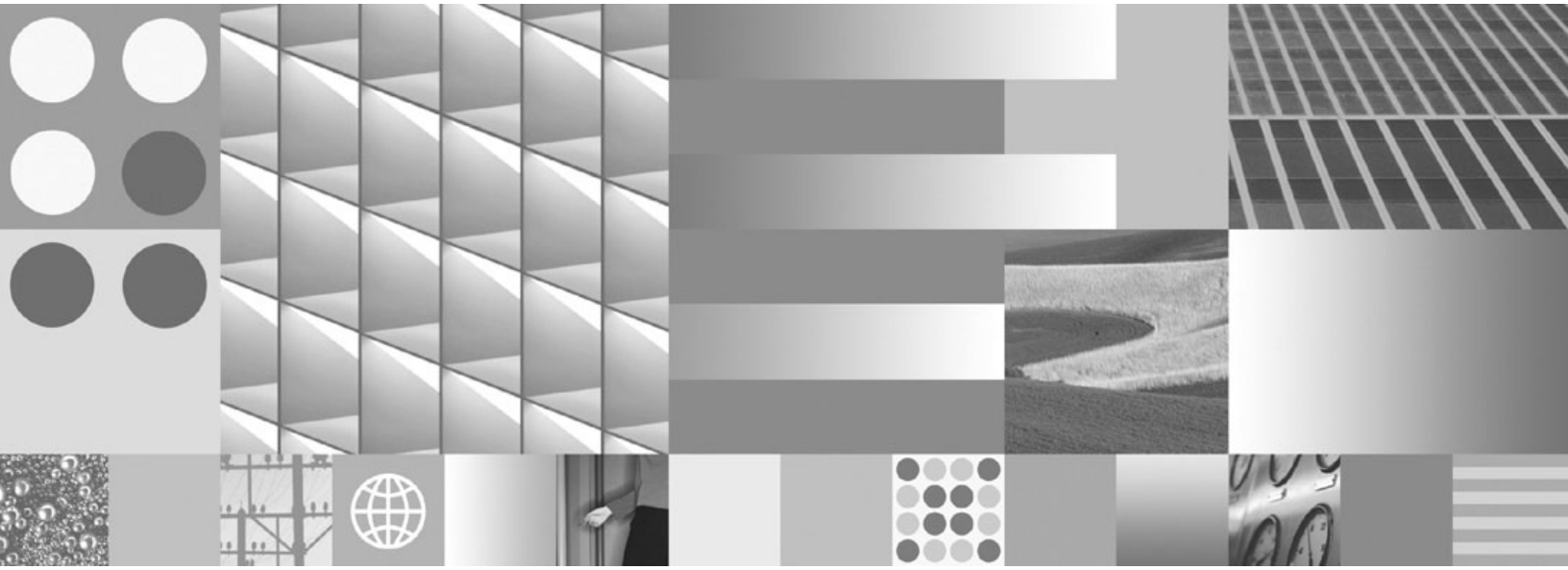
IBM Informix

Version 11.1

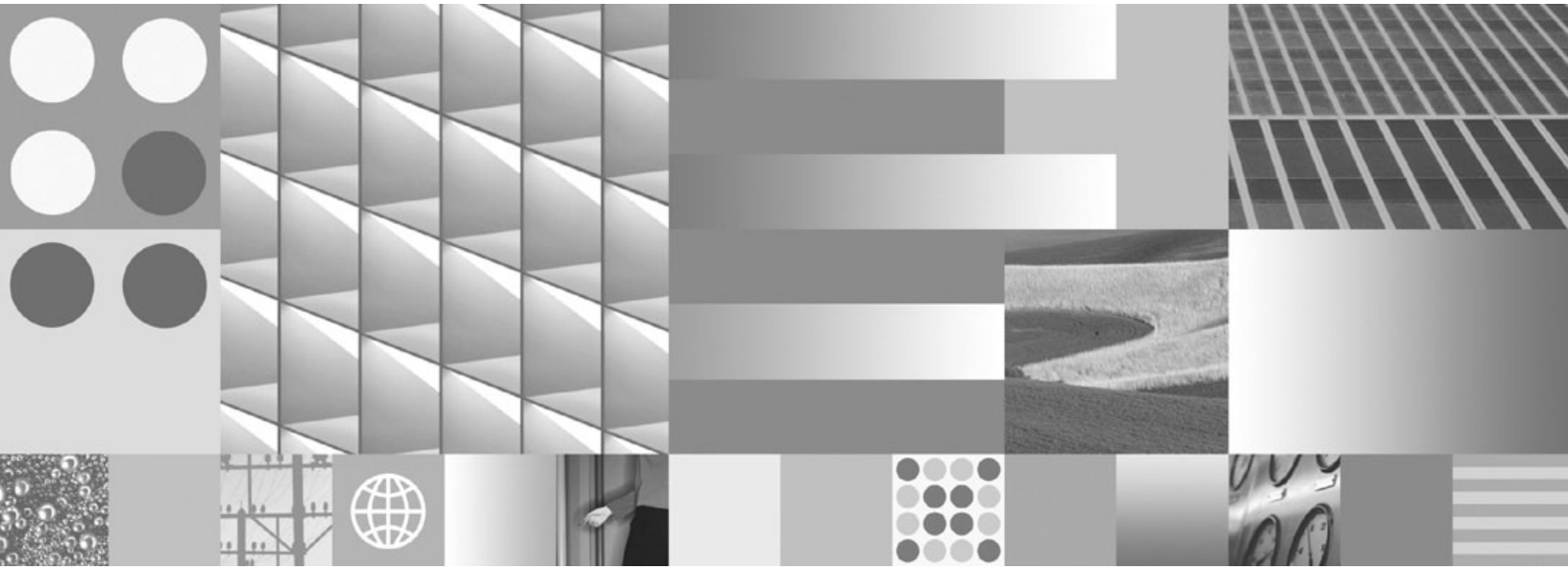


IBM Informix Dynamic Server Installation Guide for UNIX and Linux

G229-6379-00

IBM Informix

Version 11.1



IBM Informix Dynamic Server Installation Guide for UNIX and Linux

G229-6379-00

Note:
Before using this information and the product it supports, read the information in "Notices" on page B-1.

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Informix Dynamic Server Editions

Informix Dynamic Server has three different editions to fit different business needs:

- Express Edition
- Workgroup Edition
- Enterprise Edition

Some of the differences between editions include the following areas:

- Target market
- Functionality
- Scalability
- Purchase metrics
- Platforms

For details about the differences between editions, see the following Web site: http://www-306.ibm.com/software/data/informix/ids/ids-ed-choice/

New Features in Dynamic Server, Version 11.10

For a comprehensive list of new features for this release, see the *IBM Informix Getting Started Guide*. This topic lists new features relevant to this publication.

Deployment Wizard

The deployment wizard lets you install Dynamic Server with only the features that you want. This flexibility benefits users who want to minimize the footprint on their target server, as well as users who want to embed a database in another system or application. To use the deployment wizard, select custom setup during installation. You can add or remove features after installation without affecting the integrity of your system. Some features are mutually dependent, and must coexist in the instance. The wizard enforces these dependencies.

Documentation Conventions

This section describes the following conventions, which are used in the product documentation for IBM Informix Dynamic Server:

- Typographical conventions
- Feature, product, and platform conventions
- Syntax diagrams
- Command-line conventions
- Example code conventions

Typographical Conventions

This publication uses the following conventions to introduce new terms, illustrate screen displays, describe command syntax, and so forth.

Convention	Meaning
KEYWORD	Keywords of SQL, SPL, and some other programming languages appear in uppercase letters in a serif font.

Convention	Meaning
italics	Within text, new terms and emphasized words appear in italics. Within syntax and code examples, variable values that you are to specify appear in italics.
boldface	Names of program entities (such as classes, events, and tables), environment variables, file names, path names, and interface elements (such as icons, menu items, and buttons) appear in boldface.
`monospace`	Information that the product displays and information that you enter appear in a monospace typeface.
`KEYSTROKE`	Keys that you are to press appear in uppercase letters in a sans serif font.
>	This symbol indicates a menu item. For example, "Choose **Tools > Options**" means choose the **Options** item from the **Tools** menu.

Feature, Product, and Platform Markup

Feature, product, and platform markup identifies paragraphs that contain feature-specific, product-specific, or platform-specific information. Some examples of this markup follow:

Dynamic Server

Identifies information that is specific to IBM Informix Dynamic Server

End of Dynamic Server

Windows Only

Identifies information that is specific to the Windows operating system

End of Windows Only

This markup can apply to one or more paragraphs within a section. When an entire section applies to a particular product or platform, this is noted as part of the heading text, for example:

Table Sorting (Windows)

Example Code Conventions

Examples of SQL code occur throughout this publication. Except as noted, the code is not specific to any single IBM Informix application development tool.

If only SQL statements are listed in the example, they are not delimited by semicolons. For instance, you might see the code in the following example:

```
CONNECT TO stores_demo
...

DELETE FROM customer
   WHERE customer_num = 121
...

COMMIT WORK
DISCONNECT CURRENT
```

To use this SQL code for a specific product, you must apply the syntax rules for that product. For example, if you are using DB–Access, you must delimit multiple

statements with semicolons. If you are using an SQL API, you must use EXEC SQL at the start of each statement and a semicolon (or other appropriate delimiter) at the end of the statement.

Tip: Ellipsis points in a code example indicate that more code would be added in a full application, but it is not necessary to show it to describe the concept being discussed.

For detailed directions on using SQL statements for a particular application development tool or SQL API, see the documentation for your product.

Additional Documentation

You can view, search, and print all of the product documentation from the IBM Informix Dynamic Server information center on the Web at http://publib.boulder.ibm.com/infocenter/idshelp/v111/index.jsp.

For additional documentation about IBM Informix Dynamic Server and related products, including release notes, machine notes, and documentation notes, go to the online product library page at http://www.ibm.com/software/data/informix/pubs/library/. Alternatively, you can access or install the product documentation from the Quick Start CD that is shipped with the product.

Compliance with Industry Standards

The American National Standards Institute (ANSI) and the International Organization of Standardization (ISO) have jointly established a set of industry standards for the Structured Query Language (SQL). IBM® Informix® SQL-based products are fully compliant with SQL-92 Entry Level (published as ANSI X3.135-1992), which is identical to ISO 9075:1992. In addition, many features of IBM Informix database servers comply with the SQL-92 Intermediate and Full Level and X/Open SQL Common Applications Environment (CAE) standards.

Syntax Diagrams

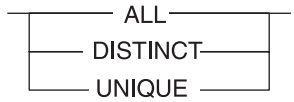
This guide uses syntax diagrams built with the following components to describe the syntax for statements and all commands other than system-level commands.

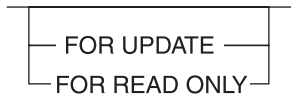
Table 1. Syntax Diagram Components

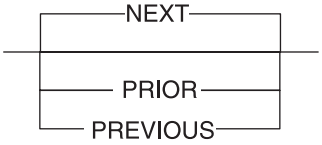
Component represented in PDF	Component represented in HTML	Meaning
	`>>----------`	Statement begins.
	`---------->`	Statement continues on next line.
	`>----------`	Statement continues from previous line.
	`----------><`	Statement ends.
	`--------SELECT----------`	Required item.
	`--+-----------------+---` `  '------LOCAL------'`	Optional item.

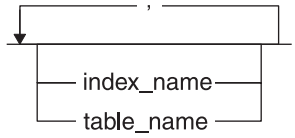
Table 1. Syntax Diagram Components (continued)

Component represented in PDF	Component represented in HTML	Meaning

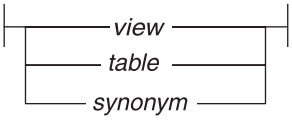
	```---+-----ALL-------+---
	   +--DISTINCT-----+
	   '---UNIQUE------'```
		Required item with choice. One and only one item must be present.

	```---+------------------+---
	    +--FOR UPDATE-----+
	    '--FOR READ ONLY--'```
		Optional items with choice are shown below the main line, one of which you might specify.

	``` .---NEXT---------.
	----+----------------+---
	    +---PRIOR--------+
	    '---PREVIOUS-----'```
		The values below the main line are optional, one of which you might specify. If you do not specify an item, the value above the line will be used as the default.

	``` .-------,-----------.
	  V |
	---+------------------+---
	    +---index_name---+
	    '---table_name---'```
		Optional items. Several items are allowed; a comma must precede each repetition.

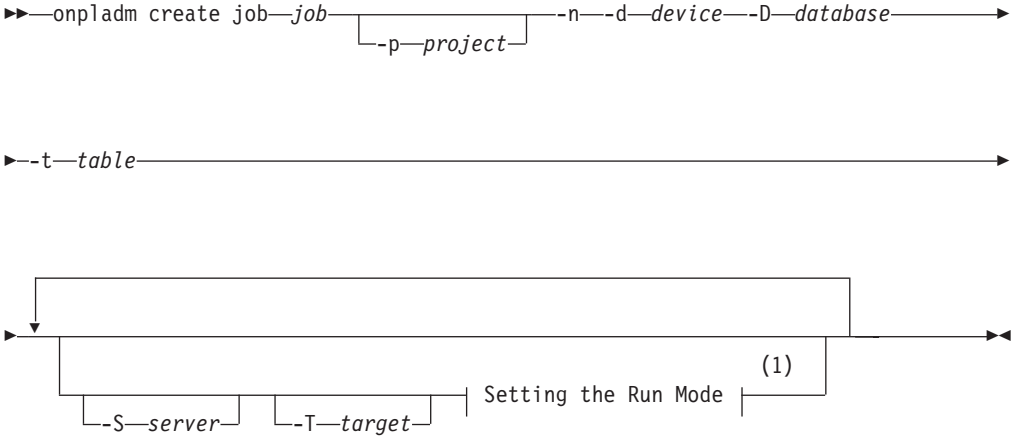
	```>>-| Table Reference |-><```	Reference to a syntax segment.

Table Reference
 
	``Table Reference
	|--+-----view--------+--|
	   +------table------+
	   '----synonym------'```
		Syntax segment.

How to Read a Command-Line Syntax Diagram

The following command-line syntax diagram uses some of the elements listed in the table in Syntax Diagrams.

Creating a No-Conversion Job

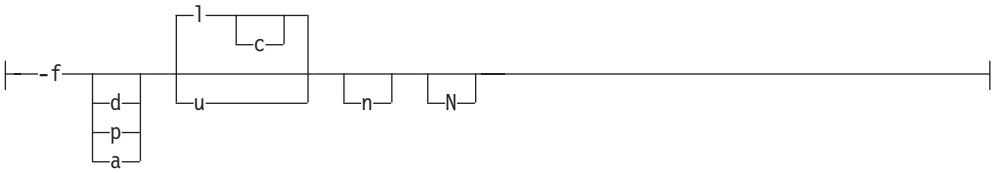


Notes:

1 See page Z-1

The second line in this diagram has a segment named "Setting the Run Mode," which according to the diagram footnote, is on page Z-1. If this was an actual cross-reference, you would find this segment in on the first page of Appendix Z. Instead, this segment is shown in the following segment diagram. Notice that the diagram uses segment start and end components.

Setting the Run Mode:



To see how to construct a command correctly, start at the top left of the main diagram. Follow the diagram to the right, including the elements that you want. The elements in this diagram are case sensitive because they illustrate utility syntax. Other types of syntax, such as SQL, are not case sensitive.

The Creating a No-Conversion Job diagram illustrates the following steps:

1. Type **onpladm create job** and then the name of the job.
2. Optionally, type **-p** and then the name of the project.
3. Type the following required elements:
   - **-n**
   - **-d** and the name of the device
   - **-D** and the name of the database
   - **-t** and the name of the table
4. Optionally, you can choose one or more of the following elements and repeat them an arbitrary number of times:
   - **-S** and the server name
   - **-T** and the target server name
   - The run mode. To set the run mode, follow the Setting the Run Mode segment diagram to type **-f**, optionally type **d**, **p**, or **a**, and then optionally type **l** or **u**.
5. Follow the diagram to the terminator.

Keywords and Punctuation

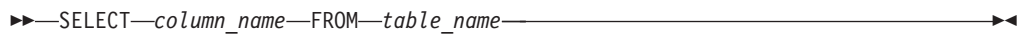
Keywords are words reserved for statements and all commands except system-level commands. When a keyword appears in a syntax diagram, it is shown in uppercase letters. When you use a keyword in a command, you can write it in uppercase or lowercase letters, but you must spell the keyword exactly as it appears in the syntax diagram.

You must also use any punctuation in your statements and commands exactly as shown in the syntax diagrams.

Identifiers and Names

Variables serve as placeholders for identifiers and names in the syntax diagrams and examples. You can replace a variable with an arbitrary name, identifier, or literal, depending on the context. Variables are also used to represent complex syntax elements that are expanded in additional syntax diagrams. When a variable appears in a syntax diagram, an example, or text, it is shown in *lowercase italic*.

The following syntax diagram uses variables to illustrate the general form of a simple SELECT statement.



When you write a SELECT statement of this form, you replace the variables *column_name* and *table_name* with the name of a specific column and table.

IBM Welcomes Your Comments

We want to know about any corrections or clarifications that you would find useful in our publications, which will help us improve future versions. Include the following information:

- The name and version of the publication that you are using
- Section and page number
- Your suggestions about the publication

Send your comments to us at the following e-mail address:

docinf@us.ibm.com

This e-mail address is reserved for reporting errors and omissions in our documentation. For immediate help with a technical problem, contact IBM Technical Support. For instructions, see the IBM Informix Technical Support website at http://www.ibm.com/planetwide/.

We appreciate your suggestions.

Chapter 1. Preparing to Install Dynamic Server on Linux and UNIX Platforms

You must prepare your system before you start the installation process and ensure that you have sufficient authority to perform the installation.

You must log in as root user to perform many of the installation-related tasks.

Complete the following tasks to prepare for installation:

- "Preparing the Operating System for Installation"
- "Upgrading Existing Dynamic Server Installations"
- "Determining System Requirements" on page 1-3
- "Loading Product Files" on page 1-5
- "Creating the Group informix and User informix" on page 1-5
- "Choosing Installation Options" on page 1-6

Preparing the Operating System for Installation

Before you install Dynamic Server, you must apply all patches and install the shared library files that are described in the Machine Notes for your specific operating system.

You must be logged in as root user to complete this task.

To prepare the operating system on your system:

1. Read the Machine Notes, which are in file **ids_machine_notes_11.10.txt** on the installation media. The Machine Notes also contain recommendations for tuning the operating system to support Dynamic Server instances, as well as any specific limitations to your operating system.

   You can also access the Machine Notes from the following Web sites:

   a. The IBM Informix Information Center at http://publib.boulder.ibm.com/infocenter/idshelp/v111/index.jsp
   b. The IBM Informix Library at http://www.ibm.com/software/data/informix/pubs/library/
2. Apply the operating system patches as documented.
3. If you do not have all the required library files for your platform, install them on your system. IBM Informix documentation refers to the installation directory as **$INFORMIXDIR**. If **$INFORMIXDIR** is set in the environment, this will be the default install location.

After installation, the Machine Notes, as well as the Dynamic ServerDocumentation Notes and Release Notes, are in the **$INFORMIXDIR/release** subdirectory.

Upgrading Existing Dynamic Server Installations

If you have earlier versions of Dynamic Server installed, you must use an upgrade path that is appropriate for your environment.

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Refer to the *IBM Informix Migration Guide* for detailed prerequisites and instructions about how to upgrade.

- If you are upgrading from one version of Dynamic Server to another on the same system, you can keep the same **informix** group identifier and **informix** user account. If the group identifier exists locally but user **informix** does not, you must create this user definition manually before running the installation application.
- If you plan to install where a previous version of Dynamic Server is already located, before you upgrade you must back up the database server that you are using, as well as its configuration files.

Choose one of the supported upgrade paths.

- The preferred approach is to install Dynamic Server in a new directory. If you choose a custom installation with this upgrade path, select the Conversion and Reversion Support feature in the Database Server Extensions component so that you can migrate your old database server to the new installation.
- Remove the Dynamic Server binaries from your previous installation but retain other parts of the installation and then install the new version in the same directory. The general process is the following:
  1. Remove the Dynamic Server binaries (**$INFORMIXDIR/bin**, **$INFORMIXDIR/gls**, **$INFORMIXDIR/msg**, **$INFORMIXDIR/extend**, and so on) from your old Dynamic Server instance.
  2. Retain the **onconfig** file, **sqlhosts**, and root chunks.
  3. Install new Dynamic Server version in **$INFORMIXDIR**.

  If you choose a custom installation with this upgrade path, select the Conversion and Reversion Support feature in the Database Server Extensions component.
- If you need to install Dynamic Server, version 11.10 over an existing Dynamic Server installation, you risk conflicts among directories and Informix-related services on your system. If you use this installation method, you must install version 11.10 with all features (typical installation mode). After you install Dynamic Server, you can remove one or more features to minimize the size of the installation.

If you used any of the following methods in past releases to redistribute Dynamic Server or to selectively remove any of its features, it is recommended that you use the new Deployment Wizard to do those tasks with this release. If you want to use the deprecated methods, refer to the documentation that came with the earlier release of the product for information about using those methods.

Table 1-1. Deprecated Installation Methods

Installation Method	Products Installed	Reasons to Use	Prerequisites
Extract with command-line script	Use to install database server, Client SDK, or Informix Connect individually	You use the extraction with command-line installation alternative when you want to install the product to redistribute it or when you want to save space or time on subsequent installations.	

Table 1-1. Deprecated Installation Methods (continued)

Installation Method	Products Installed	Reasons to Use	Prerequisites
Invoke a `jar` file directly	Use to install all components of Dynamic Server, database server only, Client SDK, Informix Connect, or Informix JDBC Driver with product-specific command	Provides a faster installation method than extraction from the command-line script (you can exclude binaries for Dynamic Server features that you do not want to install) and supports custom installation	To use this installation option, you must have the required Java™ Runtime Environment (JRE) version at release 1.4.2 or higher

Determining System Requirements

Before you install any products, make sure your system meets all the requirements.

Read the following topics and make sure that your system meets all requirements:

- "Disk Space Requirements for IBM Informix"
- "Extracting JRE from the Installation Media Manually" on page 1-4
- "Choosing an Installation Directory: $INFORMIXDIR" on page 1-8
- "Choosing Installation Options" on page 1-6

Disk Space Requirements for IBM Informix

The minimum size that the database server installation requires is about 400 megabytes.

A typical installation of Dynamic Server without other IBM Informix products requires approximately 400 megabytes (MB).

Client SDK requires approximately 150 MB.

In addition to the Dynamic Server product space requirements listed above, ensure that you have 50 MB free space available in your temporary directory (**/tmp** by default) before installation if you are using the Java Runtime Environment (JRE) that is bundled with the installation application. The JRE is extracted from the installation media if your system does not have it, and it is removed after installing products and features.

If you are using a JRE already present on the host server, you need less than 1 MB for Java.

Java Runtime Environment

Remember to keep the IBM Informix installation media after you install a product because it contains the Java Runtime Environment version that you need for all uninstalling operations and for making changes to the current installation.

Important: You are advised to keep the installation media that you are using so that you can extract the JRE from the media if necessary.

Installation and uninstallation, including changing Dynamic Server features on a current instance, require certain types of Java Runtime Environment (JRE) at version 1.4.2 or higher. The installation media has the required JRE version, and it will automatically be used for most operations in which you install or uninstall IBM Informix products and components.

When you launch the installation application with the media, it searches your system to determine if the required JRE version 1.4.2 or later is on your system.

- If you have the required JRE on your system already, the installation application uses that JRE instance.
- If the application does not detect the required JRE version on your system, it automatically extracts the correct JRE version from the **.jvm.bin** file and loads it to the temporary directory (**/tmp** by default). The installation application automatically removes the JRE files from the temporary directory. Note that JRE remains on the installation media. Any time that an IBM Informix application automatically copies JRE files to your system to install or reinstall products or features, the JRE files are automatically deleted from the temporary directory after the operation is complete.

Uninstalling IBM Informix Products and Removing Features

Uninstalling one of the products or removing features requires you to have the JRE on your system before you launch the uninstall application. The task of obtaining the JRE is documented in "Extracting JRE from the Installation Media Manually." If you know that you have a valid version of the JRE on your system, you do not need to manually extract the JRE. In any case, your system needs to be set up so that the uninstallation is pointed to the JRE that works for removing any IBM Informixproducts or features.

Before you can use the `uninstallserver` command for removing Dynamic Server or its features, do *one* of the following tasks

- Modify the PATH environment variable. Set the PATH variable using either of the following commands:

  Bourne shell:

  ```
  PATH=your_JRE_path/bin:$PATH; export PATH
  ```

  C shell:

  ```
  setenv PATH your_JRE_path/bin:$PATH
  ```

- Use the `-javahome` parameter:

  ```
  ./uninstallserver -javahome your_JRE_path
  ```

If you choose to use `uninstall.jar` to remove Dynamic Serveror specific features, your PATH environment variable must contain the location of the valid JRE.

You will also need a correct version of JRE 1.4.2 or later to uninstall Client SDK, Informix Connect, or Informix JDBC Driver.

See "Removing IBM Informix Products and Features" on page 5-2 for more information about removing Dynamic Server or its features.

Extracting JRE from the Installation Media Manually

Extract Java Runtime Environment (JRE) from the installation media to a working directory before performing uninstallation operations if necessary.

See "Java Runtime Environment" on page 1-3 and "Removing IBM Informix Products and Features" on page 5-2 to determine if you need to complete this task.

The JRE is included in the root directory of the installation media. The JRE filename is **.jvm.bin** and it is platform specific. The directory where you extract JRE must have at least 50 MB of free disk space.

To install JRE from the installation media:

1. Run the `.jvm.bin` command from the location where you want to extract the JRE and point to the location of the **.jvm.bin** file on the installation media:
   - For example, if you want to install the JRE in `/home/pd/temp/` and the **.jvm.bin** file is in a CD-ROM directory named `Java`, you would run the following command:
   - `/home/pd/temp% CDROM/Java/.jvm.bin`
2. Set the switch to the directory where you are extracting the JRE by passing the corresponding argument when you launch the uninstallation application.
   - For example, if you extracted the JRE to `/home/pd/temp/`, you would launch the uninstallation application with the following switches:
   - **Linux® x86 64-bit version:**: Use the `-javahome` switch by passing `/home/pd/temp/jre` as the argument.
   - **Other Linux versions and UNIX®:** Use the `-javahome` switch by passing `/home/pd/temp` as the argument.

Loading Product Files

Before you install, you must load the product files.

Confirm that you are logged in as root user.

The directory where the media files reside, referred to as *media_location* in this documentation, can be on a disk device, such as a CD, or on a fileserver where the downloaded source file is uncompressed.

To load the product files:

1. Access the installer directly from a CD.
2. To access the installer from a fileserver, enter the appropriate **tar** or other command:
   - On some UNIX platforms you can use the following **tar** command to place the install application in the current directory:

     `tar xvf filename`

     In this command, *filename* is the path name of the **tar** file that contains the product files.

Creating the Group informix and User informix

Typically these objects can be created with the installation application; however, in some cases you need to create them manually before you start the installation application.

Log in as root user.

You need to create the objects before you run the installation application in the following situations:

- You want to specify a particular identifier (ID) number.
- The group **informix** exists on the system; however, the user **informix** does not. In this case, you need to create the user only.

To create the group informix and user informix:

1. Create the group **informix** by using the **groupadd** utility followed by the name of the group, in this format:

   ```
   groupadd n informix
   ```

   where *n* is an unused identifier (ID) greater than 100.
2. Create the user **informix** by using the **useradd** utility followed by the group (**informix**) and user name (**informix**) in this format:

   ```
   useradd -u n -g informix informix
   ```

   Important: Only add users to the group **informix** if the users need administrative access to the database server.
3. Create a password for user **informix** by running the **passwd** utility.

Group informix

Group **informix** must exist on the system for the user accounts required to install and administer Dynamic Server.

The **informix** group definition establishes the set of user accounts to which you want to grant administrative access to the database server. User **informix** must be part of this group.

If you are installing Dynamic Server for the first time on your system, you can create group **informix** manually before you run the installation application. Alternatively, when you run the install application for Dynamic Server bundled with other IBM Informix products, the application can create it automatically.

User informix

User **informix** is a user account with main authority over a Dynamic Server instance.

User **informix** is required because it has the unique user identifier (UID) to manage and maintain Dynamic Server instances and databases on the system. The password for this user account must be protected. Only let trusted database and security administrators log in as user **informix**.

If you are installing Dynamic Server for the first time on your system, you can create user **informix** manually before you run the installation application. Alternatively, when you run the install application for Dynamic Server bundled with other IBM Informix products, the application can create it automatically in most situations. The situation when this install application cannot create user **informix** is when *group* **informix** already exists on your system.

Choosing Installation Options

You can choose from several installation options to install Dynamic Server, its features, and related products.

When you install Dynamic Server or related products, you can use various installation options to install the products to suit your installation environment and goals:

- "Typical and Custom Installation Options" on page 1-8
- "Deployment Wizard" on page 1-9
- "Installable Features of Dynamic Server" on page 1-9
- "Demonstration Database Server" on page 1-11

- "Role Separation" on page 1-13
- "Manifest File and Installed Files List" on page 1-13
- "Response File"

Installation Methods

There is a launchpad to help you install Dynamic Server and related products. There are also installation applications that allow you to install products separately.

You can install Dynamic Server products using one of various methods.

Launchpad
The `ids_install` command launches a user interface that you can use to install Dynamic Server and one or more products that are bundled with it. You can select which products you want to install, and the appropriate installation applications are launched sequentially. If you prefer, you can run an installation command in silent mode. You can use a default configuration file for silent installation, **server.ini** or **bundle.ini**, both of which are included with the installation media. The launchpad also provides quick links to the release notes, the *Dynamic Server Installation Guide*, and the IBM Informix Information Center.

Installation Applications
The `installserver`, `installconn`, and `installclientsdk` commands start installation applications that you can use to install and configure individual products. You can run these commands in silent mode. You can use a default configuration file for silent installation, **server.ini** or **bundle.ini**, both of which are included with the installation media. If you prefer, you can record your custom installation configuration in a new response file. That response file can be used with the same installation application at a later time for silent installations.

The launchpad and the installation applications start in console mode unless you specify that you want them to start in GUI mode.

Response File

You need a response file to install IBM Informix products in silent mode.

The response file contains installation settings for a product and its features.

Use one of the following response files, depending on your installation goals.

Default response files
Use one of the **.ini** files that are on the installation media to install with default values. Use the `server.ini` file to install only Dynamic Server and its features, or the `bundle.ini` file to install Dynamic Server and other IBM Informix products bundled with it.

Self-customized response files
Copy either the **server.ini** or **bundle.ini** file to your system, rename the file, and use it as a template for customizing your installation settings. Do not modify the original `server.ini` and `bundle.ini` files.

Response files generated by a product installation program
If you want to use the same installation settings in more than one directory or computer, first install a product in GUI- or console-mode to capture the installation settings in a response file. Specify the `-record` option. (When used with the ids_install command, the **-record** option will record a Typical

or complete installation of all products. You cannot use the **-record** option for a custom setup with the ids_install command.) *Do not* name your response file **server.ini** or **bundle.ini**. Use your **.ini** file to perform a silent installation elsewhere.

Choosing an Installation Directory: $INFORMIXDIR

The directory for the Dynamic Server installation, referred to as $INFORMIXDIR, can be created before or during execution of the install application.

The Dynamic Server install application and the documentation refer to the installation directory as $INFORMIXDIR.

You can accept the default $INFORMIXDIR path provided when you run the installation application.

Alternatively, you can choose a different directory from the default. If you have a particular directory to which you want to install, prepare this directory following these guidelines:

- You need to log in as root user to create the directory.
- The directory must be local or an NFS-mounted file system using regular operating-system files.
- The directory should be empty before you install IDS there.
- To preserve product files of earlier versions, create separate directories for each version of your IBM Informix products.
- The $INFORMIXDIR path, including path separators, should not exceed 200 characters.

Typical and Custom Installation Options

Typical setup uses existing defaults, while custom setup lets you exclude product features to minimize the installation footprint (disk size).

Using the installation application, you can choose a typical or custom setup for installing Dynamic Server and related products to your system.

Typical installation

A typical installation requires the most disk space and memory. It is the recommended installation for most database servers. A typical installation setup loads your system with the core of Dynamic Server (the base server) and all associated feature sets (components). Some IBM Informix products refer to this type of installation as a *complete* installation.

Custom installation

A custom installation gives you the flexibility to select what is installed on your system. For Dynamic Server on Linux and UNIX, you can choose which features you want to install. Some features are mutually dependent, and must be installed with one another. The installation application enforces these dependencies. The deployment wizard relies on the custom setup to configure an installation that contains only what your application or deployment requires.

After installation, you can install additional features, reinstall features, or remove installed features without changing anything else in the base server. Which setup type you choose depends on your system architecture, your technical expertise, and the needs of your implementation.

Deployment Wizard

The deployment wizard is a part of the custom install application that allows you to include or exclude Dynamic Server features and functions.

Some customers use Dynamic Server to embed a database within their applications. Many customers work with only a part of the capabilities available to them in Dynamic Server. For example, one customer might use Enterprise Replication and other features, but might never need to use the extra locales that are part of the Global Language Support (GLS) feature. A different customer might need to use GLS, but would use some but not all of the Performance Monitoring Utilities.

Dynamic Server consists of discrete, installable features from which you can select to install only those that your application and deployment require. Some features are mutually dependent, and must coexist in the instance. The wizard enforces these dependencies. The wizard automatically includes dependent features or informs you when a combination of selections is not supported. This flexibility benefits those who want to minimize the footprint on their systems, as well as those who want to embed Dynamic Server in another system or application.

To use the deployment wizard, you must select the custom setup in the install application. You can easily modify your installation by adding or removing features after Dynamic Server is installed without having to install the base server again. Adding or removing features after you have installed Dynamic Server does not affect the integrity of your system. The installer maintains a manifest file, which logs information about what features are currently installed.

All IBM Informix features must run on the same version as the base server.

Installable Features of Dynamic Server

You can install the following features with the base server: Dynamic Server Extensions, Global Language Support, Backup and Restore, Demos, Data-Loading Utilities, Enterprise Replication, and Administrative Utilities.

Base Server

The database server for basic database administration operations without optional extensions, libraries, or utilities. The minimum size of a Dynamic Server installation is approximately 100 megabytes (MB). The base server alone does not include Global Language Support, which is a standalone feature as of release 11.10.

Support for the DRDA® protocol is included in the Base Server. To use the Distributed Relational Database Architecture™ (DRDA) support functionality with IBM Data Server .NET Provider or IBM Data Server JDBC Driver, you must obtain and install IBM Data Server .NET Provider or IBM Data Server JDBC Driver.

BladeManager is now part of the base server, and therefore is in every Dynamic Server installation.

Features

The following list describes features in Dynamic Server, version 11.10. You can view the size of each component and feature on your system before you actually proceed with installation when you select the component or feature in GUI and console installation setups.

Database Server Extensions
Database administration tools and programming extensions

J/Foundation
For writing user-defined routines in the Java programming language

Built-in DataBlade™ Modules
For providing large-object location management, MQ transaction support, binary user-defined types, the hierarchical node data type, basic text search, and Web Feature Services for spatial data

Conversion and Reversion Support
Framework required for migrating to and from other versions of the database server

Global Language Support
The feature files to support languages, cultural conventions, and code sets. These files are not required if your default locale uses American English, which is the default language in Dynamic Server when no GLS feature is installed.

West European and Americas
Danish, Dutch, English, Finnish, French, German, Icelandic, Italian, Norwegian, Portuguese, Spanish, and Swedish locales

East European and Cyrillic
Czech, Polish, Russian, and Slovak locales

Chinese
Traditional Chinese and simplified Chinese locales

Japanese
Japanese locales

Korean
Korean locales

Other Thai locales

Backup and Restore
Feature utilities for backing up and restoring database server data

ON-Bar Utilities
`onbar` is an editable shell script that starts the onbar-driver. Use the `onbar` script , as well as its related commands, to customize backup and restore operations and check the storage-manager version.

Informix Interface for Tivoli® Storage Manager
For implementing XBSA functions that use Tivoli Storage Manager with ON-Bar

Informix Storage Manager
For managing external storage devices and media that contain backups

archecker Utility
For verifying backups and restoring portions of a database, a table, a portion of a table, or a set of tables

Demos
Demonstration databases and examples

Data-Loading Utilities
For efficient loading and unloading of data in certain configurations

onunload and onload Utilities
For moving data quickly from one operating system or database server to another without changing the database schema. Use the **onunload** utility to unload data from the specified database or table onto a tape or a file on disk in disk-page-sized units. Use the **onload** utility to re-create the database or the table from the tape or file that was created by the **onload** utility.

dbload Utility
For loading data into databases or tables that IBM Informix products created. Use the **dbload** utility to transfer data from one or more text files into one or more existing tables.

High-Performance Loader (HPL)
For loading or unloading large quantities of data efficiently to or from a database. Use HPL to exchange data with tapes, data files, and programs, and convert data from these sources into a format compatible with Informix databases. Also use HPL to manipulate and filter the data as you perform load and unload operations.

Enterprise Replication
For replicating data between Dynamic Server database servers

Administrative Utilities
Additional administrative utility feature sets

Performance Monitoring Utilities
This feature has two utilities. Use **ON–Monitor** to monitor the disk spaces and data of the database server. Use **onperf** as a graphical monitoring tool to track most of the metrics that **onstat** provides but with more options for viewing and saving data.

Miscellaneous Monitoring Utilities
For displaying the logical log by using the **onlog** utility or managing the database server with SNMP by using the **onsnmp** utility

Auditing Utilities
For administering audit masks, trails, and other auditing information on the database server by using the **onaudit** and **onshowaudit** utilities.

Database Import and Export Utilities
For unloading a database into text files, creating and populating a database from those text files, or unloading a database schema into a text file

Demonstration Database Server

You can create a demonstration database server to verify the hardware configuration settings, start using Dynamic Server, and learn more about the product.

Options in the Install Application

The install application asks if you want to create a demonstration database server instance.

- **Yes**: Choosing this option allows you to accept the default **onconfig.demo** file that is in the installation media or provide your own **onconfig** file to create the demonstration database server. After installation, the database server is initialized automatically.
- **No**: If you choose this option, then you need to configure and initialize the database server manually after installation is complete.

onconfig File

The installed database server requires the presence of a configuration file (**onconfig** file), with certain environment variables pointing to the file, in order for you to begin using Dynamic Server. Creating the demonstration database when you run the install application can automate establishment of a valid configuration file. By selecting to create the demonstration database server, you can have a working **onconfig** file installed on your system.

Setup of the Dynamic Server Demonstration Database

The following information about the default demonstration database server can help you decide whether to let the install application create it automatically:

- The demonstration database server should have on your system a server number between 0 and 255 that is not shared with another instance. If all the valid server numbers are used by other instances and you want to install the demonstration server, it is recommended that you make one of the server numbers available only for the Dynamic Server demonstration instance before launching the installation.
- The installation application automatically searches for and assigns a unique, unused server number for your demonstration database server. You can also specify a server number between 0 and 255. If you enter a server number that is used by another instance, the installation application does not accept it at first and does the following:
  1. The installation application searches for an unused server number between 0 and 255.
  2. If the application finds a valid, unused server number, then it assigns the demonstration server to this number. The application displays a message on the screen informing you of the number that is used.
  3. If your system does not have an unused server number, then the number that you entered will be used and a warning message appears.

  Any messages generated by the installation's assignment of a server number for the demonstration server are also recorded in **$INFORMIXDIR/tmp/log.txt**.
- If you select the shipped **onconfig** file, the database name will be named `demo_on` by default and the **ONCONFIG** environment variable is set to the sample **onconfig** file located at **$INFORMIXDIR/etc/onconfig.*demo_server_name***.
- When the installation program initializes the demonstration database server, four databases are built automatically: `sysmaster`, `sysuser`, `sysutils`, and `sysadmin`.
- The message log regarding installation of the demonstration database server is located in **$INFORMIXDIR/tmp/log.txt**.
- The install application creates additional configuration and log files to support the database server in **$INFORMIXDIR/demo/server**.. For information about the configuration settings for the database server, see the **$INFORMIXDIR/demo/server/profile_settings** file.

- **INFORMIXSQLHOSTS** will default correctly to **$INFORMIXDIR/etc/sqlhosts**. If you change the name or location of this file, then you must set the **INFORMIXSQLHOSTS** variable to reflect the new name and path.

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 certain group identifiers (group IDs) on your system manage and examine these records to ensure additional security.

Two roles must be associated with group IDs to enable role separation:

Database System Security Officer (DBSSO)
Controls what the auditing subsystem monitors and which actions database users can perform

Auditing Analysis Officer (AAO)
Controls whether auditing occurs, maintains the audit log files, and analyzes the audit records of those database activities that the DBSSO mandates to be audited

Important: If you enable role separation, you cannot turn it off after Dynamic Server is installed. To remove role separation, you must uninstall the database server and reinstall it without role separation.

The installation application asks you whether to set up role separation or not. The group **informix** is the default group associated with the two roles. If you want to specify group IDs rather than accept the default ones, verify that the groups that you plan to specify in the role-separation panel exist on your system before you launch the installation application.

Outside of the installation application, establish an audit-only user account for each individual who acts as a DBSSO or AAO. For example, a person with DBSSO responsibilities could have the user **DBSSO1** account, and also have the user **garcia5** account for general database server access.

Manifest File and Installed Files List

Two dynamic system files record installation information.

Manifest file
$INFORMIXDIR/etc/manifest.inf

Installed files list
$INFORMIXDIR/etc/IIFfiles.installed on platforms using J/Foundation and $INFORMIXDIR/etc/IDS2000files.installed on platforms not using J/Foundation

Important: Do not modify the content of these files. These "log files" can help you quickly see what features are currently installed, as well as a history of such activity.

Chapter 2. Installing Dynamic Server on Linux and UNIX Platforms

You can choose from several installation methods to install Dynamic Server, its features, and related products.

Ensure that you prepare your system before you install any programs.

Install Dynamic Server and any related products that you need by using any of the following information:

- "Installing Dynamic Server Quickly with Defaults"
- "Installing Dynamic Server with Selected Features" on page 2-2
- "Installation Commands for Dynamic Server and Related Products" on page 2-3
- "Performing an Unattended Dynamic Server Installation" on page 2-5
- "Installation Commands: Silent Mode" on page 2-6
- "Testing the Demonstration Database Server" on page 2-8
- "Deploying Dynamic Server to Multiple Computers" on page 2-9
- "Installing and Maintaining Client Products" on page 2-9

Installing Dynamic Server Quickly with Defaults

You can install Dynamic Server and all its features quickly by using the typical setup for installation.

Make sure that your system is ready for installation:

- Chapter 1, "Preparing to Install Dynamic Server on Linux and UNIX Platforms," on page 1-1

To install Dynamic Server on Linux or UNIX, log in as root user and complete the following steps:

1. From a command prompt, run the installation command for the products that you want to install and specify the options for the commands as described in "Installation Commands for Dynamic Server and Related Products" on page 2-3. The commands are in the directory where the media files reside, referred to as *media_location* in this documentation. The installation application runs in console mode by default, unless you specify GUI mode when you issue the command.

   media_location/**ids_install**
   Installs Dynamic Server and its features, as well as one or more related products: Informix JDBC Driver, and either Client SDK or Informix Connect.

   media_location/**SERVER/installserver**
   Installs Dynamic Server and its features.
2. Follow the instructions in the installation application.
   a. Read and accept the license to proceed with the installation.
   b. You can install into the default directory or choose a different directory.
   c. Select the products that you want to install, if that is an option.
   d. Choose **Typical** setup to install the product with all features.

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e. *Optional:* Choose whether to enable role separation for auditing procedures.

   Important: If you enable role separation, you cannot turn it off after the product is installed. To remove role separation, you must uninstall the database server and reinstall it without role separation. To learn more about role separation, see "Role Separation" on page 1-13.

f. *Optional:* Select whether to create a demonstration database server instance.
   - If you do not choose to create one, you can configure and initialize the database server manually after installation is complete.
   - If you choose to create one, you can use the default configuration file, or provide your own configuration file. After installation, the database server instance is initialized automatically. For more information, see "Demonstration Database Server" on page 1-11.

g. **Important**: Verify that the installation summary accurately reflects your installation options, and that the server has enough free space for the total installation. Go back to adjust the installation options as necessary.

3. Complete the installation and exit the installation application.

After the installation application loads the files on your system, you can test that the database server functions.

Installing Dynamic Server with Selected Features

Use the custom setup to install Dynamic Server with only the features that you need.

Make sure that your system is ready for installation:

- Chapter 1, "Preparing to Install Dynamic Server on Linux and UNIX Platforms," on page 1-1

To install Dynamic Server on Linux or UNIX, log in as root user and complete the following steps:

1. From a command prompt, run the installation command for the products that you want to install and specify the options for the commands as described in "Installation Commands for Dynamic Server and Related Products" on page 2-3. The installation application runs in console mode by default, unless you specify GUI mode when you issue the command.

   media_location/**ids_install**
   Installs Dynamic Server and its features, as well as one or more related products: Informix JDBC Driver, and either Client SDKor Informix Connect.

   media_location/**SERVER/installserver**
   Installs Dynamic Server and its features.

2. Follow the instructions in the installation application.
   a. Read and accept the license to proceed with the installation.
   b. You can install into the default directory or choose a different directory.
   c. Select the products that you want to install, if that is an option.
   d. Choose **Custom** setup to install the product with selected features. For more information about the base server and the list of features, see "Installable Features of Dynamic Server" on page 1-9.
   e. *Optional:* Choose whether to enable role separation for auditing procedures.

Important: If you enable role separation, you cannot turn it off after the product is installed. To remove role separation, you must uninstall the database server and reinstall it without role separation. To learn more about role separation, see "Role Separation" on page 1-13.

f. *Optional:* Select whether to create a demonstration database server instance.
   - If you do not choose to create one, you can configure and initialize the database server manually after installation is complete.
   - If you choose to create one, you can use the default configuration file, or provide your own configuration file. After installation, the database server instance is initialized automatically. For more information, see "Demonstration Database Server" on page 1-11.

g. **Important**: Verify that the installation summary accurately reflects your installation options, and that your system has enough free space for the total installation. Go back to adjust the installation options as necessary.

3. Complete the installation and exit the installation application.

After the installation application loads the files on your system, you can test that the database server functions. You can also remove features, reinstall features, or add features that you chose not to install earlier. You can modify the features by using the installation application without affecting the integrity of the base server.

Installation Commands for Dynamic Server and Related Products

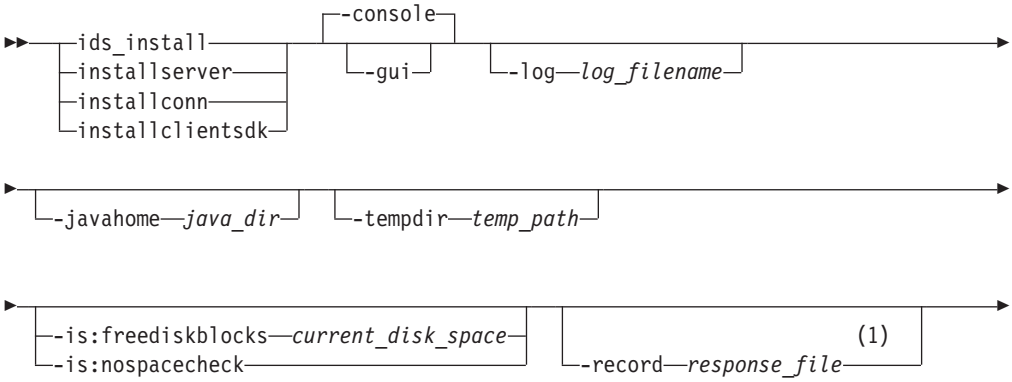
Syntax and usage for ids_install, installserver, installconn, and installclientsdk commands.

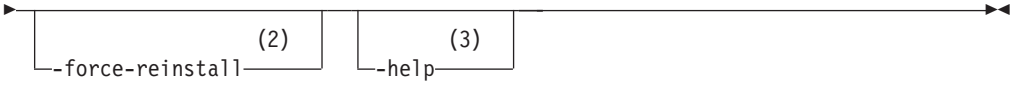
Purpose

These commands install Dynamic Server with related products, or they install Dynamic Server and related products separately, in either console or GUI mode. If you want to supply installation options in a file instead of interactively providing them during the installation, see "Installation Commands: Silent Mode" on page 2-6.

Run the following commands as root user.

Syntax





Notes:

1 When used with the ids_install command, the **-record** option will record a Typical or complete installation of all products. You cannot use the **-record** option for a custom setup with the ids_install command.

2 **Important**: Use with caution. Overwrites existing installed features or complete Dynamic Server *without* checking for version compatibility.

3 Do not use the **-help** option simultaneously with other options when you run the command. The **-help** option invalidates any other options put into the same command line.

Parameters

Table 2-1. Syntax Elements

Element	Purpose	Restrictions
java_dir	Specifies the JRE on the host computer to use during installation	The JRE must be version 1.4.2 or higher.
log_filename	Specifies a non-default log filename	None
temp_path	Specifies the path to temporary directory. If you receive an error during file extraction that there is not enough space in the **/tmp** directory, set the `-tempdir` option to a different temporary directory.	None
current_disk_space	Specifies the amount of free disk space that exists on the destination file system, in number of 512-byte blocks.	None
response_file	Specifies the name for the response file. The response file is a customized **.ini** file that you can use for silent installations elsewhere.	Required if you specify the **-record** option.

The following table describes the installation application options.

Table 2-2. Installation Options

Option	Meaning
ids_install	Install Dynamic Server and related products.
installserver	Install Dynamic Server only.
installconn	Install IConnect only.
installclientsdk	Install Client SDK only.
-console	Start the installation program in console mode. This is the default mode.
-gui	Start the installation program in GUI mode.
-log *log_filename*	Log installation program progress in the specified file.
-javahome *java_dir*	Use specified JRE. To force the installation program to use the bundled JRE and ignore any local JREs, use `-javahome none`.

Table 2-2. Installation Options (continued)

Option	Meaning
-tempdir *temp_path*	Use specified temporary directory.
-is:freediskblocks *current_disk_space*	Use to specify the amount of current free disk space on the destination file system, in case the system fails to correctly report free disk space.
-is:nospacecheck	Use to prevent the installation program from checking if there is adequate space for product installation files. **Use with caution:** If there is not enough space to extract the temporary files, the installation program will fail.
-record *response_file*	Records the installation settings in a response file that can be used for silent installations of the same configuration of Dynamic Server (specifically, the base server and its features).
-force-reinstall	**Use with caution**: Overwrites existing installed features or the complete Dynamic Server installation *without* checking for version compatibility (for example, checking if the database server being installed is an older version than the one that is already installed in the install location). **Important**: Users are responsible for the changes at the target if this option is used.
-help	Display list of supported options and their functions.

Note: The JRE is included on the installation media but it is not installed. During installation, the JRE is temporarily extracted to your system and then it is removed after the installation is complete.

Performing an Unattended Dynamic Server Installation

To install a product on your system without interactively providing installation information, run the install application in silent mode.

The silent installation requires that you have a local copy of a response file (**.ini**) that contains the installation options with preset values.

To install in silent mode, perform the following steps as root user:

1. From a command prompt, change directory to $INFORMIXDIR.
2. Start the product installation application in silent mode with the appropriate options set.
   - If you do not specify a response file with the **-options** flag, a default response file is used: **bundle.ini** for `ids_install` and **server.ini** for the `installserver` command.
   - You must accept the license for the silent installation to occur. Use the **-acceptlicense=yes** option when you start the installation application if the license agreement is not accepted in the **.ini** file.

Installation Commands: Silent Mode

A silent installation requires no user interaction with the installation program after you run the command.

Run the following commands as root user.

Notes:

1 This option is required *only* if you did not set `-G licenseAccepted=true` in the **.ini** file used for installation. By default, the license is accepted if you use the **bundle.ini** or **server.ini** file.

2 The default **.ini** file for `ids_install` is **bundle.ini**. The default **.ini** file for `installserver` is **server.ini**.

3 **Important**: Use with caution. Overwrites existing installed features or the complete Dynamic Server installation *without* checking for version compatibility.

4 Do not use the `-help` option simultaneously with other options when you run the command. The `-help` option invalidates any other options put into the same command line.

Table 2-3. Elements for Silent Installation Options

Element	Purpose	Restrictions
optionsfile	Refers to the .ini file containing preset installation properties; substitute this with your real .ini file name.	Do not name the file server.ini or bundle.ini. Those are the names of the shipped .ini files.
javadir	Specifies the JRE on the host computer to use during installation	The JRE must be version 1.4.2 or higher.
logfilename	Specifies a non-default log filename	None
temp path	Specifies path to temporary directory. If you receive an error during file extraction that there is not enough space in the `/tmp` directory, set the `-tempdir` option to a different temporary directory.	None
current_disk_space	Specifies the amount of free disk space that exists on the destination file system, in number of 512-byte blocks.	None
install dir	Specifies the installation directory.	None

The following table describes the silent installation options.

Table 2-4. Silent Installation Options

Option	Meaning
ids_install	Install Dynamic Server and selected related products. This command is in *media_location*.
installserver	Install Dynamic Server only. This command is in *media_location*/SERVER
installconn	Install IConnect only. This command is in *media_location*/ ICONNECT
installclientsdk	Install Client SDK only. This command is in *media_location*/CSDK
-silent	Install in silent mode.
-acceptlicense=yes	Accept license agreement.
-options *optionsfile*	Use specified .ini file containing preset installation values. This option is not required if you want to use the default .ini file.
-log *logfilename*	Log installation program progress.
-javahome *javadir*	Use specified JRE.
-tempdir *temp path*	Use specified temporary directory.
- P installLocation= *install dir*	Use to set the installation directory from the command line.
-is:freediskblocks *current_disk_space*	Use to specify the amount of current free disk space on the destination file system, in case the system fails to correctly report free disk space.
-is:nospacecheck	Use to prevent the installation program from checking if there is adequate space for product installation files. **Use with caution:** If there is not enough space to extract the temporary files, the installation program will fail.

Table 2-4. Silent Installation Options (continued)

Option	Meaning
-debug	Use to store all internal messages to a log file for debugging installation problems.
-force-reinstall	**Use with caution**: Overwrites existing installed features or the complete Dynamic Server instance *without* checking for version compatibility (for example, checking if the server being installed is an older version than the one that is already installed in the install location). **Important**: Users are responsible for the changes at the target if this option is used.
-help	Use to display a list of supported options and their purpose.

Examples

The following command installs Dynamic Server with the defaults that are configured in the **server.ini** file that comes with the product. You must accept the license when you run the command if you use the default configuration file.

```
media_location/SERVER/installserver -silent -acceptlicense=yes
```

The following command installs Dynamic Server with the settings that were captured in the response file, **mycustomserver.ini**. That file was generated during a server installation that was initiated with the `./installserver -gui -record mycustomer.ini` command. Note that in that previous installation, the license was accepted in the installation wizard (because the `-acceptlicense=yes` option was not passed with the command). Therefore, you do not need to specify the `-acceptlicense=yes` option during the silent installation.

```
media_location/SERVER/installserver -silent -options mycustomserver.ini
```

Testing the Demonstration Database Server

To verify that the demonstration database server functions, you can run the DB–Access utility.

To test that the demonstration database server functions, do the following:

1. Initialize or start the demonstration database server.

   "Initializing and Starting the Dynamic Server" on page 3-3

2. Run the following commands from a command prompt:

   ```
   $ dbaccessdemo
   $ dbaccess stores_demo
   ```

   If the installation was successful, the **dbaccessdemo** script interacts with the database server to create and populate the demonstration database, called `stores_demo` in this example.

You can use the **DB-Access** utility to access databases with SQL.

If the demonstration database server is not functioning, check the log file at **$INFORMIXDIR/tmp/log.txt** for possible tips about what is causing the problem. You can also use this log file to verify the server number on which the demonstration database server is set to run.

Deploying Dynamic Server to Multiple Computers

Deploying Dynamic Server is a two-phase process. During a custom installation on one computer, you generate a response file. On other computers, you use the response file to install the same configuration in silent mode.

You must be logged in as root user to run installation applications. Make sure that your system is ready for installation:

- Chapter 1, "Preparing to Install Dynamic Server on Linux and UNIX Platforms," on page 1-1

To deploy Dynamic Server on multiple computers:

1. On one computer, use an application installation to create a custom Dynamic Server installation instance and to record the installation settings.
   - Start a product installation application in GUI or console mode and specify the **-record** option to generate a response file. You cannot generate a response file for the bundle installation. When used with the ids_install command, the**-record** option will record a Typical or complete installation of all products. You cannot use the **-record** option for a custom setup with the ids_install command.
   - *Do not* call the response file **server.ini** or **bundle.ini**.
   - For more information, see "Installing Dynamic Server with Selected Features" on page 2-2.

   ```
   media_location/SERVER/installserver -gui -record myresponsefile
   ```
2. On another computer, perform a silent installation by using the recorded response file to deploy the installation configuration you completed on the first computer.
   - Start the same product installation application that you used to create the response file; however, start the application in silent mode, not GUI or console mode.
   - Specify the response file (**.ini**) with the **-options** flag.
   - To ensure the installation does not fail because of lack of disk space, specify the amount of current free disk space on the destination file system with the **-is:freediskblocks** flag.
   - For more information, see "Performing an Unattended Dynamic Server Installation" on page 2-5.

   ```
   media_location/SERVER/installserver -silent -options myresponsefile
        -is:freediskblocks current_disk_space
   ```

Installing and Maintaining Client Products

You can install Client SDKor Informix Connectas part of the Dynamic Server installation application, or you can use the client products' installation applications separately.

For detailed information about installing clients in different methods and on different platforms, see *IBM Informix Client Products Installation Guide*.

To install Client SDK or Informix Connect on Linux or UNIX, log in as root user and complete the following steps:

1. From a command prompt, run the installation command for the products that you want to install and specify the options for the commands as described in "Installation Commands for Dynamic Server and Related Products" on page 2-3.
   - *media_location*/ids_install
   - *media_location*/ICONNECT/installconn
   - *media_location*/CSDK/installclientsdk

   The installation application runs in console mode by default, unless you specify GUI mode when you issue the command.
2. Follow the instructions in the installation application.
   - You must accept the license to install the program.
   - You can install into the default directory or choose a different directory.
   - Select the product that you want to install, if that is an option. Select either Client SDK or Informix Connect , not both.
   - If you want to install the product with all defaults, choose typical or complete setup (depending on the installation application you are using). Otherwise, choose the custom setup for more configuration options.
3. Review the summary information before proceeding with the installation and exiting the installation application.

Chapter 3. Configuring a Database Server

The installed database server must be configured for your system's environment.

A demonstration database server created during installation is already configured. But the installation application does not configure other instances of Dynamic Server.

You can configure the database server by completing the following tasks:

- "Setting Environment Variables"
- "Preparing Connectivity Files" on page 3-2
- "Setting Configuration Parameters" on page 3-3
- "Initializing and Starting the Dynamic Server" on page 3-3

You can also use these procedures to change configuration settings for a database server, including the demonstration one.

See the *IBM Informix Dynamic Server Administrator's Guide* and *IBM Informix Dynamic Server Administrator's Reference Guide* for other detailed information about how to set up and configure your system's environment and the database server.

Setting Environment Variables

Set the environment variables after Dynamic Server installation for any instance other than a demonstration database server created while running the installation application.

You must be logged in as root user or with sufficient group or user identifier privileges (usually group or user **informix**) to set environment variables.

To set the environment variables for a Dynamic Server instance:

1. Set the **INFORMIXDIR** variable to the directory where you installed the database server or other IBM Informix products.
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
     ```

   You must set the **INFORMIXDIR** variable and add `$INFORMIXDIR/bin` to the **PATH** environment variable for each user.
3. Set **INFORMIXSERVER** to specify the default database server to which IBM Informix DB-Access or an SQL API client makes an explicit or implicit connection.
4. Set the **ONCONFIG** variable to the name of a valid **onconfig** configuration file. See "Setting Configuration Parameters" on page 3-3 to create or modify your **onconfig** file.
5. If using a locale or language other than the default, set the following:
   - **CLIENT_LOCALE** to specify a nondefault locale.

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- **DBLANG** to specify the subdirectory of `$INFORMIXDIR` that contains the customized language-specific message files that IBM Informix products use.
- Set **DB_LOCALE**.
- Set **SERVER_LOCALE**.

6. Set **INFORMIXSQLHOSTS** to specify the file that contains the `sqlhosts` information. (The default location of this file is **$INFORMIXDIR/etc/sqlhosts**.)
7. Set **TERMCAP** to specify whether IBM Informix DB-Access should use the information in the `termcap` file or the `terminfo` directory. On character-based systems, the `termcap` file and `terminfo` directory determine terminal-dependent keyboard and screen capabilities, such as the operation of function keys, color and intensity attributes in screen displays, and the definition of window borders and graphic characters.
8. Set `$INFORMIXDIR/lib` and any of its subdirectories to specify the shared-library path. 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

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}
```

Preparing Connectivity Files

Prepare the files that the Dynamic Server instance uses to communicate with client applications and with other database servers.

The connectivity information allows a client application to connect to any IBM Informix database server on the network. The connectivity data for a particular database server includes the database server name, the type of connection that a client can use to connect to it, the host name of the computer or node on which the database server runs, and the service name by which it is known.

You must prepare the connectivity information even if the client application and the database server are on the same computer or node. You do not need to specify all possible network connections in the **sqlhosts** file or registry before you start the database server. But to make a new connection available after you have initialized the database server, you must take the database server offline and then bring it back to online mode once again.

1. Edit the **sqlhosts** file as necessary to contain the correct connectivity information with a text editor or equivalent tool.
   - The default location of this file is **$INFORMIXDIR/etc/sqlhosts**.
   - If you set up several database servers to use distributed queries, use either one **sqlhosts** file to which **INFORMIXSQLHOSTS** points or separate **sqlhosts** files in each database server directory.

2. Enter settings in the **/etc/hosts** and **/etc/services** files if your system uses Internet protocol network connections.

For more information about setting connectivity files, see the *IBM Informix Administrator's Guide*.

Setting Configuration Parameters

The configuration file required for Dynamic Server is named **onconfig**.

You must set configuration parameters for any instance other than a demonstration database server that was successfully created in the installation application. If you need to change the configuration parameters for the demonstration database server, then you can follow the **onconfig** procedure below.

A Dynamic Server installation includes a default configuration file named **onconfig.std**. This file has initial values for many of the **ONCONFIG** parameters. You can use **onconfig.std** as a template configuration file that you can copy and tailor to your instance's needs. The path to this file is **$INFORMIXDIR/etc/onconfig.std**.

For information about why to modify the default configuration parameters, refer to *IBM Informix Administrator's Guide* documentation about configuring the database server. The *IBM Informix Administrator's Reference* details all the configuration parameters.

Do not modify or delete **onconfig.std**, which is a template and not a functional configuration.

To prepare the **onconfig.std** file:

1. Copy the **onconfig.std** template file.
2. Modify the *copy* of the template file. **Note:** The directory to which the **DUMPDIR** parameter is set must exist for the server to start.
3. Set the **ONCONFIG** environment variable to the name of your **onconfig** file.

If you omit a parameter value in your copy of the configuration file, the database server either uses default values in **onconfig.std** or calculates values based on other parameter values.

Initializing and Starting the Dynamic Server

Before you can start a database server, you must initialize it once.

Only user **informix** or root user can initialize a database server.

If you chose not to initialize the database server automatically during installation, you can initialize it manually after the product is installed.

To initialize a new server for the *first* time:

Run the `oninit -i`command.

Important: This command overwrites any existing data, so use caution when you run this command on an existing setup.

After you initialize the server once, you can use the `oninit` command to start the database server.

Chapter 4. Setting up Multiple Residency

You can set up multiple independent database server environments on the same computer.

Complete the following tasks to set up multiple residency:

- "Hosting Multiple Database Servers"
- "Planning for Multiple Residency"
- "Creating a Database Server" on page 4-2
- "Setting Up an Instance-Specific ONCONFIG File" on page 4-2
- "TCP/IP Connectivity" on page 4-3
- "Preventing Data from Being Overwritten" on page 4-4
- "Preparing the Backup Environment for Multiple Residency" on page 4-4
- "Modifying Operating System Startup for Multiple Server Instances" on page 4-5
- "Resetting the INFORMIXSERVER Environment Variable" on page 4-5

Hosting Multiple Database Servers

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

Multiple independent database server environments on the same computer allow you to:

- Separate production and development environments to protect the production system from the unpredictable nature of the development environment.
- Isolate sensitive 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 information about 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 with the extra performance cost.

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

- Memory

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Each database server needs its own memory. Ensure that your computer can handle the memory usage that an additional database server requires.

- Storage space

  Each database server must have its 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 about buffered and unbuffered files, see the section on direct disk access in the *IBM Informix 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 Database Server

Before you set up multiple residency, you must install one database server as described in Chapter 2, "Installing Dynamic Server on Linux and UNIX Platforms," on page 2-1.

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 binary 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 (see "Setting Up an Instance-Specific ONCONFIG File").
2. *Optional*: Set up connectivity for the new database server instance (see "TCP/IP Connectivity" on page 4-3).
3. Initialize disk space for the new database server instance (see "Preventing Data from Being Overwritten" on page 4-4).
4. Prepare the backup environment for multiple residency (see "Preparing the Backup Environment for Multiple Residency" on page 4-4).
5. Modify the operating system startup to start the new database server instances automatically (see "Modifying Operating System Startup for Multiple Server Instances" on page 4-5).
6. Check the **INFORMIXSERVER** environment variables for users (see "Resetting the INFORMIXSERVER Environment Variable" on page 4-5).

Setting Up an Instance-Specific 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 file name of the new **onconfig** file. Specify only the file name, not the complete path.

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

SERVERNUM
: Specifies an integer (between 0 and 255) that is 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 about the SERVERNUM, DBSERVERNAME and ROOTPATH AND ROOTOFFSET parameters, see the *IBM Informix Administrator's Reference*.

DBSERVERNAME
: 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**.

MSGPATH
: Specifies the path name of the message file for a database server. You should specify a unique path name for the message file because database server messages do not include the dbservername. If multiple database servers use the same MSGPATH parameter, 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
: Used 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 the ROOTPATH parameter. However, in that case, you must set the ROOTOFFSET parameter so that the combined values of the ROOTSIZE and ROOTOFFSET parameters define a unique portion of the partition.

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.

For more information about the SERVERNUM, DBSERVERNAME, ROOTPATH, and ROOTOFFSET parameters, the configuration parameters documentation in the *IBM Informix Administrator's Reference*.

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 the MIRRORPATH and MIRROROFFSET parameters, see the *IBM Informix Administrator's Guide*.

TCP/IP Connectivity

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 *IBM Informix Administrator's Guide*.

Preventing Data from Being Overwritten

Before you initialize disk space, check the setting of the **ONCONFIG** environment variable. If it is not set 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 that is specified in the current **onconfig** configuration file.

Important: As you create new blobspaces or dbspaces for a database server, 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 you must ensure that 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.**

ON-Bar Utility Backups

The ON–Bar utility allows you to back up data from various

Each line starts with a dotted decimal number; for example, 3 or 3.1 or 3.1.1. To hear these numbers correctly, make sure that your screen reader is set to read punctuation. All syntax elements that have the same dotted decimal number (for example, all syntax elements that have the number 3.1) are mutually exclusive alternatives. If you hear the lines 3.1 USERID and 3.1 SYSTEMID, your syntax can include either USERID or SYSTEMID, but not both.

The dotted decimal numbering level denotes the level of nesting. For example, if a syntax element with dotted decimal number 3 is followed by a series of syntax elements with dotted decimal number 3.1, all the syntax elements numbered 3.1 are subordinate to the syntax element numbered 3.

Certain words and symbols are used next to the dotted decimal numbers to add information about the syntax elements. Occasionally, these words and symbols might occur at the beginning of the element itself. For ease of identification, if the word or symbol is a part of the syntax element, the word or symbol is preceded by the backslash (\) character. The * symbol can be used next to a dotted decimal number to indicate that the syntax element repeats. For example, syntax element *FILE with dotted decimal number 3 is read as 3 * FILE. Format 3* FILE indicates that syntax element FILE repeats. Format 3* * FILE indicates that syntax element * FILE repeats.

Characters such as commas, which are used to separate a string of syntax elements, are shown in the syntax just before the items they separate. These characters can appear on the same line as each item, or on a separate line with the same dotted decimal number as the relevant items. The line can also show another symbol that provides information about the syntax elements. For example, the lines 5.1*, 5.1 LASTRUN, and 5.1 DELETE mean that if you use more than one of the LASTRUN and DELETE syntax elements, the elements must be separated by a comma. If no separator is given, assume that you use a blank to separate each syntax element.

If a syntax element is preceded by the % symbol, this identifies a reference that is defined elsewhere. The string following the % symbol is the name of a syntax fragment rather than a literal. For example, the line 2.1 %OP1 means that you should refer to a separate syntax fragment OP1.

The following words and symbols are used next to the dotted decimal numbers:

? Specifies an optional syntax element. A dotted decimal number followed by the ? symbol indicates that all the syntax elements with a corresponding dotted decimal number, and any subordinate syntax elements, are optional. If there is only one syntax element with a dotted decimal number, the ? symbol is displayed on the same line as the syntax element (for example, 5? NOTIFY). If there is more than one syntax element with a dotted decimal number, the ? symbol is displayed on a line by itself, followed by the syntax elements that are optional. For example, if you hear the lines 5 ?, 5 NOTIFY, and 5 UPDATE, you know that syntax elements NOTIFY and UPDATE are optional; that is, you can choose one or none of them. The ? symbol is equivalent to a bypass line in a railroad diagram.

! Specifies a default syntax element. A dotted decimal number followed by the ! symbol and a syntax element indicates that the syntax element is the default option for all syntax elements that share the same dotted decimal number. Only one of the syntax elements that share the same dotted decimal number can specify a ! symbol. For example, if you hear the lines

2? FILE, 2.1! (KEEP), and 2.1 (DELETE), you know that (KEEP) is the default option for the FILE keyword. In this example, if you include the FILE keyword but do not specify an option, default option KEEP is applied. A default option also applies to the next higher dotted decimal number. In this example, if the FILE keyword is omitted, default FILE(KEEP) is used. However, if you hear the lines 2? FILE, 2.1, 2.1.1! (KEEP), and 2.1.1 (DELETE), the default option KEEP only applies to the next higher dotted decimal number, 2.1 (which does not have an associated keyword), and does not apply to 2? FILE. Nothing is used if the keyword FILE is omitted.

* Specifies a syntax element that can be repeated zero or more times. A dotted decimal number followed by the * symbol indicates that this syntax element can be used zero or more times; that is, it is optional and can be repeated. For example, if you hear the line 5.1* data-area, you know that you can include more than one data area or you can include none. If you hear the lines 3*, 3 HOST, and 3 STATE, you know that you can include HOST, STATE, both together, or nothing.

Notes:

1. If a dotted decimal number has an asterisk (*) next to it and there is only one item with that dotted decimal number, you can repeat that same item more than once.
2. If a dotted decimal number has an asterisk next to it and several items have that dotted decimal number, you can use more than one item from the list, but you cannot use the items more than once each. In the previous example, you could write HOST STATE, but you could not write HOST HOST.
3. The * symbol is equivalent to a loop-back line in a railroad syntax diagram.

\+ Specifies a syntax element that must be included one or more times. A dotted decimal number followed by the + symbol indicates that this syntax element must be included one or more times. For example, if you hear the line 6.1+ data-area, you must include at least one data area. If you hear the lines 2+, 2 HOST, and 2 STATE, you know that you must include HOST, STATE, or both. As for the * symbol, you can only repeat a particular item if it is the only item with that dotted decimal number. The + symbol, like the * symbol, is equivalent to a loop-back line in a railroad syntax diagram.

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Index

Special characters

/etc/hosts file 3-2
  multiple residency 4-3
/etc/services file 3-2
  multiple residency 4-3
/etc/termcap file 3-1
/etc/terminfo directory 3-1
.inf file 1-13
.ini file 2-5
.jvm.bin file 1-3, 1-4
$INFORMIXDIR 1-8

A

AAO role 1-13
accessibility A-1
  keyboard A-1
  shortcut keys A-1
Accessibility
  dotted decimal format of syntax diagrams A-1
  syntax diagrams, reading in a screen reader A-1
adding features 5-1
administrative access 1-6
  group and user informix 1-5
Administrative Utilities 1-9
archive, preparing for multiple residency 4-4
Auditing analysis officer
  definition 1-13
Auditing Analysis Officer 1-13

B

Backup and Restore 1-9
backups, preparing for multiple residency 4-4
base server 1-9
BladeManager 1-9
blobspaces, and multiple residency 4-4
bundle.ini file 1-7

C

chunks, and multiple residency 4-4
client applications
  testing 4-1
Client SDK 2-3
  uninstalling 5-5
CLIENT_LOCALE environment variable
  setting 3-1
commands
  ids_install 2-1, 2-2
  installserver 2-1, 2-2
  tar 1-5
  uninstalling CSDK 5-5
  uninstalling IConnect 5-5
  uninstalling JDBC 5-5
  uninstalling related products 5-5
  uninstallserver 5-3
complete installation 1-8
components 1-9
configuration file 3-3
  for demonstration database server 1-11
configuration file, multiple residency 4-2
configuration parameters 3-3
  DBSERVERNAME 4-2
  DUMPDIR 3-3
  MIRROROFFSET 4-2
  MIRRORPATH 4-2
  MSGPATH 4-2
  ROOTOFFSET 4-2
  ROOTPATH 4-2
  SERVERNUM 4-2
configuring
  role separation 1-13
  silent installation 2-6
connectivity 3-2
  configuring for multiple residency 4-3
  TCP/IP 4-3
connlog.txt file 6-2
Conversion and Reversion Support
  Distributed Relational Database Architecture (DRDA) 1-9
creating
  multiple database servers 4-2
custom installation 1-8, 1-9, 2-2

D

Data-Loading Utilities 1-9
database server
  configuration overview 3-1
database servers
  creating multiple 4-1, 4-2
  environments, separating 4-1
  initializing 3-3
  running multiple 4-1
Database system security officer
  definition 1-13
Database System Security Officer 1-13
DataBlade modules 1-9
dbaccessdemo script 2-8
DBLANG environment variable
  setting 3-1
DBSERVERNAME parameter
  multiple residency 4-2
dbspaces, multiple residency 4-4
DBSSO role 1-13
demonstration database
  accessing 2-8
demonstration database server 1-11
Demos 1-9
deploying to multiple computers 2-9
deployment wizard 1-8, 1-9
directories
  installation 1-8
Disabilities, visual
  reading syntax diagrams A-1
disability A-1
disk space
  for multiple residency 4-4
disk space requirements 1-3
Dotted decimal format of syntax diagrams A-1

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Dynamic Server
custom installation 2-2
typical installation 2-1
Dynamic Server extensions 1-9

E

Enterprise Replication 1-9
environment variables
CLIENT_LOCALE 3-1
DBLANG 3-1
environment variables
LD_LIBRARY_PATH 3-1
INFORMIXSERVER 4-5
setting 3-1
INFORMIXSQLHOSTS 3-1
LIBPATH 3-1
LIBPATH environment variable (AIX), setting 3-1
ONCONFIG, multiple residency 4-2
shared library path 3-1
SHLIB_PATH 3-1
TERMCAP 3-1

F

features 1-9
adding 5-1
reinstalling 5-2
features installed with Dynamic Server 1-9
files
.ini 2-5
.jvm.bin 1-3, 1-4
bundle.ini 1-7
for connectivity 3-2
for installing 1-5
install.log 6-1
installed files list 1-13
manifest 1-13
product install log 6-2
response 1-7, 2-5
server.ini 1-7
force-reinstall option 5-2

G

Global Language Support (GLS) 1-9
GLS (Global Language Support) 1-9
group informix 1-5, 1-6
groupadd utility 1-5

I

IConnect 2-3
uninstalling 5-5
ids_install command 2-1, 2-2, 2-3
silent mode 2-6
informix group 1-6
informix user account 1-6
INFORMIXDIR
lib directory 3-1
INFORMIXSERVER environment variable 4-5
setting 3-1
INFORMIXSQLHOSTS environment variable, setting 3-1
initializing
commands
oninit 3-3
database server 3-3
oninit command 3-3
install.log file 6-1
installation
commands 2-3
custom 1-9, 2-2
directory 1-8
disk space 1-3
methods 1-7
modifying 5-1
of clients 2-9
of selective features 1-9
overview 2-1
overview of options 1-6
prerequisites 1-1, 1-3
silent 2-5
silent mode 2-6
testing 2-8
typical 2-1
typical or custom 1-8
unattended 2-5
upgrading existing Dynamic Server installations 1-2
installation application
install.log file 6-1
installclientsdk command 2-3
silent mode 2-6
installcon command 2-3
installconn command 2-3
silent mode 2-6
installed files list 1-13
installing
Client SDK 2-9
clients 2-9
IConnect 2-9
quickly 2-1
selected features 2-2
installserver command 2-1, 2-2, 2-3
adding features 5-1
silent mode 2-6
IPX/SPX, and multiple residency 4-3

J

Java Runtime Environment (JRE) 1-3
Jave Runtime Environment (JRE) 1-4
JDBC
uninstalling 5-5
jdbc_uninst command 5-5
JRE
extracting 1-4
JRE (Java Runtime Environment) 1-3

L

launchpad 1-7, 2-1, 2-2
LD_LIBRARY_PATH environment variable, setting 3-1
log files 6-2
installed files list 1-13
manifest 1-13
log.txt file 6-2

M

machine notes file 1-1
manifest file 1-13
media location 1-5
memory, and multiple residency 4-1
migrating to this version of Dynamic Server 1-2
mirroring, and multiple residency 4-2
MIRROROFFSET configuration parameter 4-2
  multiple residency 4-2
MIRRORPATH parameter 4-2
  multiple residency 4-2
modifying installations 5-1
MSGPATH parameter 4-2
  multiple residency 4-2
multiple database servers
  creating 4-1
multiple residency 4-1
  /etc/hosts file 4-3
  archiving 4-4
  assigning chunks 4-4
  backups 4-4
  blobspaces 4-4
  DBSERVERNAME parameter 4-2
  dbspaces 4-4
  definition of 4-1
  disk space 4-4
  IPX/SPX 4-3
  isolating applications 4-1
  MIRROROFFSET parameter 4-2
  MIRRORPATH parameter 4-2
  MSGPATH parameter 4-2
  multiple binaries 4-2
  planning 4-1
  requirements 4-1
  ROOTOFFSET configuration parameter 4-2
  ROOTPATH parameter 4-2
  separate configuration files 4-1
  SERVERNUM configuration parameter 4-2
  shutdown script 4-5
  sqlhosts file 4-3
  startup script 4-5
  use for testing 4-1

N

NetWare server, and multiple residency 4-3

O

ON-Bar utility, preparing for multiple residency 4-4
ONCONFIG environment variable
  multiple residency 4-2
onconfig file
  multiple residency 4-2
ONCONFIG parameters 3-3
ONCONFIG parameters. 4-2
onconfig.demo file 1-11
onconfig.std file 3-3
ontape utility, preparing for multiple residency 4-4
operating system patches 1-1

P

passwd utility 1-5
patches
  operating system 1-1
planning
  for multiple residency 4-1
preparing
  for multiple residency 4-1
  for silent installation 2-6
prerequisites
  for uninstallation 1-3
  for upgrading to this version of Dynamic Server 1-2
  JRE Version 1-3
  system 1-3
product installation files 1-5

R

reinstalling features 5-2
remove Dynamic Server 5-3
removing
  Dynamic Server 5-3
removing products 5-2
requirements, multiple residency 4-1
response file 1-7, 2-5
role separation
  configuring on Linux 1-13
roles 1-13
ROOTOFFSET configuration parameter 4-2
  multiple residency 4-2
ROOTPATH parameter 4-2
  multiple residency 4-2
running
  multiple database servers 4-1

S

Screen reader
  reading syntax diagrams A-1
scripts
  DB–Access utility 2-8
  dbaccessdemo 2-8
  system shutdown 4-5
  system startup 4-5
  utilities
    DB–Access 2-8
security
  isolating applications with multiple residency 4-1
separating
  database server environments 4-1
server.ini file 1-7
SERVERNUM configuration parameter 4-2
  multiple residency 4-2
shared-library path environment variable
  setting 3-1
SHLIB_PATH environment variable (HP-UX) setting 3-1
shortcut keys
  keyboard A-1
shutdown script
  multiple residency 4-5
silent installation 2-5
  definition of 2-6
  syntax 2-6
sqlhosts file 3-2
  multiple residency 4-3
startup script
  multiple residency 4-5
storage spaces, and multiple residency 4-1

Syntax diagrams
reading in a screen reader A-1
system requirements 1-3
system shutdown script
multiple residency 4-5
system startup script
multiple residency 4-5

T

tar command 1-5
TCP/IP
connectivity 4-3
TERMCAP environment variable
setting 3-1
testing
demonstration database 2-8
environments 4-1
typical installation 1-8, 2-1

U

unattended installation 2-5
uninstall_conn command 5-5
uninstall_csdk command 5-5
uninstallation
prerequisites 1-3
uninstallation command 5-3
uninstaller 5-3
uninstalling products 5-2
uninstallserver
command 5-3
uninstallserver command 5-3
upgrading existing Dynamic Server installations 1-2
user account informix 1-6
user informix 1-5
useradd utility 1-5
utilities 1-9
groupadd 1-5
passwd 1-5
useradd 1-5
ypmake 1-5

V

Visual disabilities
reading syntax diagrams A-1

Y

ypmake utility 1-5

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