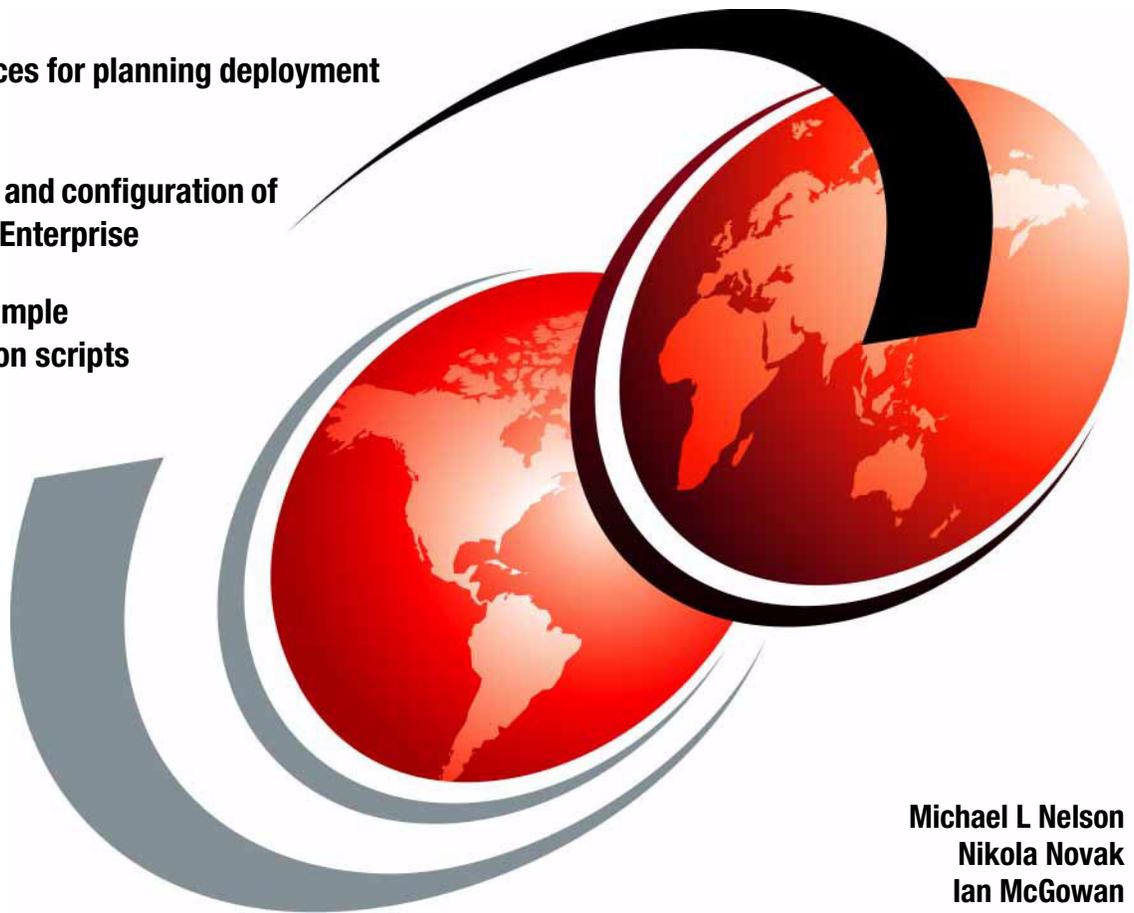


Implementing PeopleSoft Enterprise on xSeries and Linux

Best practices for planning deployment

Installation and configuration of
PeopleSoft Enterprise

Tips and sample
configuration scripts



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International Technical Support Organization

Implementing PeopleSoft Enterprise on xSeries and Linux

May 2004

Note: Before using this information and the product it supports, read the information in “Notices” on page ix.

First Edition (May 2004)

This edition applies to PeopleSoft Enterprise with PeopleTools 8.44 using DB2 UDB V8.1 and WebSphere V5.1 on xSeries systems running Red Hat Enterprise Linux Advanced Server 2.1.

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Preface

This IBM Redbook will help you plan, install, and configure PeopleSoft Enterprise with PeopleTools 8.44 on xSeries® systems running DB2® and WebSphere® on Linux. This information is based on installation experience gained while installing PeopleSoft at the IBM International Technical Support Organization Center in Research Triangle Park, North Carolina and on customer support experiences.

This book will be especially useful for those who are installing and implementing PeopleSoft on Linux for the first time. Basic knowledge of DB2, WebSphere, and Linux is assumed.

The team that wrote this redbook

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Part 1

Introduction



Introduction

This IBM Redbook will help you plan, install, and configure PeopleSoft Enterprise (PeopleTools V8.44) using DB2 V8.1 and WebSphere V5.1 on xSeries Linux platforms. It is based on the installation experience gained while installing PeopleSoft Enterprise at the IBM International Technical Support Organization Center in Research Triangle Park, North Carolina, and on customer support experiences.

In this chapter we provide an overview of the complete planning and implementation of PeopleSoft Enterprise on an xSeries Linux platform with DB2 and WebSphere, and of the products involved in managing a PeopleSoft Enterprise environment. We explore the actual planning, installation, and configuration in more detail in subsequent chapters.

1.1 Overview of PeopleSoft

PeopleSoft is a leading provider of e-business applications that build a collaborative network of customers, suppliers, and employees. PeopleSoft helps organizations optimize every interaction with their customers, employees, and suppliers to create more loyal, collaborative, and profitable relationships.

PeopleSoft, Inc. was founded in 1987 by David Duffield and Ken Morris. The company started out as a human resource client/server package application vendor and developed and delivered its first client/server human resource management system (HRMS) at the end of 1988. In April 1992, the company began branching out beyond its original human resource stronghold by shipping its second major product line, PeopleSoft Financials. In November 1992, the company completed its initial public offering on NASDAQ (PSFT). In December 1994 it announced PeopleSoft Distribution, its third major horizontal offering. In 1996, PeopleSoft acquired RedPepper Software and launched PeopleSoft Manufacturing.

In 1999, PeopleSoft's product range expanded to include PeopleSoft Enterprise Performance Management (EPM), PeopleSoft eStore and PeopleSoft eProcurement. It acquired Vantive, the number two Customer Relationship Management (CRM) vendor. PeopleSoft has embedded analytic capabilities into its new generation of eBusiness products. This means it delivers "smart" eBusiness applications such as Customer Profitability, Workforce Analytics, Supply Chain Analytics, and Balanced Scorecard. PeopleSoft's pure Internet Customer Relationship Management, Supply Chain Management, and Enterprise Management solutions provide the industry's most open and flexible eBusiness platform.

In 2000 the latest version of PeopleSoft was delivered. PeopleSoft 8 represents a generational shift to the Internet in enterprise software architecture. Each PeopleSoft 8 application is delivered completely in HTML, with no code on the client. This "Pure Internet Architecture" (PIA) means that the right data is available to the right person in the enterprise anytime, anywhere from any Web browser. Customers are able to reduce the costs of IT infrastructure, network administration, and information access.

In 2003 PeopleSoft became the second largest provider of enterprise application software through its acquisition of J.D. Edwards. With the completion of the merger PeopleSoft goes forward today with three major product families:

- ▶ PeopleSoft Enterprise

PeopleSoft Enterprise, which is the new name for the original PeopleSoft product portfolio, is a family of best-in-class applications based on PeopleSoft's Pure Internet Architecture designed for flexible configuration and

open, multi-vendor integration. It is ideally suited for financial, government, education, healthcare and other services industries. It is also ideally suited for large, company-wide functions such as human resources, finance, IT, procurement, marketing, services and sales across all industries.

▶ PeopleSoft EnterpriseOne

Formally J.D. Edwards 5, PeopleSoft EnterpriseOne is a complete suite of modular, pre-integrated industry-specific business applications designed for rapid deployment and ease of administration on a pure Internet architecture. It is ideally suited for organizations that manufacture, construct, distribute, service, or manage products or physical assets.

▶ PeopleSoft World

Formally J.D. Edwards OneWorld, PeopleSoft World (also known as WorldSoftware) is a leading application suite for the IBM iSeries™ platform. The applications are tightly integrated and pre-bundled on a single database, with a Web-enabled architecture.

All PeopleSoft Enterprise solutions are based on PeopleTools, a core set of tools that provide the technology foundation for all PeopleSoft Enterprise applications. These tools enable customers to implement, tailor, and maintain PeopleSoft applications as well as to extract, analyze, and manipulate data. PeopleTools also includes several tools for reporting, customizing, and workflow. Based on a multi-tier client/server architecture and using advanced workflow technology, PeopleSoft products support clients running Microsoft Internet Explorer and other popular Web browsers, as well as a range of mainframe, midrange, and open systems relational database server platforms.

Today, more than 11,000 customers in 150 countries run PeopleSoft applications. PeopleSoft now employs more than 12,000 people worldwide.

More information on PeopleSoft products and services can be found on the Web at:

<http://www.peoplesoft.com>

1.2 Overview of xSeries

In the 1960s, IBM introduced the flexibility of the System/360™, and the monolithic mainframe world changed forever. In the 1980s, IBM introduced the IBM PC, which used off-the-shelf parts, and the concept of a personal computer changed forever. Now IBM unveils modular, scalable server technology, and the world of industry-standard servers will never be the same.

IBM eServer X-Architecture™ technology is a blueprint for extending the benefits of advanced availability technologies to IBM Intel processor-based servers. These benefits are in the areas of availability, scalability, systems management, service, and support. IBM has been delivering on the promise of the X-Architecture model since 1998. It has included such innovative technologies as Active™ PCI, C2T Interconnect™ cabling, Chipkill™ memory, Predictive Failure Analysis®, Light Path Diagnostics™ , and IBM Director Software Rejuvenation.

Today, IBM continues to build on the X-Architecture blueprint with Enterprise X-Architecture technologies. These technologies yield revolutionary advances in the input/output (I/O), memory, and performance of xSeries servers. This peerless new server design creates a flexible “pay as you grow” approach to buying high-end 32-bit and 64-bit xSeries servers. The results are systems that can be scaled quickly, easily, and inexpensively.

Enterprise X-Architecture technology enables the following capabilities:

- ▶ XpandOnDemand™ scalability
- ▶ System partitioning
- ▶ PCI-X I/O subsystem: Active™ PCI-X
- ▶ Remote I/O
- ▶ Active Memory™
 - 256 GB memory capacity
 - High-speed (DDR) memory
 - Memory ProteXion™
 - Chipkill™ memory
 - Memory mirroring
 - Hot-add/hot-swap memory
- ▶ 533 MHz front side bus (FSB)
- ▶ Xcel4 Server Accelerator Cache
- ▶ Real Time Diagnostics

If you are looking for all of these abilities in an industry-standard server today, they are available from IBM. These features deliver application flexibility, innovative technology, and new tools for managing e-business. They bring to industry-standard servers the kinds of capabilities that were formerly available only to users of mainframes and other high-end systems. Combined with existing X-Architecture technologies, these innovations result in unprecedented “economies of scalability,” unmatched flexibility, and new levels of server availability and performance for Intel processor-based servers.

Figure 1-1 shows the xSeries product family as of December 2003.

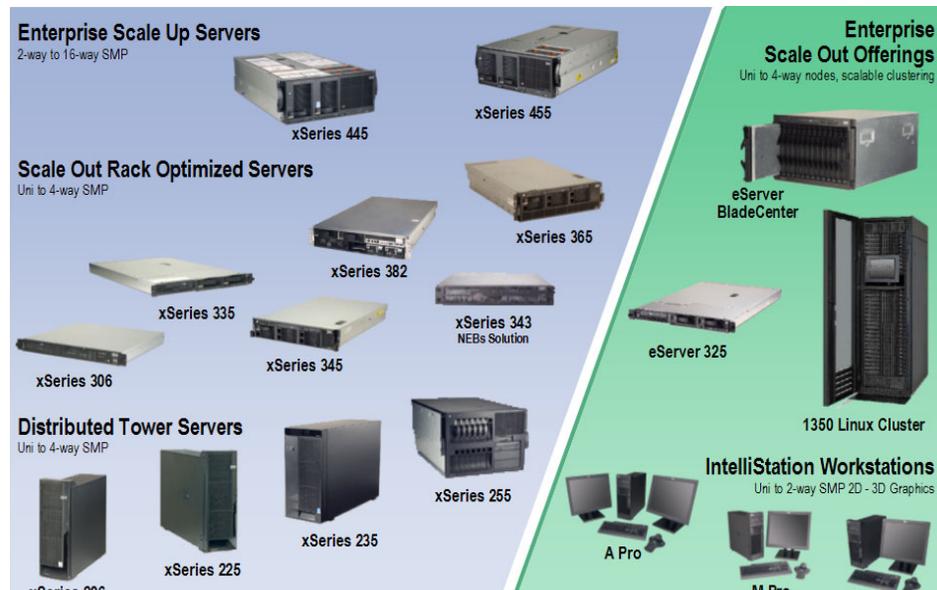


Figure 1-1 xSeries product family

For more information about xSeries, please visit:

<http://www.ibm.com/eserver/xseries>

1.3 Overview of Linux

Linux is a UNIX®-like open-source operating system. It was the original creation of Linus Torvalds from Helsinki, Finland in 1991. He wrote the first kernel, the underlying program interfacing and running the computer hardware.

Torvalds invited programmers from around the world to comment on and to improve his code. This is one of the key ideas behind the success of Linux. With the world as the laboratory, the number of testers and developers is nearly endless. It is because of this resource that Linux is constantly evolving and improving.

Since the Linux source code is freely available, several companies have developed different distributions of Linux. A distribution is a complete system, with the key component being the Linux kernel. Other utilities, services, and various applications can be included as well, depending on the distribution and

the intended use. There is no standard distribution. Each distribution that is available has unique advantages. IBM was early to recognize the value of Linux:

- ▶ Investing in Linux-related product development
- ▶ Forming alliances with key Linux distributors
- ▶ Contributing to the open-source community
- ▶ Aggressively supporting the platform

IBM believes this investment will benefit its customers as they continue to exploit Linux for their IT infrastructures and e-businesses.

IBM is fully committed to the open source movement and believes that Linux will emerge as a key platform for e-business. IBM will work with the open-source community. They will leverage relevant technologies and experience to help enhance Linux, to define the standards, and to extend Linux to the enterprise level.

IBM provides continued support and participation throughout the world. You can learn more about this support and IBM's commitment to Linux at the following Web sites:

- ▶ The IBM Linux portal for a general point of entry into IBM and Linux
<http://www.ibm.com/linux>
- ▶ IBM Linux Technology Center (LTC)
<http://www.ibm.com/linux/ltc>
- ▶ IBM Solution Partnership Centers
<http://www.developer.ibm.com/spc/index.html>
- ▶ IBM Linux support line
http://www.ibm.com/services/e-business/linux_8.html
- ▶ The Open Source Development Lab
<http://www.osdl.org/>

As part of this continuing commitment, IBM has teamed with leading commercial Linux distributors, including Red Hat, Novell/SUSE, and Turbolinux. This cooperation allows IBM to port, test, and certify the performance of its offerings running on various Linux distributions. The result is to enable you to exploit the full potential of Linux.

1.4 Overview of DB2 V8.1

The history of DB2 stretches back almost to the first days of relational databases. The relational database concept was originally developed by Dr. E.F. Codd, an

IBM researcher. In June 1970, Codd published an article entitled *A relational model of data for large shared data banks*, which triggered a flurry of database research, including a major research project called System/R within IBM. Work on System/R began in the mid-70's at IBM's Santa Teresa laboratories in San Jose, California, and led to two major developments: The development of the Structured Query Language (SQL), and the production of various commercial relational database management system (RDBMS) products.

In 1983, IBM introduced an RDBMS for its operating systems called Database 2™ (DB2). DB2 operated under IBM's MVS™ operating system. The first release of DB2 began shipping in 1985, and soon became IBM's flagship RDBMS. DB2's SQL language became the de facto standard database language. DB2 technology migrated across all IBM product lines, from personal computers to network servers to mainframes. In 1997 IBM took the DB2 cross-platform strategy further by announcing DB2 versions for computer systems made by Sun Microsystems, Hewlett Packard, and other IBM hardware competitors.

Now the DB2 Universal Database™, at the heart of the DB2 product family, runs on a multitude of platforms. Figure 1-2 shows the complete DB2 product family.

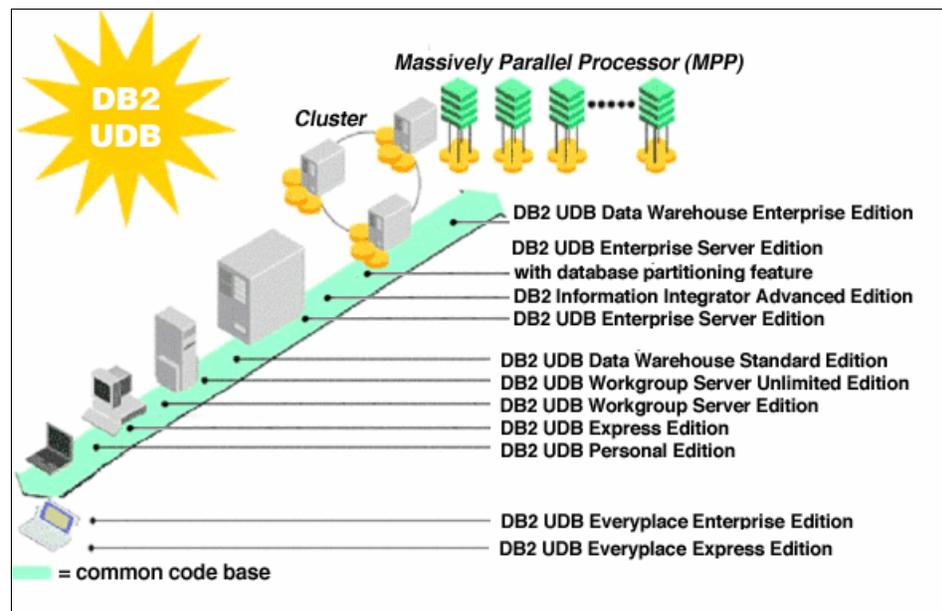


Figure 1-2 The distributed DB2 product line

1.4.1 Parallelism

Several enhancements deliver more efficient processing of SQL queries and better performance for complex queries. The way DB2 Version 8.1 processes queries can improve performance of your SQL queries. Among the improvements are the following items:

- ▶ Fewer sort operations for queries that have an ORDER BY clause and WHERE clauses with predicates of the form COL= constant
- ▶ IN-list index access parallelism, which can improve performance for queries involving IN-list index access
- ▶ The ability to use indexes with a correlated subquery so that ERM applications, such as PeopleSoft Enterprise applications, will perform and scale much better

1.4.2 Enhancements from Version 7.1

DB2 Version 8.1 delivers improved performance, availability, and scalability. Some of the new features of DB2 Version 8.1 are:

- ▶ Innovative manageability
 - Configuration Advisor puts the knowledge of a seasoned DBA at your fingertips.
 - Health Center/Monitor keeps your database functioning.
 - Memory Visualizer lets you dynamically see and control DB2's memory usage.
 - Advisors to deliver expert advice on index and materialized query tables.
 - Simplified management of large-scale partitioned databases.
- ▶ New levels of integrated information
 - Federated Web Services allow a combination of data from Web service providers.
 - XML Productivity Tools simplify integrating XML.
- ▶ A robust e-business foundation
 - Connection Concentrator for more user scalability
 - Dynamic configuration
 - In-place online reorganization
 - Online load
 - Online storage management
 - Null and default compression
 - Replication enhancements
 - New client architecture

- ▶ Integrated business intelligence
 - Multidimensional data clustering improves performance of complex queries.
 - Real-time and bulk scoring of data.
- ▶ Enhanced application development productivity
 - Development Center
 - WebSphere integration
 - Microsoft integration

For more information on DB2, please visit

<http://www.ibm.com/db2>

1.4.3 Performance tools

DB2 has various built-in performance tuning and monitoring tools. These tools are very useful for measuring database server performance and finding any bottlenecks that occur when the PeopleSoft Enterprise application calls the database for SQL requests. These tools give detailed and snapshot reports for database activity. Once installed and configured, the PeopleSoft Enterprise database is likely to grow rapidly. There needs to be proper tools and utilities to check database consistency and update database statistics. The utilities available in DB2 help to maintain up-to-date database statistics.

The most important DB2 tools and utilities that benefit PeopleSoft Enterprise applications are:

- ▶ Runstats
- ▶ Health Center
- ▶ Reorg and Reorgchk
- ▶ Visual Explain
- ▶ Performance Smart Guide Wizards from Control Center
- ▶ Event Monitor
- ▶ Snapshot Monitor
- ▶ DB2 Governor
- ▶ Performance Monitor
- ▶ Benchmark Utility

1.5 Overview of WebSphere

IBM® WebSphere® is the leading software platform for e-business on demand™. Providing comprehensive e-business leadership, WebSphere is evolving to meet the demands of companies faced with challenging business

requirements, such as the need for increasing operational efficiencies, strengthening customer loyalty, and integrating disparate systems. WebSphere provides answers in today's challenging business environments.

WebSphere is architected to enable you to build business-critical applications for the Web. WebSphere includes a wide range of products that help you develop and serve Web applications. They are designed to make it easier for customers to build, deploy, and manage dynamic Web sites more productively.

WebSphere is the IBM brand of software products that are designed to work together to help deliver dynamic e-business quickly. WebSphere provides solutions for positively touching a customer's business. It also provides solutions for connecting people, systems, and applications with internal and external resources. WebSphere is based on infrastructure software (middleware) designed for dynamic e-business. It delivers a proven, secure, and reliable software portfolio that can provide an excellent return on investment.

The technology that powers WebSphere products is Java™. Over the past several years, many software vendors have collaborated on a set of server-side application programming technologies that help build Web-accessible, distributed, platform-neutral applications. These technologies are collectively branded as the Java 2 Platform, Enterprise Edition (J2EE) platform. This contrasts with the Java 2 Standard Edition (J2SE) platform, which most customers are familiar with, that supports the development of client-side applications with rich graphical user interfaces (GUIs). The J2EE platform is built on top of the J2SE platform. It consists of application technologies for defining business logic and accessing enterprise resources such as databases, Enterprise Resource Planning (ERP) systems, messaging systems, e-mail servers, and so forth.

The potential value of J2EE to the customer is tremendous. Among the benefits of J2EE are the following:

- ▶ Promotion of an architecture-driven approach to application development helps reduce maintenance costs and allows for construction of an Information Technology (IT) infrastructure that can grow to accommodate new services.
- ▶ Application development is focused on unique business requirements and rules, rather than common application aspects, such as security and transaction support. This improves productivity and shortens development cycles.
- ▶ Industry standard technologies allow customers to choose among platforms, development tools, and middleware to power their applications.
- ▶ Embedded support for Internet and Web technologies allows for a new breed of applications that can bring services and content to a wider range of

customers, suppliers, and others, without creating the need for proprietary integration.

Another exciting opportunity for IT is Web services. Quite simply, Web services allow for the definition of functions or services within an enterprise that can be accessed using industry standard protocols that most businesses already use today, such as HTTP and XML. This allows for easy integration of both intra- and inter-business applications that can lead to increased productivity, expense reduction, and quicker time to market.

The WebSphere platform forms the foundation of a comprehensive business solutions framework; its extensive offerings are designed to solve the problems of companies of all different sizes. For example, the technologies and tools at the heart of the WebSphere platform can be used to build and deploy the core of an international financial trading application. Yet, it also fits very nicely as the Web site solution for a neighborhood restaurant that simply wants to publish an online menu, hours of operation, and perhaps provide a Web-based table reservation or food delivery system. WebSphere's complete and versatile nature can sometimes be the source of confusion for people who are trying to make important decisions about platforms and developer toolkits for their business or departmental projects.

Figure 1-3 shows the IBM WebSphere product family.

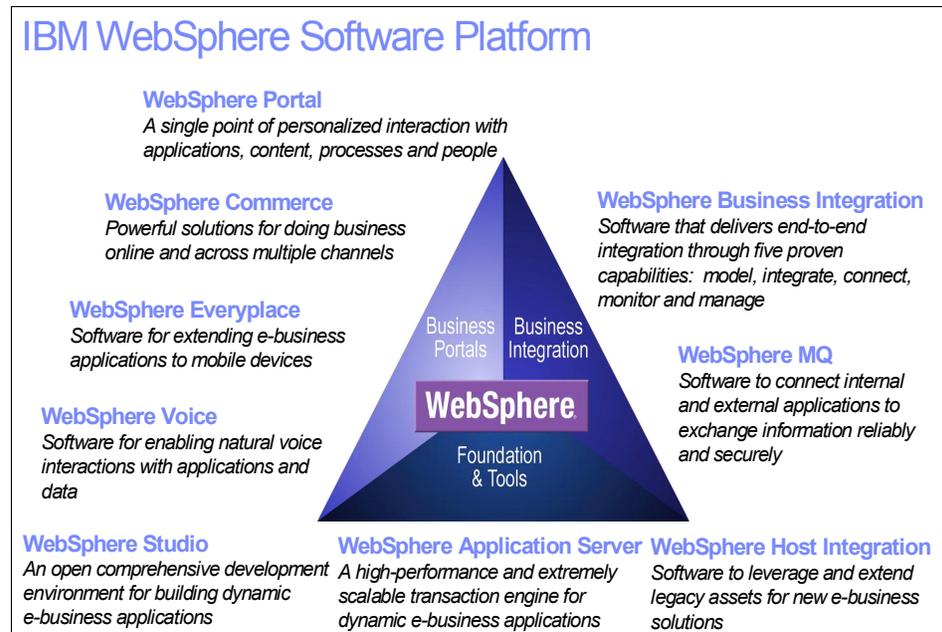


Figure 1-3 WebSphere product family

For more information on WebSphere, please visit:

<http://www.ibm.com/websphere>

1.6 Customer support

Both IBM and PeopleSoft deliver high-quality Internet-based and phone support. In you encounter an issue, first attempt to discover the source of the problem. If you are unable to resolve the issue, you should contact the appropriate supplier, PeopleSoft or IBM. If you are unable to isolate the problem, a call log should be opened with the PeopleSoft Global Support Center (GSC). Once the problem is analyzed by the PeopleSoft engineer(s), the problem may be directed to PeopleSoft Support or IBM Support until resolution is obtained.

1.6.1 PeopleSoft Global Support Center

In North America, call the Global Support Center (GSC) at 1-800-4 PPLSFT (1-800-477-5738).

Outside of North America, consult the Customer Care directory located under Contact Us on PeopleSoft Customer Connection.

1.6.2 IBM customer support

IBM's commitment to customer support is a known fact. IBM continues to deliver the best support for all xSeries, DB2 and WebSphere products.

For xSeries support, please visit:

<http://www-1.ibm.com/servers/eserver/support/>

There is an online customer support site for DB2 products at the following URL:

<http://www.ibm.com/software/data/support/>

For WebSphere support, you can go to the following URL:

<http://www.ibm.com/software/inf1/websphere/index.jsp?tab=support/index>

For customers with a support contract, IBM support with expert assistance is available through a phone call. Find out about 24x7 customer support through Passport Advantage® at the following Web site:

<http://www.ibm.com/software/howtobuy/passportadvantage/>

Other support options include Frequently Asked Questions (FAQs), Technotes, hints and tips, as well as newsgroups. For more information on support for IBM software, please visit:

<http://www.ibm.com/software/support/>



Overview of PeopleSoft 8 on Linux

This chapter describes the PeopleSoft Internet Architecture used in the remainder of this publication. We discuss all of the components that make up the design of the PeopleSoft 8 Internet architecture. We cover the following topics:

- ▶ Overall architecture
- ▶ What runs on each tier

If you are familiar with other three-tier architecture solutions, or are familiar with DB2 or WebSphere but are new to PeopleSoft, this chapter should provide you with enough high-level information to help you understand the important concepts involved in the PeopleSoft Internet Architecture.

2.1 Basic architecture

With PeopleSoft 7.5, PeopleSoft introduced the three-tier architecture, as shown in Figure 2-1. This release added the PeopleSoft Application Server tier between the client and the database server. The 7.5 release allowed better performance for the clients largely due to the SQR compression that occurred on the application server and the added ability to cache on the application server as well as the client. In this architecture, a file server, which contained the PeopleSoft executables; and the report server, which ran Crystal Reports; and nVision were also used. The 7.5 version of PeopleSoft still required code on the client. Also note that there was no Web server in the 7.5 version.

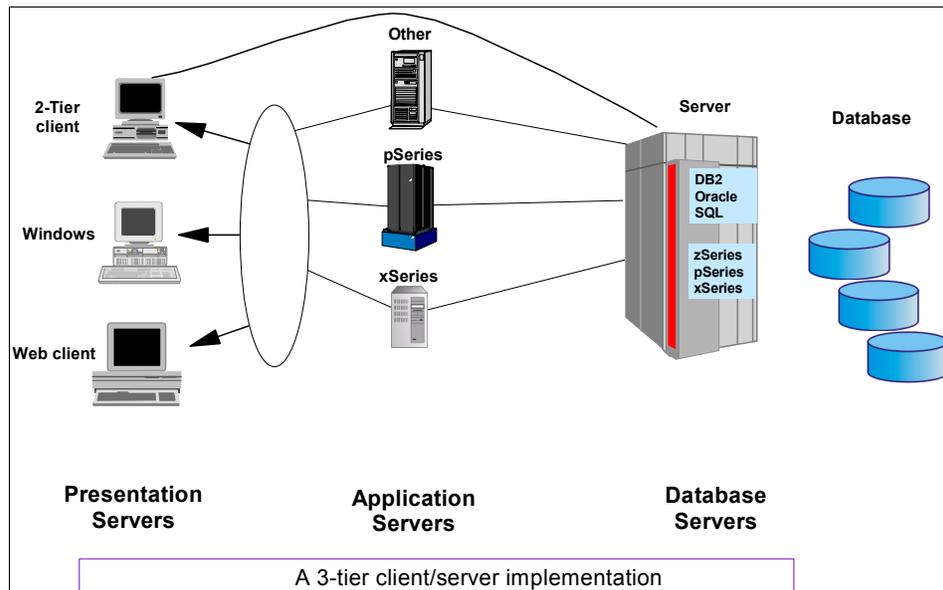


Figure 2-1 PeopleSoft Version 7.5 architecture

Version 8 of PeopleSoft introduced the PeopleSoft Internet Architecture (also known as PIA) and no code on the client, as shown in Figure 2-2 on page 19. This version is also known as the *n-tier* version of the architecture due to the addition of the Web server to the basic architecture. Version 8 applications allow any user to access PeopleSoft as long as they have access to a Web browser. There may still be a file server in the environment, but now that server only serves as a installation system and file repository, and a report server that has additional requirements. Considerations for this architecture are intranet versus Internet, where and what type of firewall strategy you intend to employ, and availability requirements for this new and fully Web-enabled application.

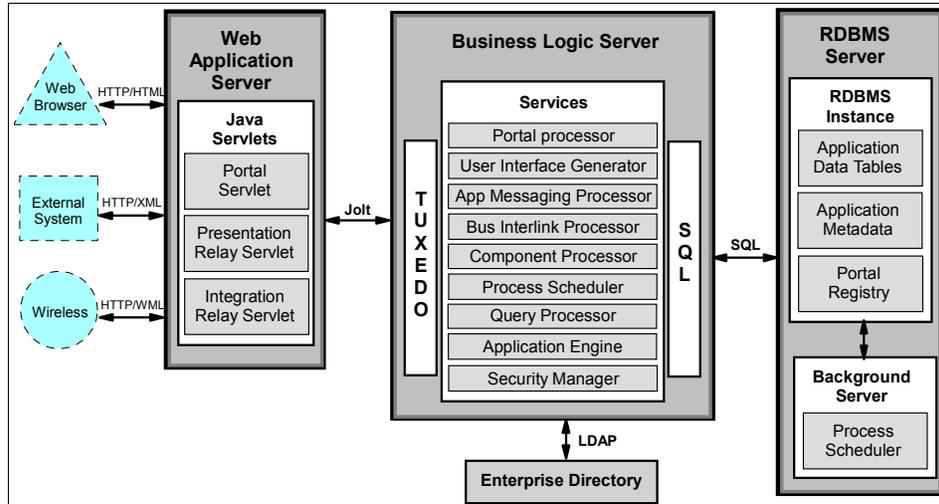


Figure 2-2 PeopleSoft Version 8 architecture

2.2 What runs on each tier

In the next few sections we discuss what runs on each of the various tiers and the system requirements for each tier. For each release of PeopleTools, which is the common code base that all PeopleSoft Enterprise applications are built off of, there is a formal certification process. This process creates a matrix of support that includes the following:

- ▶ Version of PeopleTools
- ▶ Version of Relational Database Management System (RDBMS)
- ▶ Server operating system
- ▶ Version of Web server
- ▶ Version of Web client

Please check PeopleSoft Customer Connection for the most current requirements. Also note that PeopleSoft publishes only the minimum requirements for installation. IBM may have additional recommendations that may enhance performance or resolve an issue. Prior to installation, please also check the most current recommendations from IBM.

2.2.1 Database server

With the release of PeopleTools 8.44, PeopleSoft supports the following RDBMS platforms:

- ▶ IBM DB2 UDB (V7.2 and V8.1)

- ▶ IBM DB2 UDB for OS/390® V6.1
- ▶ IBM DB2 UDB for OS/390 and z/OS® V7.1
- ▶ Informix® (9.30 and 9.40)
- ▶ Microsoft SQL Server 2000 (both 32-bit and 64-bit)
- ▶ Oracle (8.1 and 9.2)
- ▶ Sybase 12.5

While discussing all possible combinations of RDBMS and the server operating system is beyond the scope of this publication, it is important to note that at this time only two RDBMS platforms are officially supported by PeopleSoft Enterprise on Linux. These are:

- ▶ IBM DB2 UDB (both 32-bit and 64-bit)
- ▶ Oracle 9.2 (both 32-bit and 64-bit)

For the remainder of this publication we focus on implementing PeopleSoft Enterprise using DB2 UDB.

We highly recommend that you take advantage of the mature tools available on the DB2 platform to manage your PeopleSoft applications. Additionally, given the implied availability requirement for an Internet application, you may wish to consider using DB2 tools such as concurrent backup and reorg for your PeopleSoft applications. Your decision to deploy your PeopleSoft database server on xSeries and Linux gives you the advantage of these mature tools.

For more information on the tools that you can use with DB2, please see:

<http://www.ibm.com/software/data/db2imstools/>

It is also important to remember that PeopleSoft is written on one code line. This means that whatever database and platform the applications are deployed on will require tuning to give the best possible performance to the PeopleSoft applications. Several documents are available on PeopleSoft Customer Connection to assist you with this, and we highly recommend that you familiarize yourself with all of this publication.

2.2.2 Application server

The application server is at the heart of the PeopleSoft application stack. This server, which can be implemented either as a separate physical server or, as quite often is the case, as a logical server on the database server, is primarily a transaction processor that compresses, expands, and transforms SQL requests to and from the database server and to and from the Web server. The functionality that this server performs is the translation of requests via BEA Tuxedo received from the Web server to SQL. Additionally, the application server handles messaging and subscribe functions for PeopleSoft application messaging, business interlinks, and business components.

Figure 2-3 shows a block diagram of the features and services of the PeopleSoft application server.

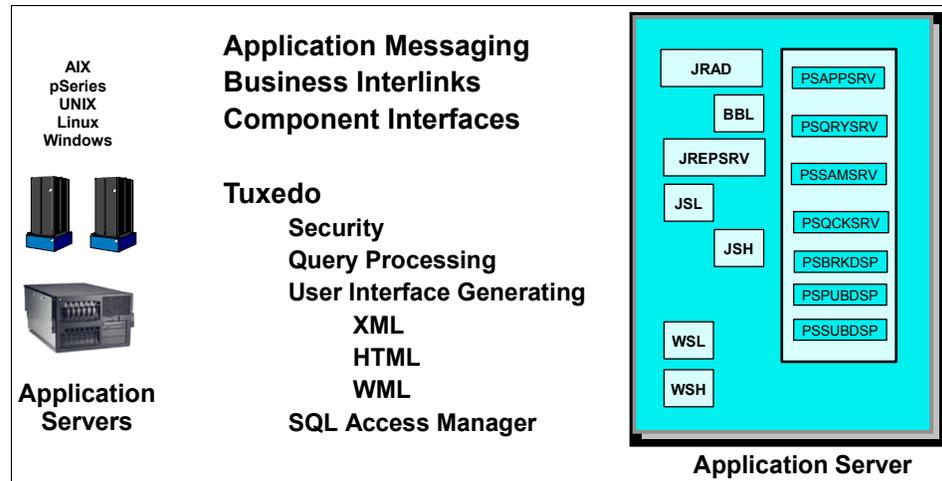


Figure 2-3 PeopleSoft application server

The following is a minimum list of software requirements for your application server:

- ▶ BEA Tuxedo/Jolt, which is delivered on the CDs received from PeopleSoft
- ▶ The PeopleSoft application server Domains, delivered on the CDs
- ▶ COBOL compiler, depending on your operating system and the applications you are using

2.2.3 Web server

The PeopleSoft Web server is integral to the PeopleSoft application server and the PeopleSoft Internet Architecture, as shown in Figure 2-4 on page 22. In theory, the Web server can reside on the same hardware as the application server. We have two reasons for depicting this Web server as being a separate server:

- ▶ We have found that from a performance standpoint, the Web servers tend to scale better horizontally, and the application servers scale well either vertically or horizontally.
- ▶ In addition, we prefer a hardware and software firewall in our architectures, as we believe this to be a more secure configuration.

The following is a list of software requirements for your Web server:

- ▶ Supported operating systems:
 - Red Hat Enterprise Linux 2.1 Advanced Server
 - Solaris 8 or 9
 - AIX® 5.1 or 5.2
 - HP-UX 11.11
 - Tru64 UNIX 5.1b
 - Windows 2000 or 2003
- ▶ Supported Web servers:
 - IBM WebSphere 5.1
 - BEA WebLogic 8.1

Note: Other Web servers, such as Microsoft Internet Information Server and Apache, are no longer supported with the release of PeopleTools 8.44.

Your PeopleSoft CDs will give you an option for installation of the Web server. You will be prompted at install to choose WebSphere or WebLogic for your PeopleSoft Web server. Both of these products are OEM and are delivered on the PeopleSoft CDs. For the purposes of this publication we will only be using WebSphere.

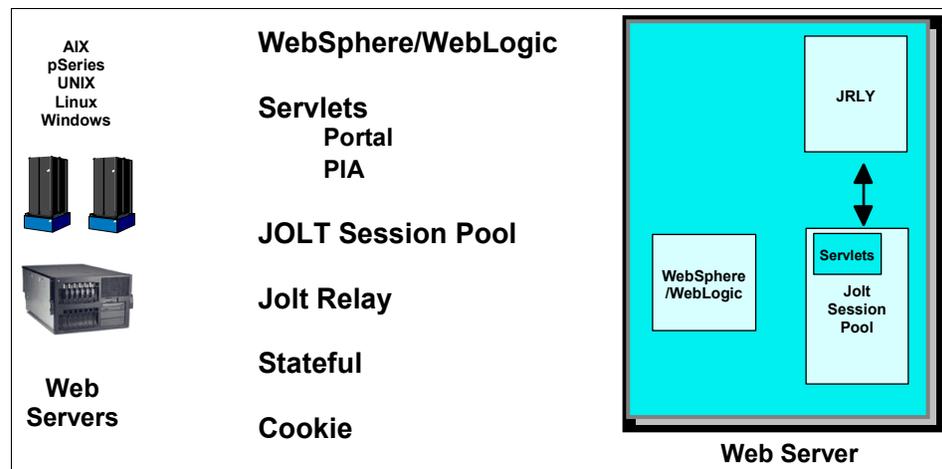


Figure 2-4 PeopleSoft Web server

Part 2



Planning



Project planning

Understanding the environment and the customers' business needs and requirements are keys to success in deploying PeopleSoft Enterprise as well as business in general. To achieve success, you need three things:

- ▶ Realistic goals and objectives
- ▶ Understanding
- ▶ Planning

In this chapter we present a number of planning concepts that can help you in gathering requirements in an orderly way. We assume that you are somewhat familiar with the concepts surrounding PeopleSoft Enterprise and the other applications that will be utilized to complete the solution. Procedures concerning the actual installation and configuration of PeopleSoft Enterprise will be discussed in later chapters.

3.1 Understanding customer expectations

The most important aspect of any implementation of PeopleSoft, or any other application, is understanding and documenting the customer's expectations for the solution. Failure to do so will almost guarantee difficulties with the project, and will end up costing money and goodwill with the customer. Properly ensuring that all expectations have been documented and agreed upon is critical.

First, a customer project leader should be assigned. This person should act as the single voice to the customer. Too often requirements are given to multiple people, resulting in potential conflict and items that may be missed. By having one person act as a focal point you create a natural gateway for all expectations and requirements.

Next, there can never be too much documentation to ensure that all requirements and expectations have been mutually agreed upon. Some of the items that should be documented are:

- ▶ Availability requirements for the solution
- ▶ Performance requirements for the solution
- ▶ Solution connectivity
- ▶ Requirements for data conversion/migration/load/transfer (both initial and ongoing)
- ▶ System management requirements for the solution
- ▶ The proposed solution and the means (sizing tools, configurators, etc.) that were used to come up with the proposed solution
- ▶ Plans for server pilot and the criteria for the customer to accept the results of the pilot and begin deployment
- ▶ Product ordering and scheduling requirements
- ▶ Target dates for:
 - Ordering
 - Delivery
 - Installation
 - Production
 - Other
- ▶ If a Business Partner is involved, the roles and responsibilities that the Business Partner has in relation to:
 - Hardware
 - Software
 - Procurement
 - Other

- ▶ Maintenance procedures
- ▶ Services offerings and how they compare or relate to the customers expectations
- ▶ Any risks of issues that could affect the success of the solution and appropriate action plans to address them
- ▶ The customer's conditions of satisfaction (when is the solution complete?)

This is by no means an exhaustive list. For most solutions, including PeopleSoft, IBM offers a Solution Assurance Review process that can help with these and other items. For more information on Solution Assurance, please visit:

http://www.ibm.com/partnerworld/pwhome.nsf/weblook/trs_wgd_sa.html

3.2 Education

Implementing PeopleSoft can be a challenge to any organization, whether this is the first time a business is deploying PeopleSoft or the first time the deployment is occurring on an Intel platform. Both PeopleSoft and IBM have resources available to ensure your technical staff is properly trained to administer and maintain your PeopleSoft Enterprise deployment.

3.2.1 xSeries education

IBM offers a complete line of education on xSeries, as well as formal certification. Some courses that may be of interest are listed in Table 3-1.

Table 3-1 xSeries education

Course code	Title	Delivery
XTR01	xSeries Technical Principles	Classroom or Web
XTR04	xSeries High Performance Technical Training	Classroom
XTR06	Linux Installation & Performance Optimization	Classroom
XTR42	Fibre Channel Storage for xSeries	Classroom
XTR08	IBM Director Workshop	Classroom or Web

You can visit the following URL for more information on education available on xSeries from IBM:

<http://www.ibm.com/servers/eserver/education/cust/xseries/custxseries.html>

Also, IBM offers formal certification on the xSeries platform through Thompson Prometic and Pearson VUE. Levels of certification are (as of April 2004):

- ▶ IBM Certified Specialist - xSeries
- ▶ IBM Certified Specialist - xSeries Sales
- ▶ IBM Certified Systems Expert - xSeries Service
- ▶ IBM Certified Systems Expert - xSeries Windows 2000
- ▶ IBM Certified Systems Expert - xSeries Linux
- ▶ IBM Certified Advanced Technical Expert - xSeries High Performance Servers

For more information on certification, including requirements and sample exams, please visit:

http://www.ibm.com/certify/certs/xs_index.shtml

3.2.2 Linux education

Just as with xSeries, IBM offers education for Linux installation and system administration, as well as advanced courses in such topics as Samba, TCP/IP, and shell programming. A selection of courses offered by IBM is listed in Table 3-2.

Table 3-2 Linux education

Course code	Title	Delivery
QLX02	Linux Basics and Installation	Classroom
QLX15	Linux Jumpstart for UNIX System Administrators	Classroom
QLX03	Linux System Administration	Classroom
QL033	Red Hat Linux Essentials	Classroom
QL133	Red Hat Linux System Administration	Classroom
QLXA3	Linux System Administration	Online
QLXA2	Linux Basics and Installation	Online

You can visit the following Web site for a complete listing of offerings for IBM on education on Linux:

<http://www.ibm.com/services/learning/ites.wss/us/en?pageType=page&contentID=a0000569>

3.2.3 DB2 education

A database is a database right? And if you know one you know them all. Well, while much may be the same between different versions of database software, even more is different, and it is critical that your database administrators be familiar with your choice of platform.

IBM offers a wide range of courseware for DB2. And some of the best are free. A series of downloadable and Web-based tutorials are available to get up to speed on DB2. They include:

- ▶ DB2 Universal Database Administration Fastpath for V8
- ▶ DB2 Universal Database Programming Fastpath
- ▶ DB2 UDB V8 Family Fundamentals Preparation
- ▶ DB2 UDB for Linux, UNIX, and Windows Version 8 DBA Certification Preparation
- ▶ DB2 UDB Problem Determination

All of these courses are available at no charge from IBM at:

<http://www.ibm.com/software/data/education/selfstudy.html>

Also, IBM has a full suite of other courses available covering all aspects of DB2. A short listing of courses that are available that may be relevant to your staff are listed in Table 3-3.

Table 3-3 DB2 education

Course code	Title	Delivery
CF201	DB2 Universal Database Administration Workshop for Linux	Classroom
CF281	Fast Path to DB2UDB for Experienced Relational DBA's	Classroom
CT030	DB2 Family Fundamentals	CD-ROM
CF412	DB2 Universal Database Performance Tuning and Monitoring	Classroom
CF104	DB2 UDB Programming Fundamentals	Classroom
CF453	DB2 UDB Advanced Administration Workshop	Classroom
CD482	DB2 Advanced Administration for Experienced Relational DBA's	Classroom

Course code	Title	Delivery
CT71C	DB2 Stored Procedures Programming	CD-ROM

You can visit the following Web site for more information on DB2 education from IBM:

<http://www.ibm.com/services/learning/ites.wss/us/en?pageType=page&contentID=a0000512>

IBM also offers a complete line of certification for DB2. Levels of certification include:

- ▶ IBM Certified Database Associate - DB2 Universal Database V8.1 Family
- ▶ IBM Certified Database Administrator - DB2 UDB V8.1 for Linux, UNIX and Windows
- ▶ IBM Certified Application Developer - DB2 Universal Database V8.1 Family
- ▶ IBM Certified Advanced Database Administrator - DB2 Universal Database V8.1 for Linux, UNIX, and Windows

For more information on certification, including sample tests and requirements, please visit:

http://www.ibm.com/certify/certs/dm_index.shtml

3.2.4 WebSphere education

It is easy to learn about WebSphere software. From classroom courses to online assistance and Internet-based education, IBM offers a full spectrum of courses to get you up to speed on WebSphere.

IBM has a full suite of courses available covering all aspects of WebSphere. A short list of courses that are available that may be relevant to your staff are listed in Table 3-4.

Table 3-4 WebSphere education

Course code	Title	Delivery
WF381	Administration of WebSphere Application Server V2	Classroom
WF441	IBM WebSphere Multi-Platform Advanced Administration	Classroom
PW431	WebSphere Portal Administration	Classroom

You can also visit the following Web site for more information on online WebSphere education from IBM:

http://www-306.ibm.com/software/info1/websphere/index.jsp?tab=education/online&S_TACT=103BGW01&S_CMP=campaign

IBM also offers a complete line of certification for WebSphere. Levels of certification include:

- ▶ IBM Certified System Administrator - WebSphere Application Server V5.0
- ▶ IBM Certified Advanced System Administrator - WebSphere Application Server V5.0
- ▶ IBM Certified System Administrator - IBM WebSphere Portal V5.0
- ▶ IBM Certified Solution Developer - IBM WebSphere Portal V5.0
- ▶ IBM Certified Solution Developer - Web Services Development with WebSphere Studio V5.1

For more information on certification, including sample tests and requirements, please visit:

http://www-1.ibm.com/certify/certs/ws_index.shtml

3.2.5 PeopleSoft education

PeopleSoft utilizes education facilities throughout the world to deliver quality education when you need it, where you need it. And now courses are available both live and recorded over the Internet to help in the education of your staff.

A short listing of courses that are available that may be relevant to your staff are listed in Table 3-5.

Table 3-5 PeopleSoft education

Course code	Title	Delivery
nva	Using PeopleSoft - Fundamentals (8.4)	Web
NTR_0405	PeopleTools Overview	Web
400	PeopleTools I	Classroom
410	PeopleTools II	Classroom
405	PeopleTools Overview	Classroom
430	SQR	Classroom
471	PeopleSoft Server Administration	Classroom

Course code	Title	Delivery
466	PeopleSoft Security	Classroom

You can visit the following Web site for more information on PeopleSoft's eLearning offerings:

<http://www.psknowledgecenter.com/>

You can also visit the following Web site for more information on traditional classroom offerings:

http://www.edweb.peoplesoft.com/edweb/main_menu.jsp

Recently, PeopleSoft announced that they will now be offering a public certification program called the PeopleSoft Certified Professional Program. Today certification is available as a PeopleSoft Certified Developer, with other certification tracks to be announced soon. This is a great way for your staff to validate their skills and gain recognition.

For more information on PeopleSoft Professional Certification please visit:

http://www.peoplesoft.com/corp/en/training/project_team/certification.jsp

3.3 Hardware configuration

Properly sizing and configuring the hardware you plan to use for your implementation of PeopleSoft is as much of an art as it is a science. To fully describe all of the possible configurations and solutions that can be created is well outside the scope of this publication. However, there are many generic questions that you should make sure are answered during the hardware configuration process. These are discussed in detail in this section.

► Planning for growth

Very rarely, if ever, are solutions deployed for a fixed function with a set number of users, database size, or number of transactions. The nature of any solution is to grow, and ensuring that the systems you select can grow to meet future requirements is essential.

At most, we recommend that the solution being deployed be configured for 80 percent maximum capacity at its eventual expected load. This does not mean that all hardware needs to be purchased up front. Many systems allow for increased capacity and processing power to be added in the future. You will want to ensure that the system you select allows for this growth.

► Connectivity options

Today the use of Ethernet and TCP/IP has become the de facto standard. However, many older environments may still use Token Ring, ATM, IPX/SPX, and other technologies. Ensuring that your servers and clients can communicate is critical. You should also consider any firewalls, VPNs, or other protections you may use and how they will both impact the hardware configuration for the solution and how the solution will impact your current communication environment. Issues like number of ports and cables that may need to be run to support the solution should also be considered.

► Printing requirements

Oftentimes requirements for the printing of documents created by this new solution is overlooked. You should take care to document and address any new printing requirements that your PeopleSoft Enterprise solution may create, and that there are enough print devices in your environment to accommodate the new solution.

► Physical hardware requirements

At a minimum, the configuration should be sized and verified so that the following components match the solution requirements:

- Server processor (speed and quantity)
- Memory
- Cache
- Disk Storage/RAID
- Tape
- Adapters (network, storage, and others)
- Peripherals (keyboard, monitor, cables)

► Disk storage

Since the core of PeopleSoft is based upon the usage of a RDBMS, sizing and planning your disk storage requirements is critical. This topic will be covered in detail in “Planning your setup” on page 56.

In general, you will want to evaluate the following items:

- Physical disk storage requirements
- Physical disk configuration
- Logical disk configuration
- Cable lengths
- Disk placement
- RAID level(s) to be used

3.3.1 xSeries questions and utilities

By choosing the xSeries platform for your PeopleSoft Enterprise implementation you will see some different challenges than you may on other server platforms. IBM also offers some utilities to help you in your configuration. In this section we highlight some of the challenges, and tools you can use to solve those challenges.

- ▶ Rack configuration

Ensuring that the new systems you are going to deploy for your PeopleSoft Enterprise solution actually fit in your server room is something that is very easily overlooked, but something that must be considered. To confirm that everything will fit in your environment, we strongly recommend using the IBM Rack Configurator. This is a free utility provided by IBM that will both ensure proper rack placement and will also help with such things as power consumption and thermal requirements.

To download the IBM Rack Configurator, please visit:

<http://www.ibm.com/pc/support/site.wss/BBOD-3MDQFF.html>

- ▶ 16-way configurations

IBM with its xSeries 445 system offers scalability of up to 16 Intel Xeon MP processors. While this offers tremendous power, it also has specific requirements associated with it. It is important that the correct models have been ordered and that all requirements have been met.

Please visit the following Web site for more information on the Datacenter Solution Program:

<http://www.pc.ibm.com/ww/eserver/xseries/windows/datacenter.html>

- ▶ xSeries configuration tools

IBM offers several tools to help confirm and complete your solution. Please visit the following for a listing of tools available:

<http://www.pc.ibm.com/us/eserver/xseries/library/configtools.html>

3.4 IBM Business Partners and the EXAct program

This section covers some basic project planning issues and questions you may want to ask if your PeopleSoft Enterprise solution is going to be provided by an IBM Business Partner.

3.4.1 IBM Business Partners

Many customers who buy from IBM never actually see an IBM employee during their entire purchase and deployment cycle. Instead they work with one of the myriad of IBM Business Partners that are available. While this is an excellent way to have someone assist you, there are some risks involved, and some questions you should ask before beginning work with a Business Partner.

- ▶ Does the Business Partner have experience planning and implementing the IBM/PeopleSoft Enterprise solution being proposed?
- ▶ Have the scope of work and responsibilities for the Business Partner been clearly discussed and documented?
- ▶ If the Business Partner is going to provide hardware or software, has that product been tested and validated with the IBM/PeopleSoft solution?
- ▶ Is the Business Partner giving you any additional or special warranties, guarantees, or provisions as part of their solution, and have these been documented?
- ▶ Have you checked out the Business Partner? Are they financially stable and known to produce quality work on time and within budget?
- ▶ If the Business Partner cannot do the work, who will?
- ▶ Is there a clear understanding between you, IBM, PeopleSoft, and the Business Partner of who “owns” the ultimate responsibility for the success of the solution?

3.4.2 The IBM xSeries EXAct program

If your solution is going to include one or more xSeries high-performance servers (such as the xSeries 365 or x445), then you need to know about the EXAct program. All Business Partners selling high-performance solutions must be members of the IBM EXAct Network program.

The EXAct Network program offers a single point of access for Enterprise X-Architecture marketing and technical expertise.

Members of the EXAct Network receive from IBM the sales tools, skills, and relationship marketing support required to compete in the emerging high-end Intel server market. Members of the EXAct Network are a set of Business Partners with dependable, cutting-edge knowledge in EXA-based servers, who are recognized as leaders in high-end EXA-based xSeries server markets.

EXAct Network participants must have specialized skills in server consolidation (including ALIGN methodology), clustering, Application Framework middleware and database planning and implementation, disaster recovery, system

partitioning, and Storage Area Networks. Required special application and solution skills include:

- ▶ IBM-supported operating systems: Windows Server 2003, Windows 2000 Datacenter Server, Windows 2000, Linux, Novell
- ▶ Middleware: VMware, Lotus® Domino®
- ▶ Collaboration: Lotus Notes®, Exchange
- ▶ Enterprise Application Software: SAP, Siebel, PeopleSoft
- ▶ Business Intelligence: SAS
- ▶ Databases: DB2, Oracle, SQL Server

For more information on the EXAct program please visit IBM PartnerWorld® at:

<http://www.ibm.com/partnerworld/pwhome.nsf/weblook/index.html>

3.5 Network configuration

The best solution in the world will do nothing to solve your business needs without proper network planning and configuration. As PeopleSoft Enterprise uses a Web browser to allow access for end users, ensuring proper network bandwidth is important to satisfy your users.

Network topologies, schematics, and diagrams need to be documented and verified. This can include the connection between all systems involved in the solution as well as connections to the end user. At a minimum, a 100 Mbps connection should be established between all systems, and Gigabit Ethernet is recommended.

Network traffic volume and flows also need to be understood and adequate capacity needs to be planned, especially for daily and seasonal peaks (such as quarter or year end). Things that should be documented can include:

- ▶ End users' response time for a defined workload
- ▶ Number of concurrent users
- ▶ Existing network bandwidth and future network requirements
- ▶ Distance and bandwidth between the clients and the server(s)
- ▶ Speed of the network
- ▶ Load on the network when moving data between systems involved in the solution

Network security is also critical. Determining what firewalls, VPN's, and other network security devices will both be utilized by the solution and what aspect of

those solutions that may need to be adjusted (such as ports opened) need to be reviewed and documented.

You should also plan for network outages. A network outage and recovery plan should be developed, which should include backup and alternate solutions. Any requirements for load balancing and failover should also be addressed.

Finally, all network equipment that is to be used with the solution, including both existing equipment and any new equipment that is to be installed, should be reviewed and documented for performance and compatibility.

3.6 Planning for installation

While planning, sizing, and ordering a system can be done by almost anyone anywhere, eventually you will reach the point where it is time to get the systems at their planned location and begin installation. Often overlooked, planning for installation is key to ensuring a smooth rollout of the solution.

Just as with the rest of the solution, planning is key for the actual installation of the systems. Once again, documentation is key. At a minimum the following should be documented:

- ▶ Who will be doing the installation?
 - Customer
 - IBM
 - Business Partner
 - Other
- ▶ Are all roles and responsibilities for the installation in place?
- ▶ Where physically will the servers be installed (town, building, floor, etc.)?
- ▶ Are there any education requirements related to installation?
- ▶ Have power requirements been reviewed and documented?
- ▶ Have rack requirements (if racks are to be used) been reviewed and documented?
- ▶ Is a raised-floor environment to be used?
- ▶ Is the physical site ready?
 - Power is in place.
 - Cooling is in place.
- ▶ Is there an established facilities schedule in place for the addition of power or cooling or to physically move the systems to the location?
- ▶ Is the appropriate network infrastructure (LAN, WAN, router, etc.) in place?

- ▶ Have any physical security issues (secured rooms/locks) been documented and resolved?
- ▶ Are there any physical delivery requirements?
 - Proper installation address
 - Loading dock
 - Elevator access and size
 - Hallway size
 - Moving equipment such as pallet jacks or carts

Many xSeries systems have specific rack, power, and cooling requirements, and these requirements need to be reviewed and documented prior to installation. To ensure that these requirements have been met, we recommend using the IBM Rack Configurator, which can be found at:

<http://www.ibm.com/pc/support/site.wss/BB0D-3MDQFF.html>

This tool allows you to place all xSeries servers and options into racks, and will document all power, cabling, and space requirements you may have.



Architecture

This chapter describes the overall PeopleSoft Internet Architecture (PIA) deployed in a solution. It also looks at the base architecture used and explores the functions of the Web server, application server, database server and batch server.

4.1 Basic architecture

PeopleSoft Internet Architecture is a server-centric component architecture that gives access to its data through a standard Web browser running on a client machine. The client machine can be any Internet device that supports standard Internet technologies such as hypertext transfer protocol (HTTP), Hyper Text Markup Language (HTML) and Extensible Markup Language (XML).

This increases the number of devices and the number of device types that can access PeopleSoft Enterprise applications. Access to PeopleSoft applications can be by entering a URL into the browser. A cell phone that supports wireless application protocol (WAP) can have access to PeopleSoft applications through delivery of wireless markup language (WML) pages. The key components of PeopleSoft architecture are displayed in Figure 4-1.

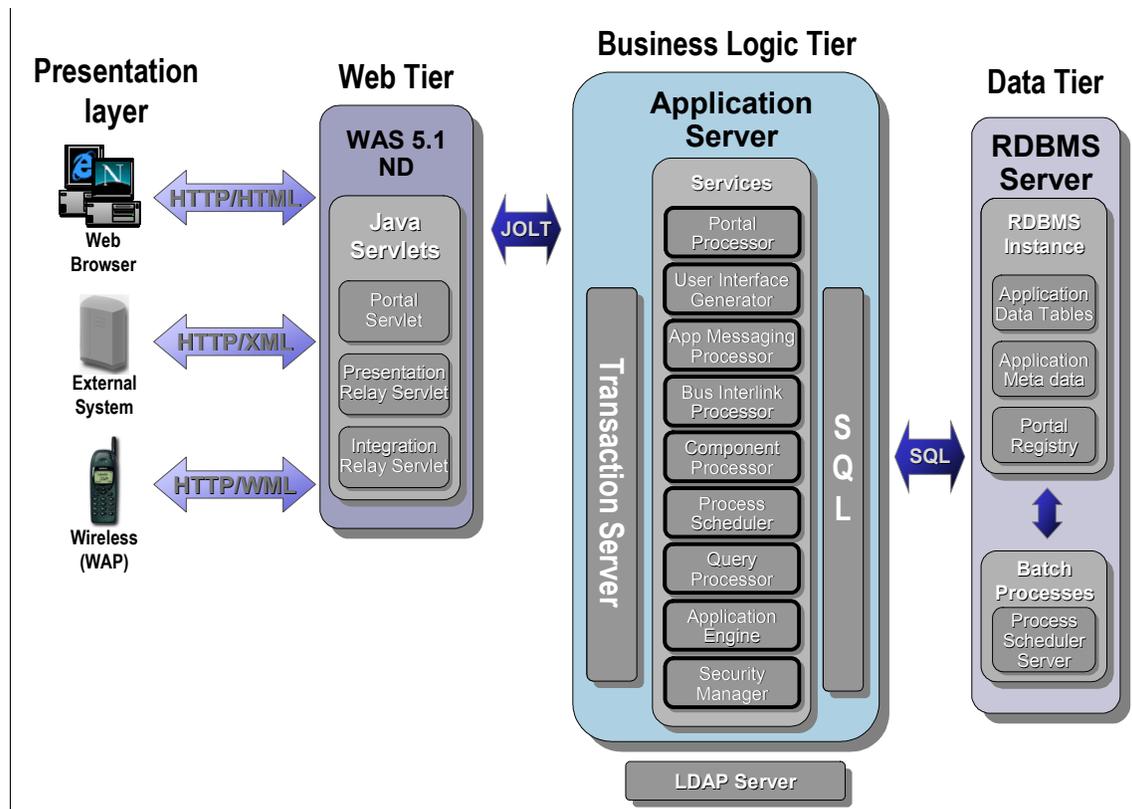


Figure 4-1 PeopleSoft Internet Architecture (PIA)

4.1.1 Web server

The Web Server's role is to handle browser transaction requests and application messaging. It is fully Java enabled and the main functions that execute on the Web Server are through Java Servlets. Java Servlets are programs that run on the Web server. Browsers on the client do not connect directly to the application server but instead send an HTTP request to a servlet on the Web server that gets translated into a Jolt request that is then directed to a Jolt port. All communications between the Web server and the application server are managed through Jolt. These programs are written in Java and as such the Web server requires a Java runtime to be installed on it. The main servlets on the Web server are the Portal Servlet, Presentation Relay servlet and the Integration servlet.

The Portal servlet handles all inbound markup language and outbound requests for the Portal. It sends and receives HTML, XML and WML over HTTP. It manages all aspects of the PeopleSoft Enterprise portal including home page personalization, searching, and content management. It communicates with the application server through Jolt.

The Presentation Relay servlet handles all inbound requests for queries and transactions and communicates with the Query processor and the Component processor, which execute under Tuxedo on the application server. Tuxedo is the transaction monitor used to manage the application server services.

The Integration Relay servlet handles all inbound and outbound requests for third-party system integration. It receives and serves XML requests and maps the data within the XML streams to the integration services:

- ▶ Application messaging processor
- ▶ Business interlinks processor
- ▶ Component processor

4.1.2 Application server

The main role of the application server is to execute business logic, generate SQL to access tables in the database, and generate HTML, which gets routed to the Web server. There are two main components that make up the application server: Tuxedo/Jolt and PeopleSoft server processes. Tuxedo manages the Internet application services. These services are:

- ▶ Portal Processor

This component handles requests from the portal servlet.

- ▶ **User Interface Generator**
This component generates the user interface from the query or component format and generates the appropriate output markup language and scripting based on the activated client action.
- ▶ **Application Messaging Processor**
Looks after the publishing, subscribing and delivery of application messages.
- ▶ **Business Interlink Processor**
This processor handles the business interlink plug-ins with third-party systems.
- ▶ **Component Processor**
This component performs the core application business logic function.
- ▶ **Process schedule**
Executes batch and report processes.
- ▶ **Query Processor**
Executes queries defined from the query tool.
- ▶ **Application Engine**
Executes application engine processes.
- ▶ **Security manager**
Authenticates users through Lightweight Directory Access Protocol (LDAP).

4.1.3 Database server

The database server houses the database engine and the database that includes all of the object definitions, system catalog tables, PeopleTools tables and application datatables. Application data being stored in the database metadata is also maintained on the database server. The application server executes business logic based on the metadata. PeopleTools Application Designer is a set of tools used by PeopleTools Application Development and customers to define applications. For example, an application object that may be defined as a series of fields, records, pages and messages gets saved as a object in the metadata repository. At runtime the application server accesses the most recent object definitions from the metadata repository. It compiles and caches the objects in memory and executes the business rules based on these objects. All of the main database management systems are supported including DB2 UDB, Informix, Oracle, Sysbase and SQL server.

4.1.4 Batch server

This batch server consists of a number of pre-programmed processes and tools that can perform functions against the database without any need for user interaction. The batch server accesses the database directly, and due to this requires fast access. The batch server may reside on the database server or on a separate system. The main component on the batch server is the process scheduler server agent, which manages the batch environment. There are other server agents that manage report distribution, application and optimization. Some of these programs may be in COBOL and would require a COBOL compiler, which does not come as part of the PeopleSoft environment.

4.1.5 Configuration layout

As you can see from the PIA architecture in Figure 4-1 on page 40, there are three functional tiers for the architecture to support. These can be architected by the deployment of one or many physical servers. The Web server, application server, database server and batch server can each be on separate machines or multiples of separate machines, or logical partitions. They can also be combined to run on one or many machines or logical partitions.

In a configuration where all three tiers run on the same machine this is generally referred to as a virtual three-tier architecture, as is shown in Figure 4-2. You can have the database and batch servers on one physical server and the application and Web servers on a separate physical box. Indeed, all servers can run on separate physical boxes.

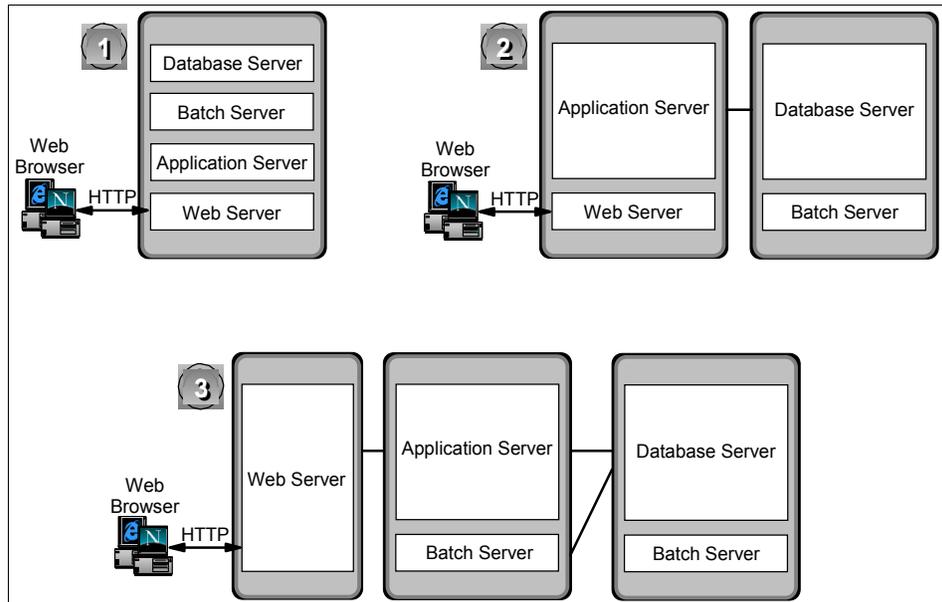


Figure 4-2 Three different setups and configurations

For example, a configuration with a separate Web server can provide enhanced security through deploying a firewall between the Web server and the application server and also between the client and the Web server. Multiple Web servers can be deployed with an edge server (WebSphere Application Server Edge Components) to enhance access, security, availability and to improve performance by load balancing among the Web servers. This type of setup can also be configured as a cluster. Here multiple copies of the HTTP server and multiple copies of the WebSphere Application Server are activated and defined to participate in a shared cluster through the WebSphere administration tool. Within the cluster, should any instance of an HTTP server fail, the user can be directed to a second instance of the HTTP server, thereby affording a higher level of availability. Also as balancing between HTTP and Web servers, there is support for balancing between the Web server and the application server.

In Figure 4-3 the Web servers can be configured to balance among the applications servers. Should one of the application servers fail, Jolt will re-establish a connection to the next available server.

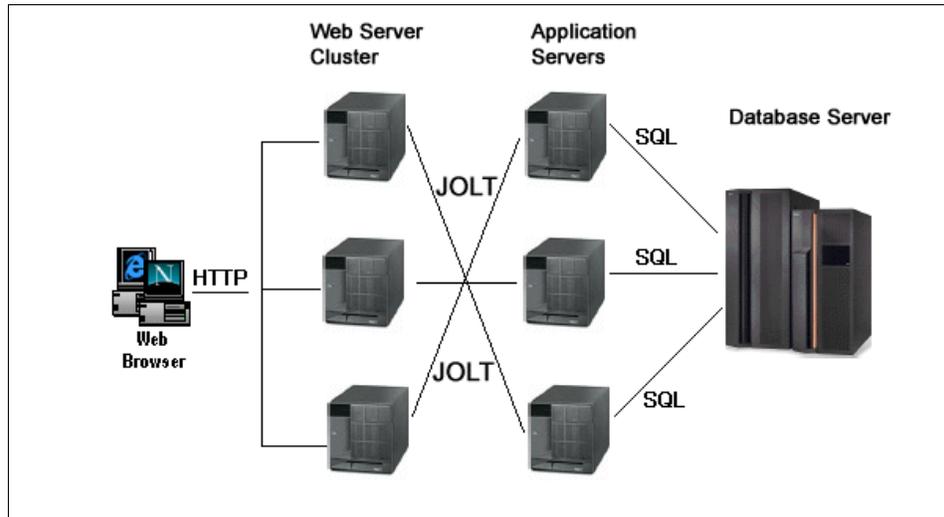


Figure 4-3 Increasing availability

The architecture deployed in a solution is such that it does not have to be all of the same type. Indeed, a mixture of systems can be deployed allowing the deployment of best of breed hardware for particular requirements. Figure 4-4 illustrates a three-tiered solution outlining the current operating system versions supported for IBM's servers.

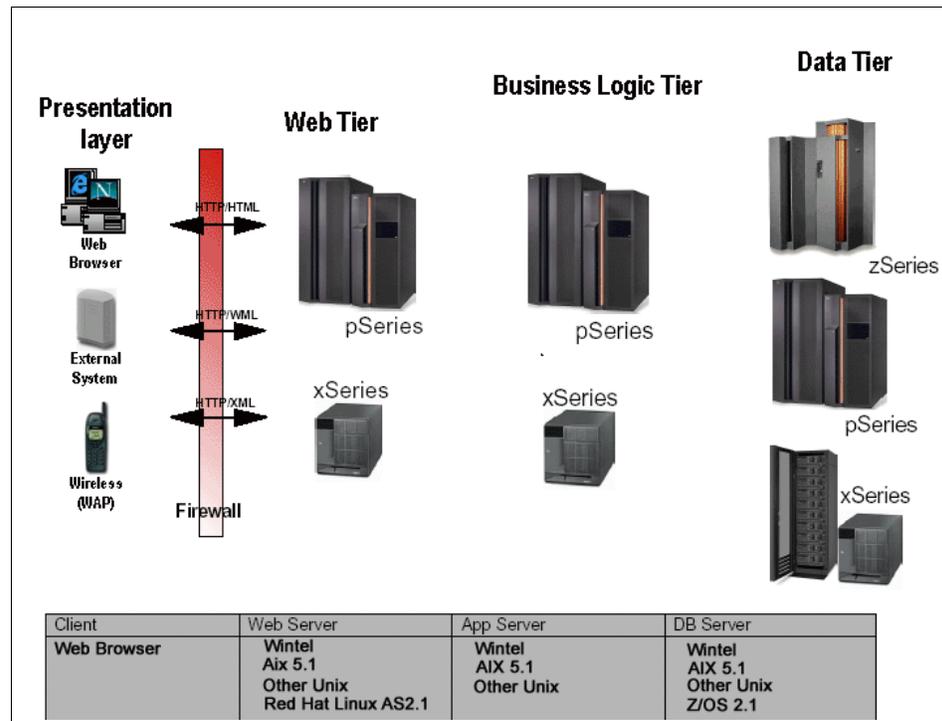


Figure 4-4 Current OS versions for xSeries, pSeries® and zSeries® systems

There are a large number of factors used in defining an architecture. Some of these are:

- ▶ The size of database being deployed
- ▶ The type of network being deployed
- ▶ The applications being deployed
- ▶ The number of end users accessing the system
- ▶ The expected performance required
- ▶ The type of security being deployed
- ▶ The availability and redundancy required to achieve this
- ▶ The cost of the solution

There are a number of PeopleSoft Sizing Questionnaires to help resolve these issues.



Database overview and planning guide

This chapter describes the characteristics of the DB2 Universal Database components and outlines the necessary steps required before installing the database.

If you know DB2 Universal Database, but are new to PeopleSoft, or if you have PeopleSoft experience but have never worked with DB2 Universal Database, this chapter should provide you with enough information to help you understand the important concepts involved in both products.

5.1 DB2 overview

This section discusses the architecture of DB2 from the instance level and all of the parts that make up a database. There are two types of instances: A DB2 Administration Server and a DB2 instance. Both of these instances may be created during the installation process. The similarities and differences between these instances are reviewed in the following sections.

5.1.1 DB2 Administration Server

DB2 Administration Server is a special DB2 administration instance used for managing local and remote DB2 servers. You must have a running DB2 Administration Server if you want to use the Client Configuration Assistant or the Control Center. DB2 Administration Server assists the Control Center and Client Configuration Assistant when working on the following administration tasks:

- ▶ Enabling remote administration of DB2 servers
- ▶ Starting and stopping DB2 instances
- ▶ Providing a means for discovering information about the configuration of DB2 instances, databases, and other DB2 Administration Servers in conjunction with the DB2 Discovery utility

This information is used by the Client Configuration Assistant and the Control Center to simplify and automate the configuration of client connections to DB2 databases.

You only need a single DB2 Administration Server on a server. The DB2 Administration Server is configured during installation to start when the operating system is booted.

5.1.2 Instance

A DB2 instance is a logical database server environment where you catalog databases and set configuration parameters. Depending on your needs, you can create more than one instance. You can use multiple instances to:

- ▶ Use one instance for a development environment and another instance for a production environment.
- ▶ Tune an instance for a particular environment.
- ▶ Restrict access to sensitive information.
- ▶ Install different versions of DB2 on the same machine.
- ▶ Control the assignment of SYSADM, SYSCTRL, and SYSMANT authority for each instance.

- ▶ Optimize the database manager configuration for each instance.
- ▶ Limit the impact of an instance failure. In the event of an instance failure, only one instance is affected. Other instances can continue to function normally.

Note that multiple instances have some minor disadvantages:

- ▶ Additional system resources (virtual memory and disk space) are required for each instance.
- ▶ More administration is required because of the additional instances to manage.

The instance directory stores all information that pertains to a database instance. Figure 5-1 on page 50 shows the configuration of an instance. You cannot change the location of the instance directory once it is created. The directory contains:

- ▶ The database manager configuration file
- ▶ The system database directory
- ▶ The node directory
- ▶ The DB2 diagnostic file (db2diag.log)
- ▶ The node configuration file (db2nodes.cfg)

The instance directory is located in the *INSTHOME*/sqllib directory, where *INSTHOME* is the home directory of the instance owner. The instance name can be called anything you want within the DB2 naming rules convention.

Sample script files are provided to help you set the database environment *db2profile*, which is located in the sqllib subdirectory under the home directory of the instance owner.

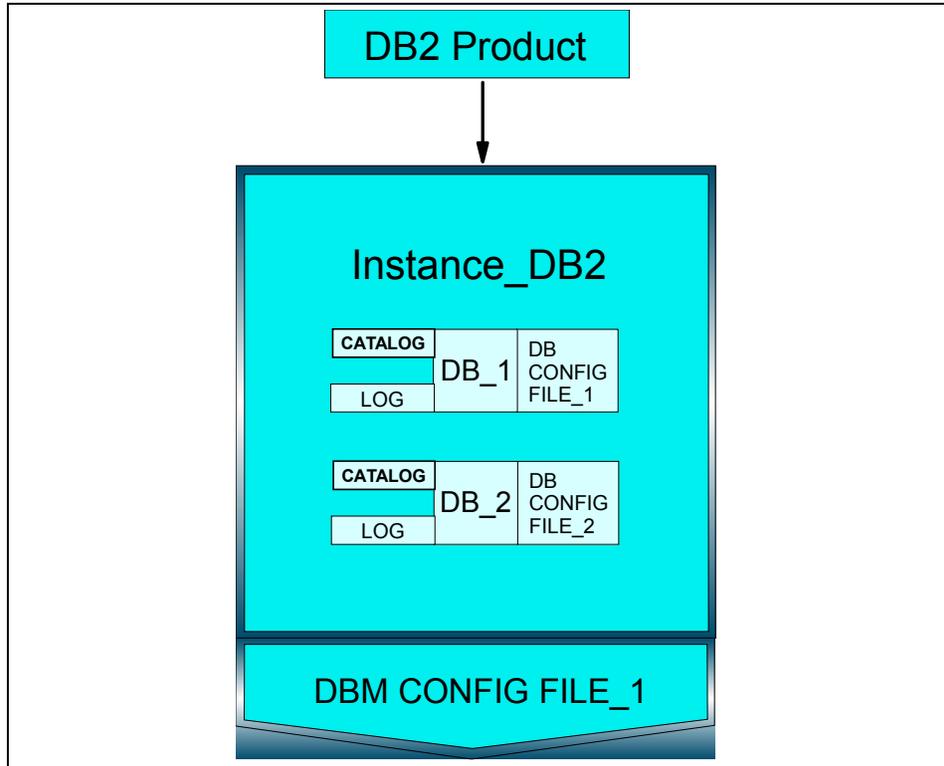


Figure 5-1 DB2 Universal Database instance

5.1.3 Database

A relational database presents data as a collection of tables. A table consists of a defined number of columns and any number of rows. Each database includes:

- ▶ A set of system catalog tables that describe the logical and physical structure of the data
- ▶ A configuration file containing the parameter values allocated for the database
- ▶ A recovery log with ongoing transactions and archivable transactions

5.1.4 Tablespaces

A database is organized into parts called *tablespaces*. Each database can have multiple tablespaces associated with it. Tablespaces are created within a database, and the tables are created within tablespaces (see Figure 5-2). The tablespace is the layer between the database and the actual data stored in tables. All DB2 tables reside in tablespaces. This means you can control where the table data is physically stored. You can use different kinds of tablespaces to store different kinds of data.

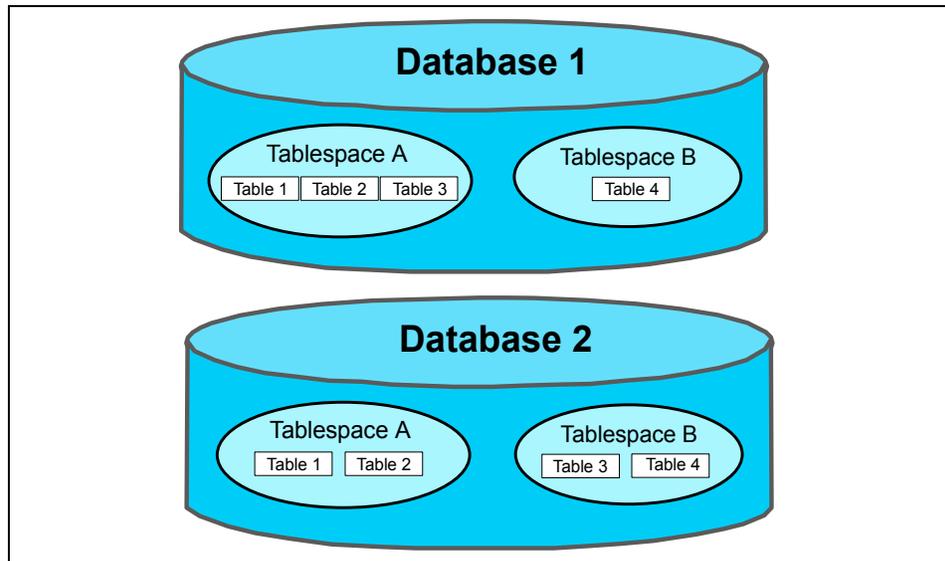


Figure 5-2 DB2 database

Tablespaces are made up of multiple *containers*. A container is an allocation of physical storage (such as a file or a device). There is a one-to-many relationship between a tablespace and containers. Multiple containers can be defined for a tablespace. However, a container can only be assigned to one tablespace.

DB2 supports two kinds of tablespaces:

- ▶ System Managed Space (SMS) tablespace
- ▶ Database Managed Space (DMS) tablespace

For an SMS tablespace, each container is a directory in a file system of the operating system, and the operating system controls the storage space as needed. For a DMS tablespace, storage is pre-allocated to a container when the container is created. Containers can be dynamically added to a DMS tablespace. For a DMS tablespace, each container is either a fixed-size pre-allocated file, or a raw device, and the database manager controls the storage space as needed.

Data, index, and large object data (such as Long varchar and LOBs) can be stored in the same tablespace or in different tablespaces (see Figure 5-3). In SMS, all three types of data for a given table must reside in the same tablespace.

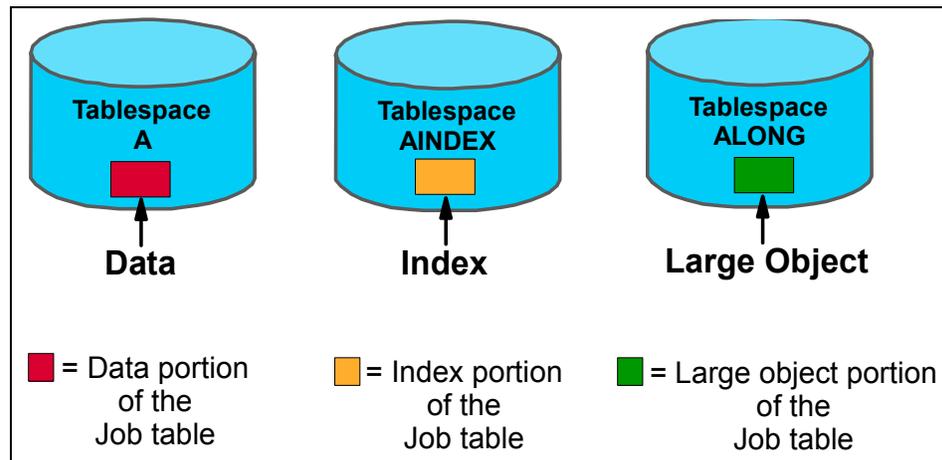


Figure 5-3 DMS tablespaces

Tables containing user data exist in regular tablespaces. The default user tablespace is called USERSPACE1. Indexes are also stored in regular tablespaces. The system catalog tables exist in a regular tablespace. The default system catalog tablespace is called SYSCATSPACE.

If the long field data or long object data of a table is to be stored in a separate tablespace, a *long* tablespace must be created for this purpose.

Temporary tablespaces are classified as either system or user. System temporary tablespaces are used to store internal temporary data required during SQL operations such as sorting, reorganizing tables, creating indexes, and joining tables. Although you can create any number of system temporary tablespaces, we recommend that you create only one for each page size used by your tables. The tablespace used should be SMS. The default system temporary tablespace is called TEMPSPACE1. User temporary tablespaces are used to store declared global temporary tables that store application temporary data. User temporary tablespaces are not created by default at database creation time.

5.1.5 Catalog

Each database includes a set of system catalog tables that describe the logical and physical structure of the data. DB2 creates and maintains an extensive set of system catalog tables for each database. These tables contain information about the definitions of database objects such as user tables, views, and indexes, as

well as security information about the authority that users have on these objects. They are created when the database is created and are updated during the course of normal operation. You cannot explicitly create or drop them, but you can query and view their contents using the catalog views.

5.1.6 Triggers

A trigger is a defined set of actions that are performed whenever a specific event defined for that trigger occurs. A trigger event can be an SQL DELETE, INSERT, or UPDATE operation against a specified table. Triggers can be defined to help support business rules. Triggers can also be used to automatically update summary or audit data. Because triggers are stored in the database, you do not have to code the trigger's actions in every application program. The trigger is coded once, stored in the database, and automatically executed by DB2 whenever the trigger event occurs. This ensures that the business rules coded by the trigger's actions are always enforced. If business rule changes, only the corresponding triggers need to be modified by dropping and recreating them.

5.1.7 Tables

A table consists of data logically arranged in columns and rows. All database and table data is assigned to tablespaces. The data in the table is logically related, and relationships can be defined between tables. Data can be viewed and manipulated based on mathematical principles and operations called *relations*.

Table data is accessed through Structured Query Language (SQL), which is a standardized language for defining and manipulating data in a relational database. A query is used in applications or by users to retrieve data from a database.

5.1.8 Views

A view is an efficient way of representing data without needing to maintain it. A view is not an actual table and requires no permanent storage. A “virtual table” is created and used.

A view can include all or some of the columns or rows contained in the tables on which it is based. For example, you can join a department table and an employee table in a view, so that you can list all employees in a particular department.

5.1.9 Buffer pools

A buffer pool is the amount of main memory allocated to cache table and index data pages as they are being read from disk or being modified. The purpose of the buffer pool is to improve system performance. Data can be accessed much faster from memory than from disk. Therefore, the fewer times the database manager needs to read from or write to a disk (I/O), the better the performance is. (You can create more than one buffer pool; although for most situations, only one will suffice.)

The number and size of the DB2 bufferpools are by far the most important performance tuning parameters of your DB2 system.

5.2 Prerequisites

Before you start the PeopleSoft Enterprise installation, you should be satisfied that all of the hardware and software prerequisites are met.

Use the following PeopleSoft Enterprise documentation to help confirm your readiness:

- ▶ *Pre-installation Checklist*
- ▶ *Hardware and Software Requirements Guide*
- ▶ *AppServer and Third-Party Product Patches Required for Install*
- ▶ *Installation and Administration Guide*
- ▶ *Installation Notes*

These documents outline in detail the installation prerequisites. This section lists some of the key requirements.

PeopleTools development environment

This is:

- ▶ 256 color display (minimum)
- ▶ DB2 Runtime Client (if 2-tier connection is required)
- ▶ TCP/IP connectivity to application server

Installation workstation

This is:

- ▶ Same supported platforms as PeopleTools Development Environment
- ▶ DB2 Runtime Client
- ▶ TCP/IP connectivity to application server

File server minimum requirements

The minimum requirement is 2.5 GB to 3 GB of disk space for your PeopleSoft Enterprise installation, in addition to network operating system and any other applications.

Application server minimum requirements

They are:

- ▶ Minimum of two processors and at least four for production
- ▶ 512 MB RAM for up to 25 users, plus 1.5 MB for each additional user
- ▶ 512 MB to 1 GB of disk space
- ▶ DB2 Runtime Client
- ▶ TCP/IP connectivity

Database server minimum requirements

They are:

- ▶ Two disk drives for development, four for production
- ▶ Enough disk space for all of your databases and log files, in addition to RDBMS software and operating system

Before you carry out an installation, you should check the latest information on the PeopleSoft Customer Connection Web site. Go to the PeopleSoft Web site:

<http://www.peoplesoft.com>

Then select **Customer Connection**. You will need a valid user ID and password to access this part of the site. Your PeopleSoft Account Executive can provide this. The Library section of Customer Connection contains up-to-date PeopleSoft documentation, including details of supported platforms.

DB2 editions certified by PeopleSoft

PeopleSoft recognizes that all of the DB2 products are built, serviced, and supported from the same source code. For future versions of DB2 Universal Database, only the Enterprise Edition (EE) will be tested for PeopleSoft certification. If a version of EE is certified by PeopleSoft, it will be implied that the Extended Enterprise Edition (EEE) version and the Workgroup Edition are also supported.

5.2.1 Planning your setup

There are a number of options available when you install a PeopleSoft application. Because PeopleSoft's Internet architecture is so flexible, it can be difficult to keep track of the installation steps needed for each computer. In almost every installation, at least one machine will have more than one role. For example, your database server could also be your file server, you could have an application server that doubles as a batch server, or the machine you use as an installation workstation could also be your development environment.

Table 5-1 lists the various components of the architecture along with the required (and suggested) software to install on each machine.

Table 5-1 Software installation planning guide

PeopleSoft architecture component	Software to install
Database server	DB2
Application server	DB2 Runtime Client Tuxedo/Jolt Application/batch server executables
Web server	Web server
File server	PeopleSoft executables PeopleSoft delivered SQR reports PeopleSoft delivered COBOL programs PeopleSoft delivered Crystal reports PeopleSoft delivered nVision reports
Batch server	Application/batch server executables SQR executables Crystal Reports DB2 Runtime Client COBOL Compiler
Report server	SQR executables Crystal Reports nVision DB2 Runtime Client
Install workstation	DB2 Runtime Client PeopleSoft Workstation SQR executables Network access to file server

PeopleSoft architecture component	Software to install
Development environment	DB2 Runtime Client PeopleSoft Data Mover Web Browser SQR executables Crystal Reports Network access to file server
Two-tier workstation	DB2 Runtime Client PeopleSoft Data Mover Network access to file server
Three-tier workstation	Network access to file server
Web client workstation	Web browser
Updates and fixes Workstation	COBOL Compiler

Also as the physical configuration of the computers on which you will install PeopleSoft, you need to plan which databases you will create. At a minimum, you should plan to create a Demo database and a System database, but you may also have requirements for further databases, such as development, testing, and training databases. If you are planning a multi-language setup or will install support for Unicode databases, this must be established before you begin your installation.

You may find Table 5-2 on page 58 useful when planning your database creation strategy. It allows you to record the following details of each database you plan to create:

- ▶ In which instance will the database reside?
- ▶ What is the size that you expect the database to require? The *PeopleSoft Installation and Administration Guide* gives the size requirements of the System and Demo databases that are provided. It also takes into account your company-specific data that will be added to the database over time.
- ▶ Will the PeopleSoft tablespaces be DMS or SMS? All PeopleSoft databases are delivered using DMS tablespaces, but to save space you may choose to recreate the tablespaces as SMS.
- ▶ Will the database be a System database (created with no company-specific data) or a Demo database (populated with PeopleSoft-supplied demonstration data)?
- ▶ What will the base language of the database be?
- ▶ If you are installing multiple languages other than US English, what will they be?

- ▶ Is the database Unicode?
- ▶ If the database is non-Unicode, what is the DB character set?
- ▶ What is the Connect ID (the DB2 ID that will be used to connect to the database every time a PeopleSoft user logs in)?

Table 5-2 Database planning table

Database				
Instance				
Size				
DMS or SMS				
System or Demo				
Base language				
Additional languages				
Is the database Unicode?				
If database is Non-Unicode, what is the DB character set?				
Connect ID				

It is important at this stage to review the PeopleSoft Customer Connection Web site to find the latest updates and fixes that are available.



Part 3

Installation

Part 3 of this book details the specific steps to perform a basic PeopleSoft Enterprise demo installation. These chapters should be read carefully and in order. They are meant to complement, not replace, the *PeopleSoft Installation Manual*, available on PeopleSoft Customer Connection:

<http://www.peoplesoft.com>



Planning for installation

In this chapter we outline and reiterate some of the basic concepts necessary for a trouble-free PeopleSoft Enterprise installation. We also discuss some of the steps required to set up the hardware before installing the operating system.

This chapter covers the following topics:

- ▶ Overview
- ▶ PeopleSoft concepts
- ▶ Preparing for operating system installation

6.1 Overview

We performed a simple PeopleSoft Enterprise Financials/SCM 8.8 installation on our test systems at the International Technical Support Organization, Raleigh Center. This type of install is generally sufficient for a demo, training, or fit and gap environment, and can be performed by an individual or a small team with basic OS, DBA and PeopleSoft skills.

6.1.1 Our environment

Building a supported environment is one of the most important priorities in any PeopleSoft installation. It is crucial to select the appropriate hardware and software—always reference *PeopleTools Hardware and Software Requirements* and *Platforms Supported* documents, both available on PeopleSoft Customer Connection:

<http://www.peoplesoft.com>

Hardware

Figure 6-1 summarizes the hardware used in our testing environment.

Table 6-1 Hardware configuration

	top440	bottom440	m23vnx85	m23vnx72
Type	xSeries 440	xSeries 440	xSeries 230	xSeries 230
CPU	8x1.6 GHz	4x1.6 GHz	2x1 GHz	2x1 GHz
RAM	4 GB	2 GB	1 GB	1 GB
HDD	18 GB + 36 GB	18 GB + 36 GB	18 GB	18 GB
IP	9.42.171.33	9.42.171.34	9.42.171.35	9.42.171.36
Primary Purpose	Console server test environment	GUI server test environment	Installation & development workstation	Installation & development workstation

Software

The following software packages were used on our servers and workstations:

- ▶ Server
 - Red Hat Enterprise Linux Advanced Server 2.1
 - IBM DB2 Enterprise Server Edition v8.1, FixPack 4
 - BEA Tuxedo 8.1 (PeopleSoft-delivered)
 - IBM WebSphere Application Server 5.1 (PeopleSoft-delivered)

- PeopleTools 8.44
- PeopleSoft Financials/SCM 8.8
- ▶ Workstation
 - Microsoft Windows 2000 Professional SP4
 - IBM DB2 Administration Client v8.1, FixPack 4
 - BEA Tuxedo 8.1 (PeopleSoft-delivered)
 - PeopleTools 8.44
 - PeopleSoft Financials/SCM 8.8

6.1.2 Installation steps

This is a high-level overview of the steps we performed for our simple installation of a PeopleSoft Demo database:

1. Assemble documentation and software.
2. Prepare the hardware.
3. Install operating system; upgrade drivers as needed.
4. Configure networking.
5. Install database engine.
6. Install PeopleTools, PeopleSoft application, and third-party software.
7. Create a PeopleSoft database.
8. Configure the application server.
9. Configure the Web server and PeopleSoft Internet Architecture.
10. Configure process scheduler and batch/report servers.

6.2 PeopleSoft concepts

Understanding the basic concepts and keeping the big picture is crucial to a successful implementation of a system as complex as the PeopleSoft environment. Here we discuss some basic ideas and architectures that every installer should be familiar with:

6.2.1 PeopleSoft Internet Architecture

PeopleSoft Internet Architecture, or PIA, as outlined in Figure 6-1 on page 65, provides a complete high-level overview of a functional PeopleSoft environment.

- ▶ Users can connect through a *n-tier connection* using a browser, or *2- or 3-tier connection* using a Windows Development or Installation Client.
 - Windows Client in 2-tier mode will connect directly to the database on the database server. The workstation will generate SQL and process all the business logic. This is the simplest but least efficient method of connection.

- Windows Client in 3-tier mode will connect to a Workstation Listener (WSL) on the application server. Upon establishing connection, WSL will hand off all further communication with the client to a Workstation Handler, WSH.
- Browser in n-tier mode will connect to the Web server (IBM WebSphere or BEA WebLogic), which will connect using Jolt to a Jolt Station Listener (JSL) on the application server. Upon establishing connection, JSL will hand off all further communication with the Web server to the Jolt Station Handler, JSH.
- ▶ JSH and WSH communicate to the Tuxedo Bulletin Board Liaison (BBL), which is in charge of managing all the other processes and communication on the application server. BBL will decide on the appropriate PeopleSoft application server process, such as PSAPPSRV, and place the message in its queue.
- ▶ The PeopleSoft application server process will pick up the request, create SQL statements and retrieve data from the database, and apply business logic to it.
- ▶ Finally, in the case of n-tier connection, the PeopleSoft application server process will generate the resultant data in HTML format. Tuxedo will forward this data the Web server, which will serve it to the client. In the case of 3-tier connection, the data will be served directly to the workstation client.

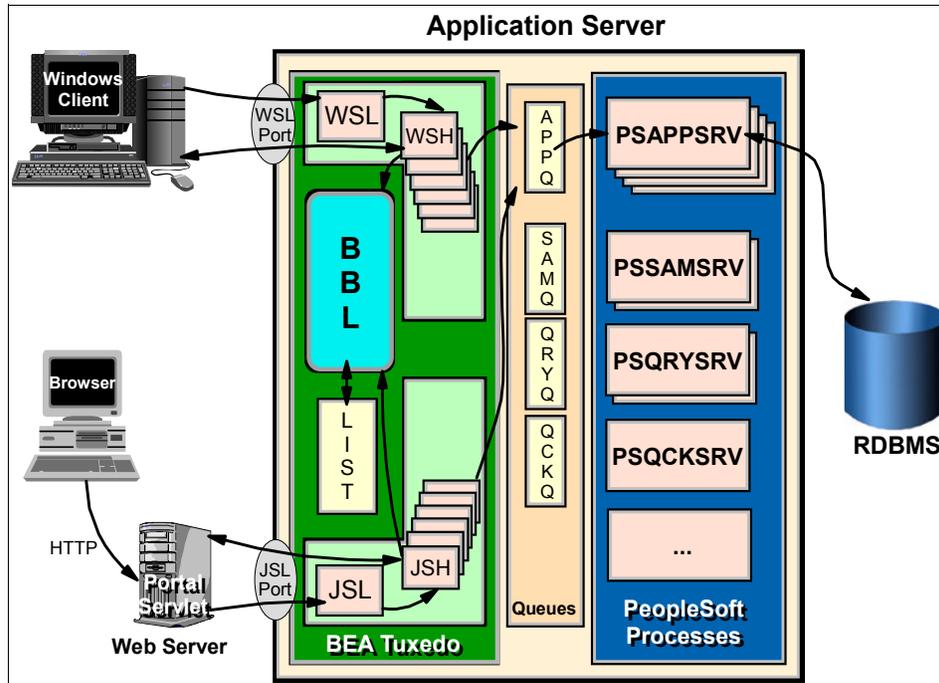


Figure 6-1 PeopleSoft Internet Architecture

6.2.2 Databases in PeopleSoft

Any PeopleSoft environment is based on a PeopleSoft database. This is where all the relevant data about your company and activities, as well as PeopleSoft's own metadata, is stored.

PeopleSoft runs on a number of database engines (often called Relational Database Management Systems, or RDBMS), including IBM DB2 UDB, Oracle, Informix, Microsoft SQL Server, and Sybase (see *Supported Platforms* on PeopleSoft Customer Connection for full details). While this flexibility makes PeopleSoft solutions attractive to modern enterprises, the terminology can become confusing due to differences between various vendors' products. Here we will try to simplify the basic concepts involving PeopleSoft databases.

- ▶ A DB2 UDB database is a collection of SQL objects (tables, views, indices, triggers and similar) contained inside one DB2 system catalog. Each DB2 UDB database uses one instance of DB2 UDB server executables (though a DB2 UDB instance may have more than one database).
- ▶ A DB2 UDB database is a self-contained, manageable unit that is universally understood.

- ▶ A PeopleSoft database is a collection of SQL objects, used by a PeopleSoft application, that have the same owner ID. It is a term coined and used by PeopleSoft for easy reference to this set of objects, and it may not be recognized as a proper database outside of the PeopleSoft environment.
- ▶ A PeopleSoft database is always located inside a single DB2 UDB database. Though it is possible to hold other data and tables inside the DB2 UDB database that do not belong to PeopleSoft, this is not recommended.

Figure 6-2 illustrates the relationship between a DB2 UDB instance, the DB2 UDB database, and a PeopleSoft database. While a PeopleSoft database belongs to one and only one DB2 UDB database, that DB2 UDB database may hold other objects (tables, views, indexes). The DB2 instance itself may hold any number of other DB2 UDB databases.

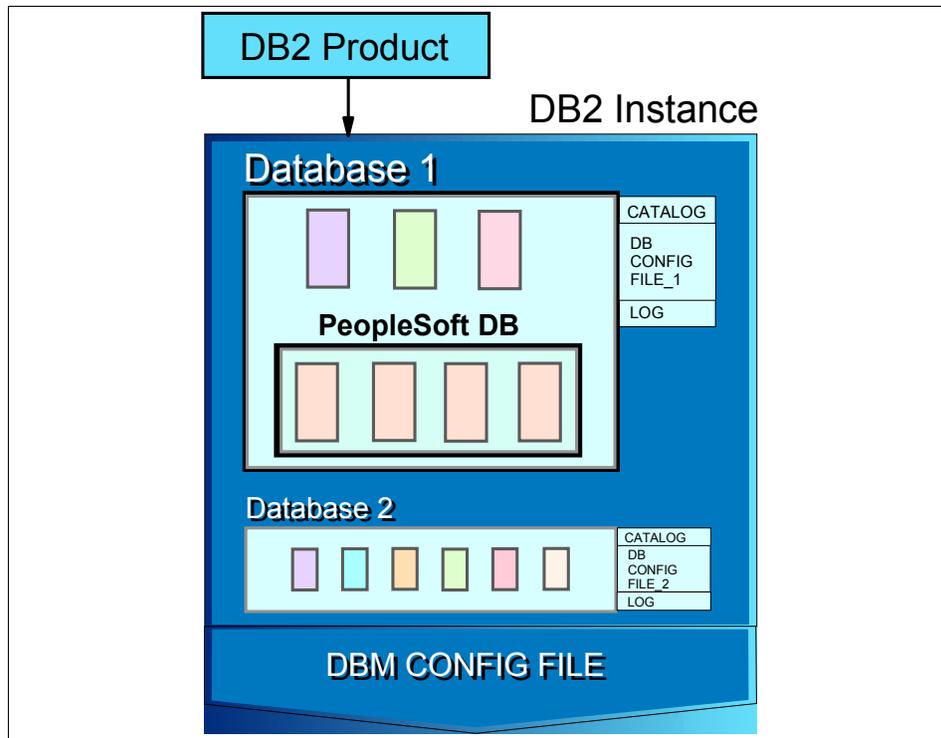


Figure 6-2 PeopleSoft database is contained within a DB2 UDB database

6.2.3 PeopleSoft IDs

Between the operating system, database, and PeopleSoft security, the phrase *user ID* gets thrown around in a seemingly random fashion. It is important to understand and delineate various IDs before starting the installation process.

Note: Terminology varies between ERP, database and OS vendors. Ensure that your project documentation is self-consistent. In this section we use the term *ID* to denote a generic identification string, rather than *User ID*, which may have a specific meaning within any given context.

- ▶ *PeopleSoft User ID* identifies an individual user logging onto a PeopleSoft application. This ID, and its related password, privileges, and other properties, are held only inside PeopleSoft tables. The operating system and database do not recognize it as an ID. Upon connection, the PeopleSoft User ID is first validated in the PSOPRDEFN table.
- ▶ *Connect ID* is a Linux/database ID that PeopleSoft uses to make initial, low-authority access to the database. This ID requires SELECT access on PSACCESSPRFL, PSOPERDEFN and PSSTATUS tables, but should be given as little additional authority as possible.
- ▶ *Access ID*, also known as the table owner ID, has full access to all PeopleSoft tables. It is used for all PeopleSoft transactions once a user has been authenticated. It is also used during installation or troubleshooting by data mover in bootstrap mode before the PeopleSoft security tables are populated. This ID should also exist as a Linux user ID.
- ▶ *Symbolic ID* is a name given to the link between the PeopleSoft User ID and its corresponding Access ID. It exists only as a reference between two security tables (PSOPRDEFN and PSACCESSPRFL) in a PeopleSoft database.

The following steps typically happen during a signon in the background:

1. User enters the PeopleSoft User ID and password.
2. PeopleSoft retrieves the Connect ID from its configuration file and uses it to connect to the database.
3. PeopleSoft accesses PSOPRDEFN and related tables to verify the given PeopleSoft User ID. If an appropriate entry is found in the table, it uses the Symbolic ID field to retrieve the appropriate Access ID in PSACCESSPRFL.
4. PeopleSoft disconnects from the database and reconnects with the Access ID. Further security is done through PeopleSoft tools and safechecks, using the access profiles stored in PeopleSoft tables, the Access ID grants full database access to PeopleSoft tables.

6.3 Preparing for operating system installation

Before you install the operating system on your xSeries hardware, it is critical that you perform several steps. While not performing these steps may not cause any problems down the road, it is important to ensure that your hardware and options are fully supported, and that your system is up to the latest level to ensure the maximum performance and reliability of your systems.

6.3.1 Option support

Once a system has been chosen it is very important to verify that any options you are planning on installing in the system are supported. This can include such things as RAID controllers, network adapters, or almost anything else you can think of that can be installed in a server. To verify that an option has been tested and supported on a particular system, IBM created the ServerProven® program. This program verifies that an IBM or a third-party vendor option has been thoroughly tested, and has complete support from IBM in the system you are planning on deploying. Also, once an option is installed in the server, it will acquire the warranty of the system, ensuring that the complete solution is fully supported throughout its entire lifespan.

To verify option support, go to:

<http://www.pc.ibm.com/us/compat/index.html>

From there you can view support either by model or by the option. If an option is not listed, we recommend that you contact IBM or your IBM Representative for additional options, which could include recommendations on equivalent options that may satisfy your need or availability of programs to test and support the option in question.

Operating system support

The next thing to check prior to installation is that the version of Linux you are planning to run on your system is fully supported. For this, there are two places you should look:

- ▶ The Linux vendors Web site
- ▶ The IBM ServerProven Web site

Vendor support

IBM works closely with the major Linux vendors to ensure that their operating systems have full functionality and reliability on IBM hardware. To demonstrate this support, each vendor keeps a Web site where systems that have been validated are listed.

In the case of our testing, we are using Red Hat Enterprise Linux 2.1 Advanced Server. To verify support, navigate to the following Web site and follow the instructions given to locate the system you are planning to deploy:

<http://hardware.redhat.com/hcl/>

An important thing to consider here is that vendor certification is typically for the base system model only. Options are either tested separately or not at all by the operating system vendor. That is why IBM created the ServerProven program.

IBM ServerProven operating system support

Just as IBM certifies hardware, they also certify operating systems for support on xSeries systems. Why do we do this, when the vendor also certifies the operating system?

The difference between vendor support and IBM support is that, when IBM certifies an operating system for a particular hardware platform, they are, in most cases, also certifying support for all options that can be installed in that server. If there are options that have been found not to function with a certain server/operating system combination that will be documented on the ServerProven Web site.

To verify that your system has been testing and supported by IBM for a certain operating system, go to:

<http://www.pc.ibm.com/us/compat/nos/matrix.shtml>

Select the version of Linux or any other operating system you are looking to run on your solution.

6.3.2 Verifying system code levels

Once the system hardware has been verified for support and installed in the system, the next step is to verify the code levels of the various hardware components. While all system components are thoroughly tested prior to release, problems can occur. Also, as more experience with the hardware is garnered, both from IBM and from customers, improvements are made that can increase the reliability and performance of your hardware. So keeping up to date is very important.

IBM offers two methods of keeping your hardware up to date. The first is the more traditional method, and requires you to individually update each system feature and option separately. The second is to use UpdateXpress, a CD-ROM that is released quarterly by IBM that contains all released updates for all xSeries and many Netfinity® systems.

To get UpdateXpress, you can go to:

<http://www.ibm.com/pc/support/site.wss/document.do?ln docid=MIGR-53046>

There you can download the latest version. Updates are released about once a quarter, and subscriptions are available to have the latest CD-ROM shipped to you on a quarterly basis.

UpdateXpress is great for updating one or multiple systems in the most efficient amount of time. It is also extremely useful in creating a consistent code base across your organization, and also creating a consistent change schedule for updating code. However, as UpdateXpress is only updated quarterly it is still important to check the IBM Web site for critical updates that may be released between releases of UpdateXpress.

The more traditional method of ensuring the latest code is applied to your system is to manually download each version of code, and either create diskettes or CD-ROMs to apply the code to your system.

Before downloading any code, the first thing to do is verify what level your system currently is at. To do this, press F1 during system startup to enter the systems' BIOS. From there, select **System Information** from the list given using the arrow keys. In the system information screen there will be listed the code levels of your system BIOS, diagnostic code, and system management processor or adapter depending on system model. Also, you will want to know the code levels of any ServeRAID™ or Fibre Channel adapters you may have in your system. Both of these code levels are displayed on the screen during system startup.

Once you have documented the current levels of system code, go to:

<http://www.ibm.com/eserver/xseries>

Select **Support** from the left-hand gutter. From there, the easiest way to get directly to the support site specifically for your system is to use the Quick Path box in the lower right-hand corner. To use Quick Path, you will need your seven-character system machine type, which is usually located on both the front and back of the server. If you need help finding your machine type, you can visit the following site for some hints:

<http://www.ibm.com/pc/support/site.wss/document.do?ln docid=MIGR-49QTT6>

Once you have input your system machine type and pressed Enter you will be presented with a Web page customized for your particular model. From this Web page, we recommend selected **Downloads and Drivers** from the View by Document Type pull-down list. This will present all of the system code available from your model, as well as the version levels. Using the list you created, compare the current system levels with what is currently available from IBM, and select the needed code and install as required.

Once all this is done, both for the system and for any options you may have installed, you are almost ready to install the operating system. There are a few more tasks you should take care of. These may include such things as:

- ▶ Determining what the system's host name will be
- ▶ Determining what the IP address will be
- ▶ Setting up any RAID arrays

What additional tasks may need to be performed depends on the type of hardware being used and the operating system to be used. The important thing is to be consistent across all systems.



Installing Red Hat Enterprise Linux AS Version 2.1

This chapter describes the necessary steps involved in installing Red Hat Enterprise Linux AS Version 2.1 using both the graphical user interface (GUI) method and the command line method.

7.1 Installing Red Hat Enterprise Linux AS Version 2.1

In this section we discuss the installation of Red Hat Enterprise Linux AS Version 2.1.

7.1.1 Pre-installation recommendations

It is strongly recommended that you consult the Red Hat Installation Manuals for detailed procedures on installation, as this document does not attempt to cover all of the install options but has selected a typical configuration as representative examples in a PeopleSoft Enterprise environment. The Red Hat installation guide can be accessed at:

<http://www.redhat.com>

Prior to the installation of Red Hat you should ensure that the latest drivers are installed on the xSeries system as outlined in the previous chapter. Additionally, the following information should be made available:

- ▶ Hard drive: Interface and size
- ▶ CD-ROM: Interface and make
- ▶ Display adapter: Make and model number
- ▶ Mouse: Type and connection
- ▶ Network adapter: Make and model
- ▶ RAM: Amount
- ▶ Monitor: Make, model and refresh rate

In order for the system to boot directly from the Red Hat CDs, the CD-ROM has to be configured as the initial boot device. The following procedure will enable the CD-ROM as the primary boot device:

1. Power on the server.
2. When the IBM logo appears, press F1 to enter the Setup Utility.
3. Within the setup utility, select **Start Options**.
4. Within Start Options, select **Startup Sequence**.
5. Ensure the CD-ROM is the initial boot device.
6. Go to the setup main window by pressing Esc and selecting **Save Settings**.
7. Confirm Save Settings and exit the Setup Utility.

7.1.2 Installation using GUI mode

Ensure that the bootable Red Hat CD is in the server and power on or reboot the server. A Welcome to Red Hat Linux AS 2.1 screen appears. From this screen

pressing Enter will cause the GUI version of the install program to run. If after a minute no selection has been chosen the system will automatically run the GUI install program.

There are also other installation options available from this screen. They are:

boot: text	This option will activate the text-based installation program.
boot: linux nofb	This option will activate the graphical install program without using frame buffers.
boot: linux expert	This option will activate the expert mode during install.
boot: linux console=<device>	This will allow for serial mode connection; for example, ttyS0.
boot: linux mem=256M	This option instructs the kernel to use 256 M of RAM.
Language Selection:	A list of the supported languages that are used during the install process are presented. Select the appropriate language and then click Next .

Keyboard configuration

A list of supported keyboard types, models and layouts is presented. Select the exact keyboard type. If an exact match cannot be found then choose the best *Generic* match for the keyboard type. Click **Next**.

Tip: An example of a dead key is the backspace character (^H). To test the keyboard configuration use the blank field at the bottom of the screen. The keyboard type can be changed after Red Hat is installed either by logging in as root, activating the command `/usr/sbin/kdconfig`, or by typing `setup` at the root prompt.

Mouse configuration

A list of supported mice is displayed. Select the exact mouse type and then click **Next**.

Tip: The Emulate 3 Buttons feature allows a two-button mouse to act as if it had three buttons. The third “middle” button is activated by pressing both mouse buttons simultaneously.

Welcome to Red Hat Linux System Installer

This is an informational screen that allows a review of the release notes on Red Hat Linux. To hide the help information from being displayed click **Hide Help**. Click **Next**.

System Installer

There are two options on this screen. The Advanced Server Installation option is specifically aimed at installations where high levels of availability through load balancing and failover are required. The Custom Installation option gives complete flexibility over the install. The Custom install method is recommended. Select this option and click **Next**.

Partitioning

There are three options on this screen.

- ▶ Have the Installer automatically partition for you.
This option will automatically create mountpoints, partitions and allocate space.
- ▶ Manually partition with Disk Druid.
- ▶ Manually partition with fdisk.

The latter two options allow for manual setup. Disk Druid is recommended as it supports partitioning setup in an interactive environment. It is required to set up at least two Linux partitions: A root partition and a swap partition. The root partition is where the Linux system files and application files reside. The swap partition is used as virtual memory that is a repository for data to be written to when there is not enough real memory. A boot partition is also recommended, as this contains the operating system kernel and files used in the bootstrap process.

The size of the swap partition should be the same size as the memory of the system with a minimum recommendation of at least 64 MB. The boot partition size should be in the region of 50 MB.

For file system types select **ext3**, which is a journaling file system and is a native type for Linux partitions except for the swap partition, as this should be set to the swap type. A journaling file system reduces the time spent recovering a file system after a crash, as it prevents the need to run **fsck**, which is a command to check and repair a Linux file system. The mountpoint for the root partition is the root directory represented by a slash (/). The mountpoint for the boot partition is /boot. The swap partition does not have a mountpoint. Once the partitions, mountpoints and filetypes have been defined click **Next**.

Tip: If this is a reinstall, it is best to delete the existing Linux partition before redefining the new partitions.

Boot loader installation

A boot loader is used to start Linux from a hard disk. Red Hat uses the Grand Unified Bootloader (GRUB). If you have multiple operating systems installed then this will display a screen at boot time listing all partitions with different operating systems on them and the partition to boot by default. There are two places to install the boot loader: The Master Boot Record (MBR) or the root partition. If Red Hat is the only operating system being installed then the Boot loader should be installed in the Master Boot Record.

Tip: If “Do not install a boot loader” is selected then be sure there is another way to boot Red Hat (for example, boot diskette), as it will not otherwise boot directly.

GRUB Password

This screen presents an optional password for the boot loader. This security prevents a user from passing arbitrary options to the kernel.

Network Config

Select the appropriate box if the network adapter is to be configured via DHCP or if it is to be configured at boot time. If the adapter is not to be configured via DHCP then the following information is required:

- ▶ The IP address.
- ▶ The Netmask, Network and Broadcast will automatically be entered. These values can be edited.
- ▶ Hostname.
- ▶ Gateway.
- ▶ Primary DNS.
- ▶ Secondary DNS (optional).
- ▶ Ternary DNS (optional).

When the appropriate fields are entered click **Next**.

Tip: A hostname can be entered even if the system is not part of a network; otherwise the hostname will be known as *localhost*.

Firewall configuration

Red Hat offers firewall protection for enhanced system security ranging from preventing all connections that are not explicitly defined to allowing all connections with no security checking. Firewall rules can also be customized. Select the appropriate options for your environment and click **Next**.

Language support

Select a language to use as the default language, which will be the language used on the server once Red Hat is installed. By selecting additional languages it is then possible to change the default language once Red Hat is installed.

Time Zone Selection

This screen allows setting of the time zone by either selecting the computer's physical location or by the time zone's offset from Universal Coordinate Time. Set the appropriate fields and click **Next**.

Tip: The time zone configuration may be changed once the system is loaded by becoming root and activating the command `/usr/sbin/timeconfig`.

Account Configuration

Set the root password. It is strongly recommended that the password is made up from a mixture of alphanumeric characters. The creation of a user account is also recommended, as the root account should only be used for maintenance and administration.

Authentication Configuration

This screen is used mainly for setting up network passwords.

- ▶ Selecting Enable MD5 passwords allows passwords of up to 256 characters.
- ▶ Selecting Enable Shadow passwords increases security by replacing the standard `/etc/passwd` file with `/etc/shadow`, which can only be read by the root user.
- ▶ Selecting Enable NIS enables the addition of this system to an existing NIS domain.
- ▶ Selecting Enable LDAP allows authentication via an LDAP directory server.
- ▶ Selecting Enable Kerberos allows authentication via a Realm, KDC or admin server.

Enable MD5 passwords and Enable shadow passwords are selected by default. After the appropriate options have been selected, click **Next** and the Selecting Package Groups screen is displayed.

Selecting Package Groups

Groups of packages can be selected by selecting the appropriate check boxes. Individual packages can also be selected by selecting the Select individual packages check box. Once the appropriate selection is made click **Next**.

Video Configuration

The install program will probe the system to determine the best settings for the display. The field displaying the amount of video memory available on the graphics adapter may be changed.

About to Install

Notification that clicking **Next** will start the install program and that this is the last opportunity to cancel the process and reboot the machine. Click **Next**.

Installing Packages

Notification that a complete log of the installation will be in /tmp/install.log once the system is installed is presented. Click **Next**.

Installing Packages

This screen presents update status on the install until it has completed. Click **Next**.

Boot Disk Creation

This allows Red Hat to be booted from a diskette. This option is recommended. Click **Next** once the diskette has been made.

Monitor Selection

The installation program attempts to detect the attached display to determine the best display settings. This screen also supports the selection of Horizontal and Vertical synchronization ranges. Select the appropriate option and press **Next**.

Custom X Configuration

This screen allows for the selection of color depth and screen resolution. These values may be changed and a test performed to check if these new values are supported by the adapter. Click **Next**.

Congratulations

This screen gives confirmation that Red Hat is installed. Click **Exit** and the CD will be ejected. Make sure that you have also removed any diskettes from the floppy drive. The system reboots itself and presents a logon screen.

7.1.3 Installation using text mode

The text mode installation program has a screen-based interface with widgets and navigational keys for data and field entry. As such the process of installing Red Hat is very similar to the GUI approach. The main differences is in the mapping between the interfaces.

The keystrokes used for navigating through the dialogs are as follows:

- ▶ To move the cursor, use left, right, up and down arrow keys.
- ▶ Use Tab and Alt+Tab to move forward and backward through each widget on the screen.
- ▶ To activate a button, position the cursor over the appropriate button and press the space bar or Enter.
- ▶ To select an item from a list press Enter while the cursor is over the appropriate item.
- ▶ To select an item from a checkbox, move the cursor over the appropriate checkbox and press the space bar. Pressing the space bar again will deselect the item.
- ▶ Pressing F12 takes the current selection and proceeds to the next dialog.

Most screens display the available positioning keys at the bottom of the screen.

To activate the install process please refer to “Installation using GUI mode” on page 74.

7.1.4 Post-installation

Once the operating system has been installed it is important to run the Red Hat Update Agent. The Update Agent is a connection to the Red Hat Network that enables you to register your operating system. Once this has been done the application can be used to retrieve the latest software packages and bug fixes thereby ensuring that the operating system is at the most up-to-date level. Before the Update Agent can be run a username, password and system profile need to be created. These values can be set by running the Red Hat Network Registration Client.

Root authority is required to register the system with Red Hat Network. To invoke the program using the GNOME desktop, select the **Main Menu** button followed by **Programs** followed by **System** followed by **Red Hat Network**. To invoke the program using the KDE Desktop, select the **Main Menu** button followed by **System** followed by **Red Hat Network**. The `rhnc_register` command could also be used.

If a Secure Socket Layer (SSL) connection is being used, then Python Version 1.5.2-24 or later must be used. If an earlier version of Python is used then the data will not be encrypted.

If the system being registered has previously been registered, a message box will confirm this and allow for this information to be overwritten if required. If overwrite is selected, then the existing Digital Certificate file is overwritten and a new system profile is created.

Register with Red Hat Network

This first panel displays information on the steps involved in registering and the services available. Click **Next**.

Review the Red Hat Privacy Statement

This panel reviews the privacy statement. Click **Next**.

Register a User Account

This panel prompts for a unique username, password and valid e-mail address. Click **Next**.

Register a System Profile - Hardware

The system is probed to create a profile of the installed hardware and presents the profile name. Click **Next**.

Register a System Profile - Software

This panel displays a list of all packages installed that can be updated by Red Hat Network. These can be deselected if required. Click **Next**.

The final two panels send the profile to Red Hat Network and confirm a successful registration.



Installing and configuring DB2

In this chapter we discuss the basic DB2 installation process. We describe the graphical installation and configuration tools, as well as their console counterparts.

- ▶ Installing DB2 UDB on Linux using GUI tools
- ▶ Installing DB2 UDB on Linux using the command console
- ▶ Troubleshooting the DB2 UDB installation

8.1 Introduction

The Relational Database Management System (RDBMS, sometimes also called a *database engine*) is the heart of any Enterprise Resource Planning system. PeopleSoft Enterprise on Linux is no exception. For our installation, we have chosen IBM DB2 UDB V8.1.

Tip: If you do not have a DB2 UDB V8.1 license yet but would like to try it, a 30-day trial copy can be downloaded from the following Web site:

<http://www.ibm.com/db2>

You can use the following menu navigation: **Trials and Betas** → **DB2 UDB V8.1 Download** → **DB2 Universal Database (DB2 Enterprise Server Edition for Linux (x86, 32 Bit))**

8.2 Installation preparation

There are a number of steps you need to perform before starting the DB2 UDB install process. Most of them deal with preparing and configuring the environment in which the database will run.

8.2.1 Prerequisites

Prior to installing the database engine, you should ensure that your operating system (RHEL AS 2.1) is properly configured. Make sure you are satisfied with your partition and file system configuration—it will be difficult if not impossible to change these later. Use the `up2date` utility as discussed in the previous chapter to download any required security patches, bug fixes, and driver updates. Finally, check that your network connection is working properly; troubleshooting the database connectivity will be much harder otherwise.

8.2.2 Creating the user IDs and groups

In order to function properly, PeopleSoft requires a number of user IDs and their accompanying groups to be defined in the operating system. These include the PeopleSoft instance owner, access ID, connect ID, and the DB2 UDB fence user. For more details on these IDs, please see “PeopleSoft IDs” on page 67.

While some of these user IDs can be created by the DB2 UDB installation process, we prefer to create them manually to ensure that all the names, groups and security settings are appropriate. You should choose the group and user ID

names that make sense in your particular environment. The user IDs we have chosen for our installation are listed in Table 8-1.

Table 8-1 User IDs and groups

User ID	Description	Group	DB2 authority
db2admin	administration server owner	db2adm1	SYSADM
db2inst1	instance owner	db2adm1	SYSADM
psaccess	access ID	db2adm1	DBADM/SYSADM
psconnect	connect ID	db2usr	minimal
db2fenc1	Fenced User	db2usr	minimal

Note: All users belonging to the db2adm1 group will be granted SYSADM authority, even if they are given lower-level authority explicitly (psaccess, for example). Make sure you do not put any restricted users (such as db2fenc1 or psconnect) into this group.

You can create these user IDs and groups through graphical tools such as User Manager. Exact tools may vary depending on the type of install and chosen desktop environments (Gnome or KDE). If in doubt, you can always use console commands to accomplish the same thing. Below are the sample commands we used to create the groups and user IDs on our system.

Example 8-1 Creating groups and user IDs

```
groupadd db2adm1
groupadd db2usr
useradd -g db2adm1 db2inst1
useradd -g db2adm1 psaccess
useradd -g db2adm1 db2admin
useradd -g db2usr psconnect
useradd -g db2usr db2fenc1
```

Most of these user IDs are used by PeopleSoft and DB2 services internally—you will not use them to log on to the system. However, make sure to set the password for those user IDs you do use, such as the database instance owner.

Example 8-2 Setting user ID password

```
[root@top440 root]# passwd db2inst1
Changing password for user db2inst1.
New password:
```

```
Retype new password:
passwd: all authentication tokens updated successfully.
[root@top440 root]#
```

8.2.3 Installation interfaces

DB2 UDB on Linux offers both graphical and console (text-only) interfaces. While the graphical interface simplifies the process greatly, the console interface is useful if you do not have a graphical interface installed or are encountering issues with the graphical installation. We will describe the graphical interface first, and then illustrate the equivalent installation process using the console interface.

8.3 Installing DB2 UDB on Linux using GUI tools

The graphical installation offers enhanced ease of use, but you still need to make careful choices of installation parameters. We will walk you through the steps we performed to create our sample database and instance.

8.3.1 Running the installation program

Insert the DB2 UDB CD into the CD-ROM drive. If properly set up, your Red Hat operating system should auto-mount the CD into `/mnt/cdrom`. If not, you can mount the CD-ROM drive using the console command **mount**:

```
mount -t iso 9660 -r /dev/cdrom /mnt/cdrom
```

The installation image is archived on the CD and needs to be extracted into a local staging directory (we used `/tools/db2`). Though alternative GUI tools are available, we still recommend using the console to extract the tar archive from the CD:

```
tar -xvf /mnt/cdrom/DB2_V81_ESE_LNX_32_NLV.tar /tools/db2
```

You can now start the install by double-clicking the **db2setup** file. If you encounter difficulties starting or displaying the GUI installer, see the next section, “Installing DB2 UDB on Linux using the command console” on page 96.

8.3.2 Details of GUI installation

The first screen, similar to that in Figure 8-1 on page 87, offers you a choice of actions. We urge you to review the Installation Prerequisites and Release Notes before installing any production systems. Quick Tour will help you familiarize

yourself with the system. When you are ready to begin the installation process, click **Install Products**.

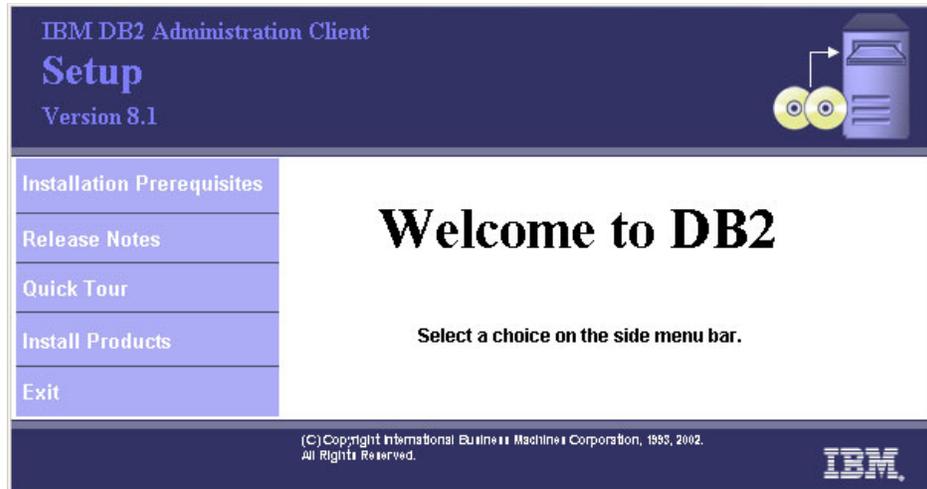


Figure 8-1 DB2 UDB installation - Welcome to DB2

You will now have a choice of specific DB2 UDB products to install. Choose DB2 UDB Enterprise Server Edition for your database server. You would install the DB2 Administration Client on workstations that need connectivity to the server. Confirm your selection on the next screen. Carefully read and accept the license agreement.

Your first significant choice will be the installation type. We prefer the Custom installation, as it grants us the most freedom in adjusting the particulars of the installation. We highly recommend this option for those familiar with DB2 or for any production-level installation.

On the next screen, “Select the installation action”, make sure the “Install DB2 UDB Enterprise Server Edition on this computer” check box is selected. We also suggest saving your settings in a response file. This will allow you to replicate this configuration on other machines or rebuild the existing server faster.

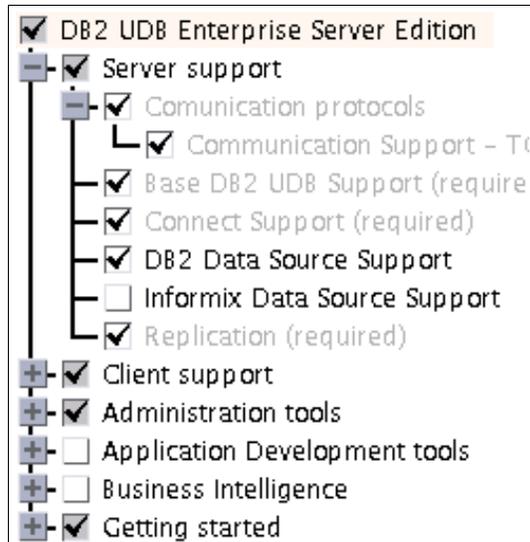


Figure 8-2 Selections

We found the default selected features on the next screen (shown above) appropriate for our server. Make sure that TCP/IP Communication Protocol, Client Support, and Administration tools are selected, as seen in Figure 8-2. Getting Started is an optional feature, but useful to beginner DBAs and other users.

Select the appropriate languages on the following screen.

Note: The languages you select here will affect only the DB2 tools and documentation. If you need to configure a Multilingual PeopleSoft system, please refer to the *Global Technologies PeopleBook*, included on your PeopleSoft Documentation CD.

8.3.3 Setting up the users and services

In the next several screens, you will configure various DB2 services and their accompanying user IDs. You can let DB2 create the default services, user IDs and groups, or choose your own. For production systems requiring tight security and close control over the user IDs, you can create user IDs and groups prior to installation using operating system tools and instruct DB2 to use them.

Configuring the DB2 Administration Server

The DB2 Administration Server (DAS) is an administrative control point for DB2 services on your system. It enables tools such as Control Center and

Configuration Assistant, as well as remote administration of the database. There can be only one DAS on each machine, which usually starts automatically during the system boot. Refer to the *DB2 UDB Administration Guide* for additional information on the DB2 Administration Server.

The settings we used for our DB2 Administration Server are outlined in Figure 8-3.

Set user information for the DB2 Administration Server

The DB2 Administration Server (DAS) runs on your computer to provide support required by the DB2 tools. A user account with a minimal set of privileges is required to run the DAS. Specify the required user information for the DAS.

New user

User name:

UID: Use default UID

Group name:

GID: Use default GID

Password:

Confirm password:

Home directory: ...

Existing user

User name: ...

For users of NIS or similar management systems:
If the user information in your environment is managed remotely by NIS or a similar system, you must specify an existing user.

Figure 8-3 Configuring the DB2 Administration Server

Creating a DB2 instance

The DB2 graphical installer will also help you install the DB2 instance. Though you can defer this task until after the installation, that is only necessary if you are adding a server to a partitioned database environment. In our sample database configuration, a single instance on a single machine was sufficient. On the next two screens, select **Create a DB2 Instance** and then **Single-Partition Instance**, unless you are planning on creating a partitioned database.

Similar to the DB2 Administration Server creation, a new DB2 instance also requires an associated operating system user ID called the DB2 Instance Owner. For our system, we used db2inst1 as this user ID, belonging to group db2adm1. This user ID will have SYSADM authority over the instance and database in which PeopleSoft will eventually reside, so make sure to keep it secure.

You can see our selections in Figure 8-4.

Set user information for the DB2 instance owner

Specify the instance-owning user information for the DB2 instance. DB2 will use this user to perform instance functions, and will store instance information in the user's home directory. The name of the instance will be the same as the user name. You can create a new user or use an existing one.

New user

User name:

UID: Use default UID

Group name:

GID: Use default GID

Password:

Confirm password:

Home directory: ...

Existing user

User name: ...



Figure 8-4 Configuring the DB2 Instance Owner

The last user ID that needs to be set is the DB2 fenced user, which is required for executing certain DB2 UDB user-defined functions. PeopleSoft does not use the fenced user, but you need to configure one to proceed with the instance creation. We have chosen user ID db2fenc1 in group db2usr.

Configuring DB2 communications and alerts

Since you will connect to this database from other machines and services (such as the Install Workstation and application server), you should configure TCP/IP communication for your new DB2 instance. You can accept the defaults, but we have found it easier to troubleshoot communication problems if we gave distinct service names and port numbers to all DB2 instances in our environment, even when they are running on separate machines. See Figure 8-5 for our selections.

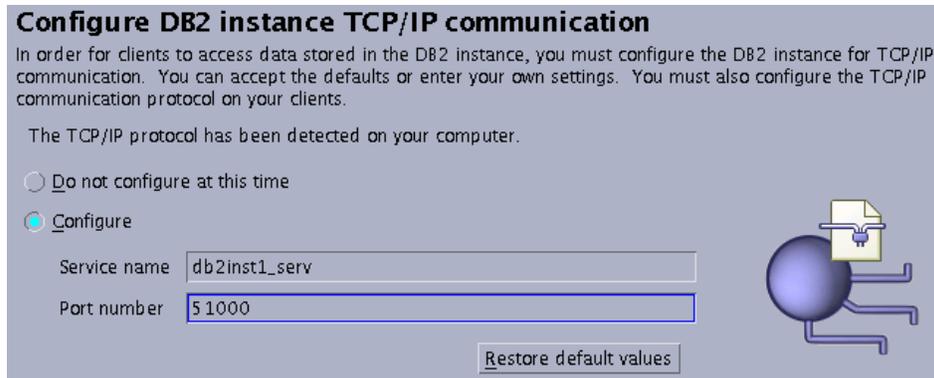


Figure 8-5 Configuring DB2 communication parameters

You can usually accept the defaults on the next screen, Setting Instance Properties. Authentication type *Server* is acceptable unless you know your environment has different needs. Leave the “Autostart the Instance at System Startup” box checked.

The installer offers the option of preparing the tools catalog. You will require this catalog for the Task Center and Scheduler to function properly. We did not require these features in our installation, and have found that preparing the tools catalog can sometimes have adverse effects on stability of the installation process. If you require the catalog but have trouble creating it during install, remember that you can always create it after the installation has completed.

You can set up the administration contact list, mail server, and notification options on the next two screens. You will want to set up these services in a production-level system to ensure a quick response time from your administrator to any issues that develop. For our purposes, we have disabled the mail server and deferred the notification task.

The final screen will show a list of your responses and installation parameters. You can also edit the name and location of the response file, if you chose to create one at the beginning of the installation process. Click **Finish** to initiate the installation.

8.3.4 Connecting to the database from external clients

Even on the simplest PeopleSoft systems, external connectivity to the database server is needed to complete the installation. PeopleSoft still requires a Windows-based Installation Workstation to run Data Mover and database creation scripts. Thus, you will need to install the DB2 UDB Administration or Run-Time client on at least one Windows system.

Installing the DB2 UDB Administration Client

The installation of DB2 UDB Administration Client is similar in principle to the installation of DB2 UDB Enterprise Server Edition, which we performed in previous sections. Upon selecting the product and agreeing to the license, you can choose the installation type. Typical installation will be sufficient for most environments. We chose Custom installation to deselect features such as Business intelligence and Getting Started, which were not needed for our install.

You can now select additional languages to be installed, as well as choose a different directory location for the product. Make sure that the drive or file system you select has sufficient space for the installation.

Since we are using TCP/IP for our database communication, we did not need to configure NetBIOS. Unless you know your environment will use this protocol, you can safely leave it unchecked.

Finally, review and confirm your selections and select a response filename. Clicking **Finish** will start the installation process.

Cataloging nodes and databases

In DB2 UDB parlance, making one system or database visible on another is called cataloging. There are several ways to catalog external systems, including a user-friendly Configuration Assistant, which is included in DB2 UDB. We will use a more straightforward cataloging method directly in DB2 UDB Control Center, the main managing tool for all DB2 UDB tasks. For more information and a detailed walkthrough on DB2 UDB Configuration Assistant, you can consult the *DB2 Planning* or *Accessing DB2 UDB Data* guides on DB2 Developer Domain.

The DB2 UDB Control Center main screen can be seen in Figure 8-6. You can call most other DB2 UDB tools from this screen, as well as perform a wide variety of administrative tasks. You can start the DB2 UDB Control Center from the console by logging in as the database instance owner (su - db2inst1), typing db2cc and pressing Enter.

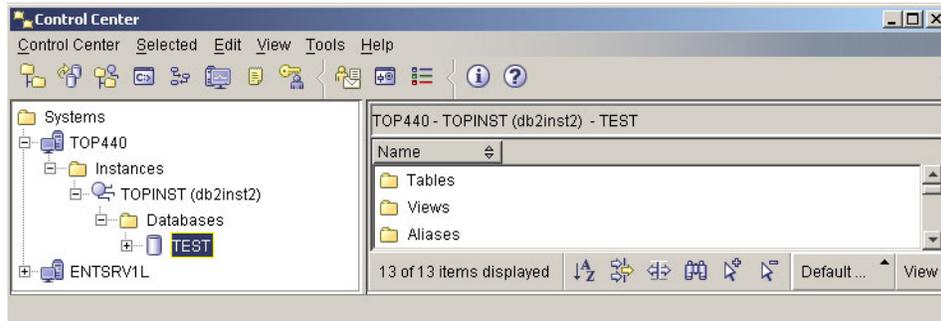


Figure 8-6 DB2 UDB Control Center

Before you connect to the database on a remote system, you first have to catalog the system and its Administration Server. To accomplish this, right click the **Systems** entry in the hierarchy on the left pane of the Control Center window, and select **Add**. A screen similar to that in Figure 8-7 appears.



Figure 8-7 DB2 UDB Control Center - Adding a system

If the database server and network are configured properly, you should be able to click **Discover** and select from a list of systems that appears. DB2 UDB will fill in the rest of the fields according to the parameters fetched from the server. We still recommend setting a unique node name by which the remote system will be referred. Since we are really connecting to the remote administration server now, we chose psxadmin.

If you are having trouble using the discover feature, try filling in the fields manually. For hostname, you can use either a resolvable name or IP address if you know it is stable or are having trouble with DNS resolution.

Click **OK** when you are done, and a new system appears in the Control Center. Clicking the name of the system shows the Instances sub-category. Right-click **Instance** and select **Add**. A window similar to that in Figure 8-8 appears.

Figure 8-8 shows the 'Add Instance' dialog box in the DB2 UDB Control Center. The dialog is titled 'Add Instance' and has a close button (X) in the top right corner. The main title of the dialog is 'BOTTOM440'. It contains several input fields and buttons: 'Node name' with 'psxinst' entered; 'Remote instance name' with 'db2inst1' entered and a 'Discover' button to its right; 'Operating system' set to 'Linux' with a dropdown arrow; 'Protocol' set to 'TCP/IP' with a dropdown arrow; a 'Protocol information' section containing 'Host name' with 'bottom440' entered and a 'View Details...' button to its right; 'Service name' with 'db2inst1_serv' entered; 'Port number' with '51000' entered and a 'Retrieve' button to its right; and an unchecked checkbox labeled 'Enable TCP/IP SOCKS security'. At the bottom, there is a 'Comment' text area and a row of buttons: 'OK', 'Cancel', 'Apply', 'Reset', 'Show Command', and 'Help'.

Figure 8-8 DB2 UDB Control Center - Adding an instance

Once again, you can use the discover feature to have DB2 automatically fill in the required fields with parameters recovered from the database server. If the client is unable to discover the server automatically, try filling the fields manually. Choose a node name that will represent the instance on the client system, and click **OK**.

The new instance appears in the hierarchy. Clicking its name exposes the databases entry. To complete the connection, right-click the databases entry and select **Add**. The screen that appears should be similar to the one shown in Figure 8-9.

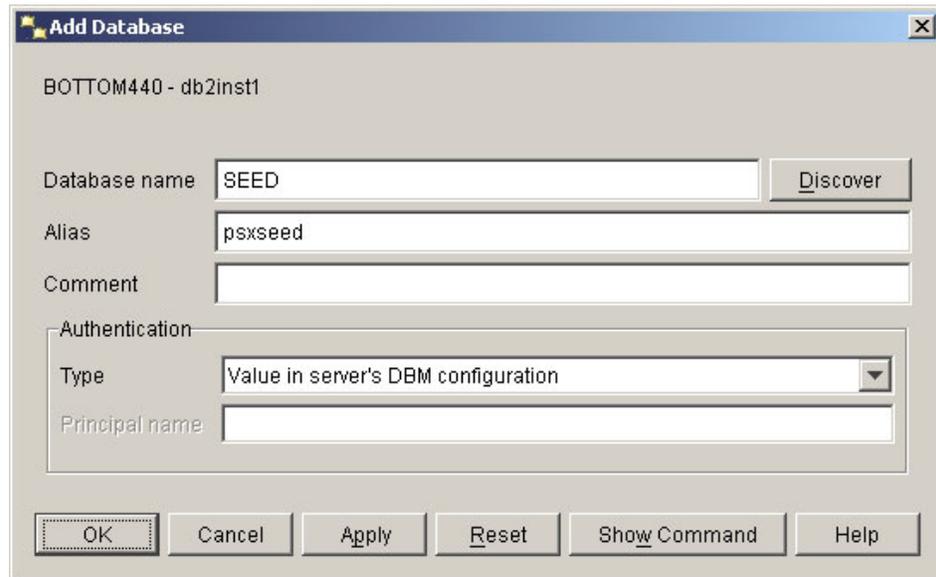


Figure 8-9 DB2 Control Center - Adding a database

At this point, you should be able to guess what the Discover button will do. If you have guessed it will present you with a list of databases on the remote system, you are well on your way to becoming a DB2 UDB DBA. Choose an alias that will represent the remote database on the client system and click **OK**.

Congratulations! If your DB2 UDB Control Center now looks like the one in Figure 8-10, you have connected a client machine to the remote database. You can browse, create and drop tables on the seed database to verify full connectivity.

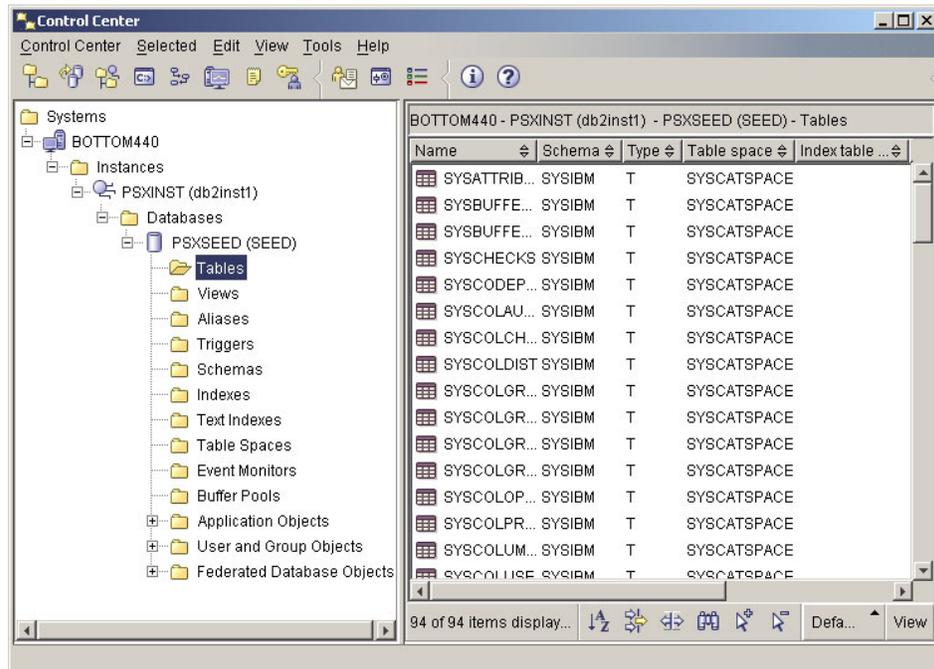


Figure 8-10 DB2 UDB Control Center - Database tables listing

If you are still having trouble connecting to the remote database, consult the next section, “Installing DB2 UDB on Linux using the command console”, or the “Troubleshooting the DB2 UDB installation” on page 99.

You may also have to perform additional steps, such as upgrading to the latest fixpack. Consult the PeopleSoft Installation Manual, found on PeopleSoft Customer Connection, for details:

<http://www.peoplesoft.com>

8.4 Installing DB2 UDB on Linux using the command console

If you are having trouble running the GUI install, or do not have a graphical interface installed, DB2 UDB provides a convenient and streamlined text-only installation method.

8.4.1 Running the installation script

The DB2 UDB Install CD contains a tar archive of all the files necessary to install the DB2 UDB Enterprise Server or a DB2 UDB client. To start the installation script, you need to extract the archive using the following steps:

1. Mount the CD-ROM drive containing your DB2 UDB CD:

```
mount -t iso 9660 -r /dev/cdrom /mnt/cdrom
```

2. Extract the DB2 UDB Installation from the tar archive:

```
mkdir -p /tools/db2  
tar -xvf /mnt/cdrom/DB2_V81_ESE_LNX_32_NLV.tar /tools/db2
```

3. Start the installation process:

```
/tools/db2/009_ESE_LNX_32_NLV/db2_install
```

The console installation script only asks for one option—the version of DB2 UDB to install. Type in DB2.ESE (case sensitive) for DB2 UDB Enterprise Server Edition. Press Enter, and the script will complete the rest of the installation without further user input. In case of error, it will point you to the log files containing detailed description of problems encountered.

8.4.2 Creating the DB2 instance and sample database

Unlike the graphical version, the console install script will not create the Administration Server or the basic instance and database for you. You will have to perform these steps manually.

Tools for creating and managing the instances are located in the /instance subfolder of your DB2 UDB home directory. The utilities you will use here are the dasrcrt (to create database Administration Server) and db2icrt (to create a database instance) utilities. As the DB2 Instance owner, you will then use the DB2 Command Line Processor (located in /bin) for most further tasks. For more details, please see your DB2 UDB Reference Manual, or other resources noted in “Related publications” on page 209.

Follow these steps to create and start the instances:

1. Create the Database Administration Server (one per server only):

```
/opt/IBM/db2/V8.1/instance/dasrcrt -u db2admin
```

2. Create the DB2 instance:

```
/opt/IBM/db2/V8.1/instance/db2icrt -u db2fenc1 db2inst1
```

3. Once a DB2 instance is created, log in as instance owner and start the database manager:

```
su - db2inst1
```

```
~/sql1lib/db2profile
db2 start dbm
```

At this point you are ready to create a simple database to verify the connectivity. We called our database seed:

```
db2 create database seed
```

Since we did not specify any parameters, DB2 UDB will create a sample database using defaults from its internal and registry parameters. This type of database is unsuitable for any serious or production purposes, but will be sufficient to test basic database engine functionality and network connectivity.

You will want to verify that the database is visible and accessible externally. This is important because you will need to use a Windows-based Install Workstation to connect to the database and run datamover scripts.

8.4.3 Connecting to the database from external clients

To enable database connectivity from the client machine, you need to catalog the remote database administrative server, instance, and database. Below are some of the names and values we used in our installation.

Table 8-2 Cataloging values

Variable	Remote value	Cataloged as
IP	9.42.171.31	N/A
hostname	bottom440	N/A
database admin server	db2admin	psxadmin
instance service	db2inst1_serv	N/A
instance	db2inst1	psxinst
database	seed	psxseed

You can adapt the following steps to your own environment by substituting the appropriate variables:

1. Catalog the remote administration server. This is required for basic system visibility:

```
catalog admin tcpip node psxadmin remote bottom440 system bottom440 ostype
linux
```

2. Catalog the remote instance as a local node:

```
catalog tcpip node psxinst remote bottom440 server db2inst1_serv
remote_instance db2inst1 system bottom440 ostype linux
```

3. Connect to the remote instance to start working with it:
attach to psxinst
4. Catalog the test database:
catalog database seed as psxseed at node psxinst
5. Connect to the remote database:
connect to psxseed
6. Verify the connection to the database by selecting from a table (choose a table you know exists on the remote server):

```
db2 => select * from test_table
TEST_FIELD
-----
ABCDEFGHIJ
1 record(s) selected.
```

If you are still having trouble connecting to the remote database, consult the next section, “Troubleshooting the DB2 UDB installation” on page 99. If not—congratulations! You have now successfully tested the database engine and connectivity.

You may also have to perform additional steps, such as upgrading to the latest fixpack. Consult the PeopleSoft Installation Manual, found on PeopleSoft Customer Connection, for details.

8.5 Troubleshooting the DB2 UDB installation

Though there are many excellent resources on troubleshooting DB2 UDB installation, we will mention some of the more common pointers from our experiences.

8.5.1 Connection and cataloging issues

Whether trying to connect to a remote database via a graphic tool (such as DB2 Control Center and Configuration Assistant), or directly through the DB2 Command Processor, these are some of the things you can check if experiencing trouble:

- ▶ Named systems and services can sometimes fail to resolve. You can avoid this issue by specifying the system you would like to connect to in the `/etc/hosts` file with a line like this:

```
9.42.171.34          bottom440.itso.ra1.ibm.com bottom440
```

This statement defines the IP address, its canonical name, and an alias that we can then use in our catalog definitions.

- ▶ You can also use explicit IP addresses and service ports rather than hostnames and service names (for example, 9.42.171.31 instead of bottom440, or 51000 instead of db2inst1_serv). This will help you isolate whether the problem is in the networking, communication stacks, or the database engine itself.
- ▶ Check the `/etc/services` file to verify that your local and remote services are properly assigned. Uncataloging nodes through the DB2 tools does not always remove the no longer relevant entries.
- ▶ If you are having trouble starting the graphical tools as a user other than root, check that the appropriate users have permissions to connect to the X-server. Use the `xhost` utility to adjust X-server access controls.



Installing PeopleSoft

This chapter describes the installation of PeopleTools and third-party software such as Tuxedo and WebSphere.

- ▶ Installing Tuxedo
- ▶ Installing WebSphere
- ▶ Installing PeopleTools and PeopleSoft applications

9.1 Third-party software

A complete PeopleSoft Enterprise environment requires a number of third-party software products to run. These include the Tuxedo application server, WebSphere or Weblogic Web server, Crystal reports and others.

Tip: PeopleTools 8.44, third-party software, and PeopleSoft applications you will install come on a number of CDs. You may find it faster or more convenient to copy the CDs to the server before performing the installation. While you can copy BEA Tuxedo 8.1, IBM WebSphere Application Server 5.1, and other software to directories of your choice, PeopleTools 8.44 CDs should be copied to subdirectories named disk1, disk2, disk3 and disk4. This will allow you to perform the PeopleTools installation without swapping CDs.

Note: Following the PeopleSoft guidelines, we will install PeopleTools and third-party software in this chapter. We will perform the actual configuration of application and Web servers following the prerequisite activities in Chapter 10, “Creating PeopleSoft databases” on page 113. For this reason, you may not be able to verify proper installation of all software until later.

9.2 Installing Tuxedo

The BEA Tuxedo Application Server has been an integral part of any PeopleSoft Enterprise system for a long time. PeopleTools 8.44 include a new version of BEA Tuxedo 8.1. It is critical that you use the PeopleSoft-delivered version of Tuxedo, as any other version may void your support and create incompatibilities due to patch-level differences.

Since PeopleSoft uses Tuxedo for all messaging and transaction management, it needs to be installed on most machines supporting your PeopleSoft system, including the database server, application server, Web server, process scheduler, report and batch servers. You should only install Tuxedo once per physical machine, even if it contains multiple logical servers such as database and application server.

9.2.1 Tuxedo prerequisites

The prerequisites are:

- ▶ You should create a BEA home directory (usually /bea), which will be the root directory for all BEA applications.

- ▶ Create a user ID and group for the tuxedo administrator. You can choose the user and group names to suit your particular environment, or use the tuxedo/tuxedo convention for simplicity.
- ▶ Create a directory under the BEA home directory to hold the actual tuxedo installation, for example, /bea/tuxedo81. Designate this directory as the Tuxedo administrator's home directory.

Note: The Tuxedo installation script will transparently copy the appropriate PeopleSoft serial keys. Customers are only licensed to use the Tuxedo environment for running their PeopleSoft application servers. Please consult your contract and *PeopleSoft Installation Manual* for details.

9.2.2 Tuxedo console installation

BEA Tuxedo uses a single installation script to perform all the installation tasks. On Linux platforms, this script is called `install.sh`.

You should log in to your system as Tuxedo administrator. Mount the CD or change to the directory that contains the copied installation files. Start the installation by invoking the script `./install.sh`.

Sample prompts from our installation are presented in Example 9-1. You will notice that PeopleSoft has packaged the Tuxedo installation so that only a few options are available to you.

After starting the script, select your platform, Linux on Red Hat Enterprise Linux AS 2.1, and confirm your choice. You can accept the defaults for the BEA home directory, Tuxedo 8.1 directory, and TListen password, or choose your own. We suggest that you keep the defaults for simplicity and consistency unless you have an identifiable requirement for different parameters. Note that the TListen monitoring agent is not used by PeopleSoft, so the default password is usually sufficient. In production systems where security is paramount, you can disable this service.

Example 9-1 Tuxedo installation

```
[tuxedo@top440 tuxedo]$ ./install.sh
01) linux/aes21      02) win/win2k
Please select a platform? [1-      2, q to quit, l for list]: 1
```

```
Installing for linux/aes21
Is this correct? [y,n,q]: y
```

If you wish to quit the installation at any point press the interrupt key,

```
<break> or <ctrl+c>.
BEA Home being defaulted to /bea (y/n)
y
Tuxedo 8.1 will be installed to /bea/tuxedo81 (y/n):
y
Accept default TListen password 'password' (y/n):
y
Continue with installation of Tuxedo 8.1 (y/n):
y
Preparing to install...
Preparing SILENT Mode Installation...
```

When finished, you will see the message Installation Complete.

9.3 Installing WebSphere

PeopleSoft offers a choice of BEA WebLogic or IBM WebSphere for its Web server. For our installation we chose IBM WebSphere Application Server 5.1 coupled with IBM HTTP Server. Both are included with every PeopleTools 8.44 CD set.

9.3.1 Prerequisites

Graphical installation requires a properly set DISPLAY environment variable. The following code checks whether the variable is set and adjusts it to proper values:

```
[root@top440 cdrom]# set | grep DISPLAY
[root@top440 cdrom]# export DISPLAY=top440:0.0
[root@top440 cdrom]# set | grep DISPLAY
DISPLAY=top440:0.0
```

Generally, the DISPLAY variable should be set to *hostname:0.0*.

For hardware and other requirements, consult the *PeopleSoft Installation Manual* for your platform, available from PeopleSoft Customer Connection:

<http://www.peoplesoft.com>

9.3.2 WebSphere graphical installation

Log in as root and mount the CD:

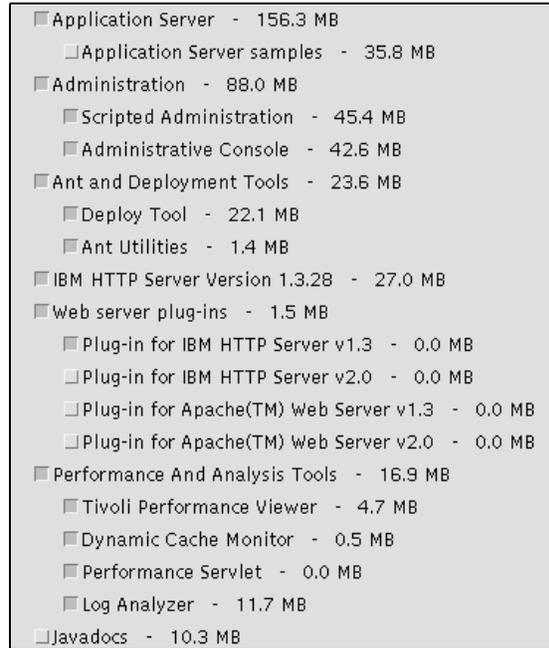
```
mount -t iso 9660 -r /dev/cdrom /mnt/cdrom
```

Start the WebSphere installation by calling the following:

```
/mnt/cdrom/installBase.sh
```

The first screen displays general WebSphere information. Click **Next** to continue. Review and check the license agreement.

PeopleSoft requires certain features of WebSphere to be excluded from the installation. For this reason, select Custom installation method on the next screen. Click **Next** and you will be presented with a list of choices similar to those in the figure on the right. Make sure to *deselect* the “Application Server samples” and “Javadocs” options. Since we are using the IBM HTTP Server, we also checked “IBM HTTP Server version 1.3.28”, “Web server plug-ins” and “Plug-in for IBM HTTP Server v1.3”. Click **Next** when you are satisfied with your choices.



If you have already installed a different HTTP server and wish to use it, select the appropriate plug-in. Verify that your HTTP server is supported by consulting the *PeopleSoft Hardware & Software Requirements* on PeopleSoft Customer Connection:

<http://www.peoplesoft.com>

Click **Next** and select the target directories for WebSphere and IBM HTTP Server installations. On the following screen, select the name for the node and check its corresponding IP address. We accepted the defaults for our installation, as summarized in Table 9-1.

Table 9-1 WebSphere installation checklist

WebSphere directory:	/opt/WebSphere51/AppServer
IBM HTTP Server:	/opt/IBMHttpServer
Node:	top440node

IP:	9.42.171.42
Exclude/Deselect:	Application Server samples Javadocs
Include/Select:	IBM HTTP Server Version 1.3.28 Plug-in for IBM HTTP Server v1.3

Confirm your selections and begin the installation process. You also may register your product at this point. Upon successful completion of the installation process, you will see a First Steps screen similar to that in Figure 9-1.



Figure 9-1 WebSphere First Steps

From the First Steps menu, you can start the verification process by clicking **Verify Installation**. A successful verification will show output similar to that in Figure 9-2, ending with the message `IVT Verification Succeeded`. Note that since the WebSphere server will likely be stopped when you start your verification, you can safely ignore the first `Could not connect to Application Server` message.

Example 9-2 Verifying WebSphere Application Server

```

IVTL0095I: defaulting to host top440 and port 9080
IVTL0010I: Connecting to the WebSphere Application Server top440 on port: 9080
IVTL0020I: Could not connect to Application Server, waiting for server to start

```

```
IVTL0025I: Attempting to start the Application Server
IVTL0030I: Running /opt/WebSphere51/AppServer/bin/startServer.sh server1
>ADMU0116I: Tool information is being logged in file
>          /opt/WebSphere51/AppServer/logs/server1/startServer.log
>ADMU3100I: Reading configuration for server: server1
>ADMU3200I: Server launched. Waiting for initialization status.
>ADMU3000I: Server server1 open for e-business; process id is 5692
IVTL0050I: Servlet Engine Verification Status - Passed
IVTL0055I: JSP Verification Status - Passed
IVTL0060I: EJB Verification Status - Passed
IVTL0070I: IVT Verification Succeeded
IVTL0080I: Installation Verification is complete
```

9.3.3 WebSphere console installation

PeopleSoft allows silent installation using a pre-configured response file. To start the silent installation, mount the WebSphere CD (`mount -t iso 9660 -r /dev/cdrom /mnt/cdrom`), and run the install script as root:

```
/mnt/cdrom/installBase.sh -silent
```

Note: WebSphere silent installation proceeds using the response file defaults without any user interaction. Unless you edit the response file manually, it is not a feasible option for customized installs.

Once complete, verify the installation from the First Steps menu as outlined in the previous section.

9.4 Installing PeopleTools and PeopleSoft applications

You will need to run the PeopleTools and Application installers on several machines in your PeopleSoft environment, including the database server, application server, Web server, and installation and development workstations. If you are installing multiple logical servers on one machine (for example, database and application server), you only need to run PeopleTools and Application installers once per machine.

Note: You will need at least one workstation with a Windows operating system to act as an Install and Development workstation. PeopleSoft recommends installing client executables on a designated file server and mapping them as network drives on workstations. This approach is preferred in all but the smallest of environments, as it simplifies the upgrading and patching process.

9.4.1 Prerequisites

PeopleSoft installer, as well as many other tools and utilities in the PeopleSoft environment, requires a Java Virtual Machine/Java Runtime Environment. If you do not have one installed yet, it is bundled with all PeopleSoft applications.

9.4.2 Using the PeopleSoft installer

Since PeopleTools takes up four CD-ROM disks, we found it easier to copy all the disks to a central server and run the PeopleSoft installer from there. The subdirectories holding the images need to be named exactly disk1, disk2, disk3 and disk4. Installing from this image avoids the problems encountered with unmounting and mounting CDs while in use. Example 9-3 details a simple way to copy PeopleTools CD images onto a local file system.

Example 9-3 Copying PeopleTools disk images

```
# cd /tools; mkdir disk1 disk2 disk3 disk4
# mount -t iso9660 -r /dev/cdrom /mnt/cdrom
# cp -R /mnt/cdrom/* /tools/disk1
# eject -R /mnt/cdrom
# [...]
```

Tip: If you prefer to perform installation directly from the CDs, you will need to open two telnet or terminal sessions on the server. Start the installer from one of the sessions, making sure *you are not in the mounted CD-ROM directory!* This would prevent the OS from unmounting the CD during the install. Rather, start the installer from another directory like this:

```
[root@top440 /tools]# /mnt/cdrom/setup.linux
```

Once the installation starts, use the second telnet session to unmount and switch CDs.

Start the PeopleTools installation by running the setup.linux executable file. If your Java Runtime Environment (JRE) is in a non-default location, you can specify it explicitly using the **-is:javahome** parameter. Finally, you can also run the console version by using **-is:javaconsole -console**. Example 9-4 shows a sample PeopleSoft installer invocation.

Example 9-4 Starting PeopleSoft installer in console mode

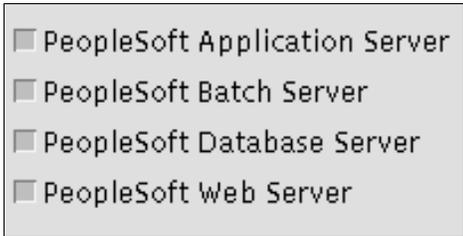
```
# disk1/setup.linux -is:javaconsole -console -is:javahome /opt/PT88.44/jre
.....InstallShield Wizard
Initializing InstallShield Wizard...
Searching for Java(tm) Virtual Machine...
Running InstallShield Wizard...
```

Welcome to the InstallShield Wizard for PeopleTools 8.44
The InstallShield Wizard will install PeopleTools 8.44 on your computer.
To continue, choose Next.
PeopleTools 8.44
Press 1 for Next, 3 to Cancel or 4 to Redisplay [1]

You will be asked for your PeopleSoft license code. At this point you should enter your 31-character PeopleTools key, located on the paper slip inside your binder. PeopleSoft license codes are functionality based, and will determine what features and options you are permitted to install.

On the next screen, choose the Non-Unicode database. Unicode database is only required when you are using a multi-lingual configuration that does not share a common character set. Unicode database will increase your database size and processing time by a significant margin. Consult the *Global Technology PeopleBook*, included on your PeopleTools documentation CD, for more details.

The next screen will offer you a choice of PeopleTools components to install. Your choice will depend on the particulars of your environment. In our case, we used logical servers located on a single machine, so we installed all the components on the server. Click **Next** when satisfied.



PeopleSoft Application Server
 PeopleSoft Batch Server
 PeopleSoft Database Server
 PeopleSoft Web Server

Select the appropriate directory for your PeopleTools installation. This is also where your application will be installed. We have accepted the default /opt/PT8.44.

The following screen asks for the Tuxedo software location. This is likely to be different from the PeopleSoft default, so make sure you input the proper directory path, in our case /bea/tuxedo81.

The configuration of the Environment Management hub follows. The Environment Management hub, a Web application that serves as a broker for all the Environment Management agents, is usually co-located with the Web server, and should use the corresponding port. For more information, consult the *Server Tools PeopleBook*, section “Using the Environment Management Components”.

Finally, select the PeopleTools features to install. You should select **PeopleTools**, as it is required on virtually every installation. PeopleTools Systems Database is available for customers wishing to create their own application—you do not need this database if you will be installing PeopleSoft

delivered applications. The PeopleSoft Language Pack and the PeopleSoft Language Development Kit are not required for English-only installations. Click **Next**, and review your selections on the following screen. Some of the parameters displayed will be the result of license code, so make sure that the proper database engine and other specifications are correct. Click **Next** to start the installation.

When the installation completes, a list of warnings and error messages generated will be displayed. On certain systems, if there were no problems encountered, a null message will be displayed; this is normal and should not be a cause for concern.

9.4.3 Installing PeopleSoft applications

PeopleSoft applications use the same PeopleSoft installer template as PeopleTools. Consult the *PeopleSoft Installation Guide* and relevant application addendums, found on PeopleSoft Customer Connection, for application-specific requirements and instructions.

For our Finance demo database, we have found that the following features were required for minimal install:

- ▶ PeopleSoft FIN/SCM Database
- ▶ PeopleSoft FIN/SCM Demo Database
- ▶ PeopleSoft Common Objects
- ▶ PeopleSoft Product Configuration

You should install the required application components on all the appropriate servers.

Important: Do not forget that you will need to install PeopleTools and the application to at least one Windows workstation. Unless you are creating a temporary demonstration environment, you should designate a dedicated file server to host the client executables. Consult the *PeopleSoft Installation Guide* for your platform for more details.

9.5 Troubleshooting PeopleSoft installation

PeopleSoft-delivered installation scripts generally work without major problems. Since we will perform actual configurations in the following chapters, we defer discussion of configuration troubleshooting until then.

If you are having trouble with graphical installations, most installation tools provide a console mode, often with a `-is:javaconsole -console` argument. Ensure

that you have appropriate permissions to create new directories and files in target file systems. Finally if your license code is for the wrong database engine or platform, contact PeopleSoft Global Customer Care.



Creating PeopleSoft databases

In this chapter we describe the process of creating the PeopleSoft database. This is perhaps the most critical aspect of the PeopleSoft installation, so we provide some common recommendations and troubleshooting tips.

This chapter covers the following topics:

- ▶ Prerequisites
- ▶ Running the database configuration wizard
- ▶ Troubleshooting database creation

10.1 Creating the PeopleSoft database

Often consisting of tens of thousands of tables, the PeopleSoft database is at the core of every PeopleSoft environment. Creating the database is a complex endeavour, and though PeopleSoft has gone to great lengths to automate the process, it is still helpful to understand the underlying mechanisms.

10.1.1 PeopleSoft prerequisites

Prior to running the database configuration wizard, you should complete these steps (some of which are outlined in previous chapters):

- ▶ Install the database engine on the database server, and verify connectivity from external clients.
- ▶ Install PeopleTools with the database server feature on the database server.
- ▶ Install the PeopleSoft application with the database server feature and the appropriate PeopleSoft application databases (including the demo database if you wish to have sample data). This process will create large .db files in your [PS_HOME]/data directory.
- ▶ Set the required DB2 registry settings. These settings were sufficient for our environment; check the PeopleSoft Installation manual for your platform if you are installing a multi-language system or for other details.

Table 10-1 Db2 registry settings

db2 command	Effect
db2set DB2_MIN_DEC_DIV_6=yes	Sets the necessary decimal precision
db2set DB2_RR_TO_RS=yes	Sets the locking level
db2 set DB2_REDUCED_OPTIMIZATION=yes	Reduces automatic optimizations

- ▶ Edit the db2cli.ini file, usually found in /opt/IBM/db2/V8.1/cfg, to include the following settings:
 - DISABLEKEYSETCURSOR=1 (inside the COMMON section of db2cli.ini)
 - IGNOREWARNINGS=1 (inside the database-specific section of db2cli.ini)

For example, our file includes:

```
[COMMON]
DISABLEKEYSETCURSOR=1

[FIN88DM0]
IGNOREWARNINGS=1
```

10.1.2 Recommended prerequisites

These are the tips and guidelines we have gathered during our experience installing PeopleSoft on Linux at IBM's ITSO in Raleigh, NC. They are meant to serve as general guidelines, and may not be appropriate for your specific environment.

- ▶ We have found the PeopleSoft-delivered defaults for database instance heap size to be insufficient for our database. This caused the database configuration wizard to fail during large imports in Data Mover scripts. We recommend increasing the default values in dbmcfg.sql file (under [PS_HOME]/scripts) from 16000 to at least 32000.

```
UPDATE DBM CFG USING QUERY_HEAP_SZ 32000
```

- ▶ Ensure that the access ID and connect ID exist in the operating system and have appropriate database privileges.
- ▶ The user running the database creation scripts should have sufficient database and operating system privileges to create database objects.
- ▶ Create the directories to store your database and tablespaces manually prior to running the configuration wizard. The database configuration wizard may fail otherwise.
- ▶ Set up the environment variables before running the database configuration wizard. This may include running the db2profile and psconfig.sh scripts, and fixing any other variables that are not properly configured. We have found that putting these in the user's startup file saves time and headache:

```
. ~/sql1lib/db2profile
. /opt/PT8.44/psconfig.sh
export LD_LIBRARY_PATH=$LD_LIBRARY_PATH:/bea/tuxedo81/lib
export PATH=$PATH:/opt/tuxedo81:/bea/tuxedo81/bin
db2 start dbm
```

10.2 Running the database configuration wizard

On Linux, PeopleSoft provides a graphical as well as console version of the database configuration wizard. This tool combines the majority of steps needed for database creation. It can be divided into several phases: Gathering the parameters, creating and running database script files, and running Data Mover.

Due to its complexity, it is not uncommon for the database configuration wizard to fail, often due to incorrect settings or environment configuration. If errors occur before running the Data Mover, it is usually easiest to drop the created database if necessary, fix the problem, and re-run the database configuration wizard. If Data Mover starts successfully but breaks during one of its steps, it is often

sufficient to fix the problem and restart the Data Mover script itself. Of course, you can always choose to create the database completely manually, as detailed in the appendix, “Creating Database on Unix Manually,” of the *PeopleSoft Installation Manual*.

The database configuration wizard is located in the /setup/databaseinstall subdirectory under [PS_HOME]. You can run the setup.linux file to start the graphical installer, or use the `-is:javaconsole -console` parameter for console installation. A full listing of our install responses can be seen in Example 10-1 on page 117. The script will present the results and ask for confirmation after each response. Generally, you will need to input 1 to proceed, 2 to go to previous question, 3 to cancel and 4 to redisplay the instructions.

1. Input the path for the database configuration modified scripts and other files, usually the same as your [PS_HOME] directory.
2. Choose between Unicode and Non-Unicode databases. Unicode databases are only required for certain multi-language environments and have special considerations.
3. Select the character set. We accepted the default ISO 8859-1.
4. Choose the database type:
 - *PeopleTools System* will install the basic PeopleTools database for customers who wish to develop their own applications from scratch.
 - *System* database will install a basic application database with all the PeopleSoft delivered tables and code. This type of database forms the basis for production databases. Customers will typically insert their own data from legacy and other sources into a system database.
 - *Demo* database will install a basic application database, as well as fill the tables with sample data. This type of database is useful for demos, testing, training, fit and gap, and similar purposes. PeopleSoft requires each customer to maintain at least one instance of an uncustomized demo database for upgrades and support.

System database is the default. We chose the Demo database for our installation.

5. Choose the **PeopleSoft** application. This should correspond to the database file installed by the PeopleSoft Application Installer in the previous chapter.
6. Choose whether you want PeopleSoft to configure the database server. PeopleSoft creates configuration scripts based on template files dbmcfg.sql and createdb.sql. We have found it convenient to apply any changes (such as increased heap size) to these template files in the [PS_HOME]/scripts directory and allow PeopleSoft to configure the server.

7. Enter the name of the database. The database name should be a maximum of 8 characters, and all letters should be capitalized. PeopleSoft recommends meaningful names that indicate application type, version, and database type. We chose FIN88DMO to represent a Demo Financials 8.8 database.
8. Type in the access and connect IDs and passwords. They should already exist as operating system user IDs with appropriate database privileges.
9. Specify the directories for the database and its tablespace files. These directories should exist prior to running the database configuration wizard.
10. Select the base language, in our case English.
11. Verify your selections and proceed with the installation.

Example 10-1 shows the output of our configuration of our demo database.

Example 10-1 Console database configuration wizard

```

[db2inst1@bottom440 databaseinstall]$ ./setup.linux -is:javaconsole
-is:javahome /opt/PT8.44/jre -console
InstallShield Wizard
Initializing InstallShield Wizard...
Searching for Java(tm) Virtual Machine...
-----
Welcome to the PeopleSoft Database Configuration Wizard
This Wizard will assist you in configuring and loading a PeopleSoft database.
To continue, click Next.

Press 1 for Next, 3 to Cancel or 4 to Redisplay [1]
-----
Peoplesoft Database Configuration Install Location
Please specify a directory or press Enter to accept the default directory.
Directory Name: [/opt/PT8.44]
-----
For a database platform of 'DB2 UDB for Unix, NT', are you installing a:
[ ] 1 - Unicode Database
[X] 2 - Non-Unicode Database
To select an item enter its number, or 0 when you are finished [0]:
-----
DB2 UDB for Unix, NT

Select Character Set:
[X] 1 - Western European ISO 8859-1

Database Create Type:

[X] 1 - Demo
[ ] 2 - System
[ ] 3 - PeopleTools System
-----

```

Select PeopleSoft Application:

1 - PeopleSoft FIN/SCM Database - US English

Please select one of the following options

1 - Configure a server and create database

2 - Create database on existing server

Please read the information below.

You have selected the following option 'Configure server and create database'. As part of server configuration the installation will shutdown the Database Server and restart it for the server configurations to take effect. Please click on the Back button if you wish to change the options or click Next to continue.

Please enter Db2 server information.

Please enter Db2 User information

Database Name

Access ID

Access Password

Connect ID

Connect Password

Please specify the Directory where the database will reside.

/db2/FIN88DMO

Please specify the Directory where the table space will be created.

/db2/FIN88DMO/ts

Select Base Language:

1 - ENG - US English

Peoplesoft Database Configuration will be installed in the following location:

/opt/PT8.44

Database Platform:

DB2 UDB for Unix, NT - Non-Unicode

Application:

PeopleSoft FIN/SCM Database - US English

Database Name:

10.3 Troubleshooting database creation

Database creation can fail at several points, and troubleshooting strategies are different. Remember that you can always choose to perform the database creation manually, as outlined in the appendices of the *PeopleSoft Installation Manual* for your particular platform. Though we focus on enabling the database configuration wizard to run successfully, the steps it performs are identical to the steps you would perform during manual database creation. Therefore, most of these troubleshooting tips are equally applicable to problems encountered during manual database creation.

10.3.1 Failure prior to Data Mover operation

On a typical platform, the Data Mover operation will take up more than 90 percent of the time it takes to create the database. If failure occurs before Data Mover is invoked, it is often easiest to remedy the problem, drop the database if needed, and restart the database configuration wizard from the beginning. Use the error messages output by the wizard as well as automatic log files in `[PS_HOME]/log` to deduce the cause of the error or the particular script/step that failed. Common problems include operating system and database permissions, which are resolved by ensuring that the user invoking the wizard has sufficient privileges to create database objects.

If the logged messages are insufficient to pinpoint the cause, you can try performing steps manually using the scripts created in `[PS_HOME]/modifiedscripts`. Remember to clean or drop the database before restarting the wizard.

Try invoking the Data Mover (`[PS_HOME]/bin/psdmtx`) manually. It should display an Invalid command line argument error. If the error message indicates missing libraries, verify the paths on your installation, including those in `[PS_HOME]/psconfig.sh` file, as well as `LD_LIBRARY_PATH` and `PATH` environment variables.

On our Linux installations, Tuxedo has installed with a broken link to certain critical libraries. We used the following commands to rebuild the link.

Example 10-2 Commands to rebuild link

```
# cd /bea/tuxedo81/locale
```

```
# ls -l
drwxrwxr-x  2 root    root      4096 Jan 27 12:30 C
lrwxrwxrwx  1 root    root      2 Jan 27 12:30 en_US -> /C
# rm -f en_US; ln -s C en_US; # ls -l
drwxrwxr-x  2 root    root      4096 Jan 27 12:30 C
lrwxrwxrwx  1 root    root      1 Feb  2 12:28 en_US -> C
```

10.3.2 Failure during Data Mover operation

Data Mover failures tend to be caused by database errors. Common errors include insufficient memory allocated to the database engine, or insufficient space available for database objects, whether tablespaces, rollback segments, logs or similar.

If a failure occurs inside the Data Mover script, you usually will not have to re-run the database configuration wizard in its entirety. The wizard should have created the database and proper tablespaces with scripts running prior to Data Mover. You can verify this by checking the appropriate logs in [PS_HOME]/log. Remedy the problem that caused Data Mover to fail (for example, by increasing the query heap), and restart Data Mover from the point it failed.

Restarting Data Mover

The database configuration wizard creates a Data Mover script in the [PS_HOME]/scripts directory. This script will usually be named according to your database and have the extension .dms—for example, the script for our Financials/SCM 8.8 demo database was called fin88dmodbx.dms.

Data Mover scripts generally perform a series of steps:

1. **IMPORT** - Creates PeopleTools and application tables and indexes using data stored in the [PS_HOME]/data/*.db files (these files were created by the PeopleSoft installer). Depending on your system, imports can take many hours to complete.
2. **Database Cleanup** - Sets up various PeopleSoft database-stored parameters, such as owner ID and license codes.
3. **Running external default Data Mover scripts** - This is a series of PeopleSoft-delivered Data Mover scripts that are preconfigured independently of your environment. They include:
 - **ENCRYPT_PASSWORD** - Encrypts passwords in PeopleSoft tables
 - **CREATE_TRIGGER** - Creates triggers required by your application
 - **REPLACE_VIEW** - Creates PeopleSoft views
 - **CREATE_TEMP_TABLE** - Creates PeopleSoft temporary tables

Depending on the point at which the Data Mover script fails, you should comment out the successful steps and modify the parameters of the next step.

If failure occurred during an IMPORT step, you should add a SET START statement to indicate the record at which import should continue, for example:

```
SET START WTHD_TO_SND_DTL;  
IMPORT epengs.db
```

You can then restart Data Mover manually by executing the [PS_HOME]/bin/psdmtx file (console version of Data Mover). Running psdmtx without arguments will list valid parameters. This is how we invoked Data Mover on our system:

```
psdmtx -CT DB2UNIX -CS TOP440 -CD FIN88DMO -CO DB2INST1 -CP xs1012r  
-CI people -CD xs1012r -FP fin88dmodbx.dms
```

For more details on modifying and running Data Mover scripts, see “Data Mover Scripts” on page 190 or consult the *Data Administration Tools PeopleBook* included on your PeopleSoft documentation CD.



Installing and configuring the application server

The Tuxedo application server is at the center of PeopleSoft Internet Architecture and performs all the transaction management and messaging duties for any PeopleSoft system. In this chapter we set up the BEA Tuxedo 8.1 application server, and look at the configuration tools PeopleSoft provides.

This chapter covers the following topics:

- ▶ Creating the application server domain
- ▶ Configuring the application server
- ▶ Troubleshooting the application server

11.1 Introduction and prerequisites

The application server, consisting of a customized version of BEA Tuxedo 8.1 and PeopleSoft-developed application server processes, is an integral part of PeopleSoft Internet Architecture. Typically, Tuxedo is used to handle client-facing connections and messaging, while PeopleSoft processes take care of business logic processing and database connection.

The application server tends to be the most processing intensive part of PeopleSoft environments, which should be considered when designing your hardware architecture. See the *PeopleSoft Installation Manual* or *Hardware Requirements*, available on PeopleSoft Customer Connection:

<http://www.peoplesoft.com>

Each PeopleSoft application/database is supported by an application server domain. Processes supporting the domain include the BEA-delivered Tuxedo Bulletin Board Liaison (BBL), which performs all the messaging and process-management functions, and PeopleSoft-developed application processes such as PSAPPSRV, that connect to the database, generate SQL and process business logic.

You will need to create an application server domain for your PeopleSoft application. Application development 3-tier clients and Internet browser n-tier users will connect to your system through this application server domain.

11.2 Creating the application server domain

You can create and configure application server domains using the PeopleSoft tool psadmin, located in the [PS_HOME]/appserv directory:

1. Start the PeopleSoft Server Administration utility by calling psadmin. Make sure that your environment variables are set properly, including running db2profile and psconfig.sh scripts.
2. Select **1**, **Enter** to select Application Server.

```
[db2inst2@top440 appserv]$ ./psadmin
PSADMIN -- Tools Release: 8.44
Copyright (c) 1988-2003 PeopleSoft, Inc. All Rights Reserved.
-----
PeopleSoft Server Administration
-----
    1) Application Server
    2) Process Scheduler
    q) Quit
Command to execute (1-2, q): 1
```

3. Select **2**, **Enter** to create a domain.

```
-----
PeopleSoft Application Server Administration
-----
1) Administer a domain
2) Create a domain
3) Delete a domain
4) Import domain configuration
q) Quit
Command to execute (1-4, q) : 2
```

4. Input the name of your domain and press Enter. By convention, the name of the domain is usually set to be the same as the name of the database.

```
Please enter name of domain to create :FIN88DMO
```

5. Select a configuration template. These templates contain the default parameters for various sizes of PeopleSoft systems. They affect the number of processes initially spawned and memory allocated. Generally, the number of users expected to use your system concurrently will affect the choice of template. For small or demo installations, developer or small templates are sufficient. We chose the small template by selecting **4**, **Enter**.

```
Configuration templates:
1) developer
2) large
3) medium
4) small
Select config template number: 4
Creating domain...
Copying application server configuration files...
Copying Jolt repository file...
Copying Java Query client files...
Domain created.
Would you like to configure this domain now? (y/n) [y] :y
```

6. At this point the PeopleSoft Server Administration utility creates the basic skeleton for your new domain. It will ask you if you would like to configure this domain now. Press **y**, **Enter** and you will see a screen similar to that in Example 11-1.

Example 11-1 PeopleSoft Server Administration - Quick-configure menu

```
-----
Quick-configure menu -- domain: FIN88DMO
-----
      Features                               Settings
      =====                               =====
1) Pub/Sub Servers   : No   13) DBNAME       : [FIN88DMO]
2) Quick Server      : No   14) DBTYPE      : [DB2UNIX]
```

```

3) Query Servers      : No    15) UserId       : [VP1]
4) Jolt              : Yes   16) UserPswd    : [VP1]
5) Jolt Relay        : No    17) DomainID    : [ITSO]
6) PC Debugger       : No    18) AddToPATH   : [.]
7) Opt Engines       : No    19) ConnectID   : [people]
8) Event Notification: Yes   20) ConnectPswd: [xs1012r]
9) MCF Servers       : No    21) ServerName  : []
10) Perf Collator    : No    22) WSL Port    : [7000]
                               23) JSL Port    : [9000]
                               24) JRAD Port   : [9100]

```

Actions

=====

```

11) Load config as shown
12) Custom configuration
   h) Help for this menu
   q) Return to previous menu

```

Enter selection (1-24, h, or q): 11

This screen, known as the Quick-Configure menu, allows you to quickly set the most commonly used application server domain parameters. In the past, this menu was only available during the domain creation, but as of PeopleSoft 8.44 it is available to the administrator at any time.

You will have to change some of these values to ensure your domain boots and operates properly. You can change any parameter on the Quick-Configure menu by typing its number and pressing the Enter key. Here are the parameters you will have to adjust on virtually every installation:

- ▶ **DBNAME:** Ensure it matches the name of your database; in our case, FIN88DMO.
- ▶ **DBTYPE:** DB2UNIX for our DB2 Enterprise Server Edition 8.1 on Linux.
- ▶ **UserId and UserPswd:** These should be PeopleSoft users that have permission to start the application server. By default, user VP1 on Financials/SCM and user PS on HCM applications are granted this authority. You can use these users to test your configuration and connectivity, but should create your own IDs for use on production systems.
- ▶ **ConnectID and ConnectPswd** should be set to the user IDs that have sufficient privileges to query the PSOPRDEFN table in your PeopleSoft database, by default people/peop1e. For more on PeopleSoft user IDs, please see “PeopleSoft IDs” on page 67
- ▶ **WSL Port:** The Workstation Listener receives requests from 3-tier clients (such as installation or development workstations) and passes them to Workstation Handlers (WSH). Ensure that this port is not blocked between your application server and the clients, which may be on the intranet or

extranet. You must configure the workstations to use the same port (through PeopleSoft Configuration Manager, as explained in the following section “Connecting to the application server” on page 128).

- ▶ **JSL Port:** The Web server receives requests from n-tier/Web clients, and forwards them to the Jolt Station Listener (JSL). Ensure that this port is not blocked between your Web server and application server (usually an intranet connection), and that it does not conflict with any other services. You must configure the same port on your Web server and application server.
- ▶ You can configure more advanced options by pressing **12, Enter**. Some of these options are detailed in “Application Server configuration” on page 193.

For details on other options, consult the appropriate *PeopleSoft Installation Manual* for your platform, available on PeopleSoft Customer Connection, or *Server Tools PeopleBook*, available on your PeopleSoft Documentation CD.

When you are satisfied with your configuration, you have to apply it by instructing the PeopleTools Server Administration tool to load the parameters (**11, Enter**)

You can now boot your application server domain. Depending on the size of the template you chose, a dozen or more processes will be started. If the boot fails, you will be offered an opportunity to view the Tuxedo and application server logs. Consult “Troubleshooting the application server” on page 133 or the *PeopleSoft Installation Manual* for your platform for tips on correcting the problem.

11.3 Configuring the application server

You can configure your application server with the same tool used to create it, psadmin. Start the psadmin tool and choose **1) Application Server**, then **1) Administer a domain**. Select your domain, and you are presented with a list of actions you can perform, including booting and shutting down the domain, viewing the status, and several configuration options.

You can configure your domain using the psadmin tool, or by editing the configuration file manually in a text editor. To configure the domain using the tool, either through the Quick-configuration menu we have seen before or through the detailed listing of parameters, select **4) Configure this domain**.

Note: PeopleSoft will shut down the domain before you configure it using the psadmin tool.

If you would like to edit the configuration file psappsrv.cfg manually in an editor (useful when you are trying to find or verify a particular setting), instead select **6)**

Edit configuration/log files menu, then **1) Edit psappsrv.cfg (current configuration file)**.

The parameters you can edit in both cases are identical—only the methods of changing them are different. Consult “Application Server configuration” on page 193, the *PeopleSoft Installation Manual* for your platform (available on PeopleSoft Customer Connection), or *Server Tools PeopleBook* available on your PeopleSoft documentation CD for more details.

Tip: Do not forget to load the parameters and reboot the domain after any changes. If you have edited the psappsrv.cfg file manually, you still need to go into the Configure this domain menu and load the configuration.

11.4 Connecting to the application server

The application server enables development users to connect to PeopleSoft system in 3-tier mode. This results in increased performance as the more efficient Tuxedo messages are passed over the network, and the business logic processing load is moved from the workstation to the more powerful application server. You should test a 3-tier connection to verify application server configuration before moving on to n-tier PeopleSoft Internet Architecture configuration in the next chapter.

11.4.1 Configuring the workstation

You need a Windows-based client workstation with PeopleTools installed or with access to a file server with PeopleTools executables (see Chapter 9, “Installing PeopleSoft” on page 101).

Use the PeopleSoft Configuration Manager to set up the required connection parameters on your workstation. You can call Configuration Manager through the Windows Program menu, or by calling [PS_HOME]\binclient\winx86\pscfg.exe.

There are three major areas that you need to configure for basic connectivity. First select the **Profile** tab and edit the Default profile or create your own. A new window will appear similar to that in Figure 11-1. Here you can configure your database for 2-tier setup, or the application server for 3-tier setup. Click the **Application Server** radio button, and input the application server name, its IP address, and the port number. Click **Set** and then **OK** when you are done.

Server Name	Connect String	Server Type
HR88S1	66.46.154.57:7100	Application Server
top440	9.42.171.33:7000	Application Server

Connection Type: Database Application Server

Application Server Name: top440

Machine Name or IP Address: 9.42.171.33

Port Number: 7000

UXEDO Connect String:

Set Delete

Figure 11-1 PeopleSoft Configuration Manager - Profile

Important: The port number and application server name must correspond to those set in the PeopleSoft Server Administration utility (psadmin) in the previous section.

In the Startup section of Configuration Manager, seen in Figure 11-2, you can set up the defaults that will appear automatically on the signon screen (Figure 11-4 on page 132) when PeopleTools are started. You can also allow the users to override these defaults by checking the appropriate boxes on the bottom left of the screen. While you can leave all these settings blank and fill them in manually every time you start PeopleTools, we find it easier to pre-configure frequently used settings.

Startup | Display | Crystal/Bus. Interlink | Trace | Workflow | Remote Call/AE | Client Setup | Import/Export | Profile

Signon Defaults

Database Type: Application Server

Application Server Name: top440

Server Name:

Database Name: HR88S1

User ID: VP1

Connect ID: people

Connect Password: *****

Connect Password (confirm): *****

Numeric keypad - Enter Key tabs to next field

User Can Override

Database Type

Database Name

User ID

Cache Files

Directory: C:\PS\CACHE

Purge Cache Directories...

Figure 11-2 PeopleSoft Configuration Manager - Startup

Finally, in the Client Setup section (Figure 11-3), you should check **Install ODBC Driver Manager**, **Install PeopleSoft ODBC Driver**, and **Install Workstation** the first time you configure PeopleTools. Click **Apply** to implement the changes.

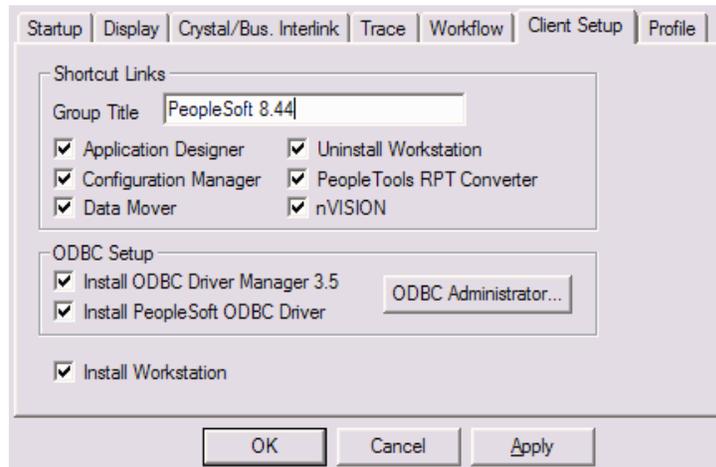


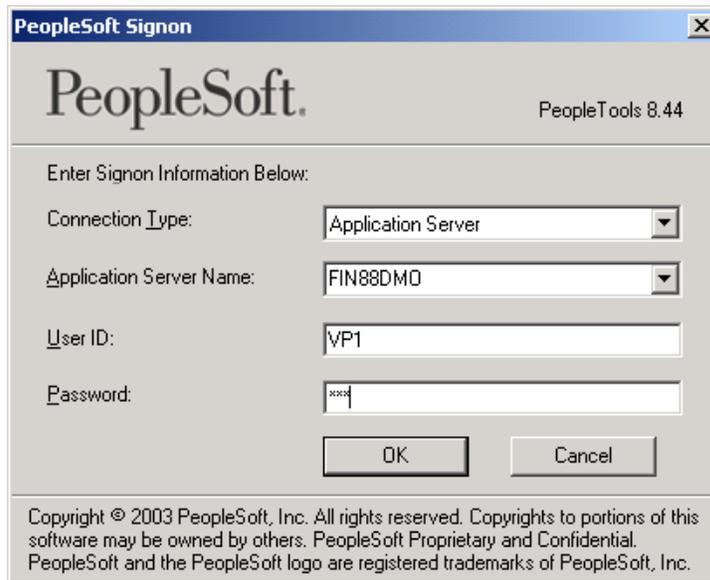
Figure 11-3 PeopleSoft Configuration Manager - Client setup

Note: Clicking **OK** will *not* apply the changes. You must click **Apply** before exiting the Configuration Manager for the changes to take place. If you have selected **Install Workstation**, you will notice a pause while the required files (typically upwards of 150 MB in size) are copied to the appropriate directories.

11.4.2 Testing the 3-tier connection

The easiest way to test the 3-tier connection is through the PeopleSoft Application Designer. You can start the Application Designer through the **Programs** menu on your Windows workstation, or by calling `[PS_HOME]\binclient\winx86\pside.exe`.

Your first window should be similar to the PeopleSoft Signon shown in Figure 11-4.



PeopleSoft Signon

PeopleSoft. PeopleTools 8.44

Enter Signon Information Below:

Connection Type: Application Server

Application Server Name: FIN88DM0

User ID: VP1

Password: xxxx

OK Cancel

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Figure 11-4 PeopleTools Signon

Some fields will already be filled in according to the parameters configured in PeopleSoft Configuration Manager in “Configuring the workstation” on page 128. Verify the settings, input your password, and click **OK**.

If all the parameters are configured correctly and a proper network connection exists between the workstation and application server, you will shortly see the Application Designer intro screen, similar to that in Figure 11-5. If you are having trouble connecting, see “Troubleshooting the application server” on page 133.

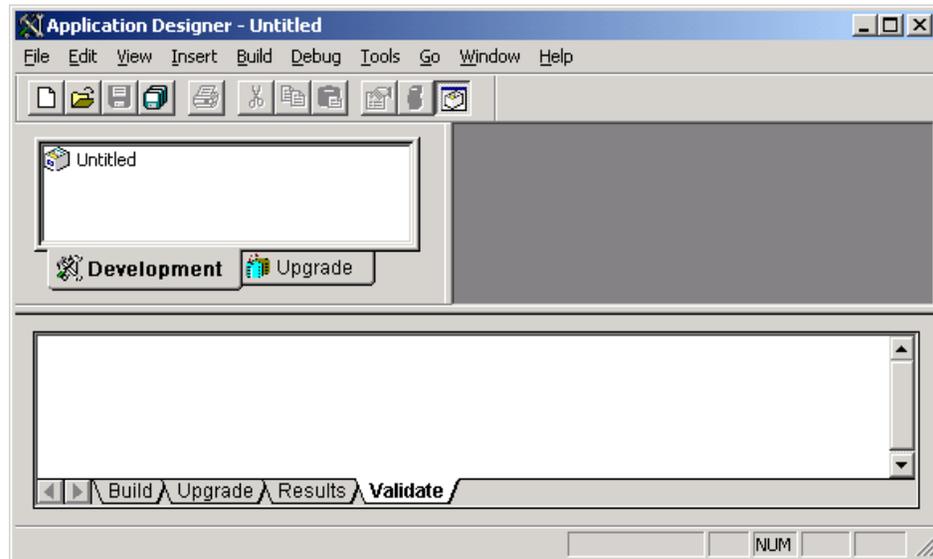


Figure 11-5 PeopleSoft Application Designer

11.5 Troubleshooting the application server

The PeopleSoft application server is responsible for the bulk of processing performed in any PeopleSoft environment. Communication problems, mis-configuration, or sheer load can cause this complex system to fail. We present some of the guidelines for identifying and resolving application server issues we discovered through our testing during the writing of this book.

11.5.1 Problems configuring the application server

The PeopleSoft Server Configuration tool goes through a complex process of merging your own responses, PeopleSoft-delivered defaults, and Tuxedo configuration parameters into the binary configuration file PSTUXCFG. Common problems that occur during application server configuration include missing libraries or incorrect permissions; ensure that all the Tuxedo libraries are in the proper locations and correctly referenced in PATH and LD_LIBRARY_PATH environment variables. Occasionally, Tuxedo will install with an incorrect symbolic link pointing to some of its internal libraries. Verify that all the links are

correct in the BEA home directory structure, and recreate as needed. Finally, make sure that you have correct permissions to modify the configuration files, and that the user ID and password entered in psadmin have proper OS and database permissions to boot the application server.

11.5.2 Problems booting the application server

A number of Tuxedo and PeopleSoft processes are started during the application server boot.

Failure of a Tuxedo process

Tuxedo processes that are started during application server boot include Bulletin Board Liaison (BBL), which is the first process to boot and manages all the other Tuxedo and PeopleSoft processes; and workstation and Jolt listeners (WSL/JSL).

- ▶ Failure of BBL process usually indicates a problem with Tuxedo installation itself. Verify that the TUXDIR and TUXCONFIG environment variables are properly set, that Tuxedo libraries are properly linked, and that the PATH variable points to the bin sub-directory under the Tuxedo home directory.
- ▶ Failure of a Workstation Listener (WSL) or Jolt Station Listener (JSL) is often a result of a port conflict on the machine. Remember that the default port for WSL is 7000 and for JSL 9000 (if you have more than one domain running on one machine, or if you have another service using one of those ports) you must configure a different port for each domain (using the PeopleSoft Server Administration utility, psadmin). This is an example of JSL failure caused by port conflict (see “Application Server Errors” on page 194 for more detailed examples of Application Server error logs):

```
exec JSL -A -- -d unused -n //top440:9000 -m 5 -M 7 -I 5 -j ANY -x 40 -T 60  
-c 1000000 -w JSH : Failed.
```

Note that listeners only handle the initial connection. Upon establishing contact, they will pass on the request to workstation or Jolt handlers (WSH/JSH), *on the next available port*. For example, for WSL running on port 7000, first WSH will spawn on port 7001, secondly on port 7002, and so on. Ensure that you have reserved a *block* of ports following the listeners.

Failure of a PeopleSoft process

PeopleSoft processes perform all the database communication in n-tier PeopleSoft environment, so database connection problems are common.

- ▶ Verify that the database server is running.
- ▶ Check the network communication between database and application server.

- ▶ Ensure the proper configuration of database communication:
 - Database name and type must be correctly set up in psadmin.
 - Connect ID and password must be valid.
 - Database run-time client should be in PATH.
 - Use DB2 Control Center and other tools to confirm connection to the database server.

11.5.3 Problems connecting to the application server

Your developers will likely need 3-tier access to the PeopleSoft environment from their Windows workstations. Here are some of the things to check if you encountered trouble in the previous section, “Connecting to the application server” on page 128.

- ▶ Verify the communications network between client and the application server, using network tools available to you. Example 11-2 shows how you can use the basic network tool telnet to check whether the application server is running on port 7000 or 8000 on machine 9.42.171.34. The type of error message seen in the first example can occur for many reasons—the application server could be down or running on a different port, the target machine might be inaccessible because of network problems or improper routing, or the port may be blocked at one of the routers or firewalls in between. The second example shows a successful connection. Because we do not “speak” Tuxedo, the connection will probably time out or otherwise break, but it is sufficient to check basic network connectivity.

Example 11-2 Using telnet to check application server connection

```
# telnet 9.42.171.34 7000
Trying 9.42.171.34...
telnet: connect to address 9.42.171.34: Connection refused
# telnet 9.42.171.34 8000
Trying 9.42.171.34...
Connected to 9.42.171.34.
```

- ▶ Use DB2 tools such as Configuration Assistant or Control Center to catalog the remote database.
- ▶ Verify the settings in Configuration Manager Startup and Profile tabs.
- ▶ Use the PeopleSoft-delivered ODBC Manager to check that PeopleSoft and DB2 drivers are installed. You may need to explicitly add your database sources under the System DSN or User DSN tabs, depending on whether the Tuxedo IPC service is using the System account or a specific user.



Configuring PIA

PeopleSoft Internet Architecture brings together all the other components of the PeopleSoft Enterprise environment. After you complete the steps outlined in this chapter you should have a working PeopleSoft system.

This chapter covers the following topics:

- ▶ Installing and configuring PeopleSoft Internet Architecture
- ▶ Troubleshooting the PIA install

12.1 Introduction to PeopleSoft Internet Architecture

PeopleSoft Internet Architecture, or PIA, was introduced with PeopleSoft 8. It brought back the concept of the “thin client”—no code runs on the workstation except for a basic Web browser. Hardware and software requirements are brought to a minimum, and enterprises are free to deploy a wide range of hardware to their end users.

12.1.1 Prerequisites

You should have installed a PeopleSoft-certified Web server by this point. We chose IBM WebSphere Application Server 5.1, as detailed in “Installing WebSphere” on page 104. You should also have configured your application server, as outlined in Chapter 11, “Installing and configuring the application server” on page 123. Your Web server also needs a supported version of Java Runtime Environment (JRE). If your JRE is installed in an unconventional location, you may have to use the `-is:javahome path` parameter.

12.2 Installing and configuring PeopleSoft Internet Architecture

PeopleSoft delivers an installation utility that configures basic PIA for your Web server. This utility can be run in either graphic or console mode. The options presented are the same. We will show how we used the console version to install PIA on WebSphere during our testing.

12.2.1 Running console PIA install script

Installation script `setup.linux` can be located in the `[PS_HOME]/setup/mpinternet` directory. To invoke the script in console mode, specifying the JRE manually, use a command line similar to following:

```
# ./setup.linux -is:javaconsole -console -is:javahome /opt/PT8.44/jre
```

Tip: Make sure you have your WebSphere Application Server running prior to starting the install script. Typically called `server1`, it is required by the PIA installer, even though the first paragraph instructs you to “shut down any running Web servers”.

The script will present various choices and ask for confirmation after each response. Generally, you will input 1 to proceed, 2 to go to the previous question,

3 to cancel and 4 to redisplay the instructions. For a full example listing of our installation, see “PIA Configuration example” on page 199.

1. Choose the PeopleSoft home location ([PS_HOME]). By default, this is /opt/PT8.44.
2. Choose the Web server you are configuring. Press **2, Enter** for IBM WebSphere server.
3. Input the WebSphere Application Server directory. This is the installation location you chose in “Installing WebSphere” on page 104. Note that WebSphere’s default location is slightly different from the default choice presented by PeopleSoft here. While the installer will verify the location and retrieve certain configuration parameters in the next step, it is still a good practice to ensure that you input a proper directory.
4. In the next steps, the installer will retrieve server, cell and node information from the WebSphere configuration files. If you accepted the defaults when installing WebSphere, the initial server will be server1 and the node is likely to take form *hostname*node. If you have more than one node configured, choose the appropriate server and node for PIA.
5. If you already have a WebSphere Application created, you have an option of configuring it or creating a new one. Otherwise, only the Create New WebSphere Application option is presented.

Tip: If you had a failed or misconfigured PIA installation, we recommend removing the incomplete application completely following the steps outlined in “Troubleshooting the PIA install” on page 141, or in the PeopleSoft Installation Manual for your platform.

6. Enter the application name, peoplesoft by default.
7. Enter the name for PeopleSoft Web site. By default ps, this name will be a part of the URL for using the PeopleSoft n-tier Web interface.

Tip: It is common to choose a database/application-specific string for the PeopleSoft Web site, for example, fin, fin88, or even fin88dmo. The signon page and the signon portal would then take the form of *hostname:port/website/signon.html*. For example:

```
http://top440:80/fin/signon.html
```

8. You will now be asked for your application server name and various port numbers. The application server name and JSL port have to be the same as those configured in PeopleSoft Server Administration utility (psadmin) in Chapter 11, “Installing and configuring the application server” on page 123.

You can choose HTTP and HTTPS (SSL) ports. Finally, put in your optional Authentication Domain Token.

Important: *Only* enter the authentication domain token if you have a specific requirement to do so. Your host must have a fully qualified domain name, and the authentication domain token will become a required part of the URL to invoke the PeopleSoft Internet Architecture. For example, authentication domain token ibm.com would imply the PIA address in the form of:

```
http://top440.ibm.com/fin/signon.html
```

Consult the *PeopleSoft Installation Manual* for your platform for further details.

9. PeopleSoft delivers several pre-configured Web profiles in the database. These profiles contain settings for all the portal and Web interface behavior. The available profiles are DEV, TEST, PROD and KIOSK. We chose DEV for our installation.

Tip: After setting up the PIA initially, you can also eventually create or customize your own Web profiles using **PeopleTools** → **Web Profile Configuration** page. Consult the *Internet Technologies PeopleBook*, section “Configuring Web Profiles,” for more details.

10. Specify the user ID and password used to retrieve the Web profile selected in the previous step. The PTWEBSERVER user ID should be set up with PeopleTools 8.44. For testing purposes, a default user such as VP1 on Financials/SCM applications or PS on HCM applications should also work.
11. Input the home directory for the report repository. As always, ensure that this directory has the proper permissions for all relevant users.
12. Finally, you are presented with a summary of chosen settings. Press **1** to proceed with the installation, **2** to change any of the values, or **3** to exit.

When the installation is complete, it is important to see two notifications: BUILD SUCCESSFUL and Deploy Complete. Generally, successful build but unsuccessful deployment would indicate permission errors on target directories.

12.2.2 Finishing PIA installation

You need to restart the Web server in order for changes to take place:

```
/opt/WebSphere51/AppServer/bin/stopServer.sh server1  
/opt/WebSphere51/AppServer/bin/startServer.sh server1
```

Your application should now be accessible with a URL in the form of:

```
http://hostname:port/name/signon.html
```

Such as:

```
http://top440:80/fin/signon.html
```

12.3 Troubleshooting the PIA install

Installing and configuring PeopleSoft Internet Architecture is the last step in a basic PeopleSoft installation. This is where all the components come together, and all the settings must match perfectly for the system to operate smoothly. We will look at some general PeopleSoft troubleshooting tips in the next chapter. Here we outline some of the common issues when PIA itself fails to run.

12.3.1 Starting and stopping WebSphere Web server

To start the WebSphere Web server, use the **startServer.sh** command, located under the bin subdirectory of your WebSphere Application Server home directory:

```
/opt/WebSphere51/AppServer/bin/startServer.sh server1
```

To stop the WebSphere Web server, use the **stopServer.sh** command:

```
/opt/WebSphere51/AppServer/bin/stopServer.sh server1
```

12.3.2 Accessing the PeopleSoft signon

The URL for your PeopleSoft application signon will take the form `http://hostname:port/name/signon.html`, where:

- ▶ *hostname* is the name or IP of your server.
- ▶ *port* is the expected port PIA is listening on (can be omitted if using the default port 80).
- ▶ *name* is the Web site name specified during PIA install, ps by default.

Alternatively, to access the PeopleSoft servlet directly, use the URL of the form:

```
http://hostname:port/psp/name/?cmd=login
```

12.3.3 Problems starting the WebSphere server

If you are having trouble starting the WebSphere server, installation may not have completed successfully.

- ▶ Use the FirstSteps tool (firststeps.sh) to verify the installation.
- ▶ Check the SystemOut and SystemErr log files for an Open for e-business message.

12.3.4 Problems accessing the signon

If you are having trouble accessing the signon page, there are several things to check:

- ▶ Ensure you are using the proper address. Remember that PeopleSoft documentation uses the default Web site name ps, which may be different for your installation. Try both the signon.html Web page, as well as the PeopleSoft servlet itself. Ensure that you are specifying the proper port if you are not using the default port 80.
- ▶ Check that your WebSphere Web server is up and running. If you have made changes in the configuration, or after you have installed PIA, you will usually have to restart the Web server.
- ▶ Try accessing the signon page from a browser running on the Web server. It is possible a networking issue, such as a blocked port, is preventing you from accessing the signon page from remote clients.
- ▶ If you have never been able to access the signon page, it is possible that your PIA was not configured correctly. You may wish to verify your settings, uninstall PIA following the instructions in “Uninstalling WebSphere PIA” on page 143, and set up PIA again.

12.3.5 Problems signing on to PeopleSoft applications

If you can access the PeopleSoft signon Web page, but cannot log in to your PeopleSoft applications, that usually means that your Web server is running but fails to connect to other components of PIA.

- ▶ Verify that your user ID and passwords are correct. In most cases, both are capital-case only. Use a generic or default user ID and password to verify the connection.
- ▶ A common problem, and one of the clearest errors in the PeopleSoft environment, is the application server not running. In this case, use the PeopleSoft Server Administration utility (psadmin) to start your application server. Also verify that the Web server is using the correct JSL ports and communication settings to connect to your application servers.

- ▶ Verify the connection between the Web server and application server. Use network tools available to you, or basic tools such as ping and telnet, to check application server visibility on the Web server. For example, to check if the Web server can connect to the application server running on the JSL port, log in to your Web server and type `telnet 9.42.171.33 9000`.
- ▶ SQL errors of all kinds often indicate a database connection issue. Make sure that the database engine is up and running, and that the application server is configured properly. You can use a 3-tier connection through the application server to help you isolate the problem and verify database connectivity.

12.3.6 Uninstalling WebSphere PIA

This is the outline of the procedure required to uninstall a failed WebSphere PIA installation. Make sure that you complete this procedure before attempting to run the installation script again:

1. Open the WebSphere Application Server Administrative Console using an address of the form `hostname:port/admin`:

```
http://top440:19090/admin
```
2. Type in your name. This does not have to be an actual user ID, as it is only used for logging and configuration tracking purposes.
3. Navigate to **Applications** -> **Enterprise Applications**.
4. Select your PeopleSoft application on the list that appears in the right pane. Stop this application by clicking the **Stop** button above the list.
5. Again select your PeopleSoft application, and uninstall it by clicking **Uninstall**, then confirming your choice by saving the configuration. Figure 12-1 on page 144 and Figure 12-2 on page 144 illustrate the process of uninstalling a WebSphere application.
6. Stop the WebSphere server:

```
/opt/WebSphere51/AppServer/bin/stopServer.sh server1
```
7. Remove all the relevant directories in the `[PS_HOME]/WebServ/cellname_nodename_servername` tree structure:

```
rm -rf /opt/PT8.44/webserv/top440Node_top440Node_server1
```
8. Resolve the issue that caused the installation to fail, and restart the Web server and installation script.

User ID: nikola

bottom440Node

- [-] Servers
- [-] Applications
 - [Enterprise Applications](#)
 - [Install New Application](#)
- [-] Resources
- [-] Security
- [-] Environment
- [-] System Administration
- [-] Troubleshooting

Enterprise Applications

A list of installed applications. A single application can be deployed onto multiple servers. [i](#)

Total: 3

- [-] Filter
- [-] Preferences

<input type="checkbox"/>	Name v	Status v r
<input type="checkbox"/>	adminconsole	
<input type="checkbox"/>	ivtApp	
<input checked="" type="checkbox"/>	peoplesoft	

Figure 12-1 Stopping and uninstalling a WebSphere application

User ID: nikola

bottom440Node

- [-] Servers
- [-] Applications
 - [Enterprise Applications](#)
 - [Install New Application](#)
- [-] Resources
- [-] Security
- [-] Environment
- [-] System Administration
- [-] Troubleshooting

Message(s)

Changes have been made to your local configuration. Click [Save](#) to apply changes to the master configuration.

The server may need to be restarted for these changes to take effect.

[Enterprise Applications](#) >

Save

Save your workspace changes to the master configuration

Save to Master Configuration

Click the Save button to update the master repository with your changes. Click the Discard button to discard your changes and begin work again using the master repository configuration. Click the Cancel button to continue working with your changes.

Total changed documents: 31

- [-] View items with changes

Figure 12-2 Confirming WebSphere changes



Process Scheduler and post-installation

This chapter outlines a few ways to extend the functionality of your basic PeopleSoft system. It also discusses some basic tips when troubleshooting the complete PeopleSoft environment.

This chapter covers the following topics:

- ▶ Configuring Process Scheduler Server
- ▶ Configuring report distribution
- ▶ Testing Process Scheduler setup
- ▶ Troubleshooting Process Scheduler configuration
- ▶ Post-installation

13.1 Introduction and prerequisites

The PeopleSoft Process Scheduler Server manages batch processes in your PeopleSoft environment (for this reason it is also often referred to as a *batch server*). It runs Application Engine, SQR & COBOL processes, as well as many third-party reporting and analysis utilities, and allows you to use familiar a Web interface to view results of these processes.

Note: The Process Scheduler is often run on the same machine as the database server. It is fully Linux compatible, however, some of the third-party reporting tools can only run on the Windows operating system. Therefore, if you want to use Crystal Reports, nVision, or other Windows-bound software, you will also have to have a Windows-based batch server.

Configuring the Process Scheduler is one of the last tasks in a basic PeopleSoft installation. There are a number of steps that must be performed prior to configuring Process Scheduler:

- ▶ Tuxedo must be properly installed and configured on all the relevant servers, including the process scheduler/batch/report servers.
- ▶ The database must be visible from the process scheduler server.
- ▶ Web server and PIA must be installed for the report and log distribution to work properly (we will discuss details on the report distribution later in this chapter).
- ▶ If your application requires COBOL processes, you will need to set up your COBOL environment.

Note: Not all PeopleSoft applications require COBOL. If you do need COBOL processes, you will need to purchase a supported COBOL compiler. Consult the PeopleSoft Customer Connection for your requirements, or your PeopleSoft account representative to inquire about COBOL compiler licenses.

13.2 Configuring Process Scheduler Server

You will use the psadmin utility to configure the Process Scheduler Server. (This is the same utility you have used to configure the application server in Chapter 11, “Installing and configuring the application server” on page 123.)

For a full listing of configuring the Process Scheduler server using psadmin, please see “Process Scheduler Configuration” on page 201.

1. Start the PeopleSoft Server Administration utility by calling [PS_HOME]/appserv /psadmin. Make sure that your environment variables are set properly, including running db2profile and psconfig.sh scripts.
2. Select **2) Process Scheduler** to start working with Process Scheduler Server configurations.
3. If this is your first time configuring the Process Scheduler, select **4) Create a Process Scheduler Server Configuration**.
4. Enter the name of the database, in our case FIN88DMO.
5. When you are prompted whether you would like to configure this server press **y**.

You will see a Quick-Configure menu. Verify that all the settings are correct:

- ▶ The name of the process scheduler server will typically reflect the operating system environment (PSNT, PSUNIX, etc.), which helps users determine the appropriate server to use (remember, some requests can only be sent to Windows-based servers).
- ▶ Check that user ID, connect ID, and related passwords are correct. You can use a PeopleSoft “superuser” (PS or VP1) to verify the configuration, but you should eventually use a different user in production systems, as outlined in the appropriate section of the *PeopleSoft Installation Manual* for your platform.
- ▶ Verify that the SQRBIN variable points to the SQR executables (interpreter and viewer) on your batch server.
- ▶ Finally, DBTYPE and DBNAME should be indicative of your actual database, in our case DB2UNIX and FIN88DMO, respectively.

When you are satisfied with the configuration, select **4) Load Config as shown**. Finally, select **1) Start a Process Scheduler Server**.

13.3 Configuring report distribution

You need to configure report distribution to be able to view reports, logs, and messages resulting from batch processes over the Web interface. This is done through PeopleTools, using the Web browser interface. When configured, PeopleSoft Process Scheduler and Distribution Server Agent will move reports into a report repository, from which the Web server will serve them to the end user.

13.3.1 Setting up a report node

Log in to your PeopleSoft environment, then navigate to **PeopleTools** → **Process Scheduler** → **Report Nodes**, and select **Add a New Value**. Enter a descriptive name for the report node you are creating. Since we only used one report node, we used a generic name Reports. A page similar to that in Figure 13-1 on page 149 will appear.

Under the Distribution Node Details section, the URL for The web server typically follows the form `http://servername:port/psreports/siteName`, in our case `http://bottom440/psreports/fin88` (port 80 is default). If the hostname will not be resolvable by all the clients using it, substitute the host's IP address instead. Type in the appropriate description, and select the correct operating system.

Connection information is used to indicate the machine hosting the report repository—almost always the same machine the Web server is located on. Type in the address of the host (IP number or hostname), Web server's port, and connection method—HTTP unless you are using Secure Socket Layer (SSL). URI Resource follows the form `SchedulerTransfer/SiteName`. Login ID and password are not required unless you are using basic authentication on the Web server. Click **Save** when you have completed the configuration.

PeopleSoft®

Home | Worklist | MultiChannel Console | Add to Favorites | Sign out

New Window | Customize Page | help

Menu

- Application Diagnostics
- Tree Manager
- Reporting Tools
- PeopleTools
 - Security
 - Utilities
 - Workflow
 - Portal
 - Search Engine
 - Personalization
- Process Scheduler
 - System Process Requests
 - Process Monitor
 - Process Types
 - Processes
 - Jobs
 - Schedule JobSet Definitions
 - Recurrences
 - Servers
 - Report Nodes**
 - Daemon Group
 - System Settings
 - Batch Timings
- Cube Manager
- Application Engine
- Integration Broker
- REN Server Configuration
- MultiChannel Framework
- Archive Data
- Data Archive Manager
- Translations

Http Distribution Node | FTP/XCopy Distribution Node

Report Node Definition

Node Name: Reports

Ftp/XCopy **Http Information**

Distribution Node Details

URL: http://9.42.171.34/psreports/fin88

Description: FIN88 Distribution Node

Operating System: UNIX

Connection Information

http https

URI Host: 9.42.171.34 **URI Port:** 80

URI Resource: SchedulerTransfer/fin88

Login ID:

Password: **Confirm Password:**

Save Notify Add Update/Display

Http Distribution Node | FTP/XCopy Distribution Node

Figure 13-1 Report Node Definition

13.3.2 Setting up a distribution server

To set up a PeopleSoft distribution server, log in to your PeopleSoft environment and select **PeopleTools** → **Process Scheduler** → **Servers**. Enter the server name for the distribution server you want to configure; this will usually be of the form PSOS, such as PSNT, PSUNX, or PSOS390. You should see a page similar to that in Figure 13-2.

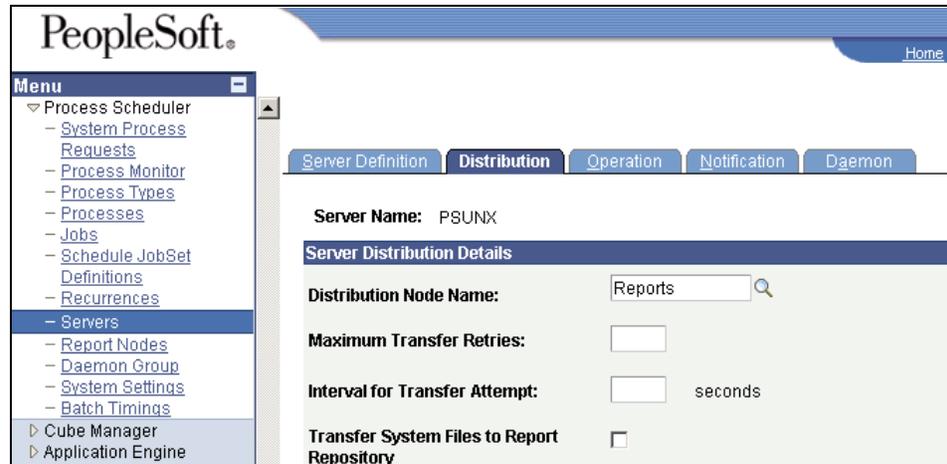


Figure 13-2 Distribution server

On the Distribution tab of the server page, enter the name of the Distribution Node you have created in the previous section (or click the magnifying glass icon to perform a lookup on all available nodes). Enter the maximum number of times the server will attempt to send a report to the repository before timeout, and the time interval between each attempt. System files are logs, messages and trace files from processes that do not generate reports. They can also be moved to the report repository if you select the appropriate checkbox. When you are satisfied with the configuration, click **Save**.

You should reboot the Process Scheduler server. Using the psadmin utility, select **2) Stop a Process Scheduler Server** then **1) Start a Process Scheduler Server**).

13.4 Testing Process Scheduler setup

The easiest way to test the Process Scheduler is to run a process and check the results. SQR processes are generally automatically configured, and PeopleSoft supplies a number of scripts specifically created for testing and verification.

Select **PeopleTools** → **Process Scheduler** → **System Process Requests**. If this is your first time running a process, you will probably have to create a new RunID (only the name of the RunID is needed). On the System Process Requests page, click the **Run** button. You will be presented with a list of available processes.

Select a process such as **Cross Reference Window Listing SQR Report (XRFWIN)** by clicking its checkbox, and ensure that Type is set to Web. Click **OK** at the bottom of the screen. You will be returned to the System Process Requests page. Click the **Process Monitor** link (also available from the PeopleTools navigation menu).

The Process Monitor page allows a quick review of recently and currently running processes. Your process will likely show Queued run status initially, changing into Processing and Success or Error. The Distribution Status field will show Posted when the resulting report has successfully been transferred to the report repository.

When the process has completed, click **Details, View Log/Trace**, and select the PDF file name of the form XRFWIN_*pid*.PDF (that is, XRFWIN_2054.PDF). You will need to type in your user ID and password, and should now see the resulting report.

13.5 Troubleshooting Process Scheduler configuration

If you are unable to start Process Scheduler, check that Tuxedo is properly installed, the database and application servers are up, and that the Process Scheduler server is configured with the proper user IDs, connection information, OS and DB selections, and paths. Make sure that the user has the appropriate rights to start Process Scheduler, and that all the system and environment variables have been set.

If the processes are failing in the Process Monitor, check that the appropriate engine (SQR, COBOL, Crystal, etc.) is configured properly. Many of these processes can be run manually (use SQRW from two-tier client to run SQR reports, and so on) to help isolate the problem. Check the messages and error logs for hints, and run a search for any errors on PeopleSoft Customer Connection:

<http://www.peoplesoft.com>

If processes are completing but not posting, check your distribution node and server details. Try using hostname or IP numbers alternatively. Ensure that the site name and port numbers are correct. Check that the network connection is open between the various servers in your PeopleSoft environment.

13.6 Post-installation

This section describes tasks you may need to consider after completing your installation.

13.6.1 Applying fixes

This section outlines some considerations you should take into account when upgrading or applying fixes to PeopleSoft databases. It describes the method PeopleSoft uses to deliver product fixes and lists the steps you need to apply the different types of fixes.

The chapter also considers PeopleSoft upgrades.

It shows how the new Upgrade Assistant can improve upgrade quality and shorten the amount of time it takes to complete an upgrade. It also comments on other improvements in PeopleSoft V8 that assist the upgrade process.

PeopleSoft delivers updates and fixes on a regular basis. Review the Customer Connection at the following site to check if there are any new updates for the product:

<http://www.peoplesoft.com>

These instructions describe the general steps for different types of patches. For details about applying a specific patch, refer to the instructions for that patch.

Applying a patch requires three steps:

1. Verify that all prerequisite patches have been applied.
2. Download the patch files from Customer Connection.
3. Apply the patch to the system.

The software change made in an application patch may depend on other changes made in prior patches. Therefore, it is important to apply patches to the PeopleSoft system in the correct order. Each Updates & Fixes Report page in Customer Connection includes a Prerequisites section. This section lists any prior patches on which the current patch relies. You must make sure that you have applied all the prerequisite patches before you apply the current patch.

For patches with multiple prerequisites, the Prerequisites section also specifies the correct order for applying the prior patches. If no specific order is given, apply the patches in the order of their posted (or reposted) date, starting with the earliest date.

Skipping prerequisites or applying them in the incorrect order may result in incompatible software with unpredictable problems.

The software changes associated with a patch are usually attached to the Updates & Fixes Report page as a self-extracting ZIP archive (.EXE) file. This archive file contains the various files you need to apply the patch. The .EXE file may also include supporting documentation, or the Updates & Fixes Report page may include a separate .EXE for the documentation. If the Updates & Fixes Report page includes more than one .EXE file, read the implementation instructions carefully to make sure to download the correct files.

Note: For some cases, the Prerequisites section lists only the immediate prerequisites for the current patch. Those prior patches may themselves have additional prerequisites. Before you apply any prerequisite patch, you must make sure that you have applied all of its prerequisites.

To install the patch, follow these steps:

1. Create an empty temporary directory on a local drive on the workstation or file server.
2. Download the .EXE file from the Updates & Fixes Report page to the temporary directory.
3. Run the executable file to extract the files that make up the patch.
4. Copy the extracted files to the appropriate locations.
5. Complete any additional steps specified on the Updates & Fixes Report page.
6. Delete the temporary directory.

Applying each type of file to the PeopleSoft system

The components delivered in a patch replace prior versions of the same components on the system. If any of these components were specially configured or customized, the changes must be re-applied to the new version of the component.

COBOL file (*.CBL)

The process for handling COBOL files differs depending on the database platform. In all cases, write access to the COBOL source and executable directories is required to compile COBOL modules.

For batch servers that reside on Windows NT® and 2000, the .cbl file(s) should be copied to the <PS_HOME>\src\cbl\base directory and recompiled. For batch servers that reside on UNIX, the .cbl file(s) should be copied using FTP (ASCII

mode) to the <PS_HOME>/src/cbl directory in the case-sensitive format of PSXXXXXX.cbl and recompiled.

Data Mover file (*.DMS, *.DAT)

There are three types of DMS files:

- ▶ Those that contain COBOL stored statements
- ▶ Those that contain database update scripts
- ▶ Those that contain Application Upgrade DAT file import scripts

The Updates & Fixes Report page should specify which type of DMS file each one is. To run the Data Mover scripts, follow these steps:

1. Copy any DMS files that contain COBOL stored statements into the directory <PS_HOME>\src \cbl \base, unless the Updates & Fixes Report page specifies a different directory.
2. Copy any DMS files that contain database or Application Upgrade DAT file import scripts into the *scripts* directory.
3. Copy all *.DAT files into the *data* directory.
4. If the set of newly delivered files includes Storexxx.DMS (where xxx refers to the relevant PeopleSoft application) then run that script using Data Mover. Store xxx. DMS reloads all stored statements, including those in the newly delivered files. Skip the next two steps.
5. If the set of newly delivered files does not include Storexxx.DMS, use Data Mover to run each newly delivered DMS script in the <PS_HOME>\src \cbl \base directory. Either run the script files individually, or add them to the existing Storexxx.DMS file and run Storexxx.DMS.
6. If the set of newly delivered files does not include Storexxx.DMS, consult the documentation provided with the patch for information about when to run the DMS scripts that are copied into the *scripts* directory.

Remember to set the Data Mover Input and Output directory settings in the Configuration Manager before running the scripts.

Report file (*.SQR, *.SQC, *.RPT, *.XNV)

PeopleSoft-delivered report files should be placed in the <PS_HOME>\sqr directory, while any user-modified SQR should be placed in a separate directory.

Do the following:

1. Copy any *.SQR and *.SQC files to the <PS_HOME>\sqr directory on the file server.
2. Copy any *.RPT files to the <PS_HOME>\crw directory on the file server.

3. Copy any *.XNV files to the <PS_HOME>\nVision \Layouts directory on the file server, unless the Updates & Fixes Report page specifies a different location.
4. Copy any *.SQR and *.SQC files to the <PS_HOME>\sqr directory on the Windows NT/2000 batch server, or FTP any *.SQR and *.SQC files to the <PS_HOME>/sqr directory on the UNIX batch server.

Application upgrade project

The process for loading Application Upgrade projects into the PeopleSoft database differs between PeopleSoft V8 and previous releases. PeopleSoft V8 Application Upgrade projects are provided as a maintenance project. This is a set of files containing the definitions for a PeopleSoft project and its related database objects.

Note: For DMS files that contain Application Upgrade DAT file import scripts, refer to “Application upgrade project” on page 155.

PeopleSoft recommends that patches be initially applied to an application demo database. Once the fix is applied to the demo database, run an upgrade to compare with the development, test, or production databases, and identify whether the delivered patch has an impact on any modifications that have been made. For information on running an upgrade compare, refer to the PeopleTools documentation.

The project file allows customers to quickly apply patches to the database directly through the Application Designer. Maintenance projects are standard PeopleTools upgrade projects with one additional feature. When a maintenance project is copied into a database, it inserts data about the applied patch into a database maintenance log for reference purposes.

To apply a maintenance project, complete these steps:

1. Log into the database where the project is to be applied (the application demo database in most cases).
2. Start Application Designer.
3. Select **File -> Copy Project from File**.
4. In the dialog box that appears, navigate to the directory that contains the maintenance project.
5. Select the project file and modify the copy options if necessary.
6. Click the **Copy** button to load the project and its related objects into the database.
7. Complete any other steps specified on the Updates & Fixes Report page.

Recreating views and altering tables

Occasionally, the instructions for applying an application patch tell customers to recreate database views or alter a database table. This section provides an overview of how to perform these tasks. Read the documentation for the patch carefully before you make these database changes. Perform these steps only for objects explicitly identified in the instructions.

To recreate a view, perform these steps:

1. Start Application Designer.
2. Select **File -> Open**.
3. Enter or select **Record** as the Object Type to open.
4. Open the record representing the view to be recreated.
5. Select **Build -> Current Object**. The Build dialog box appears.
6. Select the **Create Views** checkbox.

Note: To apply a maintenance project to a PeopleSoft V8 database, the change control must be turned off.

7. Select one of the Build Execute Options: **Build Script**, **Execute SQL now** or **Execute and Build Script**.
8. Click the **Build** button to perform the change or generate the script.
9. If Build Script is selected, review the resulting script file, and then run the file using an SQL editor.

To alter a table, follow these steps:

1. Start Application Designer.
2. Select **File -> Open**.
3. Enter or select **Record** as the Object Type to open.
4. Open the record representing the table to alter.
5. Select **Build -> Current Object**. The Build dialog box appears.
6. Select the **Alter Tables** checkbox. The Create Indexes checkbox is automatically selected, as is the Build Script checkbox in the Build Execute Options box.
7. Click the **Build** button to generate the script.
8. Review the resulting script file, then run the file according to the platform and administrative requirements.



Part 4

Appendixes



PeopleSoft products

This appendix lists the entire range of PeopleSoft products. It also provides a brief explanation of each one.

Overview of PeopleSoft product family

With the completion of the merger with J.D. Edwards, PeopleSoft now has three major product families:

- ▶ PeopleSoft Enterprise

PeopleSoft Enterprise, which is the new name for the original PeopleSoft product portfolio, is a family of best-in-class applications based on PeopleSoft's Pure Internet Architecture designed for flexible configuration and open, multi-vendor integration. It is ideally suited for financial, government, education, healthcare and other services industries. It is also ideally suited for large, company-wide functions such as human resources, finance, IT, procurement, marketing, services and sales across all industries.

- ▶ PeopleSoft EnterpriseOne

Formally J.D. Edwards 5, PeopleSoft EnterpriseOne is a complete suite of modular, pre-integrated industry-specific business applications designed for rapid deployment and ease of administration on a pure Internet architecture. It is ideally suited for organizations that manufacture, construct, distribute, service, or manage products or physical assets.

- ▶ PeopleSoft World

Formally J.D. Edwards OneWorld, PeopleSoft World (also known as WorldSoftware) is a leading application suite for the IBM iSeries platform. The applications are tightly integrated and pre-bundled on a single database, with a Web-enabled architecture.

PeopleSoft Enterprise

This section covers the products under the PeopleSoft Enterprise family.

PeopleSoft Enterprise Campus Solutions

PeopleSoft Enterprise Campus Solutions is a suite of applications specifically designed for usage at higher education institutions. Campus Solutions is designed to bring students, alumni, faculty, and administrators closer to together, and helps manage both aspects of student administration (from recruitment and admission to financial aid and student records) and contributor relations (such as fund raising), building stronger relationships and lowering cost.

Campus Solutions consists of the following modules:

- ▶ Academic Advisement
- ▶ Campus Community

- ▶ Campus Directory Interface
- ▶ Campus Learning Management
- ▶ Community Access
- ▶ Community Directory
- ▶ Contributor Relations
- ▶ Financial Aid
- ▶ Gradebook
- ▶ Involvement
- ▶ Learner Services
- ▶ Outreach
- ▶ Personal Portfolio
- ▶ Recruiting and Admissions
- ▶ Student Administration
- ▶ Student Financial
- ▶ Student Records

For more information on PeopleSoft Enterprise Campus Solutions please visit:

http://www.peoplesoft.com/corp/en/products/ent/campus_solutions/index.jsp

PeopleSoft Enterprise Customer Relationship Management

PeopleSoft Enterprise Customer Relationship Management (CRM) provides immediate, seamless integration among customer, financial, supply chain, and employee management systems. It has built-in analytics to constantly monitor all enterprise data, revealing the relationships between customers, products and channels. With PeopleSoft Enterprise CRM, every customer interaction can now be an opportunity to build business value with your customers.

PeopleSoft Enterprise CRM is built around the following solution areas:

- ▶ Industry Solutions

Business rules are different from industry to industry, therefore PeopleSoft has created sets of industry-specific functionally built around a configurable core set of CRM applications. PeopleSoft offers industry solutions for:

- Communications

Designed specifically for the communications industry, PeopleSoft Enterprise CRM for Communications simplifies the ordering and configuration of complex service offerings, supports on-line ordering, targeting marketing, and customer self-service.

- Energy

PeopleSoft Enterprise CRM for Energy enables energy providers to maximize existing investments in customer information systems (CIS) with comprehensive online customer services. Non-regulated retail energy

companies can leverage comprehensive sales and marketing functionality to aggressively target and acquire new customers. Regulated distribution companies can use CRM for Energy to help retain existing customers through world-class customer service.

- Financial Services

By providing a central customer view, PeopleSoft Enterprise CRM for Financial Services integrates all of a customers' relationships to people, products, and services across an enterprise. By giving this complete understanding of their most prized customers, CRM for Financial Services allows a business to prioritize products, services, and resources to their key customers.

- Government

As the first pure Internet-based constituent relationship management solution that is designed specifically for the way government works, PeopleSoft Enterprise CRM for Government helps you develop an agency-wide strategy for a coordinated, streamlined approach to staying connected with your constituents, ensuring that the right people have access to the right information.

- High Technology

PeopleSoft Enterprise CRM for High Technology is a complete solution designed specifically for the high-tech industry. It allows you to make the most out of every customer transaction - from first marketing contact to billing, registration, support, and service. It also helps in increasing maintenance revenue by automating the service-level agreement renewal process.

- Insurance

PeopleSoft Enterprise CRM for Insurance allows you to get a full view of a customers portfolio, even if they have several policies, allowing everyone in your organization to give personalized service. CRM for Insurance transforms the traditional agent, broker, and customer interactions from an account-centric approach to a customer-centric enterprise strategy so you can retain profitable, satisfied customers.

- ▶ Marketing Solution

The PeopleSoft Enterprise Marketing Solution allows everyone in a marketing organization - from the CMO down - to manage spending, connect with customers, and maximize returns. It provides a complete solution that enables better understanding of customer behavior, to coordinate marketing, and to focus your resources on the best possible returns, using both real-time analytics and "what-if" scenarios.

- ▶ Sales Solution
The need for sales people to access information anytime, anywhere, and in the right context is a given in today's fast paced environment. PeopleSoft Enterprise Sales Solution gives you the tools so that you can understand customers better, identify the best opportunities, and drive revenue through multiple channels.
- ▶ Service Solution
Customers today demand service to be available anytime. And providing personalized service through the channel of the customers' choice is key. PeopleSoft Enterprise Service Solution provides a complete customer view, while providing multiple channels of service and increasing cross-sale and up-sell opportunities for your business.

For more information on all of the PeopleSoft Enterprise Customer Relationship Management solutions, visit:

<http://www.peoplesoft.com/corp/en/products/ent/crm/index.jsp>

PeopleSoft Enterprise Financial Management

More than just an accounting system, PeopleSoft Enterprise Financial Management helps you automate and synchronize the entire money-management chain of your enterprise. Whether you're budgeting expenses, recording transactions, or forecasting revenue, you can minimize data entry and maximize the value of your financial information.

Financial Management consists of the following solutions:

- ▶ Financial Management Analytics Solution
 - Activity-Based Management
 - Analytic Forecasting
 - Asset Liability Management
 - Business Planning and Budgeting
 - CFO Portal
 - Enterprise Scorecard
 - EPM Portal Pac
 - ESA Warehouse
 - Financial Management Warehouse
 - Financials Portal Pack
 - Funds Transfer Pricing
 - Global Consolidations
 - Government Portal
 - Investor Portal
 - Project Portfolio Management

- Risk-Weighted Capital
- ▶ Financials
 - Business Planning and Budgeting
 - CFO Portal
 - eSettlements
 - Fixed Asset Accounting
 - General Ledger
 - Internal Controls Enforcer
 - Investor Portal
 - Payables
 - Purchasing
 - Receivables
- ▶ Profitability Management for Financial Services
 - Asset Liability Management
 - Funds Transfer Pricing
 - Risk-Weighted Capital
- ▶ Treasury
 - Cash Management
 - Deal Management
 - Risk Management
- ▶ Industry Enterprise Financial Management Product Modules
 - Government Portal

For more information on PeopleSoft Enterprise Financial Management, go to:

http://www.peoplesoft.com/corp/en/products/ent/financial_mgmt/index.jsp

PeopleSoft Enterprise Human Capital Management

It has been said time and time again that people make or break an organization. PeopleSoft Enterprise Human Capital Management (HCM) is designed to both streamline human resources operations and also to align your workforce to drive higher levels of business performance. HCM is built around four core processes:

- ▶ Plan-Attract-Onboard

Getting the best talent onboard is key in executing a business strategy. The modules here work to making sure you acquire the best talent, making sure they are productive as soon as possible, as well as giving them the tools they will need from the first day on the job onwards. This process is built on the following modules:

- eRecruit
- eRecruit Manager Desktop

- HRMS Portal Pack
 - HRMS Warehouse
 - Resume Processing
 - Services Procurement
 - Workforce Planning
- ▶ Assess-Design-Develop
- To get the most out of your employees, you need to identify your top talent for future development, and make sure that everyone is aligned with the companies goals. This process gives you the tools to assess your employees skills and design learning and performance programs to develop all of your employees. This process is built on the following modules:
- eDevelopment
 - ePerformance
 - HRMS Portal Pack
 - HRMS Warehouse
 - Learning Management
 - Workforce Planning
- ▶ Optimize-Track-Monitor
- Once you have acquired and trained your employees, you need to ensure that you have the right personnel in the right positions at the right time. And, of course, you want to make sure they are paid in a timely manner. This set of modules gives you the ability to do that and more all from one central location. This process is built on the following modules:
- Directory Interface
 - ePay
 - eProfile
 - eProfile Manager Desktop
 - Global Payroll
 - HelpDesk for Human Resources
 - HRMS Portal Pack
 - HRMS Warehouse
 - Human Resources
 - Mobile Time Management
 - Payroll for North America
 - Payroll Interface
 - Payroll Interface for ADP Connection
 - Time and Labor
 - Workforce Scorecard
- ▶ Plan-Incent-Reward
- Planning compensation and reward structures that are fair and equitable can motivate people to increased performance. This process is designed to

understand your workforce, identify your top talent, and reward them appropriately. This process is built on the following modules:

- Benefits Administration
- eBenefits
- eCompensation
- eCompensation Manager Desktop
- eEquity
- Flexible Spending Account Administration
- HRMS Portal Pack
- HRMS Warehouse
- Pension Administration
- Sales Incentive Management
- Stock Administration
- Workforce Rewards

For more information on PeopleSoft Enterprise Human Capital Management, please visit:

<http://www.peoplesoft.com/corp/en/products/ent/hcm/index.jsp>

PeopleSoft Enterprise Service Automation

The largest hidden cost for an organization today is operating costs. PeopleSoft Enterprise Service Automation gives you real-time visibility and control over all of your operating costs, something that is well needed in this time of increase shareholder, governmental, and executive scrutiny.

PeopleSoft Enterprise Service Automatic is built around the following solutions:

► Enterprise Service Automation for IT

PeopleSoft Enterprise Service Automation (ESA) for IT gives you complete control over your IT costs, from project planning to contracts to resource management. From the department to the division level, you can boost the efficiency of your IT organization and accountability of your resources. ESA for IT is comprised of the following modules:

- Billing
- Contracts
- ESA Warehouse
- Expense Management
- Mobile Time and Expense
- Program Management
- Project Costing
- Project Portfolio Management
- Resource Management
- Services Procurement

► Grants Management

PeopleSoft Enterprise Grants Management manages the full life cycle of research administration including proposal generation, transitioning proposals into awards, award tracking, facilities and administration processing, comprehensive bill generation, and flexible financial reporting. It is the only proven solution that enables research administrators to increase operational efficiencies, achieve regulatory compliance, and drive fiscal accountability throughout their organizations in order to successfully compete for grant awards. Grants Management is composed of the following modules:

- Billing
- Contracts
- General Ledger
- Grants
- Project Costing
- Receivables

► Professional Services Solution

The PeopleSoft Enterprise Professional Services Solution gives you control over your entire service chain, from contracts and people management to recognition and performance analysis., all of which to give you the ability to optimize your workforce and eventually increase profits. Professional Services Solution is made up of the following modules:

- Billing
- Contracts
- ESA Portal Pack
- Expense Management
- Mobile Time and Expense
- Program Management
- Project Costing
- Proposal Management
- Receivables
- Resource Management
- Services Procurement

► Staffing Solution

Staying competitive in the staffing industry is becoming more difficult everyday. With PeopleSoft Enterprise Staffing Solutions, you can drive efficiencies, expand you relationships with clients, and capitalize on growth opportunities by integrating both front and back-office systems to create a consistent single view of employees, customers, orders, billing, and projects. Staffing Solutions is built off the following modules:

- Billing
- Contracts

- Global Payroll
 - Human Resources
 - Pay/Bill Management
 - Payroll for North America
 - Project Costing
 - Staffing Front Office
 - Time and Labor
- ▶ Travel and Expense Management
- PeopleSoft Enterprise Travel and Expense Management is a complete end-to-end solution for your enterprises expense processes. With the ability to automate approval and reimbursement, you can prevent maverick spending and leverage preferred vendor rates in order to keep expenses down and controls tight. Travel and Expense Management is comprised of the following modules:
- Expense Management
 - Mobile Time and Expense

For more information on all of PeopleSoft's Service Automation solutions, please visit:

http://www.peoplesoft.com/corp/en/products/ent/service_automation/index.jsp

PeopleSoft Enterprise Supplier Relationship Management

PeopleSoft Enterprise Supplier Relationship Management (SRM) solutions help you focus your time and talents on high value-adding activities like collaborative product management with suppliers and customers. By making the entire purchasing process more cost-efficient, you can streamline best-practices and leverage both purchasing power and your strategic relationships with your key suppliers, reducing spending on goods and improving quality.

PeopleSoft Enterprise SRM is comprised of the following solutions and modules:

- Catalog Management
- Collaborative Supply Management
- Engineering
- eProcurement
- eSettlements
- eSupplier Connection
- Payables
- Purchasing
- Services Procurement
- Source to Settle Process Integration Pack
- Strategic Sourcing
- Supplier Rating System

- Supply Chain Portal Pack
- Supply Chain Warehouse

For more information on PeopleSoft Enterprise SRM, please visit:

<http://www.peoplesoft.com/corp/en/products/ent/srm/index.jsp>

PeopleSoft Enterprise Supply Chain Management

Building a synchronized supply chain can yield benefits in cost savings across the entire chain, from suppliers of raw goods to your customers. PeopleSoft Enterprise Supply Chain Management (SCM, formally called PeopleSoft Manufacturing) extends your supply chain real-time with both your suppliers and customers, giving you spend management and integrated analytics for all categories of goods and services. The following solutions are available for PeopleSoft Enterprise SCM:

▶ Customer Order Management

The PeopleSoft Enterprise Customer Order Management solution provides a complete end-to-end view of your entire supply chain, supporting the complete order-to-cash business process. By optimizing your distribution you can achieve insight into product and customer profitability as well as information regarding fulfillment rates and customer service. Customer Order Management is comprised of the following modules:

- Billing
- eBill Payment
- Inventory
- Order Management
- Product Configurator
- Promotions Management
- Receivables
- Supply Chain Portal Pack

▶ Manufacturing Solution

PeopleSoft Enterprise Manufacturing Solution focuses on optimizing your production process, ensuring alignment with key business goals and best practices. You can optimize manufacturing practices, manage your extended factory through both suppliers and customers, and analyze real-time manufacturing performance metrics to minimize production costs. Manufacturing Solutions consists of the following modules:

- Engineering
- Flow Production
- Manufacturing
- Quality

► Supply Chain Planning

By aligning your employees, customers, and suppliers with PeopleSoft Enterprise Supply Chain Planning, you can extend your planning to everyone in real-time. By using analytics, you can ensure performance metrics and compliance have been achieved against forecasts and execute plans across the entire enterprise. Supply Chain Planning is comprised of the following modules:

- Demand Planning
- Inventory Policy Planning
- Supply Planning Advanced Multisite Planner
- Supply Planning Multisite Material Planner

For more information on PeopleSoft Enterprise Supply Chain Management, please see:

<http://www.peoplesoft.com/corp/en/products/ent/scm/index.jsp>

PeopleSoft EnterpriseOne

PeopleSoft EnterpriseOne (formally J.D. Edwards 5 and OneWorld) represents a complete suite of industry specific applications designed for rapid deployment and ease of use based upon a pure Internet architecture. It is ideal for those business involved in manufacturing, constructing, distributing, servicing, or managing physical goods or services.

This section covers the products under the PeopleSoft EnterpriseOne family.

PeopleSoft EnterpriseOne Asset Lifecycle Management

No matter what type of asset, from physical buildings to equipment on a production floor, you need to get the most value out of them for your business to succeed. Typically, most suites only deal with maintenance and billing of assets. PeopleSoft EnterpriseOne Asset Lifecycle Management (ALM) deals with the complete lifecycle of an asset, from planning and construction to operation and eventual retirement, allowing you to maximize profitability and your return on that investment. PeopleSoft EnterpriseOne ALM offers two solution areas:

► Capital Asset Management

PeopleSoft EnterpriseOne Capital Asset Management deals with you plant and your equipment, allowing you to drive more value from your assets. It does this by linking your goals to your maintenance requirements, including technician competencies, history and availability, spares management,

service level agreements, work order backlog and forecast, warranty management, location tracking/status, and failure analysis.

▶ Real Estate Management

Today, many real estate organizations are disjointed, with separate groups responsible for billing, maintenance, sales, and processing. PeopleSoft Enterprise Real Estate Management allows you to resolve operational efficiencies in an economical manner by creating a collaborative environment based off Internet technologies. By reducing entry time and offering a central point of entry, tasks that used to take days now can take minutes, with more accurate results.

For more information on PeopleSoft EnterpriseOne Asset Lifecycle Management, please visit:

http://www.peoplesoft.com/corp/en/products/ent_one/asset_lifecycle_mgmt/index.jsp

PeopleSoft EnterpriseOne Customer Relationship Management

PeopleSoft EnterpriseOne Customer Relationship Management (CRM) is not just about getting to know your customers better. It's about creating a complete solution for your business, linking every customer touchpoint with everyone in your organization. PeopleSoft EnterpriseOne CRM does this and more: through PeopleSoft EnterpriseOne Customer Life Cycle Management it expands the definition of CRM to include every process that touches a customer, including delivery and billing. And with full integration into other PeopleSoft EnterpriseOne modules you get to streamline your entire process from customer acquisition to maintenance and service. PeopleSoft EnterpriseOne CRM is comprised of the following modules:

- ▶ Advanced Configurator
- ▶ Customer Self Service
- ▶ Integrated Field Service
- ▶ Marketing
- ▶ Mobile Sales
- ▶ MultiChannel Interaction Manager
- ▶ Partner Relationship Management
- ▶ Sales
- ▶ Support

For more information on PeopleSoft EnterpriseOne Customer Relationship Management, please see:

http://www.peoplesoft.com/corp/en/products/ent_one/crm/index.jsp

PeopleSoft EnterpriseOne Financial Management

PeopleSoft EnterpriseOne Financial Management is designed to easily manage all of your finances. All of the financial and accounting solutions are pre-integrated, and all easily link to other solutions in the PeopleSoft EnterpriseOne line of applications. Whether it's planning, accounting, or managing expenses, Financial Management can give you a foundation to account for every penny in your organization.

PeopleSoft EnterpriseOne Financial Management is comprised of the following modules:

- ▶ Accounts Payable
- ▶ Accounts Receivable
- ▶ Advanced Cost Accounting
- ▶ Cash Accounting
- ▶ Expense Management
- ▶ Financial Planning and Budgeting
- ▶ Financial Reporting
- ▶ Fixed Asset Accounting
- ▶ General Ledger

For more information on PeopleSoft EnterpriseOne Financial Management, please visit:

http://www.peoplesoft.com/corp/en/products/ent_one/financial_mgmt/index.jsp

PeopleSoft EnterpriseOne Human Capital Management

PeopleSoft EnterpriseOne Human Capital Management (HCM) provides a complete solution that can help companies solve their most important human resource and payroll challenges. Through its' workflow enabled applications, HCM offers the tools companies need to be more successful with their employees and more efficient with their payroll processing. And, by aligning your corporate objectives with your workforce the entire company benefits.

PeopleSoft EnterpriseOne HCM is comprised of the following modules:

- ▶ Employee Self Service
- ▶ Human Resources Management
- ▶ Manager Self Service
- ▶ Payroll Processing
- ▶ Time and Labor

For more information on PeopleSoft EnterpriseOne Human Capital Management, see:

http://www.peoplesoft.com/corp/en/products/ent_one/hcm/index.jsp

PeopleSoft EnterpriseOne Project Management

Every project team, whether large or small, faces similar challenges. Clients and business are demanding more and more from their projects, and at reduced cost. PeopleSoft EnterpriseOne Project Management creates a rich environment that can be accessed anywhere to give you the tools to proactively manage and track your projects. And, as in all PeopleSoft EnterpriseOne applications, you have seamless integration with other critical applications.

PeopleSoft EnterpriseOne Project Management is composed of the following modules:

- ▶ Change Management
- ▶ Contract Service Billing
- ▶ Homebuilder Management
- ▶ Project Costing

For more information on PeopleSoft EnterpriseOne Project Management see:

http://www.peoplesoft.com/corp/en/products/ent_one/project_mgmt/index.jsp

PeopleSoft EnterpriseOne Supplier Relationship Management

For centuries buyers have been exchanging information with their suppliers. However, even today with phone, email, and fax technologies it is still difficult for companies to connect and react when things go wrong. PeopleSoft EnterpriseOne Supplier Relationship Management (SRM) uses role and relationship-based rules to manage your business in real-time, allowing you to reduce material costs, improve turn around, and increase profitability. All of which allows you to compete more effectively. PeopleSoft EnterpriseOne SRM is built off the following modules:

- ▶ Procurement and Subcontract Management
- ▶ Supplier Self Service

For more information, please visit:

http://www.peoplesoft.com/corp/en/products/ent_one/srm/index.jsp

PeopleSoft EnterpriseOne Supply Chain Management

PeopleSoft EnterpriseOne Supply Chain Management (SCM) is a complete, modular solution allowing you to only apply just what you need to address your critical business needs. Whether you are in the business of industrial equipment or consumer end goods, PeopleSoft EnterpriseOne SCM can make you more competitive in any economic time.

PeopleSoft EnterpriseOne SCM offers four solution areas over 20 modules:

▶ **Advanced Planning**

No matter what industry you are in, planning is the key to success. PeopleSoft EnterpriseOne Advanced Planning gives you the ability to make collaborative strategic, operational, and tactical planning activities across all of your supply chain. And, as plans are enacted progress can be tracked in real-time against planned outcomes.

Advanced Planning is composed of the following modules:

- Demand Consensus
- Demand Forecasting
- Production and Distribution Planning
- Production Scheduling - Discrete
- Production Scheduling - Process
- Strategic Network Optimization
- Tactical Network Optimization

▶ **Customer Order Management**

Without orders, no company can survive. PeopleSoft EnterpriseOne Customer Order Management allows you to streamline order processing and maintain control over order tracking throughout the order life cycle. Complex product orders and configurations can be handled and managed, and contract agreements with your key business partners can be automatically managed. All this leading to improved customer service and reduced order error rates.

PeopleSoft EnterpriseOne Customer Order Management is comprised of the following modules:

- Advanced Pricing
- Agreement Management
- Base Configurator
- Order Promising
- Product Variants
- Sales Order Management

▶ **Logistics**

Many companies around the world use PeopleSoft EnterpriseOne Logistics solutions to improve the visibility and velocity of the flow of materials; to obtain real-time access to inventory quantities, conditions, and locations; to have warehouse facilities that are laid out to optimize the resources available; to automate the rating of loads tendered to the customer's preferred carrier; to automate payment of freight charges; and to have the ability to quote those charges at the time the order is taken. And integration with other PeopleSoft EnterpriseOne solutions such as SRM and HCM allow you to expand your capabilities to all facets of your business.

PeopleSoft EnterpriseOne Logistics is composed of the following modules:

- Advanced Inventory Management
- Bulk Stock Logistics
- Inventory Management Base
- Transportation Management
- Warehouse Management

► Manufacturing

PeopleSoft EnterpriseOne Manufacturing solution allows your organization to interchange your choice of manufacturing modes on demand to meet changing production requirements. Because each mode exists within a single enterprise-wide system where all manufacturing processes share common inventory, material, planning, purchasing, and financial databases, you can depend upon the utmost efficiency and accuracy across every mode.

PeopleSoft EnterpriseOne Manufacturing consists of the following modules:

- Quality
- Requirements Planning

For more information on all that PeopleSoft EnterpriseOne SRM can do for you, go to:

http://www.peoplesoft.com/corp/en/products/ent_one/scm/index.jsp

PeopleSoft World

PeopleSoft World (formally known as J.D. Edwards OneWorld) is a host-centric product line and the leading solution for the IBM eServer iSeries platform.

PeopleSoft World Self-Service

Today, PeopleSoft World Self-Service gives you the power of the Internet to ensure that your business is open long after the last employee has left for the evening. All business need to have their applications available to customers, employees, and partners 24x7, and PeopleSoft World Self-Service offers applications that enable key parties to access information when they need it, where they need it, building a competitive advantage for your organization. PeopleSoft World Self-Service is comprised of the following modules:

► Customer Self-Service

The cost of serving a customer continues to increase. However, the cost of losing that customer to a competitor due to poor service is even higher. By harnessing the power of the Internet, PeopleSoft World Customer Self-Service allows you to create closer relationships with your current

customers, increasing supply chain efficiency and improving customer retention and loyalty. At the same time, you increase time your customer service agents can spend with customers with special issues, increasing sales and reducing service costs.

▶ Employee Self-Service

Managing employee data, such as name changes, address changes, and benefit adjustments, can take away your HR people from what they were hired to do - optimize the human resources that make up your organization.

PeopleSoft World Employee Self-Service empowers your employees to manage their own HR record electronically, freeing your HR staff to concentrate on building better employees to improve your organization.

PeopleSoft World Employee Self-Service is composed of two modules:

- Human Resource Management Self-Service
- Employee Resource Self-Service

▶ Supplier Self-Service

When you are working with suppliers, collaboration, be that over email or phone, is key to your success. PeopleSoft World Supplier Self-Service allows you to streamline your supply processes by harnessing the power of the Internet to connect with your partners and suppliers. By giving you real-time access to purchase orders and release schedules, you can easily and quickly meet demand, giving you a competitive advantage. PeopleSoft World Supplier Self-Service is comprised of two modules:

- Buyer Self-Service
- Supplier Self-Service

For more information on the PeopleSoft World product family, please visit:

<http://www.peoplesoft.com/corp/en/products/world/index.jsp>



IBM eServer xSeries and BladeCenter Servers

In this appendix we describe the IBM @server xSeries product family as of April 2004.

As the world's leading server manufacturer, IBM has the goal of providing the greatest capability possible in an industry-standard server at a price appropriate for your business. If you are using industry-standard technologies, IBM xSeries servers provide you with a reliable foundation for your networked businesses by delivering outstanding power, scalability, control, and service.

On demand computing - information anywhere, anytime - may provide information access to millions of new users and devices. These new capabilities will drive huge requirements onto the back-end systems that support them. Server infrastructures will require new capabilities for communicating and managing ever larger quantities of information in a more dynamic and cost-effective manner than ever before.

In addition, the adoption of e-business technologies for business-to-consumer, Business-to-business and intra-business applications are accelerating; and this is placing higher demands on technology platforms. More significantly, businesses are increasingly turning to industry-standard technologies such as Intel processors along with Microsoft Windows 2003 or Linux operating systems for the new e-business foundation.

By building robust capabilities into xSeries servers and working on new technologies to enhance our industry-leading capabilities for the future, IBM xSeries X-Architecture™ addresses these requirements and helps prepare you for the next wave of e-business, on demand. The key to doing this successfully is experience - experience in software and hardware capabilities, experience in procedures and practices, and experience in supporting high-availability platforms. IBM has a long heritage of high-availability platform support, and xSeries is leveraging that experience throughout its' product line.

For more information about xSeries, please visit:

<http://ibm.com/eserver/xseries>

Universal tower servers

This section describes those systems in the universal tower server family.

xSeries 205

The ultra-affordable x205 delivers outstanding value and availability to small and medium-sized businesses. Advanced capabilities make the server easy to manage, which can control IT expenses. With such features as Intel Pentium® 4 processors with up to 533 MHz front-side bus speeds, optional hot-swap hard disk drives, and 2 GB of memory, the x205 offers incredible price / performance. And with Alert Standard Format (ASF) and IBM Remote Supervisor Adapter II support you have options to insure system availability and remote support 24/7.

For more information on the xSeries 205 please visit:

<http://www.pc.ibm.com/us/eserver/xseries/x205.html>

xSeries 206

The new x206 delivers affordability without sacrificing features or functionality. . With such features as Intel Pentium 4 processors with up to 800 MHz front-side bus speeds, optional hot-swap hard disk drives and simple-swap Serial ATA hard disk drives, and 4 GB of memory, the x206 offers incredible price / performance. And with the integrated ServeRAID 7E and IBM Remote Supervisor Adapter II support you have a robust system at a great price.

For more information on the xSeries 206 please visit:

<http://www.pc.ibm.com/us/eserver/xseries/x206.html>

xSeries 225

The 2-way x225 provides outstanding value to workgroups by combining scalable performance and new availability features at an affordable price. Designed to support such environments as file-and-print sharing and workgroup applications, the x225 offers such features as hot-swap hard disk drives, Chipkill memory, and optional redundant power supplies to improve availability.

For more information on the xSeries 225 please visit:

<http://www.pc.ibm.com/us/eserver/xseries/x225.html>

xSeries 235

This flexible 2-way server, maximized for high availability in distributed environments, supports extreme expandability of more than 1.3 TB of storage. Its industry-leading, high-availability features help deliver maximum uptime. The x235 delivers leading Ultra320 HDD performance with affordable data protection and server availability. The x235 also delivers integrated Ultra320 RAID-1 functionality, which provides the ability to mirror hard disk drives for data protection and even higher server availability. X-Architecture features like Chipkill memory, Active PCI-X technology and hot-swap cooling/power keep your server available when you need it. For flexibility to meet your custom space needs, the x235 offers a tower-to-rack conversion kit.

For more information on the xSeries 235 please visit:

<http://www.pc.ibm.com/us/eserver/xseries/x235.html>

xSeries 255

This affordable, high-capacity 4-way Intel Xeon MP-based server is designed for businesses with multiple locations or data centers delivers economical high performance and combines high-availability features with tremendous internal storage. Equipped with the latest Intel Xeon MP processors and up to 24GB of Chipkill memory, the x255 supports numerous Enterprise X-Architecture features such as Active Memory, Active PCI-X, and redundant components such as fans and power supplies.

For more information on the xSeries 255 please visit:

<http://www.pc.ibm.com/us/eserver/xseries/x255.html>

Rack-optimized servers

This section describes those servers in the rack-optimized server family.

xSeries 305

This highly affordable, ultra-dense one-way server, designed for edge-of-network and Web-based systems, is a value-packed, entry-level 1U server. With its' incredibly small 16.75 inch packaging, integrated dual Gigabit Ethernet, and support for the IBM Remote Supervisor Adapter II, the x305 offers both exceptional reliability and performance at a very attractive price point.

For more information on the xSeries 305 please visit:

<http://www.pc.ibm.com/us/eserver/xseries/x305.html>

xSeries 306

Recently introduced, the x306 is an ultra-dense, rack-optimized performance uni server that combines exceptional price and performance for Web and network infrastructure applications. With its' incredibly small sub 20 inch packaging, integrated hostRAID, and support for simple-swap Serial ATA hard disk drives, the x306 offers enhanced features at any entry price.

For more information on the xSeries 306 please visit:

<http://www.pc.ibm.com/us/eserver/xseries/x306.html>

xSeries 335

This ultra-dense, 1U, 2-way SMP server helps you do more with less, while helping reduce costs and save space. The x335 packs the latest Intel Xeon DP processors and support for up to 8 GB of Chipkill memory into a sleek, cost efficient package. Support for the latest Ultra 320 hard disk drives and integrated RAID 1 capability give you added performance and redundancy at no additional cost or sacrifice of space. And IBM's innovative C2T cabling technology can ease setup and eliminate over 120 cables from a full rack of servers.

For more information on the xSeries 335 please visit:

<http://www.pc.ibm.com/us/eserver/xseries/x335.html>

xSeries 343

The x343 is a high performance, 2-way, fully NEBS compliant carrier grade server optimized for communications infrastructure. Designed for Linux, the xSeries 343 takes telecommunications servers and Next Generation Networks to new levels. Built especially for network equipment providers and service providers, this powerful server is rich in design and functionality. Two Intel Pentium III, 1.266 Ghz processors provide the engine for high compute environments. Featuring a sub-20" deep chassis ideal for space constrained

communications environments, the xSeries 343 is also equipped with dual, redundant hot swap DC power supplies for high availability, six PCI slots for extreme expandability and an external alarm panel providing 24x7 surveillance of system outages. Complete with IBM Director systems management software, the x343 is the smart choice for IP-based Next Generation Networks.

For more information on the xSeries 343 please visit:

<http://www.pc.ibm.com/us/eserver/xseries/x343.html>

xSeries 345

This highly available 2-way 2U server delivers mission-critical performance, expandability and availability for dense data environments. The x345 is packed with the latest Intel® Xeon™ processors supporting 533Mhz FSB, DDR memory, Dual Ultra320 SCSI controllers, support of Ultra320 HDDs, Integrated Dual Gigabit Ethernet and five PCI slots. The x345 is a feature-rich application serving platform for space constrained data centers and application service providers.

For more information on the xSeries 345 please visit:

<http://www.pc.ibm.com/us/eserver/xseries/x345.html>

xSeries 365

With the xSeries 365, IBM introduces a rack-dense, high-performance 4-way server that combines exceptional price and performance with the datacenter readiness of Enterprise X-Architecture™, creating a powerful new solution for mission-critical enterprise applications.

- ▶ Second-generation Enterprise X-Architecture technology with the latest Intel® Xeon™ MP processors
- ▶ Exclusive “pay as you grow,” remote I/O scalability using RXE-100 I/O expansion chassis
- ▶ Flexibility to be used for high performance, value performance or I/O-intensive server applications
- ▶ Powerful 4-way SMP in space-efficient, slender 3U form factor
- ▶ Large internal storage (up to 876 GB) with support for RAID 1 integrated into the system
- ▶ Interoperability with iSeries servers through native IXA-adapter support

For more information on the xSeries 365 please visit:

<http://www.pc.ibm.com/us/eserver/xseries/x365.html>

xSeries 382

The x382 is a rack-dense, 2U, 2-way Intel Itanium 2 based server optimized for high-performance computing and cluster use. With support to up to 16 GB of RAM, integrated dual Gigabit Ethernet and support for two hot-swap hard disk drives and integrated RAID 1 capability the x382 is ideal for either your first entry into the 64-bit Intel environment or for your most demanding needs.

For more information on the xSeries 382 please visit:

<http://www.pc.ibm.com/us/eserver/xseries/x382.html>

High-performance scalable servers

This section describes those models in the xSeries high-performance scalable server family.

xSeries 445

IBM takes it to the next level with the xSeries high-performance flagship, the x445! This next-generation scalable enterprise server offers the increased XpandOnDemand™ scalability, industry-leading price/performance, and exceptional mission-critical availability required for today's on demand world. Optimized for server consolidation and high-end databases, the xSeries 445 combines scale-up or scale-out flexibility with the high performance of Intel Xeon MP processors.

Powered by second-generation Enterprise X-Architecture™, this 4U rack-optimized, industry-standard server supports "pay-as-you-grow" scalability up to 16-way by simple interconnection of two xSeries 445 chassis as a single 8U configuration with support for up to 32-way available in the near future. This innovative, modular server architecture delivers the ultimate enterprise solution: high-performance, high-availability, remote manageability, and investment protection.

For more information on the xSeries 445 please visit:

<http://www.pc.ibm.com/us/eserver/xseries/x445.html>

xSeries 455

The x455 is a leadership Itanium 2 solution that leverages the proven Enterprise X-Architecture chipset to deliver commercially viable 64-bit systems. The x455 builds on the XpandOnDemand building-block architecture. Purchase only the capacity and I/O you need, when you need it, without having to buy costly,

underutilized up-front infrastructure. Built in 4U modules, the x455 supports expanability to up to 16-way with over 250GB of memory, offering tremendous power for your high computing applications or databases.

For more information on the xSeries 455, please visit:

<http://www.pc.ibm.com/us/eserver/xseries/x455.html>

IBM eServer BladeCenter™

The IBM eServer BladeCenter is a 7U (12.25") modular chassis that is capable of housing up to 14 blade servers. The BladeCenter chassis allows individual blades to share resources such as power, switch, management and blower modules. Key features of BladeCenter are the following:

- ▶ Rack-optimized, 7U modular design enclosure—holds up to 14 hot-swap BladeCenter HS20 or JS20 blades or 7 HS20 blades with up to six enclosures in a 42U rack.
- ▶ Contains a high availability midplane supporting the hot-swap of individual blades.
- ▶ Two 1800-watt, hot-swap power modules and support for two optional 1800-watt power modules—provides redundancy and power for robust configurations.
- ▶ Two hot-swap 325 CFM blowers and thermal sensors throughout to monitor and alert of over-temperature conditions.
- ▶ Management module—lets you manage and control components in the enclosure.
- ▶ Optional hot-swap redundant Ethernet and Fibre Channel switch modules (supports up to four network switch modules).
- ▶ Control panel—contains USB port and status LEDs.

For more information on BladeCenter and the BladeCenter chassis please visit:

http://www.ibm.com/servers/eserver/bladecenter/chassis/more_info.html

IBM eServer BladeCenter HS20

Designed to support the Intel Xeon DP processor, BladeCenter HS20 blades deliver density without sacrificing performance, allowing you to scale your computing needs only when you need it, without having to purchase costly systems or processors up front. Features of the HS20 include:

- ▶ A choice of up to 3.2 GHz Intel Xeon DP processors with a quad-pumped 533MHz front-side bus (FSB) and a full-speed 512KB or 1MB ECC L2 cache.
- ▶ Standard 512MB or 1GB system memory with Chipkill ECC support—supports 8GB maximum.

- ▶ Dual Broadcom 5703 Gigabit Ethernet controllers with teaming and failover support.
- ▶ Integrated service processor—monitors critical components on each blade for remote and local systems management.
- ▶ ATA-100 IDE controller—economical interface for up to two optional 40GB IDE hard disk drives.
- ▶ SCSI expansion connector—supports optional storage unit containing an Ultra320 SCSI RAID 1 controller and backplane support for two hot-swap hard disk drives.

For more information on the BladeCenter HS20 please visit:

http://www.ibm.com/servers/eserver/bladecenter/hs20/more_info.html

IBM eServer BladeCenter HS40

Designed to support the Intel Xeon MP processor, BladeCenter HS40 blades deliver density without sacrificing performance, allowing you to scale your computing needs only when you need it, without having to purchase costly systems or processors up front. Features of the HS40 include:

- ▶ A choice of up to four 2.8 GHz Intel Xeon MP processors with a quad-pumped 400 MHz front-side bus (FSB) and a full-speed 2MB ECC L2 cache.
- ▶ Standard 2 GB system memory with Chipkill ECC support--supports 16 GB maximum.
- ▶ Four Intel Gigabit Ethernet controllers with teaming and failover support.
- ▶ Integrated service processor--monitors critical components on each blade for remote and local systems management.
- ▶ SCSI expansion connector--supports optional storage unit containing an Ultra320 SCSI RAID 1 controller and backplane support for two hot-swap hard disk drives.

For more information on the BladeCenter HS40 please visit:

http://www-1.ibm.com/servers/eserver/bladecenter/hs40/more_info.html

IBM eServer BladeCenter JS20

Featuring POWER™ technology and advanced SIMD capabilities, the BladeCenter JS20 is an ideal platform for high performance computing (HPC) environments. With support for two 1.6 GHz PowerPC® 970 processors and up to 4GB of RAM, the JS20 can scale to meet your most demanding needs. Integrated dual Gigabit Ethernet and support for multiple IDE hard disk drives round out the package. Also, the JS20 leverages your existing BladeCenter or

xSeries investment by using the same tools (IBM Director) that you use today to manage your Intel server, desktop, and laptop environment.

For more information on the BladeCenter JS20 please visit:

http://www.ibm.com/servers/eserver/bladecenter/js20/more_info.html

xSeries Systems Management

The best systems in the world will not improve productivity if you do not have a way to manage and deploy them. IBM has the solution here with the powerful combination of IBM Director 4.12 and Remote Deployment Manager. Together, these two applications can deploy, monitor, and manage your system deployment.

IBM Director 4.12

IBM Director is a comprehensive systems-management solution. Based on industry standards, it can be used with most Intel-microprocessor-based systems. IBM Director has features designed expressly to work with the hardware in the following IBM systems and products:

- ▶ IBM xSeries servers
- ▶ IBM BladeCenter chassis
- ▶ IBM HS20 and JS20 blade servers
- ▶ IBM ThinkCentre™ desktop computers
- ▶ IBM IntelliStation® workstations
- ▶ IBM ThinkPad® mobile computers
- ▶ IBM TotalStorage® Network Attached Storage (NAS) products
- ▶ IBM SurePOS™ point-of-sale systems

A powerful suite of tools and utilities, IBM Director automates many of the processes required to manage systems proactively, including capacity planning, asset tracking, preventive maintenance, diagnostic monitoring, troubleshooting, and more. It has a graphical user interface that provides easy access to both local and remote systems.

IBM Director can be used in environments with multiple operating systems (heterogeneous environments) and integrated with robust workgroup and enterprise management software from IBM (such as Tivoli®), Computer Associates, Hewlett-Packard, Microsoft, NetIQ, and BMC.

In addition to making available a new version of IBM Director, enhanced extensions to IBM Director will also be available for IBM customers who want advanced capabilities. IBM Director Server Plus Pack consists of five additional

tools for advanced server managements to help optimize performance and maximize availability. These tools are tightly integrated with IBM Director for consistent management from a single console.

For more information on IBM Director please visit:

http://www.ibm.com/servers/eserver/xseries/systems_management/director_4.html

Remote Deployment Manager

IBM Remote Deployment Manager 4.11 is the latest installment in the IBM Systems Management Portfolio of deployment products and is the follow on to the standalone version of RDM 3.x. RDM 4.11 can be purchased as an optional add on to IBM Director. RDM 4.11 smoothly integrates into IBM Director 4.12 providing a consistent look and feel and a single point of control.

This beneficial tool simplifies and automates the deployment, redeployment, lower-level management and disposal of IBM xSeries servers, IBM IntelliStation workstations, IBM ThinkPad laptops, IBM ThinkCentre desktops and IBM Point-of-Sale computers. RDM uses imaging technology from industry leader PowerQuest to provide high performance cloning, recovery, and reprovisioning solutions. This provides back up of the initial image of the server and incremental images of the server.

Because Remote Deployment Manager gains control of a PC before it starts its local operating system, many of the lower-level tasks that previously required a visit to each computer can now be performed over the network. Using Remote Deployment Manager, a network administrator can remotely flash a selected system's BIOS, modify CMOS settings, and perform deployment of the following operating systems:

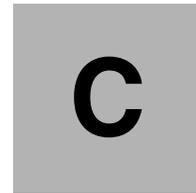
- ▶ Windows 2000 Server
- ▶ Windows 2000 Advanced Server
- ▶ Windows 2000 Professional
- ▶ Red Hat Linux 7.3
- ▶ Red Hat Linux 8.0
- ▶ Red Hat Enterprise Linux 2.1 Advanced Server (32-bit)
- ▶ Windows XP Professional
- ▶ Windows Server 2003 Standard Edition
- ▶ Windows Server 2003 Enterprise Edition (32-bit)
- ▶ Windows Server 2003 Web Edition

To help protect sensitive information when a system is redeployed or retired, Remote Deployment Manager can erase all data on the system's hard drives, making the data as non-recoverable as possible.

Remote Deployment Manager can save your IT staff time and money by enabling deployment, update, maintenance and retirement of systems remotely. It helps make systems management simpler and less time-consuming, thereby helping to lower the total cost of ownership of IBM systems.

For more information on Remote Deployment Manager please visit:

http://www.ibm.com/servers/eserver/xseries/systems_management/sys_migration/rdm.html



Code and configurations samples

In this appendix we include some of the extended configuration file, code, and output samples from our PeopleSoft installation.

- ▶ Data Mover Scripts
- ▶ Application Server configuration
- ▶ Application Server Errors
- ▶ PIA Configuration example
- ▶ Process Scheduler Configuration

Data Mover Scripts

The database configuration wizard creates a data mover script stored in your [PS_HOME]/scripts directory. This script is responsible for creating your PeopleSoft application and PeopleTools tables, and in case of demo databases, populating the tables with sample data.

In case of failures during data mover operation, you will likely need to modify the data mover script to restart operation at a particular point. Remember to backup a copy of the original script before any modifications.

Original Data Mover Script

This is an example of a data mover script created by database configuration wizard. For our financial demo database, it performs two imports, database cleanup, and runs other default data mover scripts to create temporary tables, views, update passwords, and so on.

Example: C-1 Original data mover script on bot tom440

```
[root@bottom440 scripts]# cat fin88dmodbx.dms.old
REM - fin88dmodbx.dms
REM - Created by Data Mover 8.44 Thu Jan 29 15:08:57 2004
REM - Database Platform: DB2 UDB for Unix, NT, Non-Unicode Database
REM - Selected Character Set: ISO 8859-1 - Western European ISO 8859-1
REM - Generate Latin-1 Code
/
REM - PeopleSoft FIN/SCM Database - US English
/
SET LOG epengs.log;
SET INPUT epengs.db;
SET NO VIEW;
SET NO SPACE;
SET NO TRACE;
SET UNICODE OFF;
SET IGNORE_DUPS;
IMPORT *;

REM - PeopleSoft FIN/SCM Database - US English
/
SET LOG epeng1.log;
SET INPUT epeng1.db;
SET NO VIEW;
SET NO SPACE;
SET NO TRACE;
SET UNICODE OFF;
SET IGNORE_DUPS;
IMPORT *;
```

```

REM - Final Database cleanup
REM - Based on your inputs to Database Setup, you will be using
REM - ConnectID's to connect to your PeopleSoft Application
/
DELETE FROM PS.PSDBOWNER WHERE DBNAME='FIN88DMO';
INSERT INTO PS.PSDBOWNER VALUES('FIN88DMO', 'db2inst1');
UPDATE PSSTATUS SET OWNERID = 'db2inst1';
UPDATE PSOPRDEFN SET SYMBOLICID = 'FIN88DMO', OPERPSWD = OPRID, ENCRYPTED = 0;
UPDATE PSACCESSPRFL SET ACCESSID = 'db2inst1', SYMBOLICID = 'FIN88DMO',
ACCESSPSWD = 'xs1012r', VERSION = 0, ENCRYPTED = 0;
UPDATE PSOPTIONS SET LICENSE_CODE = '*****', LICENSE_GROUP = '2';
UPDATE PS_INSTALLATION SET CP='Y', SP='Y', PPSCM='Y';
GRANT SELECT ON PSSTATUS TO USER people;
GRANT SELECT ON PSOPRDEFN TO USER people;
GRANT SELECT ON PS.PSDBOWNER TO USER people;
GRANT SELECT ON PSACCESSPRFL TO USER people;

REM - ENCRYPT PASSWORD
/
SET LOG encrypt.log;
ENCRYPT_PASSWORD *;

REM - CREATE TRIGGERS
/
SET LOG triggers.log;
CREATE_TRIGGER *;

REM - CREATE VIEWS
/
SET LOG views.log;
REPLACE_VIEW *;

REM - CREATE TEMP TABLES
/
SET LOG temptbls.log;
CREATE_TEMP_TABLE *;

```

Modified data mover scripts

Example C-2 on page 192 is a modified data mover script (remember to save a backup copy of the original script). In this case, first import has completed successfully, but the second import has failed due to insufficient database query heap. We changed the database manager configuration, and modified the script by commenting out the first import and adding a SET START statement before the second import. We then re-run the data mover script.

Example: C-2 Modified data mover script - SET START

```
REM - fin88dmodbx.dms
REM -- MODIFIED to skip the successful first import, epengs.db
REM -- SET START to appropriate record on second import, epeng1.db
/
REM SET LOG epengs.log;
REM SET INPUT epengs.db;
REM SET NO VIEW;
REM SET NO SPACE;
REM SET NO TRACE;
REM SET UNICODE OFF;
REM SET IGNORE_DUPS;
REM IMPORT *;

REM - PeopleSoft FIN/SCM Database - US English
/
SET LOG epeng1_2.log;
SET INPUT epeng1.db;
SET NO VIEW;
SET NO SPACE;
SET NO TRACE;
SET UNICODE OFF;
SET IGNORE_DUPS;
SET START PSA_BI_AET;
IMPORT *;
[.....]
```

Example C-3 is another modified data mover script. All the imports have completed and database was cleaned up. However, the last step, creation of temporary tables, has failed. After fixing the problem, we modified the data mover script to only include the relevant last statement.

Example: C-3 Modified data mover script - CREATE_TEMP_TABLE

```
REM - fin88dmodbx.dms
REM -- MODIFIED to only execute the last step, creating the temporary tables
/
SET NO VIEW;
SET NO SPACE;
SET NO TRACE;
SET UNICODE OFF;
SET IGNORE_DUPS;
/
SET LOG temptb1s_2.log;
CREATE_TEMP_TABLE *;
```

Application Server configuration

Example C-4 lists the first portion of application server configuration file (psappsrv.cfg). It contains crucial database connection information. Note that after editing the file manually, you still have to load it through psadmin.

Example: C-4 Basic AppServer settings

```
DBName=FIN88DMO
DBType=DB2UNIX
UserId=VP1
UserPswd=VP1
ConnectId=people
ConnectPswd=xs1012r
ServerName=

[Database Options]
;=====
; Database-specific configuration options
;=====

SybasePacketSize=
; Please see Chapter "Tuning and Administration", in
; Oracle Installation and Administration Guide for details
UseLocalOracleDB=0
;ORACLE_SID=
; Dynamic change allowed for EnabledDBMonitoring
EnabledDBMonitoring=1
```

Example C-5 lists the process of creating a new application server domain.

Example: C-5 Creating a new Domain

```
PSADMIN -- Tools Release: 8.44
Copyright (c) 1988-2003 PeopleSoft, Inc. All Rights Reserved.
```

```
-----
PeopleSoft Server Administration
-----
```

```
1) Application Server
2) Process Scheduler
q) Quit
Command to execute (1-2, q): 1
```

```
-----
PeopleSoft Application Server Administration
-----
```

```
1) Administer a domain
2) Create a domain
3) Delete a domain
4) Import domain configuration
q) Quit

Command to execute (1-4, q) : 2

Please enter name of domain to create :FIN88DEM

Configuration templates:

1) developer
2) large
3) medium
4) small
Select config template number: 4

Creating domain...
Copying application server configuration files...
Copying Jolt repository file...
Copying Java Query client files...
Domain created.

Would you like to configure this domain now? (y/n) [y] : y
```

Application Server Errors

Errors with booting application server are not uncommon. While PeopleSoft provides detailed error output from psadmin, Tuxedo and PSAPPSRV logs, sometimes the sheer amount of seemingly cryptic data can hide the actual errors. Here we present full sample output for several different error types typically encountered during application server configuration. The relevant statements are highlighted in bold.

Figure C-6 shows output of errors in a PeopleSoft process, such as PSAPPSRV. These errors are typically caused by database connection problems.

Example: C-6 Error in PeopleSoft process - cannot sign to database

```
No Archive subdirectory, creating it...
No psappsrv.cfg in the Archive subdirectory, creating it...
Attempting to boot ...
Booting all admin and server processes in /opt/PT8.44/appserv/FIN88DEM/PSTUXCFG
INFO: BEA Tuxedo, Version 8.1, 32-bit, Patch Level (none)
```

```
INFO: Serial #: 650522264138-1184269388129, Expiration NONE, Maxusers 1000000
INFO: Licensed to: PeopleSoft - ISV
```

```
Booting admin processes ...
```

```
exec BBL -A :
    process id=18500 ... Started.
```

```
Booting server processes ...
```

```
exec PSWATCHSRV -A -- -ID 212002 -C psappsrv.cfg -D TESTSERV -S PSWATCHSRV :
    process id=18501 ... Started.
exec PSAPPSRV -s@../psappsrv.lst -s@../psqcksrv.lst -sICQuery -sSqlQuery:SqlRequest -- -C
psappsrv.cfg -D TESTSERV -S PSAPPSRV :
    CMTUX_CAT:1685: ERROR: Application initialization failure
tmboot: CMTUX_CAT:827: ERROR: Fatal error encountered; initiating user error handler
```

```
exec tmsshutdown -qy
```

```
=====ERROR!=====
Boot attempt encountered errors!. Check the TUXEDO log for details.
=====ERROR!=====
```

```
Do you wish to see the error messages in the APPSRV.LOG file? (y/n) [n] :y
```

```
PSADMIN.18482 [02/06/04 16:27:26] (0) Begin boot attempt on domain FIN88DEM
PSWATCHSRV.18501 [02/06/04 16:27:31] Checking process status every 120 seconds
PSWATCHSRV.18501 [02/06/04 16:27:31] Starting
PSAPPSRV.18502 [02/06/04 16:27:35] (0) PeopleTools Release 8.44 (Linux) starting
PSAPPSRV.18502 [02/06/04 16:27:36] (0) Cache Directory being
used:/opt/PT8.44/appserv/FIN88DEM/CACHE/1/
PSAPPSRV.18502 [02/06/04 16:27:36] (0) Cache Directory being
used:/opt/PT8.44/appserv/FIN88DEM/CACHE/1/
PSAPPSRV.18502 [02/06/04 16:27:36] (1) GenMessageBox(0, 0, M): Database Signon: Could not sign
on to database FIN88DEM with user QEDMO.
PSWATCHSRV.18501 [02/06/04 16:27:37] Shutting down
PSADMIN.18482 [02/06/04 16:27:43] (0) End boot attempt on domain FIN88DEM
```

```
Do you wish to see the error messages in the TUXLOG.020604 file? (y/n) [n] :y
```

```
162726.top440!PSADMIN.18482: Begin boot attempt on domain FIN88DEM
162731.top440!BBL.18500.8192.0: 02-06-2004: Tuxedo Version 8.1, 32-bit, Patch Level (none)
162731.top440!BBL.18500.8192.0: LIBTUX_CAT:262: INFO: Standard main starting
162731.top440!PSWATCHSRV.18501.8192.-2: 02-06-2004: Tuxedo Version 8.1, 32-bit
162731.top440!PSWATCHSRV.18501.8192.-2: LIBTUX_CAT:262: INFO: Standard main starting
162735.top440!PSAPPSRV.18502.8192.0: 02-06-2004: Tuxedo Version 8.1, 32-bit
```

```

162735.top440!PSAPPSRV.18502.8192.0: LIBTUX_CAT:262: INFO: Standard main starting
162736.top440!PSAPPSRV.18502.8192.0: LIBTUX_CAT:250: ERROR: tpsvrinit() failed
162736.top440!tmbboot.18499.8192.-2: 02-06-2004: Tuxedo Version 8.1, 32-bit
162736.top440!tmbboot.18499.8192.-2: tmbboot: CMDTUX_CAT:827: ERROR: Fatal error encountered;
initiating user error handler
162740.top440!BBL.18500.8192.0: CMDTUX_CAT:26: INFO: The BBL is exiting system
162743.top440!PSADMIN.18482: End boot attempt on domain FIN88DEM

```

Press Enter to continue...

Figure C-7 details the output of a listener error, in this case JSL. These errors are most commonly caused by port conflicts. When setting up an application server, ensure you configure unique ports for all the services.

Example: C-7 Listener error

```

Command to execute (1-7, q) : 1
psappsrv.cfg has changed archiving old one...
Copying FIN88DMO/Archive/psappsrv.cfg to FIN88DMO/Archive/psappsrv_020604_1632_54.cfg
Attempting to boot ...
Booting all admin and server processes in /opt/PT8.44/appserv/FIN88DMO/PSTUXCFG
INFO: BEA Tuxedo, Version 8.1, 32-bit, Patch Level (none)
INFO: Serial #: 650522264138-1184269388129, Expiration NONE, Maxusers 1000000
INFO: Licensed to: PeopleSoft - ISV

Booting admin processes ...

exec BBL -A :
    process id=18916 ... Started.

Booting server processes ...

exec PSWATCHSRV -A -- -ID 109115 -C psappsrv.cfg -D PT844 -S PSWATCHSRV :
    process id=18923 ... Started.
exec PSAPPSRV -s@./psappsrv.lst -s@./psqcksrv.lst -sICQuery -sSqlQuery:SqlRequest -- -C
psappsrv.cfg -D PT844 -S PSAPPSRV :
    process id=18924 ... Started.
exec PSAPPSRV -s@./psappsrv.lst -s@./psqcksrv.lst -sICQuery -sSqlQuery:SqlRequest -- -C
psappsrv.cfg -D PT844 -S PSAPPSRV :
    process id=18927 ... Started.
exec PSAPPSRV -s@./psappsrv.lst -s@./psqcksrv.lst -sICQuery -sSqlQuery:SqlRequest -- -C
psappsrv.cfg -D PT844 -S PSAPPSRV :
    process id=18936 ... Started.
exec PSSAMSRV -A -- -C psappsrv.cfg -D PT844 -S PSSAMSRV :
    process id=18943 ... Started.
exec PSMONITORSRV -A -- -ID 109115 -C psappsrv.cfg -D PT844 -S PSMONITORSRV :
    process id=18948 ... Started.
exec WSL -A -- -n //9.42.171.33:8000 -z 0 -Z 0 -d unused -I 5 -T 60 -m 1 -M 3 -x 40 -c 5000 -p
8001 -P 8003 -H //9.42.171.33:MMMM :

```

```
process id=18952 ... Started.  
exec JSL -A -- -d unused -n //top440:9000 -m 5 -M 7 -I 5 -j ANY -x 40 -T 60 -c 1000000 -w JSH :  
Failed.
```

```
tmbboot: CMDTUX_CAT:827: ERROR: Fatal error encountered; initiating user error handler
```

```
exec tmsshutdown -qy
```

```
=====ERROR!=====  
Boot attempt encountered errors!. Check the TUXEDO log for details.  
=====ERROR!=====
```

```
Do you wish to see the error messages in the APPSRV.LOG file? (y/n) [n] :y
```

```
PSADMIN.18482 [02/06/04 16:35:10] (0) Begin boot attempt on domain FIN88DMO  
PSWATCHSRV.18923 [02/06/04 16:35:15] Checking process status every 120 seconds  
PSWATCHSRV.18923 [02/06/04 16:35:15] Starting  
PSAPPSRV.18924 [02/06/04 16:35:19] (0) PeopleTools Release 8.44 (Linux) starting  
PSAPPSRV.18924 [02/06/04 16:35:19] (0) Cache Directory being  
used:/opt/PT8.44/appserv/FIN88DMO/CACHE/1/  
PSAPPSRV.18924 [02/06/04 16:35:19] (0) Cache Directory being  
used:/opt/PT8.44/appserv/FIN88DMO/CACHE/1/  
PSAPPSRV.18927 [02/06/04 16:35:26] (0) PeopleTools Release 8.44 (Linux) starting  
PSAPPSRV.18927 [02/06/04 16:35:26] (0) Cache Directory being  
used:/opt/PT8.44/appserv/FIN88DMO/CACHE/2/  
PSAPPSRV.18927 [02/06/04 16:35:26] (0) Cache Directory being  
used:/opt/PT8.44/appserv/FIN88DMO/CACHE/2/  
PSAPPSRV.18936 [02/06/04 16:35:32] (0) PeopleTools Release 8.44 (Linux) starting  
PSAPPSRV.18936 [02/06/04 16:35:32] (0) Cache Directory being  
used:/opt/PT8.44/appserv/FIN88DMO/CACHE/3/  
PSAPPSRV.18936 [02/06/04 16:35:33] (0) Cache Directory being  
used:/opt/PT8.44/appserv/FIN88DMO/CACHE/3/  
PSSAMSRV.18943 [02/06/04 16:35:38] (0) PeopleTools Release 8.44 (Linux) starting  
PSMONITORSRV.18948 [02/06/04 16:35:43] (0) PeopleTools Release 8.44 (Linux) starting  
PSWATCHSRV.18923 [02/06/04 16:35:47] Shutting down  
PSADMIN.18482 [02/06/04 16:35:53] (0) End boot attempt on domain FIN88DMO
```

```
Do you wish to see the error messages in the TUXLOG.020604 file? (y/n) [n] :y
```

```
163510.top440!PSADMIN.18482: Begin boot attempt on domain FIN88DMO  
163515.top440!BBL.18916.8192.0: 02-06-2004: Tuxedo Version 8.1, 32-bit, Patch Level (none)  
163515.top440!BBL.18916.8192.0: LIBTUX_CAT:262: INFO: Standard main starting  
163515.top440!PSWATCHSRV.18923.8192.-2: 02-06-2004: Tuxedo Version 8.1, 32-bit  
163515.top440!PSWATCHSRV.18923.8192.-2: LIBTUX_CAT:262: INFO: Standard main starting  
163519.top440!PSAPPSRV.18924.8192.0: 02-06-2004: Tuxedo Version 8.1, 32-bit  
163519.top440!PSAPPSRV.18924.8192.0: LIBTUX_CAT:262: INFO: Standard main starting  
163525.top440!PSAPPSRV.18927.8192.0: 02-06-2004: Tuxedo Version 8.1, 32-bit  
163525.top440!PSAPPSRV.18927.8192.0: LIBTUX_CAT:262: INFO: Standard main starting  
163532.top440!PSAPPSRV.18936.8192.0: 02-06-2004: Tuxedo Version 8.1, 32-bit
```

```

163532.top440!PSAPPSRV.18936.8192.0: LIBTUX_CAT:262: INFO: Standard main starting
163538.top440!PSSAMSRV.18943.8192.0: 02-06-2004: Tuxedo Version 8.1, 32-bit
163538.top440!PSSAMSRV.18943.8192.0: LIBTUX_CAT:262: INFO: Standard main starting
163543.top440!PSMONITORSRV.18948.8192.-2: 02-06-2004: Tuxedo Version 8.1, 32-bit
163543.top440!PSMONITORSRV.18948.8192.-2: LIBTUX_CAT:262: INFO: Standard main starting
163544.top440!WSL.18952.8192.0: 02-06-2004: Tuxedo Version 8.1, 32-bit
163544.top440!WSL.18952.8192.0: LIBTUX_CAT:262: INFO: Standard main starting
163544.top440!WSH.18953.8192.0: 02-06-2004: Tuxedo Version 8.1, 32-bit
163544.top440!WSH.18953.8192.0: WSNAT_CAT:1030: INFO: Work Station Handler joining application
163544.top440!JSL.18954.8192.0: 02-06-2004: Tuxedo Version 8.1, 32-bit
163544.top440!JSL.18954.8192.0: LIBTUX_CAT:262: INFO: Standard main starting
163544.top440!JSL.18954.8192.0: INFO: JOLT Listener version-BEA Jolt 8.1
163544.top440!JSL.18954.8192.0: JOLT_CAT:1563: "INFO: Serial Number :
<650522264138-1184269388129>, Expiration Date : <None>"
163544.top440!JSL.18954.8192.0: JOLT_CAT:1564: "INFO: Licensee : <PeopleSoft - ISV>"
163544.top440!JSL.18954.8192.0: JOLT_CAT:1568: "INFO: Compression threshold is set to 1000000"
163544.top440!JSL.18954.8192.0: JOLT_CAT:1008: "ERROR: Could not establish listening address on
network //top440:9000"
163544.top440!JSL.18954.8192.0: LIBTUX_CAT:250: ERROR: tpsvrinit() failed
163544.top440!tmboot.18913.8192.-2: 02-06-2004: Tuxedo Version 8.1, 32-bit
163544.top440!tmboot.18913.8192.-2: CMDTUX_CAT:825: ERROR: Process JSL at top440 failed with /T
tperrno (TPESYSTEM - internal system error)
163544.top440!tmboot.18913.8192.-2: tmboot: CMDTUX_CAT:827: ERROR: Fatal error encountered;
initiating user error handler
163544.top440!WSL.18952.8192.0: WSNAT_CAT:1196: INFO: Terminating handlers in preparation for
shutdown
163544.top440!WSL.18952.8192.0: WSNAT_CAT:1197: INFO: Exiting system
163550.top440!BBL.18916.8192.0: CMDTUX_CAT:26: INFO: The BBL is exiting system
163553.top440!PSADMIN.18482: End boot attempt on domain FIN88DMO

```

Press Enter to continue...

Finally, Figure C-8 shows a basic BBL error. These errors are usually caused by significant problems in Tuxedo installation, so the error messages may be sparse, cryptic, or even absent. It is often up to you to recognize the lack of detailed logs or inability to start BBL and investigate the Tuxedo installation. Broken links, incomplete installations or incorrect permissions are some of the potential problems to check.

Example: C-8 BBL error

```

Command to execute (1-7, q) : 1
psappsrv.cfg has changed archiving old one...
Copying FIN88DMO/Archive/psappsrv.cfg to
FIN88DMO/Archive/psappsrv_020604_1635_10.cfg
Attempting to boot ...

```

```

tmboot: NLS:4: Cannot open message catalog CMTUX_CAT, set 1, num 703; check
TUXDIR=/tuxedo/bin, LANG=en_US
: NLS:4: Cannot open message catalog CMTUX_CAT, set 1, num 703; check
TUXDIR=/tuxedo/bin, LANG=en_US

=====ERROR!=====
Boot attempt encountered errors!. Check the TUXEDO log for details.
=====ERROR!=====

Do you wish to see the error messages in the APPSRV.LOG file? (y/n) [n] :y

PSADMIN.19132 [02/06/04 16:40:30](0) Begin boot attempt on domain FIN88DMO
PSADMIN.19132 [02/06/04 16:40:30](0) End boot attempt on domain FIN88DMO

Do you wish to see the error messages in the TUXLOG.020604 file? (y/n) [n] :y

164030.top440!PSADMIN.19132: Begin boot attempt on domain FIN88DMO
164030.top440!PSADMIN.19132: End boot attempt on domain FIN88DMO

Press Enter to continue...

```

PIA Configuration example

Figure C-9 details the full process of configuring PeopleSoft Internet Architecture on one of our servers, using the installation script's console mode.

Example: C-9 PIA installation example

```

$ ./setup.linux -is:javaconsole -console -is:javahome /opt/PT8.44/jre
InstallShield Wizard
Initializing InstallShield Wizard...
Searching for Java(tm) Virtual Machine...
.....
Welcome to the InstallShield Wizard for PeopleSoft Internet Architecture.
Using the InstallShield Wizard you will install PeopleSoft Internet
Architecture on your computer.
Please be sure to shutdown any running web servers at this time to avoid data
corruption.
Version: 8.44
Select Next to continue or Cancel to exit.
Press 1 for Next, 3 to Cancel or 4 to Redisplay [1]

Choose the directory where you installed PeopleSoft, commonly known as
"PS_HOME":
Please specify a directory name or press Enter [/opt/PT8.44]

Choose the setup type that best suits your needs.

```

1 - BEA WebLogic Server
 2 - IBM WebSphere Server

To select an item enter its number, or 0 when you are finished: [0] 2

Select the WebSphere Application Server directory:

Directory Name:

Please specify a directory name or press Enter

[/opt/WebSphere/AppServer] /opt/WebSphere51/AppServer

Cell Name:

1 - top440Node

To select an item enter its number, or 0 when you are finished [0]:

Node Name:

1 - top440Node

To select an item enter its number, or 0 when you are finished [0]:

Server name:

1 - server1

To select an item enter its number, or 0 when you are finished [0]:

Select application type:

1 - Create New WebSphere Application

Enter application name or click Next to select default:

[peoplesoft]

Please specify a name for the PeopleSoft web site:

Website name:

[ps]

Enter port numbers and summaries.

AppServer name:

[top440]

JSL Port:

[9000]

HTTP Port:

[80]

HTTPS Port:

[443]

Authentication Token Domain:(optional)

[]

Please enter the Name of the Web Profile used to configure the webserver. The

user id and password will be used to retrieve the web profile from the database. (NOTE: Other available preset web profile names are "TEST", "PROD", and "KIOSK".)

Web Profile Name:
[DEV]

User ID:
[PTWEBSERVER] VP1

Password:
[PTWEBSERVER] VP1

Re-type Password:
[] VP1

Select the Report Repository location:
Please specify a directory name or press Enter [/opt/psreports]

Please verify the following information:
[.....]

Select 1 to install, select 2 to change your values or select 3 to exit.
Press 1 for Next, 2 for Previous, 3 to Cancel or 4 to Redisplay [1]
Deploying PeopleSoft Internet Architecture ...

[.....]

BUILD SUCCESSFUL

Total time: 1 minute 21 seconds

PSInstallPanel\$PsftAntExit

100 % complete

Deploy Completed. Click next to finish the install.

The InstallShield Wizard has successfully installed PeopleSoft Internet Architecture. Choose Finish to exit the wizard.

Press 3 to Finish or 4 to Redisplay [3]

Process Scheduler Configuration

Figure C-10 details the output of creating a simple process scheduler server for our FIN88DMO database. Note the similarity to configuring an application server.

Example: C-10 Creating a Process Scheduler server

```
# ./psadmin
```

```
PSADMIN -- Tools Release: 8.44
```

```
Copyright (c) 1988-2003 PeopleSoft, Inc. All Rights Reserved.
```

```

-----
PeopleSoft Server Administration
-----
  1) Application Server
  2) Process Scheduler
  q) Quit
Command to execute (1-2, q): 2
-----
PeopleSoft Process Scheduler Administration
-----
  1) Start a Process Scheduler Server
  2) Stop a Process Scheduler Server
  3) Configure a Process Scheduler Server
  4) Create a Process Scheduler Server Configuration
  5) Delete a Process Scheduler Server Configuration
  6) Edit a Process Scheduler Configuration File
  7) Import an existing Process Scheduler Configuration
  8) Show Status of a Process Scheduler Server
  9) Kill a Process Scheduler Server
  q) Quit
Command to execute (1-9, q) : 4
Please enter name of Database that server will access :FIN88DMO
Process Scheduler Configuration templates:

  1) unix
Selecting the only Process Scheduler Configuration template available...
Creating Process Scheduler Server for Database FIN88DMO...
Copying Process Scheduler Server configuration file(s)...
Process Scheduler Server configuration created.

Would you like to configure this Process Scheduler Server now? (y/n) [y] :y
-----
Quick-configure menu -- Scheduler for Database: FIN88DMO
-----
      Features                               Settings
      =====                               =====
  1) Master Schdlr   : Yes                   6) DBNAME          :[FIN88DMO]
  2) App Eng Server  : Yes                   7) DBTYPE          :[DB2UNIX]
  3) Opt Eng Server  : No                    8) PrcsServer     :[PSUNX]
                                           9) UserId         :[VP1]
                                           10) UserPswd      :[VP1]
                                           11) ConnectID     :[people]
                                           12) ConnectPswd   :[xs1012r]
                                           13) ServerName    :[]
      Actions
      =====
  4) Load config as shown
  5) Custom configuration
                                           14) Log/Output Dir:[%PS_SERVDIR%/log_output]
                                           15) SQRBIN        :[%PS_HOME%/bin/sqr/%PS_DB%/bin]
                                           16) AddToPATH     :[%PS_HOME%/cblbin]

```

- h) Help for this menu
- q) Return to previous menu

Enter selection (1-16, h, or q): 4

[.....]

New CFG file written with modified Startup parameters
Spawning enabled for server PSDSTSRV.
Configuration file successfully created.
CFG setting changes completed, loading configuration...
Process Scheduler Server configuration complete.

Abbreviations and acronyms

AES	Advanced Encryption Standard	ECC	error checking and correcting
ALM	Asset Lifecycle Management	EEPROM	Electrically Erasable Programmable Read Only Memory
ANSI	American National Standards Institute	EFS	Encrypted File System
API	application programming interface	EJB	Enterprise JavaBeans
ASF	Alert Standard Format	EPM	Enterprise Performance Management
ATAPI	Advanced Technology Attachment Packet Interface	ERM	Enterprise Resource Management
ATM	Asynchronous Transfer Mode	ERP	Enterprise Resource Planning
BBL	Bulletin Board Liaison	ESA	Enterprise Service Automation
BIOS	Basic Input/Output System	ESD	electronic software distribution
BSOD	blue screen of death	FSB	front side bus
CFM	cubic feet per minute	FTP	file transfer protocol
CHS	cylinders, heads, sectors	GIF	CompuServe Graphics Interchange Format
CIS	customer information systems	GINA	Graphical Identification and Authentication
CISC	Complex Instruction Set Computer	GSC	Global Support Center
CMOS	Complementary Metal-Oxide Semiconductor	GSK	Global Security Toolkit
COBOL	Common Business Oriented Language	GUI	Graphical User Interface
CRM	Customer Relationship Management	GRUB	Grand Unified Bootloader
DAS	DB2 Administration Server	HCM	Human Capital Management
DBA	database administrator	HDD	Hard Disk Drive
DDR	double data rate	HPC	high performance computing
DHCP	dynamic host configuration protocol	HRMS	human resource management system
DLL	dynamic link library	HTML	Hypertext Markup Language
DLT	digital linear tape	HTTP	Hypertext Transport Protocol
DNS	Domain Name System	HTTPS	Hypertext Transport Protocol Secure
DMS	Database Managed Space		

IBM	International Business Machines Corporation	OEM	Original Equipment Manufacturer
IDE	Integrated Drive Electronics	PCI	peripheral component interconnect
IE	Internet Explorer	PIA	PeopleSoft Internet Architecture
IP	Internet Protocol	PKCS	Public Key Cryptographic Standard
IPC	InterProcess Communications	PKI	Public Key Infrastructure
IPX	Internetwork Packet Exchange	RAID	Redundant Array of Inexpensive Disks
ISO	international Standards Organization	RDBMS	Relational Database Management System
ISV	independent software vendor	RDM	Remote Deployment Manager
ITSO	International Technical Support Organization	RISC	Reduced Instruction Set Computer
J2EE	Java 2 Enterprise Edition	ROI	Return on Investment
J2SE	Java 2 Standard Edition	RTE	Java Runtime Environment
JDBC	Java database connection	SCSI	Small Computer Systems Interface
JDK	Java Development Kit	SDK	Software Developer's Kit
JRE	Java Runtime Environment	SIMD	Single Instruction [stream], Multiple Data [stream]
JSH	Jolt Station Handler	SMBIOS	Systems Management Basic Input Output System
JSL	Jolt Station Listener	SMP	Symmetrical Multiprocessing
JSP	JavaServer Pages	SMS	System Managed Spaced
LBA	Logical Block Addressing	SPX	Sequenced Packet Exchange
LDAP	Lightweight Directory Access Protocol	SQL	Structured Query Language
LTC	Linux Technology Center	SQR	Structured Query Report
MBR	Master Boot Record	SRM	Supplier Relationship Management
MDAC	Microsoft Data Access Components	SSL	secure sockets layer
MSI	Microsoft Software Installation	TAM	Tivoli Access Manager
MVS	Multiple Virtual Storage	TCO	total cost of ownership
NAS	Network Attached Storage	TFTP	Trivial File Transfer Protocol
NEBS	New Equipment Building System	UDB	Universal Database
NIC	Network Interface Card	URL	Uniform Resource Locator
NLS	National Language Support		
NTFS	New Technology File System		
ODBC	Open Database Connectivity		

USB	Universal Serial Bus
USS	unformatted systems services
WAP	wireless application protocol
WMI	Windows Management Instrumentation
WML	wireless markup language
WSH	Workstation Handler
WSL	Workstation Listener
XML	eXtensible Markup Language

Related publications

The publications listed in this section are considered particularly suitable for a more detailed discussion of the topics covered in this redbook.

IBM Redbooks

For information on ordering these publications, see “How to get IBM Redbooks” on page 212. Note that some of the documents referenced here may be available in softcopy only.

- ▶ *Linux Handbook: A Guide to IBM Linux Solutions and Resources*, SG24-7000
- ▶ *Implementing PeopleSoft on zSeries*, SG24-6549
- ▶ *WebSphere Product Overview*, REDP-3740
- ▶ *Tuning IBM eServer xSeries Servers for Performance*, SG24-5287-02
- ▶ *IBM eServer xSeries 445 Planning & Installation Guide*, SG24-8870
- ▶ *Linux with xSeries and FAStT: Essentials*, SG24-7026
- ▶ *Up and Running with DB2 for Linux*, SG24-6899
- ▶ *PeopleSoft on DB2 Universal Database Enterprise Edition V7*, SG24-6307

Other publications

PeopleSoft Customer Connection is the authoritative resource for comprehensive information on all issues pertaining to PeopleSoft applications.

To access PeopleSoft Customer Connection, go to

<http://www.peoplesoft.com>

and click **Customers + Partners Log In**. The best way to navigate this Web site is through the Site Index.

In particular, you may also want to consult the following PeopleSoft documents:

- ▶ *PeopleSoft Internet Architecture Answer Book*
- ▶ *PeopleBooks*
- ▶ *Pre Installation Checklist*

- ▶ *Hardware and Software Requirements Guide*
- ▶ *Application Server and Third-Party Product Patches Required for Install*
- ▶ *Installation and Administration Guide*
- ▶ *Installation Notes*
- ▶ *Security Answer Book*

These publications are also relevant as further information sources:

- ▶ The Complete Reference - Red Hat Enterprise Linux & Fedora Edition, ISBN 0-07-223075-4

Online resources

These Web sites and URLs are also relevant as further information sources:

- ▶ The IBM Linux portal for a general point of entry into IBM and Linux
<http://www.ibm.com/linux>
- ▶ IBM Linux Technology Center (LTC)
<http://www.ibm.com/linux/ltc>
- ▶ IBM Solution Partnership Centers
<http://www.developer.ibm.com/spc/index.html>
- ▶ IBM Linux support line
http://www.ibm.com/services/e-business/linux_8.html
- ▶ The Open Source Development Lab
<http://www.osdl.org/>
- ▶ Information on DB2
<http://www.ibm.com/db2>
<http://www.ibm.com/software/data/support/>
<http://www.ibm.com/software/data/db2imstools/>
- ▶ For more information on WebSphere
<http://www.ibm.com/websphere>
<http://www.ibm.com/software/info1/websphere/index.jsp?tab=support/index>
- ▶ Passport Advantage
<http://www.ibm.com/software/howtobuy/passportadvantage/>
- ▶ xSeries
<http://ibm.com/eserver/xseries>
<http://www.pc.ibm.com/us/eserver/xseries/x205.html>

<http://www.pc.ibm.com/us/eserver/xseries/x225.html>
<http://www.pc.ibm.com/us/eserver/xseries/x235.html>
<http://www.pc.ibm.com/us/eserver/xseries/x255.html>
<http://www.pc.ibm.com/us/eserver/xseries/x305.html>
<http://www.pc.ibm.com/us/eserver/xseries/x335.html>
<http://www.pc.ibm.com/us/eserver/xseries/x343.html>
<http://www.pc.ibm.com/us/eserver/xseries/x345.html>
<http://www.pc.ibm.com/us/eserver/xseries/x365.html>
<http://www.pc.ibm.com/us/eserver/xseries/x382.html>
<http://www.pc.ibm.com/us/eserver/xseries/x445.html>
<http://www.pc.ibm.com/us/eserver/xseries/x455.html>
http://www.ibm.com/servers/eserver/bladecenter/chassis/more_info.html
http://www.ibm.com/servers/eserver/bladecenter/hs20/more_info.html
http://www.ibm.com/servers/eserver/bladecenter/js20/more_info.html
http://www.ibm.com/servers/eserver/xseries/systems_management/director_4.html
http://www.ibm.com/servers/eserver/xseries/systems_management/sys_migration/rdm.html
<http://www.ibm.com/servers/eserver/education/cust/xseries/custxseries.html>

► **Solutions Assurance process**

http://www.ibm.com/partnerworld/pwhome.nsf/weblook/trs_wgd_sa.html

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http://www.peoplesoft.com/corp/en/products/ent/financial_mgmt/index.jsp
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http://www.peoplesoft.com/corp/en/products/ent_one/scm/index.jsp
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Implementing PeopleSoft Enterprise on xSeries and Linux



Implementing PeopleSoft Enterprise on xSeries and Linux



Best practices for planning deployment

This IBM Redbook will help you plan, install, and configure PeopleSoft Enterprise with PeopleTools 8.44 on xSeries® systems running DB2® and WebSphere® on Linux. This information is based on installation experience gained while installing PeopleSoft at the IBM International Technical Support Organization Center in Research Triangle Park, North Carolina, and on customer support experiences.

Installation and configuration of PeopleSoft Enterprise

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