VERITAS NetBackup™ 6.0 for Sybase

System Administrator’s Guide

for Windows

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Preface

This guide describes how to install, configure, and use NetBackup for Sybase on a Windows platform. For information about the NetBackup server software, see the following platform-specific manuals:

- NetBackup System Administrator’s Guide for UNIX and Linux, Volume I and II

Getting Help

You can find answers to questions and get help from the NetBackup documentation and from the VERITAS technical support web site.

Finding NetBackup Documentation

A list of the entire NetBackup documentation set appears as an appendix in the NetBackup Release Notes. All NetBackup documents are included in PDF format on the NetBackup Documentation CD.

For definitions of NetBackup terms, consult the online glossary.

▼ To access the NetBackup online glossary

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

Use the scroll function to navigate through the glossary.
Accessing the VERITAS Technical Support Web Site

The address for the VERITAS Technical Support Web site is http://support.veritas.com.

The VERITAS Support Web site lets you do any of the following:

- Obtain updated information about NetBackup for Sybase, including system requirements, supported platforms, and supported peripherals
- Contact the VERITAS Technical Support staff and post questions to them
- Get the latest patches, upgrades, and utilities
- View the NetBackup for Sybase Frequently Asked Questions (FAQ) page
- Search the knowledge base for answers to technical support questions
- Receive automatic notice of product updates
- Find out about NetBackup for Sybase training
- Read current white papers related to NetBackup for Sybase

From http://support.veritas.com, you can complete various tasks to obtain specific types of support for NetBackup for Sybase:

1. Subscribe to the VERITAS Email notification service to be informed of software alerts, newly published documentation, Beta programs, and other services.
   a. From the main http://support.veritas.com page, select a product family and a product.
   b. Under Support Resources, click Email Notifications.
      Your customer profile ensures you receive the latest VERITAS technical information pertaining to your specific interests.

2. Locate the telephone support directory at http://support.veritas.com by clicking the Phone Support icon. A page appears that contains VERITAS support numbers from around the world.

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

3. Contact technical support using e-mail.
a. From the main http://support.veritas.com page, click the E-mail Support icon. A wizard guides you to do the following:
   - Select a language of your preference
   - Select a product and a platform
   - Provide additional contact and product information, and your message
   - Associate your message with an existing technical support case

b. After providing the required information, click Send Message.

Contacting VERITAS Licensing

For license information, you can contact us as follows:
   - Call 1-800-634-4747 and select option 3
   - Fax questions to 1-650-527-0952
   - In the Americas, send e-mail to americus@veritas.com.
      In the Asia and Pacific areas, send email to apac@veritas.com.
      In all other areas, send email to internationallicense@veritas.com.

Accessibility Features

NetBackup contains features that make the user interface easier to use by people who are visually impaired and by people who have limited dexterity. Accessibility features include:
   - Support for assistive technologies such as screen readers and voice input (Windows servers only)
   - Support for keyboard (mouseless) navigation using accelerator keys and mnemonic keys

For more information, see the NetBackup Installation Guide.
Comment on the Documentation

Let us know what you like and dislike about the documentation. Were you able to find the information you needed quickly? Was the information clearly presented? You can report errors and omissions or tell us what you would find useful in future versions of our manuals and online help.

Please include the following information with your comment:

◆ The title and product version of the manual on which you are commenting
◆ The topic (if relevant) on which you are commenting
◆ Your comment
◆ Your name

Email your comment to NBDocs@veritas.com.

Please only use this address to comment on product documentation. See “Getting Help” in this preface for information on how to contact Technical Support about our software.

We appreciate your feedback.
Introduction

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

This chapter introduces NetBackup for Sybase and explains how it relates to both Sybase Backup Server and NetBackup. It contains the following sections:

- NetBackup for Sybase features
- NetBackup for Sybase terminology
- NetBackup for Sybase overview
NetBackup for Sybase Features

The following list shows NetBackup for Sybase’s main features and introduces some terms used in the NetBackup for Sybase documentation. For more information on general NetBackup terminology, see the NetBackup System Administration Guide, Volume I.

<table>
<thead>
<tr>
<th>Feature</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Media and device management</td>
<td>All devices supported by Media Manager are available to NetBackup for Sybase.</td>
</tr>
<tr>
<td>Scheduling facilities</td>
<td>NetBackup scheduling facilities on the master server can be used to schedule automatic and unattended Sybase backups.</td>
</tr>
<tr>
<td></td>
<td>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.</td>
</tr>
<tr>
<td>Multiplexed backups and restores</td>
<td>NetBackup for Sybase lets you take advantage of NetBackup’s multiplexing capabilities. Multiplexing directs multiple data streams to one backup device, thereby reducing the time necessary to complete the operation.</td>
</tr>
<tr>
<td>Transparent execution of both Sybase and regular file system backup and restore operations</td>
<td>All backups and restores run simultaneously and transparently without any action from the NetBackup administrator.</td>
</tr>
<tr>
<td></td>
<td>The database administrator can run database backup and restore operations through NetBackup. Alternatively, you can use Sybase Backup Server as if NetBackup were not present.</td>
</tr>
<tr>
<td></td>
<td>An administrator or any other authorized user can use NetBackup to run database backups and restores.</td>
</tr>
<tr>
<td>Sharing the same Media Manager and disk storage units used for other file backups</td>
<td>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.</td>
</tr>
<tr>
<td>Centralized and networked backup operations</td>
<td>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.</td>
</tr>
<tr>
<td>Feature</td>
<td>Description</td>
</tr>
<tr>
<td>-------------------------------</td>
<td>---------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Graphical user interfaces</td>
<td>NetBackup provides the following graphical user interfaces for client users and administrators:</td>
</tr>
<tr>
<td></td>
<td>• NetBackup Administration Console for Java</td>
</tr>
<tr>
<td></td>
<td>• NetBackup Administration Console for Windows</td>
</tr>
<tr>
<td></td>
<td>A database administrator or NetBackup administrator can start backup operations for Sybase from the NetBackup graphical user interface on the master server.</td>
</tr>
<tr>
<td>Parallel backup and restore</td>
<td>NetBackup for Sybase supports the parallel backup and restore capabilities of the Sybase Backup Server. For example, this permits the user to run more than one tape device at a time for a single Sybase backup or restore, thereby reducing the time necessary to complete the operation.</td>
</tr>
</tbody>
</table>
## NetBackup for Sybase Terminology

The following list shows terms that might be new to a Sybase database administrator or a NetBackup administrator:

<table>
<thead>
<tr>
<th>Term</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>SQL Server and Sybase Backup Server</td>
<td>SQL Server improves the backup and restore functions of Sybase Backup Server by using remote procedure calls (RPCs) to instruct Sybase Backup Server to back up or restore specific databases. NetBackup for Sybase enhances SQL Server functionality by integrating Sybase Backup Server with NetBackup. This provides access to NetBackup media management and scheduling in addition to graphical and menu interfaces.</td>
</tr>
<tr>
<td>SQL Server DUMP and LOAD commands</td>
<td>These SQL Server commands are used for Sybase database backups and restores. The DUMP command is used to back up. The LOAD command is used to restore.</td>
</tr>
<tr>
<td>Archive device</td>
<td>This dump device is used with the DUMP and LOAD commands. It is required to support integration with NetBackup for Sybase.</td>
</tr>
<tr>
<td>Sybase backup scripts</td>
<td>Shell scripts that control NetBackup for Sybase operations.</td>
</tr>
<tr>
<td>Sybase SQL script</td>
<td>An SQL script that contains SQL commands to be performed by Sybase SQL Server.</td>
</tr>
</tbody>
</table>
NetBackup for Sybase Overview

The following example network shows the major components in a NetBackup for Sybase configuration. The server that is hosting the Sybase database must be a NetBackup client, and it must have NetBackup for Sybase licensed.

Example NetBackup for Sybase Configuration

System hosting the Sybase database
NetBackup for Sybase supplies:
- Dynamically Loadable Library
- Sample script files

Sybase database software supplies:
- SQL Server
- Backup Server

Network (TCP/IP)

NetBackup master server
or remote media server
NetBackup software:
- NetBackup Master Server
- NetBackup Media Server (if system is a media server)

Media Manager or disk storage unit

SQL Server and Sybase Backup Server

SQL Server performs Sybase backups and restores by sending Sybase DUMP and LOAD directives to Sybase Backup Server. Sybase Backup Server is an Open Server application that prevents backup and restore tasks from interfering with user processes. SQL Server and Sybase Backup Server are installed and configured with Sybase’s regular installation facilities.
When either a Sybase DUMP or LOAD command is processed, SQL Server sends Sybase Backup Server the directives to dump or load the specified database or transaction log. These directives indicate which set of archive devices to use for the dump image. Sybase Backup Server then handles all data transfer for the operation.

For more information on SQL Server and Sybase Backup Server, see your Sybase documentation.

### NetBackup for Sybase

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

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

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

```
"sybackup::"
```

The Sybase DUMP command is as follows:

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

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

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

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

The `backup_type` is either D for database or T for transaction.

For example:

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

Sybase script files control the NetBackup operations. A user selects a script through the NetBackup client user interface. For more information, see “Using NetBackup for Sybase” on page 41.

You use the NetBackup Administration Console to configure a schedule to use a script to perform NetBackup operations. For more information, see “Configuration” on page 13. The following process takes place when a script is selected for a backup:

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

2. The Sybase backup script starts the `isql` utility and uses the Sybase SQL script as an input file.

3. SQL Server starts the requested operation on the databases.

4. If the process requires media to store backup data, NetBackup for Sybase starts a user-directed backup by using the NetBackup `bphbackup` command for Sybase database extension.

5. The NetBackup media server connects to NetBackup for Sybase on the client.

6. Sybase Backup Server sends data to NetBackup for Sybase, which transfers data to the media server.

7. The media server sends the data to a storage unit.

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

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

---

**Note** The Sybase Backup Server API does not support the Remote Sybase Backup Server feature. NetBackup controls all network communications.
Installation Requirements and License Key Registration

This chapter describes how to perform the following tasks:

- Verifying the installation prerequisites for NetBackup for Sybase. Perform this task before enabling this agent.

  The NetBackup for Sybase software is installed when you install NetBackup, so verify these prerequisites before enabling NetBackup for Sybase.

- Registering the license key for NetBackup for Sybase.

- Enabling functions specific to NetBackup for Sybase.

Verifying the Installation Prerequisites

Before enabling NetBackup for Sybase, verify that you are installing the agent on a supported operating system or platform and that requirements are met for the NetBackup software, the database agent, and, if applicable, the cluster software. These requirements apply for remote and local installations.

Operating System and Platform Compatibility

Verify that NetBackup for Sybase will be installed on an operating system or platform supported by NetBackup. A compatibility list for database agents is available on the Technical Support web site.

▼ To verify compatibility


2. From the Select Product Family list, click NetBackup Products.

3. From the Select Product list in the right pane, click NetBackup Enterprise Server.
Verifying the Installation Prerequisites


5. In the list of documents, click NetBackup Enterprise Server (tm)/ Server x.x Database Agent Compatibility (updated date).
   For x.x, look for the current release. For date, look for the most recent date.
   For information on supported cluster environments for NetBackup for Sybase, see NetBackup (tm) x.x Cluster Compatibility (updated date).

6. Click on the link for the PDF document, which is a downloadable file that enables you to view the supported database spreadsheet for this release.

7. Read the document and verify that the software in your environment is compatible with the NetBackup and NetBackup for Sybase software.

NetBackup Software

Verify that the following requirements are met for the NetBackup server and client software:

- The NetBackup server software is installed and operational on the NetBackup server.
  The NetBackup server platform can be any of those that NetBackup supports. For installation information, see the NetBackup Installation Guide.

- The NetBackup client software is installed on the client where you will be backing up the databases. This step also installs NetBackup for Sybase.
  In addition, the \install_path\NetBackup directory must exist on the client. On Windows platforms, the NetBackup for Sybase software is installed along with the server and client software. For installation information, see the NetBackup Installation Guide.

- Make sure that you have configured backup media in a Media Manager or disk storage unit. The amount of backup media required depends on the devices used, the sizes of the databases that you are backing up, the amount of data that you are archiving, the size of your backups, and the frequency of backups or archives. For information on using Media Manager, see the NetBackup Media Manager System Administrator’s Guide.

Database Software

Verify the following regarding the database software on the NetBackup client:

- Sybase vendor software must be installed and operational.
One or more Sybase instances must exist.
For information on installing Sybase and creating instances, see your Sybase documentation.

Cluster Software

Verify the following requirements if you are enabling the NetBackup for Sybase software on a NetBackup server configured in a NetBackup cluster:

- The Sybase vendor software is installed and operational on each node to which NetBackup can failover.
- The NetBackup server software is installed and configured to work in a NetBackup cluster. Follow the instructions in the NetBackup Installation Guide.

The NetBackup server installation procedure installs the NetBackup for Sybase software along with the server and client software. After all other prerequisites are met, you only need to register the license key for the agent on each NetBackup server in order to enable the agent.
Registering the License Key

NetBackup for Sybase is installed with the server and client software. To use this agent, register a valid license key for it on the master or media server. In a NetBackup cluster, register the key on each node on which the NetBackup server is installed.

If you have more than one instance of Sybase on your Windows computer, copy the NetBackup for Sybase library to every Sybase instance.

▼ To register a license key

1. On the master or media server, open the NetBackup Administration Console.
2. Choose Help > License Keys.
3. Click the New button.
4. Type in the license key and click Add.
   For information on adding license keys, see the NetBackup System Administrator’s Guide, Volume I.

▼ To copy the NetBackup for Sybase library

❖ Copy VERITAS\NetBackup\dbext\sybase\lib\**\lib\**

<table>
<thead>
<tr>
<th>For</th>
<th>Copy to this directory</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sybase 12.0 or 12.5</td>
<td>%SYBASE%\ASE-12_*\lib\</td>
</tr>
<tr>
<td>Sybase 11.9.2</td>
<td>%SYBASE%\lib\</td>
</tr>
</tbody>
</table>
Configuration

Before attempting to configure NetBackup for Sybase, complete the procedure described in “Installation Requirements and License Key Registration” on page 9.

The following steps outline the configuration procedure:

1. Configuring the Maximum Jobs Per Client
2. Configuring Backup Policies
3. Modifying the Backup, Restore, and Load Scripts
4. Configuring the NetBackup Client
5. User Authorization
6. Enabling Striped Dumps and Loads
7. Testing Configuration Settings

The following sections in this chapter describe each of these steps in detail.

User Interface Terminology Notes

You can perform many of the configuration steps in this chapter from the NetBackup Administration Console on the master server. Depending on your master server’s platform, the console is available in one or two forms. NetBackup supports a Java interface for both Windows and UNIX master servers. In addition, NetBackup supports a Windows interface for Windows master servers.

The Java and Windows interfaces are nearly identical, but when there are interface differences in the configuration procedures, this manual uses the following headings to identify the interface being described:

*From the Windows interface:*

*From the Java interface:*
Configuring the Maximum Jobs Per Client

▼ To configure the Maximum jobs per client

1. In the left pane of the NetBackup Administration Console, expand Host Properties.

2. Select Master Server.

3. In the right pane, double-click on the server icon.
   The Master Server Properties dialog box displays.

4. In the Master Server Properties dialog box, click Global Attributes.

5. Change the Maximum jobs per client value to 99.
   The Maximum jobs per client specifies the maximum number of concurrent backups allowed per client. The default is 1. You can use the following formula to calculate a smaller value:
   
   Maximum jobs per client = number_ofStreams \times number_of_policies

   \textit{number_of_streams} \quad \text{The number of backup streams between the database server and NetBackup. Each separate stream starts a new backup job on the client.}

   \textit{number_of_policies} \quad \text{The number of policies of any type that can back up this client at the same time. This number can be greater than one. For example, a client can be in two policies in order to back up two different databases. These backup windows can overlap.}

\textbf{Tip} \quad \text{Enter a large enough value for the Maximum jobs per client attribute to meet the number of jobs executed by Sybase. You might need to experiment with different values at your site.}
Configuring Backup Policies

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
- Policy attributes
- Backup schedules
- Clients to be backed up
- The script files to be executed on the clients

To use NetBackup for Sybase, you need to define at least one Sybase policy with the appropriate schedules. 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. For configuration instructions and information on all the attributes available, see the *NetBackup System Administrator’s Guide, Volume I*.

**Note** If you are going to perform striped dumps or loads, see “Enabling Striped Dumps and Loads” on page 38.

Planning NetBackup for Sybase Policies and Schedules

The following table summarizes the types of NetBackup policies and schedules to create:

<table>
<thead>
<tr>
<th>For this type of data:</th>
<th>Specify this type of policy:</th>
<th>Specify this type of schedule:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sybase database</td>
<td>Sybase</td>
<td>Required schedule:</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Application Backup (Default-Application-Backup)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Optional schedule (Note: the following schedule is required if you want to perform scheduled backups):</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Automatic Full Backup (for the database_dump)</td>
</tr>
<tr>
<td>Sybase transaction logs</td>
<td>Sybase</td>
<td>Required Schedule:</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Automatic Full for the transaction logs (trans_dump)</td>
</tr>
</tbody>
</table>
Adding a New Policy

To add a new policy

1. Log on to the master server as administrator (Windows) or root (UNIX).

2. Start the NetBackup Administration Console.

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

4. From the Windows interface: In the left pane, right-click Policies and choose New Policy.

From the Java interface: In the left pane, click Policies. In the All Policies pane, right-click the master server, and click New.

The Add a New Policy dialog box displays.

5. In the Policy name field, type a unique name for the new policy.

6. Click OK.

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

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

Note The Sybase policy type does not appear in the drop-down list unless your master server has a license key for NetBackup for Sybase.
8. Complete the entries on the Attributes tab. For more information, see “Description of Attributes”, which follows this procedure.

9. Add other policy information.
   ◦ To add schedules, see “Adding Schedules” on page 17.
   ◦ To add clients, see “Adding Clients” on page 22.
   ◦ To add scripts to the Backup Selections list, see “Adding Backup Selections” on page 23.

10. When you have added all the schedules, clients, and Backup Selections you need, click OK. The new policy is created.

Description of Attributes

With a few exceptions, NetBackup manages a database backup like a file system backup. The following table shows the policy attributes that are different for Sybase backups. This information is used when you are adding a new policy.

Other policy attributes vary according to your specific backup strategy and system configuration. For more information on policy attributes, see the NetBackup System Administrator’s Guide, Volume I.

Description of Policy Attributes

<table>
<thead>
<tr>
<th>Attribute</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Policy type</td>
<td>Determines the types of clients that can be in the policy and, in some cases, the types of backups that NetBackup can perform on those clients. To use NetBackup for Sybase, you must define at least one policy of type Sybase.</td>
</tr>
<tr>
<td>Keyword phrase</td>
<td>For NetBackup for Sybase, the <strong>Keyword phrase</strong> entry is ignored.</td>
</tr>
</tbody>
</table>

Adding Schedules

Each policy has its own set of schedules. These schedules initiate automatic backups and specify when a user can initiate operations.

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

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

To access the Policy dialog, double-click the policy name in the Policies list in the NetBackup Administration Console.

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

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

All Sybase backup operations are performed through NetBackup for Sybase using an Application Backup schedule. This includes backups that start automatically.

Configure an Application Backup schedule for each Sybase policy you create. If you do not do this, you cannot 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” on page 20.

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

For example, assume the following:

- Users perform Sybase backup operations during business hours, 0800 to 1300.
- Automatic backups that use this policy commence 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

<table>
<thead>
<tr>
<th>Type of Backup</th>
<th>Schedule settings</th>
<th>Description</th>
<th>Settings</th>
</tr>
</thead>
<tbody>
<tr>
<td>Application Backup</td>
<td>Retention</td>
<td>The length of time the backup images are retained in the NetBackup catalog for restore.</td>
<td>2 weeks</td>
</tr>
<tr>
<td></td>
<td>Backup Window</td>
<td>The time during which a NetBackup operation can be initiated.</td>
<td>Sunday through Saturday 00:00:00 - 24:00:00</td>
</tr>
</tbody>
</table>
Tip  Set the time period for the Application Backup schedule for 24 hours per day, seven
days per week. This ensures that your NetBackup for Sybase operations are never
locked out due to the Application Backup schedule.

To configure an automatic backup schedule

Generally, you configure two Automatic Backup schedules for each Sybase database: one
for the database dump backups and one for the transaction log backups.

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

2. Click New.
   A dialog box displays. The title bar shows the name of the policy to which you are
   adding the schedules.

3. Specify a unique name for the schedule.

4. Select the Type of backup.
   For information on the types of backups available for this policy, see “Types of Backup
   Schedules” on page 20.

5. Specify the other properties for the schedule as explained in Schedule Properties,
   which follows this procedure.

   The following table shows example settings for an automatic backup schedule:

<table>
<thead>
<tr>
<th>Type of Backup</th>
<th>Schedule Settings</th>
<th>Description</th>
<th>Settings</th>
</tr>
</thead>
<tbody>
<tr>
<td>Automatic Backup</td>
<td>Retention</td>
<td>The length of time to store the record of a backup, which NetBackup uses to determine if the schedule needs to be run.</td>
<td>2 weeks</td>
</tr>
<tr>
<td></td>
<td>Frequency</td>
<td>Frequency determines how often a backup should be performed</td>
<td>every week</td>
</tr>
<tr>
<td></td>
<td>Backup Window</td>
<td>The time during which a NetBackup operation can be initiated.</td>
<td>Sunday, 18:00:00 - 22:00:00</td>
</tr>
</tbody>
</table>

6. If this is the last schedule, click OK. To add other schedules, repeat step 1 through step 6.
**Types of Backup Schedules**

You can perform backups with the following types of schedules:

**Sybase Backup Types**

<table>
<thead>
<tr>
<th>Application Backup</th>
<th>The Application Backup schedule enables user-controlled NetBackup operations from the client, both those initiated from the client and those initiated by an automatic schedule on the master server. NetBackup uses the Application Backup schedule when the Sybase user starts a backup manually. Configure at least one Application Backup schedule for each Sybase policy. The Default-Application-Backup schedule is configured automatically as an Application Backup schedule.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Automatic Backup</td>
<td>An Automatic Backup schedule specifies the dates and times for NetBackup to 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 run on each client.</td>
</tr>
</tbody>
</table>

**Schedule Properties**

Some of the schedule properties have a different meaning for database backups than for a regular file system backup. The following table explains the schedule properties:

**Description of Schedule Properties**

<table>
<thead>
<tr>
<th>Property</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type of backup</td>
<td>Specifies the type of backup that this schedule controls. The selection list shows only the backup types that apply to the policy you are configuring. For more information, see “Types of Backup Schedules” on page 20.</td>
</tr>
<tr>
<td>Frequency</td>
<td>This setting is used only for scheduled backups and not for user-directed backups. <strong>Frequency</strong> specifies the period of time that can elapse until the next backup or archive operation begins on this schedule. For example, if the frequency is seven days and a successful backup occurs on Wednesday, the next full backup does not occur until the following Wednesday. Typically, incremental backups have a shorter frequency than full backups.</td>
</tr>
<tr>
<td>Calendar</td>
<td>This setting is used only for scheduled backups. It is not used for user-directed backups. The <strong>Calendar</strong> option allows you to schedule backup operations based on specific dates, recurring week days, or recurring days of the month.</td>
</tr>
</tbody>
</table>
Description of Schedule Properties (continued)

<table>
<thead>
<tr>
<th>Property</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Retention</td>
<td><strong>Frequency-based scheduling</strong>&lt;br&gt;The retention period for an Application Backup schedule refers to the length of time that NetBackup keeps backup images.&lt;br&gt;The retention period for an Automatic Backup schedule controls how long NetBackup keeps records of when scheduled backups have occurred.&lt;br&gt;Set a retention period that is longer than the frequency setting for the schedule. For example, if the frequency setting is set to one week, set the retention period to be more than one week. The NetBackup scheduler compares the latest record of the Automatic Backup schedule to the frequency of that Automatic Backup schedule 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 is unpredictable. However, if you set the retention period to be longer than necessary, the NetBackup catalog accumulates unnecessary records.&lt;br&gt;<strong>Calendar-based scheduling</strong>&lt;br&gt;The retention period for an Application Backup schedule refers to the length of time that NetBackup keeps backup images.&lt;br&gt;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.</td>
</tr>
<tr>
<td>Multiple copies</td>
<td>If you want to specify multiple copies for your Sybase policy, configure Multiple copies on the Application Backup schedule.</td>
</tr>
</tbody>
</table>

Other schedule properties vary according to your specific backup strategy and system configuration. For more information on schedule properties, consult the *NetBackup System Administrator’s Guide, Volume I.*
Adding Clients

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

The following software must be installed on the client:

◆ Sybase
◆ NetBackup client or server
◆ The backup and restore Sybase script(s)

▼ To add clients to a policy

1. In the Policy dialog, click the Clients tab.

To access the Policy dialog, double-click the policy name in the Policies list in the NetBackup Administration Console.

2. Click New.

3. Enter the name of the client you want to add.

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

From the Windows interface:

◆ Type the name into the client list and press Enter.

   If NetBackup cannot detect the hardware and operating system, a dialog box displays so you can specify this information.

   OR

◆ Click the Browse for Computer button to choose the client from the network.

From the Java interface:

a. The Add Client dialog box displays. In the Client name field, type the name of the client you are adding.

b. Choose the Hardware and operating system type and click Add.

4. To add another client, repeat step 2 and step 3.

5. If this is the last client, click OK.
Adding Backup Selections

The backup selections list in a database policy has a different meaning than for non-database policies. For example, in an MS-Windows-NT policy, the list contains files and folders to be backed up. In a NetBackup for Sybase database policy, you specify scripts to be run.

Observe the following when using scripts:

◆ Make sure the scripts reside on each client in the client list. Scripts can reside in any location. Make sure that NetBackup can access the location you choose and that NetBackup can run the scripts.

◆ NetBackup installs sample scripts when you install the software, and you can modify these scripts for your own use. As part of the modification process, write the scripts to a location outside of the original installation location so future NetBackup installations do not overwrite your site’s scripts.

◆ If you are using NetBackup for Sybase in a NetBackup server cluster, make sure that the scripts reside in a location that is available after a failover.

Add scripts only if you are setting up a policy for automatic scheduling. All scripts listed in the backup selections list are run for manual backups and for Automatic Backup schedules as specified under the Schedules tab. NetBackup runs the scripts in the order that the scripts appear in the Backup Selections list.

For more information on backup scripts, see “Modifying the Backup, Restore, and Load Scripts” on page 25.

▼ To add scripts to the backup selections list

The following steps show how to perform this procedure from both the Java interface and from the Windows interface.

Caution Be sure to specify the correct script names in the Backup Selections list to prevent an error or possibly a wrong operation. Make sure that the script resides on the client before you try to add it to the Backup Selections list.

From the Java interface:

1. Open the Policy dialog.
   
   To access the Policy dialog, double-click the policy name in the Policies list in the NetBackup Administration Console.

2. Click the Backup Selections tab.

3. Click New.
Configuring Backup Policies

A dialog box displays.

4. Specify the names of the scripts that you want NetBackup to use.
   a. In the Script box, type the full path name of a script on the client.
      For example:
      C:\backup_scripts\db\cold_backup.cmd
   b. Click Add to add the script to the list.
   c. Repeat step a and step b until all scripts are added.

5. Click OK.

From the Windows interface:

1. In the Policy dialog, click the Backup Selections tab.
   To access the Policy dialog, double-click the policy name in the Policies list in the NetBackup Administration Console.

2. Click New.

3. Specify the names of the scripts you want NetBackup to use.
   Use one of the following methods:
   ♦ Type the full path name of the script on the client.
     For example:
     C:\backup_scripts\db\cold_backup.cmd
   ♦ Click the Remote Folder button.
     The Browse window displays the hosts in the client list. Navigate to and select the script file. Click OK.

4. Click OK.
Modifying the Backup, Restore, and Load Scripts

Sybase SQL scripts cause the SQL Server to send directives that initiate a dump or load of the specified database or transaction log to the Sybase backup server. The Sybase \isql\ utility communicates with the SQL server. For more information about the \isql\ utility, see your Sybase documentation.

NetBackup for Sybase includes the following example scripts:

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

The NetBackup for Sybase installation process writes these example scripts to the following location:

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

Each script can perform multiple Sybase backup server operations, but each type of operation requires a separate script. For example, you need to use separate scripts for backups versus restores.

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

The following sections show how to modify these scripts for your environment.
Modifying the Backup Script

▼ To modify the sybase_mdb_backup.cmd script

1. Copy the example script to a different location on your client.
   Sybase backup scripts can be located anywhere on a client. If you do not copy the
   scripts to a site-specific location, subsequent NetBackup upgrades can overwrite your
   site’s scripts.

2. Make sure there is share access to the script.

3. Use a text editor to open the sybase_mdb_backup.cmd script.

4. Modify the sybase_mdb_backup.cmd script using the instructions in the script
   itself.
   The table called “Additional Information for Editing the Backup Script” on page 29
   contains information on modifying this script.
   You can modify the sybase_mdb_backup.cmd script to back up more than one
   database. For example, the following DUMP commands back up two different
   databases, db1 and db2, and use two different Sybase policy configurations:
   
   ```
   dump database db1 to "sybackup::-POLICY db1-policy"
   go
   dump database db2 to "sybackup::-POLICY db2-policy"
   go
   ```

5. Save and close the file.

6. Test the script you modified.
   For information on testing scripts, see “Testing Configuration Settings” on page 40.

The sybase_mdb_backup.cmd script is as follows:

```bash
@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 **************************************************************
```
Modifying the Backup, Restore, and Load Scripts

@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 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 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 Remove the REM from the beginning of the line below if you are going to
Modifying the Backup, Restore, and Load Scripts

@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%SYBASE%
-i .\syb_%DATABASE_NAME%_dump
@echo %CMD_LINE%
@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
The following table provides additional information for editing the backup script:

### Additional Information for Editing the Backup Script

<table>
<thead>
<tr>
<th>Line</th>
<th>Modification Needed</th>
</tr>
</thead>
<tbody>
<tr>
<td>@set SYBASE=C:\Sybase</td>
<td>Set this variable to the Sybase home folder. Typically set to the same value as the SYBASE environment variable.</td>
</tr>
<tr>
<td>@set SYBSERVER=SYBASE</td>
<td>Set this variable to the name of the Sybase Adaptive Server. Typically set to the same value as the DQUERY environment variable.</td>
</tr>
<tr>
<td>@set DATABASE_NAME=SYB_DB</td>
<td>Set this variable to the name of your Sybase database.</td>
</tr>
<tr>
<td>if &quot;%SYBACKUP_SCHED%&quot; == &quot;database_dump&quot; goto dbdump</td>
<td>Replace database_dump with the Automatic Backup schedule name that is used to schedule database dumps. You configured this Automatic Backup schedule in “Configuring Backup Policies” on page 15.</td>
</tr>
<tr>
<td>@echo dump %DUMP_TYPE% %DATABASE_NAME% to &quot;sybackup:-SERV %SYBACKUP_SERVER% -POLICY %SYBACKUP_POLICY% -SCHED Default-Application-Backup -STAT_FILE %STATUS_FILE%&quot; &gt; .\syb_%DATABASE_NAME%_dump</td>
<td>This line builds the dump command that isql processes. Change the NetBackup server name (%SYBACKUP_SERVER%), the Sybase policy name (%SYBACKUP_POLICY%), and Application Backup schedule name (Default-Application-Backup) to fit your environment. Do not change the name of the client status file (%STATUS_FILE%).</td>
</tr>
<tr>
<td>@REM echo stripe on &quot;sybackup:-SERV %SYBACKUP_SERVER% -POLICY %SYBACKUP_POLICY% -SCHED Default-Application-Backup -STAT_FILE %STATUS_FILE%&quot; &gt;&gt; .\syb_%DATABASE_NAME%_dump</td>
<td></td>
</tr>
</tbody>
</table>
**Modifying the Backup, Restore, and Load Scripts**

### Additional Information for Editing the Backup Script (continued)

<table>
<thead>
<tr>
<th>Line</th>
<th>Modification Needed</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Change the NetBackup server name (%SYBACKUP_SERVER%), the Sybase policy name (%SYBACKUP_POLICY%), and Application Backup schedule name (%SYBACKUP_POLICY%) to match the <code>echo dump</code> line described previously in this table. Repeat this line for each additional stripe that you plan to use to backup the database. If you are going to use multiple stripes to back up the Sybase database, delete <code>REM</code> from this line.</td>
</tr>
</tbody>
</table>

```plaintext
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.
Modifying the Restore Script

To modify the sybase_mydb_restore.cmd script

1. Copy the example script to a different location on your client.
   Sybase restore and load scripts can be located anywhere on the client. If you do not
   copy the scripts to a site-specific location, subsequent NetBackup upgrades can
   overwrite your site’s scripts.

2. Make sure there is share access to the script.

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

4. Modify the sybase_mydb_restore.cmd script using the instructions in the script
   itself.
   The table called “Additional Information for Editing the Restore Script” on page 32
   contains more information for modifying this script.

5. Save and close the file.

6. Test the script you modified.
   For information on testing scripts, see “Testing Configuration Settings” on page 40.

The sybase_mydb_restore.cmd script is as follows:

```bash
@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=
```

Chapter 3, Configuration
Modifying the Backup, Restore, and Load Scripts

: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 ******************************************************
@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%
%MD_LINE%

@echo on
@endlocal

The following table provides additional information for editing the restore script:

<table>
<thead>
<tr>
<th>Line</th>
<th>Modification Needed</th>
</tr>
</thead>
<tbody>
<tr>
<td>@set SYBASE=C:\Sybase</td>
<td>Set this to the Sybase home folder. Typically set to the same value as the SYBASE environment variable.</td>
</tr>
<tr>
<td>@set SYBSERVER=SYBASE</td>
<td>Set this to the name of the Sybase Adaptive Server. Typically set to the same value as the DSQUERY environmental variable.</td>
</tr>
<tr>
<td>@set LOADDB=\sybase_mydb_load&quot;</td>
<td>Replace LOADDB with the full pathname of the script file that contains the Sybase LOAD command. Perform this replacement only if the script file is in a directory that is different from the one in which the sybase_mydb_restore.cmd script file resides.</td>
</tr>
</tbody>
</table>
### Additional Information for Editing the Restore Script (continued)

<table>
<thead>
<tr>
<th>Line</th>
<th>Modification Needed</th>
</tr>
</thead>
<tbody>
<tr>
<td>set CMD_LINE=%SYBASE%%OCS_QUAL%\bin\isql -Usa -Pmanager -I%SYBASE%\ini\sql.ini -S%SYBSERVER%</td>
<td>Replace <code>manager</code> with the Adaptive Server password for the administrator.</td>
</tr>
</tbody>
</table>
Modifying the Load Script

To modify the sybase_mydb_load script

1. Copy the example script to a different location on your client.
   Sybase restore and load scripts can be located anywhere on the client. If you do not copy the scripts to a site-specific location, subsequent NetBackup upgrades can overwrite your site’s scripts.

2. Make sure there is share access to the script.

3. Use a text editor to open the sybase_mydb_load script.

4. Modify the sybase_mydb_load script, which is as follows:

   ```
   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
   ```

   a. Replace mydb with the name of the database.

   b. Replace the file name, shown here as SYBASE11, with the name obtained from the bpplist command.
      The file name portion of the load command begins after the two colons (::).
      For information about how to obtain the file name, see “Browsing Backups” on page 44.
      For more information about the format of the file name, see the technical overview in “NetBackup for Sybase” on page 6.

   c. (Optional) Use the -SERV option to specify the NetBackup server on the device string of the load command. The -SERV option, which in this example specifies saturn, overrides any server that is specified in the NetBackup client configuration. For example:

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

5. Save and close the file.

6. Test the script you modified.
For information on testing scripts, see “Testing Configuration Settings” on page 40.

**Environment Variables**

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

<table>
<thead>
<tr>
<th>Environment Variable</th>
<th>Purpose</th>
</tr>
</thead>
<tbody>
<tr>
<td>%SYBACKUP_SERVER%</td>
<td>Name of the NetBackup server.</td>
</tr>
<tr>
<td>%SYBACKUP_POLICY%</td>
<td>Name of the NetBackup policy.</td>
</tr>
<tr>
<td>%SYBACKUP_SCHED%</td>
<td>Name of the Automatic Backup schedule.</td>
</tr>
<tr>
<td>%SYBACKUP_SCHEDULED%</td>
<td>Set to 1 if this is a scheduled backup (Automatic Backup).</td>
</tr>
<tr>
<td>%SYBACKUP_USER_INITIATED%</td>
<td>Set to 1 if this is a user-initiated backup (Application Backup).</td>
</tr>
</tbody>
</table>

**Note** The %SYBACKUP_POLICY% and %SYBACKUP_SCHED% variables are set 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 operation is initiated, NetBackup searches for the policy, server, and schedule definitions in the following order:

1. `-SERV`, `-POLICY` and `-SCHED` options on the Sybase DUMP command.

2. NetBackup Client configuration.
   
   The **Backups** tab of the NetBackup Client Properties dialog lets you specify this configuration. **NetBackup Client Properties** is available from the **File** menu of the Backup, Archive, and Restore interface.

   NetBackup searches the configuration for policy, server, and schedule definitions. In case of conflicts, the order of precedence is as follows:
Configuring the NetBackup Client

1. Command line options
2. Script variables
3. Environment variables
4. $USER/bp.conf (UNIX clients)
5. /usr/openv/netbackup/bp.conf (UNIX clients) or the NetBackup client configuration (Windows clients)
6. Built-in variables

NetBackup uses a policy or schedule configured in the NetBackup client configuration for all backups on the client, including file system and Sybase database backups. For this reason, if a policy or schedule that is not a Sybase policy is configured in the NetBackup client configuration, use the -POLICY and -SCHED options on the Sybase DUMP command to specify the correct policy or schedule. For information on how to specify a policy or schedule on the Sybase DUMP command, see “Modifying the Backup, Restore, and Load Scripts” on page 25.

If NetBackup fails to find policy and schedule definitions, NetBackup for Sybase defaults to the 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 does not have permission to connect to the target database if you are using OS Authentication instead of passwords. If you are using OS Authentication, run the NetBackup client service under an account that has SYSDBA privileges. Use the following procedure to change the user account.

▼ To change the user account for the NetBackup client services

1. Choose Start > Settings > Control Panel.
2. From the Control Panel, open Services.
3. Highlight NetBackup Client Service, and click 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 supports the Sybase Backup Server’s ability to open multiple streams simultaneously to perform parallel dumps and loads. All streams must be available simultaneously before the dump or load can proceed. In addition, the number of stripes specified during a load should match that of the dump.

Example Scripts for Striped Dumps and Loads

The following is an example Sybase SQL backup script for a Sybase striped dump:

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

The following is an example Sybase SQL load script for a Sybase striped load:

load database mydb from
"sybackup::SYBASE11.mydb.D.0.27997.20-10-1997.10:55:52"
go

For more information, see “Modifying the Backup, Restore, and Load Scripts” on page 25.

Multiplexing Considerations - Duplicating Tapes

If you duplicate a tape with backup files on it that was created with Sybase striping and the NetBackup multiplex feature, make sure to use multiplexing when duplicating the tape.

Caution  NetBackup tape duplication must be performed with the multiplex option when Sybase striping and the NetBackup multiplex (MPX) feature are used for a Sybase backup. A problem occurs when multiple Sybase 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. This is also accessible as the Preserve multiplexing checkbox on the Duplicate Backup Images window. In addition, all of the backups from the original Sybase multiplexing session must be included in the duplicated multiplexed group.
Multiplexing Considerations - Using more than 12 Stripes

If multiplexing striped Sybase database backups, you might require a special configuration to restore them. By default, when restoring from multiplexed backups, NetBackup uses twelve data buffers. This is enough unless you are using more than twelve stripes. If you are using more than 12 stripes, use the following procedure to increase the number of data buffers used by NetBackup.

▼ To increase the amount of data buffers for a restore

1. On the master server, use a text editor to create file
   \install_path\NetBackup\db\config\NUMBER_DATA_BUFFERS_RESTORE.

2. In the file, enter an integer to specify the number of buffers.
   This number is the only entry in the file.

3. Save and close the file.
   Make sure that editor does not save the file with any file extensions.
Testing Configuration Settings

After configuring the master server for NetBackup for Sybase, test the configuration settings by performing a manual backup (or backups) using the automatic backup schedules you have created.

▼ To test the configuration settings

1. Log onto the master server as administrator (Windows) or root (UNIX).

2. Start the NetBackup Administration Console.

3. In the left pane, click Policies.
   
   From the Windows interface: The policy list appears in the right pane.
   
   From the Java interface: The right pane splits into an All Policies pane and a details pane.

4. Click the policy you want to test.

   
   The Manual Backup dialog box appears.
   
   The Schedules pane contains the name of an automatic schedule (or schedules) configured for the policy that you are going to test. The Clients pane contains the name of the client(s) listed in the policy that you are going to test.

6. Follow the directions in the Manual Backup dialog box.

7. Click Activity Monitor on the NetBackup Administration Console.
   
   If the manual backup does not exit with a successful status, see “Troubleshooting” on page 47.

For a description of status codes and other troubleshooting information, see the NetBackup Troubleshooting Guide.
Using NetBackup for Sybase

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

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

This chapter contains the following sections:

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

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

- A full backup copies the entire database, including both the data and the transaction log. This is accomplished by performing a database dump.
- An incremental backup copies 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.

Backup Strategy

One of the major tasks in developing a backup plan is to determine how often to back up your databases. The backup strategy in this section is an example. For guidelines on developing your own backup and recovery plan, refer to your Sybase documentation.

The frequency of your backups determines how much work you can restore in the event of a disaster. Dump each database just after you create it to provide a base point, and then dump it on a fixed schedule thereafter.

The following is an example database backup strategy:

1. Perform a full database backup by running a database dump every Friday night.

2. Back up your Sybase configuration files every Friday night at the same time as the full-database backup.
   
   Sybase recommends that you save all the Sybase scripts. This includes scripts that contain the disk init, create database, and alter database commands.
   
   Sybase also recommends that you save a hard copy of your sydatabases, sysusages, and sydevices tables each time you issue one of these commands. In addition, keep a copy of the syslogins.

3. Perform an incremental backup each night by running a transaction log dump.

Automatic Backup of a Sybase Database

The most convenient way to back up your database is to set up schedules for automatic backups. When the NetBackup scheduler invokes a schedule for an automatic backup, the Sybase backup scripts run in the same order as they appear in the file list. The scheduler tries to find each script, and it runs the scripts that it finds.

For information on initiating a backup of a Sybase policy, see “Testing Configuration Settings” on page 40.
Manual Backup of a Sybase Database

▼ To back up a Sybase database manually

1. (Optional) Issue the Sybase DBCC command to check database consistency.
   Database consistency is needed to ensure consistent and accurate backups. If the database is corrupt, use the DUMP command. The DUMP command can complete successfully even if the database is corrupt.

2. Log into the NetBackup master server as administrator (Windows) or root (UNIX).

3. Using the NetBackup Administration Console, manually run an automatic backup schedule for the Sybase policy.
   For information on initiating a backup of a Sybase policy, see “Testing Configuration Settings” on page 40.

User-Directed Backup

▼ To perform a user-directed backup

1. (Optional) Issue the Sybase DBCC command to check the database’s consistency.

2. Issue the Sybase DUMP command from the isql utility on the client.
   If the client name appears in one or more Sybase policies, the Default-Application-Schedule that NetBackup uses is the first policy in alphabetical order.

For example:

dump transaction mydb to "sybackup::"
go

For information on the isql utility and the DUMP command, see your Sybase documentation.
Browsing Backups

Browsing Backups

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

```
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 \n/sybase1200.exam.T.0.22448.26-10-2001.11:45:17
/sybase1200.model.D.0.21182.26-10-2001.12:56:40
/sybase1200.model.D.0.20932.26-10-2001.12:33:02
/sybase1192.model.D.0.4172.25-10-2001.07:17:20
C:\Program Files\VERITAS\NetBackup\bin>
```

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

For more information on this command, see the NetBackup online help.
Performing a Restore

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

1. Initialize a new device.

2. Re-create the database.

For information on how to restore your database in each of the preceding situations, see your Sybase documentation.

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

1. Execute the LOAD commands directly from SQL Server.
   This loads the database dump and transaction log dumps.

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

Using isql to Restore a Sybase Database

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

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

For information on how to perform the preceding steps, see your Sybase documentation.

A load can take significantly longer than a dump. The time required to load a database depends on 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 LOAD command from the isql utility on the client.
Performing a Restore

The LOAD command must include the appropriate dump file name. For information about editing the LOAD command with the correct dump file name, see “Modifying the Backup, Restore, and Load Scripts” on page 25. Make sure to load the database dump and all of the transaction logs before bringing the database 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 steps:

1. Ensure that the NetBackup server is configured to allow the redirected restore. For information, see the NetBackup System Administrator’s Guide, Volume 1.

2. Specify the 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.0.14693.12-12-1997.09:29:37 -CLIENT saturn"
go
```
Troubleshooting

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

The NetBackup server and client software allow you to enable detailed debugging logs. The information in these log files can help you troubleshoot problems that occur outside of either NetBackup for Sybase or the Sybase Backup Server. Note the following with regard to these logs:

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

- Generally, each debug log corresponds to a NetBackup process and executable.

For information about the debugging log files, see the NetBackup Troubleshooting Guide and the install_path\NetBackup\logs\README.debug file.

Enabling Logging

To enable the NetBackup for Sybase logs

1. Create the following folders on the client in a DOS window:

```
install_path\NetBackup\logs\bpbackup
install_path\NetBackup\logs\bpbackup32
install_path\NetBackup\logs\bphdb
install_path\NetBackup\logs\bprestore
install_path\NetBackup\logs\tar32
install_path\NetBackup\logs\sybackup
```

For example:

```
 cd install_path\NetBackup\logs
 mkdir bphdb
```

2. Make sure there is share access to the log folders.

3. Enable logging for the nbpe, nbjm, and nbxb scheduling processes, which use unified logging.

NetBackup writes unified logs to /usr/openv/logs on UNIX and to install_path\NetBackup\logs on Windows. You do not need to create log directories for processes that use unified logging. For information on using logs and reports, see the NetBackup Troubleshooting Guide.
The following is an example debug log:

```
[14:05:13 [24312] <4> SYSEVENT: INF - Backup completed SUCCESSFULLY:
  Database server = SYBASE11
  Database = ndb
  Strips = 0
  Total stripes = 1
  Type = UNAVAILABLE
Dump file name: SYBASE11.ndb.D.0.24312.17-12-1999.14:05:25
[14:05:13 [24312] <4> SYSEVENT: --- Successful End of SYSEVENT ---]
```

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

### Accessing the Log Files

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:

- `sybase_stdout.mmddyy.hhmmss.txt`  
  Unless redirected elsewhere, NetBackup writes Sybase script output to this file.

- `sybase_stderr.mmddyy.hhmmss.txt`  
  Unless redirected elsewhere, NetBackup writes Sybase script errors to this file.

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

**sybackup Folder on the Client**

The `install_path\NetBackup\logs\sybackup` folder contains the following execution log:

`log.mmddyy.log`
Setting the Debug Level

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

NetBackup Server Reports

NetBackup provides other reports that are useful in isolating problems. One such report is All Logs Entries on the server. For information on server reports, see the NetBackup System Administrator’s Guide, Volume I.

Setting the Debug Level

You can control the amount of information written to the debugging logs in the install_path\NetBackup\logs\ folders by changing the Database debugging level. The higher the value, the more information is logged. Typically, the default value of 0 is sufficient. However, Technical Support might ask you to set the value higher when a problem is being analyzed. You can set the debugging levels to 0, 1, 2, 3, 4, or 5. A level of 5 provides the most detail.

▼ To change the debugging level

1. From the Windows Start menu, choose Programs > VERITAS NetBackup > Backup, Archive, and Restore. The Backup, Archive, and Restore interface displays.


3. In the NetBackup Client Properties dialog, select the Troubleshooting tab. By default, the setting is 0.

4. Set the Database debug level.

Note Information from both settings is logged to the same file, mmdyy.log
Sybase Backup Server Logs and Messages

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

DUMP and LOAD Progress Messages

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

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

If the `install_path\NetBackup\logs\bphdb\` location does not exist, NetBackup for Sybase does not write the messages.

Error Logging

Sybase Backup Server performs its own error logging in the file that you specify when you configure Sybase Backup Server. For more information on this file, see your Sybase documentation.

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

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

The following Sybase Backup Server message log 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: 3.43.1.1: Dump phase number 3 completed.
Backup Server: 3.42.1.1: DUMP is complete (database model).
```
Minimizing 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 while waiting for media or device access. If the delay is too long, the restore session times out. Use the following procedures to minimize session timeouts and to allow the restores to complete successfully.

▼ To minimize database session timeouts

1. In the NetBackup Administration Console, expand NetBackup Management > Host Properties > Clients

2. Set the Client read timeout property to a large value.
   The default for the Client read timeout setting is 300 seconds (5 minutes). For database agent clients, increase the value significantly from the value recommended in the NetBackup System Administrator’s Guide, Volume 1. For example, change this setting to 30-60 minutes to minimize timeout errors.

3. Click OK for each client.
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