IBM Informix Dynamic Server

Installation Guide

for UNIX and Linux

Version 9.4
March 2003
Part No. CT1TENA

Note:
Before using this information and the product it supports, read the information in the appendix entitled "Notices."

Table of Contents

In This Guide

This guide explains how to install your IBM Informix Dynamic Server and IBM Informix Dynamic Server with J/Foundation on the UNIX and Linux operating systems.

This guide also describes the following procedures for using the IBM Informix UNIX Bundle Installer to install IBM Informix products:

- Preparing to install IBM Informix products (page 4).
- Installing IBM Informix products (page 8).
- Setting up the environment (page 14).
- Testing the installation (page 18).
- Configuring the database server and other IBM Informix products (page 18).

See Appendix C for information on how to:

Linux

- Use RPM to install the database server on your Linux system (page C-1). ♦

UNIX

- Use **pkgadd** to install the database server on your Siemens UNIX system (page C-5). ♦

If your computer requires special installation procedures, follow the instructions in the installation letter included with the product materials before you continue with these installation instructions. Also see the machine notes file (page 2) for additional instructions.

For information on specialized installations, such as silent installation, see Appendix A, "Setting Up Specialized Installations."

If you encounter difficulties during installation, see Appendix B, "Solving Installation Problems."

Types of Users

This guide is written for database administrators (DBAs) who install IBM Informix products. This guide assumes that you are familiar with the operating procedures of your computer and with your operating system. For information about your operating system, see your UNIX or Linux documentation.

Related Reading

The following publications provide additional information about the topics that this guide discusses:

- To upgrade from a previous version or migrate from a different database server to IBM Informix Dynamic Server, see the *IBM Informix Migration Guide.*
- For a list of publications that provide an introduction to database servers and operating-system platforms, refer to your *Getting Started Guide*.
- For more information on how to configure and manage your database server, see the *IBM Informix Dynamic Server Administrator's Guide* and the *IBM Informix Dynamic Server Administrator's Reference*.
- For information on how to tune your database server, see the *IBM Informix Dynamic Server Performance Guide*.

Documentation Notes, Release Notes, Machine Notes

In addition to printed documentation, online files supplement the information in this guide. Examine these files before you install your database server. They contain vital information about application and performance issues.

The following online files appear in the **$INFORMIXDIR/release/en_us/0333** directory.

Online File	Purpose
ids_unix_install_docnotes_9.40.html	The documentation notes file for your version of this guide describes features that are not covered in the guide or that were modified since publication.
ids_unix_release_notes_9.40.html	Release notes files describe compatibility issues, feature differences from earlier versions of IBM Informix products, and how these differences might affect current products. Release notes also contain information about any known problems and their workarounds.
ids_machine_notes_9.40.txt	The machine notes file describes any special actions that you must take to configure and use IBM Informix products on your computer. Machine notes are named for the product described.

Important: *The release notes and documentation notes files contain important information for application development. Therefore you must make this information available to both developers and users. It is recommended that you attach copies of these files to each set of documentation. The machine notes files contain information primarily of interest to system and database administrators.*

You can obtain the same notes and other installation information on the Web at http://www.ibm.com/software/data/informix/pubs/library/.

Upgrading the Database Server

When you upgrade from Version 7.24, 7.3x or 9.3x to Version 9.4 of the database server, the installation script overwrites the old version of the database server with the new version if you install in the same directory.

Important: *When you upgrade to a new version of the database server, it is recommended that you install the new version in a new location so that you can continue to run the old version as long as necessary.*

For instructions on how to upgrade your database server from Version 7.24, 7.3x or 9.3x, see the *IBM Informix Migration Guide*, Version 9.4.

Preparing to Install IBM Informix Products

Before you install IBM Informix products, follow these steps:

1. Review the documentation notes, release notes, and machine notes (page 2) for important information and instructions before you install your database server.
2. Apply operating-system patches, if applicable.

   For patch information, see the machine notes file (page 2).
3. Perform any necessary pre-installation tasks as described in the machine notes file (page 2) for your operating system.
4. Decide whether to configure role separation.

   Role separation provides checks and balances to improve the security of your event-auditing procedures. Event auditing tracks selected activities that users perform. With role separation enabled, members of different UNIX groups manage and examine these records to ensure additional security.

   You must follow the instructions in "Preparing for Role Separation" on page A-2 before you install the database server.
5. Complete the Installation Checklist and Configuration Checklist.

Installation Checklist

You need the following information to respond to prompts during the installation.

IBM Informix Product Configuration	
Operating-System Patches Check the machine notes file for information on any required patches.	❒ No ❒ Yes, enter patch numbers: _____ _____ _____
$INFORMIXDIR Enter the directory in which to install IBM Informix products.	_____
Role Separation (page A-1)	❒ No ❒ Yes, enter Administrative Group Names: Security (DBSSO):_____ Auditing (AAO): _____ Standard-user access group:_____
IBM Informix Products to Install	See your product media for available products.

Configuration Checklist

You need the following information to respond to prompts during the demonstration database server configuration.

IBM Informix Bundle Installer Configuration	
Configure a Demo IDS server The IBM Informix UNIX Bundle Installer automatically configures a basic database server that you can use as a template to customize to meet your requirements.	❒ No ❒ Yes, you must also install IBM Informix Dynamic Server.
Install IBM Informix Server Administrator	❒ No ❒ Yes, fill out the IBM Informix Server Administrator Configuration checklist.
IBM Informix Server Administrator Configuration	
Port Number Specify a port number for the ISA server between 1024 and 65536. For a list of port numbers currently in use, see the **/etc/services** file. (This list might not be complete for your installation.)	_____
Host Name Enter the name of the computer on which you are installing ISA.	_____
ISA Administrator Specify the email address of the ISA administrator. ISA uses this address to send problem reports. It is recommended that you create an **isa-admin** alias for this purpose.	_____
HTTP Server Password Specify a password for the user **informix** when logging into ISA. It is recommended that this password be the same as the password for user **informix**.	(For security, do not enter the password here.)

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IBM Informix Bundle Installer Configuration	
Read-Only Users Read-only users can monitor the database server but are not allowed to change the mode of the database server, add or remove storage, or perform other administrative tasks. You must provide user names and passwords for any read-only users that you add.	❒ No ❒ Yes, enter user names: _____ _____ _____
Install Server Setup	❒ No ❒ Yes, fill out the Server Setup Configuration checklist.
Server Setup Configuration	
JRE Location	_____
ISA Servlet Engine Port Number Specify a port number for the ISA servlet engine between 1024 and 65536. This must be a different number than the one you chose for the ISA HTTP server. For a list of port numbers currently in use, see the **/etc/services** file. (This list might not be complete for your installation.)	_____

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Installing on UNIX and Non-RPM Installed Linux

Linux

To use the Red Hat Package Manager (RPM) to install the database server on your Linux system, see "To install IBM Informix products on a Linux system using RPM" on page C-1. ♦

To install the database server using the IBM Informix UNIX Bundle Installer

1. If you are installing IBM Informix products for the first time, complete the first-time installation procedure (page 8).
2. Run the UNIX Bundle Installer (page 10).

Preparing to Install for the First Time

The first time that you install an IBM Informix product, you must:

1. Create a new **informix** group and user (page 8).
2. Create the **INFORMIXDIR** product directory (page 9).

Creating group and user informix

Tip: *On HP systems, use the* ***sam*** *tool to create groups and users. On Solaris systems, use the* ***admintool*** *to create groups and users. Some systems use the* ***groupadd*** *utility to create groups and the* ***useradd*** *utility to create user entries. For more information, see your operating-system manual.*

To create group informix and user informix

1. Log in as user **root**.
2. Create group **informix**:
   a. Create group **informix** in the **group** file. On most UNIX and Linux systems, this file is **/etc/group**.
   b. Assign an unused group ID equal to or greater than 100.

3. Create user **informix**:
   a. Create a new entry called **informix** in the **/etc/passwd** file.
   b. Assign an unused user ID equal to or greater than 100 for that user.
   c. Assign the user to group **informix**.
   d. Create a password for user **informix**.
4. If you use a network, propagate the new user name to all the systems on the network that must recognize user **informix**. For example, on some systems, you (or the network administrator) must run the **ypmake** utility.

The user **informix** is the database equivalent of the UNIX or Linux **root** account, so that anyone logged in as user **informix** has complete access to any IBM Informix products and databases. Keep the user **informix** password confidential.

IBM Informix products use group **informix** internally to control database access. Make user **informix** the *only* member of group **informix**. Any person who belongs to group **informix** is a database server administrator. If you make an actual user of an IBM Informix product a member of group **informix**, you can allow unintended and uncontrolled database access. User accounts in group **informix** have all the privileges of user **informix** and can be used to disrupt the database server, either intentionally or unintentionally.

Creating the INFORMIXDIR Product Directory

Tip: *To preserve product files of earlier versions, create separate directories for each version of your IBM Informix products.*

1. Log in as user **informix**.
2. Create a directory in which to install your IBM Informix products.

   This directory can be any directory that is local or is an approved NFS-mounted directory. IBM Informix database servers support only certified versions of NFS.

   Linux

   The standard Linux location for IBM Informix products is **/opt/informix**. ♦

3. Set **$INFORMIXDIR** to the directory you created in step 2. For example:

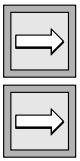
   Bourne shell:

   ```
   INFORMIXDIR=/work; export INFORMIXDIR
   ```

   C shell:

   ```
   setenv INFORMIXDIR /work
   ```

Running the UNIX Bundle Installer



Important: *A database server must be installed in the same directory as any local client products that use it.*

Important: *The installation scripts used by the Bundle Installer temporarily extract the Error Message and GLS .tar files into a temporary directory. The must be enough free space on the temporary drive to hold the contents of these files.*

The installation scripts use /tmp as the default temporary drive. You can change this location by setting the TMP environment variable.

To run the UNIX Bundle Installer

1. Log in as user **root**.
2. If you are installing from a CD-ROM, insert it into the appropriate drive of your computer and use the **mount** command to mount the CD-ROM. For more information, see the **mount** manual page.
3. Change directories to the location of the installation media.

   For example, if you are installing from CD-ROM and the mount point is **/cdrom**, enter:

   ```
   cd /cdrom
   ```

4. If you are configuring role separation, follow the steps in "Preparing for Role Separation" on page A-2.

5. Enter the following installation command:

```
./ids_install
```

The IBM Informix UNIX Bundle Installer begins installation of the database server. The following menu is displayed:

```
IBM Informix Unix Bundle Installer

Installation Requirements:
- A user 'informix' must be known to the system.
- This installation procedure must be run as root

0) All Products listed below
1) IBM Informix Dynamic Server 9.40
2) IBM Informix IConnect
3) IBM Informix JDBC version 2.21
4) IBM Informix System Administrator
5) Configure a Demo IDS Server (requires IDS)

Enter the number(s) of the products to install, separated by
spaces (e.g. '1 2 3'):
```

6. Select the number of the component you wish to install.

   If this is a new server installation, the IBM Informix UNIX Bundle Installer will extract an install the error messages and GLS files without prompting you for more information. You can proceed to step 8 to continue with the server installation.

7. If you are installing a newer server version over an older existing installation, the following prompts will appear:

   a. Error messages

   ```
   $INFORMIXDIR/msg/en_us/0333 contains message files which
   appear to be out of date.
   Would you like to update them?(Y/N):
   ```

   Enter "Y" if you would like to replace the older message files with the newer ones.

   b. GLS Files

   ```
   $INFORMIXDIR/gls contains GLS files which appear to be out
   of date.
   Would you like to update them?(Y?N):
   ```

   Enter "Y" if you would like to replace the older GLS files with the newer ones.

   Proceed to step 8 to continue with the server installation.

8. If you are installing a server version which contains error message and GLS files that are older the currently installed ones, the following prompts appear:

   a. Error messages

   ```
   The existing message file in $INFORMIXDIR/msg/en_us/0333
   appear to be the most current.
   Would you like to skip messages installation?(Y/N):
   ```

   Enter Y if you want to preserve the error messages that are currently installed. Enter N if you want to overwrite the existing error messages.

   b. GLS files

   ```
   The existing GLS files in $INFORMIXDIR/gls appear to be
   the most current.
   Would you like to skip the GLS installation?(Y/N):
   ```

   Enter Y if you want to preserve the GLS that are currently installed. Enter N if you want to overwrite the existing GLS files.

9. If you enabled role separation by setting the **INF_ROLE_SEP** environment variable (p. A-3), the installation script prompts you to either:

   - Press RETURN to continue the product installation with role separation enabled.
   - Press Q to quit the installation.

   If you did not set INF_ROLE_SEP, skip to step 9.

   To install the product without role separation, unset the INF_ROLE_SEP environment variable and restart the installation at step 5.

   To continue installation with role separation:

   a. At the prompt, enter the group name that you assigned to the DBSSO account (page 5).

   This group becomes the group that owns the **$INFORMIXDIR/dbssodir** directory.

   b. At the prompt, enter the group name that you assigned to the AAO account (page 5).

   This group becomes the group that owns the **$INFORMIXDIR/aaodir** directory.

c. At the prompt, enter the name of the group that should be granted access to the database server (page 5).

Members of this group can access the database server. To grant access to all user groups, press RETURN.

d. Press RETURN to accept the settings or Q to quit the installation.

For more information about role separation, see page A-1.

10. Press RETURN to continue the installation procedure. A series of messages similar to the following appear on the screen:

```
Installing directory
Installing directory aaodir
Installing directory bin
...
```

11. If you choose to install ISA, you are prompted for additional information. Use the information from the IBM Informix Server Administrator Configuration section of the "Installation Checklist" on page 5 to respond to the prompts.

a. Specify the port number for ISA (page 6).

b. Specify the host name of the computer on which you are installing ISA (page 6).

c. Specify the email address of the administrator for ISA (page 6).

d. Specify the HTTP server password (page 6).

e. Specify whether to allow read-only users and provide usernames and passwords for the read-only users (page 7).

f. Specify whether to install Server Setup. If you do not install Server Setup, skip to step i.

g. Specify the complete path (including filename) to the Java runtime executable (JRE) (page 7).

h. Specify the port number for the ISA servlet engine (page 7).

i. Enter Y to start ISA or press RETURN to skip this step.

If you choose to configure a Demo IDS, you see messages like the following:

```
Configuring Demo IBM Informix Dynamic Server

Disk Initializing Demo IBM Informix Dynamic Server

Demo IBM Informix Dynamic Server is Online
Sample environment configuration can be
found in $INFORMIXDIR/demo/server/profile_settings
```

12. After the IBM Informix UNIX Bundle Installer is complete, the following message appears:

```
**************************************************
To complete the installation of IBM Informix Dynamic
Server,run $INFORMIXDIR/RUN_AS_ROOT.server as root.
**************************************************
```

To complete the installation of IBM Informix Dynamic Server you must login as user **root** and run this script.

Important: *If any error messages appear before the Installation Complete message appears, see Appendix B, "Solving Installation Problems." Do not use the* ***oninit*** *command. If you use* ***oninit****, you might cause further installation problems.*

The installation script changes the owner of the **INFORMIXDIR** directory to user **informix** as well as any subdirectories and files under the **INFORMIXDIR** directory that the user **informix** must access or control.

Tip: *To uninstall IBM Informix products installed with the IBM Informix UNIX Bundle Installer or the installation script from a previous release, remove the directory in which you installed the product files (****$INFORMIXDIR****).*

Setting Up the Environment

Before users can use the database server, you must set up their environment.

For each user, set the following environment variables:

1. Set **INFORMIXDIR** to the directory where you installed the IBM Informix products (see page 9).
2. Set the **PATH** environment variable to include **$INFORMIXDIR/bin** as follows:
   - C shell:

```
setenv PATH${INFORMIXDIR}/bin:${PATH}
```

   - Bourne shell:

```
PATH=$INFORMIXDIR/bin:$PATH
export PATH
```

Important: *You must set* ***INFORMIXDIR*** *and add* ***$INFORMIXDIR/bin*** *to the* ***PATH*** *for each user.*

Setting Locale- and Platform-Specific Environment Variables

Depending on your installation, locale, and operating system, set the optional environment variables:

- **CLIENT_LOCALE** specifies a nondefault locale.

  Set this environment variable *only* if you want to use a locale other than the default GLS (Global Language Support) locale, U.S. English.

  The GLS feature allows you to create databases that use the diacritics, collating sequence, and monetary and time conventions of the language that you select. For more information, see the *IBM Informix GLS User's Guide*.

- **DBLANG** specifies the subdirectory of **$INFORMIXDIR** that contains the customized language-specific message files that IBM Informix products use.

  Set this environment variable *only* if you do not want to use the default subdirectory, **$INFORMIXDIR/msg/lg_tr/code_set**. For more information, see the *IBM Informix GLS User's Guide* and the *IBM Informix Guide to SQL: Reference*.

- **INFORMIXSERVER** specifies the default database server to which an SQL API client or DB-Access makes an explicit or implicit connection. For more information, see the *IBM Informix Guide to SQL: Reference*.

- **INFORMIXSQLHOSTS** specifies the file that contains the **sqlhosts** information.

- **INFORMIXTERM** specifies whether DB-Access should use the information in the **termcap** file or the **terminfo** directory.

- **TERM** enables DB-Access to recognize and communicate with the terminal that you are using.

- **TERMCAP** (or **TERMINFO**)

  To verify that **TERM** and **TERMCAP** (or **TERMINFO**) are set correctly, invoke a text editor such as **vi**. An unformatted display indicates that these environment variables are not set correctly for your terminal.

- The shared-library path environment variable specifies the library search path and is platform-dependent.

Platform	Environment Variable
AIX	LIBPATH
HP-UX	SHLIB_PATH
Solaris and most other platforms	LD_LIBRARY_PATH

Set this environment variable to include **$INFORMIXDIR/lib** and any of the **$INFORMIXDIR/lib** subdirectories that apply to programs that you will use.

For example, on Solaris, set this environment variable as follows:

- Bourne shell:

```
LD_LIBRARY_PATH=$INFORMIXDIR/lib:$LD_LIBRARY_PATH
export LD_LIBRARY_PATH
```

- C shell:

```
setenv LD_LIBRARY_PATH${INFORMIXDIR}/lib:
\${LD_LIBRARY_PATH}
```

For more information, see the following table.

Description	Documents and Files
INFORMIX environment variables	*IBM Informix Guide to SQL: Reference*
How to create or modify a **/etc/termcap** file	**$INFORMIXDIR/etc/termcap**

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Description	Documents and Files
Information about the **/etc/termcap** file	*Archive and Backup Guide for IBM Informix Dynamic Server*
CLIENT_LOCALE and **DBLANG** environment variables	*IBM Informix GLS User's Guide*
List of computers that provide full support for the UNIX System V **terminfo** library	Machine notes file (see page 2)

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Using the Demonstration Database Server

If you chose to configure a Demo Dynamic Server, the installation script automatically configures and initializes a sample database server named **demo_on** and sets the **ONCONFIG** environment variable to a sample ONCONFIG file, **$INFORMIXDIR/etc/onconfig.demo**.

When the installation script initializes the demonstration database server, three databases, **sysmaster**, **syscdr**, and **sysutils**, are built automatically. However, because it takes several minutes to build these databases, the system is not completely initialized until messages like the following appear in the message log (**$INFORMIXDIR/demo/server/online.log)**:

```
09:28:59  'sysmaster' database built successfully.
09:29:00  'sysutils' database built successfully.
09:29:00  'syscdr' database built successfully.
```

The installation script creates additional configuration and log files to support the **demo_on** database server in **$INFORMIXDIR/demo/server**. For information on the configuration settings for **demo_on**, see the **$INFORMIXDIR/demo/server/profile_settings** file**.**

Testing the Installation

To test that the installation succeeded, run the following commands:

```
$ dbaccessdemo
$ dbaccess stores_demo
```

If the installation was successful, the **dbaccessdemo** script interacts with the database server to create and populate the **stores_demo** database. The **dbaccess** program enables you to access databases (**stores_demo** in this case) using SQL.

Configuring IBM Informix Products

After you install the IBM Informix products, you must configure the database server and other products. For most post-installation configuration tasks, see the *IBM Informix Dynamic Server Administrator's Guide*. In addition, you can perform the following configuration:

1. If you installed IBM Informix Server Administrator (ISA), you can use it now to configure the database server.

   If you did not start ISA during installation, start it now:

   a. Log in as **informix** or **root** and enter the following command to start ISA:
      ```
      $INFORMIXDIR/ISA/sbin/isactl start
      ```
   b. Start your web browser and open:
      ```
      http://<hostname><domain_name>:port_number/
      ```
   c. Log in with the username and password you provided during installation.

      See the IBM Informix Server Administrator Configuration section of the "Installation Checklist" on page 5.

   For more information, see the ISA online help.

2. ISM is automatically installed with the database server, however you must configure it before it can work.

   For more information, see the *IBM Informix Storage Manager Administrator's Guide*. For information on how to configure ON-Bar and **ontape**, see the *IBM Informix Backup and Restore Guide*.

3. You can ask your system administrator to modify the sample system startup script located in **$INFORMIXDIR/etc/ids-example.rc** (see the section on preparing UNIX startup and shutdown scripts in the *Administrator's Guide*) so that your database server starts whenever the computer is rebooted (for example, after a power failure).

   The startup script should set the **INFORMIXDIR**, **PATH**, **ONCONFIG**, and **INFORMIXSERVER** environment variables and then execute **oninit**. Similarly, you can ask the system administrator to modify the shutdown script so that the database server shuts down in a graceful manner.

Appendix

A

Setting Up Specialized Installations

This appendix covers four types of specialized installations of Dynamic Server that you can perform:

- Setting Up Role Separation
- Performing a Silent Installation
- Setting Up a Private Installation
- Setting Up Multiple Residency

Setting Up Role Separation

Role separation provides checks and balances to improve the security of your event-auditing procedures. Event auditing tracks selected activities that users perform. With role separation enabled, members of different UNIX groups manage and examine these records to ensure additional security.

The following table lists the two roles that you must set up.

Role Category	Role Definition
Database System Security Officer (DBSSO)	The DBSSO oversees the security concerns of the database server. Functions of this role include audit adjustment and changing security characteristics of storage objects.
Auditing Analysis Officer (AAO)	The AAO maintains and analyzes audits of the records of specific types of database activities. If someone attempts to circumvent or corrupt the security mechanism of the database, these actions can be traced.

Important: *You must decide at installation time whether you want to activate role separation for the database server. You cannot disable role separation after you enable it. The only way to turn off role separation is to uninstall the database server and then reinstall it without role separation activated.*

For detailed information on role separation, see the *Trusted Facility Guide*.

Preparing for Role Separation

To prepare for role separation, you must perform the following steps before you install the database server:

1. Set up separate administrative groups and accounts (page A-2).
2. Set up standard user accounts (page A-3).
3. Enable role separation (page A-3).

Creating the Administrative Groups and Accounts

To enable role separation, you must:

1. Create the special administrative (DBSSO and AAO) groups.

   Assign unique names to the DBSSO and AAO groups, for example, **ixdbsso** and **ixaao**.

2. Create two users, the Database System Security Officer (**DBSSO**) and the Auditing Analysis Officer (**AAO**).

   Do not use **informix** or **root** for the **DBSSO** and **AAO** account names.

   For audit purposes, it is recommended that you establish one account for each individual who acts as a DBSSO or AAO. For example, **DBSSO1** and **DBSSO2** might be the account names for the **DBSSO** role and dickAAO and janeAAO might be the account names for the **AAO** role. In addition, all standard users should have separate account names.

3. Add the **DBSSO** user to the **ixdbsso** group and the **AAO** user to the **ixaao** group.

For information on how to create groups and user accounts, see "Creating group and user informix" on page 8 or your operating-system documentation.

Setting Up a Group for Standard-User Access to the Database Server

By default, all user groups can access the database server. To access the database server, standard users must belong to one of the user groups. To restrict standard-user access to the database, create a special group. If you specify that group during the role-separation portion of database server installation, only members of that special group can access the database server.

Enabling Role Separation

After you set up the role-separation accounts, set the role-separation environment variable to implement role separation:

- Bourne shell:

```
INF_ROLE_SEP=1;export INF_ROLE_SEP
```

- C shell:

```
setenv INF_ROLE_SEP 1
```

After you set this environment variable, you are ready to install the database server with role separation.

Installation Method	Description	Operating System
IBM Informix **Bundle Installer**	"Installing on UNIX and Non-RPM Installed Linux" on page 8.	UNIX
RPM	"To install IBM Informix products on a Linux system using RPM" on page C-1.	Linux
pkgadd	"Installing on Siemens UNIX Using pkgadd" on page C-5.	UNIX

Performing a Silent Installation

A *silent installation* requires no user interaction with the installation program once you start the **ids_install** script.

Important: *You cannot perform a silent installation with RPM or* ***pkgadd****.*

To perform a silent installation

1. Follow the steps in "Preparing to Install IBM Informix Products" on page 4 and "Installing on UNIX and Non-RPM Installed Linux" on page 8.
2. Follow steps 1 through 3 on "Running the UNIX Bundle Installer" on page 10.
3. Verify that **INFORMIXDIR** is set correctly (see page 9).
4. Run the **ids_install** script:

   ```
   ids_install product_code(s) options
   ```

   where:

   - *product_code* is the short name associated with each product and *options* are any options associated with a particular *product_code*.

   For information, enter:

   ```
   ids_install -help.
   ```

For example, to install IBM Informix Dynamic Server with role separation and to install ISA and set up a demonstration database server, enter a command such as the following:

```
ids_install IDS ixaao ixdbsso ixuser IDSDEMO \
   ISA 1025 my_computer isa_admin my_password -y
```

Setting Up a Private Installation

Important: *You cannot perform a private installation with RPM or* ***pkgadd****.*

A *private installation* copies or links files from your conventional installation of the database server to a directory of your choice. The installation script creates the necessary files and directory structure that you need to run the database server in private database server mode. You do not need to be user **root** or **informix** to create or use a private installation. After you create the private installation, you own the critical resources and services such as the **sysmaster** database.

A private installation is useful because it allows a programmer who develops DataBlade modules and user-defined routines to attach a debugger and test code extensions to the database server without affecting the performance of the database server or the work of other users.

A private installation also allows a developer to create new functions, dynamically link them with the database server, execute them, and debug them without violating security.

Private Installation Restrictions

A private installation places the following restrictions on the database server:

- You must be the owner or belong to the group that is the owner of any chunks you access. A chunk is the largest unit of physical disk dedicated to database server data storage.

  For more information on chunks, see the *IBM Informix Dynamic Server Administrator's Guide*.

- The database server does not have the privileges of user **root** or user **informix**.

- The database server does not support DBA tools, such as **dbschema**, **dbimport**, and **dbexport**.
- Other users cannot connect to a private installation of the database server.

Creating a Private Installation

A private installation does not affect a conventional installation of the database server. However, you must have already installed the database server on your system before you perform a private installation. For more information, see "Installing IBM Informix Products."

To create a private installation

1. Log in with the user ID that you intend to use for the private work.
2. Create a target directory where you want to install the private installation files. The directory can have any name and location that you choose.
3. Check that you have read and write permissions for the target directory.
4. Check that the shared-library path environment variable includes **$INFORMIXDIR/lib**.

   The name of this environment variable is platform dependent. See the table on page 16.
5. Change directories to **$INFORMIXDIR**.
6. Enter the following command:

   ```
   ./installserver [-c | -l] target_directory
   ```

   Enter **-c** to copy all files or **-l** to link files wherever possible.
7. After the installation is complete, configure the database server as you would a conventional installation.

   For more information, see "Configuring IBM Informix Products" on page 18 and the *IBM Informix Dynamic Server Administrator's Guide*.

Overriding Default Limits

When you run a conventional installation of the database server, **oninit** runs as user **root** and group **informix**. This arrangement permits the database server to override some default limits such as file-descriptor limits and memory limits. If you run a private database server installation, **oninit** runs as the user who invokes it and cannot override these limits itself. You might need to request that your system administrator increase these limits on your behalf.

Setting Up Multiple Residency

Multiple residency refers to multiple database servers and their associated shared memory and disk structures coexisting on a single computer.

Creating multiple independent database server environments on the same computer allows you to:

- Separate production and development environments

  You can separate production and development environments to protect the production system from the unpredictable nature of the development environment.

- Isolate sensitive databases

  You can isolate applications or databases that are critically important, either to increase security or to accommodate more frequent backups than most databases require.

  When you use multiple residency, each database server has its own configuration file. Thus, you can create a configuration file for each database server that meets its special requirements for backups, shared-memory use, and tuning priorities.

- Test distributed data transactions on a single computer

  If you are developing an application for use on a network, you can use local loopback to perform your distributed-data simulation and testing on a single computer. (See the section on using a local loopback connection in the *IBM Informix Dynamic Server Administrator's Guide*.) Later, when a network is ready, you can use the application without changes to application source code.

Planning for Multiple Residency

Running multiple database servers on the same computer is not as efficient as running one database server. You need to balance the advantages of separate database servers against the extra performance cost.

When you plan for multiple residency on a computer, consider the following factors:

- Memory

  Each database server has its own memory. Can your computer handle the memory usage that an additional database server requires?

- Storage space

  Each database server must have its own unique storage space. You cannot use the same disk space for more than one instance of a database server. When you prepare an additional database server, you must repeat some of the planning that you did to install the first database server. For example, consider these questions:

  - Will you use buffered or unbuffered files? Will the unbuffered files share a disk partition with another application? (For more information on buffered and unbuffered files, see the section on direct disk access in the *Administrator's Guide*.)
  - Will you use mirroring? Where will the mirrors reside?
  - Where will the message log reside?
  - Can you dedicate a tape drive to this database server for its logical logs?
  - What kind of backups will you perform?

Creating a New Database Server

Before you set up multiple residency, you must install one database server as described in "Installing IBM Informix Products."

Important: *You do not need to install more than one copy of the database server binary files. All instances of the same version of the database server on one computer can share the same executable files.*

To create multiple residency of a database server

1. Prepare a new ONCONFIG configuration file and set the **ONCONFIG** environment variable to the new filename (page A-9).
2. If needed, set up connectivity for the new database server instance (page A-11).
3. Initialize disk space for the new database server instance (page A-11).
4. Prepare the backup environment for multiple residency (page A-11).
5. Modify the operating-system startup to start the new database server instances automatically (page A-12).
6. Check the **INFORMIXSERVER** environment variables for users (page A-13).

For more information, see the *IBM Informix Dynamic Server Administrator's Guide*.

Setting Up the ONCONFIG File

Each instance of the database server must have its own ONCONFIG configuration file. Make a copy of an ONCONFIG file that has the basic characteristics that you want for your new database server. Give the new file a name that you can easily associate with its function. For example, you might select the filename **onconfig.acct** to indicate the configuration file for a production system that contains accounting information.

Set the **ONCONFIG** environment variable to the filename of the new ONCONFIG file. Specify only the filename, not the complete path.

In the new configuration file, change the following configuration parameters:

- SERVERNUM

  The SERVERNUM parameter specifies an integer (between 0 and 255) associated with a database server configuration. Each instance of a database server on the same host computer must have a unique SERVERNUM value. For more information, see the section on SERVERNUM in the *Administrator's Reference*.

- DBSERVERNAME

  The DBSERVERNAME parameter specifies the dbservername of a database server. It is suggested that you choose a name that provides information about the database server, such as **ondev37** or ***hostname*dev37**. For more information, see the section on DBSERVERNAME in the *Administrator's Reference*.

- MSGPATH

  The MSGPATH parameter specifies the pathname of the message file for a database server. You should specify a unique pathname for the message file because database server messages do not include the dbservername. If multiple database servers use the same MSGPATH, you cannot identify the messages from separate database server instances. For example, if you name the database server **ondev37**, you might specify **/usr/informix/dev37.log** as the message log for this instance of the database server.

- ROOTPATH and ROOTOFFSET

  The ROOTPATH and ROOTOFFSET parameters together specify the location of the root dbspace for a database server. The root dbspace location must be unique for every database server configuration.

  If you put several root dbspaces in the same partition, you can use the same value for ROOTPATH. However, in that case, you must set ROOTOFFSET so that the combined values of ROOTSIZE and ROOTOFFSET define a unique portion of the partition. For more information about ROOTPATH and ROOTOFFSET, refer to the chapter on configuration parameters in the *Administrator's Reference*.

Tip: *You do not need to change ROOTNAME. Even if both database servers have the name* ***rootdbs*** *for their root dbspace, the dbspaces are unique because ROOTPATH specifies a unique location.*

You might also need to set the MIRRORPATH and MIRROROFFSET parameters. If the root dbspace is mirrored, the location of the root dbspace mirror must be unique. For information about setting MIRRORPATH, see the *Administrator's Guide*.

Setting Up Connectivity Information

If you use the TCP/IP communication protocol, you might need to add an entry to the **services** file for the new database server instance. If you use the IPX/SPX communication protocol, you might need to modify the connection information for the NetWare server.

The **sqlhosts** file must have an entry for each database server. If IBM Informix products on other computers access this instance of the database server, the administrators on those computers must update their **sqlhosts** files.

If you plan to use TCP/IP network connections with an instance of a database server, the system network administrator must update the **hosts** and **services** files. If you use an IPX/SPX network, the NetWare administrator must update the NetWare file-server information.

For information about these files, see the chapter on client/server communications in the *Administrator's Guide*.

Initializing Disk Space

Before you initialize disk space, check the setting of your **ONCONFIG** environment variable. If you have not set it correctly, you might overwrite data from another database server. When you initialize disk space for a database server, the database server initializes the disk space specified in the current ONCONFIG configuration file.

Warning: *As you create new blobspaces or dbspaces for a database server, be sure to assign each chunk to a unique location on the device. The database server does not allow you to assign more than one chunk to the same location within a single database server environment, but it remains your responsibility as administrator to make sure chunks that belong to different database servers do not overwrite each other.*

Preparing the Backup Environment for Multiple Residency

Depending on your backup method, you must prepare the backup environment for multiple residency.

Preparing for ON-Bar backups

ON-Bar allows you to back up data from various database server instances to a single storage device if the storage manager allows it. The storage manager keeps track of what data has been backed up. However, it is recommended that you keep storage-space and logical-log backups on separate storage devices.

Preparing for ontape backups

When you use multiple residency, you must maintain separate storage-space and logical-log backups for each database server instance.

If you can dedicate a tape drive to each database server, use the continuous-logging option to back up your logical-log files. Otherwise, you must plan your storage-space and logical-log backup schedules carefully so that use of a device for one database server instance does not cause the other database server instance to wait. You must reset the ONCONFIG configuration parameter each time you switch backup operations from one database server instance to the other.

Modifying Operating-System Startup for Multiple Server Instances

You can ask your system administrator to modify the system startup script so that each of your database server instances starts whenever the computer is rebooted, for example, after a power failure (see page 18). For more information about startup scripts, see the section on preparing UNIX startup and shutdown scripts in the *Administrator's Guide*.

To start a second instance of a database server, change the **ONCONFIG** and **INFORMIXSERVER** environment variables to point to the configuration file for the second database server and then execute **oninit**. Do not change **INFORMIXDIR** or **PATH**.

Similarly, you can ask the system administrator to modify the shutdown script so that all instances of a database server shut down in a graceful manner.

Setting the INFORMIXSERVER Environment Variable

If a new instance of a database should be the default database server, users must reset the **INFORMIXSERVER** environment variable. Users might also need to update their **.informix** files.

If you use the **informix.rc** file to set environment variables for the users, you might need to update that file. The *IBM Informix Guide to SQL: Reference* describes the **informix.rc** and **.informix** files.

B

Solving Installation Problems

This appendix describes the most common installation problems you might encounter and the corresponding solutions. This appendix covers:

- Solving UNIX Bundle Installer Failures
- Solving installserver Script Failures
- Solving Problems After Installation
- Solving Problems Using IBM Informix Products

Linux

If you experience problems with RPM, see "Solving RPM Failures" on page C-3. ♦

If any of the problems in this section persist, contact Tech Support at the IBM Informix product family technical support site, http://www.ibm.com/software/data/informix/support/, or by email at tsmail@us.ibm.com.

Important: *If you receive your IBM Informix product materials from an ESD vendor, consult the vendor documentation for information on how to solve any problems you might encounter.*

Solving UNIX Bundle Installer Failures

The following problems might occur when you run the **ids_install** script.

- ***Problem.*** When you attempt an installation, the following message appears:

  ```
  Please rerun this installation procedure as root.
  ```

  Solution. Make sure that you are logged in as user **root**.

Important: *If you continue to have problems running the* ***ids_install*** *script in your environment, try running the individual installation scripts provided with your IBM Informix product. For example, to install Dynamic Server, run the* ***$INFORMIXDIR/installserver*** *script.*

Solving installserver Script Failures

The following problems might occur when you run the **installserver** script, for example, to set up a private installation (page A-5).

- ***Problem.*** When you attempt an installation, the following message appears:

  ```
  Please rerun this installation procedure as
  the informix user.
  ```

  Solution. Check that you are logged in as user **informix**.

- ***Problem.*** When you attempt an installation, the following message appears:

  ```
  INFORMIXDIR is not set.
  ```

  Solution. Set the **INFORMIXDIR** environment variable to the directory where the product will be installed. The installation script does not set the **INFORMIXDIR** environment variable for you.

- ***Problem.*** When you attempt an installation, the following message appears:

  ```
  INFORMIXDIR and working directory do not match.
  INFORMIXDIR = pathname_x
  Current working directory = pathname_y
  ```

  Solution. Make sure that you are in **$INFORMIXDIR**, the directory into which you want to install the products when you invoke the installation script.

- ***Problem.*** When you run the **./installserver** or the **./installids** script, the following message appears:

  ```
  chown filename: Not owner.
  ```

  Solution. Remove **$INFORMIXDIR** and all its files. Then follow the procedures in "Preparing to Install for the First Time" on page 8 and perform all subsequent steps.

Solving Problems After Installation

The problems in this section relate to difficulties accessing IBM Informix products after installation.

- ***Problem.*** You try to run an IBM Informix product program from the command line (or alternative method), and you receive only a system prompt or the following (or a similar) message:

  ```
  program:  Command not found.
  ```

  Solution. Verify that the environment variables are set properly (see "Setting Up the Environment" on page 14).

  If the environment variables are set correctly, check if another file with the same name exists in your search path that would be accessed before the Informix executable file. Move, rename, or delete that file, or reorder the search path so that the path in which the Informix executable resides precedes the path in which the conflicting executable resides.

- ***Problem.*** You try to invoke an IBM Informix product from the command line (or alternative method), but you get the following (or a similar) message:

  ```
  Unknown message number 32766
  ```

  Solution. Verify that the **INFORMIXDIR** environment variable is set correctly. If you changed the default settings for the **DBLANG** and **CLIENT_LOCALE** environment variables, change them back to the default, and try to invoke the IBM Informix product again (see "Setting Up the Environment" on page 14).

- ***Problem.*** You try to send a command to an IBM Informix product from the command line (or through an alternative method), but you receive the following (or a similar) message:

  ```
  cannot attach to shared memory
  ```

  Solution. Before you use the database server, bring it to online mode. See the chapter on managing database server modes in the *Administrator's Guide*.

Solving Problems Using IBM Informix Products

The problems in this section relate to product usage.

- ***Problem.*** The list of databases is incomplete.

  Solution. Check that the **DBPATH** environment variable contains the names of all other database servers not referenced by the **INFORMIXSERVER** environment variable.

- ***Problem.*** After you access an IBM Informix application, the screen display is unformatted.

  Solution. Verify that the **TERM**, **TERMCAP** (or **TERMINFO**), and **INFORMIXTERM** environment variables are set correctly (see "Setting Up the Environment" on page 14).

- ***Problem.*** You successfully install your IBM Informix products and you successfully invoke the database server, but you cannot connect to the database server.

  Solution. Check that your environment variables and your **sqlhosts**, **/etc/hosts**, and **/etc/services** files do not contain typographical errors, misspellings, or inconsistencies.

  If you use a network information system, check that the changes you make to the **services** file are properly accessed and available to your computer.

  Check that the database server is configured correctly. See the chapter on client/server connectivity in the *Administrator's Guide*.

- ***Problem.*** Unusual problems occur (for example, networking problems on Hewlett-Packard computers or unexplainable failures on Sun computers).

  Solution. Your system might need a patch. Read the machine notes file for advice on patch information. For more information, see "Documentation Notes, Release Notes, Machine Notes" on page 2.

C

Using Alternative Installation Programs

This appendix describes how to use alternative installation programs to install IBM Informix products on your system:

Linux

- Install on Linux using the RedHat Package Manager (RPM) (below). ♦

UNIX

- Install on UNIX (Siemens) using **pkgadd** (page C-5).

To install the database server using the IBM Informix UNIX Bundle Installer (**ids_install**), see "Installing on UNIX and Non-RPM Installed Linux" on page 8. ♦

If you encounter difficulties during installation, see Appendix B, "Solving Installation Problems."

Linux

To install IBM Informix products on a Linux system using RPM

1. Follow the relevant steps in "Preparing to Install IBM Informix Products" on page 4 and fill out the "Installation Checklist" on page 5.
2. Uninstall any previous versions of the database server, if necessary.

Important: *RPM requires that you uninstall the old version of the database server before you install the new version.*

See "Uninstalling a Package Using RPM" on page C-3.

3. If you are configuring role separation, follow the steps in "Preparing for Role Separation" on page A-2.
4. Log in as **root**.

5. Verify that the RPM package is installed on your system and install it, if necessary. For more information, see the **rpm** manual pages.

   To obtain a copy of RPM, see the RPM Website at http://www.rpm.org.

6. Insert the media into the appropriate drive of your computer and use the **mount** command to mount the drive that contains the IBM Informix package files. For more information, see the **mount** manual page.

7. Change directories to the location of the IBM Informix package files.

8. Load the contents of the IBM Informix package file. For example:

   ```
   INFORMIXDIR=/opt/informix/LE; export INFORMIXDIR
   rpm -iv --relocate /opt/informix $INFORMIXDIR *.rpm
   ```

   This example loads all IBM Informix packages located in the current directory to the directory that **$INFORMIXDIR** (**/opt/informix/LE**) specifies.

After you enter the installation command or finish role-separation configuration, the script displays information about the product as well as the script requirements.

When you finish the installation, follow these steps to complete IBM Informix product configuration:

1. Set up the environment (page 14).
2. Test the installation (page 18).
3. Configure the database server and other IBM Informix products (page 18).

♦

Uninstalling a Package Using RPM

Important: *You must uninstall the old version of the database server before you install the new version with RPM.*

To uninstall a package using RPM

1. Log in as **root**.
2. Use **rpm -qi** to determine the name, version, and release of the package.
3. Use **rpm -e** to remove the product files and directories, as well as the corresponding entry in the RPM database.

   Do not use the longer name of the package file.

   For example, the following commands query the RPM database for Dynamic Server and uninstall the database server:

```
$ rpm -qi ids
Version     : 9.20.UC5
Release     : 1
. . .
$ rpm -ev ids-9.20.UC5-1
```

For more information, see http://www.rpm.org or the **rpm** manual pages.

Linux

Solving RPM Failures

The following problems might occur while you use the **rpm** utility to load or unload an IBM Informix package:

- ***Problem.*** The command displays one of the following messages:

```
ERROR: You must be root to install product.
ERROR: You must be root to uninstall product.
```

  Solution. Check that you are logged in as user **root**.

- ***Problem.*** The command displays the following message:

```
ERROR: Failed to locate directory with write permissions.
```

  Solution. Check that you are logged in as user **root**. Use the **chmod** command to grant write permission on the current directory and then run **rpm** again.

- ***Problem.*** The command displays one of the following messages:

  ```
  ERROR: User informix must exist to install product.
  ERROR: Group informix must exist to install product.
  ```

  Solution. Follow the instructions in "Preparing to Install for the First Time" on page 8 to create the necessary user or group.

- ***Problem.*** The command displays the following message:

  ```
  package product is already installed
  ERROR: product.rpm cannot be installed
  ```

  Solution. If you want to reinstall the product, uninstall the previous package, as described in "Uninstalling a Package Using RPM" on page C-3.

- ***Problem.*** The command displays the following message:

  ```
  rpm: arguments to --relocate must begin with a /
  ```

  Solution. If you relocate the package installation directory by selecting a target directory other than the default, you must specify an absolute pathname for the target directory. For example:

  ```
  rpm -iv --relocate /opt/informix=$INFORMIXDIR *.rpm
  ```

Installing on Siemens UNIX Using pkgadd

Siemens platforms require you to use the **pkgadd** utility.

To install IBM Informix products on Siemens platforms only using the pkgadd utility

1. Follow the relevant steps in "Preparing to Install IBM Informix Products" on page 4 and fill out the "Installation Checklist" on page 5.
2. Uninstall any previous versions of the database server, if necessary.

Important: *The **pkgadd** utility requires that you uninstall the old version of the database server before you install the new version.*

   For more information, see your operating-system manual.

3. Verify that your **/tmp** directory has enough room to accommodate the products.
4. If you are configuring role separation, follow the steps in "Preparing for Role Separation" on page A-2.
5. Log in as **root**.
6. Load the media supplied with your software into the appropriate drive of your computer. Enter one of the following commands:
   - To load from a tape device, enter:

     ```
     pkgadd -d tape_device
     ```

     where *tape_device* is the name of your tape device.
   - To load from a CD-ROM, enter:

     ```
     mount -F hs -o dos device_file mount_directory
     pkgadd -d mount_directory/prodimag
     ```

     where *device_file* is the name of the CD-ROM and *mount_directory* is the location where you mounted the CD-ROM.
7. If prompted, enter the absolute pathname of the directory where you want to install the products (**$INFORMIXDIR**). (On some platforms the script prompts you for this directory.)
8. At the prompt, choose the role separation option. For more information, see "Setting Up Role Separation" on page A-1.

When you finish the installation, follow these steps to complete IBM Informix product configuration:

1. Set up the environment (page 14).
2. Test the installation (page 18)
3. Configure the database server and other IBM Informix products (page 18).

Appendix

D

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