

# Installation Guide

*iPlanet Application Server*

**Version 6.0, SP1**

806-3492-01  
September 2000

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# Contents

<b>Preface</b> .....	<b>7</b>
About This Guide .....	7
What You Should Know .....	7
How This Guide Is Organized .....	7
Documentation Conventions .....	8
<b>Chapter 1 Installing on NT</b> .....	<b>9</b>
Preparing for Installation .....	9
Check System Requirements .....	10
Install and Configure the Web Server .....	11
Create a Mirror Directory for Transaction Manager .....	11
Create a Raw Partition .....	11
Install and Configure All Database Servers .....	11
Installing the Application Server .....	12
Using the Custom Installation Wizard .....	14
Using ezSetup .....	49
To Run ezSetup: .....	49
Upgrading iPlanet Application Server 6.0 to SP1 .....	49
Verifying Installation of the Application Server .....	50
To Verify Installation: .....	50
Installing the Web Connector Plug-in .....	50
To Install the Web Connector Plug-in: .....	51
Using the Sample Applications .....	51
To Use the Sample Applications: .....	52
Uninstalling .....	52
To Uninstall: .....	53

<b>Chapter 2 Installing on Solaris</b> .....	<b>55</b>
Preparing for Installation .....	56
Check System Requirements .....	56
Install and Configure the Web Server .....	56
Create a Raw Partition .....	57
Create a Mirror Directory for Transaction Manager .....	57
Install and Configure All Database Servers .....	57
Installing the Application Server .....	58
Using the Custom Installation Wizard .....	61
Using ezSetup .....	112
To Run ezSetup: .....	113
Installing Multiple Instances on Solaris .....	113
To Install for Developer Deployment: .....	113
To Install for Production Deployment: .....	114
Upgrading iPlanet Application Server 6.0 to SP1 .....	117
To Upgrade iPlanet Application Server 6.0 to SP1 on Solaris: .....	117
Verifying Installation of the Application Server .....	118
To Verify Installation: .....	118
Installing the Web Connector Plug-in .....	119
To Install the Web Connector Plug-in: .....	119
Using the Sample Applications .....	120
To Use the Sample Applications: .....	120
Uninstalling .....	121
To Uninstall on Solaris: .....	122
<b>Chapter 3 Configuring iPlanet Application Server</b> .....	<b>123</b>
.....	<b>123</b>
Server Components .....	124
Directory Server .....	124
Directory Manager DN .....	126
Administration Server .....	126
Port Numbers .....	126
Web Server .....	127
Manually Configuring a Web Server .....	127
Webless Installations .....	128
Database .....	128
Transaction Manager .....	128
Raw Partitions .....	129
Third Party JDBC Driver Support .....	130
Current Capabilities and Limitations .....	130
Configuration Overview .....	132
Configuring Third Party JDBC Drivers .....	132
Configuring JDBC Datasources for Your Applications .....	135

Resource Manager .....	140
Database Type Information .....	141
Open String Information .....	141
Clusters and Data Synchronization .....	142
Multiple Instances of iPlanet Application Server .....	144
Reasons for Installing Multiple Instances .....	144
Failover Issues .....	145
Multi-cluster Issues .....	145
Resource Issues .....	146
Anticipated Performance Benefits .....	147
Troubleshooting .....	147
<b>Index .....</b>	<b>149</b>



This preface describes what is in this *Installation Guide*, and contains the following sections:

- About This Guide
- What You Should Know
- How This Guide Is Organized
- Documentation Conventions

## About This Guide

This guide describes iPlanet Application Server installation on Windows NT and Solaris, and how to configure and use the components provided with iPlanet Application Server.

## What You Should Know

This guide assumes you are familiar with the following topics:

- Application server concepts
- Internet and World Wide Web
- Configuration concepts

## How This Guide Is Organized

This guide is organized into the following chapters:

Chapter 1, “Installing iPlanet Application Server on NT” describes the various steps to install, upgrade, verify installation, run sample applications, or uninstall on the Windows NT platform. The new ezSetup option is also covered.

Chapter 2, “Installing iPlanet Application Server on Solaris” describes the various steps to install, upgrade, verify installation, run sample applications, or uninstall on the Solaris platform. ezSetup and installation of multiple instances are also covered.

Chapter 3, “Configuring iPlanet Application Server” describes the configuration options offered by the installation program.

## Documentation Conventions

File and directory paths are given in Windows format (with backslashes separating directory names). For Unix versions, the directory paths are the same, except slashes are used instead of backslashes to separate directories.

This guide uses URLs of the form:

`http://server.domain/path/file.html`

In these URLs, *server* is the name of server on which you run your application; *domain* is your Internet domain name; *path* is the directory structure on the server; and *file* is an individual filename. Italics items in URLs are placeholders.

This guide uses the following font conventions:

The `monospace` font is used for sample code and code listings, API and language elements (such as function names and class names), file names, pathnames, directory names, and HTML tags.

*Italic* type is used for book titles, emphasis, variables and placeholders, and words used in the literal sense.

# Installing on NT

This chapter explains how to install iPlanet Application Server on Windows NT. It includes the following topics:

- Preparing for Installation
- Installing the Application Server
- Using ezSetup
- Verifying Installation of the Application Server
- Installing the Web Connector Plug-in
- Using the Sample Applications
- Uninstalling

Read this chapter carefully before installing iPlanet Application Server. Check the release notes for any updates to these instructions at:

<http://docs.iplanet.com/docs/manuals/ias/60/sp1/releasenotes.htm>

For more information about configuring your application server during and after installation, refer to Chapter 3, “Configuring iPlanet Application Server.”

## Preparing for Installation

Before you begin installing iPlanet Application Server, you need to:

- Check system requirements
- Install and configure the web server
- Create a Mirror Directory for Transaction Manager

- Create a raw partition on a separate disk drive
- Install and configure all database servers

## Check System Requirements

Your system must meet the following requirements before you can install iPlanet Application Server:

**Table 1-1**

Component	Requirement
Computer/Operating system	PC running Microsoft Windows NT version 4.0 with Service Pack 5
Memory	Per CPU: 256 MB minimum; 512 MB recommended
Available disk space	Total disk space: 200 MB NT (NTFS) CD-ROM drive
Pre-installed software	One of the following web servers: <ul style="list-style-type: none"> <li>• iPlanet Web Server 4.1 Enterprise Edition</li> <li>• Microsoft Internet Information Server 4.0 (NT only)</li> </ul> Netscape Directory Server 4.1 (optional) One of the following web browsers: <ul style="list-style-type: none"> <li>• Netscape Communicator 4.5</li> <li>• Microsoft Internet Explorer 4.0 (NT only)</li> </ul> Database connectivity software (see the following table)

iPlanet Application Server 6.0 SP1 is configured to work with the database clients and servers listed below:

**Table 1-2**

Database Client	Database Server
Oracle 8.1.6	Oracle 8.05, 8i, 7.3.4
Sybase 11.1.1	Sybase 11.9.2, 12
DB2 5.2	DB2 5.2, 6.1

**Table 1-2**

Database Client	Database Server
ODBC 3.51	Microsoft SQL Server 7
Informix 2.4	Informix Server 7.3, 9.1.4

## Install and Configure the Web Server

The web server and web browser must be installed and configured before you install iPlanet Application Server.

You need to know whether your web server runs on the machine where you are about to install iPlanet Application Server, or whether it resides on another machine. A “webless” installation of iPlanet Application Server occurs when it resides on a separate machine. After a webless installation you will need to install the Web Connector plug-in on the machine that has the web server. For more information on Webless Installations, see page 128.

## Create a Mirror Directory for Transaction Manager

The default disk drive is where you are installing the iPlanet Application Server. It is recommended that you specify a path on a separate disk drive. This is only needed if you are planning to use global transactions.

## Create a Raw Partition

It is recommended that you create a raw partition on a separate disk prior to running the installation program. This is where the transaction manager log file gets stored for each Java Server. Raw Partitions are described in more detail on page 129.

## Install and Configure All Database Servers

Install and configure all database servers before installing iPlanet Application Server.

# Installing the Application Server

You must be logged on to Windows NT as a user with administrator privileges to install iPlanet Application Server. Check the system requirements, and make sure a web server and web browser are installed on your system.

There are two ways to install: using setup.exe, and using ezSetup.exe. The ezSetup provides an easy installation without requiring various inputs. For more information on Using ezSetup, see page 49. This section covers the setup.exe installation options: Express, Typical, and Custom installation. The Typical installation process is the default.

The following table describes the different installations:

**Table 1-3**

Express Install	Minimal input is sought from the user for settings and features.
Typical Install	Input is sought from the user for most common settings and features. This is the default setup option.
Custom Install	This is the most flexible and input is sought from the user for each and every setting and feature.

The following table shows which dialog boxes are displayed for each type of installation. Use this table in conjunction with “Using the Custom Installation Wizard” instructions on page 14 of in this document.

**Table 1-4**

Dialog Box	Custom	Typical	Express
Welcome	X	X	X
Software License Agreement	X	X	X
Select Server or Console Installation	X	X	X
Installation Type	X	X	X
Location of Installation	X	X	X

**Table 1-4**

<b>Dialog Box</b>	<b>Custom</b>	<b>Typical</b>	<b>Express</b>
Components to Install	X	X	X
<ul style="list-style-type: none"> <li>• Netscape Server Family Core Components</li> <li>• Netscape Directory Suite</li> <li>• Administration Services</li> <li>• iPlanet Application Server 6.0</li> </ul>			
Netscape Server Family Core Components	X		
Netscape Directory Suite	X		
Administration Services	X		
iPlanet Application Server	X		
Directory Server	X	X	
User and group	X	X	
Directory Server Settings	X	X	
Configuration Directory Server Administrator	X	X	X
Administration Domain	X	X	
Directory Manager Settings	X	X	X
Replication	X		
Populate Database	X		
Disable Schema Checking	X		
Admin IP address	X		
Administration Server Port Selection	X	X	
Global Configuration Name	X		
Product Key	X	X	X
Web Server Type	X	X	X
Number of Java and C++ Servers	X		
Administration Port, Executive Port, and the specified number of Java and C++ server ports.	X		
Administration Server Authentication	X	X	X
Database Client Selection	X		
Global transactions	X		

**Table 1-4**

Dialog Box	Custom	Typical	Express
Transaction Manager	X		
Transaction Manager LogVolDiskName	X		
Third Party JDBC Drivers	X		
Third Party JDBC Driver Settings	X		
<ul style="list-style-type: none"> <li>• Driver name</li> <li>• Class name</li> <li>• URLprefix</li> <li>• CLASSPATH</li> </ul>			
Resource Manager	X		
Resource Manager Details	X		
Internationalization	X	X	X
Cluster Configuration	X		
Sync Server Candidate for cluster Default	X		
<ul style="list-style-type: none"> <li>• The IP Address for DSync server</li> <li>• The Executive server port</li> <li>• The priority of this candidate</li> </ul>			
Configuration Summary	X	X	X

## Using the Custom Installation Wizard

The following procedure describes how to install iPlanet Application Server using the Custom installation option:

1. Insert the iPlanet Application Server Install CD-ROM into the CD-ROM drive.
2. Use Start on the Windows NT taskbar and then Run, or choose File - Run from the Windows NT Program Manager and click the Run button.
3. Browse and go to the CD-ROM drive (for example, d:\).

4. Open the NT folder and run the file `setup.exe`.

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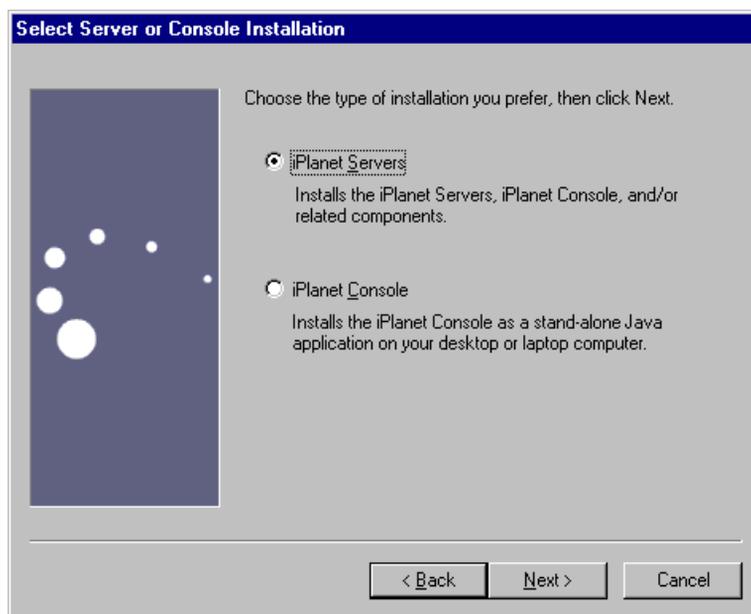
**NOTE** For other installation types use the above table to refer to the relevant sections in the procedure described for custom installation.

---

## Installing the Components

Click Next after each screen selection.

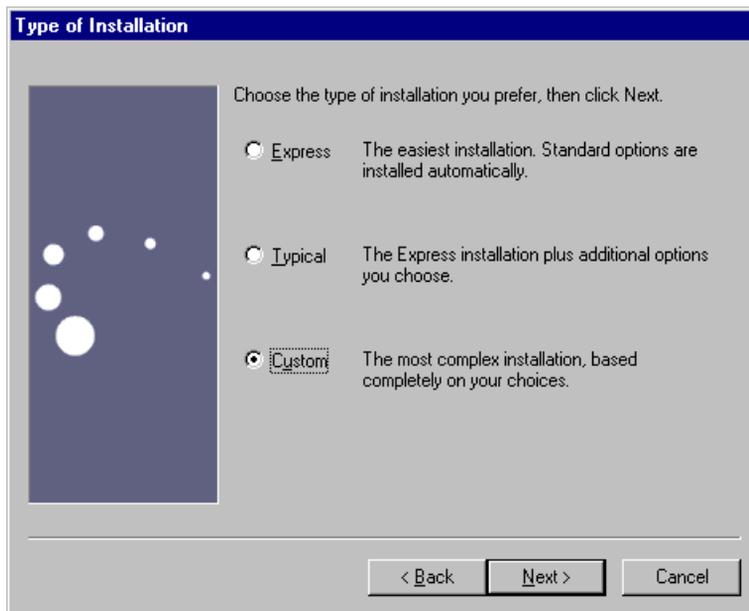
1. Accept the default to select iPlanet Servers.



Choosing iPlanet Servers installs the Netscape Server Products Core Components, Netscape Directory Suites, and Administration Services with the iPlanet Application Server.

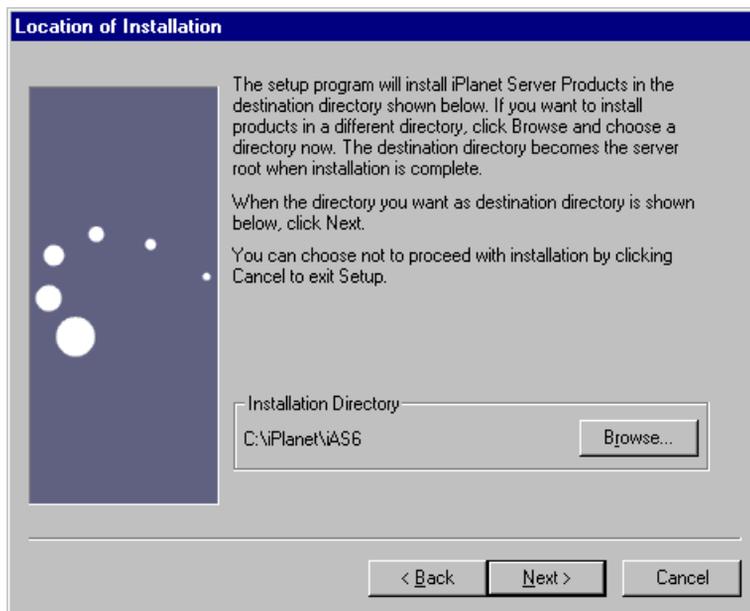
The iPlanet Console is an administration console. Select it only to install as a stand-alone application.

2. Accept the default Typical installation, or select Express or Custom. (These steps detail a Custom installation.)



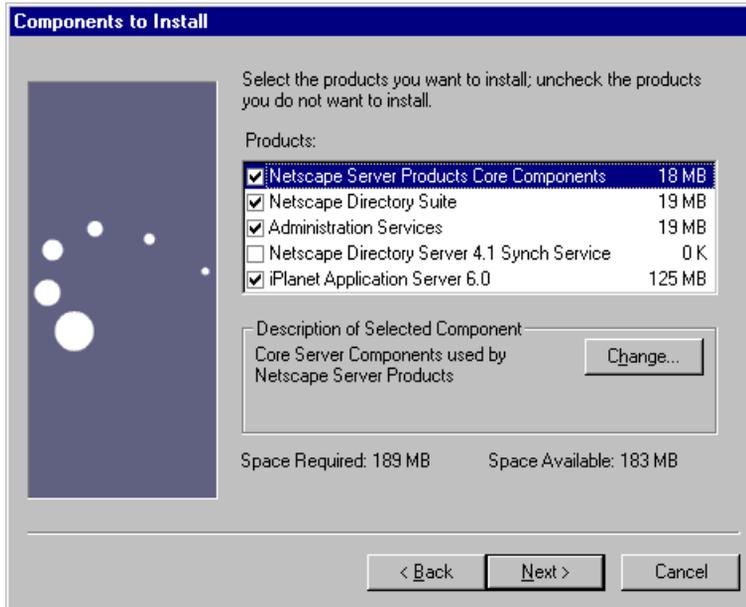
See Table 1-3 for an explanation of the installation types.

3. Select the installation directory.



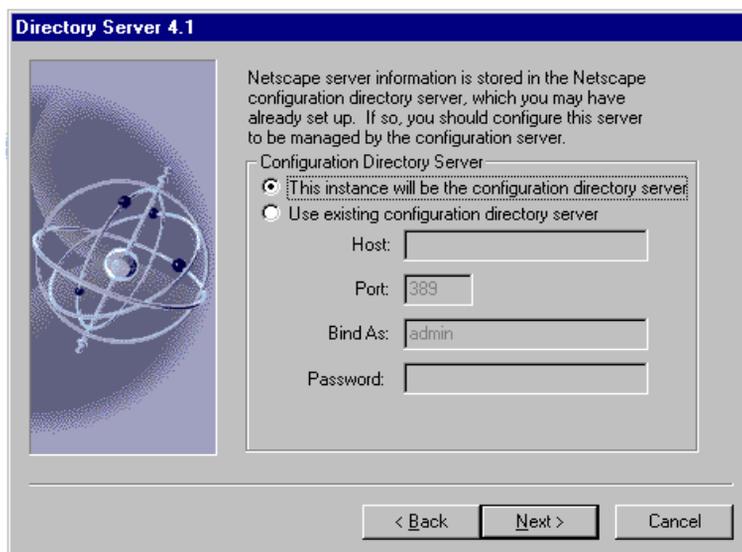
The default directory is `c:\iPlanet\iAS6`. If you do not have 200MB available on this drive for the installation of iPlanet Application Server, browse to select a different drive. Do not use a directory name that includes spaces.

4. Accept default selections.



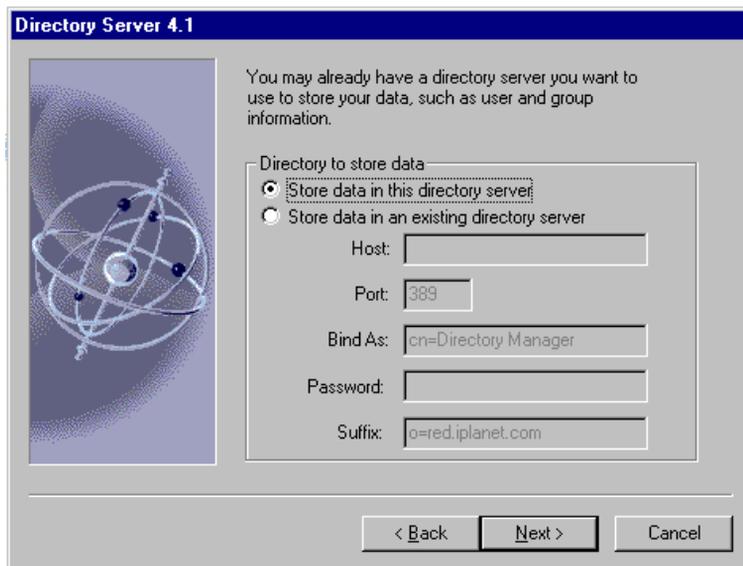
Do not select the Netscape Directory Server 4.1 Synch Service, even though it is listed.

5. Accept the default “This instance will be the configuration directory server.”



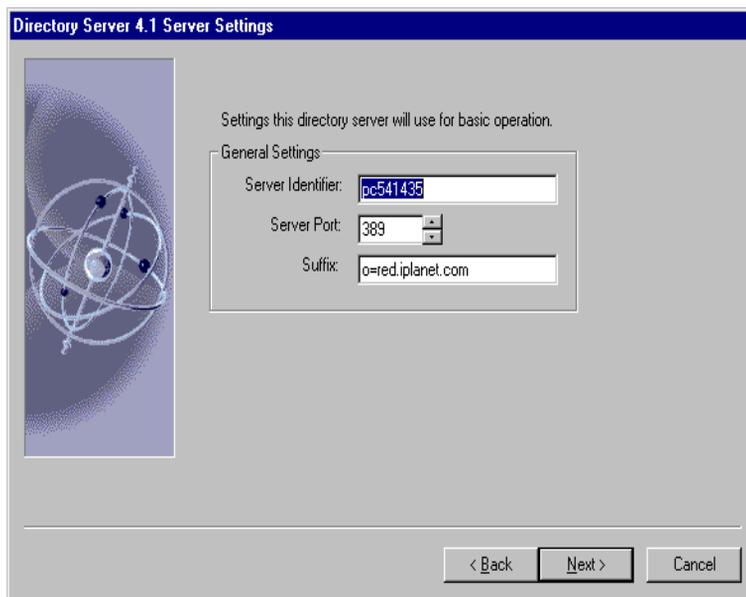
If you will be use another directory server (local or remote) to store the iPlanet Application Server configuration information, select “Use existing configuration directory server” and enter those settings.

6. Accept the default “Store data in this directory server” if you did not select an existing Directory Server in the previous step.



If you want to use an existing directory server, select “Store data to existing Directory Server” and enter its settings.

7. Accept the default Directory Server settings.

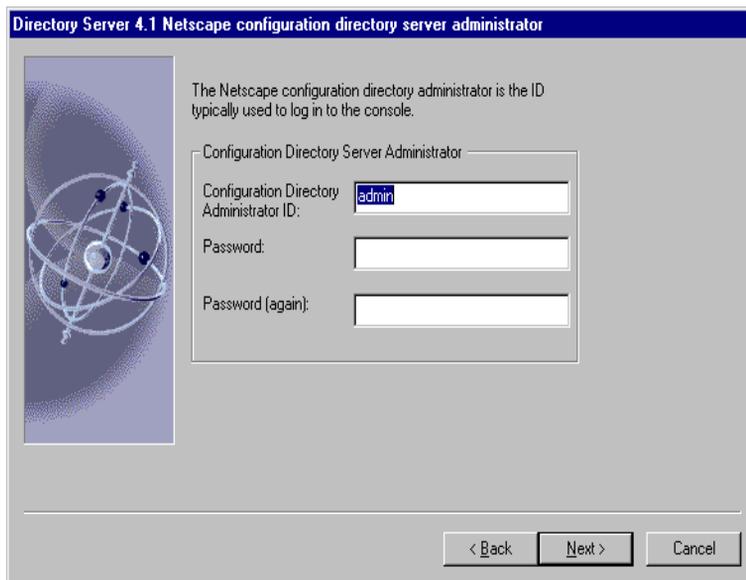


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**CAUTION** Entering an identifier other than the default will cause the installation to fail.

---

8. Enter the Administrator ID and password for the configuration directory server administrator.



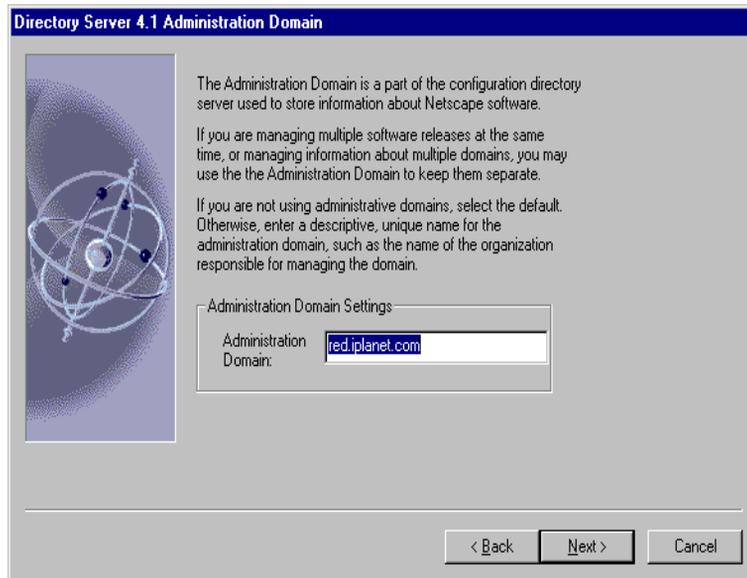
I

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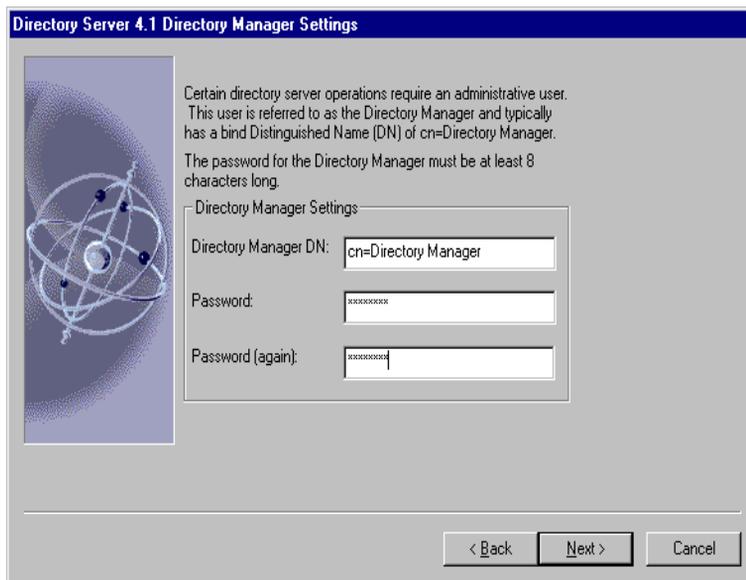
**NOTE** The Administrator ID and password supplied here will be required to uninstall iPlanet Application Server and Directory Server.

---

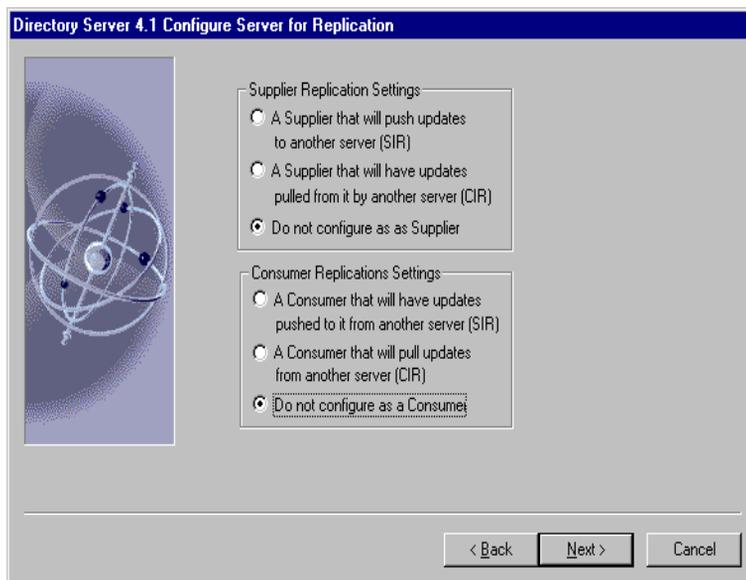
9. Accept the default, or enter a unique name for the Administration Domain.



10. Enter the Directory Manager Distinguished Name (DN) and a password of at least eight characters.



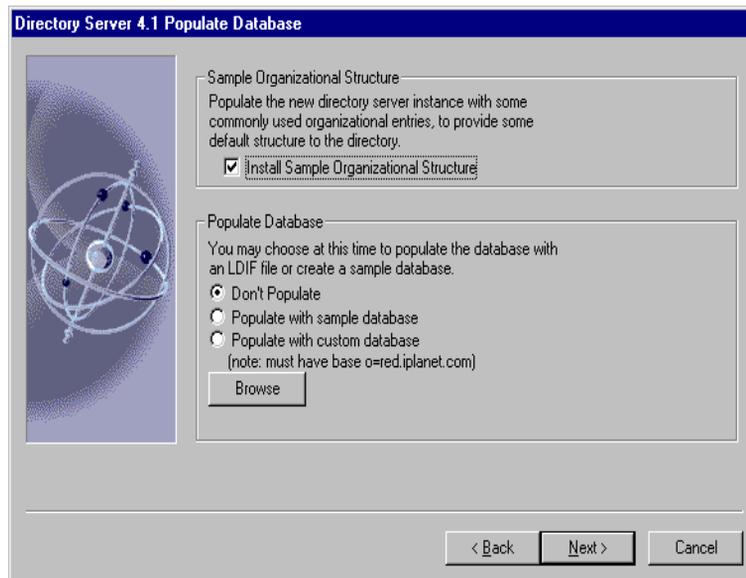
The default value for the Distinguished Name is `cn=Directory Manager`. For more information about Directory Manager DN, see page 126.

**11. Accept the default supplier and consumer replication settings.**

For more information about consumer and supplier replication, see Netscape Directory Server documentation:

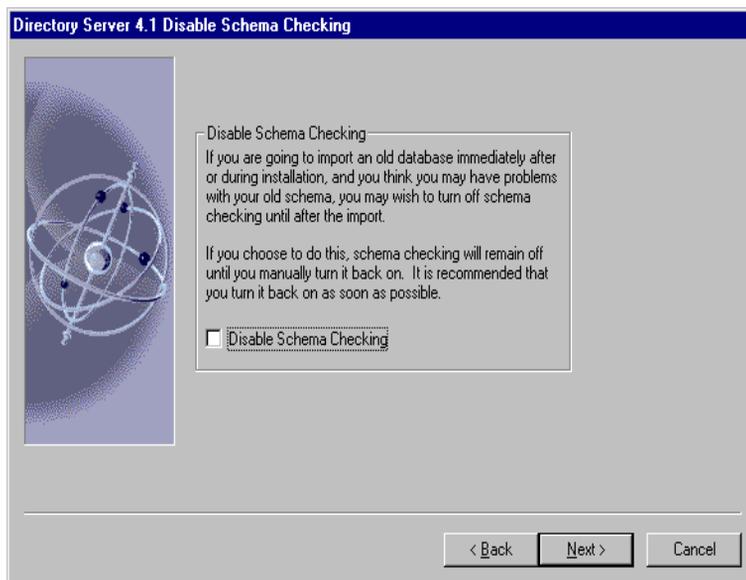
<http://docs.iplanet.com/docs/manuals/directory.html#dirserver>

12. Accept the default to populate the directory server with commonly used entries. These are provided to help you get started running iPlanet Application Server. Populate the database by selecting the appropriate radio button.



For more information about populating the database, see Netscape Directory Server documentation:

<http://docs.iplanet.com/docs/manuals/directory.html#dirserver>

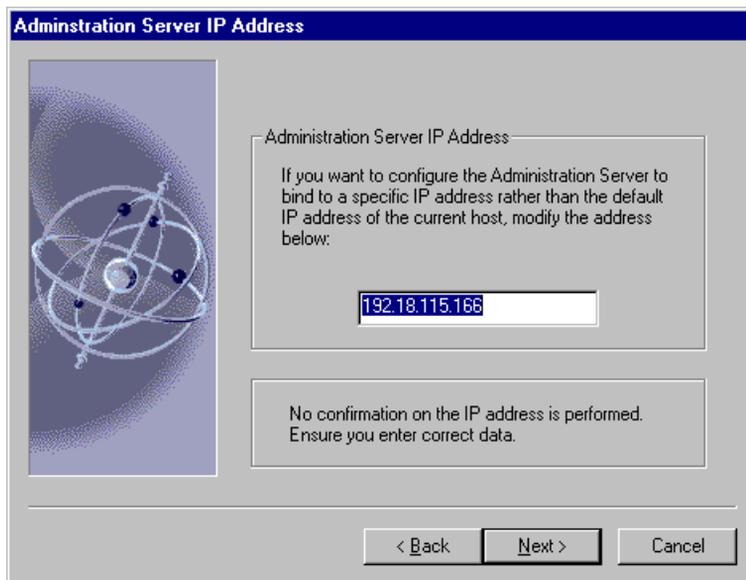
**13. Accept the default, or disable schema checking.**

For more information about installing and configuring the Directory Server, see page 124, or the Netscape Directory Server documentation:

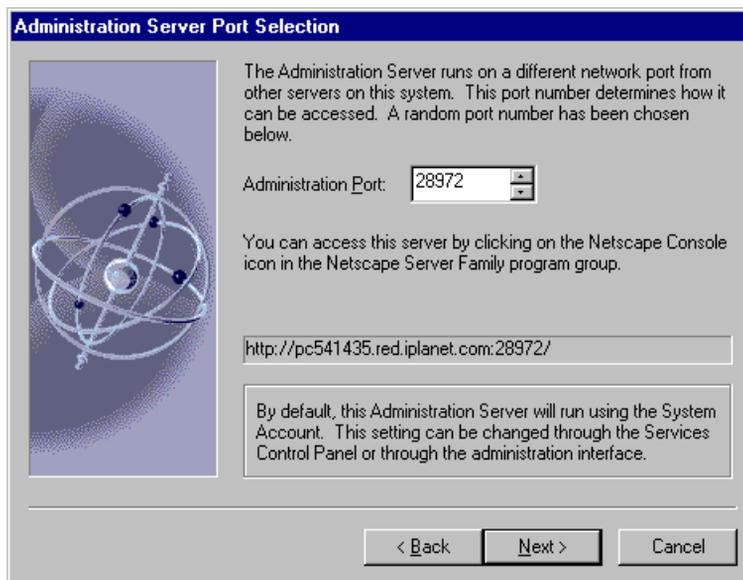
<http://docs.iplanet.com/docs/manuals/directory.html#dirserver>

## Configuring the Administration Server

1. Accept the default or enter a specific IP address to bind to your Administration Server.



2. Accept the default port number for the Administration Server.



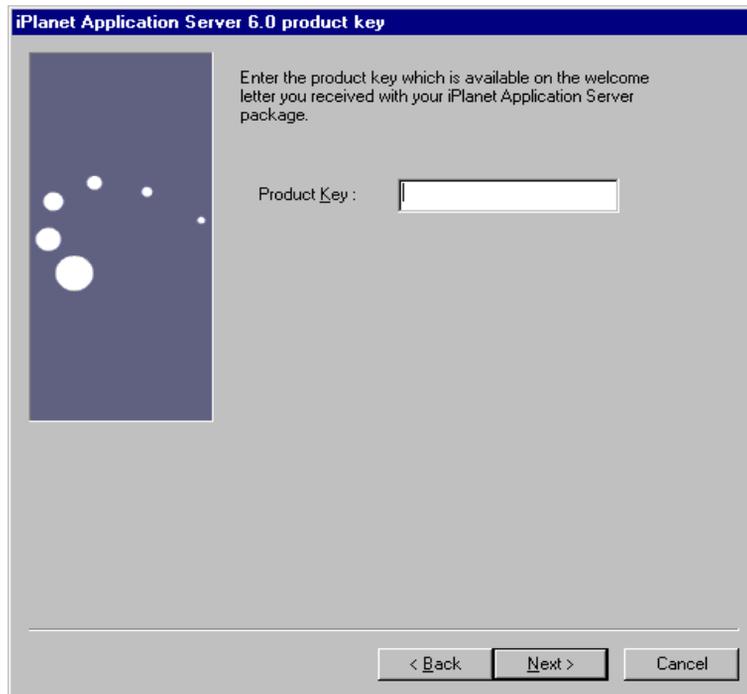
Netscape Console requires this port number to administer the Directory Server. For more information about the Administration Server, see page 126.

3. Accept the default, or enter a unique global configuration name for this installation of iPlanet Application Server.



The name you assign is stored on the configuration Directory Server, under the `o=iPlanetRoot` tree, along with the global configuration names of any other iPlanet Application Server installations.

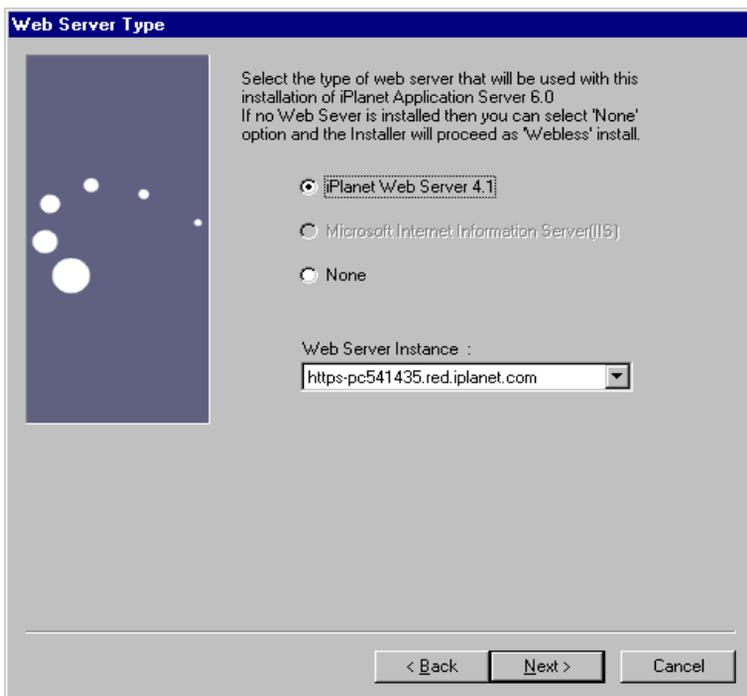
4. Enter the NT product key for iPlanet Application Server.



The image shows a dialog box titled "iPlanet Application Server 6.0 product key". The dialog has a dark blue header bar with the title in white. The main area is light gray. On the left, there is a dark blue square containing several white circles of varying sizes, resembling a logo. To the right of this square, the text reads: "Enter the product key which is available on the welcome letter you received with your iPlanet Application Server package." Below this text is a label "Product Key:" followed by a white text input field. At the bottom of the dialog, there are three buttons: "< Back", "Next >", and "Cancel".

5. Select the web server you want to use.

In case of multiple instances of iPlanet Web Server (iWS), select the instance you wish to use.



---

**NOTE** If you are using a web server other than IIS or iWS, you must enter the doc and cgi-bin directories.

---

See “Web Server,” page 127, to learn more about web servers and webless installation.

6. Enter the number of Java Servers (KJS) and C++ Servers (KCS) used to process applications.

**Number of Java and C++ Servers**

Enter the number of Java and C++ Servers.  
Minimum = 0, Maximum = 32

Number of Java Servers : 1

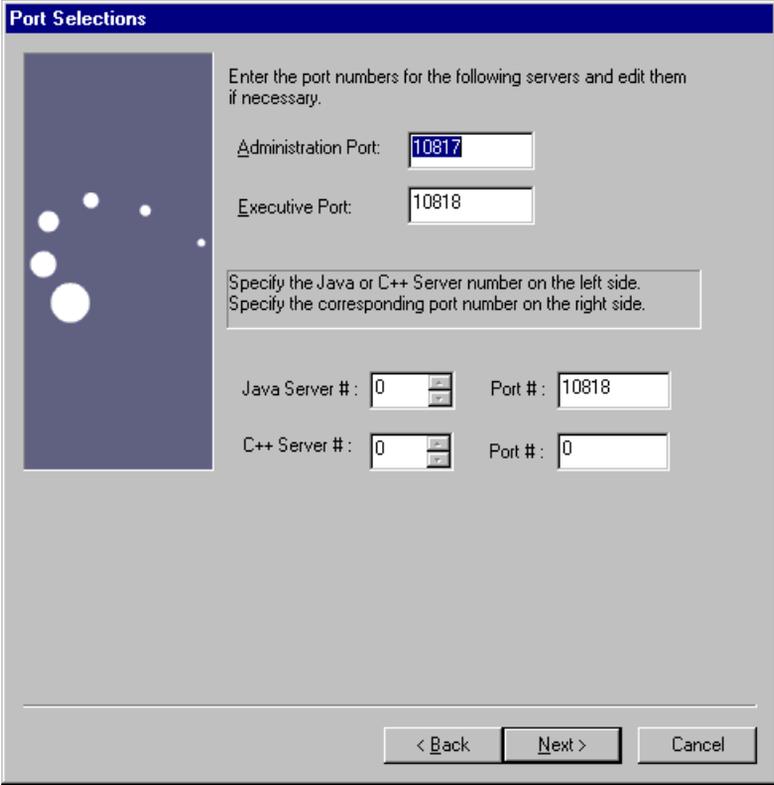
Number of C++ Servers : 1

< Back   Next >   Cancel

The default values are 1; increase these values to handle high processing loads.

You can also adjust the values after installation using the Administration Tool. See the *iPlanet Application Server Administrator's Guide* for more information.

7. Enter the port numbers for the Administrative Server (KAS), the Executive Server (KXS), the Java Servers (KJS), and C++ Servers (KCS).



The image shows a 'Port Selections' dialog box with a blue title bar. On the left is a dark blue panel with several white circles of varying sizes. The main area is light gray and contains the following text and controls:

Enter the port numbers for the following servers and edit them if necessary.

Administration Port:

Executive Port:

Specify the Java or C++ Server number on the left side. Specify the corresponding port number on the right side.

Java Server #:  Port #:

C++ Server #:  Port #:

At the bottom are three buttons: '< Back', 'Next >', and 'Cancel'.

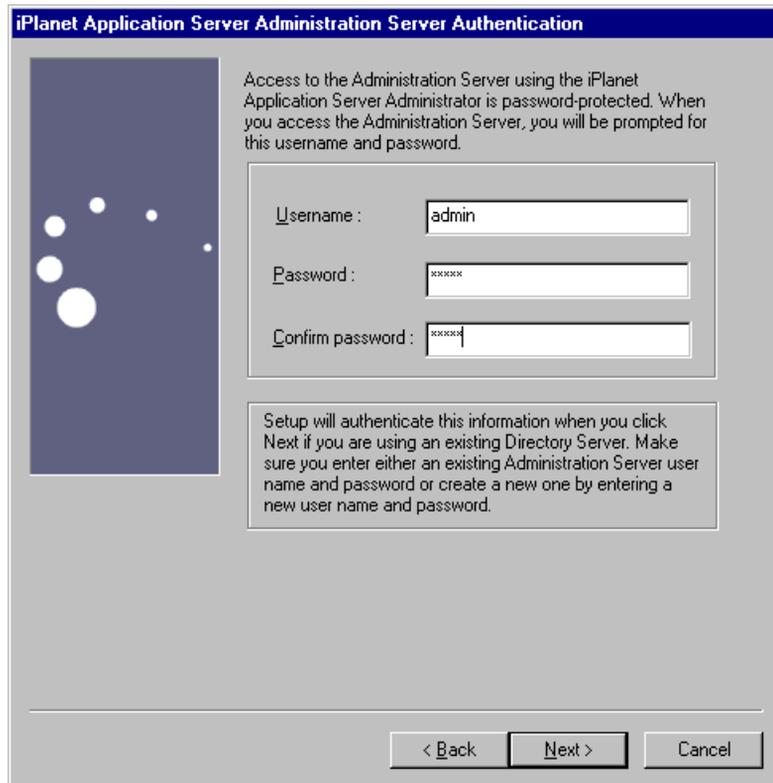
All port numbers you specify for listener ports must be within the acceptable range (1 to 65535), and must be unique (not used by any other applications on your system). For more information, see "Port Numbers," page 126.

---

**NOTE** If the port number is already in use, the service will not start up when you run iPlanet Application Server.

---

8. Enter the Administration Server username and password.



**iPlanet Application Server Administration Server Authentication**

Access to the Administration Server using the iPlanet Application Server Administrator is password-protected. When you access the Administration Server, you will be prompted for this username and password.

Username :

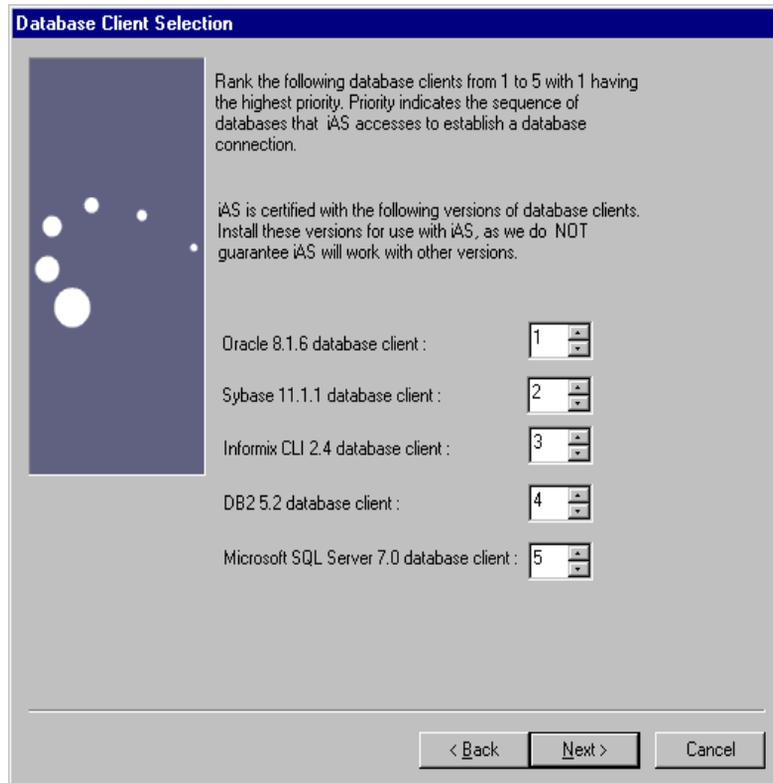
Password :

Confirm password :

Setup will authenticate this information when you click Next if you are using an existing Directory Server. Make sure you enter either an existing Administration Server user name and password or create a new one by entering a new user name and password.

< Back    Next >    Cancel

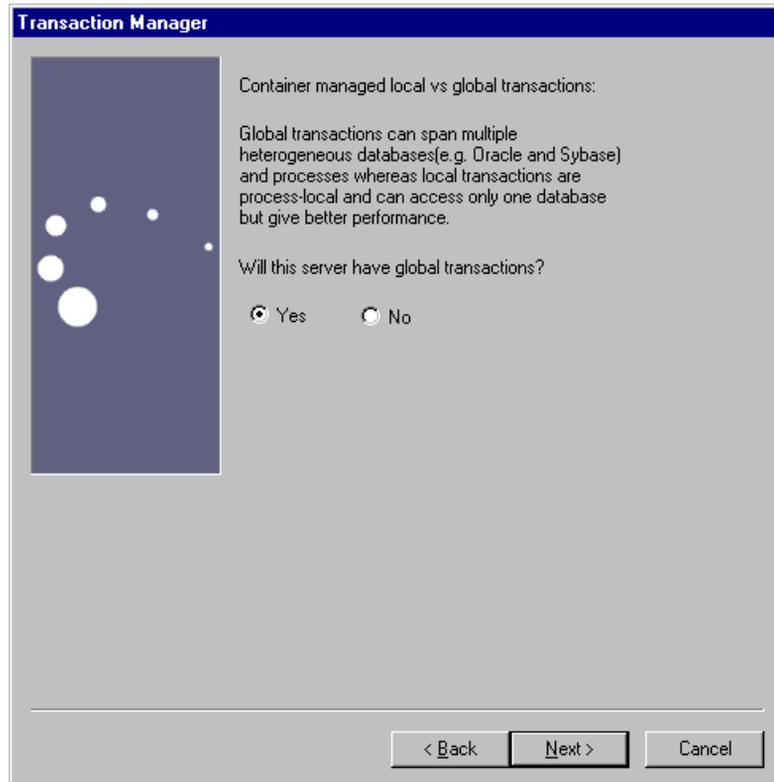
9. Rank the installed databases in order of connection priority.



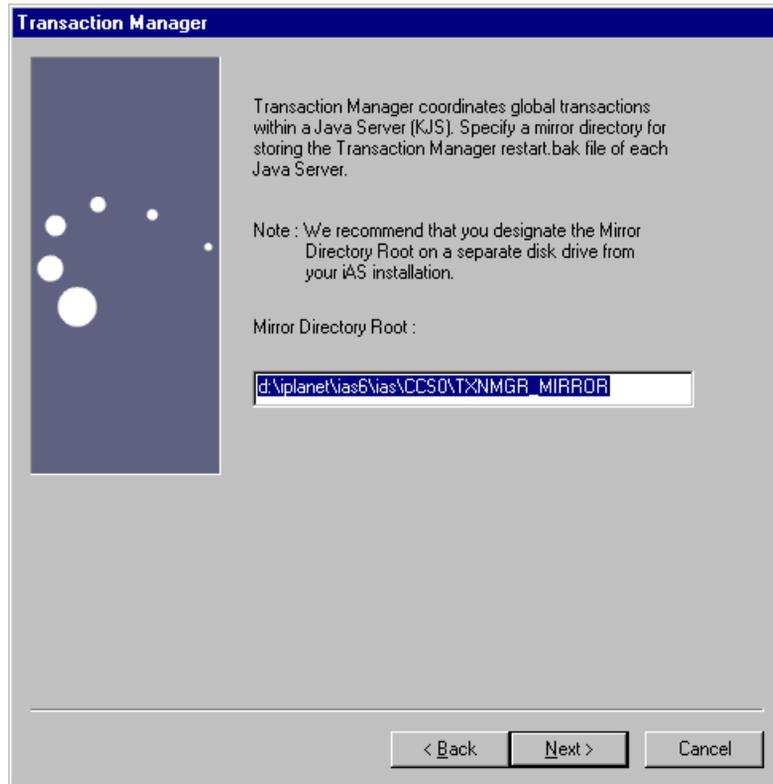
The installation program lists all supported database clients. The clients allow your applications to connect to your database back ends. Rank the clients according to connection priority, whether you've installed them yet or not. Client software can be added after installation. Sample applications are configured for the highest priority database. See "Database," page 128, to learn more.

## Configuring Transaction Manager

1. Specify if the server will have global transactions.



2. If you specified “Yes” to global transactions, enter the mirror directory path where the transaction manager `restart.bak` file for each KJS engine process gets stored.



The default location is the disk drive on which you are installing iPlanet Application Server. It is recommended that you specify a path on a separate disk drive.

3. Accept the default, or enter the log volume disk name where the transaction manager log file is to be stored for each Java Server.

**Transaction Manager**

For Transaction Manager, enter  
LogVolumeDiskName for Java Server # 1

Note : We recommend that you designate the LogVolume disk on a separate disk drive. Make sure the size of the log volume is at least 4MB and select "Raw Partition" only if it is a raw device.

Log Volume Disk Name :

c:\iplane\ias6\ias\CCSO\TXNMGR\ENG1\log\vol

Raw Partition ?

Offset : 0 (Starting page number)

Size(in pages) : 1000 (must be >= 1000 pages; each page = 4KB)

< Back    Next >    Cancel

It is recommended that you specify a path on a separate disk drive. Indicate if the specified disk name is a raw partition.

If the log volume is a raw partition, indicate Offset (starting page number) and Size (number of pages) in the raw partition. Make sure the size allocated for the log file is greater than 4 MB; the file should be greater than or equal to 1000 pages, at a size of roughly 4 KB per page. See "Raw Partitions," page 129, for more information.

## Configuring Third Party JDBC Drivers

1. Enter whether or not you will use third party JDBC drivers. If you answer yes, type in how many drivers will be configured.

**Third Party JDBC Support**

Do you want to use third party JDBC drivers?

Yes  No

How many drivers do you want to configure ?

1

< Back   Next >   Cancel

For more information about Third Party JDBC Driver Support, see page 130.

2. You will need to enter the following information for each third party JDBC driver you will use. Format your entries as shown in the examples.

**Third Party JDBC Driver Settings**

Driver Identifier ( any string used to manage this driver )  
( Example: ora-type2-816 )

Driver Classname ( Example: oracle.jdbc.driver.OracleDriver )

Driver Classpath ( Example: C:\jdbc\lib\classes111.zip )

Third Party Native Driver Directory (optional - needed for Type2 drivers )  
( Example: c:\orant\bin )

< Back    Next >    Cancel

---

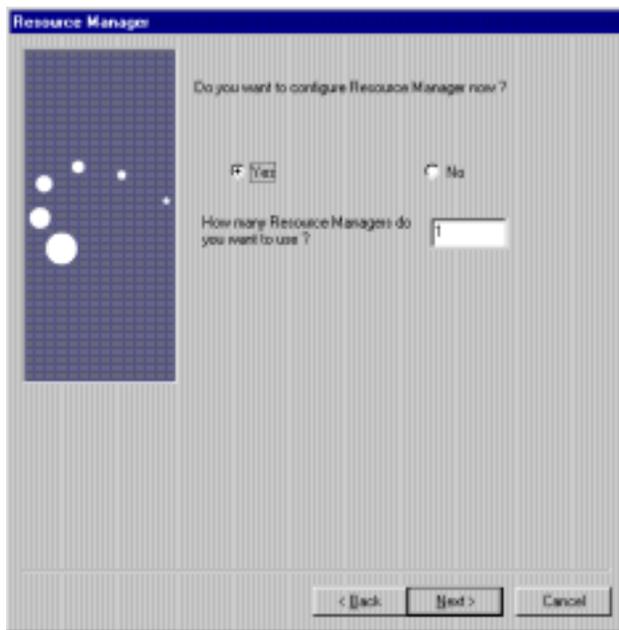
**NOTE** For typical Classnames and CLASSPATHS, see Third Party JDBC Driver Support, page 130.

After installation you must register the datasource files for the third party JDBC drivers. The above reference also explains registration.

---

## Configuring Resource Manager

1. Indicate whether or not you want to configure the Resource Manager, and specify the number of Resource Managers you will use.



For more information about the Resource Manager, see page 140.

2. Accept the defaults or enter new information for each Resource Manager.

**Resource Manager Name**

Enter the following entries for the Resource manager # 1

Resource Manager Name :

Database Type :   
 mssql  
 db2

Datasource

Username

Password

RM recovery Guid   
 value of registry key - HKEY\_LOCAL\_MACHINE\SOFTWARE -  
 \Microsoft\MSSQLServer\MSSQLServer.

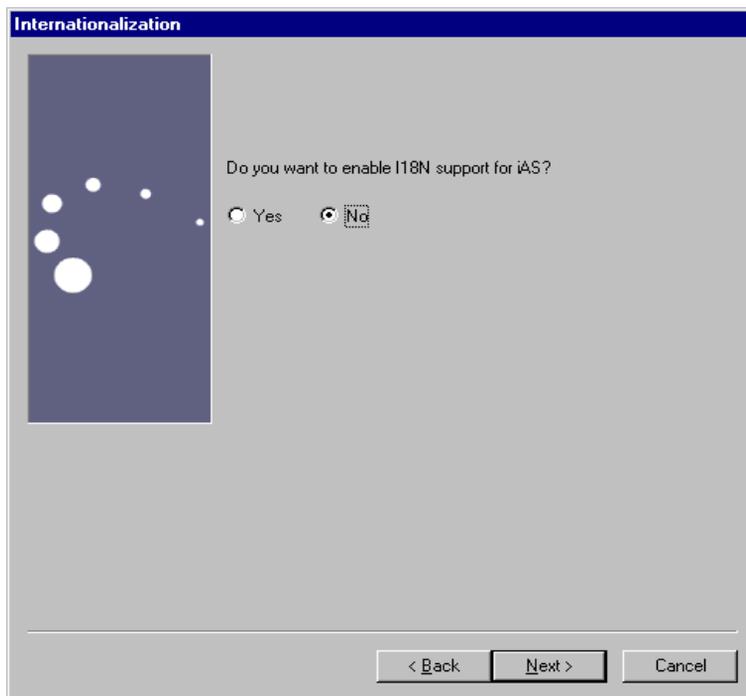
The following is for showing the syntax only. Edit for your own open string accordingly.

Open String :

Enable this Resource Manager

See “Open String Information,” page 141, to learn more.

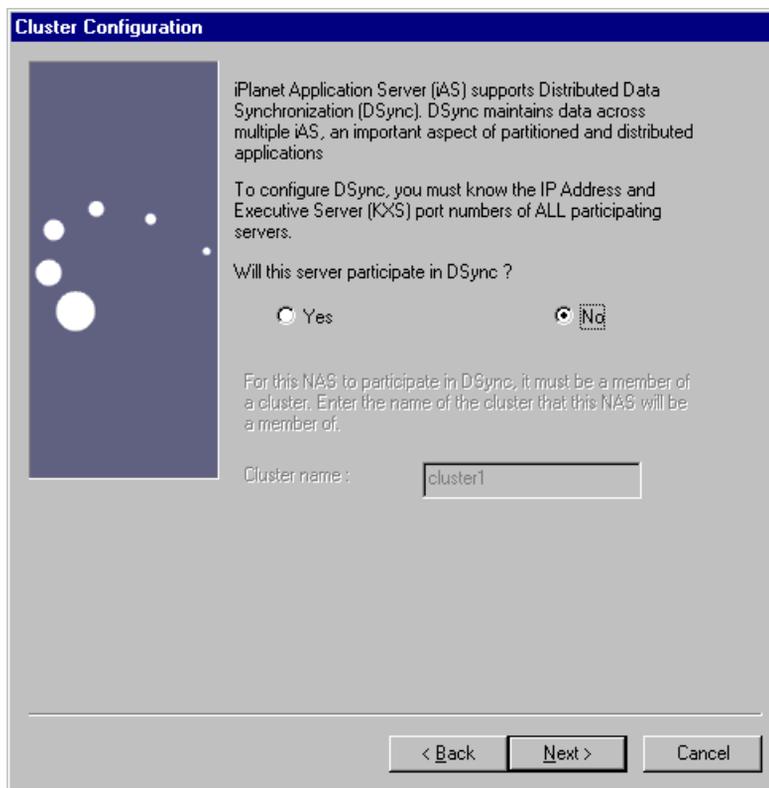
3. Specify whether or not you want to enable I18N support.



Enabling I18N support allows multi-lingual applications to be deployed to iPlanet Application Server.

## Configuring Clusters

1. Accept the default, or select “Yes” if you intend to synchronize session and state information across multiple servers for failover and fault tolerance. Then enter the name of the cluster that this instance of iPlanet Application Server participates in.



The image shows a 'Cluster Configuration' dialog box. It has a dark blue title bar with the text 'Cluster Configuration'. On the left side, there is a dark blue square containing several white circles of varying sizes, representing a cluster. The main area of the dialog is light gray and contains the following text:

iPlanet Application Server (iAS) supports Distributed Data Synchronization (DSync). DSync maintains data across multiple iAS, an important aspect of partitioned and distributed applications

To configure DSync, you must know the IP Address and Executive Server (KXS) port numbers of ALL participating servers.

Will this server participate in DSync ?

Yes  No

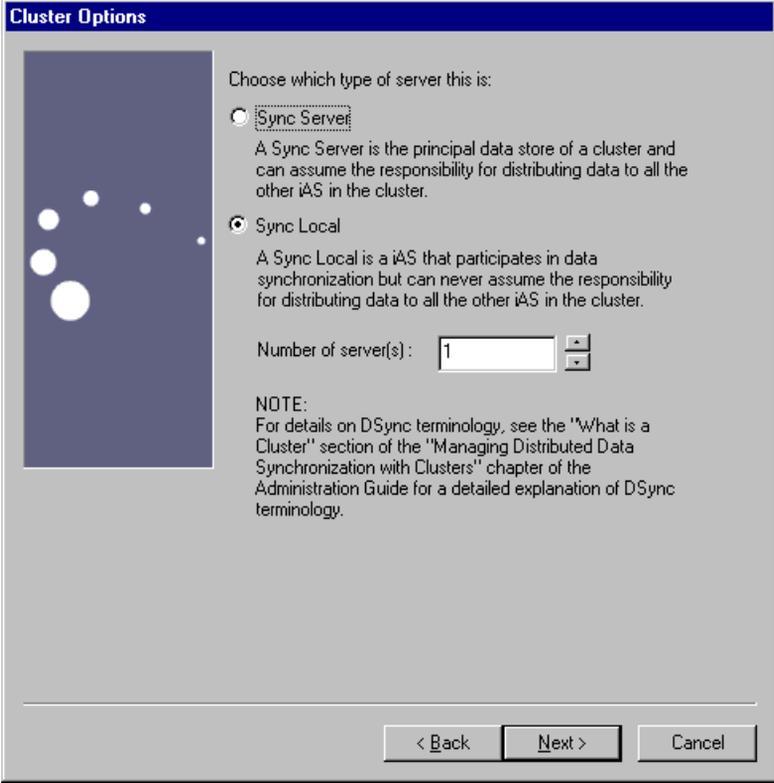
For this NAS to participate in DSync, it must be a member of a cluster. Enter the name of the cluster that this NAS will be a member of.

Cluster name :

At the bottom of the dialog, there are three buttons: '< Back', 'Next >', and 'Cancel'.

For more information about “Clusters and Data Synchronization,” see page 142.

2. Indicate if you are currently installing a Sync Server or a Sync Local. Then enter the total number of Sync Servers that you plan to have in the cluster.



The image shows a dialog box titled "Cluster Options". On the left is a dark blue vertical panel with several white circles of varying sizes. The main area is light gray and contains the following text:

Choose which type of server this is:

Sync Server  
A Sync Server is the principal data store of a cluster and can assume the responsibility for distributing data to all the other iAS in the cluster.

Sync Local  
A Sync Local is a iAS that participates in data synchronization but can never assume the responsibility for distributing data to all the other iAS in the cluster.

Number of server(s):

NOTE:  
For details on DSync terminology, see the "What is a Cluster" section of the "Managing Distributed Data Synchronization with Clusters" chapter of the Administration Guide for a detailed explanation of DSync terminology.

At the bottom are three buttons: "< Back", "Next >", and "Cancel".

A Sync Local server uses data synchronization services, but is not eligible to become a Sync Primary or the Sync Backup Server.

3. If you selected Sync Server in the previous step, enter information for each Sync Server in the cluster. Then choose which Sync Server has the highest priority for taking over as Sync Primary, and rate all other servers in order of priority.

**Sync Server candidate for cluster Default**

All Sync Servers within a cluster must be ranked according to priority. Priority determines which Sync Backup server will become the Sync Primary if the Sync Primary becomes inaccessible. It also determines which Sync Alternate will become a Sync Backup if a Sync Backup becomes inaccessible.

Enter the IP address and Executive Server (KXS) port number for the Sync Server corresponding to the Sync Server candidate number listed here.

Sync Server Candidate : 1

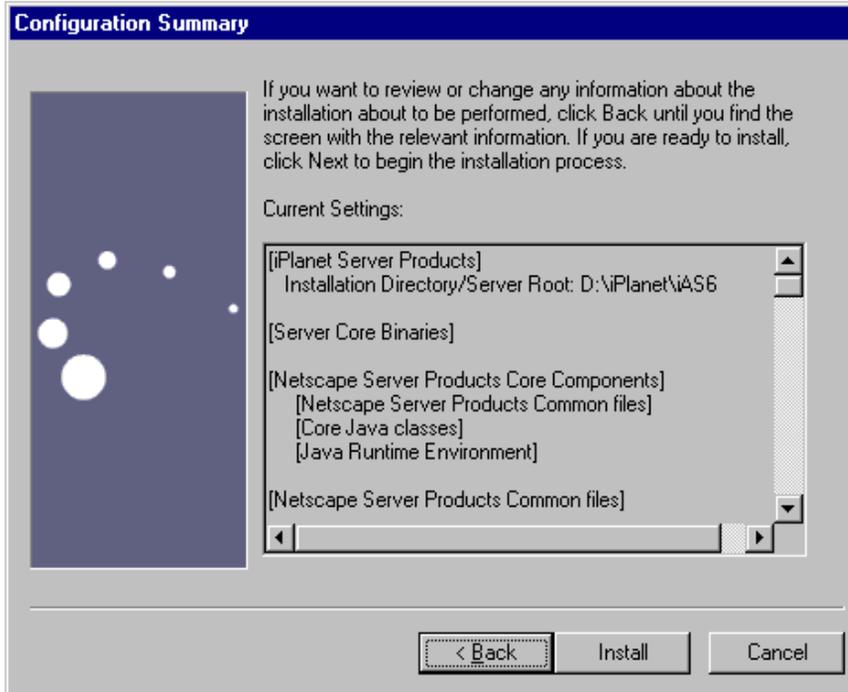
IP address :

Executive Server port (KXS) :

Note : 1 has the highest priority.

Priority :

4. Review the summary provided by the installation program of the configuration you have selected.



The installation program confirms when all of the iPlanet Application Server files have been copied to your computer. Select OK on the final dialog to reboot your computer, allowing the new settings to take effect.

# Using ezSetup

The ezSetup option provides a fast and easy installation of the iPlanet Application Server and can be used for evaluation purposes. It is a Typical installation with all the default values already set. The following usernames and passwords are set as defaults:

**Table 1-5**

Component	username	password
Configuration server administrator	admin	admin
Directory manager	Directory Manager	DManager
iAS Administration server	admin	admin

You will need the iAS Administration server username and password when you log in to that server.

Before using ezSetup, make sure a web server is installed and running.

## To Run ezSetup:

1. Click the ezSetup.exe [`<cdrom_drive>\ezsetup\ezSetup.exe`].
2. Enter the path where you want to install the iPlanet Application Server.
3. In case of multiple instances of iWS, select the instance you want to use. ezSetup will default to iWS, if both iWS and IIS are installed.
4. Click OK in the confirmation dialog to reboot your system.

# Upgrading iPlanet Application Server 6.0 to SP1

To upgrade iPlanet Application Server 6.0 to SP1, it is not necessary to uninstall the pervious version. Follow the installation steps as described earlier. Select only the components you wish to upgrade.

## Verifying Installation of the Application Server

You can use a pre-installed application to verify that iPlanet Application Server is running. Since this basic application, which uses servlets and JSPs, does not rely on a backend database, it runs without any post-installation setup.

### To Verify Installation:

1. Open your browser and enter the following URL:  
`http://yourwebserver:portnumber/ias-samples/index.html`
2. Press Enter.
3. Click the Test Connectivity to iPlanet Application Server link to run a basic application.
4. Press the shift key and click on the browser's Reload button to ensure the application repeatedly returns a new HTML stream.

## Installing the Web Connector Plug-in

The Web Connector plug-in passes requests from your web server to applications on iPlanet Application Server.

iPlanet provides Web Connector plug-ins for the following web servers:

- iPlanet Web Server
- Microsoft Internet Information Server

If you install iPlanet Application Server on a different machine than where the web server resides, you are configuring what is referred to as a “webless installation” of iPlanet Application Server. If this is the case, you must install the iPlanet Application Server Web Connector plug-in on the web server machine.

Before you install the Web Connector plug-in, do the following:

1. Check whether or not the iPlanet Application Server 6.0 Web Connector plug-in has already been installed. If it has, the web server instance is already configured for iPlanet Application Server and you do not need to re-install the plug-in.
2. Stop running your web server instance.

3. You must be logged on as an administrator before installing the iPlanet Application Server Web Connector plug-in.

This procedure assumes that you have already installed iPlanet Application Server and Directory Server.

## To Install the Web Connector Plug-in:

1. After you finish installing iPlanet Application Server as a webless installation, take the installation CD-ROM to the machine or machines that host the web server.
2. Run the installation program as described “Installing the Application Server” on page 12.
3. When prompted, select “iPlanet Servers” as an installation.
4. Specify the installation type “Typical.”
5. Specify a target installation directory. Do not include spaces in the path name.
6. When prompted for the components you want to install, select only “iPlanet Application Server 6.0” component.
7. Select only the “Web Connector Plug-in Component” from the list of subcomponents.
8. Follow the instructions of the installation program.
9. Select OK on the final dialog to reboot your computer, allowing the new settings to take effect.

More information about the iPlanet Application Server Web Connector Component is contained in the *Administrator's Guide* and in the Deployment Tool Help system.

## Using the Sample Applications

To better understand specific technology features provided by iPlanet Application Server, run the iPlanet Application Server Technology Samples.

## To Use the Sample Applications:

1. Start running iPlanet Application Server.
2. Open your browser, enter the following URL, and press Enter:  

```
http://yourwebserver:portnumber/ias-samples/index.html
```
3. Select the iPlanet Application Server J2EE Application Samples link and select a specific sample application. Follow the application-specific setup instructions to establish the necessary database settings and to run the application.

After you become familiar with the iPlanet Application Server sample applications, run the Sun Samples, which are applications based on those found at <http://java.sun.com>. The Java Pet Store example in particular demonstrates how a popular J2EE application is deployed to iPlanet Application Server.

You can review the source code of the sample applications and associated J2EE XML Deployment Descriptors by browsing in the following location:

*iAS Installation Path*/ias/ias-samples/

You can also find compile scripts at this site for experimenting with the sample code.

## Uninstalling

If you need to uninstall iPlanet Application Server, follow the steps described in this section. *Do not* uninstall iPlanet Application Server by deleting directories or modifying parameters in the registry.

This procedure is for uninstalling iPlanet Application Server and its subcomponents. By default, all components are selected for uninstall. Confirm that no other servers are using the Directory Server; if that is the case, deselect and do not uninstall the Directory Server.

Before running the iPlanet Application Server uninstall program, make sure that Directory Server is running.

During the uninstall process, you are prompted to provide a user name and password with administrator access to the configuration directory. Enter the user name and password given during installation. Another user name and password can be entered, if it has administrator privileges to the configuration Directory Server.

The following directories remain after you uninstall iPlanet Application Server:

- iPlanet Application Server root directory
- Any custom directories you created under the iPlanet Application Server directory
- The *install directory*/APPS directory

After uninstalling iPlanet Application Server, decide if you want to remove these directories, particularly the custom and APPS directories, which may contain applications you've developed, and files you wish to keep.

## To Uninstall:

1. Click the Uninstall icon in the iPlanet Application Server 6.0 program group.
2. Choose the components and subcomponents you wish to uninstall.
3. When prompted, enter a user name and password with administrator access to the configuration Directory Server. If you do not know, or do not want to use the user name and password given during installation, enter another user name and password having administrator privileges on the configuration Directory Server.
4. Enter the configuration Directory Server information.

## Uninstalling

# Installing on Solaris

This chapter explains how to install iPlanet Application Server. It includes the following topics:

- Preparing for Installation
- Installing the Application Server
- Using ezSetup
- Installing Multiple Instances on Solaris
- Upgrading iPlanet Application Server 6.0 to SP1
- Verifying Installation of the Application Server
- Installing the Web Connector Plug-in
- Using the Sample Applications
- Uninstalling

Read this chapter carefully before installing iPlanet Application Server. Check the release notes for any updates to these instructions at:

<http://docs.iplanet.com/docs/manuals/ias/60/sp1/releasenotes.html>

Refer to Chapter 3, “Configuring iPlanet Application Server” for more information about configuring your application server during and after installation.

# Preparing for Installation

Before you begin installing iPlanet Application Server, you will need to:

- Check system requirements
- Install and configure the web server
- Create a raw partition
- Create a Mirror Directory for Transaction Manager
- Install and configure all database servers

## Check System Requirements

Your system must meet the following requirements before you can install iPlanet Application Server:

**Table 2-1**

Component	Requirement
Computer/Operating system	Sun SPARC running Solaris 2.6 or Solaris 8
Memory	Per CPU: 256 MB minimum; 512 MB recommended
Available disk space	Total disk space: 400 MB Solaris, 800 MB Solaris if installing both NetDynamics and iPlanet Application Server 6.0 CD-ROM drive
Pre-installed software	<ul style="list-style-type: none"> <li>• iPlanet Web Server 4.1 Enterprise Edition</li> <li>• iPlanet Application Server Directory Server 4.1 (optional)</li> <li>• Netscape Communicator 4.5</li> </ul> Database connectivity software (see the following table)

## Install and Configure the Web Server

The web server and web browser must be installed and configured before you install iPlanet Application Server. **You will need the full path of the web server for Solaris installation.**

The iPlanet Application Server user and the web server user must either be the same or from the same group. If the web server is installed as a regular user, and the iPlanet Application Server user is installed as the root user, a file permission problem will exist. The web server won't start because it won't have access to the registry file `reg.dat`.

Know whether your web server runs on the machine where you are about to install iPlanet Application Server or whether it resides on another machine. If it is on another machine, you perform what is referred to as a “webless” installation of iPlanet Application Server. If you are performing a webless installation of iPlanet Application Server, know the type of web server you have and remember to install the Web Connector plug-in on the web server after you finish installing iPlanet Application Server.

## Create a Raw Partition

Create a raw partition on a separate disk prior to running the installation program. This is where the transaction manager log file gets stored for each Java Server.

## Create a Mirror Directory for Transaction Manager

The iPlanet Application Server is installed on the default disk drive. Create a directory on a separate drive and specify a path to it prior to running the installation program.

## Install and Configure All Database Servers

Before installing iPlanet Application Server install and configure the database servers and clients you will use. iPlanet Application Server.

iPlanet Application Server 6.0 SP1 is configured to work with the database clients and servers listed below:

**Table 2-2**

Database Client	Database Server
Oracle 8.1.6	Oracle 8.05, 8i, 7.3.4
Sybase 11.1.1	Sybase 11.9.2, 12

**Table 2-2**

Database Client	Database Server
DB2 5.2	DB2 5.2, 6.1
ODBC 3.51	Microsoft SQL Server 7
Informix 2.4	Informix Server 7.3, 9.1.4

## Installing the Application Server

You can choose from four installation types: custom, typical, express, and ezSetup. The following table shows which questions are asked for each type of installation. Use the table in conjunction with “Using the Custom Installation Wizard” on page 61 in this document.

For information on the ezSetup option, see “Using ezSetup” on page 112.

**Table 2-3**

Dialog Box	Custom	Typical	Express	EzSetup
Welcome	X	X	X	
Software License Agreement	X	X	X	
Select Server or Console Installation	X	X	X	
Installation Type	X	X	X	
Location of Installation	X	X	X	X
Components to Install	X	X	X	

Components with a number in () contain additional subcomponents which you can select using subsequent screens.

- Netscape Server Family Core Components (3)
- Netscape Directory Suite (2)
- Administration Services (2)
- iPlanet Application Server Suite (4)

iPlanet Server Family Core Components	X	X		
---------------------------------------	---	---	--	--

components.

Accept the default and install all components

**Table 2-3**

Dialog Box	Custom	Typical	Express	EzSetup
iPlanet Directory Suite Components	X	X		
Accept the default and install all components				
Administration Services components	X	X		
Accept the default and install all components				
iPlanet Application Server Suite components.	X	X		
Accept the default and install all components				
Domain name	X	X		
System User and Group	X	X	X	
Do you want to register this software with an existing Netscape configuration directory server?	X	X		
Do you want to use another directory server to store your data?	X	X		
Directory Server Network Port	X	X		
Directory Server Identifier	X	X		
Netscape configuration directory server administrator ID	X	X	X	
Suffix	X	X		
Directory Manager DN	X	X	X	
Administration Domain	X	X		
Replication	X			
Sample entries	X			
Populate new directory instance	X			
Disable schema checking	X			
Administration Port	X	X		
IP address	X			
Run Administration Server as [root]	X	X		
Install locally	X			
Name for iAS global configuration parameters	X			
Product Key	X	X	X	

**Table 2-3**

Dialog Box	Custom	Typical	Express	EzSetup
FULL PATH of the Web Server Instance	X	X	X	X
Configuring the iPlanet Web Server	X	X	X	
Port numbers for:	X			
<ul style="list-style-type: none"> <li>• iAS Administrator (KAS)</li> <li>• Executive Server (KXS)</li> <li>• CGI to KXS</li> </ul>				
Number of Java Servers (KJS) to be installed and their KJS to KXS port numbers	X			
Number of C++ Servers (KCS) to be installed and their KCS to KXS port numbers	X			
Administration Server access user name and password.	X	X	X	
JDBC third party or native drivers	X			
IF JDBC: number of third party drivers	X			
IF JDBC: information to configure third party drivers	X			
<ul style="list-style-type: none"> <li>• driver name</li> <li>• Class name</li> <li>• URLprefix</li> <li>• ClassPath</li> </ul>				
IF NATIVE: Database client setup for:	X			
<ul style="list-style-type: none"> <li>• Oracle</li> <li>• Sybase</li> <li>• Informix</li> <li>• DB2</li> </ul>				
IF NATIVE: Database Priority	X			
Transaction Manager	X			
Transaction Manager LogVolumeDiskName	X			
Resource Manager	X			

**Table 2-3**

Dialog Box	Custom	Typical	Express	EzSetup
Configure Resource Manager	X			
<ul style="list-style-type: none"> <li>• Resource Manager Name</li> <li>• Database Type</li> <li>• Open String Example</li> <li>• Database Server Name</li> <li>• Database User Name</li> <li>• Database User Password</li> </ul>				
Internationalization (I18N) support	X	X	X	
Cluster Configuration for Data Synchronization	X			
Cluster information	X			
Run iAS at system startup	X			
Finished with gathering of information.	X	X	X	

## Using the Custom Installation Wizard

The following procedure describes how to install iPlanet Application Server using the Custom installation option:

1. Insert the iPlanet Application Server Install CD-ROM into the CD-ROM drive.
2. Mount the CD-ROM on, for example, `/cdrom/cdrom0`.
3. At the shell prompt, run the following command:

```
/cdrom/cdrom0/solaris/setup
```

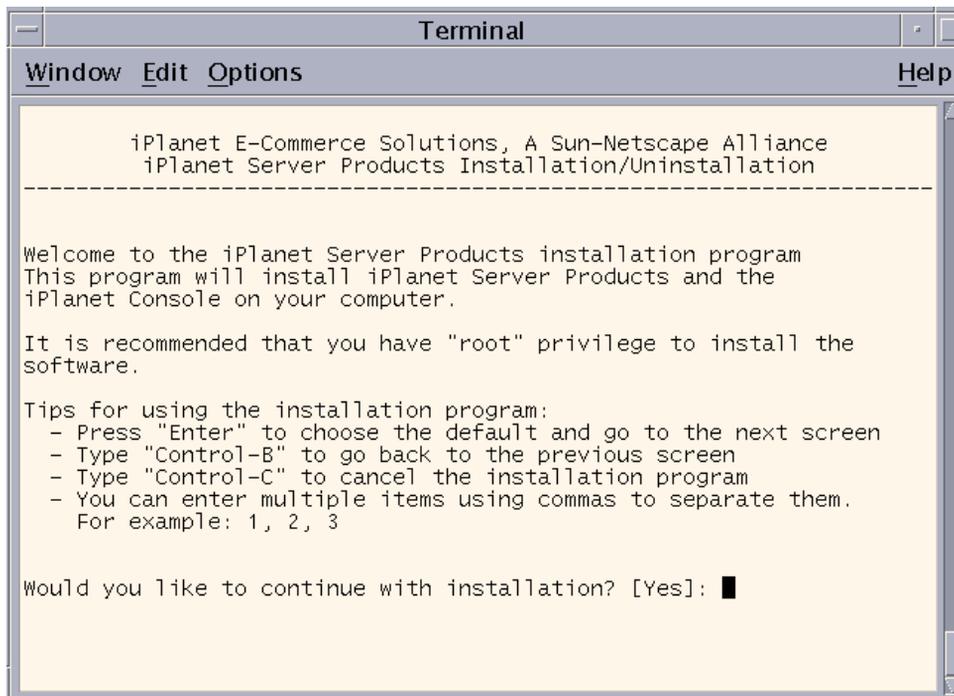
During installation, press:

- The Enter key to accept the default and continue.
- CTL+B to back up to the previous screen within an installation section, as defined by the title at the top of the screen. For example, “iPlanet Directory,” is a section within the installation program. You cannot use CTL+B to go back to a screen in a different section than the one you are currently in.
- CTL+C if you need to exit the installation. If you want to install again, you must run the installation program from the beginning.

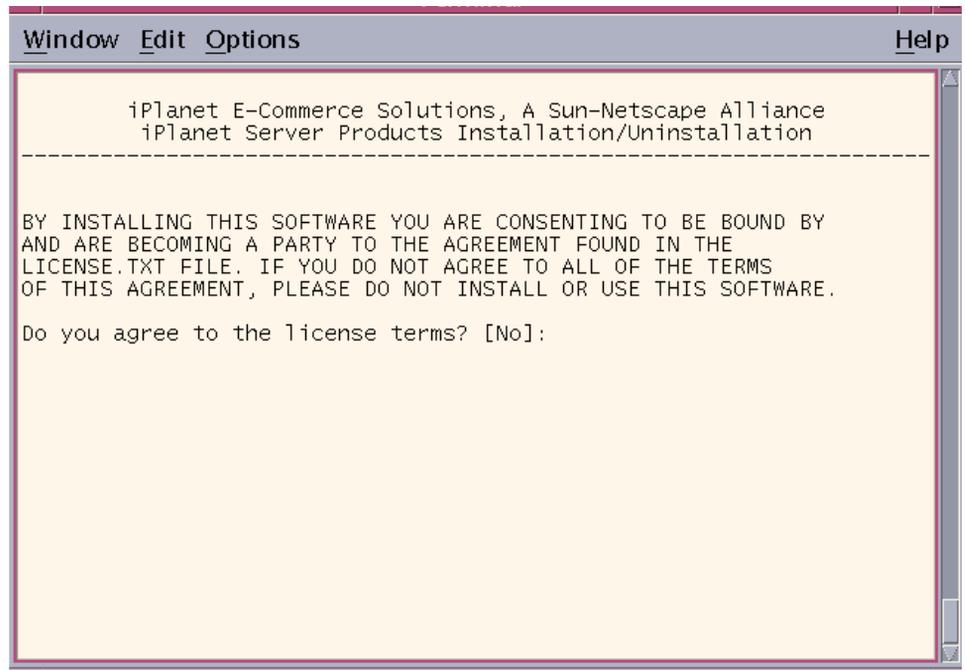
## Installing the Components

1. In the temporary directory you have created type `#!/setup`

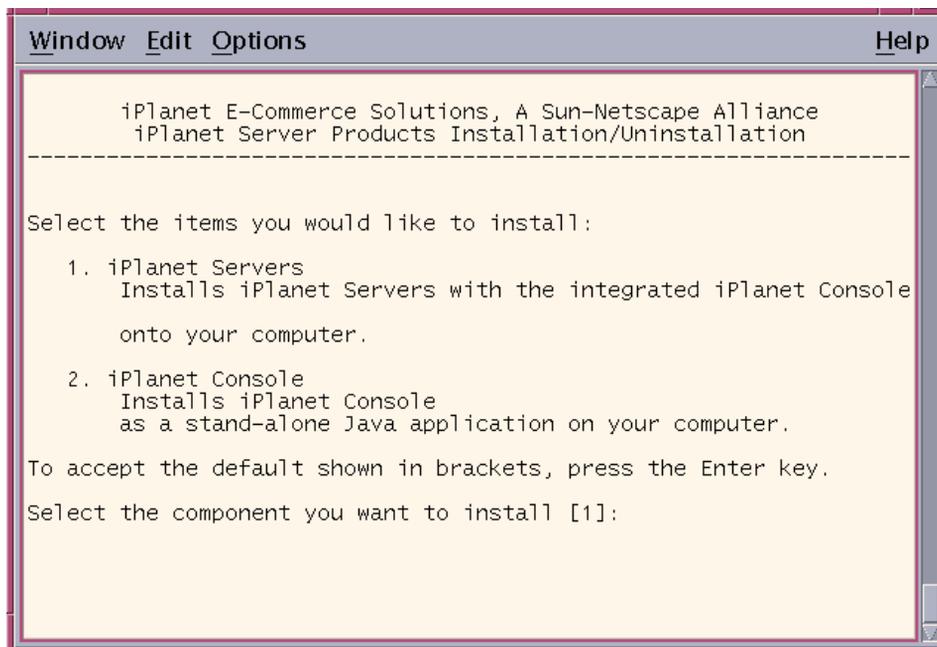
The following dialog will appear in a Terminal window:



2. Accept the default, or type Yes to continue.

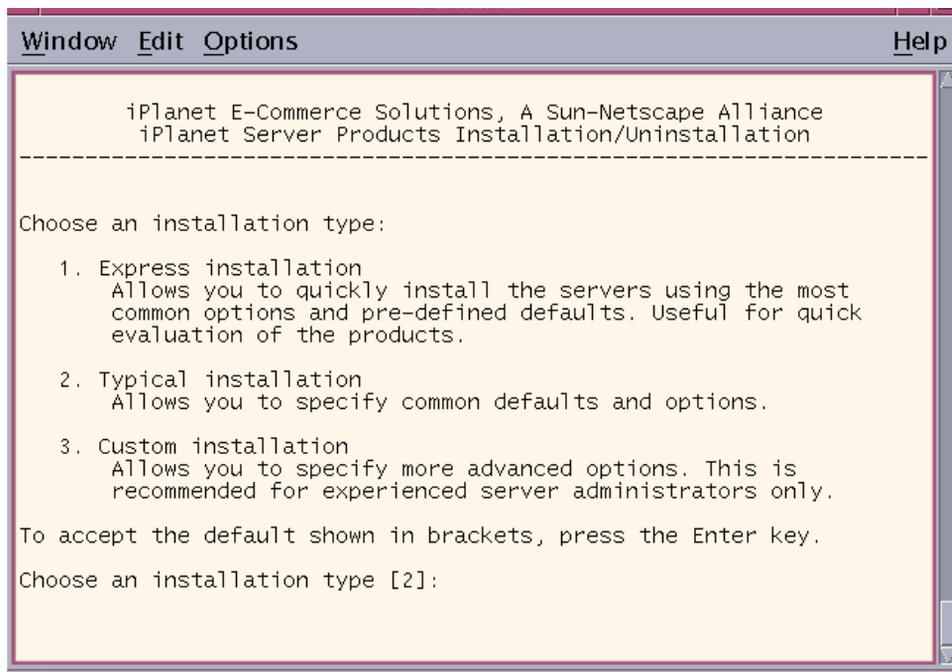


3. You must type Yes to continue the installation. Do not accept the default.



4. Enter to accept the default, or type 1.

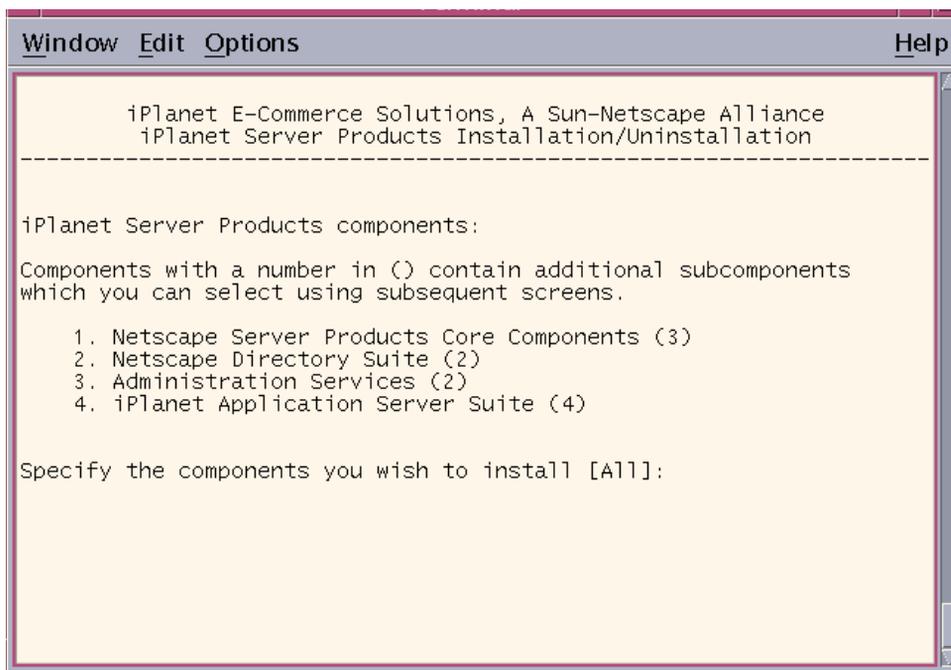
iPlanet Console can be installed as a stand-alone application.



5. Enter the number of the installation type. Typical is the default installation. (A Custom installation is detailed in these steps.)

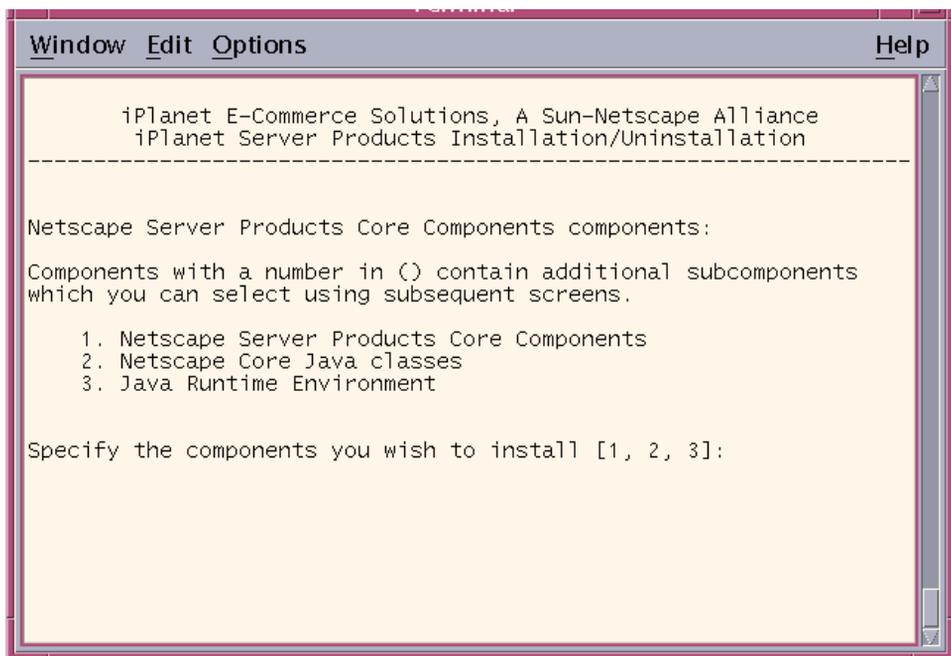


6. Enter to accept the default directory of `/usr/iplanet/ias6.`, or type in a different location. If you do not have 400MB available on this drive for the installation of iPlanet Application Server, browse to select a different drive. If you enter a different location, do not include spaces in the path name. All components will be installed in this base directory.

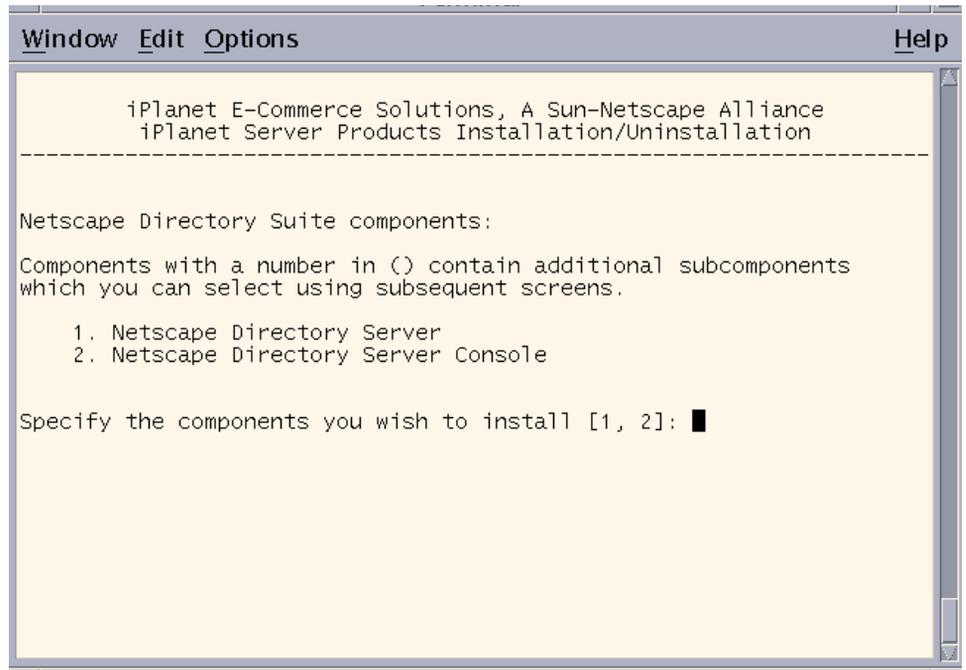


**7. Accept the default and install all components.**

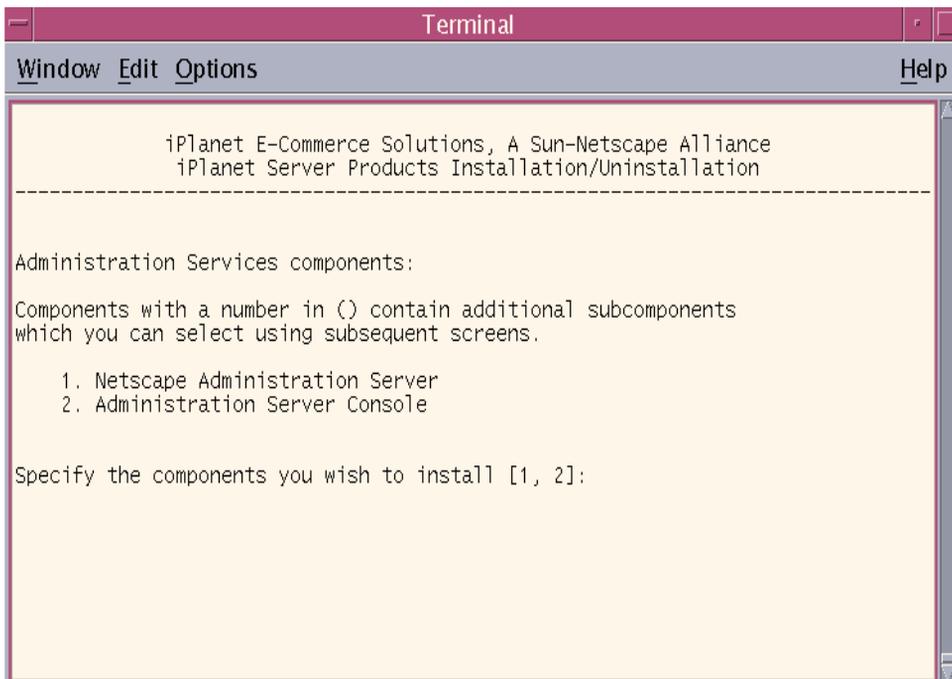
For information about the components, see “Server Components” on page 124.



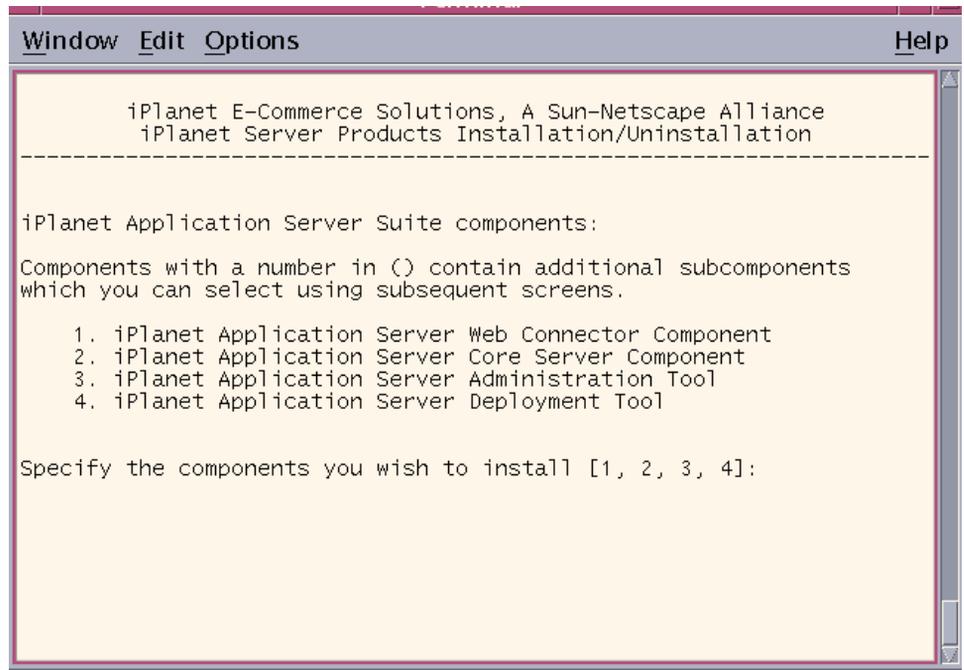
**8. Accept the default and install all components.**



9. Accept the default and install all components.



**10. Accept the default and install all components.**

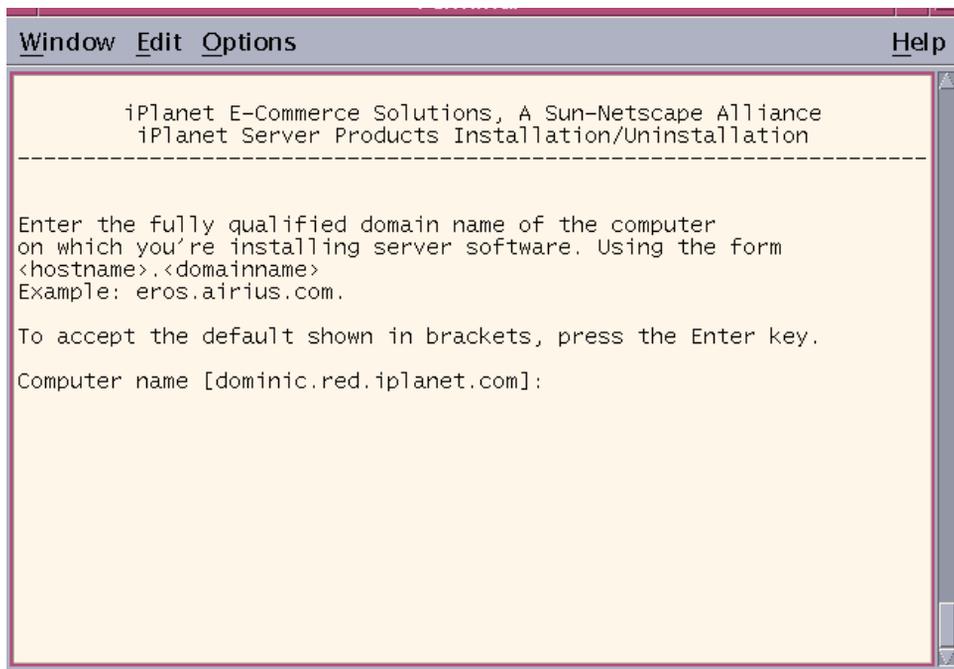


**11. Accept the default and install all components.**

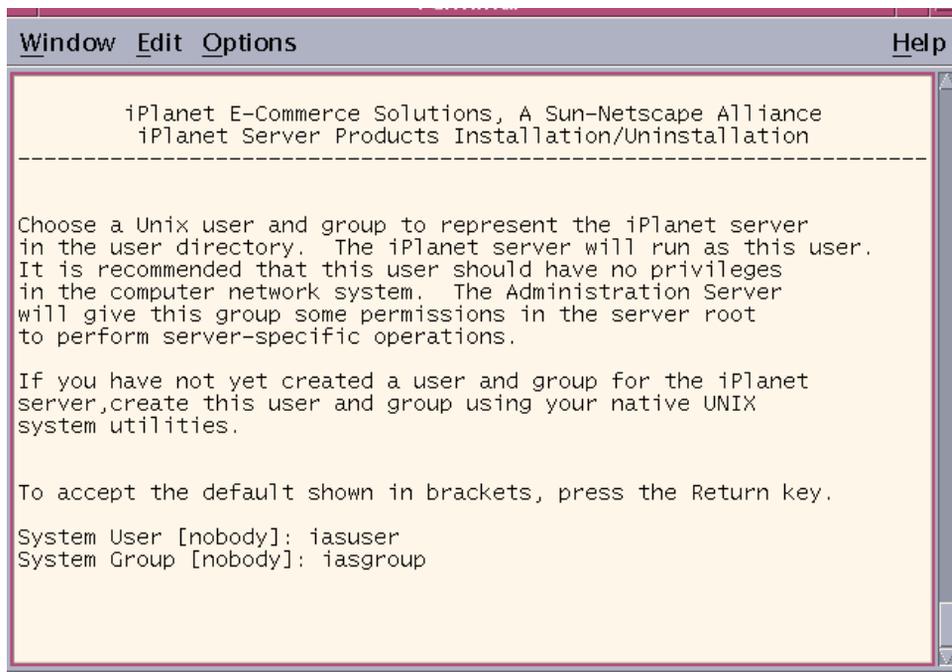
## Configuring the Directory Server

For information about the Directory Server, see page 124, or the Netscape Directory Server documentation at:

<http://docs.iplanet.com/docs/manuals/directory.html#dirserver>

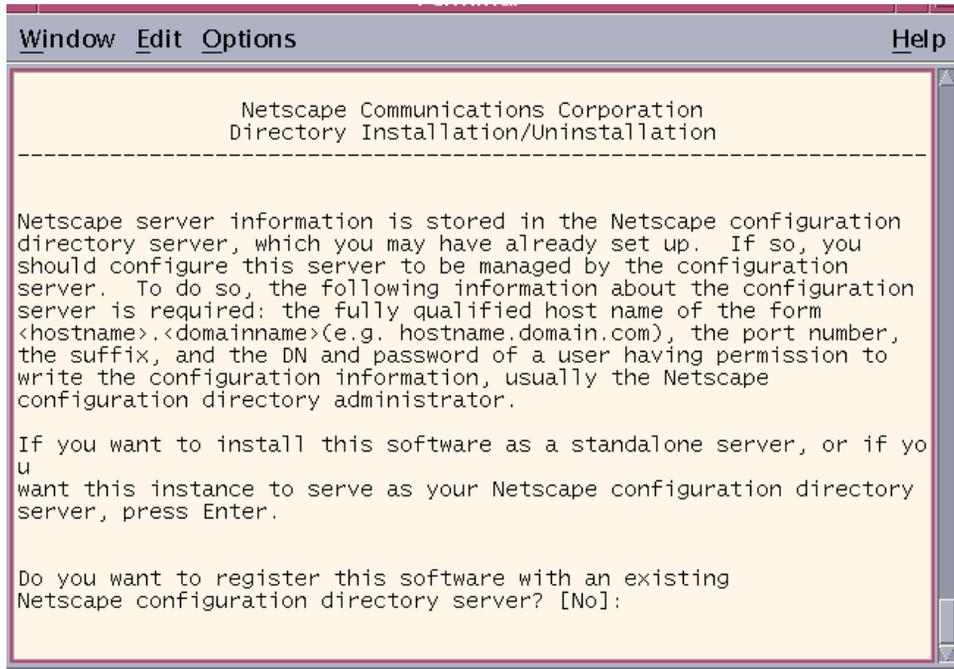


1. Enter to accept the default computer name.

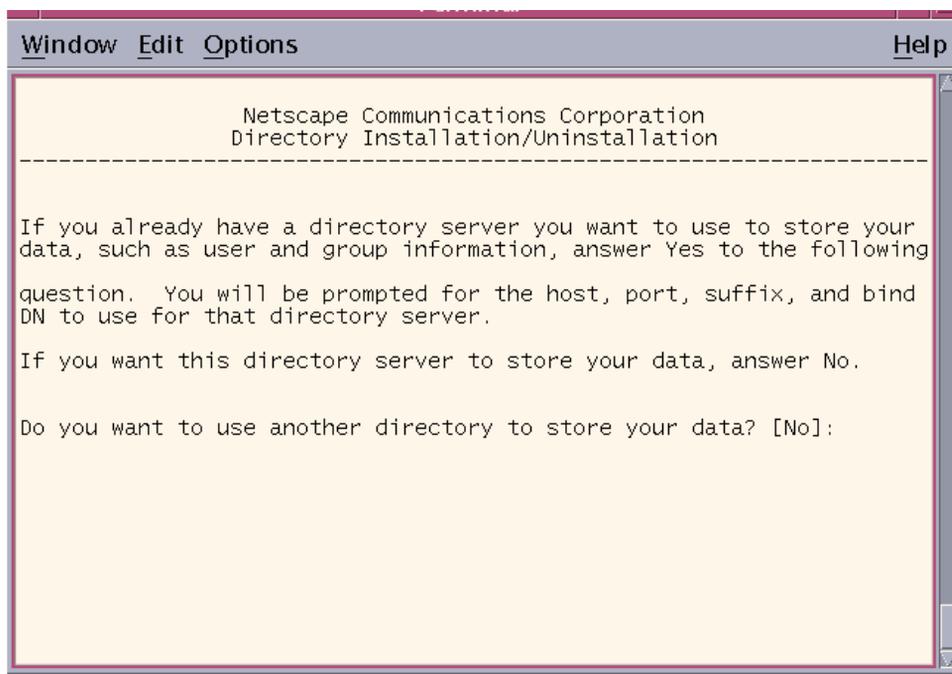


**2. Type in the system user and system group names.**

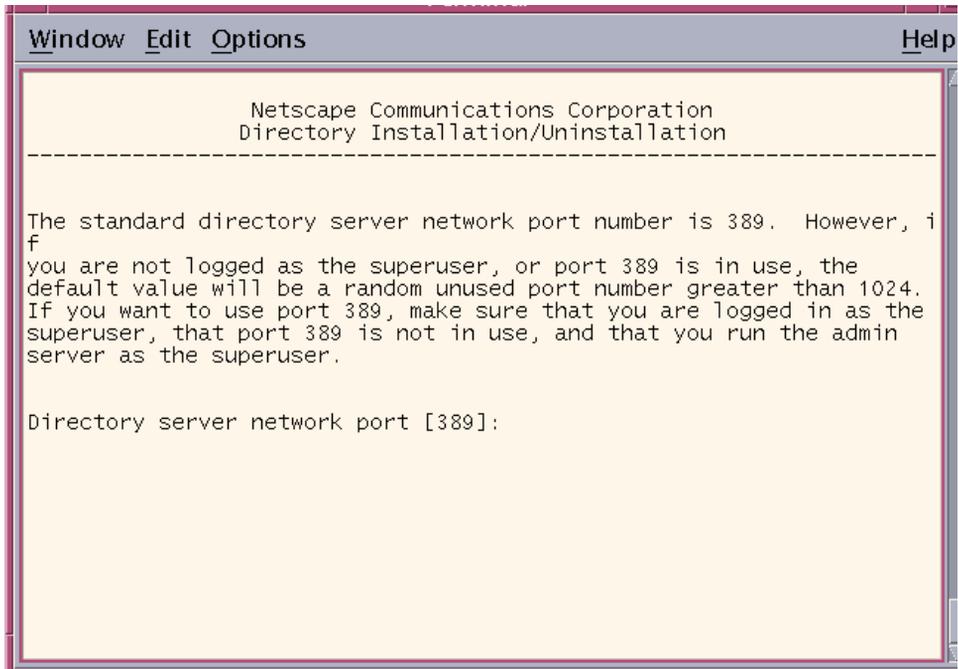
You should have already set up this user and group prior to running the installation program. Specify a user that has no privileges elsewhere on the system to avoid access to restricted servers, such as the configuration Directory Server.



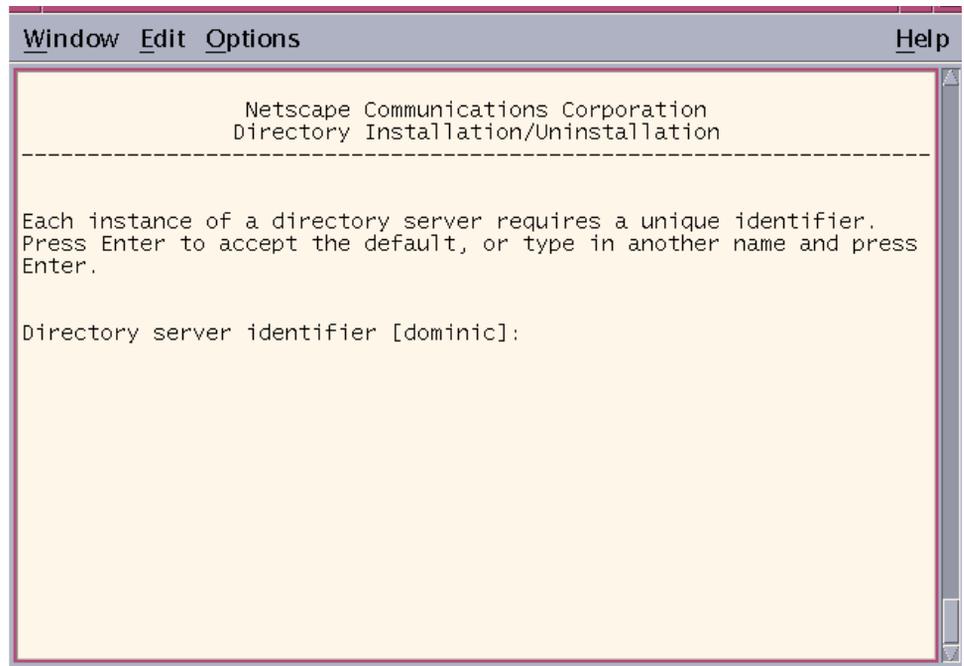
- 3. Enter to accept the default and register this Directory Server as the configuration Directory Server. If not installing the configuration Directory Server included in this installation, specify an existing Directory Server and type in the Relay Host.**



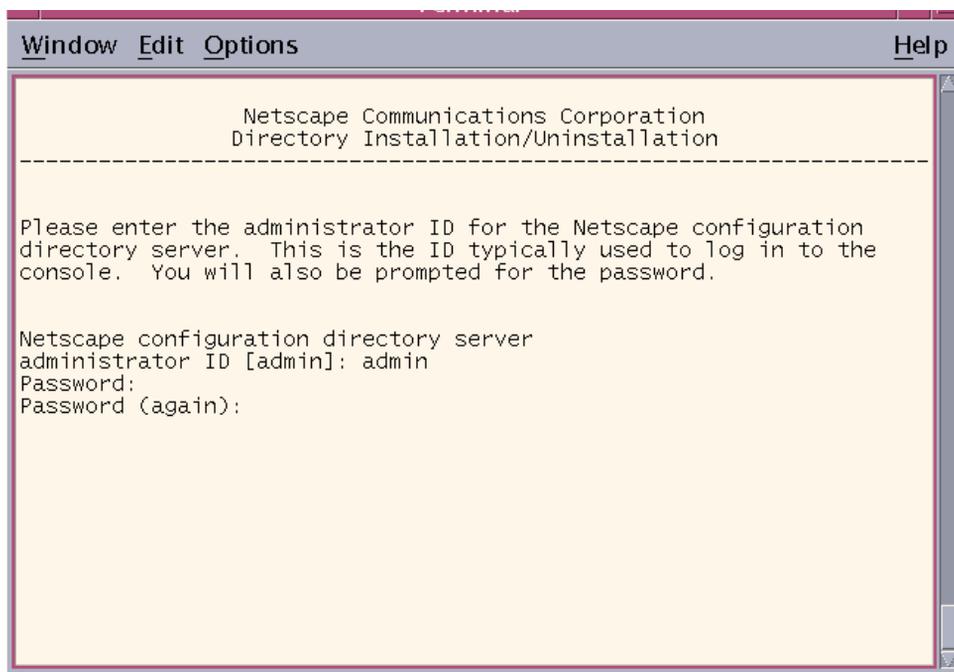
4. Accept the default specifying this Directory Server as the storage server. If you are not installing this Directory Server, you can only specify a Directory Server already installed on your system.



5. Accept the default port number to be used by the Directory Server. The default value is 389 if you install as root, otherwise, the default value will be a random available port number.



6. Accept the default.

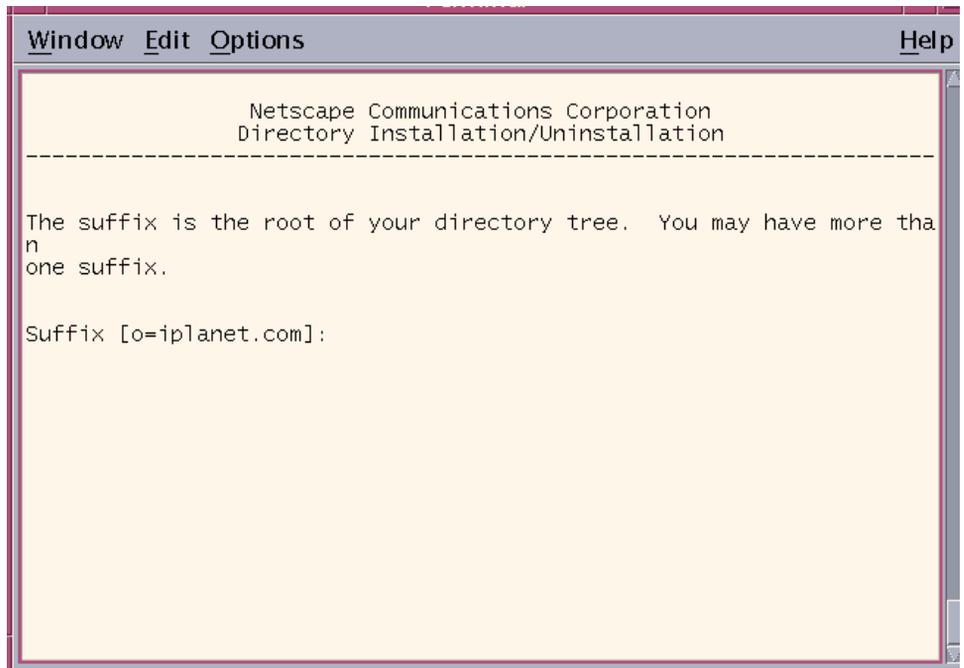


7. Enter the administrator ID and password for the configuration Directory Server.

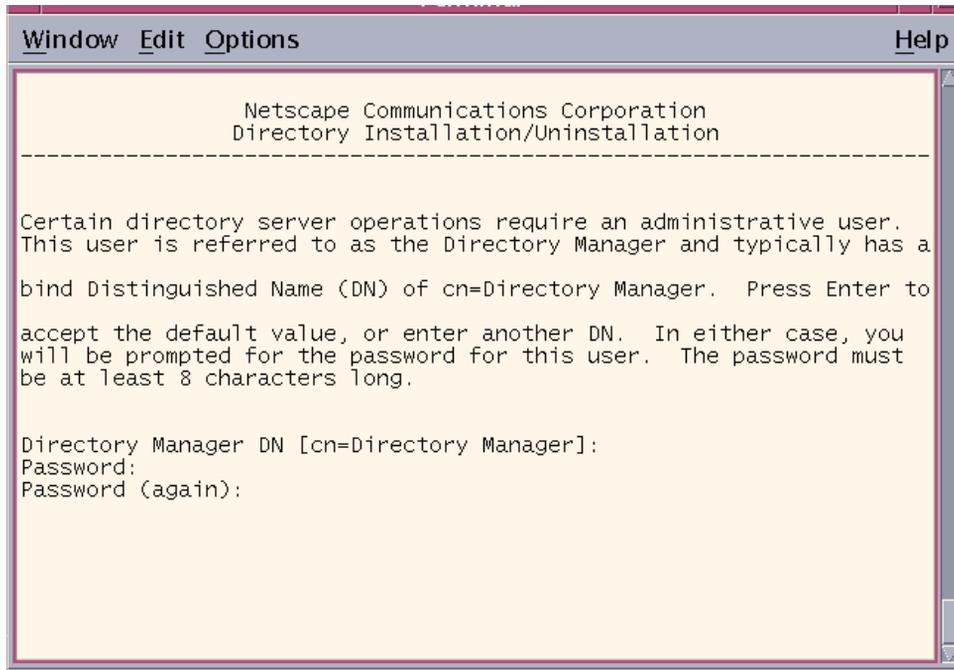
---

**NOTE** The Administrator ID and password supplied here will be required to uninstall iPlanet Application Server and Directory Server.

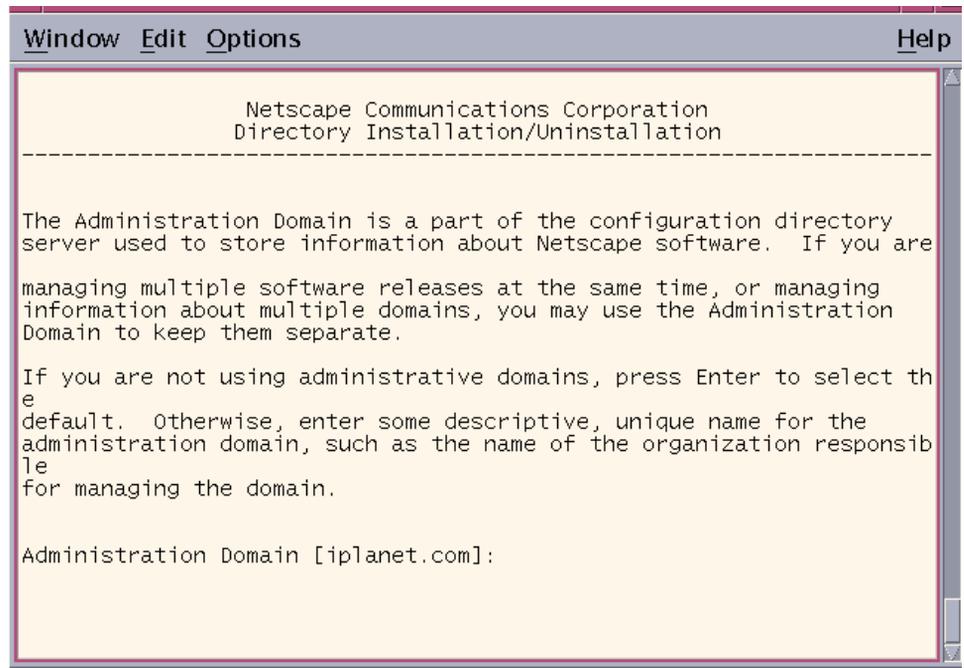
---



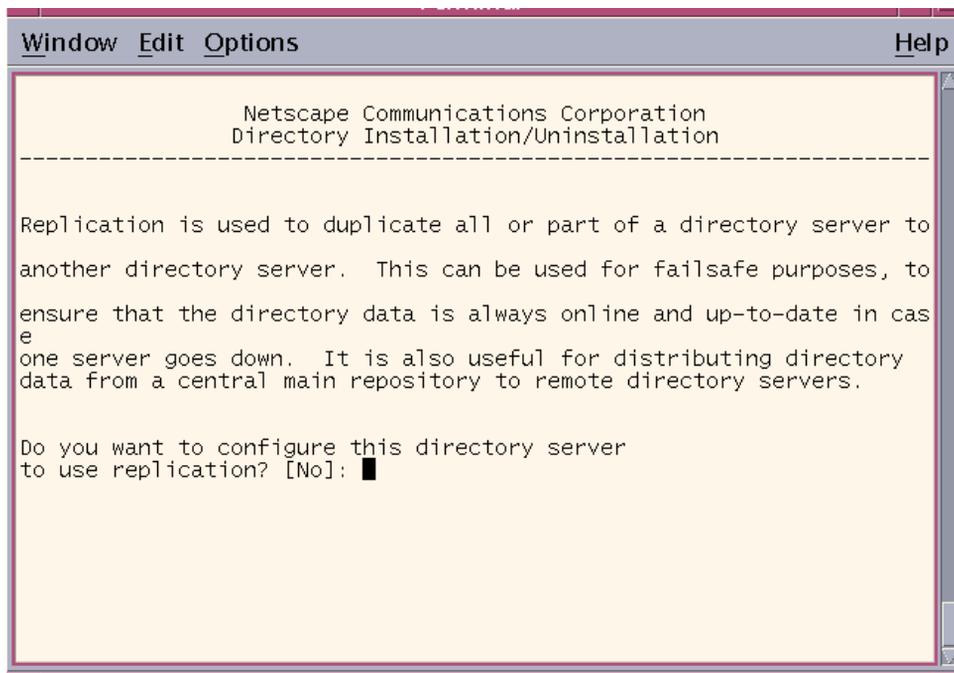
8. Enter to accept the default, or select the top level domain name for your system.



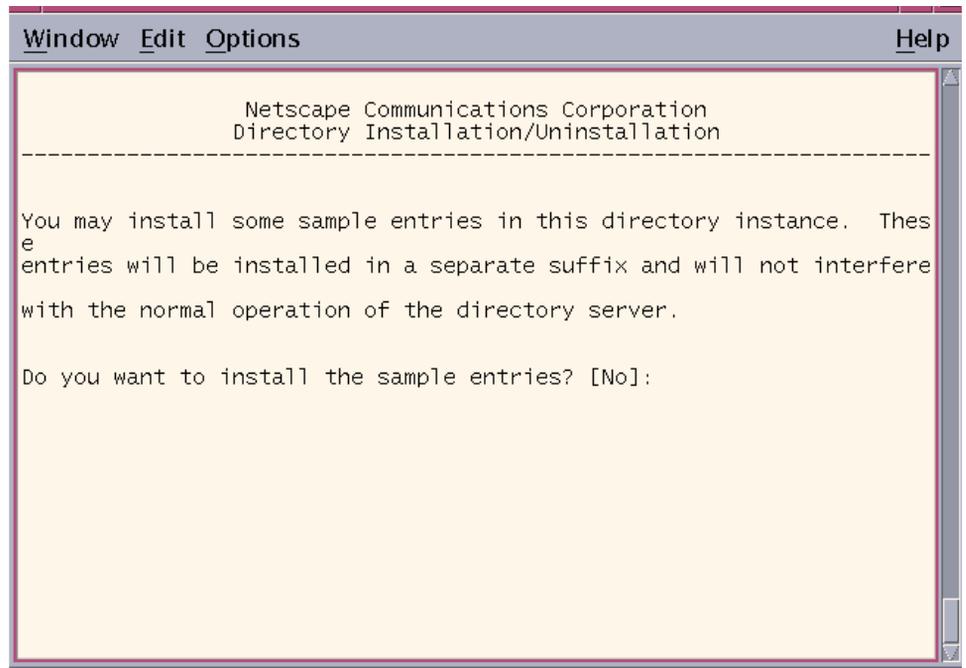
9. Enter to accept the default, or type in a Distinguished Name (DN).  
For information about the Directory Manager DN, see page 126.



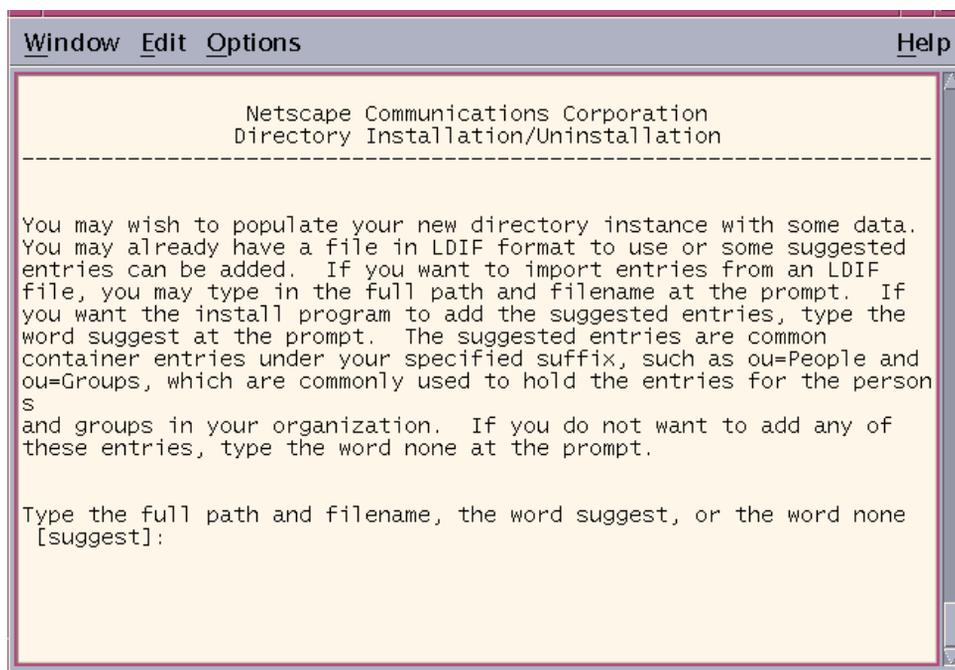
10. Accept the default, or enter a unique name for the Administration Domain.



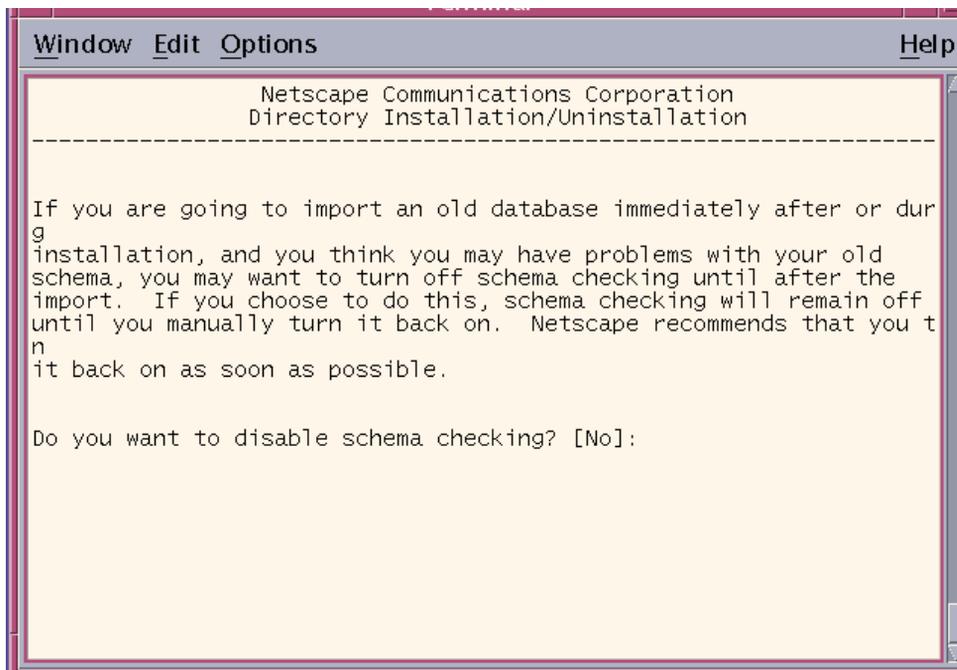
11. Enter to accept the default or type Yes.



**12.** Enter to accept the default or type Yes.



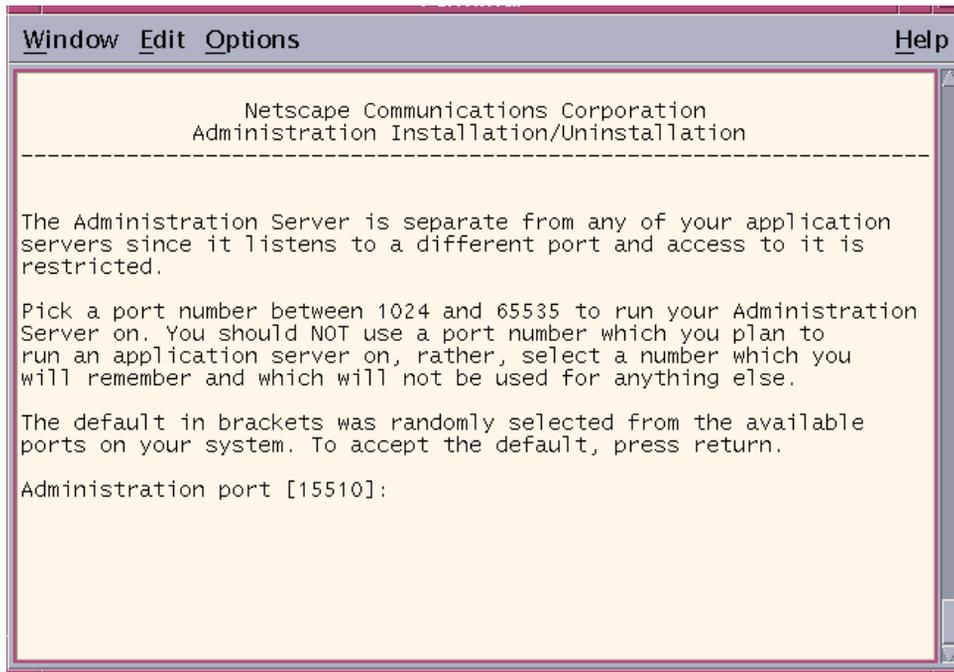
13. Enter to accept the default or type none, or the full path and file name of the data you wish to populate the instance with.



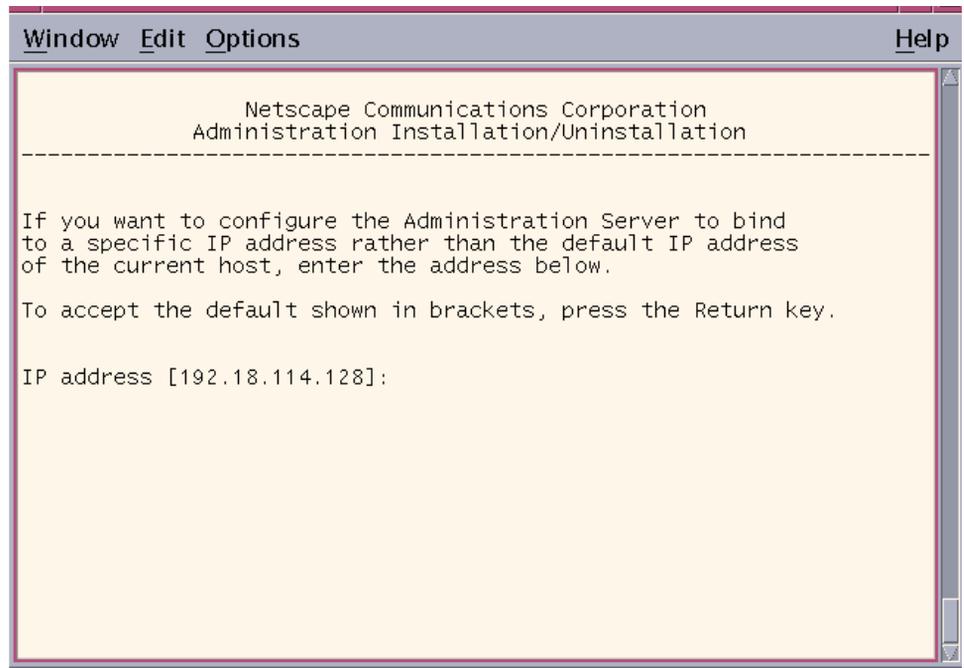
14. Enter to accept the default or type Yes.

## Configuring the Administration Server

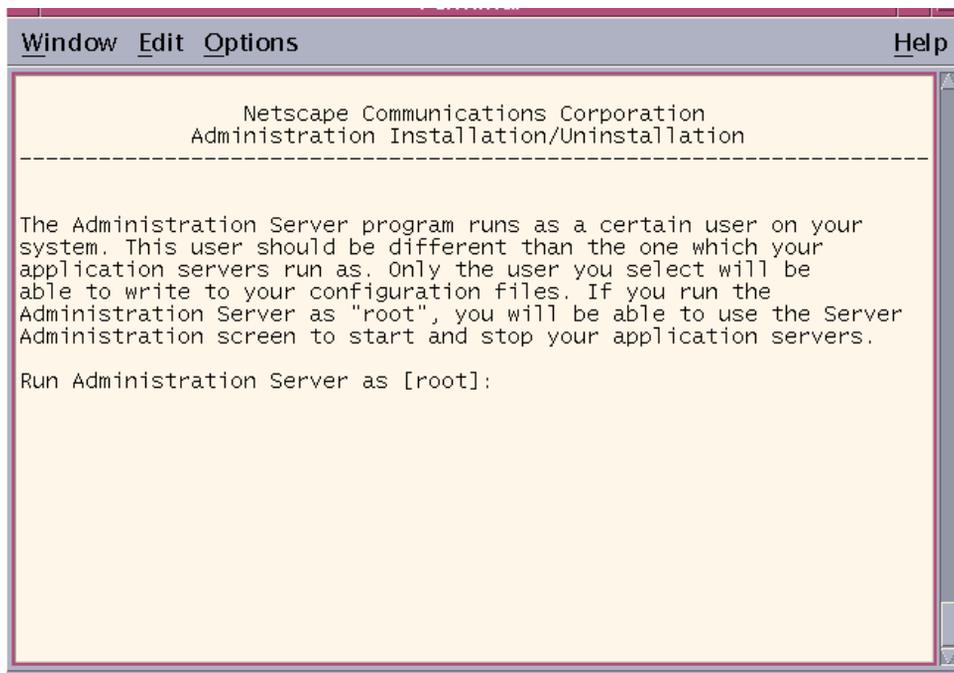
For information about the Administration Server, see page 126.



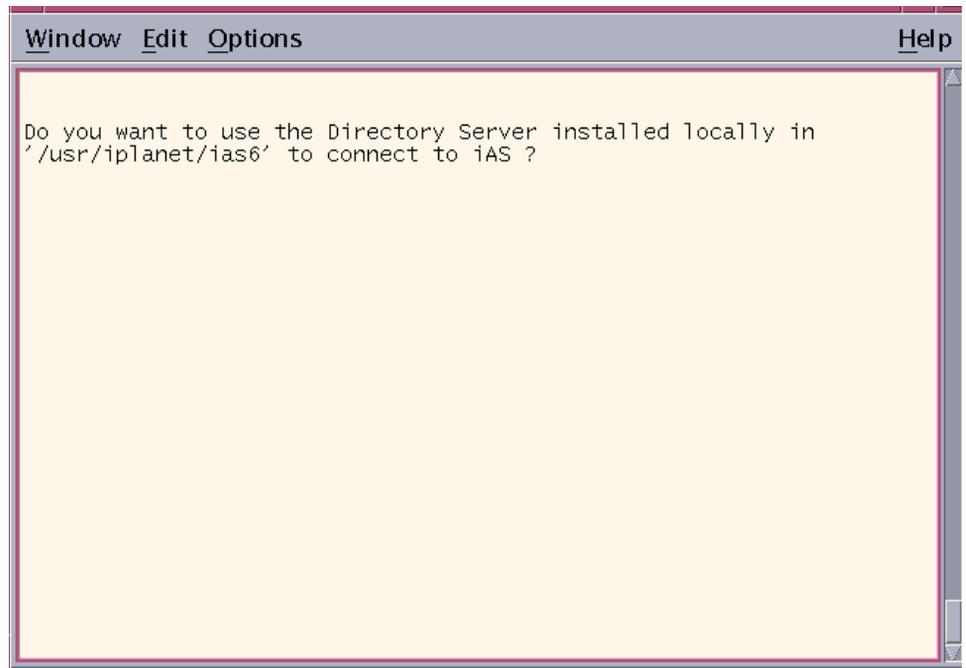
1. Enter to accept the default, or type in a different port number.



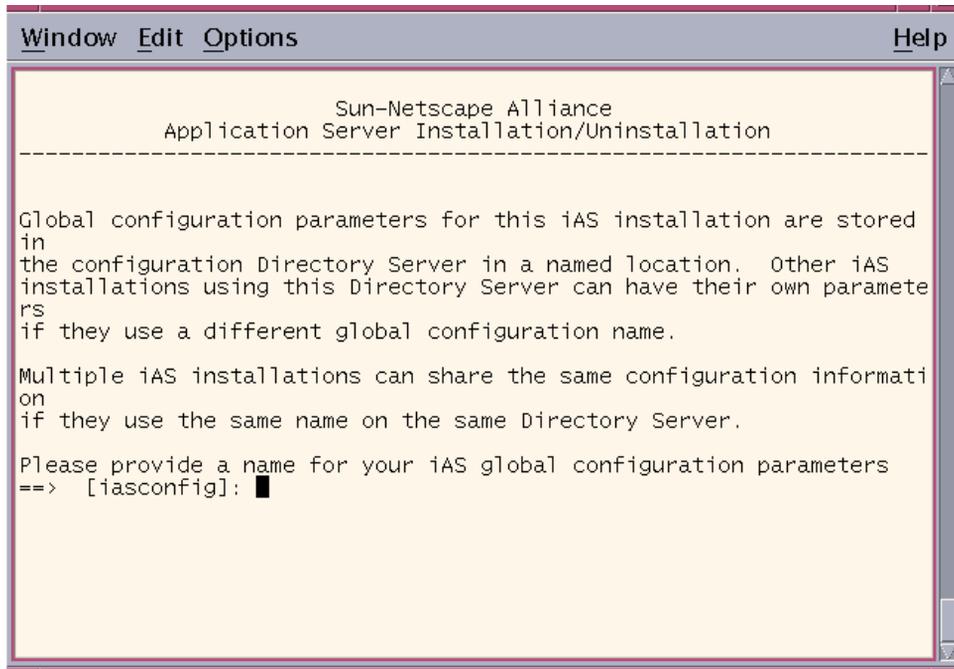
2. Enter to accept the default.



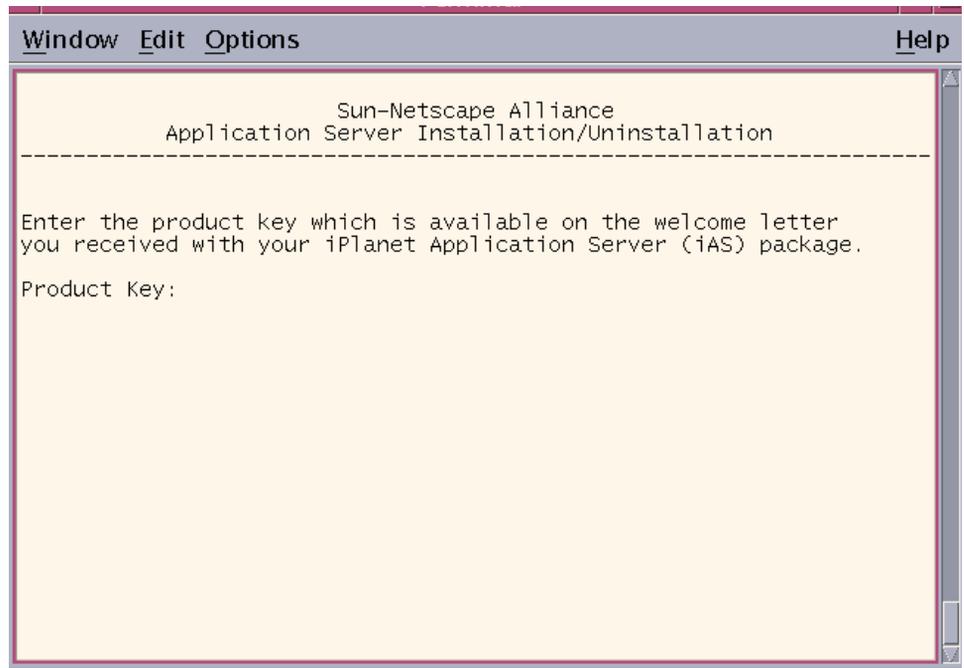
3. Enter to continue.



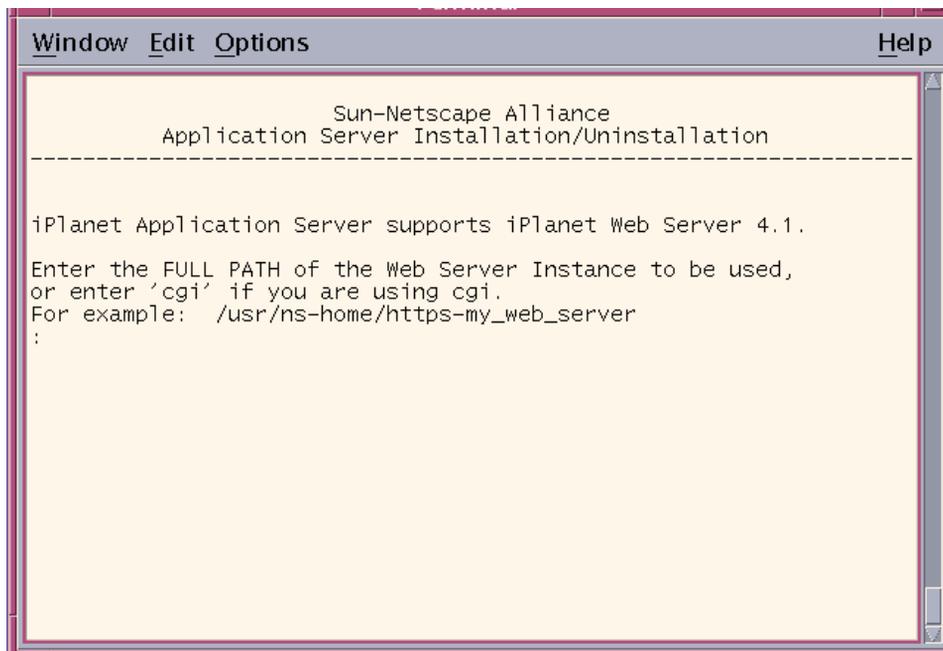
4. You must type Yes to continue. There is no default for this step.



5. Enter to accept the default, or type in a unique global configuration name for this installation of iPlanet Application Server. This name is stored on the configuration Directory Server, under the `o=iPlanetRoot` tree, along with global configuration names of any other iPlanet Application Server installations.

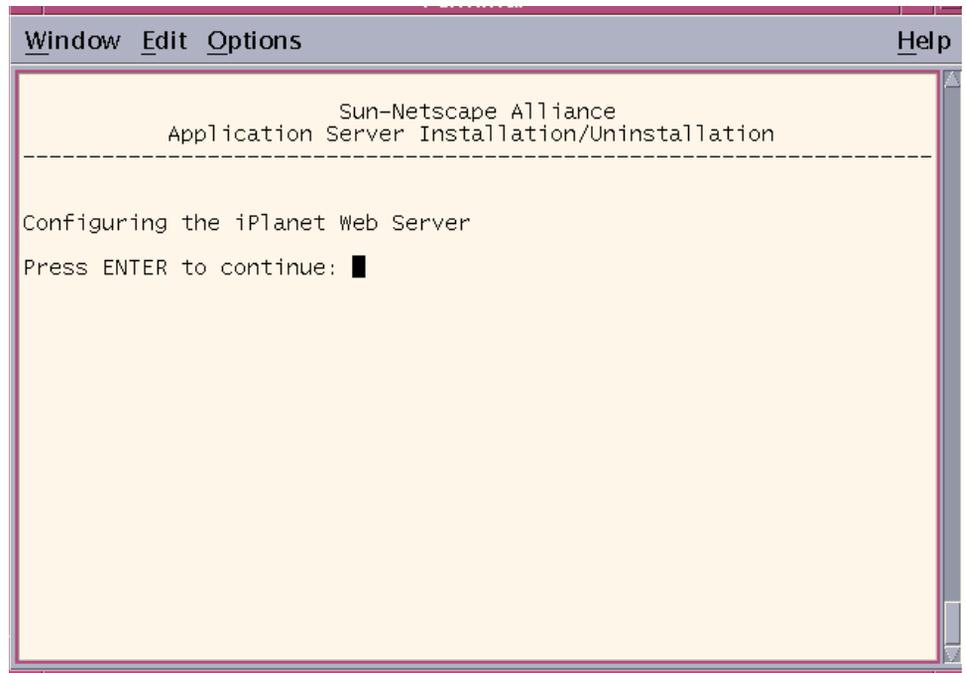


6. Type in the Solaris product key.

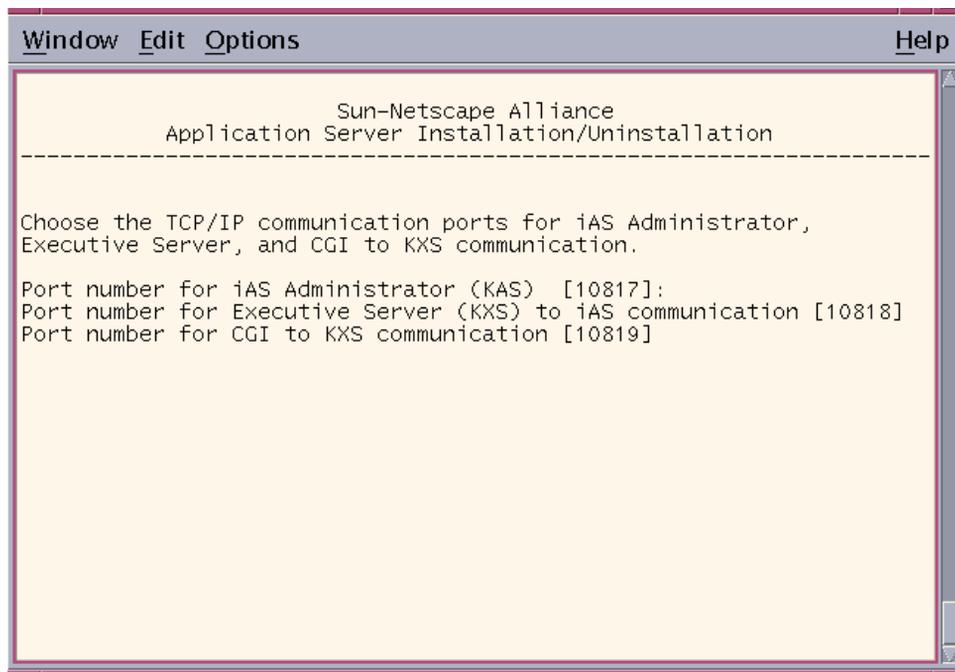


7. Type in the full path of your web server instance. No default is provided.

To learn more about web servers and webless installations, see “Web Servers,” page 127.

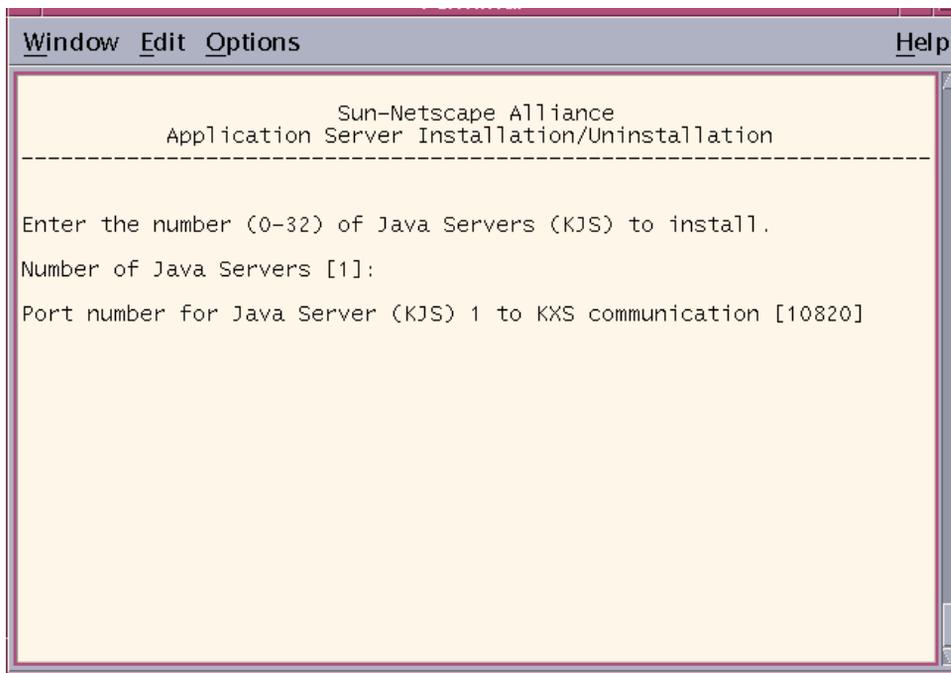


8. Enter to continue.



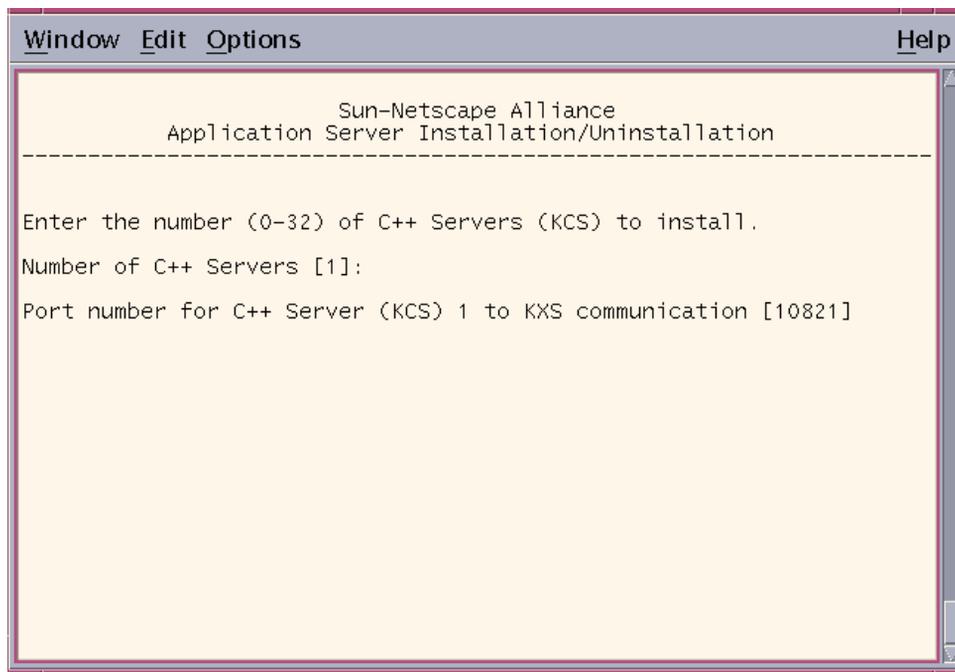
**9. Enter to accept the defaults.**

Listener ports must be within the acceptable range (1025 to 32768), and must be unique (not used by any other services on your system). For more information, see "Port Numbers," page 126.



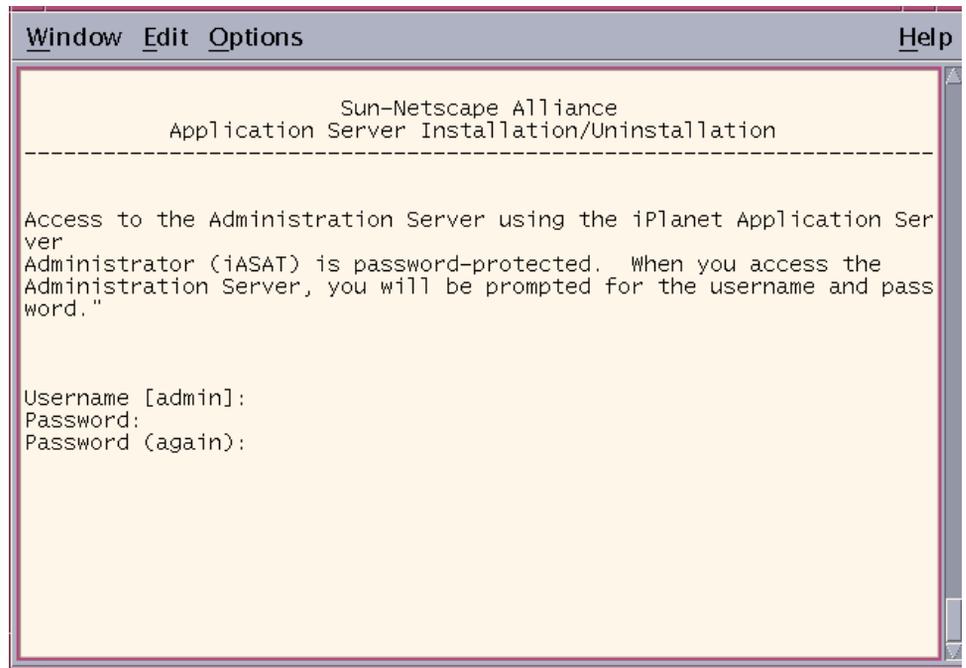
10. Enter to accept the default number of Java Servers (KJS) you intend to use and their default port number(s), or type in different port numbers.

All Java Server port numbers are listener ports and must be within the acceptable range of 1025 to 32768. Port numbers must be unique (not used by any other services on your system).



11. Enter to accept the default number of C++ Servers (KCS) you intend to use and their default port number(s). Or type in different port numbers.

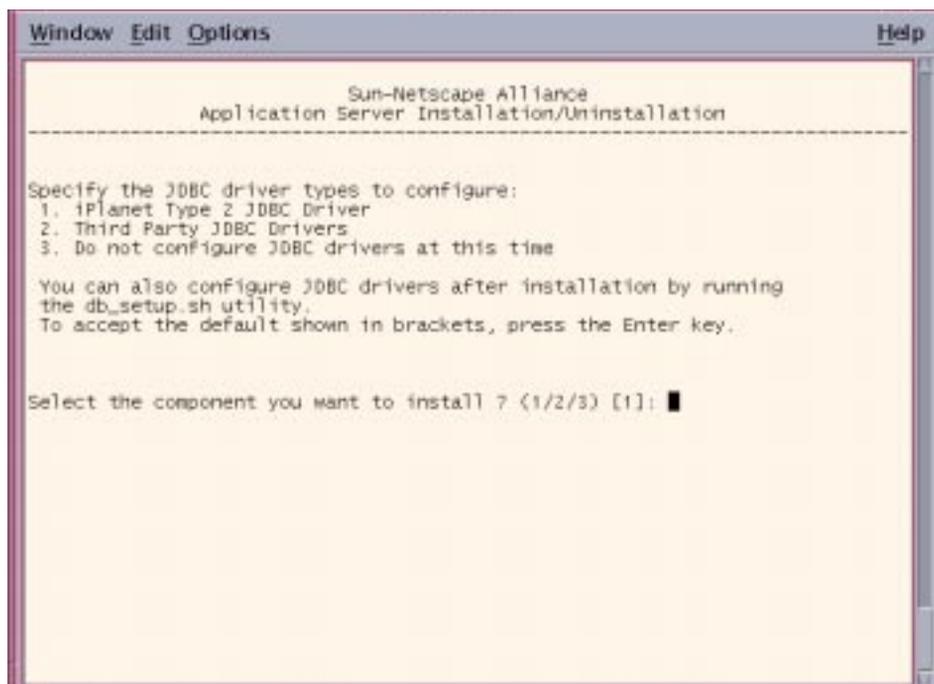
All C++ port numbers are listener ports and must be within the acceptable range of 1025 to 32768. Port numbers must be unique (not used by any other services on your system).



**12.** Type in your Administration Server username and password.

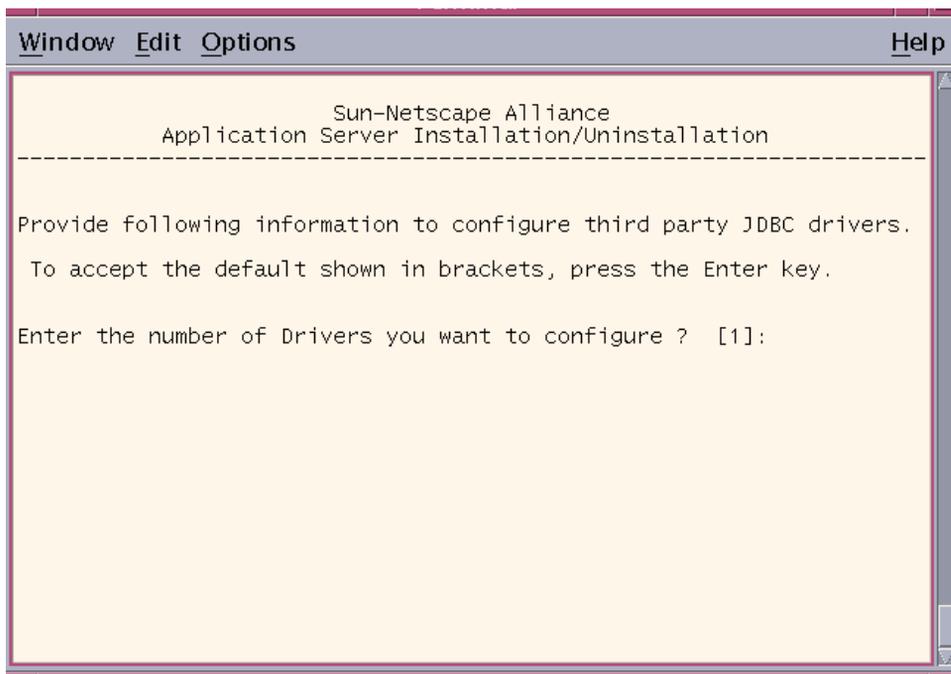
## Setting up JDBC Third Party or Native Drivers

To learn more about Third Party JDBC Driver Support, see page 130.

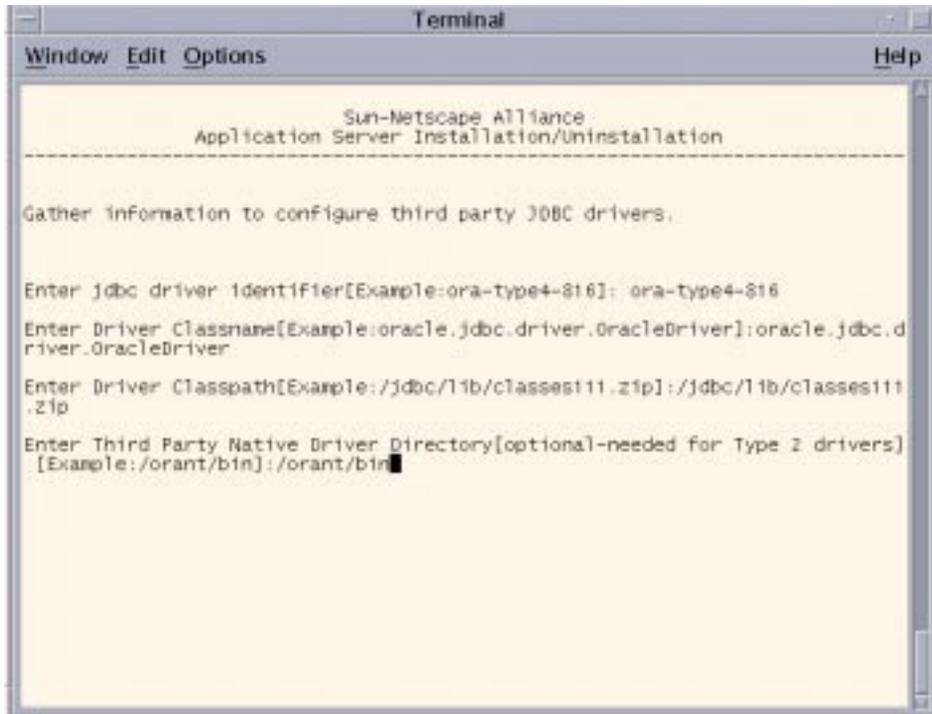


1. Enter whether you will use iPlanet Type 2 JDBC drivers, third party JDBC drivers, or none at this time.

If you select third party JDBC drivers, you will need to complete the following steps:



2. Enter the number of JDBC third party drivers you will use.



```
Terminal
Window Edit Options Help

Sun-Netscape Alliance
Application Server Installation/Uninstallation

-----

Gather information to configure third party JDBC drivers.

Enter jdbc driver identifier[Example:ora-type4-816]: ora-type4-816
Enter Driver Classname[Example:oracle.jdbc.driver.OracleDriver]:oracle.jdbc.d
river.OracleDriver
Enter Driver Classpath[Example:/jdbc/11b/classes111.zip]:/jdbc/11b/classes111
.zip
Enter Third Party Native Driver Directory[optional-needed for Type 2 drivers]
[Example:/orant/bin]:/orant/bin
```

3. For each third party JDBC driver enter the driver identifier, Classname, and CLASSPATH. Follow the formats in the examples to enter your information. The Third Party Native Driver Directory is required for Type 2 drivers only.

---

**NOTE** For typical Classnames and CLASSPATHS, see Third Party JDBC Driver Support, Resource Managerpage 130.

After installation you must register the datasource files for the third party JDBC drivers. The above reference also explains registration.

---

## Configuring Database Connectivity

```

Sun-Netscape Alliance
Application Server Installation/Uninstallation
-----
iAS requires the following information for database connectivity. You will
be asked whether to configure iAS for each of the supported databases.
If you answer yes, you will be prompted for the home directory and other
information that iAS requires to work with your database(s).

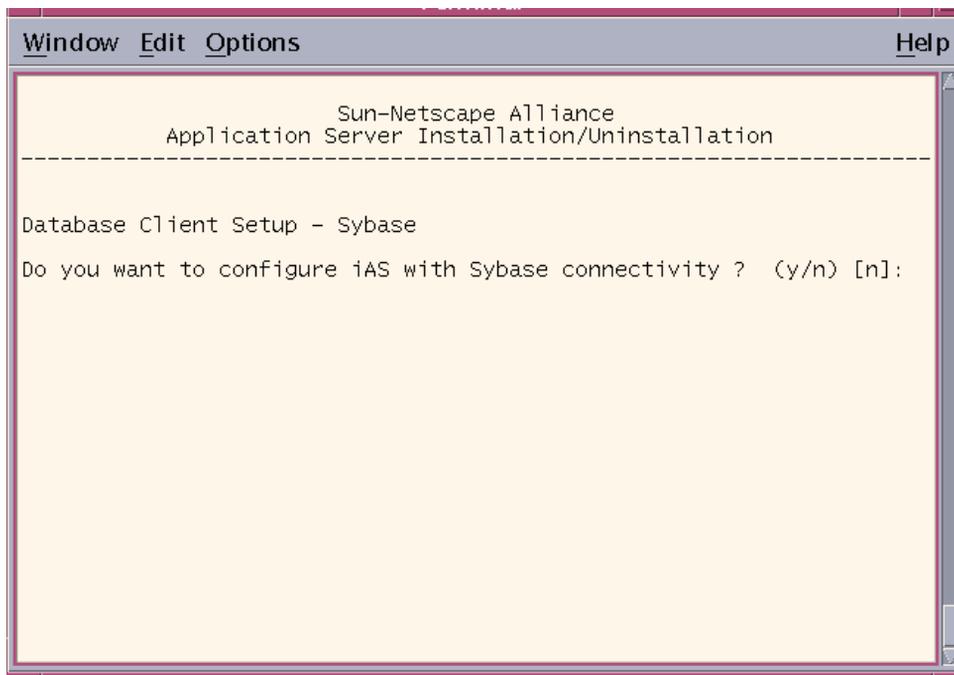
Database Client Setup - Oracle
Do you want to configure iAS with Oracle connectivity? (y/n) [y]:
Enter the Oracle home directory: [/usr/oracle8]
Enter the ORACLE_SID: [ORCL]
Enter the Oracle client library name: [libclntsh.so]

```

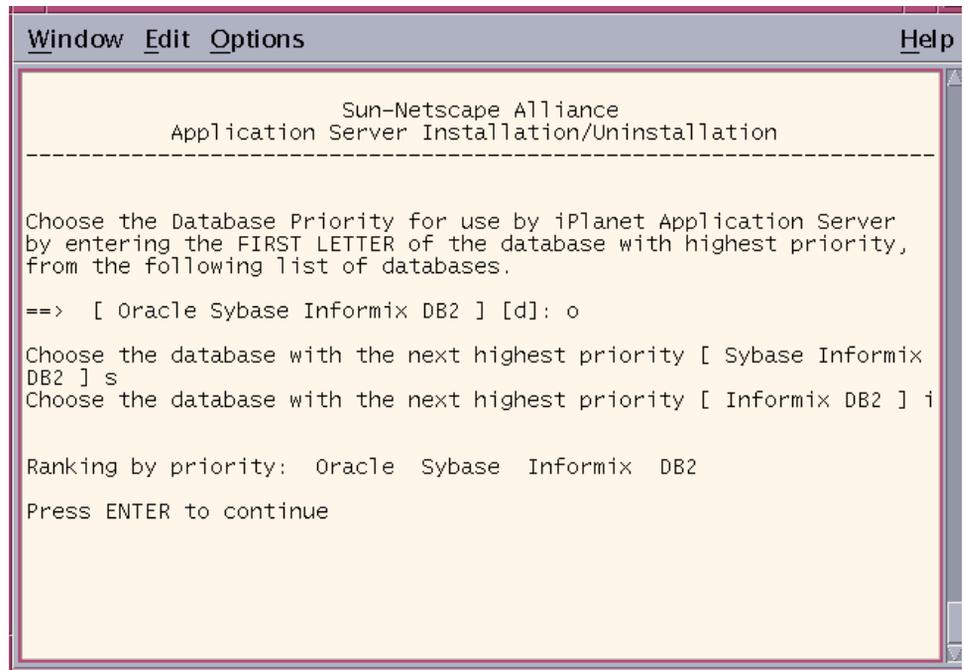
1. Enter to accept each default.

The installation program lists the database clients supported by iPlanet Application Server. The clients are required for your iPlanet Application Server applications to process data. Indicate if you want to configure this instance of iPlanet Application Server to connect with each of the supported database clients. For each client that you specify “Yes,” provide the client’s home directory and library name.

For information about the Database connectivity, see page 128.

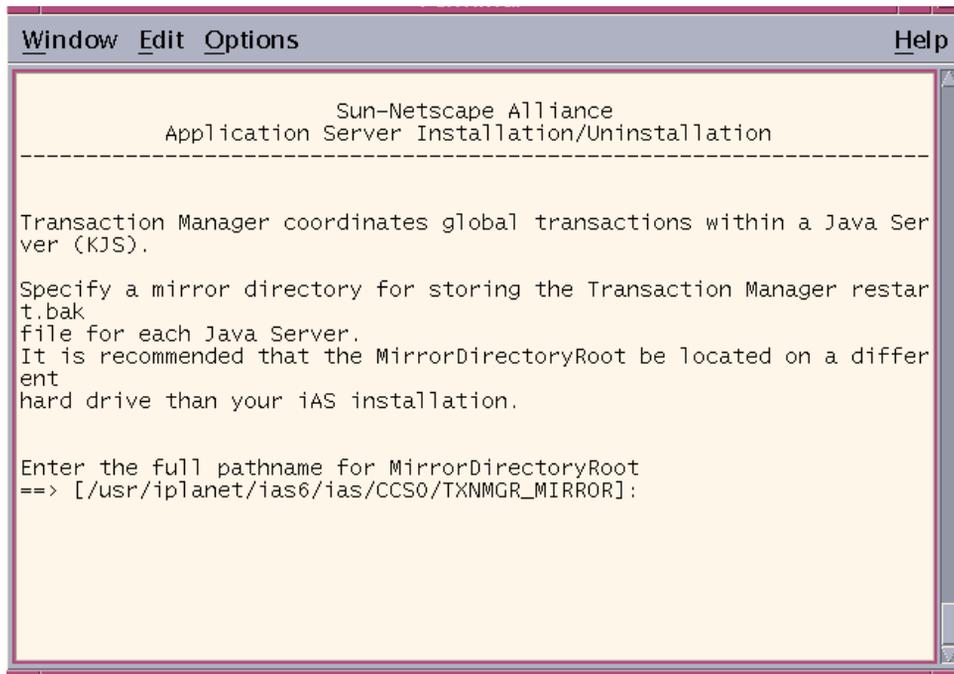


2. Type y (yes) or n (no). You will be required to do this for Oracle, Sybase, Informix, and IBM DB2.



**3. Rank each database.**

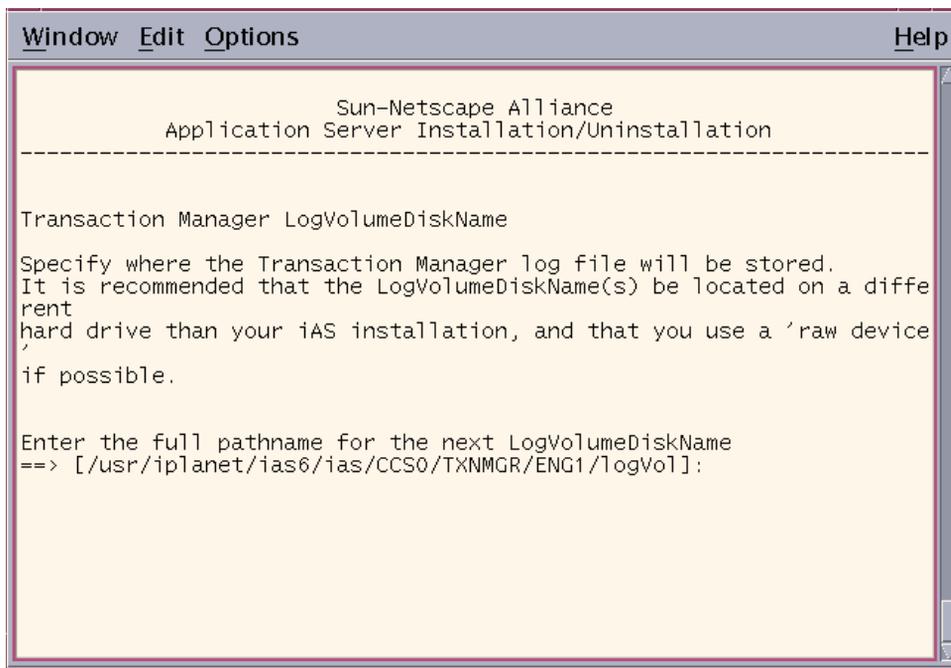
## Configuring Transaction Manager and Resource Manager



1. Enter to accept the default mirror directory path where the transaction manager `restart.bak` file of each KJS process is to be stored.

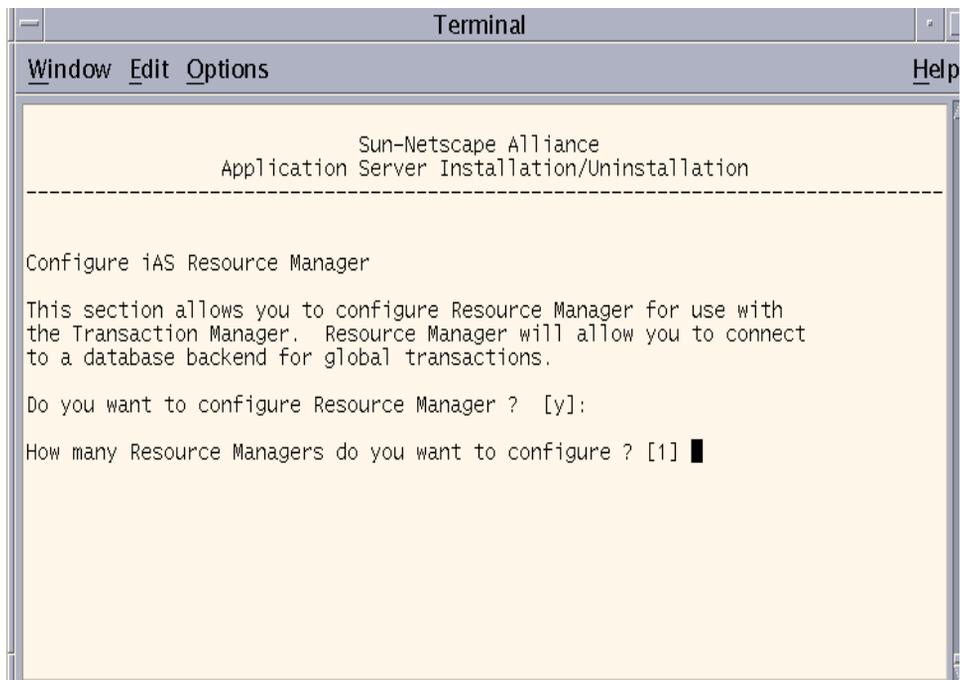
The default directory is `iAS install directory/CCS0/TXNMGR_MIRROR/`. This is the same path that is used to store the restart file. It is recommended that you store `restart.bak` in a different location than `restart`. Consider using a pointer to the different physical disk drive.

For information about the Transaction Manager, see page 128.

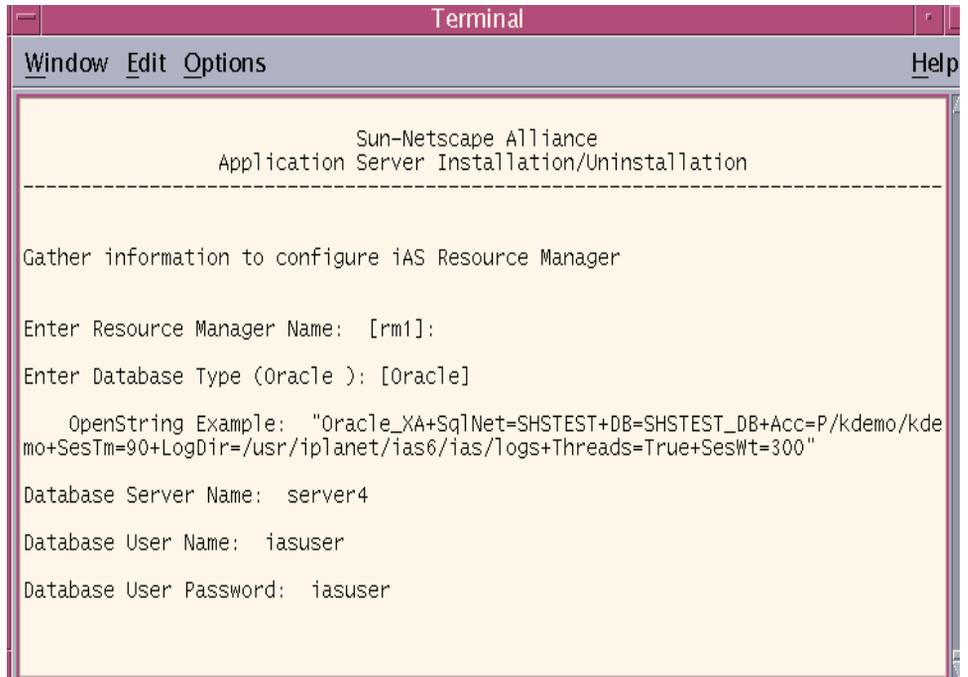


2. Enter to accept the default. The log volume disk name is where the transaction manager log file is stored. The engine /ENGx/ represents the KJS engine process number. Create a directory on a separate disk drive and specify if it is a raw partition.

For more information see Raw Partitions, page 129.



3. Accept the defaults. If you have not yet configured a database, you will be prompted to do it here.

A terminal window titled "Terminal" with a menu bar containing "Window", "Edit", "Options", and "Help". The main content area has a yellow background and displays the following text:

```
Sun-Netscape Alliance
Application Server Installation/Uninstallation
-----

Gather information to configure iAS Resource Manager

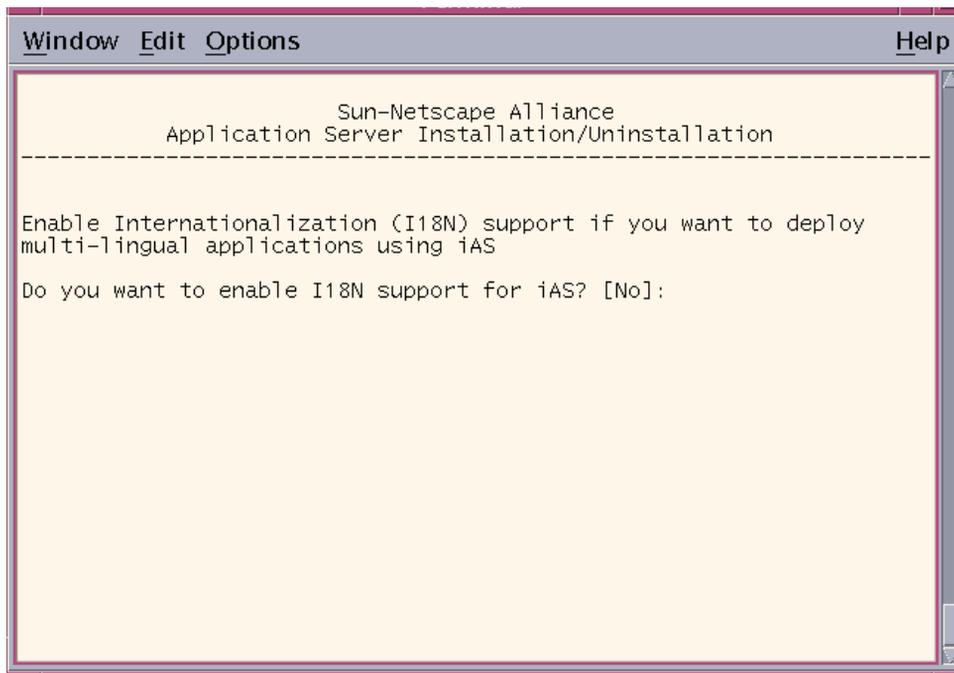
Enter Resource Manager Name: [rm1]:
Enter Database Type (Oracle ): [Oracle]

    OpenString Example: "Oracle_XA+SqlNet=SHSTEST+DB=SHSTEST_DB+Acc=P/kdemo/kde
mo+SesTm=90+LogDir=/usr/iplanet/ias6/ias/logs+Threads=True+SesWt=300"

Database Server Name: server4
Database User Name: iasuser
Database User Password: iasuser
```

4. Enter to accept the defaults, or type in the information.

To learn more see [Open String Information](#), page 141.



5. Enter to accept the default, or type Yes.

## Configuring Clusters

```
Terminal
Window Edit Options Help
Sun-Netscape Alliance
Application Server Installation/Uninstallation
-----
Cluster Configuration for Data Synchronization
iAS supports Distributed Data Synchronization (DSync).
DSync maintains data across multiple iPlanet Application Servers,
an important aspect of partitioned and distributed applications.
To configure DSync, you must know the IP addresses and Executive Serv
er
(KXS) port numbers of ALL participating servers.
Will this server participate in DSync ? [n]:
```

1. Enter to accept default, or type y (yes) if you intend to synchronize session and state information across multiple servers for failover and fault tolerance.

```

Terminal
Window Edit Options Help

Sun-Netscape Alliance
Application Server Installation/Uninstallation
-----

For iAS to participate in DSync, it must be a member of a cluster.
Enter the name of the Cluster this iAS will be a member of [NASCluster]: cluster1

Servers that participate in data sychronization fit into two categories :

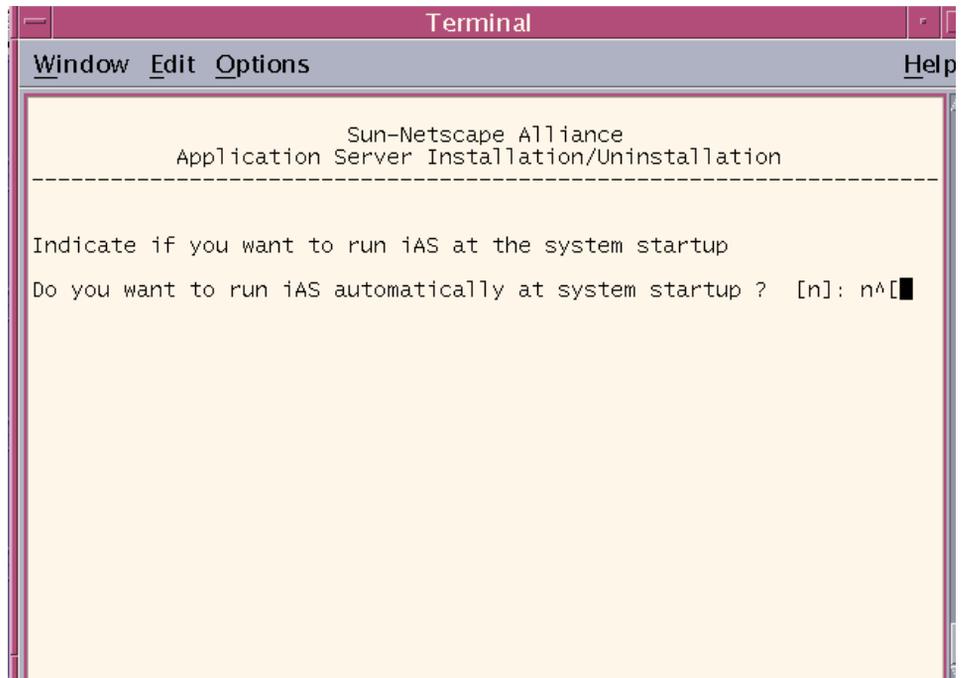
1. Sync Server : A Sync Server is the principal data store of a cluster and can
                assume the responsibility for distributing data to all the
                other iAS in the cluster.

2. Sync Local : A Sync Local is a iAS that participates in data synchronization
                but can never assume the responsibility for distributing data
                to all the other iAS in the cluster.

```

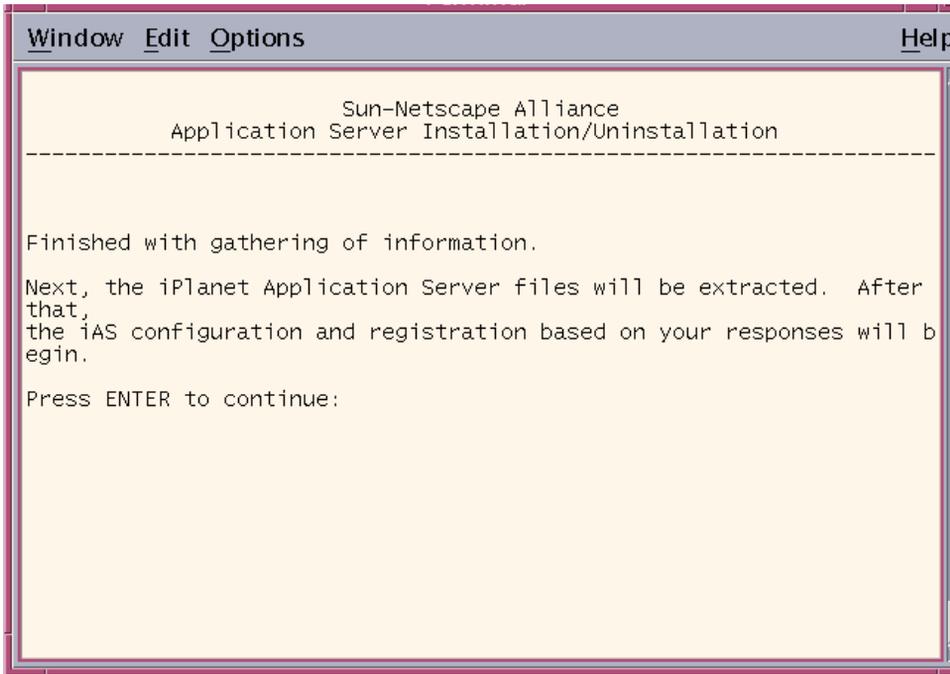
2. If you answered y (yes) in the previous screen, you will be asked to:
  - o Enter the name of the cluster where this instance of iPlanet Application Server belongs. The cluster may already exist, or this may be the first server assigned to the cluster.
  - o Indicate if Sync Local or Sync Server.
  - o Enter the IP address and priority for each Sync Server. Start with the highest priority Sync Server in the cluster: the first server to take over if Sync Primary fails. Enter each Sync Server's priority until all are ranked.
  - o Enter the same IP addresses and port numbers for each installation of iPlanet Application Server in the cluster. These IP addresses and port numbers must match across installations for the cluster to function properly.
  - o Specify the number of Sync Backup servers that should be active while the cluster is running.

To learn more see Clusters and Data Synchronization, page 142.



```
Terminal
Window Edit Options Help
Sun-Netscape Alliance
Application Server Installation/Uninstallation
-----
Indicate if you want to run iAS at the system startup
Do you want to run iAS automatically at system startup ? [n]: n^█
```

3. Enter to accept the default or type y (yes). You can only run iPlanet Application Server automatically at startup if you logged on as root.



The installation program will now configure Planet Application Server files in your system.*li*

---

**NOTE** After using Typical or Express installation, you can configure your database connection and resource manager by going to `$iAS_home/bin` and running `db_setup.sh`.

---

## Using ezSetup

The EZ Install option facilitates fast and easy installation of iPlanet Application Server for evaluation purposes. This installation is not intended for working developer or production environments.

## To Run ezSetup:

1. Uninstall any previously installed application servers following the instructions for that version.
2. Make sure the web server is installed and running.
3. Access the ezSetup from the CD-ROM.
4. Choose the same username and group to represent the iPlanet server in the user directory that installed the web server.
5. Enter the install location when prompted.
6. Enter the full path where the web server is installed.

The following default usernames and passwords are set for ezSetup:

**Table 2-4**

Component	username	password
Configuration server administrator	admin	admin
Directory manager	Directory Manager	DManager
iAS Administration server	admin	admin

## Installing Multiple Instances on Solaris

Multiple instances benefit two environments:

- |               |                      |
|---------------|----------------------|
| • development | isolates code        |
| • production  | improves scalability |

This option is not available on NT. See “Multiple Instances of iPlanet Application Server,” page 144, to learn more.

## To Install for Developer Deployment:

1. Create logins for each instance.
2. Install the initial instance of the application server on each system.

- Use a non-default home directory, e.g. `/usr/iplanet/ias6/instance0`.
  - Store config data in "iasconfig0" on the directory server.
  - Configure the number KJS processes so there is one KJS per instance.
3. Install additional instances.
    - Use Custom Install to change port numbers.
    - Input non-default home directories for each instance, e.g.  
`/usr/iplanet/ias6/instance1`, `/usr/iplanet/ias6/instance2`, etc.
    - Do not install the iPlanet Directory Suite or Administration Services.
    - Do not install iPlanet Core Java classes or Java Runtime Environment.
  4. Store config data on the primary directory server in "iasconfig1", "iasconfig2", etc.
  5. Install the Web Connector on all web server instances. Each web server instance will be associated with one application server instance.

## To Install for Production Deployment:

1. Install the directory server in both a primary and secondary server. Configure the directory servers so that the primary replicates to the secondary.
2. Create logins for each instance. The best performance will come from using 1 instance per processor, but more processors can be used (up to 8) in each instance.
3. Install the initial instance of the application server on each system.
  - Use a non-default home directory, e.g. `/usr/iplanet/ias6/instance0`.
  - Store config data in `iasconfig_global` on the primary directory server.
  - Configure for the secondary directory server.
  - Configure the number KJS processes so there are at least two KJS processes per instance.
  - Configure the application server so that it starts up automatically (if that behavior is desirable).
4. Install additional instances.

- Use Custom Install to change port numbers.
  - Input non-default home directories for each instance, e.g.  
/usr/iplanet/ias6/instance1, /usr/iplanet/ias6/instance2, etc.
  - Do not install the iPlanet Directory Suite or Administration Services.
  - Do not install iPlanet Core Java classes or Java Runtime Environment.
  - Do not install iPlanet Application Server Web Connector Component or Administration Tool or Deployment Tool.
5. Store config data on the primary directory server in:
    - iasconfig\_global for most instances
    - iasconfig\_aol for web and iPlanet Application Servers in cluster dedicated to handling AOL customers
    - iasconfig\_isp1 for web and iPlanet Application Servers in cluster dedicated to handling isp1 customers
    - iasconfig\_ispN for web and iPlanet Application Servers in cluster dedicated to handling ispN customers
  6. Configure for the secondary directory server.
  7. Configure the number of KXS and KJS processes so that there are at least two KJS processes per instance. Configure for a maximum of 8 processors per instance, but definitely consider starting with 1 processor per instance.
  8. Configure each instance so that it does NOT start up automatically.
  9. Create a script to bind processes to individual processors. Consider binding the KXS and two KJS processes of an instance to the same processor if a processor per instance has been allocated. Otherwise, bind the KXS to one processor and each of the KJS processes to separate processors for each instance. Consider 2 processor sets for KXS processes on Primary instances.
  10. Create a crontab script to periodically check process bindings. A restart of a KJS process should cause this script to run the process binding script.
  11. Configure cluster pairs:
    - Configure pairs so that a ring topology is achieved as much as possible.
    - Configure pairs so that each instance is on a separate server.

**Example 1:**

Server A runs Instance 0 and Instance 1

Server B runs Instance 2 and Instance 3

Server C runs Instance 4 and Instance 5

Create Cluster 0 with Instance 1 and Instance 2

Create Cluster 1 with Instance 3 and Instance 4

Create Cluster 2 with Instance 5 and Instance 0

**Example 2:**

Server A runs Instance 0, 1, 2, and 3

Server B runs Instance 4, 5, 6, and 7

Server C runs Instance 8 and 9

Create Cluster 0 with Instance 0 and 4

Create Cluster 1 with Instance 1 and 5

Create Cluster 2 with Instance 2 and 6

Create Cluster 3 with Instance 3 and 9

Create Cluster 4 with Instance 7 and 8

12. Configure all iPlanet Application Server clusters for Per Component load balancing. Per Server LB will be confused by the sharing of servers between instances.

On each server, modify the rc2 startup scripts so that all Sync Primary instances are started as soon as possible. Delay the startup of all Sync Backup Instances. Determine which instances are to be Sync Primary or Sync Backup by evenly dividing the load between the physical servers. The reason for making these changes is that Sync Primary servers do more work, so it is desirable to evenly divide the work. Sync Primary instances are determined based on the startup order.

**Example 1:**

Continuing from Example 1 in the previous section. Primary instances could be 1, 3, and 5.

**Example 2:**

Continuing from Example 2 in the previous section. Primary instances could be 0, 1, 6, 7, and 8.

13. Install Web Connector on all web server instances. Allocate appropriate numbers of web server instances for each cluster that is allocated to ISP proxies. All other web server instances can be shared by the remaining cluster pairs.
  - o Configure the web tier load balancer so that sessions return to their original web servers.
  - o Configure the web tier load balancer so that known ISP proxies are associated with the web servers which have been allocated for that purpose.
  - o Configure the web tier load balancer so that application partitioning between clusters is supported (in cases where applications do not exist on all clusters).

---

**NOTE** Not all load balancing solutions can support all of these features. Resonate Central Dispatch is an example of a load balancer with these features.

---

## Upgrading iPlanet Application Server 6.0 to SP1

The following information applies only to upgrading version 6.0 to SP1, and not the upgrading of Netscape Application Servers.

### To Upgrade iPlanet Application Server 6.0 to SP1 on Solaris:

1. Run setup.
2. At the “Select the component you want to install [1]” prompt, press enter to accept default.

3. At the “Choose an installation type [2]” prompt, press enter to accept the default.
4. Enter the original installation location for iPlanet Application Server 6.0 at the “Install location [/usr/iplanet/ias6]” prompt.
5. At the “iPlanet Server Products Components” screen, enter 1,3,4 for the “Specify the components you wish to install [All]” prompt.  
  
Do not select the number 2 component, “iPlanet Directory Suite,” for upgrade.
6. Press enter to accept the default for installing all three “iPlanet Server Family Core Components.”
7. Press enter to accept default for installing all “iPlanet Administration Service Components.”
8. Press enter to accept default for installing all “iPlanet Application Server Suite Components.”
9. Enter hostname.domainname at the “Computer name” prompt.
10. Enter System User, System Group.
11. Enter Configuration Admin ID and password.
12. Answer “Do you want to reconfigure this server? [No]” question.
13. Enter [1] at the “A version of iPlanet Application Server is already installed.”
14. Choose (1) Upgrade (2) Completely re-install NAS prompt for upgrading your iPlanet Application Server software.

## Verifying Installation of the Application Server

You can use a pre-installed application to verify that iPlanet Application Server is running. Since this basic application, which uses servlets and JSPs, does not rely on a backend database, it runs without any post-installation setup.

### To Verify Installation:

1. Open your browser and enter the following URL:  
`http://yourwebserver:portnumber/ias-samples/index.html`
2. Press Enter.

3. Click the Test Connectivity to iPlanet Application Server link to run a basic application. Press shift the shift key and click on the browser's Reload button to ensure the application repeatedly returns a new HTML stream.

## Installing the Web Connector Plug-in

The Web Connector plug-in passes requests from your web server to applications on iPlanet Application Server.

iPlanet provides Web Connector plug-ins for the iPlanet Web Server.

If you install iPlanet Application Server on a different machine than where the web server resides, you are configuring what is referred to as a “webless installation” of iPlanet Application Server. If this is the case, you must install the iPlanet Application Server Web Connector plug-in on the web server machine.

Before you install the Web Connector plug-in, do the following:

1. Check whether or not the iPlanet Application Server 6.0 Web Connector plug-in has already been installed. If it has, the web server instance is already configured for iPlanet Application Server and you do not need to re-install the plug-in.
2. Stop running your web server instance.
3. On Solaris, log on as the root user, or as a user from the same group as the root user, who installed iPlanet Application Server before installing the Web Connector plug-in

This procedure assumes that you have already installed iPlanet Application Server and Directory Server.

### To Install the Web Connector Plug-in:

1. After you finish installing iPlanet Application Server as a webless installation, take the installation CD-ROM to the machine or machines that host the web server.
2. Follow the instructions of the installation program.
3. When prompted, select “iPlanet Servers” as an installation.
4. Specify the installation type “Typical.”
5. Specify a target installation directory. Do not include spaces in the path name.

6. When prompted for the components you want to install, select an iAS-only installation.
7. When prompted to install the iPlanet Application Server components, select the iPlanet Application Server Web Connector Component.
8. Follow the instructions of the installation program.

More information about the iPlanet Application Server Web Connector Component is contained in the *Administrator's Guide* and in the Deployment Tool Help system.

## Using the Sample Applications

To better understand specific technology features provided by iPlanet Application Server, run the iPlanet Application Server Technology Samples.

### To Use the Sample Applications:

1. Start running iPlanet Application Server.
2. Open your browser, enter the following URL, and press Enter:  
`http://yourwebserver:portnumber/ias-samples/index.html`
3. Select the iPlanet Application Server J2EE Application Samples link and select a specific sample application. Follow the application-specific setup instructions to establish the necessary database settings and to run the application.

After you become familiar with the iPlanet Application Server sample applications, run the Sun Samples, which are applications based on those found at <http://java.sun.com>. The Java Pet Store example in particular demonstrates how a popular J2EE application is deployed to iPlanet Application Server.

You can review the source code of the sample applications and associated J2EE XML Deployment Descriptors by browsing in the following location:

*iAS Installation Path/ias/ias-samples/*

You can also find compile scripts at this site for experimenting with the sample code.

# Uninstalling

When uninstalling iPlanet Application Server, use the procedure described in this section. *Do not* uninstall iPlanet Application Server by deleting directories or modifying parameters in the registry.

This procedure is for uninstalling iPlanet Application Server and its subcomponents only. If you installed Directory Server along with iPlanet Application Server, other servers may also have since been configured with that Directory Server. Uninstalling the Directory Server could cause problems for these other servers. Therefore, you should not uninstall Directory Server with iPlanet Application Server, unless you are absolutely certain that the only system configured with this installation of Directory Server is the iPlanet Application Server you are uninstalling.

The following directories remain after you uninstall iPlanet Application Server:

- iPlanet Application Server root directory
- The *install directory*/APPS directory, which is moved by the uninstall program to *install directory*/ias\_APPS/

After uninstalling iPlanet Application Server, decide if you want to remove these directories, particularly the custom and APPS directories which may contain applications you've developed and files you wish to keep.

Before running the iPlanet Application Server uninstall program, make sure that Directory Server is running. Do not uninstall Directory Server *before* you uninstall iPlanet Application Server.

During the uninstall process, you are prompted to provide a user name and password with administrator access to the configuration Directory Server. If you do not want to use the user name and password you entered at the beginning of the installation process, enter another user name and password, *as long as it has administrator privileges on the configuration Directory Server*.

On Solaris, the uninstall program overwrites the web server configuration file (`obj.conf`) with a version of the same file that existed *before* you installed iPlanet Application Server and the Web Connector plug-in. Therefore, all changes you made to the web server's `obj.conf` file after installing iPlanet Application Server and the Web Connector plug-in are lost.

## To Uninstall on Solaris:

1. From the iPlanet installation directory (the default is `/usr/iPlanet/iAS6`), type `uninstall` and press Enter.
2. Specify the components and subcomponents you want to uninstall.
3. Enter a user ID and password that has administrator privileges on the configuration Directory Server. If you do not want to use the user name and password entered during installation, enter another user name and password having administrator privileges on the configuration Directory Server.

You will receive the message “Uninstallation completed.” when the files have been removed.

# Configuring iPlanet Application Server

This chapter explains how to configure iPlanet Application Server on Windows NT and Solaris. It includes the following topics:

- Server Components
- Directory Server
- Administration Server
- Port Numbers
- Web Server
- Database
- Transaction Manager
- Third Party JDBC Driver Support
- Clusters and Data Synchronization
- Multiple Instances of iPlanet Application Server

- Troubleshooting

## Server Components

The following describes the components that install with iPlanet Application Server:

- iPlanet Application Server includes the Administration Server, the Web Connector plug-in used to communicate between iPlanet Application Server and the web server, and the Deployment Tool.
- Netscape Console provides the common user interfaces for all iPlanet server products. It allows you to perform common server administration functions such as stopping and starting servers, installing new server instances, and managing user and group information. Netscape Console can be installed BY itself (stand-alone) on any machine on your network and used to manage remote servers.
- The Administration Server is a common front end to all iPlanet servers. It receives communications from the Netscape Console, and sends them on to the appropriate iPlanet server. Your site will have at least one Administration Server for each server root in which you have installed an iPlanet server.
- Netscape Directory Server is iPlanet's LDAP implementation. The Directory Server runs as the `slapd` service on an NT machine, and `ns-slapd` on Solaris. This server manages the directory databases and responds to client requests.

## Directory Server

Read the Netscape Directory Server documentation, particularly the *Netscape Directory Server 4.0 Installation Guide*, for information about setting up Directory Server and issues discussed in this section. All Directory Server documentation is located in the following places:

- At <http://docs.iplanet.com/docs/manuals/directory.html>
- From the Help menu in Directory Server.

You can choose to install Directory Server with iPlanet Application Server or connect iPlanet Application Server to an existing Directory Server.

If you install Directory Server with iPlanet Application Server, you must designate this installation of Directory Server as the configuration directory, even if another installation of Directory Server already exists at your site.

The configuration directory contains the `o=NetscapeRoot` tree used by your iPlanet servers. All of the configuration settings of your iPlanet servers are stored at the `o=NetscapeRoot` tree.

If you do not install Directory Server with iPlanet Application Server, you must designate an existing Directory Server as the configuration directory. Make sure that the Directory Server you designate as the configuration directory contains the `o=NetscapeRoot` tree.

The iPlanet Application Server installation program will prompt you for the following information about the existing Directory Server:

- The host name and port number for the machine where the existing Directory Server is installed.
- Login ID and password to connect to the existing Directory Server installation.
- Administrator login ID and password.

Multiple iPlanet Application Server installations can store their configuration settings on the configuration Directory Server. To avoid your settings being overwritten by another iPlanet Application Server installation's configuration, assign a unique global configuration name to your installation's settings. This name appears in the `o=NetscapeRoot` tree, along with the global configuration names of other iPlanet Application Server installations.

During installation, you are asked to provide the global configuration name for the settings of the iPlanet Application Server you are currently installing. If you want to share configuration settings with other iPlanet Application Server installations, simply enter the same global configuration name for each installation.

The configuration directory contains an administration domain, which allows you to group iPlanet servers together to more easily distribute server administrative tasks across organizations, while retaining centralized control. If you want to use administration domains, select the name(s) you want to use. It is recommended that you use names corresponding to the organizations that will control the servers in each domain.

## Directory Manager DN

The installation program asks you to specify a Directory Manager distinguished name (DN) and password. Directory Manager DN is the special directory entry to which access control does not apply. Think of directory manager as your directory's superuser.

The default Directory Manager DN is `cn=Directory Manager`. Because the Directory Manger DN is a special entry that is not stored in the directory tree (instead it is stored in `slapd.conf`), it does not have to conform to any suffix configured for your Directory Server. Also, you should not create an actual Directory Server entry to use with the Directory Manager DN.

The Directory Manager password must be at least eight characters long.

## Administration Server

The Administration Server is a common front end to all iPlanet servers. It receives communications from Netscape Console, and passes those communications on to the appropriate iPlanet server. Your site will have at least one Administration Server for each iPlanet server root. During installation you are prompted for an Administration Server port number. Your system administrator must specify this port number to access the Administration Server.

Make sure the port number you select for the Administration Server is unique and is not a non-SSL port number for the configuration server.

## Port Numbers

All ports you specify are listener ports. Valid port numbers must be within the acceptable range (1 to 65535 on NT, 1025 to 32768 on Solaris) and must be unique (not used by any other applications on your system).

The default port numbers are as follows:

- 10817 for the Administrative Server (KAS)
- 10818 for the Executive Server (KXS)
- 10819 for the Java Server (KJS) on NT. On Solaris, this port is used for the CGI to Executive Server (KXS) communication.

- 10820 for the C++ Server (KCS) on NT. On Solaris, this port is used for the Java Server (KJS).
- 10821 for the C++ Server (KCS) on Solaris.

In most cases, use the default port numbers suggested by the installation program, unless you are configuring multiple Java and C++ Servers, which require a unique port number for each additional Java and C++ engine.

## Web Server

If you use one of the supported web servers on the same machine as iPlanet Application Server, the connector plug-in configuration is automatic.

On Solaris, install iPlanet Application Server as the same user, or as a member of the same group that installed the web server iPlanet Application Server will interface with.

If you are installing iPlanet Application Server over an NFS-mounted file system, make sure you have the same read-write permission on the following directories as the user who installed the web server:

- gxlib
- APPS
- registry
- kdb

These are subdirectories in the iPlanet Application Server installation directory.

## Manually Configuring a Web Server

When you install iPlanet Application Server, your web server is automatically configured for the Web Connector plug-in, meaning that all necessary directories and settings on the web server are updated.

If you have problems with the connection between iPlanet Application Server and your web server, you may need to manually reconfigure the web server after you've installed the Web Connector plug-in.

See the *Administrator's Guide* for more information.

## Webless Installations

In a webless installation, the web server and iPlanet Application Server reside on separate machines. You should consider security issues related to your firewall setup. If a firewall will exist between the iPlanet Application Server machine and the web server machine, consult with your security administrator before performing a webless installation. Make sure that the necessary ports on the firewall are open to allow the Executive Server (KXS) and the Web Connector plug-in to communicate. For information about the Executive Server, see the *Overview Guide*.

## Database

When you create your own applications, you can elect not to specify the particular database you want the application to use. In this case, the application will attempt to connect to the configured databases in the priority order you specify during installation.

## Transaction Manager

Transaction manager in iPlanet Application Server provides support for the EJB transaction model for both bean and container-managed transactions. Transaction manager can be configured in two modes: global transaction mode, where transactions span multiple processes and data sources; and local transaction mode, where transactions cannot span databases and are local to a process.

Local transaction mode is recommended if your transactions do not span multiple databases. Local transactions offer better performance, and work across all iPlanet Application Server supported database backends.

Global transaction mode coordinates global transactions within a Java Server (KJS process). A global transaction can:

- Update a database using one or more Enterprise Java Beans (EJBs) running concurrently for the same global transaction, from within one or more KJS processes. One EJB triggers another EJB to run, and they both participate in the same transaction.
- Update multiple databases that are distributed over different geographic locations.
- Update multiple databases of different types (Oracle, Sybase, and so on).

Transaction manager runs within a KJS process and creates two files: a `restart` file and a `restart.bak` file. You need to provide a log file for each KJS process.

You must provide the following transaction manager information for each KJS process:

- A mirror directory for storing the `restart.bak` file.

The default directory is `install directory/CCS0/TXNMGR_MIRROR/`.

---

<b>NOTE</b>	This is the same path that is used to store the <code>restart</code> file. It is recommended that you store <code>restart.bak</code> in a different location than <code>restart</code> . Consider using a pointer to the different physical disk drive.
-------------	---

---

- A log volume disk name for storing the log file.

The default name is `install directory/CCS0/TXNMGR/ENGnumber/logVol`, where `logVol` is the device name.

For each KJS process, `ENGnumber` changes to match the process number. So, for KJS1, the directory is `install directory/CCS0/TXNMGR/ENG1`; for KJS2, the directory is `install directory/CCS0/TXNMGR/ENG2`, and so on.

## Raw Partitions

Note the following when configuring your transaction manager:

- Create a raw partition on a physical drive *prior* to running the installation program. At installation specify the path for this partition, including the raw device name. Refer to your operating system documentation for information on how to create a raw device.
- If you intend to specify a file name, use the default drive and log volume disk name provided by the installation program.
- If you specify the name of a log volume disk that is a raw partition, make sure to indicate during installation that it is a raw partition.
- If you specify a raw partition, you must specify a starting page number (Offset value) during the installation. You must also specify the number of the pages (Size value) in the log file. Make sure that the size allocated for the log file is greater than 4 MB; the file should be greater than or equal to 1000 pages, at a size of roughly 4 KB per page.

- If you prefer to store the log file somewhere other than a raw partition, create a directory and file on a different disk drive, specify this directory name during installation, and do not check raw partition. The file must be greater than 4 MB, so make sure you have sufficient disk space wherever you create the directory and file. Refer to your operating system documentation for information on how to create a directory and file on a different disk drive.

## Third Party JDBC Driver Support

Prior to iPlanet Application Server 6.0 SP1, using third party JDBC drivers required you to manage the coupling of the JDBC drivers to your applications outside of the iPlanet Application Server management environment, and to forego the standard J2EE JNDI-based datasource access, connection pooling, and transaction management features built into the iPlanet Application Server driver. In SP1, support has been added for using JDBC drivers in conjunction with standard J2EE JNDI-based datasource access, and iPlanet Application Server connection pooling and transaction management features.

Support for the existing iPlanet Application Server Type 2 JDBC driver based on relational database management system (RDBMS) client libraries will continue until at least iPlanet Application Server 6.1. Third party JDBC support is envisioned to eventually replace the iPlanet Type 2 JDBC native client driver in iPlanet Application Server.

## Current Capabilities and Limitations

### Datasource-Based Connection Pooling

The new third party JDBC driver support manages connection pooling at the datasource level, while the existing iPlanet Type 2 JDBC driver manages connection pooling at the native driver level. Datasource level connection pooling enables you to more finely tune database access to application requirements.

### No Application Impact

New and existing J2EE applications do not require modifications to switch between the iPlanet Type 2 JDBC driver and third party JDBC drivers. Only the underlying datasource registration needs to be changed when switching between driver types.

## Path Settings Automatically Set in Runtime Environment

Upon registration, the CLASSPATHs of third party JDBC drivers and the native driver library path for Type 2 drivers are added to the application server's runtime environment. You do not need to modify the runtime environment separately.

## Supports Concurrent Use of Both iPlanet Type 2 and Third Party JDBC Drivers

Under certain circumstances, you are able to use both third party drivers and the iPlanet Type 2 driver. Special considerations apply to global transactions. See the section describing Registry Settings for Third Party JDBC Drivers for specific capabilities and limitations.

## Local Transaction Support

Currently the iPlanet third party JDBC driver support does not support global transactions (sometimes referred to as distributed, heterogeneous transactions). For global transactions use the iPlanet Type 2 JDBC driver in conjunction with RDBMS native client drivers. As iPlanet implements a JTS-based transaction manager, support for third party JDBC drivers and global transactions will be provided.

## Driver Must Support DriverManager Class

iPlanet's initial implementation of third party JDBC drivers includes only those drivers that support the DriverManager class. Although applications use JNDI and the datasource interface to interact with JDBC drivers, the DriverManager class is relayed upon to load JDBC drivers.

## Administration via Registry Editor and Command Line Tools

For now, third party JDBC driver setup and configuration is performed via the iPlanet Application Server Registry Editor and command line tools. You may define datasources in XML files, and either register them via a command line tool, or through the iPlanet Application Server Deployment Tool. In the next release of iPlanet Application Server, third party JDBC configuration will be incorporated into the GUI administrative tools.

**Table 3-1**

Driver	Platform
Oracle 8i 8.1.6.0.1: Type 4 (thin)	Solaris and NT
Oracle 8i 8.1.6.0.1: Type 2	Solaris and NT

**Table 3-1**

Driver	Platform
Merant (Intersolv) SequeLink Java 5.0	Solaris and NT (RDBMS platforms supported by SequeLink)
Sybase jConnect for JDBC 5.2 Type 4 (with Oracle only)	Solaris NT
DB2 6.1, server 5.2	NT only
Access to MSFT SQL Server	Available from Merant for NT only

## Configuration Overview

Using a third party JDBC driver in iPlanet for J2EE JNDI and datasource-based access, and iPlanet's connection pooling and local transaction management requires:

1. Identifying the JDBC driver to iPlanet.
2. Specifying the driver identifier and database connection information in datasource definitions used by your application.

(If you desire to use a third party JDBC driver without iPlanet's JDBC integration, ensure that your application manually loads the driver (typically performed through the DriverManager class), and sets up the appropriate connection settings. Configure the application server runtime environment with the appropriate CLASSPATH and library path settings.

## Configuring Third Party JDBC Drivers

### Information Requirements

The following information is required to identify a third party JDBC driver in iPlanet Application Server:

#### *Driver Name*

A logical name by which you identify the driver to iPlanet. This name is used to link datasource definitions back to a physical driver type. The name can be of any string value you choose. Examples, include "ora-type4", "ora-type2", and "jconnect".

*Driver Class Name*

The class name associated with the driver. See the JDBC driver supplier for this information. Following are examples of class names for third party JDBC drives can be uses on NT and Solaris:

**Table 3-2**

Driver	Class name
Oracle Types 2 & 4	oracle.jdbc.OracleDriver
SequeLink Java 5	com.merant.sequelink.jdbc.SequeLinkDriver
Sybase jConnect 5.2	com.sybase.jdbc2.jdbc.SybDriver
DB2	com.ibm.db2.jdbc.app.DB2Driver

*Driver CLASSPATH:*

The fully qualified path to the driver classes, JAR, or ZIP file. The following table gives typical Solaris and NT CLASSPATHS:

**Table 3-3**

Driver	Typical Solaris CLASSPATH	Typical NT CLASSPATH
Oracle Types 2 & 4	/oraclient/jdbc/lib/classes12.zip	D:\orant\jdbc\lib\classes12.zip
SequeLink Java 5	/sljc/driver/lib/sljc.jar	C:\sljc\driver\lib\sljc.jar
Sybase jConnect 5.2	/jConnect-5_2/classes/jconn2.jar	D:jConnect-5_2\classes\jconn2.jar
DB2	(not supported)	D:\SQLLIB\java\db2java.zip

The path under which the native libraries supporting Type 2 drivers exist. The following Library Paths are for Type 2 JDBC drivers:

**Table 3-4**

Driver	Solaris Library Path	NT Library Path
Oracle Types 2	/oraclient//lib/	D:\orant\bin
DB2	(not supported)	D:\SQLLIB\bin

## Configuring Drivers

Third party JDBC drivers need be identified to iPlanet either during application server installation, or via registration tools after installation. Registration must occur on each application server instance housing applications with third party JDBC driver datasources. For example, if you are configuring a two node cluster of iPlanet Application Server, and you are making an application available on both nodes in the cluster, then you must register the third party JDBC driver with each instance. (Existing iPlanet Type 2 driver have the same requirement).

### *During iPlanet Application Server Installation*

You can configure the third party JDBC drivers only through the Custom installation option. If you use the Express or Typical installation, see the next section for configuring the third party JDBC drivers after installation of the application server.

During application server Custom installation, you can only choose to configure iPlanet Type 2, third party JDBC, or no JDBC drivers. Although you can only configure either the Type 2 driver or third party JDBC driver during installation, you can choose to configure both after installation.

### *After Installation*

Configure third party JDBC drivers after installation by executing a JDBC driver configuration tool. When configuring after installation, you must restart the application server to apply the driver changes.

- For NT execute the `jdbctestup.exe` program. (Registration of iPlanet Type 2 JDBC drivers for the supported database platforms is automatic since iPlanet automatically recognizes the presence of the supported native client libraries).
- For Solaris: execute the `db_setup.sh` script. (Same command used to configure iPlanet Type 2 drivers).

## Registry Settings for Third Party JDBC Drivers

As you register third party JDBC drivers in iPlanet, you will see the following iPlanet Registry settings:

### *Driver Entry*

```
SOFTWARE\iPlanet\Application Server\6.0\CCS0\DAE3\DRIVERS\\
```

Under this key, you will find the driver's class name.

When you register a third party JDBC driver, a flag is set in the existing iPlanet Type 2 JDBC driver area of the Registry:

### Third Party JDBC Flag

SOFTWARE\iPlanet\Application Server\6.0\CCS0\DAE2\IS3PJDBC

When set to on ("1"), the RowSet and transactional capabilities orient towards third party driver support. When using only third party JDBC drivers in your application, this flag should always be set to on.

This flag is set by the installation program and command line third party JDBC driver registration tools. Configuring an iPlanet Type 2 driver turns it off. If needed, you can manually change this flag via the iPlanet Application Server Registry Editor (*kregedit*). The following table provides scenarios and associated IS3PJDBC flag settings:

**Table 3-5**

Scenario	Capabilities /Limitations	IS3PJDBC Setting	Server Transaction Mode
Using third party JDBC drivers only	Local transactions are supported in both a programmatic mode throughout the web and EJB containers as well as in a declarative mode for EJBs.	On ("1")	Local only
Using iPlanet Type2 drivers only	Local and global transactions are supported in both programmatic and declarative styles.	Off ("0")	Local or global
Mix of third party and iPlanet Type 2 drivers	Local transactions are supported in web container via third party drivers. Global and local transactions supported in both web and EJB containers via iPlanet Type 2 driver.	Off ("0")	Local or global

## Configuring JDBC Datasources for Your Applications

Once you have registered a third party JDBC driver with the application server, you must define JDBC datasources for applications to be able to interact with your database management system. A datasource in iPlanet Application Server holds the following information:

- Driver Type/Name

- Connection URL
- Authentication Data
- Connection Pooling Settings

Except for connection pooling settings, this information is specified when registering a datasource with command line tools.

## Datasource Information Requirements

This section describes the information required to register a JDBC datasource associated with a third party JDBC driver in iPlanet Application Server. Once you've registered a JDBC datasource in iPlanet, you can modify the connection pooling settings via the iPlanet Application Server Registry Editor.

### *Required Data*

The jndi-name uniquely identifies the datasource within the JNDI namespace of the application server. For example, a JNDI name of `dbc/estore/EstoreDB` would be referenced in `ias-web.xml` and `ias-ejb-jar.xml` files `<resource-ref>` entries of J2EE applications. The `<resource-ref>` entries map resource names used by J2EE applications to JNDI names defined within the application server.

The driver-type maps to the logical name assigned to third party JDBC driver.

The database-url is the database connection. See JDBC driver vendor documentation for driver-specific formats.

Following are examples of URL formats:

**Table 3-6**

Driver	Class name
Oracle Types 2 & 4	<code>jdbc:oracle:oci8:@MyHostString</code> <code>jdbc:oracle:thin:@myhost:1521:orcl</code> <code>jdbc:oracle:thin:scott/tiger@myhost:1521:orcl</code> <code>jdbc:oracle:oci8:scott/tiger@myhost</code>

**Table 3-6**

Driver	Class name
SequeLink Java 5	dbc:sequelink://sequelinkhost:19996  jdbc:sequelink://192.168.5.96:19996;user=john;password=whatever jdbc:sequelink://192.168.5.96:19996;databaseName=stores7  jdbc:sequelink://192.168.5.96:19996;databaseName=pubs;HUser=john;HPassword=whatever  jdbc:sequelink://sequelinkhost:4006;databaseName=pubs;DBUser=john;DBPassword=whatever  jdbc:sequelink:ssl://mysecurehost:9500;cipherSuites=SSL_DH_anon_WITH_3DES_EDE_CBC_SHA jdbc:sequelink:ssl://mysecurehost:9502;
Sybase jConnect 5.2	jdbc:sybase:Tds:host:port
DB2	db2:jdbc:dbname

### *Optional Data*

The following optional data is conveyed to the third party driver on the `DriverManager.getConnection(url, properties)` as name value pairs in the `properties` parameter. The usage of each property is driver dependent.

The username is supplied to the RDBMS when iPlanet makes a connection to the database. Username and password are optional, since they can be supplied either programmatically, or on the connection URL.

The password is supplied to the RDBMS when iPlanet makes a connection to the database.

(The iPlanet Type 2 driver also supports the `datasource` and `database` fields in the `datasource` registration. Since the information represented by these fields is typically defined in the database connection URL, these fields are not supported in `datasource` definitions for third party JDBC drivers.)

### *Datasource XML File Example*

The following example illustrates an XML file associated with a `datasource` based on a connection to an Oracle Type 4 driver:

```

<ias-resource>
  <resource>
    <jndi-name>jdbc/estore/EstoreDB</jndi-name>
    <jdbc>
      <driver-type>ora-type4</driver-type>
      <database-url>jdbc:oracle:thin:@hostname:1521:
      orcl</database-url>
      <username>estore</username>
      <password>estore</password>
    </jdbc>
  </resource>
</ias-resource>

```

You could either use the `resreg` command line tool or the Deployment Tool to register this datasource. For more examples, see the Bank and Java Pet Store (estore) sample applications at `<iAS install path>/ias/ias-samples/`.

To use a different third party JDBC driver for this datasource, modify the `<driver-type>` and the `<database-url>`. This driver must already be registered in iPlanet. Restart the application server after reregistering the datasource.

## Datasource Registration Tools

### *deploycmd and resreg Command Line Tools*

The `deploycmd` tool is recommended for command line registration of datasources.

**Example:**

```
deploycmd -f EstoreDB.xml -s admin:admin@localhost:10817
```

If you are registering against a local server, you can use the `resreg` command:

```
resreg EstoreDB.xml
```

### *Deployment Tool*

Start the Deployment Tool (`deploytool`) and go to `Tools->Register Datasource`. Open an existing XML file of the form described above, or create a new datasource by filling the required and optional fields. Select Register to register the datasource with one or more application server instances.

## Datasource Registry Settings

As you register datasources associated with third party JDBC drivers in iPlanet, you will see the following iPlanet Registry settings:

### *Datasource Entry*

SOFTWARE\iPlanet\Application Server\6.0\DataSource\\

The jndi-name is specified during registration of the datasource.

### *Connection Pooling Parameters*

Connection pooling parameters are not currently defined during datasource registration. A set of default values are applied to each datasource as the datasource is registered. You can modify the connection pooling parameters via the iPlanet Registry Editor (kregedit).

SOFTWARE\iPlanet\Application Server\6.0\CCS0\POOLS\\

The <portion of jndi-name> is the JNDI name specified in the datasource XML except for the jdbc\ portion. For example, estore/EstoreDB/.

- DebugLevel

Set the KJS log file to display third party JDBC driver connection pooling diagnostic messages.

**Table 3-7**

DebugLevel	Effect
0	No messages.
1	Common messages like pool status, connection being returned to the pool, etc.
2	Output from option 1 and messages to indicate whether a connection is coming out of pool or causing a new connection. This is also used when you want to monitor how your pools are getting shrunk.

- MaxPoolSize

Maximum number of physical connections to the database.

- MaxWait

Maximum wait time in seconds for a connection to be freed from the pool when all connections are already in use.

- `MonitorInterval Time`

Interval in seconds at which monitor thread will scan the pool to determine if unused physical database connections should be terminated.

- `SteadyPoolSize`

Minimum size of pool. Once number of physical database connections reach the `SteadyPoolSize`, this number of connections will be maintained regardless of `UnusedMaxLife` setting. If `SteadyPoolSize` and `MaxPoolSize` are set to the same value, `UnusedMaxLife` does not apply. The monitor thread still executes, but returns as soon as it determines that steady and max values are identical.

In iPlanet Application Server, physical database connections are established as needed. Even though `SteadyPoolSize` is set to a certain value, the application server will not create physical database connections until application requests access the connection pool. Physical connections are accumulated based on the settings of `Steady` and `MaxPoolSize`, as well as `UnusedMaxLife`.

- `UnusedMaxLife`

If physical database connections exceed the number specified in `SteadyPoolSize`, `UnusedMaxLife` specifies the idle time in seconds after which a physical connection is eligible for deletion during the next execution of the monitor interval.

## Resource Manager

Resource manager lets you connect to a database back end for global transactions. Configure one resource manager for each database back end that you want to connect to. If you decide that you want to configure iPlanet Application Server with resource manager, you must define the following information for each resource manager: the database type, whether or not the resource manager is enabled, and an open string.

If you enable a resource manager, whenever you start a KJS process the transaction manager attempts a connection using the resource manager information you provided.

## Database Type Information

The following list contains the database types you can specify for a resource manager:

- Oracle
- Sybase
- IBM DB2
- Microsoft SQL

## Open String Information

The following table provides the open string formats for the different types of database back ends:

**Table 3-8**

Database	Format	Example
Oracle	Oracle_XA +  Acc=P/user/password (or Acc=P//) +  SesTm=session_time_limit +  (optional_fields) DB=db_name +  GPwd=P/group_password +  LogDir=log_dir +	Oracle_XA+SqlNet=  ksample1+DB=ksample1+A c c=P/kdemo/kdemo+SesTm =  90+LogDir=/export/TxnLo g/ tmp+Threads=True

**Table 3-8**

Database	Format	Example
Sybase	U username -P password -N lrm_name [ -V version] [ -C connections] -L logfile [ -T trace_flag]	-Usa -P -Nksample_rm -Txa -L/tmp/syb_xa_log
DB2	database name, user name, password	ksample, inst1, inst1
Microsoft SQL	TM=ENCINA, RmRecoveryGuid= resource manager ID	TM=ENCINA, RmRecoveryGuid= 12345698247024507520450 2450420579
	<p>Note: The resource manager ID is available in the following location of the Microsoft SQL Server registry:</p> <pre>[HKEY_LOCAL_MACHINE\SOFTWARE \Microsoft\MSSQLServer\MSSQLSe rver] "ResourceMgrID"="{resource manager ID}"</pre>	

## Clusters and Data Synchronization

Distributed data synchronization maintains the integrity of shared information across multiple iPlanet Application Server machines. This is crucial for partitioned and distributed applications that are hosted on multiple iPlanet Application Server machines.

For more information about distributed data synchronization, see the *Administrator's Guide*.

A cluster is more than one instance of iPlanet Application Server, each installed on a separate machine, that can participate as a group in synchronization of state and session data. Each server within a cluster can assume one of several roles. Most important for this installation discussion is the category of Sync Server, which includes the Sync Primary, Sync Backup, and Sync Alternate servers.

The Sync Primary is the primary data store, to which all other servers in a cluster communicate for the latest distributed data information.

A Sync Backup mirrors the information on the Sync Primary, and takes over the role of the Sync Primary if the original Sync Primary fails.

A Sync Alternate is eligible to become a Sync Backup. If the number of Sync Backups falls below the set maximum, the Sync Alternate with the highest priority relative to other Sync Alternates is promoted to Sync Backup.

---

**NOTE**

If your configuration consists of only one instance of iPlanet Application Server, then cluster planning is not necessary.

---

When configuring your cluster, consider how many servers have the potential to become the Sync Primary. The maximum is the number of iPlanet Application Server machines in your network.

The Sync Primary is determined by which machine you start up first, after all servers are installed, and not by which machine has the highest priority assignment.

Note the priority rating you assign to the iPlanet Application Server machines in the cluster. For each installation of iPlanet Application Server in the cluster; you must re-enter the IP address, KXS port number, and priority number for every server in the cluster.

You should assign the highest priority to the iPlanet Application Server instance you prefer to be the Sync Primary, and start that machine up first. Assign the next highest priority to the Sync Backup; and assign those remaining to Sync Alternates, in the desired order of promotion.

You do not have to install the servers in the same priority order, as long as the priority rating and application server identification information is consistent across each installation.

# Multiple Instances of iPlanet Application Server

## Reasons for Installing Multiple Instances

### Isolating Code

For Developers to ensure that a development team can work efficiently on shared systems, it is important to run code in separate processes, as in a Java Virtual Machine (JVM) for Java code, so that bugs in one developer's code will not bring down the development environment for the entire team. The current implementation of the iPlanet Application Server can isolate application components to individual instances of the application server, but cannot resolve to JVMs within an instance. Consequently, developers who share computer resources need to have multiple instances of the application server installed on their shared system(s).

In a production environment, it is usually necessary to update releases of the application without taking down the server. To accomplish this, iPlanet Application Server requires multiple JVMs and a stop/start for each JVM process. To reduce the impact of an update for one application on the rest of the applications, multiple instances of the application server can provide multiple platforms on which to deploy the unrelated application components. In that way, a single instance can be stopped/started to update any given application.

### Improving Scalability

Each instance of the iPlanet Application Server scales well up to twelve processors. However, contention for resources causes performance to increase by lesser and lesser amounts as processors are added. By installing multiple instances, and binding processes to processors, a single large system looks like a number of smaller virtual systems. Dividing up the resources in this manner lessens resource contention and enables higher overall system performance.

## Failover Issues

iPlanet Application Server clusters provide high availability (HA) by storing state and session information on one of the servers in the cluster, called the Sync Primary, and copying to another server in the cluster, called the Sync Backup. The Sync Primary and Sync Backup are determined by the boot sequence of the application server instances. The first instance in the cluster to come up becomes the Sync Primary, and the second instance becomes the Sync Backup.

If any of the instances of a cluster are on the same system, the odds are extremely high that both the Sync Primary and Sync Backup will be located on the same computer system. Failure of a single computer could bring down the entire cluster. To avoid this, each instance on the server should be clustered with at least one other instance on a separate server. This implies that a production site will be composed of multiple clusters. The number of clusters is minimally the largest number of instances that are created on a single server. For optimal performance, clusters should be composed of pairs of instances.

## Multi-cluster Issues

The most straightforward method of implementing multiple clusters is to install every application server instance using a single Directory Server configuration. Each web server uses a plug-in to route requests to the iPlanet Application Servers. This plug-in, referred to as the web connector, identifies the available application servers through the entries in the directory server.

A session beginning in one cluster, and subsequently load balanced to a different cluster, which does not have access to the state/session information generated by preceding requests creates a problem. To prevent this situation, the load balancer for the web servers must be sufficiently sophisticated to apply sticky load balancing for all requests associated with a particular session.

Load balancing solutions generally use two methods to accomplish sticky load balancing for sessions: base the stickiness on a cookie with the session ID, or base the stickiness on the source IP address of the request. For SSL encrypted sessions, the contents of the cookie are not available to the load balancer, so the source IP address is used. Unfortunately, some ISPs use proxies for their customers' web browsing sessions. Since the session can be load balanced between these proxies, the source IP address for the request can change, even though the request belongs to the same session. Currently, there are two solutions for this: keep state and session information in a shared (between clusters) resource, such as a database; or use a load balancing solution that allows the Network Administrator to enter known ISP proxy addresses to be consistently routed to a particular cluster.

## Resource Issues

### Unique Network Ports

During installation, the iPlanet Application Server must be configured to communicate on particular network ports for its individual services. Use the Custom Installation to configure these ports to non-default values. For the installation of multiple instances on a single server, it is necessary to select different network ports for each instance, to avoid contention for resources.

For example, you typically install the Administrator process to port 10817, the Executive process to port 10818, and the first Java service to port 10820. If the first instance is installed with those defaults, you might install second instance with the Administrator process at port 11817, Executive at port 11818, and first Java service at port 11820.

### Shared Directory Configuration Trees

For ease of administration and optimal load balancing across all of the iPlanet Application Server instances, the simplest configuration shares a common directory server with a common configuration tree (default is `iasconfig`). Due to the potential failure scenario described above in Multi-cluster Issues , you should separate all instances associated with the cluster allocated to serving a given ISPs proxies into a separate configuration tree. A subset of the web server instances will be allocated to that cluster as well.

### Shared Java Environment

All instances should share a single instance of the JDK to reduce disk storage requirements.

### Login

For each instance on a server, you should create a separate login. During installation, the iPlanet Application Server processes should be owned by the associated login. Separating ownership of the different instances eliminates ambiguity for the startup and shutdown scripts.

## Anticipated Performance Benefits

Estimating performance for the many possible configurations is a complicated process. Use the Performance Tool for estimates. An example of the potential performance boost might be to compare the performance of a cluster of (2) 12-way E4500 servers to a multi-instance deployment using the same hardware: (12) clusters of (2) instances each. The multi-instance deployment should perform about twice as fast as the initial configuration.

## Troubleshooting

After you install iPlanet Application Server, consider the following issues.

- After installing iPlanet Application Server, make sure that the iPlanet Application Server `gxlib` directory (*install directory/ias/gxlib*) and the registry directory (*install directory/ias/registry*) are accessible by the web server owner and user.
- Ensure that “CGI file type” is enabled on your web server. For iPlanet Web Server, go to the Server Administrator page, and under the Programs folder, click Yes for CGI file type.
- When running applications, if the iPlanet Application Server Class Loader is unable to find the AppLogic class file through the `SYSTEM_JAVA` parameter (the registry parameter that contains both the `CLASSPATH` and `GX_CLASSPATH` settings), the request is handed over to the JAVA Class Loader, which in turn reads the `CLASSPATH` environment variable to find the class file. This allows AppLogics and servlets to execute even if the user `CLASSPATH` is not specified.
- Check for required operating system patches. See the readme file to determine what patches you may need.
- Check the latest Release Notes for workarounds to any problems you might encounter with installation:

<http://docs.iplanet.com/docs/manuals/ias.html#60>



# Index

## A

- administration domain 125
- Administration Server 126
  - port number 29
- Administrative Server (KAS) 34, 126

## C

- C++ Server (KCS) 33, 34, 96
- C++ Server (KCS) on NT 127
- C++ Server (KCS) on Solaris 127
- CGI file type 147
- CGI to Executive Server (KXS) on Solaris 126
- CGI-Bin directory 127
- Class Loader 147
- CLASSPATH 147
- clusters 110, 142
- code isolation 144
- configuration directory 125
- configuring database connection 112
- configuring the web server 127
- Console 126

## D

- data synchronization 45, 142
- database connection, configuring 112
- database ranking 36
- database requirements 10, 57
- default disk drive 57
- developer deployment 113
- Directory 126
- directory configuration trees 146
- Directory Manager distinguished name (DN) 24, 126
- Directory Server 124
  - administration domain 125
  - configuration directory 125
  - Directory Manager distinguished name (DN) 126
  - documentation 124
  - installing 19
  - o=NetscapeRoot tree 125
  - populating 26
  - schema checking 27
  - super user 126
- distinguished name (DN) 126
- document directory 127
- documentation
  - Directory Server 124
- DSync 45

## E

- Executive Server (KXS) 34, 126, 128
- EZ Install on NT 49
- ezSetup Option 112
- ezSetup option 58

## F

- failover 145
- firewall issues 128
- format
  - URLs, in manual 8

## G

- global configuration name 30
- global transactions 37

## I

- I18N 44
- installation
  - Directory Server 19
    - preparing for 9, 56
    - verifying 50, 118
  - web connector plug-in 51, 119
- installation directory 17
- installation type 12
- installing a webless iAS 127, 128
- Installing on NT 12
- internationalization, enabling 44

## J

- Java Server (KJS) 33, 34

- Java Server (KJS) on NT 126
- Java Server (KJS) on Solaris 127

## K

- KAS (Administrative Server) 34
- KCS (C++ Server) 33, 34, 96
- KJS (Java Server) 33, 34
- KXS (Executive Server) 34, 128

## L

- log volume disk 39
- login 146

## M

- memory requirements 10, 56
- mirror directory 38
- Multiple 144
- multiple instances 144
- multiple instances on Solaris 113

## N

- NFS-mounted file system 127

## O

- o=NetscapeRoot tree 125
- open string 141
- operating system requirements 10, 56

## P

- plug-in 127, 128
- populate Directory Server 26
- port number 34
  - Administration Server 29
- port numbers 126
- production deployment 114

## R

- ranking databases 36
- Raw 129
- raw partition 11, 57
- raw partitions 129
- requirements
  - database 10, 57
- Resource Manager 140
- root tree 125

## S

- sample applications on NT 52
- sample applications on Solairs 120
- sample applications on Solaris 120
- Scalability 144
- scalability 144
- schema checking 27
- server components 124
- server products
  - Administration Server
    - Console 126
  - Directory Server 124
  - iPlanet Application Server 124
- shared Java environment 146
- silent installation 112
- super user 126
- Sync Alternate 142
- Sync Backup 142
- Sync Primary 142

- Sync Server 142
- synchronizing data 45
- system requirements on NT 10
- system requirements on Solaris 56

## U

- uninstalling iAS 121
- uninstalling on NT 52
- uninstalling on Solaris 121
- Unique 146
- Upgrading to SP1 on NT 49
- upgrading to SP1 on Solaris 117
- URLs
  - format, in manual 8

## V

- verifying installation 50, 118
- verifying installation on NT 50

## W

- web connector plug-in 50, 119, 127, 128
  - installation 51, 119
- web connector plug-in, installing on NT 50
- web server 11, 56
- web server CGI-Bin directory 127
- web server document directory 127
- web server instance 32
- web server issues 127
- Webless 128
- webless installation 11, 50, 57, 119, 127, 128