

# **VERITAS NetBackup™ 4.5 for Informix**

---

## **System Administrator's Guide**

**UNIX**

March 2002  
30-000497-011

  
**VERITAS**

---

## Disclaimer

The information contained in this publication is subject to change without notice. VERITAS Software Corporation makes no warranty of any kind with regard to this manual, including, but not limited to, the implied warranties of merchantability and fitness for a particular purpose. VERITAS Software Corporation shall not be liable for errors contained herein or for incidental or consequential damages in connection with the furnishing, performance, or use of this manual.

## Copyright

Copyright © 1996–2002 VERITAS Software Corporation. All Rights Reserved. VERITAS, VERITAS SOFTWARE, the VERITAS logo, *Business Without Interruption*, VERITAS The Data Availability Company, and VERITAS NetBackup are trademarks or registered trademarks of VERITAS Software Corporation in the U.S. and/or other countries. Other product names mentioned herein may be trademarks or registered trademarks of their respective companies.

VERITAS Software Corporation  
350 Ellis Street  
Mountain View, CA 94043  
Phone 650-527-8000  
Fax 650-527-8050  
[www.veritas.com](http://www.veritas.com)



# Contents

---

<b>Preface</b> .....	<b>vii</b>
Audience .....	viii
Accessibility .....	viii
Organization .....	ix
Related Documents .....	ix
Conventions .....	x
Type Style .....	x
Notes and Cautions .....	x
Key Combinations .....	xi
Command Usage .....	xi
Terms .....	xii
Getting Help .....	xii
<b>Chapter 1. Introduction</b> .....	<b>1</b>
Features of NetBackup for Informix .....	2
Terminology for NetBackup for Informix .....	4
NetBackup Terms .....	4
NetBackup for Informix Terms .....	5
Technical Overview of NetBackup for Informix .....	6
Informix On-BAR Utility .....	6
NetBackup for Informix .....	7
Sequence of Operation .....	7
<b>Chapter 2. Installation</b> .....	<b>9</b>



---

Installation Prerequisites .....	10
Installing NetBackup for Informix .....	11
Remote Installation of NetBackup for Informix .....	11
Installation Requirements .....	11
Remote Install Procedure .....	11
Local Installation of NetBackup for Informix .....	18
<b>Chapter 3. Configuration .....</b>	<b>21</b>
Configuration Using the NetBackup Administration Console for Windows .....	22
Configuring the Media Manager .....	23
Setting the Maximum Jobs per Client Global Attribute .....	23
Configuring a NetBackup Policy .....	25
Adding New Policies .....	25
Description of Attributes .....	27
Adding New Schedules .....	28
Types of Backups .....	31
Schedule Properties .....	32
Specifying the List of Scripts .....	33
Adding Clients to a Policy .....	34
Configuring a Standard Policy .....	35
Configuration Using the NetBackup Administration Console for UNIX .....	37
Configuring the Media Manager .....	38
Setting the Maximum Jobs per Client Global Attribute .....	38
Configuring a NetBackup Policy .....	40
Description of Attributes .....	42
Adding New Schedules .....	43
Types of Backups .....	46
Schedule Properties .....	47
Specifying the List of Scripts .....	48
Adding Clients to a Policy .....	49



---

Configuring a Standard Policy .....	50
Creating Scripts .....	52
Instructions for Modifying Scripts .....	52
Environment Variables .....	55
Configuring the bp.conf Files .....	56
Options for netbackup/bp.conf On the Server .....	56
Create a \$INFORMIXDIR/bp.conf File on the Client .....	56
Testing NetBackup for Informix Configuration Settings .....	57
NetBackup Administration Console for Windows .....	57
NetBackup Administration Console for UNIX .....	58
<b>Chapter 4. Using NetBackup for Informix .....</b>	<b>61</b>
Performing a Backup .....	62
Backup Strategy .....	62
Automatic Backup of an Informix-On-BAR Policy .....	63
Manual Backup of an Informix-On-BAR Policy .....	63
User-Directed Backups .....	64
Using xbp to Perform a Backup .....	64
Using the onbar Command to Perform a Backup .....	65
Browsing Backups .....	66
Using xbp to Browse .....	66
Using bplist to Browse .....	67
Performing a Restore .....	68
User-Directed Restore .....	68
Using xbp .....	69
Using the onbar Command to Perform a Restore .....	70
Redirecting a Restore to a Different Client .....	70
<b>Chapter 5. Troubleshooting .....</b>	<b>71</b>
Troubleshooting Tips .....	72
NetBackup Logs .....	74



---

NetBackup Server Reports .....	75
Informix On-BAR Utility Logs .....	75
Setting the Debug Level .....	76
Preventing Timeout Failures on Large Database Restores .....	76
Deleting Expired Backups from the Informix Backup Database .....	76
<b>Index .....</b>	<b>77</b>



# Preface

---

This guide describes how to install, configure and use VERITAS NetBackup for 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 Administrator'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 Administrator'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

## Accessibility

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

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

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





---

## Organization

This guide is organized as follows:

- ◆ 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.
- ◆ 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 for UNIX*  
Explains how to configure and manage NetBackup on a UNIX system.
- ◆ *NetBackup Media Manager System Administrator's Guide for UNIX*  
Explains how to configure and manage the storage devices and media on UNIX NetBackup servers. Media Manager is part of NetBackup.
- ◆ *NetBackup Troubleshooting Guide - UNIX*  
Provides troubleshooting information for UNIX-based NetBackup products. You can also refer to [www.support.veritas.com](http://www.support.veritas.com), access the Knowledge Base Search option, and search for TechNotes.

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

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



◆ *NetBackup Troubleshooting Guide for Windows*

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

For this product, you may also need the following 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

#### Typographic Conventions

---

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

---

### Notes and Cautions

---

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

---

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

---

## Key Combinations

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

Press Ctrl+t

## Command Usage

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

brackets [ ]

The enclosed command line component is optional.

Vertical bar or pipe (|)

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

`command arg1 | arg2`

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



## Terms

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

---

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

---

## Getting Help

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

<http://www.support.veritas.com/>

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



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





NetBackup for 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	<p>NetBackup scheduling facilities on the master server can be used to schedule automatic and unattended Informix backups.</p> <p>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.</p>
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	<p>All backups and restores are executed simultaneously and transparently without any action from the NetBackup administrator.</p> <p>A Informix administrator can execute database backup and restore operations through NetBackup or use Informix On-BAR Utility as if NetBackup were not present.</p> <p>An administrator or any other authorized user can use NetBackup to execute database backups and restores.</p>
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	<p>NetBackup provides the following graphical user interfaces for client users and administrators:</p> <ul style="list-style-type: none"><li>◆ Backup, Archive, and Restore user interface</li><li>◆ Client user motif interface, <code>xbp</code></li><li>◆ NetBackup Administration Console for Java</li><li>◆ NetBackup Administration Console for Windows</li></ul> <p>A database administrator or NetBackup administrator can start backup or restore operations for Informix from the NetBackup graphical user interface on the master server.</p>
Parallel backup and restore operations	<p>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.</p>

---



## 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.

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



## NetBackup for Informix Terms

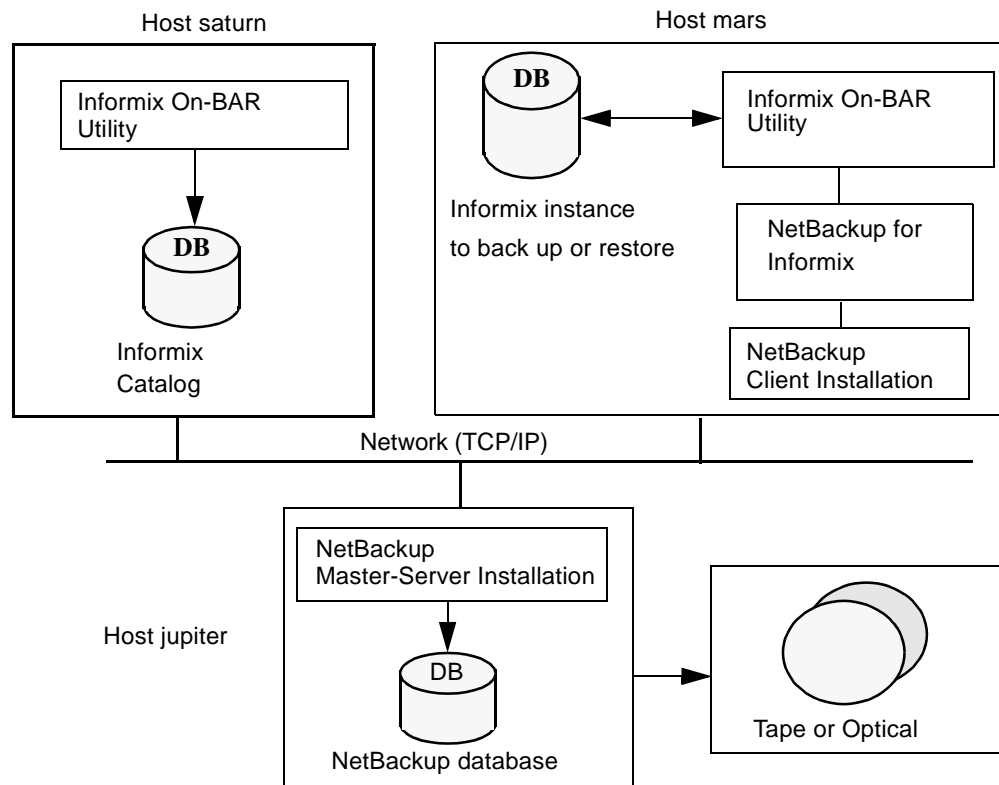
<b>Informix On-BAR Utility</b>	The Informix On-BAR Utility allows database administrators to back up and restore Informix databases on UNIX systems. This utility, however, does not directly manage storage devices and media. The Informix On-BAR Utility must be integrated with a media management system 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.
<code>onbar</code>	The <code>onbar</code> command starts a backup or restore with the Informix On-BAR Utility. This command is described in the <i>Informix-OnLine Dynamic Server Backup and Restore Guide</i> .
<b>On-BAR script</b>	A Bourne-shell script that contains <code>onbar</code> commands.
<code>Onsmsync</code>	<code>Onsmsync</code> is an Informix version 9.20 feature which synchronizes the NetBackup catalog with the Informix backup catalog. The <code>onsmsync</code> utility feature is used to delete images from both Informix backup catalogs and NetBackup catalogs. Refer to the <i>Informix-OnLine Dynamic Server Administration Guide</i> 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 Backup, Archive, and Restore 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` starts a user-directed backup by issuing a backup request.
3. The NetBackup master server connects to On-BAR through the NetBackup library on the client and transfers the database data to secondary storage.

For a restore:

A restore works in essentially the same manner except that `onbar` issues a restore request. This causes NetBackup to retrieve the data from secondary storage and send it to NetBackup for Informix on 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.



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 Agent Platform Support section in the *NetBackup Release Notes*.



## Installation Prerequisites

Before installing NetBackup for Informix, be sure you have completed the following procedures:

- ❖ Install the NetBackup server software on the server.

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

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

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

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

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

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

- ❖ 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.





## Installing NetBackup for Informix

There are two ways to install database agent 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 18.

### Remote Installation of NetBackup for Informix

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

#### Installation Requirements

- ◆ The version of the NetBackup Client and the version of NetBackup for Informix must be the same (e.g., 4.5).
- ◆ There must be adequate disk space on each client that will receive the software. Less than one megabyte of additional disk space is required in the client's *install\_path/netbackup* directory. However, more disk space may be necessary at run time.
- ◆ NetBackup version 4.5 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. To view or add license keys, perform one of the following:
  - Run the command  
*install\_path/netbackup/bin/admincmd/get\_license\_key.*



- Open the NetBackup Administration Console and from the **Help** menu choose **License Keys**.
- 3. Insert the CD-ROM into the drive.
- 4. Change the working directory to the CD-ROM directory.  

```
cd /CD_mount_point
```
- 5. Load the software on the server by executing the `install` script.  

```
./install
```

  - a. Select the NetBackup Database Agent Software option.  
The following prompt will appear:  

```
Do you want to do a local installation? (y/n) [n]
```
  - b. Answer `n`.  
You are presented with a menu of all database agents available on the CD-ROM.
  - c. Select the NetBackup for Informix option.
  - d. Enter `q` to quit selecting options.  
A prompt will appear asking if the list is correct.
  - e. Answer `y`.  
The `install` script identifies the types of client software loaded during the installation of the NetBackup server. By default, any matching NetBackup for 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 agent 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 as described in the next sections.  
There are two types of installs.
  - *initial install* — Use an initial install if the clients you intend to update have not been configured into policies of type Informix-On-BAR.
  - *upgrade install* — Use an upgrade install if all the clients you intend to update already have been configured into policies of type Informix-On-BAR.



---

**Note** The NetBackup version level (for example, 4.5) running on the clients you wish to update must be the same as the version level of the NetBackup for Informix being installed.

---

### 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/bpplclients -allunique -noheader > filename
```

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

`bpplclients` generates output in following format:

```
hardware operating_system client_name
```

where:

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

*operating\_system* is the operating system name. For example, execute the `ls` command in directory *install\_path*/netbackup/client/*hardware*.

*client\_name* is the name of the client.

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

```
Solaris Solaris2.6 curry
RS6000 AIX4.3.3 cypress
```

2. Edit *filename*.

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

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

For example:

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



**Note** If the receiving client is configured as an HP-UX11.00, Solaris2.6, Solaris7, Solaris8, Solaris9, AIX4.3.3, or AIX5 machine, both the 32 bit and 64 bit versions of NetBackup for Informix will be installed.

---

Only clients listed in *filename* will be updated.

---

**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 of the "Remote Install Procedure" on page 11
- (if using the ALL ALL method) the client does not belong to the Informix policy type

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

---

## Upgrade Install Procedure

1. 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 the Informix policy type.

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

---

**Note** If the receiving client is configured as an HP-UX11.00, Solaris2.6, Solaris7, Solaris8, Solaris9, AIX4.3.3, or AIX5 machine, both the 32 bit and 64 bit versions of NetBackup for Informix will be installed.

---

**Note** With an initial or upgrade install, some clients may be skipped and not updated.

Possible reasons are:

- the client is a PC client (which cannot be updated from a UNIX server)
- NetBackup for 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 of the "Remote Install Procedure" on page 11
- (if using the ALL ALL method) the client does not belong to the Informix policy type

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

---



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

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

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

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

where:

*max* is the maximum number of simultaneous updates that is allowed. The value displayed 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.

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

`update_dbclients` 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]
```

## 2. 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
```

```
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
```

```
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
```

```
guava
```

```
hat
```

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

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

The next client is `guava`.

- If client `guava` 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` 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`. The Informix instance home path name you entered for `guava` becomes the "previous response" displayed for `hat`.

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. 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.

### 3. 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.

<code>bar_version</code>	<code>bsa_version</code>	<code>bar_sm</code>	<code>sm_version</code>
1	1.1.1	VERITAS-NetBackup	1

---

**Note** Make sure `/usr/lib/ibsad001.[so,sl,a]` is correctly linked to NetBackup's `infxbsa.[so,sl,a]`. For more information, see “Troubleshooting Tips” on page 72.

---



## 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.

### Installation Requirements

- ◆ The version of the NetBackup Client and the version of NetBackup for Informix are the same (e.g., 4.5).
- ◆ The local machine must have adequate disk space.  
Less than one megabyte of additional disk space is required in the *install\_path/netbackup* directory. However, more disk space may be necessary at run time.
- ◆ NetBackup version 4.5 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. To view or add license keys, perform one of the following:
  - Run the command  

```
install_path/netbackup/bin/admincmd/get_license_key.
```
  - Open the NetBackup Administration Console and from the **Help** menu choose **License Keys**.
3. Insert the CD-ROM into the drive.
4. Change the working directory to the CD-ROM directory.  

```
cd /CD_mount_point
```
5. Load and install the software by executing the `install` script.





---

**Note** It is expected that the NetBackup version level (for example, 4.5) running on the local machine matches the version level of the database agent being installed.

---

`./install`

- a.** Select the NetBackup Database Agent Software option.

The following prompt will appear:

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

- b.** Answer **y**.

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

- c.** Select the NetBackup for Informix option.

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

A prompt will appear asking if the list is correct.

- e.** 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/ext/dbext`.
- The `install` script will automatically execute the `install_dbext` script.
- If the local machine is configured as an HP11.00, Solaris 2.6, Solaris7, Solaris8, Solaris9, AIX4.3.3, or AIX5 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.
- 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 the receiving client is configured as an HP-UX11.00,machine, both the 32 bit and 64 bit versions of NetBackup for Informix will be 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
```

---

**Note** Make sure `/usr/lib/ibsad001.[so,sl,a]` is correctly linked to NetBackup's `infxbsa.[so,sl,a]`. For more information, see “Troubleshooting Tips” on page 72.

---



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. Configuring the Media Manager
2. Setting the Maximum Jobs per Client Global Attribute
3. Configuring a NetBackup Policy
4. Creating Scripts
5. Configuring the `bp.conf` Files
6. Testing NetBackup for Informix Configuration Settings

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

To configure NetBackup for Informix from a Windows NetBackup server, see “Configuration Using the NetBackup Administration Console for Windows” on page 22.

To configure NetBackup for Informix from a UNIX NetBackup server, see “Configuration Using the NetBackup Administration Console for UNIX” on page 37.



## Configuration Using the NetBackup Administration Console for Windows

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

These procedures include:

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

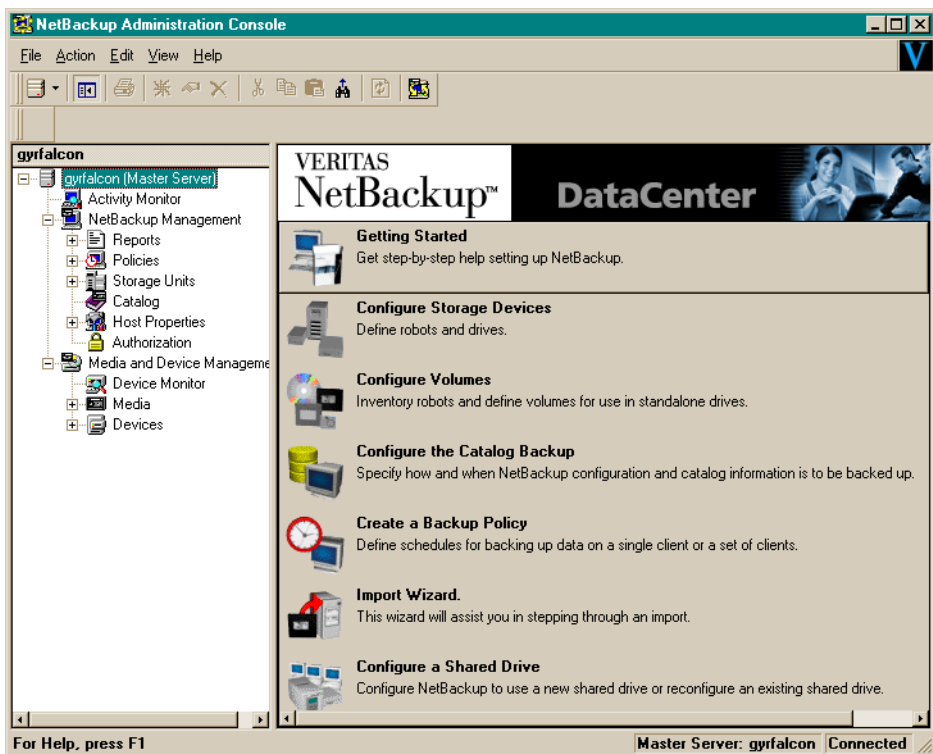
See the next section for instructions on starting the NetBackup Administration Console.

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

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

The NetBackup Administration Console appears.





## Configuring the Media Manager

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

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

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

## Setting the Maximum Jobs per Client Global Attribute

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



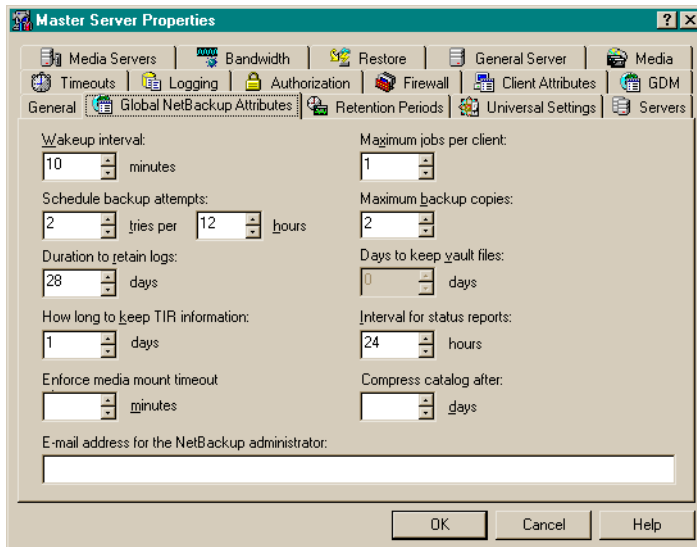
Max Jobs per Client = *Number of Streams* × *Number of Policies*

Where:

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

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

1. In the left pane of the NetBackup Administration Console, expand **Host Properties**. Select **Master Server**.
2. In the right pane, double-click on the server icon.  
The Master Server Properties dialog box appears.
3. In the Master Server Properties dialog box, click the **Global NetBackup Attributes** tab.



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

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

---

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

---

## Configuring a NetBackup Policy

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

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

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

In addition, a Standard type policy with a user-backup schedule type must be configured to back up the INFORMIX/etc files specified in the backup scripts.

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

### Adding New Policies

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

#### ▼ To add a new policy

---

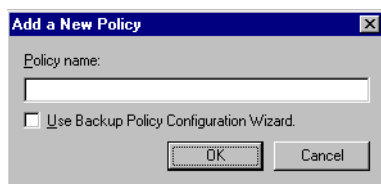
**Note** This policy name may be specified in the `$INFORMIX_HOME/bp.conf` file. This is optional. Refer to “Configuring the `bp.conf` Files” on page 56 for details.

---

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



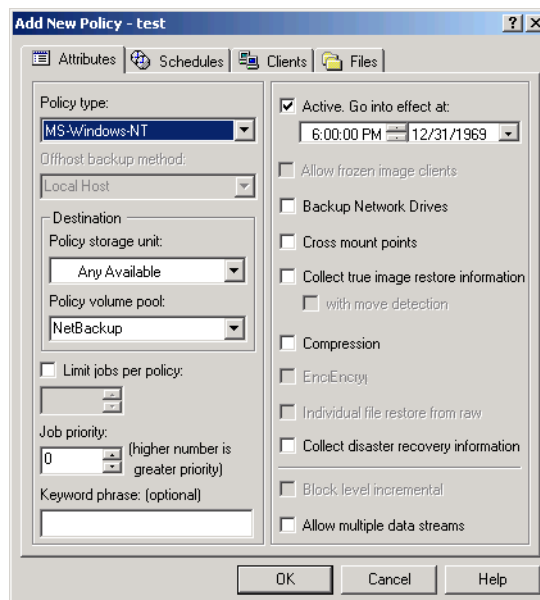
The Add a New Policy dialog box appears.



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



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



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

## Description of Attributes

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



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

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

## Adding New Schedules

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

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

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

### ▼ To configure an Application Backup schedule

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

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

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

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

The backup window for an Application Backup schedule must encompass the time period during which all NetBackup jobs, scheduled and unscheduled, will occur. This is necessary because the Application Backup schedule starts processes that are required for all NetBackup for 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 Application Backup schedule must have a start time of 0800 and a duration of 14 hours.

Example Settings for an Application Backup schedule.

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

---

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

---



---

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

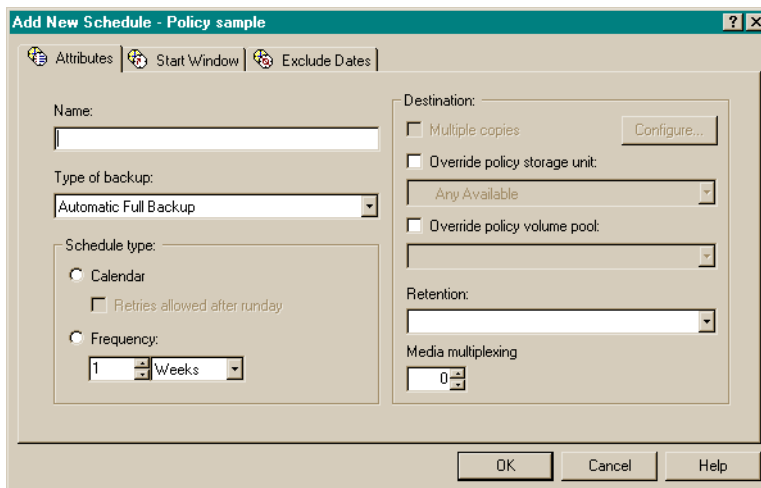
---



▼ **To configure an automatic backup schedule**

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

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



2. Specify a unique name for the schedule.

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

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

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

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

Type of Backup	Schedule settings	Description	Settings
Automatic Incremental Backup	Retention	The length of time to store the record of a backup.	1 week
	Frequency	Frequency determines how often a backup should be performed	every day
	Backup Window	The time during which a NetBackup operation can be performed.	Sunday through Saturday 18:00:00 - 22:00:00

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

## Types of Backups

---

Application Backup	The Application Backup schedule enables user-controlled NetBackup operations performed on the client. At least one Application Backup schedule type must be configured for each Informix-On-BAR policy. The Default-Application-Backup schedule is automatically configured as an Application Backup schedule.
Automatic Full Backup	<p>A full backup copies all blocks into the backup set, skipping only datafile blocks that have never been used. Note that a full backup is not the same as a whole database backup; full is an indicator that the backup is not incremental.</p> <p>A full backup has no effect on subsequent incremental backups, which is why it is not considered part of the incremental strategy. In other words, a full backup does not affect which blocks are included in subsequent incremental backups.</p>
Automatic Incremental Backup	An incremental backup is a backup of only those blocks that have changed since a previous backup.

---



## Schedule Properties

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

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

---

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



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

## Specifying the List of Scripts

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

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

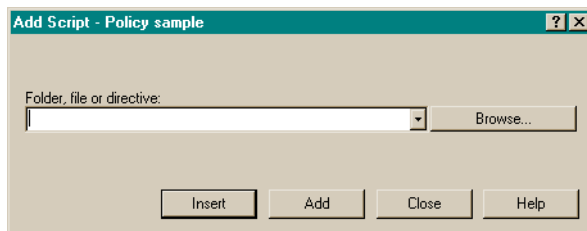
All scripts specified in the Scripts list are executed during manual or automatic backups. NetBackup will start backups by running the scripts in the order that they appear in the Scripts list.



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

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

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



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

Be sure to specify the full pathname when listing On-BAR scripts. For example:

*install\_path/netbackup/ext/dbext/informix/scripts/script\_name*

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

3. Click **Add**.

## **Adding Clients to a Policy**

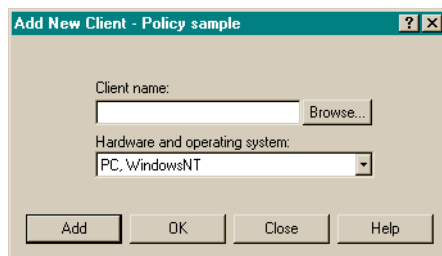
The client list is the list of clients on which your On-BAR scripts will be executed during an automatic backup. A NetBackup client must be in at least one policy but can be in more than one.



### ▼ To add clients to a policy

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

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



2. In the **Client name** text box, type the name of the client that you are adding.  
On the client the following should be installed:
  - Informix
  - NetBackup client or server
  - NetBackup for Informix
  - the backup or restore On-BAR script(s)
3. Choose the hardware and operating system type.
4. Click **Add**.
5. To add another client, repeat step 2 through step 4. If this is the last client, click **Close** to close the dialog box.

## Configuring a Standard Policy

In addition to the Informix policy, you must also configure a Standard type policy. A Standard policy will enable the backup of the `INFORMIXDIR/etc` files specified in the scripts.

---

**Note** The name of the policy must be specified in the backup scripts you modify on the client.

---



▼ **To Create a Standard Policy**

1. Add a new policy, as specified in “Configuring a NetBackup Policy.”
2. Specify the general attributes for the policy:
  - a. Select Standard for the policy type.
  - b. Specify other attributes as desired.
3. Add a schedule:
  - a. Type the name of your schedule.
  - b. In the **Type of Backup** box, select **User Backup**.

A User Backup schedule enables user controlled NetBackup operations performed on the client.
  - c. In the **Retention** box, set the time period needed to retain two full backups of your database.

For example, if your database is backed up once every Sunday morning, select a retention period of at least two weeks.
  - d. In the **Start Window** section of the **Schedules** dialog, set the time of day when you want backup operations to be available to the user.

---

**Note** You do not need to configure a file list for this policy because it will be a User Backup type schedule.

---

4. Specify the clients that you will be backing up. The client must have:
  - Informix installed
  - NetBackup for Informix installed
5. Click **OK**.

The Add New Policy dialog box closes. The policy you just configured appears in the policy list.

## Configuration Using the NetBackup Administration Console for UNIX

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

These procedures include:

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

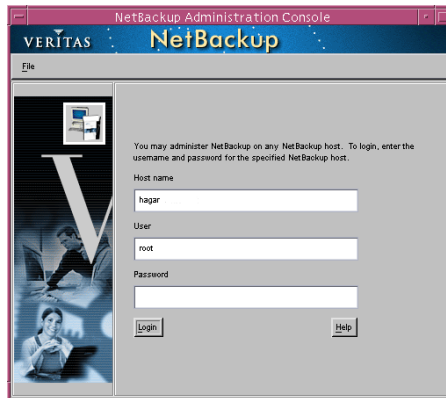
See the next section for instructions on starting the NetBackup Administration Console.

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

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

```
install_path/netbackup/bin/jnbSA &
```

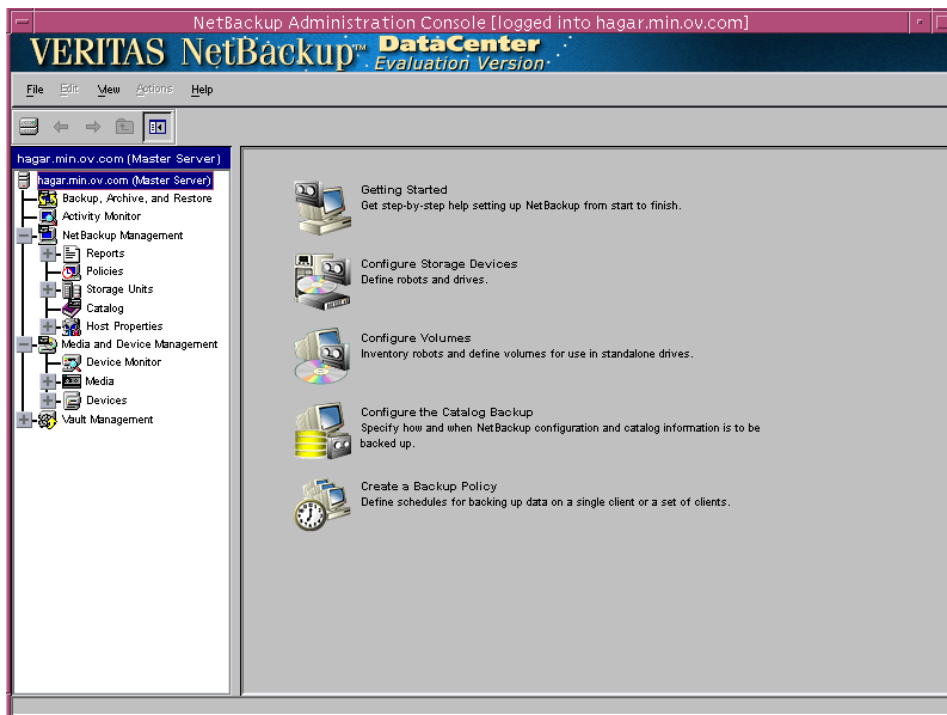
The Login dialog box appears.



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



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



## Configuring the Media Manager

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

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

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

## Setting the Maximum Jobs per Client Global Attribute

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

Max Jobs per Client = *Number of Streams* × *Number of Policies*

Where:

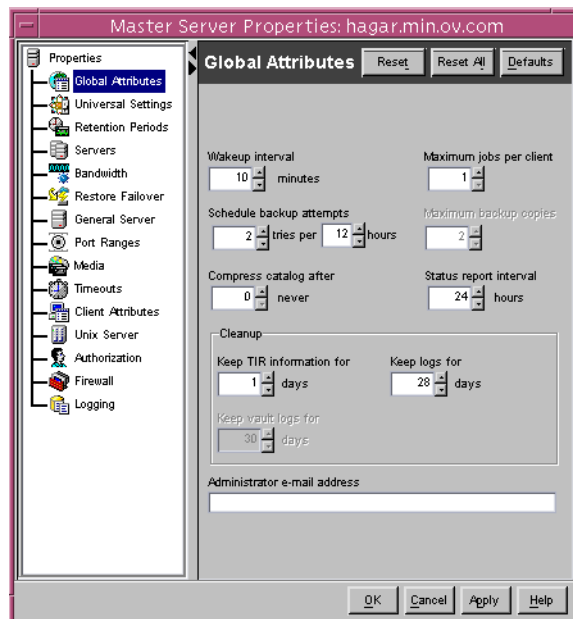
- ◆ *Number of Streams* is the number of backup streams between the database server and NetBackup. Each separate stream starts a new backup job on the client.
- ◆ *Number of Policies* is the number of policies that may back up this client at the same time. This number can be greater than one. For example,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

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

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

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

The Master Server Properties dialog box appears.



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

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



---

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

---

## Configuring a NetBackup Policy

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

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

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

In addition, a Standard type policy with a user-backup schedule type must be configured to back up the INFORMIX/etc files specified in the backup scripts.

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

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

### ▼ To add a new policy

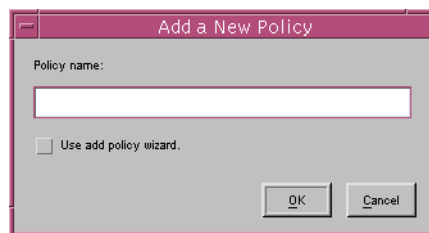
---

**Note** This policy name may be specified in the `$/INFORMIX_HOME/bp.conf` file. This is optional. Refer to “Configuring the `bp.conf` Files” on page 56 for details.

---

1. Log onto the server as root.
2. Start the NetBackup Administration Console.
3. If your site has more than one master server, choose the one to which you want to add the policy.
4. In the left pane, click on **Policies**. The right pane splits into a All Policies pane and a details pane.

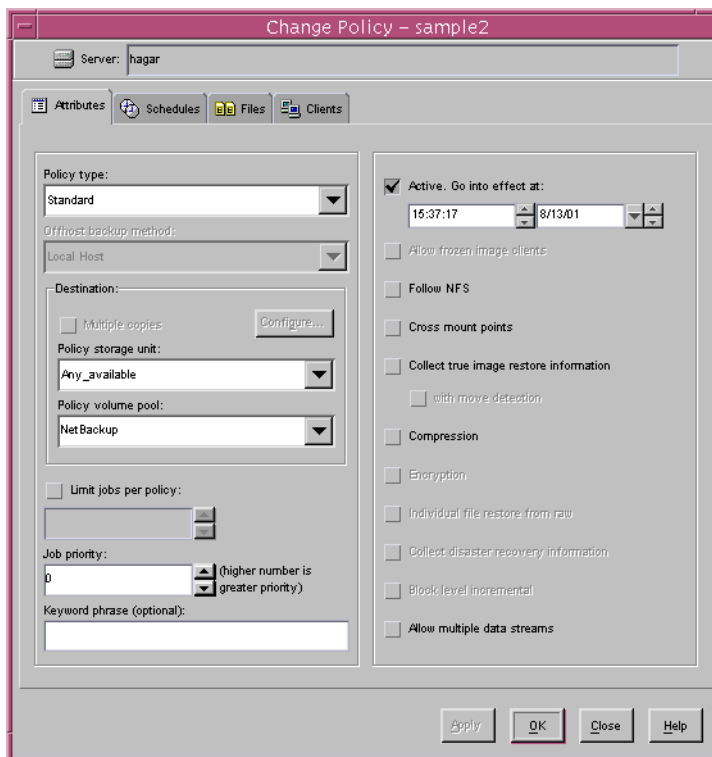
5. In the All Policies pane, right-click on the Master Server, and click **New**.  
The Add a New Policy dialog box appears.



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



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



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

## Description of Attributes

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



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

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

## Adding New Schedules

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

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

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

### ▼ To configure an Application Backup schedule

1. Under the policy name, select **Schedules**.
2. In the right pane, double-click on the schedule named **Default-Application-Backup**.

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

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

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

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



The backup window for an Application Backup schedule must encompass the time period during which all NetBackup jobs, scheduled and unscheduled, will occur. This is necessary because the Application Backup schedule starts processes that are required for all NetBackup for 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 Application Backup schedule must have a start time of 0800 and a duration of 14 hours.

---

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

---

Example Settings for an Application Backup schedule.

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

---

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

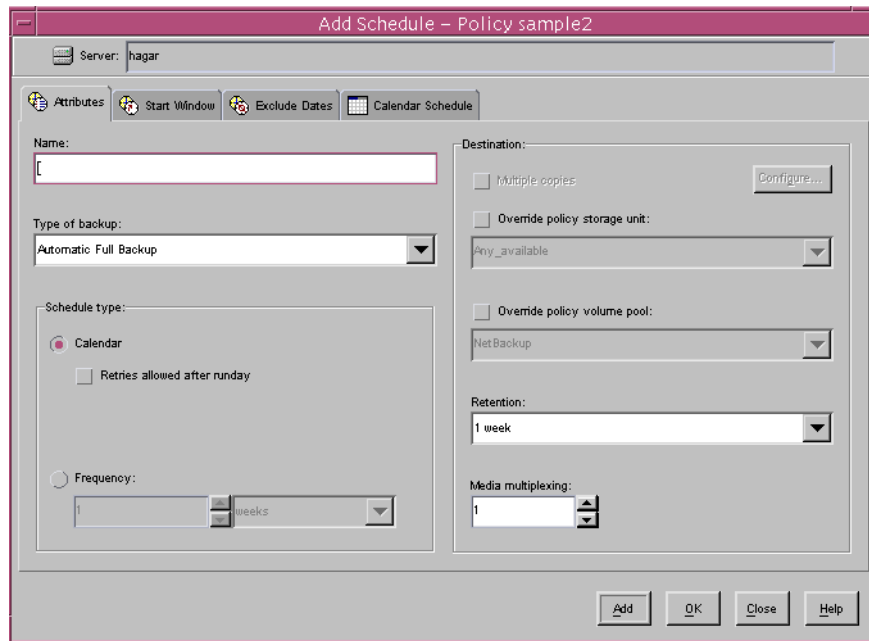
---



▼ **To configure an automatic backup schedule**

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

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



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

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



Type of Backup	Schedule settings	Description	Settings
Automatic Full Backup	Retention	The length of time to store the record of a backup.	2 weeks
	Frequency	Frequency determines how often a backup should be performed	every week
	Backup Window	The time during which a NetBackup operation can be performed.	Sunday, 18:00:00 - 22:00:00
Automatic Incremental Backup	Retention	The length of time to store the record of a backup.	1 week
	Frequency	Frequency determines how often a backup should be performed	every day
	Backup Window	The time during which a NetBackup operation can be performed.	Sunday through Saturday 18:00:00 - 22:00:00

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

## Types of Backups

---

Application Backup	The Application Backup schedule enables user-controlled NetBackup operations performed on the client. At least one Application Backup schedule type must be configured for each Informix-On-BAR policy. The Default-Application-Backup schedule is automatically configured as an Application Backup schedule.
Automatic Full Backup	A full backup copies all blocks into the backup set, skipping only datafile blocks that have never been used. Note that a full backup is not the same as a whole database backup; full is an indicator that the backup is not incremental.  A full backup has no effect on subsequent incremental backups, which is why it is not considered part of the incremental strategy. In other words, a full backup does not affect which blocks are included in subsequent incremental backups.
Automatic Incremental Backup	An incremental backup is a backup of only those blocks that have changed since a previous backup.

---

## Schedule Properties

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

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

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



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

## Specifying the List of Scripts

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

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

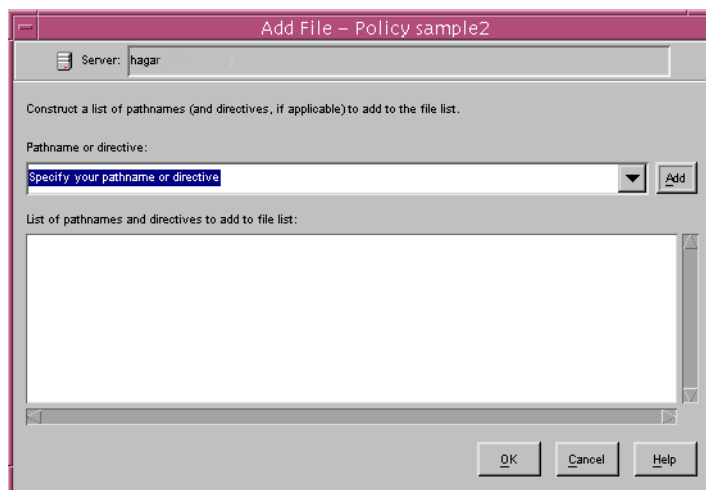
All scripts specified in the Files list are executed during manual or automatic backups. NetBackup will start backups by running the scripts in the order that they appear in the Files list.



### ▼ To add scripts to the Scripts List

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

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



4. Type the name of the Informix script.

Be sure to specify the full pathname when listing On-BAR scripts. For example:

*install\_path/netbackup/ext/dbext/informix/scripts/script\_name*

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

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

### Adding Clients to a Policy

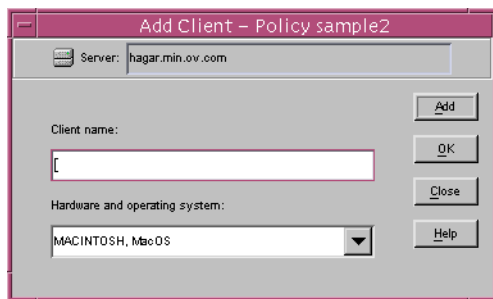
The client list is the list of clients on which your NetBackup for Informix backups will be performed. A NetBackup client must be in at least one policy but can be in more than one.



▼ **To add clients to a policy**

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

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



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

## Configuring a Standard Policy

In addition to the Informix policy, you must also configure a Standard type policy. A Standard policy will enable the backup of the `INFORMIXDIR/etc` files specified in the scripts.



**Note** The name of the policy must be specified in the backup scripts you modify on the client.

---

▼ **To Create a Standard Policy**

1. Add a new policy, as specified in “Configuring a NetBackup Policy.”
2. Specify the general attributes for the policy:
  - a. Select Standard for the policy type.
  - b. Specify other attributes as desired.
3. Add a schedule:
  - a. Type the name of your schedule.
  - b. In the **Type of Backup** box, select **User Backup**.

A User Backup schedule enables user controlled NetBackup operations performed on the client.
  - c. In the **Retention** box, set the time period needed to retain two full backups of your database.

For example, if your database is backed up once every Sunday morning, select a retention period of at least two weeks.
  - d. In the **Start Window** section of the **Schedules** dialog, set the time of day when you want backup operations to be available to the user.

---

**Note** You do not need to configure a file list for this policy because it will be a User Backup type schedule.

---

4. Specify the clients that you will be backing up. The client must have:
  - Informix installed
  - NetBackup for Informix installed
5. Click **OK**.

The Add New Policy dialog box closes. The policy you just configured appears in the policy list.



## Creating 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

# Replace xxxxx below with the extension 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 policy */
# to be used to back up the $INFORMIXDIR/etc directory. */
INFX_ETC_POLICY=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_POLICY = $INFXBSA_POLICY"

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_POLICY $INFORMIXDIR/etc"
/usr/openv/netbackup/bin/bpbackup -c $INFX_ETC_POLICY $INFORMIXDIR/etc
BPBACKUP_STATUS=$?
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 “Testing 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 (*Application Backup* 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\_POLICY**

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

**INFXBSA\_LOGICAL\_SCHEDULED**

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

**INFXBSA\_POLICY**

Name of the Informix-On-BAR policy. If this variable is set, NetBackup will back up Informix databases using this policy.

**INFXBSA\_SCHEDULED**

Name of the *Application Backup* schedule. If this variable is set, NetBackup will back up Informix databases using this schedule.



## Configuring 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 home directory of the Informix user's account used for the backup, on the NetBackup client.

---

**Note** The path to this directory can be equal to the value of the `$(INFORMIXDIR)` variable, but that is not always the case.

---

For example, if the home directory is `/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_POLICY=informix_policy
BPBACKUP_SCHED=informix_sched (Default-Application-Backup Schedule)
SERVER=server_name
CLIENT_READ_TIMEOUT=1800
```

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

---

**Note** NetBackup uses the `$(INFORMIXDIR)/bp.conf` file *only* for Informix-On-BAR policies.

---

## Testing 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 server or the *NetBackup Troubleshooting Guide - UNIX* if you are using a UNIX server.

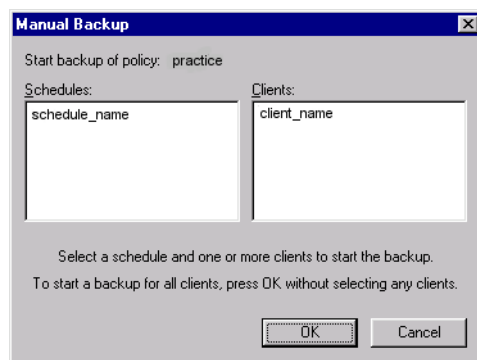
### NetBackup Administration Console for Windows

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

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

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

The Manual Backup dialog box appears.

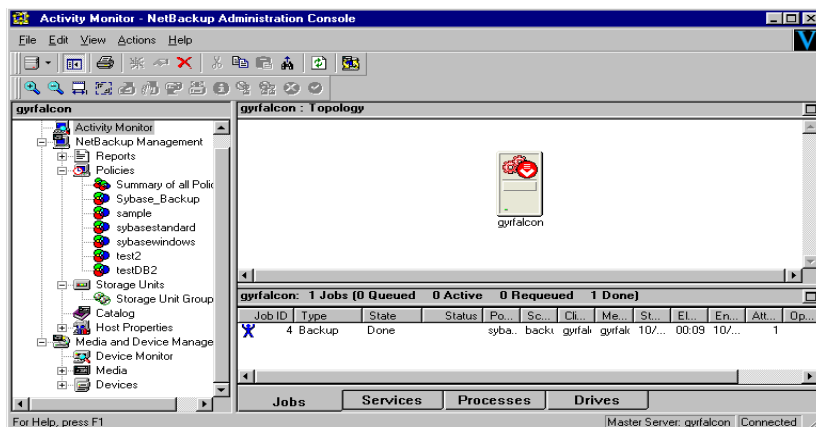


The Schedules pane contains the name of a schedule (or schedules) configured for the policy you are going to test. The Clients pane contains the name of the client(s) listed in the policy you are going to test.

6. Follow the instructions on the dialog box.



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



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

## NetBackup Administration Console for UNIX

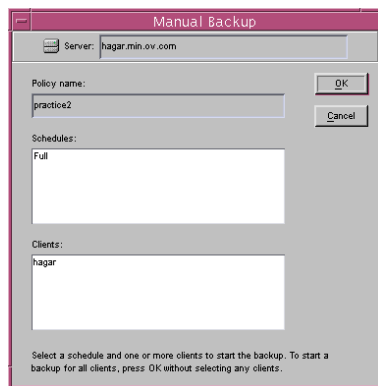
Use this procedure to test a policy configuration on the NetBackup Administration Console for UNIX.

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

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

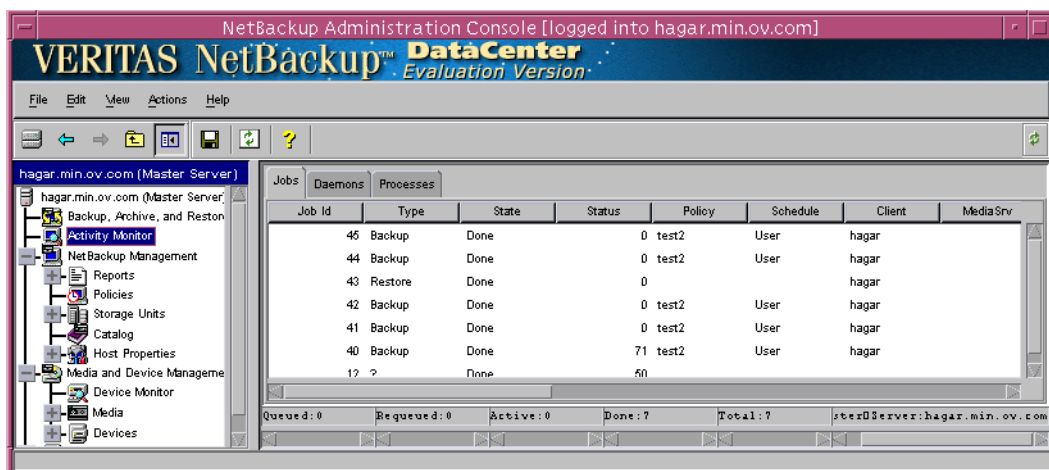


The Manual Backup dialog box appears.



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

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



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



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
- ◆ Browsing 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 <code>ALARMPROGRAM</code> 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 policy 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 Policy

The most convenient way to back up your database is to set up schedules for automatic backups. When the NetBackup scheduler invokes a schedule for an automatic backup, the 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 “Configuring a NetBackup Policy” on page 40.

### Manual Backup of an Informix-On-BAR Policy

The administrator on the master server can use the NetBackup server software to manually execute an Automatic Backup schedule for the Informix-On-BAR policy. For instructions on manually executing a policy, see “Testing NetBackup for Informix Configuration Settings” on page 57.



## User-Directed Backups

This section describes the following procedures for performing user-directed backups:

- ◆ Using xbp to Perform a Backup
- ◆ Using the onbar Command to Perform a Backup

### Using xbp to Perform a Backup

---

**Note** xbp is not supported on AIX platforms.

---

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

1. Log in as the Informix administrator or as root.  
If you are already logged in under a different user account, use the `su -` command to change 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**.
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. For additional information, check the output of the script.

9. View the log file for the NetBackup operation.
  - a. Change directories to the bphdb log directory.

```
cd install_path/netbackup/logs/bphdb
```

- b. Open the log file with the tail option.

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

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

## Using 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.



## Browsing Backups

This section describes the following procedures for browsing backups:

- ◆ Using `xbp` to Browse
- ◆ Using `bplist` to Browse

### Using `xbp` to Browse

---

**Note** `xbp` is not supported on AIX platforms.

---

The following describes how to use `xbp` to browse your database backups. Refer to the *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, use the `su` command to change 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 Policy type of image to browse, specify the Informix-On-BAR policy.

- 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`:

A terminal window titled "windows" showing the execution of the `bplist` command. The command is `# bplist -C cabbage -t 6 -R /legohead`. The output lists several file paths: `/legohead/0/18`, `/legohead/0/17`, `/legohead/0/17`, `/legohead/rootdbs/0`, `/legohead/0/17`, `/legohead/0/17`, `/legohead/0/17`, `/legohead/0/16`, and `/legohead/rootdbs/0`. The prompt `#` is visible at the end of the output.

```
# bplist -C cabbage -t 6 -R /legohead
/legohead/0/18
/legohead/0/17
/legohead/0/17
/legohead/rootdbs/0
/legohead/0/17
/legohead/0/17
/legohead/0/17
/legohead/0/16
/legohead/rootdbs/0
#
```

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.SERVERTNUM` file, use the NetBackup Administrator Console - 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.

---

This section describes the following procedures for performing user-directed restores:

- ◆ Using `xbp`
- ◆ Using the `onbar` Command to Perform a Restore

---

## Using xbp

---

**Note** xbp is not supported on AIX platforms.

---

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, use the `su-` command to switch to the Informix administrator.
2. Execute xbp on the client to which you want to restore a database.  

```
install_path/netbackup/bin/xbp
```
3. In the Directory to Search Box, type in the path name of the location of the 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 /install_path/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.

## Redirecting a Restore to a Different Client

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

1. Ensure that the NetBackup server is configured to allow the redirected restore (see the *NetBackup System Administrator's Guide - 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
```



This chapter explains how to determine and resolve problems encountered when using NetBackup for Informix. It contains the following sections:

- ◆ Troubleshooting Tips
- ◆ NetBackup Logs
- ◆ Setting the Debug Level
- ◆ Deleting Expired Backups from the Informix Backup Database



## 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](http://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 policy and schedule are properly created. Refer to “Configuring a NetBackup Policy” on page 40.
- ◆ 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, policy 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.mmmddyy`.

`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 debug 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 debug logs. Also see the `install_path/netbackup/logs/README.debug` file.

---

**Note** These logs do not reveal errors that occur during the execution of the Informix On-BAR Utility, unless those errors also affect NetBackup for Informix. Informix may (or may not) use the NetBackup for Informix logs for errors in the application. Your best sources for Informix error information are the logs provided by 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 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.mmddy`

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

`onbar_stderr.mmddy`

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

`log.mmddy`



---

`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.mmdyy`

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



## Setting the Debug Level

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

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

```
VERBOSE = 5
```

## Preventing Timeout Failures on Large Database Restores

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

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

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

## 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

---

## A

- Activity Monitor
  - Java interface 59
  - Windows interface 58
- Adding Schedules
  - Java interface 43
  - Windows interface 28
- Administrator-directed backups
  - definition 4
- Alternate client restore
  - See Redirected restore
- Application Backup schedule
  - configuration (Java interface) 43
  - configuration (Windows interface) 28
  - environmental variables 55
  - retention, backup window (Java interface) 44
  - retention, frequency, backup window (Windows interface) 29
- Automatic backup
  - class 63
  - create scripts 52
  - schedule
    - bphdb log 75
    - manual backup 63
  - automatic backup schedule
    - configuration (Windows interface) 30
- Automatic Full Backup schedule (Java interface) retention, frequency, backup window 30, 46
- Automatic-scheduled backups
  - definition 4

## B

- Backup
  - see also Automatic backups
  - automatic
    - configure scripts 52
    - using scripts 63

- user directed
  - with xbp 64

- Backups
  - expired
    - delete from Informix 76
  - manual See Manual backups.
  - On-BAR types 62
  - restoring
    - database backups 68
  - strategy 62
- bp.conf
  - administrator 56
  - client 56
  - client name 70
- bpbackup command 7
- bphdb log 74, 75
- bphdb process 64, 69
  - sequence of operation 7
- bplist command, to browse backups 67
- bpplclients 13
- bprestore command 7

## C

- Caution
  - script usage 52
- Client
  - install 10
- Client list
  - Windows interface 34
- Client Read Timeout 76
- Commands
  - bpbackup 7
  - bplist 67
  - onbar 5, 6, 7, 65, 68, 70
  - restore 7
  - su 52
- Configuration
  - database debug level 76
  - media manager 23, 38



- testing policies (Java interface) 58
  - testing policies (Windows interface) 57
  - UNIX 37
  - Windows 22
- D**
- Debug logs
    - description 74
  - Default-Application-Backup schedule
    - automatic backups (Windows interface) 28
    - automatic backups (Java interface) 44
    - configuration (Java interface) 43
    - configuration (Windows interface) 28
  - Directory
    - xbp
      - directory to search 64, 69
- E**
- Environmental variable 55
    - shell script 55
  - Error
    - information 74
    - script name 52
    - script permissions 52
  - Execution log 75
- F**
- Full backup 4
- G**
- get\_license\_key 11, 18
- I**
- Incremental backup
    - Automatic-scheduled backups 4
  - INFORMIXDIR/etc
    - backup 35, 50
  - Inline Tape Copy
    - configuring 33, 48
  - Install
    - NetBackup client software 10
    - NetBackup server software 10
  - install\_dbext 12, 16, 19
  - Installation
    - local 18
    - prerequisites 10
    - upgrade 14
- J**
- Java interface
    - launching 37
- jnbSA** 37
- L**
- Level 0 (full) backup 62
  - Level 1 (incremental) backup 62
  - Level 2 backup 62
  - Library 7
  - License key 11, 18
  - Local installation 18
  - Logical-log backup 62
  - Logs
    - error 74
    - Onbar 72
    - troubleshooting 74
- M**
- Manual backups 57, 63
  - Master server
    - technical overview 6
  - Maximum jobs per client 23, 38
    - specifying in Java interface 39
    - specifying in Windows interface 24
  - Media Manager 23, 38
    - configuration 23, 38
    - definition 4
  - Media server 6
  - Multiplexing 2
- N**
- NetBackup Administration Console
    - UNIX 37
    - Windows 22
  - NetBackup definition 4
  - NetBackup policy
    - attributes 27, 42
    - configuring 25, 40
- O**
- onbar command 5
    - description 6
    - performing backup 65
    - performing restore 70
    - physical restore 68
    - sequence of operation 7
    - technical overview 6
  - OnBAR debug log 72
  - On-BAR script 5
    - description 6
  - On-BAR utility 5
    - backup types 62
    - level 0 (full) 62



- 
- level 1 (incremental) 62
  - level 2 62
  - logical log 62
  - description 6, 7
  - ONCONFIG 72
  - Onmsync utility 5
- P**
- Parallel operations 7
  - Path
    - xbp
      - to browse for backups 66
      - to search for backup scripts 64
      - to search for restore scripts 69
  - Policies
    - configuring 25, 40
    - Standard 35
- R**
- Redirected restore 70
  - Reports
    - database operations 71
  - Restore
    - database 68
    - user directed
      - with xbp 69
  - Retention period 33, 48
- S**
- Schedule
    - automatic backup 63
  - Schedule properties 32, 47
  - Schedules
    - adding, Java interface 43
    - adding, Windows interface 28
    - frequency 32, 47
    - retention 33, 48
  - Scripts
    - example 52
    - On-BAR 5
    - scheduler 63
    - su command 52
    - type of operation 52
  - Scripts list (Java interface) 48
  - Scripts list (Windows interface) 33
  - Server install 10
  - Standard policy
    - configuring 50
  - Status
    - On-BAR utility 7
  - Storage device 6
- T**
- Testing (manual backup) 57
  - Testing policy configuration
    - Java interface 58
    - Windows interface 57
  - Troubleshooting logs 74
- U**
- update\_dbclients 13, 14
  - Upgrade installation 14
  - User-directed backup, and restore
    - definition 4
  - Utility
    - Informix On-BAR 5
- X**
- xbp
    - backup procedure 64
    - restore procedure 69



