BrightStor® ARCserve® Backup for Linux

Agent for MySQL Guide

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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 MySQL. The agent allows BrightStor ARCserve Backup to back up and restore MySQL databases and to display MySQL databases on a server in a logical tree for easy management. You can back up and restore databases.

Note: MySQL is an open source technology that is used in a wide range of database applications, including web site databases, eCommerce applications, data warehousing, logging applications, and distributed applications. You can find out more information about MySQL on the MySQL web site.

This guide introduces the BrightStor ARCserve Backup Agent for MySQL. It contains information about how to install, configure, and use the agent.

Architecture of the MySQL Agent

The BrightStor ARCserve Backup Agent for MySQL is used to back up and restore MySQL databases on Linux-based platforms.

The agent consists of two components:

- The MySQL browser
- The MySQL agent

The BrightStor ARCserve Backup Common Agent starts the MySQL browser, which can be used to browse and select MySQL databases on clients where the MySQL data is located. The agent, also enabled by the Common Agent, can back up and restore selected MySQL data to and from media.

For more information about the Common Agent, in this chapter see the section Functions of the Common Agent.

MySQL Browser

The MySQL browser consists of two modules:

- The browser main module
- The MySQL browser module

The browser main module primarily receives browsing commands from the BrightStor ARCserve Backup server and calls the MySQL browser module to send database browsing information to the BrightStor ARCserve Backup server. The MySQL browser communicates with the MySQL server, reading database information and tracking instances on the database server.

For more information about the Common Agent, in this chapter see the section Functions of the Common Agent.

MySQL Agent

The MySQL agent consists of three modules:

- The agent main module
- The MySQL backup module
- The MySQL restore module

The agent main module communicates with the BrightStor ARCserve Backup server, receives backup and restore jobs from the BrightStor ARCserve Backup server, and calls the backup or restore module to back up and restore MySQL databases. The MySQL backup module transfers the MySQL database information to the BrightStor ARCserve Backup server and writes the data to tape. The MySQL restore module reads data from tape, receives data through the BrightStor ARCserve Backup server, and then uses the data to restore MySQL databases.

For more information about the Common Agent, in this chapter see the section Functions of the Common Agent.

Multiple Instance Support

The agent supports all of the following multiple instance types:

- Different sets of binaries (versions may differ)
- One set of binaries but different data file directories
- One set of binaries and same data file directories

The MySQL browser can retrieve all databases running in every instance, and it can back up and restore every database running in each instance.

Note: The agent does not support backing up and restoring of MySQL tables and online logs.

Functions of the Common Agent

The Common Agent (caagent) is a standard component for all BrightStor ARCserve Backup Linux agents. This agent runs at all times as a daemon, and its primary functions include:

- Enabling and disabling all BrightStor ARCserve Backup agents and options
- Listening for requests on behalf of all the agents and options that are installed on the system

The Common Agent is installed automatically when you install BrightStor ARCserve Backup. It tracks all of the BrightStor ARCserve Backup agents and options that are installed in your system in a configuration file called agent.cfg. When you install a new agent, the agent.cfg file is updated with the new agent's information. The Common Agent uses the new agent's information to detect its existence in your system and to enable and disable the agent as necessary.

You can also use the configuration file to set the status of the agent to enabled or disabled. For more information, see the sections Enable the Agent and Disable the Agent in the chapter "Using the Agent."

You will not need to modify this configuration file often. Manual modification of this file is required only to enable certain debugging messages, to change the default timeout value, or to change the default TCP/IP port on which the Common Agent runs.

The Agent Directory Structure

The following diagram illustrates the agent's directory structure.

Chapter 2: Installing the Agent

This chapter provides the information you need to install and configure the BrightStor ARCserve Backup Agent for MySQL. The information in this chapter assumes you are familiar with the characteristics and requirements of the specified operating systems in general, and with superuser responsibilities on those operating systems in particular.

Installation Prerequisites

Before installing the BrightStor ARCserve Backup Agent for MySQL, verify the following:

- Your system meets the software requirements needed to install the agent. For a list of these requirements, see the readme file.

- You have superuser privileges or the proper authority to install software on the computers where you will be installing the agent.

- If you are are using more than one MySQL instance ID, you need the MySQL instance ID and its corresponding installation base, MySQL datafile directory, socket file, and port number.

Install the Agent

If you did not install the agent during the BrightStor ARCserve Backup installation process, you can use the Red Hat Package Manager (RPM) to install the agent by entering the following command at the Linux prompt:

```
rpm –i BABmysql.rpm
```

For detailed instructions about how to install the agent, see the *Getting Started*.

Configure the Agent

The BrightStor ARCserve Backup Agent for MySQL enables BrightStor ARCserve Backup to display the virtual hosts, directories, and databases on a server in a logical tree for easy management. To enable this function, you must run the mqsetup program to properly configure the agent.

At the command prompt, run the following command to configure the agent:

```
./mqsetup
```

The following information is specific to the script that guides you through the configuration process. Steps 1 through 8 prompt you for information in the following order:

1. Is MySQL installed on this machine—Enter **y** to continue, as shown in the following sample script.

   ```
   Is MySQL installed on this machine ? (y/n):y
   ```

2. MySQL instance ID—The instance ID registers each MySQL instance. You must enter at least one instance ID to configure the agent, as shown in the following sample script (for example, MySQL).

   ```
   You will now be requested to register all the MySQL instances to be used with
   BrightStor ARCserve Backup. You may also edit the file instance.cfg to
   register new instances or to make modifications.
   ```

   ```
   MySQL instance id to be used by this agent [<Enter> to end]: MYSQL
   ```

   Note: To register new MySQL instances or make modifications to existing MySQL instances, you can edit the instance.cfg file at any time.

3. Re-register instance.cfg—If the instance is already registered with instance.cfg, and you do not want to re-register it, enter n and then go to Step 9. Otherwise, enter y and continue to the next step. A script sample is shown next:

   ```
   The instance is already registered, do you want to re-register it? (y/n):
   ```

4. Installation base—For each instance, you must provide an installation base, as shown in the following sample script (for example, for an rpm installation, usr/bin).

   ```
   Please provide installation base for this instance: /usr/bin
   ```

5. MySQL datafile directory—For each instance, you must provide the corresponding datafile directory, as shown in the following sample script (for example, /var/lib/mysql).

   ```
   Please provide datafile directory for this instance: /var/lib/mysql
   ```

6. Socket file—For each instance, you must provide the corresponding socket file, as shown in the following sample script (for example, /var/lib/mysql/mysql.sock).

```
Please provide socket file for this instance: /var/lib/mysql/mysql.sock
```

7. Port number—For each instance, you must provide the corresponding port number, as shown in the following sample script (for example, 3306).

```
Please provide port number for this instance: 3306
```

8. MySQL instance ID—If there are no other instances that you want to configure, press Enter, as shown in the following sample script. Otherwise, enter the next instance ID and repeat Steps 3 through 8 until you have defined all of your instance IDs.

```
MySQL instance id to be used by this agent [<Enter> to end]:
```

The setup script displays the following messages:

```
Configuring Backup Agent for MYSQL.
The MysqlAgent is enabled.
```

Use of the Configuration File

The agent configuration file, agent.cfg, is located in the agent's home directory ($BAB_HOME/BABcmagt/agent.cfg). It supplies the following default information used when running mqsetup for each backup or client agent installed on your system:

- The TIMEOUT value—Defines the maximum time that the agent will wait to establish a connection with the MySQL server. The agent reports a failed connection if the timeout value is exceeded.

- LD_LIBRARY_PATH—Defines the path to the specified dynamic library.

  Note: Before modifying the instance.cfg file, disable the agent by using the *caagent disable* command. For additional information about this command, see Disable the Agent.

Configuration File Variables

The configuration file contains the following code:

```
Line 1: #instance_name:install_basedir:datadir:socket:port
Line 2: MYSQL:/usr/bin:/var/lib/mysql:/var/lib/mysql/mysql.sock:3306
```

The pound sign (#), as shown in Line 1, denotes comments. The following table defines the variables contained within the code on Line 2.

Variable	Definition
MYSQL	Instance name

Variable	Definition
/usr/bin	Base installation directory
/var/lib/mysql	Data directory
/var/lib/mysql/mysql.sock	Socket file name
3306	Port number

Uninstall the Agent

You can use the Red Hat Package Manager (RPM) to uninstall the agent by entering the following command at the Linux prompt:

```
rpm -e BABmysql
```

Chapter 3: Using the Agent

This chapter describes how to start the agent, stop the agent, and perform a backup or a restore using the BrightStor ARCserve Backup Agent for MySQL. For an overall description of the backup and restore features, see the *Administrator Guide*.

Enable the Agent

Although the BrightStor ARCserve Backup Agent for MySQL is automatically enabled at the end of the configuration process, situations can arise that require you to enable the agent.

For BrightStor ARCserve Backup to back up or restore databases on a MySQL server, the agent must be enabled. To enable the agent, use the following procedure:

Note: You do not need to change to the agent's home directory; you can issue this command from any directory.

1. Log in to the host as root.

2. Enter the following command, where 40 represents the MySQL agent's register ID with the Common Agent:

   ```
   caagent enable 40
   ```

Disable the Agent

To disable the agent, use the following procedure:

Note: You do not need to change to the agent's home directory; you can issue this command from any directory.

1. Log in to the host as root.

2. Enter the following command, where 40 represents the MySQL agent's register ID with the Common Agent:

   ```
   caagent disable 40
   ```

Check the Agent Status

To check the status of the BrightStor ARCserve Backup Agent for MySQL, use the following procedure:

Note: You do not need to change to the agent's home directory; you can issue this command from any directory.

1. Log in to the host as root.

2. Enter the following command:

   ```
   caagent list 40
   ```

Back Up Data

The agent allows you to back up an individual MySQL database or a full MySQL instance (all databases in an instance). The following sections describe how to back up a MySQL database or instance when the MySQL instance is online or offline.

Note: If you are running MySQL Version 4.0, and MySQL server is in log-bin mode, the BrightStor ARCserve Backup Agent for MySQL flushes binary logs during the backup job.

Back Up Online Instances

To back up an online MySQL database, use the following procedure:

1. From the BrightStor ARCserve Backup Home Page, click the Backup Manager icon. The Source tab of the Backup Manager window opens, as shown in the following example:
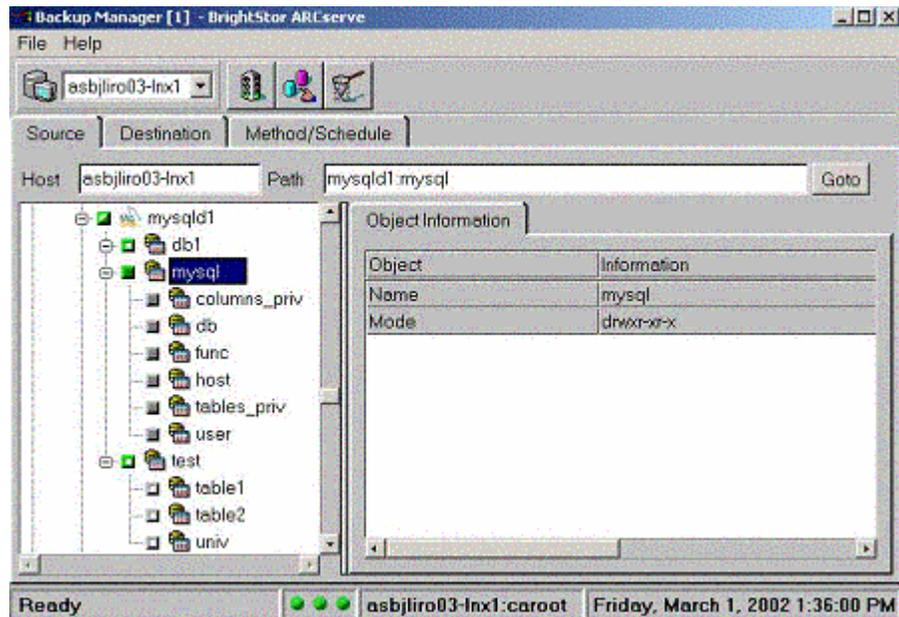
2. From the left pane of the Source tab, expand the host to which the MySQL instance belongs. The system prompts you to provide login information.

    Note: If you do not see your host, use the Database Manager of BrightStor ARCserve Backup to add the host. For more information about the Database Manager, see the *Administrator Guide*.

    After logging in to the host, select the MySQL instance you want to back up. The system prompts you to log in to the MySQL instance. After logging in to the instance, select the MySQL database you want to back up.

3. From the right pane of the Source tab, click the MySQL Option tab to select the backup option, as shown in the following example:
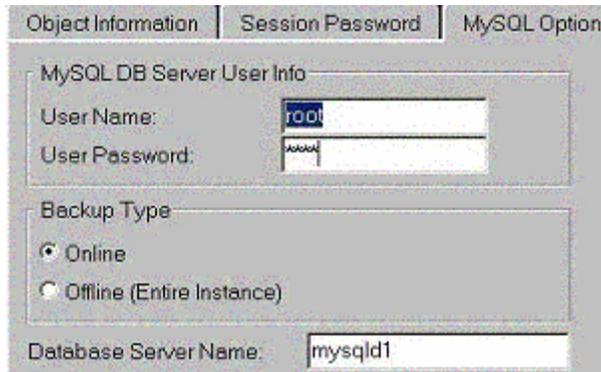
Enter a database server user name and password to log on to the MySQL instance. Under Backup Type, choose Online to back up the selected database.

Note: BrightStor ARCserve Backup does not support backing up individual databases using the Offline (Entire Instance) option. If a back up job is submitted for an individual database with the Offline option, the following error message appears:
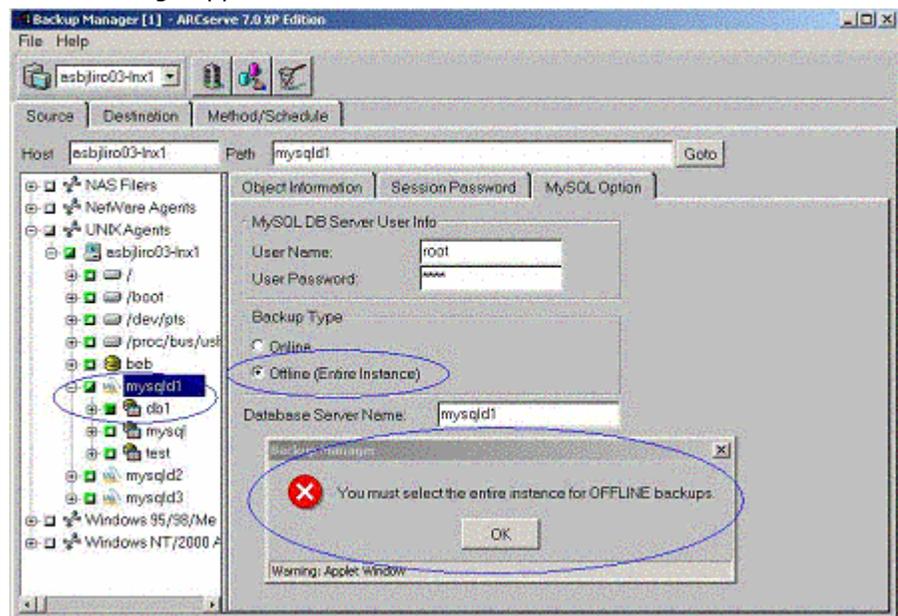
4. Expand the media device group and select the media for the backup job.

5. To schedule and run the backup job, click the Submit toolbar button. From the Submit dialog, you can schedule the job to run now or later.

6. To submit the job, click OK.

The job is submitted and can be monitored from the BrightStor ARCserve Backup Job Status Manager.

Back Up Offline Instances

When the MySQL instance is offline, you can only back up the full instance.

To back up an offline MySQL instance, use the following procedure:

1. From the BrightStor ARCserve Backup Home Page, click the Backup Manager icon.

2. From the left pane of the Source tab, select the MySQL instance that you want to back up.

3. Click the MySQL Option tab, and enter your database server user name and password.

4. Under Backup Type, choose Offline.

    Note: BrightStor ARCserve Backup does not support backing up an Offline MySQL instance with an Online type. If this job is submitted, it will fail.

5. Expand the media device group and select the media for backup.

6. Click the Submit toolbar button to schedule and run the job. From the Submit dialog, you can schedule the job to run now or later.

7. To submit the job, click OK.

    The job is submitted and can be monitored from the BrightStor ARCserve Backup Job Status Manager.

    Note: An offline backup of the entire instance requires only one session on the media.

Set Session Password

To set a Session Password before you backup a session complete the following steps:

1. From the BrightStor ARCserve Backup Home Page, click the Backup Manager icon.

2. From the left pane of the Source tab, select the MySQL instance that you want to have a session password.

3. Click the Session Password tab, and enter your password.

4. Click Set.

    Note: If you back up a session using password protection, you must provide the password to restore the session before submitting the job.

Restore Data

The BrightStor ARCserve Backup Agent for MySQL allows you to restore:

■   A full instance that was backed up offline

■   A database that was backed up online

Restore a Full Instance That Was Backed Up Offline

The following sections describe how to restore an instance from an offline backup when the instance is online or offline.

Note: For an offline backup, you can restore only the session that contains the entire instance.

Restore Online Instance Backups

To restore an instance from an offline backup when the instance is online, use the following procedure:

1. From the BrightStor ARCserve Backup Home Page, click the Restore Manager icon. The Source tab of the Restore Manager window opens.

2. From the drop-down list, choose Restore by File System.

3. From the left pane of the Source tab, expand the host to which the MySQL instance belongs.

4. Expand the database, and select Offline.

   Note: If you want to restore a previous offline backup, click the Version History button, select the session you want to restore, and then click OK.

5. From the left pane of the Destination tab, expand the host to which the MySQL instance belongs. You are prompted for login information.

6. After logging in to the host, double-click to select the instance you want to restore. You are prompted for login information.

   Note: The destination instance that you want to restore can differ from the source instance when doing the backup.

7. To schedule and run the restore job, click the Submit toolbar button. From the Submit dialog, you can schedule the job to run now or later.

8. To submit the job, click OK.

Restore Offline Instance Backups

To restore an instance from an offline backup when the instance is offline, use the following procedure:

1. From the BrightStor ARCserve Backup Home Page, click the Restore Manager icon. The Source tab of the Restore Manager window opens.

2. From the drop-down list, choose Restore by File System.

3. From the left pane of the Source tab, expand the host to which the MySQL instance belongs.

4. Expand the database, and select Offline.

   Note: If you want to restore a previous offline backup, click the Version History button, select the session that you want to restore, and click OK.

5. From the left pane of the Destination tab, expand the host to which the MySQL instance belongs. You are prompted for login information.

   Note: The destination instance that you want to restore can differ from the source instance when doing the backup.

6. After logging in to the host, double-click to select the instance you want to restore. A message box displays the message, "Database server *instance-name* is offline."

7. Close the message box.

8. Click the MySQL Option tab, and enter your database server user name and password.

9. To schedule and run the restore job, click the Submit toolbar button. From the Submit dialog, you can schedule the job to run now or later.

10. To submit the job, click OK.

Restore a Database That Was Backed Up Online

The following sections describe how to restore a database from an online backup when the instance is online or offline.

Restore Online Instance Backups

To restore a database from an online backup when the instance is online, use the following steps.

1. From the BrightStor ARCserve Backup Home Page, click the Restore Manager icon. The Source tab of the Restore Manager window opens.

2. From the drop-down list, choose Restore by File System.

3. From the left pane of the Source tab, expand the host to which the MySQL instance belongs.

    Note: File System files and DB agents cannot be restored simultaneously. The Apache agent is the exception and can be restored with File System files

4. Expand the database, and select Online.

    Note: If you want to restore a previous online backup, click the Version History button, select the session that you want to restore, and click OK.

5. From the left pane of the Destination tab, expand the host to which the MySQL instance belongs. You are prompted for login information.

6. After logging in to the host, double-click to select the instance you want to restore. You are prompted for login information.

    Note: The destination instance you want to restore can differ from the source instance when doing the backup.

7. To schedule and run the restore job, click the Submit toolbar button. From the Submit dialog, you can schedule the job to run now or later.

8. To submit the job, click OK.

Restore Offline Instance Backups

To restore a database from an online backup when the instance is offline, use the following steps.

1. From the BrightStor ARCserve Backup Home Page, click the Restore Manager icon. The Source tab of the Restore Manager window opens.

2. From the drop-down list, choose Restore by File System.

3. From the left pane of the Source tab, expand the host to which the MySQL instance belongs.

4. Expand the database, and select Online.

   Note: If you want to restore a previous online backup, click the Version History button, select the session you want to restore, and then click OK.

5. From the left pane of the Destination tab, expand the host to which the MySQL instance belongs. You are prompted for login information.

   Note: The destination instance you want to restore can differ from the source instance when doing the backup.

6. After logging in to the host, double-click to select the instance you want to restore. A message box displays the message, "Database server *instance-name* is offline."

7. Close the message box.

8. Click the MySQL Option tab, and enter your database server user name and password.

9. To schedule and run the restore job, click the Submit toolbar button. From the Submit dialog, you can schedule the job to run now or later.

10. To submit the job, click OK.

Backup and Restore Limitations

When you are using the BrightStor ARCserve Backup Agent for MySQL to back up and restore MySQL data, the following limitations apply:

- The agent does not support backing up and restoring MySQL tables and MySQL binary log files.

- To flush binary logs, MySQL servers must be in log-bin mode during a backup job.

- Database agents and File System agents cannot be restored simultaneously.

- Database agents and Apache agents can be restored simultaneously.

Appendix A: Frequently Asked Questions

"MySQL server not available" error message occurs during job submissions when MySQL instance is offline.

If you submit a backup or restore job when the MySQL instance is offline, the error "MySQL server not available" might occur in $AGENT_HOME/logs/MQagentd.log.

You can tune and increase the timeout value in the MySQL section of the file "$CAAGENT_HOME/agent.cfg." After updating the agent.cfg file, run the following commands to resubmit the backup or restore job:

```
#caagent update

or

#caagent stop
#caagent start
```

Note: AGENT_HOME is the directory where the MySQL agent is located, and CAAGENT_HOME is the directory where the Common Agent is located.

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