VERITAS NetBackup™ 3.4 for Informix

System Administrator's Guide

UNIX

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VERITAS

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Contents

Preface

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

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

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

  or

- *NetBackup System Adminstrator's Guide - Windows NT/2000* if you have a Windows NT/2000 server.

This document is the same as `NetBackup_AdminGuide_Informix.pdf` distributed with the NetBackup for Informix software.

Audience

This guide is intended for the:

- Informix database system administrator responsible for configuring and using the Informix On-BAR Utility to back up and restore Informix databases.
- NetBackup system administrator responsible for configuring NetBackup.

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

This guide assumes:

- A basic understanding of system administration.
- A working understanding of the NetBackup client and server software.
- A familiarity with the information covered in the following NetBackup manuals:
  - *NetBackup User's Guide - UNIX*
  - *NetBackup System Administrator's Guide - UNIX* or *NetBackup System Adminstrator's Guide - Windows NT/2000*
  - *NetBackup Troubleshooting Guide - UNIX* or *NetBackup Troubleshooting Guide - Windows NT/2000*
- A thorough understanding of the following Informix database topics:
  - Database file types and their relationships at recovery time
  - Data recovery scenarios
  - Informix On-BAR Utility

Organization

This guide is organized as follows:

- Introduction is an overview of the product's capabilities.
- The Installation chapter explains how to install NetBackup for Informix on your system.
- Configuration explains how to configure your system to use NetBackup for Informix. This information supplements the NetBackup and Informix manuals.
- The Using NetBackup for Informix explains how to use this product to back up and restore your Informix databases. This information supplements the NetBackup manuals.

- The Troubleshooting chapter contains instructions on troubleshooting NetBackup for Informix.

Related Documents

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

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

- *NetBackup System Administrator's Guide - UNIX*

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

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

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

- *NetBackup Troubleshooting Guide - UNIX*

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

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

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

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

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

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

- *NetBackup Troubleshooting Guide - Windows NT/2000*

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

For this product, you may also need the following manual from Informix Software Incorporated:

Informix-Online Dynamic Server Backup and Restore Guide

Informix-OnLine Dynamic Server Administration Guide

Conventions

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

Type Style

Table 1. Typographic Conventions

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

Notes and Cautions

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

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

Key Combinations

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

Press Ctrl+t

Command Usage

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

brackets [ ]

The enclosed command line component is optional.

Vertical bar or pipe (|)

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

`command` *arg1*|*arg2*

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

Getting Help

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

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

For product assistance, contact VERITAS Customer Support.

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

International Customers: +1 (650) 335-8555

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

`support@veritas.com`

Introduction 1

NetBackup for Informix integrates the database backup and recovery capabilities of Informix On-BAR Utility with the backup and recovery management capabilities of NetBackup and its Media Manager.

This chapter introduces NetBackup for Informix and how it relates to both Informix On-BAR Utility and NetBackup. Read this chapter for a description of:

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

Features of NetBackup for Informix

This section describes the NetBackup for Informix main features.

Feature	Description
Media and device management	All devices supported by Media Manager are available to NetBackup for Informix.
Scheduling facilities	NetBackup scheduling facilities on the master server can be used to schedule automatic and unattended Informix backups. This also lets you choose the times when these operations can occur. For example, to prevent interference with normal daytime operations, you can schedule your database backups to occur only at night.
Multiplexed backups and restores	NetBackup for Informix 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 Informix and regular file system backup and restore operations	All backups and restores are executed simultaneously and transparently without any action from the NetBackup administrator. A database administrator can execute database backup and restore operations through NetBackup or use Informix On-BAR Utility as if NetBackup were not present. An administrator or any other authorized user can use NetBackup to execute database backups and restores.
Sharing the same devices and tapes used during other file backups	It is possible to share the same devices and media used for other backups or to give Informix 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 Informix databases can also reside on hosts that are different from the devices on which NetBackup stores the backups.

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

Terminology for NetBackup for Informix

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

NetBackup Terms

This section describes NetBackup terms as they apply to NetBackup for Informix.

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

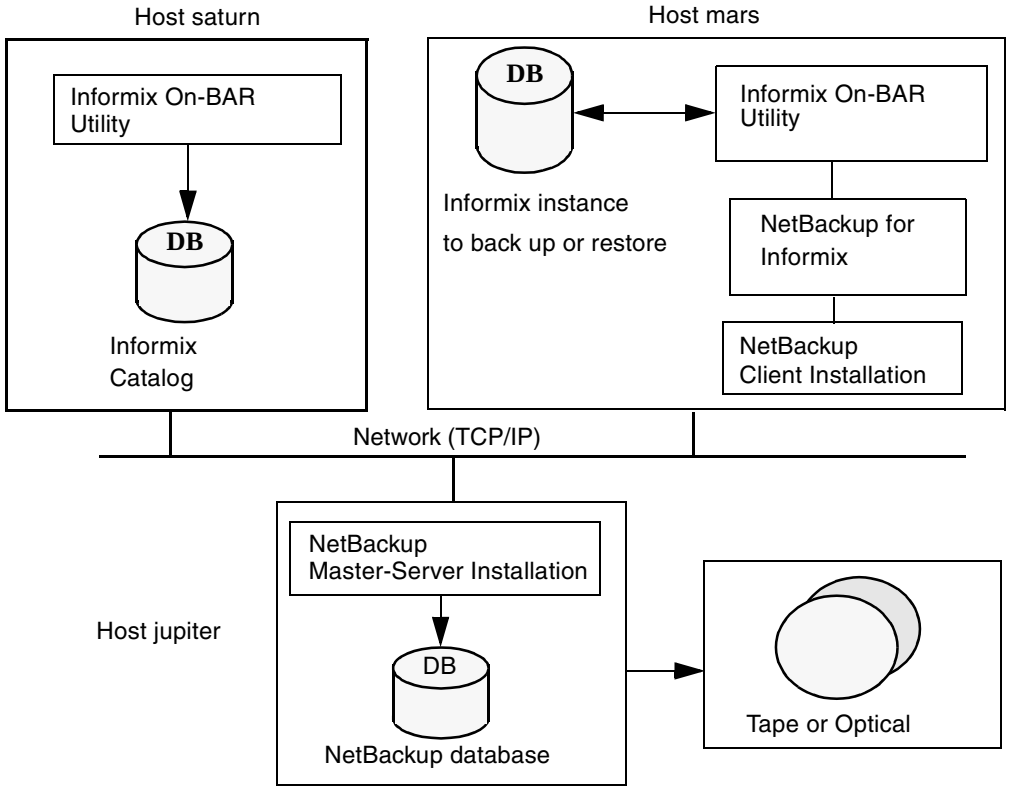
NetBackup for Informix Terms

Informix On-BAR Utility	The Informix On-BAR Utility allows database administrators to back up and restore Informix databases on UNIX systems. This utility, however, does not directly manage storage devices and media. The Informix On-BAR Utility must be integrated with a media management system that can access devices and keep information about the media used in Informix database backups. NetBackup for Informix provides this media-management capability by integrating the utility with NetBackup.
`onbar`	The `onbar` command starts a backup or restore with the Informix On-BAR Utility. This command is described in the *Informix-OnLine Dynamic Server Backup and Restore Guide.*
On-BAR script	A Bourne-shell script that contains `onbar` commands.
Onsmsync	Onsmsync is an Informix version 9.20 feature which synchronizes the NetBackup catalog with the Informix backup catalog. The onsmsync utility feature is used to delete images from both Informix backup catalogs and NetBackup catalogs. Refer to the *Informix-OnLine Dynamic Server Administration Guide* for more information on how to use this utility.

Technical Overview of NetBackup for Informix

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

The storage devices are connected to the NetBackup master server. The host with the database must be a NetBackup client and have NetBackup for Informix and the Informix On-BAR Utility software installed.



Informix On-BAR Utility

During a backup or restore, the Informix On-BAR Utility provides the interface to the databases and performs the actual extraction and insertion of data.

To start a database backup or restore, the database administrator must execute a command called `onbar`. This command is part of the Informix On-BAR Utility and can be executed from the command line, an On-BAR script, or an application such as NetBackup. An On-BAR script includes the `onbar` command to be executed and defines the database objects to be backed up or restored.

During a backup or restore, the Informix On-BAR Utility controls the data streams going into or out of a database. In order to access the storage devices, this utility must be integrated with a media-management system such as the one provided by NetBackup and its Media Manager.

The `onbar` command is documented in the *Informix On-Line Dynamic Server Backup and Restore Guide*.

For the Informix version level supported, refer to the Database Extension Matrix in Chapter 4, "Supported Platforms and Peripherals" of the *NetBackup Release Notes - UNIX*.

NetBackup for Informix

NetBackup for Informix has a special library that contains the functions necessary for the Informix On-BAR Utility to use NetBackup.

Sequence of Operation

An On-BAR script can be executed from either the NetBackup scheduler or manually from the NetBackup administration interface on the NetBackup master server, from the NetBackup user interface or from the command line on the NetBackup client. With the exception of the command line method, a NetBackup process named `bphdb` starts the On-BAR script on the client.

For a backup:

1. The `onbar` command starts the requested operation on the databases.

2. When the process requires media to store backup data, `onbar` uses the NetBackup library to execute the `bpbackup` command which starts a user-directed backup.

3. The NetBackup scheduler on the master server then schedules the backup job(s) to be run.

4. Once the job(s) are complete, the NetBackup master server connects to On-BAR through the NetBackup library on the client and transfers the database data to a storage unit.

For a restore:

A restore works in essentially the same manner except that `onbar` issues a `bprestore` command. This causes NetBackup to retrieve the data from the storage unit where the backup images reside. NetBackup then sends the data through the NetBackup library to the client.

Since the Informix On-BAR Utility supports parallel operations, it is possible for a single On-BAR execution to start more than one backup or restore operation.

The status for an On-BAR operation is stored in the Informix bar_action table. A database administrator can use this status to determine if a backup or restore was successful.

NetBackup also logs status, but only for its own part of the operation. The database administrator cannot use NetBackup status to determine whether On-BAR was successful because errors can occur in On-BAR that do not affect NetBackup and are not recorded in its logs.

Installation 2

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

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

Installation Prerequisites

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

1. Install NetBackup server software on the server.

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

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

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

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

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

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

3. Install the Informix vendor software on the client where you will be backing up the databases.

   See the *Informix-Online Dynamic Server Administration Guide*.

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

Install NetBackup for Informix

There are two ways to install database extension software.

- Remote Installation

  Loads the software on a master server. The user will then push the database software out to affected clients.

  Refer to the following section.

- Local Installation

  Loads and installs the software only to the local machine.

  Refer to "Local Installation of NetBackup for Informix" on page 17.

Remote Installation of NetBackup for Informix

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

Before performing a remote install, make sure:

- There is adequate disk space on each client that will receive the software.

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

- NetBackup version 3.4 client software is installed and operational on each Informix client.

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

Remote Install Procedure

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

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

   ```
   su - root
   ```

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

   Use the command *install_path*`/netbackup/bin/admincmd/get_license_key` to list and add keys.

3. Insert the CD-ROM into the drive.

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

   ```
   cd /CD_mount_point
   ```

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

   ```
   ./install
   ```

   The following prompt will appear:

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


a. Answer **n**.

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

b. Select the NetBackup for Informix option.

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

A prompt will appear asking if the list is correct.

d. Answer **y**.

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

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

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

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

There are two types of installs.

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

Initial Install Procedure

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

cd *install_path*/**netbackup/bin**

./admincmd/bpclclients -allunique -noheader > *filename*

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

`bpclclients` generates output in following format:

hardware operating_system client_name

where

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

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

client_name is the name of the client.

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

```
Solaris Solaris2.6 curry.min.ov.com
RS6000 AIX4.3 cypress
```

2. Edit *filename*.

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

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

For example:

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

Only clients listed in *filename* will be updated.

Upgrade Install Procedure

Execute the following command.

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

This command will look at all possible clients and only update the ones currently in an Informix-On-BAR class type.

Instead of `ALL ALL`, you may use `-ClientList` *filename* as explained in "Initial Install Procedure" on page 12.

Note If the receiving client is an HP11.00 64-bit machine, the native package (64-bit NetBackup for Informix) will be installed. If you are running the 32-bit version of Informix on that type of client, execute *install_path*`/netbackup/dbext/install_dbext` locally on that machine after completing the Remote Install Procedure. When prompted, select the 32-bit NetBackup for Informix package.

Note With an initial or upgrade install, some clients may be skipped and not updated. Possible reasons are:
- the client is a PC client (which cannot be updated from a UNIX server),
- NetBackup for Informix does not support that client's platform type,
- the NetBackup for Informix software for that client type was not loaded onto the server in step 5,
- (if using the `ALL ALL` method) the client does not belong to an Informix-On-BAR class type.

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

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

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

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

where:

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

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

Example 1

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

Example 2

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

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

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

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

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

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

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

- If the configuration information for a client is unknown, you will be prompted for it. For example:

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

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

  Type the location where the Informix vendor software has been installed on the client shown. You also will have an opportunity to validate your answer.

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

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

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

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

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


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

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

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

`curry.min.ov.com`

`guava.min.ov.com`

`hat.min.ov.com`

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

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

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

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

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

If the `update_dbclients` command was successful in distributing the software to the client, it will automatically run the `install_dbext` script on the client. Configuration information determined in step c on page 15 is used to complete the installation. If `install_dbext` has successfully completed, there will be a version file in directory *install_path*`/netbackup/ext` that contains the version of NetBackup for Informix that was installed and an installation timestamp. The `update_dbclients` command displays a note on whether the update was successful for each client. When the `update_dbclients` command has completed, it displays a file name that contains a complete log of what happened for each client. If the update failed for any client, the log file should be examined to determine the problem.

7. Verify the Informix On-BAR Utility configuration.

   The `install_dbext` script created the following entry in the Informix instance home path's *$INFORMIXDIR*`/etc/sm_versions` file for each client:

   ```
   1|1.1.1|VERITAS-NetBackup|1
   ```

   Informix 8.x dynamically reads the appropriate information from the `sm_versions` file every time a backup/restore is executed. If you are not using Informix 8.x, insert this information into the table `bar_version` in the `sysutils` database.

   ```
   bar_version  bsa_version  bar_sm            sm_version
   1            1.1.1        VERITAS-NetBackup 1
   ```

Local Installation of NetBackup for Informix

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

Before performing a local install, make sure:

- The local machine has adequate disk space.

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

- NetBackup version 3.4 client software is installed and operational.

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

Local Install Procedure

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

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

   ```
   su - root
   ```

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

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

   Use the command *install_path*`/netbackup/bin/admincmd/get_license_key` to list and add keys.

3. Insert the CD-ROM into the drive.

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

   `cd /CD_mount_point`

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

Note It is expected that the NetBackup version level (for example, 3.4) running on the local machine matches the version level of the database extension being installed.

`./install`

The following prompt will appear:

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

a. Answer **`y`**.

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

b. Select the NetBackup for Informix option.

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

   A prompt will appear asking if the list is correct.

d. Answer **`y`**.

   The following actions will occur:

   - The version file, compressed tar file and `install_dbext` script will be loaded to directory *install_path*`/netbackup/dbext`.
   - The `install` script will automatically execute the `install_dbext` script.
   - If the local machine is an HP11.00 64-bit machine, you will be prompted as to whether to install the 32-bit or 64-bit NetBackup for Informix package. The option you choose should match the type of Informix software you installed. (A remote install assumes that the native package (64-bit) is the one that should be installed.)
   - After the `install_dbext` script unbundles NetBackup for Informix compressed tar file, you will be prompted for the following configuration information:

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

     Type the location where the Informix vendor software has been installed.

- If `install_dbext` has successfully completed, there will be a version file in directory *install_path*`/netbackup/ext/` that contains the version of NetBackup for Informix that was installed and an installation timestamp.

6. Verify the Informix On-BAR Utility configuration.

The `install_dbext` script created the following entry in the Informix instance home path's `etc/sm_versions` file for each client:

```
1|1.1.1|VERITAS-NetBackup|1
```

Informix 8.x dynamically reads the appropriate information from the `sm_versions` file every time a backup/restore is executed. If you are not using Informix 8.x, insert this information into the table `bar_version` in the `sysutils` database.

```
bar_version  bsa_version  bar_sm            sm_version
1            1.1.1        VERITAS-NetBackup 1
```


Configuration 3

Before attempting to configure NetBackup for Informix, complete the installation procedure as described in “Installation” on page 9.

The following is the configuration procedure.

1. Configure Media Manager.
2. Add Informix Classes to NetBackup.
3. Create Scripts.
4. Configure the bp.conf Files.
5. Test NetBackup for Informix Configuration Settings.

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

Configure Media Manager

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

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

The number of volumes required will depend on the devices used, the size of the Informix

Add Informix Classes to NetBackup

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

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

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

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

Some issues of special importance are:

- Maximum Jobs per Client Global Attribute
- Class Configuration Procedures

Maximum Jobs per Client Global Attribute

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

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

Where:

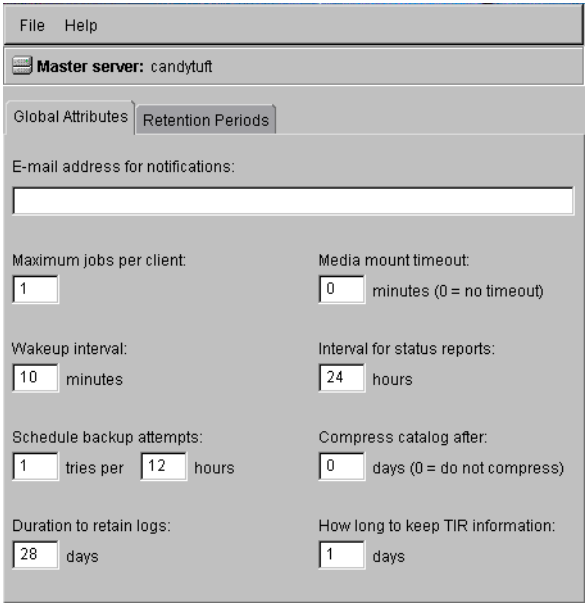
- *Number of Streams* is the number of backup streams between the database server and NetBackup. Each separate stream starts a new backup job on the client.
- *Number of Classes* is the number of classes that may back up this client at the same time. This number can be greater than one. For example,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

NetBackup Administration - Java Interface

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

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

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



   The default value is 1 for Maximum jobs per client.

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

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

`xbpadm` Interface

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

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

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

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

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

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

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

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

5. Click OK.

NetBackup Administration - Windows NT/2000 Interface

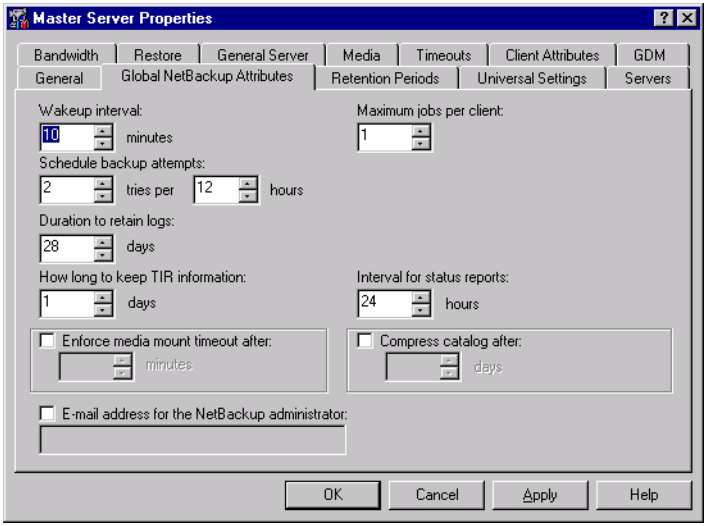
Use this procedure to set the Maximum Jobs per Client global attribute on a Windows NT/2000 server or on the NetBackup Administration Client host.

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

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

   The Master Server Properties dialog box appears.

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



   The default value is 1 for Maximum jobs per client.

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

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

Class Configuration Procedures

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

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

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

NetBackup Administration - Java Interface

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

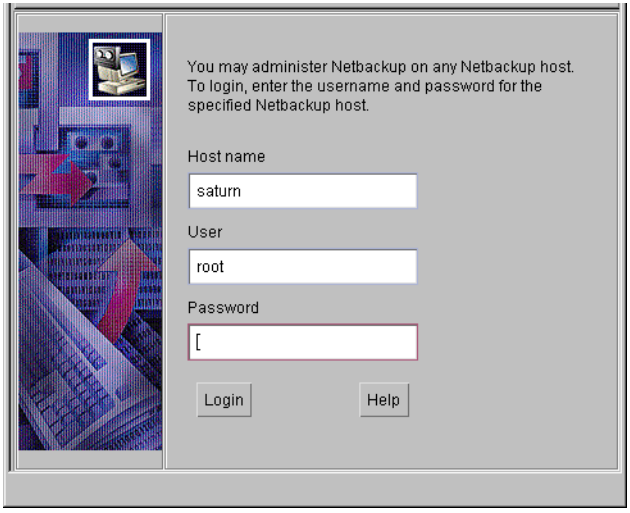
1. Log onto the server as root.
2. Start the NetBackup administrator interface by entering:

   install_path`/netbackup/bin/jnbSA &`

   For additional usage information, enter:

   `jnbSA -h`

   The Login dialog box appears.



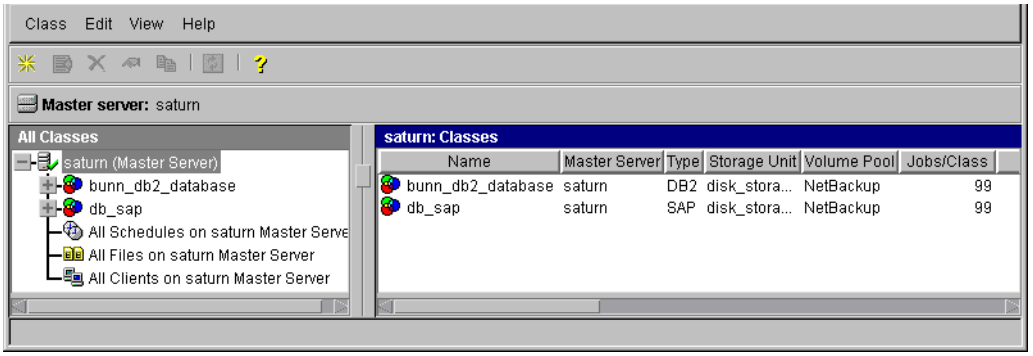
3. Type the password.

4. Press Login.

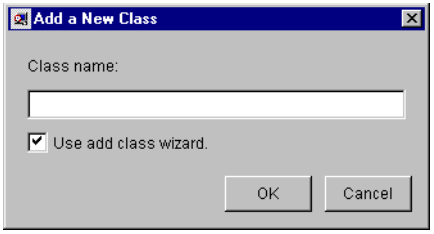
   The Login dialog closes and the NetBackup Assistant displays.

5. Click Close. The launch screen displays.

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



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



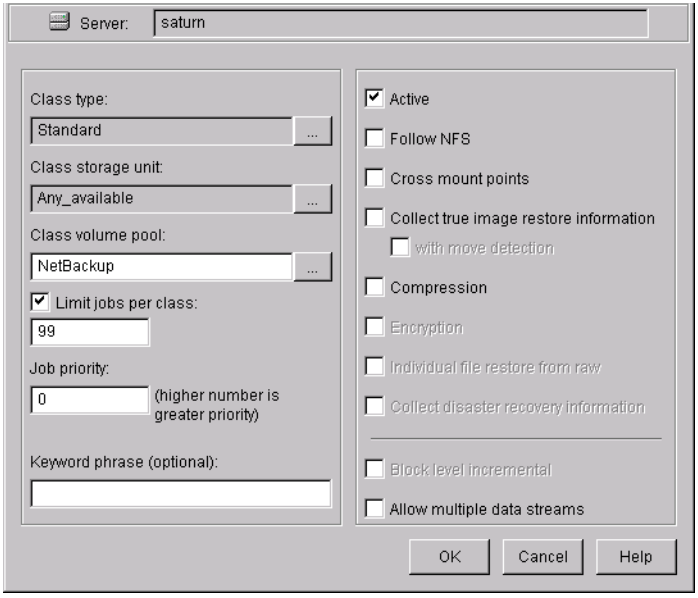
The class wizard automates the class configuration process. To configure classes without using the class wizard, use the following instructions.

8. Clear the Use add class wizard check box.

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

Note This class name may be specified in the *$INFORMIX_HOME*/`bp.conf` file. This is optional. Refer to "Configure the bp.conf Files" on page 56 for details.

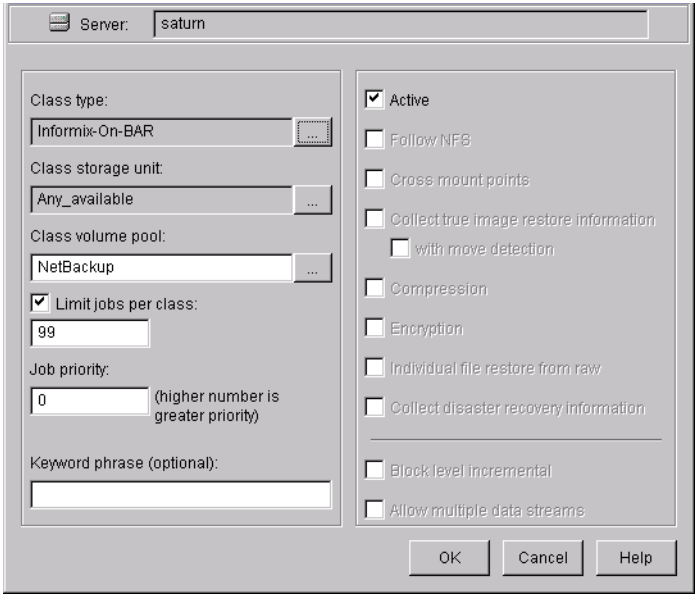
10. Click OK. The Change Attributes dialog box appears.



a. Select the Informix-On-BAR class type for Informix.

b. Click OK

The Change Attributes dialog box will change as follows.



Refer to the following table to configure class attributes.

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

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

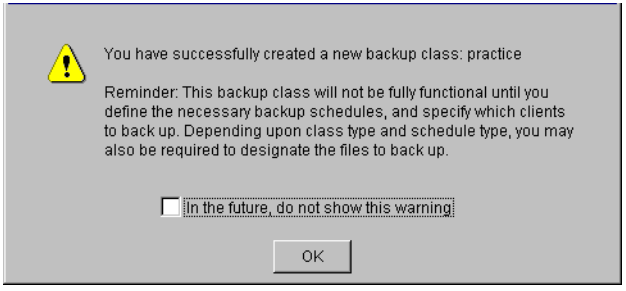
Limit jobs per class:
: Type the maximum number of concurrent jobs for this class. If the Limit jobs per class checkbox is clear, the maximum number of backup and restore jobs that NetBackup will perform concurrently for this class can be up to a limit of 999. To specify a lower limit, select the checkbox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

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

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

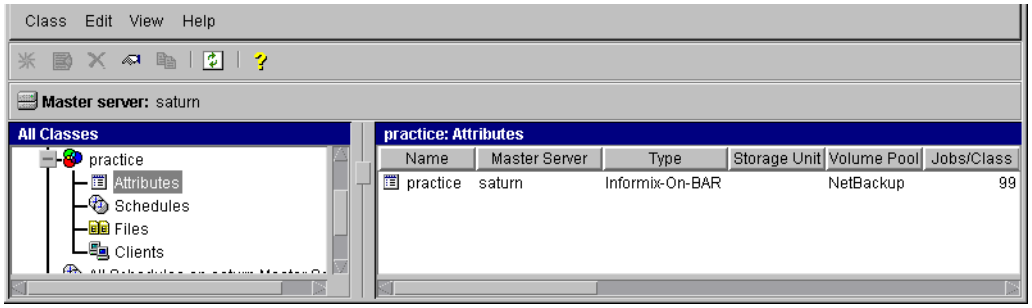
Active
: Select the checkbox to perform scheduled operations defined in this class. The class must be active for NetBackup to execute automatic backup schedules or allow user backups or archives.

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



d. Click OK to close the Warning box.

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



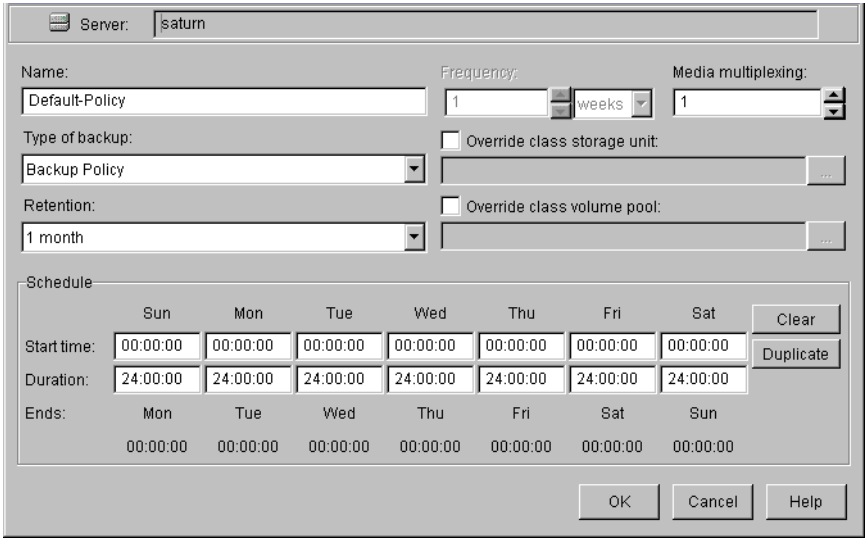
Also notice that the configuration settings you entered in the Change Attributes dialog box are displayed in the *class: Attributes* pane. Use the scroll bar at the bottom of the *class: Attributes* pane to view all settings.

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

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

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

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



c. Configure a *Backup Policy* schedule.

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

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

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

Name:
: Each schedule requires a unique name.

Note The *Backup Policy* schedule name must be specified in the `bp.conf` file on the client.

Type of backup:
: A *Backup Policy* schedule enables user-controlled NetBackup operations performed on the client.
At least one *Backup Policy* schedule must be configured in each Informix-On-BAR class. The Default-Policy schedule is configured as a *Backup Policy* schedule.

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

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

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

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

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

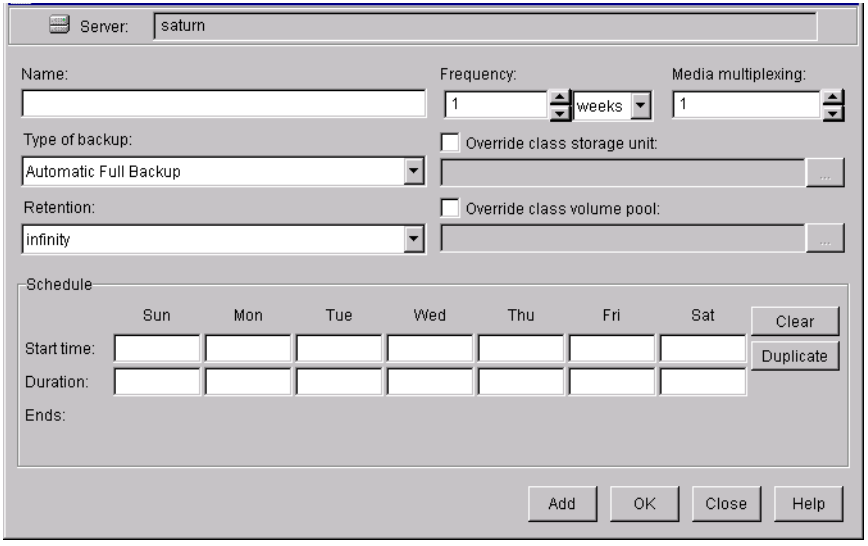
For example, assume that you:
- expect users to perform NetBackup operations during business hours, 0800 to 1300.
- configured automatic backups to start between 1800 and 2200.

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

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

d. Configure an *Automatic Backup*

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



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

Name:

Each schedule requires a unique name.

Type of backup:

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

Retention:

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

The NetBackup scheduler compares the latest record to the frequency to determine whether a backup is due. This means that if you set the retention period to expire the record too early, the scheduled backup frequency will be unpredictable. However, if you set the retention period to be longer than necessary, the NetBackup catalog will accumulate unnecessary records. Therefore, set a retention period that is *longer* than the frequency setting for the schedule.

For example, if the frequency setting is set to one week, set the retention period to be more than one week.

Frequency

Refers to the time period to wait between backups.

Start:

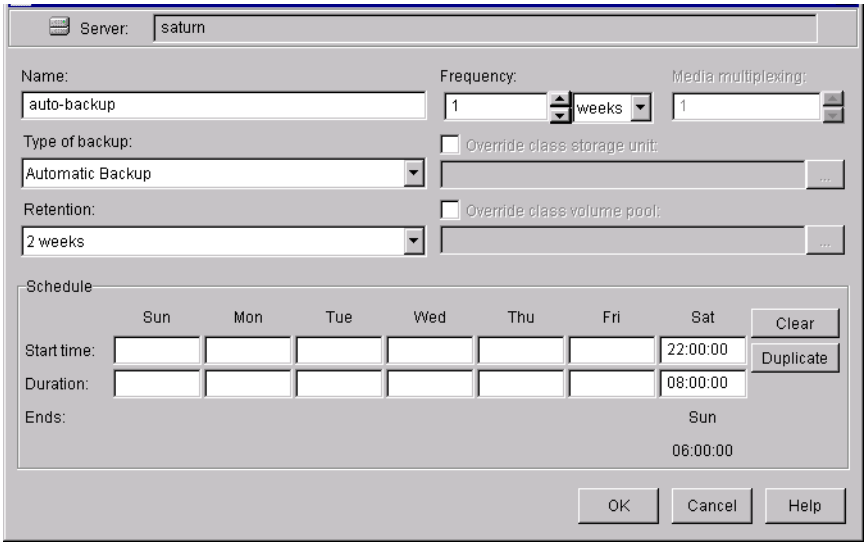
Specifies the day and time when the backup windows will open.

Duration:

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

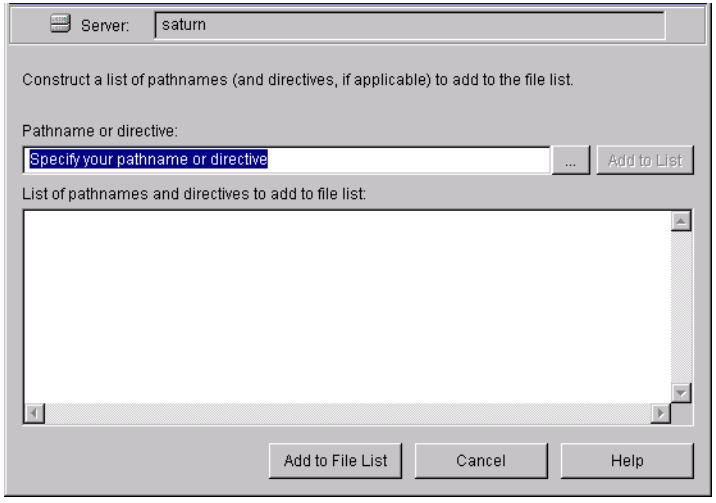
These settings define the backup window, which is the time period during which backups can occur for this schedule. The start time defines the times and days of the week when the window opens. The duration defines how long the window stays open.

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



12. Refer to the following instructions to configure the list of On-BAR scripts.

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



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

Refer to "Instructions for Modifying Scripts" on page 52 for more details on scripts.

b. Type the On-BAR script. Specify the full pathname.

For example:

install_path`/netbackup/ext/db_ext/informix/scripts/script_name`

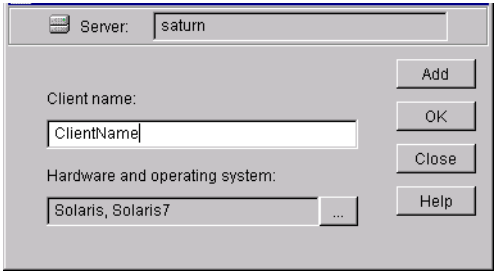
Note Be sure that the scripts listed here are installed on each client in the Client list.

c. Click Add.

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

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

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



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

- the database installed
- NetBackup for Informix installed
- the backup or restore On-BAR script(s)

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

d. Click OK.

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

`xbpadm` Interface

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

1. Log onto the server as root.

2. Start the NetBackup `xbpadm` administrator interface.

   - If the `DISPLAY` variable is set, type:

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

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

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

   The NetBackup Administration dialog box will open.

3. Create a new class.

   a. On the Actions menu, select New, then Classes. The Creating a Class dialog box will open.

   b. In the Class Name box, type the new class name.

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

Note This class name may be specified in the *$INFORMIX_HOME*`/bp.conf` file. This is optional. Refer to "Configure the bp.conf Files" on page 56 for details.

   c. Under Select one of, select New Class. The Class Type list box will enable.

   d. Select the Informix-On-BAR class from the list box.

   e. Click OK. The Changing Class dialog box will open.

4. Check the Class Attribute settings.

   Refer to the following table to configure class attributes.

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

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

Limit jobs per class:

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

Job priority

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

Keyword phrase:

For NetBackup for Informix, the keyword phrase entry is ignored.

Active

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

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

a. Click Schedules to change the display.

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

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

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

e. Configure a *Backup Policy* schedule.

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

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

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

Name:

Each schedule requires a unique name.

Note The *Backup Policy* schedule name must be specified in the `bp.conf` file on the client.

Type of backup:

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

Retention:

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

Media Multiplexing

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

Start:

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

Duration:

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

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

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

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

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

f. Configure an *Automatic Backup*.

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

Name:

Each schedule requires a unique name.

Type of backup:

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

Retention:

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

The NetBackup scheduler compares the latest record to the frequency to determine whether a backup is due. This means that if you set the retention period to expire the record too early, the scheduled backup frequency will be unpredictable. However, if you set the retention period to be longer than necessary, the NetBackup catalog will accumulate unnecessary records. Therefore, set a retention period that is *longer* than the frequency setting for the schedule.

For example, if the frequency setting is set to one week, set the retention period to be more than one week.

Frequency

Refers to the time period to wait between backups.

Start:

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

Duration:

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

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

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

a. Click Files.

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

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

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

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

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

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

a. Click Clients to change the display.

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

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

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

- the database installed
- NetBackup for Informix installed
- the backup or restore On-BAR script(s)

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

e. Click OK.

8. Click OK.

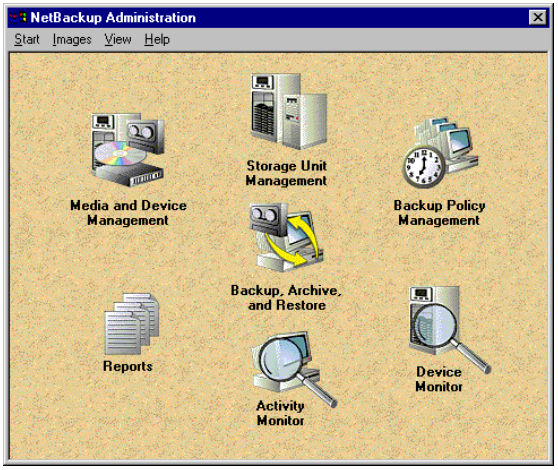
The Changing Class dialog box will close. The NetBackup Administration dialog box will remain open.

NetBackup Administration - Windows NT/2000 Interface

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

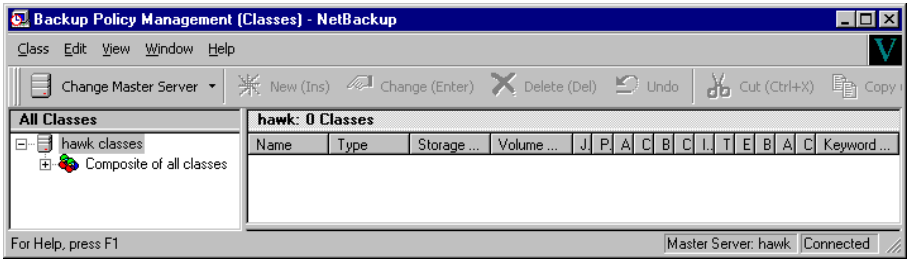
1. Log onto the server as Administrator.

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



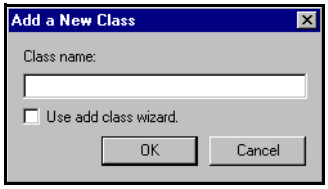
3. Click the Backup Policy Management icon.

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



4. Use the following instructions to add a new class.

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



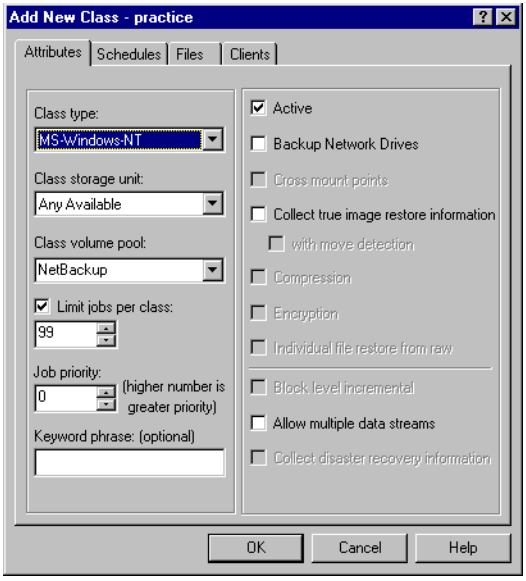
The class wizard automates the class configuration process. To configure classes without using the class wizard, use the following instructions.

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

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

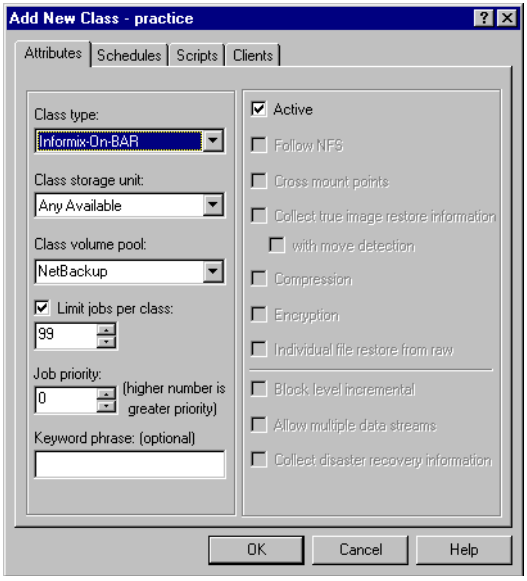
Note This class name may be specified in the *$INFORMIX_HOME*/bp.conf file. This is optional. Refer to "Configure the bp.conf Files" on page 56 for details.

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



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

a. Select the Informix-On-BAR class type.



Refer to the following table to configure class attributes.

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

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

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

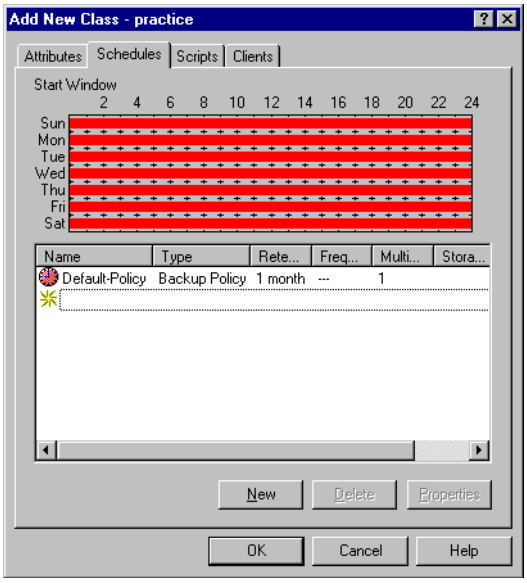
Job priority
: Select a value for the job priority NetBackup will assign to automatic backup jobs for this class. When a drive becomes available, NetBackup assigns it to the first client in the highest priority class.

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

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

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

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



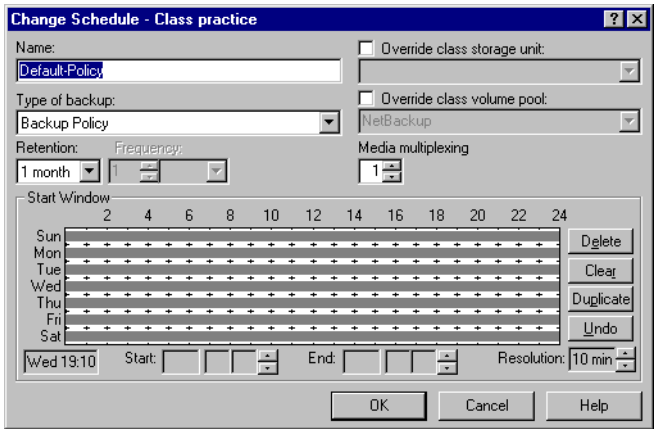
b. Configure a *Backup Policy* schedule.

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

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

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

The Change Schedules dialog box appears.



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

Name:

Each schedule requires a unique name.

Note The *Backup Policy* schedule name must be specified in the `bp.conf` file on the client.

Type of backup:

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

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

Retention:

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

Media Multiplexing

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

Start:

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

End:

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

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

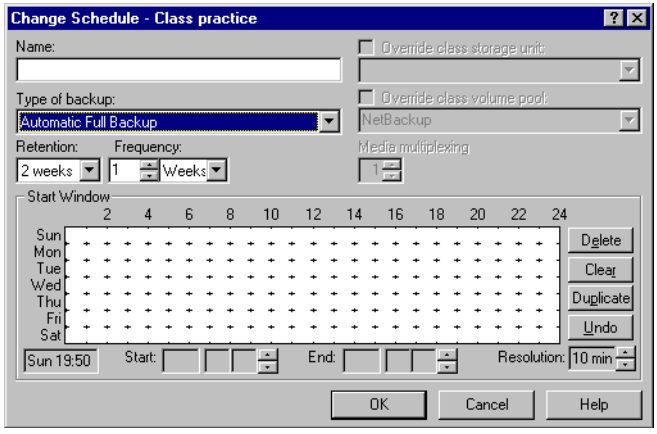
For example, assume that you:
- expect users to perform NetBackup operations during business hours, 0800 to 1300.
- configured automatic backups to start between 1800 and 2200.

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

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

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

The following appears.



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

Name:
: Each schedule requires a unique name.

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

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

  The NetBackup scheduler compares the latest record to the frequency to determine whether a backup is due. This means that if you set the retention period to expire the record too early, the scheduled backup frequency will be unpredictable. However, if you set the retention period to be longer than necessary, the NetBackup catalog will accumulate unnecessary records. Therefore, set a retention period that is *longer* than the frequency setting for the schedule.

  For example, if the frequency setting is set to one week, set the retention period to be more than one week.

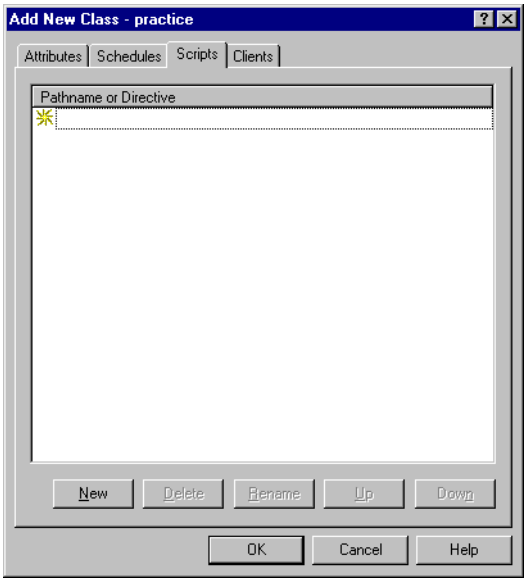
Frequency
: Refers to the time period to wait between backups.

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

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

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

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



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

Refer to “Instructions for Modifying Scripts” on page 52 for more details on scripts.

b. Click New.

c. Type the On-BAR script. Specify the full pathname for the On-BAR script in the file list.

For example:

install_path`/netbackup/ext/db_ext/informix/scripts`

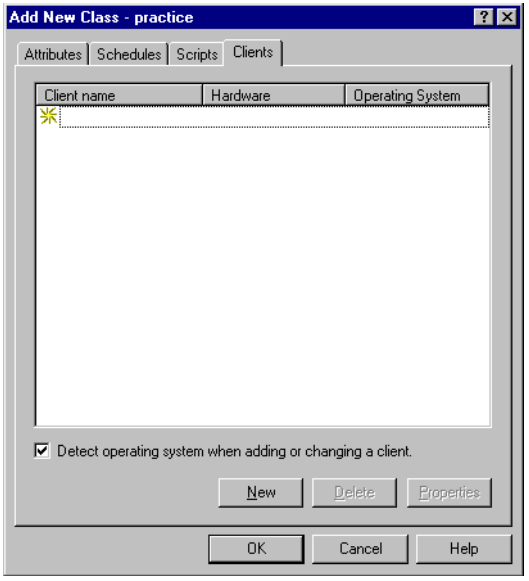
Note Be sure that the scripts listed here are installed on each client in the Client list.

d. Click Enter.

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

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

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



   b. Click New.

   c. Type the name of the client that has:

      - the database installed
      - NetBackup for Informix installed
      - the backup or restore On-BAR script

   d. Click OK.

      The Client Hardware and Operating System dialog box appears.

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

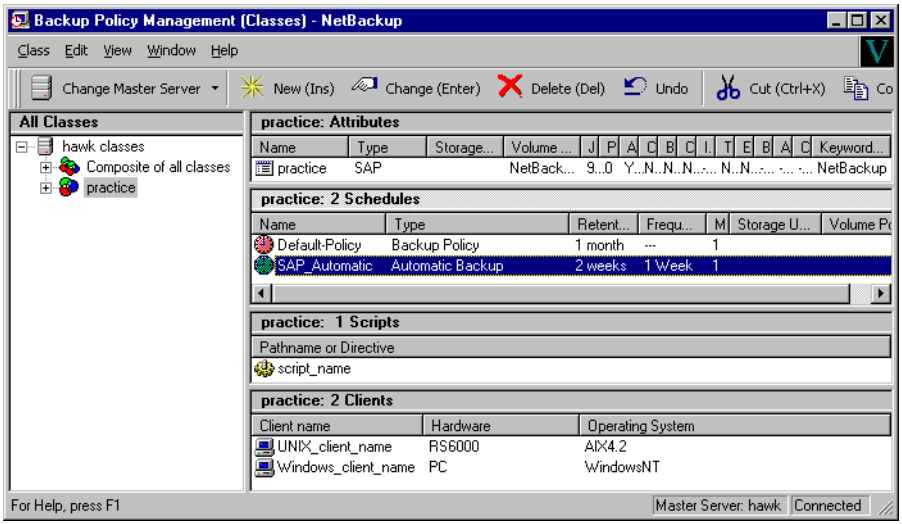
   f. Click OK.

      The Client Hardware and Operating System dialog box closes.

9. Click OK.

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

Example Informix-On-BAR Class on a NetBackup for Windows NT/2000 server



Create Scripts

For more information on ON-BAR scripts, see the *Informix-OnLine Dynamic Server Backup and Restore Guide* (available from Informix).

The following example scripts were included with the NetBackup for Informix installation:

```
informix_dbspace_list
informix_logical_log_backup
informix_onbar_backup_of_dbspace1
informix_onbar_backup_of_rootdbs
informix_onbar_backup_of_rootdbs_and_dbspace1
informix_onbar_backup_using_file_list
informix_onbar_restore_dbspace1
informix_onbar_restore_rootdbs
infx_remove_expired_backup
```

These scripts were installed in the following directory:

install_path`/netbackup/ext/db_ext/informix/scripts`

Be sure to modify these scripts for your environment.

Although each script can have multiple Informix On-BAR Utility 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 Informix 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 Scripts

Note If you do not include an su - user (user is the Informix administrator account) in your scripts, they will not run with the proper permissions and environment variables. The result will be problems with your database backups or restores.

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

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

   `chmod 775 <`*`script_name`***`>`**

3. Modify the `informix_onbar_backup_of_rootdbs` script

a. Use a text editor to open the `informix_onbar_backup_of_rootdbs` script. The following example uses the `vi` text editor.

`vi informix_onbar_backup_of_rootdbs`

The following appears.

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

# Replace xxxxx below with the extention used for your onconfig file. */
ONCONFIG=onconfig.xxxxx

# Replace yyyyy below with the Informix home path. */
INFORMIXDIR=/yyyyy/informix

# Replace zzzzz below with the name of the Informix server. */
INFORMIXSERVER=zzzzz

# Replace informix_etc below with the name of the NetBackup server class */
# to be used to back up the $INFORMIXDIR/etc directory. */
INFX_ETC_CLASS=informix_etc


echo "Started `date`"

export ONCONFIG
echo "exported ONCONFIG"

export INFORMIXDIR
echo "exported INFORMIXDIR"

export INFORMIXSERVER
echo "exported INFORMIXSERVER"

echo "INFXBSA_SERVER = $INFXBSA_SERVER"
echo "INFXBSA_SCHEDULED = $INFXBSA_SCHEDULED"
echo "INFXBSA_USER_INITIATED = $INFXBSA_USER_INITIATED"
echo "INFXBSA_FULL = $INFXBSA_FULL"
echo "INFXBSA_INCR = $INFXBSA_INCR"
echo "INFXBSA_CLASS = $INFXBSA_CLASS"

RETURN_STATUS=0
```


```
if [ "${INFXBSA_INCR}" = "1" ]
then
   # Netbackup has started an incremental backup. */
   echo "$INFORMIXDIR/bin/onbar -b -L 1 rootdbs"
   $INFORMIXDIR/bin/onbar -b -L 1 rootdbs
   RETURN_STATUS=$?
else
   # Initiate a backup of the directory that contains the onconfig, */
   # sqlhosts, oncfg_$INFORMIXSERVER.SERVERNUM, and ixbar.SERVERNUM */
   # files before doing the level 0 backup. */

   echo "bpbackup -c $INFX_ETC_CLASS $INFORMIXDIR/etc"
   /usr/openv/netbackup/bin/bpbackup -c $INFX_ETC_CLASS $INFORMIXDIR/etc
   BPBACKUP_STATUS=$?
   if ["$BPBACKUP_STATUS" -ne 0]
   then
      echo ""
      echo "bpbackup of $INFORMIXDIR/etc returned $BPBACKUP_STATUS"
   fi

   echo "$INFORMIXDIR/bin/onbar -b -L 0 rootdbs"
   $INFORMIXDIR/bin/onbar -b -L 0 rootdbs
   RETURN_STATUS=$?
fi

echo "Finished `date`"

echo "exit $RETURN_STATUS"
echo ""
```

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

Note Test the scripts you just created. Refer to "Test NetBackup for Informix Configuration Settings" on page 57.

Environment Variables

When a schedule executes, NetBackup sets environment variables for the local shell scripts to use when performing the backup. The `echo` lines are used to show what Informix environment variables are available. These variables can be used to perform conditional functions inside the scripts. These variables are local to the Informix shell script.

NetBackup sets the following variables:

INFXBSA_FULL
Set to 1 if this is a full backup (*Automatic Full Backup*).

INFXBSA_INCR
Set to 1 if this is an incremental backup (*Automatic Incremental Backup*).

INFXBSA_SCHEDULED
Set to 1 if this is a scheduled backup (*Automatic Full Backup* or *Automatic Incremental Backup*).

INFXBSA_USER_INITIATED
Set to 1 if this is a user-initiated backup (*Backup Policy* backup).

These variables can be set by the Informix user either in the script or manually from the command line in the same environment that `onbar` is executed from.

INFXBSA_SERVER
Name of the NetBackup server.

INFXBSA_LOGICAL_CLASS
Name of the class to be used for a logical logs backup. If this variable is set, NetBackup will backup the logical logs using this class.

INFXBSA_LOGICAL_SCHED
Name of the schedule to be used for a logical logs backup. If this variable is set, NetBackup can distinguish and will backup logical logs using this schedule.

INFXBSA_CLASS
Name of the Informix-On-BAR class. if this variable is set, NetBackup will backup Informix databases using this class.

INFXBSA_SCHED
Name of the *Backup Policy* schedule. If this variable is set, NetBackup will backup Informix databases using this schedule.

Configure the bp.conf Files

The administrator can add options to the NetBackup main bp.conf file on the NetBackup master server. The administrator *must* create an additional bp.conf file in the Informix home directory on the client.

Options for netbackup/bp.conf On the Server

To prevent unloading and reloading tapes between dbspace backups, add the following options to the NetBackup main bp.conf file that is in the netbackup directory on the NetBackup master server.

```
MEDIA_UNMOUNT_DELAY=200
MEDIA_REQUEST_DELAY=30
```

Create a $INFORMIXDIR/bp.conf File on the Client

Before using NetBackup for Informix, you must create a bp.conf file in the Informix home directory on the NetBackup client. The path to this directory is equal to the value of the $INFORMIXDIR variable. For example, if $INFORMIXDIR is equal to /informix, the path is:

```
/informix/bp.conf
```

After creating a bp.conf file in the Informix home directory, add the following option to it:

```
BPBACKUP_CLASS=informix_class
BPBACKUP_SCHED=informix_sched (Backup Policy Schedule)
BPBACKUP_SERVER=server_name
CLIENT_READ_TIMEOUT=1800
```

This ensures that NetBackup for Informix will use the correct Informix-On-BAR class for backups.

Note NetBackup uses the *$INFORMIXDIR*/bp.conf file *only* for Informix-On-BAR classes.

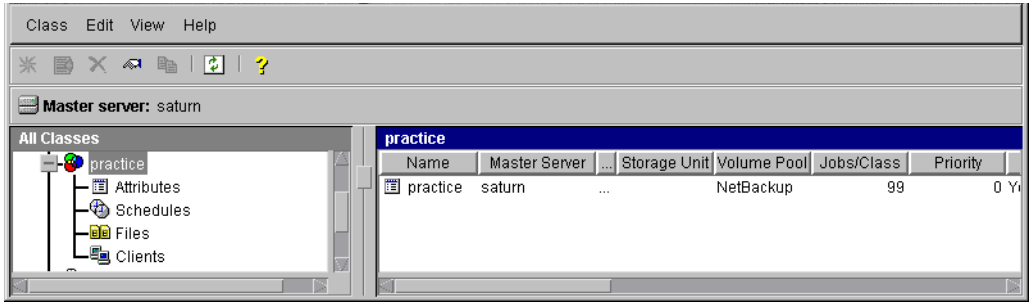
Test NetBackup for Informix Configuration Settings

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

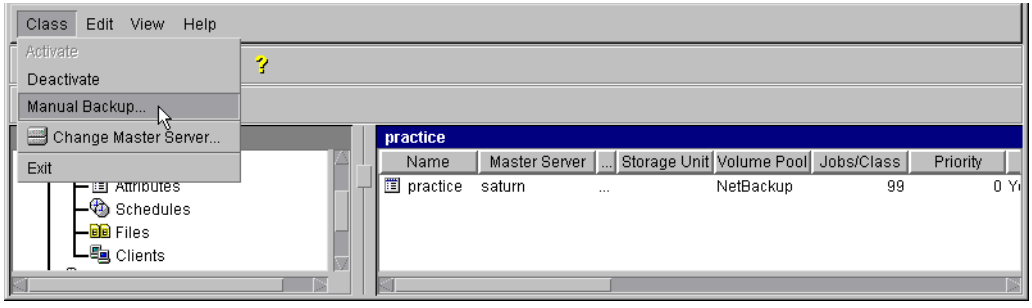
NetBackup Administration - Java Interface

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

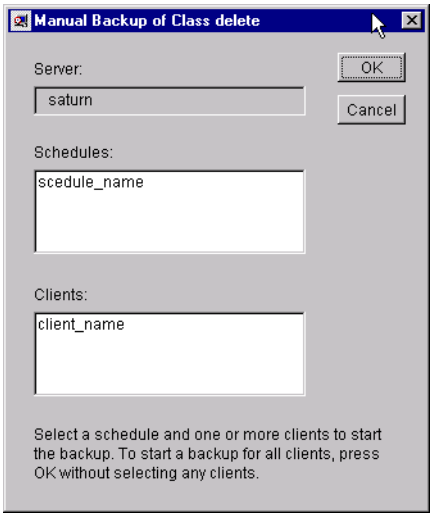
1. Log onto the server as root.
2. Start the NetBackup administrator interface.
3. Click the Backup Policy Management icon. The Backup Policy Management (Classes) - NetBackup dialog appears.
4. Select a class to back up.



5. On the Class menu, click Manual Backup.



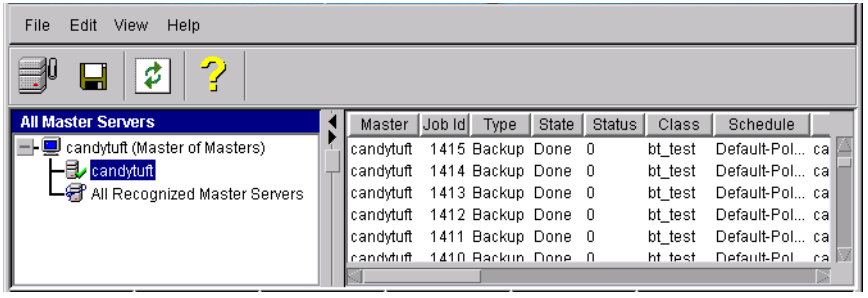
The Manual Backup dialog box appears.



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

6. Follow the instructions on the dialog box.

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



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

`xbpadm` Interface

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

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

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

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

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

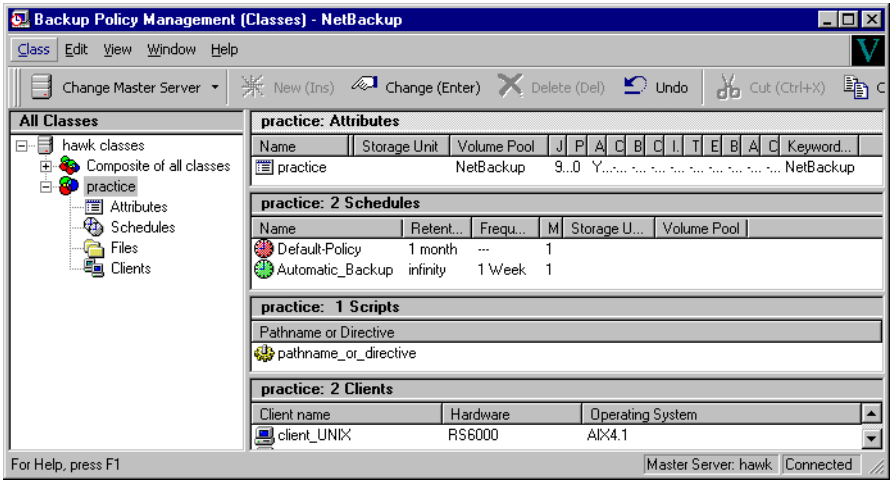
Note The jobs listed in the Job Monitor dialog box include one job for the overall database backup and multiple default-policy jobs which depended on the need of drives have been specified.

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

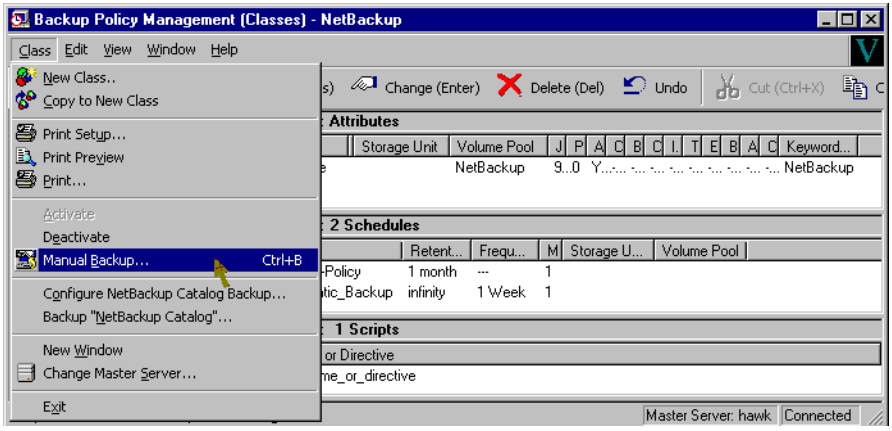
NetBackup Administration - Windows NT/2000 Interface

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

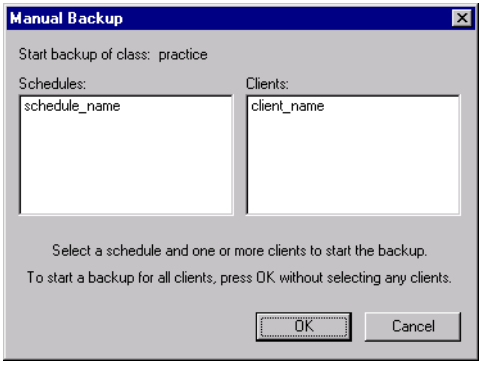
1. Log onto the server as Administrator.
2. Start the NetBackup administrator interface.
3. Click the Backup Policy Management icon. The Backup Policy Management (Classes) - NetBackup dialog appears.
4. Select a class to back up.



5. On the Class menu, click Manual Backup.



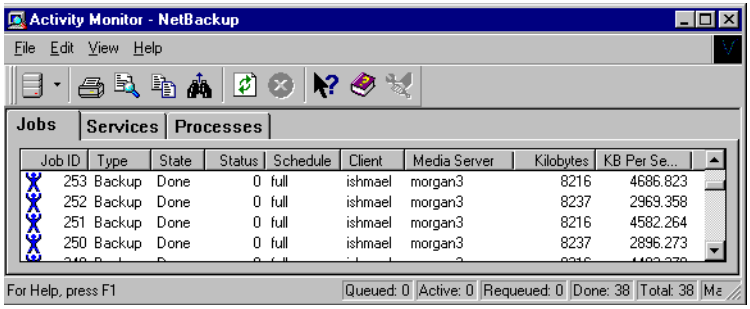
The Manual Backup dialog box appears.



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

6. Follow the instructions on the dialog box.

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



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

Using NetBackup for Informix 4

When all installation and configuration is complete, you can start Informix backups and restores through NetBackup or execute the `onbar` command directly.

This chapter contains the following sections:

- Performing a Backup
- Browse Backups
- Performing a Restore

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

Performing a Backup

The Informix On-BAR Utility supports four different types of backups:

- Level 0 backup (Full)
- Level 1 backup (Incremental)
- Level 2 backup (not supported by NetBackup)
- Logical log backup

The following provides a brief description of each backup type. See the *Informix-OnLine Dynamic Server Backup and Restore Guide* for more information.

Backup Type	Description
Level 0 Backup (Full)	An Informix full backup (level 0 backup) includes all the records in the selected dbspaces. This is the only type of backup that allows a complete restore without performing any recovery steps.
Level 1 Backup (Incremental)	An Informix incremental backup (level 1 backup) backs up records that have changed since the last level 0 backup in the selected dbspaces.
Level 2 Backup (Not supported by NetBackup)	An Informix Level 2 backup backs up records that have changed since the last level 1 backup in the selected dbspaces. This type of backup is not supported by NetBackup. Level 2 backups can be done, however, by keeping track of the previous backup type with the On-Bar script.
Logical Log Backups	An Informix logical-log backup backs up the logical logs that have filled. By using the Informix `ALARMPROGRAM` configuration option, these backups can be scheduled, started manually, or started on demand when the logical logs fill.

Backup Strategy

The backup strategy that we show in our examples is for a database that requires frequent backups in order to provide protection against disk failure. This strategy is as follows:

1. Perform an Informix full backup (level 0) every Friday night. This backs up the selected dbspaces.
2. Back up the `$INFORMIXDIR/etc` directory once a day.
3. Perform an Informix incremental backup (level 1) each night.
4. Configure the Informix `ALARMPROGRAM` to start a logical-log backup as the logs fill.

5. If you do not want to wait for log files to fill, you can set up a separate NetBackup class and then schedule a full logical-log backup to occur as often as necessary.

Note It is especially important to have a good strategy for backing up logical-log files, since they are needed for database recovery.

Automatic Backup of an Informix-On-BAR Class

The most convenient way to back up your database is to set up schedules for automatic backups. When the NetBackup scheduler invokes a schedule for an automatic backup, the On-BAR 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 On-BAR scripts will start the database backup.

To add a new schedule or change an existing schedule for automatic backups, follow the guidelines in:

- "NetBackup Administration - Windows NT/2000 Interface" on page 42 if you are using a UNIX master server
- "NetBackup Administration - Java Interface" on page 26 if you are using a Windows NT master server

Manual Backup of an Informix-On-BAR Class

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

Refer to "Test NetBackup for Informix Configuration Settings" on page 57 for instructions on initiating a backup of an Informix-On-BAR class.

User-Directed Backups

Using xbp to Perform a Backup

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

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

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

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

   install_path/netbackup/bin/xbp

3. In the Directory to Search Box, type the path name of the location of the On-BAR scripts. For example:

   install_path/netbackup/ext/db_ext/informix/scripts/

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

5. Select the backup script from the Files pane.

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

7. Click OK.

   A NetBackup process called bphdb starts the On-BAR script on the client.

8. View the status of the script execution.

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

   b. Select the log file for your backup.

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

9. View the log file for the NetBackup operation.

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

```
cd /usr/openv/netbackup/logs/bphdb
```

b. Open the log file with the tail option.

```
tail -f log.mmddyy
```

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

Using the `onbar` Command to Perform a Backup

You can start a backup by executing the `onbar` command from the UNIX command line on the client. See the *Informix-OnLine Dynamic Server Backup and Restore Guide* for details on using the `onbar` command.

Browse Backups

Using `xbp` to Browse

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

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

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

2. Execute `xbp` on the client.

   install_path`/netbackup/bin/xbp`

   The xbp dialog box appears.

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

   The xbp_config dialog box appears.

   a. In the Class type of image to browse, specify the Informix-On-BAR class.

   b. Click OK to close the dialog box.

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

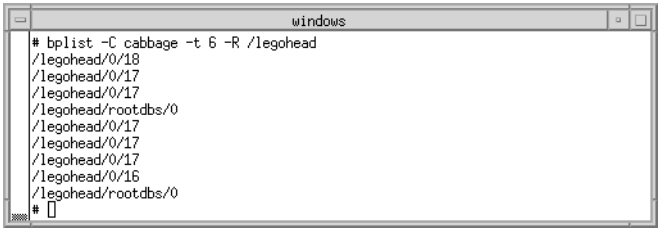
   d. Set the Range of Dates to include the date of your backup.

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

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

Using `bplist` to Browse

Use the `bplist` command to browse Informix backup history on the master server. The result is the list of dump-file names. The following example uses `bplist` to search all Informix backups for a client named cabbage:



The `-t 6` on this command specifies the Informix backups (dumps). Refer to the `bplist(1M)` man page for more information on this command.

Performing a Restore

The following procedure explains how to restore your database to the level of your last full or partial backup plus all transactions through the last incremental. It includes steps for recovering all of your files. For some types of failures, you will not have to perform all of these steps. Refer to the *Informix-OnLine Dynamic Server Backup and Restore Guide* for more information on the steps described here and which step(s) to perform for a specific type of failure:

1. Salvage the logical-log files before replacing any disks that have failed:

   `onbar -l -s`

2. If you need to restore the `$ONCONFIG` file, `sqlhosts` file, emergency boot file, or the `oncfg_$INFORMIX SERVER.SERVERNUM` file, use the NetBackup Administrator Java interface as follows:

   a. Change to the `$INFORMIXDIR/etc` directory:

      `cd $INFORMIXDIR/etc`

   b. Start the java interface, select the files that you want to restore, and then start the restore.

3. Use `onbar` to perform the physical restore of the damaged dbspaces:

   `onbar -r -p dbspace1 dbspace2`

4. Perform a logical restore of the dbspaces that you physically restored:

   `onbar -r -l`

User-Directed Restore

All restores must be started from the NetBackup for Informix client. Prior to the execution of a restore, a backup must have been successfully completed or an error will occur during the execution.

Note You cannot execute restore operations from the server.

Using `xbp` to Perform a Restore

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

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

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

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

   install_path`/netbackup/bin/xbp`

Note You cannot restore a database to a remote machine.

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

   install_path`/netbackup/ext/db_ext/informix/scripts/`

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

5. Select the restore script from the Files pane.

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

7. Click OK.

   A NetBackup process called `bphdb` starts the On-BAR script on the client.

8. View the status of the script execution.

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

   b. Select the log file for your restore.

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

9. View the log file for the NetBackup operation.

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

      ```
      cd /usr/openv/netbackup/logs/bphdb
      ```

   b. Open the log file with the tail option.

```
tail -f log.mmddyy
```

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

Using the `onbar` Command to Perform a Restore

You can also use the `onbar` command from the UNIX command line on the client. See the *Informix-OnLine Dynamic Server Backup and Restore Guide* for details about the `onbar` command.

Alternate Client Restore Configuration on the Client

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

1. Ensure that the NetBackup server is configured to allow the alternate client restore (see the *NetBackup System Administrator's Guide - UNIX* or the *NetBackup System Administrator's Guide - Windows NT/2000*).

2. Do one of the following (if you do both, NetBackup considers them in the order listed).

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

     `CLIENT_NAME = jupiter`

     or

   - Set the Informix environment variable, INFXBSA_CLIENT. For example, if you are using the C shell, the following command specifies jupiter as the client to browse:

     `setenv INFXBSA_CLIENT jupiter`

Troubleshooting 5

NetBackup, NetBackup for Informix, and the Informix On-BAR Utility all provide reports on database operations. These reports are useful for finding errors associated with those applications.

Troubleshooting Tips

Refer to this section when troubleshooting NetBackup for Informix.

- Refer to *Informix-Online Dynamic Server Backup and Restore Guide*, available on-line at www.informix.com.
- For the IBM AIX platform, Informix 7.3 requires the file `infxbsa.so` instead of `infxbsa.a`. For Informix 7.2, `infxbsa.a` will be used. The `ar` command can be used to extract `infxbsa.so` from `infxbsa.a` if necessary.
- Verify the existence of `/usr/lib/ibsad001.[so,sl,a]`. This should point to NetBackup's `infxbsa.[so,sl,a]`. The permission should be `755`.
- Verify that the Informix class and schedule are properly created. Refer to "Class Configuration Procedures" on page 26.
- Make sure the table bar_version in the `sysutils` database has the correct value for the bar_version column. It should be `1.1.1` for Informix 7.3 or later.
- Verify the existence of the following directories. Their permissions should be `777`.

  install_path`/netbackup/ext/db_ext/informix/infx_db_comm`
  install_path`/netbackup/logs/infxbsa`

- Examine the following client logs in the following order:

  1. Informix server log, path is specified in `ONCONFIG`.
  2. `OnBAR` debug log, path is specified in `ONCONFIG`.
  3. *install_path*`/netbackup/logs/infxbsa`.

     If this directory was created properly and no log was present, then STOP. Do not go any further since this is the starting point of communication with NetBackup and there are no further NetBackup activities on either the server or client. Do the following:

     a. Examine the `OnBAR` debug log to determine the cause.

     b. Verify the table bar_version in the `sysutils` database.
     The column bar_version should have the value `1.1.1` for Informix 7.3.

     ```
     bar_version
     -----------
     1.1.1
     ```

     c. Make sure `/usr/lib/ibsad001.[so,sl,a]` is linked to NetBackup's `infxbsa.[so,sl,a]` correctly.

  4. *install_path*`/netbackup/logs/bpbackup` or `bprestore`

A backup/restore request from OnBAR will result in a call to `bpbackup/bprestore`. Check for any error from this log. This log will show if a backup/restore request was successfully sent to NetBackup's main request daemon.

- Look for error code in *install_path*`/netbackup/logs/infxbsa`, then depending the type of error found, refer to the log in the following server directory, if it exists.

  install_path`/netbackup/logs/bprd`

  This log shows if a backup/restore request from `bpbackup/bprestore` was received. Examine the request's details such as client name, class type, client type, and backup file name.

  When the following directories are created on the client, a file is created for each backup/restore session. These files have the naming convention of `log.mmddyy`.

  install_path`/netbackup/logs/bpdbm`
  install_path`/netbackup/logs/bpcd`
  install_path`/netbackup/logs/bpbrm`
  install_path`/netbackup/logs/bptm`
  install_path`/netbackup/logs/bpsched`
  install_path`/netbackup/ext/db_ext/informix/infx_db_comm`

  These files may offer additional debug information. The name of the file can be found in the *install_path*`/netbackup/logs/infxbsa` directory. Search for the backup/restore request in this log. For example:

```
11:18:39 [671] <4> BSACreateObject: INF - Issue backup command:
install_path/netbackup/bin/bpbackup -I
-L install_path/netbackup/ext/db_ext/informix/infx_db_comm/infxbsa.671.0
-t 6 /legohead/rootdbs/0
```

The above message was generated by an OnBAR request for a backup session. The temporary file used was:

install_path`/netbackup/ext/db_ext/informix/infx_db_comm/infxbsa.671.0`

NetBackup Logs

The NetBackup server and client software allow you to set up detailed activity logs for troubleshooting problems that occur outside of either NetBackup for Informix or the Informix On-BAR Utility. See the *NetBackup Troubleshooting Guide - UNIX* or the *NetBackup Troubleshooting Guide - Windows NT/2000* for a complete description of activity logs. Also see the *install_path*`/netbackup/logs/README.debug` file.

Note These logs do not reveal errors that occur during the execution of the Informix On-BAR Utility, unless those errors also affect NetBackup for Informix. Your best sources for Informix error information are the logs provided by the Informix.

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

1. Create the following directories on the client:

   install_path`/netbackup/logs/bphdb`
   install_path`/netbackup/logs/infxbsa`

   % cd *install_path***/netbackup/logs**
   % mkdir bphdb
   % mkdir infxbsa

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

   ```
   % chmod 777 bphdb
   % chmod 777 infxbsa
   ```

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

bphdb Directory on the Client

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

`onbar_stdout.`*mmddyy*

Unless redirected elsewhere, NetBackup places On-BAR script output in this file.

`onbar_stderr.`*mmddyy*

Unless redirected elsewhere, NetBackup places On-BAR script errors in this file.

`log.`*mmddyy*

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

`infxbsa` Directory on the Client

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

`log.`*mmddyy*

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

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.

Informix On-BAR Utility Logs

The Informix On-BAR Utility performs its own error logging and tracing in the file specified by `BAR_ACT_LOG` in the `$INFORMIXDIR/etc/ONCONFIG` file. Database administrators can use this log file to determine what has happened during On-BAR execution.

Deleting Expired Backups from the Informix Backup Database

Informix does not have a mechanism for deleting records of expired backups from its backup database. NetBackup for Informix, however, provides a script that will delete these records from the Informix backup database if the NetBackup image database has expired the backups. To run the script, execute the following command as user informix or the Informix Administrator.

install_path`/netbackup/ext/db_ext/informix/scripts/infx_remove_expired_images`

When this script runs, it creates files in the `/tmp` directory. These files are not removed so that they can be used to diagnose any problems that occur.

Index