VERITAS NetBackup™ 3.4 for Sybase

System Administrator's Guide

UNIX

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Preface

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

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

- *NetBackup System Administrator's Guide - UNIX*, if you have a UNIX server.

  or

- *NetBackup System Adminstrator's Guide - Windows NT Server* if you have a Windows NT server.

This document is the same as `NetBackup_AdminGuide_Sybase_Unix.pdf` distributed with the NetBackup for SYBASE 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 User's Guide - UNIX*
  - *NetBackup System Administrator's Guide - UNIX* or *NetBackup System Adminstrator's Guide - Windows NT Server*
  - *NetBackup Troubleshooting Guide - UNIX* or *NetBackup Troubleshooting Guide - Windows NT Server*
- A thorough understanding of the following Sybase database topics:
  - SYBASE administration
  - SYBASE commands
  - SYBASE Backup Server Archive API (Application Program Interface)

Organization

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 your system.
- Configuration explains how to configure your system to use NetBackup for SYBASE. This information supplements the NetBackup for SYBASE manuals.
- Chapter 4, "Using NetBackup for SYBASE," 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.

Related Documents

The following documents provide related information. For a more detailed listing of NetBackup documents, refer to *NetBackup Release Notes*.

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

- *NetBackup System Administrator's Guide - UNIX*

  Explains how to configure and manage NetBackup on a UNIX system.

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

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

- *NetBackup Troubleshooting Guide - UNIX*

  Provides troubleshooting information for UNIX-based NetBackup products. You can also refer to www.veritas.com knowledge base for tech notes.

If you have a Windows NT/2000 server, refer to these documents:

- *NetBackup System Administrator's Guide - Windows NT/2000*

  Explains how to configure and manage NetBackup on a Windows NT/2000 server system.

- *NetBackup Media Manager System Administrator's Guide - Windows NT/2000*

  Explains how to configure and manage the storage devices and media on Windows NT/2000 NetBackup servers. Media Manager is part of NetBackup.

- *NetBackup Troubleshooting Guide - Windows NT/2000*

  Provides troubleshooting information for Windows NT/2000-based NetBackup products. You can also refer to www.veritas.com knowledge base for tech notes.

For this product, you may also need the following manuals:

- *SYBASE SQL Server Installation and Configuration Guide*
- *SYBASE SQL Server System Administration Guide.*
- *SYBASE SQL Server Utility Programs for Unix*
- *SQL Server Configuration Guide*

Conventions

The following explains typographical and other conventions used in this guide.

Type Style

Table 1. Typographic Conventions

Typeface	Usage
`Bold fixed width`	Input. For example, type **`cd`** to change directories.
`Fixed width`	Paths, commands, filenames, or output. For example: The default installation directory is `/opt/VRTSxx`.
Italics	Book titles, new terms, or used for emphasis. For example: *Do not* ignore cautions.
Sans serif (italics)	Placeholder text or variables. For example: Replace *filename* with the name of your file.
Sans serif (no italics)	Graphical user interface (GUI) objects, such as fields, menu choices, etc. For example: Enter your password in the Password field.

Notes and Cautions

Note This is a Note and is used to call attention to information that makes it easier to use the product or helps you to avoid problems.

Caution This is a Caution and is used to warn you about situations that can cause data loss.

Key Combinations

Some keyboard command sequences use two or more keys at the same time. For example, you may have to hold down the Ctrl key before you press another key. When this type of command is referenced, the keys are connected by plus signs. For example:

Press Ctrl+t

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*

the user can use either the *arg1* or *arg2* variable.

Getting Help

For updated information about this product, including system requirements, supported platforms, supported peripherals, and a list of current patches available from Technical Support, visit our web site:

`http://www.veritas.com/`

For product assistance, contact VERITAS Customer Support.

US and Canadian Customers: 1-800-342-0652

International Customers: +1 (650) 335-8555

VERITAS Customer Support can also be reached through electronic mail at:

`support@veritas.com`

Introduction 1

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

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

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

Features of NetBackup for Sybase

This section describes the NetBackup for Sybase main features.

Feature	Description
Media and device management	All devices supported by Media Manager are available to NetBackup for Sybase.
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 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 executed simultaneously and transparently without any action from the NetBackup administrator. A database administrator can execute database backup and restore operations through NetBackup or use Sybase Backup Server as if NetBackup were not present. An administrator or any other authorized user can use NetBackup to execute 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.

Feature	Description
Graphical user interfaces	NetBackup provides the following graphical user interfaces for client users and administrators: ◆ Client user interface on Java, `jbpSA` ◆ Client user motif interface, `xbp` ◆ Administrator user interface on Java, `jnbSA` ◆ Administrator user interface, `xbpadm` ◆ Administrator user interface on Windows NT/2000 A database administrator or NetBackup administrator can start backup or restore operations for Sybase from the NetBackup graphical user interface on the master server.
Parallel backup and restore operations	NetBackup for Sybase supports the parallel backup and restore capabilities of the Sybase Backup Server. This permits the user to run more than one tape device at a time for a single Sybase backup or restore, thereby reducing the time necessary to complete the operation.

Terminology for NetBackup for Sybase

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.

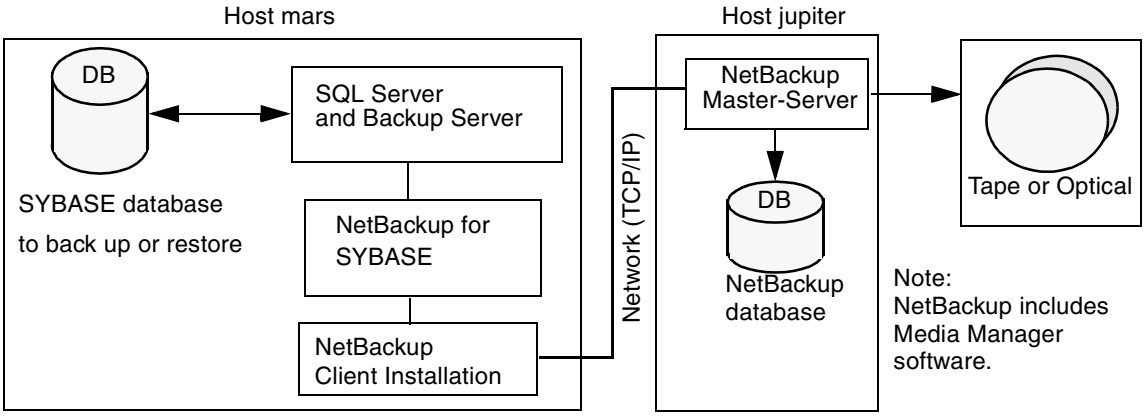
NetBackup	NetBackup backs up and restores files, directories, raw partitions, and databases on client systems that have Sybase databases.
NetBackup schedule	NetBackup schedules control NetBackup operations such as: when backups can occur, the type of backup (full, incremental) to perform, and how long 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.
User-directed backups and restores	NetBackup for Sybase 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.

NetBackup for Sybase Terms

SQL Server and Sybase Backup Server	SQL Server improves the backup and restore functions of Sybase Backup Server by using remote-procedure calls to instruct Sybase Backup Server to back up or restore specific databases. NetBackup for Sybase enhances SQL Server functionality by integrating Sybase 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 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.
Sybase scripts	Shell scripts.
Sybase SQL script	An SQL script that contains SQL commands to be performed by Sybase SQL Server.

Technical Overview of NetBackup for Sybase

The example network below shows the major components in a NetBackup for Sybase configuration.



The main elements to this configuration are:

- The Sybase database host, mars, which contains SQL Server, Sybase Backup Server, NetBackup for Sybase, and NetBackup client software. Refer to "SQL Server and Sybase Backup Server" and "NetBackup for Sybase" on page 7 for more details.
- The NetBackup server, jupiter, which contains NetBackup server software. Refer to the *NetBackup System Administrator's Guide - UNIX* or *NetBackup System Adminstrator's Guide - Windows NT/2000* 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 - UNIX* or the *NetBackup Media Manager System Administrator's Guide - Windows NT/2000* for more details on the NetBackup Media Manager.

SQL Server and Sybase Backup Server

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

When either a `DUMP` or `LOAD` command is processed, SQL Server sends Sybase 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 Backup Server then handles all data transfer for the operation.

For more information on SQL Server and Sybase 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

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

NetBackup for Sybase is integrated with Sybase Backup Server through the Sybase Backup Server Archive API. Sybase Backup Server uses the Archive API routines to issue I/O requests to an archive-byte stream. At run time, Sybase Backup Server loads the NetBackup for Sybase 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 `DUMP` and `LOAD` commands is extended to support the Archive API. The following syntax instructs Sybase Backup Server to use the NetBackup archive device to transfer data to and from NetBackup.

`"sybackup::"`

The `DUMP` command appears as follows:

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

SQL Server and Sybase Backup Server do not have a backup-catalog feature. However, when you perform a database or transaction dump, NetBackup for Sybase 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.0.24312.17-12-1996.14:05:25
```


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 page 67 for details. A schedule is configured, through the NetBackup server interface, to use a script to perform NetBackup operations. Refer to "Configuration" on page 19 for details.

The following process takes place when a script is selected.

For a backup:

1. A NetBackup process called `bphdb` starts the Sybase script on the client.
2. The Sybase 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 starts a user-directed backup by using the NetBackup `bpbackup` command.
5. The NetBackup master server then connects to NetBackup for Sybase on the client.
6. Sybase Backup Server sends data to NetBackup for Sybase 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 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 the client.

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

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

Installation 2

This chapter describes the NetBackup for Sybase installation procedure. It includes a section on installation prerequisites.

To determine which Sybase version levels are supported, refer to the Database Extension Matrix in the *NetBackup Release Notes*.

Installation Prerequisites

Before installing NetBackup for Sybase, be sure to complete the following procedures:

1. Install NetBackup server software on the server.

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

   For a BusinesServer installation, refer to the *NetBackup BusinesServer Getting Started Guide - UNIX* or the *NetBackup BusinesServer Getting Started Guide - Windows NT/2000* for details.

   For a DataCenter installation, refer to the *NetBackup DataCenter Installation Guide - UNIX* or the *NetBackup DataCenter Installation Guide - Windows NT/2000*.

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

   For a BusinesServer installation, refer to the *NetBackup BusinesServer Getting Started Guide - UNIX* for installation instructions on UNIX clients.

   For a DataCenter installation, refer to the *NetBackup DataCenter Installation Guide - UNIX* for installation instructions on UNIX clients.

3. 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*.

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

Install NetBackup for Sybase

There are two ways to install database extension software.

- Remote Installation

  Loads the software on a master server. The user will then push 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 page 17.

Remote Installation of NetBackup for Sybase

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

Before performing a remote install, make sure:

- There is 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 3.4 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.

Remote Install Procedure

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

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

   ```
   su - root
   ```

2. Make sure a valid license key for NetBackup for Sybase has been registered.

   Use the command *install_path*`/netbackup/bin/admincmd/get_license_key` to list and add 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 the software on the server by executing the `install` script.

   `./install`

   The following prompt will appear:

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

   a. Answer **`n`**.

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

   b. Select the NetBackup for Sybase option.

   c. Enter **`q`** to quit selecting options.

      A prompt will appear asking if the list is correct.

   d. 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 software will automatically be 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 extension version files, compressed tar files and the `install_dbext` script are copied to directory *install_path*`/netbackup/dbext`.

6. Distribute and install the NetBackup for Sybase software on each client.

Note It is expected that the NetBackup version level (for example, 3.4) running on each client that you wish to update matches the version level of the database extension being installed.

   a. Execute the command to distribute the NetBackup for Sybase software to the clients. This command varies, depending upon the type of install you will perform.

      There are two types of installs.

- *initial install*
  Use an initial install if the clients you intend to update have not been configured into classes of type Sybase.
- *upgrade install*
  Use an upgrade install if all the clients you intend to update already have been configured into classes of type Sybase.

Initial Install Procedure

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

   cd *install_path***/netbackup/bin**
   ./admincmd/bpclclients -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 `bpclclients`.

   `bpclclients` generates output in following format:

   hardware operating_system client_name

   where

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

   operating_system is the operating system name. For examples, 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 Solaris2.6 curry.min.ov.com
   RS6000 AIX4.3 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 software.

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

   For example:

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

Only clients listed in *filename* will be updated.

Upgrade Install Procedure

Execute the following command.

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

This command will look at all possible clients and only update the ones currently in a Sybase class type.

Instead of `ALL ALL`, you may use `-ClientList` *filename* as explained in "Initial Install Procedure" on page 13.

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 does not support that client's platform type,
- the NetBackup for Sybase software for that client type was not loaded onto the server in step 5,
- (if using the `ALL ALL` method) the client does not belong to a Sybase class type.
All skipped clients are available in a file whose name is displayed by `update_dbclients`.

b. 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*

where:

max is the maximum number of simultaneous updates that is allowed. The value displayed will be a number ranging from 1 to 30.

dflt is the default number the program will use if you press Enter. The value displayed will be a number ranging from 1 to 15.

Example 1

If three client updates will be performed, the *max* and *dflt* values shown would be 3.

Example 2

If 50 client updates will be performed, the *max* value shown would be 30 and the *dflt* value shown would be 15.

`update_dbclients` will start the number of updates that you specify. If this number is less than the total number of client updates to be performed, new updates will 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]
```

c. Enter **`y`** or **`n`** for the prompt.

If you answer **`n`**, `update_dbclients` will quit and leave 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 configuration information for a client is unknown, you will be prompted for it. For example:

  ```
  -----> Client curry.min.ov.com

  Please specify the Sybase instance home path name:
  ```

  Type the location where the Sybase vendor software has been installed on the client shown. It will continue to ask this question until you indicate you are through specifying Sybase instances. You also will have an opportunity to validate your answer.

- If the `update_dbclients` command is able to determine a client's configuration, it will not prompt.

To change a client's Sybase instance configuration information later, you must log onto the client and execute the command *install_path*`/netbackup/bin/install_sybackup`.

- If more than one client is being updated, the configuration information for the previous client (whether determined by asking explicitly or by `update_dbclients` itself) establishes a default answer for the next client. This makes configuration simpler when the clients have been similarly configured. Therefore, you may see a display similar to the following:

  ```
  -----> Client guava.min.ov.com

  Please specify the Sybase instance home path name:
  ```


```
The previous response to this question was:
/sybase

Use the previous response? (y/n) [y]
```

Example: Let's assume that you want to update the following three clients.

`curry.min.ov.com`

`guava.min.ov.com`

`hat.min.ov.com`

As far as the script is concerned, the configuration information for all three clients is unknown.

Assume the instance home path on `curry.min.ov.com` is **`/sybase`**, so when you are prompted for configuration information for `curry.min.ov.com`, specify **`/sybase`** as the Sybase instance home path name.

The next client is `guava.min.ov.com`.

- If client `guava.min.ov.com` also has **`/sybase`** as its Sybase instance home path name, the answer to the `Use the previous response?` prompt will be **`y`**.
- If client `guava.min.ov.com` has a different configuration, the answer to the `Use the previous response?` prompt will be **`n`**. The `Please specify the Sybase instance home path name:` prompt will re-display. At this point you specify a different home path name**.**

The next client is `hat.min.ov.com`. The Sybase instance home path name you entered for `guava.min.ov.com` becomes the "previous response" displayed for `hat.min.ov.com`.

If the `update_dbclients` command was successful in distributing the software to the client, it will automatically run the `install_dbext` script on the client. Configuration information determined in step c on page 15 is used to complete the installation. If `install_dbext` has successfully completed, there will be a version file in directory *`install_path`*`/netbackup/ext` that contains the version of NetBackup for Sybase that was installed and an installation timestamp. 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

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

Before performing a local install, make sure:

- The local machine has 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 3.4 client software is installed and operational.

  This also means that the *install_path*`/netbackup` directory already exists.

Local Install Procedure

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

   If you are already logged in, but are not the root user, execute 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 has been registered.

   Use the command *install_path*`/netbackup/bin/admincmd/get_license_key` to list and add 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, 3.4) running on the local machine matches the version level of the database extension being installed.

```
./install
```

The following prompt will appear:

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

a. Answer **y**.

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

b. Select the NetBackup for Sybase option.

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

A prompt will appear asking if the list is correct.

d. Answer **y**.

The following actions will occur:

- The version file, compressed tar file and `install_dbext` script will be loaded to directory *install_path*`/netbackup/dbext`.
- The `install` script will automatically execute the `install_dbext` script.
- After the `install_dbext` script unbundles the NetBackup for Sybase compressed tar file, you will be prompted for the following configuration information:

  ```
  Please specify the Sybase instance home path name:
  ```

  Type the location where the Sybase vendor software has been installed. It will continue to ask this question until you indicate you are through specifying Sybase instances.
- If `install_dbext` has successfully completed, there will be a version file in directory *install_path*`/netbackup/ext/` that contains the version of NetBackup for Sybase that was installed and an installation timestamp.

Configuration 3

Before attempting to configure NetBackup for Sybase, complete the installation procedure as described in "Installation" on page 9.

The following steps outline the configuration procedure.

1. Configure Media Manager.
2. Add Classes to NetBackup.
3. Create Scripts.
4. Configure the bp.conf Files.
5. Test NetBackup for Sybase Configuration Settings.
6. Striped Dumps and Loads

This chapter describes each of these steps in detail.

Configure Media Manager

Use the Media Manager to configure tapes or other storage units for a NetBackup for Sybase configuration.

- Refer to the *Media Manager for NetBackup System Administrator's Guide - UNIX* if the NetBackup server is UNIX.
- Refer to the *Media Manager for NetBackup System Administrator's Guide - Windows NT/2000* if the NetBackup server is Windows NT/2000.

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.

Add Classes to NetBackup

This section provides an overview of how to configure NetBackup to perform backup and restore operations.

To use NetBackup for Sybase, you must add at least one Sybase class to NetBackup, then define the appropriate schedules for that class. This section contains the following:

- Issues to remember while configuring a class for NetBackup for Sybase.
- Class configuration procedures for the NetBackup Java Interface and the NetBackup Windows NT/2000 interface

Most requirements for Sybase classes are the same as for file system backups. Refer to the *NetBackup System Administrator's Guide - UNIX* or the *NetBackup System Administrator's Guide - Windows NT/2000* for detailed configuration instructions.

Set Maximum Jobs per Client Global Attribute

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

`Max Jobs per Client =` *Number of Streams* `x` *Number of Classes*

Where:

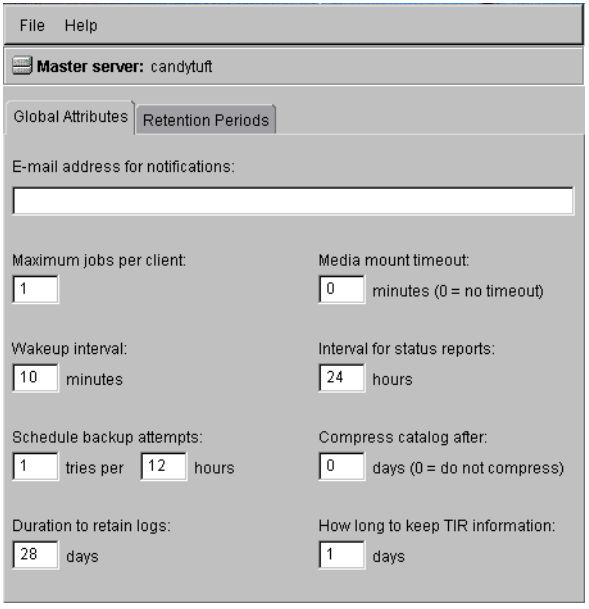
- *Number of Streams* is the number of backup streams between the database server and NetBackup. Each separate stream starts a new backup job on the client.
- *Number of Classes* is the number of classes that may back up this client at the same time. This number can be greater than one. For example, a client may be in two classes in order to back up two different databases. These backup windows may overlap.

NetBackup Administration Java Interface

Use this procedure to set the Maximum Jobs per Client global attribute on the NetBackup Administration - Java Interface for HP or Solaris operating systems.

1. On the Configure menu in the NetBackup Administration dialog box, click NetBackup System Configuration. The System Configuration dialog box appears.

2. In the Master Server dialog box, click the Global Attributes tab.



The default value is 1 for Maximum jobs per client.

3. Change the Maximum jobs per client value to a value equal to the maximum number of backups allowed per client.

Tip To avoid any problems, we recommend that you enter a value of 99 for the Maximum jobs per client global attribute.

`xbpadm` Interface

Use this procedure to set the Maximum Jobs per Client global attribute on a UNIX NetBackup master server.

1. Log onto the server as root.
2. Start the NetBackup `xbpadm` administrator interface.
   - If the `DISPLAY` variable is set, type:

     ```
     /usr/openv/netbackup/bin/goodies/xbpadm &
     ```

   - If the `DISPLAY` variable is not set, use the `-d` option:

     ```
     /usr/openv/netbackup/bin/goodies/xbpadm -d (your_machine_name):0 &
     ```

   The NetBackup Administration dialog box will open.
3. From the File menu, click Change NetBackup Configuration. The NetBackup Configuration dialog box will appear.

   The default value is 1 for Maximum jobs per client.
4. Change the Maximum jobs per client value to a value equal to the maximum number of backups allowed per client.

Tip To avoid any problems, we recommend that you enter a value of 99 for the Maximum jobs per client global attribute.

5. Click OK.

NetBackup Administration Windows NT/2000

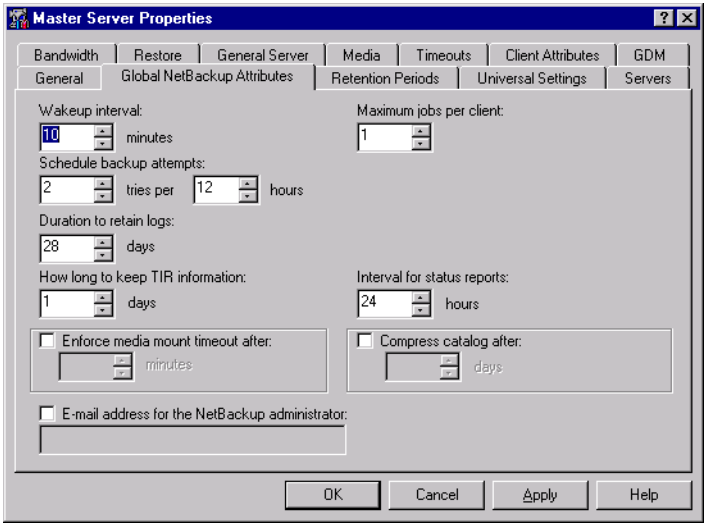
Use this procedure to set the Maximum Jobs per Client global attribute on a Windows NT/2000 server or on the NetBackup Administration Client host.

1. On the Start menu in the NetBackup Administration window, click Configure NetBackup. The Configure-NetBackup dialog box appears.

2. In the left pane, right-click on the server and on the shortcut menu click Properties (Read/Write).

   The Master Server Properties dialog box appears.

3. In the Master Server Properties dialog box, click the Global NetBackup Attributes tab.



   The default value is 1 for Maximum jobs per client.

4. Change the Maximum jobs per client value to a value equal to the maximum number of backups allowed per client.

Tip To avoid any problems, we recommend that you enter a value of 99 for the Maximum jobs per client global attribute.

Configure a Class

NetBackup classes define the criteria for the backup. These criteria include:

- clients and the NetBackup for Sybase script files to be executed on the clients
- storage unit and media to use
- backup schedules

Procedures in this section describe how to configure a class for NetBackup for Sybase on a NetBackup server. There are other attributes for a class to consider. Refer to the *NetBackup System Administrator's Guide - UNIX* or the *NetBackup System Administrator's Guide - Windows NT/2000* for details on how to configure all the attributes.

NetBackup Administration for Java Interface

Note If you are going to perform striped dumps or loads, also see "Striped Dumps and Loads" on page 66.

Use this procedure to configure a class on the NetBackup Administration - Java Interface on HP or Solaris operating systems.

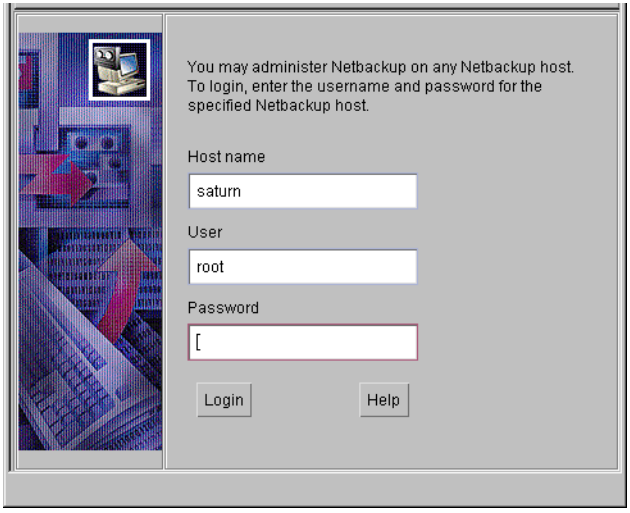
1. Log onto the server as root.
2. Start the NetBackup administrator interface by entering:

   install_path`/netbackup/bin/jnbSA &`

   For additional usage information, enter:

   ```
   jnbSA -h
   ```

The Login dialog box appears.

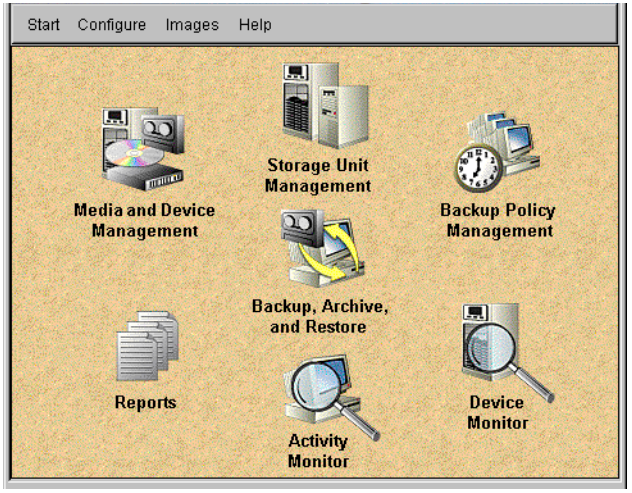


3. Type the password.

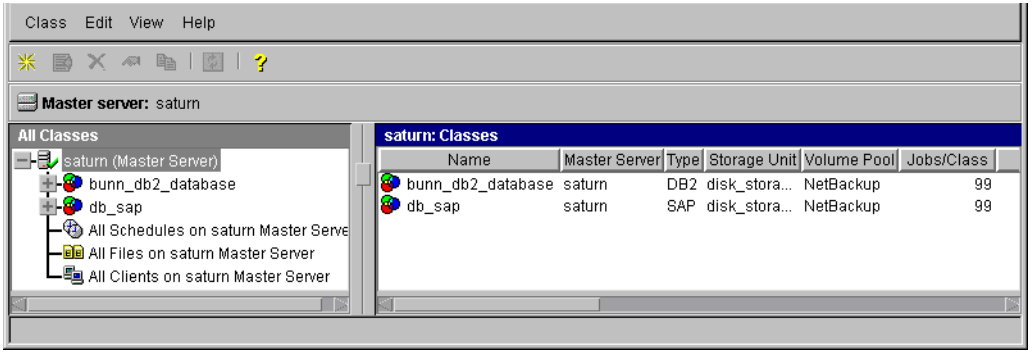
4. Press Login.

   The Login dialog closes and the NetBackup Assistant displays.

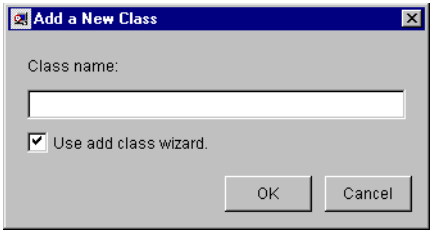
5. Click Close. The launch screen displays.



6. Click the Backup Policy Management icon. The Backup Policy Management (Classes) - NetBackup dialog appears.



7. On the Edit menu click New. The Add a New Class dialog box appears.



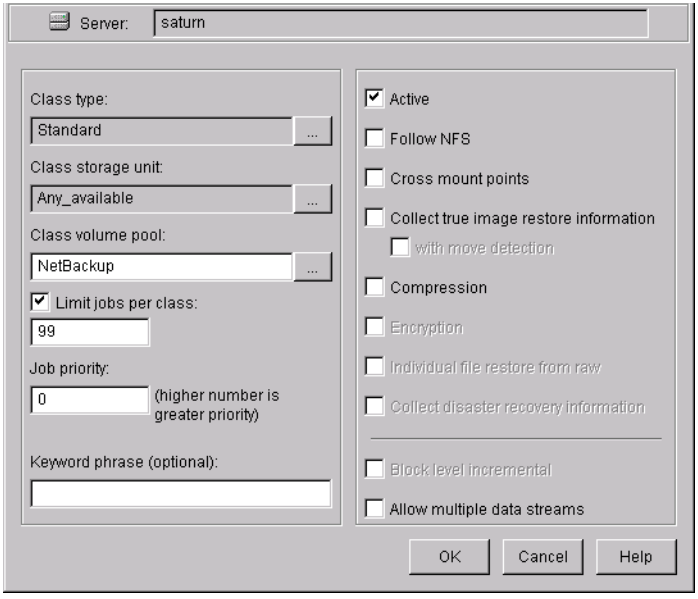
The class wizard automates the class configuration process. To configure classes without using the class wizard, use the following instructions.

8. Clear the Use add class wizard check box.

9. Type the new class name in the Class name box.

Note This class name can be specified in the `bp.conf` file on the client. This class name should also be specified in the *$Sybase_HOME*`/bp.conf` file. Refer to "Configure the bp.conf Files" on page 60 for details.

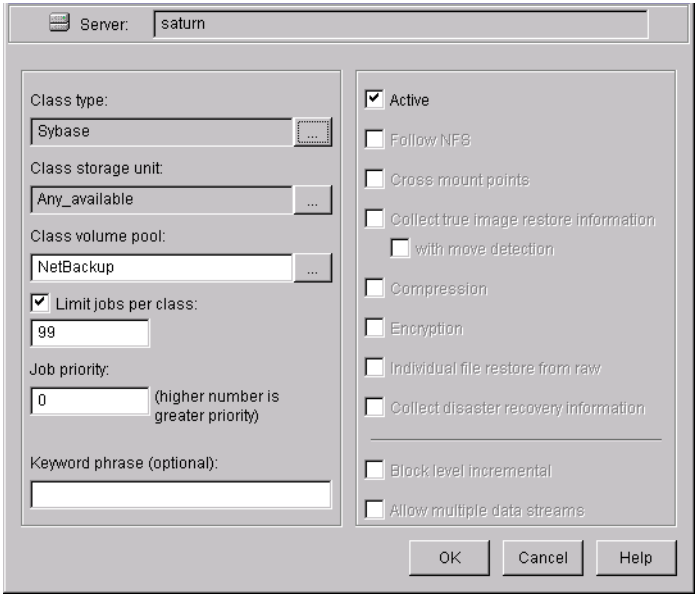
10. Click OK. The Change Attributes dialog box appears.



a. Select the Sybase class type for Sybase.

b. Click OK

The Change Attributes dialog box will change as follows.



Refer to the following table to configure class attributes.

Class storage unit:
: Select the storage unit for this class. A storage unit is a group of one or more storage devices configured to store information from a backup.

Class volume pool:
: Select the volume pool for this class. A volume pool is a group of volumes (removable media) configured for use by NetBackup only. These volumes are protected from being used by other applications.

Limit jobs per class:
: Type the maximum number of concurrent jobs for this class. If the Limit jobs per class checkbox is clear, the maximum number of backup and restore jobs that NetBackup will perform concurrently for this class can be up to a limit of 999. To specify a lower limit, select the checkbox and specify a value from 1 to 999 (the default is 99).

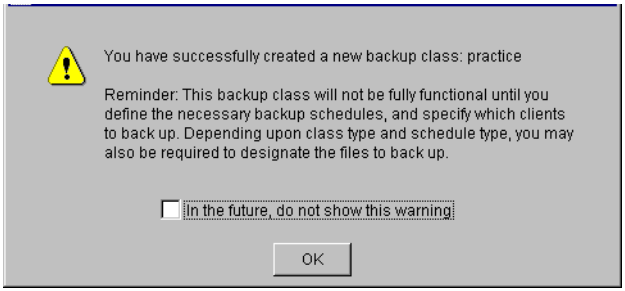
Job priority
: Select a value for the job priority NetBackup will assign to automatic backup jobs for this class. When a drive becomes available, NetBackup assigns it to the first client in the highest priority class.

Keyword phrase:
: For NetBackup for Sybase, the keyword phrase entry is ignored.

Active

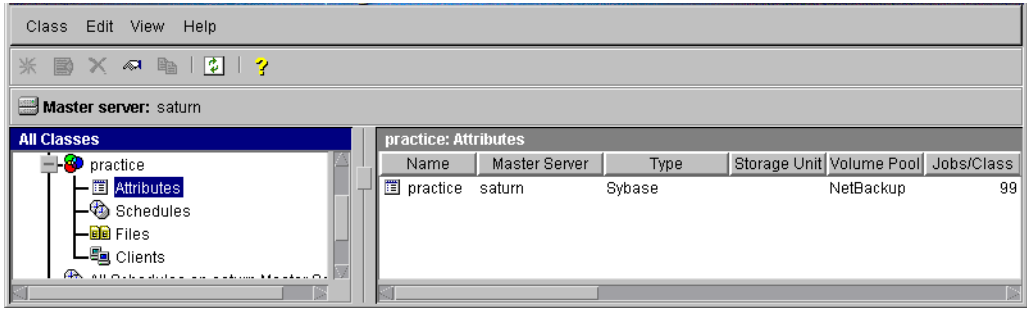
Select the checkbox to perform scheduled operations defined in this class. The class must be active for NetBackup to execute automatic backup schedules or allow user backups or archives.

c. Click OK to close the Change Attributes dialog box. The following Warning appears.



d. Click OK to close the Warning box.

Notice that the newly created class appears in the All Master Servers pane in the Backup Policy Management (Classes) - NetBackup dialog box.



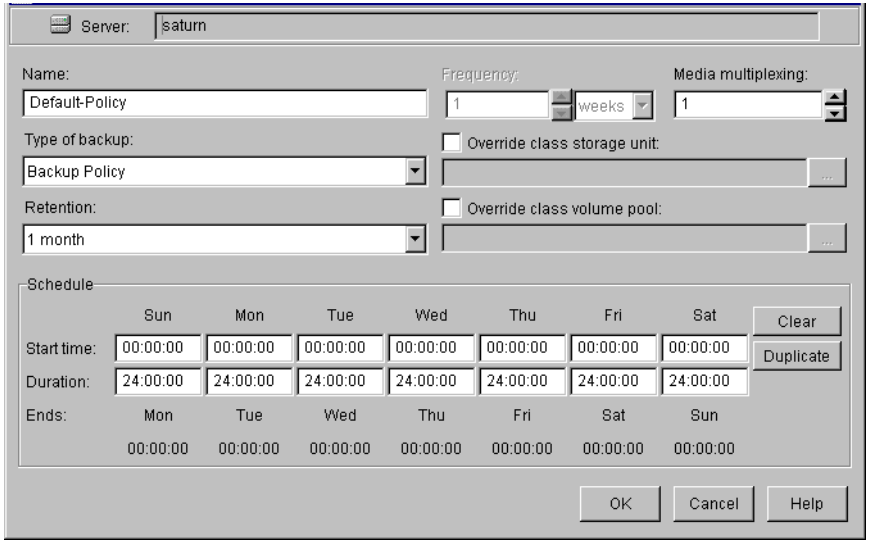
Also notice that the configuration settings you entered in the Change Attributes dialog box are displayed in the *class: Attributes* pane. Use the scroll bar at the bottom of the *class: Attributes* pane to view all settings.

11. Refer to the following instructions to configure schedules for your class.

a. Click Schedules in the All Master Servers pane of the Backup Policy Management (Classes) - NetBackup dialog box.

Notice that a Default-Policy appears in the practice:Schedules pane.

b. Double-click the Default-Policy schedule. The Change Schedules dialog box appears.



c. Configure a *Backup Policy* schedule.

All Sybase database operations are performed through NetBackup for Sybase using a *Backup Policy* schedule. This includes those backups started automatically.

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

Refer to the following table when configuring *Backup Policy* schedules.

Name:

Each schedule requires a unique name.

Note This *Backup Policy* schedule name can be specified in the `bp.conf` file on the client. This *Backup Policy* schedule name should also be specified in the *$Sybase_HOME*`/bp.conf` file. Refer to "Configure the bp.conf Files" on page 60 for details.

Type of backup:

A *Backup Policy* schedule enables user controlled NetBackup operations performed on the client.

At least one *Backup Policy* schedule must be configured in each Sybase class. The Default-Policy schedule is configured as a *Backup Policy* schedule.

Retention:

The retention period refers to the length of time that NetBackup keeps backup images. Set the time period to retain at lease two full backups of your database. In this way, if one full backup has been lost, you will have another full backup to fall back on.

For example, if your database is backed up once every Sunday morning, you should select a retention period of at least "2 weeks."

Media Multiplexing

The media multiplexing box sets the number of jobs from this schedule that NetBackup can multiplex onto any one drive.

Start:

Specifies the day and time when the backup windows will open.

Duration:

Specifies the period of time (backup window) during which the backup job can take place.

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

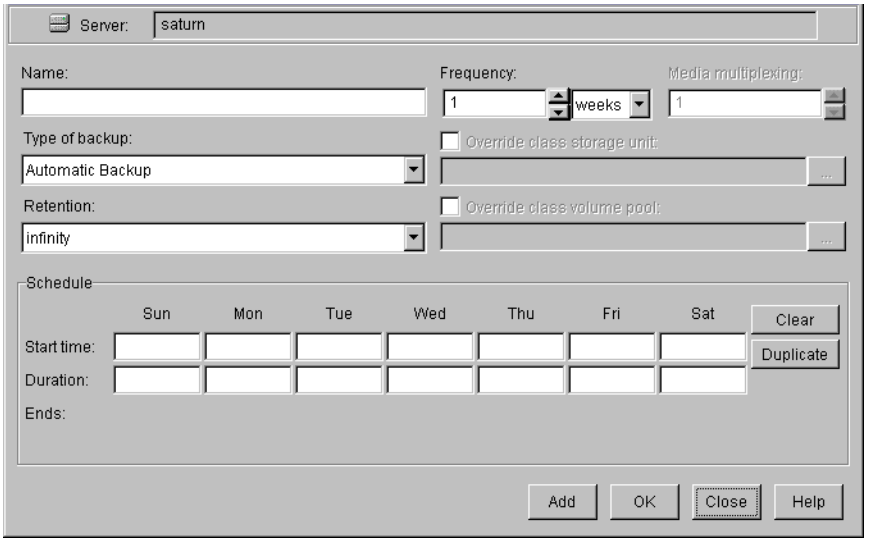
For example, assume that you:
- expect users to perform NetBackup operations during business hours, 0800 to 1300.
- configured automatic backups to start between 1800 and 2200.

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

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

d. Configure an *Automatic Backup*.

Double-click on Schedules in the All Master Servers pane of the Backup Policy Management (Classes) - NetBackup dialog box. The Add Schedule - Class *classname* property sheet appears.



Refer to the following table when configuring *Automatic Backup* schedules.

Name:

Each schedule requires a unique name.

Type of backup:

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

Retention:

The retention period for an *Automatic Backup* schedule controls how long NetBackup keeps records of when scheduled backups have occurred. Note that this is different than with a *Backup Policy* schedule.

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.

Frequency

Refers to the time period to wait between backups.

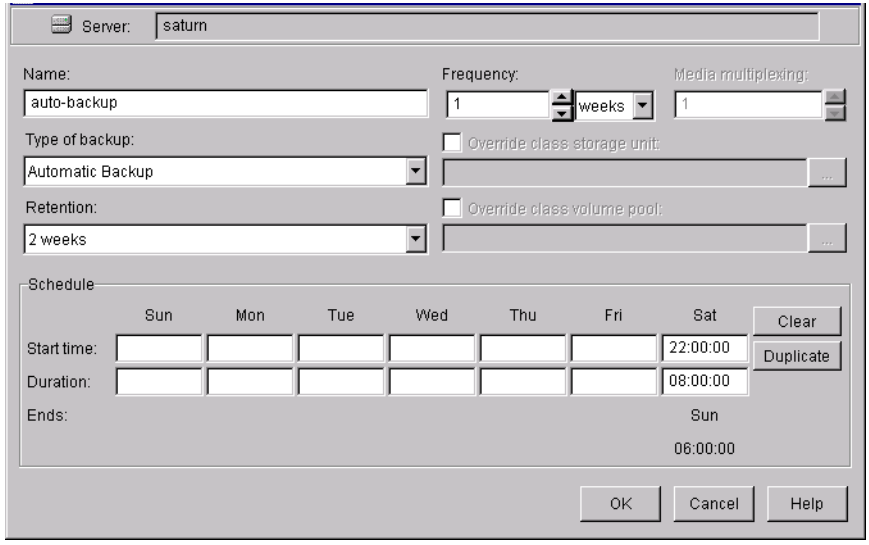
Start:

Specifies the day and time when the backup windows will open.

Duration:

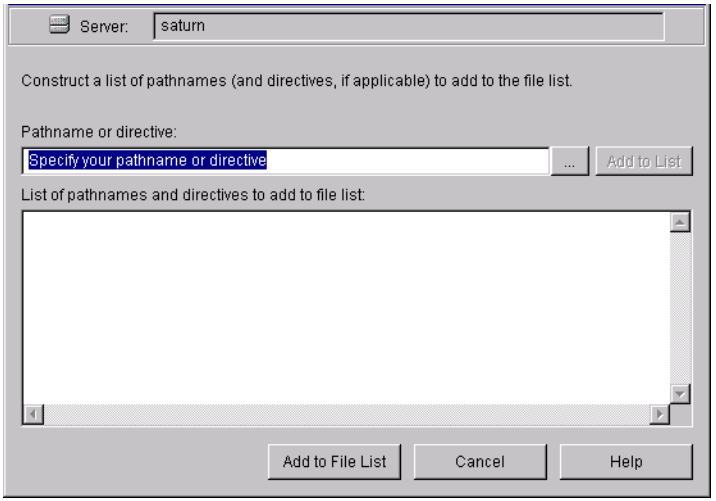
Specifies the period of time (backup window) during which the backup job can take place.

The following illustrates how an *Automatic Backup* schedule might be configured.



12. Refer to the following instructions to configure the list of Sybase scripts.

a. Double-click on Files in the All Master Servers pane of the Backup Policy Management (Classes) - NetBackup dialog box. The Add File Class appears.



The File list in a database class has a different meaning than for other classes. Normally, in a Standard class, you would list files and directories to be backed up. But since you are now configuring a database class, you will list Sybase scripts.

Refer to "Instructions for Modifying Backup Scripts" on page 54 for more details on scripts.

b. Type in the Sybase script. Specify the full pathname.

For example:

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

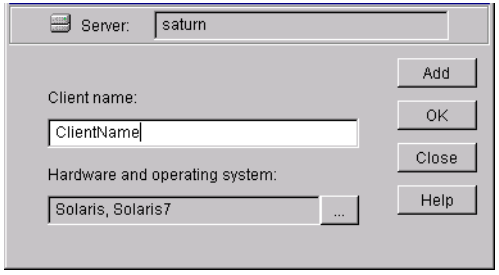
Note Be sure that the scripts listed here are installed on each client in the Client list.

c. Click Add.

Since all Sybase scripts specified in the file list execute during automatic backups, you must make sure that only one type of backup is executed on the same database. NetBackup will automatically start backups by running the Sybase scripts in the order that they appear in the file list.

13. Refer to the following instructions to configure the Client list.

a. Double-click on Clients in the All Master Servers pane of the Backup Policy Management (Classes) - NetBackup dialog box. The Add Client Class dialog box appears.



b. Type the name of the client. This client should have:

- the database installed
- NetBackup for Sybase installed
- the backup or restore Sybase script(s)

c. Click Add to add the client to the client list.

d. Click OK.

The Add Client Class dialog box will close. The NetBackup Administration dialog box will remain open.

`xbpadm` Interface

Use these procedures to configure a class on a UNIX NetBackup master server.

1. Log onto the server as root.
2. Start the NetBackup `xbpadm` administrator interface.
   - If the `DISPLAY` variable is set, type:

     `/usr/openv/netbackup/bin/goodies/xbpadm &`
   - If the `DISPLAY` variable is not set, use the `-d` option:

     `/usr/openv/netbackup/bin/goodies/xbpadm -d (`*your_machine_name*`):0 &`

   The NetBackup Administration dialog box will open.
3. Create a new class.
   a. On the Actions menu, select New, then Classes. The Creating a Class dialog box will open.
   b. In the Class Name box, type the new class name.

      When you configure the Sybase class on your NetBackup installation, you will use a unique class name. For this procedure, we are going to use the word ***`practice`*** as the class name.

Note This class name can be specified in the `bp.conf` file on the client. This class name should also be specified in the *$Sybase_HOME*`/bp.conf` file. Refer to "Configure the bp.conf Files" on page 60 for details.

   c. Under Select one of, select New Class. The Class Type list box will enable.
   d. Select the Sybase class from the list box.
   e. Click OK. The Changing Class dialog box will open.
4. Check the Class Attribute settings.

   Refer to the following table to configure class attributes.

   Class storage unit:
   : Select the storage unit for this class. A storage unit is a group of one or more storage devices configured to store information from a backup.

Class volume pool:
: Select the volume pool for this class. A volume pool is a group of volumes (removable media) configured for use by NetBackup only. These volumes are protected from being used by other applications.

Limit jobs per class:
: Type the maximum number of concurrent jobs for this class. If the Limit jobs per class checkbox is clear, the maximum number of backup and restore jobs that NetBackup will perform concurrently for this class can be up to a limit of 999. To specify a lower limit, select the checkbox and specify a value from 1 to 999 (the default is 99).

Job priority
: Select a value for the job priority NetBackup will assign to automatic backup jobs for this class. When a drive becomes available, NetBackup assigns it to the first client in the highest priority class.

Keyword phrase:
: For NetBackup for Sybase, the keyword phrase entry is ignored.

Active
: Select the checkbox to perform scheduled operations defined in this class. The class must be active for NetBackup to execute automatic backup schedules or allow user backups or archives.

5. Refer to the following instructions to configure the schedules for your class.

a. Click Schedules to change the display.

b. Click New to open the Creating a Schedule dialog box.

c. In the Name of Schedule box, type the new schedule name.

d. Click OK. The Creating a Schedule dialog box will open.

e. Configure a *Backup Policy* schedule.

All Sybase backup and restore operations are performed through NetBackup for Sybase using a *Backup Policy* schedule. This includes those backups started automatically.

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

Refer to the following table when configuring *Backup Policy* schedules.

Name:
: Each schedule requires a unique name.

Note This *Backup Policy* schedule name can be specified in the `bp.conf` file on the client. This *Backup Policy* schedule name should also be specified in the *$Sybase_HOME*`/bp.conf` file. Refer to "Configure the bp.conf Files" on page 60 for details.

Type of backup:

A *Backup Policy* schedule enables user-controlled NetBackup operations performed on the client.
At least one *Backup Policy* schedule must be configured in each Sybase class. The Default-Policy schedule is configured as a *Backup Policy* schedule.

Retention:

The retention period for a *Backup Policy* schedule refers to the length of time that NetBackup keeps backup images. Set the time period to retain at least two full backups of your database. In this way, if one full backup has been lost, you will have another full backup to fall back on. For example, if your database is backed up once every Sunday morning, you should select a retention period of at least 2 weeks.

Media Multiplexing

The media multiplexing box sets the number of jobs from this schedule that NetBackup can multiplex onto any one drive.

Start:

Specifies the day and time when the backup windows will open.

Duration:

Specifies the period of time (backup window) during which the backup job can take place.

The backup window for a *Backup Policy* schedule must encompass the time period during which all NetBackup jobs, scheduled and unscheduled, will occur. This is necessary because the *Backup Policy* 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 *Backup Policy* schedule must have a start time of 0800 and a duration of 14 hours.

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

f. Configure an *Automatic Backup*.

Refer to the following table when configuring *Automatic Backup* schedules.

Name:
: Each schedule requires a unique name.

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

Retention:
: The retention period for an *Automatic Backup* schedule controls how long NetBackup keeps records of when scheduled backups have occurred. Note that this is different than with a *Backup Policy* schedule.

  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.

Frequency
: Refers to the time period to wait between backups.

Start:
: Specifies the day and time when the backup windows will open.

Duration:
: Specifies the period of time (backup window) during which the backup job can take place.

6. Refer to the following instructions to configure the Files list for your class.

Perform this procedure if unattended schedule backups are going to be performed. Otherwise this step can be skipped.

a. Click Files.

The Files list in a database class has a different meaning than for other classes. Normally, in a Standard class, you would list files and directories to be backed up. But since you are now configuring a database class, you will list Sybase scripts.

Refer to "Create Scripts" later in this chapter for details on creating a script.

b. Specify the full path name for a Sybase script in the file list. For example:

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

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

7. Refer to the following instructions to configure the Clients list for your class.

a. Click Clients to change the display.

b. Click New to open the Adding Clients dialog box.

c. Select the hardware and operating system from the Hardware and Operating System: scroll box.

d. Type the name of the client. This client should have:

- the database installed
- NetBackup for Sybase installed
- the backup or restore Sybase script(s)

Note The Install NetBackup Client Software checkbox will install NetBackup client software on a remote client. There is no option to install NetBackup for Sybase software. Refer to the installation instructions in this guide to install NetBackup for Sybase.

e. Click OK.

8. Click OK.

The Changing Class dialog box will close. The NetBackup Administration dialog box will remain open.

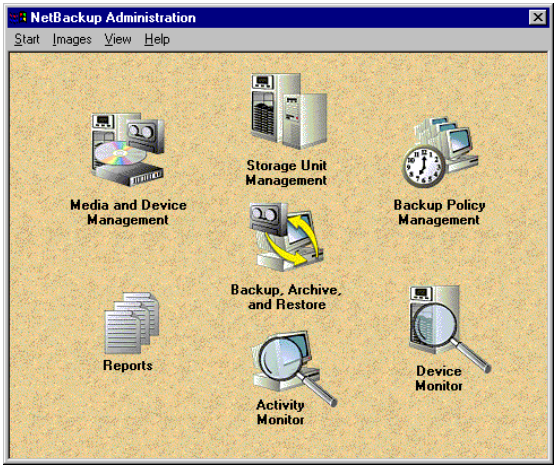
NetBackup Administrator for Windows NT/2000 Interface

Note If you are going to perform striped dumps or loads, also see "Striped Dumps and Loads" on page 66.

Use this procedure when configuring a class from a Windows NT/2000 server or from the NetBackup Administration Client host.

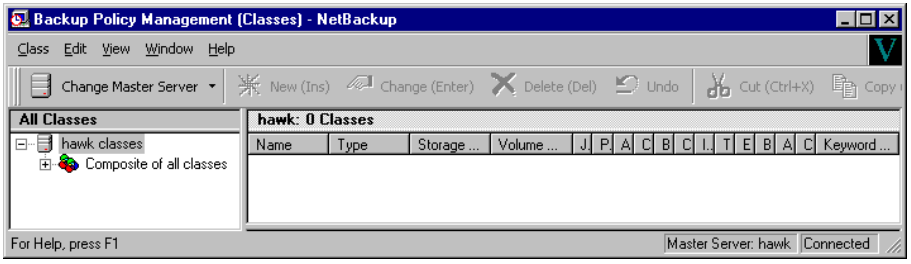
1. Log onto the server as Administrator.

2. From the Start menu, select Programs, VERITAS NetBackup, NetBackup Administration. The NetBackup Administration interface appears.



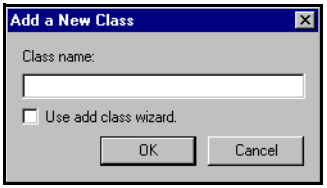
3. Click the Backup Policy Management icon.

   The Backup Policy Management (Classes) - NetBackup dialog appears.



4. Perform the following steps to add a new class.

a. On the Class menu click New. The Add a New Class dialog box appears.



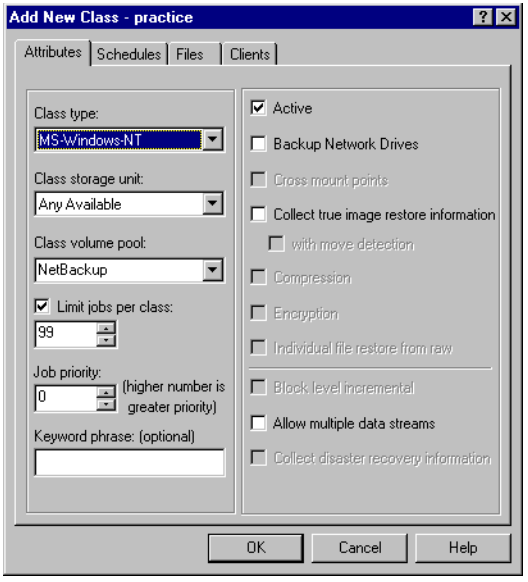
The class wizard automates the class configuration process. To configure classes without using the class wizard, use the following instructions.

b. Confirm that the Use add class wizard check box is not checked.

c. Type the new class name in the Class name box.

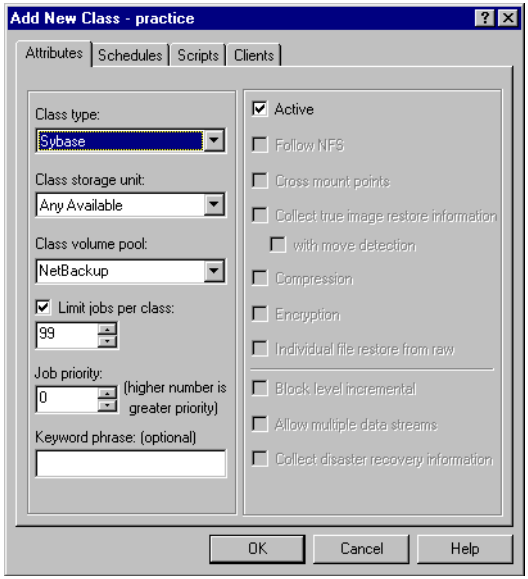
Note This class name can be specified in the `bp.conf` file on the client. This class name should also be specified in the *$Sybase_HOME*`/bp.conf` file. Refer to "Configure the bp.conf Files" on page 60 for details.

d. Click OK. The Add New Class dialog box appears. The class name you specified appears in the title bar.



5. Use the following instructions to configure the general attributes for the class.

a. Select the Sybase class type.



Refer to the following table to configure class attributes.

Class storage unit:
: Select the storage unit for this class. A storage unit is a group of one or more storage devices configured to store information from a backup.

Class volume pool:
: Select the volume pool for this class. A volume pool is a group of volumes (removable media) configured for use by NetBackup only. These volumes are protected from being used by other applications.

Limit jobs per class:
: Type the maximum number of concurrent jobs for this class. If the Limit jobs per class checkbox is clear, the maximum number of backup and restore jobs that NetBackup will perform concurrently for this class can be up to a limit of 999. To specify a lower limit, select the checkbox and specify a value from 1 to 999 (the default is 99).

Job priority
: Select a value for the job priority NetBackup will assign to automatic backup jobs for this class. When a drive becomes available, NetBackup assigns it to the first client in the highest priority class.

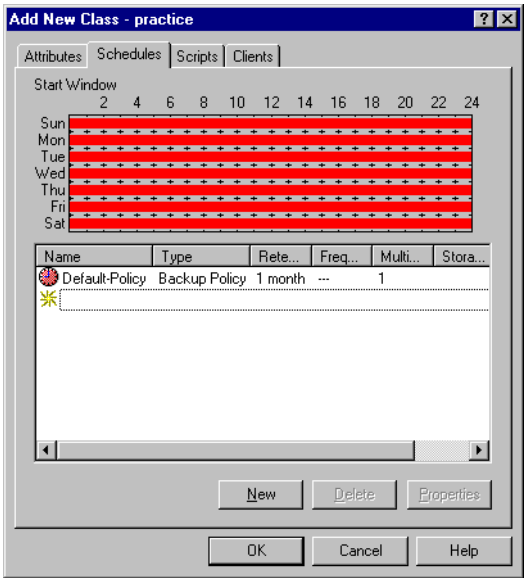
Keyword phrase:
: For NetBackup for Sybase, the keyword phrase entry is ignored.

Active

Select the checkbox to perform scheduled operations defined in this class. The class must be active for NetBackup to execute automatic backup schedules or allow user backups or archives.

6. Use the following instructions to configure the class schedules.

a. Click Schedules tab. The Schedules property sheet appears.



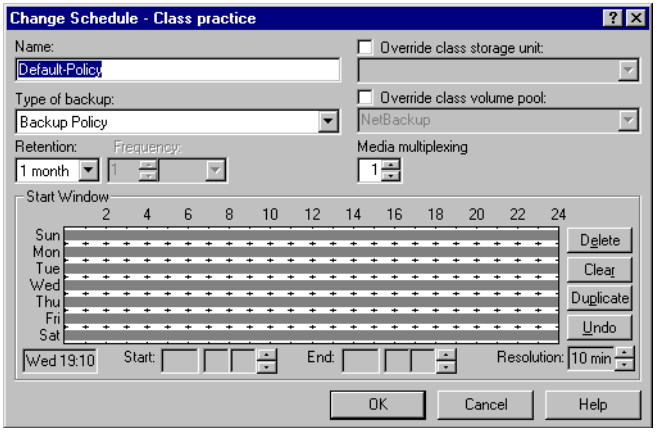
b. Configure a *Backup Policy* schedule.

All Sybase database operations are performed through NetBackup for Sybase using a *Backup Policy* schedule. This includes those backups started automatically.

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

c. Double-click on Backup Schedule in the Add New Class dialog box.

The Change Schedules dialog box appears.



Refer to the following table when configuring *Backup Policy* schedules.

Name:

Each schedule requires a unique name.

Note This *Backup Policy* schedule name can be specified in the `bp.conf` file on the client. This *Backup Policy* schedule name should also be specified in the *$Sybase_HOME*`/bp.conf` file. Refer to "Configure the bp.conf Files" on page 60 for details.

Type of backup:

A *Backup Policy* schedule enables user controlled NetBackup operations performed on the client.

At least one *Backup Policy* schedule must be configured in each Sybase class. The Default-Policy schedule is configured as a *Backup Policy* schedule.

Retention:

The retention period refers to the length of time that NetBackup keeps backup images. Set the time period to retain at lease two full backups of your database. In this way, if one full backup has been lost, you will have another full backup to fall back on.

For example, if your database is backed up once every Sunday morning, you should select a retention period of at least "2 weeks."

Media Multiplexing

The media multiplexing box sets the number of jobs from this schedule that NetBackup can multiplex onto any one drive.

Start:

Specifies the day and time when the backup windows will open.

End:

Specifies the day and time when the backup windows will close.

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

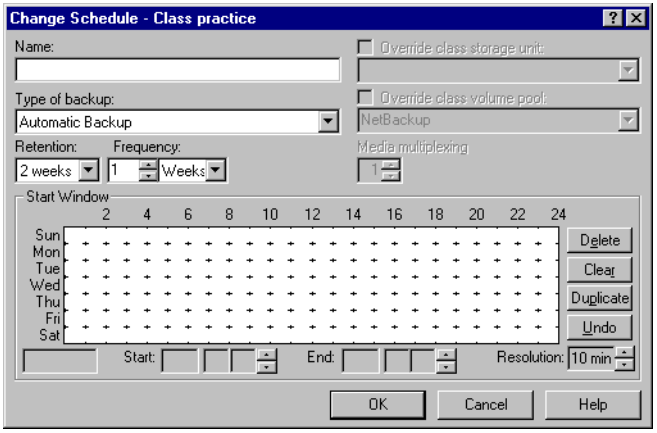
For example, assume that you:
- expect users to perform NetBackup operations during business hours, 0800 to 1300.
- configured automatic backups to start between 1800 and 2200.

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

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

d. Click New to configure an *Automatic Backup* schedule.

The following appears.



Refer to the following table when configuring *Automatic Backup* schedules.

Name:
: Each schedule requires a unique name.

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

Retention:
: The retention period for an *Automatic Backup* schedule controls how long NetBackup keeps records of when scheduled backups have occurred. Note that this is different than with a ***Backup Policy*** schedule.

  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.

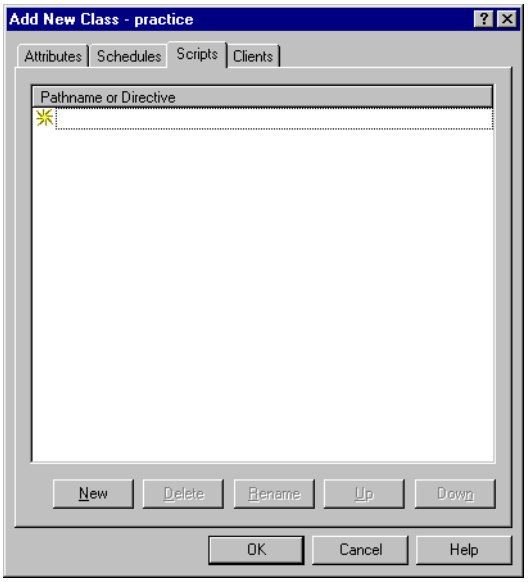
Frequency
: Refers to the time period to wait between backups.

Start:
: Specifies the day and time when the backup windows will open.

End:
: Specifies the day and time when the backup windows will close.

7. Refer to the following instructions to configure the list of scripts.

a. Click Scripts tab. The Scripts property sheet appears.



The File list in a database class has a different meaning than for other classes. Normally, in a Standard class, you would list files and directories to be backed up. But since you are now configuring a database class, you will list Sybase scripts.

Refer to "Instructions for Modifying Backup Scripts" on page 54 for more details on scripts.

b. Click New.

c. Type the Sybase script. Specify the full pathname for the Sybase script in the file list.

For example:

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

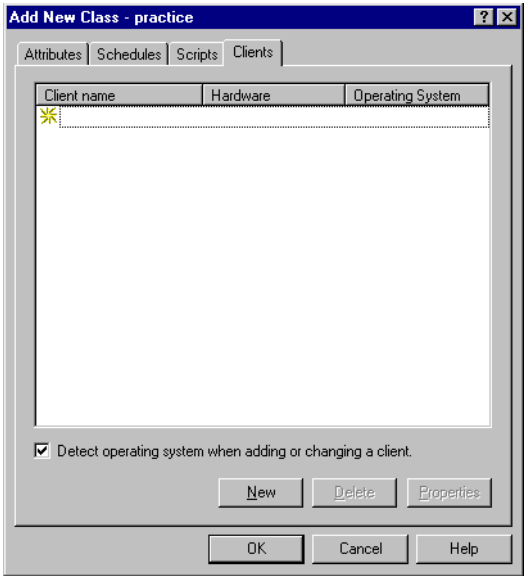
Note Be sure that the scripts listed here are installed on each client in the Client list.

d. Click Enter.

Since all Sybase scripts specified in the file list execute during automatic backups, you must make sure that only one type of backup is executed on the same database. NetBackup will automatically start backups by running the Sybase scripts in the order that they appear in the file list.

8. Refer to the following instructions to configure the Client list.

   a. Click Clients tab. The Clients property sheet appears.



   b. Click New.

   c. Type the name of the client that has:

      - the database installed
      - NetBackup for Sybase installed
      - the backup or restore Sybase script

   d. Click OK.

      The Client Hardware and Operating System dialog box appears.

   e. Select the hardware and operating system for the client.

   f. Click OK.

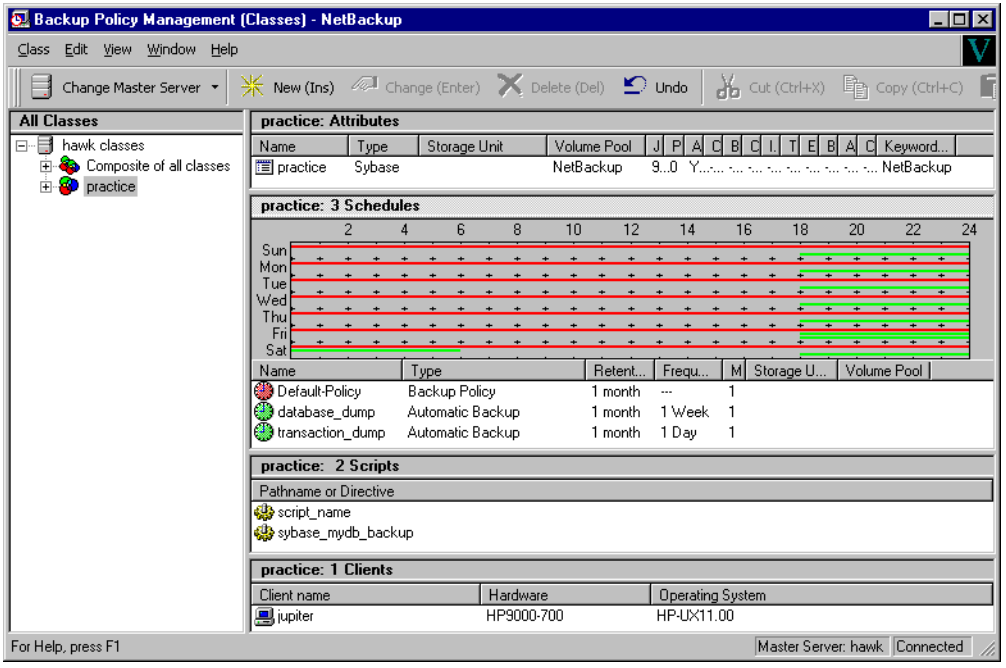
      The Client Hardware and Operating System dialog box closes.

9. Click OK.

   The Changing Class dialog box will close. The Backup Policy Management (Classes) - NetBackup dialog box remains open.

Also notice that the configuration settings you entered are displayed in the class pane. Use the scroll bar at the bottom of the pane to view all settings.

Example Sybase Class on a NetBackup for Windows NT/2000 Server



In this class, we set the class type to Sybase and use a separate volume pool named NetBackup. NetBackup will use the 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 script for the database and transaction log dumps. We created this script previously and named it:

```
/usr/openv/netbackup/ext/db_ext/sybase/scripts/sybase_mydb_backup
```

The three schedules for this class are named:

- database_dump
- transaction_dump
- Default-Policy

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

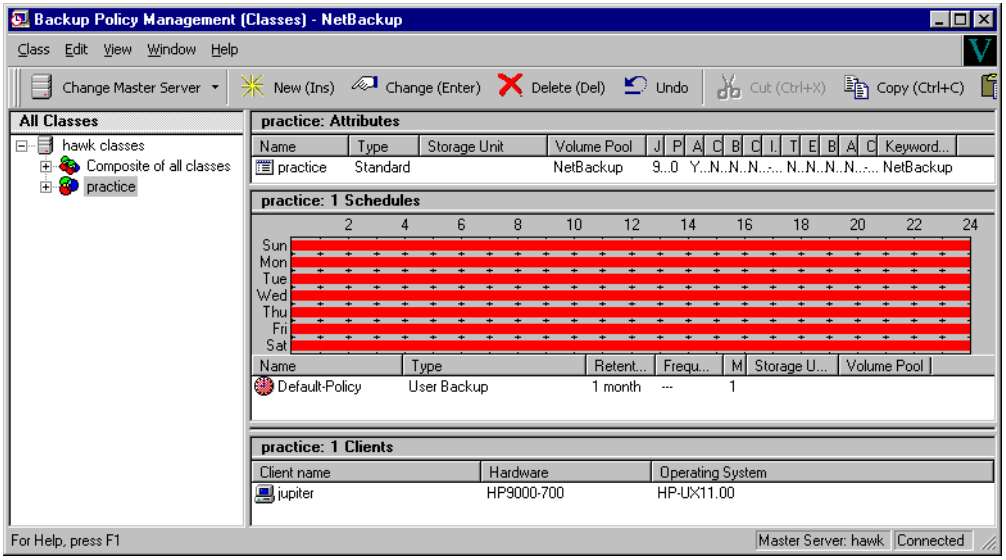
Executes every night between 6 pm (18:00) and 12 am (12:00). When the `sybase_mydb_backup` script detects this schedule name, it starts a backup of the transaction logs by performing a transaction log dump.

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

The *Backup Policy* schedule named Default-Policy was created when NetBackup Sybase class 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.

Standard Class

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



The above schedule permits a user directed backup at any time.

Create Scripts

Sybase SQL scripts cause SQL Server to send the directives to Sybase 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 were included with the NetBackup for Sybase installation:

```
sybase_mydb_backup
sybase_mydb_dump_db
sybase_mydb_dump_tran
sybase_mydb_load
sybase_mydb_restore
```

These scripts were installed in the following directory:

```
/usr/openv/netbackup/ext/db_ext/sybase/scripts
```

Be sure to modify these scripts for your environment.

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

Caution Always specify the correct script when configuring automatic backups or when starting operations through NetBackup. NetBackup for Sybase will 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

1. If necessary, copy the example scripts to a different directory on your client. Sybase 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.

```
#!/bin/sh
# sybase_mydb_backup $Revision: 1.3 $
#bcpyrght
#***************************************************************************
#* Copyright 1993 - 1999 VERITAS Software Corporation, All Rights Reserved *
#***************************************************************************
#ecpyrght

# Replace /usr/sybase11 below with your actual Sybase home directory
SYBASE=/usr/sybase11

# Replace SYBASE11 below with your actual name of the SQL Server
SYBSERVER=SYBASE11

# Replace syb_files below with your actual name of the NetBackup
# server class to be used to backup the directory with Sybase files
SYB_FILES_CLASS=syb_files

# Replace /usr/sybase11/test below with your actual path of the Sybase files
SYB_FILES_DIR=/usr/sybase11/test

# Replace /usr/openv/netbackup/ext/db_ext/sybase/scripts/sybase_mydb_dump_db
# and /usr/openv/netbackup/ext/db_ext/sybase/scripts/sybase_mydb_dump_tran
# below with your actual SQL script paths which contain corresponding DUMP
# commands
DUMPDB=/usr/openv/netbackup/ext/db_ext/sybase/scripts/sybase_mydb_dump_db
DUMPTRAN=/usr/openv/netbackup/ext/db_ext/sybase/scripts/sybase_mydb_dump_tran

echo "Started `date`"
```

```
# These environment variables are set by NetBackup
echo "SYBACKUP_SERVER = $SYBACKUP_SERVER"
echo "SYBACKUP_CLASS = $SYBACKUP_CLASS"
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 schedule name
if [ "${SYBACKUP_SCHED}" = "database_dump" ]
then

#     NetBackup has started a "database_dump" backup

      echo "$SYBASE/bin/isql -Usa -Pmanager -I$SYBASE/interfaces -S$SYBSERVER
$DUMPDB"

      $SYBASE/bin/isql -Usa -Pmanager -I$SYBASE/interfaces -S$SYBSERVER <
$DUMPDB
      RETURN_STATUS=$?

#     Initiate a backup of the Sybase files

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

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

else

#      NetBackup has started a "transaction_dump" backup

     echo "$SYBASE/bin/isql -Usa -Pmanager -I$SYBASE/interfaces -S$SYBSERVER <
$DUMPTRAN"

      $SYBASE/bin/isql -Usa -Pmanager -I$SYBASE/interfaces -S$SYBSERVER
$DUMPTRAN
      RETURN_STATUS=$?


fi
```


```
echo "Finished `date`"

echo "exit $RETURN_STATUS"
echo ""

exit $RETURN_STATUS
```

b. Follow the instructions in the `sybase_mydb_backup` script.

When you customize this script for your 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 you set up the NetBackup configuration in "Add Classes to NetBackup" on page 20.

c. Modify the `sybase_mydb_dump_db` script.

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

Replace `mydb` with the name of the database.

d. Modify the `sybase_mydb_dump_tran` script.

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

Replace `mydb` with the name of the database.

You can specify the NetBackup server, Sybase class, and schedule on the device string of the `DUMP` command by using the options shown in the following example:

```
1> dump database mydb to "sybackup::-SERV server -CLASS class -SCHED schedule"
2> go
```

Where:

- *server* is the name of your NetBackup server
- *class* is the name of your Sybase class
- *schedule* is the name of your *Backup Policy* schedule

These options will override any servers, Sybase classes, or schedules that are specified in the `bp.conf` files. You can specify these `DUMP` options in any order.

For example, the following `dump` commands will back up two different databases, db1 and db2, by using two different Sybase class configurations:

```
dump database db1 to "sybackup::-CLASS db1-class"
go
dump database db2 to "sybackup::-CLASS db2-class"
go
```

Note Test the scripts you just created. Refer to "Test NetBackup for Sybase Configuration Settings" on page 61.

Instructions for Modifying Restore Scripts

1. 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_restore`

   The following appears.

```
#!/bin/sh
# sybase_mydb_restore $Revision: 1.3 $
#bcpyrght
#***************************************************************************
#* Copyright 1993 - 1999 VERITAS Software Corporation, All Rights Reserved *
#***************************************************************************
#ecpyrght

# Replace /usr/sybase11 below with your actual Sybase home directory
export SYBASE=/db2/syb11_9

# Replace SYBASE11 below with your actual name of the SQL Server
SYBSERVER=SYB11_5

# 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`"

RETURN_STATUS=0

# NetBackup has started a restore

echo "$SYBASE/bin/isql -Usa -P -I$SYBASE/interfaces -S$SYBSERVER < $LOADDB"
$SYBASE/bin/isql -Usa -P -I$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.

c. Modify the `sybase_mydb_load` script.

```
load database mydb from "sybackup::SYB11_5.mydb.D.0.27086.25-03-1999.11:01:21"
go
#load transaction mydb from
"sybackup::SYBASE11.mydb.T.0.44532.21-12-1996.22:01:00"
#go
#load transaction mydb from
"sybackup::SYBASE11.mydb.T.0.14142.22-12-1996.20:45:00"
#go
online database mydb
go
```

d. Replace `mydb` with the name of the database.

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::SYB11.mydb.D.0.24312.17-12-1999.14:05:25
-SERV saturn"
go
online database mydb
go
```

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

Note Test the scripts you just modified. Refer to "Test NetBackup for Sybase Configuration Settings" on page 61.

Environment Variables

When a schedule executes, 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_CLASS

Name of the NetBackup class.

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 (*Backup Policy* backup).

Note The SYBACKUP_CLASS 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).

Configure the bp.conf Files

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

1. *$SYBASE_HOME*/bp.conf
2. /usr/openv/netbackup/bp.conf

If NetBackup fails to find CLASS and SCHEDULE definitions, NetBackup for Sybase will default to first CLASS and SCHEDULE with the appropriate class type.

Create a *$SYBASE_HOME*/bp.conf File On the Client

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

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

   /sybase/bp.conf

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

   BPBACKUP_CLASS=*class_name*
   BPBACKUP_SCHED=*schedule_name*

   Where:

   class_name is the name of the Sybase class you want to use.

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

Note NetBackup uses the *$SYBASE_HOME*/bp.conf file only for Sybase classes.

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

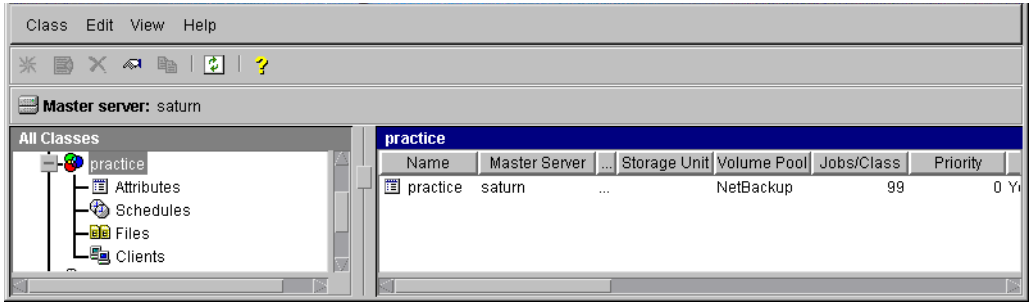
Test NetBackup for Sybase Configuration Settings

After you have configured the master server for NetBackup for Sybase, you should test the configuration settings. For a description of status codes, refer to the *NetBackup Troubleshooting Guide - Windows NT/2000* if you are using a Windows NT/2000 server or the *NetBackup Troubleshooting Guide - UNIX* if you are using a UNIX server.

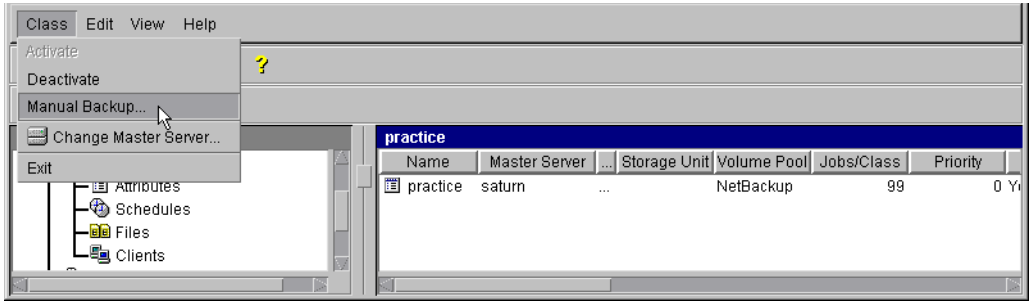
NetBackup Administration Java Interface

Use this procedure to test a class configuration on the NetBackup Administration - Java Interface for HP or Solaris operating systems.

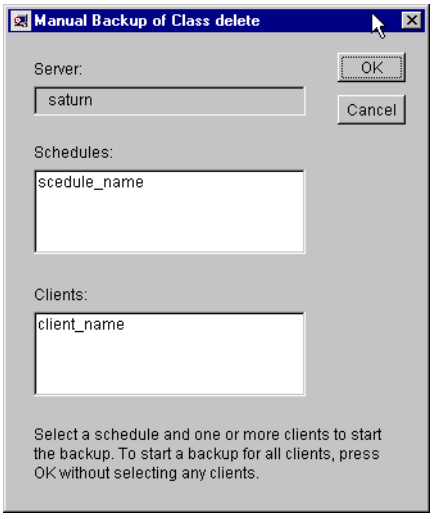
1. Log onto the server as root.
2. Start the NetBackup administrator interface.
3. Click the Backup Policy Management icon. The Backup Policy Management (Classes) - NetBackup dialog appears.
4. Select a class to back up.



5. On the Class menu, click Manual Backup.



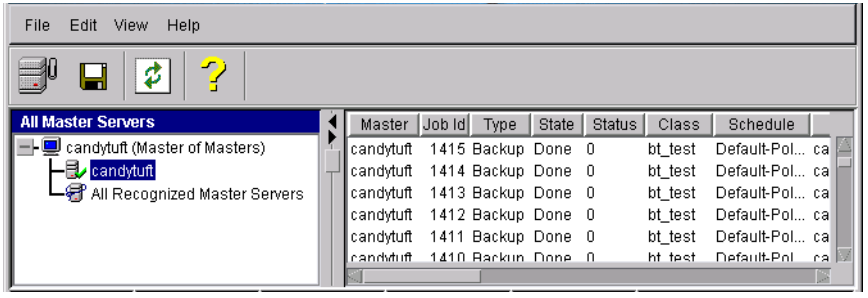
The Manual Backup dialog box appears.



The Schedule pane contains the name of a schedule configured for the class you are going to test. The Client pane contains the name of the client(s) listed in the class you are going to test.

6. Follow the instructions on the dialog box.

7. Click Activity Monitor on the NetBackup Administration interface to open the Activity Monitor dialog box.



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

`xbpadm` Interface

Use this procedure to test a class configuration on a UNIX NetBackup master server.

1. Log onto the server as root.
2. Start the NetBackup `xbpadm` administrator interface.
   - If the `DISPLAY` variable is set, type:

     `/usr/openv/netbackup/bin/goodies/xbpadm &`
   - If the `DISPLAY` variable is not set, use the `-d` option:

`/usr/openv/netbackup/bin/goodies/xbpadm -d (`*your_machine_name*`):0 &`

   The NetBackup Administration dialog box will open.
3. Under Classes, select the Sybase class you configured.
4. Under Actions, select Manual Backup. The Manual Backup dialog box will appear.
   a. Select a schedule in the Schedules pane.
   b. Select a client in the Clients pane.
   c. Click OK. The Manual Backup dialog box will close.
5. Under File, select Job Monitor. The Job Monitor dialog box will appear. A status code will display in the Status column.

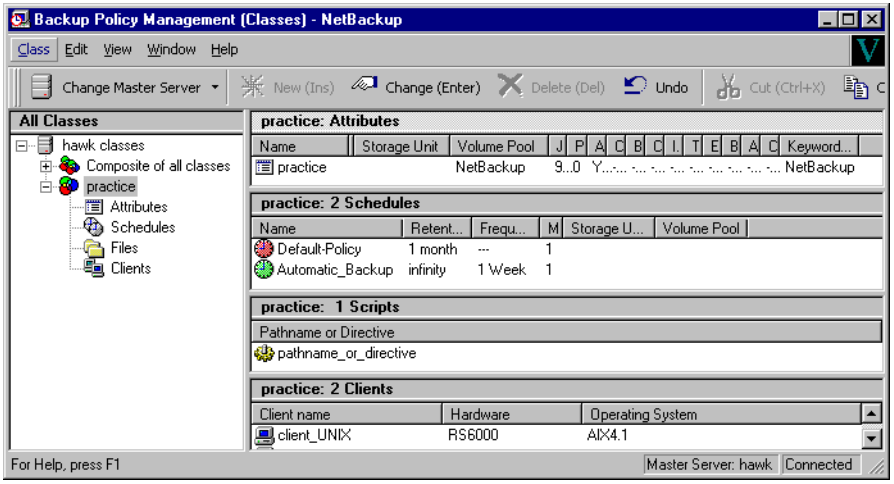
Note The jobs listed in the Job Monitor dialog box include one job for the overall database backup and multiple default-policy jobs which depended on the need of drives have been specified.

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

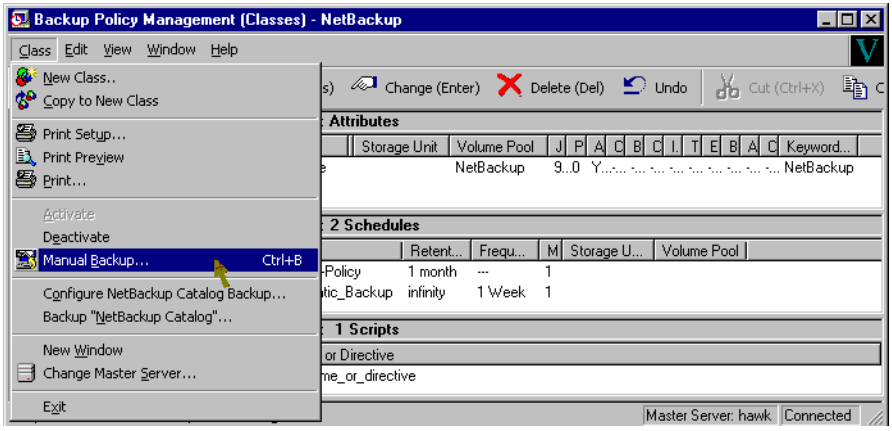
NetBackup Administration Windows NT/2000 Interface

Use this procedure to test a class configuration from a Windows NT/2000 server or from the NetBackup Administration Client host.

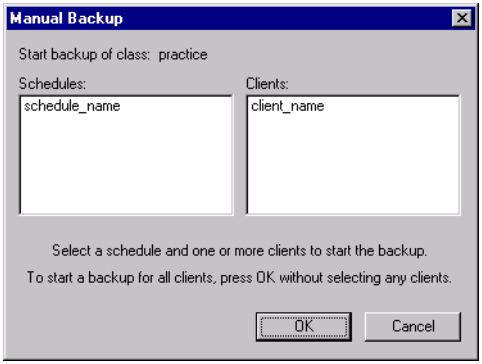
1. Log onto the server as Administrator.
2. Start the NetBackup administrator interface.
3. Click the Backup Policy Management icon. The Backup Policy Management (Classes) - NetBackup dialog appears.
4. Select a class to back up.



5. On the Class menu, click Manual Backup.



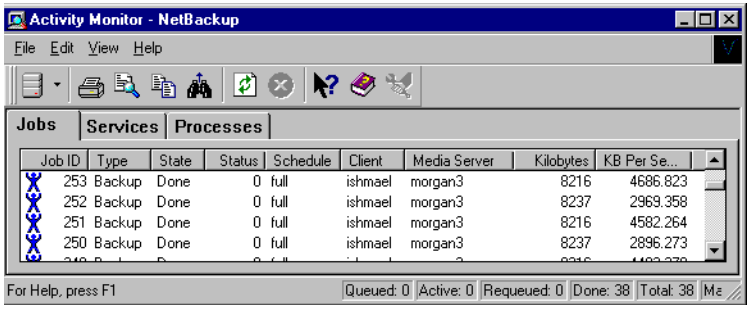
The Manual Backup dialog box appears.



The Schedule pane contains the name of a schedule configured for the class you are going to test. The Client pane contains the name of the client(s) listed in the class you are going to test.

6. Follow the instructions on the dialog box.

7. Click Activity Monitor on the NetBackup Administration interface to open the Activity Monitor dialog box.



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

Striped Dumps and Loads

NetBackup for Sybase supports the Sybase 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 is not fully supported when Sybase striping and NetBackup multiplex (MPX) is used for a Sybase backup. The problem occurs when multiple Sybase stripes are multiplexed to a single tape and then the tape is duplicated. The duplicated tape cannot be used to perform a Sybase restore.

If multiplexing striped Sybase database backups, you may require a special configuration to restore them. By default, when restoring from multiplexed backups, Media Manager 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 Media Manager as follows.

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

   ```
   /usr/openv/netbackup/db/config/NUMBER_DATA_BUFFERS_RESTORE
   ```

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

Example Sybase SQL script for a Striped Dump

```
/usr/openv/netbackup/ext/db_ext/sybase/scripts/mydb.dumpD.Stripes:
dump databse mydb to "sybackup::"
stripe on "sybackup::"
stripe on "sybackup::"
go
```

Example Sybase SQL script for a Striped Load

```
/usr/openv/netbackup/ext/db_ext/sybase/mydb.loadD.Srtipes:
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
```

Using NetBackup for Sybase 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

This chapter contains the following sections:

- Performing a Backup
- Browsing Backups
- Performing a Restore

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

Performing a Backup

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

- A full backup is a copy of the entire database, including both the data and transaction log. This is accomplished by performing a database dump.
- An incremental backup is 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 “Standard Class” on page 52.
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. For example, 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 Class

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 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 scripts will start the database backup.

Manual Backup of a Sybase Class

The administrator on the master server can use the NetBackup server software to manually execute an Automatic Backup schedule for the Sybase class. See the *NetBackup System Administrator's Guide - UNIX* or the *NetBackup System Adminstrator's Guide - Windows NT/2000* for detailed instructions.

Refer to "Test NetBackup for Sybase Configuration Settings" on page 61 for instructions on initiating a backup of a Sybase class.

User-Directed Backup

Using `xbp` to Perform a Backup

The following describes how to use `xbp` to backup your database. Refer to the *NetBackup User's Guide - UNIX* for detailed instructions on using `xbp` to backup the database.

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 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 scripts. For example:

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

4. From the File menu, click Browse File System for Backup Scripts. The xbp dialog box appears.

5. Select the backup script from the Files pane.

6. On the Backup menu, click Backup Database Using Selected Scripts. The xbp_confirm dialog box appears.

7. Click OK.

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

8. View the status of the script execution.

   a. On the Backup menu, click Report Progress Of Backup.... The xbp_progress dialog box will appear.

   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.

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

Using `isql` to Perform a Backup

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

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

The time required to dump a database is proportional to the used pages in the database.

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

Browsing Backups

Using xbp to Browse

The following describes how to use xbp to browse your database backups. Refer to the *NetBackup User's Guide - UNIX* 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, change the su command to the Sybase administrator.

2. Execute xbp on the client.

   install_path/netbackup/bin/xbp

   The xbp dialog box appears.

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

   The xbp_config dialog box appears.

   a. In the Class type of image to browse, specify the Sybase class.

   b. Click OK to close the dialog box.

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

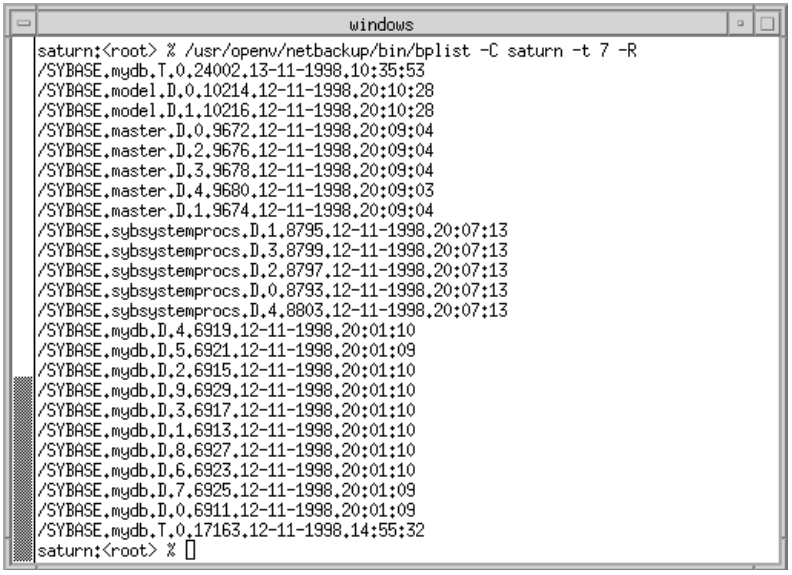
   d. Set the Range of Dates to include the date of your backup.

   e. Enter 9 in the Directory Depth Box.

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

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 named saturn:



The `-t 7` on this command specifies the Sybase backups (dumps). 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 will load 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 its consistency.

Using `xbp` to Restore

Before using `xbp` to perform a restore, 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 72.

The following describes how to use `xbp` to restore your database. Refer to the *NetBackup User's Guide - UNIX* for detailed instructions on using `xbp` to restore database backups.

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`

Note You cannot restore a database to a remote machine.

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

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

4. From the File menu, click Browse File System for Restore Scripts. The xbp dialog box appears.

5. Select the restore script from the Files pane.

6. On the Restore menu, click Restore Database Using Selected Scripts. The xbp_confirm dialog box appears.

7. Click OK.

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

8. View the status of the script execution.

   a. On the Restore menu, click Report Progress Of Restore.... The xbp_progress dialog box will appear.

   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

The steps that you must perform to recover a Sybase 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.

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 `LOAD` command to SQL Server. See the *SYBASE SQL Server System Administration Guide* for details on using the `LOAD` command. The LOAD command must include the appropriate dump-file name.

For example:

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

Alternate Client 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 alternate client restore (see the *NetBackup System Adminstrator's Guide - Windows NT/2000* or the *NetBackup System Administrator's Guide - UNIX*).

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

   - Specify client name on the `LOAD` command with the `-CLIENT` 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
-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
     ```


3. Determine the name of the database on the source client (the client from which the database was backed up).

4. Check that the name of the database on the destination client (the client receiving the database restore) is the same as the name of the database on the source client.

   For a successful alternate client restore, the destination client must have a database with the same name as the database backed up from the source client. Refer to the *Sybase SQL Server Reference Manual* for information on creating a database.

Troubleshooting 5

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

NetBackup Logs

The NetBackup server and client software allow you to set up detailed activity logs for troubleshooting problems that occur outside of either NetBackup for Sybase or the Sybase Backup Server. See the *NetBackup Troubleshooting Guide - UNIX* or the *NetBackup Troubleshooting Guide - Windows NT/2000* for a complete description of activity 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. Your best sources for Sybase error information are the logs provided by the Sybase.

Enable the NetBackup for Sybase logs by performing the following steps.

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

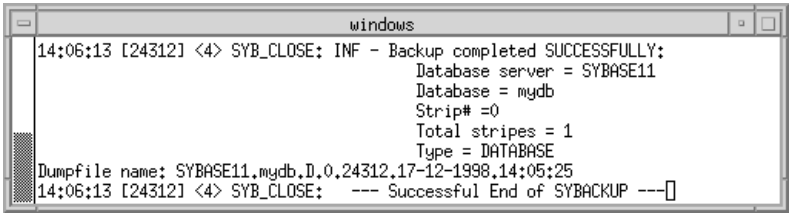
2. Set the access permissions to 777 on these log directories.

   % chmod 777 bphdb
   % chmod 777 sybackup

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

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

The following is an example activity log:



NetBackup for Sybase 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 script output in this file.

`sybase_stderr.`*mmddyy*

Unless redirected elsewhere, NetBackup places Sybase 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 uses this client process for Sybase 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 processes linked to the library provided with NetBackup for Sybase.

Note The scripts must be local to each machine in the client list.

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 a description of this and other reports.

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 routes Sybase Backup Server progress messages to the following file:

```
/usr/openv/netbackup/logs/bphdb/sybase_stdout.mmddyy
```

If the `/usr/openv/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).
```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