

VERITAS NetBackup™ 5.1 for Informix

System Administrator's Guide

for UNIX

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.

VERITAS Legal Notice

Copyright © 1996–2004 VERITAS Software Corporation. All rights reserved. VERITAS, the VERITAS logo, and all other VERITAS product names and slogans are trademarks or registered trademarks of VERITAS Software Corporation. VERITAS, NetBackup, the VERITAS logo, Reg. U.S. Pat. & Tm. Off. Other product names and/or slogans mentioned herein may be trademarks or registered trademarks of their respective companies.

Portions of this software are derived from the RSA Data Security, Inc. MD5 Message-Digest Algorithm. Copyright 1991-92, RSA Data Security, Inc. Created 1991. All rights reserved.

VERITAS Software Corporation
350 Ellis Street
Mountain View, CA 94043
USA
Phone 650-527-8000 Fax 650-527-2908
www.veritas.com

Third-Party Copyrights

ACE 5.2A: ACE(TM) is copyrighted by Douglas C.Schmidt and his research group at Washington University and University of California, Irvine, Copyright (c) 1993-2002, all rights reserved.

IBM XML for C++ (XML4C) 3.5.1: Copyright (c) 1999,2000,2001 Compaq Computer Corporation; Copyright (c) 1999,2000,2001 Hewlett-Packard Company; Copyright (c) 1999,2000,2001 IBM Corporation; Copyright (c) 1999,2000,2001 Hummingbird Communications Ltd.; Copyright (c) 1999,2000,2001 Silicon Graphics, Inc.; Copyright (c) 1999,2000,2001 Sun Microsystems, Inc.; Copyright (c) 1999,2000,2001 The Open Group; All rights reserved.

Permission is hereby granted, free of charge, to any person obtaining a copy of this software and associated documentation files (the "Software"), to deal in the Software without restriction, including without limitation the rights to use, copy, modify, merge, publish, distribute, and/or sell copies of the Software, and to permit persons to whom the Software is furnished to do so, provided that the above copyright notice(s) and this permission notice appear in all copies of the Software and that both the above copyright notice(s) and this permission notice appear in supporting documentation.

This product includes software developed by the Apache Software Foundation (<http://www.apache.org/>).

JacORB 1.4.1: The licensed software is covered by the GNU Library General Public License, Version 2, June 1991.

Open SSL 0.9.6: This product includes software developed by the OpenSSL Project * for use in the OpenSSL Toolkit. (<http://www.openssl.org/>)

TAO (ACE ORB) 1.2a: TAO(TM) is copyrighted by Douglas C. Schmidt and his research group at Washington University and University of California, Irvine, Copyright (c) 1993-2002, all rights reserved.



Contents

Preface	vii
Audience	viii
What Is In This Guide?	viii
Getting Help	ix
NetBackup for Informix Manuals	x
Informix Manuals	xi
Glossary	xii
Accessibility Features	xii
Conventions	xiii
Chapter 1. Introduction	1
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
Chapter 2. Installation	9
Installation Prerequisites	10
Guidelines for Installing NetBackup for Informix in a Cluster	10
Installing NetBackup for Informix	11



Remote Installation of NetBackup for Informix	11
Installation Requirements	11
Remote Installation Instructions	12
Initial Installation on Clients	13
Upgrade Installation on Clients	15
Local Installation of NetBackup for Informix	16
Installation Requirements	16
Local Install Instructions	17
Specifying the Informix Home Path	18
Chapter 3. Configuration	21
Configuration Using the NetBackup Administration Console for Windows	22
Configuring Media Using Media and Device Management	23
Setting the Maximum Jobs Per Client Property	23
Configuring a NetBackup Policy	25
Adding New Policies	25
Description of Attributes	28
Adding New Schedules	28
Types of Backups	31
Schedule Properties	31
Adding Clients to a Policy	33
Specifying the List of Backup Selections	34
Configuring a Standard Policy	35
Configuration Using the NetBackup Administration Console for UNIX	37
Configuring Media Using Media and Device Management	38
Setting the Maximum Jobs Per Client Property	38
Configuring a NetBackup Policy	40
Adding New Policies	40
Description of Attributes	43
Adding New Schedules	43



Types of Backups	46
Schedule Properties	47
Adding Clients to a Policy	48
Specifying the List of Backup Selections	49
Configuring a Standard Policy	51
Creating Scripts	53
Instructions for Modifying Scripts	53
Environment Variables	56
Configuring the bp.conf Files	57
Options for netbackup/bp.conf On the Server	57
Create a bp.conf File on the Client	57
Testing NetBackup for Informix Configuration Settings	58
NetBackup Administration Console for Windows	58
NetBackup Administration Console for UNIX	59
Chapter 4. Using NetBackup for Informix	63
Performing a Backup	64
Backup Strategy	64
Automatic Backup of an Informix-On-BAR Policy	65
Manual Backup of an Informix-On-BAR Policy	65
User-Directed Backups	66
Using xbp to Perform a Backup	66
Using the onbar Command to Perform a Backup	67
Browsing Backups	68
Using xbp to Browse	68
Using bplist to Browse	69
Performing a Restore	70
User-Directed Restore	70
Using xbp	71
Using the onbar Command to Perform a Restore	72



Redirecting a Restore to a Different Client	72
Redirected Restore Example	75
Chapter 5. Troubleshooting	79
Troubleshooting Tips	80
NetBackup Logs	83
NetBackup Server Reports	84
Informix On-BAR Utility Logs	84
Setting the Debug Level	85
Preventing Timeout Failures on Large Database Restores	85
Deleting Expired Backups from the Informix Backup Database	85
Informix Versions XPS 8.x and IDS 9.x	85
Informix Version IDS 7.x	86
Index	87



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 for UNIX, Volumes I and II*, if you have a UNIX server.

or

- ◆ *NetBackup System Administrator's Guide for Windows, Volumes I and II*, if you have a Windows 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:
 - ◆ *Backup, Archive, and Restore Getting Started Guide for UNIX and Windows*
 - ◆ *NetBackup System Administrator's Guide for UNIX, Volumes I and II* or *NetBackup System Administrator's Guide for Windows, Volumes I and II*
 - ◆ *NetBackup Troubleshooting Guide for UNIX and Windows*
- ◆ 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

What Is In This Guide?

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.

Getting Help

VERITAS offers you a variety of support options.

Accessing the VERITAS Technical Support Web Site

The VERITAS Support Web site allows you to:

- ◆ obtain updated information about NetBackup for Informix, including system requirements, supported platforms, and supported peripherals
- ◆ contact the VERITAS Technical Support staff and post questions to them
- ◆ get the latest patches, upgrades, and utilities
- ◆ view the NetBackup for Informix Frequently Asked Questions (FAQ) page
- ◆ search the knowledge base for answers to technical support questions
- ◆ receive automatic notice of product updates
- ◆ find out about NetBackup for Informix training
- ◆ read current white papers related to NetBackup for Informix

The address for the VERITAS Technical Support Web site follows:

- ◆ <http://support.veritas.com>

Subscribing to VERITAS Email Notification Service

Subscribe to the VERITAS Email notification service to be informed of software alerts, newly published documentation, Beta programs, and other services.

Go to <http://support.veritas.com>. Select a product and click “E-mail Notifications” on the right side of the page. Your customer profile ensures you receive the latest VERITAS technical information pertaining to your specific interests.

Accessing VERITAS Telephone Support

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



▼ **To locate the telephone support directory on the VERITAS web site**

1. Open <http://support.veritas.com> in your web browser.
2. Click the **Phone Support** icon. A page that contains VERITAS support numbers from around the world appears.

Accessing VERITAS E-mail Support

▼ **To contact support using E-mail on the VERITAS web site**

1. Open <http://support.veritas.com> in your web browser.
2. Click the **E-mail Support** icon. A brief electronic form will appear and prompt you to:
 - ◆ Select a language of your preference
 - ◆ Select a product and a platform
 - ◆ Associate your message to an existing technical support case
 - ◆ Provide additional contact and product information, and your message
3. Click **Send Message**.

Contacting VERITAS Licensing

For license information call 1-800-634-4747 option 3, fax 1-650-527-0952, or e-mail amercustomercare@veritas.com.

NetBackup for Informix Manuals

The following manuals, along with the online help, are included in the NetBackup for Informix documentation set. For a more detailed listing of NetBackup documents, refer to *NetBackup Release Notes for UNIX and Windows*.

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

- ◆ *VERITAS NetBackup System Administrator's Guide for UNIX, Volume I*

`NetBackup_AdminGuideI_UNIXServer.pdf`

Explains how to configure and manage NetBackup on a UNIX server, including managing storage units, backup policies, catalogs and host properties.

- ◆ *VERITAS NetBackup System Administrator's Guide for UNIX, Volume II*



NetBackup_AdminGuideII_UNIXServer.pdf

Explains additional NetBackup features such as notify scripts, enhanced authorization and authentication, and role-based security. The guide also discusses using NetBackup with AFS, Intelligent Disaster Recovery (IDR), and the BE Tape Reader.

- ◆ *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.

- ◆ *VERITAS NetBackup Troubleshooting Guide for UNIX and Windows*

Provides troubleshooting information for UNIX- and Windows-based NetBackup products, including Media Manager.

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

- ◆ *VERITAS NetBackup System Administrator's Guide for Windows, Volume I*

NetBackup_AdminGuideI_WinServer.pdf

Explains how to configure and manage NetBackup on a Windows server, including managing storage units, backup policies, catalogs and host properties.

- ◆ *VERITAS NetBackup System Administrator's Guide for Windows, Volume II*

NetBackup_AdminGuideII_WinServer.pdf

Explains additional NetBackup features such as notify scripts, enhanced authorization and authentication, and role-based security. The guide also discusses using NetBackup with AFS, Intelligent Disaster Recovery (IDR), and the BE Tape Reader.

- ◆ *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.

- ◆ *VERITAS NetBackup Troubleshooting Guide for UNIX and Windows*

Provides troubleshooting information for UNIX- and Windows-based NetBackup products, including Media Manager.

Informix Manuals

For this product, you may need the *IBM Informix Backup and Restore Guide* from Informix. Check the IBM website for the correct version of the backup and restore guide for your Informix environment.



Glossary

If you encounter unfamiliar terminology, consult the NetBackup online glossary. The glossary contains terms and definitions for NetBackup and all additional NetBackup options and agents.

The NetBackup online glossary is included in the NetBackup help file.

▼ **To access the NetBackup online glossary**

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

Use the scroll function to navigate through the glossary.

Accessibility Features

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

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

For more information, see the *NetBackup System Administrator's Guide for Windows, Volume I* or the *NetBackup System Administrator's Guide for UNIX, Volume I*.



Conventions

The following conventions apply throughout the documentation set.

Product-Specific Conventions

The following term is used in the NetBackup for Informix 5.1 documentation to increase readability while maintaining technical accuracy.

- ◆ Microsoft Windows, Windows

Terms used to describe a specific product or operating system developed by Microsoft, Inc. Some examples you may encounter in NetBackup documentation are, Windows servers, Windows 2000, Windows Server 2003, Windows clients, Windows platforms, or Windows GUI.

When Windows or Windows servers is used in the documentation, it refers to all of the currently supported Windows operating systems. When a specific Windows product is identified in the documentation, only that particular product is valid in that instance.

For a complete list of Windows operating systems and platforms that NetBackup supports, refer to the *NetBackup Release Notes for UNIX and Windows* or go to the VERITAS support web site at <http://www.support.veritas.com>.

Typographical Conventions

Here are the typographical conventions used throughout the manuals:

Conventions

Convention	Description
GUI Font	Used to depict graphical user interface (GUI) objects, such as fields, listboxes, menu commands, and so on. For example: Enter your password in the Password field.
<i>Italics</i>	Used for placeholder text, book titles, new terms, or emphasis. Replace placeholder text with your specific text. For example: Replace <i>filename</i> with the name of your file. Do <i>not</i> use file names that contain spaces. This font is also used to highlight NetBackup server-specific or operating system-specific differences. For example: <i>This step is only applicable for NetBackup Enterprise Server.</i>
Code	Used to show what commands you need to type, to identify pathnames where files are located, and to distinguish system or application text that is displayed to you or that is part of a code example.



Conventions (continued)

Convention	Description
Key+Key	Used to show that you must hold down the first key while pressing the second key. For example: Ctrl+S means hold down the Ctrl key while you press S.

You should use the appropriate conventions for your platform. For example, when specifying a path, use backslashes on Microsoft Windows and slashes on UNIX. Significant differences between the platforms are noted in the text.

Tips, notes, and cautions are used to emphasize information. The following samples describe when each is used.

Tip Used for nice-to-know information, like a shortcut.

Note Used for important information that you should know, but that shouldn't cause any damage to your data or your system if you choose to ignore it.

Caution Used for information that will prevent a problem. Ignore a caution at your own risk.

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
```

In this example, the user can use either the *arg1* or *arg2* variable.

Navigating Multiple Menu Levels

When navigating multiple menu levels, a greater-than sign (>) is used to indicate a continued action.

The following example shows how the > is used to condense a series of menu selections into one step:



- ❖ Select **Start > Programs > VERITAS NetBackup > NetBackup Administration Console**.

The corresponding actions could be described in more steps as follows:

1. Click **Start** in the task bar.
2. Move your cursor to **Programs**.
3. Move your cursor to the right and highlight **VERITAS NetBackup**.
4. Move your cursor to the right. First highlight and then click **NetBackup Administration Console**.





Introduction

1

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

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

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



Features of NetBackup for Informix

This section describes the NetBackup for Informix main features.

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 run simultaneously and transparently without any action from the NetBackup administrator.</p> <p>An Informix administrator can run 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 run 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.

NetBackup for Informix main features

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>◆ Client user motif interface, xbp<li>◆ NetBackup Administration Console for Java<li>◆ NetBackup Administration Console for Windows <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.

For explanations of other NetBackup terms, consult the NetBackup online glossary. For instructions, see the “[Glossary](#)” section in the Preface.



NetBackup for Informix Terms

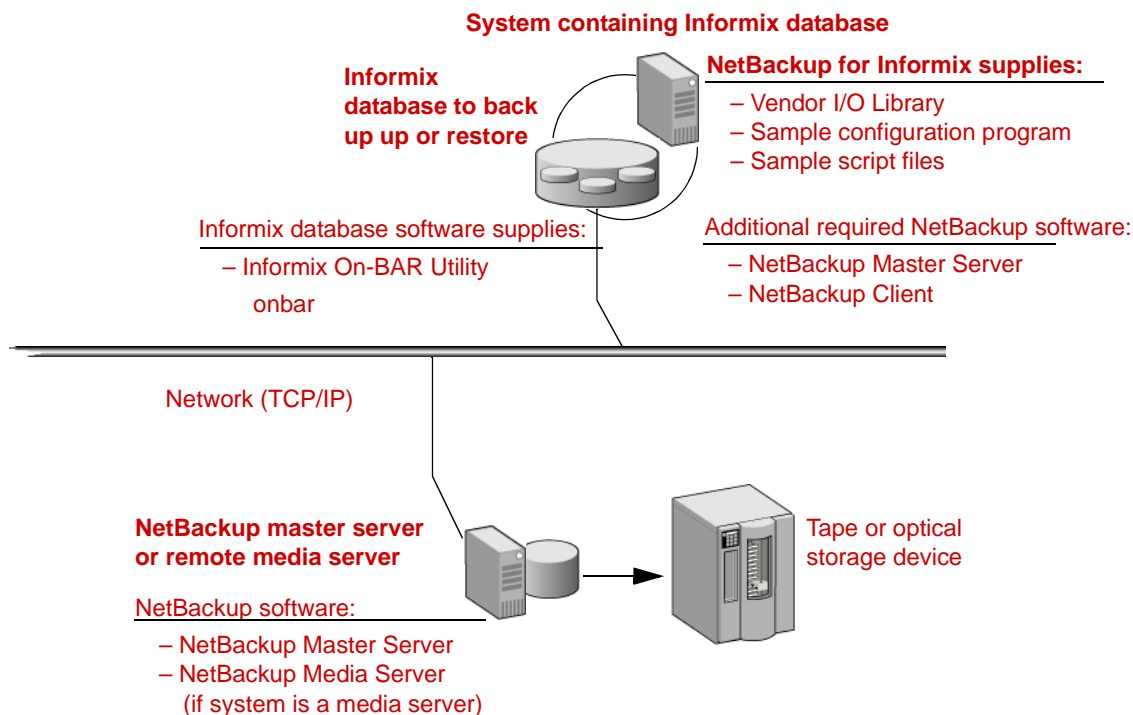
Informix On-BAR Utility	The Informix On-BAR Utility allows database administrators to back up and restore Informix databases on UNIX systems. This utility, however, does not directly manage storage devices and media. The Informix On-BAR Utility must be integrated with a media management system that can access devices and keep information about the media used in Informix database backups. NetBackup for Informix provides this media-management capability by integrating the utility with NetBackup.
onbar	The <code>onbar</code> command starts a backup or restore with the Informix On-BAR Utility. This command is described in the <i>Informix Backup and Restore Guide</i> .
On-BAR scripts	A Bourne-shell script that contains <code>onbar</code> commands.
Onsmsync	Onsmsync is an Informix version XPS 8.x, IDS 9.x, and later 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 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 Backup and Restore Guide*.

For instructions on finding the Informix version level supported, refer to “[Installation](#)” on page 9.

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.

The status for an On-BAR operation is logged in the Informix `BAR_ACT_LOG`. A database administrator can use this log 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 and setup procedures. It includes a section on installation prerequisites.

▼ **To locate the latest Database Agent information on the VERITAS support web site**

1. Go to the VERITAS support web page: <http://www.support.veritas.com>.
2. From the Select Product Family list, choose **NetBackup Products**. The Select Product window refreshes showing a list of NetBackup products.
3. Select one of the NetBackup products. The page refreshes and displays a search window with four tabs.
4. Select **5.1** in the **Product Version** drop-down field.
5. Select a Product Platform.
6. Click the **Compatibility** tab. The page refreshes showing documents that contain compatibility information.
7. Click on the title of the document link for NetBackup Database Agent Compatibility List. A document appears that contains a downloadable file that enables you to view the supported database spreadsheet for this release.



Installation Prerequisites

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

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

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

- ❖ Install the NetBackup server software on the server.

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

Refer to the *NetBackup Installation Guide for UNIX* or the *NetBackup Installation Guide for Windows*.

- ❖ Install the NetBackup client software on the machine where the Informix vendor software resides.

Refer to the *NetBackup Installation Guide for UNIX* for installation instructions.

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.

Guidelines for Installing NetBackup for Informix in a Cluster

- ◆ Prior to installing NetBackup for Informix, the NetBackup server must be installed and configured to work in a cluster. (This is accomplished by following the instructions in the *NetBackup Installation Guide for UNIX*, including running the `cluster_config` script after the NetBackup server software has been installed.)
- ◆ Commands such as `bppclients` and `update_dbclients` must be run from the active NetBackup node. If you are pushing the database agent software to clients located in a cluster, specify the individual node names (not virtual names) in the list of clients.
- ◆ If installing NetBackup for Informix on a clustered NetBackup server, freeze the active NetBackup node before beginning the installation. Install on all the inactive nodes, then install on the active node. After you successfully install on the active node, unfreeze this node.
- ◆ The `cluster_config` script only needs to be run after the NetBackup server software has been installed. You do not need to run this script after installing NetBackup for Informix on a NetBackup server or if you wish to install NetBackup for Informix on a machine on which only the NetBackup client is installed.

Installing NetBackup for Informix

There are two ways to install database agent software.

- ◆ Remote installation: Loads the software on a master server. The user then pushes 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 16.

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 is then distributed to the clients and installed.

Note In a clustered environment, the capability to push client software is only available from the active node.

Installation Requirements

- ◆ The version of the NetBackup client and the version of NetBackup for Informix must be the same (for example, 5.1).
- ◆ 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 5.1 software is installed and operational on each Informix client.
This also means that the directory *install_path/netbackup* already exists on each Informix client.
- ◆ In a clustered environment, NetBackup server software has been installed and configured to work in a cluster. (This is accomplished by following the instructions in the *NetBackup Installation Guide for UNIX*, including running the `cluster_config` script after the NetBackup server software is installed.)



Remote Installation Instructions

▼ To perform a remote installation

1. If installing NetBackup for Informix on a clustered NetBackup server, first refer to the “Guidelines for Installing NetBackup for Informix in a Cluster” earlier in this chapter.

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

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

```
su - root
```

3. 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 following command:

```
install_path/netbackup/bin/admincmd/get_license_key.
```

- ◆ Open the NetBackup Administration Console and choose **Help > License Keys**.

4. Insert the CD-ROM into the drive.

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

```
cd /CD_mount_point
```

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

```
./install
```

- a. Select the NetBackup Database Agent Software option.

The following prompt appears:

```
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 appears 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 is automatically 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`.

7. Distribute and install the NetBackup for Informix software on each client as described in the next sections.

Note In a clustered environment, the capability to distribute client software is only available from the active node.

There are two types of installation processes.

- ◆ *initial install*: Use an initial install if the clients you intend to update have not been added to policies of type Informix-On-BAR.
- ◆ *upgrade install*: Use an upgrade install if all the clients you intend to update already have been added to policies of type Informix-On-BAR.

Note The NetBackup version level (for example, 5.1) running on the clients you wish to update must be the same as the version level of the NetBackup for Informix being installed.

Initial Installation on Clients

▼ To perform an initial install on the clients

1. Run 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 Solaris8 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* in the `update_dbclients` command.

For example:

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

Only clients listed in *filename* are updated.

Note If the receiving client is configured as an HP-UX11.00, HP-UX11.11, 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 6](#) of the "[Remote Installation Instructions](#)" on page 12
- (if using the ALL ALL method) the client does not belong to the [Informix-On-BAR](#) policy type

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

Upgrade Installation on Clients

▼ To perform an upgrade installation on the clients

1. Execute the following command.

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

This command looks at all possible clients and updates only the clients currently in the Informix-On-BAR policy type.

Instead of ALL ALL, you may use `-ClientList filename` as explained in “[Initial Installation on Clients](#)” on page 13.

Note If the receiving client is configured as an HP-UX11.00, HP-UX11.11, 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 6](#) of the “[Remote Installation Instructions](#)” on page 12
- (if using the ALL ALL method) the client does not belong to the Informix-On-BAR 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 ranges from 1 to 30.

dflt is the default number the program uses if you press Enter. The value displayed ranges 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` starts the number of updates that you specify. If this number is less than the total number of client updates to be performed, new updates 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` quits and leaves 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 `update_dbclients` command was successful in distributing the software to the client, it automatically runs the `install_dbext` script on the client. If `install_dbext` has successfully completed, there will be a version file in directory `install_path/share` that contains the version of NetBackup for Informix that was installed. The `update_dbclients` command displays a note on whether the update was successful for each client. When the `update_dbclients` command has completed, it displays a file name that contains a complete log of what happened for each client. If the update failed for any client, the log file should be examined to determine the problem.

Local Installation of NetBackup for Informix

During a local installation, the NetBackup for Informix files are extracted and installed. 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 (for example, 5.1).
- ◆ 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 5.1 client software is installed and operational.
This also means that the `install_path/netbackup` directory already exists.

Local Install Instructions

▼ To install NetBackup for Informix to the local machine

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

If you are already logged in, but are not the root user, run 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. In a NetBackup server clustered environment, the license key must be registered on each node. 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 choose **Help > 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, 5.1) 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 appears:

```
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 appears asking if the list is correct.

e. Answer **y**.

The following actions occur:

- ◆ The version file, compressed tar file and `install_dbext` script are loaded to directory `install_path/netbackup/dbext`.
- ◆ The `install` script automatically executes the `install_dbext` script.
- ◆ If the receiving client is configured as an HP-UX11.00, HP-UX11.11, Solaris7, Solaris8, Solaris9, AIX4.3.3, or AIX5 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/share` that contains the version of NetBackup for Informix that was installed and an installation timestamp.

f. Enter **q** to quit from the script.

Specifying the Informix Home Path

After you install NetBackup for Informix, you will need to perform an additional setup step that provides NetBackup for Informix with information about your Informix environment. NetBackup for Informix provides a script to accomplish this setup.

▼ **To specify the Informix home path**

1. Change to the following directory:

```
/usr/openv/netbackup/bin
```

2. Run the setup command:

```
./informix_config
```

The following appears:

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

3. Supply the appropriate name for the Informix instance home path.

The command finishes and the setup step is complete.

4. Verify the Informix On-BAR Utility configuration.

This script creates the following entry in the Informix instance home path's `etc/sm_versions` file for each client.

```
1|1.1.0|VERITAS-NetBackup|1
```

All Informix versions later than 7.31 UC4 dynamically read the appropriate information from the `sm_versions` file every time a backup/restore is executed.

Informix versions 7.31 UC4 and earlier do not read from the `sm_versions` file. Instead, they read from the `bar_version` table in the `sysutils` database.

If you are using Informix version 7.31 UC4 or earlier, 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	1.1.0	VERITAS-NetBackup	1

Note Make sure `$BAR_BSALIB_PATH` is correctly linked to NetBackup's `infxbas.[so,sl,a]`. For more information, see [“Troubleshooting”](#) on page 79.

Note The configuration parameter `BAR_RETRY` in the `$INFORMIXDIR/etc/$ONCONFIG` file specifies the number of times ON-Bar attempts to back up or restore the storage space or logical log if the first attempt fails. Informix recommends setting `BAR_RETRY` to 5.





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 Media Using Media and Device Management
2. Setting the Maximum Jobs Per Client Property
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 media using Media and Device Management
- ◆ Setting the **Maximum Jobs per Client** property
- ◆ Configuring a NetBackup policy
- ◆ Testing NetBackup for Informix configuration settings

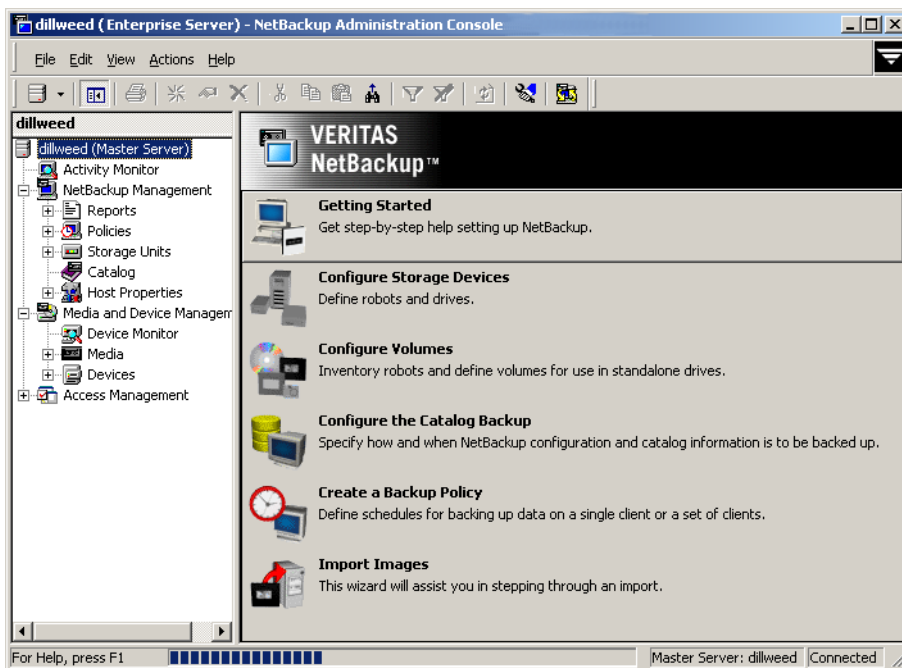
See the next section for instructions on starting the NetBackup Administration Console.

▼ To launch the NetBackup Administration Console for Windows

1. Log on to the server as administrator.
2. Choose **Start > Programs > VERITAS NetBackup > NetBackup Administration Console**.



The NetBackup Administration Console is displayed.



Configuring Media Using Media and Device Management

Use the Media and Device Management (Media Manager) to configure media for a NetBackup for Informix configuration. Refer to the *NetBackup Media Manager System Administrator's Guide* for more information.

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 Property

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

Maximum Jobs per Client = *Number of Streams* x *Number of Policies*

Where:

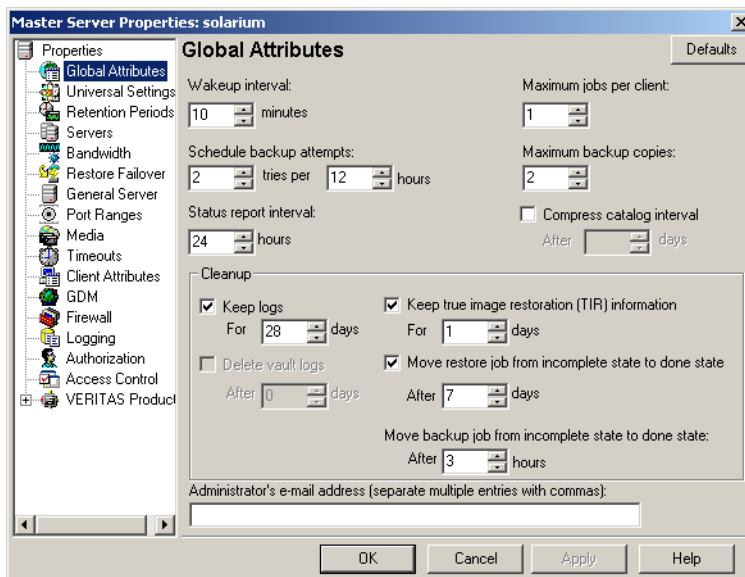
- ◆ *Number of Streams* is the number of backup streams between the database server and NetBackup. Each separate stream starts a new backup job on the client.



- ◆ *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.

Tip To avoid any problems, we recommend that you enter a high enough value for the **Maximum jobs per client** property to meet the number of jobs executed by Informix.

- ▼ **To set the Maximum jobs per client property using the Windows console**
 1. In the left pane of the NetBackup Administration Console, expand **Host Properties**.
 2. Select **Master Server**.
 3. In the right pane, double-click on the server icon.
The Master Server Properties dialog is displayed.
 4. In the Master Server Properties dialog, click **Global Attributes**.



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

5. Change the **Maximum jobs per client** value to 99.

If you prefer to enter a lower value, calculate the value equal to the maximum number of backups allowed per client using the formula provided above.

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
- ◆ clients to be backed up
- ◆ script files to be executed on the clients

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 Windows, Volume I* or *NetBackup System Administrator's Guide for UNIX, Volume I* 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

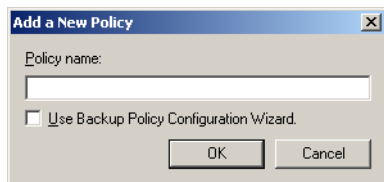
Note This policy name may be specified in the `bp.conf` file on the client. This is optional. Refer to “[Configuring the bp.conf Files](#)” on page 57 for details.

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** and choose **New Policy**.

The Add a New Policy dialog is displayed.

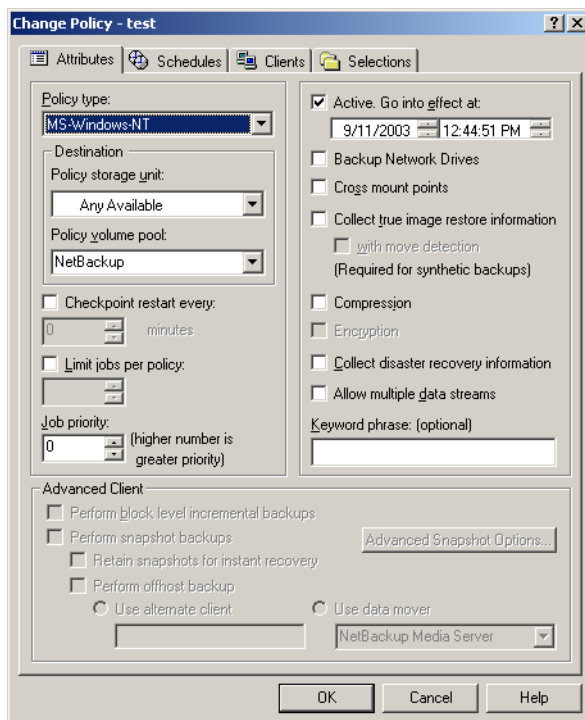


- a. In the **Policy name** box, type a unique name for the new policy.
- b. Choose whether to use the wizard for configuring the policy. The wizard guides you through most of the setup process and simplifies it by automatically choosing default values that are good for most configurations. If necessary, you can change the defaults later by editing the policy. You will need to manually add entries to the Backup Selections list after completing the wizard.
 - ◆ 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.

Note The Informix-On-BAR policy type will not appear in the drop-down list unless your server has a license key for NetBackup for Informix.

- ◆ 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 is displayed 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 clients, see “[Adding Clients to a Policy.](#)”
 - ◆ To add scripts to the Backup Selections list, see “[Specifying the List of Backup Selections.](#)”
9. Click **OK**. The new policy is 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 Windows, Volume I* or *NetBackup System Administrator's Guide for UNIX, Volume I* for detailed explanations of the policy attributes.

Description of Policy Attributes

Attribute	Description
Policy type	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.
Keyword phrase to associate with the backup	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 an Application Backup schedule, which is created automatically when you create a Informix policy. The Application Backup schedule is used to initiate and manage the backup operation. You also need one or more Automatic Backup schedules, if you plan to have NetBackup perform automatic, scheduled backups.

The following procedures explain how to configure the required schedule types, and how to add new schedules. The procedures start on the Policy dialog. To see the Policy dialog, double-click the policy name in the Policies list of the NetBackup Administration Console.

▼ To configure an Application Backup schedule

1. On the Policy dialog, click the **Schedules** tab.
2. Double-click on the schedule named **Default-Application-Backup**.
A dialog is displayed.

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.

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 may be specified in the `bp.conf` file on the client. This is optional. See “[Configuring the bp.conf Files](#)” on page 57 for details.

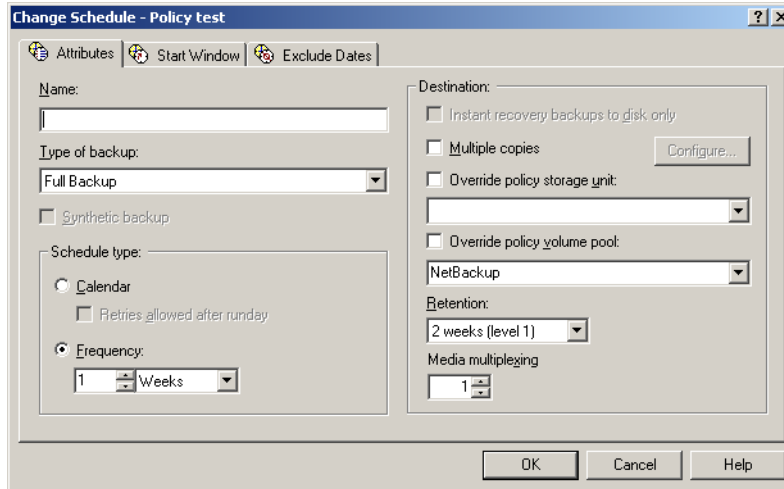
Tip Set the time period for the Application Backup schedule for 24 hours per day, seven days per week. This ensures that your NetBackup for Informix operations are never locked out due to the Application Backup schedule.



▼ **To configure an automatic backup schedule**

1. On the Policy dialog, click the **Schedules** tab.
2. Click **New**.

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



3. Specify a unique name for the schedule.
4. Select the **Type of backup**.

For information on the types of backups available for this policy, see [“Types of Backups.”](#)

Refer to the following tables for example 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

5. Specify the other properties for the schedule as explained in “[Schedule Properties.](#)”
6. Click OK.

Types of Backups

Description of Backup Types for Informix

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 in the following table.



Other schedule properties vary according to your specific backup strategy and system configuration. Consult the *NetBackup System Administrator's Guide for Windows, Volume I* or *NetBackup System Administrator's Guide for UNIX, Volume I* for detailed explanations of the schedule properties.

Description of Schedule Properties

Property	Description
Type of backup	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 the following section " Types of Backups. "
Frequency	This setting is used only for scheduled backups, and not for user-directed backups. Frequency 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.
Calendar	This setting is used only for scheduled backups, and not for user-directed backups. The Calendar option allows you to schedule backup operations based on specific dates, recurring week days, or recurring days of the month.



Description of Schedule Properties (Continued)

Property	Description
Retention	<p>Frequency based scheduling</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>Calendar based scheduling</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>
Multiple copies	<p>If you are licensed for the Inline Tape Copy feature and wish to specify multiple copies for your Informix-On-BAR policy, configure Multiple copies on the Application Backup schedule.</p>

Adding Clients to a Policy

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

This procedure starts in the Policy dialog. To see the Policy dialog, double-click the policy name in the Policies list in the NetBackup Administration Console.

Requirements for clients

The following software must be installed on the client:

- ◆ Informix



- ◆ NetBackup client or server
- ◆ NetBackup for Informix
- ◆ the backup or restore On-BAR script(s)

▼ **To add clients to a policy**

1. In the Policy dialog, click the **Clients** tab.
2. Click **New**.
3. Enter the name of the client you want to add.

- ◆ Type the name into the client list and click **OK**.

If NetBackup cannot detect the hardware and operating system, a dialog will be displayed so you can specify this information.

OR



- ◆ Click the **Browse for Computer** button to choose the client from the network:

4. To add another client, repeat [step 2](#) and [step 3](#). If this is the last client, click **OK** to close the dialog.

Specifying the List of Backup Selections

The Backup Selections list in a database policy has a different meaning than for non-database policies. For example, in a Standard policy, the list contains files and directories to be backed up. In a database policy, you specify scripts to be run.

Add scripts only if you are setting up a policy for automatic scheduling. All scripts listed in the Backup Selections list will be executed for the Automatic Full Backup or Automatic Incremental Backup schedules, as specified under the **Schedules** tab, and manual backups. NetBackup will start backups according to the order that scripts appear in the Backup Selections list.

The following procedure starts in the Policy dialog. To see the Policy dialog, double-click the policy name in the Policies list in the NetBackup Administration Console.

▼ **To add scripts to the Backup Selections list**

1. In the Policy dialog, click the **Backup Selections** tab.
2. Click **New**.
3. Enter the name of the selection.

Scripts:

- ◆ Type the name of the script.

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

install_path/netbackup/ext/dbext/informix/scripts/script_name

OR



- ◆ Click the **Remote Folder** button.

The Browse window is displayed. Navigate to the script file and select the file. Click **OK**.

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

4. Click **OK**.

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 media using Media and Device Management
- ◆ Setting the **Maximum Jobs per Client** property
- ◆ Configuring a NetBackup policy
- ◆ Testing NetBackup for Informix configuration settings

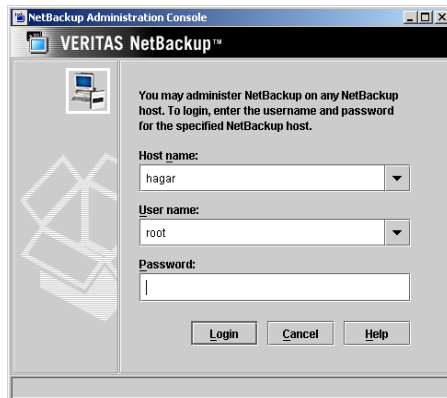
See the next section for instructions on starting the NetBackup Administration Console.

▼ 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 &
```

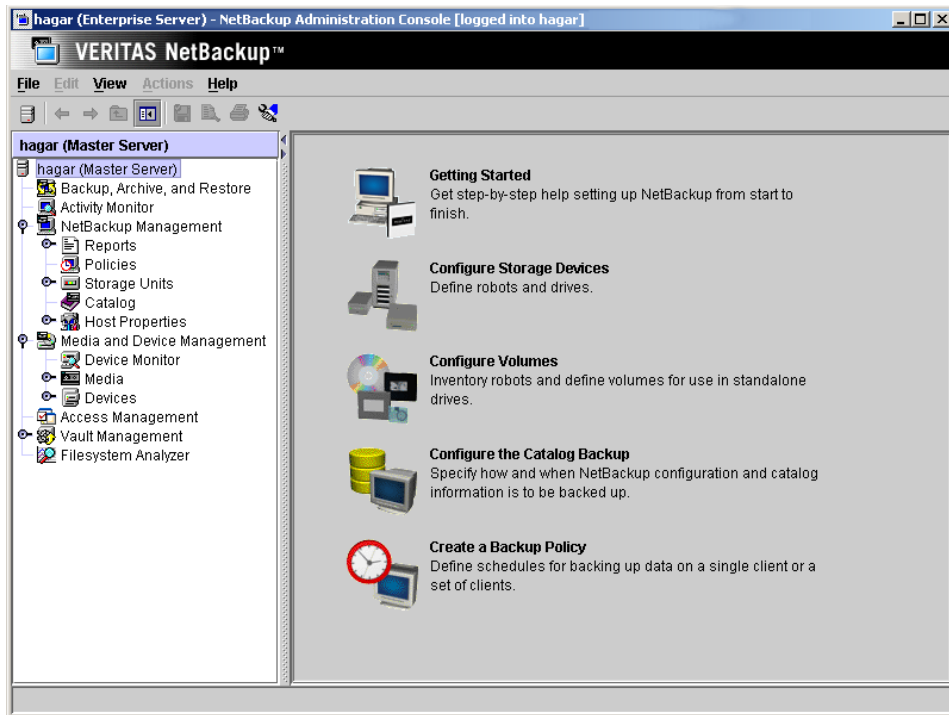
The login dialog is displayed.



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 is displayed.



Configuring Media Using Media and Device Management

Use the Media and Device Management (Media Manager) to configure media for a NetBackup for Informix configuration. Refer to the *NetBackup Media Manager System Administrator's Guide* for more information.

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 Property

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

Maximum Jobs per Client = *Number of Streams* x *Number of Policies*

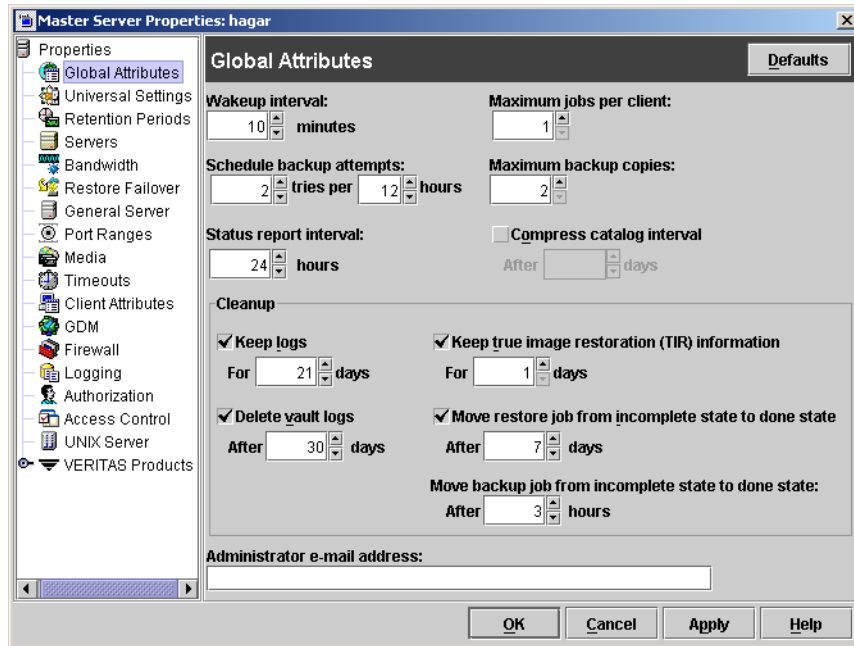
Where:

- ◆ *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.

Tip To avoid any problems, we recommend that you enter a high enough value for the **Maximum jobs per client** property to meet the number of jobs executed by Informix.

- ▼ **To set the Maximum jobs per client property using the NetBackup Administration Console for UNIX**
 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 is displayed.



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

3. Change the **Maximum jobs per client** value to 99.



If you prefer to enter a lower value, calculate the value equal to the maximum number of backups allowed per client using the formula provided above.

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
- ◆ clients to be backed up
- ◆ script files to be executed on the clients

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 Windows, Volume I* or *NetBackup System Administrator's Guide for UNIX, Volume I* for detailed configuration instructions and information on all the attributes available.

Adding New Policies

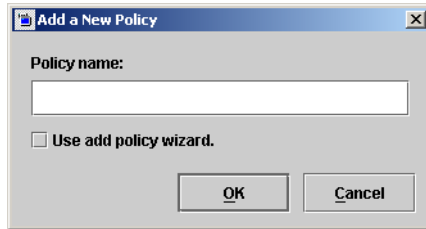
Use this procedure when configuring a policy from a UNIX server.

▼ To add a new policy

Note This policy name may be specified in the `bp.conf` file on the client. This is optional. Refer to [“Configuring the bp.conf Files”](#) on page 57 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 an 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 is displayed.



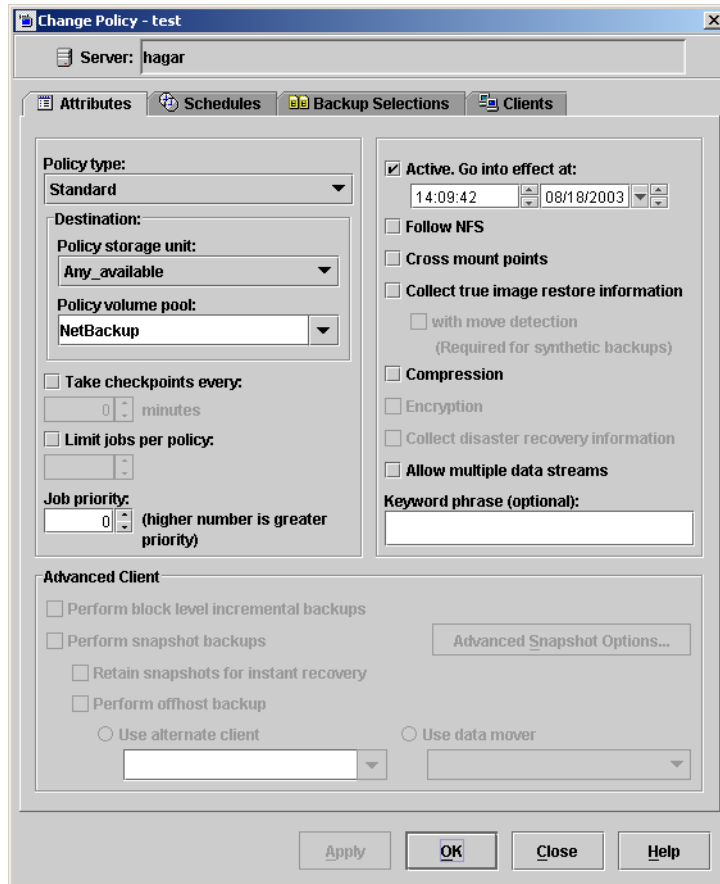
- a. In the **Policy name** box, type a unique name for the new policy.
- b. Choose whether to use the wizard for configuring the policy. The wizard guides you through most of the setup process and simplifies it by automatically choosing default values that are good for most configurations. If necessary, you can change the defaults later by editing the policy. You will need to manually add entries to the Backup Selections list after completing the wizard.
 - ◆ 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.

Note The Informix-On-BAR policy type will not appear in the drop-down list unless your server has a license key for NetBackup for Informix.

- ◆ 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 is displayed 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 clients, see “[Adding Clients to a Policy.](#)”
 - ◆ To add scripts, see “[Specifying the List of Backup Selections.](#)”
10. Click **Apply**. The new policy is 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 Windows, Volume I* or *NetBackup System Administrator's Guide for UNIX, Volume I* for detailed explanations of the policy attributes.

Description of Policy Attributes

Attribute	Description
Policy type	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.
Keyword phrase to associate with the backup	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. The procedures start from the Policy dialog. To see the Policy dialog, double click the policy in the policy list in the left pane of the NetBackup Administration Console.

▼ To configure an Application Backup schedule

1. In the Policy dialog, click the **Schedules** tab.
2. In the Schedule list, double-click on the schedule named **Default-Application-Backup**.

A dialog is displayed. 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 ensures 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 may be specified in the `bp.conf` file on the client. This is optional. See “[Configuring the bp.conf Files](#)” on page 57 for details.

▼ **To configure an automatic backup schedule**

1. In the Policy dialog, click the **Schedules** tab.
2. Click **New**.

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

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

For information on the types of backups available for this policy, see [“Types of Backups.”](#)



Refer to the following tables for example 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
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

5. Specify the other properties for the schedule as explained in “[Schedule Properties.](#)”
6. If this is the last schedule, click **OK**.

Types of Backups

Description of Backup Types for Informix

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>

Description of Backup Types for Informix

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 in the following table.

Other schedule properties vary according to your specific backup strategy and system configuration. Consult the *NetBackup System Administrator's Guide for Windows, Volume I* or *NetBackup System Administrator's Guide for UNIX, Volume I* for detailed explanations of the schedule properties.

Description of Schedule Properties

Property	Description
Type of backup	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 the following section " Types of Backups ."
Frequency	This setting is used only for scheduled backups, and not for user-directed backups. Frequency 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.
Calendar	This setting is used only for scheduled backups, and not for user-directed backups. The Calendar option allows you to schedule backup operations based on specific dates, recurring week days, or recurring days of the month.



Description of Schedule Properties (Continued)

Property	Description
Retention	<p>Frequency based scheduling</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>Calendar based scheduling</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>
Multiple copies	<p>If you are licensed for the Inline Tape Copy feature and wish to specify multiple copies for your Informix-On-BAR policy, configure Multiple copies on the Application Backup schedule.</p>

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.

This procedure starts from the Policy dialog. To see the Policy dialog, double-click the policy in the policy list in the left pane of the NetBackup Administration Console.

Requirements for clients

The following software must be installed on the client:

- ◆ Informix
- ◆ NetBackup client or server

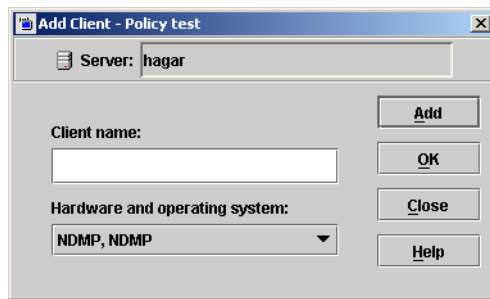


- ◆ NetBackup for Informix
- ◆ the backup or restore On-BAR script(s)

▼ **To add clients to a policy**

1. In the Policy dialog, click the **Clients** tab.
2. On the **Clients** tab, click **New**.

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



3. In the **Client name** text box, type the name of the client that you are adding.
4. Choose the **Hardware and operating system** type and click **Add**.
5. If this is the last client, click **OK**. If you are going to add more clients, repeat [step 3](#) and [step 4](#).

Specifying the List of Backup Selections

The Backup Selections list in a database policy has a different meaning than for non-database policies. For example, in a Standard policy, the list contains files and directories to be backed up. In a database policy, the list contains script.

Add scripts only if you are setting up a policy for automatic scheduling. All scripts listed in the Backup Selections list will be executed for the Automatic Full Backup or Automatic Incremental Backup schedules as specified under the **Schedules** tab. NetBackup will start backups by running the scripts in the order that they appear in the Backup Selections list.

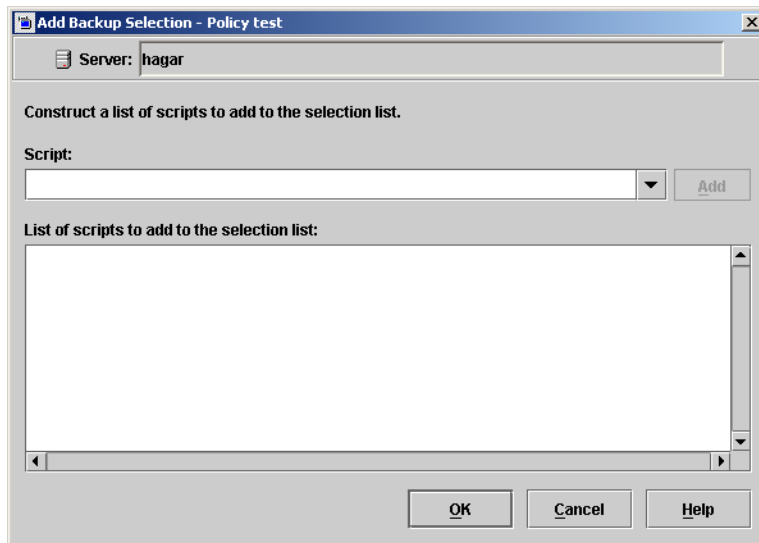
The following procedure starts from the Policy dialog. To see the Policy dialog, double-click the policy in the **Policies** list in the NetBackup Administration Console.



▼ **To add scripts to the Backup Selections List**

1. In the Policy dialog, click the **Backup Selections** tab.
2. Click **New**.

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



3. 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.
4. Click **Add**.
5. To add more scripts, repeat .
6. When you are finished adding backup selections, click **OK**.

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.

▼ To modify NetBackup for Informix scripts

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

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

fi

if [ "$RETURN_STATUS" -eq "0" ]
then

    # Initiate a backup of the directory that contains the onconfig,
    # sqlhosts, oncfg_$INFORMIXSERVER.SERVERTYPE, and ixbar.SERVERTYPE
    # files after doing the backup.

    echo "bpbackup -p $INFX_ETC_POLICY -w 0 $INFORMIXDIR/etc"
    /usr/opensv/netbackup/bin/bpbackup -p $INFX_ETC_POLICY -w 0 $INFORMIXDIR/etc
    BPBACKUP_STATUS=$?

    if [ "$BPBACKUP_STATUS" -ne "0" ]
    then
        echo ""
        echo "bpbackup of $INFORMIXDIR/etc returned $BPBACKUP_STATUS"
    fi
fi

echo "Finished `date`"

echo "exit $RETURN_STATUS"
echo ""

exit $RETURN_STATUS

```

- 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 58.



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 (<i>Automatic Full Backup</i>).
INFXBSA_INCR	Set to 1 if this is an incremental backup (<i>Automatic Incremental Backup</i>).
INFXBSA_SCHEDULED	Set to 1 if this is a scheduled backup (<i>Automatic Full Backup</i> or <i>Automatic Incremental Backup</i>).
INFXBSA_USER_INITIATED	Set to 1 if this is a user-initiated backup (<i>Application Backup</i> 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 <i>Application Backup</i> 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 `bp.conf` file on the NetBackup master server. The administrator can create an additional `bp.conf` file in the home directory of the Informix user's account used for the backup or restore.

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 bp.conf File on the Client

Before using NetBackup for Informix, you can 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 `bp.conf` file in the Informix user's home directory *only* for Informix-On-BAR policies.



Testing NetBackup for Informix Configuration Settings

After configuring the master server for NetBackup for Informix, test the configuration settings. For a description of status codes, refer to the *NetBackup Troubleshooting Guide for UNIX and Windows*.

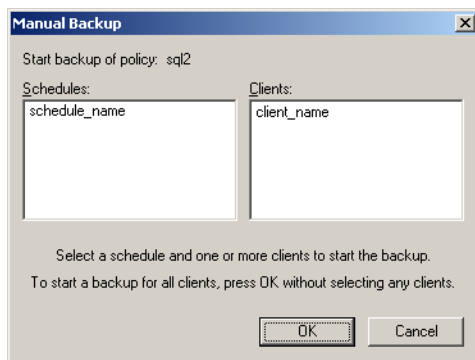
NetBackup Administration Console for Windows

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. Choose **Actions** > **Manual Backup**.

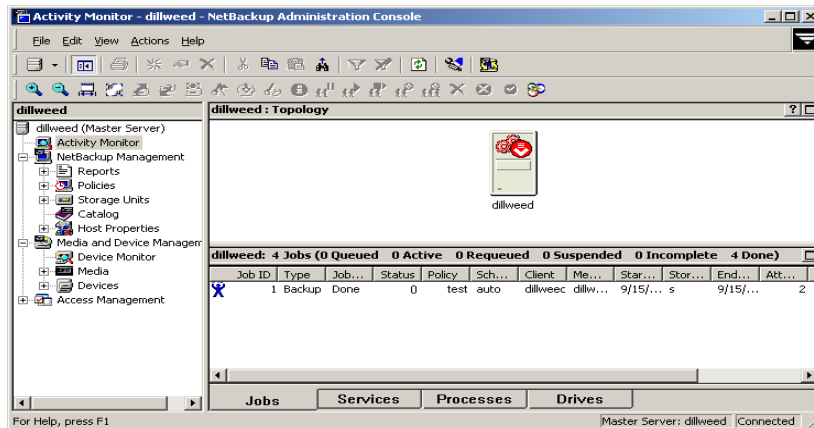
The Manual Backup dialog is displayed.



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.

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

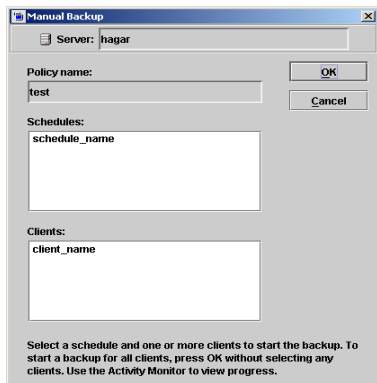
Use this procedure to test a policy configuration on the NetBackup Administration Console for UNIX.

▼ 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. Choose **Actions > Manual Backup**.

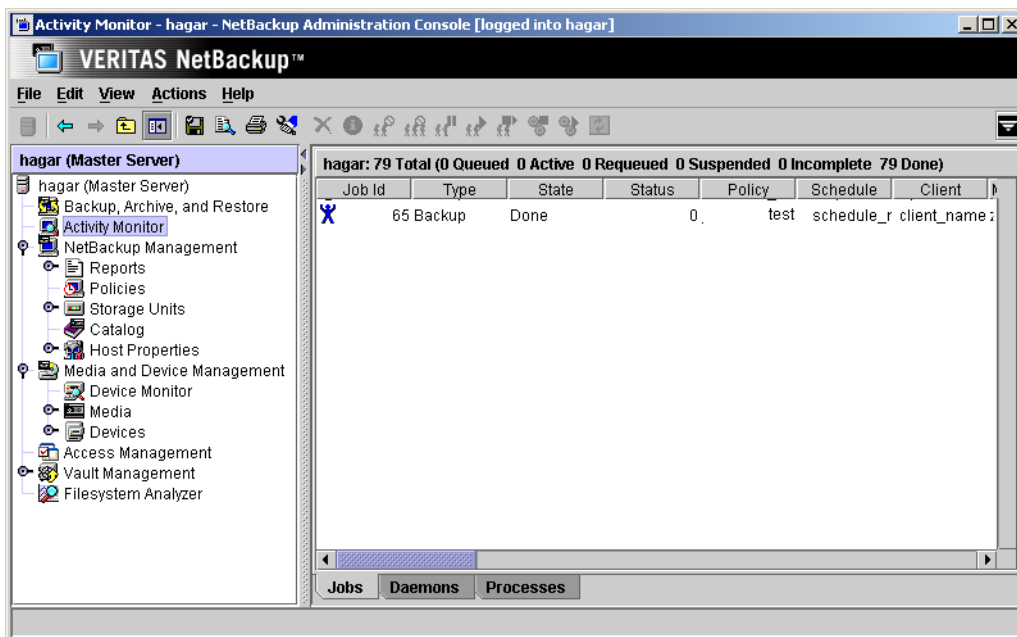


The Manual Backup dialog is displayed.



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



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





Using NetBackup for Informix

4

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

This chapter contains the following sections:

- ◆ [Performing a Backup](#)
- ◆ [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. The following provides a brief description of each backup type. See the *Informix Backup and Restore Guide* for more information.

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

Backup Strategy

The backup strategy in the following example 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 25.

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 58.



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 `xbp` man page and the online help in the interface for detailed instructions on using `xbp` to back up the database.

▼ To perform a backup using `xbp`

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. Choose **File > Browse File System for Backup Scripts**.

5. Select the backup script from the Files pane.

6. Choose **Backup > Backup Database Using Selected Scripts**. The `xbp_confirm` dialog displays.

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. Choose **Backup > Report Progress Of Backup...**

The `xbp_progress` dialog displays.

- 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 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 `xbp` man page and the online help in the interface 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 is displayed.


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

The `xbp_config` dialog displays.

- a. In the Policy type of image to browse, specify the Informix-On-BAR policy.
- b. Click **OK** to close the dialog.
- 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 appears in the dialog.

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 backup 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`.

```
# 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.SERVERNUM` 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

The following describes how to use `xbp` to restore your database. Refer to the UNIX client online help 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. Choose **File > Browse File System for Restore Scripts**. The `xbp` dialog is displayed.

5. Select the restore script from the Files pane.

6. Choose **Restore > Restore Database Using Selected Scripts**. The `xbp_confirm` dialog is displayed.

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. Choose **Restore > Report Progress Of Restore....** The `xbp_progress` dialog is displayed.

- 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 Backup and Restore Guide* for details about the `onbar` command.

Redirecting a Restore to a Different Client

You have the option to restore an Informix Database to a client other than the one that originally supplied the backup. This process of restoring data to a different client is called a redirected restore.

In order to perform a redirected restore, the following conditions must be true:

- ◆ The source and destination clients must have identical OS versions and bit-levels.
- ◆ The source and destination clients must have identical Informix database versions.
- ◆ The Informix `ownerId` and `groupId` and Informix home must be identical on the source and destination clients.

The redirected restore is a 6 part process:

1. Configuring the NetBackup server.
2. Configuring the source client.
3. Shutting down the Informix databases on *both* the source client and the destination client.
4. Copying files from the source client to the destination client.
5. Configuring the destination client.
6. Performing the redirected restore.

The following procedure explains each part of the process in detail. For more information on redirected restore, see the *NetBackup System Administrator's Guide*. For more details on using Informix to back up and restore, see the *Informix Backup and Restore Guide*.

▼ To perform a redirected restore

1. Configure the NetBackup server to allow redirected restores. You must be the NetBackup administrator to perform these tasks.

To remove restrictions for all clients, create the following file on the Netbackup master server:

```
install_path/netbackup/db/altnames/No.Restrictions
```

Or, to restrict clients to restore only from certain other clients, create the following file:

```
install_path/netbackup/db/altnames/client_name
```

(where *client_name* is the name of the client allowed to perform the redirected restore). Add the name of the NetBackup for Informix source client to that file.

2. Configure the NetBackup for Informix source client.

- a. Back up the logical logs on the NetBackup for Informix source client.

A logical log contains records of all the database activity that occurs between backups. These records contain all the database transactions that have taken place after the last backup.

Log into the source client as Informix ownerId and issue the following command:

```
onbar -b -l
```

- b. If the source client database server is down, salvage the logical logs.

This command backs up any logical logs that have not yet been backed up and are not corrupted or destroyed.

Log into the source client as Informix ownerid and issue the following command:

```
onbar -l -s
```

3. Shut down the Informix database server on *both* the source client and the destination client by issuing the following command:

for Informix Dynamic Server

```
onmode -ky
```

for Extended Parallel Server

```
xctl onmode -ky
```

4. Copy the following files in the `$INFORMIXDIR/etc` directory from the NetBackup for Informix source client to the `$INFORMIXDIR/etc` directory on the NetBackup for Informix destination client.



Note Before overwriting the files on the destination client, back up the files in `$INFORMIXDIR/etc` directory to preserve the original configuration.

The file copy can be accomplished by using ftp – File Transfer Protocol.

- ◆ Emergency or backup boot files:
for Informix Dynamic Server, emergency boot file
`$INFORMIXDIR/etc/ixbar.servernum`
or
for Extended Parallel Server, backup boot file
`$INFORMIXDIR/etc/Bixbar_hostname.servernum`
where *servernum* is the value of the SERVERNUM configuration parameter specified in the `$INFORMIXDIR/etc/$ONCONFIG` file.
- ◆ Connectivity information file that specifies how the client application finds and connects to an Informix Database Server:
`$INFORMIXDIR/etc/sqlhosts`
- ◆ Database configuration file specified by the environment variable ONCONFIG:
`$INFORMIXDIR/etc/$ONCONFIG`
- ◆ Files created and updated by the Informix Database server every time a dbspace, blobspace, logical-log file, or chunk is added or deleted.
for Informix Dynamic Server:
`$INFORMIXDIR/etc/oncfg_servername.servernum`
or
for Extended Parallel Server
`$INFORMIXDIR/etc/oncfg_servername.servernum.coserverid` (for each coserver)
where
 - ◆ *servernum* is the value of the SERVERNUM configuration
 - ◆ *servername* is the value of the DBSERVERNAME configuration
 - ◆ *coserverid* is the id of the co-server.
- ◆ XPS Server-created file that contains information about coserver location and dbslice definition:
for Extended Parallel Server

```
xcfg_servername.servernum
```

where

- ◆ *servernum* is the value of the SERVERNUM configuration
- ◆ *servername* is the value of the DBSERVERNAME configuration

5. Configure the NetBackup for Informix destination client.
 - a. Set the *INFXBSA_CLIENT* environmental variable to the hostname of the source client.
 - b. Set the *INFXBSA_SERVER* environmental variable to the NetBackup server used for the source client backup.

Note The *INFXBSA_SERVER* needs to be changed only if the NetBackup server used for the source client backup is different than the server specified in the bp.conf file on the destination.

6. Perform the redirected restore.
 - a. Log onto the NetBackup for Informix destination client as Informix ownerId.
 - b. Perform a physical restore (restores storage spaces to their most recent backed-up state):


```
onbar -r -p
```
 - c. Perform a logical restore (updates the most recent backed-up version of the storage spaces with later transactions):


```
onbar -r -l
```

Redirected Restore Example

This example shows the procedure for restoring an Informix database from the original source machine, camel, to the destination machine, giraffe. For this example, the redirected restore is necessary because the original machine, camel, has failed. You may also use a redirected restore to duplicate your Informix database in a development or test environment.

This example assumes the following:

- ◆ Source client camel is a Solaris HP11.00 32-bit running Informix IDS 9.21.
 - ◆ SERVERNUM is 6



- ◆ DBSERVERNAME is srcdb
- ◆ Hostname is srcclient
- ◆ Destination client giraffe is a Solaris HP11.00 32-bit running Informix IDS 9.21 HC3.
 - ◆ SERVERNUM is 0
 - ◆ DBSERVERNAME is destdb
 - ◆ Hostname is destclient
- ◆ NetBackup master server is lion.
 - ◆ The bp.conf on camel should include SEVER=lion, or
 - ◆ The env variable INFXBSA_SERVER on camel should be set to lion:

```
export INFXBSA_SERVER=lion
```
- ◆ You have performed the `onbar -b` Informix database backup on camel.
- ◆ You have performed a file system backup of `$INFORMIXDIR/etc` on camel, effectively backing up:
 - ◆ `ixbar.6`
 - ◆ `sqlhosts`
 - ◆ `onconfig`
 - ◆ `oncfg_srcdb.6`
- ◆ You have salvaged the logical logs on camel:

```
onbar -l -s
```

▼ **To redirect a restore from camel to giraffe (example)**

1. As the NetBackup administrator, create the following file on the NetBackup server, lion:

```
install_path/netbackup/db/altnames/giraffe
```
2. Add the name camel to the file.
3. Log into giraffe as Informix ownerId and ensure that the Informix Database Server is shut down.
4. Perform a manual file system backup of `$INFORMIXDIR/etc` on giraffe, including the following files:

```
ixbar.0  
sqlhosts
```

```
onconfig
oncfg_destdb.0
```

Note Step 4 is a precaution, in case these configuration files are needed to recreate the environment on giraffe. This backup will not be used for the redirected restore.

5. On giraffe, change the Informix server env variable to match the variable on camel, as follows:

```
export INFORMIXSERVER=srcdb
```

6. On giraffe, change the INFXBSA_CLIENT env variable to camel, as follows:

```
export INFXBSA_CLIENT=camel
```

This allows giraffe to browse backups from camel.

7. On giraffe, set the INFXBSA_SERVER env variable to lion, as follows:

```
export INFXBSA_SERVER=lion
```

Note Step 7 is necessary only if the server specified in the bp.conf file on giraffe is not lion.

8. Browse the file system backups from camel, and restore the following files to \$INFORMIXDIR/etc on giraffe.

```
ixbar.6
sqlhosts
onconfig
oncfg_destdb.6
```

9. Perform the redirected restore to giraffe:

- a. Perform the physical restore:

```
onbar -r -p
```

- b. Verify the return status using the following command:

```
echo $?
```

If the restore was successful, the return status will be 0.

- c. Perform the logical restore:



```
onbar -r -1
```

- d. Verify the return status using the following command:

```
echo $?
```

If the restore was successful, the return status will be 0.



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](#)
- ◆ [Preventing Timeout Failures on Large Database Restores](#)
- ◆ [Deleting Expired Backups from the Informix Backup Database](#)



Troubleshooting Tips

Refer to this section when troubleshooting NetBackup for Informix.

- ◆ Refer to *Informix Backup and Restore Guide*, available on-line at www.informix.com.
- ◆ For the IBM AIX platform, Informix 7.3 requires the file `infxbsa.so` instead of `infxbsa.a`. For Informix 7.2, `infxbsa.a` will be used. The `ar` command can be used to extract `infxbsa.so` from `infxbsa.a` if necessary.
- ◆ Verify the existence of `$BAR_BSALIB_PATH`, which is defined in the Informix `$CONFIG` file. 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 25.
- ◆ Set `BAR_DEBUG`: Set
- ◆ Set the following variables in the Informix configuration file (`$INFORMIXDIR/etc/$ONCONFIG`):
 - ◆ `BAR_DEBUG`
 - ◆ `BAR_DEBUG_LOG`

`BAR_DEBUG` sets the level of detail that will be gathered about the backup. Range is 0-9, with 9 providing the most detail.

`BAR_DEBUG_LOG` sets the location of the file that will collect the log. This should be the same location specified by `MSGPATH` in the Informix configuration file (`$ONCONFIG`).

To set these variables, stop / restart the Informix instance. In Informix version 7.X and 9.X engines, run the following Informix commands:

```
onmode -uky
oninit
```

In Informix version 8.X engines, run the following commands:

```
xctl onmode -uky
xctl -C oninit
```

- ◆ Check the Informix instance log pointed to by the `MSGPATH` `onconfig` variable.
- ◆ 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 \$BAR_BSALIB_PATH 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.mmddyy*.

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



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

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

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

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

NetBackup Logs

The NetBackup server and client software allow you to set up detailed debug logs for troubleshooting problems that occur outside of either NetBackup for Informix or the Informix On-BAR Utility. See the *NetBackup Troubleshooting Guide for UNIX and Windows* 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.

Note In general, each debug log corresponds to a NetBackup process and executable.

▼ To enable the NetBackup for Informix logs

1. Create the following directories on the client:

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

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

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

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

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

bphdb Directory on the Client

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

`onbar_stdout.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.mmddy`

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

`install_path/netbackup/logs/`

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 Windows, Volume I* or *NetBackup System Administrator's Guide for UNIX, Volume I* 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/` directories 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 times out.

This problem can be resolved by increasing the **Client Read Timeout** property, which prevents session timeouts and allows 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 **Client Read Timeout** property is found on the Timeouts host properties dialog of the master and media servers. 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 Versions XPS 8.x and IDS 9.x

`onmsync` is an Informix version XPS 8.x, IDS 9.x utility that synchronizes the NetBackup catalog with the Informix backup catalog. Use the `onmsync` utility to delete images from both Informix backup catalogs and NetBackup catalogs. Refer to the *Informix Server Administration Guide* for more information on how to use this utility.



Informix Version IDS 7.x

Informix version IDS 7.x does not have a mechanism for deleting records of expired backups from its backup database. NetBackup for Informix 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

- accessibility features xii
- Activity Monitor 59, 60
- administrator-directed backups, definition 4
- alternate client restore
 - see redirected restore
- Application Backup schedule 29, 44
 - backup window 29, 44
 - configuration 28, 43
 - environmental variables 56
 - retention 29, 44
- automatic backup
 - create scripts 53
 - policy 65
 - schedule
 - bphdb log 84
 - manual backup 65
- automatic backup schedule 30, 45
- Automatic Full Backup schedule, Admin Console for UNIX 30, 46

B

- backup
 - automatic
 - configure scripts 53
 - using scripts 65
- Backup Selections list 34, 49
- Backups
 - On-BAR types 64
- backups
 - expired
 - delete from Informix 86
 - manual 59
 - restoring
 - database backups 70
 - strategy 64
- BAR_ACT_LOG 7
- bp.conf
 - administrator 57

- client 57
- bpbackup command 7
- bphdb log 83, 84
- bphdb process 66, 71
 - sequence of operation 7
- bplist command, to browse backups 69
- bpplclients 13
- bpplclients, running in a cluster 10
- bprestore command 7

C

- caution
 - script usage 53
- Client Read Timeout property 85
- Clients list 34, 49
- cluster_config script 10, 11
- commands
 - bpbackup 7
 - bplist 69
 - onbar 5, 6, 7, 67, 70, 72
 - restore 7
 - su 53
- configuration
 - database debug level 85
 - Media Manager 23, 38
 - UNIX 37
 - Windows 22

D

- debug logs
 - description 83
- Directory
 - xbp
 - directory to search 71
- directory
 - xbp
 - directory to search 66

E

- Environmental variable



- shell script 56
- environmental variable 56
- error
 - script name 53
 - script permissions 53

G

- get_license_key 12, 17
- Glossary. *See* NetBackup Help.

I

- INFORMIXDIR/etc
 - backup 35, 51
- Inline Tape Copy 33, 48
- install_dbext 12, 16, 18
- installation
 - local 16
 - on UNIX
 - prerequisites 10
 - remote 12
 - upgrading clients 15
 - remote, new clients 13
 - requirements 16

J

- jnbSA 37

L

- level 0 (full) backup 64
- level 1 (incremental) backup 64
- level 2 backup 64
- library 7
- license keys 12, 17
- local installation 16
- logical-log backup 64
- logs 84
 - Onbar 81
 - troubleshooting 83

M

- manual backups 65
- master server
 - technical overview 6
- Maximum jobs per client 24
- Maxium jobs per client 23, 38
- Media Manager
 - configuration 23, 38
 - definition 4
 - media server 6
 - multiplexing 2

N

- NetBackup Administration Console,
 - launching 22, 37
- NetBackup definition 4

O

- onbar command 5
 - description 6
 - performing backup 67
 - performing restore 72
 - physical restore 70
 - sequence of operation 7
 - technical overview 6
- OnBAR debug log 81
- On-BAR script 5
 - description 6
- On-BAR utility 5
 - backup types 64
 - level 0 (full) 64
 - level 1 (incremental) 64
 - level 2 64
 - logical log 64
 - description 6, 7
- ONCONFIG 81
- Onsmsync utility 5, 85

P

- Path
 - xbp
 - to search for restore scripts 71
- path
 - xbp
 - to browse for backups 68
 - to search for backup scripts 66
- Policies
 - Standard 35
- policy configuration
 - adding new 25, 40
 - attributes 28, 43
 - Backup Selections list 34
 - clients 34, 49
 - overview 25, 40
 - schedules 28
 - testing 58, 59

R

- redirected restore 72
- Reports
 - database operations 79
- Restore



-
- user directed
 - with xbp 71
 - restore
 - database 70
 - user directed
 - with xbp 66
 - retention period 33, 48
 - S**
 - schedule
 - automatic backup 65
 - schedules
 - adding 28, 43
 - frequency 32, 47
 - properties 31, 47
 - retention 33, 48
 - schedules, defined 4
 - scripts
 - example 53
 - On-BAR 5
 - scheduler 65
 - su command 53
 - type of operation 53
 - Standard policy
 - configuring 51
 - storage device 6
 - T**
 - testing policy configuration 58, 59
 - troubleshooting logs 83
 - U**
 - update_dbclients 14, 15
 - update_dbclients
 - running in a cluster 10
 - upgrade installation 15
 - user-directed backups
 - definition 4
 - user-directed restores
 - definition 4
 - Utility
 - Informix On-BAR 5
 - X**
 - xbp
 - restore procedure 66, 71



