# Installation Guide

*iPlanet™ Application Server*

**Version 6.0**

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# Preface

This chapter describes the contents of iPlanet Application Server *Installation Guide*. It contains the following sections:

- Using the Documentation
- About This Guide
- What You Should Know
- How This Guide is Organized
- Documentation Conventions

## Using the Documentation

The following table lists the tasks and concepts that are described in the iPlanet Application Server manuals and *Release Notes*. If you are trying to accomplish a specific task or learn more about a specific concept, refer to the appropriate manual.

Note that the printed manuals are also available online in PDF and HTML format, at: http://docs.iplanet.com/docs/manuals/ias.html

| For information about | See the following | Shipped with |
|---|---|---|
| Late-breaking information about the software and the documentation | *Release Notes* | iPlanet Application Server 6.0 |
| Installing iPlanet Application Server and its various components (Web Connector plug-in, iPlanet Application Server Administrator), and configuring the sample applications | *Installation Guide* | iPlanet Application Server 6.0 |

| For information about | See the following | Shipped with |
|---|---|---|
| Creating iPlanet Application Server 6.0 applications that follow the open Java standards model (Servlets, EJBs, JSPs, and JDBC), by performing the following tasks:<br>• Creating the presentation and execution layers of an application<br>• Placing discrete pieces of business logic and entities into Enterprise Java Bean (EJB) components<br>• Using JDBC to communicate with databases<br>• Using iterative testing, debugging, and application fine-tuning procedures to generate applications that execute correctly and quickly | *Developer's Guide (Java™)* | iPlanet Application Server 6.0 |
| Administering one or more application servers using iPlanet Application Server Administrator Tool to perform the following tasks:<br>• Monitoring and logging server activity<br>• Implementing security for iPlanet Application Server<br>• Enabling high availability of server resources<br>• Configuring web-connector plugin<br>• Administering database connectivity<br>• Administering transactions<br>• Configuring multiple servers<br>• Administering multiple-server applications<br>• Load balancing servers<br>• Managing distributed data synchronization<br>• Setting up iPlanet Application Server for development | *Administrator's Guide* | iPlanet Application Server 6.0 |

| For information about | See the following | Shipped with |
|---|---|---|
| Migrating your applications to the new iPlanet Application Server 6.0 programming model from the Netscape Application Server version 2.1, including a sample migration of an Online Bank application provided with iPlanet Application Server | *Migration Guide* | iPlanet Application Server 6.0 |
| Using the public classes and interfaces, and their methods in the iPlanet Application Server class library to write Java applications | *Server Foundation Class Reference (Java)* | iPlanet Application Server 6.0 |
| Using the public classes and interfaces, and their methods in the iPlanet Application Server class library to write C++ applications | *Server Foundation Class Reference (C++)* | Order separately |

# About This Guide

This *Installation Guide* tells you about the various kinds of installation procedures for the iPlanet Application Server and how to follow them.

This manual is intended for system administrators, network administrators, evaluators, application server administrators, web developers, and software developers who want to install iPlanet™ Application Server.

# What You Should Know

Before you begin, you should already be familiar with the following topics:

- Application Servers
- Client/Server programming model
- Internet and World Wide Web
- Windows NT/2000 or Solaris™ operating systems
- Java programming and J2EE

# How This Guide is Organized

This Guide is organized as follows:

Chapter 1, “Getting Started”, gives an overview of iPlanet Application Server features, iPlanet Application Server components, installation options, and system requirements for installation.

Chapter 2, “Preparing to Install”, provides an overview of the minimum requirements, and steps to be taken prior to installing iPlanet Application Server.

Chapter 3, “Easy iPlanet Application Server Installations”, contains the quick installation procedures for both the Windows and Solaris platform, including the ezSetup installation option.

Chapter 4, “Advanced Installations for Solaris”, describes the Custom Installation options for the Solaris platform. This installation option is recommended only for experienced users.

Chapter 5, “Advanced Installations for Windows,” describes the Custom Installation option for the Windows NT/2000 platform. This installation option is recommended only for experienced users.

Chapter 6, “Uninstalling,”describes uninstallation procedures.

Appendix A, “Configuring iPlanet Application Server,” describes configuration options in more detail.

# 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 forward slashes are used instead of backslashes to separate directories.

This guide uses URLs of the form: `http://server.domain/path/file.html`, where:

- server is the name of the server where you are running the application.
- domain is your internet domain name.
- path is the directory structure on the server.
- file is an individual filename.

The following table shows the typographic conventions used throughout iPlanet documentation.

**Table 1** Typographic Conventions

| Typeface | Meaning | Examples |
|---|---|---|
| `Monospaced` | The names of files, directories, sample code, and code listings; and HTML tags | Open `Hello.html` file.<br>`<HEAD1>` creates a top level heading. |
| *Italics* | Book titles, variables, other code placeholders, words to be emphasized, and words used in the literal sense | See Chapter 8 of the *Installation Guide*.<br>Enter your *UserID*.<br>Enter *Login* in the Name field. |
| **Bold** | First appearance of a glossary term in the text | **Templates** are page outlines. |

Chapter 1

# Getting Started

This chapter provides the information to correlate your usage goals for iPlanet™ Application Server with the installation option that best suits those goals. In addition, it contains an overview of iPlanet Application Server components.

This chapter includes the following topics:

- iPlanet Application Server Features
- Overview of Server Components
- What's New in SP3

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

`http://docs.iplanet.com/docs/manuals/ias.html`

## iPlanet Application Server Features

This section discusses the features you should consider when planning to integrate iPlanet Application Server into your environment. The configurations which you use to achieve your goals may affect where you install iPlanet Application Server and how you configure it after installation. Although some configuration is done during installation by entering required settings (especially while using the custom installation), you should plan on doing most of the configuration after installation is complete, using the iPlanet Application Server Administration Tool.

This section includes the following topics:

- High Scalability
- High Performance
- High Availability via Failover

- Security
- Enterprise System and Database Connectivity
- Enterprise-wide Manageability
- Cross-platform Portability

## High Scalability

When a system can incrementally increase the capacity, capability, throughput and workload as the number of users increase, it is known as a highly scalable system. There are two categories of scalability available within iPlanet Application Server:

- Vertical scaling — focuses on loading up a single powerful machine to take full advantage of its resources.
- Horizontal scaling — adds several less powerful machines to increase performance.

iPlanet Application Server's scalable architecture allows applications to be developed to meet the needs of initial deployment, and later to be scaled to meet heavier demands as business needs grow. iPlanet Application Server applications can scale dynamically to support massive number of users. The Distributed Data Synchronization (DSync) mechanism in iPlanet Application Server allows the ability to dynamically add servers and new instances of application components.

## High Performance

iPlanet Application Server can support a high volume of concurrent users without affecting the throughput. The following features contribute to high performance:

- Multi-threaded capabilities — Supports the multi-threading capabilities of the host operating system.

  An application can optimize performance by processing requests on multiple threads, which maximizes CPU resource utilization.

- Dynamic load balancing — Distributes requests among instances of application servers to avoid any one or more of the servers being underutilized, or overutilized while others are available.

iPlanet Application Server offers several load balancing methods, including server load, response time, round robin and weighted round robin mechanisms. For more information see, “Balancing User-Request Loads” in the the *iPlanet Application Server Administrator’s Guide*.

- Application partitioning — Allows components to be distributed across servers to accommodate heavier loads.

  iPlanet Application Server architecture supports application partitioning, which allows logic to be distributed across servers as an application scales to accommodate heavier loads. Using iPlanet Application Server Administration Tool, system administrators can partition an application into functional areas.

- Resource pooling and caching — Avoids unnecessary time spent on creating and closing connections as well as on retrieving frequently accessed results by:

  - Connection caching and pooling — To improve performance, iPlanet Application Server caches database connections so that commonly used, existing connections are re-used rather than re-established each time. Connection caching avoids the overhead involved in creating a new database connection for each request.

  - Results Caching — iPlanet Application Server improves application performance by caching the results of application logic execution. Developers can optionally enable this feature in their applications.

  - JSP Caching — iPlanet Application Server provides this new feature, which aids in the development of compositional JSPs. This provides functionality to cache JSPs within the Java engine, making it possible to have a master JSP which includes multiple JSPs (similar to a portal page), each of which can be cached using different cache criteria. The JSP caching feature is in addition to result caching.

- Data Streaming — Moves data more quickly, providing results sooner.

  iPlanet Application Server provides data streaming that allows users to begin viewing results of requests sooner, rather than wait until the operation has been completely processed. Application developers can explicitly control what data is streamed, or allow the system to provide automatic streaming.

- Optimized Web Server communication — Speeds application performance through tighter integration with web servers.

  Web Server integration occurs through the Web Connector Plug-ins and corresponding listeners. iPlanet Application Server supports NSAPI, ISAPI, APACHEAPI, and optimized CGI for iPlanet, Microsoft, and CGI-compatible Web servers, respectively.

Other factors affecting application performance include network topology, network and server hardware, database architecture, and application programming. For more information see iPlanet Application Server Performance News Group at:

`snews://secnews.netscape.com/iplanet.ias.perf`

# High Availability via Failover

iPlanet Application Server can support operations that run 24 hours per day, and seven days per week (24 by 7). The main factor to consider while configuring a highly available iPlanet Application Server installation is the failover capability.

iPlanet Application Server provides a highly available and reliable solution through the use of load balancing and dynamic failover (also called failure recovery). iPlanet Application Server can distribute all or part of an application across multiple servers. As a result, if one server goes down, the other servers can continue to handle requests. iPlanet Application Server minimizes downtime by providing automatic application distributed user-session information and distributed application-state information. Information is maintained as long as at least one iPlanet Application Server installation is still running in a cluster with the server that crashed.

iPlanet Application Server features a set of failover capabilities that promote application availability, including:

- Stateful Session Bean failover — If there are unexpected fatal problems with the server, the bean fails over to another server. Supporting failover for stateful session beans is an iPlanet Application Server value-added feature. J2EE applications do not need any modification to support this feature.
- Rich Client failover — The Rich Client CORBA Executive Service (CXS) acts as a bridge between Rich Clients that use the Internet Inter-Object Protocol (IIOP) and the EJBs on iPlanet Application Server's Java engine(s). If the CXS server within iPlanet Application Server crashes, the state of the bridge objects for all EJBs are restored to that before the crash. By eliminating single points of failure, iPlanet Application Server offers maximum application availability.

# Security

To prevent unauthorized access to business logic, resources, and data, the main factor to consider are the authentication and authorization mechanisms. These mechanisms can be role-based, certificate-based, or form-based authentication.

iPlanet Application Server supports all J2EE security requirements, including role-based authentication, certificate authentication, and form-based authentication. iPlanet Application Server supports the EJB v1.1 security model and the Java Servlet v2.2 security model.

iPlanet Application Server also provides secure web server communication and supports SSL, HTTPS, and HTTP challenge-response authentication to clients. To bridge the security gap between browsers and data sources, iPlanet Application Server supports user authentication, cookies, and database access controls for the secure handling of transactional operations. Event logging and tracking enables detection of, and protection against, unauthorized access.

iPlanet Application Server features a set of security features that include:

- Single sign-on across all applications on iPlanet Application Server
- Security for Rich Clients
- XML-based role mapping information. Use the iPlanet Application Server GUI-based deployment tool to build the XML files that contain security information
- LDAP-based authentication

## Enterprise System and Database Connectivity

iPlanet Application Server has the ability to interface with external databases and enterprise information systems. iPlanet Application Server provides developers with native database drivers, JDBC support, and the Unified Integration Framework API, which provides heterogeneous transactions - spanning multiple vendor databases.

iPlanet Application Server provides support for all JDBC database drivers conforming to the Java Software JDBC API. iPlanet Application Server certifies JDBC drivers for:

- Oracle
- DB2
- Informix
- Sybase
- SQL Server (on Windows only)

iPlanet Application Server provides JDBC connectivity through an iPlanet Application Server implementation of JDBC. This implementation supports both heterogeneous and global transactions. Local transactions are native to a database and are restricted within a single process. Global transactions are managed and coordinated by the Transaction Manager build into iPlanet Application Server.

## Enterprise-wide Manageability

By using the iPlanet Application Server Administration Tool, you can change the system configuration without interrupting the operation of the system or disrupting service to clients. The Java-based iPlanet Application Server Administrator Tool enables local and remote monitoring and management of multiple Application Servers and distributed applications. The following features enable this:

- Remote administration — remotely configuring the server and its applications.
- Automatic detection and restart of failed servers and processes
- Real-time monitoring of system events and performance
- Event notification system that you can configure to run a script and send an email message about critical situations
- Application management and partitioning
- Fine tuning of applications for optimal performance
- Setup security roles and access control lists
- Transaction Management features for local or global transactions

## Cross-platform Portability

iPlanet Application Server provides developers the flexibility to develop and deploy on different hardware platforms.

iPlanet Application Server is available on a variety of hardware platforms. These include:

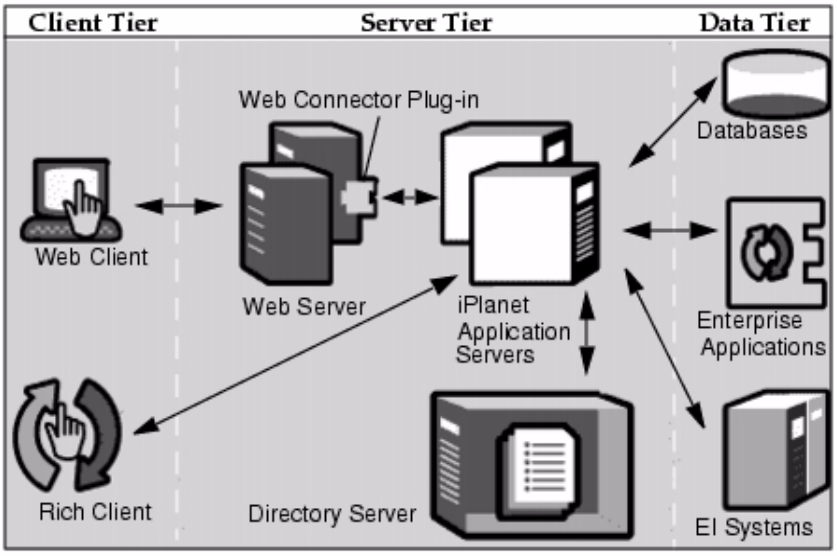
- Microsoft Windows NT SP6a or Windows 2000 Professional
- Sun® SPARC™ running Solaris™ 2.6 or Solaris 8
- Hewlett Packard HP-UX 11.0

- IBM® AIX 4.3.3

# Overview of Server Components

iPlanet Application Server includes the iPlanet Console, the Administration Server, the (optional) Web Connector plug-in, the Directory Server, iPlanet Application Server Deployment Tool, and the Administration Tool. Their relationship to the three tier and J2EE computing model is shown in Figure 1-1.

**Figure 1-1** iPlanet Application Server is at the core of the three tier computing model




This section includes the following topics:

- iPlanet Console
- Administration Servers
- Core Application Server Components
- iPlanet Directory Server

# iPlanet Console

The iPlanet Console (previously known as the Netscape Console) performs common server administration functions such as stopping and starting servers, installing new server instances, and managing user and group information through the LDAP services of the Directory Server. The console can be installed with iPlanet Application Server or by itself. When installed as a standalone application, you can use it to manage remote servers from any machine on your network.

# Administration Servers

When you install iPlanet Application Server, you install its Administration Server also. The iPlanet Application Server's Administration Server is used internally by the Administration Tool and Deployment Tool but is not used directly by system administrators.

In addition, when you install the iPlanet Console, its Administration Server is installed. Like the iPlanet Application Server's Administration Server, this server is used internally by the iPlanet Console.

# Core Application Server Components

## Web Connector Plug-In

The Web Connector plug-in enables communication between iPlanet Application Server and a Web server. When you install iPlanet Application Server, your Web server is automatically configured for the Web Connector plug-in. This means that all necessary directories and settings on the Web server are updated.

If you have problems with the connection between iPlanet Application Server and the Web Connector plug-in, see the *iPlanet Application Server Administrator's Guide* for more information.

## iPlanet Application Server Administration Tool

The iPlanet Application Server Administration Tool is a stand-alone Java application with a graphical user interface that allows you to administer one or more instances of iPlanet Application Server.

### iPlanet Application Server Deployment Tool

The iPlanet Application Server Deployment Tool allows you to package and deploy your J2EE applications. Like the Administration Tool, the Deployment Tool is also a stand-alone Java application with a graphical user interface.

## iPlanet Directory Server

Your iPlanet Application Server and other directory-enabled applications use the iPlanet Directory Server as a common, network-accessible location for storing shared data such as user and group identification, server identification, and access control information. The most well known of the Directory Server's service is the Distinguished Name Service (DNS).

The iPlanet Directory Server provides global directory services, meaning, it provides information to a wide variety of applications. A global directory service is a single, centralized repository of directory information that any application can access through network-based communication between the applications and the directory. iPlanet Directory Server uses LDAP (Lightweight Directory Access Protocol) to give applications access to its global directory service. The LDAP protocol enables iPlanet Directory Server to scale to millions of entries for a modest investment in hardware and network infrastructure.

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**NOTE** iPlanet Directory Server runs as the `slapd` service on Windows, and `ns-slapd` on Solaris.

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iPlanet Directory Server installed along with the Application Server, is configured to store two types of information: configuration information and authentication information. As you install iPlanet Application Server, you set up the Directory Server Data Information Tree (DIT), which has branches for this information. For more information see the *iPlanet Directory Server Installation Guide* at: `http://docs.iplanet.com`

The configuration directory is the part of Directory Server used to store the Application Server's configuration information. It contains the data tree, `o=NetscapeRoot`, used by the iPlanet Application Server to store the configuration settings under the suffix that you set up to identify your organization. Multiple server installations can store their configuration settings in this configuration directory.

If you install Directory Server component with the 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.

For an overview of the various functions of Directory Server, see the *iPlanet Directory Server Installation Guide*.

# What's New in SP3

The following list represents the product enhancements and new features added to iPlanet Application Server SP3 installation:

- Integrated Database
- Support for Apache Web Server
- Common Environment Variable Setting

## Integrated Database

An ORDBMS package - PointBase Network 3.5, is bundled with the iPlanet Application Server. PointBase enables you to test your applications without having to install, or have access to, a production level database.

PointBase is one of the options available during installation, under Application Server core components. You can choose to install or not install PointBase by selecting the `PointBase DataBase Server` option.

PointBase database server and its third party JDBC driver is automatically registered with the Administration Server. It also populates the sample databases of e-Store, J2EEGuide, Database, and Bank sample applications.

For more information on how to register database drivers and deploy applications, see the *iPlanet Application Server Administrator's Guide*.

## To Start PointBase

On Solaris, go to the `<iASInstallDir>/pointbase/network/bin` and type:

```
pointbaseServer start
```

To stop, type:

```
pointbaseServer stop
```

This procedure works on Windows as well.

On Windows, click Start, then select Programs > PointBase Network 3.5 > PointBase Server to start the PointBase application.

To shutdown, use the `Shutdown` option from the PointBase administration console.

**NOTE**

- The PointBase server is started automatically after installation of iPlanet Application Server is complete.
- On Solaris, after installation is complete, the PointBase database package's administration console will be displayed. If you get an error message, and you are unable to view the dialog box, set the DISPLAY terminal variable to X.

By default, PointBase runs on port 9092. Therefore, make sure that no other service is running on port 9092 before installing iPlanet Application Server. Since each PointBase server uses port 9092 by default, only one PointBase instance can run on a machine at any given moment.

Also, ensure that other iPlanet Application Server services do not use the same port.

# To Administer PointBase

Two administration utilities are available with PointBase Network 3.5—the GUI-based `Pointbase Console` and the command line utility `PointBase Commander`.

Both these tools are available in the following location:

## On Windows

- `<iASInstallDir>\pointbase\client\examples\batch\windows\startconsole`
- `<iASInstallDir>\pointbase\client\examples\batch\windows\startcommander`

The administrative tools can also be accessed through the Start menu:

Go to Start, select Programs > PointBase Network 3.5 and then select PointBase Console or PointBase Commander.

### On Solaris

- To run `startconsole`, go to `<iASInstalDir>/pointbase/client/examples/batch/unix/startconsole`
- To run `startcommander`, go to `<iASInstallDir>/pointbase/client/examples/batch/unix/startcommander`

**CAUTION** We recommend that you do not use the PointBase Console and Commander available in `<iASInstallDir>\pointbase\client`, as they are not optimized for your iPlanet Application Server installation.

## Support for Apache Web Server

iPlanet Application Server supports the Apache Web Server version 1.3.19, on Solaris and Windows NT/2000. A few manual configuration steps are necessary to enable the Apache web server to work with the iPlanet Web Connector Plug-In.

To use the Apache web server, you must select either the iPlanet Web Server or Microsoft Internet Information Server (on Windows) during installation. After installing iPlanet Application Server, install and configure Apache Web Server.

For more information on how to install and configure the Apache web server, see "Configuring Apache Web Server" on page 155.

## Common Environment Variable Setting

On the Solaris platform, the common environment variable settings are recorded in a single script file, `iasenv.ksh`. The `iasenv.ksh` script records the common environment variable settings, such as CLASSPATH, GX_ROOTDIR and LD_LIBRARY_PATH.

Therefore, These settings are no longer set in each of the scripts located under the `ias/bin` or `ias/jms/bin` directory.

The script is located in the `<iASInstallDir>/ias/env` directory.

**NOTE** If any of your current applications are reading environment information for kjs, kxs, etc, they need to be modified to read from `iasenv.ksh`.

**CAUTION** We recommend that you do not change the values in the `iasenv.ksh` script, unless absolutely necessary.

Chapter 2

# Preparing to Install

This chapter includes the following topics:

- Minimum System Requirements
- Installation Options
- Upgrading to SP3
- List of Certified Directory Servers
- List of Certified Web Servers
- List of Certified JVMs
- List of Certified Third Party JDBC Database Drivers
- List of Certified Native Type 2 Database Servers and Clients
- Configuring iPlanet Application Server Clusters

Read this chapter before using the ezSetup, Typical, or Express iPlanet™ Application Server installations. For any late breaking updates to these instructions, check the *Release Notes* at:

`http://docs.iplanet.com/docs/manuals/ias.html`

For more information about configuring your application server after installation, refer to the *iPlanet Application Server Administrator's Guide*.

## Minimum System Requirements

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

# Solaris

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

- Sun® SPARC™ running Solaris 2.6 or Solaris 8
- 400 MB free hard disk space
- 256 MB RAM (512 MB recommended)
- One of the following Web Servers:
  - iPlanet Web Server Enterprise Edition 4.1, SP7
  - Apache Web Server 1.3.19
- The following Web browser:
  - Netscape™ Communicator 4.5 or later

**NOTE** The web server and browser need not be present on the same machine if you are performing a Webless installation. For more information, see "Webless Installations," on page 155

- Solaris Patch Requirements

  iPlanet Application Server 6.0 bundles Solaris Production JDK 1.2.2_07 for SPARC. The following patches for JDK 1.2.2_07 must be applied on Solaris 2.6. These patches can be downloaded from the http://sunsolve.sun.com Web site.

**Table 2-1** Required JDK 1.2.2_07 patches

| Patch | Patch Description |
|---|---|
| 105181-23 | Kernel update patch |
| 105210-32 | libaio, libc & watchmalloc patch |
| 105284-37 | Motif 1.2.7: Runtime library patch |
| 105568-18 | Libthread patch |
| 105633-48 | OpenWindows 3.6: Xsun patch |
| 105669-10 | libDtSvc Patch |
| 106040-14 | X Input & Output Method patch |
| 106409-01 | Fixes the Traditional Chinese TrueType fonts |

**Table 2-1** Required JDK 1.2.2_07 patches

| Patch | Patch Description |
|---|---|
| 107733-08 | Linker patch |
| 108091-03 | ssJDK1.2.1_03 fails with fatal error in ISO8859-01 Locales |

For Solaris 8, apply the recommended JDK 1.2.2_07 patches listed on the http://sunsolve.sun.com Web site.

**Table 2-2** Recommended Solaris 8 OS patches

| Patch | Patch Description |
|---|---|
| 108991-12 | libc and watchmalloc patch |

# Windows

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

- Microsoft Windows NT 4.0 with SP6a or Windows 2000 Professional
- 275 MB free hard disk space (NTFS)

**NOTE** On a FAT file system, the installer may not calculate the needed space correctly and may run out of disk space without warning.

- 256 MB RAM (512 MB recommended)
- One of the following Web Servers:
  - iPlanet Web Server Enterprise Edition 4.1, SP7
  - Microsoft Internet Information Server 4.0
  - Apache Web Server 1.3.19
- One of the following Web browsers:
  - Netscape Communicator 4.5 or later
  - Internet Explorer 4.0 or later

**NOTE** The web server and browser need not be present on the same machine if you are performing a Webless installation. For more information, see “Webless Installations,” on page 155

# Installation Options

iPlanet Application Server provides the following installation options:

- Ezsetup
- Express or Typical
- Custom
- Silent

The first three options require very little user input and thus enable you to get the application server up and running in a matter of minutes. The installer sets up the application server with default values for port numbers, passwords, and so on. These settings are sufficient for running many of the iPlanet sample applications and for providing a platform for you to use in deploying your own sample applications.

## Ezsetup

The ezsetup installation is a standalone application you launch from the desktop. It is the easiest of the installation options. The ezsetup installer runs a script which assigns default values to administrator user names and passwords. You only have to enter information to two questions to start the installation process.

For installation instructions, go to “Running ezsetup on Windows,” on page 54, or “Running ezSetup on Solaris,” on page 71.

## Express or Typical

The Express and Typical options afford more flexibility than ezSetup. The express and Typical options will install iPlanet Application Server with the most common settings. You can configure your iPlanet Application Server instances after installation by using the Administration Tool.

For instructions on installing on Windows, go to “Running the Wizard Installation,” on page 56, and for installing on Solaris, go to “Starting Solaris Installations,” on page 73.

## Custom

The Custom installation option allows you to configure the application server and its associated components during the installation. The Custom installation option requires a lot of user input and is recommended for advanced users.

For instructions on installing on Windows, go to Chapter 5, “Advanced Installations for Windows”, and for Solaris, see Chapter 4, “Advanced Installations for Solaris”.

**NOTE** You must use the Custom installation option to test the clustering samples.

## Silent

The Silent Installation feature allows iPlanet Application Server installation on multiple machines without running the installation program more than once.

For more information on running the Silent installation option on Windows, see “Installing on Multiple Windows Machines,” on page 146, and for Solaris, see, “Installing on Multiple Solaris Machines,” on page 116.

# Upgrading to SP3

This section describes procedures to upgrade from iPlanet Application Server 6.0, SP1 RevB and SP2, to iPlanet Application Server Enterprise Edition (EE) 6.0, SP3 release.

Due to changes in SP3 to provide enhanced security, and the class loader, you must redeploy applications running on SP1 using the `redeploy` utility. For more information on upgrading from SP1 RevB to SP3, see Upgrading from SP1 RevB to SP3.

Upgrading from SP2 is fairly straight forward. Your applications are automatically migrated when you install SP3. For more information on upgrading from SP2 to SP3, see Upgrading from SP2 to SP3.

**NOTE**

- Stop iPlanet Application Server before starting the upgrade process.
- The installer performs an upgrade based on the existing configuration. If you want to make any changes to the existing configuration, first complete the upgrade procedure, and then use iPlanet Application Server Administration Tool (IASAT) and other utilities to make those changes.
- If you are running a release earlier than iPlanet Application Server 6.0, SP1 RevB, then you must do a complete reinstall.
- iPlanet Application Server installation or upgrade will cause the Directory Server installed locally on the same machine on which the application server is being installed, to restart. Other application server instances configured to the same Directory Server will display error messages, until the Directory Server is up again.

  After the Directory Server has restarted, all the iPlanet Application Server instances will function normally.

This section includes the following topics:

- Upgrading from SP2 to SP3
- Upgrading from SP1 RevB to SP3

# Upgrading from SP2 to SP3

Use the following procedure to upgrade to iPlanet Application Server Enterprise Edition 6.0, SP3.

This section includes upgrade procedures for the following platforms:

- Upgrading on Windows Platforms
- Upgrading on Solaris Platforms

## Upgrading on Windows Platforms

To upgrade to iPlanet Application Server 6.0 SP3 on Windows, perform the following steps:

**NOTE** Stop iPlanet Application Server before starting the upgrade process.

1. Ensure you have met all the conditions listed in “Minimum System Requirements,” on page 35, and “Prerequisites for Installation,” on page 122.
2. Run the setup program.
3. Click Next after the Welcome screen appears.
4. Click Yes to accept the license agreement.

   You must accept the License agreement to continue.
5. Click Next to install the iPlanet Server and core components.
6. Select Custom as the type of installation.
7. The Setup program will automatically select the same location as your current installation. Click Next to continue.

   The Components to Install screen appears.
8. Deselect Directory Server Suite.
9. Select iPlanet Application Server 6.0.

   Make sure this is the only selected component.
10. Follow directions in the installer as you would for a normal installation. You will require the License Key that you received along with the product CD.
11. Enter configuration details, such as configuration directory administrator ID, password and port numbers, exactly as used for your current installation.

    The installer will display the port numbers as used by the existing installation. Do not modify any of the values.
12. Click Next through the rest of the screens to complete the install.

    For more information on the installation procedure, see Chapter 5, “Advanced Installations for Windows”.

## Upgrading on Solaris Platforms

To upgrade to iPlanet Application Server 6.0, SP3 on Solaris, perform the following steps:

**NOTE**
- Make sure to stop the iPlanet Application Server before starting the upgrade process.

1. Ensure you have met all the conditions listed in “Minimum System Requirements,” on page 35, and “Prerequisites for Installation,” on page 53.
2. Run the setup program.

   For detailed information on the installation procedure, see Chapter 4, “Advanced Installations for Solaris”.
3. Select Custom as the type of installation.
4. Choose to install the software in the same location as your current installation. Press Enter.

   The iPlanet Server Products Components screen appears.
5. Type-in 4 and press Enter to install only the iPlanet Application Server component
6. Enter the Directory Server administrator ID and password.
7. When you are asked whether you want to upgrade, type y at the prompt and press Enter.
8. Follow directions in the installer as you would for a normal installation.

   Enter configuration details, such as, configuration directory administrator ID, password and the port numbers, exactly as used for your current installation.

   **NOTE**
   - Choose the same configuration options that you chose for the existing installation. You can make modifications to your configuration after upgrading.
   - The installer will not display the existing port numbers and configuration details. You must enter the same values as used by the existing installation.

9. Follow directions in the installer as you would for a normal custom installation. You will require the License Key that you received along with the product CD.

   For more information on the installation procedure, see Chapter 4, “Advanced Installations for Solaris”.

# Upgrading from SP1 RevB to SP3

The following changes made to iPlanet Applications Server EE 6.0, SP3 make it necessary to redeploy applications running on SP1 RevB:

- Applications that contain code which tries to read the username and password from a HTTP request string will not work on SP3, even after redeploying the application on SP3. You will have to modify the application's source code to use Form Based Authentication.
- iPlanet Application Server EE 6.0, SP3 extracts class files in a `.war` file under the directory, `<iASInstallDir>/ias/APPS/<app-name>/<module-name>/classes`, compared to `<iASInstallDir>/ias/APPS` in SP1.

  The Jasper compiler integrated with iPlanet Application Server 6.0, SP3 specifically expects this directory structure.

**NOTE** The Jasper source files have been modified to work better with iPlanet Application Server 6.0 SP3. Use the archives that are bundled with the application server installation.

- The new Class Loader implemented in SP3 might not be able to load class files from previously deployed `.war` components of `.ear` files are placed in the wrong path.

  For more information, see the *iPlanet Application Server Migration Guide*.

## To upgrade from SP1 RevB to SP3

To upgrade from SP1 RevB to SP3, on both the Windows and Solaris platforms:

1. Install SP3 in the same location where SP1 is currently installed.

   Follow instructions given in Upgrading from SP2 to SP3.

2. After completing the SP3 installation, run the `redeploy` utility to migrate applications to SP3.

   The `redeploy` utility is shipped along with iPlanet Application Server 6.0 EE SP3 and can be found at the following location:

   - On the Windows platform, run:

     `<iASInstallDir>/ias/bin/redeploy.exe`

- On the Solaris platform, run the `redeploy` shell script from

  `<iASInstallDir>/ias/bin/redeploy`

The `redeploy` utility finds all applications and the corresponding ear files deployed on SP1, and re-deploys each application on SP3. All class files from the `.war` components of applications deployed on SP1 are moved to the following location:

`<iASInstallDir>/ias/trash/sp1`

A directory structure corresponding to the package structure of that class is recreated in this location.

**NOTE**

- Applications that contain code which tries to read the username and password from a HTTP request string will not work on SP3, even after redeploying the application on SP3.
- Applications that consist of only `.war` files (not packaged within an .ear file), will have to be redeployed manually after upgrading.
- If you have applications deployed on SP1 that uses database clients not supported by SP3, then you must register a database client compatible with iPlanet Application Server EE 6.0, SP3 and register the data sources for these applications.

  To register the database drivers, run `dbsetup.exe` (for native drivers) and `jdbcsetup.exe` (for third party drivers) on Windows, and `db_setup.sh` on Solaris after completing the upgrade.

  Use the `iasdeploy` utility to register datasources.

# List of Certified Directory Servers

The following directory servers are certified to work with iPlanet Application Server 6.0, SP3.

**Table 2-3** Certified Directory Servers

| Directory Server | Version |
|---|---|
| iPlanet Directory Server | 4.13 (bundled with iPlanet Application Server 6.0, SP3) |

# List of Certified Web Servers

The following Web servers are certified to work with iPlanet Application Server 6.0, SP3.

**Table 2-4** Certified Web Servers

| Wed Server | Interface |
|---|---|
| iPlanet Web Server Enterprise Edition 4.1 SP7 | NSAPI |
| Microsoft Internet Information Server 4.0 | ISAPI |
| Apache 1.3.19 | APACHEAPI |

# List of Certified JVMs

The following JVMs are certified to work with iPlanet Application Server 6.0, SP3.

**Table 2-5** Certified JVMs

| Platform | Version | JVM |
|---|---|---|
| Windows 2000 | Professional | JDK 1.2.2_007 |
| Windows NT | 4.0 SP6a | JDK 1.2.2_007 |
| Solaris | 2.6, 8 | JDK 1.2.2_07 |

# Accessing Databases

To configure a new iPlanet Application Server instance for database access, it is recommended that you use one of the iPlanet Application Server database setup tools after installation. You can use these tools to configure your applications and components for third party JDBC access.

**NOTE** In addition to the JDBC third party driver support, the Custom installation option provides wizard panels for configuring iPlanet Application Server Type 2 database access. However, these drivers are planned for deprecation in the next major release of iPlanet Application Server.

This section includes the following topics:

- Configuring Database Drivers
- Database Support

# Configuring Database Drivers

Third party JDBC drivers need to be identified to iPlanet either during application server installation, or by using registration tools after installation. Registration must occur on each application server instance that houses applications which use third party JDBC driver data sources.

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.

**NOTE** During installation, third party JDBC drivers are automatically setup, even if you choose not to configure database drivers. This is to ensure the proper working of the PointBase database server, which is installed by default during installation.

## During 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.

## 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 Windows, execute the `jdbcsetup.exe` program. (Registration of iPlanet Type 2 JDBC drivers for the supported database platforms is automatic since iPlanet recognizes the presence of the supported native client libraries).
- For Solaris, execute the `db_setup.sh` script. (The same command used to configure iPlanet Type 2 drivers).

**NOTE** For more information on configuring Third Party JDBC drivers, see “Third Party JDBC Driver Support,” on page 164, and the *iPlanet Application Server Administrator’s Guide*.

# Database Support

Support for third party JDBC drivers was added as a new feature in iPlanet Application Server 6.0 SP1. This feature augments the previous database support for iPlanet Application Server Native Type 2 JDBC database drivers.

iPlanet Application Server will continue to support iPlanet Application Server native Type 2 JDBC database drivers until the next major version of iPlanet Application Server is released. At that time, they are planned for deprecation. Future iPlanet Application Server applications must function with JDBC database drivers.

iPlanet Application Server 6.0 SP3 is certified against the third party JDBC database drivers in Table 2-6. In addition, though not yet certified, other third party JDBC database drivers should work with iPlanet Application Server 6.0, SP3.

## List of Certified Third Party JDBC Database Drivers

**Table 2-6** Third party JDBC database drivers certified in SP3

| Database Vendor | JDBC Driver |
|---|---|
| Oracle | Oracle8i 8.1.6.0.1: Type 4 and Type 2 |
| Merant SequeLink | DataDirect Java 5.0 (all databases supported by DDJ5) |
| Sybase | jConnect for JDBC 5.2 Type 4 |
| BM DB2 | IBM DB2 7.1 JDBC Client |
| Informix | Informix JDBC v1.22, Informix JDBC v2.1 (Type 4 driver) |

## List of Certified Native Type 2 Database Servers and Clients

iPlanet Application Server 6.0 continues to support the database clients and servers for the iPlanet Application Server Type 2 JDBC Database Drivers listed in Table 2-7.

**Table 2-7** Native Type 2 database servers and clients supported in SP3

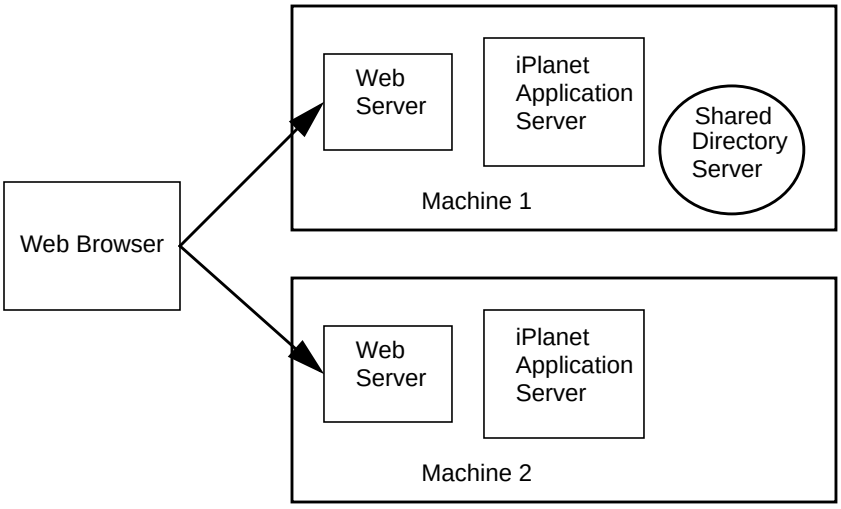
| Database Server | Database Client |
|---|---|
| Oracle 8.05, 8i, (7.3.4), 9i | Oracle 8.1.5, 8.1.6. and 8.1.7 |
| Sybase 11.9.2, 12 | Sybase Open / Client System 12 |
| DB2 6.1, 7.1 | DB2 6.1, 7.1 |
| Informix 7.3, 9.1.4, 9.2 | Informix SDK 2.40 |
| Microsoft SQL Server 7 | ODBC 3.51 |

# Configuring iPlanet Application Server Clusters

A simple cluster configuration is demonstrated in the instructions on the iPlanet Developer's Web site. This simplistic cluster configuration is not representative of a true production configuration, but is sufficient to demonstrate the behavior of the iPlanet Application Server.

The configuration consists of two machines that each have a Web server instance and an iPlanet Application Server instance installed. One machine also has a Directory Server instance that is used by the application servers on both machines, as shown in the following illustration.

**Figure 2-1** A simple iPlanet Application Server cluster configuration




In this simple cluster, configuration data is stored in the directory server on the first machine. When the second application server is installed, it uses the same directory server for configuration information. It's preferable to use the same data tree in the directory server, so that the same configuration information can be shared between all servers and Web connectors.

During installation of the second application server, you must enter the same value for the cluster name and global configuration name as specified during the first application server installation.

In this example, the Web servers are on the same machine as the iPlanet Application Servers. If the Web servers were housed on a separate tier of machines, then you would enter the same global configuration name and cluster name during the Web connector installation. See the iPlanet Application Server Samples for complete instructions on installing and configuring this simple cluster on a Windows or Solaris machine at:

## Windows

`http://developer.iplanet.com/appserver/samples/cluster/docs/nt-cluster.html`

### Solaris

`http://developer.iplanet.com/appserver/samples/cluster/docs/unix-cluster.html`

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**NOTE** This is not a production configuration. If it were a production configuration, it would most likely have the Web servers on separate machines and a second Directory Server configured to act as a backup for the first Directory Server. For information on how to set up the iPlanet Directory Servers for replication and failover, see the *iPlanet Directory Server Installation Guide* at: `http://docs.iplanet.com`

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For more information on configuring iPlanet Application Server clusters, see “Configuring Clusters and Data Synchronization,” on page 178, and the *iPlanet Application Server Administrator’s Guide*.

Chapter 3

# Easy iPlanet Application Server Installations

This chapter describes how to install and configure the iPlanet™ Application Server for the Windows and Solaris™ platforms. It contains the following information

- The Easy Installation Options
- What You're Installing
- Prerequisites for Installation
- Using Easy Installation Options on Windows
- Using the Easy Installation Options for Solaris
- Verifying Installation
- Using the Sample Applications

Read this chapter before using the ezsetup, Typical, or Express iPlanet Application Server installations. For any late breaking updates to these instructions, check the *Release Notes* at:

`http://docs.iplanet.com/docs/manuals/ias.html`

For more information about configuring your application server after installation, refer to the *iPlanet Application Server Administrator's Guide.*

## The Easy Installation Options

The easiest iPlanet Application Server software installation options are as follows:

- `ezsetup`; at most, a two step installation, which sets port numbers, usernames, and passwords to default values
- Express; requires slightly more user input than `ezsetup`
- Typical; requires more user input but yields an installation that is essentially the same as that performed by `ezsetup`

# What You're Installing

The software you're installing for iPlanet Application Server, consists of a group or *stack* of components, including:

- iPlanet Directory Server, Enterprise Edition 4.13
- iPlanet Console, which has its own Administration Server
- iPlanet Application Server and its subcomponents:
  - iPlanet Application Server Web Connector Plug-in component
  - iPlanet Application Server Core Server Component
  - iPlanet Application Server Administration Tool
  - iPlanet Application Server Deployment Tool
  - PointBase Database Server

    Installs the required PointBase files / packages when you select the Application Server core components.

See Chapter 1, "Getting Started", for an overview of the iPlanet Application Server features and components. For more specific information about any of the other server or components, check the iPlanet Web site at:

`http://docs.iplanet.com/`

# Using Easy Installation Options on Windows

This section describes the easy installation options for Windows NT / 2000 platforms.

The following topics are included in this section:

- Prerequisites for Installation

- Running ezsetup on Windows
- Running the Wizard Installation
- Running the Express Installation
- Running the Typical Installation

# Prerequisites for Installation

Make sure you meet the following requirements before starting the installation program:

- Meet the Minimum System Requirements for Windows, as given in “Chapter 2, “Preparing to Install”.
- Log into the Windows system as a user with administrative privileges
- Keep the product key nearby (look for it in the Welcome letter)
- Ensure that a static IP address is assigned to the server machine (contact your system administrator to get one)
- Install and make sure that one of the following Web servers is installed and running:
  - iPlanet Web Server, Enterprise Edition 4.1 SP7
  - Microsoft Internet Information Server 4.0
- Install and make sure that one of the following Web browsers is installed and running:
  - Netscape™ Communicator 4.5 or later
  - Microsoft Internet Explorer 4.0 or later

**NOTE** A Web server and Web browser must be installed and running before you begin iPlanet Application Server installation. You can download iPlanet Web Server, Enterprise Edition 4.1 SP7 from:

www.iplanet.com/downloads/download/

The web server and browser need not be present on the same machine if you are performing a Webless installation. For more information, see "Webless Installations," on page 155

- Configure the Web Server

  If your Web Server runs on a different machine than the iPlanet Application Server, you perform what is referred to as a "webless" installation. After performing a webless installation, you must remember to install the Web Connector plug-in on the Web Server in your configuration after you finish installing iPlanet Application Server.

**NOTE**

- To use Apache Web Server, you must configure iPlanet Application Server to work with either iPlanet Web Server or Microsoft Internet Information server, during installation. After installing iPlanet Application Server, install and configure Apache Web Server.

  For more information on how to install and configure Apache Web Server, see "Configuring Apache Web Server" on page 155.

- Make sure to set the registry permissions for the `\SOFTWARE\iPlanet` key to `Full Control` for all options.

- Make sure that no services are running on port 9092 before installing iPlanet Application Server as the bundled PointBase database application uses port 9092 by default.

# Running ezsetup on Windows

The standalone `ezsetup` application performs an automated iPlanet Application Server installation and sets the default values given in Table 3-1.

Ensure you have met all the conditions listed in“Prerequisites for Installation,” on page 53.

**NOTE** This installation is not intended for working developers or production environments.

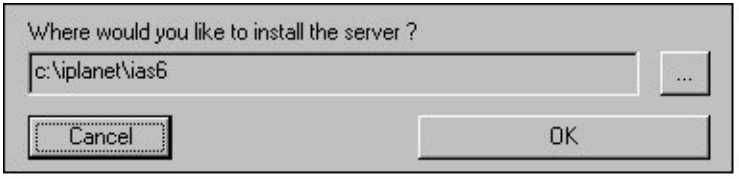
## To Run ezsetup

1. From the `ezSetup` directory, double-click `ezSetup.exe`.

   If you have multiple Web server instances running, the following dialog box appears:


2. Select the Web server instance to associate with iPlanet Application Server and click OK.

   The following dialog box appears:




3. Click OK to select the default pathway or click the ellipsis (...) to browse through your computers’ folders to select another directory.
4. Enter the product key and Click OK.

   iPlanet Application Server installs without any further prompts.

**Table 3-1** The following usernames and passwords are set as defaults

| Component | Username | Password |
|---|---|---|
| Configuration Server Administrator | admin | admin |
| Directory Manager | Directory Manager | DManager |

**Table 3-1** The following usernames and passwords are set as defaults

| Component | Username | Password |
|---|---|---|
| iPlanet Administration Server | admin | admin |

# Running the Wizard Installation

The iPlanet Application Server Installation Wizard's Express and Typical installation options both require very little user input. The first six (6) screens of all the Wizard Installations are the same.

**NOTE** A Web server and browser must be installed and running before you begin iPlanet Application Server installation. You can download the iPlanet Web Server, Enterprise Edition 4.1 SP7 from: `http://www.iplanet.com/downloads/download/`

The web server and browser need not be present on the same machine if you are performing a Webless installation. For more information, see "Webless Installations," on page 155

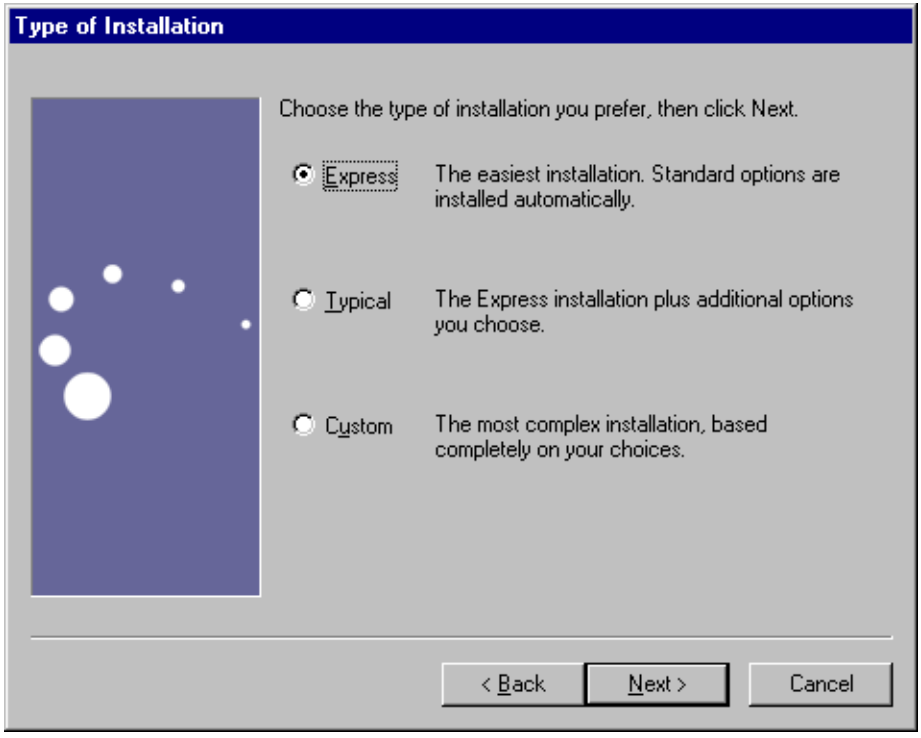
## To Start the Wizard Installation

1. Ensure conditions in "Prerequisites for Installation," on page 53 are met.
2. If you are installing from a CD-ROM, the installation wizard should start automatically when the CD is inserted in the CD-ROM drive. If it does not, browse the CD-ROM drive to locate and launch the file: `setup.exe`.
3. Click Next after the Welcome screen appears.
4. Click Yes to accept the license agreement.

   You must accept the License agreement to continue.
5. Click Next to install the iPlanet Server and core components.

   Select the iPlanet Administration Console to install it as a standalone application. Selecting the iPlanet Server and core components will install the Administration Console by default on the same machine on which you are installing the application server.

6. Choose the type of installation and click Next.




Following is a description of the Express installation. For information on Typical installation, see “Running the Typical Installation” on page 64”.

For information on Custom installation, see Chapter 5, “Advanced Installations for Windows.”

## Running the Express Installation

Since the first steps of the Installation wizard are the same for all of its options, execute the steps in, “Running the Wizard Installation” on page 56, before you start the following procedure. Click Next after each step.

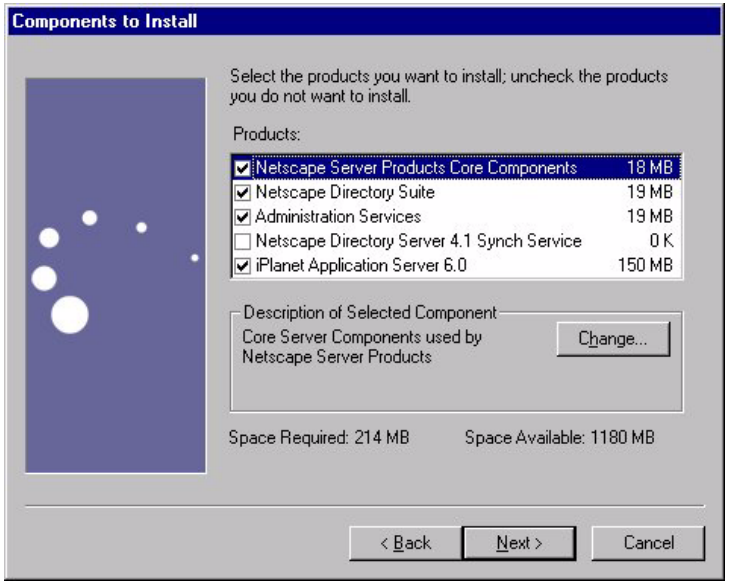
**NOTE** A Web server and Web browser must be installed and running before you begin iPlanet Application Server installation. You can download iPlanet Web Server, Enterprise Edition 4.1 SP7 from: `http://www.iplanet.com/downloads/download/`

The web server and browser need not be present on the same machine if you are performing a Webless installation. For more information, see “Webless Installations,” on page 155

## To Start the Express Installation

1. Select Express as the type of installation to perform and click Next.
2. Click Next on the Location of Installation panel to accept the default pathway, or click the ellipsis (...) to browse through your computers’ folders and select another directory. Do not use a directory name that includes spaces.

   The Components to Install screen appears.



3. Click Next to accept the default choices on the Components to Install panel. The default choices indicate those installed during a full installation.

   Click the Change button to further refine your choices. This displays the subcomponents associated with each component selected.

   Your selections at the component level of the Components to Install panel enable you to:

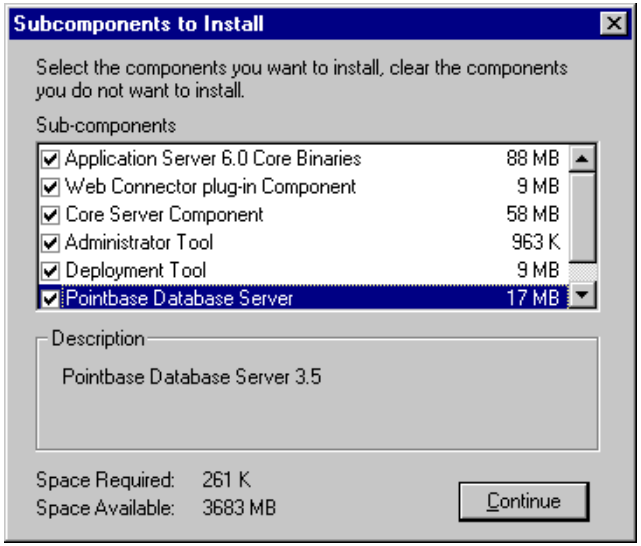
   - Deselect the Directory Suite component if you already have a directory service available.
   - Deselect Administration Services if you don't want the iPlanet Administration Console.

     Do not select the Netscape Directory Server 4.1 Synch Service. It's better to configure it after installation.

**NOTE** The iPlanet Directory Server provides a “Synch Service” for synchronizing directory data between multiple instances of Directory Servers set up in a group configuration. For information about setting up this configuration, see the iPlanet Directory Server Installation Guide at:

`http://docs.iplanet.com`

iPlanet Application Server bundles the PointBase database server, which is installed by default. If you do not want to install PointBase, select iPlanet Application Server 6.0 > Change, and uncheck the box next to PointBase Database Server.




Within the iPlanet Application Server installation there are several panels pertaining to installing and configuring the Directory Server. The Express Installation Wizard panels set up the following:

- Administrator for the configuration directory.

- Administrator for the Directory Server. This “superuser” has the default Distinguished Name (DN) of Directory Manager.

The Configuration Directory Server is the part of the Directory Server used to store configuration information. The Directory Server also stores directory data. For an overview of the various functions of the Directory Server, see the *iPlanet Directory Server Installation Guide.*

The following steps configure the directory server:

4. Assign the Administrator ID and Password for the configuration directory, on the Directory Server 4.1 panel. Click Next.

   The default username is `admin`.

   For more information about the Configuration Directory Server, see *iPlanet Directory Server Deployment Guide*, on the Web at:
   http://docs.iplanet.com/docs/manuals/directory.html

5. Enter the Directory Manager DN or keep the default, and click Next.

   The Directory Manager’s Distinguished Name is the special directory entry to which access control does not apply. You can think of the Directory Manager as your directory’s super user.

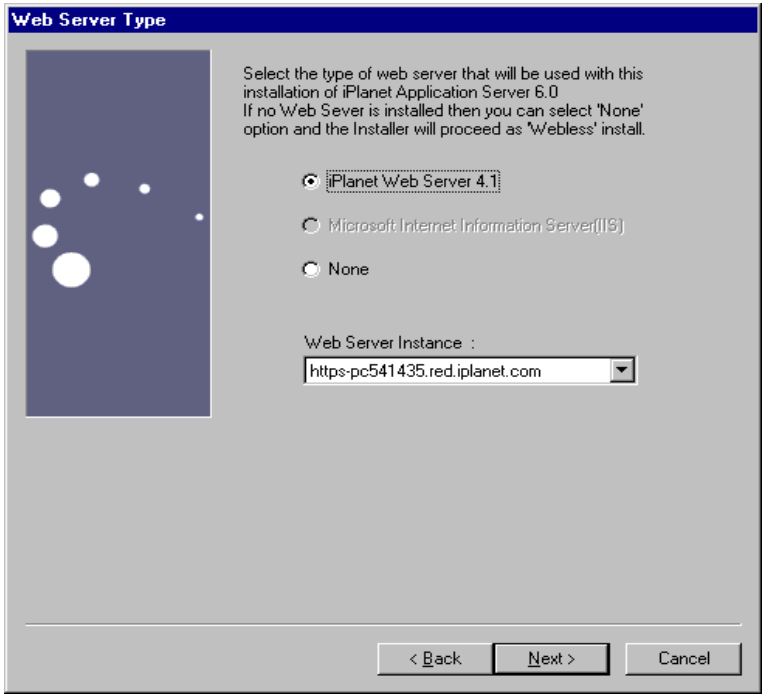
   In most cases, it is best to keep the default value, which is set to the common name of Directory Manager, as follows: `cn=Directory Manager`

6. Enter the Directory Manager’s password; it must be at least 8 characters long. Click Next.

7. Enter the product key and click Next.

   The product key is in the Welcome Letter you received with the iPlanet Application Server CD. You must enter this number correctly for installation to continue.

8. Select the type of Web Server installed. If you have multiple Web server instances running, then select one from the drop-down menu to locate an instance to associate with iPlanet Application Server.

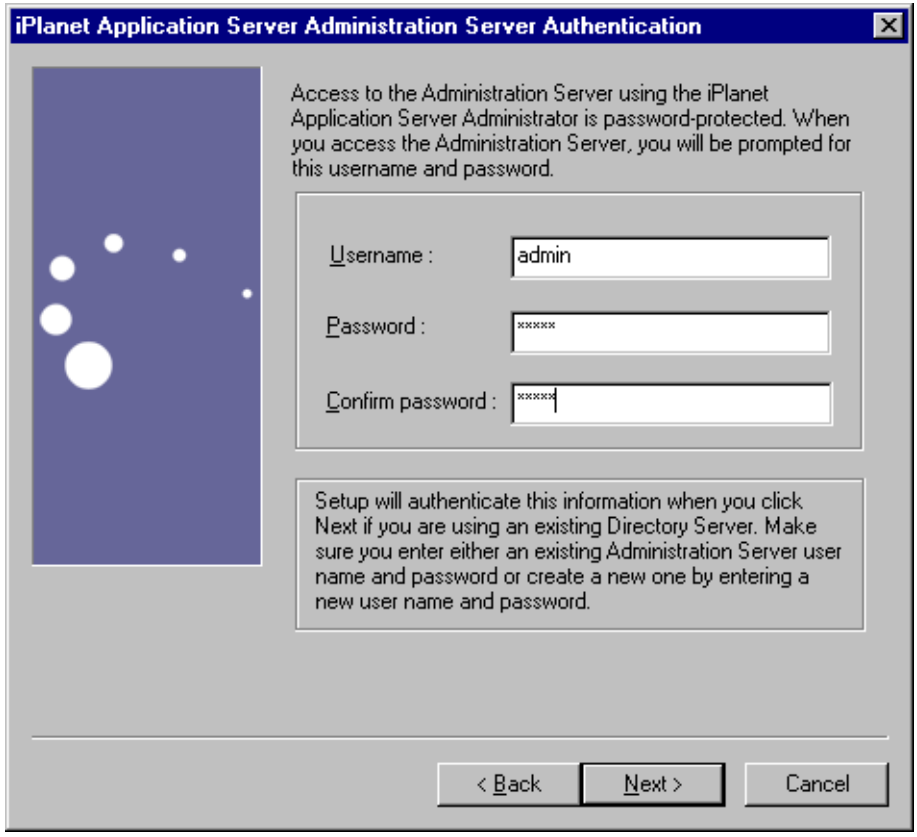



Select None if you do not have a Web server installed. This causes iPlanet Application Server Installer to continue without installing the Web Connector plug-in. This is referred to as a "webless" installation. For more information, see "Installing the Web Connector Plug-in" on page 160.

**NOTE** The Webless type of installation is necessary if your Web server is installed on a remote machine. After you are finished installing iPlanet Application Server, you must go to that machine and install the Web connector.

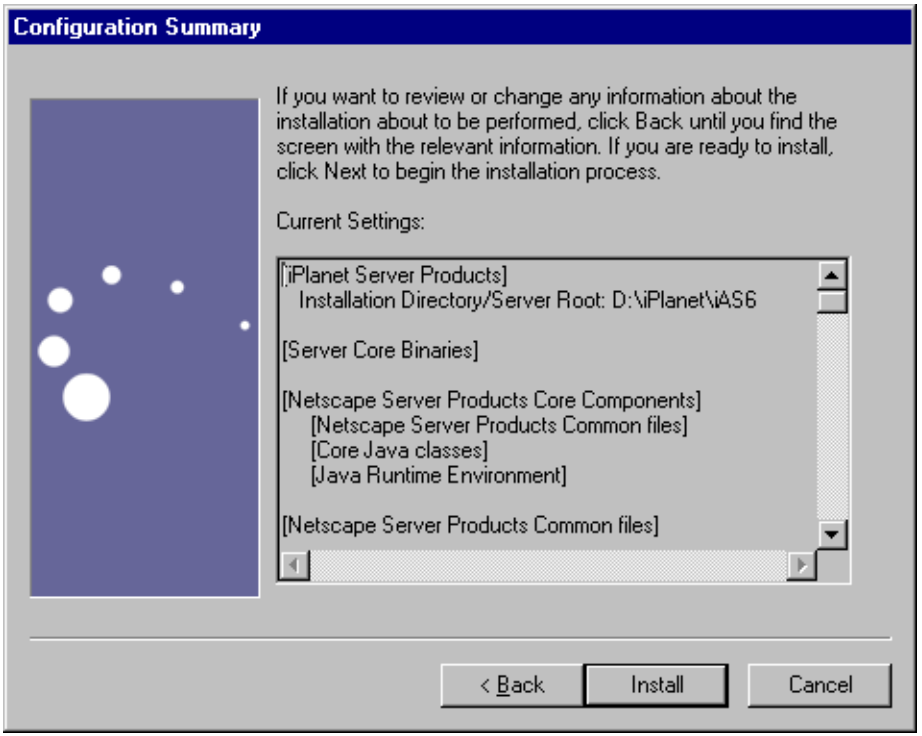
For more information, see "Installing the Web Connector Plug-in," on page 160.

**9.** Enter an Administrator Username and Password. This sets up the user name and password for the iPlanet Administration Server Console.



10. Select Yes on the Internationalization panel to enable support for standard Java internationalization. Click Next.

    The Configuration Summary screen with all your settings will now be displayed.




11. Click Install to complete the installation.

    If you want to change any of the settings, click Back to page back through the panels and correct them.

An Installation Progress indicator bar appears. After the Installer finishes, reboot the machine so the new settings can take effect.

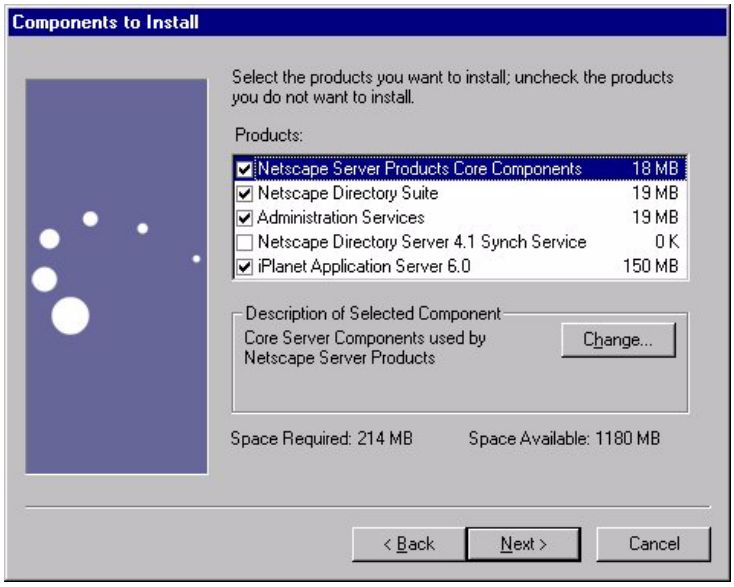
# Running the Typical Installation

As the first steps of the Installation wizard are the same for all of its options, execute the steps in, “Running the Wizard Installation” on page 56, before you start the following procedure. Click Next after each step.

## To Run the Typical Installer

1. Select Typical as the type of installation to perform.
2. Click Next on the Location of Installation panel to accept the default pathway, or click the ellipsis (...) to browse through your computers' folders and select another directory. Do not use a directory name that includes spaces.

   The Components to Install screen appears.




3. Click Next to accept the default choices on the Components to Install panel. The default choices indicate those installed during a full installation. Click the Change button to further refine your choices. This displays the subcomponents associated with each component selected.

   Your selections at the component level of the Components to Install panel enable you to:

   - Deselect the Directory Suite component if you already have a directory service available.
   - Deselect Administration Services if you don't want the iPlanet Administration Console.

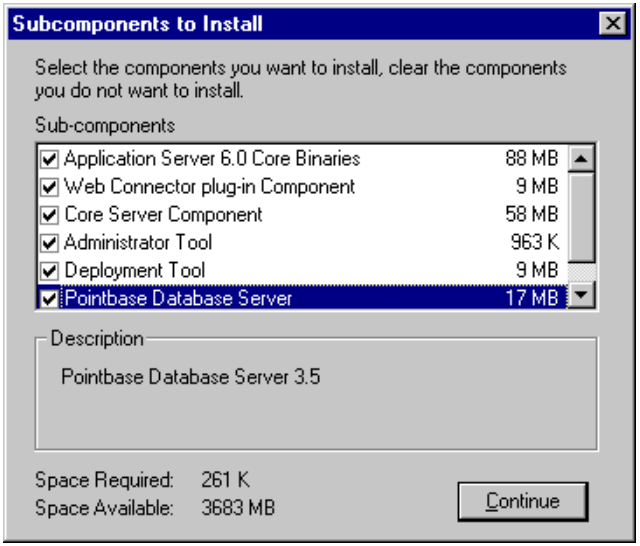
     *Do not select* the Netscape Directory Server 4.1 Synch Service. It's better to configure it after installation.

**NOTE** The iPlanet Directory Server provides a “Synch Service” for synchronizing directory data between multiple instances of Directory Servers set up in a group configuration. For information about setting up this configuration, see the iPlanet Directory Server Installation Guide at:

`http://docs.iplanet.com`

If you have deselected the directory suite component, you will be prompted to enter the location of the configuration directory.

iPlanet Application Server bundles the PointBase database server, which is installed by default. If you do not want to install PointBase, select iPlanet Application Server 6.0 > Change, and uncheck the box next to PointBase Database Server.




Within the iPlanet Application Server installation there are several panels pertaining to installing and configuring the Directory Server. These panels and their function are described in the following steps.

4. Select the directory server that will hold the configuration directory.

   The configuration directory contains the data tree used by the iPlanet Application Server. The Directory Server stores these configuration settings in the data tree: `o=NetscapeRoot`, under the suffix that you set up to identify your organization. Multiple server installations can store their configuration settings in this configuration directory.

   Choose one of the following options:

   - Set a new Directory Server (the one you are installing) as the configuration directory by keeping the default setting, or
   - Use an existing Directory Server by selecting "Use existing configuration Directory Server," and then fill in the information used to identify that server.

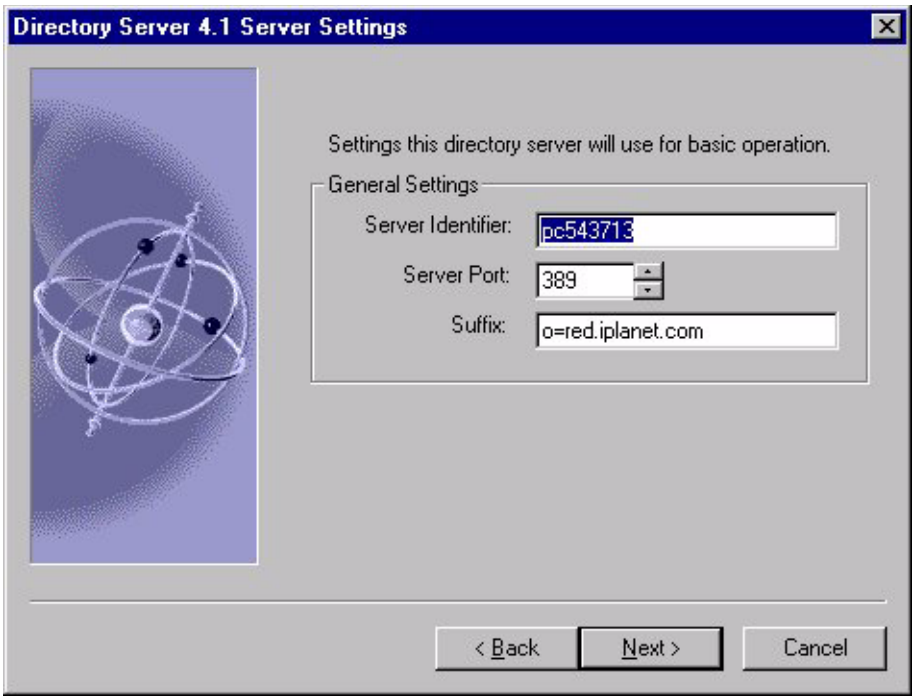
   **NOTE** If you don't install Directory Server with iPlanet Application Server, you must designate an existing Directory Server as the configuration directory. The Directory Server you designate as the configuration directory must contain the data tree: `o=NetscapeRoot`.

5. Select the directory server that will store iPlanet Application Server Data.

The Directory Server gives you the option to distribute data amongst multiple Directory Server databases. It does this by using a plug-in that chains together distributed data. For more information, see *iPlanet Directory Server Deployment Guide*, which is available on the Web at:
http://docs.iplanet.com/docs/manuals/directory.html

Choose one of the following options:

- To store directory data in the newly installed Directory Server, select the default option.
- To use an existing Directory Server for data storage, select that option and enter its general settings:
  - Host name and port number.
  - Default binding or Distinguished Name (DN). By default it's `cn=Directory Manager`.
  - Suffix: o=the DNS name. For example, if the DNS name is `iplanet.com`, then the suffix should be `o=iplanet.com`




**6.** Specify the Directory Server's General Settings

These settings consist of an identifier for the Directory Server's host machine, the port number of the LDAP communication port, and the data information tree suffix that is used to identify the root of the database tree for this iPlanet Application Server installation or the Directory Server.

The suffix is the entry at the top of the Directory Server data tree, below which iPlanet Application Server data is stored. For more information on standard directory suffixes, see the *iPlanet Directory Server Administrator's Guide.*

- The Server Identifier is set to the local host (the computer on which you are installing the directory server.)
- The default Server Port number is 389 (the standard LDAP port number); if the port is in use, a randomly generated number will be used.
- The default domain name is set to the computer you're installing the Application Server on.

7. Set up the directory server's Administration Domain.

   The default is set to the installation computer's domain. If you need to change this value, you should use a name that corresponds to the organizations that control the servers in each domain

   Since a Directory Server may store Configuration information for multiple domains, the Administration Domain is used to keep these separate. For more advanced configurations and information about using the Directory Server to store information about multiple domains, see the *iPlanet Directory Server Administrator's Guide*.

8. Enter a Directory Administrator (Manager) user name and password.

9. Click Next to use default Administrator Port Number.

10. Enter the Directory Manager common name, or keep the default value, which is: `cn=Directory Manager`.

    The Directory Manager's Distinguished Name is the special directory entry to which access control does not apply. You can think of the Directory Manager as your directory's super user. On the Directory Manager Settings panel, enter a Directory Manager DN or keep the default.

11. Enter the Directory Manager's password; it must be at least 8 characters long.

12. Enter the Product Key; it's in the iPlanet Application Server Welcome letter.

13. Indicate the Web Server type (which has been installed earlier), by choosing one of the following:

    - iPlanet Web Server
    - Microsoft Internet Information Server (IIS)
    - None. In this case a Webless installation take place. After you have finished with this installation you must install the Web Connector Plug-in. for more information see, "Installing the Web Connector Plug-in," on page 160.

14. Enter the user name and password for the iPlanet Administration server. Click Next.

    The Internationalization panel appears.

15. Choose to either install or not install support for Internationalization, and click Next.

    The Configuration Summary panel appears.

16. Click Install to complete the installation.

    If you want to change any of the settings, click Back to page back through the panels and correct them.

To finish, restart your computer so the new settings can take effect.

You can use a pre-installed application to verify that the iPlanet Application Server is running. For more information see, “Verifying Installation” on page 84.

# Using the Easy Installation Options for Solaris

Before you begin installing check to see that you satisfy the system requirements. Once these are satisfied, you can follow your choice of the various installation procedures.

This section includes the following topics:

- Prerequisites for Installation
- Running ezSetup on Solaris
- Starting Solaris Installations
- Running the Express Installation
- Running the Typical Installation

## Prerequisites for Installation

Before beginning installation, your system must meet the following requirements:

- Meet the “Minimum System Requirements” on page 35.
- Ensure that a static IP address is assigned to the server machine (contact your system administrator to get one)
- Have administrative privileges on the system on which you are going to install iPlanet Application Server.
- Have your product key nearby; it’s in the Welcome letter
- Login as root
- Establish a UNIX user and group for iPlanet Application Server. You use this account to install and manage iPlanet Application Server.

- Install and run iPlanet Web server 4.1 Enterprise Edition, or later.
- Install and run Netscape Communicator 4.5 or later.
- Configure the Web Server

  The Web Server and Web Browser must be installed and configured before you install iPlanet Application Server. The iPlanet Web Server is available on the iPlanet Web site at: `http://www.iplanet.com/downloads/download/`

  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`.

  If your Web Server runs on a different machine than the iPlanet Application Server, you perform what is referred to as a "webless" installation. After performing a webless installation, you must remember to install the Web Connector plug-in on the Web Server in your configuration after you finish installing iPlanet Application Server.

**NOTE** To use the Apache web server, you must configure iPlanet Application Server to work with the iPlanet Web Server during installation. After installing the iPlanet Application Server, install and configure the Apache web server.

For more information on how to install and configure the Apache web server, see "Configuring Apache Web Server" on page 155.

- Make sure that no services are running on port 9092 before installing iPlanet Application Server as the bundled PointBase database application uses port 9092 by default.

# Running ezSetup on Solaris

The ezSetup application requires almost no user input because it assigns default values for the iPlanet Application Server's component's usernames and passwords.

The standalone ezSetup application performs an automated iPlanet Application Server installation and sets the default values given in Table 3-2.

Ensure you have met all the conditions listed in"Prerequisites for Installation," on page 53.

**NOTE** This installation is not intended for working developers or production environments.

Before you start the `ezSetup` installation program, make sure that the Web server is installed and running.

## To Run ezSetup

1. Log in as root.
2. Mount the CD-ROM on, for example, /cdrom/cdrom0
3. At the shell prompt, run the following command:

   `/cdrom/cdrom0/solaris/ezSetup`

   If you have downloaded the tar file, untar the file and in the temporary directory you have created, type:

   `./ezSetup`
4. Enter the iPlanet Application Server installation directory.
5. When prompted for the web server's installation location, enter the full path where the Web server is installed.
6. Type-in the product key and press Enter
7. Press Enter to continue with the installation.

   The server files will now be extracted to the installation directory you have specified. After all the files have been extracted, the installer generates a report of the port numbers assigned.

   **NOTE** Record or print the port number report as the port numbers are required to administer the iPlanet Application Server.

8. Go to the installation directory and execute the `startconsole -a http://<servername>:<port_number>` command (printed at the end of the port number report) to start the iPlanet Administration Console.

**Table 3-2** Default values assigned for username and password

| Component | username | password |
|---|---|---|
| Configuration server administrator | admin | admin |
| Directory manager | Directory Manager | DManager |
| iPlanet Application Server Administration Server | admin | admin |

# Starting Solaris Installations

During iPlanet Application Server installation on the Solaris platform, use the following keystroke commands:

- Enter key; accepts that screen's default setting and goes to next screen.
- CTL+B; goes back to the previous screen within an installation section, as defined by the title at the top of the screen. You cannot use CTL+B to go back to a screen in a different section.
- CTL+C; exits the installation. Once exited, the installer starts over at the beginning.
- Comma (,) delineated list; specifies more than one item.

**NOTE** A Web server and Web browser must be installed and running before you begin iPlanet Application Server installation. You can download iPlanet Web Server, Enterprise Edition 4.13 from: http://www.iplanet.com/downloads/download/

## To Begin Installation

The following six steps are common to all the Solaris installations.

1. Login as root.
2. Insert the product CD in the CD-ROM drive.
3. Mount the CD-ROM on, for example, /cdrom/cdrom0

4. At the shell prompt, run the following command:

   `/cdrom/cdrom0/solaris/setup`

   If you have downloaded the tar file, untar the file and in the temporary directory you have created, type:

   `./setup`

   The Tips screen appears.

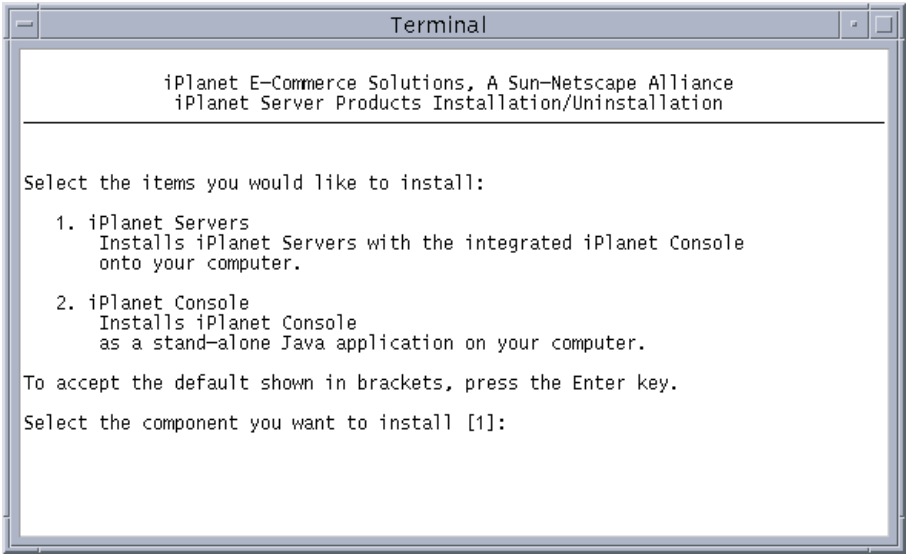
5. Press Enter.

   The License Agreement screen appears.

6. You must enter y to continue.

7. Press Enter to accept the default; install the iPlanet Servers group unless you select the iPlanet Console instead.

   If you select iPlanet Console (formerly Netscape Console), the iPlanet Console is installed as a standalone application, which can be used from any machine to administer your iPlanet Application Server configuration.




The next screen allows you to choose the installation type. The Express Installation is described next. For a description of the typical installer, see “Running the Typical Installation” on page 78.

# Running the Express Installation

Before you begin installing iPlanet Application Server, ensure you have met all the conditions listed in“Prerequisites for Installation,” on page 53.

1. Enter `1` to select Express Installation.
2. Press Enter to accept the default installation directory: `/usr/iplanet/ias6`

   If you enter a different location, do not include spaces in the path name.

   **NOTE** You must have at least 400 MB available on this drive to install. All components are installed in this directory

3. On the iPlanet Server Products Components panel, the default choice of [All] indicates which components are installed during a full install of iPlanet Application Server. You may choose to:

   - Keep the default selection. If you choose [All], the sub-components of the selected components are listed in subsequent screens, so that you can further refine your choices.
   - Enter `1,3,4` to not install the Directory Suite component if you already have a directory service available.

     **NOTE** The Directory Component should not be selected if you intend to install multiple instances of iPlanet Application Server. See “Installing Multiple Instances on Solaris,” on page 112 for more information.

   - Enter `1,2,4` to not install the Administration Services component if you don’t want the iPlanet Administration Console.
   - Enter `4` to install only the iPlanet Application Server.
4. Type in the system user and group names.

   This user and group should be set up prior to running the installation program. Typically, this user and group should be the same as the user and group used for the web server installation.

   Specify a user that has no privileges elsewhere on the system to avoid access to restricted servers, such as the configuration Directory Server.

Within iPlanet Application Server installation, there are several panels pertaining to installing and configuring the Directory Suite. The Express Installation Wizard panels set up the:

- Administrator for the Configuration Directory Server
- Administrator for the Directory Server directory data; this “superuser” is identified by the Directory Manager Distinguished Name (DN)

These panels and their function are described in the following procedures.

**5.** Assign the Administrator ID and password for the configuration directory.

Press Enter to accept default username as `admin`, or type in a username and press Enter. Enter a password: it can contain letters and numbers.

The Configuration Directory Server is the part of the Directory Server used to store configuration information. The Directory Server also stores directory data.

---

**NOTE** This ID and password is used to login to the iPlanet Administration Console and to uninstall iPlanet Application Server and the Directory Server.

---

To learn more about the Directory Server, see *iPlanet Directory Server Deployment Guide*, on the Web at:
`http://docs.iplanet.com/docs/manuals/directory.html`

**6.** Assign the Directory Manager’s Distinguished Name.

Keep the default DN value `Directory Manager`, which is set to the common name of Directory Manager (`cn=Directory Manager`). Or, if necessary, enter a different Directory Manager name. Enter a password for the Directory Manager that is at least 8 characters long.


The Directory Manager's Distinguished Name is the special directory entry for the administrator of the Directory Server. Access control does not apply to the Directory Manager.

The Directory Server is now configured for installation.

7. Enter the Product Key; it's is in the Welcome letter you received with iPlanet Application Server.

   You must enter this number correctly for installation to continue.

8. Enter the full path to your running Web server instance.

   The iPlanet Application Server Web Connector Plug-in will now be installed and configured to the Web Server instance that is identified here.

9. Enter a user name and password for the iPlanet Application Server's Administration Server.

**NOTE** Record the username and password. After installation, you'll need them to register iPlanet Application Server with the iPlanet Application Server Administration Tool.

10. Enter `Y` to enable standard Java internationalization for iPlanet Application Server applications, otherwise accept the default.

    The iPlanet Application Server installation is now ready to extract the required files and installs them in your system.

11. Press Enter to extract the components to install.

    Here, you may be prompted to change the ownership of iPlanet Application Server files if the owner and group are different.

    Type Y and press Enter if you want to change the group permission of iPlanet Application Server files to that of the user you are installing as. You must be the super user or logged in as that user to change permissions.

    After all the files have been extracted, the installer generates a report of the port numbers assigned.

**NOTE** Record or print the port number report as the port numbers are required to administer iPlanet Application Server.

12. To start the iPlanet Administration Console, go to the installation directory and execute the command (printed at the end of the port number report):

    `startconsole -a http://<servername>:<port_number>` command

# Running the Typical Installation

Before beginning iPlanet Application Server installation:

- Ensure that all requirement in “Prerequisites for Installation” on page 70 are met.
- Perform the procedure in “Starting Solaris Installations” on page 73.

## To Run the Typical Installer

1. Enter `2` to select the Typical Installation type.
2. Press Enter to accept the default installation directory: `/usr/iplanet/ias6`

   If you enter a different location, do not include spaces in the path name.

**NOTE** You must have at least 400 MB available on this drive to install. All components are installed in this directory

3. On the iPlanet Server Products Components panel, the default choice of [All] indicates which components are installed during a full installation of iPlanet Application Server. You may choose to:

   - Keep the default selection. If you choose [All], the sub-components of the selected components are listed in subsequent screens, so that you can further refine your choices.
   - Enter `1,3,4` to not install the Directory Suite component if you already have a directory service available.

     **NOTE** The Directory Component should not be selected if you intend to install multiple instances of iPlanet Application Server. For more information, see "Installing Multiple Instances on Solaris," on page 112.

   - Enter `1,2,4` to not install the Administration Services component if you don't want the iPlanet Administration Console.
   - Enter `4` to install only the iPlanet Application Server.

     The components selected here have multiple sub-components. Press Enter in each screen to accept the default sub-components.

4. Press Enter in each subsequent screen to accept the default sub-components.
5. Press Enter to accept the default name of the computer you are installing on.
6. Type in the system user and group names.

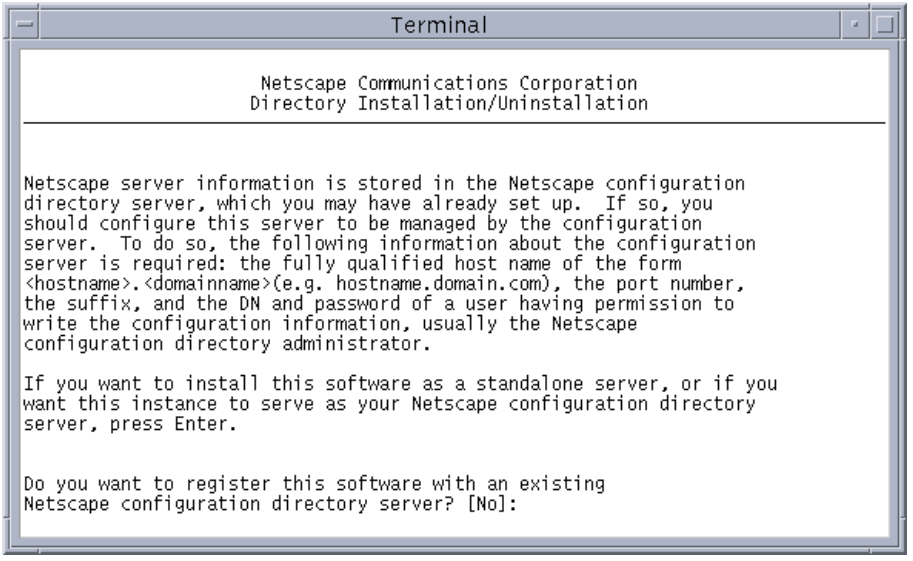
   This user and group should be set up prior to running the installation program. Typically, this user and group should be the same as that which installed the web server.

   Specify a user that has no privileges elsewhere on the system to avoid access to restricted servers, such as the configuration Directory Server.

Within the iPlanet Application Server installation there are several panels pertaining to installing and configuring the Directory Suite. The Typical Installation Wizard panels set up the:

- Administrator for the Configuration Directory Server
- Administrator for the Directory Server directory data; this “superuser” is identified by the Directory Manager Distinguished Name (DN).

These panels and their function are described in the following procedures.




7. Press Enter to register iPlanet Application Server’s configuration information with the directory server instance that you are installing.

   The default choice is No, so that the Directory Server instance being installed currently is registered for use by iPlanet Application Server.

   Enter `Yes` if you want to specify an existing directory server to hold the configuration information. You must provide the fully qualified domain name (*hostname.domain.com*) and the port number of the directory server.

| **TIP** | The Configuration Directory Server is the part of the Directory Server used to store configuration information. The Directory Server also stores directory data. |
|---|---|

8. Press Enter to register iPlanet Application Server's data storage, such as user and group information, with the Directory Server instance installed with this installation of iPlanet Application Server.

   Enter `Yes` to register with an existing directory server. You will be prompted for the host, port, suffix, and bind DN to use for that directory server.

9. Press Enter to set the listener port for the Directory Server by default to the standard port number: 389. For more information, see "Configuring Port Numbers" on page 153, in Appendix A.

10. Press Enter to set the unique identifier for the Directory Server by default to the name of the computer it's being installed on.

    To enter a different name type the name and press Enter.

11. Assign the Administrator ID and password for the configuration directory.

    - Press Enter to accept default username as `admin`, or type in a username and press Enter.
    - Enter a password; it can contain letters and numbers.

    **NOTE** Record and keep the Configuration Directory Administrator ID and password for future reference. They are required to login to the iPlanet Administration Console and to uninstall the iPlanet Application Server and the Directory Server.

12. Enter the data information tree suffix for your organization.

    For example, if an organization uses the distinguished name service (DNS) of `iplanet.com`, then a reasonable suffix for identifying that organizations' data is: `o=iplanet.com`.

13. Enter a distinguished name (DN) for the directory server's administrator. The default value is Directory Manager (`cn=Directory Manager`).

    Enter a password for the Directory Manager that is at least 8 characters long.

    The Directory Manager's Distinguished Name is the special directory entry for the administrator of the Directory Server. Access control does not apply to the Directory Manager.

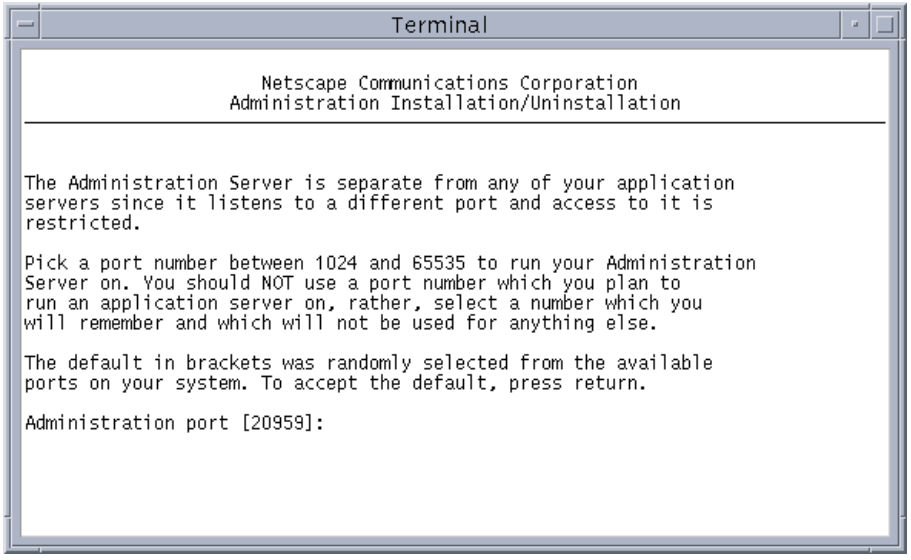
14. Enter the directory server's Administration Domain.

    The default is set to the installation computer's domain. If you need to change this value, you should use a name that corresponds to the organizations that control the servers in each domain.

    As a Directory Server may store Configuration information for multiple domains, the Administration Domain is used to keep these separate. Enter an administration domain to use for keeping software configuration information stored in the Configuration Directory Server distinct from other such information.

    The Directory Server is now configured for installation.

15. Set the port number of the iPlanet Administration Console's administration server. By default it is set to a random unused port number between 1024 and 65535. For more information, see "Configuring Port Numbers" on page 153, in Appendix A.




16. Enter the name of the user who will have the privilege to write configuration information to the Directory Server using iPlanet Console. By default, this is set to: `root`

17. Enter the product key at the prompt.

    The Product Key is in the welcome letter you received with iPlanet Application Server. You must enter this number correctly for installation to continue.

18. Enter the full path of the Web server instance that is already installed and running.

    The iPlanet Application Server Web connector will be installed and configured to the Web Server instance that is identified here.

19. Enter the username and password to use for the iPlanet Application Server Administration Tool.

| **NOTE** | Record the username and password. After installation, you'll need them to register iPlanet Application Server with the iPlanet Application Server Administration Tool. |
|---|---|

20. Enter `Y` to enable standard Java internationalization for iPlanet Application Server applications, otherwise accept the default.

    The iPlanet Application Server installation is now ready to complete the installation.

21. Press Enter to start copying the installation files.

    Here, you may be prompted to change the ownership of iPlanet Application Server files if the owner and group are different.

    Type Y and press Enter if you want to change the group permission of iPlanet Application Server files to that of the user you are installing as. You must be the superuser or logged in as that user to change permissions.

    After all the files have been extracted, the installer generates a report of the port numbers assigned.

| **NOTE** | Record or print the port number report as the port numbers are required to administer the iPlanet Application Server. |
|---|---|

22. To start the iPlanet Administration Console, go to the installation directory and execute the command (printed at the end of the port number report):

    ```
    startconsole -a http://<servername>:<port_number>
    ```

# Verifying Installation

The iPlanet Web site provides an application that verifies connectivity of your iPlanet Application Server installation. Since this basic application, which uses servlets and JSPs, does not rely on a database, it runs without any extra setup.

To Verify Installation, perform the following steps:

1. Open your browserm enter the following URL, and then click Enter:

   http://<*yourwebserver*>:<*portnumber*>/ias-samples/index.html

2. Click the *Quick Test* link, under Sample Applications.

3. Press the shift key and click on the browser's Reload button to ensure the application repeatedly returns a new HTML stream.

# 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, perform the following steps:

1. Start 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://www.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:

`<installDir>/ias/ias-samples/`

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

Chapter 4

# Advanced Installations for Solaris

This chapter describes the advanced installation options to install and configure iPlanet™ Application Server for the Solaris™ platform. It contains the following information:

- What You're Installing
- Using the Solaris Custom Installer
- Verifying Installation of the Application Server
- Using the Sample Applications
- Installing Multiple Instances on Solaris
- Installing on Multiple Solaris Machines

Check the *Release Notes* for any updates to these instructions at:

`http://docs.iplanet.com/docs/manuals/ias.html`

| | |
|---|---|
| **NOTE** | Before you start iPlanet Application Server installation, make sure that you are running a Solaris 2.6 or Solaris 8 system. |

## What You're Installing

The software you're installing for iPlanet Application Server, actually consists of a group or stack of components, including:

- iPlanet Directory Server, Enterprise Edition 4.13
- iPlanet Administration Console, which has its own Administration Server
- iPlanet Application Server and its subcomponents:

- iPlanet Application Server Web Connector Plug-in Component
- iPlanet Application Server Core Server Component
- iPlanet Application Server Administration Tool
- iPlanet Application Server Deployment Tool
- PointBase Database Server.

  Installs the required PointBase packages when you select the Application Server core components.

See Chapter 1, “Getting Started,” for an overview of iPlanet Application Server features and components.

**NOTE** In addition to these components, Custom Installation allows you to install database clients, proprietary Type 2 iPlanet Application Server Database Drivers, and Type 3 JDBC drivers.

# Using the Solaris Custom Installer

This section explains how to install iPlanet Application Server on the Solaris platform using the custom set up procedure. It includes the following topics:

- Prerequisites for Installation
- Starting Solaris Installation
- To Begin the Custom Installation
- To Configure the Directory Server
- To Configure iPlanet Application Servers
- To Configure Database Connectivity
- To Install iPlanet Application Server Clusters
- To Configure Clusters for Data Synchronization
- To Complete the Installation

**NOTE** You can configure your database connections effectively after installation by running the database setup tool, `db_setup.sh`, which is found in: `<iASInstallDir>/bin`.

# Prerequisites for Installation

Before you begin installing iPlanet Application Server, verify that the following prerequisite conditions are met:

- Meet the Minimum System Requirements for Solaris, as given in “Chapter 2, “Preparing to Install”.
- Have root access to the Solaris system.
- Ensure that a static IP address is assigned to the machine (contact your system administrator to get one)
- Make sure you have your product key nearby; it’s in the Welcome letter
- Establish a UNIX user and group for iPlanet Application Server. Use this account to install and manage iPlanet Application Server.
- Install and run iPlanet Web server 4.1 Enterprise Edition or later.
- Install and run Netscape Communicator 4.5 or later.
- Configure the Web Server

  The Web Server and Web Browser must be installed and configured before you install iPlanet Application Server. The iPlanet Web Server is available for download at: `http://www.iplanet.com/downloads/download/`

  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`.

  If your web server runs on a different machine from the machine on which iPlanet Application Server is installed, you perform what is referred to as a “webless” installation. After performing a webless installation, you must remember to install the Web Connector plug-in on the web server in your configuration after you finish installing iPlanet Application Server.

  For more information, see “Webless Installations,” on page 155.

**NOTE** To use Apache Web Server, you must configure iPlanet Application Server to work with the iPlanet Web Server during installation. After installing the iPlanet Application Server, install and configure the Apache Web Server.

For more information on how to install and configure the Apache web server, see Part , “Configuring Apache Web Server” on page 155.

- Create a Raw Partition (Optional)

  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 (Optional)

  Create a directory on a separate drive from the iPlanet Application Server installation directory and specify a path to it - prior to installing the application server.

- Make sure that no other service is running on port 9092 before installing iPlanet Application Server as the bundled PointBase database application uses port 9092 by default.

- Install and Configure Database Servers

  Before installing iPlanet Application Server, install the database servers and clients to use with this iPlanet Application Server installation.

  During application server Custom installation, you can 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.

  You can configure third party JDBC drivers after installation by executing `db_setup.sh` script, a JDBC driver configuration tool. When configuring the database drivers after installation, you must restart the application server to apply the changes. For more information, see the *iPlanet Application Server Administrator’s Guide.*

**NOTE** PointBase database server and its third party JDBC driver is automatically registered with the Administration Server. It also populates the sample databases of e-Store, J2EEGuide, Database, and Bank sample applications.

For more information on how to register database drivers and deploy applications, see the iPlanet Application Server Administrator's Guide and the online help of the Deployment Tool.

# Starting Solaris Installation

Before you begin installing iPlanet Application Server, see "Prerequisites for Installation," on page 87.

**NOTE** A Web server and Web browser must be installed and running before you begin iPlanet Application Server installation. You can download iPlanet Web Server, Enterprise Edition 4.1 SP7 from: http://www.iplanet.com/downloads/download/

When installing iPlanet Application Server on the Solaris platform, use the following keystroke commands:

- Enter key; accepts that screen's default setting and goes to next screen.
- CTL-B; goes back to the previous screen within an installation section, as defined by the title at the top of the screen. You cannot use CTL+B to go back to a screen in a different section.
- CTL-C; exits the installation. Once exited, the installer starts over at the beginning.
- Comma (,) delimited list; specifies more than one item.

# To Begin the Custom Installation

1. Login as root.
2. Insert the product CD in the CD-ROM drive.
3. Mount the CD-ROM on, for example, /cdrom/cdrom0

4. At the shell prompt, run the following command:

   `/cdrom/cdrom0/solaris/iAS`

   If you have downloaded the tar file, untar the file and type:

   `./setup`

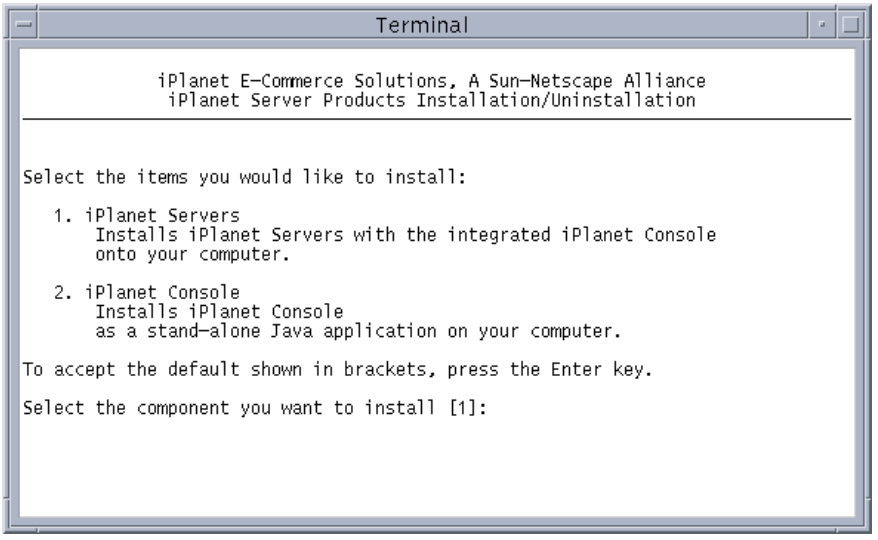
   The Tips screen appears.

5. Press Enter.

   The License Agreement screen appears.

6. You must enter `Y` to continue.

7. Press enter to accept the default; install the iPlanet Servers group unless you select the iPlanet Console instead.




   If you select iPlanet Console (formerly Netscape Console), the iPlanet Administration Console is installed as a standalone application, which can be used from any machine to administer your iPlanet Application Server configuration.

8. Enter `3` to select the Custom Installation type.

9. Enter the installation directory. The default iPlanet Application Server installation directory location is: `/usr/iplanet/ias6`

   If you enter a different location, do not include spaces in the path name. All components are installed in this base directory

**NOTE** You must have at least 400 MB free space available on this drive to install iPlanet Application Server.

10. On the iPlanet Server Products Components panel, the default choice of [All] indicates which components are installed during a full installation of iPlanet Application Server. You may choose to:

    - Keep the default selection (All).

      If you choose [All], the sub-components of the selected components are listed in subsequent screens, so that you can further refine your choices.

    - Enter `1,3,4` to not install the Directory Suite component if you already have a directory service available.

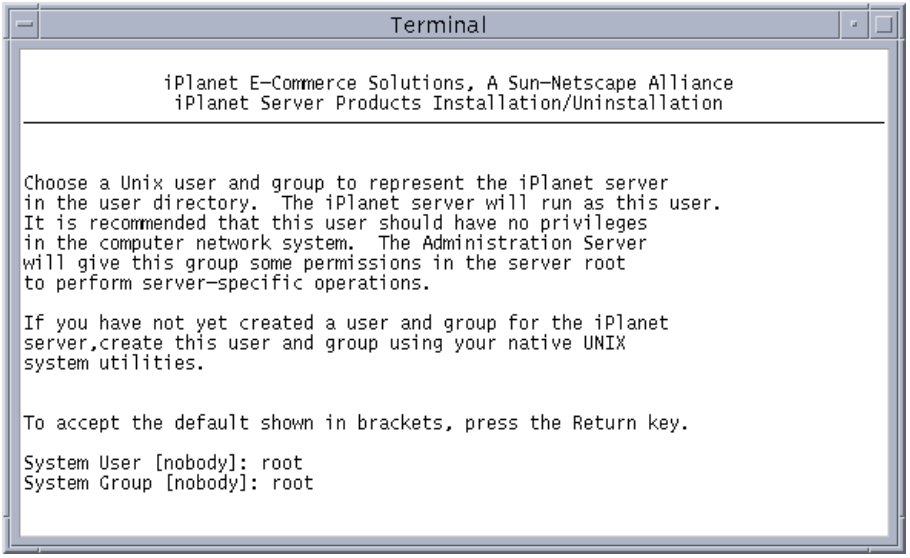
      **NOTE** The Directory Suite Component should not be selected if you intend to install multiple instances of iPlanet Application Server. See "Installing Multiple Instances on Solaris," on page 112 for more information.

    - Enter `1,2,4` to not install the Administration Services component if you don't want to install iPlanet Administration Console.

    - Enter `4` to install only the iPlanet Application Server.

      The components selected here have multiple sub-components. Press Enter in each screen to accept the default sub-components.

11. Press Enter in each subsequent screen to accept the default sub-components.
12. Press Enter to accept the default name of the computer you are installing on.
13. Enter the system user and system group names.




You should have already set up this user and group prior to running the installation program. Typically, this user and group should be the same as that which installed the web server.

Specify a user that has no privileges elsewhere on the system to avoid access to restricted servers, such as the configuration Directory Server.

Within the iPlanet Application Server installation there are several panels having to do with installing and configuring the Directory Suite.

## To Configure the Directory Server

The Custom Installation Wizard panels set up the following:

- Directory Server
- Registers the Directory Server's data tree by indicating what the Directory Server stores:
  - Configuration data
  - Directory data
- Sets up following administrators:
  - Configuration Data Administrator

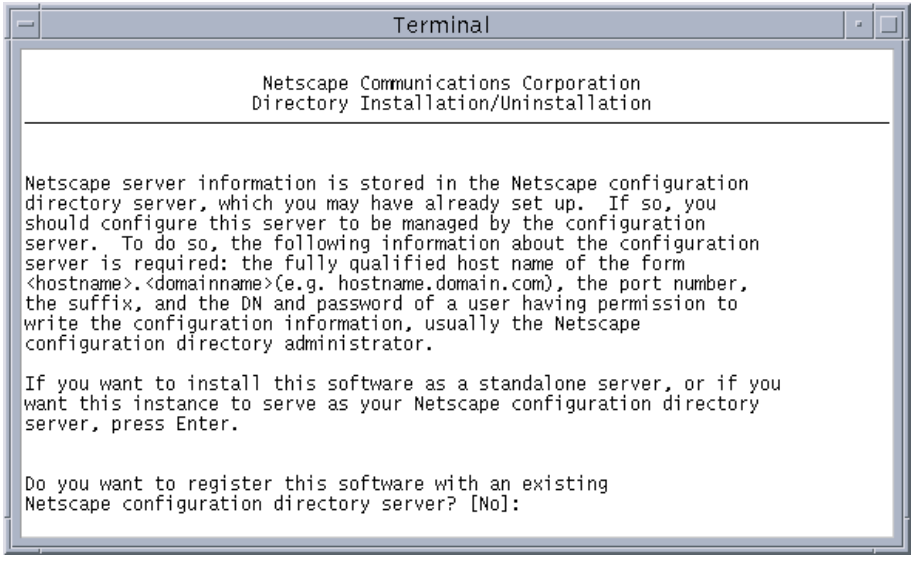
- Directory Data Administrator, known as Directory Manager

- Records general settings for the Directory server's
  - LDAP communication port
  - Local host machine
  - Data Tree Root Suffix for the iPlanet Application Server you're installing
- Sets Administrative Domain boundaries for the Directory Server

**NOTE** For information about installing the Directory Server, see the *iPlanet Directory Server Installation Guide* at:

`http://docs.iplanet.com/`

1. Press Enter to accept the default and register this Directory Server as the configuration Directory Server.




If you are not installing the configuration Directory Server included in this installation, specify an existing Directory Server and provide its fully qualified domain name (*hostname.domain.com*) and port number.

**TIP** The Configuration Directory Server is the part of the Directory Server used to store configuration information. The Directory Server also stores directory data.

2. Press Enter to accept this Directory Server instance as the general directory data storage server.

   If you have an existing Directory Server already installed on your system for this purpose, specify it. You will have to provide the fully qualified domain name, port number, the data information tree suffix, and the user directory admin (typically cn=Directory Manager) and password.

**NOTE**

- 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.
- If you don't install Directory Server with iPlanet Application Server, you must designate an existing Directory Server as the configuration directory. The Directory Server you designate as the configuration directory must contain the data tree: `o=NetscapeRoot`.

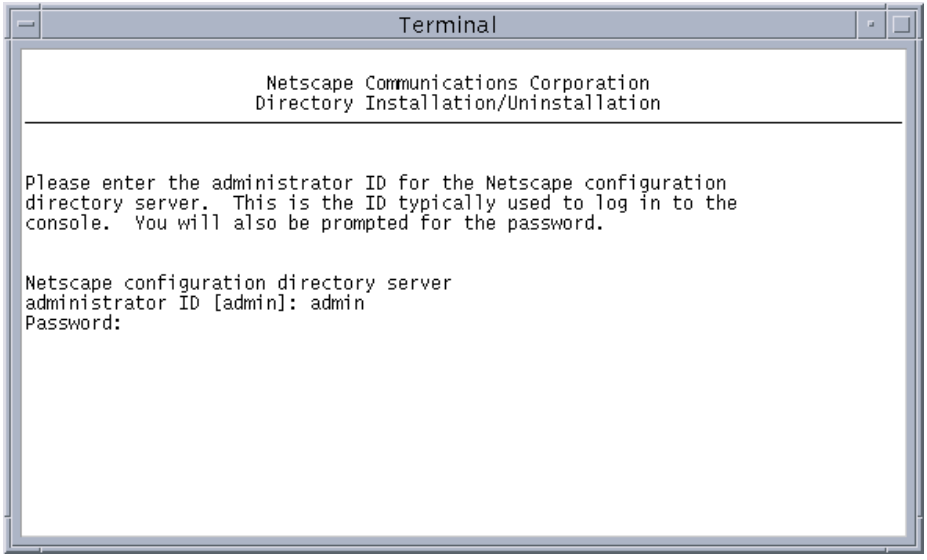
3. Press Enter to accept the default directory server port number of 389.

   If you are not logged in as root, the default value is a random number generated by the installer, which is greater than 1024.

4. Press Enter to set the unique identifier for the Directory Server by default to the name of the computer it's being installed on.

   To enter a different name, type in the name and press Enter.

5. Assign the Administrator ID and password for the Configuration Directory Server.




- Press Enter to accept default username as `admin`, or type in a username and press Enter.
- Enter a password; it can contain letters and numbers.

**NOTE** Record and keep the Configuration Directory Administrator ID and password for future reference. They are required to login to the iPlanet Administration Console and to uninstall the iPlanet Application Server and the Directory Server.

6. Enter the data information tree suffix for your organization.

   For example, if an organization uses the distinguished name service (DNS) of `iplanet.com`, then a reasonable suffix for identifying that organizations' data is: `o=iplanet.com`.

7. Enter a distinguished name (DN) for the directory server's administrator. The default value is Directory Manager (`cn=Directory Manager`).

   Enter a password for the Directory Manager that is at least 8 characters long.


The Directory Manager's Distinguished Name is the special directory entry for the administrator of the Directory Server. Access control does not apply to the Directory Manager.

**8.** Enter the directory server's Administration Domain.

If your installation has multiple domains setup for this Directory Server, enter a unique domain name here, otherwise keep the default entry. The default is set to the installation computer's domain. If you need to change this value, you should use a name that corresponds to the organizations that control the servers in each domain.

Since a Directory Server may store Configuration information for multiple domains, the Administration Domain is used to keep these separate. Enter an administration domain to use for keeping software configuration information stored in the Configuration Directory Server distinct from other such information.

9. Enter `Y` to configure this Directory Server installation for replication; otherwise accept the default choice.

   Replication is used to duplicate all or part of a directory server to another directory server to provide a fail-safe setup.

   A server that holds a replica that is copied to a replica on a different server is called a *supplier*. A server that holds a replica that is copied from a different server is called a *consumer*. For more information on replication concepts, see *iPlanet Directory Server Deployment Guide*.

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

10. Enter `Y` to enter sample directory data or accept the default.

11. Enter the full path and filename of a file in LDIF format to populate the directory with your custom database, or Enter `suggest` at the prompt to add sample entries to the Directory Server.

12. Press Enter to enable schema checking for an imported database.

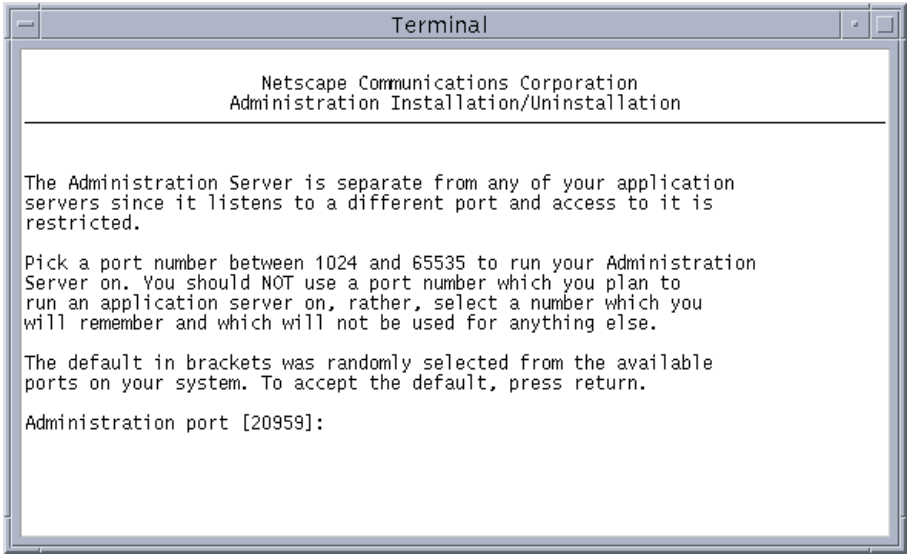
    Disable schema checking if you are going to import an old database immediately after or during installation, and you think you may have problems with it. If you choose to do this, schema checking will remain off until you manually turn it back on.

    We recommend that you turn it back on as soon as possible.

The Directory Server is now configured for installation. Next, you will configure the port numbers and the number of Java and C++ servers.

# To Configure iPlanet Application Servers

1. Press Enter to accept the default port number for the administration server, or type in a different port number.




   The Administration Server is separate from any of your application servers since it listens to a different port and access to it is restricted.

2. Enter the IP address of the machine you want the Administration Server to bind to.

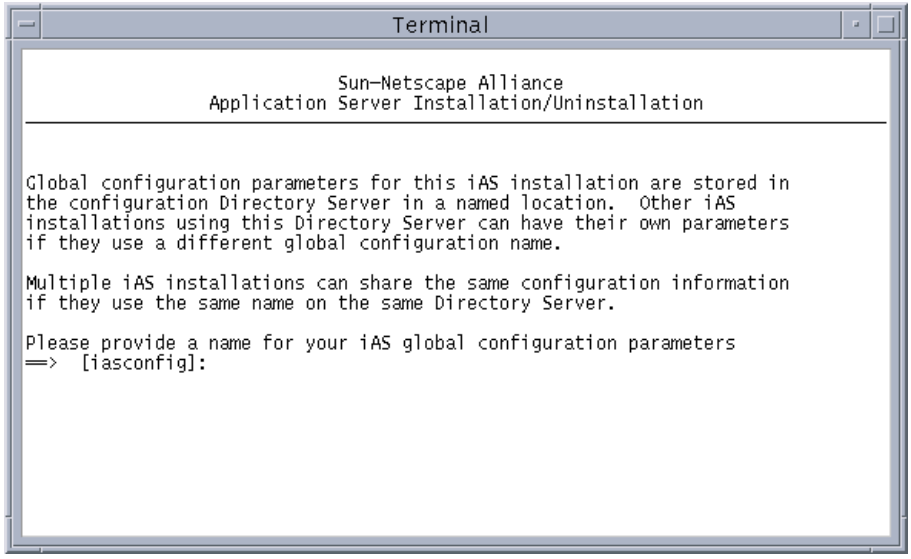
   By default, the IP address is that of the current host.

3. Press Enter to enable “root” user access to the Administration Server.

4. Enter Y if you want the locally installed Directory Server to be the instance which connects to the iPlanet Application Server.

   Depending on the configuration you are currently installing you may or may not want the locally installed Directory Server to be the instance which connects to iPlanet Application Server.

5. Press Enter to accept the default global configuration name or type a unique name for this installation of iPlanet Application Server.




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

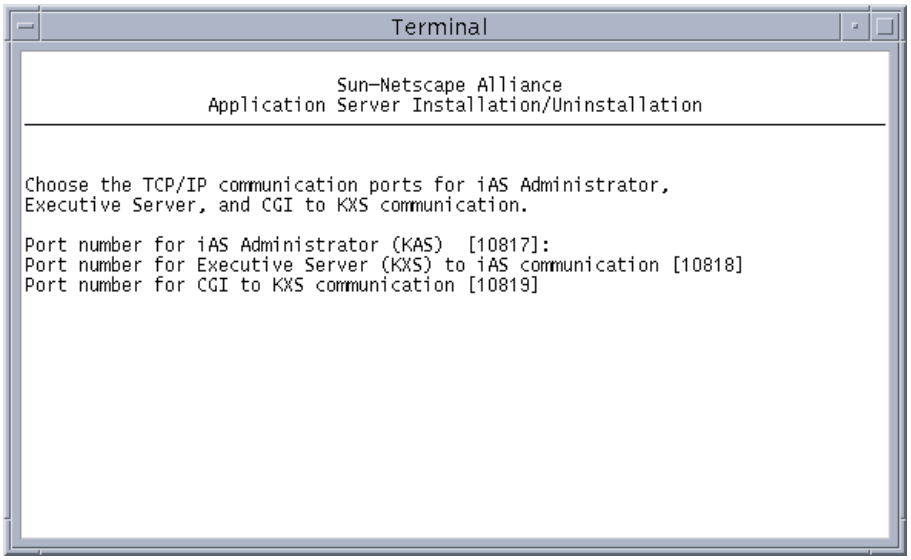
6. Enter the product key.

   The Product Key is in the welcome letter you received with iPlanet Application Server. You must enter this number correctly for installation to continue.

7. Enter the full path of your Web Server instance.

   No default is provided.

8. Press Enter to accept the default listener port numbers.




Listener ports must be within the acceptable range (1025 to 32768), and must be unique (not used by any other services on your system).

9. Press Enter to install one Java Server (KJS).

   If you intend to use more than one, enter the number and their default port number(s), or type different port numbers.

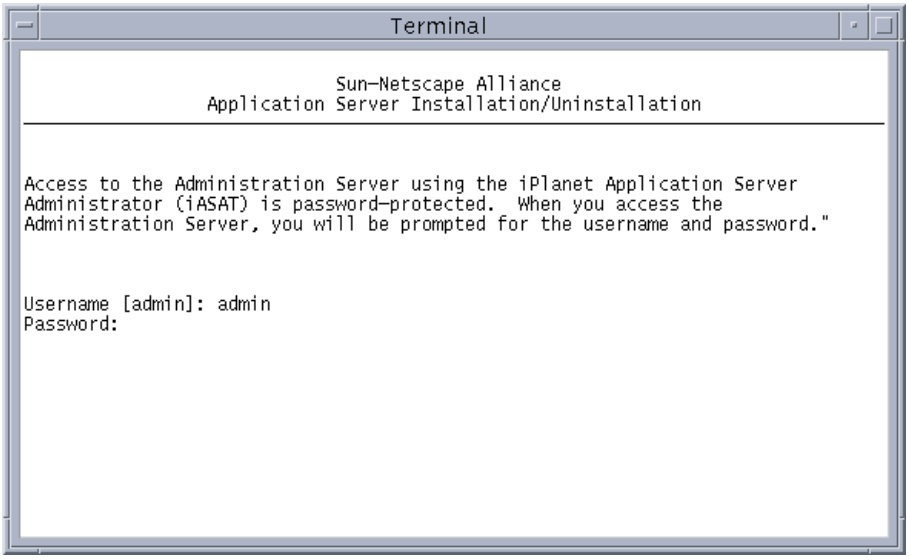
   All Java Server port numbers are listener ports and must be within the acceptable range of 1025 to 32768. Port numbers must be unique (not used by any other services on your system).

10. Press Enter to install one C++ Server (KCS).

    If you intend to use more than one C++ server, enter the number and their default port number(s).

    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).

11. Enter the username and password to use for the iPlanet Application Server Administration Tool.




**NOTE** Record the username and password. After installation, you'll need them to register iPlanet Application Server with the iPlanet Application Server Administration Tool.

Next up are configuration options to setup third party JDBC database drivers. You can also configure them after installation by running the `db_setup.sh` utility.

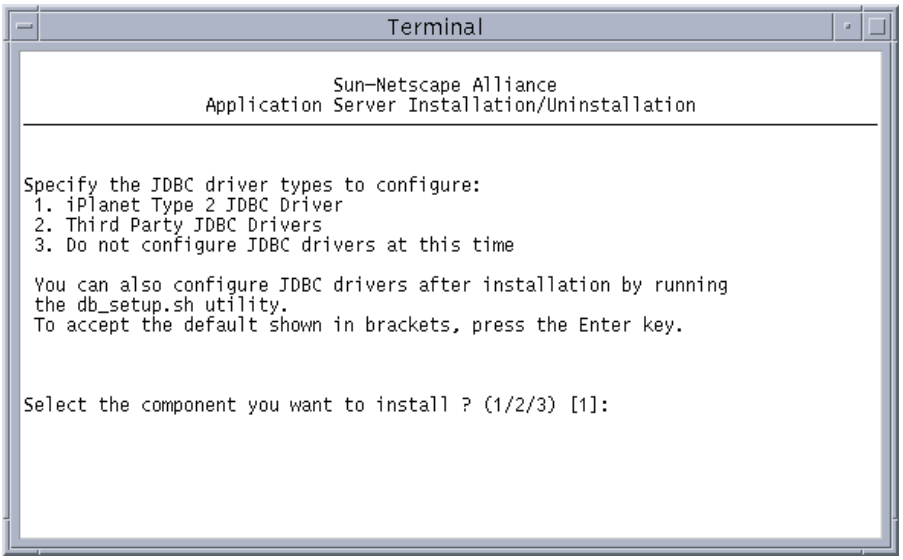
iPlanet Application Server supports iPlanet Type 2 JDBC drivers and third party JDBC database drivers.

# To Configure Database Connectivity

This section includes procedures on setting up the database clients, Third party JDBC drivers, the Transaction Manager, and the Resource Manager.

## Choose To Set Up JDBC Drivers

- Press Enter to install iPlanet Type 2 JDBC drivers by default, or `2` to install Third Party JDBC drivers, or enter `3` for none.




We recommend that you use the third party JDBC drivers, since the proprietary iPlanet Type 2 JDBC drivers are to be deprecated in the next major release.

## To Set Up Third Party JDBC Drivers

1. Enter the number of Third Party JDBC drivers you need.
2. For each Third Party JDBC driver, enter the driver name, driver class name, and driver CLASSPATH. Follow the formats in the wizard examples. For more details, see “Preparing to Configure Third Party JDBC Drivers,” on page 167.

   The Third Party Native Driver Directory is required for Type 2 drivers only.

**NOTE**

- PointBase database server and its third party JDBC driver is automatically registered with the Administration Server. It also populates the sample databases of e-Store, J2EEGuide, Database, and Bank sample applications.
- After installation you must register the datasource for the third party JDBC drivers. For more information, see "Configuring JDBC Datasources for Your Applications," on page 171.

  Additional information is available in the *iPlanet Application Server Administrator's Guide* and the online help of the Deployment Tool.

## To Configure Type 2 Database Connectivity

The installation program lists the database clients supported by iPlanet Application Server. These clients are required for Type 2 connectivity.

1. 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 specified information for that client:
   - Oracle
     - Oracle home directory
     - Class library
   - Sybase:
     - Sybase home directory
     - Sybase server name
     - Class library
   - Informix:
     - Informix home directory
     - Informix server name
     - Class library
   - DB2:
     - DB2 home directory

- DB2 server name
- Class library

2. Type Y (Yes) or N (No) to indicate whether or not to configure iPlanet Application Server for communication with Oracle, Sybase, Informix, and IBM DB2.
3. Rank each database according to its priority for your application's data lookup needs.

   This enables you to write applications without specifying what database to use.

## To Configure the Transaction Manager

The restart backup file for managing transactions, in case of engine failure, should be stored in a directory on a separate drive from the iPlanet Application Server installation directory. This needs to be setup prior to installing the application server.

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

   The default directory is installDir/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 the default one. Consider using a pointer to the different physical disk drive.
2. Set a location for the transaction manager log file.

   The log volume disk name is where the transaction manager log file is stored. The engine specified by `/ENGx/`represents the KJS engine process number. Create a directory on a separate disk drive and specify if it is a raw partition.
3. Press Enter to configure iPlanet Application Server to use the Resource Manager with the Transaction Manager.

   If you have not yet configured a database, you are prompted to do it here.
4. Coordinate the first resource manager instance with a database driver. You must specify the database server name, administrative user name and password.

   To configure others, type a unique resource identifier, the database type to associate it with, as well as, the database server name, administrative user name and password.

5. Enter `Y` to enable standard Java Internationalization support, otherwise accept the default setting (N).

## To Install iPlanet Application Server Clusters

Follow instructions for installing and verifying the simple cluster on the Solaris platform at:
`http://developer.iplanet.com/appserver/samples/cluster/docs/unix-cluster.html`

Additional information on configuring and deploying iPlanet Application Servers is available under “Configuring Clusters and Data Synchronization,” on page 178, and in the *iPlanet Application Server Administrator’s Guide*.

## To Configure Clusters for Data Synchronization

1. Enter y and press Enter to set this iPlanet Application Server instance to participate in data synchronization. The default is no (n).

---

**NOTE** During installation, you cannot configure multiple instances on a single machine as a cluster. Use the Administration Tool to set up a clustering environment.

For more information, see the *iPlanet Application Server Administrator’s Guide*.

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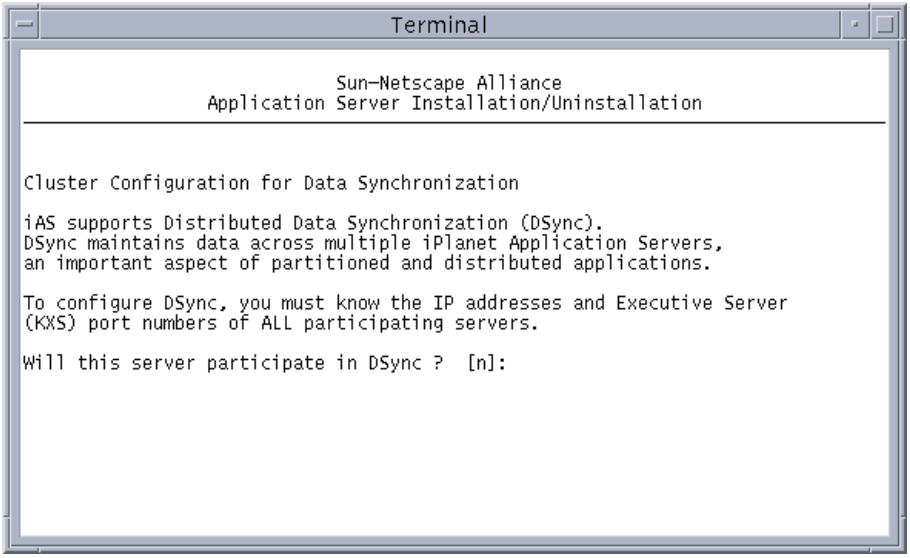
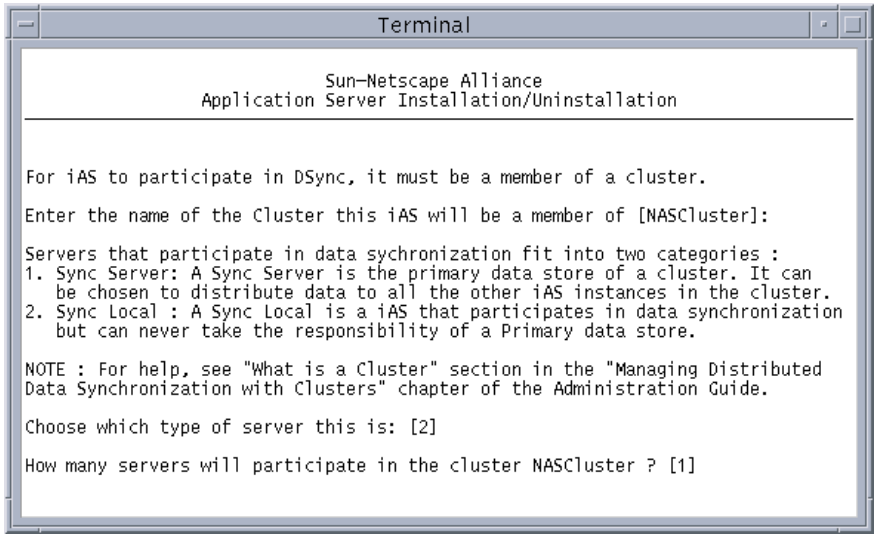



This sets up the synchronization of session and state information across multiple servers for failover and fault tolerance.

2. If you answered yes in the previous screen, you are asked to:

   a. Enter the name of the cluster to which this instance of iPlanet Application Server belongs. The cluster may already exist, or this may be the first server assigned to the cluster.

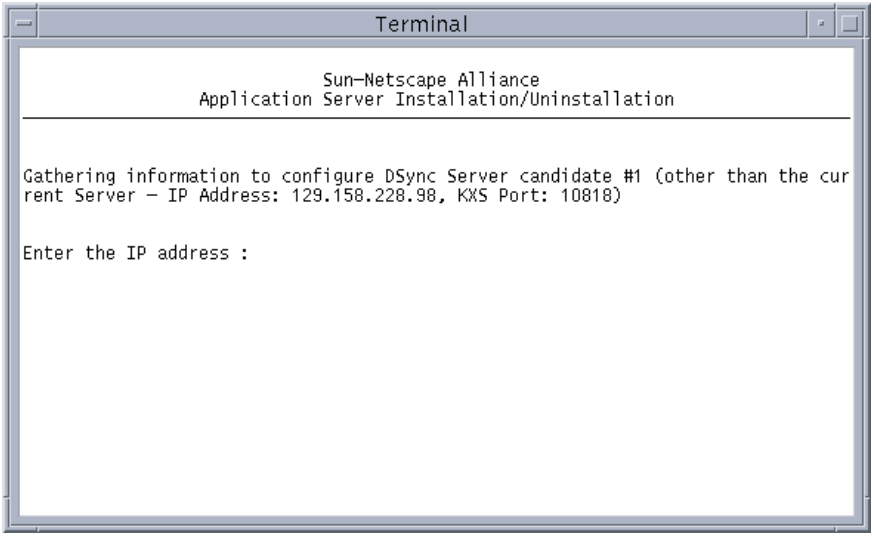



**b.** Indicate if this iPlanet Application Server instance is to be a Sync Local or Sync Server instance.

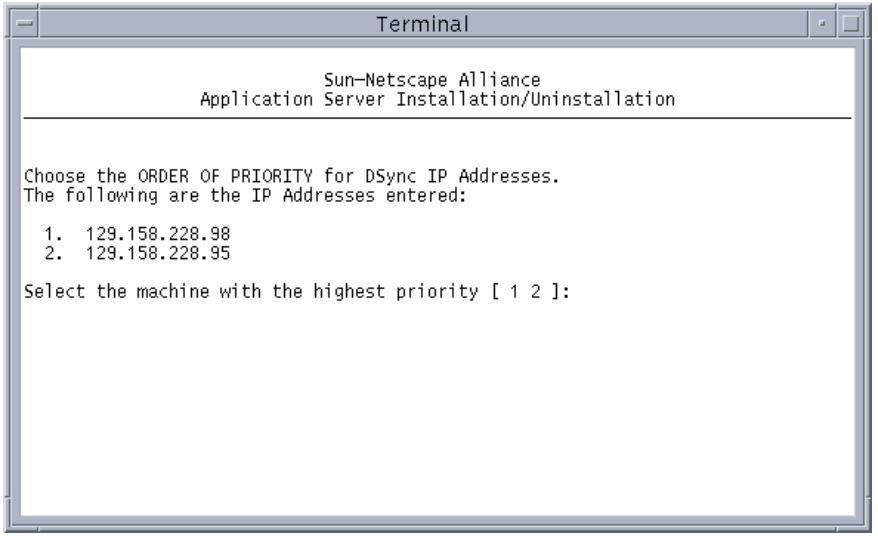
A Sync Local server uses data synchronization services, but is not eligible to become a Sync Primary or the Sync Backup Server. For more information on Sync Servers and Sync Local, see “Configuring Clusters and Data Synchronization,” on page 178

**c.** Enter the IP addresses and port numbers for each installation of iPlanet Application Server in the cluster. The IP address of the machine you are installing on is added by default (if it’s a Sync Server).

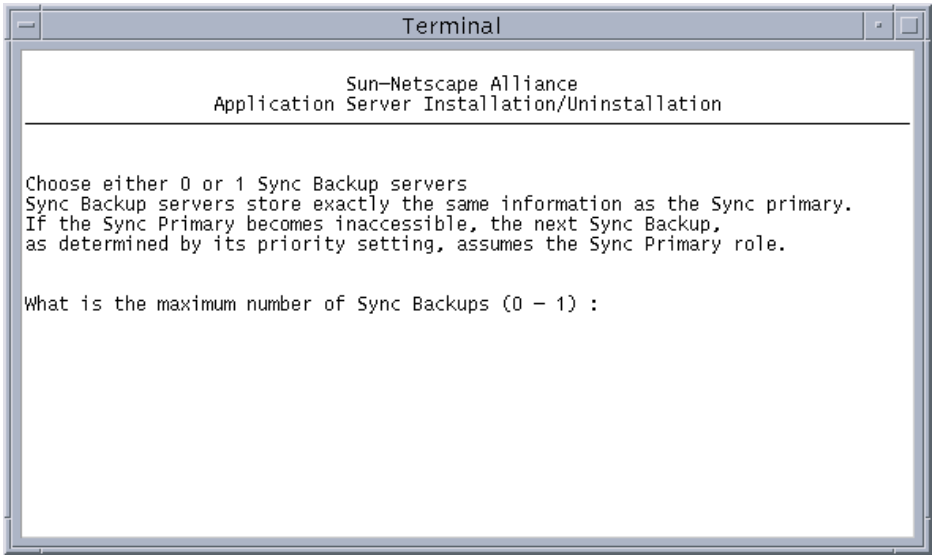
These IP addresses and port numbers must match across installations for the cluster to function properly.




**d.** Enter the priority for each Sync Server. Start with the highest priority Sync Server in the cluster. This is the first server to take over if Sync Primary fails. Enter each Sync Server's priority until all are ranked.




**e.** Specify the number of Sync Backup servers that should be active while the cluster is running.




This completes the configuration of your iPlanet Application Server installation. Continue with the next few steps to extract the packages and complete the installation.

# To Complete the Installation

**1.** Enter `Y` to enable this iPlanet Application Server instance to automatically start at system startups.

The default is No.

**NOTE** You can only run iPlanet Application Server automatically at startup if you have logged on as root.

2. The installation program now extracts the iPlanet Application Server files and installs them in your system.

   Here, you may be prompted to change the ownership of iAS files if the owner and group are different.

   Type y and press Enter if you want to change the group permission of iAS files to that of the user you are installing as. You must be the superuser or logged in as that user to change permissions.

   After all the files have been extracted, the installer generates a report of the port numbers assigned.

---

**NOTE**

- Record or print the port number report as the port numbers are required to administer the iPlanet Application Server.
- After installation is complete, the PointBase database package's administration dialog will be displayed. If you get an error message, and you are unable to view the dialog box, set the DISPLAY terminal variable to X.

---

   The PointBase database engine automatically starts after installation (if you had opted to install it). Use this bundled database application to test your sample database applications. If you don't want to use it right away, you can shut down the PointBase database engine and use it later.

   To start PointBase, go to the `<iASInstallDir>/pointbase/network/bin` and type:

   ```
   pointbaseServer start
   ```

   To stop, type:

   ```
   pointbaseServer stop
   ```

3. To start iPlanet Administration Console, go to the installation directory and execute the command (printed at the end of the port number report):

   `startconsole -a http://<servername.domain.com>:<port_number>.`

# Verifying Installation of the Application Server

The iPlanet Web site provides an application that verifies connectivity of your iPlanet Application Server installation. Since this basic application, which uses servlets and JSPs, does not rely on a database, it runs without any extra 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 *Quick Test* link, under Sample Applications.
4. Press the shift key and click on the browser's Reload button to ensure the application repeatedly returns a new HTML stream.

# 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 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://www.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:

installDir/ias/ias-samples/

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

# Installing Multiple Instances on Solaris

Multiple instances benefit both the development and production environments. In the development environment, having multiple iPlanet Application Server instances enables you to isolate code. In a production environment, multiple iPlanet Application Server instances will improve scalability.

For more information on the benefits of installing multiple instances, see “Reasons for Installing Multiple Instances,” on page 179

**NOTE** This option is available only on Solaris.

## To Install for Developer Deployment

1. Create logins for each iPlanet Application Server instance.
2. Install the initial instance of the iPlanet Application Server on each system.
   - Set up a home directory, such as: `/usr/iplanet/ias6/instance0`.
   - Store configuration data under the global configuration name, `iasconfig0`, on the Directory Server.
   - Configure the number of executive server (KJS) processes so there is one KJS per iPlanet Application Server instance.
3. Install additional iPlanet Application Server instances.
   - Use Custom Installation to assign different port numbers.
   - Set up different home directories for each instance, like: `/usr/iplanet/ias6/instance1, /usr/iplanet/ias6/instance2`
   - Do not install the iPlanet Directory Suite or Administration Services.
   - Do not install iPlanet Core Java classes or Java Runtime Environment.

4. Store configuration data on the primary directory server in "iasconfig1", "iasconfig2", and so forth.
5. Install the Web Connector on all Web Server instances. Each Web Server instance is associated with one iPlanet Application Server instance.

## To Install for Production Deployment

1. Install two Directory Servers; one to serve as a primary and the other a secondary server. Configure these servers so that the primary Directory Server replicates to the secondary.
2. Create logins for each Directory Server instance. The best performance comes from using 1 instance per processor, but up to eight (8) processors can be used per Directory Server instance.
3. Install the initial instance of the iPlanet Application Server on each system.
   - Setup an installation directory, like: `/usr/iplanet/ias6/instance0`.
   - Store configuration data in `iasconfig_global` on the primary Directory Server.
   - Configure for the secondary Directory Server.
   - Configure at least two KJS processes per iPlanet Application Server instance.
   - Optional: Configure the application server so that it starts up automatically
4. Install additional instances.
   - Use the Custom Installation to change port numbers.
   - Input different home directories for each instance, like: `/usr/iplanet/ias6/instance1, /usr/iplanet/ias6/instance2`
   - 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 Deployment Tool.
5. Store configuration data on the primary Directory Server in:
   - `iasconfig_global` for most instances

- `iasconfig_aol` for Web servers and iPlanet Application Servers in a cluster configuration dedicated to handling AOL customers
- `iasconfig_isp1` for Web servers and iPlanet Application Servers in a cluster configuration dedicated to handling isp1 customers
- iasconfig_ispN for Web servers and iPlanet Application Servers in cluster configuration dedicated to handling ispN customers

6. Configure a 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 so that:
    - A ring topology is achieved as much as possible
    - 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 load balancing 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.

- Configure the web tier load balancer so that sessions return to their original web servers.

- Configure the web tier load balancer so that known ISP proxies are associated with the web servers which have been allocated for that purpose.
- 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.

# Installing on Multiple Solaris Machines

The Silent Installation feature allows you to install the Application Server on multiple Solaris machines without running the installation program more than once.

## To run Silent Install

1. Run the `setup -k` command on the first machine.

   Proceed with the installation program. An `install.inf` file is generated in the installDir/setup directory. In addition, a log file,`userinput.log`, is generated in the installDir/ias directory. This file contains all input entered during the installation procedure.

2. Once you have completed the installation process, copy `install.inf` and `userinput.log` and add them to the `/tmp` directory of a second system.

3. Modify the copies of `install.inf` and `userinput.log`, as described in the following steps.

4. You may have to change some or all of the following values in `install.inf`, depending on your configuration requirements, such as, port numbers, domain name, etc.

**Table 4-1** Settings in install.inf

| Value | Description |
|---|---|
| FullMachineName | Name of the machine on which iPlanet Application Server is being installed |
| ServerRoot | Installation root directory |
| AdminDomain | Directory server's administration domain |
| ConfigDirectoryLdapURL | URL for the configuration information in the directory server. |
| UserDirectoryLdapURL | URL for the user information in the directory server |
| ServerPort | Local directory server port |
| ServerIdentifier | Local directory server identifier |
| Port | Local Administration port |

**5.** Change the following keys in the `userinput.log` file. You may need to change some or all of the following values, depending on your configuration requirements:

**Table 4-2** Settings in userinput.log file

| Value | Description |
|---|---|
| NAS_backup_dir | Directory used to back up files, usually <ServerRoot>/backup |
| LDAP_ServerRoot | Same as ServerRoot in `install.inf` |
| LDAP_Hostname | Same as FullMachineName in `install.inf` |
| LDAP_ServerIdentifier | Same as ServerIdentifier in `install.inf` |
| LDAP_ServerPort | Same as ServerPort in `install.inf` |
| AdminServer_Port | `Same as Port in install.inf` |
| LDAP_AdminDomain | `Same as AdminDomain in install.inf` |
| LDAP_UserDirectoryLdapURL | Same as UserDirectoryLdapURL in `install.inf` |

**Table 4-2** Settings in userinput.log file

| Value | Description |
|---|---|
| NAS_home | Root of iPlanet Application Server installation. Usually `<ServerRoot>/ias` |
| NAS_userinputlog | Path for storing `userinput.log file` |
| BASEDIR | Same as NAS_home |
| LocalHostName | Name of the machine on which silent install is being done |
| LocalIPAddress | IP address of the machine on which silent install is being done |
| KIVAKey | Product Key |
| LDAP_nasconfig | Global configuration name under which iPlanet Application Server configuration information is stored in the directory server. |
| NSRootDir | Path of the Web Server instance |
| nsinst | Same as NSRootDir |
| webserver_version | If you are running iPlanet Web Server 4.1, then this value id 4.1. If you are running 6.0, then use the value 6.0 |

6. Enter the port numbers for KAS, KXS, KJS, KCS, etc.
7. Enter the logvol root's sizes for each of the kjs engines, such as, TXN_DirectoryRoot_logVol_1
8. Enter passwords in the following fields. You need not modify these values if you want to use the same passwords for all the multiple installations.
   - Password settings in the `install.inf` file:
     - ConfigDirectoryAdminPwd
     - UserDirectiryAdminPwd
     - RootDNPwd
     - ServerAdminPwd
   - Password settings in the `userinput.log` file

- LDAP_RootDNPwd
- LDAP_UserDirectoryAdminPwd
- PASSWORD

**9.** Run the following command on the second system to begin silent installation: setup -s -f fullpath/install.inf

This performs an installation with exactly the same setup as the first system.

Chapter 5

# Advanced Installations for Windows

This chapter describes how to install and configure the iPlanet™ Application Server for the Windows platform. It contains the following information:

- What You're Installing
- Prerequisites for Installation
- Running the Custom Installer
- Verifying Installation
- Using the Sample Applications
- Installing on Multiple Windows Machines

For any late breaking updates to these instructions, check the Release Notes at:

`http://docs.iplanet.com/docs/manuals/ias.html`

For more information about configuring your application server after installation, refer to the *iPlanet Application Server Administrator's Guide*.

## What You're Installing

The software you're installing for iPlanet Application Server, actually consists of a group or stack of components, including:

- iPlanet Directory Server, Enterprise Edition 4.13
- iPlanet Console, which has its own Administration Server
- iPlanet Application Server and its subcomponents:

- iPlanet Application Server Web Connector Plug-in Component
- iPlanet Application Server Core Server Components
- iPlanet Application Server Administration Tool
- iPlanet Application Server Deployment Tool
- PointBase Database Server

  Installs the required PointBase files when you select the Application Server core components.

See Chapter 1, “Getting Started,” for an overview of the iPlanet Application Server features and components.

**NOTE** In addition to these components, Custom Installation allows you to install database clients, proprietary Type 2 iPlanet Application Server Database Drivers, and Type 3 JDBC drivers.

# Prerequisites for Installation

Make sure you meet the following requirements:

- Meet the Minimum System Requirements for Windows, as given in “Chapter 2, “Preparing to Install”.
- Log into the Windows system as a user with administrative privileges
- Keep the product key nearby (look for it in the Welcome letter)
- Ensure that a static IP address is assigned to the server machine (contact your system administrator to get one)
- Install and make sure that one of the following Web servers is installed:
  - iPlanet Web Server, Enterprise Edition 4.1
  - Microsoft Internet Information Server 4.0
- Install and make sure that one of the following Web browsers is installed:
  - Netscape Communicator 4.5 or later
  - Microsoft Internet Explorer 4.0 or later
- Configure the Web Server

If your Web Server runs on a different machine than the iPlanet Application Server, you perform what is referred to as a "webless" installation. After performing a webless installation, you must remember to install the Web Connector Plug-in on the Web Server in your configuration, after you finish installing iPlanet Application Server.

**NOTE**

- To use Apache Web Server, you must configure iPlanet Application Server to work with either the iPlanet Web Server or Microsoft Internet Information Server during installation. After installing iPlanet Application Server, install and configure the Apache Web Server.

  For more information on how to install and configure the Apache web server, see "Configuring Apache Web Server," on page 155

- Make sure to set the registry key permissions for the `\SOFTWARE\iPlanet` key to `Full Control` for all options.

- Create a Raw Partition (Optional)

  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 (Optional)

  Optional. Create a directory on a separate drive from the iPlanet Application Server installation directory and specify a path to it - prior to installing the application server.

- Make sure that no other service is running on port 9092 before installing iPlanet Application Server as the bundled PointBase database application uses port 9092 by default.

- Install and Configure Database Servers

  Before installing iPlanet Application Server, install the database servers and clients to use with this iPlanet Application Server installation.

  During application server Custom installation, you can 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.

You can configure third party JDBC drivers after installation iPlanet Application Server by executing `jdbcsetup.exe`, a JDBC driver configuration tool. When configuring the database drivers after installation, you must restart the application server to apply the changes.

Registration of iPlanet Type 2 JDBC drivers for the supported database platforms is automatic since the iPlanet Application Server automatically recognizes the presence of the supported native client libraries.

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**NOTE** PointBase database server and its third party JDBC driver is automatically registered with the Administration Server. It also populates the sample databases of e-Store, J2EEGuide, Database, and Bank sample applications.

For more information on how to register database drivers and deploy applications, see the *iPlanet Application Server Administrator's Guide* and the online help of the Deployment Tool.

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# Running the Custom Installer

Installing iPlanet Application Server using the custom installation wizard is divided into the following topics:


- "To Start Custom Installation," on page 124
- "To Configure the Directory Server," on page 128
- "To Configure iPlanet Application Servers," on page 135
- "To Configure Database Connectivity," on page 136
- "To Configure iPlanet Application Server Clusters," on page 141
- "To Use the Sample Applications," on page 145


## To Start Custom Installation

1. If you are installing from a CD-ROM, the installation wizard should start automatically. If it does not, browse the CD-ROM drive to locate and launch `setup.exe`.
2. Click Next after the Welcome screen appears.

3. Click Yes to accept the license agreement.

   You must accept the License agreement to continue.

4. Click Next to install the iPlanet Server and core components.

   Select the iPlanet Administration Console to install it as a standalone application. Selecting the iPlanet Server and core components will install the Administration Console by default on the same machine on which you are installing the application server.

   The Type of Installation panel appears.

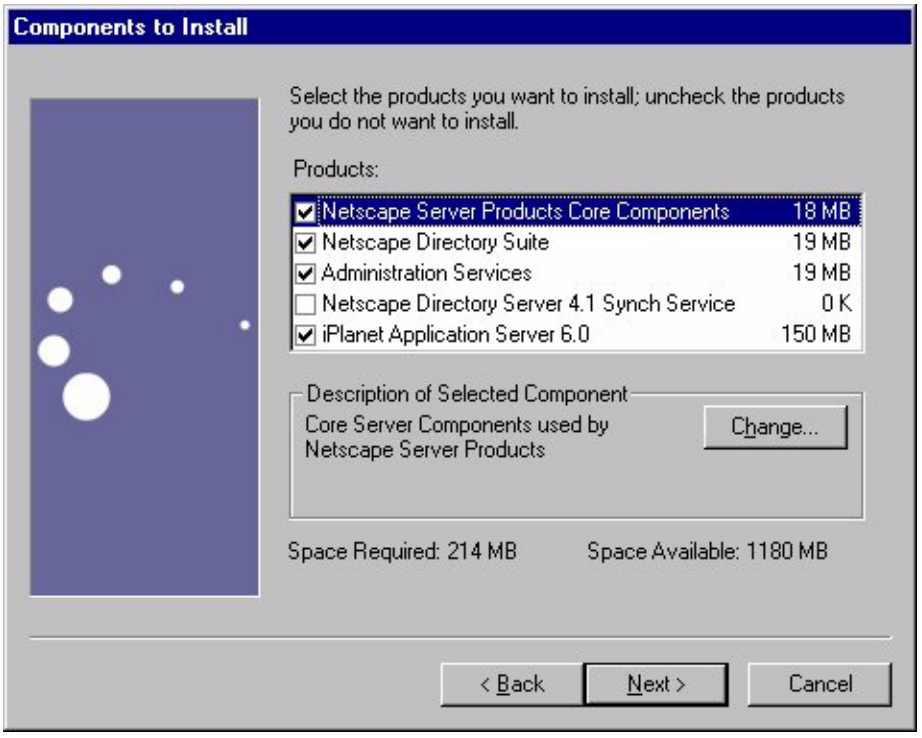
5. Select `Custom` as the type of installation and Click Next.

   The Location of Installation panel appears.

6. Click Next on the Location of Installation panel to accept the default pathway, or click the ellipsis (...) to browse through your computers' folders and select another directory.

   Do not use a directory name that includes spaces.

   The Components to Install screen appears.




**7.** Click Next to accept the default choices on the Components to Install panel. The default choices indicate those installed during a full installation.

Click the Change button to further refine your choices. This displays the subcomponents associated with each component selected.

The Components to Install panel enables you to:

- Deselect the Directory Suite component if you already have a directory service available.
- Deselect Administration Services if you don't want the iPlanet Administration Console.

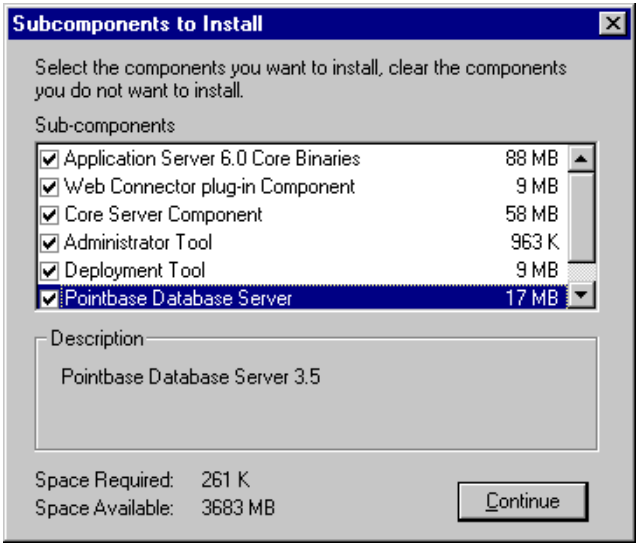
  *Do not select* the Netscape Directory Server 4.1 Synch Service. It's better to configure it after installation.

**NOTE** The iPlanet Directory Server provides a “Synch Service” for synchronizing directory data between multiple instances of Directory Servers set up in a group configuration. For information about setting up this configuration, see the iPlanet Directory Server Installation Guide at:

`http://docs.iplanet.com`

If you deselect the directory suite component, you will be prompted to enter the location of the existing configuration directory.

iPlanet Application Server bundles the PointBase database server, which is installed by default. If you do not want to install PointBase, select iPlanet Application Server 6.0 > Change, and uncheck the box next to PointBase Database Server.




Within iPlanet Application Server installation, there are several panels pertaining to installing and configuring Directory Server. The Directory Server stores the application server’s configuration and directory data.

# To Configure the Directory Server

The Custom Installation Wizard panels set up the following:

- Directory Server
- Registers the Directory Server's data tree by indicating what the Directory Server stores:
  - Configuration data
  - Directory data
- Sets up following administrators:
  - Configuration Data Administrator
  - Directory Data Administrator, known as Directory Manager
- Records general settings for the Directory server's
  - LDAP communication port
  - Local host machine
  - Data Tree Root Suffix for the iPlanet Application Server you're installing
- Sets Administrative Domain boundaries for the Directory Server

  For an overview of the various functions of the Directory Server, see the *iPlanet Directory Server Installation Guide*.

**NOTE** For information about the Directory Server's Synchronous Service for Windows, see the *iPlanet Directory Server Installation Guide* at: `http://docs.iplanet.com/`.

These panels and their function are described in the following steps.

1. Select the directory server that will hold the configuration directory.

   The configuration directory contains the data tree used by the iPlanet Application Server. The Directory Server stores these configuration settings in the data tree: `o=NetscapeRoot`, and under the suffix that you set up to identify your organization. Multiple server installations can store their configuration settings in this configuration directory.

   Choose one of the following options:

- Specify a new Directory Server (the one you are installing) as the configuration directory by keeping the default setting, or
- Use an existing Directory Server by selecting “Use existing configuration Directory Server,” and then fill in the information used to identify that server:
  - Host name and port number.
  - Default binding: admin
  - Password

**NOTE**

- 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.
- If you don’t install Directory Server with iPlanet Application Server, you must designate an existing Directory Server as the configuration directory. The Directory Server you designate as the configuration directory must contain the data tree: `o=NetscapeRoot`.

**2.** Select the Directory Server that will store iPlanet Application Server data.

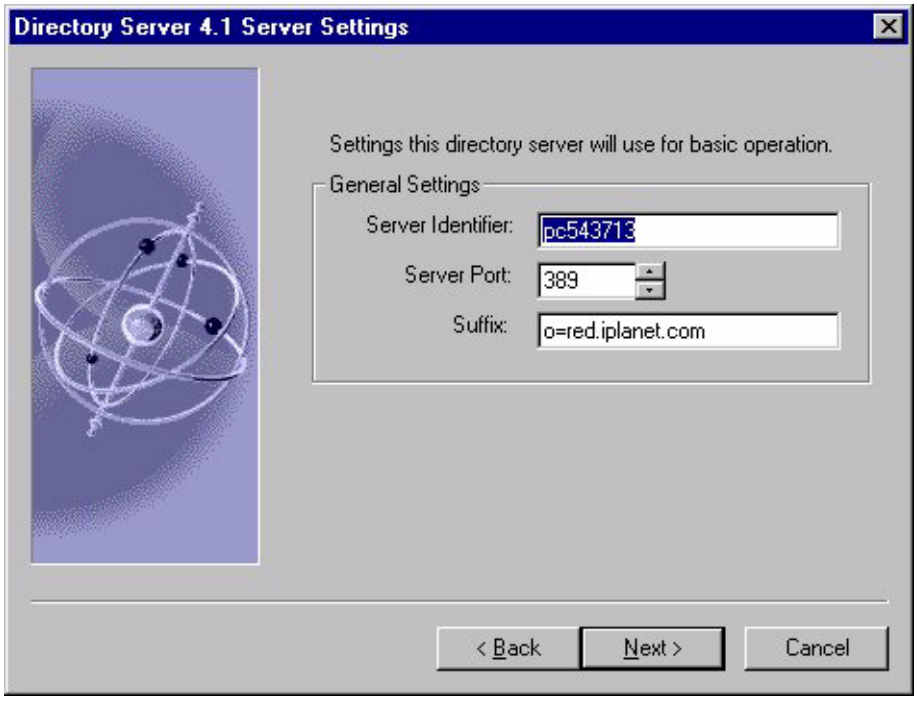
The Directory Server gives you the option to distribute data amongst multiple Directory Server databases. It does this by using a plug-in that chains together distributed data. For more information, see *iPlanet Directory Server Deployment Guide*, which is available on the Web.

Choose one of the following options:

- To store directory data in the newly installed Directory Server, select the default option.
- To use an existing Directory Server for data storage, select that option and enter its general settings:
  - Host name and port number.
  - Default binding or Distinguished Name (DN). By default it’s `cn=Directory Manager`.

- Suffix: o=the DNS name. For example, if the DNS name is `red.iplanet.com`, then the suffix would be `o=red.iplanet.com`

Click Next to continue with the Directory Server Settings.




**3.** Specify the Directory Server's General Settings

These settings consist of an identifier for the Directory Server's host machine, the port number of the LDAP communication port, and the data information tree suffix that is used to identify the root of the database tree for this iPlanet Application Server installation or the Directory Server.

The suffix is the entry at the top of the Directory Server data tree, below which iPlanet Application Server data is stored. For more information on standard directory suffixes, see the *iPlanet Directory Server Administrator's Guide.*

- The Server Identifier is set to the local host (the computer on which you are installing the directory server.)
- The default Server Port number is 389 (the standard LDAP port number); if the port is in use, a randomly generated number will be used.

- The default domain name is set to the computer you're installing the Application Server on.

4. Enter the Administrator ID and password for this configuration server instance.

   **NOTE** This Administrator ID and password will be required if you ever want to uninstall iPlanet Application Server and Directory Server.

5. Set up the directory server's Administration Domain.

   The default is set to the installation computer's domain. If you need to change this value, you should use a name that corresponds to the organizations that control the servers in each domain.

   Since a Directory Server may store Configuration information for multiple domains, the Administration Domain is used to keep these separate. The Directory Server administration domain allows you to logically group servers together so that you can more easily distribute server administrative tasks.

   A common scenario is for two divisions in a company is to have each want control of their individual servers. However, you may still want some centralized control of all the servers in your enterprise. Administration domains allow you to meet these conflicting goals.

   For more advanced configurations and information about using the Directory Server to store information about multiple domains, see the *iPlanet Directory Server Administrator's Guide.*

6. Enter a Directory Administrator (Manager) user name and password.

7. Enter the Directory Manager DN or keep the default.

   The Directory Manager's Distinguished Name is the special directory entry to which access control does not apply. You can think of the Directory Manager as your directory's super user.

   In most cases, it is best to keep the default value, which is set to the common name of Directory Manager, `cn=Directory Manager`

8. Enter the Directory Manager's password; it must be at least 8 characters long.

9. Specify the Supplier and Consumers for Directory Manager.

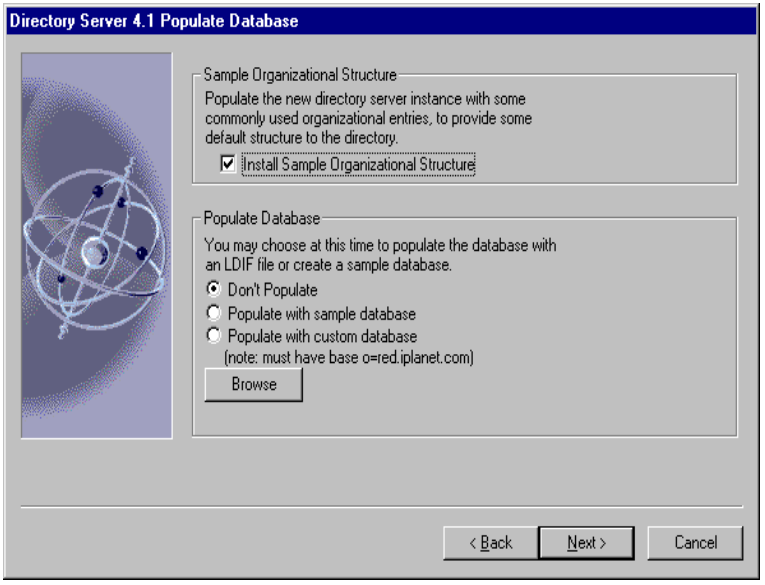
   Accept the default supplier and consumer replication settings, unless you have another Replication Configuration design to implement.

   *Replication* is the process by which directory data is automatically copied from one Directory Server to another.

   A server that holds a replica that is copied to a replica on a different server is called a *supplier*. A server that holds a replica that is copied from a different server is called a *consumer*. For more information on replication concepts, see *iPlanet Directory Server Deployment Guide*.

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

10. Accept the default to populate the directory server with commonly used entries.




   These sample entries are provided to help you to start running iPlanet Application Server.

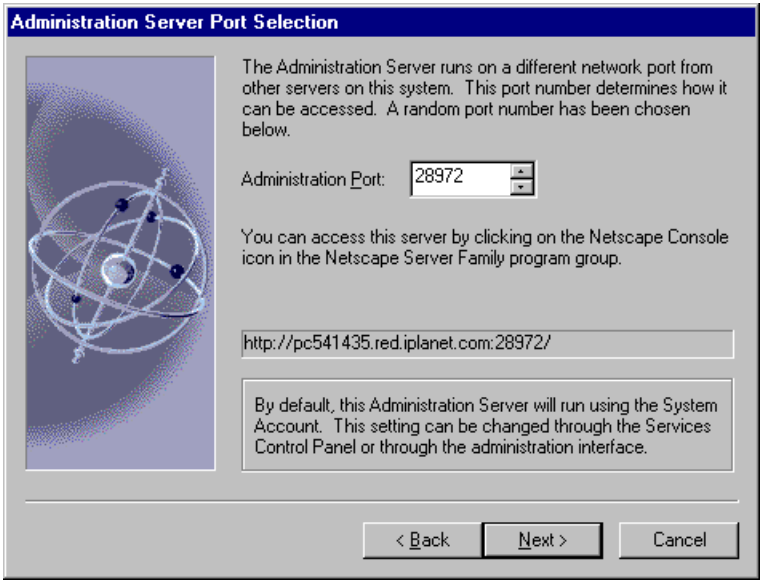
11. Choose to populate the database by selecting the appropriate radio button.

    If you have a custom database, select the `Populate with custom database` option > click Browse. Enter the full path and filename of a file in LDIF format to populate the directory with the custom database.

12. Click Next to enable schema checking. We recommended that you keep the default.
13. Click Next to accept the default or enter a specific IP address to bind to your Administration Server.

**NOTE** Enter the correct IP address as no verification is performed.

14. Click Next to accept the default port number for the Administration Server.




The iPlanet Administration Console requires this port number to administer the Directory Server.

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

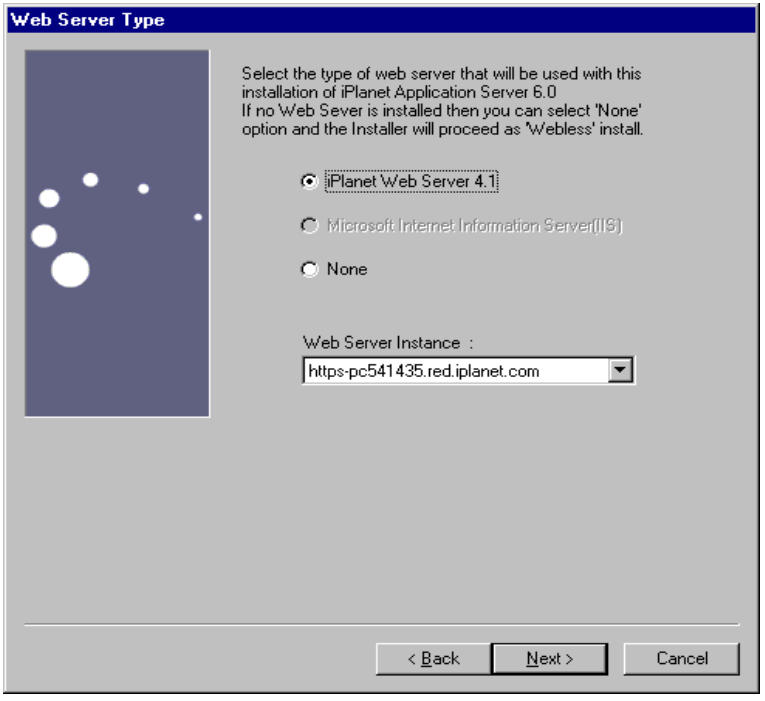
    The name you assign is stored in the configuration directory, under `o=NetscapeRoot` tree, along with the global configuration names of any other iPlanet Application Server installations.

16. Enter the product key for iPlanet Application Server.

    The product key is in the Welcome letter you received with the product and is required before installation can continue.

17. Select the Web Server type and instance that you have installed and running.

    In case of multiple instances of iPlanet Web Server, select one to associate with iPlanet Application Server.




**NOTE**

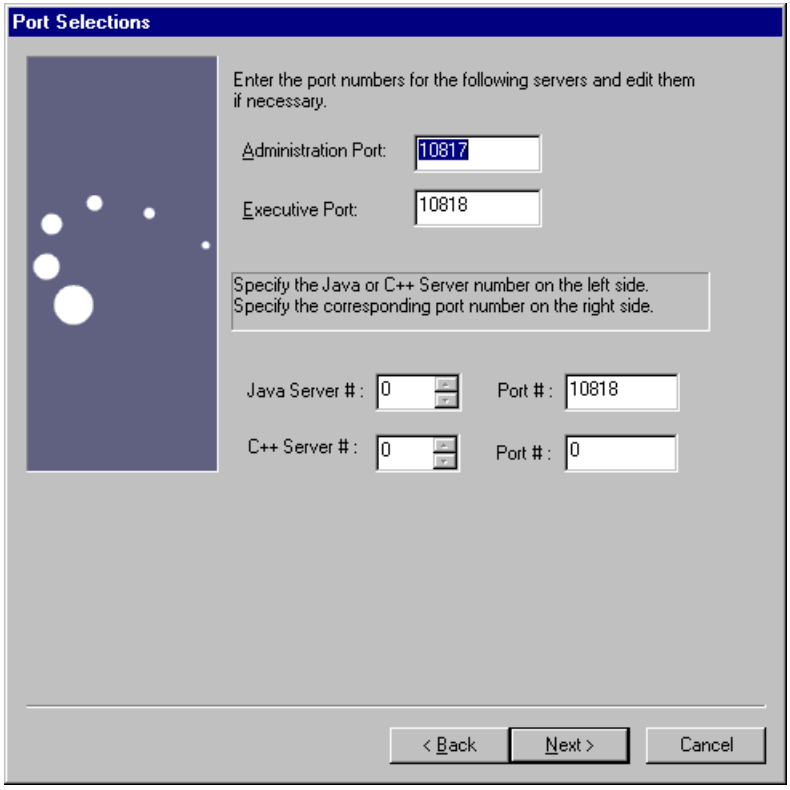
- If you are using a Web Server other than IIS or iPlanet Web Server, you must enter the doc and cgi-bin directories.
- To use the Apache Web Server, you must configure iPlanet Application Server to work with either the iPlanet Web Server or Microsoft Internet Information Server during installation. After installing the iPlanet Application Server, install and configure the Apache Web Server.

  For more information on how to install and configure the Apache Web Server, see “Configuring Apache Web Server,” on page 155
- Make sure to set the registry key permissions for the `\SOFTWARE\iPlanet` key to `Full Control` for all options.

Next, you will configure the port numbers and the number of Java and C++ servers.

# To Configure iPlanet Application Servers

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




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).

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

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

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.

2. Enter the iPlanet Application Server administrator's username and password.

   These are used to authenticate to the Administration Server, which is used by the Administration Tool and the Deployment Tool.

Next up are panels that enable you to configure database clients.

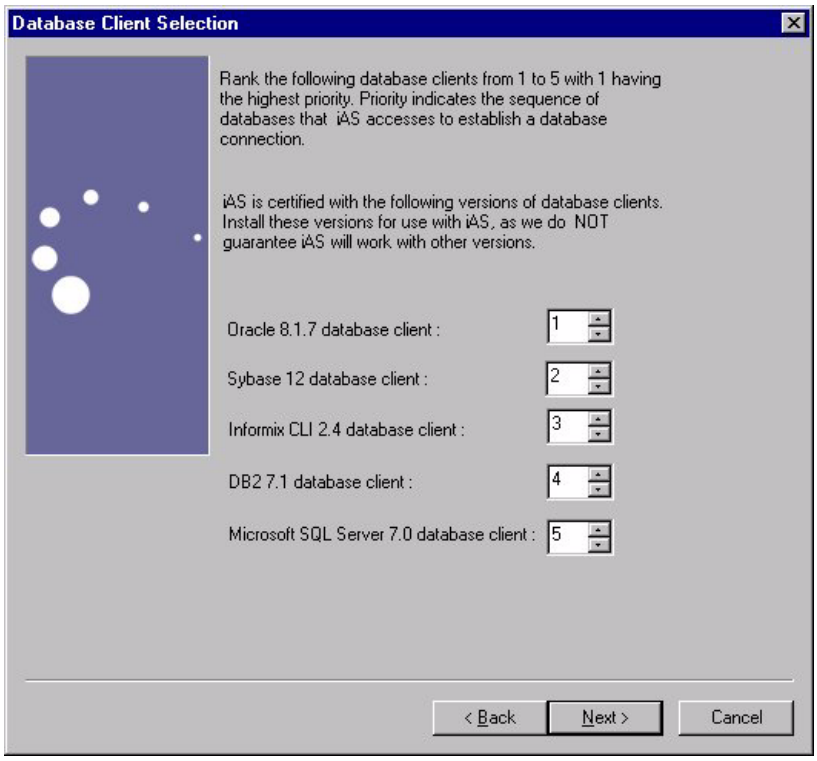
# To Configure Database Connectivity

This section includes procedures on setting up the database clients, Third party JDBC drivers, the Transaction Manager, and the Resource Manager.


- "To Set the Database Client Priority," on page 136
- "To Configure the Transaction Manager," on page 137
- "To Configure Third Party JDBC Drivers," on page 139
- "To Configure the Resource Manager," on page 140


## To Set the Database Client Priority

Rank the installed database clients in order of connection priority.

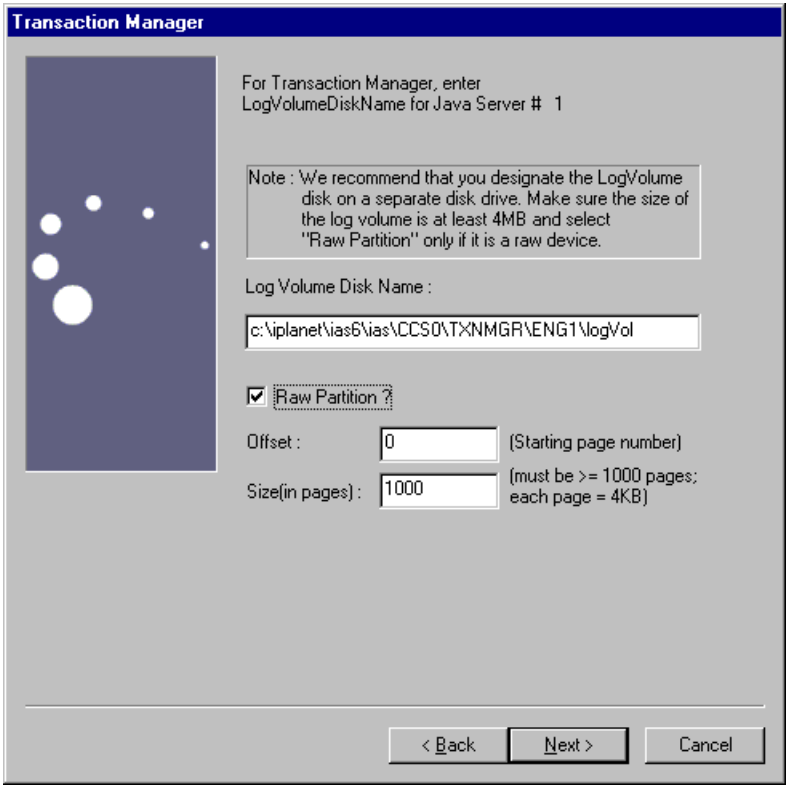



The installation program lists all supported database clients. The clients allow your applications to connect to your database back ends. Rank the clients according to connection priority, whether you've installed them yet or not. Client software can be added after installation. Sample applications are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

## To Configure the Transaction Manager

1. Specify whether or not to enable 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.

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




We recommended that you specify a path on a separate disk drive. Indicate if the specified disk name is a raw partition by checking the box next to `Raw Partition?`.

Enter the path to the raw partition using the syntax: `\\.\F:`, where F is the drive letter.

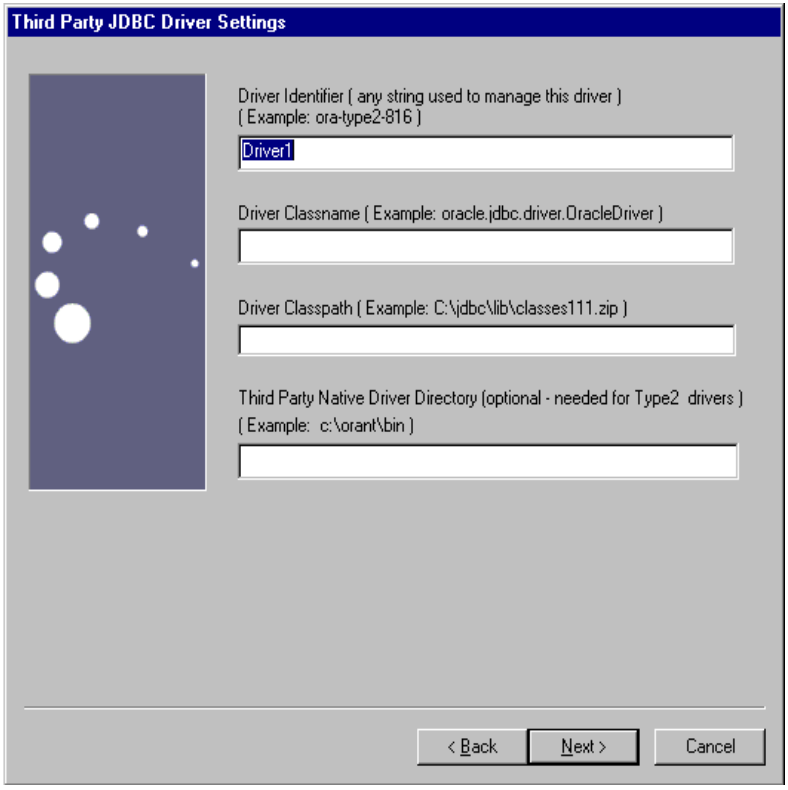
If the log volume is a raw partition, indicate Offset (starting page number) and Size (number of pages) in the raw partition. Make sure the size allocated for the log file is greater than 4 MB; the file should be greater than or equal to 1000 pages, at a size of roughly 4 KB per page.

## To Configure Third Party JDBC Drivers

1. Enter whether or not you are using third party JDBC drivers on the Third Party JDBC Support panel.

   If you answer yes, enter the number of drivers you want to configure before clicking Next.

2. For each third party JDBC driver, enter the driver's identifier, classname, and classpath; formatting each entry as shown in the wizard's examples.



**NOTE**

- PointBase database server and its third party JDBC driver is automatically registered with the Administration Server. It also populates the sample databases of e-Store, J2EEGuide, Database, and Bank sample applications.
- After installation you must register the datasource for the third party JDBC drivers. For more information, see "Configuring JDBC Datasources for Your Applications," on page 171.

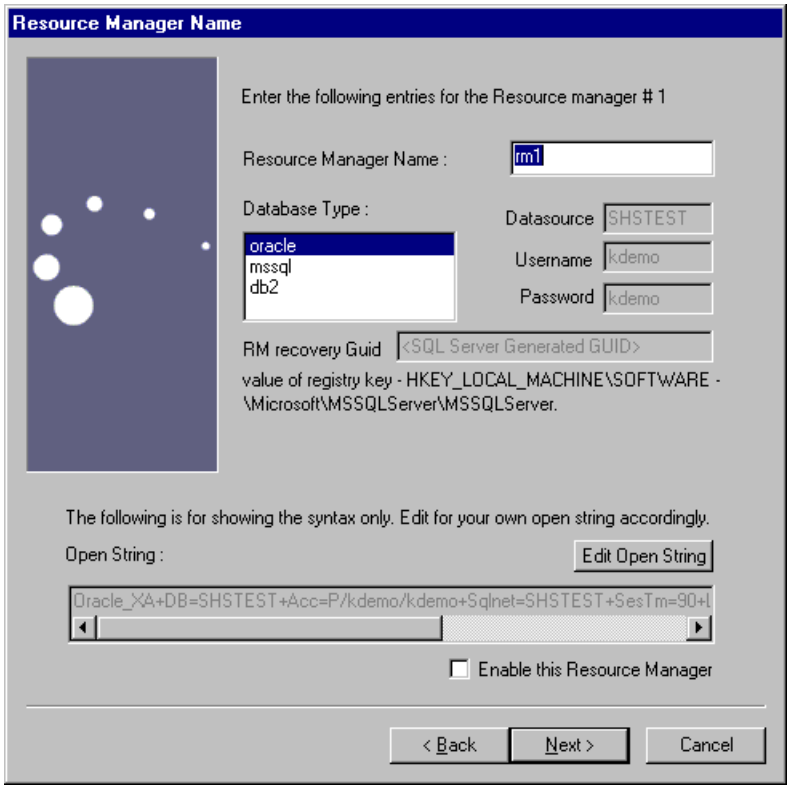
  Additional information is available in the *iPlanet Application Server Administrator's Guide* and the online help of the Deployment Tool.

## To Configure the Resource Manager

1. Indicate whether or not you want to configure any Resource Managers at this point in the installation. If you do, specify the number of Resource Managers you will use.

   Configure one resource manager for each database back end that you want to connect to. Resource manager lets you connect to a database back end for global transactions. For more information on configuring the Resource Manager, see "Configuring the Resource Manager," on page 176.

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




3. Select Yes on the *Internationalization* panel to enable support for standard Java internationalization. Click Next.

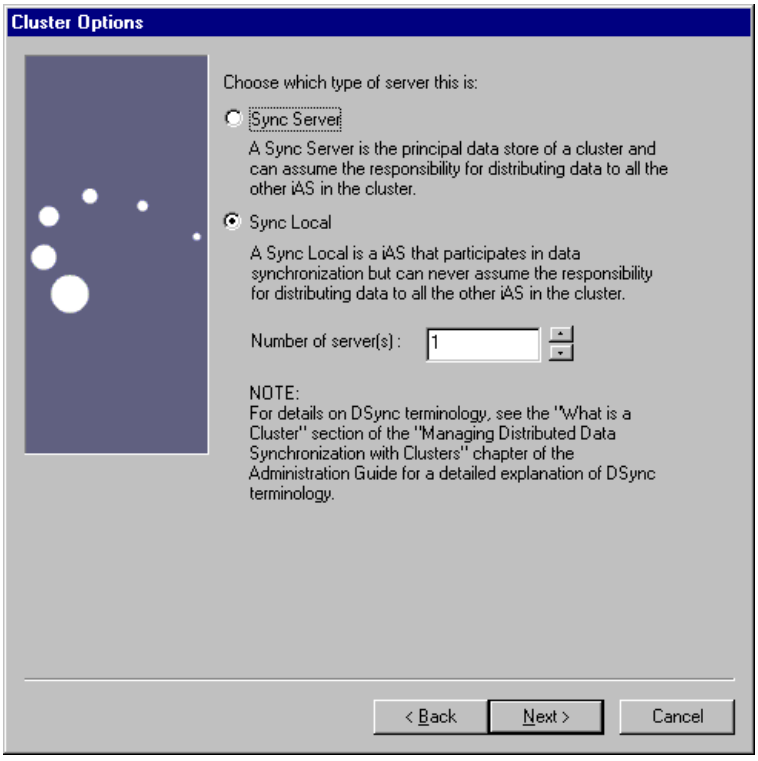
   Enabling I18N support allows multi-lingual applications to be deployed to iPlanet Application Server.

Next up are configuration options for setting up iPlanet Application Server clusters.

# To Configure iPlanet Application Server Clusters

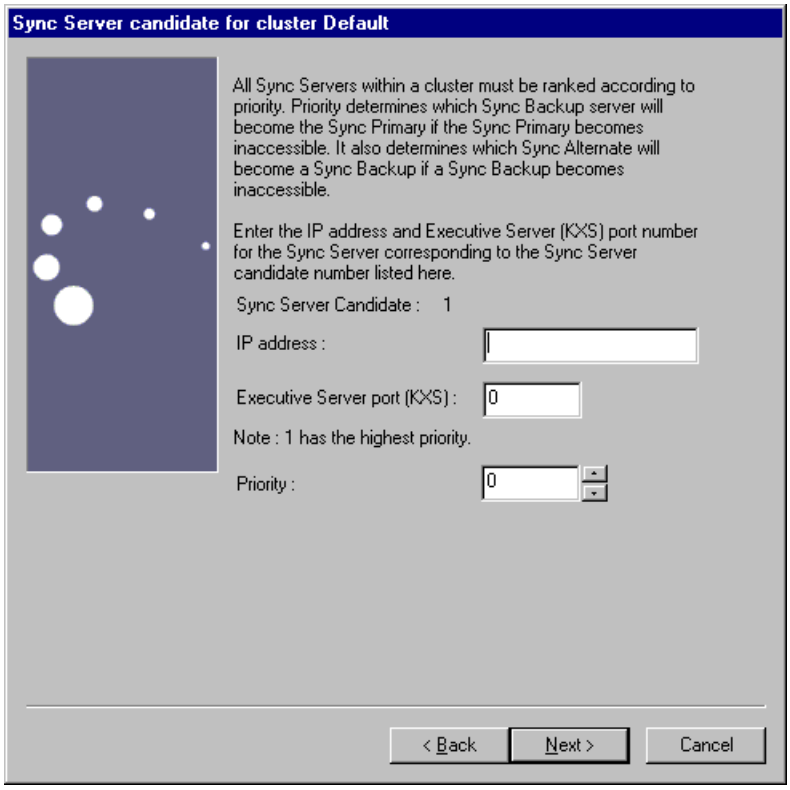
**NOTE** Follow instructions for installing and verifying the simple cluster on the Windows platform at:
`http://developer.iplanet.com/appserver/samples/cluster/docs/nt-cluster.html`

1. Select “Yes” if you intend to synchronize session and state information across multiple servers for failover and fault tolerance.
2. Enter the name of the cluster that this instance of iPlanet Application Server participates in.
3. Click on Sync Server or Synch Local to indicate whether this iPlanet Application Server is a synchronization server (Sync. Server) or a local server (Sync Local.)




4. Enter the total number of synchronization servers that you plan to have in this cluster.

   A Sync Local server uses data synchronization services, but is not eligible to become a Sync Primary or the Sync Backup Server.
5. If this server is a synchronization server (you selected Sync Server in the previous step) enter its IP address, Executive Server (KXS) port number, and its priority number for taking over as the primary synchronization server.

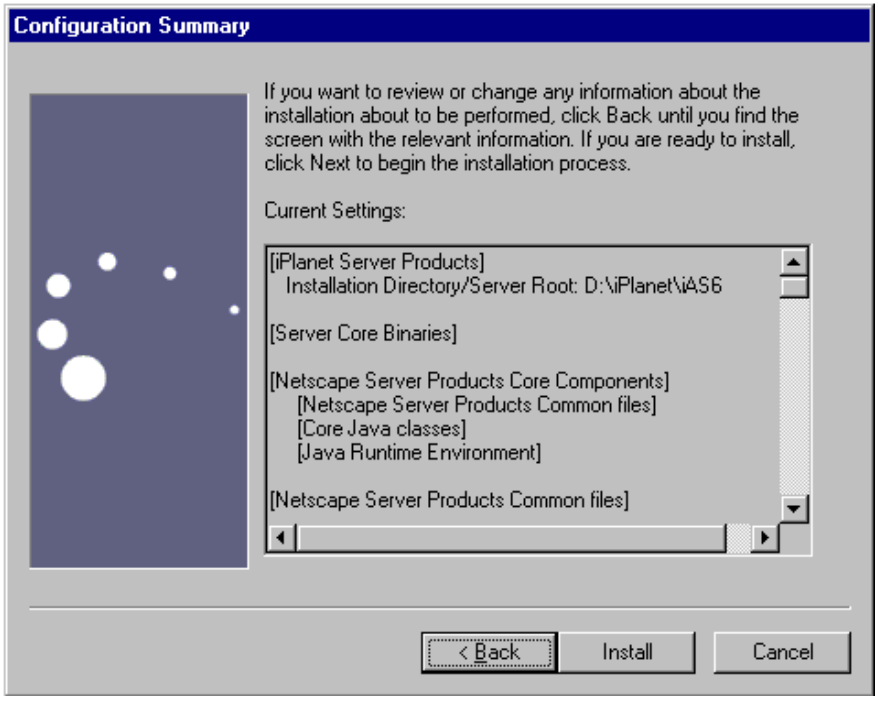



For more information on setting up sync servers, backups etc., see “Configuring Clusters and Data Synchronization,” on page 178.

Additional instructions for installing and verifying a simple cluster on the Windows platform are available at:
`http://developer.iplanet.com/appserver/samples/cluster/docs/nt-cluster.html`

6. Click Install to complete the installation process.

   You can scroll down the Current Settings list to verify your settings. Click Back to return to a previous panel to make corrections.




   The installation program notifies you when all of the iPlanet Application Server files are in place. Select OK on the final dialog to reboot your computer, so that the new settings can take effect.

# Verifying Installation

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 on the *Quick Test* link, under Sample Applications.
4. Press the shift key and click on the browser's Reload button to ensure the application repeatedly returns a new HTML stream.

# 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 `www.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:

`installDir/ias/ias-samples/`

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

# Installing on Multiple Windows Machines

The Silent Installation feature allows you to install the Application Server on multiple Windows machines without running the installation program more than once.

To execute a Silent installation, perform the following procedure:

1. Install on the first machine by running the `setup -k` command.

   Choose one of the installation types and proceed with the installation program. An `install.inf` file is generated in the installDir/setup directory.

2. Copy the install.inf to the machine on which you want to install iPlanet Application Server.

3. You may have to change some or all of the following values in `install.inf`, depending on your configuration requirements, such as, port numbers, domain name, etc. Default values are set for several of the entries.

**Table 5-1** Settings in install.inf

| Value | Description |
|---|---|
| FullMachineName | Name of the machine on which iPlanet Application Server is being installed |
| ServerRoot | Installation root directory |
| AdminDomain | Directory server's administration domain |
| ConfigDirectoryLdapURL | URL for the configuration information in the directory server |
| UserDirectoryLdapURL | URL for the user information in the directory server |
| ServerPort | Local directory server port |
| ServerIdentifier | Local directory server identifier |
| ServerIpAddress | IP address of the machine on which you are performing Silent installation |
| Suffix | Suffix for the configuration directory server |

**Table 5-1** Settings in install.inf

| Value | Description |
|---|---|
| WebServerInstanceName | Name of the web server instance |
| WS_HOME | Path of the web server instance |
| Port | Local administration port |
| LDAPHostName | Same as FullMachineName |
| LDAPPort | Same as ServerPort |
| LDAPConfigName | Global configuration name in the directory server, under which iPlanet Application Server configuration information is stored. |

4. Change the following passwords, if required:

   `ConfigDirectoryAdminPwd`

   `UserDirectoryAdminPwd`

   `RootDNPwd`

   `LDAPUserPassword`(Same as RootDNPwd)

5. Run the following command on the second system to begin silent installation: setup -s -f <fullpath_install.inf>

   Check the status of `Setup.exe` in Windows Task Manager.

6. Restart the system when the process entry for `Setup.exe` disappears from Windows Task Manager.

**NOTE** The command `setup -help` lists the syntax usage for Silent installation.

Chapter 6

# Uninstalling

This chapter describes the procedures required for uninstalling iPlanet Application Server and the associated subcomponents.

The following sections are described in this chapter:

- General Guidelines
- Uninstalling iPlanet Application Server on Windows Platforms
- Uninstalling iPlanet Application Server on Solaris Platforms

## General Guidelines

By default, all components are selected for uninstallation. Confirm that no other servers are using the directory server. If the directory server is being used by another server, de-select it and do not uninstall the directory server.

**NOTE** Do not uninstall iPlanet Application Server by deleting directories or modifying parameters in the registry.

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 that user name has administrator privileges to the configuration directory.

The following directories remain after you uninstall iPlanet Application Server:

- iPlanet Application Server root directory
- Custom directories you created under the iPlanet Application Server directory

- `iAS_installDir/APPS` directory

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

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

# Uninstalling iPlanet Application Server on Windows Platforms

To uninstall iPlanet Application Server on Windows platforms, perform the following steps:

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 iPlanet Application Server on Solaris Platforms

To uninstall iPlanet Application Server on Solaris platforms, perform the following steps:

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.

   You will receive the message “Uninstallation completed” when the software finishes removing all the files.

Appendix A

# Configuring iPlanet Application Server

This appendix explains how to configure iPlanet™ Application Server on Windows NT/2000 and Solaris™ platforms.

This appendix includes the following topics:

- Configuring Port Numbers
- Configuring Web Servers
- Configuring Apache Web Server
- Installing the Web Connector Plug-in
- Configuring the Transaction Manager
- Third Party JDBC Driver Support
- Configuring Third Party JDBC Drivers
- Configuring the Resource Manager
- Configuring Clusters and Data Synchronization
- Reasons for Installing Multiple Instances
- Troubleshooting

## Configuring Port Numbers

All ports you specify are listener ports. Valid port numbers must be within the acceptable range (1 to 65535 on Windows, 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 Windows. On Solaris, this port is used for the CGI to Executive Server (KXS) communication.
- 10820 for the C++ Server (KCS) on Windows. On Solaris, this port is used for the Java™ Server (KJS).
- 10821 for the C++ Server (KCS) on Solaris
- 9092 for the PointBase database
- 389 for the directory server

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.

# Configuring Web Servers

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 *iPlanet Application Server 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.

# Configuring Apache Web Server

Apache Web Server 1.3.19 is supported in the iPlanet Application Server 6.0 SP3 release. To use the Apache Web server with the iPlanet Application Server's Web Connector Plug-in, a few manual configuration steps have to be performed.

You must install and configure the Apache Web Server on the machine on which the Web Connector Plug-in is installed.

**NOTE** To use the Apache Web Server, you must select either the iPlanet Web Server or Microsoft Internet Information Server (on Windows only) during the application server installation. After installing the iPlanet Application Server, install and configure the Apache Web Server.

# To Install Apache Web Server on Solaris

1. Download the Apache web server 1.3.19 source files from the Apache Web site at `www.apache.org` and unpack the tar.gz file.

**NOTE**

- `ar` should be in your PATH.
- The owner / group of iPlanet Application Server and Apache should be the same. By default, Apache runs as nobody:nobody.

  If you need to change the owner / group of iPlanet Application Server files say, to nobody:nobody, then type the following command:

  ```
  chown -R nobody:nobody <iASInstallDirectory/ias/>
  ```

- Apache recommends that the Web server *not* be run as root. For more information, see the Apache Web site.

  To run as root, set the shell variable `EXTRA_CFLAGS` to `-DBIG_SECURITY_HOLE,` before compiling.

2. Go to the root directory where the source files are saved and run:

```
./configure  --prefix=<Installation_Directory>
--enable-module=so --with-port=<PortNo.>
make
make install
```

**NOTE**

- `enable-module=so` is mandatory
- The port number value is optional, as it is set to 80, by default.

The Apache control script is called `apachectl` and is available in the bin directory of the installation.

To start the script, type:

```
apachectl  start
```

To stop, type

```
apachectl  stop
```

# To Configure Apache Web Server on Solaris

1. Add the shell variables GX_ROOTDIR, LD_LIBRARY_PATH and LD_PRELOAD to the apachectl script:

**Code Example A-1**

```
# Additions for the iPlanet Application Server
#
GX_ROOTDIR=<iASInstallDir>/ias
export GX_ROOTDIR
LD_LIBRARY_PATH=${GX_ROOTDIR}/gxlib:$LD_LIBRARY_PATH
export LD_LIBRARY_PATH
LD_PRELOAD=${GX_ROOTDIR}/gxlib/libiasdl.so
export LD_PRELOAD
#
```

**NOTE**

- Replace <*iASInstallDir*> with the installation directory of iPlanet Application Server.
- Replace <*ApacheInstallDir*> with the installation directory of Apache web server.
- The lines with LD_PRELOAD are required only for Solaris 2.6.

2. Add the following lines at the end of `<ApacheInstallDir>/conf/httpd.conf`

**Code Example A-2**

```
# Additions for the iPlanet Application Server
#
LoadModule nas_module<iASInstallDir>/ias/gxlib/libiASApachePlugin.so
AddModule iASApacheInterface.cpp
<Location "/">
SetHandler ias-handler
</Location>
#
```

3. Copy the `<iASInstallDir>/ias/GXApp` and `<iASInstallDir>/ias/ias-samples` directories to the `<apacheInstallDir>/htdocs/` directory.

   The minimum, maximum and the starting number of Web servers can be controlled by the following keys in `conf/httpd.conf`. These are the default values provided by Apache:

   ```
   MinSpareServers 5

   MaxSpareServers 10

   StartServers 5

   All the web servers write to the same log file.
   ```

4. Modify the iPlanet Application Server registry using `kregedit`, as given in "Configuring iPlanet Application Server Registry," on page 159.

# To Install Apache on Windows NT/2000

Download and install the binaries for Apache 1.3.19 from the Apache Web site at www.apache.org. For more information on installing Apache on Windows NT, follow instructions on the Apache Web site.

# To Configure Apache Web Server on Windows

1. Add the path of the Apache executable in the system variable PATH.
2. Add the path of `iASApachePlugin.dll` (the Web Connector Plug-in) to the system variable PATH.

   The path will be *<iASInstallDir>*`/ias/bin`.

**NOTE**

- Replace *<iASInstallDir>* with the installation directory of iPlanet Application Server.

3. Add the following lines at the end of `<ApacheInstallDir>/conf/httpd.conf`

**Code Example A-3**

```
#Additions for the iPlanet Application Server
#
LoadModule nas_module<iASInstallDir>/ias/bin/iASApachePlugin.dll
AddModule iASApacheInterface.cpp
<Location “/”>
SetHandler ias-handler
</Location>
#
```

4. Copy the `<iASInstallDir>/ias/GXApp` and `<iASInstallDir>/ias/ias-samples` directories to the <ApacheInstallDir> / htdocs / directory.
5. Modify the iPlanet Application Server registry using `kregedit`, as given in “Configuring iPlanet Application Server Registry,” on page 159”.

# Configuring iPlanet Application Server Registry

After installation, use `kregedit` to modify the following keys in the iPlanet Application Server registry.

1. Set `SOFTWARE/iPlanet/Application Server/6.0/CCS0/HTTPAPI/HTTPPort` to the listening port of the Apache web server.
2. Set `SOFTWARE/iPlanet/Application Server/6.0/CCS0/HTTPAPI/PATH` and `SOFTWARE/iPlanet/Application Server/6.0/deployment/LogicalName/WWW_DOCROOT` to the document root directory.
3. Append the document root directory, *<Apache_Installation_Directory>* / htdocs, to `SOFTWARE/iPlanet/Application Server/6.0/CCS0/TEMPLATE/PATH`, separated by semi colons.

# Installing the Web Connector Plug-in

The Web Connector plug-in passes requests from your Web server to the iPlanet Application Server. iPlanet provides Web Connector plug-ins for the following web servers:

- iPlanet Web Server
- Microsoft Internet Information Server (Windows only)
- Apache 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's already installed, the Web Server instance is already configured for iPlanet Application Server and you do not need to re-install the plug-in.

   If the plug-in is not installed, continue with Step 2.
2. Stop running your Web Server instance.
3. Log on as a user with administrative privileges before installing the iPlanet Application Server Web Connector plug-in.

   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 on Solaris

1. After you finish installing iPlanet Application Server as a webless installation, take the installation CD-ROM to the machine (or machines) that hosts the Web Server and run the installation program.

2. Follow the instructions of the installation program.

   For more information on the installation procedure, see Chapter 3, “Easy iPlanet Application Server Installations”.

3. When prompted, select “iPlanet Servers” as the components to install.
4. Select Typical as the installation type.
5. Specify a target installation directory. Do not include spaces in the path name.
6. When prompted for the components you want to install, choose to install only the iPlanet Application Server.
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 *iPlanet Application Server Administrator’s Guide*, and in the Deployment Tool online help system.

## To Install the Web Connector Plug-in on Windows

1. After you finish installing iPlanet Application Server in a webless installation, take the installation CD-ROM to the machine (or machines) that hosts the web server and run the installation program.
2. When prompted, select “iPlanet Servers” as the components to install.

   For more information on the installation procedure, see Chapter 3, “Easy iPlanet Application Server Installations”.

3. Select Typical as the installation type.
4. Specify a target installation directory. Do not include spaces in the path name.
5. When prompted for the components you want to install, select only “iPlanet Application Server 6.0” component.
6. Click the Change button.

   The iPlanet Application Server subcomponent screen appears.

7. Select the “Web Connector Plug-in Component” and “Core Server Components” from the list of subcomponents.

8. Follow the instructions of the installation program.
9. Select OK on the final dialog to reboot your computer, so the new settings can take effect.

For more information about the iPlanet Application Server Web Connector Component, see the *iPlanet Application Server Administrator's Guide,* and in the Deployment Tool Online Help.

## Registering the Plug-in on IIS 5.0 running on Windows 2000

On systems running Windows 2000 with IIS 5.0, the Web Connector Plug-in should be registered as an `In-process` IIS 5.0 service. By default, the Plug-in is registered as an Out-of-process IIS service.

Use the following steps to register the Web Connector Plug-in as an `In-process` service of IIS 5.0.

### To register the Plug-in on IIS 5.0

1. Go to Start >Settings> Control Panel > Administrative Tools > Computer Management

   The Computer Management window will open.
2. In the left pane, click on the + sign to expand Services and Applications > Internet Information Services > Default Web Site.
3. Right-click Cgi-bin and select Properties
4. Select the Virtual Directory tab
5. Under Applications Settings, click Create.
6. Select the pull-down menu next to Application Protection.
7. Select `Low(IIS Process)`
8. Click OK.

# Configuring the 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/.

| **NOTE** | 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. |
|---|---|

- 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.

## Guidelines Regarding Raw Partitions

Note the following guidelines 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 the next major iPlanet Application Server release. Third party JDBC support is envisioned to eventually replace the iPlanet Type 2 JDBC native client driver in iPlanet Application Server.

This section includes the following topics:

- Current Capabilities and Limitations
- Configuration Overview

# Current Capabilities and Limitations

The current capabilities and limitations of iPlanet Application Server third party JDBC support include the following issues:

- Datasource-Based Connection Pooling
- No Application Impact
- Path Settings Automatically Set in Runtime Environment
- Supports Concurrent Use of Both iPlanet Type 2 and Third Party JDBC Drivers
- Local Transaction Support
- Driver Must Support DriverManager Class
- Administration via Registry Editor and Command Line Tools

These issues are described in the following sections.

## 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 a pplications use JNDI and the datasource interface to interact with JDBC drivers, the DriverManager class is relied 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.

**Table 6-1** Certified Drivers

| Driver | Platform |
|---|---|
| Oracle 8i 8.1.6.0.1: Type 4 (thin) | Solaris and Windows |
| Oracle 8i 8.1.6.0.1: Type 2 | Solaris and Windows |
| Merant (Intersolv) SequeLink Java 5.0 | Solaris and Windows |
| | (RDBMS platforms supported by SequeLink) |

**Table 6-1** Certified Drivers

| Driver | Platform |
|---|---|
| Sybase jConnect for JDBC 5.2 Type 4 | Solaris and Windows |
| DB2 6.1, server 5.2, DB2, 7.1 client, server 6.1 | Solaris and Windows |
| Access to MSFT SQL Server | Available from Merant for Windows only |

# Configuration Overview

Using a third party JDBC driver in iPlanet Application Server for J2EE JNDI and datasource-based access, and iPlanet Application Server'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.

## Preparing to Configure Third Party JDBC Drivers

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 drivers that can be used on Windows and Solaris:

**Table 6-2** Class Names for 3rd Party JDBC Drivers

| 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` |
| Informix | com.informix.jdbc.Ifx Driver |

### *Driver CLASSPATH*

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

**Table 6-3** Typical Solaris and Windows CLASSPATHs

| Driver | Typical Solaris CLASSPATH | Typical Windows 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 | /DB2DIR/java/db2java.zip | D:\SQLLLIB\java\db2java.zip |

### *Third Party Native Driver Directory*

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

**Table 6-4** Library paths for Type 2 JDBC drivers

| Driver | Solaris Library Path | Windows Library Path |
|---|---|---|
| Oracle Types 2 | /oraclient//lib/ | D:\orant\bin |

# Configuring Third Party JDBC 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 drivers have the same requirement).

This section describes the following topics:

- During iPlanet Application Server Installation
- After Installation
- Registry Settings for Third Party JDBC Drivers
- Driver Entry
- Third Party JDBC Flag
- Configuring JDBC Datasources for Your Applications

## 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 Windows, execute the `jdbcsetup.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\<driver
name>\
```

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 IS3JPDBC flag settings:

**Table 6-5** IS3JPDBC flag settings

| Scenario | Capabilities /Limitations | IS3PDBC 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 6-6** Database URL formats

| Driver | Class name |
|---|---|
| Oracle Types 2 & 4 | jdbc:oracle:oci8:@MyHostString jdbc:oracle:thin:@myhost:1521:orcl |
| | jdbc:oracle:thin:scott/tiger@myhost:1521:orcl jdbc:oracle:oci8:scott/tiger@myhost |
| 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 |
| Informix | jdbc:informix-sqli://mysecurehost:1528/database:informixserver=my_server |
| PointBase 3.5 | jdbc:pointbase://localhost/j2eeguide, max.connections=100 |

### *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 `iasdeploy` or `regdatasource` 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

### *iasdeploy and regdatasource Command Line Tools*

The iasdeploy tool is recommended for command line registration of datasources. Example:

```
iasdeploy regdatasource EstoreDB.xml
```

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\<jndi-name>\

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

### *Connection Pooling Parameters*

Connection pooling parameters are not currently defined during datasource registration. You can specify these parameters using the Administration Tool and selecting Database > External JDBC DataSource.

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\<portion of jndi-name>\

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 6-7** KJS log file settings to display diagnostic messages

| DebugLevel | Effect |
|---|---|
| 0 | No messages. |
| 1 | Common messages like pool status, connection being returned to the pool, and so on. |
| 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 an 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.

# Configuring the 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 databases:

**Table 6-8** Open string formats

| Database | Format | Example |
|---|---|---|
| Oracle | Oracle_XA +<br>Acc=P/user/password (or Acc=P//) +<br>SesTm=session_time_limit +<br>(optional_fields)<br>DB=db_name +<br>GPwd=P/group_password +<br>LogDir=log_dir + | Oracle_XA+SqlNet=<br>ksample1+DB=ksample1+Ac<br>c=P/kdemo/kdemo+SesTm=<br>90+LogDir=/export/TxnLog/<br>tmp+Threads=True |
| Sybase | U username -P password -N lrm_name<br>[ -V version] [ -C connections] -L logfile<br>[ -T trace_flag] | -Usa -P -Nksample_rm -Txa<br>-L/tmp/syb_xa_log |
| DB2 | database name, user name, password | ksample, inst1, inst1 |
| Microsoft SQL | TM=ENCINA, RmRecoveryGuid= resource manager ID<br>Note: The resource manager ID is available in the following location of the Microsoft SQL Server registry:<br>[HKEY_LOCAL_MACHINE\SOFTWARE<br>\Microsoft\MSSQLServer\MSSQLServer]<br>"ResourceMgrID"="{resource managerID}" | TM=ENCINA, RmRecoveryGuid=<br>12345698247024507520450<br>2450420579 |

# Configuring 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.

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.

For more information on configuring distributed data synchronization, see the *iPlanet Application Server Administrator's Guide.*

# Reasons for Installing Multiple Instances

Installing multiple instances of iPlanet Application Server provides numerous advantages in both development and production environments. The following topics elaborate on the associated benefits and issues when running multiple instances.

- Isolating Code
- Improving Scalability
- Failover Issues
- Multi-cluster Issues
- Resource Issues
- Anticipated Performance Benefits

## 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). For developer installations, multi-instance installations should include separate web, application server, and directory instances.

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

To ensure that requests are routed correctly after a web server failure, the topology of a multi-cluster installation should allocate specific web servers to each cluster. Consequently, the configuration information for the clusters should either be in separate subtrees of one iPlanet Directory Server or in separate iPlanet Directory Servers.

Each webserver 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 in the cluster through the entries in the cluster's shared 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 three solutions for this situation:

- Use an SSL appliance between the Internet and the web tier's load balancer so that the cookies are already decoded, 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, or
- Keep state and session information in a shared (between clusters) resource, such as a database.

# Resource Issues

This section discusses resource sharing and configuration options in an iPlanet Application Server cluster that can impact resource utilization. The following topics are covered:

- Unique Network Ports

- Shared Directory Configuration Trees
- Login

### 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.

### 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 Release Notes to determine what patches you may need.
- Check the latest Release Notes for workarounds to any problems you might encounter with installation at:

`http://docs.iplanet.com/docs/manuals/ias.html`

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