

# **VERITAS NetBackup™ 4.5 for Sybase**

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## **System Administrator's Guide**

**Windows NT/2000**

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**VERITAS**

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# Preface

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This guide describes how to install, configure and use VERITAS NetBackup for Sybase on Windows on a Windows NT/2000 platform. In this guide, VERITAS NetBackup for Sybase on Windows is referred to as NetBackup for Sybase on Windows.

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

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

or

- ◆ *NetBackup System Administrator's Guide for Windows* if you have a Windows server.

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

## Accessibility

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

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

For more information, see the NetBackup system administrator's guide.



## Organization

This guide is organized as follows:

- ◆ The Introduction is an overview of the product's capabilities.
- ◆ The Installation chapter explains how to install NetBackup for Sybase on Windows on your system.
- ◆ Configuration explains how to configure your system to use NetBackup for Sybase on Windows. This information supplements the NetBackup for Sybase on Windows manuals.
- ◆ Chapter 4, "Using NetBackup for Sybase on Windows," 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 for UNIX*  
Explains how to configure and manage NetBackup on a UNIX system.
- ◆ *NetBackup Media Manager System Administrator's Guide for UNIX*  
Explains how to configure and manage the storage devices and media on UNIX NetBackup servers. Media Manager is part of NetBackup.
- ◆ *NetBackup Troubleshooting Guide - UNIX*  
Provides troubleshooting information for UNIX-based NetBackup products. You can also refer to [www.support.veritas.com](http://www.support.veritas.com), access the Knowledge Base Search option, and search for TechNotes.

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

- ◆ *NetBackup System Administrator's Guide for Windows*  
Explains how to configure and manage NetBackup on a Windows server system.
- ◆ *NetBackup Media Manager System Administrator's Guide for Windows*  
Explains how to configure and manage the storage devices and media on Windows NetBackup servers. Media Manager is part of NetBackup.



- ◆ *NetBackup Troubleshooting Guide for Windows*

Provides troubleshooting information for Windows-based NetBackup products. You can also refer to [www.support.veritas.com](http://www.support.veritas.com), access the Knowledge Base Search option, and search for TechNotes.

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

- ◆ *SYBASE SQL Server Installation and Configuration Guide*
- ◆ *SYBASE SQL Server System Administration Guide.*
- ◆ *SYBASE SQL Server Utility Programs for Windows 95, Windows 98, and Windows NT*
- ◆ *SQL Server Configuration Guide*

## Conventions

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

### Type Style

#### Typographic Conventions

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

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## Notes and Cautions

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**Note** This is a Note. Notes are used to call attention to information that makes using the product easier or helps in avoiding problems.

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**Caution** This is a Caution. Cautions are used to warn about situations that could cause data loss.

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## Key Combinations

Some keyboard command sequences use two or more keys at the same time. For example, holding down the **Ctrl** key while pressing another key. Keyboard command sequences are indicated by connecting the keys with a plus sign. 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.



## Terms

The terms listed in the table below are used in the VERITAS NetBackup documentation to increase readability while maintaining technical accuracy.

---

| <b>Term</b>                | <b>Definition</b>  |
|----------------------------|--|
| Microsoft Windows, Windows | <p>Terms used as nouns to describe a line of operating systems developed by Microsoft, Inc.</p> <p>A term used as an adjective to describe a specific product or noun. Some examples are: Windows 95, Windows 98, Windows NT, Windows 2000, Windows servers, Windows clients, Windows platforms, Windows hosts, and Windows GUI.</p> <p>Where a specific Windows product is identified, then only that particular product is valid with regards to the instance in which it is being used.</p> <p>For more information on the Windows operating systems that NetBackup supports, refer to the VERITAS support web site at <a href="http://www.support.veritas.com">http://www.support.veritas.com</a>.</p> |
| Windows servers            | <p>A term that defines the Windows server platforms that NetBackup supports; those platforms are: Windows NT and Windows 2000.</p>   |
| Windows clients            | <p>A term that defines the Windows client platforms that NetBackup supports; those platforms are: Windows 95, 98, ME, NT, 2000, XP (for 32- and 64-bit versions), and LE.</p>  |

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## 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.support.veritas.com/>

VERITAS Customer Support has an extensive technical support structure that enables you to contact technical support teams that are trained to answer questions to specific products. You can contact Customer Support by sending an e-mail to [support@veritas.com](mailto:support@veritas.com), or by finding a product-specific phone number from the VERITAS support web site. The following steps describe how to locate the proper phone number.



1. Open <http://www.support.veritas.com/> in your web browser.
2. Click **Contact Support**. The *Contacting Support Product List* page appears.
3. Select a product line and then a product from the lists that appear. The page will refresh with a list of technical support phone numbers that are specific to the product you just selected.





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

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

- ◆ Features of NetBackup for Sybase on Windows
- ◆ Terminology for NetBackup for Sybase on Windows
- ◆ Technical Overview of NetBackup for Sybase on Windows



## Features of NetBackup for Sybase on Windows

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

| Feature  | Description   |
|--|---|
| Media and device management  | All devices supported by Media Manager are available to NetBackup for Sybase on Windows.  |
| Scheduling facilities  | NetBackup scheduling facilities on the master server can be used to schedule automatic and unattended Sybase backups.<br><br>This also lets you choose the times when these operations can occur. For example, to prevent interference with normal daytime operations, you can schedule your database backups to occur only at night.   |
| Multiplexed backups and restores   | NetBackup for Sybase on Windows 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.<br><br>A Sybase administrator can execute database backup and restore operations through NetBackup or use Sybase ASE Backup Server as if NetBackup were not present.<br><br>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              | <p>NetBackup provides the following graphical user interfaces for client users and administrators:</p> <ul style="list-style-type: none"><li>◆ Backup, Archive, and Restore user interface</li><li>◆ Client user interface on Windows 95/98/2000 and NT clients</li><li>◆ NetBackup Administration Console for Java</li><li>◆ NetBackup Administration Console for Windows</li></ul> <p>A database administrator or NetBackup administrator can start backup operations for Sybase from the NetBackup graphical user interface on the master server.</p> |
| Parallel backup and restore operations | <p>NetBackup for Sybase on Windows supports the parallel backup and restore capabilities of the Sybase ASE Backup Server. This permits the user to run more than one tape device at a time for a single Sybase ASE backup or restore, thereby reducing the time necessary to complete the operation.</p>   |

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## Terminology for NetBackup for Sybase on Windows

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

### NetBackup Terms

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

|   |  |
|---|--|
| <i>NetBackup</i>                          | NetBackup backs up and restores files, directories, raw partitions, and databases on client systems that have Sybase databases.  |
| <i>NetBackup policy</i>                   | NetBackup policies define criteria for backups and restores. These criteria include storage unit and media to use, backup schedules, clients, files to back up, or backup templates or scripts to execute. |
| <i>NetBackup schedule</i>                 | 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).           |
| <i>Administrator directed backups</i>     | NetBackup administrators are able to perform remote backups of all files, directories, databases, and raw partitions contained on client systems within a client/server network via NetBackup interfaces.  |
| <i>User-directed backups and restores</i> | NetBackup users are able to perform backups of all files, directories, databases, and raw partitions contained on client systems within a client system.   |
| <i>Graphical interfaces</i>               | Graphical user interfaces are available for both users and administrators.   |
| <i>Media Manager</i>                      | The Media Manager provides complete management and tracking of all devices and media used during backups and restores.   |



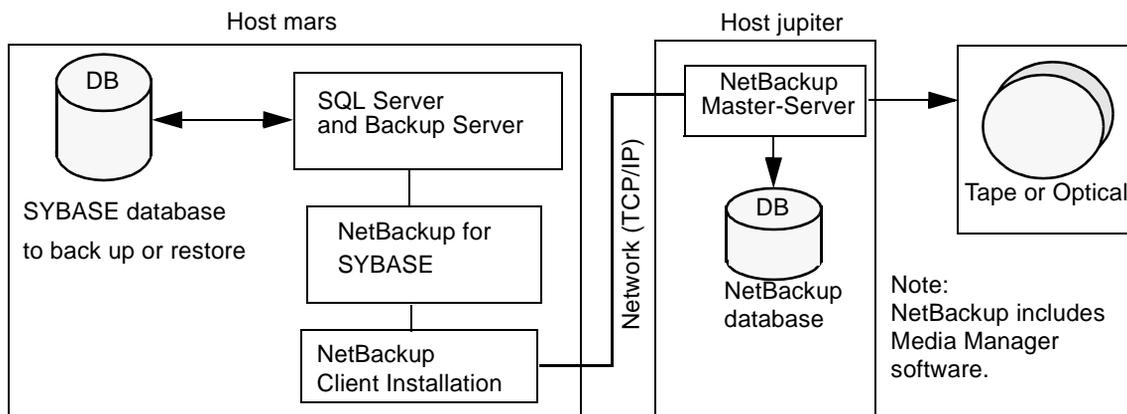
## NetBackup for Sybase on Windows Terms

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



## Technical Overview of NetBackup for Sybase on Windows

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



The main elements to this configuration are:

- ◆ The Sybase database host, mars, which contains SQL Server, Sybase ASE Backup Server, NetBackup for Sybase on Windows, and NetBackup client software. Refer to “SQL Server and Sybase ASE Backup Server” on page 6 and “NetBackup for Sybase on Windows” on page 7 for more details.
- ◆ The NetBackup server, jupiter, which contains NetBackup server software. Refer to the *NetBackup System Administrator’s Guide for UNIX* or *NetBackup System Administrator’s Guide for Windows* for more details on the NetBackup server.
- ◆ The storage media is connected to the NetBackup master server. Refer to the *NetBackup Media Manager System Administrator’s Guide for UNIX* or the *NetBackup Media Manager System Administrator’s Guide for Windows* for more details on the NetBackup Media Manager.

### SQL Server and Sybase ASE Backup Server

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

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

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

## NetBackup for Sybase on Windows

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

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

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

**"sybackup::"**

The Sybase ASE `DUMP` command appears as follows:

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

SQL Server and Sybase ASE Backup Server do not have a backup-catalog feature. However, when you perform a database or transaction dump, NetBackup for Sybase on Windows 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 63 for details. A schedule is configured, through the NetBackup server interface, to use a script to perform NetBackup operations. Refer to “Configuration” on page 13 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 on Windows starts a user-directed backup by using the NetBackup `bpbackup` command.
5. The NetBackup master server then connects to NetBackup for Sybase on Windows on the client.
6. Sybase ASE Backup Server sends data to NetBackup for Sybase on Windows which transfers data to the master server.
7. The master server sends the data to a storage unit.

A restore works in essentially the same manner except that NetBackup for Sybase on Windows 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 Windows on the client.

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

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

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This chapter explains how to install NetBackup for Sybase on Windows.

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

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**Note** Each time you install a new instance of Sybase ASE, you will need to re-install NetBackup for Sybase.

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## Installation Prerequisites

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

- ❖ Install the NetBackup server software on the server.

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

For a BusinessServer installation, refer to the *NetBackup BusinessServer Getting Started Guide for UNIX* or the *NetBackup BusinessServer Getting Started Guide for Windows* for details.

For a DataCenter installation, refer to the *NetBackup DataCenter Installation Guide for UNIX* or the *NetBackup DataCenter Installation Guide for Windows*.

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

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

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



## Installing NetBackup for Sybase on Windows

The following is the procedure for installing NetBackup for Sybase on Windows.

### Installation Requirements

- ◆ A valid license key for NetBackup for Sybase on Windows must be registered on the master or media server. License keys can be added from the NetBackup Administration Console. From the **Help** menu, choose **License Keys**.
  - ◆ The version of the NetBackup Client and the version of NetBackup for Sybase on Windows must be the same (e.g., 4.5).
- ▼ **To install NetBackup for Sybase on Windows:**
- Insert the NetBackup CD-ROM into the drive. On systems with AutoPlay enabled for CD-ROM drives, the NetBackup install program starts automatically.
  - On Windows NT 4.0 or Windows 2000 systems that have AutoPlay disabled, run the `Launch.exe` program in the root directory on the CD-ROM.
8. Below the “Main Menu” on the left, click **Database Agents**.
  9. Click **Database Agent Installation**.
  10. Click **Sybase**.
  11. Click **Next** and follow the prompts in the setup program.





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

The following steps outline the configuration procedure.

1. Configuring the Media Manager
2. Setting the Maximum Jobs per Client Global Attribute
3. Configuring a NetBackup Policy
4. Creating Scripts
5. Configuring the NetBackup Client
6. User Authorization
7. Enabling Striped Dumps and Loads
8. Testing NetBackup for Sybase on Windows Configuration Settings

To configure NetBackup for Sybase on Windows from a Windows NetBackup server, see “Configuration Using the NetBackup Administration Console for Windows” on page 14.

To configure NetBackup for Sybase on Windows from a UNIX NetBackup server, see “Configuration Using the NetBackup Administration Console for UNIX” on page 30.



## Configuration Using the NetBackup Administration Console for Windows

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

These procedures include:

- ◆ Configuring the Media Manager
- ◆ Setting the Maximum Jobs per Client global attribute
- ◆ Configuring a NetBackup policy
- ◆ Testing NetBackup for Sybase on Windows configuration settings

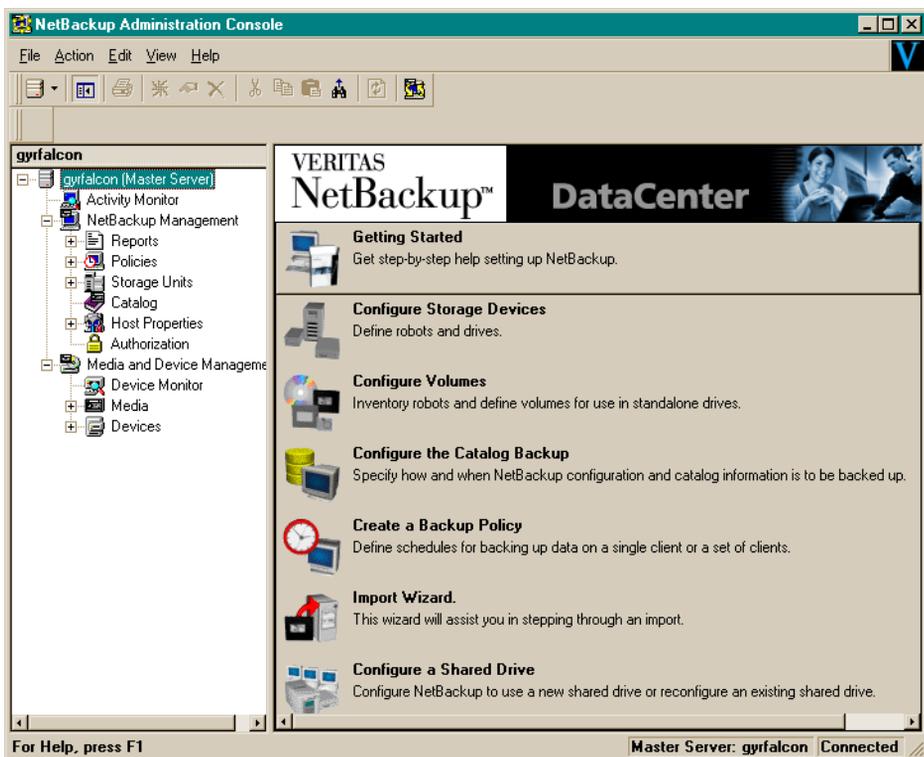
See the next section for instructions on starting the NetBackup Administration Console.

### ▼ To launch the NetBackup Administration Console for Windows

1. Log on to the server as administrator.
2. From the Windows **Start** menu, point to **Programs**, point to **VERITAS NetBackup** and click **NetBackup Administration Console**.

The NetBackup Administration Console appears.





## Configuring the Media Manager

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

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

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



## Setting the Maximum Jobs per Client Global Attribute

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

$$\text{Max Jobs per Client} = \text{Number of Streams} \times \text{Number of Policies}$$

Where:

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

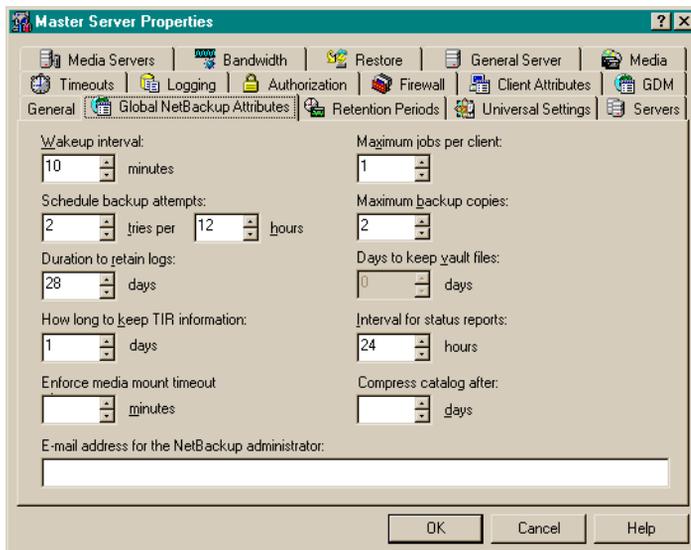
### ▼ To set the Maximum jobs per client attribute on a Windows server

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

2. In the right pane, double-click on the server icon.

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.

---

## Configuring a NetBackup Policy

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

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

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

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

---

**Note** If you are going to perform striped dumps or loads, also see “Enabling Striped Dumps and Loads” on page 57.

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## Configuring a Sybase Policy

### Adding New Policies

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

#### ▼ To add a new policy

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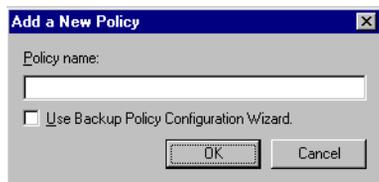
**Note** The policy name can be configured either in the Sybase backup scripts or in the NetBackup Client program. However, if the policy name is configured in the NetBackup Client program, the policy name will apply to all of the client initiated backups for this client. Refer to the following sections for details on modifying scripts:  
“Instructions for Modifying Backup Scripts for Use with Sybase ASE” on page 48

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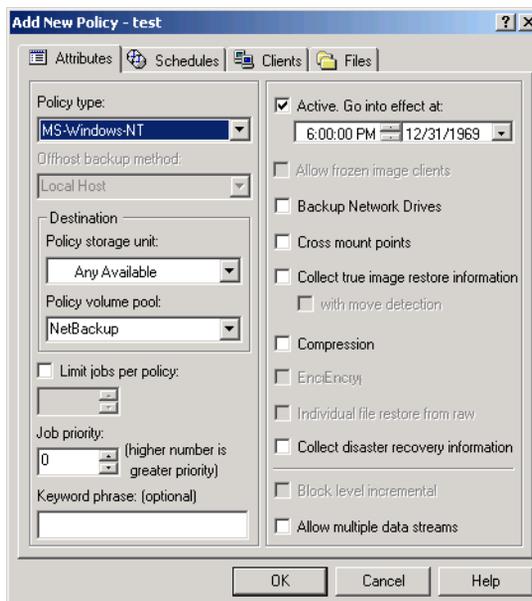
1. Log on to the server as administrator.
2. Start the NetBackup Administration Console.
3. If your site has more than one master server, choose the one where you want to add the policy.
4. In the left pane, right-click **Policies**. From the menu, select **New Policy**.

The Add a New Policy dialog box appears.



- a. In the **Policy name** box, type a unique name for the new policy.
  - b. Choose whether to use the wizard for configuring the policy. The wizard guides you through the setup process and simplifies it by automatically choosing default values that are good for most configurations. If necessary, you can change the defaults later by editing the policy.
    - To use the wizard, select the **Use Backup Policy Configuration Wizard** box and click **OK**. The wizard starts and you create the policy by following the prompts. When prompted, select the Sybase policy type.
    - If you require more control over the settings than the wizard provides, then do not select the **Use Backup Policy Configuration Wizard** box and proceed to step 5.
5. Click **OK**.

A dialog box appears in which you can specify the general attributes for the policy.



6. From the **Policy Type** box, select the Sybase policy type.
7. Complete the entries on the **Attributes** tab as explained in “Description of Attributes.”
8. Add other policy information:
  - To add schedules, see “Adding New Schedules.”
  - To add scripts, see “Specifying the List of Scripts.”
  - To add clients, see “Adding Clients to a Policy.”
9. Click **OK**. The new policy will be created.

## Description of Attributes

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



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

### Description of Policy Attributes

| Attribute             | Description  |
|-----------------------|--|
| <b>Policy type</b>    | Determines the type of clients that can be in the policy and in some cases the types of backups that can be performed on those clients.<br>To use NetBackup for Sybase on Windows, you must have defined at least one Sybase policy. |
| <b>Keyword phrase</b> | For NetBackup for Sybase on Windows, the keyword phrase entry is ignored.  |

## Adding New Schedules

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

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

The following procedures explain how to configure the required schedule types, and how to add other new schedules.

### ▼ To configure an Application Backup schedule

---

**Note** This Application Backup schedule name can be configured either in the Sybase backup scripts or in the NetBackup Client program. However, if the schedule name is configured in the NetBackup Client program, the schedule name will apply to all of the client initiated backups for this client. Refer to the following sections for details on modifying scripts:

“Instructions for Modifying Backup Scripts for Use with Sybase ASE” on page 48

---

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

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

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

2. Specify the other properties for the schedule as explained in “Schedule Properties.”

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

For example, assume that you:

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

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

Example Settings for an Application Backup schedule.

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

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

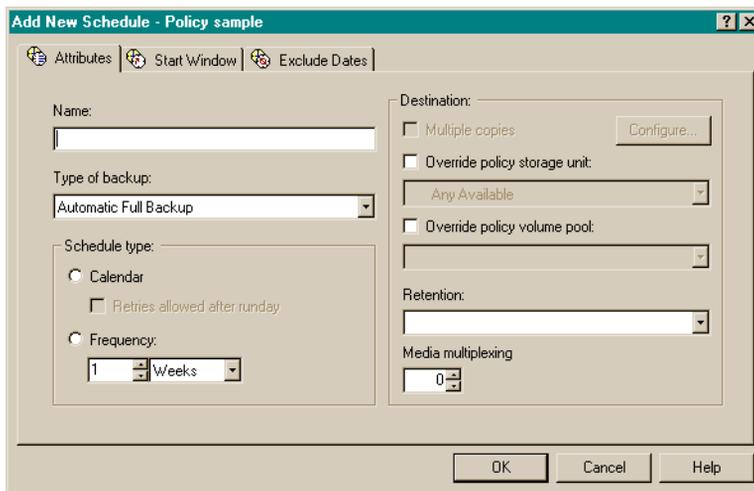
▼ **To configure an automatic backup schedule**

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



1. In the left pane, right-click on the name of the policy and select **New Schedule** from the menu.

The Add New Schedule dialog box appears. The title bar shows the name of the policy to which you are adding the schedules.



2. Specify a unique name for the schedule.
3. Select the **Type of Backup**.

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

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

Example Settings for an Automatic Backup Schedule.

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

4. Specify the other properties for the schedule as explained in “Schedule Properties.”



## Types of Backups

### Description of Backup Types for Sybase

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

## Schedule Properties

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

Other schedule properties will vary according to your specific backup strategy and system configuration. Consult the *NetBackup System Administrator's Guide* for detailed explanations of the schedule properties.

### Description of Schedule Properties

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



Description of Schedule Properties

| Property               | Description  |
|------------------------|--|
| <b>Retention</b>       | <p><b>Frequency based scheduling</b></p> <p>The retention period for an Application Backup schedule refers to the length of time that NetBackup keeps backup images.</p> <p>The retention period for an Automatic Backup schedule controls how long NetBackup keeps records of when scheduled backups have occurred.</p> <p>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. <i>Therefore, set a retention period that is <u>longer</u> than the frequency setting for the schedule.</i></p> <p>For example, if the frequency setting is set to one week, set the retention period to be more than one week.</p> <p><b>Calendar based scheduling</b></p> <p>The retention period for an Application Backup schedule refers to the length of time that NetBackup keeps backup images.</p> <p>The retention period for an Automatic Backup schedule controls how long NetBackup keeps records of when scheduled backups have occurred. However, this setting is not significant for calendar based scheduling.</p> |
| <b>Multiple copies</b> | <p>If you are licensed for the Inline Tape Copy feature and wish to specify multiple copies for your Sybase policy, configure <b>Multiple copies</b> on the Application Backup schedule.</p>   |

## Specifying the List of Scripts

The Scripts list in a database policy has a different meaning than the File list has for other policies. Normally, in a Windows policy, you would list files and folders to be backed up. But since you are now configuring a database policy, you will list scripts.

Add scripts only if you are setting up a policy for automatic scheduling. All scripts listed in the Scripts list will be executed for the Automatic Backup schedules as specified under the **Schedules** tab.

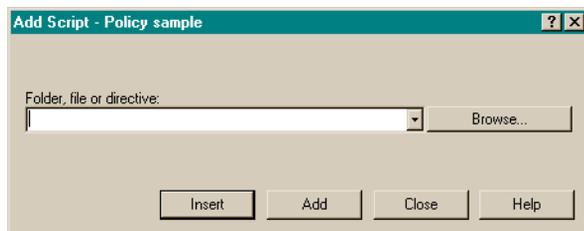
All scripts specified in the Scripts list are executed during manual or automatic backups. NetBackup will start backups by running the scripts in the order that they appear in the Scripts list.



### ▼ To add scripts to the Scripts List

1. In the left pane of the NetBackup Administration Console, right-click on the policy name and click **New Script**.

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



2. Type the name of the NetBackup for Sybase script.

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

```
install_path\NetBackup\dbext\Sybase\Sample\script_name
```

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

Refer to “Instructions for Modifying Backup Scripts for Use with Sybase ASE” on page 48 for more details on Sybase scripts.

---

**Note** Alternatively, use the **Browse** button in the Add Script dialog box to locate and specify the script on the client.

---

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

3. Click **Add**.

### Adding Clients to a Policy

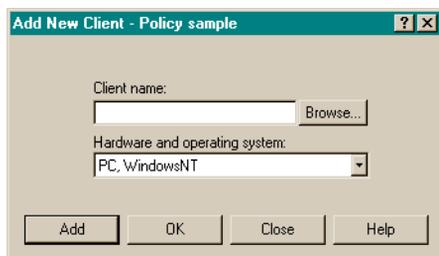
The client list is the list of clients on which your Sybase scripts will be executed during an automatic backup. A NetBackup client must be in at least one policy but can be in more than one.



▼ **To add clients to a policy**

1. In the left pane of the NetBackup Administration Console, right-click on the policy name and click **New Client**.

The Add New Client dialog box appears. The title bar shows the name of the policy to which you are adding the clients.



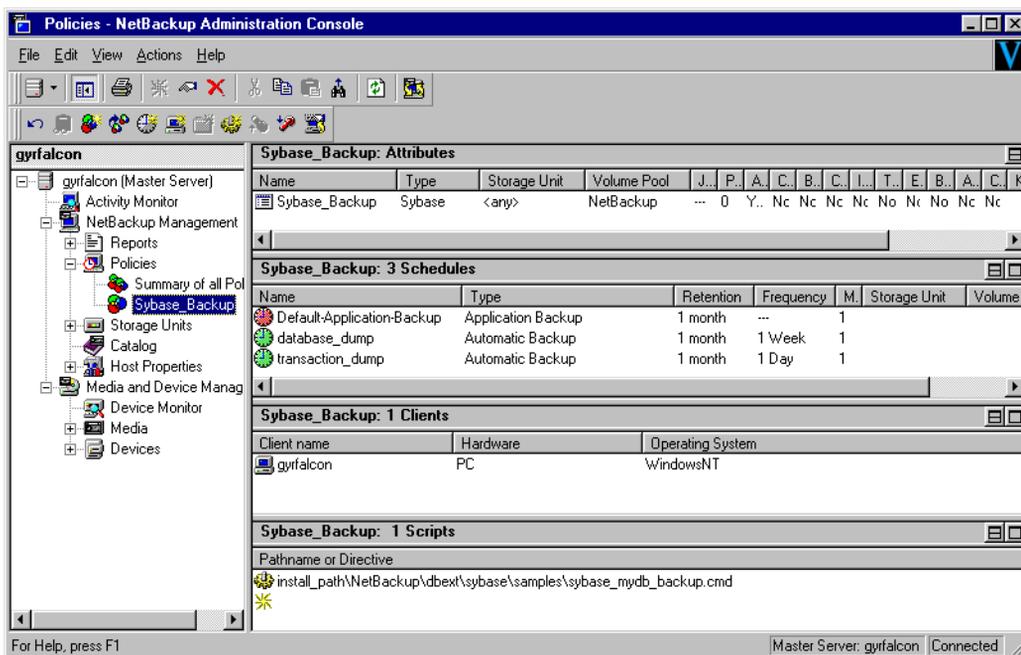
2. In the **Client name** text box, type the name of the client that you are adding.

On the client the following should be installed:

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

3. Choose the hardware and operating system type.
4. Click **Add**.
5. To add another client, repeat step 2 through step 4. If this is the last client, click **Close** to close the dialog box.

## Example Sybase Policy for Sybase ASE on a NetBackup for Windows Server



In this policy, we set the policy 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:

```
install_path\NetBackup\dbext\sybase\samples\sybase_mydb_backup.cmd
```

The three schedules for this policy are named:

- ◆ database\_dump
- ◆ transaction\_dump
- ◆ Default-Application-Backup

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

`database_dump`

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

### transaction\_dump

Executes every night between 6 pm (18:00) and 6 am (06:00). When the `sybase_mydb_backup.cmd` 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 Application Backup schedule named Default-Application-Backup was created when the NetBackup Sybase policy was created. The backup window for this schedule encompasses the windows for the Automatic Backup schedules. It also includes the times user backups are allowed. To accomplish this, the user-directed window is open 24 hours a day, every day of the week. This permits scheduled backups and user directed backups to occur at any time.



## Configuring an MS-Windows-NT Policy

An MS-Windows-NT policy is used to back up Sybase files: datafiles, shell scripts, Sybase SQL scripts and logs. In this example, we identify scripts as Sybase files and create a NetBackup MS-Windows-NT policy with a User Backup schedule to back them up. Assume that we keep the Sybase files in the `$SYBASE\syb_files` folder.

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

The screenshot displays the NetBackup Administration Console interface. The left pane shows a tree view with the following structure:

- gyrfalcon (Master Server)
  - Activity Monitor
  - NetBackup Management
    - Reports
    - Policies
      - Summary of all Pol
      - SybaseWindows
      - Sybase\_Backup
    - Storage Units
    - Catalog
    - Host Properties
    - Media and Device Manag
      - Device Monitor
      - Media
      - Devices

The right pane shows the configuration for the **SybaseWindows** policy:

- SybaseWindows: Attributes**

| Name          | Type          | Storage Unit | Volume Pool | J.. | P.. | A.. | C.. | B.. | C.. | L.. | T.. | E.. | B.. | A.. |
|---------------|---------------|--------------|-------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| SybaseWindows | MS-Windows-NT | <any>        | NetBackup   | --- | 0   | Y.. | Nc  | Nc  | Nc  | Nc  | No  | Nc  | No  | Nc  |
- SybaseWindows: 1 Schedules**

| Name       | Type        | Retention | Frequency | M.. | Storage Unit | Volume Pool | F  |
|------------|-------------|-----------|-----------|-----|--------------|-------------|----|
| UserBackup | User Backup | 1 month   | ---       | 1   |              |             | Cc |
- SybaseWindows: 1 Clients**

| Client name | Hardware | Operating System |
|-------------|----------|------------------|
| gyrfalcon   | PC       | WindowsNT        |
- SybaseWindows: 1 Files**

Pathname or Directive

  - \* \$Sybase\syb\_files

The status bar at the bottom indicates: For Help, press F1 | Master Server: gyrfalcon | Connected

## Configuration Using the NetBackup Administration Console for UNIX

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

These procedures include:

- ◆ Configuring the Media Manager
- ◆ Setting the Maximum Jobs per Client global attribute
- ◆ Configuring a NetBackup policy
- ◆ Testing NetBackup for Sybase on Windows configuration settings

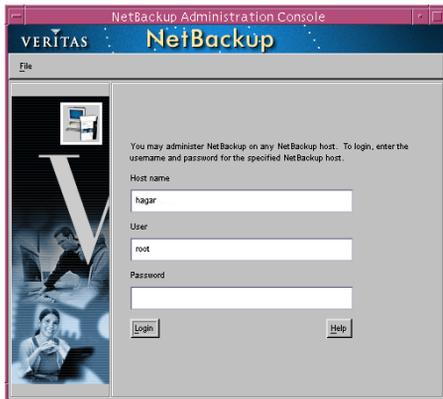
See the next section for instructions on starting the NetBackup Administration Console.

### ▼ To launch the NetBackup Administration Console for UNIX

1. Log onto the UNIX server as root.
2. Start the NetBackup Administration Console by executing:

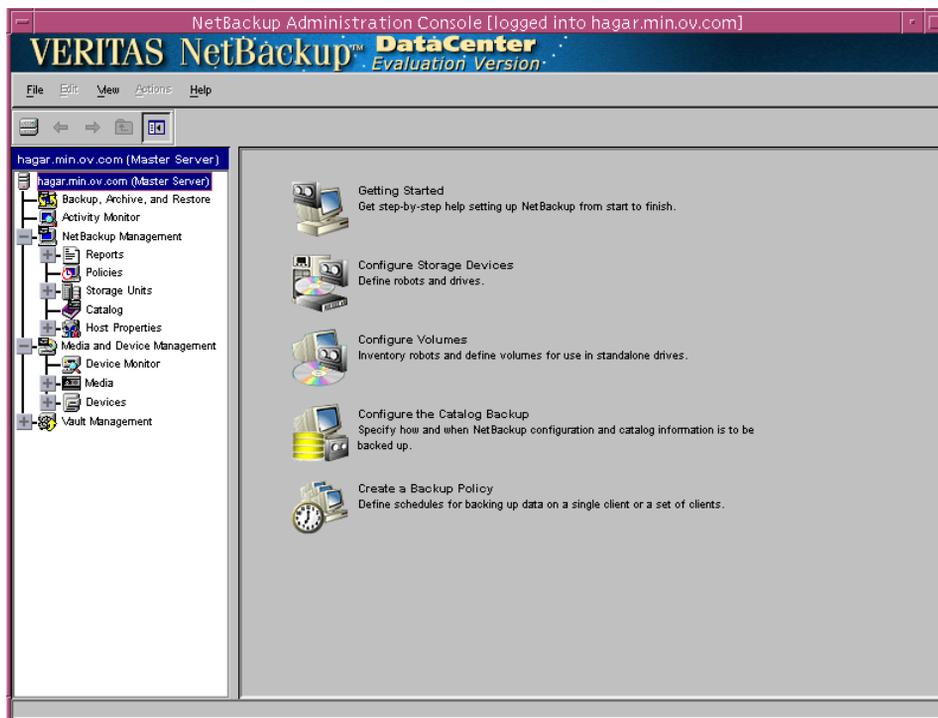
*install\_path/netbackup/bin/jnbSA &*

The Login dialog box appears.



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

4. Click **Login**. The NetBackup Administration Console appears.



## Configuring the Media Manager

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

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

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

## Setting the Maximum Jobs per Client Global Attribute

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



$\text{Max Jobs per Client} = \text{Number of Streams} \times \text{Number of Policies}$

Where:

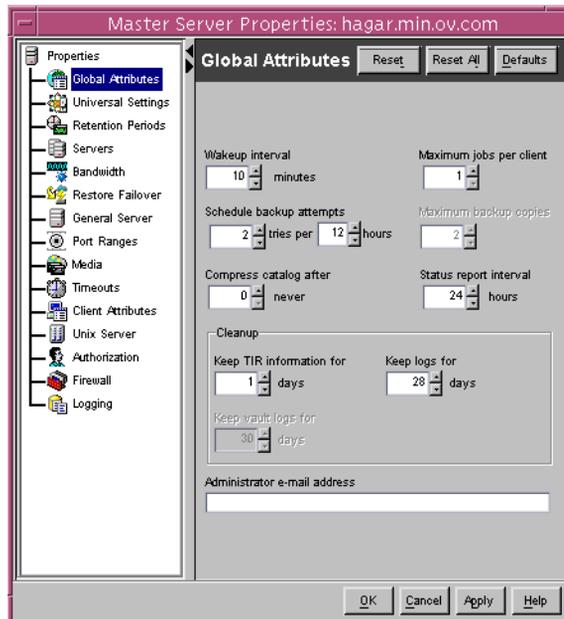
- ◆ *Number of Streams* is the number of backup streams between the database server and NetBackup. Each separate stream starts a new backup job on the client.
- ◆ *Number of Policies* is the number of policies that may back up this client at the same time. This number can be greater than one. For example,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

### ▼ To set the Maximum jobs per client attribute on a UNIX server

Use this procedure to set the **Maximum jobs per client** global attribute using the NetBackup Administration Console - Java interface on a Java-capable platform.

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

The Master Server Properties dialog box appears.



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.

---

## Configuring a NetBackup Policy

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

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

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

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

---

**Note** If you are going to perform striped dumps or loads, also see “Enabling Striped Dumps and Loads” on page 57.

---

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

### ▼ To add a new policy

---

**Note** The policy name can be configured either in the Sybase backup scripts or in the NetBackup Client program. However, if the policy name is configured in the NetBackup Client program, the policy name will apply to all of the client initiated backups for this client. Refer to the following sections for details on modifying scripts:  
“Instructions for Modifying Backup Scripts for Use with Sybase ASE” on page 48.

---

1. Log onto the server as root.
2. Start the NetBackup Administration Console.

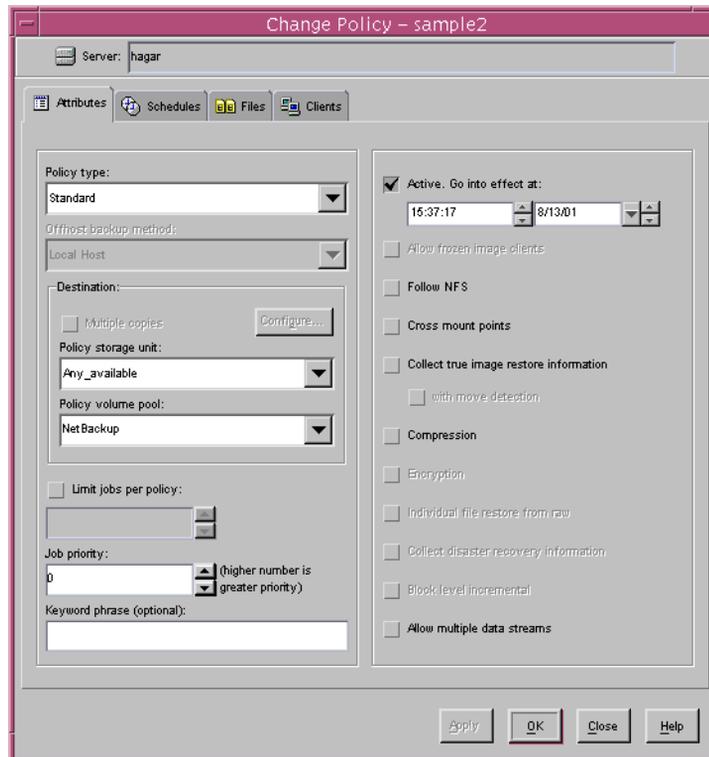


3. If your site has more than one master server, choose the one to which you want to add the policy.
4. In the left pane, click on **Policies**. The right pane splits into a All Policies pane and a details pane.
5. In the All Policies pane, right-click on the Master Server, and click **New**.  
The Add a New Policy dialog box appears.



- a. In the **Policy name** box, type a unique name for the new policy.
  - b. Choose whether to use the wizard for configuring the policy. The wizard guides you through the setup process and simplifies it by automatically choosing default values that are good for most configurations. If necessary, you can change the defaults later by editing the policy.
    - To use the wizard, select the **Use add policy wizard** box and click **OK**. The wizard starts and you create the policy by following the prompts. When prompted, select the Sybase policy type.
    - If you require more control over the settings than the wizard provides, do not select the **Use add policy wizard** box and proceed to step 6.
6. Click **OK**.

A dialog box appears in which you can specify the general attributes for the policy.



7. From the **Policy type** box, select the Sybase policy type.
8. Complete the entries on the **Attributes** tab as explained in “Description of Attributes” and click **Apply** to save the attribute entries.
9. Add other policy information:
  - To add schedules, see “Adding New Schedules.”
  - To add scripts, see “Specifying the List of Scripts.”
  - To add clients, see “Adding Clients to a Policy.”

## Description of Attributes

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



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

### Description of Policy Attributes

| Attribute             | Description  |
|-----------------------|--|
| <b>Policy type</b>    | Determines the type of clients that can be in the policy and in some cases the types of backups that can be performed on those clients.<br>To use NetBackup for Sybase on Windows, you must have defined at least one Sybase policy. |
| <b>Keyword phrase</b> | For NetBackup for Sybase on Windows, the keyword phrase entry is ignored.  |

## Adding New Schedules

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

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

The following procedures explain how to configure the required schedule types, and how to add other new schedules.

### ▼ To configure an Application Backup schedule

---

**Note** This Application Backup schedule name can be configured either in Sybase backup scripts or in the NetBackup Client program. However, if the schedule name is configured in the NetBackup Client program, the schedule name will apply to all of the client initiated backups for this client. Refer to the following sections for details on modifying scripts:

“Instructions for Modifying Backup Scripts for Use with Sybase ASE” on page 48.

---

1. Under the policy name, select **Schedules**.
2. In the right pane, double-click on the schedule named **Default-Application-Backup**.  
A dialog box appears. The title bar shows the name of the policy to which you are adding the schedule.



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

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

**3.** Specify the other properties for the schedule as explained in “Schedule Properties.”

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

For example, assume that you:

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

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

---

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

---

Example Settings for an Application Backup schedule.

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

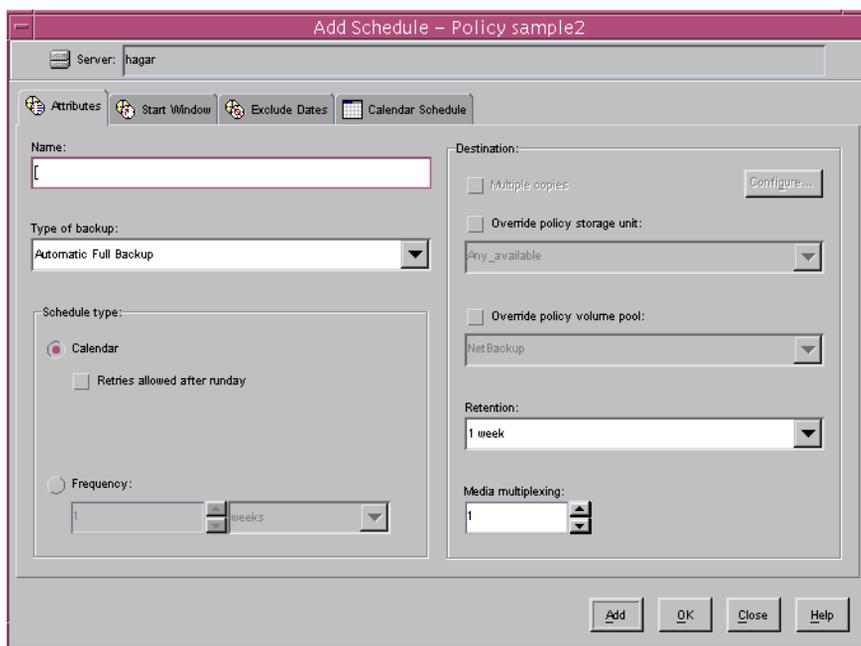


▼ To configure an automatic backup schedule

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

1. In the All Policies pane, expand the policy you wish to configure. Right-click **Schedules** and choose **New**.

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



2. Specify a unique name for the schedule.

3. Select the **Type of Backup**.

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

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

Example Settings for a Automatic Backup Schedule.

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

- Specify the other properties for the schedule as explained in “Schedule Properties.”

## Types of Backups

### Description of Backup Types for Sybase

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



## Schedule Properties

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

Other schedule properties will vary according to your specific backup strategy and system configuration. Consult the *NetBackup System Administrator's Guide* for detailed explanations of the schedule properties.

### Description of Schedule Properties

---

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



## Description of Schedule Properties

| Property               | Description  |
|------------------------|--|
| <b>Retention</b>       | <p><b>Frequency based scheduling</b></p> <p>The retention period for an Application Backup schedule refers to the length of time that NetBackup keeps backup images.</p> <p>The retention period for an Automatic Backup schedule controls how long NetBackup keeps records of when scheduled backups have occurred.</p> <p>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. <i>Therefore, set a retention period that is <u>longer</u> than the frequency setting for the schedule.</i></p> <p>For example, if the frequency setting is set to one week, set the retention period to be more than one week.</p> <p><b>Calendar based scheduling</b></p> <p>The retention period for an Application Backup schedule refers to the length of time that NetBackup keeps backup images.</p> <p>The retention period for an Automatic Backup schedule controls how long NetBackup keeps records of when scheduled backups have occurred. However, this setting is not significant for calendar based scheduling.</p> |
| <b>Multiple copies</b> | <p>If you are licensed for the Inline Tape Copy feature and wish to specify multiple copies for your Sybase policy, configure <b>Multiple copies</b> on the Application Backup schedule.</p>   |

## Specifying the List of Scripts

The File list in a database policy has a different meaning than the File list has for other policies. Normally, in a Windows policy, you would list files and folders to be backed up. But since you are now configuring a database policy, you will list scripts.

Add scripts only if you are setting up a policy for automatic scheduling. All scripts listed in the Files list will be executed for the Automatic Backup schedules as specified under the **Schedules** tab.

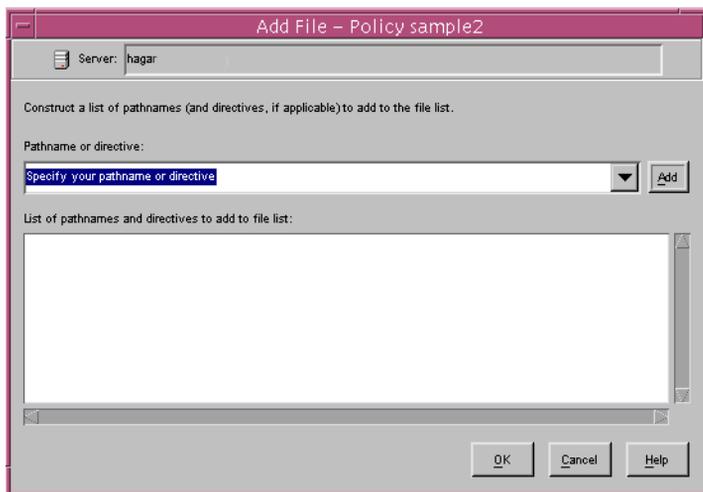
All scripts specified in the Files list are executed during manual or automatic backups. NetBackup will start backups by running the scripts in the order that they appear in the Files list.



▼ **To add scripts to the Scripts List**

1. In the left pane, click **Policies**.
2. In the All Policies pane, expand the policy you want to add the scripts.
3. Right-click on **Files** and choose **New**.

The Add File dialog box appears. The title bar shows the name of the policy to which you are adding the scripts.



4. Type the name of the Sybase script.

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

```
install_path\NetBackup\dbext\Sybase\Sample\script_name
```

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

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

Refer to “Instructions for Modifying Backup Scripts for Use with Sybase ASE” on page 48 for more details on Sybase scripts.

5. Click **Add**.
6. To add more scripts, repeat step 4 and step 5.

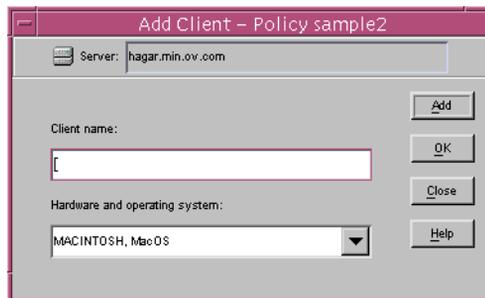
## Adding Clients to a Policy

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

### ▼ To add clients to a policy

1. In the left pane, expand **Policies**.
2. In the All Policies pane, expand the policy you wish to configure.
3. Right-click on **Clients** and choose **New**.

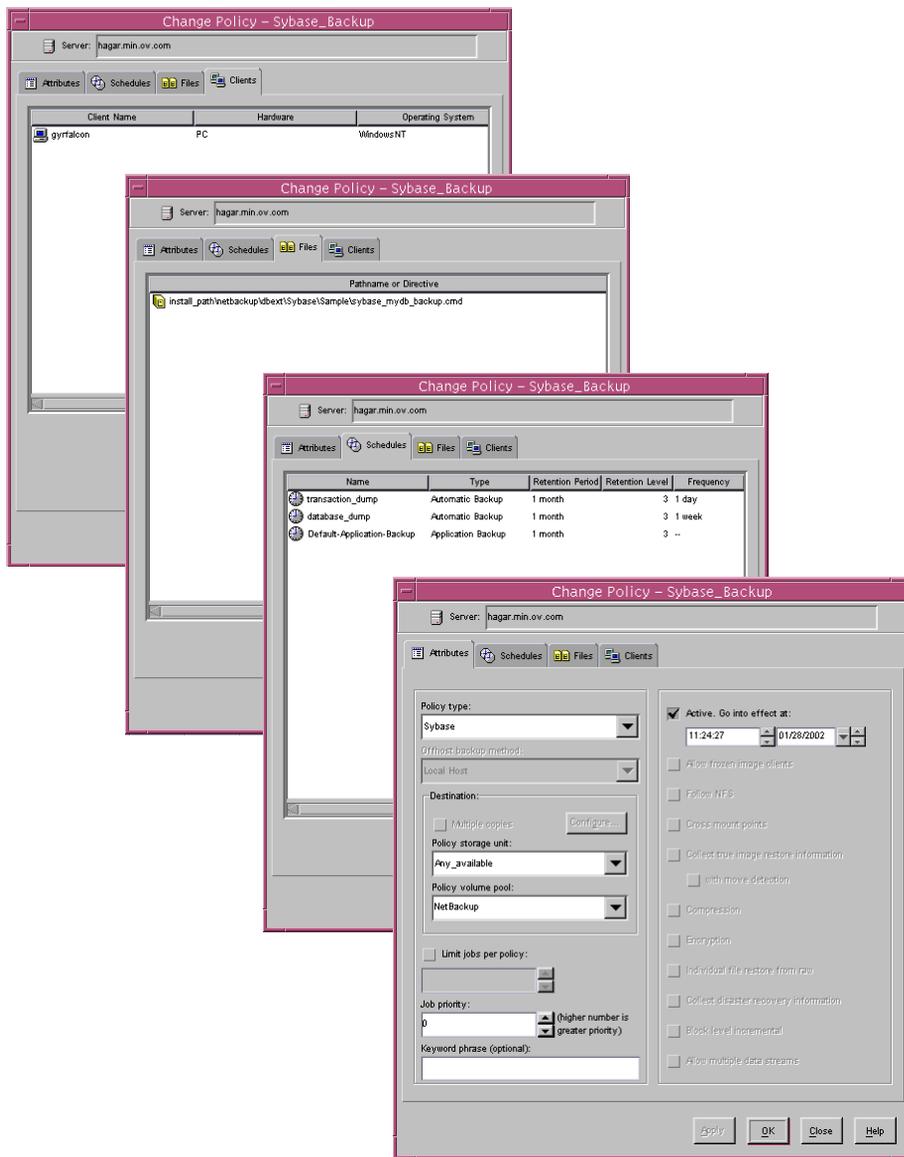
The Add Client dialog box appears. The title bar shows the name of the policy where you are adding clients.



4. In the **Client name** text box, type the name of the client that you are adding.  
On the client the following should be installed:
  - Sybase
  - NetBackup for Sybase on Windows
  - the backup and restore Sybase script(s)
5. Choose the hardware and operating system type and click **Add**.
6. If this is the last client, click **OK**. If you are going to add more clients, repeat step 4 and step 5.



## Example Sybase Policy for Sybase ASE on a NetBackup UNIX Server



In this policy, we set the policy 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:

```
install_path\NetBackup\dbext\sybase\samples\sybase_mydb_backup.cmd
```

The three schedules for this policy are named:

- ◆ database\_dump
- ◆ transaction\_dump
- ◆ Default-Application-Backup

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

#### `database_dump`

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

#### `transaction_dump`

Executes every night between 6 pm (18:00) and 6 am (06:00). When the `sybase_mydb_backup.cmd` 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.

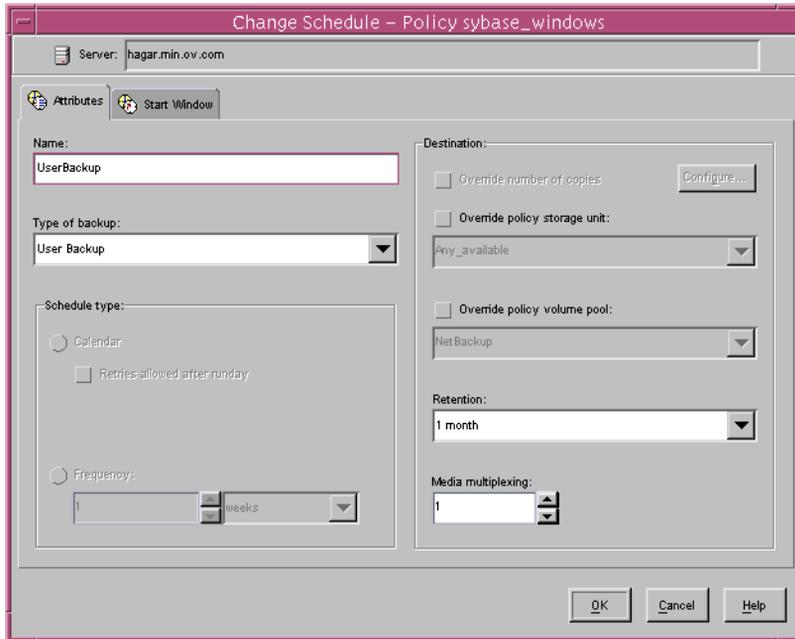
The Application Backup schedule named Default-Application-Backup was created when the NetBackup Sybase policy was created. The backup window for this schedule encompasses the windows for the Automatic Backup schedules. It also includes the times user backups are allowed. To accomplish this, the user-directed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



## Configuring an MS-Windows-NT Policy

An MS-Windows-NT policy is used to back up Sybase files: datafiles, shell scripts, Sybase SQL scripts and logs. In this example, we identify scripts as Sybase files and create a NetBackup MS-Windows-NT policy with a User Backup schedule to back them up. Assume that we keep the Sybase files in the `$SYBASE\syb_files` folder.

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



---

## Creating Scripts

Sybase SQL scripts cause SQL Server to send the directives to Sybase ASE Backup Server that initiate a dump or load of the specified database or transaction log. The Sybase `isql` utility communicates with SQL server. See the *SYBASE SQL Server Utility Programs for Windows 95, Windows 98, and Windows NT* manual for information about the `isql` utility (this manual is available from Sybase).

The following example scripts were included with the NetBackup for Sybase on Windows installation for use with Sybase ASE:

```
sybase_mydb_backup.cmd  
sybase_mydb_load  
sybase_mydb_restore.cmd
```

These scripts were installed in the following folder:

```
install_path\NetBackup\dbext\sybase\samples\
```

Be sure to modify these scripts for your environment.

---

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

---

Although each script can have multiple Sybase ASE Backup Server operations, a separate script is required for each type of operation. For example, 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 on Windows 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 for Use with Sybase ASE

1. If necessary, copy the example scripts to a different folder on your client. Sybase scripts can be located anywhere on the client.
2. Make sure there is share access to the scripts.
3. Modify the `sybase_mydb_backup.cmd` script.
  - a. Use a text editor to open the `sybase_mydb_backup.cmd` script.

The following appears.

```
@REM $Revision: 1.2 $

@setlocal
@echo off

@REM *****
@REM Replace C:\Sybase below with your actual Sybase home directory
@REM *****
@set SYBASE=C:\Sybase

@REM *****
@REM Replace Sybase below with the actual name of your SQL Server
@REM *****
@set SYBSERVER=SYBASE

@REM *****
@REM Replace SYB_DB below with the actual name of your Sybase database
@REM *****
@set DATABASE_NAME=SYB_DB

if "%SYBASE_OCS%" == "" goto notsyb12
@REM ***** Sybase 12.0 or later *****
@set OCS_QUAL=%SYBASE_OCS%
goto cont1

:notsyb12
@REM ***** Sybase 11.9.2 or earlier *****
@set OCS_QUAL=

:cont1

@REM *****
@REM These environment variables are set by NetBackup.
```



```

@REM *****
@echo SYBACKUP_SERVER = %SYBACKUP_SERVER%
@echo SYBACKUP_POLICY = %SYBACKUP_POLICY%
@echo SYBACKUP_SCHED = %SYBACKUP_SCHED%
@echo SYBACKUP_SCHEDULED = %SYBACKUP_SCHEDULED%
@echo SYBACKUP_USER_INITIATED = %SYBACKUP_USER_INITIATED%

@REM *****
@REM Replace "database_dump" below with your actual NetBackup schedule name
@REM which is used for a full backup of the Sybase database.
@REM *****
if "%SYBACKUP_SCHED%" == "database_dump" goto dbdump

@REM ***** NetBackup has started a "transaction_dump" backup *****
set DUMP_TYPE=TRANSACTION
    goto entercmd

:dbdump
@REM ***** NetBackup has started a "database_dump" backup *****
set DUMP_TYPE=DATABASE

:entercmd

@REM *****
@REM Replace "Default-Application-Backup" below with your actual NetBackup
@REM Application Backup type schedule name for the Sybase database.
@REM *****

@echo dump %DUMP_TYPE% %DATABASE_NAME% to "sybackup::-SERV %SYBACKUP_SERVER% -POL
%SYBACKUP_POLICY% -SCHED Default-Application-Backup -STAT_FILE %STATUS_FILE%" >
.\syb_%DATABASE_NAME%_dump

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

@echo go >> .\syb_%DATABASE_NAME%_dump

@REM *****
@REM Replace "manager" with your Sybase server Administrator's Password
@REM *****

```



```
set CMD_LINE=%SYBASE%\OCS_QUAL%\bin\isql -Usa -Pmanager -I%SYBASE%\ini\sql.ini
-S%SYBSERVER% -i .\syb_%DATABASE_NAME%_dump

@echo %CMD_LINE%
%CMD_LINE%

@REM *****
@REM This script will return an error status back to the NetBackup client if
@REM the isql command fails.
@REM *****

if errorlevel 0 goto end
echo Execution of isql command failed - exiting
if "%STATUS_FILE%" == "" goto end
if exist "%STATUS_FILE%" echo 1 > "%STATUS_FILE%"

:end
@echo on
@endlocal
```

- b.** Follow the instructions in the `sybase_mydb_backup.cmd` script.

Refer to the following table.

```
@set SYBASE=C:\Sybase
```

*SYBASE* should get set to the Sybase home folder. This variable will usually get set to the same value as the *SYBASE* environmental variable.

```
@set SYBSERVER=SYBASE
```

*SYBSERVER* should get set to the name of the Sybase Adaptive Server. This variable will usually get set to the same value as the *DSQUERY* environmental variable.

```
@set %DATABASE_NAME%=SYB_DB
```

*DATABASE\_NAME* should get set to the name of your Sybase database.

```
if "%SYBACKUP_SCHED%" == "database_dump" goto dbdump
```

Replace *database\_dump* with the Automatic Backup schedule name which will be used to schedule database dumps. This Automatic Backup schedule was configured in “Configuring a NetBackup Policy” on page 17.

```
@echo dump %DUMP_TYPE% %DATABASE_NAME% to "sybackup::-SERV
%SYBACKUP_SERVER% -POLICY %SYBACKUP_POLICY% -SCHED
Default-Application-Backup -STAT_FILE %STATUS_FILE%" >
.\syb_%DATABASE_NAME%_dump
```



This line builds the dump command which `isql` will process. You can change the name of your NetBackup server (`%SYBACKUP_SERVER%`), the name of your Sybase policy (`%SYBACKUP_POLICY%`), or the name of your Application Backup schedule (Default-Application-Backup) to fit your environment. Do not change the name of the client status file (`%STATUS_FILE%`).

```
@REM echo stripe on "sybackup::-SERV %SYBACKUP_SERVER% -POLICY
%SYBACKUP_POLICY% -SCHED Default-Application-Backup -STAT_FILE
%STATUS_FILE%" >>.\syb_%DATABASE_NAME%_dump
```

If you are going to use multiple stripes to back up the Sybase ASE database, delete REM from this line. Also, you should change the NetBackup server name, policy name, and schedule name to match the DUMP command above. You will need to repeat this line for each additional stripe that you plan to use to backup the database

```
set CMD_LINE=%SYBASE%%OCS_QUAL%\bin\isql -Usa -Pmanager
-I%SYBASE%\ini\sql.ini -S%SYBSERVER%
```

Replace *manager* with the Adaptive Server password for the administrator.

4. The `sybase_mydb_backup.cmd` script can be modified to backup more than one database.

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

```
dump database db1 to "sybackup::-POLICY db1-policy"
go
dump database db2 to "sybackup::-POLICY db2-policy"
go
```

Test the scripts you just created. Refer to “Testing NetBackup for Sybase on Windows Configuration Settings” on page 59.



## Instructions for Modifying Restore Scripts for Use with Sybase ASE

1. If necessary, copy the example scripts to a different folder on your client. Sybase scripts can be located anywhere on the client.
2. Make sure there is share access to the scripts.
3. Modify the `sybase_mydb_restore.cmd` script.
  - a. Use a text editor to open the `sybase_mydb_restore.cmd` script.

```
@REM $Revision: 1.2 $

@setlocal
@echo off

@REM *****
@REM Replace C:\Sybase below with your actual Sybase home directory
@REM *****
@set SYBASE=C:\Sybase

@REM *****
@REM Replace SYBASE below with the actual name of your SQL Server
@REM *****
@set SYBSERVER=SYBASE

if "%SYBASE_OCS%" == "" goto notsyb12
@REM ***** Sybase 12.0 or later *****
@set OCS_QUAL=%SYBASE_OCS%
goto cont1

:notsyb12
@REM ***** Sybase 11.9.2 or earlier *****
@set OCS_QUAL=

:cont1

@REM *****
@REM Replace ".\sybase_mydb_load" below with a full directory path only if
@REM the script file which contains the isql LOAD command is in a different
@REM directory than this script file.
@REM *****
@set LOADDB=".\sybase_mydb_load"

@REM NetBackup has started a restore
@REM *****
@REM Replace "manager" with your Sybase server Administrator's Password
@REM *****
```



```
set CMD_LINE=%SYBASE%\OCS_QUAL%\bin\isql -Usa -Pmanager -I%SYBASE%\ini\sql.ini -S%SYBSERVER%
-i %LOADDB%
```

```
@echo %CMD_LINE%
%CMD_LINE%
```

```
@echo on
@endlocal
```

**b. Follow the instructions in the `sybase_mydb_restore.cmd` script.**

When you customize this script for your restores, note the following lines.

```
@set SYBASE=C:\Sybase
```

SYBASE should get set to the Sybase home folder. This variable will usually get set to the same value as the SYBASE environmental variable.

```
@set SYBSERVER=SYBASE
```

SYBSERVER should get set to the name of the Sybase Adaptive Server. This variable will usually get set to the same value as the DSQUERY environmental variable.

```
@set LOADDB=". \sybase_mydb_load"
```

LOADDB should get set to the full pathname of the script file containing the Sybase ASE LOAD command only if the script file is in a different folder than the `sybase_mydb_restore.cmd` script file.

```
set CMD_LINE=%SYBASE%\OCS_QUAL%\bin\isql -Usa -Pmanager -I%SYBASE%\ini\sql.ini -S%SYBSERVER%
```

Replace *manager* with the Adaptive Server password for the administrator.

**4. Modify the `sybase_mydb_load` script.**

```
load database mydb from "sybackup::SYBASE11.mydb.D.0.24312.20-12-1996.23:05:25"
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
```

Replace `mydb` with the name of the database.



Replace the file name with the name obtained from the `bplist` command. Refer to “Browsing Backups” on page 66 for information about how to obtain the file name. The file name portion of the `LOAD` command begins after `::`. Refer to “NetBackup for Sybase on Windows” on page 7 for more information about the format of the file name.

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

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

The `-SERV` option will override any server that is specified in the NetBackup client configuration.

---

**Note** Test the scripts you just modified. Refer to “Testing NetBackup for Sybase on Windows Configuration Settings” on page 59.

---

## 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\_POLICY**

Name of the NetBackup policy.

**SYBACKUP\_SCHED**

Name of the Automatic Backup schedule.

**SYBACKUP\_SCHEDULED**

Set to 1 if this is a scheduled backup (Automatic Backup).

**SYBACKUP\_USER\_INITIATED**

Set to 1 if this is a user-initiated backup (Application Backup backup).

---

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

---

## Configuring the NetBackup Client

When a NetBackup for Sybase on Windows operation is initiated, NetBackup will search for the POLICY, SERVER and SCHEDULE definitions in the following order:

1. -SERV, -POLICY and -SCHED options on the Sybase ASE `DUMP` command.
2. NetBackup Client configuration.

---

**Note** NetBackup will use a Policy or Schedule configured in the NetBackup Client Configuration for all backups on the client, including file system and Sybase database backups. For this reason, if a non-Sybase type Policy or Schedule is configured in the NetBackup Client Configuration, the -POLICY or -SCHED option must be used on the Sybase ASE `DUMP` command to specify the correct Policy or Schedule. Refer to “Instructions for Modifying Backup Scripts for Use with Sybase ASE” on page 48 for details on how to specify a Policy or Schedule on the Sybase ASE `DUMP` command.

---

If NetBackup fails to find POLICY and SCHEDULE definitions, NetBackup for Sybase on Windows will default to first POLICY and SCHEDULE with the appropriate policy type.



## User Authorization

Because the NetBackup Client service is, by default, started under the `SYSTEM` account, special attention must also be given to database user authentication. The `SYSTEM` account will not have permission to connect to the target database if you are using OS Authentication instead of passwords. If you are using OS Authentication, you must run the NetBackup Client service under an account that has `SYSDBA` privilege. To do this:

1. From the Start menu, open Control Panel.
2. From the Control Panel, open Services.
3. Highlight **NetBackup Client Service** and click on **Stop**.
4. Click **Startup**.
5. From the **Log ON As:** pane, select **This Account**.
6. Type in the account name with `SYSDBA` privileges.
7. Type in the password.
8. Click **OK**.
9. Click **START** to restart the service.



## Enabling Striped Dumps and Loads

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

---

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

---

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

For a UNIX master server, enter the following:

```
install_path/netbackup/db/config/NUMBER_DATA_BUFFERS_RESTORE
```

For a Windows master server, enter the following:

```
install_path\NetBackup\db\config\NUMBER_DATA_BUFFERS_RESTORE
```

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

### ▼ Example Sybase SQL script for a Striped Dump for Sybase ASE

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

---

**Note** Refer to “Instructions for Modifying Backup Scripts for Use with Sybase ASE” on page 48 for further details.

---



▼ **Example Sybase SQL script for a Striped Load for Sybase ASE**

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

---

**Note** Refer to “Instructions for Modifying Restore Scripts for Use with Sybase ASE” on page 52 for further details.

---



## Testing NetBackup for Sybase on Windows Configuration Settings

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

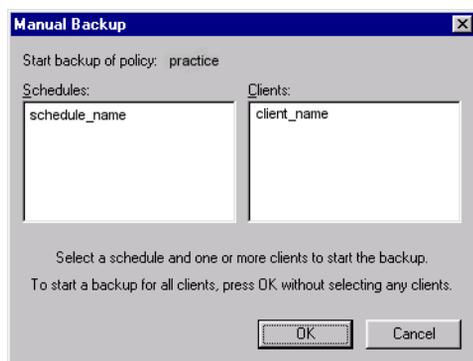
### NetBackup Administration Console for Windows

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

#### ▼ To test the configuration settings on a Windows server

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

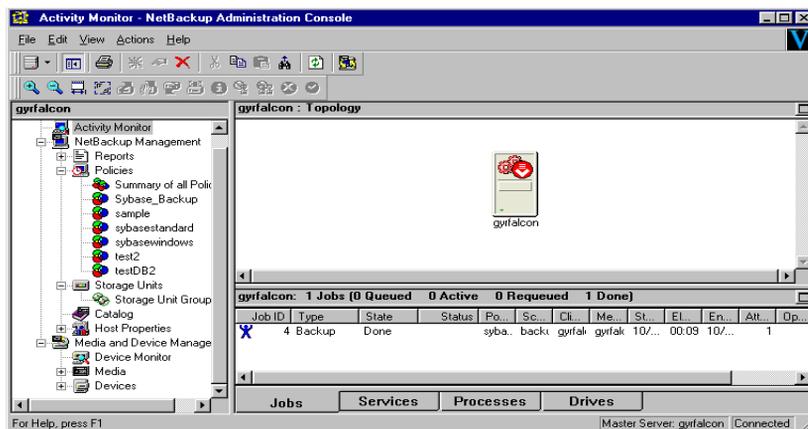
The Manual Backup dialog box appears.



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



6. Follow the instructions on the dialog box.
7. Click **Activity Monitor** on the NetBackup Administration Console.



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

## NetBackup Administration Console for UNIX

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

### ▼ To test the configuration settings on a UNIX server

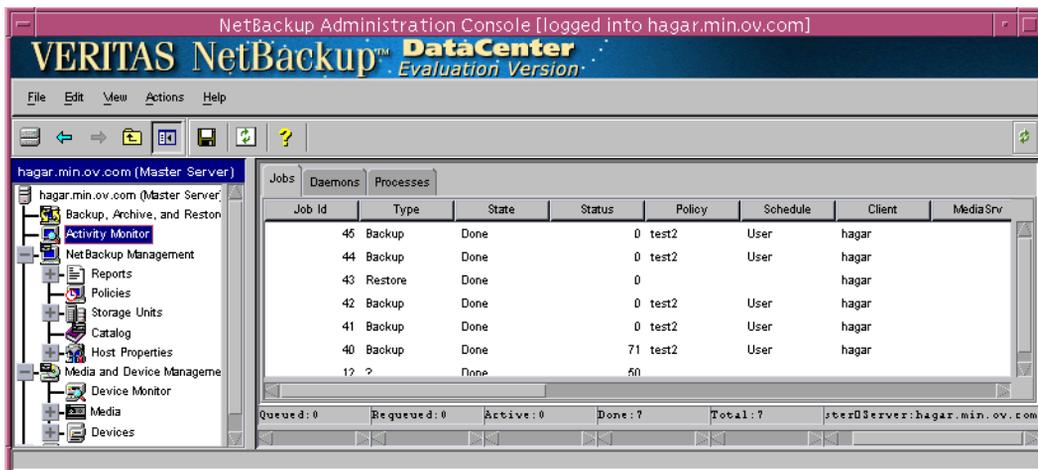
1. Log onto the server as root.
2. Start the NetBackup Administration Console.
3. In the left pane, click **Policies**.  
The right pane splits into an All Policies pane and a details pane.
4. In the All Policies pane, click the policy you wish to test.
5. From the **Actions** menu, click **Manual Backup**.

The Manual Backup dialog box appears.



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

6. Follow the instructions on the dialog box.
7. Click **Activity Monitor** on the NetBackup Administration Console.



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



# Using NetBackup for Sybase

---

# 4

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

---

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

---

This chapter contains the following sections:

- ◆ Performing a Backup
- ◆ Browsing Backups
- ◆ Performing a Restore



## Performing a Backup

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

- ◆ 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 “Configuring an MS-Windows-NT Policy” on page 46 .
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 Policy

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

The administrator on the master server can use the NetBackup server software to manually execute an Automatic Backup schedule for the Sybase policy. Refer to “Configuring a NetBackup Policy” on page 17 for detailed instructions on configuring an automatic backup.

Refer to “Testing NetBackup for Sybase on Windows Configuration Settings” on page 59 for instructions on initiating a backup of a Sybase policy.

## User-Directed Backup

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

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

---

**Note** Refer to “Instructions for Modifying Backup Scripts for Use with Sybase ASE” on page 48 for further details.

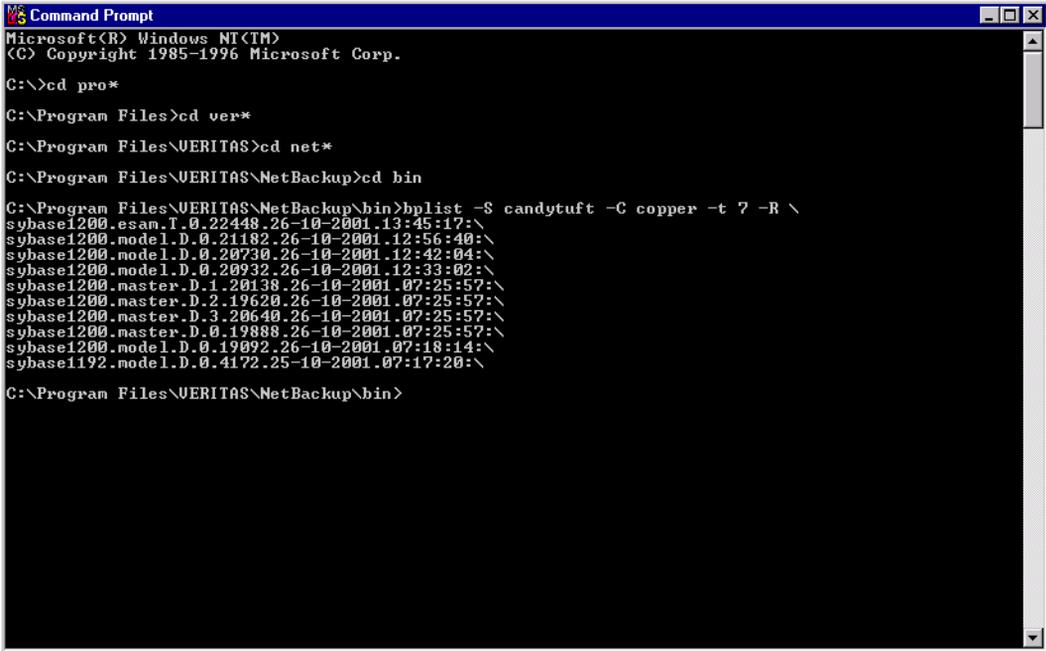
---

See *SYBASE SQL Server Utility Programs for Windows NT* for details on using the `isql` utility. See the *SYBASE SQL Server System Administration Guide* for information on the `DUMP` command.



## Browsing Backups

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 `copper` on a server named `candytuft`.



```
Microsoft Windows [Version 4.0.950] Copyright (c) 1996 Microsoft Corporation
C:\>cd pro*
C:\Program Files>cd ver*
C:\Program Files\VERITAS>cd net*
C:\Program Files\VERITAS\NetBackup>cd bin
C:\Program Files\VERITAS\NetBackup\bin>bplist -S candytuft -C copper -t 7 -R \
sybase1200.esam.I.0.22448.26-10-2001.13:45:17:\
sybase1200.model.D.0.21182.26-10-2001.12:56:40:\
sybase1200.model.D.0.20730.26-10-2001.12:42:04:\
sybase1200.model.D.0.20932.26-10-2001.12:33:02:\
sybase1200.master.D.1.20138.26-10-2001.07:25:57:\
sybase1200.master.D.2.19620.26-10-2001.07:25:57:\
sybase1200.master.D.3.20640.26-10-2001.07:25:57:\
sybase1200.master.D.0.19888.26-10-2001.07:25:57:\
sybase1200.model.D.0.19092.26-10-2001.07:18:14:\
sybase1192.model.D.0.4172.25-10-2001.07:17:20:\
C:\Program Files\VERITAS\NetBackup\bin>
```

The `-t 7` on this command specifies the Sybase backups (dumps). Refer to the NetBackup online help for more information on the `bplist` command.

## Performing a Restore of a Sybase ASE Database

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

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

Refer to the *SYBASE SQL Server System Administration Guide* for detailed instructions.

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

You can load database and transaction dumps by manually submitting the Sybase ASE `LOAD` command from the `isql` utility on the client. See *SYBASE SQL Server Utility Programs for Windows NT* for details on using the `isql` utility. See the *SYBASE SQL Server System Administration Guide* for details on using the Sybase ASE `LOAD` command.

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

Refer to “Instructions for Modifying Restore Scripts for Use with Sybase ASE” on page 52 for information about editing the `LOAD` command with the correct dump-file name. Note that the database dump and all of the transaction logs must be loaded before the database is brought back online.

For example:

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



## Redirected Restore Configuration on the Client

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

1. Ensure that the NetBackup server is configured to allow the redirected restore (see the *NetBackup System Administrator's Guide for Windows* or the *NetBackup System Administrator's Guide for UNIX*).
2. 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
```

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 redirected 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.



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

This chapter contains the following sections.

- ◆ NetBackup and NetBackup for Sybase on Windows Logs
- ◆ Setting the Debug Level
- ◆ Sybase ASE Backup Server Logs and Messages



## NetBackup and NetBackup for Sybase on Windows Logs

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

---

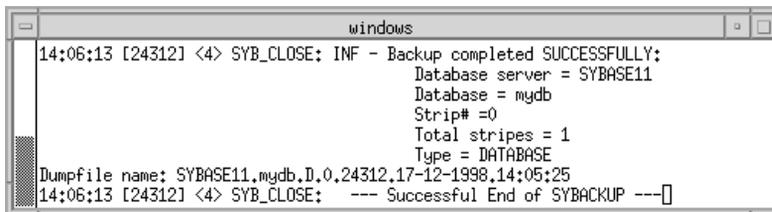
**Note** These logs do not reveal errors that occur during the execution of the Sybase ASE Backup Server, unless those errors also affect NetBackup for Sybase. Sybase may (or may not) use the NetBackup for Sybase logs for errors in the application. Your best sources for Sybase error information are the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

---

Enable the NetBackup for Sybase on Windows NT logs by performing the following steps.

1. Create the following folders on the client:
2. `install_path\NetBackup\logs\bphdb`  
`install_path\NetBackup\logs\sybackup`  
Make sure there is share access to the log folders.

The following is an example debug log:



```

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

NetBackup for Sybase on Windows sends an informational message that specifies the dump-file name to Sybase ASE 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 Folder on the Client

The `install_path\NetBackup\logs\bphdb` folder contains the following types of logs. These logs are a good starting place to determine what type of error occurred.

`sybase_stdout.mmdyy.hhmmss.txt`

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

`sybase_stderr.mmdyy.hhmmss.txt`

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

*mmddy.log*

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

### **sybackup Folder on the Client**

The *install\_path\NetBackup\logs\sybackup* folder contains the following execution log.

*mmddy.log*

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

## **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.

## **Setting the Debug Level**

You can control the amount of information written to the debug log in the *install\_path\NetBackup\logs\sybackup* folder by changing the Database debug level. The higher the value, the more information is logged. In everyday normal operations, the default value of 0 is sufficient. However, VERITAS technical support may ask you to set the value higher when a problem is being analyzed. 5 is the highest possible setting.

### ▼ **To change the Debug Level**

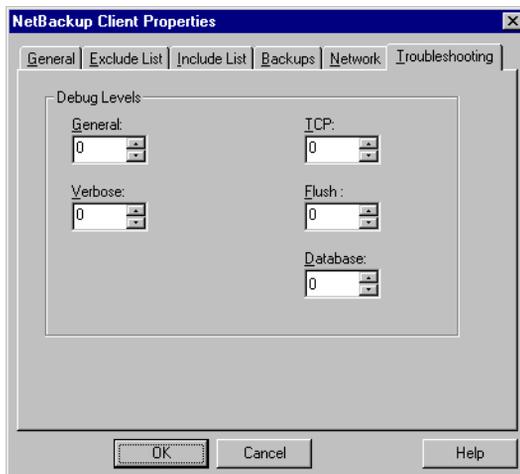
1. From the Start button, click **Programs->VERITAS NetBackup->Backup, Archive, and Restore**.

The Backup, Archive, and Restore interface appears.

2. From the File menu, select **NetBackup Client Properties**.



3. In the NetBackup Client Properties dialog box, select the **Troubleshooting** tab.



By default, the settings are zero.

4. Set the Database debug level.

---

**Note** Information from both settings will be logged to the same file, `mmddy.log`

---

## Sybase ASE Backup Server Logs and Messages

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

```
install_path\NetBackup\logs\bphdb\sybase_stdout.mmddy.hhmmss.txt
```

If the *install\_path*\NetBackup\logs\bphdb\ folder does not exist, the messages are not written.

## ERROR Logging

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

Informational and error messages sent to the Sybase ASE 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 ASE Backup Server messages and logs.

---

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

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

## Preventing Timeout Failures on Large Database Restores

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

This problem can be resolved by increasing the NetBackup Client Read Timeout setting, which will prevent session timeouts and allow the restores to complete successfully.

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





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