VERITAS NetBackup™ 5.1 for Sybase

System Administrator's Guide

for UNIX

N12340B

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Preface

This guide describes how to install, configure and use VERITAS NetBackup for Sybase on UNIX. In this guide, VERITAS NetBackup for Sybase on UNIX is referred to as NetBackup for Sybase on UNIX.

For specific information about the NetBackup server software, refer to:

- *NetBackup System Administrator's Guide for UNIX, Volumes I and II*, if you have a UNIX server.

  or

- *NetBackup System Adminstrator's Guide for Windows, Volumes I and II* if you have a Windows server.

This document is the same as `NetBackup_AdminGuide_Sybase_Unix.pdf` distributed with the NetBackup for Sybase on UNIX software.

Audience

This guide is intended for the:

- SYBASE database system administrator responsible for configuring and using the SYBASE SQL Server and Backup Server to back up and restore SYBASE databases.
- NetBackup system administrator responsible for configuring NetBackup.

A system administrator is defined as a person with system administrator privileges and responsibilities.

This guide assumes:

- A basic understanding of system administration.
- A working understanding of the NetBackup client and server software.
- A familiarity with the information covered in the following NetBackup manuals:
  - *NetBackup Backup, Archive, and Restore Getting Started Guide*
  - *NetBackup System Administrator's Guide for UNIX, Volumes I and II* or *NetBackup System Adminstrator's Guide for Windows, Volumes I and II*
  - *NetBackup Troubleshooting Guide for UNIX and Windows*
- A thorough understanding of the following Sybase database topics:
  - SYBASE administration
  - SYBASE commands
  - SYBASE Backup Server Archive API (Application Program Interface)

What Is In This Guide?

This guide is organized as follows:

- Chapter 1, "Introduction," is an overview of the product's capabilities.
- The Installation chapter explains how to install NetBackup for Sybase on UNIX on your system.
- Configuration explains how to configure your system to use NetBackup for Sybase on UNIX. This information supplements the NetBackup for Sybase on UNIX manuals.
- Chapter 4, "Using NetBackup for Sybase on UNIX," explains how to use this product to back up and restore your Sybase databases. This information supplements the NetBackup manuals.
- Finally, the Troubleshooting chapter provides troubleshooting information.

Getting Help

VERITAS offers you a variety of support options.

Accessing the VERITAS Technical Support Web Site

The VERITAS Support Web site allows you to:

- obtain updated information about NetBackup for Sybase, including system requirements, supported platforms, and supported peripherals
- contact the VERITAS Technical Support staff and post questions to them
- get the latest patches, upgrades, and utilities
- view the NetBackup for Sybase Frequently Asked Questions (FAQ) page
- search the knowledge base for answers to technical support questions
- receive automatic notice of product updates
- find out about NetBackup for Sybase training
- read current white papers related to NetBackup for Sybase

The address for the VERITAS Technical Support Web site follows:

- http://support.veritas.com

Subscribing to VERITAS Email Notification Service

Subscribe to the VERITAS Email notification service to be informed of software alerts, newly published documentation, Beta programs, and other services.

Go to http://support.veritas.com. Select a product and click “E-mail Notifications” on the right side of the page. Your customer profile ensures you receive the latest VERITAS technical information pertaining to your specific interests.

Accessing VERITAS Telephone Support

Telephone support for NetBackup for Sybase is only available with a valid support contract. To contact VERITAS for technical support, dial the appropriate phone number listed on the Technical Support Guide included in the product box and have your product license information ready for quick navigation to the proper support group.

▼ **To locate the telephone support directory on the VERITAS web site**

1. Open http://support.veritas.com in your web browser.
2. Click the **Phone Support** icon. A page that contains VERITAS support numbers from around the world appears.

Accessing VERITAS E-mail Support

▼ **To contact support using E-mail on the VERITAS web site**

1. Open http://support.veritas.com in your web browser.
2. Click the **E-mail Support** icon. A brief electronic form will appear and prompt you to:
   - Select a language of your preference
   - Select a product and a platform
   - Associate your message to an existing technical support case
   - Provide additional contact and product information, and your message
3. Click **Send Message**.

Contacting VERITAS Licensing

For license information call 1-800-634-4747 option 3, fax 1-650-527-0952, or e-mail amercustomercare@veritas.com.

NetBackup for Sybase Manuals

The following manuals, along with the online help, are included in the NetBackup for Sybase documentation set. For a more detailed listing of NetBackup documents, refer to *NetBackup Release Notes for UNIX and Windows*.

If you have a UNIX server, refer to these documents:

- *VERITAS NetBackup System Administrator's Guide for UNIX, Volume I*

  NetBackup_AdminGuideI_UNIXServer.pdf

  Explains how to configure and manage NetBackup on a UNIX server, including managing storage units, backup policies, catalogs and host properties.

- *VERITAS NetBackup System Administrator's Guide for UNIX, Volume II*

NetBackup_AdminGuideII_UNIXServer.pdf

Explains additional NetBackup features such as notify scripts, enhanced authorization and authentication, and role-based security. The guide also discusses using NetBackup with AFS, Intelligent Disaster Recovery (IDR), and the BE Tape Reader.

- *NetBackup Media Manager System Administrator's Guide for UNIX*

  Explains how to configure and manage the storage devices and media on UNIX NetBackup servers. Media Manager is part of NetBackup.

- *VERITAS NetBackup Troubleshooting Guide for UNIX and Windows*

  Provides troubleshooting information for UNIX- and Windows-based NetBackup products, including Media Manager.

If you have a Windows server, refer to these documents:

- *VERITAS NetBackup System Administrator's Guide for Windows, Volume I*

  NetBackup_AdminGuideI_WinServer.pdf

  Explains how to configure and manage NetBackup on a Windows server, including managing storage units, backup policies, catalogs and host properties.

- *VERITAS NetBackup System Administrator's Guide for Windows, Volume II*

  NetBackup_AdminGuideII_WinServer.pdf

  Explains additional NetBackup features such as notify scripts, enhanced authorization and authentication, and role-based security. The guide also discusses using NetBackup with AFS, Intelligent Disaster Recovery (IDR), and the BE Tape Reader.

- *NetBackup Media Manager System Administrator's Guide for Windows*

  Explains how to configure and manage the storage devices and media on Windows NetBackup servers. Media Manager is part of NetBackup.

- *VERITAS NetBackup Troubleshooting Guide for UNIX and Windows*

  Provides troubleshooting information for UNIX- and Windows-based NetBackup products, including Media Manager.

Sybase Manuals

For this product, you may also need the following Sybase manuals (available from Sybase):

- *SYBASE SQL Server Installation and Configuration Guide*

- *SYBASE SQL Server System Administration Guide.*
- *SYBASE SQL Server Utility Programs for UNIX*
- *SQL Server Configuration Guide*

Glossary

If you encounter unfamiliar terminology, consult the NetBackup online glossary. The glossary contains terms and definitions for NetBackup and all additional NetBackup options and agents.

The NetBackup online glossary is included in the NetBackup help file.

▼ To access the NetBackup online glossary

1. In the NetBackup Administration Console, click **Help** > **Help Topics**.
2. Click the **Contents** tab.
3. Click **Glossary of NetBackup Terms**.

Use the scroll function to navigate through the glossary.

Accessibility Features

NetBackup contains features that make the user interface easier to use by people who are visually impaired and by people who have limited dexterity. Accessibility features include:

- Support for assistive technologies such as screen readers and voice input (Windows servers only)
- Support for keyboard (mouseless) navigation using accelerator keys and mnemonic keys

For more information, see the *NetBackup System Administrator's Guide for Windows, Volume I* or the *NetBackup System Administrator's Guide for UNIX, Volume I.*

Conventions

The following conventions apply throughout the documentation set.

Product-Specific Conventions

The following term is used in the NetBackup for Sybase 5.1 documentation to increase readability while maintaining technical accuracy.

- Microsoft Windows, Windows

  Terms used to describe a specific product or operating system developed by Microsoft, Inc. Some examples you may encounter in NetBackup documentation are, Windows servers, Windows 2000, Windows Server 2003, Windows clients, Windows platforms, or Windows GUI.

  When Windows or Windows servers is used in the documentation, it refers to all of the currently supported Windows operating systems. When a specific Windows product is identified in the documentation, only that particular product is valid in that instance.

  For a complete list of Windows operating systems and platforms that NetBackup supports, refer to the *NetBackup Release Notes for UNIX and Windows* or go to the VERITAS support web site at `http://www.support.veritas.com`.

Typographical Conventions

Here are the typographical conventions used throughout the manuals:

Conventions

Convention	Description
GUI Font	Used to depict graphical user interface (GUI) objects, such as fields, listboxes, menu commands, and so on. For example: Enter your password in the **Password** field.
Italics	Used for placeholder text, book titles, new terms, or emphasis. Replace placeholder text with your specific text. For example: Replace *filename* with the name of your file. Do *not* use file names that contain spaces. This font is also used to highlight NetBackup server-specific or operating system-specific differences. For example: *This step is only applicable for NetBackup Enterprise Server.*
`Code`	Used to show what commands you need to type, to identify pathnames where files are located, and to distinguish system or application text that is displayed to you or that is part of a code example.
Key+Key	Used to show that you must hold down the first key while pressing the second key. For example: Ctrl+S means hold down the Ctrl key while you press S.

You should use the appropriate conventions for your platform. For example, when specifying a path, use backslashes on Microsoft Windows and slashes on UNIX. Significant differences between the platforms are noted in the text.

Tips, notes, and cautions are used to emphasize information. The following samples describe when each is used.

Tip Used for nice-to-know information, like a shortcut.

Note Used for important information that you should know, but that shouldn't cause any damage to your data or your system if you choose to ignore it.

Caution Used for information that will prevent a problem. Ignore a caution at your own risk.

Command Usage

The following conventions are frequently used in the synopsis of command usage.

brackets [ ]

The enclosed command line component is optional.

Vertical bar or pipe (|)

Separates optional arguments from which the user can choose. For example, when a command has the following format:

`command` *`arg1`*`|`*`arg2`*

In this example, the user can use either the *arg1* or *arg2* variable.

Navigating Multiple Menu Levels

When navigating multiple menu levels, a greater-than sign (>) is used to indicate a continued action.

The following example shows how the > is used to condense a series of menu selections into one step:

❖ Select **Start** > **Programs** > **VERITAS NetBackup** > **NetBackup Administration Console**.

The corresponding actions could be described in more steps as follows:

1. Click **Start** in the task bar.
2. Move your cursor to **Programs**.

3. Move your cursor to the right and highlight **VERITAS NetBackup**.

4. Move your cursor to the right. First highlight and then click **NetBackup Administration Console**.

Introduction 1

NetBackup for Sybase on UNIX integrates the database backup and recovery capabilities of Sybase ASE Backup Server with the backup and recovery management capabilities of NetBackup and Media Manager.

This chapter introduces NetBackup for Sybase on UNIX and explains how it relates to both Sybase ASE Backup Server and NetBackup. Read this chapter for a description of:

- Features of NetBackup for Sybase on UNIX
- Terminology for NetBackup for Sybase on UNIX
- Technical Overview of NetBackup for Sybase on UNIX

Features of NetBackup for Sybase on UNIX

This section describes the NetBackup for Sybase on UNIX main features.

NetBackup for Sybase on UNIX main features

Feature	Description
Media and device management	All devices supported by Media Manager are available to NetBackup for Sybase on UNIX.
Scheduling facilities	NetBackup scheduling facilities on the master server can be used to schedule automatic and unattended Sybase backups. This also lets you choose the times when these operations can occur. For example, to prevent interference with normal daytime operations, you can schedule your database backups to occur only at night.
Multiplexed backups and restores	NetBackup for Sybase on UNIX lets you take advantage of NetBackup's multiplexing capabilities. Multiplexing directs multiple data streams to one backup device, thereby reducing the time necessary to complete the operation.
Transparent execution of both Sybase and regular file system backup and restore operations	All backups and restores are run simultaneously and transparently without any action from the NetBackup administrator. A Sybase administrator can run database backup and restore operations through NetBackup or use Sybase ASE Backup Server as if NetBackup were not present. An administrator or any other authorized user can use NetBackup to run database backups and restores.
Sharing the same devices and tapes used during other file backups	It is possible to share the same devices and media used for other backups or to give Sybase exclusive use of certain devices and media.
Centralized and networked backup operations	From the NetBackup master server, you can schedule database backups or start them manually for any client. The Sybase databases can also reside on hosts that are different from the devices on which NetBackup stores the backups.

NetBackup for Sybase on UNIX main features

Feature	Description
Graphical user interfaces	NetBackup provides the following graphical user interfaces for client users and administrators: ◆ Backup, Archive, and Restore user interface ◆ Client user motif interface, `xbp` ◆ NetBackup Administration Console for Java ◆ NetBackup Administration Console for Windows A database administrator or NetBackup administrator can start backup operations for Sybase from the NetBackup graphical user interface on the master server.
Parallel backup and restore operations	NetBackup for Sybase on UNIX supports the parallel backup and restore capabilities of the Sybase ASE Backup Server. This permits the user to run more than one tape device at a time for a single Sybase ASE backup or restore, thereby reducing the time necessary to complete the operation.

Terminology for NetBackup for Sybase on UNIX

This section explains important terms that may be new to a Sybase database administrator or a NetBackup administrator.

NetBackup Terms

This section describes NetBackup terms as they apply to NetBackup for Sybase on UNIX.

NetBackup	NetBackup backs up and restores files, directories, raw partitions, and databases on client systems that have Sybase databases.
NetBackup policy	NetBackup policies define criteria for backups and restores. These criteria include storage unit and media to use, backup schedules, clients, files to back up, or backup templates or scripts to execute.
NetBackup schedule	NetBackup schedules control NetBackup operations such as: when backups can occur, the type of backup (full, incremental) to perform, and how long NetBackup retains the image (retention level).
Administrator-directed backups	NetBackup administrators are able to perform remote backups of all files, directories, databases, and raw partitions contained on client systems within a client/server network via NetBackup interfaces.
User-directed backups and restores	NetBackup users are able to perform backups of all files, directories, databases, and raw partitions contained on client systems within a client system.
Graphical interfaces	Graphical user interfaces are available for both users and administrators.
Media Manager	The Media Manager provides complete management and tracking of all devices and media used during backups and restores.

For explanations of other NetBackup terms, consult the NetBackup online glossary. For instructions, see the “Glossary” section in the Preface.

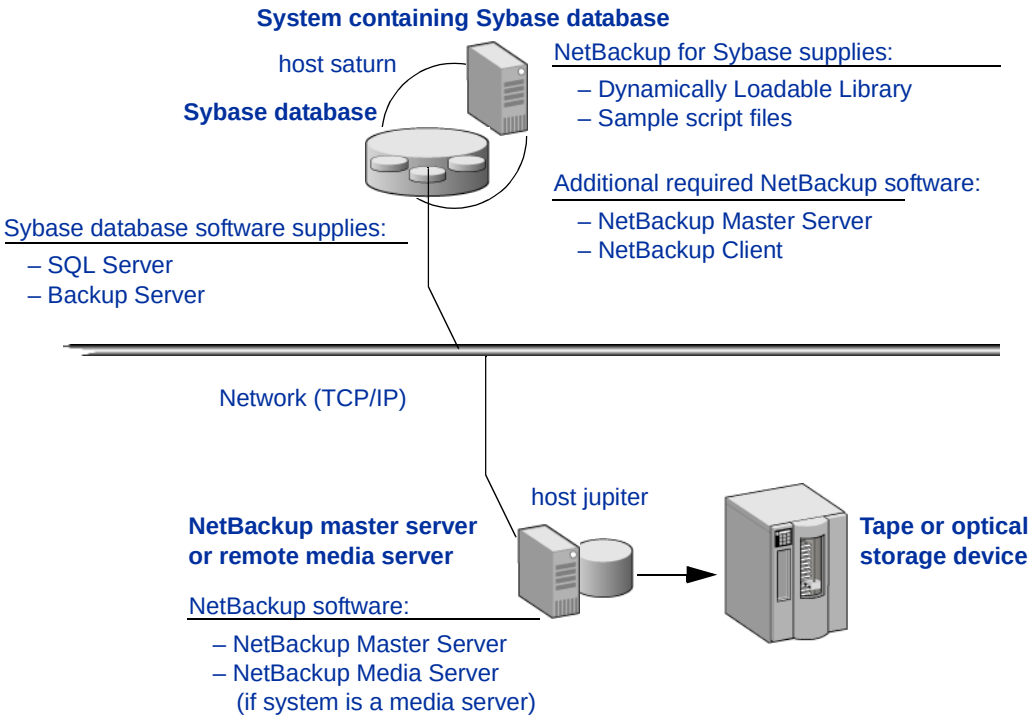
NetBackup for Sybase on UNIX Terms

SQL Server and Sybase ASE Backup Server	SQL Server improves the backup and restore functions of Sybase ASE Backup Server by using remote-procedure calls to instruct Sybase ASE Backup Server to back up or restore specific databases. NetBackup for Sybase on UNIX enhances SQL Server functionality by integrating Sybase ASE Backup Server with NetBackup. This provides access to NetBackup media-management and scheduling in addition to graphical and menu interfaces.
SQL Server `DUMP` *and* `LOAD` *commands*	These SQL Server commands are used for Sybase ASE database backups and restores. The `DUMP` command is used to back up. The `LOAD` command is used to restore.
Archive device	This dump-device is used with the `DUMP` and `LOAD` commands. It is required to support integration with NetBackup for Sybase on UNIX.
Sybase backup scripts	Shell scripts that control NetBackup for Sybase operations.
Sybase SQL script	An SQL script that contains SQL commands to be performed by Sybase SQL Server.
Sybase Adaptive Server Enterprise	A powerful data management platform for mission-critical, transaction-intensive enterprise applications.
Sybase ASE	Sybase Adaptive Server Enterprise.

Technical Overview of NetBackup for Sybase on UNIX

The following illustration shows the major components in a NetBackup for Sybase on UNIX configuration.

Example NetBackup for Sybase Configuration



The main elements to this example configuration are:

- The Sybase database host, in this example, “saturn,” which contains SQL Server, Sybase ASE Backup Server, NetBackup for Sybase on UNIX, and NetBackup client software. Refer to “SQL Server and Sybase ASE Backup Server” on page 7 and “NetBackup for Sybase on UNIX” on page 7 for more details.
- The NetBackup server, in this example, “jupiter,” which contains NetBackup server software. Refer to the *NetBackup System Administrator’s Guide for UNIX, Volumes I and II* or *NetBackup System Adminstrator’s Guide for Windows, Volumes I and II* for more details on the NetBackup server.

- The storage media is connected to the NetBackup master server. Refer to the *NetBackup Media Manager System Administrator's Guide for UNIX* or the *NetBackup Media Manager System Administrator's Guide for Windows* for more details on the NetBackup Media Manager.

SQL Server and Sybase ASE Backup Server

SQL Server performs Sybase ASE backups and restores by sending Sybase ASE `DUMP` and `LOAD` directives to Sybase ASE Backup Server. Sybase ASE Backup Server is an Open Server application that prevents backup and restore tasks from interfering with user processes. SQL Server and Sybase ASE Backup Server are installed and configured with Sybase ASE's regular installation facilities.

When either a Sybase ASE `DUMP` or `LOAD` command is processed, SQL Server sends Sybase ASE Backup Server the directives to dump or load the specified database or transaction log. These directives indicate which set of archive devices to use for the dump image. Sybase ASE Backup Server then handles all data transfer for the operation.

For more information on SQL Server and Sybase ASE Backup Server, refer to the *SYBASE SQL Server Installation and Configuration Guide* for your platform and the *SYBASE SQL Server System Administration Guide*.

NetBackup for Sybase on UNIX

NetBackup for Sybase on UNIX has a dynamically-loadable library that provides the functions necessary for Sybase ASE Backup Server to use NetBackup. This library is installed when NetBackup for Sybase on UNIX is installed.

NetBackup for Sybase on UNIX is integrated with Sybase ASE Backup Server through the Sybase ASE Backup Server Archive API. Sybase ASE Backup Server uses the Archive API routines to issue I/O requests to an archive-byte stream. At run time, Sybase ASE Backup Server loads the NetBackup for Sybase on UNIX library and makes calls to the API routines to open, close, read, and write to the byte stream through this API interface.

The dump-device string of the Sybase ASE `DUMP` and `LOAD` commands is extended to support the Archive API. The following syntax instructs Sybase ASE Backup Server to use the NetBackup archive device to transfer data to and from NetBackup.

`"sybackup::"`

The Sybase ASE `DUMP` command appears as follows:

```
dump database model to "sybackup::"
```

SQL Server and Sybase ASE Backup Server do not have a backup-catalog feature. However, when you perform a database or transaction dump, NetBackup for Sybase on UNIX automatically creates a file name for the dump image. You must then specify this file name during a subsequent load operation.

The file naming convention for the database and transaction dumps is the following:

```
sql_server_name.database_name.backup_type.stripe_number.pid.dd-mm-yyyy.hh:mm:ss
```

Where *backup_type* is **D** for database and **T** for transaction.

For example:

```
SYBASE11.mydb.D.0.24312.17-12-2003.14:05:25
```

Sequence of Operation

NetBackup operations are controlled by Sybase script files. A user selects a script through the NetBackup client user interface. Refer to "Using NetBackup for Sybase on UNIX" on page 75 for details. A schedule is configured, through the NetBackupAdministration Console, to use a script to perform NetBackup operations. Refer to "Configuration" on page 25 for details.

The following process takes place when a script is selected for a backup:

1. A NetBackup process called `bphdb` starts the Sybase backup script on the client.
2. The Sybase backup script then starts the `isql` utility with the Sybase SQL script as an input file.
3. SQL Server starts the requested operation on the databases.
4. When the process requires media to store backup data, NetBackup for Sybase on UNIX starts a user-directed backup by using the NetBackup `bpbackup` command.
5. The NetBackup master server then connects to NetBackup for Sybase on UNIX on the client.
6. Sybase ASE Backup Server sends data to NetBackup for Sybase on UNIX, which transfers data to the master server.
7. The master server sends the data to a storage unit.

A restore works in essentially the same manner except that NetBackup for Sybase on UNIX issues a `bprestore` command. This causes the master server to retrieve the data from the storage unit and send it to NetBackup for Sybase on UNIX on the client.

Since Sybase ASE Backup Server supports parallel operations, it is possible to start more than one backup or restore operation.

Note The Sybase ASE Backup Server API does not support the Remote Sybase ASE Backup Server feature. All network communications are controlled by NetBackup.

Installation 2

This chapter describes the NetBackup for Sybase on UNIX installation and setup procedures. It includes a section on installation prerequisites.

▼ To locate the latest Database Agent information on the VERITAS support web site

1. Go to the VERITAS support web page: http://`www.support.veritas.com`.
2. From the Select Product Family list, choose **NetBackup Products**. The Select Product window refreshes showing a list of NetBackup products.
3. Select one of the NetBackup products. The page refreshes and displays a search window with four tabs.
4. Select **5.1** in the **Product Version** drop-down field.
5. Select a Product Platform.
6. Click the **Compatibility** tab. The page refreshes showing documents that contain compatibility information.
7. Click on the title of the document link for NetBackup Database Agent Compatibility List. A document appears that contains a downloadable file that enables you to view the supported database spreadsheet for this release.

Installation Prerequisites

Before installing NetBackup for Sybase on UNIX, be sure you have completed the following procedures:

- Install the Sybase vendor software on the client where you will be backing up the databases.

  See the *Sybase SQL Server Installation and Configuration Guide* for instructions on installing Sybase ASE.

- Install the NetBackup server software on the server.

  The NetBackup server platform can be any of those that NetBackup supports.

  Refer to the *NetBackup Installation Guide for UNIX* or the *NetBackup Installation Guide for Windows*.

- Install the NetBackup client software on the client where you will be backing up the databases.

  Refer to the *NetBackup Installation Guide for UNIX* for installation instructions.

Now you are ready to install NetBackup for Sybase on UNIX on the client where you will be backing up the databases. Refer to the next section for detailed instructions on installing NetBackup for Sybase on UNIX.

Guidelines for Installing NetBackup for Sybase on UNIX in a Cluster

- Prior to installing NetBackup for Sybase on UNIX, the NetBackup server must be installed and configured to work in a cluster. (This is accomplished by following the instructions in the *NetBackup Installation Guide for UNIX*, including running the `cluster_config` script after the NetBackup server software has been installed.)
- Commands such as `bpplclients` and `update_dbclients` must be run from the active NetBackup node. If you are pushing the database agent software to clients located in a cluster, specify the individual node names (not virtual names) in the list of clients.
- If installing NetBackup for Sybase on UNIX on a clustered NetBackup server, freeze the active NetBackup node before beginning the installation. Install on all the inactive nodes, then install on the active node. After you successfully install on the active node, unfreeze this node.

- The `cluster_config` script only needs to be run after the NetBackup server software has been installed. You do not need to run this script after installing NetBackup for Sybase on UNIX on a NetBackup server or if you wish to install NetBackup for Sybase on UNIX on a machine on which only the NetBackup client is installed.

Installing NetBackup for Sybase on UNIX

There are two ways to install database agent software.

- Remote installation: Loads the software on a master server. The user then pushes the database software out to affected clients.

  Refer to the following section.

- Local installation: Loads and installs the software only to the local machine.

  Refer to "Local Installation of NetBackup for Sybase on UNIX" on page 19.

Remote Installation of NetBackup for Sybase on UNIX

During a remote installation, NetBackup for Sybase on UNIX files are loaded onto the current machine, which must be a UNIX master server. The software is then distributed to the clients and installed.

Note In a clustered environment, the capability to push client software is only available from the active node.

Installation Requirements

- The version of the NetBackup client and the version of NetBackup for Sybase on UNIX must be the same (for example, 5.1).
- There must be adequate disk space on each client that will receive the software.

  Less than one megabyte of additional disk space is required in the client's `install_path/netbackup` directory. However, more disk space may be necessary at run time.

- NetBackup version 5.1 client software is installed and operational on each Sybase client.

  This also means that the directory `install_path/netbackup` already exists on each Sybase client.

- In a clustered environment, NetBackup server software has been installed and configured to work in a cluster. (This is accomplished by following the instructions in the *NetBackup Installation Guide for UNIX*, including running the `cluster_config` script after the NetBackup server software is installed.)

Remote Installation Instructions

▼ To perform a remote installation

1. If installing NetBackup for Sybase on UNIX on a clustered NetBackup server, first refer to the "Guidelines for Installing NetBackup for Sybase on UNIX in a Cluster" earlier in this chapter.

2. Log in as the root user on the server.

   If you are already logged in, but are not the root user, run the following command.

   ```
   su - root
   ```

3. Make sure a valid license key for NetBackup for Sybase on UNIX has been registered. To view or add license keys, perform one of the following:

   - Run the following command:

     install_path/netbackup/bin/admincmd/get_license_key.

   - Open the NetBackup Administration Console and choose **Help** > **License Keys**.

4. Insert the CD-ROM into the drive.

5. Change the working directory to the CD-ROM directory.

   ```
   cd /CD_mount_point
   ```

6. Load the software on the server by executing the `install` script.

   ```
   ./install
   ```

   a. Select the NetBackup Database Agent Software option.

      The following prompt appears:

      ```
      Do you want to do a local installation? (y/n) [n]
      ```

   b. Answer **n**.

      You are presented with a menu of all database agents available on the CD-ROM.

   c. Select the NetBackup for Sybase option.

   d. Enter **q** to quit selecting options.

      A prompt appears asking if the list is correct.

   e. Answer **y**.

The `install` script identifies the types of client software loaded during the installation of the NetBackup server. By default, any matching NetBackup for Sybase on UNIX software is automatically loaded. If there are more platforms available, the script displays a menu giving you the opportunity to add more client types to the default list. Once the list is complete, database agent version files, compressed tar files and the `install_dbext` script are copied to directory *`install_path`*`/netbackup/dbext`.

7. Distribute and install the NetBackup for Sybase on UNIX software on each client as described in the next sections.

Note In a clustered environment, the capability to distribute client software is only available from the active node.

There are two types of installation processes.

- *initial install*: Use an initial install if the clients you intend to update have not been added to policies of type Sybase.
- *upgrade install*: Use an upgrade install if all the clients you intend to update already have been added to policies of type Sybase.

Note The NetBackup version level (for example, 5.1) running on the clients you wish to update must be the same as the version level of the NetBackup for Sybase on UNIX being installed.

Initial Installation on Clients

▼ To perform an initial install on the clients

1. Run the following command to create a file containing a list of clients currently configured in the NetBackup database.

```
cd install_path/netbackup/bin
./admincmd/bpplclients -allunique -noheader > filename
```

where *`filename`* is the name of the file to contain the list of unique clients. If no clients have been configured in the NetBackup database, and therefore *`filename`* is empty, create *`filename`* using the same format as that generated by `bpplclients`.

`bpplclients` generates output in following format:

hardware operating_system client_name

where:

hardware is the hardware name. For example, execute the `ls` command in directory *`install_path`*`/netbackup/client`.

operating_system is the operating system name. For example, execute the `ls` command in directory *`install_path`*`/netbackup/client/`*`hardware`*.

client_name is the name of the client.

For example, the contents of *filename* might look like this:

```
Solaris Solaris8 curry
RS6000 AIX4.3.3 cypress
```

2. Edit *filename*.

This is an optional step. Use it if the contents of *filename* need to be changed. Edit *filename* to contain only those clients you wish to update with NetBackup for Sybase on UNIX software.

Note If you are pushing the database agent software to clients located in a cluster, specify the hostnames of the individual nodes (not virtual names) in the list of clients.

3. Specify *filename* in the `update_dbclients` command.

For example:

`cd` ***`install_path`***`/`**`netbackup/bin`**
`./update_dbclients Sybase -ClientList` *filename*

Only clients listed in *filename* are updated.

Note If the receiving client is configured as an HP-UX11.00, HP-UX11.11, Solaris7, Solaris8, or Solaris9, both the 32-bit and 64-bit versions of NetBackup for Sybase on UNIX will be installed.

Upgrade Installation on Clients

▼ To perform an upgrade installation on the clients

1. Execute the following command.

`cd` ***`install_path`***`/`**`netbackup/bin`**
`./update_dbclients Sybase ALL ALL`

This command looks at all possible clients and updates only the clients currently in the Sybase policy type.

Instead of `ALL ALL`, you may use `-ClientList` *filename* as explained in "Initial Installation on Clients" on page 16.

Note If you are pushing the database agent software to clients located in a cluster, specify the hostnames of the individual nodes (not virtual names) in the list of clients.

Note If the receiving client is configured as an HP-UX11.00, HP-UX11.11, Solaris7, Solaris8, or Solaris9, both the 32-bit and 64-bit versions of NetBackup for Sybase on UNIX will be installed.

Note With an initial or upgrade install, some clients may be skipped and not updated. Possible reasons are:
- the client is a PC client (which cannot be updated from a UNIX server)
- NetBackup for Sybase on UNIX does not support that client's platform type
- the NetBackup for Sybase on UNIX software for that client type was not loaded onto the server in step 6 of the "Remote Installation Instructions" on page 15
- (if using the `ALL ALL` method) the client does not belong to the Sybase policy type

All skipped clients are available in a file whose name is displayed by `update_dbclients`.

The number of updates required to distribute the software to the clients is displayed.

If more than one update will occur, you will see the following prompt:

```
Enter the number of simultaneous updates you wish to take place. 1 - max dflt
```

(must be in the range of 1 to *max*; default: *dflt*).

where:

max is the maximum number of simultaneous updates that is allowed. The value displayed ranges from 1 to 30.

dflt is the default number the program uses if you press Enter. The value displayed ranges from 1 to 15.

For example, if three client updates will be performed, the *max* and *dflt* values shown would be 3. If 50 client updates will be performed, the *max* value shown would be 30 and the *dflt* value shown would be 15.

`update_dbclients` starts the number of updates that you specify. If this number is less than the total number of client updates to be performed, new updates start as the previous updates finish until all of the updates have been completed.

Based on your answer, the time it will take to update the clients is displayed, followed by this question:

```
Do you want to upgrade the clients now? (y/n) [y]
```

2. Enter **y** or **n** for the prompt.

   If you answer **n**, `update_dbclients` quits and leaves the list of clients it would have updated in a file. This file can later be used by the `-ClientList` parameter mentioned previously.

   Answer **y** to continue the installation process.

If the `update_dbclients` command was successful in distributing the software to the client, it automatically runs the `install_dbext` script on the client. If `install_dbext` has successfully completed, there will be a version file in directory *`install_path`*`/share` that contains the version of NetBackup for Sybase on UNIX that was installed. The `update_dbclients` command displays a note on whether the update was successful for each client. When the `update_dbclients` command has completed, it displays a file name that contains a complete log of what happened for each client. If the update failed for any client, the log file should be examined to determine the problem.

Local Installation of NetBackup for Sybase on UNIX

During a local installation, the NetBackup for Sybase on UNIX files are extracted and installed. The local machine can be a client or a master server that also happens to be a client.

Installation Requirements

- The version of the NetBackup client and the version of NetBackup for Sybase on UNIX are the same (for example, 5.1).
- The local machine must have adequate disk space.

  Less than one megabyte of additional disk space is required in the *`install_path`*`/netbackup` directory. However, more disk space may be necessary at run time.
- NetBackup version 5.1 client software is installed and operational.

  This also means that the *`install_path`*`/netbackup` directory already exists.
- In a clustered environment, NetBackup server has been installed and configured to work in a cluster. (This is accomplished by following the instructions in the *NetBackup Installation Guide for UNIX*, including running the `cluster_config` script after installing the NetBackup server software.)

Local Install Instructions

▼ To install NetBackup for Sybase on UNIX to the local machine

1. Log in as the root user on the machine.

   If you are already logged in, but are not the root user, run the following command.

   ```
   su - root
   ```

   - If the local machine is a client, go to step 3.
   - If the local machine is a server, go to step 2.

2. Make sure a valid license key for NetBackup for Sybase on UNIX has been registered. In a NetBackup server clustered environment, the license key must be registered on each node. To view or add license keys, perform one of the following:

   - Run the command *install_path*/netbackup/bin/admincmd/get_license_key.
   - Open the NetBackup Administration Console and choose **Help** > **License Keys**.

3. Insert the CD-ROM into the drive.

4. Change the working directory to the CD-ROM directory.

   ```
   cd /CD_mount_point
   ```

5. Load and install the software by executing the `install` script.

Note It is expected that the NetBackup version level (for example, 5.1) running on the local machine matches the version level of the database agent being installed.

```
./install
```

a. Select the NetBackup Database Agent Software option.

   The following prompt appears:

   ```
   Do you want to do a local installation? (y/n) [n]
   ```

b. Answer **y**.

   You are presented with a menu of all database agents available on the CD-ROM.

c. Select the NetBackup for Sybase option.

d. Enter **q** to quit selecting options.

A prompt appears asking if the list is correct.

e. Answer **y**.

The following actions occur:

- The version file, compressed tar file and `install_dbext` script are loaded to directory *`install_path`*`/netbackup/dbext`.
- The `install` script automatically executes the `install_dbext` script.
- If the receiving client is configured as an HP-UX11.00, HP-UX11.11, Solaris7, Solaris8, or Solaris9, both the 32-bit and 64-bit versions of NetBackup for Sybase on UNIX will be installed.
- If `install_dbext` has successfully completed, there will be a version file in directory *`install_path`*`/share` that contains the version of NetBackup for Sybase on UNIX that was installed and an installation timestamp.

f. Enter **q** to quit from the script.

Compaq Tru64 Clients: Required Steps

Note These instructions apply only for Compaq Tru64 clients.

For NetBackup 5.1 for Sybase, Sybase ASE Backup Server must be started with special environment variables, *_RLD_ARGS*=-taso and *LD_LIBRARY_PATH*=`/usr/openv/lib`. The NetBackup 4.5 for Sybase install script, `install_sybackup`, sets these environment variables in the Sybase ASE login scripts.

For Sybase ASE 12.0, these login scripts are `SYBASE.sh` for the Bourne shell or `SYBASE.csh` for the C shell.

For Sybase ASE 11.9.2, these login scripts are `.profile` for the Bourne shell or `.cshrc` for the C shell.

All of these login scripts are located in the Sybase ASE home directory.

The user must invoke one of these login scripts so that the user's environment gets set up correctly before the Sybase ASE Backup Server is started. If the user's environment is not set up correctly before Sybase ASE Backup Server is started, one of the following errors will be reported when a backup is attempted from NetBackup 4.5 for Sybase.

```
Backup Server: 4.145.2.73: [0] Error for device 'sybackup::-SERV
-SCHED Default-Application-Backup::00'. Pipe I/O returned 0 bytes
Backup Server Internal Error: 4.62.3.4: Multibuffering
subprocesses died, archive sybackup::-SERV -SCHED
Default-Application-Backup::00. Backup Server: 4.141.2.66: [0] The
'write' call failed for device 'sybackup::-SERV -SCHED
Default-Application-Backup::00' with error number 32 (Broken
pipe). Refer to your operating system documentation for further
details.
```

```
Backup Server: 4.124.2.1: Archive API error for
device='sybackup::-SERV -SCHED Default-Application-Backup::00':
Vendor application name=<UNINIT>, Library version=0, API
routine=<UNINIT>, Message=Unable to open API library for device
'sybackup::-SERV -SCHED Default-Application-Backup'. Library path
is '/db/sybase1200/ASE-12_0/lib/libsybackup.so'. dlopen()
returned: Code=22, Message=dlopen: cannot load
/db/sybase1200/ASE-12_0/lib/libsybackup.so
```

After installing or upgrading to NetBackup 4.5 for Sybase, the Sybase ASE Backup Server must be stopped and restarted with these environment variables to prevent this problem.

Specifying the Sybase Home Path

After you install NetBackup for Sybase, perform this additional setup step that provides NetBackup for Sybase with information about your Sybase environment. NetBackup for Sybase provides a script to accomplish this setup.

▼ To specify the Sybase home path

1. Change to the following directory:

   `/usr/openv/netbackup/bin`

2. Run the setup command:

   `./sybase_config`

   The following appears:

   `Please specify the Sybase instance home path name:`

3. Supply the appropriate home path name, and press Enter.

   The following appears:

   `Do you have other Sybase instances? (y/n) [n]`

4. Add other Sybase instances as appropriate, or enter **n** if you are finished.

   The setup step is complete.

Adding New Sybase Instances

If you add a new Sybase instance after NetBackup for Sybase on UNIX has been installed, follow the procedure described in "Specifying the Sybase Home Path" on page 23. This ensures that all new database instances are included in the NetBackup for Sybase backup operations.

Configuration 3

Before attempting to configure NetBackup for Sybase, complete the installation procedure as described in the Installation chapter.

The following steps outline the configuration procedure.

1. Configuring Media Using Media and Device Management
2. Setting the Maximum Jobs Per Client Property
3. Configuring a NetBackup Policy
4. Creating Scripts
5. Configuring the bp.conf File
6. Enabling Striped Dumps and Loads
7. Testing NetBackup for Sybase Configuration Settings

To configure NetBackup for Sybase on UNIX from a Windows NetBackup server, see "Configuration Using the NetBackup Administration Console for Windows" on page 26.

To configure NetBackup for Sybase on UNIX from a UNIX NetBackup server, see "Configuration Using the NetBackup Administration Console for UNIX" on page 42.

Configuration Using the NetBackup Administration Console for Windows

Although the database agent is installed on the NetBackup client, some configuration procedures are performed using the NetBackup Administration Console on the server.

These procedures include:

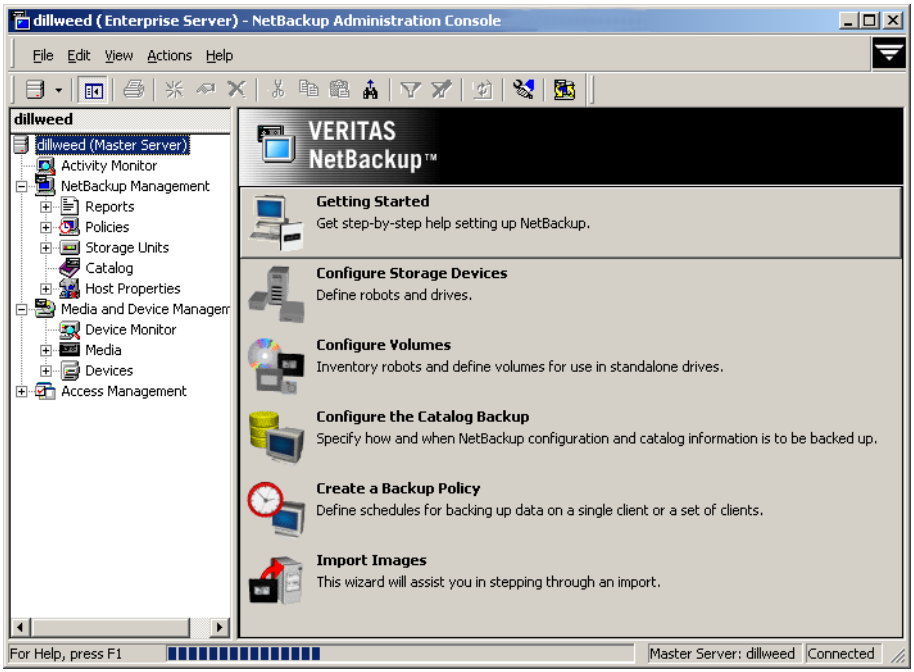
- Configuring media using Media and Device Management
- Setting the **Maximum Jobs per Client** property
- Configuring a NetBackup policy
- Testing NetBackup for Sybase configuration settings

See the next section for instructions on starting the NetBackup Administration Console.

▼ To launch the NetBackup Administration Console for Windows

1. Log on to the server as administrator.
2. Choose **Start** > **Programs > VERITAS NetBackup** > **NetBackup Administration Console**.

The NetBackup Administration Console is displayed.



Configuring Media Using Media and Device Management

Use the Media and Device Management (Media Manager) to configure media for a NetBackup for Sybase configuration. Refer to the *NetBackup Media Manager System Administrator's Guide* for more information.

The number of volumes required will depend on the devices used, the size of the Sybase databases that you are backing up, and the frequency of backups.

Setting the Maximum Jobs Per Client Property

The **Maximum jobs per client** attribute value is figured with the following formula.

Maximum Jobs per Client = *Number of Streams* x *Number of Policies*

Where:

- *Number of Streams* is the number of backup streams between the database server and NetBackup. Each separate stream starts a new backup job on the client.

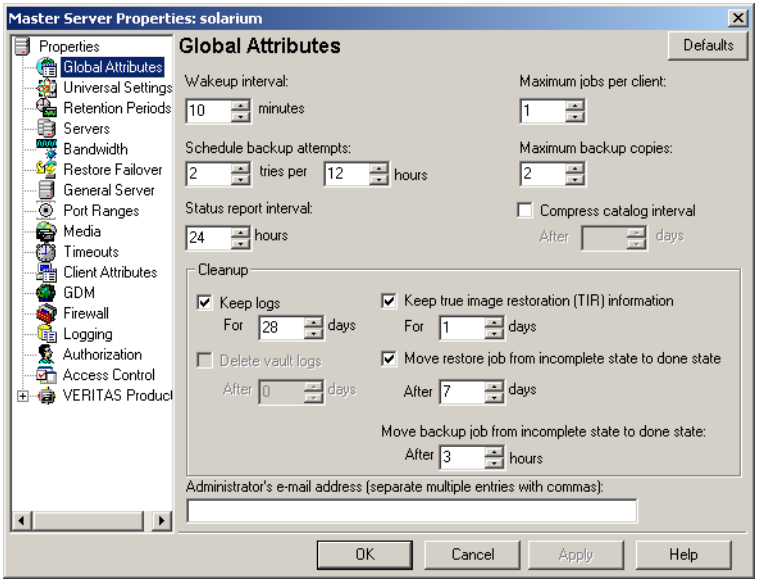
- *Number of Policies* is the number of policies that may back up this client at the same time. This number can be greater than one. For example, a client may be in two policies in order to back up two different databases. These backup windows may overlap.

Tip To avoid any problems, we recommend that you enter a high enough value for the **Maximum jobs per client** property to meet the number of jobs executed by Sybase.

▼ To set the Maximum jobs per client property using the Windows console

1. In the left pane of the NetBackup Administration Console, expand **Host Properties**.
2. Select **Master Server**.
3. In the right pane, double-click on the server icon.

   The Master Server Properties dialog is displayed.
4. In the Master Server Properties dialog, click **Global Attributes**.



   The default value is 1 for **Maximum jobs per client**.
5. Change the **Maximum jobs per client** value to 99.

If you prefer to enter a lower value, calculate the value equal to the maximum number of backups allowed per client using the formula provided above.

Configuring a NetBackup Policy

A NetBackup policy defines the backup criteria for a specific group of one or more clients. These criteria include:

- storage unit and media to use
- backup schedules
- clients to be backed up
- script files to be executed on the clients

To use NetBackup for Sybase, at least one Sybase policy with the appropriate schedules needs to be defined. A configuration can have a single policy that includes all clients or there can be many policies, some of which include only one client.

Most requirements for Sybase policies are the same as for file system backups. In addition to the attributes described here, there are other attributes for a policy to consider. Refer to the *NetBackup System Administrator's Guide for Windows, Volume I* or *NetBackup System Administrator's Guide for UNIX, Volume I* for detailed configuration instructions and information on all the attributes available.

Note If you are going to perform striped dumps or loads, also see "Enabling Striped Dumps and Loads" on page 68.

Configuring a Sybase Policy

Adding New Policies

Use this procedure when configuring a policy from a Windows server or from a NetBackup Remote Administration Console host.

▼ **To add a new policy**

Note This policy name can be specified in the `bp.conf` file on the client. This policy name can also be specified in the `$SYBASE_HOME/bp.conf` file. Refer to "Configuring the bp.conf File" on page 66 for details.
Also, this policy name can be specified in the Sybase backup script. Refer to "Instructions for Modifying Backup Scripts for Use with Sybase ASE" on page 60 for more details.

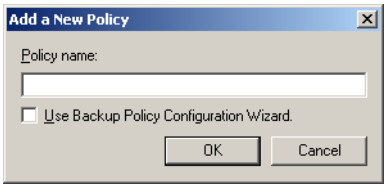
1. Log on to the server as administrator.

2. Start the NetBackup Administration Console.

3. If your site has more than one master server, choose the one where you want to add the policy.

4. In the left pane, right-click **Policies** and choose **New Policy**.

   The Add a New Policy dialog is displayed.



   a. In the **Policy name** box, type a unique name for the new policy.

   b. Choose whether to use the wizard for configuring the policy. The wizard guides you through most of the setup process and simplifies it by automatically choosing default values that are good for most configurations. If necessary, you can change the defaults later by editing the policy. You will need to manually add entries to the Backup Selections list after completing the wizard.

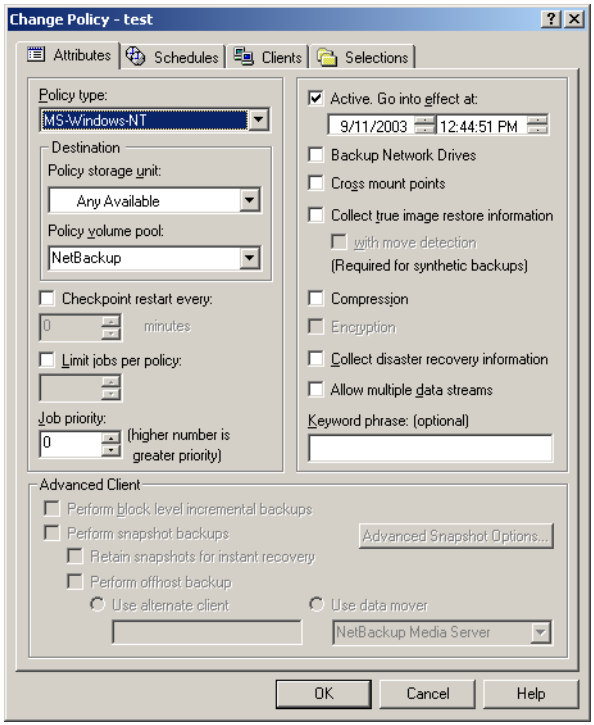
      - To use the wizard, select the **Use Backup Policy Configuration Wizard** box and click **OK**. The wizard starts and you create the policy by following the prompts. When prompted, select the Sybase policy type.

Note The Sybase policy type will not appear in the drop-down list unless your server has a license key for NetBackup for Sybase.

      - If you require more control over the settings than the wizard provides, then do not select the **Use Backup Policy Configuration Wizard** box and proceed to step 5.

5. Click **OK**.

A dialog is displayed in which you can specify the general attributes for the policy.



6. From the **Policy Type** box, select the Sybase policy type.

7. Complete the entries on the **Attributes** tab as explained in "Description of Attributes."

8. Add other policy information:

   - To add schedules, see "Adding New Schedules."
   - To add clients, see "Adding Clients to a Policy."
   - To add scripts to the Backup Selections list, see "Specifying the List of Backup Selections."

9. Click **OK**. The new policy is created.

Description of Attributes

With a few exceptions, NetBackup manages a database backup like a file system backup. Policy attributes that are different for Sybase backups are explained below.

Your other policy attributes will vary according to your specific backup strategy and system configuration. Consult the *NetBackup System Administrator's Guide for Windows, Volume I* or *NetBackup System Administrator's Guide for UNIX, Volume I* for detailed explanations of the policy attributes.

Description of Policy Attributes

Attribute	Description
Policy type	Determines the type of clients that can be in the policy and in some cases the types of backups that can be performed on those clients. To use NetBackup for Sybase, you must have defined at least one Sybase policy.
Keyword phrase to associate with the backup	For NetBackup for Sybase, the keyword phrase entry is ignored.

Adding New Schedules

Each policy has its own set of schedules. These schedules control initiation of automatic backups and also specify when user operations can be initiated.

A Sybase backup requires an Application Backup schedule, which is created automatically when you create a Sybase policy. The Application Backup schedule is used to initiate and manage the backup operation. You also need one or more Automatic Backup schedules, if you plan to have NetBackup perform automatic, scheduled backups.

The following procedures explain how to configure the required schedule types, and how to add new schedules. The procedures start on the Policy dialog. To see the Policy dialog, double-click the policy name in the Policies list of the NetBackup Administration Console.

▼ To configure an Application Backup schedule

Note This Application Backup schedule name can be specified in the `bp.conf` file on the client. This Application Backup schedule name can also be specified in the *`$SYBASE_HOME`*`/bp.conf` file. Refer to "Configuring the bp.conf File" on page 66 for details. Also, this Application Backup schedule name can be specified in the Sybase backup script. Refer to "Instructions for Modifying Backup Scripts for Use with Sybase ASE" on page 60 for more details.

1. On the Policy dialog, click the **Schedules** tab.

2. Double-click on the schedule named **Default-Application-Backup**.

   A dialog is displayed.

   All Sybase database operations are performed through NetBackup for Sybase using an Application Backup schedule. This includes those backups started automatically.

   You must configure an Application Backup schedule for each Sybase policy you create. If you do not do this, you will not be able to perform a backup. To help satisfy this requirement, an Application Backup schedule named **Default-Application-Backup** is automatically created when you configure a new Sybase policy.

3. Specify the other properties for the schedule as explained in "Schedule Properties."

   The backup window for an Application Backup schedule must encompass the time period during which all NetBackup jobs, scheduled and unscheduled, will occur. This is necessary because the Application Backup schedule starts processes that are required for all NetBackup for Sybase backups, including those started automatically.

   For example, assume that you:

   - expect users to perform NetBackup operations during business hours, 0800 to 1300.
   - configured automatic backups to start between 1800 and 2200.

   The Application Backup schedule must have a start time of 0800 and a duration of 14 hours.

Example Settings for an Application Backup schedule

Type of Backup	Schedule settings	Description	Settings
Application Backup	Retention	The length of time backup images are stored.	2 weeks
	Backup Window	The time during which a NetBackup operation can be performed.	Sunday through Saturday 00:00:01 - 23:59:59

Tip Set the time period for the Application Backup schedule for 24 hours per day, seven days per week. This ensures that your NetBackup for Sybase operations are never locked out due to the Application Backup schedule.

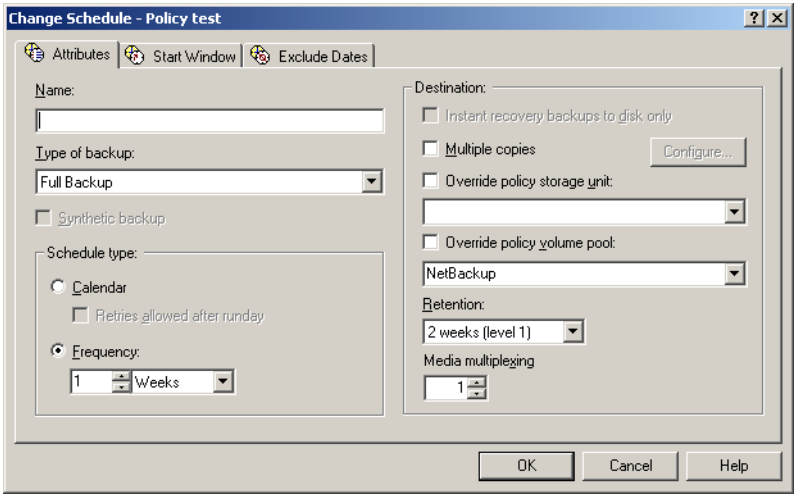
▼ To configure an automatic backup schedule

Note Generally, you will want to configure two Automatic Backup schedules for each Sybase ASE database; one for the database dump backups and one for the transaction log backups.

1. On the Policy dialog, click the **Schedules** tab.

2. Click **New**.

   A dialog is displayed. The title bar shows the name of the policy to which you are adding the schedules.



3. Specify a unique name for the schedule.

4. Select the **Type of backup**.

   For information on the types of backups available for this policy, see "Types of Backups."

   Refer to the following table for example settings for an Automatic Backup schedule.

Example Settings for an Automatic Backup Schedule

Type of Backup	Schedule settings	Description	Settings
Automatic Backup	Retention	The length of time to store the record of a backup.	2 weeks

Example Settings for an Automatic Backup Schedule

Type of Backup	Schedule settings	Description	Settings
	Frequency	Frequency determines how often a backup should be performed	every week
	Backup Window	The time during which a NetBackup operation can be performed.	Sunday, 18:00:00 - 22:00:00

5. Specify the other properties for the schedule as explained in "Schedule Properties."

6. Click **OK**.

Schedule Properties

Some of the schedule properties have a different meaning for database backups than for a regular file system backup. These properties are explained in the following table.

Other schedule properties vary according to your specific backup strategy and system configuration. Consult the *NetBackup System Administrator's Guide for Windows, Volume I* or *NetBackup System Administrator's Guide for UNIX, Volume I* for detailed explanations of the schedule properties.

Description of Schedule Properties

Property	Description
Type of backup	Specifies the type of backup that this schedule will control. The selection list shows only the backup types that apply to the policy you are configuring. For more information see the following section "Types of Backups."
Frequency	This setting is used only for scheduled backups, and not for user-directed backups. **Frequency** specifies the period of time that will elapse until the next backup operation can begin on this schedule. For example, if the frequency is seven days and a successful backup occurs on Wednesday, the next full backup will not occur until the following Wednesday. Normally, incremental backups will have a shorter frequency than full backups.
Calendar	This setting is used only for scheduled backups, and not for user-directed backups. The **Calendar** option allows you to schedule backup operations based on specific dates, recurring week days, or recurring days of the month.

Description of Schedule Properties (continued)

Property	Description
Retention	**Frequency based scheduling** The retention period for an Application Backup schedule refers to the length of time that NetBackup keeps backup images. The retention period for an Automatic Backup schedule controls how long NetBackup keeps records of when scheduled backups have occurred. The NetBackup scheduler compares the latest record to the frequency to determine whether a backup is due. This means that if you set the retention period to expire the record too early, the scheduled backup frequency will be unpredictable. However, if you set the retention period to be longer than necessary, the NetBackup catalog will accumulate unnecessary records. *Therefore, set a retention period that is longer than the frequency setting for the schedule.* For example, if the frequency setting is set to one week, set the retention period to be more than one week. **Calendar based scheduling** The retention period for an Application Backup schedule refers to the length of time that NetBackup keeps backup images. The retention period for an Automatic Backup schedule controls how long NetBackup keeps records of when scheduled backups have occurred. However, this setting is not significant for calendar based scheduling.
Multiple copies	If you are licensed for the Inline Tape Copy feature and wish to specify multiple copies for your Sybase policy, configure **Multiple copies** on the Application Backup schedule.

Types of Backups

Description of Backup Types for Sybase

Application Backup	The Application Backup schedule enables user-controlled NetBackup operations performed on the client. At least one Application Backup schedule type must be configured for each Sybase policy. The Default-Application-Backup schedule is automatically configured as an Application Backup schedule.

Description of Backup Types for Sybase	
Automatic Backup	An Automatic Backup schedule specifies the dates and times when NetBackup will automatically start backups by running the Sybase backup scripts in the order that they appear in the file list. If there is more than one client in the Sybase policy, the Sybase backup scripts are executed on each client.

Adding Clients to a Policy

The client list is the list of clients on which your Sybase backup scripts are run during an automatic backup. A NetBackup client must be in at least one policy but can be in more than one.

This procedure starts in the Policy dialog. To see the Policy dialog, double-click the policy name in the Policies list in the NetBackup Administration Console.

Requirements for clients

The following software must be installed on the client:

- Sybase
- NetBackup client or server
- NetBackup for Sybase
- the backup or restore script(s)

▼ To add clients to a policy

1. In the Policy dialog, click the **Clients** tab.
2. Click **New**.
3. Enter the name of the client you want to add.
   - Type the name into the client list and click **OK**.

     If NetBackup cannot detect the hardware and operating system, a dialog will be displayed so you can specify this information.

     OR

   - Click the **Browse for Computer** button to choose the client from the network:

   If Sybase is installed in a cluster, specify the virtual Sybase name as the client name.

4. To add another client, repeat step 2 and step 3. If this is the last client, click **OK** to close the dialog.

Specifying the List of Backup Selections

The Backup Selections list in a database policy has a different meaning than for non-database policies. For example, in a Standard policy, the list contains files and directories to be backed up. In a database policy, you specify scripts to be run.

Add scripts only if you are setting up a policy for automatic scheduling. All scripts listed in the Backup Selections list will be executed for the Automatic Backup schedules, as specified under the **Schedules** tab, and manual backups. NetBackup will start backups according to the order that scripts appear in the Backup Selections list.

The following procedure starts in the Policy dialog. To see the Policy dialog, double-click the policy name in the Policies list in the NetBackup Administration Console.

▼ To add scripts to the Backup Selections list

1. In the Policy dialog, click the **Backup Selections** tab.

2. Click **New**.

3. Enter the name of the selection.

   - Type the name of the script.

     Be sure to specify the full pathname when listing Sybase scripts. For example:

     `install_path/netbackup/ext/dbext/sybase/scripts/script_name`

     where *script_name* is the name of the Sybase backup script that the customer actually uses to back up the Sybase database. An example for Sybase ASE is `sybase_mydb_backup`, a sample script copied to the client during NetBackup for Sybase installation.

     Refer to "Instructions for Modifying Backup Scripts for Use with Sybase ASE" on page 60for more details on Sybase backup scripts.

     OR

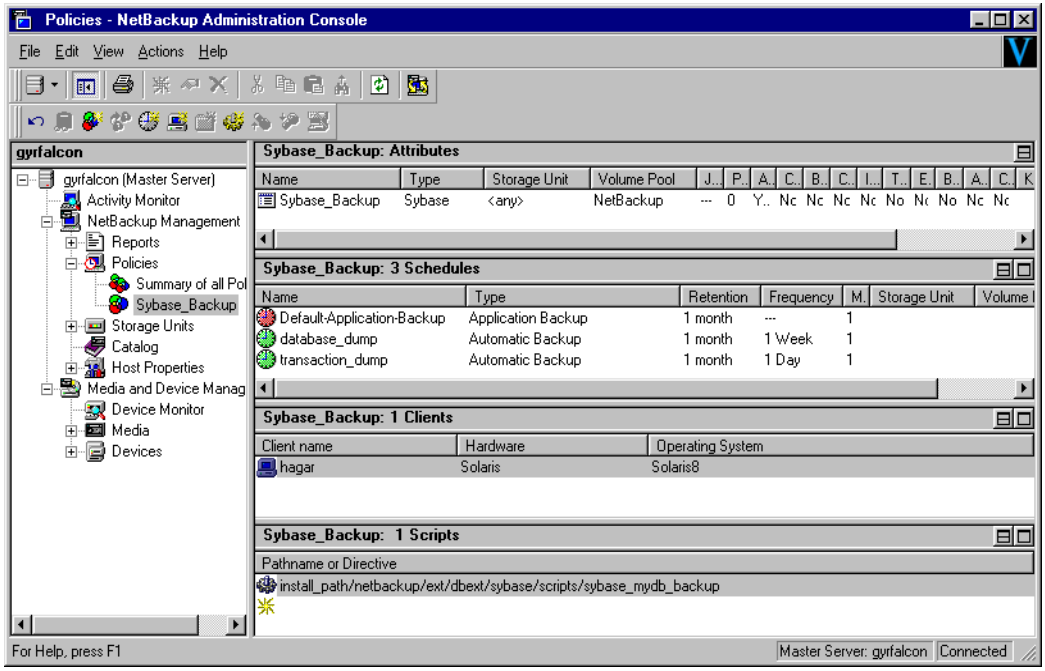
   - Click the **Remote Folder** button.

     The Browse window is displayed. Navigate to the script file and select the file. Click **OK**.

   Be sure that the Sybase scripts listed here are installed on each client in the Client list.

4. Click **OK**.

Example Sybase Policy for Sybase ASE on a NetBackup Windows Server



The Sybase policy above is set up to use a separate volume pool named NetBackup. NetBackup uses he NetBackup volume pool to store all the images associated with Sybase backups.

The client list names the client that has the database.

The file list specifies the name of the Sybase backup script for the database and transaction log dumps. We created this script previously and named it:

install_path/netbackup/ext/db_ext/sybase/scripts/sybase_mydb_backup

The three schedules for this policy are named:

- database_dump
- transaction_dump
- Default-Application-Backup

First, we set up the schedules named database_dump and transaction_dump. These are Automatic Backup schedules that execute automatically at the designated times.

- database_dump

Executes once a week between 6 pm (18:00) on Friday night and 6 am (06:00) Saturday morning. When the sybase_mydb_backup script detects this schedule name, it starts a full backup of the database by performing a database dump.

- transaction_dump

  Executes every night between 6 pm (18:00) and 6 am (06:00). When the sybase_mydb_backup script detects this schedule name, it starts a backup of the transaction logs by performing a transaction log dump.

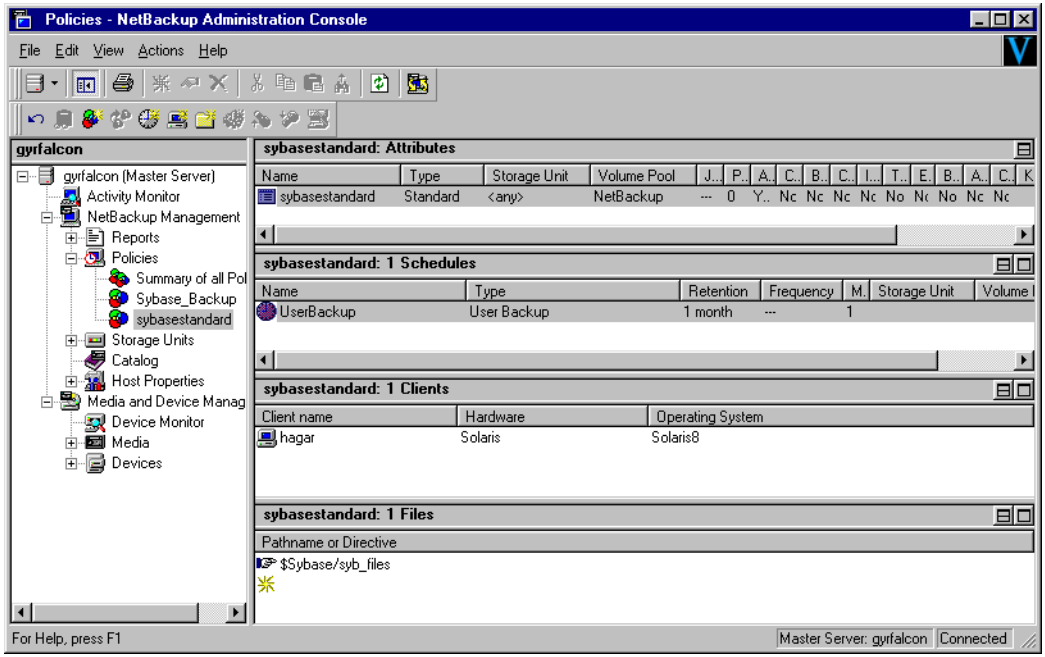
At this point, our configuration causes a Sybase database dump to occur every Friday night, and a transaction log dump to occur every night except Friday.

The Application Backup schedule named Default-Application-Backup was created when the NetBackup Sybase policy was created. The backup window for this schedule encompasses the windows for the Automatic Backup schedules. It also includes the times user backups are allowed. To accomplish this, the user-directed window is open 24 hours a day, every day of the week. This permits scheduled backups and user directed backups to occur at any time.

Creating a Standard Policy

A Standard policy is used to back up Sybase files: data files, shell scripts, Sybase SQL scripts and logs. In the following example, we identify scripts as Sybase files and create a NetBackup Standard policy with a User Backup schedule to back them up. Assume that we keep the Sybase files in the *$SYBASE*/`syb_files` directory.

The following schedule permits a user-directed backup at any time.



Configuration Using the NetBackup Administration Console for UNIX

Although the database agent is installed on the NetBackup client, some configuration procedures are performed using the NetBackup Administration Console on the server.

These procedures include:

- Configuring media using Media and Device Management
- Setting the **Maximum Jobs per Client** property
- Configuring a NetBackup policy
- Testing NetBackup for Sybase configuration settings

See the next section for instructions on starting the NetBackup Administration Console.

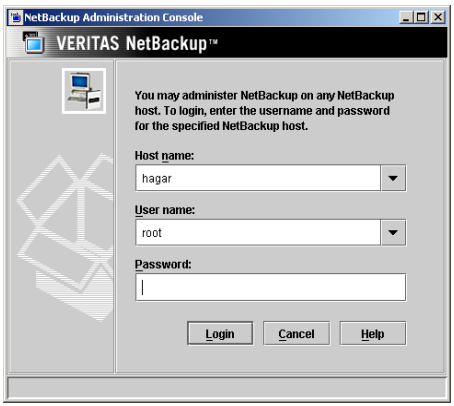
▼ To launch the NetBackup Administration Console for UNIX

1. Log onto the UNIX server as root.

2. Start the NetBackup Administration Console by executing:

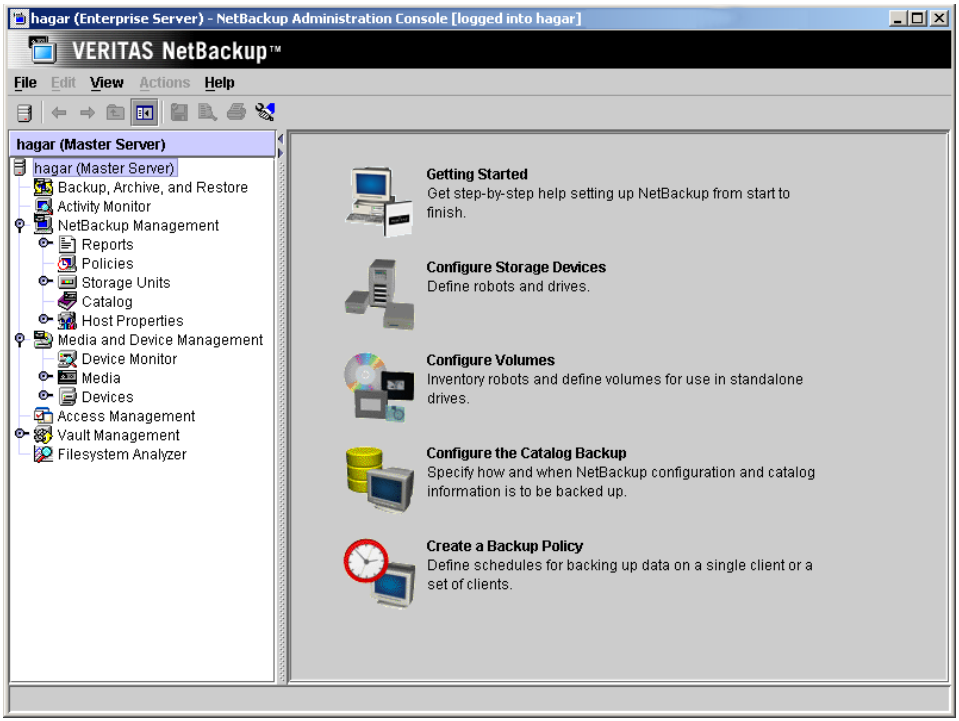
   install_path/**netbackup/bin/jnbSA &**

   The login dialog is displayed.



3. Type the name of the master server where you initially want to manage NetBackup. You can specify any NetBackup master server. Indicate the User and Password.

4. Click **Login**. The NetBackup Administration Console is displayed.



Configuring Media Using Media and Device Management

Use the Media and Device Management (Media Manager) to configure media for a NetBackup for Sybase configuration. Refer to the *NetBackup Media Manager System Administrator's Guide* for more information.

The number of volumes required will depend on the devices used, the size of the Sybase databases that you are backing up, and the frequency of backups.

Setting the Maximum Jobs Per Client Property

The **Maximum jobs per client** attribute value is figured with the following formula.

Maximum Jobs per Client = *Number of Streams* x *Number of Policies*

Where:

- *Number of Streams* is the number of backup streams between the database server and NetBackup. Each separate stream starts a new backup job on the client.

- *Number of Policies* is the number of policies that may back up this client at the same time. This number can be greater than one. For example, a client may be in two policies in order to back up two different databases. These backup windows may overlap.

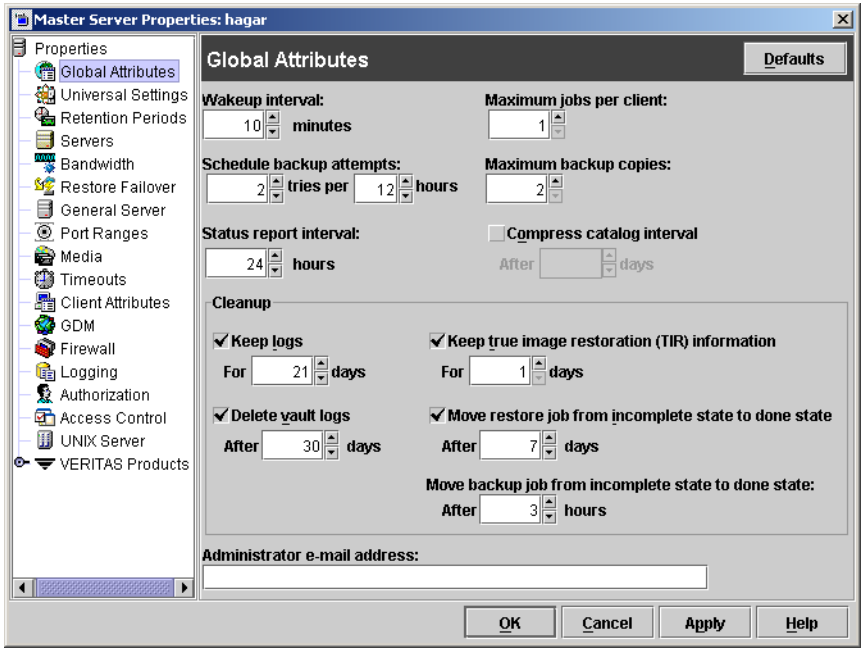
Tip To avoid any problems, we recommend that you enter a high enough value for the **Maximum jobs per client** property to meet the number of jobs executed by Sybase.

▼ To set the Maximum jobs per client property using the NetBackup Administration Console for UNIX

1. In the left pane of the NetBackup Administration Console, expand **Host Properties**. Select **Master Servers**.

2. In the right pane, double-click on the server icon. Click **Global Attributes**.

   The Master Server Properties dialog is displayed.



   The default value is 1 for **Maximum jobs per client**.

3. Change the **Maximum jobs per client** value to 99.

If you prefer to enter a lower value, calculate the value equal to the maximum number of backups allowed per client using the formula provided above.

▼

Configuring a NetBackup Policy

A NetBackup policy defines the backup criteria for a specific group of one or more clients. These criteria include:

- storage unit and media to use
- backup schedules
- clients to be backed up
- script files to be executed on the clients

To use NetBackup for Sybase, at least one Sybase policy with the appropriate schedules needs to be defined. A configuration can have a single policy that includes all clients or there can be many policies, some of which include only one client.

Most requirements for Sybase policies are the same as for file system backups. In addition to the attributes described here, there are other attributes for a policy to consider. Refer to the *NetBackup System Administrator's Guide for Windows, Volume I* or *NetBackup System Administrator's Guide for UNIX, Volume I* for detailed configuration instructions and information on all the attributes available.

Note If you are going to perform striped dumps or loads, also see "Enabling Striped Dumps and Loads" on page 68.

Configuring a Sybase Policy

Adding New Policies

Use this procedure when configuring a policy from a UNIX server.

▼ **To add a new policy**

Note This policy name can be specified in the `bp.conf` file on the client. This policy name can also be specified in the *`$SYBASE_HOME`*`/bp.conf` file. Refer to "Configuring the bp.conf File" on page 66 for details.

Also, this policy name can be specified in the Sybase backup script. Refer to "Instructions for Modifying Backup Scripts for Use with Sybase ASE" on page 60 for more details.

1. Log onto the server as root.

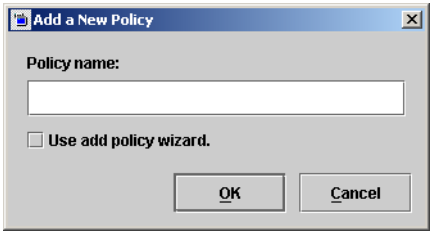
2. Start the NetBackup Administration Console.

3. If your site has more than one master server, choose the one to which you want to add the policy.

4. In the left pane, click on **Policies**. The right pane splits into an All Policies pane and a details pane.

5. In the All Policies pane, right-click on the Master Server, and click **New**.

   The Add a New Policy dialog is displayed.



   a. In the **Policy name** box, type a unique name for the new policy.

   b. Choose whether to use the wizard for configuring the policy. The wizard guides you through most of the setup process and simplifies it by automatically choosing default values that are good for most configurations. If necessary, you can change the defaults later by editing the policy. You will need to manually add entries to the Backup Selections list after completing the wizard.

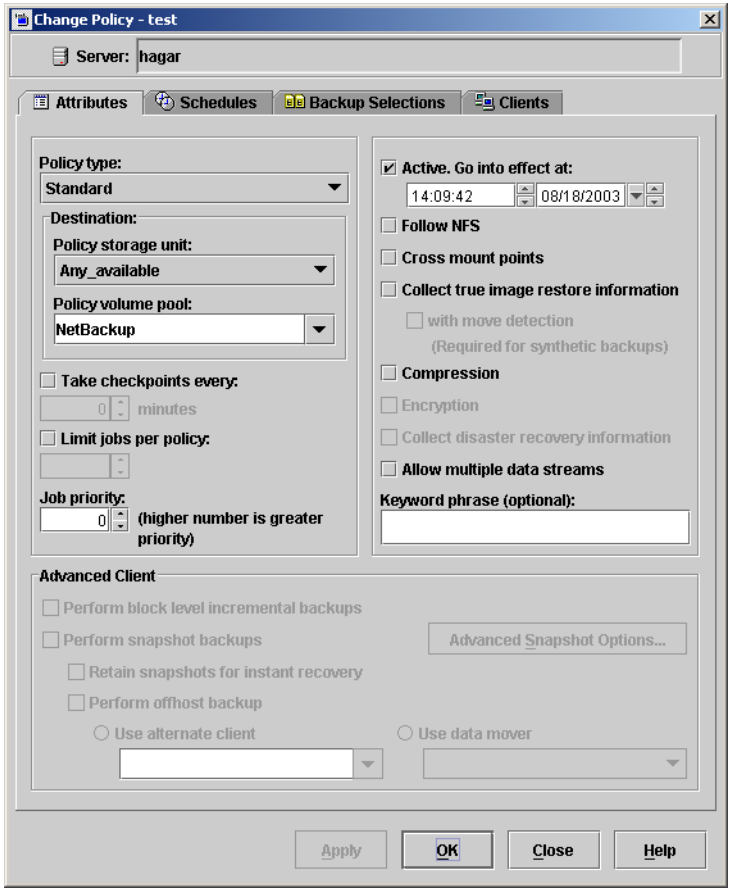
      - To use the wizard, select the **Use add policy wizard** box and click **OK**. The wizard starts and you create the policy by following the prompts. When prompted, select the Sybase policy type.

Note The Sybase policy type will not appear in the drop-down list unless your server has a license key for NetBackup for Sybase.

      - If you require more control over the settings than the wizard provides, do not select the **Use add policy wizard** box and proceed to step 6.

6. Click **OK**.

A dialog is displayed in which you can specify the general attributes for the policy.



7. From the **Policy type** box, select the Sybase policy type.

8. Complete the entries on the **Attributes** tab as explained in "Description of Attributes" and click **Apply** to save the attribute entries.

9. Add other policy information:

   - To add schedules, see "Adding New Schedules."
   - To add clients, see "Adding Clients to a Policy."
   - To add scripts, see "Specifying the List of Backup Selections."

10. Click **Apply**. The new policy is created.

Description of Attributes

With a few exceptions, NetBackup manages a database backup like a file system backup. Policy attributes that are different for Sybase backups are explained below.

Your other policy attributes will vary according to your specific backup strategy and system configuration. Consult the *NetBackup System Administrator's Guide for Windows, Volume I* or *NetBackup System Administrator's Guide for UNIX, Volume I* for detailed explanations of the policy attributes.

Description of Policy Attributes

Attribute	Description
Policy type	Determines the type of clients that can be in the policy and in some cases the types of backups that can be performed on those clients. To use NetBackup for Sybase, you must have defined at least one Sybase policy.
Keyword phrase to associate with the backup	For NetBackup for Sybase, the keyword phrase entry is ignored.

Adding New Schedules

Each policy has its own set of schedules. These schedules control initiation of automatic backups and also specify when user operations can be initiated.

A Sybase backup requires at least two specific schedule types: an Application Backup schedule and an Automatic Backup schedule. You can also create additional schedules.

The following procedures explain how to configure the required schedule types, and how to add other new schedules. The procedures start from the Policy dialog. To see the Policy dialog, double click the policy in the policy list in the left pane of the NetBackup Administration Console.

▼ To configure an Application Backup schedule

Note This Application Backup schedule name can be specified in the `bp.conf` file on the client. This Application Backup schedule name can also be specified in the *$SYBASE_HOME*`/bp.conf` file. Refer to "Configuring the bp.conf File" on page 66 for details Also, this Application Backup schedule name can be specified in the Sybase backup script. Refer to "Instructions for Modifying Backup Scripts for Use with Sybase ASE" on page 60 for more details..

1. In the Policy dialog, click the **Schedules** tab.

2. In the Schedule list, double-click on the schedule named **Default-Application-Backup**.

   A dialog is displayed. The title bar shows the name of the policy to which you are adding the schedule.

   All Sybase database operations are performed through NetBackup for Sybase using an Application Backup schedule. This includes those backups started automatically.

   You must configure an Application Backup schedule for each Sybase policy you create. If you do not do this, you will not be able to perform a backup. To help satisfy this requirement, an Application Backup schedule named *Default-Application-Backup* is automatically created when you configure a new Sybase policy.

3. Specify the other properties for the schedule as explained in "Schedule Properties."

   The backup window for an Application Backup schedule must encompass the time period during which all NetBackup jobs, scheduled and unscheduled, will occur. This is necessary because the Application Backup schedule starts processes that are required for all NetBackup for Sybase backups, including those started automatically.

   For example, assume that you:

   - expect users to perform NetBackup operations during business hours, 0800 to 1300.
   - configured automatic backups to start between 1800 and 2200.

   The Application Backup schedule must have a start time of 0800 and a duration of 14 hours.

Tip Set the time period for the Application Backup schedule for 24 hours per day, seven days per week. This ensures that your NetBackup for Sybase operations are never locked out due to the Application Backup schedule.

Example Settings for an Application Backup schedule

Type of Backup	Schedule settings	Description	Settings
Application Backup	Retention	The length of time backup images are stored.	2 weeks
	Backup Window	The time during which a NetBackup operation can be performed.	Sunday through Saturday 00:00:01 - 23:59:59

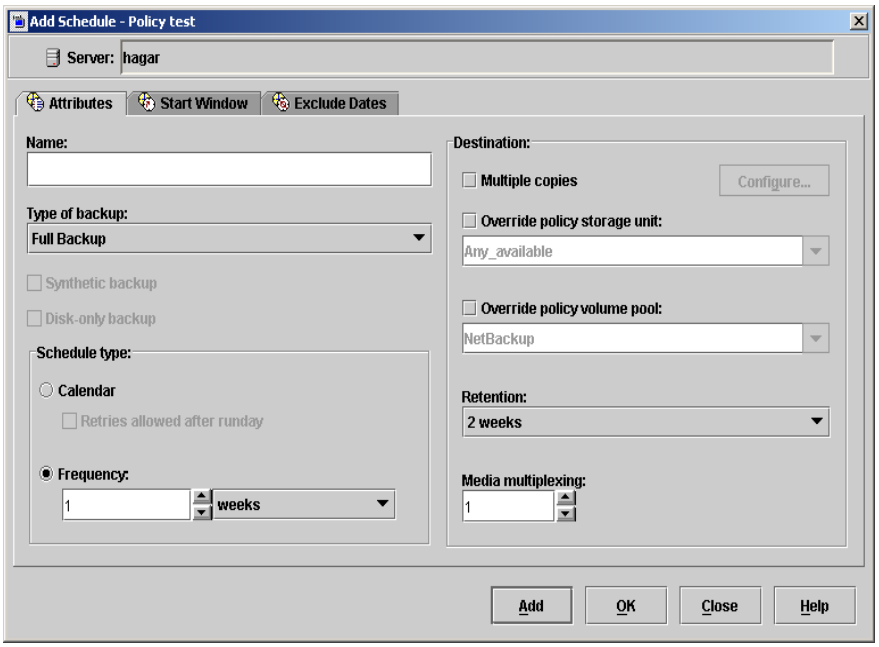
▼ To configure an automatic backup schedule

Note Generally, you will want to configure two Automatic Backup schedules for each Sybase ASE database; one for the database dump backups and one for the transaction log backups.

1. In the Policy dialog, click the **Schedules** tab.

2. Click **New**.

   A dialog is displayed. The title bar shows the name of the policy to which you are adding the schedules.



3. Specify a unique name for the schedule.

4. Select the **Type of Backup**.

   For information on the types of backups available for this policy, see "Types of Backups."

Refer to the following tables for example settings for an Automatic Backup schedule.

Example Settings for a Automatic Backup Schedule

Type of Backup	Schedule settings	Description	Settings
Automatic Backup	Retention	The length of time to store the record of a backup.	2 weeks
	Frequency	Frequency determines how often a backup should be performed	every week
	Backup Window	The time during which a NetBackup operation can be performed.	Sunday, 18:00:00 - 22:00:00

5. Specify the other properties for the schedule as explained in "Schedule Properties."

6. If this is the last schedule, click **OK**.

Schedule Properties

Some of the schedule properties have a different meaning for database backups than for a regular file system backup. These properties are explained in the following table.

Other schedule properties vary according to your specific backup strategy and system configuration. Consult the *NetBackup System Administrator's Guide for Windows, Volume I* or *NetBackup System Administrator's Guide for UNIX, Volume I* for detailed explanations of the schedule properties.

Description of Schedule Properties

Property	Description
Type of backup	Specifies the type of backup that this schedule will control. The selection list shows only the backup types that apply to the policy you are configuring. For more information see the following section "Types of Backups."
Frequency	This setting is used only for scheduled backups, and not for user-directed backups. **Frequency** specifies the period of time that will elapse until the next backup operation can begin on this schedule. For example, if the frequency is seven days and a successful backup occurs on Wednesday, the next full backup will not occur until the following Wednesday. Normally, incremental backups will have a shorter frequency than full backups.

Description of Schedule Properties (continued)

Property	Description
Calendar	This setting is used only for scheduled backups, and not for user-directed backups. The **Calendar** option allows you to schedule backup operations based on specific dates, recurring week days, or recurring days of the month.
Retention	**Frequency based scheduling** The retention period for an Application Backup schedule refers to the length of time that NetBackup keeps backup images. The retention period for an Automatic Backup schedule controls how long NetBackup keeps records of when scheduled backups have occurred. The NetBackup scheduler compares the latest record to the frequency to determine whether a backup is due. This means that if you set the retention period to expire the record too early, the scheduled backup frequency will be unpredictable. However, if you set the retention period to be longer than necessary, the NetBackup catalog will accumulate unnecessary records. *Therefore, set a retention period that is longer than the frequency setting for the schedule.* For example, if the frequency setting is set to one week, set the retention period to be more than one week. **Calendar based scheduling** The retention period for an Application Backup schedule refers to the length of time that NetBackup keeps backup images. The retention period for an Automatic Backup schedule controls how long NetBackup keeps records of when scheduled backups have occurred. However, this setting is not significant for calendar based scheduling.
Multiple copies	If you are licensed for the Inline Tape Copy feature and wish to specify multiple copies for your Sybase policy, configure **Multiple copies** on the Application Backup schedule.

Types of Backups

Description of Backup Types for Sybase

Application Backup	The Application Backup schedule enables user-controlled NetBackup operations performed on the client. At least one Application Backup schedule type must be configured for each Sybase policy. The Default-Application-Backup schedule is automatically configured as an Application Backup schedule.
Automatic Backup	An Automatic Backup schedule specifies the dates and times when NetBackup will automatically start backups by running the Sybase backup scripts in the order that they appear in the file list. If there is more than one client in the Sybase policy, the Sybase backup scripts are executed on each client.

Adding Clients to a Policy

The client list is the list of clients on which your NetBackup for Sybase backups will be performed. A NetBackup client must be in at least one policy but can be in more than one.

This procedure starts from the Policy dialog. To see the Policy dialog, double-click the policy in the policy list in the left pane of the NetBackup Administration Console.

Requirements for clients

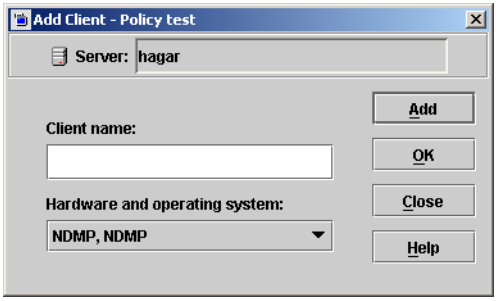
The following software must be installed on the client:

- Sybase
- NetBackup for Sybase
- the backup and restore Sybase script(s)

▼ To add clients to a policy

1. In the Policy dialog, click the **Clients** tab.
2. On the **Clients** tab, click **New**.

The Add Client dialog is displayed. The title bar shows the name of the policy where you are adding clients.



3. In the **Client name** text box, type the name of the client that you are adding.

   If Sybase is installed in a cluster, specify the virtual Sybase name as the client name.

4. Choose the **Hardware and operating system** type and click **Add**.

5. If this is the last client, click **OK**. If you are going to add more clients, repeat step 3 and step 4.

Specifying the List of Backup Selections

The Backup Selections list in a database policy has a different meaning than for non-database policies. For example, in a Standard policy, the list contains files and directories to be backed up. In a database policy, the list contains script.

Add scripts only if you are setting up a policy for automatic scheduling. All scripts listed in the Backup Selections list will be executed for the Automatic Backup schedules as specified under the **Schedules** tab. NetBackup will start backups by running the scripts in the order that they appear in the Backup Selections list.

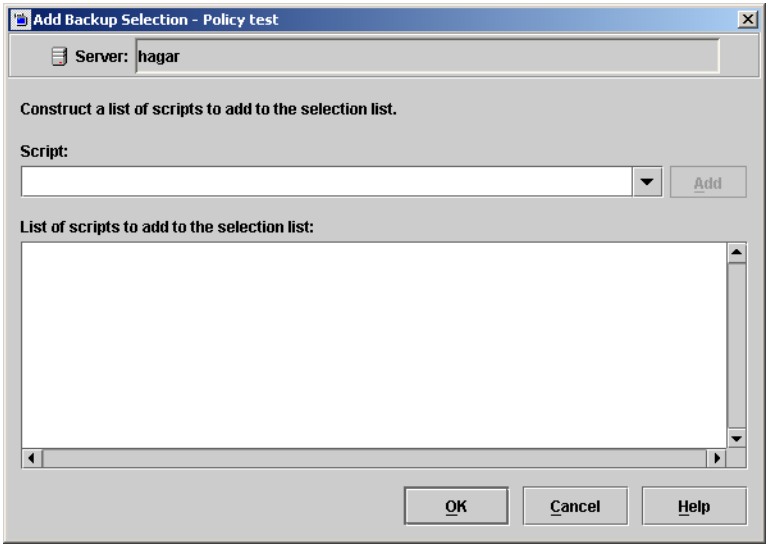
The following procedure starts from the Policy dialog. To see the Policy dialog, double-click the policy in the **Policies** list in the NetBackup Administration Console.

▼ To add scripts to the Backup Selections List

1. In the Policy dialog, click the **Backup Selections** tab.

2. Click **New**.

A dialog is displayed. The title bar shows the name of the policy to which you are adding the scripts.



3. Type the name of the Sybase script.

   Be sure to specify the full pathname when listing Sybase scripts. For example:

   `install_path/netbackup/ext/dbext/sybase/scripts/script_name`

   where *`script_name`* is the name of the Sybase backup script that the customer actually uses to back up the Sybase database. An example for Sybase ASE is `sybase_mydb_backup`, a sample script copied to the client during NetBackup for Sybase installation.

   Refer to "Instructions for Modifying Backup Scripts for Use with Sybase ASE" on page 60 for more details on Sybase backup scripts.

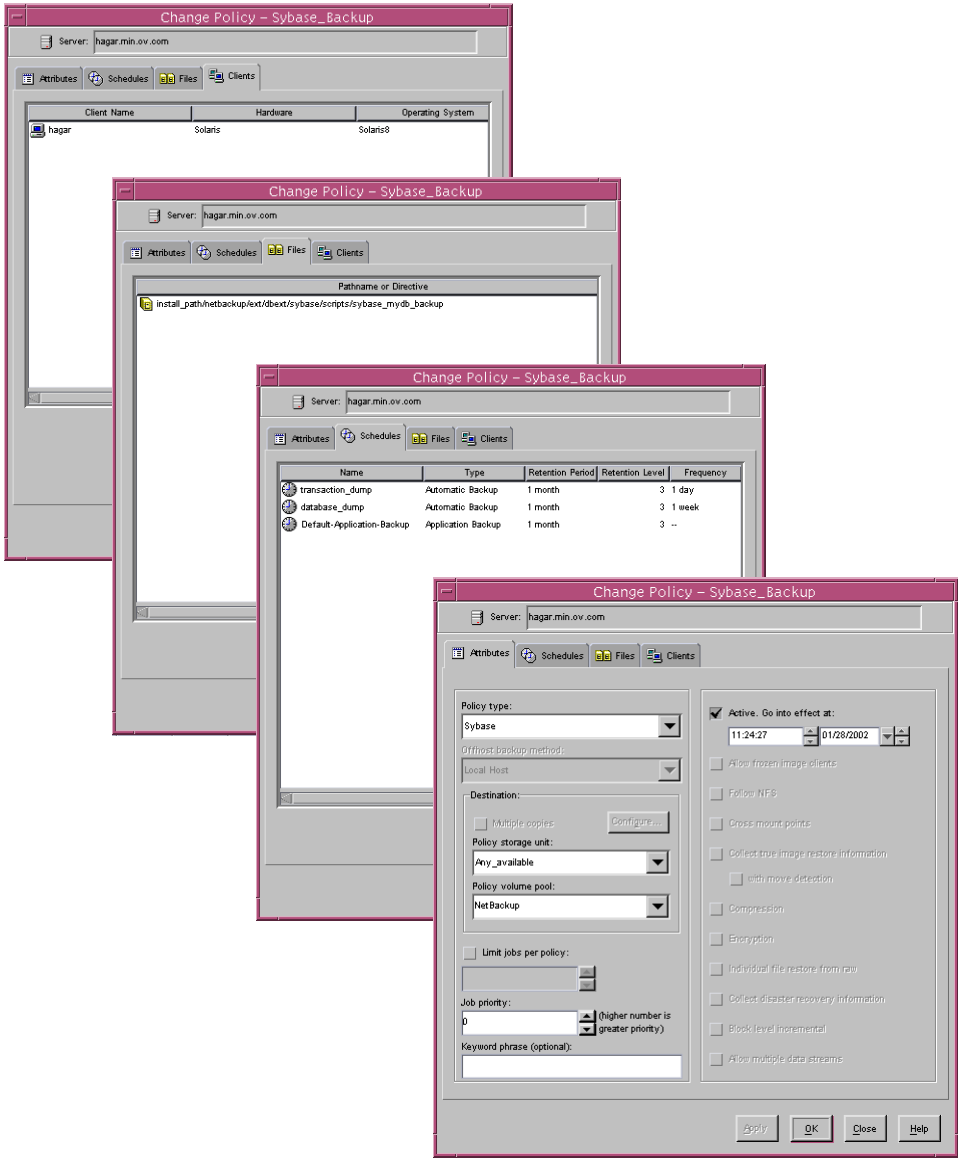
   Be sure that the Sybase scripts listed here are installed on each client in the Client list.

4. Click **Add**.

5. To add more scripts, repeat step 3 and step 4.

6. When you are finished adding backup selections, click **OK**.

Example Sybase Policy for Sybase on a NetBackup UNIX Server



The Sybase policy above is set up to use a separate volume pool named NetBackup. NetBackup uses he NetBackup volume pool to store all the images associated with Sybase backups.

The client list names the client that has the database.

The file list specifies the name of the Sybase backup script for the database and transaction log dumps. We created this script previously and named it:

install_path/netbackup/ext/db_ext/sybase/scripts/sybase_mydb_backup

The three schedules for this policy are named:

- database_dump
- transaction_dump
- Default-Application-Backup

First, we set up the schedules named database_dump and transaction_dump. These are Automatic Backup schedules that execute automatically at the designated times.

- database_dump

  Executes once a week between 6 pm (18:00) on Friday night and 6 am (06:00) Saturday morning. When the sybase_mydb_backup script detects this schedule name, it starts a full backup of the database by performing a database dump.

- transaction_dump

  Executes every night between 6 pm (18:00) and 6 am (06:00). When the sybase_mydb_backup script detects this schedule name, it starts a backup of the transaction logs by performing a transaction log dump.

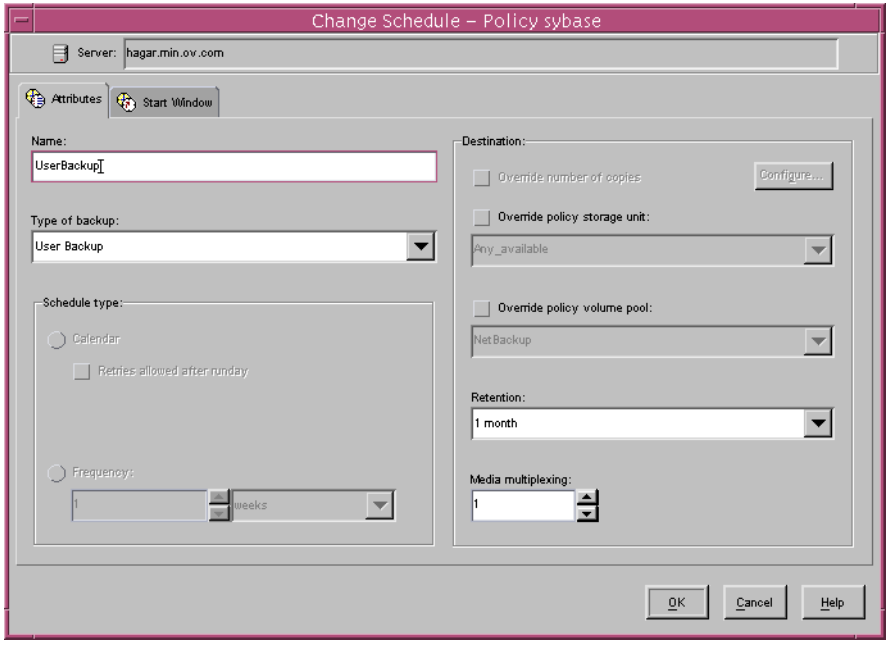
At this point, our configuration causes a Sybase database dump to occur every Friday night, and a transaction log dump to occur every night except Friday.

The Application Backup schedule named Default-Application-Backup was created when the NetBackup Sybase policy was created. The backup window for this schedule encompasses the windows for the Automatic Backup schedules. It also includes the times user backups are allowed. To accomplish this, the user-directed window is open 24 hours a day, every day of the week. This permits scheduled backups and user directed backups to occur at any time.

Creating a Standard Policy

A Standard policy is used to back up Sybase files: data files, shell scripts, Sybase SQL scripts and logs. In the following example, we identify scripts as Sybase files and create a NetBackup Standard policy with a User Backup schedule to back them up. Assume that we keep the Sybase files in the *$SYBASE*/`syb_files` directory.

The following schedule permits a user-directed backup at any time.



Creating Scripts

Sybase SQL scripts cause SQL Server to send the directives to Sybase ASE Backup Server that initiate a dump or load of the specified database or transaction log. The Sybase `isql` utility communicates with SQL server. See the *SYBASE SQL Server Utility Programs for UNIX* manual for information about the `isql` utility. (This manual is available from Sybase.)

The following example scripts are included with the NetBackup for Sybase installation for use with Sybase ASE:

```
sybase_mydb_backup
sybase_mydb_load
sybase_mydb_restore
```

These scripts are installed in the following directory:

install_path/netbackup/ext/db_ext/sybase/scripts/

Be sure to modify these scripts for your environment.

Note If necessary, copy the example scripts to a different directory on your client. Sybase backup scripts can be located anywhere on the client.

Although each script can have multiple Sybase ASE Backup Server operations, a separate script is required for each type of operation. For example, separate scripts for backups and restores are required.

Caution Always specify the correct script when configuring automatic backups or when starting operations through NetBackup. NetBackup for Sybase does not generate an error if a restore script is used for a backup operation or a backup script is used for a restore operation.

Instructions for Modifying Backup Scripts for Use with Sybase ASE

1. If necessary, copy the example scripts to a different directory on your client. Sybase backup scripts can be located anywhere on the client.

2. Set the access permissions of these scripts to 775.

   `chmod 775 script_name`

3. Modify the sybase_mydb_backup script.

   a. Use a text editor to open the sybase_mydb_backup script.

      The following example uses the `vi` text editor.

      `vi sybase_mydb_backup`

      The following appears.

1.

```
#***************************************************************************
# Replace /usr/sybase12 below with the actual Sybase home directory
#***************************************************************************
SYBASE=/usr/sybase12

#***************************************************************************
# Replace SYBASE12 below with the actual name of the SQL Server
#***************************************************************************
SYBSERVER=SYBASE12

#***************************************************************************
# Replace SYB_DB below with the actual name of your Sybase database
#***************************************************************************
DATABASE_NAME=SYB_DB

#***************************************************************************
# Replace syb_files below with your actual name of the NetBackup
# server Policy to be used to backup the directory with Sybase script files
#***************************************************************************
SYB_FILES_POLICY=syb_files

#***************************************************************************
# Replace /usr/sybase12/scripts below with your actual path of the Sybase files
#***************************************************************************
SYB_FILES_DIR=/usr/sybase12/scripts

if [ ! -d "${SYBASE}"/ASE-12_0/ ]
then
```

```
#************** Sybase 11.9.2 or earlier *******************
ASE_QUAL=
OCS_QUAL=
else
#************** Sybase 12.0 ****************************
SYBASE_ASE=ASE-12_0; export SYBASE_ASE
SYBASE_OCS=OCS-12_0; export SYBASE_OCS
ASE_QUAL=/$SYBASE_ASE
OCS_QUAL=/$SYBASE_OCS
fi


echo "Started `date`"
SYBASE=$SYBASE; export SYBASE
# These environment variables are set by NetBackup
echo "SYBACKUP_SERVER = $SYBACKUP_SERVER"
echo "SYBACKUP_POLICY = $SYBACKUP_POLICY"
echo "SYBACKUP_SCHED = $SYBACKUP_SCHED"
echo "SYBACKUP_SCHEDULED = $SYBACKUP_SCHEDULED"
echo "SYBACKUP_USER_INITIATED = $SYBACKUP_USER_INITIATED"

RETURN_STATUS=0

#*****************************************************************************
# Replace "database_dump" below with your actual NetBackup schedule name
# which is used for a full backup of the Sybase database.
#*****************************************************************************
if [ "${SYBACKUP_SCHED}" = "database_dump" ]
then
############# NetBackup has started a "database_dump" backup ##############
DUMP_TYPE=DATABASE

else
############# NetBackup has started a "transaction log" backup ##############
DUMP_TYPE=TRANSACTION
fi

#*****************************************************************************
# Replace "Default-Application-Backup" below with your actual NetBackup
# Application Backup type schedule name for the Sybase database.
#*****************************************************************************
  echo dump $DUMP_TYPE $DATABASE_NAME to \"sybackup::-SERV $SYBACKUP_SERVER -POL
$SYBACKUP_POLICY -SCHED Default-Application-Backup\" > ./syb_${DATABASE_NAME}_dump

#*****************************************************************************
# Remove the '#' from the beginning of the line below if you are going to
# use multiple stripes for the backup. Repeat this line for each stripe.
# Replace "Default-Application-Backup" below with your actual NetBackup
# Application Backup type schedule name for the Sybase database.
# ****************************************************************************
# echo stripe on \"sybackup::-SERV $SYBACKUP_SERVER -POL $SYBACKUP_POLICY -SCHED
Default-Application-Backup\" >> ./syb_${DATABASE_NAME}_dump

echo go >> ./syb_${DATABASE_NAME}_dump
```

```
#*************************************************************************
# Replace "manager" with your Sybase server Administrator's Password
#*************************************************************************
  echo "$SYBASE$OCS_QUAL/bin/isql -Usa -Pmanager -I$SYBASE/interfaces -S$SYBSERVER <
./syb_${DATABASE_NAME}_dump"

  $SYBASE$OCS_QUAL/bin/isql -Usa -Pmanager -I$SYBASE/interfaces -S$SYBSERVER <
./syb_${DATABASE_NAME}_dump
  RETURN_STATUS=$?

if [ "${DUMP_TYPE}" = "DATABASE" ]
then
# Initiate a backup of any file related to the Sybase database, such as script files.

  echo "bpbackup -c $SYB_FILES_POLICY $SYB_FILES_DIR"
  /usr/openv/netbackup/bin/bpbackup -c $SYB_FILES_POLICY $SYB_FILES_DIR
  BPBACKUP_STATUS=$?

  if [ "$BPBACKUP_STATUS" -ne 0 ]
  then
    echo ""
    echo "bpbackup of $SYB_FILES_DIR returned $BPBACKUP_STATUS"
  fi
fi


echo "Finished `date`"

echo "exit $RETURN_STATUS"
echo ""

exit $RETURN_STATUS
```

b. Follow the instructions in the sybase_mydb_backup script.

When customizing this script for backups, note the following lines:

```
# Replace "database_dump" below with your actual schedule name
if [ "${SYBACKUP_SCHED}" = "database_dump" ]
```

The schedule name must be the same as the Automatic Backup schedule name used when setting up the NetBackup configuration in "Configuring a NetBackup Policy" on page 29.

2. Test the scripts you just created. Refer to "Testing NetBackup for Sybase Configuration Settings" on page 70.

Instructions for Modifying Restore Scripts for Use with Sybase ASE

1. If necessary, copy the example scripts to a different directory on your client. Sybase backup scripts can be located anywhere on the client.

2. Set the access permissions of these scripts to 775.

   `chmod 775 script_name`

3. Modify the sybase_mydb_restore script.

   a. Use a text editor to open the sybase_mydb_restore script.

      The following example uses the `vi` text editor.

      `vi sybase_mydb_backup`

      The following appears:

```
#***************************************************************************
# Replace /usr/sybase12 below with your actual Sybase home directory
#***************************************************************************
SYBASE=/usr/sybase12

#***************************************************************************
# Replace SYBASE12 below with your actual name of the SQL Server
#***************************************************************************
SYBSERVER=SYBASE12

if [ ! -d "${SYBASE}"/ASE-12_0/ ]
then
#************** Sybase 11.9.2 or earlier **************
ASE_QUAL=
OCS_QUAL=
else
#************** Sybase 12.0 or later **************
SYBASE_ASE=ASE-12_0; export SYBASE_ASE
SYBASE_OCS=OCS-12_0; export SYBASE_OCS
ASE_QUAL=/$SYBASE_ASE
OCS_QUAL=/$SYBASE_OCS
fi

#***************************************************************************
# Replace /usr/openv/netbackup/ext/db_ext/sybase/scripts/sybase_mydb_load
# below with your actual SQL script path which contains corresponding
# LOAD commands
#***************************************************************************
LOADDB=/usr/openv/netbackup/ext/db_ext/sybase/scripts/sybase_mydb_load

echo "Started `date`"
```

```
SYBASE=$SYBASE; export SYBASE

RETURN_STATUS=0

# NetBackup has started a restore

#*************************************************************************
# Replace "manager" with your Sybase server Administrator's Password
#*************************************************************************
echo "$SYBASE$OCS_QUAL/bin/isql -Usa -Pmanager -I$SYBASE/interfaces -S$SYBSERVER < $LOADDB"
$SYBASE$OCS_QUAL/bin/isql -Usa -Pmanager -I$SYBASE/interfaces -S$SYBSERVER < $LOADDB

RETURN_STATUS=$?

echo "Finished `date`"

echo "exit $RETURN_STATUS"
echo ""

exit $RETURN_STATUS
```

b. Follow the instructions in the sybase_mydb_restore script.

4. Modify the `sybase_mydb_load` script.

```
load database mydb from "sybackup::SYBASE12.mydb.D.0.24312.20-12-2001.23:05:25"
go
load transaction mydb from "sybackup::SYBASE12.mydb.T.0.44532.21-12-2001.22:01:00"
go
load transaction mydb from "sybackup::SYBASE12.mydb.T.0.14142.22-12-2001.20:45:00"
go
online database mydb
```

Replace `mydb` with the name of the database.

Replace the file name with the name obtained from the `bplist` command. Refer to "Browsing Backups" on page 79 for information about how to obtain the file name. The file name portion of the `LOAD` command begins after `::`. Refer to the technical overview in "NetBackup for Sybase on UNIX" on page 7 for more information about the format of the file name.

You can specify the NetBackup server on the device string of the `LOAD` command as shown in the following example.

```
load database mydb from "sybackup::SYBASE12.mydb.D.0.24312.20-12-2001.23:05:25 -SERV saturn"
go
online database mydb
go
```

The `-SERV` option overrides any server that is specified in the `bp.conf` file.

5. Test the scripts you modified. Refer to "Testing NetBackup for Sybase Configuration Settings" on page 70 .

Environment Variables

When a schedule runs, NetBackup sets environment variables for the scripts to use when performing the backup. These environment variables are as follows:

SYBACKUP_SERVER	Name of the NetBackup server.
SYBACKUP_POLICY	Name of the NetBackup policy.
SYBACKUP_SCHED	Name of the Automatic Backup schedule.
SYBACKUP_SCHEDULED	Set to 1 if this is a scheduled backup (Automatic Backup).
SYBACKUP_USER_INITIATED	Set to 1 if this is a user-initiated backup (Application Backup backup).

Note The SYBACKUP_POLICY and SYBACKUP_SCHED variables are set up only if the backup is initiated from the server (either automatically by the NetBackup scheduler or manually through the administrator interface).

Configuring the bp.conf File

When a NetBackup for Sybase operation is initiated, NetBackup will search the configuration files for the POLICY, SERVER and SCHEDULE definitions in the following order.

1. *$SYBASE*/bp.conf
2. *install_path*/netbackup/bp.conf

Note NetBackup uses a Policy or Schedule configured in the NetBackup Client Configuration for all backups on the client, including file system and Sybase database backups. For this reason, if a non-Sybase type Policy or Schedule is configured in the NetBackup Client Configuration, the -POLICY or -SCHED option must be used on the Sybase ASE DUMP command to specify the correct Policy or Schedule. Refer to "Instructions for Modifying Backup Scripts for Use with Sybase ASE" on page 60 for details on how to specify a Policy or Schedule on the Sybase ASE DUMP command.

If NetBackup fails to find POLICY and SCHEDULE definitions, NetBackup for Sybase defaults to the first POLICY and SCHEDULE with the appropriate policy type.

Create a $SYBASE/bp.conf File On the Client

By configuring these bp.conf options, you ensure that NetBackup for Sybase will use the correct Sybase policy and schedule for your Sybase backups.

1. Create a bp.conf file in your Sybase home directory. For example, if *$SYBASE* is /sybase, you will create the following file:

   /sybase/bp.conf

2. Add the following options to bp.conf file.

   BPBACKUP_POLICY=*policy_name*
   BPBACKUP_SCHED=*schedule_name*

   Where:

   policy_name is the name of the Sybase policy you want to use.

   schedule_name is the name of the *Application Backup* schedule that you want to use.

Note NetBackup uses the *$SYBASE*/bp.conf file only for Sybase policies.

Options for /usr/openv/netbackup/bp.conf File On the Client

Add a SYBASE_HOME option to the `/usr/openv/netbackup/bp.conf` file on the client. SYBASE_HOME must be your Sybase SQL Server home directory. For example, if *$SYBASE_HOME* is equal to `/sybase`, add the following to the `bp.conf` file.

```
SYBASE_HOME=/sybase
```

Enabling Striped Dumps and Loads

NetBackup for Sybase supports the Sybase ASE Backup Server ability to open multiple streams simultaneously to perform parallel dumps and loads. *ALL* streams must be simultaneously available before the dump or load can proceed. In addition, the number of stripes specified during a load should match that of the dump.

Caution NetBackup tape duplication must be performed with the multiplex option when Sybase ASE striping and NetBackup multiplex (MPX) is used for a Sybase ASE backup. The problem occurs when multiple Sybase ASE stripes are multiplexed to a single tape and then the tape is duplicated without using the -mpx option. The duplicated tape must be created with the -mpx option on the `bpduplicate` command (accessible as the **Preserve multiplexing** checkbox on the Duplicate Backup Images window). In addition, all of the backups from the original Sybase ASE multiplexing session must be included in the duplicated multiplexed group.

If multiplexing striped Sybase ASE database backups, you may require a special configuration to restore them. By default, when restoring from multiplexed backups, NetBackup uses twelve data buffers. This is enough unless you are using more than twelve stripes. If you are using more than twelve stripes, increase the number of data buffers used by NetBackup as follows.

1. Create the following file on the NetBackup master that has the storage unit.

   For a UNIX master server, enter the following:

   `install_path/netbackup/db/config/NUMBER_DATA_BUFFERS_RESTORE`

   For a Windows master server, enter the following:

   `install_path\NetBackup\db\config\NUMBER_DATA_BUFFERS_RESTORE`

2. Specify the number of buffers. This number is the only entry in the file.

Example Sybase SQL script for a Striped Dump for Sybase ASE

```
dump database mydb to "sybackup::"
stripe on "sybackup::"
stripe on "sybackup::"
go
```

Note Refer to “Instructions for Modifying Backup Scripts for Use with Sybase ASE” on page 60 for further details.

\

Example Sybase SQL script for a Striped Load for Sybase ASE

```
load database mydb from
"sybackup::SYBASE11.mydb.D.0.27997.20-10-1997.10:55:52"
stripe on "sybackup::SYBASE11.mydb.D.1.27999.20-10-1997.10:55:52"
stripe on "sybackup::SYBASE11.mydb.D.2.28001.20-10-1997.10:55:52"
go
```

Note Refer to "Instructions for Modifying Restore Scripts for Use with Sybase ASE" on page 63 for further details.

Testing NetBackup for Sybase Configuration Settings

After configuring the master server for NetBackup for Sybase, test the configuration settings. For a description of status codes, refer to the *NetBackup Troubleshooting Guide for UNIX and Windows*.

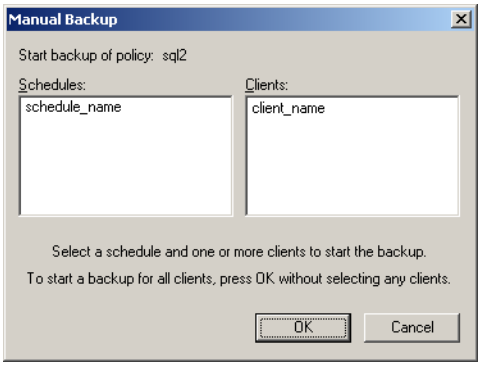
NetBackup Administration Console for Windows

Use this procedure to test a policy configuration from a Windows server or from the Remote Administration Console.

▼ To test the configuration settings on a Windows server

1. Log onto the server as administrator.
2. Start the NetBackup Administration Console.
3. In the left pane, click **Policies**. The policy list appears in the right pane.
4. Click on the policy you wish to test.
5. Choose **Actions** > **Manual Backup**.

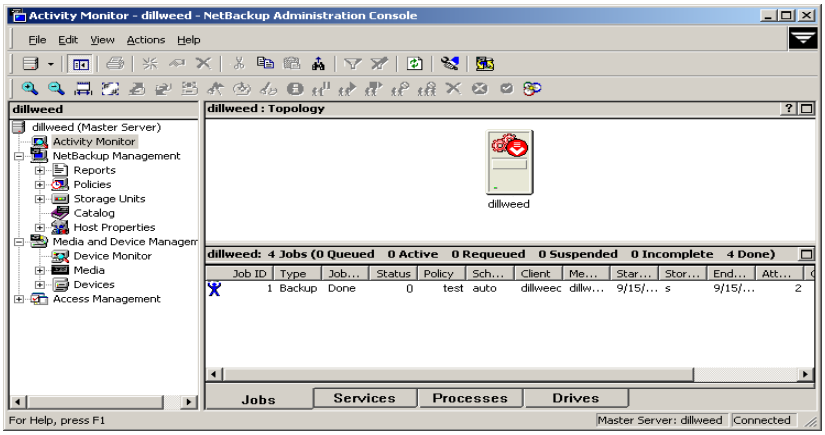
   The Manual Backup dialog is displayed.



   The Schedules pane contains the name of a schedule (or schedules) configured for the policy you are going to test. The Clients pane contains the name of the client(s) listed in the policy you are going to test.

6. Follow the instructions on the dialog.

7. Click **Activity Monitor** on the NetBackup Administration Console.



If the manual backup does not exit with a successful status, refer to the Troubleshooting chapter.

NetBackup Administration Console for UNIX

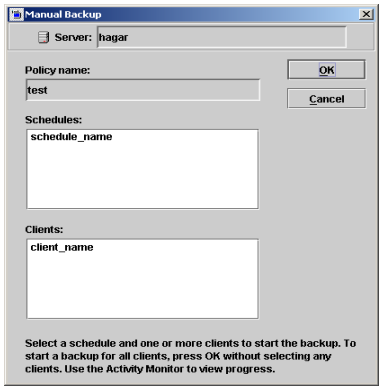
Use this procedure to test a policy configuration on the NetBackup Administration Console for UNIX.

▼ To test the configuration settings on a UNIX server

1. Log onto the server as root.
2. Start the NetBackup Administration Console.
3. In the left pane, click **Policies**.

   The right pane splits into an All Policies pane and a details pane.
4. In the All Policies pane, click the policy you wish to test.
5. Choose **Actions** > **Manual Backup**.

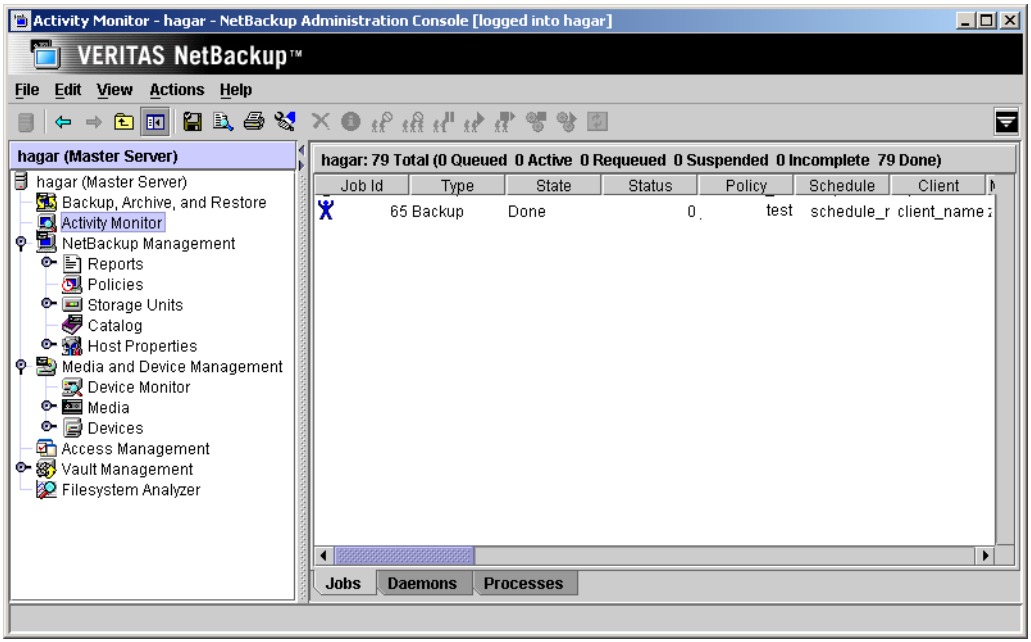
The Manual Backup dialog is displayed.



The Schedules pane contains the name of a schedule (or schedules) configured for the policy you are going to test. The Clients pane contains the name of the client(s) listed in the policy you are going to test.

6. Follow the instructions on the dialog.

7. Click **Activity Monitor** on the NetBackup Administration Console.



If the manual backup does not exit with a successful status, refer to the Troubleshooting chapter.

Using NetBackup for Sybase on UNIX 4

After completing the installation and configuration, you can use the NetBackup interfaces to start Sybase backups and restores. You can also execute `DUMP` and `LOAD` commands directly from the `isql` utility to perform Sybase ASE backups and restores.

Caution Always specify the correct Sybase backup script when configuring automatic backups or when starting operations through NetBackup. NetBackup for Sybase on UNIX will not generate an error if a restore Sybase backup script file is used for a backup operation or a backup Sybase backup script is used for a restore operation.

This chapter contains the following sections:

- Performing a Backup
- Browsing Backups
- Performing a Restore

Performing a Backup

There are two types of Sybase ASE backups: full and incremental.

- *full backup*: A copy of the entire database, including both the data and transaction log. This is accomplished by performing a database dump.
- *incremental backup* :A copy of the transaction log that contains the database changes made since the last database or transaction log dump. You can run a transaction log dump only if the database stores its log on a separate segment.

To ensure consistent and accurate backups, always use the `DBCC` command to check database consistency before backing up a database. The `DUMP` command can complete successfully even if your database is corrupt.

Backup Strategy

Note This backup strategy is an example. For guidelines on developing your own backup and recovery plan, refer to the *SYBASE SQL Server System Administration Guide.*

One of the major tasks in developing a backup plan is to determine how often to back up your databases. The frequency of your backups determines how much work you can save in the event of a media failure. Dump each database just after you create it to provide a base point, and then dump it on a fixed schedule thereafter.

An example database backup strategy follows:

1. Perform a full-database backup by running a database dump every Friday night.
2. Back up your important Sybase files every Friday night at the same time as the full-database backup. If desired, you can schedule additional backups for them at other times. See “Creating a Standard Policy” on page 41 .
3. Perform an incremental backup each night by running a transaction log dump.
4. For further protection, Sybase recommends that you save all the important Sybase scripts. This includes scripts that contain the `disk init`, `create database`, and `alter database` commands.
5. Sybase also recommends that you save a hard copy of your sysdatabases, sysusages, and sysdevices tables each time you issue one of these commands. In addition, keep a copy of the syslogins and so on.

Automatic Backup of a Sybase Policy

The most convenient way to back up your database is to set up schedules for automatic backups. When the NetBackup scheduler invokes a schedule for an automatic backup, the Sybase backup scripts run:

- in the same order as they appear in the file list
- on all clients that have them (that is, matching path names)

The Sybase backup scripts start the database backup.

Manual Backup of a Sybase Policy

The administrator on the master server can use the NetBackup server software to manually execute an Automatic Backup schedule for the Sybase policy. Refer to "Configuring a NetBackup Policy" on page 29 for detailed instructions on configuring an automatic backup.

Refer to "Testing NetBackup for Sybase Configuration Settings" on page 70 for instructions on initiating a backup of a Sybase policy.

User-Directed Backup

Using xbp to Perform a Backup

Note xbp is not supported on AIX platforms.

The following describes how to use xbp to back up your database. Refer to the xbp man page and the online help in the interface for detailed instructions on using xbp to back up the database.

▼ **To perform a backup using xbp**

1. Log in as the Sybase administrator or as root.

   If you are already logged in under a different user account, use the su - command to change to the Sybase administrator.

2. Execute xbp on the client to which you want to backup a database.

   ***install_path*/netbackup/bin/xbp**

3. In the Directory to Search Box, type the path name of the location of the Sybase backup scripts. For example:

   ***install_path*/netbackup/ext/db_ext/sybase/scripts/**

4. Choose **File** > **Browse File System for Sybase Backup Scripts**.

5. Select the backup script from the Files pane.

6. Choose **Backup** > **Backup Database Using Selected Scripts**. The xbp_confirm dialog displays.

7. Click **OK**.

   A NetBackup process called `bphdb` starts the Sybase backup script on the client.

8. View the status of the script execution.

   a. Choose **Backup** > **Report Progress Of Backup...**.

      The xbp_progress dialog displays.

   b. Select the log file for your backup.

      The Contents of Selected Log File pane displays only the status of the script execution. A status `=0` message indicates that the script was successfully completed. Go to Step 9 for a detailed status report. For a status other than 0, refer to the Troubleshooting section of this manual. For additional information, check the output of the script.

9. View the log file for the NetBackup operation.

   a. Change directories to the `bphdb` log directory.

      cd *install_path*/netbackup/logs/bphdb

   b. Open the log file with the tail option.

      tail -f log.mmddyy

A `Backup completed SUCCESSFULLY` message indicates a successfully completed NetBackup operation.

Using isql to Perform a Backup of a Sybase ASE Database

You can start a backup by executing the Sybase ASE `DUMP` command from the `isql` utility on the client. For example:

```
dump transaction mydb to "sybackup::"
go
```

Note Refer to "Instructions for Modifying Backup Scripts for Use with Sybase ASE" on page 60 for further details.

See the *SYBASE SQL Server System Administration Guide* for details on using the `isql` utility.

Browsing Backups

Using xbp to Browse

Note `xbp` is not supported on AIX platforms.

The following describes how to use `xbp` to browse your database backups. Refer to the xbp man page and the online help in the interface for detailed instructions on using `xbp` to browse database backups.

1. Log in as the Sybase administrator or as root.

   If a different user account is used, use the `su` command to change to the Sybase administrator.

2. Execute `xbp` on the client.

   ***install_path*/netbackup/bin/xbp**

   The xbp dialog is displayed.

3. From the **File** menu, click **Configuration**.

   The xbp_config dialog displays.

   a. In the Policy type of image to browse, specify the Sybase policy.

   b. Click **OK** to close the dialog.

   c. In the **Directory To Search Box**, enter / as the directory to search.

   d. Set the **Range of Dates** to include the date of your backup.

   e. Enter `9` in the **Directory Depth Box**.

f. From the **File** menu, select **Browse Backups (Restore)**. A list of backup images appears in the dialog.

Using bplist to Browse

You can use the `bplist` command to browse Sybase backup history on the master server. The result is the list of dump-file names. The following example uses `bplist` to search all Sybase backups (dumps) for a client (-C) named saturn on a server (-S) named candytuft.

```
xterm
root:<candytuft> %
root:<candytuft> %
root:<candytuft> %
root:<candytuft> %
root:<candytuft> %
root:<candytuft> %
root:<candytuft> %
root:<candytuft> %
root:<candytuft> %
root:<candytuft> %
root:<candytuft> %
root:<candytuft> % cd /usr/openv/netbackup/bin
root:<candytuft> % bplist -S candytuft -C copper -t 7 -R /
/sybase1200.esam.T.0.22448.26-10-2001.13:45:17
/sybase1200.model.D.0.21182.26-10-2001.12:56:40
/sybase1200.model.D.0.20730.26-10-2001.12:42:04
/sybase1200.model.D.0.20932.26-10-2001.12:33:02
/sybase1200.master.D.1.20138.26-10-2001.07:25:57
/sybase1200.master.D.2.19620.26-10-2001.07:25:57
/sybase1200.master.D.3.20640.26-10-2001.07:25:57
/sybase1200.master.D.0.19888.26-10-2001.07:25:57
/sybase1200.model.D.0.19092.26-10-2001.07:18:14
/sybase1192.model.D.0.4172.25-10-2001.07:17:20
root:<candytuft> %
```

The `-t 7` on this command specifies the Sybase backups (dumps). The `-R` on this command specifies recursive listing.

Refer to the `bplist(1M)` man page for more information on this command.

Note NetBackup stores Sybase backups (dumps) in its catalog as *dumpfile*, but when you specify a backup for the `LOAD` command, you must use *dumpfile* without the slash `/`.

Performing a Restore

The procedure for restoring a Sybase database depends on the database involved and the problems that you have on your system. If the database and the device were lost:

1. Initialize a new device.
2. Re-create the database.

See the *SYBASE SQL Server System Administration Guide* for a complete description of how to restore your database for each type of problem.

The following example shows how to restore our example database, mydb, to the level of a recent database dump plus two transaction log dumps.

1. Execute the `LOAD` commands directly from SQL Server.

   This loads the database dump and transaction log dumps.

2. Check database consistency.

   When you have brought the database up-to-date, use `DBCC` commands to check the consistency of the database.

Using xbp to Restore

Before using `xbp` to perform a restore of a Sybase ASE database, the `sybase_mydb_load` script must be edited to contain the correct database name and dump-file name. A list of the dump-file names can be obtained by executing the `bplist` command. Refer to "Using bplist to Browse" on page 80.

The following describes how to use `xbp` to restore your database. Refer to the xbp man page and the online help in the interface for detailed instructions on using `xbp` to restore database backups.

▼ To use xbp to perform a restore

1. Log in as the Sybase administrator or as root.

   If a different user account is used, change the `su-` command to the Sybase administrator.

2. Execute `xbp` on the client to which you want to restore a database.

   ***install_path*/netbackup/bin/xbp**

3. In the Directory to Search Box, type in the path name of the location of the Sybase backup scripts. For example:

   ***install_path*/netbackup/ext/db_ext/sybase/scripts/**

4. Choose **File** > **Browse File System for Restore Scripts**. The xbp dialog is displayed.

5. Select the restore script from the Files pane.

6. Choose **Restore** > **Restore Database Using Selected Scripts**. The xbp_confirm dialog is displayed.

7. Click **OK**.

   A NetBackup process called `bphdb` starts the Sybase backup script on the client.

8. View the status of the script execution.

   a. Choose **Restore** > **Report Progress Of Restore...**.

      The xbp_progress dialog is displayed.

   b. Select the log file for your restore.

      The Contents of Selected Log File pane displays only the status of the script execution. A status `=0` message indicates that the script was successfully completed. Go to Step 9 for a detailed status report. For a status other than 0, refer to the Troubleshooting section of this manual.

9. View the log file for the NetBackup operation.

   a. Change directories to the `bphdb` log directory.

      cd /usr/openv/netbackup/logs/bphdb

   b. Open the log file with the tail option.

      tail -f log.*mmddyy*

A `Restore completed SUCCESSFULLY` message indicates a successfully completed NetBackup operation.

Using isql to Restore a Sybase ASE Database

The steps required to recover a Sybase ASE database depend on the database that is involved and the problem that you have on your system. These steps can include:

- Using buildmaster, installmaster, and installmodel for system databases
- Re-creating database devices
- Re-creating databases
- Loading database dumps
- Applying transaction logs

Refer to the *SYBASE SQL Server System Administration Guide* for detailed instructions on performing these actions.

A load can take significantly longer than a dump. The time required to load a database is proportional to the overall number of pages in the database. The `load database` command loads all used pages from the dump into the target database and runs recovery of syslogs to ensure consistency. The load process initializes any unused pages.

You can load database and transaction dumps by manually submitting the Sybase ASE `LOAD` command to SQL Server. See the *SYBASE SQL Server System Administration Guide* for details on using the Sybase ASE `LOAD` command.

Note The `LOAD` command must include the appropriate dump-file name.

Refer to "Instructions for Modifying Restore Scripts for Use with Sybase ASE" on page 63 for information about editing the `LOAD` command with the correct dump-file name. Note that the database dump and all of the transaction logs must be loaded before the database is brought back online.

For example:

```
load database mydb from "sybackup::SYBASE.mydb.D.0.14693.12-12-1997.09:29:37 -SERV saturn"
go
```

Redirected Restore Configuration on the Client

If you want to browse and restore backups that are owned by another client, perform the following:

1. Ensure that the NetBackup server is configured to allow the redirected restore (see the *NetBackup System Adminstrator's Guide for Windows, Vol. I* or the *NetBackup System Administrator's Guide for UNIX, Vol. I*).

2. Specify either of the following (if you specify both, NetBackup considers them in the order listed).

   - Specify client name on the Sybase ASE `LOAD` command with the `-CLIENT` and `-SERV` option. For example, the following command specifies saturn as the client to browse:

```
load database mydb from "sybackup::SYBASE.mydb.D.0.14693.12-12-1997.09:28:37 -SERV candytuft
CLIENT saturn"
go
```

   - Specify client name with the CLIENT_NAME option in the `$HOME/bp.conf` or *install_path*/netbackup/bp.conf file on the client. For example, the following command specifies saturn as the client to browse.

     `CLIENT_NAME=saturn`

Troubleshooting 5

NetBackup, NetBackup for Sybase on UNIX, and the Sybase Backup Server all provide reports on database operations. These reports are useful for finding errors associated with those applications.

This chapter contains the following sections.

- NetBackup and NetBackup for Sybase on UNIX Logs
- Setting the Debug Level
- Sybase Backup Server Logs and Messages
- Preventing Timeout Failures on Large Database Restores

NetBackup and NetBackup for Sybase on UNIX Logs

The NetBackup server and client software allow you to set up detailed debug logs for troubleshooting problems that occur outside of either NetBackup for Sybase on UNIX or the Sybase Backup Server. See the *NetBackup Troubleshooting Guide for UNIX and Windows* for a complete description of debug logs. Also see the *install_path*/`netbackup/logs/README.debug` file.

Note These logs do not reveal errors that occur during the execution of the Sybase Backup Server, unless those errors also affect NetBackup for Sybase. Sybase may (or may not) use the NetBackup for Sybase logs for errors in the application. Your best sources for Sybase error information are the logs provided by Sybase.

Note In general, each debug log corresponds to a NetBackup process and executable.

▼ To enable the NetBackup for Sybase logs

1. Create the following directories on the client:

   install_path/netbackup/logs/bphdb
   install_path/netbackup/logs/sybackup

   ```
   % cd install_path/netbackup/logs/
   % mkdir bphdb
   % mkdir sybackup
   ```

2. Set the access permissions to 777 on these log directories.

   ```
   % chmod 777 bphdb
   % chmod 777 sybackup
   ```

If you create a debug log directory on the client, NetBackup for Sybase on UNIX records the dump-file name in the resulting debug log. The debug log directory that you must create is:

`/usr/openv/netbackup/logs/sybackup`

The following is an example debug log:

```
windows
14:06:13 [24312] <4> SYB_CLOSE: INF - Backup completed SUCCESSFULLY:
                                      Database server = SYBASE11
                                      Database = mydb
                                      Strip# =0
                                      Total stripes = 1
                                      Type = DATABASE
Dumpfile name: SYBASE11.mydb.D.0.24312.17-12-1998.14:05:25
14:06:13 [24312] <4> SYB_CLOSE:   --- Successful End of SYBACKUP ---
```

NetBackup for Sybase on UNIX sends an informational message that specifies the dump-file name to Sybase Backup Server.

The following sections describe the logs created when you create the log directories. Use a text editor to view the contents of the logs.

bphdb Directory on the Client

The *install_path*/netbackup/logs/bphdb directory contains the following types of logs. These logs are a good starting place to determine what type of error occurred.

sybase_stdout.*mmddyy*

Unless redirected elsewhere, NetBackup places Sybase backup script output in this file.

sybase_stderr.*mmddyy*

Unless redirected elsewhere, NetBackup places Sybase backup script errors in this file.

log.*mmddyy*

bphdb is the NetBackup Database Backup binary. This log contains debugging information for the bphdb process. NetBackup for Sybase on UNIX uses this client process for Sybase backup script execution. It is invoked when an automatic backup schedule is executed.

sybackup Directory on the Client

The *install_path*/netbackup/logs/sybackup directory contains the following execution log.

log.*mmddyy*

This log contains debugging information and execution status for the Sybase NetBackup client processes linked to the library program provided with NetBackup for Sybase on UNIX.

install_path/netbackup/logs/

NetBackup Server Reports

NetBackup provides other reports that are useful in isolating problems. One such report is All Logs Entries on the server. See the *NetBackup System Administrator's Guide for Windows, Volume I* or *NetBackup System Administrator's Guide for UNIX, Volume I* for a description of this and other reports.

Setting the Debug Level

You can control the amount of information written to the debug log in the *install_path*/`netbackup/logs/` directories by changing the Database debug level. The higher the value, the more information is logged. In everyday normal operations, the default value of 0 is sufficient. However, VERITAS Technical Support may ask you to set the value higher when a problem is being analyzed. 5 is the highest possible setting.

❖ To change the Debug Level, enter the following line in the `bp.conf` file.

```
VERBOSE = 5
```

Sybase Backup Server Logs and Messages

The Sybase Backup Server log provides information on the Sybase Backup Server part of the operation. This is the log that the database administrator must check to determine the ultimate success or failure of the database backups and restores.

DUMP and LOAD Progress Messages

Sybase Backup Server sends its dump and load progress messages to the client that initiated the dump or load request. When you use NetBackup to start Sybase backups, NetBackup for Sybase on UNIX routes Sybase Backup Server progress messages to the following file:

install_path/netbackup/logs/bphdb/sybase_stdout.mmddyy.hhmmss.txt

If the *install_path*/netbackup/logs/bphdb/ directory does not exist, the messages are not written.

ERROR Logging

Sybase Backup Server performs its own error logging in the file that you specify when you configure Sybase Backup Server. See the *SQL Server Configuration Guide* for more information.

Informational and error messages sent to the Sybase Backup Server log file include messages from the Archive API. You can enable detailed diagnostic tracing for the Archive API by specifying the *-DTRACEIO* option on the backup server command line.

Note To determine successful status of DUMP and LOAD commands, always check Sybase Backup Server messages and logs.

Here is an example of a Sybase Backup Server message log that indicates successful DUMP command completion:

```
Backup Server: 3.43.1.1: Dump phase number 1 completed.
Backup Server: 3.43.1.1: Dump phase number 2 completed.
Backup Server: 4.58.1.1: Database model: 238 kilobytes DUMPed.
Backup Server: 3.43.1.1: Dump phase number 3 completed.
Backup Server: 4.58.1.1: Database model: 242 kilobytes DUMPed.
Backup Server: 3.42.1.1: DUMP is complete (database model).
```

Preventing Timeout Failures on Large Database Restores

Large database restores sometimes fail when multiple restore sessions compete for resources. In this situation, a restore session can be delayed waiting for media or device access. If the delay is too long, the restore session times out.

This problem can be resolved by increasing the **Client Read Timeout** property, which prevents session timeouts and allows the restores to complete successfully.

Use the NetBackup Administration Console on the server to change the properties of each client that contains a database you may need to restore. The **Client Read Timeout** property is found on the Timeouts host properties dialog of the master and media servers. The default for the **Client Read Timeout** setting is 300 seconds (5 minutes). For database agent clients, increase the value significantly to prevent timeout errors, e.g. 30 minutes.

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