

# Deploying IBM Workplace Collaboration Services on the IBM System i5 Platform

Complete configuration guide for Workplace  
Collaboration Services on the System i5 platform

Guidance to help you use the IBM  
Workplace Managed Client

Many practical and helpful  
hints and tips



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**Redbooks**





International Technical Support Organization

**Deploying IBM Workplace Collaboration Services  
on the IBM System i5 Platform**

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Archived

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

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# Preface

IBM®, the leader in collaboration, has created IBM Workplace™ Collaboration Services, a completely integrated collaborative environment based on open standards. Workplace Collaboration Services provides a wide range of integrated ready-to-use communication and collaboration capabilities as services for the IBM Workplace environment. This includes such capabilities as e-mail, calendaring and scheduling, presence awareness, instant messaging, e-learning, team spaces, Web conferencing, and document and Web content management.

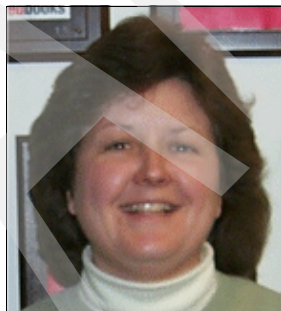
The integrated design of the IBM System i5™ platform provides a low-cost, low-maintenance computing system for Workplace solutions. The System i5 platform, which employs the latest implementation of Power Architecture™, advances IBM eServer™ iSeries™ integration, simplicity, and low total cost of ownership to record-setting levels. You magnify the benefits of IBM Workplace Collaboration Services by hosting it on the System i5 platform.

This IBM Redbook is written for administrators who want to install, configure, and administer IBM Workplace Collaboration Services on the System i5 platform. It introduces you to Workplace Collaboration Services. It shows you how to deploy and customize it on the System i5 platform as well as how to configure the IBM Workplace Managed Client™. In addition, this redbook provides many performance tips to help you optimize your Workplace Collaboration Services environment.

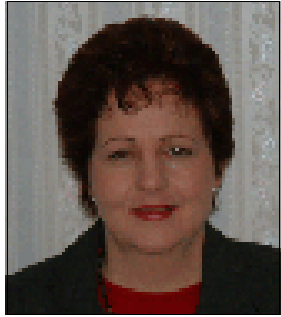
**Note:** At the time this redbook was written, IBM was transitioning from the iSeries server to the release of the System i5 platform. In this redbook, we use the terms System i5 and iSeries server interchangeably. System i5 merely refers to the IBM POWER5™ line of servers within the IBM System i™ product line. Also, with OS/400® V5R3, the operating system has been renamed to IBM i5/OS®. Again throughout this redbook, we use the terms OS/400 and i5/OS interchangeably to refer to OS/400 V5R3.

## The team that wrote this redbook

This redbook was produced by a team of specialists from around the world working at the International Technical Support Organization (ITSO), Rochester Center.



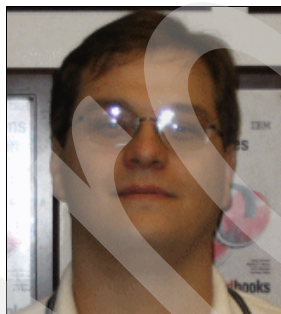
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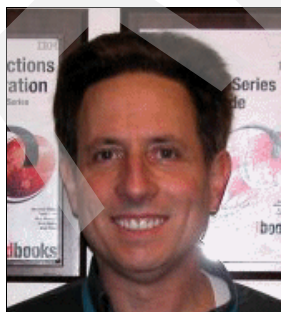
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## IBM Workplace defined

In this chapter, we provide an overview of IBM Workplace and explain IBM Workplace Collaboration Services. We discuss why the IBM eServer iSeries server is well suited to be the platform of choice when deploying a Workplace Collaboration Services solution.

## 1.1 What is IBM Workplace?

In general terms, the term *workplace* refers to a physical space or location where work is performed. IBM Workplace is a unified electronic work environment for people productivity, built with products and technologies from IBM.

IBM Workplace is a family of products, technologies, and solutions that transform the way people work, making them more productive. The product families include:

- ▶ IBM Lotus Notes and Domino
- ▶ IBM WebSphere Portal
- ▶ IBM WebSphere Everyplace®
- ▶ IBM Workplace products such as Workplace Collaboration Services
- ▶ IBM Workplace technologies and solutions, including the IBM Workplace Managed Client, IBM Workplace for Business Controls and Reporting, IBM Workplace for Branch Banking, and much more

**Note:** IBM Workplace represents all of the products and technologies inside IBM Software Group that are focused on making people more productive.

IBM Workplace is an innovative suite of integrated products that allow you to do your work the way you want to, wherever you are, and whenever you want to do it. It is the IBM vision for how people will use technology to help them do their work as best suits their requirements. IBM Workplace is part of the IBM On Demand strategy to provide solutions that people need to help them be more coordinated, responsive, and integrated, within and beyond their organization.

IBM Workplace products are based on reliable, industry-proven technology such as WebSphere Application Server, DB2® Universal Database™, and Java 2 Platform, Enterprise Edition (J2EE™). These products deliver high functionality that includes collaboration in a secure enterprise-wide portal environment via a range of client technologies including a rich client, Web browser, or mobile devices.

Building on existing skills, the intuitive tools enable people to work in a low-cost Web browser-based environment or use a rich client or a mobile device when disconnected and working elsewhere. These capabilities enable people to seamlessly collaborate on important documents, easily connect to critical information systems, or instantly contact key colleagues in real-time.

### 1.1.1 IBM Workplace portfolio

Built on a service-oriented architecture (SOA), IBM Workplace offerings can address the needs for transforming organizations of all sizes, from products designed specifically for small, medium, and large enterprises, to flexible tools and innovative technologies, to a broad set of solutions. With IBM Workplace offerings, organizations can deploy an online environment with a flexible set of componentized capabilities that can be used to adapt quickly to meet specific business needs.

The IBM Workplace environment helps to consolidate and present whatever resources users need, including business processes, collaboration capabilities, information, documents, and productivity tools, all through a unified Workplace interface. And the Workplace environment can be tailored to each user's or team's business role. The integrated environment keeps resources close at hand and in the appropriate business context. The result? Users can work conveniently, securely, and more efficiently within a single Workplace environment, instead of continuously switching between multiple applications.



Figure 1-1 highlights the four parts of the IBM Workplace portfolio of product offerings.

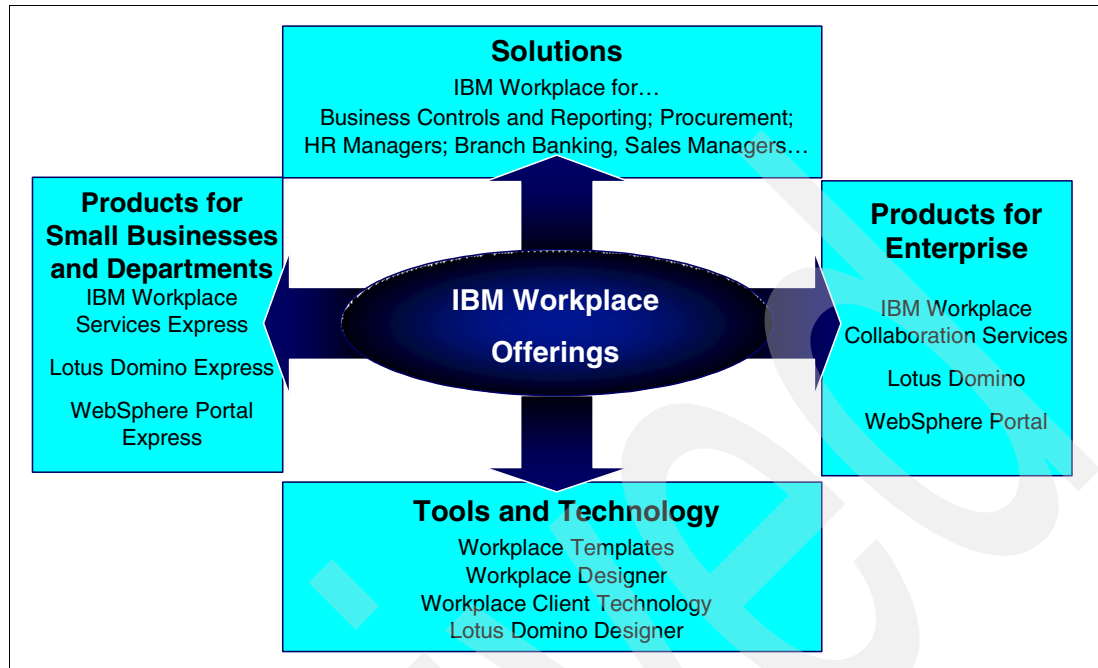


Figure 1-1 IBM Workplace portfolio of product offerings

As shown in Figure 1-1, four components compose the IBM Workplace offerings:

- **Products for Small Businesses and Departments**

These are the IBM Express products such as Lotus Domino Express, WebSphere Portal, and IBM Workplace Services Express. See for 1.5, “What is IBM Workplace Services Express?” on page 12, more information.

For more information about IBM Express software, refer to the IBM Redpaper *IBM Software Express Buying and Selling Guide*, REDP-3975.

- **Solutions**

IBM Workplace Solutions are role-based frameworks to help customers apply IBM Workplace technologies faster and more productively. These solutions leverage IBM's industry expertise, insights, and analysis of various business applications. These solutions are designed to provide “short-cuts” for creating a high performance role-based work environment, helping to accelerate time-to-value. Workplace Solutions draw on IBM's rich portfolio of software products and services, as well as on independent software vendor (ISV) applications and other business partner skills to enable clients to address some of their most pressing business issues.

For more information, see the IBM Workplace Solutions Web site at the following address:

<http://www-306.ibm.com/software/info/workplace/solutions.jsp>

- **Products for the Enterprise**

These are the products that exist for the enterprise. Lotus Domino and WebSphere Portal are existing products today. IBM Workplace Collaboration Services is new in 2005 and is the focus of this redbook. Specifically this redbook focuses on deploying IBM Workplace Collaboration Services version 2.5 on the iSeries server.

- Tools and Technology

These are the various client tools and technologies that support the various IBM Workplace products and solutions.

## 1.1.2 IBM Workplace strategy from the top

The IBM Workplace strategy enables users to become more effective, while simultaneously allowing corporations to meet any major changes with maximum efficiency, minimum effort, and low cost. This is not a “rip and replace” proprietary strategy, but a reuse open standards policy. The IBM Workplace vision is two-fold:

- IBM Workplace simplifies access to content, applications, people, and processes. It is built on a secure enterprise-wide portal that enables people to do their work from anywhere, at anytime, faster and more effectively.
- Server-managed clients and provisioning provide rich functionality and consistent deployment with a lower cost of ownership.

Figure 1-2 illustrates how IBM Workplace makes people more productive in the context of the business that they do every day. It positions IBM Workplace as the front-end application for all the back-end business processes and information.

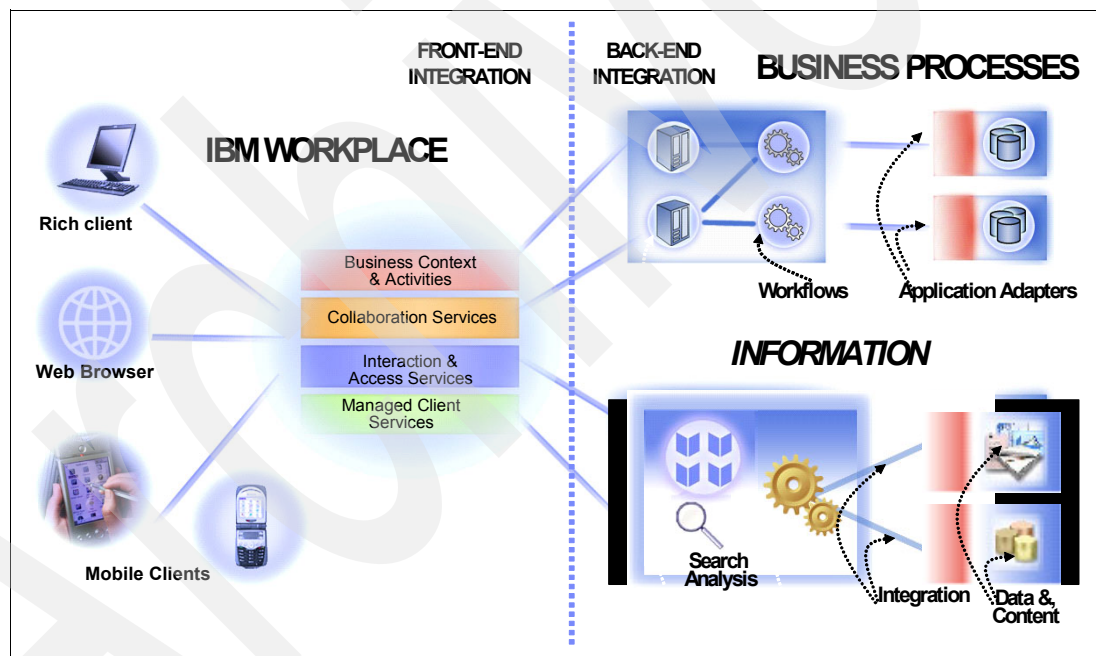


Figure 1-2 The power of one architectural model, one programming model, one consistent tool set

“IBM Workplace is the result of a very natural, almost unavoidable evolution and convergence of four major IBM software technologies that customers have been using adjacently for a while,” says Ken Bisconti, IBM Software Group VP of Workplace, Portal and Collaboration Products, in the article “IBM Workplace extends more transformational power to more businesses”.

Bisconti continues, “If you think of the desktop, with its multiple windows and disconnected applications and PC only accessibility, as the end-user environment of the past, then IBM Workplace is increasingly the end user environment of the present and the future.”

Bisconti defines IBM Workplace, as the next-generation “front-end” for end-user computing. “It’s a flexible, dynamic environment,” he says, “that lets an organization assemble, on the fly, all the resources a user needs to do his or her job, applications, information, business processes and people, into a single integrated work environment, which the user can access on whatever device he or she chooses.”

“IBM Workplace makes users more productive by transforming the way they access the resources they need to do their jobs,” says Bisconti. “When you can aggregate the information, applications, business processes, and people a user needs in one place, the user spends less time searching for these resources and organizing them, and more time analyzing them and making intelligent decisions.”

You can find the complete article “IBM Workplace extends more transformational power to more businesses” by Ken Bisconti on the Web at the following address:

<http://www-306.ibm.com/software/swnews/swnews.nsf/n/jmae664pzt?OpenDocument&Site=software>

For more information about the IBM Workplace strategy and its implications, refer to the IBM Workplace home page at the following address:

<http://www.ibm.com/software/info/workplace/index.jsp>

## 1.2 What is IBM Workplace Collaboration Services?

IBM Workplace Collaboration Services is an innovative product from the IBM Workplace family of products that helps transform the way people work. Workplace Collaboration Services is a completely integrated collaborative environment that includes a wide range of capabilities. These capabilities include e-mail, calendaring and scheduling, online awareness, instant messaging, e-learning, team spaces, Web conferencing, and document and Web content management. With Workplace Collaboration Services, organizations can readily deploy a single collaboration solution for the enterprise with the flexibility to deploy one, two, or more capabilities in any combination, all running within a single, fully integrated IBM Workplace collaboration environment.

**Note:** IBM Workplace Collaboration Services is a single, integrated customizable collaboration server for everyday collaboration. It has ready-to-use tools that enable people to do their jobs more effectively anytime, anywhere. Workplace Collaboration Services provides a consistent, integrated user interface.

Businesses will find the collaborative environment that is right for them through a choice of integrated ready-to-use communication and collaboration capabilities. With Workplace Collaboration Services, you have the flexibility to start by solving a single business need, such as training the sales force, or by solving a broader set of business needs such as achieving more efficient teaming, communication, and decision making. The integrated collaboration services include:

- **Messaging services**

These services provides standards-based messaging capabilities with a choice of a rich client or Web browser experience. It combines e-mail, calendaring and scheduling, and a personal address book so everyone in your organization can stay connected and communicate more effectively.

- **Team collaboration services**

These services provide integrated presence awareness, instant messaging, Web conferencing, and customizable team spaces to help individuals, teams and entire

organizations to become more responsive, increase business efficiencies, and improve productivity.

- ▶ Document services

These services provide standards-based document management functionality with a choice of rich client or Web browser experience that enables the management of the complete life cycle of office documents, from inception to collaborative authoring, to review, approval, and archival.

- ▶ Web content management services

These services help to streamline the Web content management process by placing content creation and management in the hands of content experts for author-once, publish-everywhere control, enabling businesses to reduce content development and implementation time.

- ▶ Learning services

These services provide a personalized, online learning environment for your users, and streamlines the management of your training programs, resources, and courseware. Integration with other services delivers blended learning experiences and provides students with enhanced collaborative tools, such as course discussion areas, document sharing, Web conferencing, and chat rooms.

### 1.2.1 Workplace Collaboration Services version 2.5 products

You can purchase Workplace Collaboration Services as a bundle that includes the entire set of collaboration capabilities or purchase any of the following capabilities separately:

- ▶ IBM Workplace Messaging®
- ▶ IBM Workplace Team Collaboration™
- ▶ IBM Workplace Documents
- ▶ IBM Workplace Collaborative Learning™
- ▶ IBM Workplace Web Content Management™

IBM provides flexible licensing options so that you can easily purchase one or more individual collaboration services when that is the desired approach for solving your specific business needs.

#### IBM Workplace Messaging

IBM Workplace Messaging is a cost-effective, standards-based messaging product that is security-rich, scalable, and easily deployed. It integrates with an organization's existing corporate infrastructure and uses the organization's Lightweight Directory Access Protocol (LDAP) directory to automatically create, delete, and authenticate user accounts; resolve addresses; and route mail. Workplace Messaging supports both a Web browser and the IBM Workplace Managed Client, also referred to as the *rich client*.

IBM Workplace Messaging provides access to these features:

- ▶ Mail lets users send and receive e-mail messages.
- ▶ Calendar and scheduling lets users maintain and manage calendar events and schedule meetings.
- ▶ Personal Address Book lets users maintain and manage contact information for people and for group mailing lists.

IBM Workplace Messaging for the rich client provides these additional features:

- ▶ Offline support that allows users to read, edit, and create mail while disconnected from the network
- ▶ Integrated instant messaging and chat, including the ability to save chats

**Note:** To make this available to users, you must have a license for IBM Workplace Collaboration Services or a license for IBM Workplace Team Collaboration, and you must configure instant messaging.

## IBM Workplace Team Collaboration

IBM Workplace Team Collaboration provides users with the capability to participate in online meetings, create libraries, and interact with team members through online chats, threaded discussion forums, and document sharing.

IBM Workplace Team Collaboration includes the following features:

- ▶ Applications provide users with access to Workplace applications, HTML-enabled Domino applications, and custom applications. Workplace applications include *team spaces* where members can participate in discussions and chats, share documents and a team calendar, and search for information related to a project and documents for managing online document libraries. Users can create and maintain a list of favorite document libraries.
- ▶ Web conferences are online meetings in which moderators make presentations to conference participants.
- ▶ Templates provide tools for creating, customizing, and managing application templates. Users can also design and customize form templates for use in applications.

## IBM Workplace Documents

IBM Workplace Documents provide systematic, controlled access to critical documents and provide a fundamental document-management capability that is standards-based and has integrated collaborative capabilities. Workplace Documents supports both a Web browser and the IBM Workplace Managed Client.

IBM Workplace Documents provides access to these features:

- ▶ Document library capabilities provide document check-in and check-out, document locking, and version control.
- ▶ Structured access provides an easy method for setting up library access so that information needed organization-wide can be easily viewed, but selective information can be viewed only by a limited audience.
- ▶ Document editors provide the power to modify popular document types even when native editors are unavailable.
- ▶ Document author, owner, and editor awareness is available through integrated instant messaging and chat capabilities.
- ▶ Security lets users store documents outside the file system to increase protection from viruses and other risks.

IBM Workplace Documents for the rich client provides these additional features:

- ▶ Offline support provides a secure method for users to create, import, edit, and save documents, presentations, and spreadsheets by supporting offline use and synchronization between local and server stores.
- ▶ Productivity tools provide the power to modify popular document types even when native editors are unavailable.

### **IBM Workplace Collaborative Learning**

IBM Workplace Collaborative Learning provides access to a scalable, flexible product for managing classroom-based and online learning activities, resources, curricula, and courseware catalogs.

IBM Workplace Collaborative Learning provides access to these features:

- ▶ The learning student experience provides an easy-to-use interface where students access courses. Students can search for courses and organize them in personalized folders, as well as preview, enroll in, and participate in courses online.
- ▶ The learning management and delivery system components provide a Web-based administrative interface that course developers and instructors access to manage resources, learning programs, and skills development.
- ▶ The Authoring tool is used by course developers, at their own workstations, to create course structure and content, assemble course packages, and import courses to learning servers.

### **IBM Workplace Web Content Management**

IBM Workplace Web Content Management delivers powerful end-to-end Web content management through multiple Internet, intranet, extranet, and portal sites. IBM Workplace Web Content Management provides the following features:

- ▶ Content authoring is template-based, with a What You See Is What You Get (WYSIWYG) rich text editor that provides a guided process that does not require technical skills.
- ▶ Versioning and rollback provide a method for creating multiple content versions that can be used at different times or restored to previous versions, as needed.
- ▶ Automatic workflow processing ensures that the right people approve Web content before it is published and assures accuracy and relevancy of content.
- ▶ Integration of information from various sources allows reuse of information from back-end systems, improving transactional performance.
- ▶ Personalized delivery lets authors create content once and reuse it in different sites for users with different roles or preferences.

## **1.2.2 Architecture**

The Workplace Collaboration Services architecture is built with Java as an open standards platform. The IBM Workplace collaborative application framework extends Lotus' previous industry leading position, incorporating all the previously gained expertise in messaging and collaboration, by taking it to the next level.

Figure 1-3 shows a high-level overview of the IBM Workplace Collaboration Services architecture.

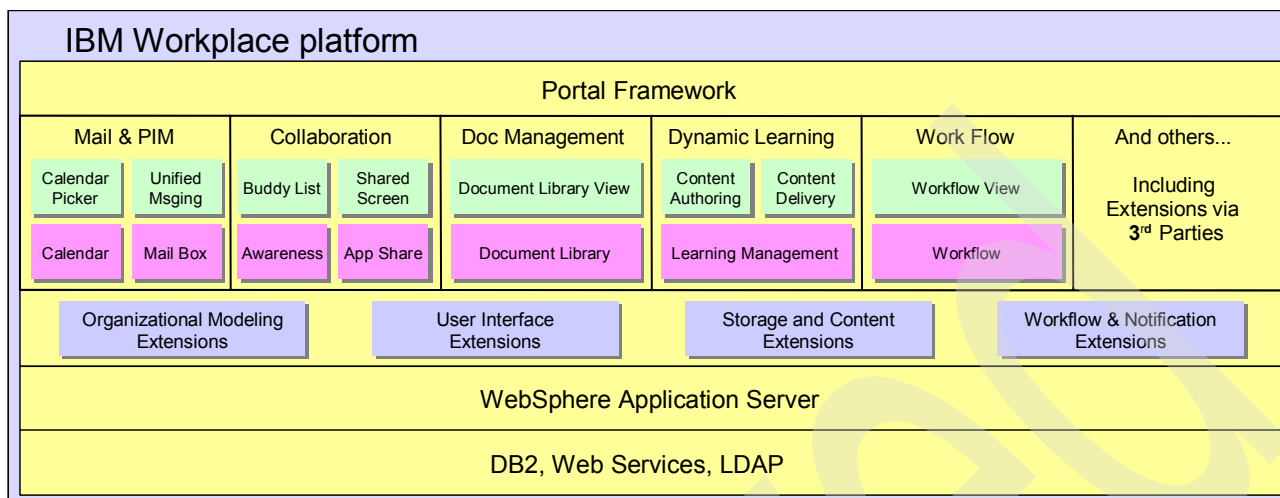


Figure 1-3 IBM Workplace Collaboration Services architecture

## 1.3 Running Workplace Collaboration Services on i5/OS

With most platforms, several separate physical servers are required to efficiently run a production implementation of Workplace Collaboration Services. It is interesting to note that a typical implementation of Workplace Collaboration Services requires a minimum of three servers for an IBM eServer xSeries® server implementation. This includes one server for the LDAP server, one for the DB2 Universal Database server, and one server for WebSphere Application Server and Workplace Collaboration Services. However, the entire Workplace Collaboration Services environment can run on a single iSeries server, consolidating the environment on to a secure, scalable, trusted platform.

The software components required to deploy the IBM Workplace Collaboration Services framework include middleware, development tools, and ready-to-deploy applications. Because iSeries is an integrated platform, many of the software components are already integrated, tested, and ready to use, reducing the effort needed to deploy Workplace Collaboration Services. The i5/OS operating system bundles core technologies needed for On Demand Business applications, such as the IBM HTTP Server (powered by Apache), which includes the IBM Web Administration for iSeries. This is where the iSeries unique Workplace Collaboration Services configuration wizard is delivered. IBM Directory Server is also part of i5/OS and provides an integrated LDAP server. In addition, DB2 Universal Database is integrated with i5/OS.

Figure 1-4 shows a simplified view of the required components that are part of a Workplace Collaboration Services environment running on the iSeries server. The LDAP service can be the IBM Directory services running under the same i5/OS, or it can be a corporate LDAP service if preferred. See 2.5, "Supported LDAP directories" on page 35, for a list of supported LDAP directories.



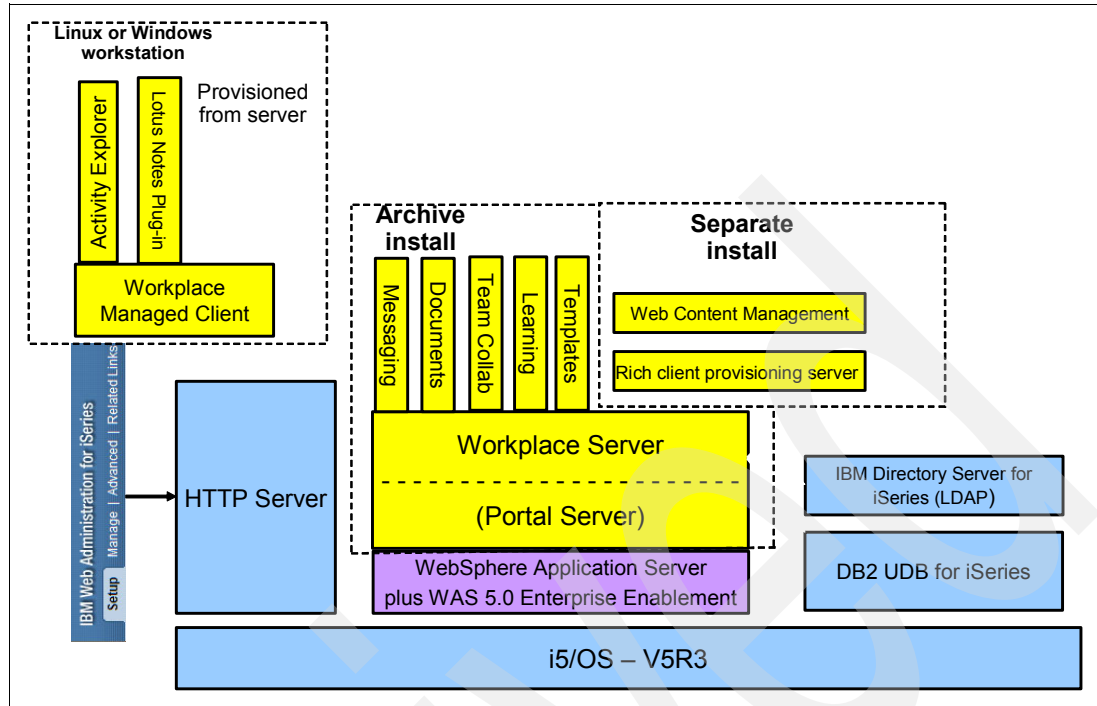


Figure 1-4 iSeries server Workplace Collaboration Services environment

## HTTP server

An HTTP server handles client HTTP requests across an intranet or the Internet. All dynamic requests are routed by the HTTP server to the WebSphere Application Server, which in-turn replies back with the required portlets.

## Database management system

A database management system (DBMS) hosts the databases that store Workplace Collaboration Services and WebSphere Portal data and manages access to them. Workplace Collaboration Services supports IBM DB2 Universal Database for iSeries for hosting databases on i5/OS.

## LDAP directory

An LDAP directory stores user account information that is used by Workplace Collaboration Services for authentication. It is used to store and update user-specific data related to authentication and authorization. Workplace Collaboration Services supports a variety of LDAP directories, including IBM Directory Server, Lotus Domino, Microsoft Active Directory®, Novell eDirectory, and Sun™ ONE™ Directory Server. For more information, see 2.5, “Supported LDAP directories” on page 35.

If your company already uses a supported LDAP directory, you can use it with Workplace Collaboration Services instead of setting up a new one.

## IBM WebSphere Application Server

WebSphere Application Server provides the engine that drives WebSphere Portal and Workplace Collaboration Services. Facilitating the J2EE environment, WebSphere Application Server is a required base for both products. It also provides the WebSphere Application Server Administrative Console, from which you can administer the WebSphere Portal and Workplace Collaboration Services products.



## IBM WebSphere Portal

WebSphere Portal consists of middleware, portlets, and development tools for building and managing secure portals. It provides the infrastructure for Workplace Collaboration Services. On i5/OS, the Workplace Collaboration Services installation program installs its own instance of WebSphere Portal. This instance runs in parallel to other instances if WebSphere Portal is already installed.

### 1.3.1 Why choose i5/OS?

From a technical perspective, you want the most advanced, secure, scalable, and reliable platform that you can afford, and one where the entire Workplace Collaboration Services environment can run on a single IBM eServer platform. Some of the unique benefits of i5/OS include:

- ▶ i5/OS sets the industry standard

i5/OS is a highly scalable true 64-bit operating system. In multiple benchmark tests, i5/OS is the number one IBM eServer system for scalability and performance.

- ▶ Maturity with a proven track record

i5/OS is an extremely mature product, launched back in the 1970s as the operating system for the S/38, then rebranded as OS/400 for the AS/400 series, and more recently on the iSeries servers. Now called i5/OS, each iteration of the operating system has added more features, more scalability, and more solidity to the platform.

- ▶ Enterprise scaling and industrial grade security

In security terms, i5/OS sets the standard. Try searching the Web for reported weaknesses, and you are unlikely to find any. Compare the i5/OS security track record to that of any other system type or manufacturer.

- ▶ Consolidation

Unlike other platforms, the entire Workplace Collaboration Services environment can run on a single iSeries server, consolidating the environment onto a secure, scalable, trusted platform.

- ▶ Integration

On the iSeries server, everything is integrated. The operating system, i5/OS, has DB2 Universal Database, security, HTTP server, and LDAP server built right in to it. In addition, WebSphere Application Server is standard.

- ▶ Ease of installation and configuration

Unique to the iSeries platform is a configuration wizard that simplifies the creation of a Workplace Collaboration Services environment. This graphical user interface is built into the Web Administration for iSeries. For details about this configuration wizard, see Chapter 4, "Installation and initial configuration" on page 77.

## 1.4 IBM Workplace Managed Client

To further enhance the end user's experience and expand the range of available options to access their collaborative portal, IBM Workplace Collaboration Services 2.5 supports an optional user downloadable rich client for the desktop. This client is referred to as the *IBM Workplace Managed Client* or *rich client*. It is built on a standards-based platform and uses the Eclipse technology as a base component. A key element of the IBM Workplace Managed Client is its ability to provide a no-touch deployment model coupled with a policy-based management. It is a server managed client.

This centrally managed, policy controlled rich desktop client also offers the following features:

- ▶ **Work offline**

The Workplace Managed Client offers a complete and secure offline working ability, so that editing documents, spreadsheets and presentations, answering mail, using calendaring and scheduling, and interacting with local applications can all be done while travelling or disconnected from a network.

- ▶ **Synchronization automatically on reconnect**

Synchronization occurs when the Workplace Managed Client reconnects to the network. Lotus' previous experience in replication and synchronization with Lotus Domino and SyncML4 technology is incorporated here.

- ▶ **Automatic updates**

The Workplace Managed Client platform itself and its hosted applications can be automatically updated with incremental fixes and application changes from the Workplace Collaboration Services server. It is all done with a "no user touch" delivery. No visit to the desktop is required by IT staff.

For more information about the Workplace Managed Client, see Chapter 6, "IBM Workplace Managed Client" on page 255.

You can also reference the following IBM Redpapers:

- ▶ *IBM Workplace Client Technology (Rich Client Edition) Technology Overview*, REDP-3884
- ▶ *IBM Workplace Client Technology (Rich Client Edition) ISV Integration Guide*, REDP-3883

## 1.5 What is IBM Workplace Services Express?

IBM Workplace is designed to connect teams of people, information, and applications into a dynamic work environment to help people be more productive and responsive. IBM Workplace Services Express is an IBM Workplace offering that is designed especially for the small-to-medium business. IBM Workplace Services Express gives you immediate power and flexibility that you need to boost productivity with quick time-to-value and low total cost of ownership.

IBM Workplace Services Express provides a subset of the services included in the IBM Workplace Collaboration Services product such as team-collaboration with team spaces, document sharing, presence awareness, and discussion capabilities. It includes portal technologies, enabling you to take advantage of the WebSphere Portal infrastructure to deploy your portlet applications or use previously created portlets that are available. It offers platform choices. It provides Microsoft Office extensions in the Windows environment. IBM Workplace Services Express includes the set of product functions that small and medium businesses will use most.

The features of IBM Workplace Services Express version 2.5 include:

- ▶ **Easy and quick installation and configuration**

The product can be customized using simple drag-and-drop techniques and wizards.

- ▶ **A robust portal environment, based on the industry-leading IBM WebSphere Portal technology**

- ▶ **Ready-to-use team space templates that enable project teams to create their own customized portal Web site and get up and running quickly**

- ▶ **Templates that enable people to create basic applications from existing data, through a drag-and-drop interface, without assistance**

- ▶ Document manager, which includes features such as simple approval workflow, access control, versioning, and search capabilities  
End users can create, edit, view, index, and share documents with existing Microsoft Office 2000, XP, or 2003 environments or built-in editors. The document manager can also be integrated into Microsoft Windows Explorer so that users can work from either the portal or their local file system.
- ▶ Simple Web browser-based spreadsheet, presentation, and word-processing document editors that can be used by users who do not require the full functionality of expensive productivity suites such as Microsoft Office  
It gives users the ability to view from a Web browser more than 130 different types of documents without any special software installed.
- ▶ Integrated instant messaging and online presence awareness that enable easy access to other team members  
You can immediately see if a document's author or the person who sent you an e-mail is online and start a chat with them.
- ▶ Integration of existing applications within the portal environment, all accessible from a Web browser
- ▶ Integration with existing IT environment through support of your company's LDAP server, including Domino, Microsoft, and IBM Tivoli® Directory Server
- ▶ Simplified system management and administration through the ability to operate an integrated solution for team spaces, document management, instant messaging, and portal on one server
- ▶ Integrated data store so an external database is not required

All of these functions are provided with a single purchase and installation on a single server.

It is important to note that IBM Workplace Services Express Version 2.5 does *not* include support for the following functions:

- ▶ E-mail and calendaring
- ▶ IBM Workplace Managed Client
- ▶ Web Content Management
- ▶ Distance Learning
- ▶ Web Conferencing

Table 1-1 provides a function comparison between Workplace Collaboration Services version 2.5 and Workplace Services Express version 2.5.

*Table 1-1 Function comparison*

Function	Workplace Collaboration Services	Workplace Services Express
E-mail and calendar	Yes	No
Instant messaging	Yes	Yes
Team spaces	Yes	Yes
Web conferencing	Yes	No
Distance learning	Yes	No
Document management	Yes	Yes
Web content management	Yes	No

Function	Workplace Collaboration Services	Workplace Services Express
IBM Workplace Managed Client	Yes	No
WebSphere Portal license included	No	Yes
Licensing method	Per processor	Per processor or per user

IBM Workplace Services Express supports the following platforms:

- ▶ Microsoft Windows 2000 Server and Windows Server® 2003 (includes Integrated xSeries Server on iSeries)
- ▶ Microsoft Windows XP SP1 (Development platform support only)
- ▶ Red Hat Enterprise Linux 2.1 (Intel® x86) for Intel (includes Integrated xSeries Server on iSeries)
- ▶ SUSE Linux Enterprise Server 8 (Intel x86) for Intel
- ▶ IBM i5/OS

IBM Workplace Services Express supports the following clients:

- ▶ Microsoft Internet Explorer® 6.0 SP1 or 5.5 SP2
- ▶ Mozilla Web Browser 1.3, 1.2.1, or 1.0.2
- ▶ Mozilla 1.4 on Linux with Sun Java™ Runtime Environment (JRE™) 1.4.2
- ▶ Netscape Communicator 7.2

For more information, refer to the IBM Workplace Services Express Web site at the following address:

<http://www.lotus.com/products/product5.nsf/wdocs/workplaceservicesexpresshome/>

## Prerequisites

In this chapter, we describe the hardware and software prerequisites for running IBM Workplace Collaboration Services version 2.5 on the iSeries server. Before you can install and configure Workplace Collaboration Services, you must install and configure the necessary hardware and software requirements.

This chapter discusses the following prerequisites to ensure that your iSeries server meets all the Workplace Collaboration Services requirements:

- ▶ Hardware requirements
- ▶ Software requirements
- ▶ Required program temporary fixes (PTFs)
- ▶ i5/OS configuration and network requirements
- ▶ Supported Lightweight Directory Access Protocol (LDAP) directories
- ▶ Supported HTTP servers
- ▶ Client requirements

**Tip:** For the latest information about these prerequisites, see the Workplace Collaboration Services Release Notes available on the Lotus Documentation Web site at the following address:

<http://www.lotus.com/ldd/notesua.nsf>

## 2.1 iSeries server hardware requirements

The following list provides the minimum iSeries server processor and memory requirements for the new System i5 platform. For existing systems, contact your IBM representative to determine capacity requirements for your organization's deployment.

- ▶ IBM System i5 model 520 1-way (2400 commercial processing workload (CPW))
- ▶ 4 GB main storage
- ▶ 15 GB of disk space for installation of Workplace Collaboration Services and WebSphere Application Server V5.0.2 Enterprise Enablement
- ▶ 4 GB of disk space for each Workplace Collaboration Services server configured
- ▶ Additional disk space sized based on the Workplace Collaboration Services application being used

Refer to the Workplace Collaboration Services release notes for the latest information.

**Note:** Throughout this redbook, we use the terms “System i5” and “iSeries server” interchangeably. The *System i5* name merely refers to the IBM POWER5 line of servers within the IBM System i product line. Also, with OS/400 V5R3, the operating system has been renamed to IBM i5/OS. Again throughout this redbook, we use the terms OS/400 and i5/OS interchangeably to refer to OS/400 V5R3.

### 2.1.1 IBM Systems Workload Estimator

To size your iSeries server based upon your business needs, we recommend that you use the IBM Systems Workload Estimator. The Workload Estimator can help you estimate your system correctly. The IBM Systems Workload Estimator is available on the Web at:

<http://www-912.ibm.com/supporthome.nsf/document/16533356>

The Workload Estimator is an interactive Java-based tool for sizing an iSeries server for mixed workloads. For many existing systems, you can import IBM Performance Management data directly into the Workload Estimator and use it to analyze your company growth and server needs. The purpose of the Workload Estimator is to provide recommendations for estimating an appropriate configuration for a server running one or more workloads associated with On Demand Business or collaboration, such as Workplace Collaboration Services.

**Important:** At the time this redbook was written, only mail and instant messaging workloads can be sized using the Workload Estimator. Additional workloads will be available in a future release of Workload Estimator.

Using the Workload Estimator, you can try different scenarios and print the results for comparison. The Workload Estimator is not a replacement for the advice of an IBM representative or Business Partner who is experienced with Workplace Collaboration Services requirements. If you are new to or are not familiar with sizing methodologies, we strongly recommend that you obtain expert assistance before you select a final iSeries server configuration.

**Tip:** Before you start using the Workload Estimator for the first time, we recommend that you carefully read the help documentation. This opens automatically in a separate Web browser window and is available through the tutorial provided with Workload Estimator. You can download the tutorials as PDF files.

The recommendation or Selected System reported by the Workload Estimator includes the model, processor, interactive feature, CPW capacity, memory, and the number and capacity of disk storage (hard disk drive) necessary to support the set of workloads defined by the user. When the Workload Estimator provides a sizing recommendation, it always defaults to recommend the latest technology systems that are currently available.

Even though detailed resource requirements for each Workload Estimator recommendation are given, it is important to remember that, as with every performance estimate (whether a rule of thumb or a sophisticated model), you always need to treat it as an estimate and not a detailed capacity planner. This is particularly true with a robust system such as the iSeries server that offers so many different capabilities where each installation has unique performance characteristics and demands.

The sizing recommendations that are generated by the Workload Estimator are based on benchmark measurements and performance tests from well-defined repeatable workloads. To arrive at a recommended system, the Workload Estimator goes through a series of questions to collect the necessary information to calculate the resource requirements of your solution.

As you become more familiar with the Workload Estimator, you can provide more specific information for particular workloads, thereby leading to a more accurate estimation. The Workload Estimator is continually updated to implement the latest versions and releases of the workloads. New function is added on a regular basis to keep the information and projections current. Periodically go to the following Web address and, in the Help box on the right, click the **What's New** link to keep up-to-date with the most accurate information about Workload Estimator:

<http://www-912.ibm.com/estimator/index.html>

## 2.2 i5/OS software requirements

Table 2-1 lists the licensed program software for i5/OS that is required to run Workplace Collaboration Services. Notice that IBM Workplace Collaboration Services 2.5 for i5/OS requires V5R3 or later. OS/400 V5R2 is not supported.

**Note:** The IBM Web Administration for iSeries Create IBM Workplace wizard also verifies that the required licensed program software is installed prior to configuring a Workplace Collaboration Services server. Refer to 4.3, "Using the iSeries Create IBM Workplace wizard" on page 97, for more information. Make sure that you have the latest 5722-DG1 group PTF installed before you use the iSeries Create IBM Workplace wizard to configure a Workplace Collaboration Services server.

Table 2-1 i5/OS software requirements for Workplace Collaboration Services version 2.5

Licensed program product	Option	Description
5722SS1	*BASE	OS/400 V5R3
	12	OS/400 - Host Servers
	30	OS/400 - Qshell Interpreter
	33	OS/400 - Portable Application Solution Environment (PASE)
	43	OS/400 - Additional Fonts
5722AC3	*BASE	Crypto Access Provider 128-bit

Licensed program product	Option	Description
5722DG1	*BASE	IBM HTTP Server for iSeries
5722JC1	*BASE	IBM Toolbox for Java
5722JV1	*BASE	IBM Developer Kit for Java
	5	Developer Toolkit 1.3
	6	Developer Toolkit 1.4
5722TC1	*BASE	TCP/IP Connectivity Utilities for iSeries
5733WS5	*BASE	WebSphere Application Server V5.0
	1	WebSphere Application Server V5.0 Client development and runtime
	2	WebSphere Application Server V5.0 Application server runtime
	10	WebSphere Application Server V5.0 Enterprise Enablement <sup>1</sup>
5799PTL	*BASE	iSeries Tools for Developers PRPQ (optional) <sup>2</sup>

<sup>1</sup> WebSphere Application Server V5.0 option 10, Enterprise Enablement, is provided as part of the Workplace Collaboration Services bundle of CDs. It cannot be installed until after option 1, WebSphere Application Server V5.0 Client development and runtime, and option 2, WebSphere Application Server V5.0 Application server runtime are installed. For instructions on how to install WebSphere Application Server V5.0 option 10, Enterprise Enablement, see 2.2.1, "Installing WebSphere Application Server V5.0, Enterprise Enablement" on page 18.

<sup>2</sup> For instructions on how to obtain and install 5799-PTL iSeries Tools for Developers PRPQ, see 2.2.2, "Installing iSeries Tools for Developers PRPQ" on page 19. This product only needs to be installed when using the Virtual Network Computing (VNC) server as your document rendering server.

**Important:** As part of the IBM Workplace Collaboration Services installation, a runtime version of WebSphere Portal is also installed. WebSphere Portal is *not* required prior to installing Workplace Collaboration Services on the iSeries server. This runtime version of WebSphere Portal is used only to support an IBM Workplace Collaboration Services environment. If you intend to use WebSphere Portal for other applications, you must purchase a separately licensed version.

## 2.2.1 Installing WebSphere Application Server V5.0, Enterprise Enablement

IBM Workplace Collaboration Services requires functionality that is not available with standard versions of WebSphere Application Server on IBM i5/OS. To add this functionality, you must install IBM Enterprise Enablement for WebSphere Application Server for iSeries (WebSphere Application Server V5.0 option 10, Enterprise Enablement).

WebSphere Application Server V5.0 option 10, Enterprise Enablement, is provided as part of the Workplace Collaboration Services bundle of CDs. It cannot be installed until after option 1, WebSphere Application Server V5.0 Client development and runtime, option 2, WebSphere Application Server V5.0 Application server runtime, and the WebSphere Application Server V5.0 group PTF (SF99287 for i5/OS V5R3) are installed.



To install WebSphere Application Server V5.0 option 10, Enterprise Enablement, from a PC workstation connected to your iSeries server:

1. If your WebSphere Application Server subsystem is running, end it by entering the following End Subsystem (ENDSBS) CL command on an i5/OS command line:  
`ENDSBS SBS(QEJBAS5)`
2. Insert the WebSphere Application Server V5.0 Enterprise Enablement CD into your PC workstation's CD-ROM drive. The WebSphere Application Server V5.0 Enterprise Enablement installation program starts automatically.
3. A signon window prompts you to enter your iSeries server name, user ID, and password. After you enter that information, click **OK**.
4. In the window, select the language for the installation and click **Next**.
5. In the WebSphere Application Server V5.0 Enterprise Enablement Welcome window that opens, click **Next**.
6. Review the license agreement. Select **I accept the terms of the licensing agreement** and click **Next**.
7. The window that opens prompts you for the version of WebSphere Application Server V5.0 Enterprise Enablement you want to install. Select **WebSphere Application Server V5.0 Enterprise Enablement** to install the Base Edition. Click **Next**.
8. View the installation summary information and click **Next**.
9. When WebSphere Application Server V5.0 Enterprise Enablement finishes installing, the installation program presents a window that confirms a successful installation. Click **Finish** on this window.

## 2.2.2 Installing iSeries Tools for Developers PRPQ

**Important:** iSeries Tools for Developers PRPQ must be installed only if you intend to use VNC for document rendering. See 7.5.4, "X Virtual Frame Buffer versus Virtual Network Computing" on page 362, for more information. Also iSeries Tools for Developers PRPQ does not need to be installed if the 5722-DG1 PTF SI20496 is installed.

You can download 5799-PTL iSeries Tools for Developers PRPQ from the IBM Software Web site at the following address:

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

Click the **Trials and betas** link in the left navigation column. On the Trials and betas Web page, enter 5799PTL in the Search for selection box and click **Search**.

For the installation instructions for 5799-PTL iSeries Tools for Developers PRPQ, see the Follow a roadmap Porting Central for iSeries instructions page at the following Web address:

<http://www.ibm.com/servers/enable/site/porting/tools/install.html>

For ordering information for 5799-PTL iSeries Tools for Developers PRPQ, refer to the Follow a roadmap Porting Central for iSeries Frequently asked questions page at the following address:

<http://www.ibm.com/servers/enable/site/porting/tools/faqs.html>

### 2.2.3 Displaying installed software on the iSeries server

To determine which software is currently installed on your iSeries server:

1. Sign onto your iSeries server.
2. Type the Display Software Resources (DSPSFWRSC) CL command and press Enter.
3. On the Display Software Resources display (Figure 2-1), verify the software that is installed.

Display Software Resources				System: RCHAS12
Resource ID	Option	Feature	Description	
5722999	*BASE	5050	Licensed Internal Code	
5722SS1	*BASE	5050	Operating System/400	
5722SS1	*BASE	2924	Operating System/400	
5722SS1	1	5050	OS/400 - Extended Base Support	
5722SS1	1	2924	OS/400 - Extended Base Support	
5722SS1	2	5050	OS/400 - Online Information	
5722SS1	2	2924	OS/400 - Online Information	
5722SS1	3	5050	OS/400 - Extended Base Directory Support	
5722SS1	3	2924	OS/400 - Extended Base Directory Support	
5722SS1	12	5050	OS/400 - Host Servers	
5722SS1	12	2924	OS/400 - Host Servers	
5722SS1	30	5050	OS/400 - Qshell	
5722SS1	30	2924	OS/400 - Qshell	
5722SS1	31	5050	OS/400 - Domain Name System	
				More...
Press Enter to continue.				
F3=Exit F11=Display libraries/releases F12=Cancel				
F19=Display trademarks				

Figure 2-1 Display Software Resources display

- Press F11 (Display libraries/releases) on the Display Software Resources display (Figure 2-2) to see the release level of the product that is installed.

Display Software Resources						System: RCHAS12
Resource ID	Option	Feature	Type	Library	Release	
5722999	*BASE	5050	*CODE	QSYS	V5R3M0	L00
5722SS1	*BASE	5050	*CODE	QSYS	V5R3M0	L00
5722SS1	*BASE	2924	*LNG	QSYS	V5R3M0	L00
5722SS1	1	5050	*CODE	QSYS2	V5R3M0	
5722SS1	1	2924	*LNG	QSYS2	V5R3M0	
5722SS1	2	5050	*CODE	QHLPSYS	V5R3M0	
5722SS1	2	2924	*LNG	QHLPSYS	V5R3M0	
5722SS1	3	5050	*CODE	QSYSDIR	V5R3M0	
5722SS1	3	2924	*LNG	QSYSDIR	V5R3M0	
5722SS1	12	5050	*CODE	QIWS	V5R3M0	
5722SS1	12	2924	*LNG	QIWS	V5R3M0	
5722SS1	30	5050	*CODE	QSHELL	V5R3M0	
5722SS1	30	2924	*LNG	QSHELL	V5R3M0	
5722SS1	31	5050	*CODE	QDNS	V5R3M0	

More...

Press Enter to continue.

F3=Exit    F11=Display descriptions    F12=Cancel    F19=Display trademarks

Figure 2-2 Display Software Resources display showing the installed release

You can also use iSeries Navigator to verify the currently installed licensed software on your system. From iSeries Navigator, click **My Connections** → **server name** → **Configuration and Service** → **Software** → **Installed Products**. See Figure 2-3.

Environment: My Connections		Rchas12: Installed Products			
		Product	Option	Release	Description
Management Central (Rchas12)		5722999	0000	V5R3M0	Licensed Internal Code
My Connections		5722ss1	0000	V5R3M0	Operating System/400
Basic Operations		5722ss1	0001	V5R3M0	OS/400 - Extended Base Support
Work Management		5722ss1	0002	V5R3M0	OS/400 - Online Information
Configuration and Service		5722ss1	0003	V5R3M0	OS/400 - Extended Base Directory Supp
System Values		5722ss1	0012	V5R3M0	OS/400 - Host Servers
Time Management		5722ss1	0030	V5R3M0	OS/400 - Qshell
Hardware		5722ss1	0031	V5R3M0	OS/400 - Domain Name System
Software		5722ss1	0033	V5R3M0	OS/400 - Portable App Solutions Environ
All Products		5722ss1	0034	V5R3M0	OS/400 - Digital Certificate Manager
Installed Products		1tmelcf	0000	V4R1M0	Tivoli Management Agent
Supported Products		5639c34	0000	V5R3M0	WebSphere MQ classes for Java and JMS
Fixes Inventory		5639c34	0001	V5R3M0	WebSphere MQ Classes for Java - sample
Collection Services		5722ac3	0000	V5R3M0	Crypto Access Provider 128-bit
Logical Partitions		5722bz1	0000	V5R1M0	IBM Business Solutions
		5722ce3	0000	V5R3M0	Client Encryption 128-bit
		5722da1	0000	V5R3M0	IBM HTTP Server for iSeries

Figure 2-3 Using iSeries Navigator to display installed licensed software

For more information, refer to the IBM eServer iSeries Information Center for Version 5 Release 3 (V5R3) at the following Web address:

<http://publib.boulder.ibm.com/series/v5r3/ic2924/index.htm>

## 2.3 Program temporary fixes

System updates and fixes on the iSeries server are applied through a PTF. The PTFs that are required to be loaded on the system depend on the version and release of OS/400 that is used and the software products that are installed on the system. This section covers the minimum PTFs that are required to perform the configuration steps covered in this redbook.

**Note:** Always make sure that the latest OS/400 Cumulative PTF package is installed on your iSeries server.

Running IBM Workplace Collaboration Services version 2.5 on the iSeries server requires group PTF packages and individual PTFs. Each group PTF package and individual PTF includes specific installation instructions.

Also, the IBM Web Administration for iSeries Create IBM Workplace wizard verifies that the required group PTFs and individual PTFs are installed prior to configuring a Workplace Collaboration Services server.

### 2.3.1 Group PTFs

You must verify that the required group PTFs are installed on your iSeries server. A group PTF provides a logical set of PTFs that affect a specific function. A group PTF can span across many products. Typically group PTFs are installed after you install the required licensed software products and before you install any individual PTFs.

Table 2-2 lists the required group PTFs for i5/OS V5R3 that you must apply *before* you can install Workplace Collaboration Services 2.5 on i5/OS. Verify that your iSeries server has the latest levels of these group PTFs installed.

Table 2-2 Required i5/OS V5R3 group PTFs for Workplace Collaboration Services version 2.5

Group PTF	Description	Minimum level
SF99530	Cumulative PTF package	5032
SF99503	DB2 Universal Database for iSeries	4
SF99287	WebSphere Application Server V5.0 (Base Edition)	7
SF99282	WebSphere Portal Express/Express Plus Service Pack	3
SF99269	Java	5
SF99099	IBM HTTP Server for iSeries	7
SF99288	WebSphere Application Server V5.0 (Network Deployment) (This is required only if WebSphere Application Server Network Deployment (5733-WS5 Option 5) is installed.)	1
SF99173	IBM Business Solutions (This is required only if IBM Business Solutions (5722-BZ1) is installed.)	1
SF99295	WebSphere MQ for iSeries - version 5, release 3 (This is required only if WebSphere MQ for iSeries (5724-B41) is installed.)	1

**Important:** The WebSphere Portal Express or Express Plus Service Pack Group PTF (SF99282) must be applied *after* WebSphere Application Server V5.0 Enterprise Enablement (5733-WS5, option 10) is installed.

After installing WebSphere Application Server V5.0 Enterprise Enablement (5733-WS5, option 10), some users have observed that several of the group PTFs change to an uninstalled status. Installing the WebSphere Portal Express/Express Plus Service Pack Group PTF (SF99282) changes these group PTFs back to the *Installed* status.

The WebSphere Portal Express/Express Plus Service Pack group PTF (SF99282) includes the WebSphere Application Server group PTF. This group PTF also includes several PTFs for products other than the WebSphere Application Server product.

Refer to the following Web address for Preventive Service Planning (PSP) Information for the WebSphere Portal Express/Express Plus Service Pack Group PTF SF99282:

[http://www-912.ibm.com/a\\_dir/as4ptf.nsf/0/137eb683e8bf962f86256eb1001605ef?0openDocument](http://www-912.ibm.com/a_dir/as4ptf.nsf/0/137eb683e8bf962f86256eb1001605ef?0openDocument)

## Verifying group PTFs

To verify that the correct group PTF levels are installed on your system:

1. Sign onto your iSeries server.
2. Type the Work with PTF Groups (WRKPTFGRP) CL command on a command line and press Enter.
3. The Work with PTF Groups display (Figure 2-4) lists the group PTFs that are installed on your system and the level. Make sure to also verify that each group PTF shows a status of Installed.

Work with PTF Groups				System: RCHAS12
Type options, press Enter.				
4=Delete 5=Display 6=Print 8=Display special handling PTFs				
9=Display related PTF groups				
Opt	PTF Group	Level	Status	
	SF99530	5032	Installed	
	SF99503	4	Installed	
	SF99287	7	Installed	
	SF99282	3	Installed	
	SF99269	5	Installed	
	SF99099	5	Installed	
				Bottom
F3=Exit F6=Print F11=Display descriptions F12=Cancel				
F22=Display entire field				

Figure 2-4 Work with PTF Groups (WRKPTFGRP) initial display

- The initial Work with PTF Groups display provides limited information. For a more descriptive display of the group PTF information, press F11 (Display descriptions). See Figure 2-5.

Work with PTF Groups		System: RCHAS12
Type options, press Enter.		
4=Delete 5=Display 6=Print 8=Display special handling PTFs		
9=Display related PTF groups		
Opt	PTF Group	Text
	SF99530	CUMULATIVE PTF PACKAGE C4272530
	SF99503	DB2 UDB FOR ISERIES
	SF99287	WEBSPHERE APP SERVER V5.0 (BASE EDITION)
	SF99282	WEBSPHERE PORTAL EXPRESS/EXPRESS PLUS SERVICE PACK
	SF99269	JAVA
	SF99099	IBM HTTP SERVER FOR ISERIES
		Bottom
F3=Exit F6=Print F11=Display status F12=Cancel		
F22=Display entire field		

Figure 2-5 Work with PTF Groups (WRKPTFGRP) display, using F11 to display the descriptions

You can also use iSeries Navigator to verify the installed group PTFs on your system (Figure 2-6). From iSeries Navigator, click **My Connections** → **server name** → **Configuration and Service** → **Fixes Inventory** → **Fix Groups**.

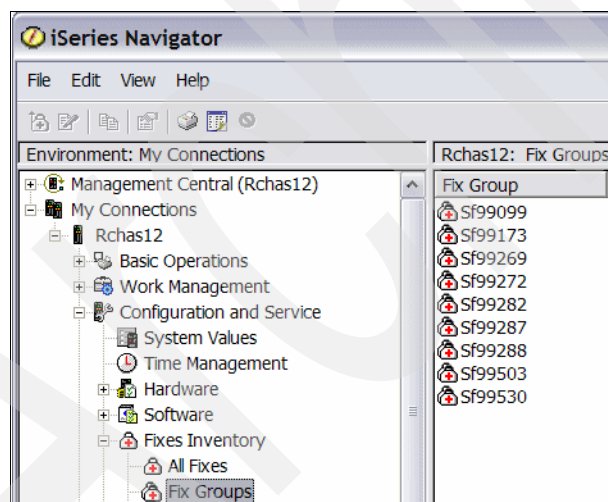


Figure 2-6 Using iSeries Navigator to display installed group PTFs

The Preventative Service Planning (PSP) Web page, at the following address, provides detailed information about all group PTFs for the different OS/400 and i5/OS releases:

[http://www-912.ibm.com/s\\_dir/sline003.NSF/GroupPTFs?OpenView&view=GroupPTFs](http://www-912.ibm.com/s_dir/sline003.NSF/GroupPTFs?OpenView&view=GroupPTFs)

Refer to the following Web address for details and instructions about ordering group PTFs:

<http://www-912.ibm.com/supporthome.nsf/document/10000069>

You can also refer to the Fix Central Web site at the following address:

<http://www-912.ibm.com/eserver/support/fixes/fcgui.jsp>

## 2.3.2 Required individual PTFs for i5/OS V5R3

Table 2-3 lists the required individual i5/OS V5R3 PTFs for IBM Workplace Collaboration Services 2.5. To review the cover letters for these required PTFs, see the Web site at the following address:

[http://www-912.ibm.com/a\\_dir/as4ptf.nsf/as4ptfhome](http://www-912.ibm.com/a_dir/as4ptf.nsf/as4ptfhome)

**Important:** Install these required individual PTFs *after* you install the required group PTFs. See 2.3.1, “Group PTFs” on page 22.

The IBM Web Administration for iSeries Create IBM Workplace wizard verifies that the required group PTFs and individual PTFs are installed prior to configuring a Workplace Collaboration Services server. Refer to 4.3, “Using the iSeries Create IBM Workplace wizard” on page 97.

Refer to the Web site at the following address for information and instructions on ordering individual PTFs:

<http://www.ibm.com/servers/eserver/support/series/fixes/orderfix.html>

Table 2-3 Required individual i5/OS V5R3 PTFs for Workplace Collaboration Services version 2.5

Product	PTF number
5722-999	MF34851
	MF34853
	MF34854
	MF34855
	MF34856
	MF34923
5722-SS1	SI14360
	SI14668
	SI14875
	SI15032
	SI15608
	SI15974
	SI16692
	SI16999
	SI17063
	SI17274
	SI17276
	SI17277
	SI17308
	SI17314
	SI17480

Product	PTF number
5722-SS1 (continued)	SI17551
	SI17684
	SI16999 (recommended)
5733-WS5	SI17024
5799-PTL	SI09622

**Important:** PTF SI17980 (product 5722-DG1) includes the IBM Web Administration for iSeries Create IBM Workplace wizard. This individual PTF is part of the IBM HTTP Server for iSeries Group PTF, SF99099 level 5.

## Verifying individual PTFs

To determine if the required individual PTFs are installed on your iSeries server:

1. Sign onto your iSeries server.
2. Type the following Display Program Temporary Fix (DSPPTF) CL command on an i5/OS command line and press Enter:

```
DSPPTF LICPGM(productID)
```

In this example, we enter:

```
DSPPTF LICPGM(5722SS1)
```

In the Display PTF Status screen, you see the PTFs that have been applied for a particular product. In the example in Figure 2-7, you see the PTFs installed for OS/400 V5R3.

```

                                Display PTF Status
                                System:   RCHAS12

Product ID   . . . . . :   5722SS1
IPL source   . . . . . :   ##MACH#B  ##SERV#P
Release of base option . . . . . :   V5R3M0 L00

Type options, press Enter.
    5=Display PTF details   6=Print cover letter   8=Display cover letter

    PTF                                IPL
Opt  ID      Status                    Action
TC04272  Temporarily applied          None
TC04209  Permanently applied          None
TC04153  Superseded                   None
TC04118  Superseded                   None
TC04083  Superseded                   None
TCP0039  Temporarily applied          None
TCP0038  Superseded                   None
TCP0037  Superseded                   None
TCP0036  Superseded                   None

More...

F3=Exit F11=Display alternate view F17=Position to F12=Cancel

```

Figure 2-7 Display PTF Status for i5/OS V5R3 (5722SS1)



You can also use iSeries Navigator to verify the installed individual PTFs on your system (Figure 2-8). From iSeries Navigator, click **My Connections** → **server name** → **Configuration and Service** → **Fixes Inventory** → **licensed program**.

Fix	Status	Release	Save File	Cover Letter	Last Changed
SI11074	Superseded	v5r3m0	No	No	9/16/2004 2:18:35 AM
SI11409	Superseded	v5r3m0	No	No	9/16/2004 2:18:35 AM
SI11432	Superseded	v5r3m0	No	No	9/16/2004 2:18:35 AM
SI11453	Superseded	v5r3m0	No	No	9/16/2004 1:50:31 AM
SI11518	Superseded	v5r3m0	No	No	9/16/2004 2:18:35 AM
SI11727	Installed	v5r3m0	No	No	9/16/2004 2:41:44 AM
SI11747	Superseded	v5r3m0	No	No	9/16/2004 2:18:35 AM
SI11839	Superseded	v5r3m0	No	No	9/16/2004 2:18:35 AM
SI11892	Superseded	v5r3m0	No	No	9/16/2004 2:18:35 AM
SI11901	Superseded	v5r3m0	No	No	9/16/2004 2:18:35 AM
SI12051	Superseded	v5r3m0	No	No	9/16/2004 1:49:58 AM
SI12130	Superseded	v5r3m0	No	No	9/16/2004 1:50:35 AM
SI12170	Superseded	v5r3m0	No	No	9/16/2004 2:18:35 AM
SI12289	Superseded	v5r3m0	No	No	9/16/2004 2:18:35 AM
SI12298	Installed permanently	v5r3m0	No	No	11/3/2004 6:41:38 PM
SI12376	Superseded	v5r3m0	No	No	9/16/2004 2:18:35 AM
SI12397	Superseded	v5r3m0	No	No	9/16/2004 2:18:35 AM
SI12514	Superseded	v5r3m0	No	No	9/16/2004 2:18:35 AM
SI12583	Superseded	v5r3m0	No	No	9/16/2004 2:18:35 AM
SI12718	Superseded	v5r3m0	No	No	9/16/2004 1:50:31 AM
SI12730	Superseded	v5r3m0	No	No	9/16/2004 1:49:58 AM
SI12765	Superseded	v5r3m0	No	No	9/16/2004 1:50:31 AM

Figure 2-8 Using iSeries Navigator to display installed individual PTFs

## 2.4 i5/OS configuration and network requirements

In this section, we explain the i5/OS configuration and network requirements, which includes the installation and configuration user profiles, system values, the HTTP Administration Server, and the network requirements.

### 2.4.1 Installation and configuration user profiles

To install and configure IBM Workplace Collaboration Services for i5/OS, you need the following user profiles with the specified special authorities:

- ▶ A valid user ID and password on the i5/OS server
  - This user profile must at have least \*ALLOBJ, \*IOSYSCFG, and \*JOBCTL special authorities in order to install and configure a Workplace Collaboration Services server on the iSeries server.
- ▶ An existing database user profile with at least \*USER authority and a maximum storage parameter set to \*NOMAX on the iSeries server where the DB2 Universal Database to be used is located

This profile is specified as the database owner in the IBM Web Administration or iSeries Workplace Create wizard. We recommend that you do not use this user profile for any other purpose; otherwise you can encounter problems. You cannot change the database user after a Workplace Collaboration Services server is created.

**Note:** If the user profile that you are using to configure a Workplace Collaboration Services server has \*SECADM special authority, you can create this database owner user profile when using the iSeries Create IBM Workplace Collaboration Services wizard.

## 2.4.2 Verifying the i5/OS time zone

Before you install the IBM Workplace Collaboration Services software, make sure that the time zone system value is set correctly. To verify your i5/OS time zone:

1. The i5/OS system value of QTIMZON specifies the time zone information used to calculate local system time. You can use the Change System Value (CHGSYSVAL) CL command to set the QTIMZON system value.

Before you change the QTIMZON system value, you can verify the current time zone setting with the following Work with System Values (WRKSYSVAL) CL command:

```
WRKSYSVAL SYSVAL(QTIMZON)
```

2. If the QTIMZON system value needs to be changed, you can select it with option 2 (Change) to access the Change System Value display as shown in Figure 2-9. Or you can run the following CHGSYSVAL command, which in this example, is changing the time zone value to Central Standard Time:

```
CHGSYSVAL SYSVAL(QTIMZON) VALUE(QN0600CST)
```

Change System Value

System value . . . . . : QTIMZON  
Description . . . . . : Time zone

Type choice, press Enter.

Time zone . . . . . : QN0600CST      Name

Associated settings:  
Offset . . . . . : -06:00  
Full name . . . : Central Standard Time  
Abbreviated name : CST

F3=Exit   F4=Prompt   F5=Refresh   F12=Cancel

Figure 2-9 Changing the QTIMZON system value

## 2.4.3 HTTP Administration Server

The HTTP Administration Server must be active in order to access the IBM Web Administration for iSeries Create IBM Workplace wizard. To verify that the HTTP Administration Server is active:

1. Start the HTTP Administration Server on i5/OS by using either of the following options:
  - Enter the following Start TCP/IP Server (STRTCPSVR) CL command:  
STRTCPSVR SERVER(\*HTTP) HTTPSVR(\*ADMIN)
  - From iSeries Navigator, click **My Connections** → **server name** → **Network** → **Servers** → **TCP/IP**. In the right pane, right-click **HTTP Administration** and click **Start** (Figure 2-10).

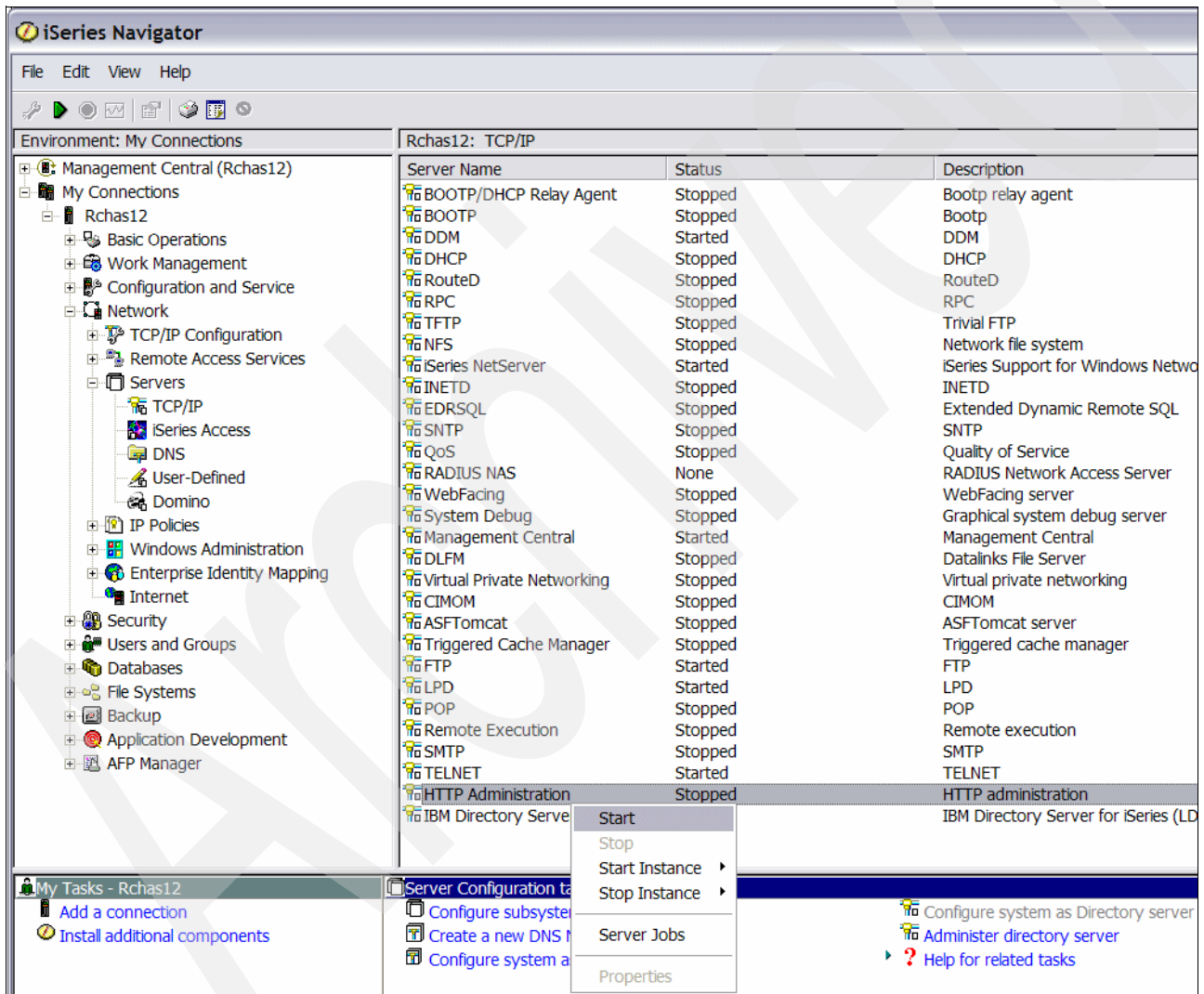


Figure 2-10 Starting the HTTP Administration Server from iSeries Navigator

2. To access the IBM Web Administration for iSeries, point your Web browser to the following URL, where *serverhostname* is the fully qualified host name of your iSeries server:

`http://serverhostname:2001`

In this example, we use the following URL:

`http://rchas12.rchland.ibm.com:2001`

3. When prompted, enter a valid i5/OS user profile and password with at least \*ALLOBJ, \*IOSYSCFG, and \*JOBCTL special authorities. Click **OK**.
4. You should now see the iSeries Tasks Web page as shown in Figure 2-11. Click the **IBM Web Administration for iSeries** link.

**Note:** The options listed on the iSeries Tasks Web page depend on the products that are installed on your iSeries server.



Figure 2-11 iSeries Tasks page

## 2.4.4 Network requirements

The configuration of an IBM Workplace Collaboration Services server on the iSeries server requires a static TCP/IP address and a fully-qualified host name. This allows the Workplace Collaboration Services server to use well-known ports on that TCP/IP address for functions such as mail (Simple Mail Transfer Protocol (SMTP), Post Office Protocol 3 (POP3), and Internet Message Access Protocol (IMAP)) and instant messaging (Session Initiation Protocol (SIP)).

You also need a static TCP/IP address for the external HTTP server, which may or may not be on the same system as the Workplace Collaboration Services server. The IBM Web Administration for iSeries Create IBM Workplace wizard creates a local, external HTTP server

on the same TCP/IP address on the same iSeries server where the Workplace Collaboration Services server is being created.

Before you start the configuration of a Workplace Collaboration Services server, you must determine the dedicated static TCP/IP address and the fully qualified host name to use.

## Static TCP/IP address

A Workplace Collaboration Services server on i5/OS requires the use of a static TCP/IP address. Perform the following steps to determine an available TCP/IP address:

1. From an i5/OS command line, type the Configure TCP/IP (CFGTCP) CL command and press Enter.
2. On the Configure TCP/IP menu that is displayed, type option 1 (Work with TCP/IP interfaces), and press Enter.
3. On the Work with TCP/IP Interfaces display (Figure 2-12), all the currently configured TCP/IP addresses on the iSeries server are displayed. From here you have the options to add, change, remove, display, start, or end the TCP/IP interfaces.

Work with TCP/IP Interfaces					System: RCHAS12
Type options, press Enter.					
1=Add 2=Change 4=Remove 5=Display 9=Start 10=End					
Opt	Internet Address	Subnet Mask	Line Description	Line Type	
	10.10.10.1	255.255.255.128	ETHLINE	*ELAN	
	10.10.10.2	255.255.255.128	ETHLINE	*ELAN	
	10.10.10.3	255.255.255.128	ETHLINE	*ELAN	
	10.10.10.4	255.255.255.128	ETHLINE	*ELAN	
	127.0.0.1	255.0.0.0	*LOOPBACK	*NONE	
					Bottom
F3=Exit	F5=Refresh	F6=Print list	F11=Display interface status		
F12=Cancel	F17=Top	F18=Bottom			

Figure 2-12 Work with TCP/IP Interfaces display

**Note:** You must have at least one TCP/IP address other than 127.0.0.1 defined on your system.

You can also use iSeries Navigator to verify whether an available static TCP/IP address is defined on your system. Using iSeries Navigator, select **My Connections** → **server name** → **Network** → **TCP/IP Configuration** → **IPv4** → **Interfaces**. See Figure 2-13.

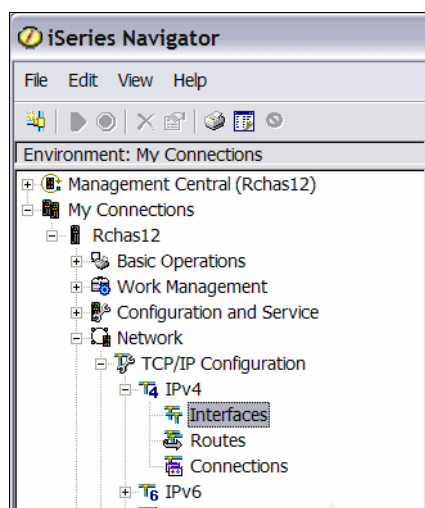


Figure 2-13 Using iSeries Navigator to determine available TCP/IP addresses

The currently configured TCP/IP addresses on the iSeries server are displayed in the right pane.

### Fully qualified host name

Each IBM Workplace Collaboration Services server on the iSeries server requires a static TCP/IP address and a fully-qualified host name. If the host name is listed in the i5/OS host table, it is required that the fully qualified host name is the first item listed after the IP address.

Along with the i5/OS host table, adding the fully-qualified host name to your Domain Name System (DNS) server or servers should ensure remote and client name resolution. For client and server connections, you *must* have name resolution for the Workplace Collaboration Services server.

**Note:** We recommend that you update the i5/OS local host table with the fully-qualified host name of the Workplace Collaboration Services server. The name resolution of the Workplace Collaboration Services server by a DNS server is also a supported configuration.

Perform the following steps to verify that your system is configured with a fully-qualified host name:

1. From an i5/OS command line, type the Configure TCP/IP (CFGTCP) CL command and press Enter.
2. On the Configure TCP/IP menu that is displayed, type option 12 (Change TCP/IP domain information), and press Enter.

3. On the Change TCP/IP Domain (CHGTCPDMN) display, you can verify the fully qualified host name of your iSeries server. In Figure 2-14, the fully qualified host name in our example is RCHAS12.RCHLAND.IBM.COM.

```

Change TCP/IP Domain (CHGTCPDMN)

Type choices, press Enter.

Host name . . . . . 'RCHAS12'
Domain name . . . . . 'RCHLAND.IBM.COM'
Domain search list . . . . . *DFT
Host name search priority . . . *LOCAL      *REMOTE, *LOCAL, *SAME
Domain name server:
  Internet address . . . . . '10.10.244.100'
                              '10.10.244.200'

F3=Exit  F4=Prompt  F5=Refresh  F10=Additional parameters  F12=Cancel
F13=How to use this display  F24=More keys
Bottom

```

Figure 2-14 Verifying the fully qualified host name of the iSeries server

Using an available static TCP/IP address and a fully-qualified host name for the Workplace Collaboration Services server, to update the i5/OS local host table:

1. From an i5/OS command line, type the Configure TCP/IP (CFGTCP) CL command and press Enter.
2. On the Configure TCP/IP menu that is displayed, type option 10 (Work with TCP/IP host table entries), and press Enter.
3. On the Work with TCP/IP Host Table Entries display, type option 1 (Add), and press Enter.
4. On the Add TCP/IP Host Table Entry (ADDTCPHTE) display, add the TCP/IP address with the fully-qualified host name listed *first*.

Figure 2-15 shows an example of the host table entries for a Workplace Collaboration Services server called ITSOWCS1. Notice that the fully qualified host name is added first. Then press Enter.

```

Add TCP/IP Host Table Entry (ADDTCPHTE)

Type choices, press Enter.

Internet address . . . . . > '10.10.10.1'
Host names:
Name . . . . . > ITSOWCS1.RCHLAND.IBM.COM
Name . . . . . > ITSOWCS1

Text 'description' . . . . . 'IBM Workplace Collaboration Services server'

F3=Exit  F4=Prompt  F5=Refresh  F12=Cancel  F13=How to use this display
F24=More keys
Bottom

```

Figure 2-15 Adding a TCP/IP host table entry

- Confirm that the fully qualified host name resolves to the correct TCP/IP address. Enter the following Ping CL command from an i5/OS command line and replace ITSOWCS1.RCHLAND.IBM.COM with the fully qualified host name that you assigned to your Workplace Collaboration Services server:

```
ping ITSOWCS1.RCHLAND.IBM.COM
```

See Figure 2-16.

Command Entry

RCHAS12

Request level: 1

Previous commands and messages:

```

> ping ITSOWCS1.RCHLAND.IBM.COM
Verifying connection to host system ITSOWCS1.RCHLAND.IBM.COM at address
10.10.10.1.
PING reply 1 from 10.10.10.1 took 0 ms. 256 bytes. TTL 64.
PING reply 2 from 10.10.10.1 took 0 ms. 256 bytes. TTL 64.
PING reply 3 from 10.10.10.1 took 0 ms. 256 bytes. TTL 64.
PING reply 4 from 10.10.10.1 took 0 ms. 256 bytes. TTL 64.
PING reply 5 from 10.10.10.1 took 0 ms. 256 bytes. TTL 64.
Round-trip (in milliseconds) min/avg/max = 0/0/0.
Connection verification statistics: 5 of 5 successful (100 %).

```

Bottom

Type command, press Enter.

===>

F3=Exit

F4=Prompt

F9=Retrieve

F10=Include detailed messages

F11=Display full

F12=Cancel

F13=Information Assistant

F24=More keys

Figure 2-16 Verifying the TCP/IP host table entry

## Port assignments

Before you install and configure an IBM Workplace Collaboration Services server on your iSeries server, it is important to verify the ports required for the installation and configuration are available for use. Table 2-4 lists some of the more common ports used by a Workplace Collaboration Services server. You must ensure that these port numbers are available on the TCP/IP address that you assigned to the Workplace Collaboration Services server. The Workplace Collaboration Services server binds these ports to the dedicated TCP/IP address.

Table 2-4 Ports bound to a specific host name used by a Workplace Collaboration Services server

Port number	Application	Description
25	SMTP	Simple Mail Transfer Protocol (SMTP): A protocol to send e-mail between servers
80	HTTP	Hypertext Transfer Protocol (HTTP)
110	POP3	Post Office Protocol (POP3): A protocol used to retrieve e-mail from an e-mail server
143	IMAP	Internet Message Access Protocol (IMAP): A protocol used to retrieve e-mail from an e-mail server
465	SMTP SSL	SMTP Secure Sockets Layer
993	IMAP SSL	IMAP Secure Sockets Layer
995	POP3 SSL	POP3 Secure Sockets Layer



Port number	Application	Description
5060	SIP	Session Initiated Protocol (SIP): A protocol used for Internet conferencing and instant messaging
5061	SIP	SIP Transport Layer Security
8080	SIP	HTTP - Server1 application server
8081	SIP	HTTP - WebSphere_Portal application server

A Workplace Collaboration Services server also requires a block of 100 consecutive ports that are bound across all TCP/IP addresses configured on your iSeries server. The Web Administration for iSeries Create IBM Workplace wizard automatically determines an available block when configuring a Workplace Collaboration Services server.

See Appendix B, “IBM Workplace Collaboration Services ports” on page 515, for a complete listing of the WebSphere Application Server and Workplace Collaboration Services internal port assignments.

### **Port conflicts**

You must make must ensure that you do not have port conflicts on the TCP/IP address that you have chosen for you Workplace Collaboration Services server. This is especially true for the system's SMTP server.

If you are not using the i5/OS SMTP server, you can end the server by using the following End TCP/IP Server (ENDSVRTCP) command:

```
ENDTCPSVR SERVER(*SMTP)
```

Also, if you are not using the i5/OS SMTP server, make sure to not set it to autostart when starting TCP/IP on your iSeries server.

If you are using the i5/OS SMTP server, you can bind it to a specific TCP/IP address by performing the following steps:

1. Using iSeries Navigator, click **My Connections** → **server name** → **Network** → **Servers** → **TCP/IP**.
2. From the right pane, right-click **SMTP** and select **Properties**.
3. From the SMTP Properties window, click the **Bindings** tab and select a specific TCP/IP address to bind the system SMTP server to.

## **2.5 Supported LDAP directories**

Workplace Collaboration Services requires the use of an LDAP directory. The supported LDAP directories for Workplace Collaboration Services 2.5 are:

- ▶ IBM Directory Server for iSeries 5.1 (included with i5/OS V5R3)
- ▶ IBM Directory Server 5.2
- ▶ IBM Lotus Domino Enterprise server (configured as an LDAP server) version 6.5.1 or later
- ▶ Microsoft Active Directory 2000 or Microsoft Active Directory 2003
- ▶ Novell eDirectory 8.7
- ▶ Sun One Directory Server V5.2 with Fix Pack 3

**Note:** The IBM Web Administration for iSeries Create IBM Workplace wizard verifies that a valid LDAP directory server was specified during the configuration of a Workplace Collaboration Services server. Refer to 4.3, “Using the iSeries Create IBM Workplace wizard” on page 97, for more information.

Refer to Chapter 3, “Preparing your directory server” on page 41, for more information about configuring a supported LDAP directory for use with Workplace Collaboration Services.

## 2.6 Supported HTTP servers

A separate, external HTTP server is required for instant messaging, presence awareness, Web conferencing, and the rich client provisioning server. Workplace Collaboration Services comes with an internal HTTP server provided by the WebSphere Application Server. However, using an external HTTP server can improve performance.

Workplace Collaboration Services supports the following local or remote HTTP servers running on i5/OS:

- ▶ IBM HTTP Server for iSeries 2.0.49
- ▶ IBM Lotus Domino Server for iSeries Release 5.0.12 or later

Workplace Collaboration Services on the iSeries server also supports the following remote HTTP servers:

- ▶ IBM HTTP Server (powered by Apache) 1.3.26 and 1.3.28
- ▶ IBM HTTP Server 1.3.26.1 and 1.3.26.2
- ▶ IBM HTTP Server 2.0.42.1 and 2.0.42.2
- ▶ IBM Lotus Domino Enterprise Server (as a Web server) 5.0.9a
- ▶ Microsoft IIS 5.0
- ▶ Sun ONE Web Server (formerly iPlanet™), Enterprise Edition 6.0 with Service Pack 4

**Important:** Using the IBM Web Administration for iSeries Create IBM Workplace wizard to configure a Workplace Collaboration Services server automatically configures a new IBM HTTP Server (powered by Apache) for iSeries server. If you are planning to use any other HTTP server (other than the IBM HTTP Server (powered by Apache for iSeries)), you must manually configure that HTTP server after you configure the Workplace Collaboration Services server. For more information, refer to the Workplace Collaboration Services documentation Web page at the following address:

<http://www.ibm.com/developerworks/workplace/documentation/collaborationservices/>

## 2.7 Client requirements

In this section, we describe the client software and operating system requirements for deploying IBM Workplace Collaboration Services in your client environment.

## 2.7.1 Web browser client

The following operating systems are supported for Web browser clients:

- ▶ Microsoft Windows 2000 Professional with Service Pack 2
- ▶ Microsoft Windows XP with Service Pack 1
- ▶ Red Hat Enterprise Linux WS 3.0 with Update 3
- ▶ SUSE Linux Desktop 1.0
- ▶ Macintosh 8.0 (IBM Workplace Collaborative Learning only)

**Note:** The Workplace Collaborative Learning Authoring Tool and Offline Learning client only supports Microsoft Windows 2000 and Microsoft Windows XP.

The following Web browsers are supported by the Web browser client:

- ▶ Microsoft Internet Explorer 6.0 with Service Pack 1  
This browser is supported only on Microsoft Windows 2000 or XP with the Sun Java Runtime Environment (JRE) 1.4.2 or with Microsoft Java virtual machine (JVM™) 1.1 installed.
- ▶ Mozilla 1.4  
This browser is supported on Linux and Microsoft Windows 2000 or XP with Sun JRE 1.4.2 installed.
- ▶ Mozilla FireFox 1.0  
This browser is supported on Linux and Microsoft Windows 2000 or XP with Sun JRE 1.4.2 installed.
- ▶ Netscape 6.2 (IBM Workplace Collaborative Learning only)

## 2.7.2 IBM Workplace Managed Client

The following operating systems are supported by the IBM Workplace Managed Client (the rich client):

- ▶ Microsoft Windows Mobile® 2003
- ▶ Microsoft Windows 2000 Professional with Service Pack 2
- ▶ Microsoft Windows XP with Service Pack 1
- ▶ Red Hat Enterprise Linux WS 3.0 with Update 3; Kernel: 2.4.2.21-27; Compiler: gcc 3.2, glibc 2.3.2; and desktop environment: GNOME

### IBM Workplace Managed Client hardware requirements

The minimum processor and memory requirements for the IBM Workplace Managed Client are:

- ▶ Intel Pentium® 3 processor, 800 MHz
- ▶ 512 MB RAM

To reduce client startup time, you can use an Intel Pentium 4 processor and increase the amount of memory to 1 GB, for example. This increase in processor speed and memory does not provide significant performance gains after startup.

Table 2-5 presents disk space recommendations for the IBM Workplace Managed Client.

*Table 2-5 Disk space recommendations for the IBM Workplace Managed Client*

Installation scenario	Recommended disk space
IBM productivity tools not installed	350 MB
IBM productivity tools installed without language pack	600 MB
IBM productivity tools installed with language pack	700 MB

Refer to Chapter 6, “IBM Workplace Managed Client” on page 255, for more information.

## 2.7.3 Supported mail clients

In addition to the Web browser client and IBM Workplace Managed Client, Workplace Collaboration Services Messaging supports the following POP3 and IMAP mail clients.

### POP3 clients

Workplace Collaboration Services Messaging supports the following POP3 clients running on Microsoft Windows 2000 or Microsoft Windows XP:

- ▶ IBM Lotus Notes 6.5.x
- ▶ Microsoft Outlook® Express 6
- ▶ Microsoft Outlook for Windows XP and Windows 2003
- ▶ WebSphere Portal Internet Mailbox 5.0

### IMAP clients

Workplace Collaboration Services Messaging supports the following IMAP clients running on Microsoft Windows 2000 or Microsoft Windows XP:

- ▶ IBM Lotus Notes 6.5.x
- ▶ Microsoft Outlook Express 6
- ▶ Microsoft Outlook for Windows XP and Windows 2003

## 2.8 Planning for Workplace Collaboration Services

Planning your Workplace Collaboration Services environment is a necessary task. The decisions made during installation and configuration may be difficult or impossible to change after the system is in use. In this section, we show you why it is important to understand what is involved in deploying Workplace Collaboration Services on your iSeries server.

Prior to installing Workplace Collaboration Services, consider the number of people who will use it, the amount of data that you expect to manage, the types of servers that you will host, and the third-party components that you plan to use with Workplace Collaboration Services. Ask yourself some questions to gain an understanding of what is needed before beginning, for example:

- ▶ What are your user requirements for collaborative systems?
- ▶ Will there be a pilot installation and testing period?
- ▶ Do you have an LDAP directory in place?
- ▶ Do you have experience with all the Workplace Collaboration Services components?
- ▶ Will Workplace Collaboration Services be integrated with other collaborative products, such as Lotus Domino or Lotus Sametime?

Sometimes, answering one question leads to new ones. It is a good practice to go through these questions and address any that might come up, prior to starting the installation of Workplace Collaboration Services.

## 2.8.1 Recommended skills

IBM Workplace Collaboration Services is comprised of core IBM software such as:

- ▶ WebSphere Application Server
- ▶ WebSphere Portal Server
- ▶ DB2 Universal Database
- ▶ LDAP

For these reasons, we recommend that an organization gather together personnel with working experience in these areas to make the initial installation and configuration of Workplace Collaboration Services on your iSeries server a success.

### LDAP administration

LDAP knowledge is one of the most critical areas of expertise required for a successful deployment of Workplace Collaboration Services. Your LDAP directory is key to all Workplace Collaboration Services functionality. If your organization currently has an LDAP directory in place, you might have to update it so that it can be used with Workplace Collaboration Services. If your organization does not currently have an LDAP directory in place, then you require the skills to architect a proper directory that suits the needs of your organization and grow with it.

For more information, see Chapter 3, “Preparing your directory server” on page 41.

### WebSphere administration

WebSphere Application Server is the engine behind Workplace Collaboration Services. WebSphere Portal Server handles the presentation of Workplace Collaboration Services to the administrator and the end user. An experienced WebSphere administrator plays a key role in your deployment process. You can fix most of the problems that you encounter when using Workplace Collaboration Services by reviewing the WebSphere Application Server and WebSphere Portal Server logs to see the error information.

### Relational database administration

Storage of data is a central part of Workplace Collaboration Services. All data related to a Workplace Collaboration Services server is stored in DB2 Universal Database for iSeries. You must have a person with medium to high administration skills in this area to manage the databases and perform daily administration tasks such as backup and recovery.

### Operating system administration

Workplace Collaboration Services requires i5/OS V5R3 or later. An administrator must have an understanding of i5/OS to maintain and troubleshoot the Workplace Collaboration Services environment. This includes working with the Qshell Interpreter environment and many of the i5/OS TCP/IP utilities.

## Mail administration

Workplace Collaboration Services Messaging is most likely going to be installed and used in your deployment. It provides security rich, scalable, flexible, and adaptive messaging capabilities for Web browser and rich client users. Workplace Collaboration Services Messaging can be easily integrated across existing infrastructures enabling more direct and broader communications with extended communities. For these benefits to reach their fullest potential, administrators must be able to architect and maintain a messaging environment.

## Network administration and security

The Workplace Collaboration Services environment depends on network connections. Consult an experienced network person before deployment to ensure that server-to-server and server-to-client communications will run at their best. This is important for efficient and timely communications, but also for safe and secure transmissions inside and outside the organization. You need skills to configure your DNS server, host names, and TCP/IP addresses.

### 2.8.2 Understanding your environment

A full understanding of your organization's hardware and software topology is essential when deploying Workplace Collaboration Services. This may require you to bring together those who are responsible for each of the technologies that Workplace Collaboration Services relies on. Outline the goals for your deployment and how they will impact your current environment. Consider these questions when reviewing the environment:

- ▶ Will Workplace Collaboration Services be replacing any existing system?
- ▶ Is an LDAP directory in place?
- ▶ Can the current network handle the traffic needs of the server systems and clients?
- ▶ Who is responsible for each aspect of the environment?
- ▶ What applications will Workplace Collaboration Services interact with?

## Pilot plan

After the plan for deployment is completed, we recommend that you devise a pilot system. The pilot system allows administrators to work out the kinks in the deployment plan. It is also beneficial to see how the end user will interact with the system. A preproduction pilot makes your deployment into production much smoother.

### 2.8.3 Checklists

Several checklists are available in the Workplace Collaboration Services Information Center that can assist your deployment planning. Refer to the IBM Workplace Collaboration Services Information Center at the following Web address:

<http://publib.boulder.ibm.com/infocenter/lwpphelp/index.jsp>

## Preparing your directory server

In this chapter, we describe the fundamental role that directory services plays within Workplace Collaboration Services for i5/OS. This chapter covers the following topics:

- ▶ Understanding the importance of your directory server
- ▶ Selecting your directory service provider
- ▶ Preparing your directory server to configure a Workplace Collaboration Services server
- ▶ Using checklists to make sure that your directory server is configured properly

**Note:** Directory servers use the Lightweight Directory Access Protocol (LDAP). In this chapter, the terms directory server, LDAP server, and LDAP directory are synonymous and may be used interchangeably.

## 3.1 The importance of your directory (LDAP) server

Your directory server is the starting point for your Workplace Collaboration Services server. All user information is stored in the LDAP directory. Everything from authentication and authority to data access is determined from the information received from the directory server. If the information stored in the directory server is invalid, the function of Workplace Collaboration Services is compromised. Due to the dependence on the LDAP server, configuring your directory server properly before you configure your first Workplace Collaboration Services server is important.

In this chapter, we provide in-depth information to help confirm that your directory configuration will work with Workplace Collaboration Services. We also provide checklists to help you along the way.

**Important:** If you do not configure security as part of the installation process for Workplace Collaboration Services, a self-contained directory service based upon WebSphere Member Manager is deployed. This is considered to be the *internal directory server*. The internal directory server is not designed for use beyond a typical sandbox implementation that consists of a few users. Those users can be registered via the Sign up link on the Workplace Collaboration Services home page. Since the purpose of this redbook is to configure Workplace Collaboration Services for a production environment, we assume that you will use an LDAP server for your directory service provider.

### 3.1.1 LDAP and Workplace Collaboration Services terminology

As you read this chapter, there are some LDAP terms and concepts used that you may be unfamiliar with. This section provides a quick reference for you to use as you review your directory server's configuration.

- ▶ **Suffix:** The top entry in your LDAP directory information tree. The suffix can also be referred to as the base entry or the root. There can be several suffixes in an LDAP directory, each representing the top of a separate directory information tree.
- ▶ **Users container:** The container in your LDAP directory where information about Workplace Collaboration Services users is stored.
- ▶ **Group container:** The container in your LDAP directory where information about Workplace Collaboration Services groups is stored. Initially only one group is created, the administrative users group, with a single member, the Workplace Collaboration Services administrator user. To grant administrative privileges to other users, add them to the administrative users group.
- ▶ **LDAP administrator:** The LDAP administrator is a user account in your directory server that has read/write authority to the directory server. Use of this account is required during the configuration of the Workplace Collaboration Services server.
- ▶ **Workplace Collaboration Services administrator:** The administrator account that is selected or created when the Workplace Collaboration Services server is configured. This account is used to configure portlets, run scripts to modify the Workplace Collaboration Services configuration, and access the LDAP server after the initial configuration of the server.



### 3.1.2 Supported LDAP servers

Workplace Collaboration Services version 2.5 supports the following LDAP servers:

- ▶ IBM Directory Server for iSeries 5.1 (included with i5/OS V5R3)
- ▶ IBM Directory Server 5.2
- ▶ IBM Lotus Domino Enterprise server (configured as an LDAP server) version 6.5.1 or later
- ▶ Microsoft Active Directory 2000 or Microsoft Active Directory 2003
- ▶ Novell eDirectory 8.7
- ▶ Sun One Directory Server V5.2 with Fix Pack 3

**Note:** Refer to the IBM Workplace Collaboration Services Release Notes for a more specific version and service pack details. You can find the Workplace Collaboration Services release notes and other product documentation at the following Web address:

[http://www.lotus.com/idd/doc/uafiles.nsf/docs/lwp25/\\$File/releasenotes.pdf](http://www.lotus.com/idd/doc/uafiles.nsf/docs/lwp25/$File/releasenotes.pdf)

### 3.1.3 iSeries: The one system solution for Workplace Collaboration Services

The architecture of Workplace Collaboration Services varies based on the platform on which the solution is deployed. On the iSeries, deploying Workplace Collaboration Services has been simplified. All of the technologies required to run a Workplace Collaboration Services deployment can run on the same system. Here are some examples of the technologies supported concurrently on the same iSeries server:

- ▶ DB2
- ▶ IBM Directory Server
- ▶ IBM HTTP Server
- ▶ Lotus Domino
- ▶ WebSphere Application Server
- ▶ WebSphere Portal Server
- ▶ Workplace Collaboration Services

As you can see from the list, you have a choice of two directory servers when seeking a one-system solution for Workplace Collaboration Services using either IBM Directory Server or Lotus Domino.

### 3.1.4 Choosing a directory server

Choosing a directory server is an important decision. If you have an existing LDAP infrastructure that is supported for use with Workplace Collaboration Services, your decision is easy. Continue to use your existing directory server.

If you have an existing Domino infrastructure, this chapter helps you configure your Domino server to use the LDAP functionality that is part of Domino. If you are using the IBM Directory Server that is part of the i5/OS operating system, you may continue to use this with your Workplace Collaboration Services server.

If you do not have an existing LDAP server, you may use any of the supported servers. Since LDAP is configured for you automatically within i5/OS, you may want to consider using this as your LDAP server. Refer to Appendix A, "Setting up the IBM Directory Server on i5/OS" on page 499, for additional information.

You can see that several options are available to you. To help you understand what you need to do before you can configure your first Workplace Collaboration Services server, refer to Table 3-1 as a checklist to follow when preparing your directory server.

Table 3-1 Checklist of setup tasks for your directory server

	Task to be completed	Where you can find help in this redbook
	Choose a directory server	See 3.1.4, "Choosing a directory server" on page 43.
	Determine read or write access to the directory server	See 3.2, "Read/write or read-only access to the directory server" on page 44.
	Modify the LDAP server configuration (three choices)	
	-----IBM Directory Server	See 3.3, "Preparing the IBM Directory Server" on page 45.
	-----IBM Domino Enterprise Server	See 3.4, "Preparing the Domino server for LDAP" on page 57.
	-----Other directory servers	This is beyond the scope of this redbook. Refer to the Workplace Collaboration Services Information Center at the following address: <a href="http://publib.boulder.ibm.com/infocenter/lwpphelp/index.jsp">http://publib.boulder.ibm.com/infocenter/lwpphelp/index.jsp</a>

## 3.2 Read/write or read-only access to the directory server

Before you can run the IBM Web Administration for iSeries Create IBM Workplace wizard, you must determine whether you will allow read-only or read/write access to your directory server. In the following sections, we briefly explain read/write access and read-only access to help you make this decision.

### 3.2.1 Read/Write access

If you do not have an existing LDAP tree, have little LDAP experience, or want the IBM Web Administration for iSeries Create IBM Workplace wizard to correctly create and configure the objects needed for your Workplace Collaboration Services server, then consider granting the IBM Web Administration for iSeries Create IBM Workplace wizard *write access* to the directory server. In this case, the IBM Web Administration for iSeries Create IBM Workplace wizard can optionally perform the following tasks for you:

- ▶ Create a users container.
- ▶ Create a group container.
- ▶ Create a Workplace Collaboration Services administrator user under the users container.
- ▶ Create a Workplace Collaboration Services administrator group under the group container.
- ▶ Add the Workplace Collaboration Services administrator as a member of the Workplace Collaboration Services administrator group.
- ▶ Grant your Workplace Collaboration Services administrator write access to the LDAP directory.

Workplace Collaboration Services uses the administrator user to permit Workplace Collaboration Services users to self-register themselves via a Sign up link on the initial Workplace Collaboration Services page. Workplace Collaboration Services also uses the administrator user to allow users to maintain some basic personal information via an Edit my profile link.

Permitting users to self-register via the Sign up link and maintain some of their attributes via the Edit my profile link may not be desired. You can disable these features by customizing the Workplace Collaboration Services configuration, thereby creating no harm by granting write access to the LDAP directory at this time. With this customization in place, all user registration and maintenance is performed by the LDAP administrator. For information about removing the Sign up and Edit my profile links, see “Removing the Sign up link” on page 530.

**Tip:** For simplicity, we recommend that you allow the IBM Web Administration for iSeries Create Workplace wizard to have read/write access to the LDAP directory and then customize the Workplace Collaboration Services server to remove the Sign up and Edit my profile links.

### 3.2.2 Read-only access

Read-only access is better suited for experienced LDAP administrators who require a tightly managed directory. If this is the case, then it is the LDAP administrator's responsibility to mimic the LDAP-related tasks performed by the IBM Web Administration for iSeries Create IBM Workplace wizard. The IBM Web Administration for iSeries Create IBM Workplace wizard also runs a script to remove the Sign up and Edit my profile links. The entries that must exist in the LDAP directory in order to use read-only access are as follows:

- ▶ A users container
- ▶ A group container
- ▶ A Workplace Collaboration Services administrator user under your users container
- ▶ A Workplace Collaboration Services administrator group under your group container

You must also add your Workplace Collaboration Services administrator as a member of your Workplace Collaboration Services administrator group.

## 3.3 Preparing the IBM Directory Server

In this section, we explain how to prepare the IBM Directory Server for use by a Workplace Collaboration Services server.

**Note:** If you already have i5/OS user profiles that you want Workplace Collaboration Services to use, you must import the profiles into the LDAP server.

The process to prepare the IBM Directory Server depends on whether you are already using the IBM Directory Server and whether you will allow write access to the directory. In this section, we presume that most people have already configured the IBM Directory Server on their system. However, to make sure that nothing is overlooked, we provide the following checklist of the steps that are required to prepare the IBM Directory Server for Workplace Collaboration Services:

1. Configure the default LDAP server.
2. Configure the HTTP Administration Server.
3. Configure the Tivoli Directory Server Web Administration Tool.
4. Add the appropriate users to the LDAP server.
5. Test the IBM Directory Server.

If you are already using the IBM Directory Server and are going to give the IBM Web Administration for iSeries Create Workplace wizard write authority to the directory, you can skip this section and go to 3.3.5, “Testing the IBM Directory Server” on page 56.

**Important:** If you implemented IBM Directory Server for i5/OS prior to V5R3, then your entries are missing the *ibm-entryUuid* attribute that is required for Workplace Collaboration Services. If you intend for those users to have access to Workplace Collaboration Services, then you must add the *ibm-entryUuid* attribute to those entries manually. See the Workplace Collaboration Services release notes for step-by-step instructions. You can find the release notes at the following Web address:

[http://www.lotus.com/ldd/doc/uafiles.nsf/docs/lwp25/\\$File/releasenotes.pdf](http://www.lotus.com/ldd/doc/uafiles.nsf/docs/lwp25/$File/releasenotes.pdf)

### 3.3.1 Configuring the default LDAP server

The focus of this redbook is to set up IBM Workplace Collaboration Services. To ensure that your LDAP server is configured correctly, we provide the information that you need in Appendix A, “Setting up the IBM Directory Server on i5/OS” on page 499.

### 3.3.2 Configuring the HTTP Administration Server

To add users to the IBM Directory Server, you must use the HTTP Administration Server interface. To access the HTTP Administration Server interface, iSeries Tasks menu, point your Web browser to:

`http://iSeriesHostName.domain:2001`

If you cannot access the iSeries Tasks menu, refer to “Configuring the HTTP Administration Server” on page 505, for additional information.

### 3.3.3 Configuring the Tivoli Directory Server Web Administration Tool

To administrator the IBM Directory Server for iSeries, you must access the Tivoli Directory Server Web Administration tool. If you have not configured this tool, refer to “Enabling the Tivoli Directory Server Web Administration Tool” on page 505.

### 3.3.4 Adding Workplace Collaboration Services administrator to the LDAP directory

The IBM Web Administration for iSeries Create Workplace wizard does all the work for you, if you allow it. If you are planning to allow read/write access to the LDAP directory, then you do not need to add the required Workplace Collaboration Services administrator user and group manually. The wizard does it for you. In this case, you can skip to 3.3.5, “Testing the IBM Directory Server” on page 56.

If you do not want the exposure of Workplace Collaboration Services having write access to your directory, you must manually add the required Workplace Collaboration Services administrator user and group. You have two options to add the Workplace Collaboration Services administrator user and group: import an .ldif file or use the Tivoli Directory Server Web Administration Tool.

The steps in the following section walk you through the process of manually adding the Workplace Collaboration Services administrator user and group via the Tivoli Directory Server Web Administration Tool. For steps on using an .ldif file to add a user and group, refer to “Importing an .ldif file to add users, groups to the IBM Directory server” on page 52.

**Tip:** By default the IBM Web Administration for iSeries Create IBM Workplace wizard adds a user named `wpsadmin` and a group named `wpsadmins` to the LDAP directory. In the steps that follow, we manually add a user named `wpsadmin` and a group named `wpsadmins`. You can change this and use any user or group name that you desire.

## Using the Tivoli Directory Server Web Administration Tool

To add a user and group to the IBM Directory Server using the Tivoli Directory Server Web Administration Tool:

1. Access the Tivoli Directory Server Web Administration Tool:
  - a. Point your Web browser to your fully qualified iSeries host name on port 2001:

`http://iSeriesHostName.domain:2001`

In this example, we use:

`http://rchas55.rchland.ibm.com:2001`

- b. In the iSeries Tasks menu that opens, click **IBM Directory Server for iSeries**.

**Note:** If the Tivoli Directory Server Web Administration Tool does not load for you, you must configure the HTTP Administration Server. Refer to “Enabling the Tivoli Directory Server Web Administration Tool” on page 505.

- c. From the drop-down menu, select the host name of the LDAP server that you are going to administer. In most cases, this name is the same as the host name of your iSeries server.
  - d. Enter the distinguished name (DN) for the administrator (`cn=admin` by default) and password that is configured in the IBM Directory Server properties. If you do not know which user and password to provide here, refer to Appendix A, “Setting up the IBM Directory Server on i5/OS” on page 499, for assistance with modifying the administrator user name and password.

2. Manage the entries in the Tivoli Directory Server Web Administration Tool:
  - a. In the left pane, expand **Directory Management** and select **Manage entries**.
  - b. Select the appropriate domain suffix for your system as shown in Figure 3-1.

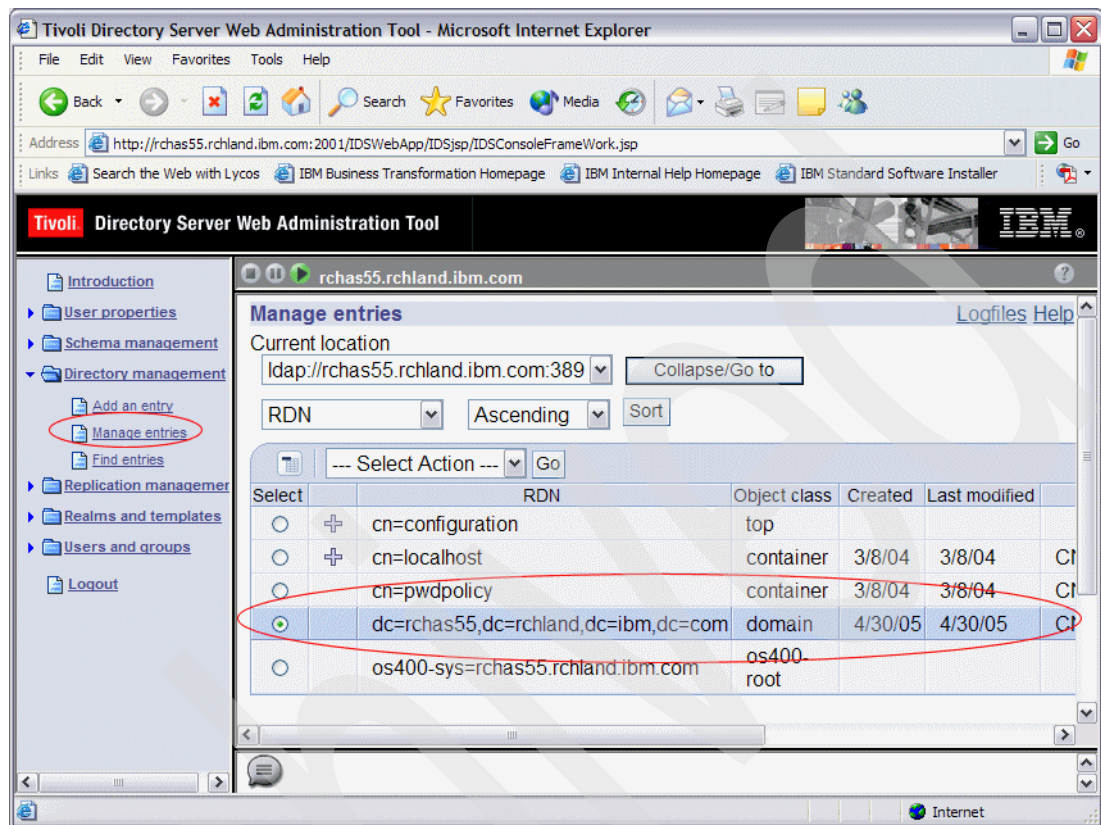


Figure 3-1 Tivoli Directory Server Web Administration Tool - Manage entries panel

3. Create the cn=users container:
  - a. Select the suffix where you want to create the container and click **Add**.

**Note:** If you already have a cn=users and cn=groups container for this suffix, you can skip to step 5 on page 50. If you do not see a plus (+) sign in the second column for your suffix, you must complete this step.

**Tip:** The Add button is located on the far right side of the panel. You may need to scroll to the right to find this button.

- b. In the Select object class panel (Figure 3-2), select the structural object class of **container** and click **Next**.

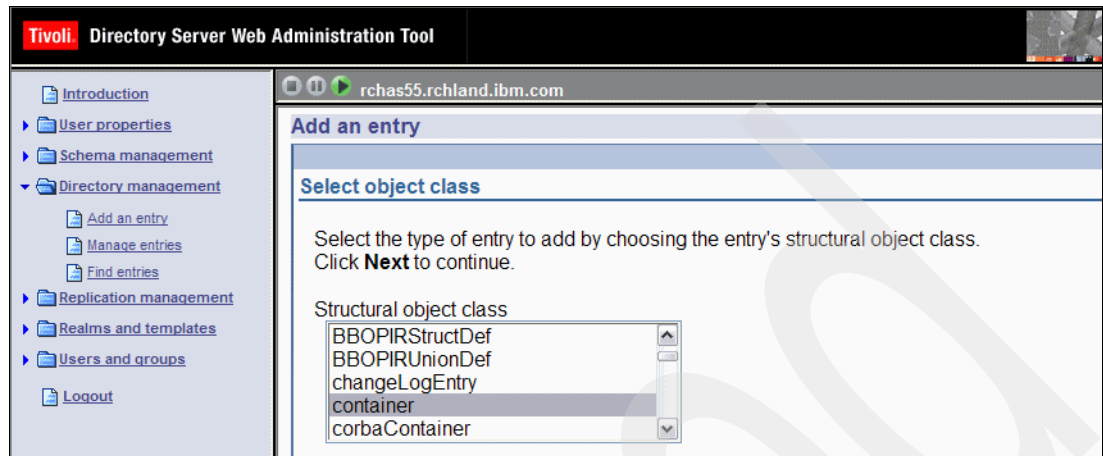


Figure 3-2 Selecting the object class container

- c. You do not need to specify an auxiliary object class for the new container. In the Select auxiliary object class panel, click **Next**.
- d. In the Enter the attributes panel (Figure 3-3), complete the following tasks:
  - i. For Object class, keep **container**.
  - ii. In the Relative DN field, enter **cn=users** (required).
  - iii. Verify that the Parent DN field contains the correct suffix for your host.
  - iv. In the **cn** field, enter **users** (required).
  - v. Click **Finish**.

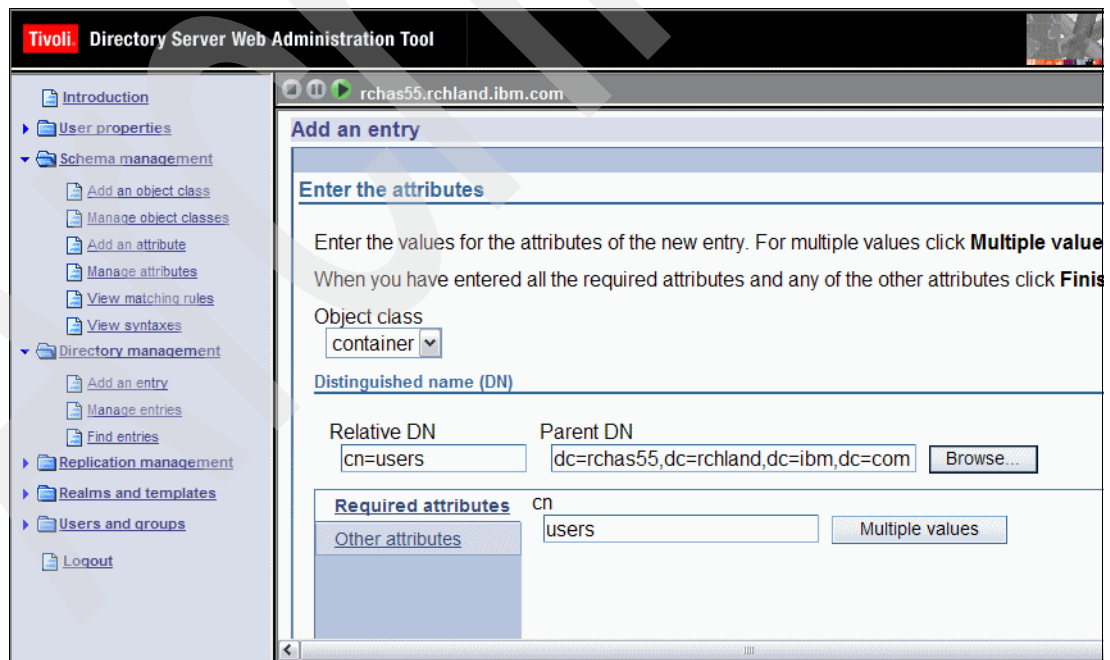


Figure 3-3 Modifying the attributes for the cn=users entry



4. Create the cn=groups container:
  - a. In the Manage Entries window, click **Add**.
  - b. In the Select object class panel, select the Structural object class of **container** as shown in Figure 3-2 and click **Next**.
  - c. You do not need to specify an auxiliary object class for the new container. In the Select auxiliary object class panel, click **Next**.
  - d. In the Enter the attributes panel (Figure 3-4), change the following values:
    - i. For Object class, keep the **container** option.
    - ii. In the Relative DN field, enter cn=groups (required).
    - iii. Verify that the Parent DN field contains the correct suffix for your host.
    - iv. In the cn field, enter groups (required).
    - v. Click **Finish**.

The screenshot shows the 'Tivoli Directory Server Web Administration Tool' interface. On the left is a navigation pane with links like 'Introduction', 'User properties', 'Schema management', 'Directory management', 'Replication management', 'Realms and templates', 'Users and groups', and 'Logout'. The main area is titled 'Add an entry' and contains the 'Enter the attributes' form. The form includes instructions to enter values for attributes and a 'Finish' button. The 'Object class' is set to 'container'. The 'Distinguished name (DN)' section has 'Relative DN' as 'cn=groups' and 'Parent DN' as 'dc=rchas55,dc=rchland,dc=ibm,dc=com'. The 'Required attributes' section shows 'cn' with the value 'groups'.

Figure 3-4 Modifying the attributes for the cn=groups entry

5. Create the Workplace Collaboration Services administrator user:
  - a. In the Manage Entries panel, click **Add**.
  - b. In the Select object class panel, select the Structural object class of **inetOrgPerson** and click **Next**.
  - c. You do not need to specify an auxiliary object class for the new container. In the Select auxiliary object class panel, click **Next**.
  - d. In the Enter the attributes panel (Figure 3-5), change the following values where *wpsadmin* represents your Workplace Collaboration Services administrator:
    - i. For Object class, keep the **inetOrgPerson** options.
    - ii. In the Relative DN field, type *uid=wpsadmin* (required).
    - iii. Verify that the Parent DN field contains the correct suffix for your user's container.
    - iv. In the cn field, type *wpsadmin* (required).
    - v. In the sn field, type *wpsadmin* (required).



Figure 3-5 Adding the wpsadmin user to the IBM Directory server

- e. In the same panel, click **Other attributes** and scroll down to fill in the remaining values.
  - i. In the Mail field, enter an e-mail address, for example `wpsadmin@itsowcs01.rchland.ibm.com`.
  - ii. In the UserPassword field, enter a password (see Figure 3-6).
  - iii. In the uid field, enter `wpsadmin` (required).

In these steps, `wpsadmin` represents your Workplace Collaboration Services administrator.

- f. Click **Finish** to create the Workplace Collaboration Services administrator user.

Figure 3-6 Setting a password for the wpsadmin user

6. To create the Workplace Collaboration Services administrator group:
  - a. In the Manage Entries panel, click **Add**.
  - b. In the Select object class panel, select the Structural object class of **groupofUniqueNames** and click **Next**.
  - c. You do not need to specify an auxiliary object class for the new container. In the Select auxiliary object class panel, click **Next**.
  - d. In the Enter the attributes panel, complete the following tasks. Note that *wpsadmins* represents the name of your Workplace Collaboration Services administrator group. See Figure 3-7.
    - i. For Object class, keep the **groupofUniqueNames** option.
    - ii. In the Relative DN field, enter *cn=wpsadmins* (required).
    - iii. Verify that the Parent DN field contains the correct suffix for your groups container.
    - iv. In the cn field, enter *wpsadmins* (required).
    - v. The uniqueMember field must contain the DN of the Workplace Collaboration Services administrator. In our example, we use *cn=wpsadmin,cn=users,dc=rchas55,dc=rchland,dc=ibm,dc=com*.
    - vi. Click **Finish** to create the Workplace Collaboration Services administrators group.

The screenshot shows the 'Add an entry' form in the Tivoli Directory Server Web Administration Tool. The form is titled 'Enter the attributes' and includes the following fields:

- Object class:** A dropdown menu showing 'groupOfUniqueNames'.
- Distinguished name (DN):** Two text boxes. The 'Relative DN' box contains 'cn=wpsadmins'. The 'Parent DN' box contains 'cn=groups,dc=rchas55,dc=rchland,dc=ibm'. There is a 'Browse...' button next to the Parent DN box.
- Required attributes:** A section with two tabs: 'Required attributes' and 'Other attributes'. Under 'Required attributes', there are two text boxes: 'cn' with the value 'wpsadmins' and 'uniqueMember' with the value 'cn=wpsadmin,cn=users,dc=rchas55,dc=rchland,dc=ibm,dc=com'. Each text box has a 'Multiple values' button next to it.

Figure 3-7 Adding the *wpsadmins* group to the IBM Directory server

7. Go to 3.3.5, "Testing the IBM Directory Server" on page 56.

### Importing an .ldif file to add users, groups to the IBM Directory server

In this section, we show you how to modify the IBM Directory server using an .ldif file. The file used in this example does the following actions:

- ▶ Adds a users container
- ▶ Adds a groups container
- ▶ Adds a user wpsadmin to the users container
- ▶ Adds a group wpsadmins to the groups container
- ▶ Adds wpsadmin as a member to the wpsadmins group
- ▶ Gives read, write, search and compare authorities to the wpsadmins group for the users and groups containers

To import the .ldif file into your directory:

1. Download the example rchas55.ldif file. Refer to Appendix E, “Additional material” on page 533, for information about how to obtain this file.
2. Modify the rchas55.ldif file on your PC workstation using Notepad or another PC text editor of your choice. You must change the domain suffix to match the domain suffix in your environment.
3. Example 3-1 shows the file that we imported to create the users. To use this file for your directory server, you must change the domain suffix to match your environment. When you are finished editing the file, there should not be any remaining references to rchas55.

You must also edit the mail attribute for the wpsadmin user. If you do not want wpsadmin to have a reference to a mail account, remove that line from the .ldif file.

*Example 3-1 The rchas55.ldif file*

---

```
version: 1
dn: cn=users,DC=RCHAS55,DC=RCHLAND,DC=IBM,DC=COM
objectClass: top
objectClass: container
cn: users
IBM-ENTRYUUID: 298e6001-4edb-18a5-81e6-0004ac086256
aclpropagate: TRUE
ownerpropagate: TRUE
entryowner: access-id:CN=ADMINISTRATOR
entryowner: group:CN=WPSADMINS,CN=GROUPS,DC=RCHAS55,DC=RCHLAND,DC=IBM,DC=COM
aclentry: group:CN=WPSADMINS,CN=GROUPS,DC=RCHAS55,DC=RCHLAND,DC=IBM,DC=COM:object:ad:normal:rwsc:sensitive:rwsc:critical:rwsc
aclentry: group:CN=ANYBODY:normal:rsc
aclentry: access-id:CN=THIS:object:d:normal:rwsc:sensitive:rwsc:critical:rwsc

dn: cn=groups,DC=RCHAS55,DC=RCHLAND,DC=IBM,DC=COM
objectClass: top
objectClass: container
cn: groups
IBM-ENTRYUUID: 29d09801-4edb-18a5-81e6-0004ac086256
aclpropagate: TRUE
ownerpropagate: TRUE
entryowner: access-id:CN=ADMINISTRATOR
entryowner: group:CN=WPSADMINS,CN=GROUPS,DC=RCHAS55,DC=RCHLAND,DC=IBM,DC=COM
aclentry: group:CN=WPSADMINS,CN=GROUPS,DC=RCHAS55,DC=RCHLAND,DC=IBM,DC=COM:object:ad:normal:rwsc:sensitive:rwsc:critical:rwsc
aclentry: group:CN=ANYBODY:normal:rsc
aclentry: access-id:CN=THIS:object:d:normal:rwsc:sensitive:rwsc:critical:rwsc

dn: uid=wpsadmin,cn=users,dc=RCHAS55,dc=RCHLAND,dc=IBM,dc=COM
objectClass: top
objectClass: person
objectClass: organizationalPerson
objectClass: inetOrgPerson
mail: wpsadmin@ITSOWSE4.RCHLAND.IBM.COM
uid: wpsadmin
userPassword:: e1NIQX1bqmHkybk/PwaCJQts+DMbfuaP2A==
sn: wpsadmin
cn: wpsadmin
IBM-ENTRYUUID: 296fb801-4ee5-18a5-81e6-0004ac086256
```

```

dn: cn=wpsadmins,cn=groups,dc=RCHAS55,dc=RCHLAND,dc=IBM,dc=COM
objectClass: top
objectClass: groupOfUniqueNames
cn: wpsadmins
IBM-ENTRYUUID: 2a973001-4ee5-18a5-81e6-0004ac086256
uniqueMember: uid=wpsadmin,cn=users,dc=RCHAS55,dc=RCHLAND,dc=IBM,dc=COM

```

4. Copy the modified .ldif file from your PC to the iSeries server. You can do this by using a mapped network drive or by using File Transfer Protocol (FTP).
5. Open iSeries Navigator.
6. In iSeries Navigator, in the left pane, click **Network** → **Servers** → **TCP/IP**.
7. The directory server must have a status of *Stopped* to import the .ldif file. In the right pane of iSeries Navigator, right-click **IBM Directory Server** and click **Stop** as shown in Figure 3-8.

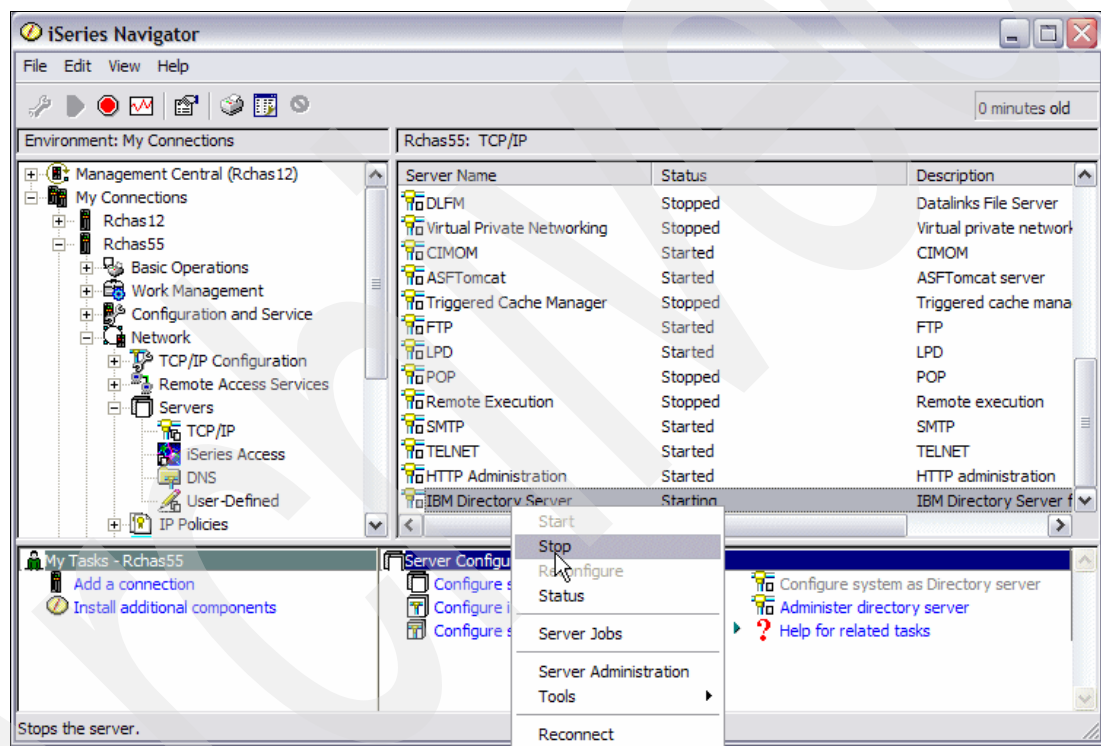


Figure 3-8 Stopping the IBM Directory Server using iSeries Navigator

8. Again right-click **IBM Directory Server** and select **Tools** → **Import File** as shown in Figure 3-9.

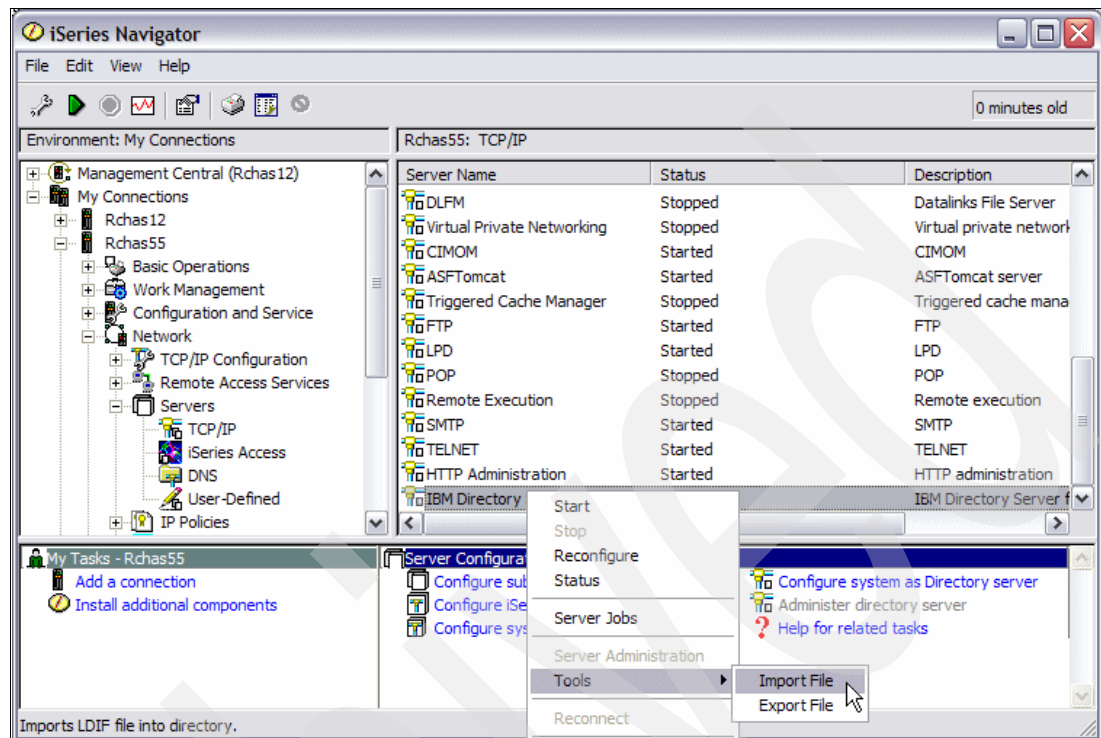


Figure 3-9 Selecting the Import File option for IBM Directory Server

9. In the Import LDIF File window, select the file that you copied to the iSeries server in the previous step. On our test system, we named the file `rchas55.ldif` and placed the file in the root directory as shown in Figure 3-10. Click **OK**.

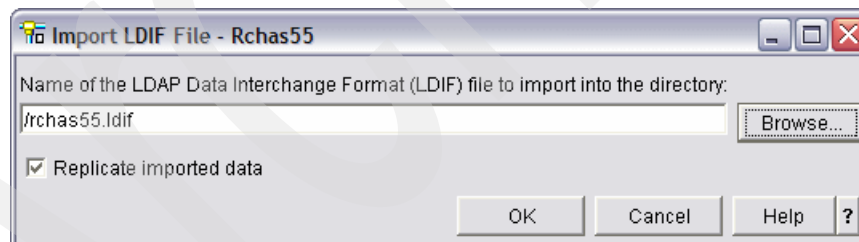


Figure 3-10 Selecting the .ldif file to import

10. After the file is copied, the Display Messages window opens and shows a status message indicating whether the entries were added successfully. If you did not have a cn=users or a cn=groups container, then four entries are added. If you already had a cn=users or a cn=groups container, then only two entries are successfully added as shown in Figure 3-11. Click **OK** to close the window.

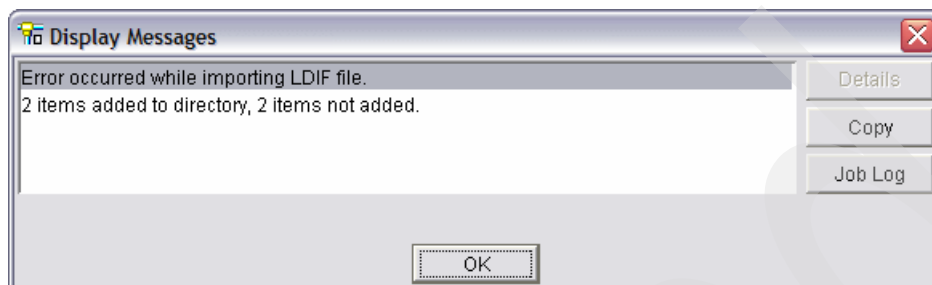


Figure 3-11 Displayed messages after importing the .ldif file

11. When you return to the main iSeries Navigator window, start the IBM Directory Server. Right-click **IBM Directory Server** and select **Start**.

### 3.3.5 Testing the IBM Directory Server

Running an **ldapsearch** command against the LDAP directory indicates whether you have configured your LDAP server correctly. If you prefer a graphical user interface (GUI), third-party products are available on the Internet for download. In Example 3-2, we perform the following **ldapsearch** command from a Windows command prompt to verify the Workplace Collaboration Services administrator user and Workplace Collaboration Services administrator group exists in the IBM Directory server:

```
ldapsearch -h rchas55.rchland.ibm.com -p 389 -D cn=administrator -w password -b  
dc=rchas55,dc=rchland,dc=ibm,dc=com cn=wps*
```

If you manually created the wpsadmin user and wpsadmins group, you should see a minimum of two entries returned to you as shown in Example 3-2. If you have chosen to use an alternative administrator user and group, you must modify the command to search for the appropriate entries in your directory.

**Note:** If you did not manually add the wpsadmin user as your Workplace Collaboration Services administrator and the wpsadmins group as the Workplace Collaboration Services administrator group, the command returns with no output.

*Example 3-2 The ldapsearch command to verify wpsadmin and wpsadmins are in the LDAP directory*

```
C:\Documents and Settings\Administrator>ldapsearch -h rchas55.rchland.ibm.com -p 389  
-D cn=administrator -w password -b dc=rchas55,dc=rchland,dc=ibm,dc=com cn=wps*
```

```
uid=wpsadmin,cn=users,dc=rchas55,dc=rchland,dc=ibm,dc=com  
userpassword=NOT ASCII  
uid=wpsadmin  
objectclass=inetOrgPerson  
objectclass=organizationalPerson  
objectclass=person  
objectclass=top  
sn=wpsadmin  
cn=wpsadmin  
mail=wpsadmin@ITSOWSE1.RCHLAND.IBM.COM
```

```

cn=wpsadmins,cn=groups,dc=rchas55,dc=rchland,dc=ibm,dc=com
objectclass=groupOfUniqueNames
objectclass=top
cn=wpsadmins
uniquemember=cn=wpsadmin,cn=users,dc=rchas55,dc=rchland,dc=ibm,dc=com
uniquemember=uid=wpsadmin,cn=users,dc=RCHAS55,dc=RCHLAND,dc=IBM,dc=COM

```

---

The IBM Directory Server is now setup, and you are ready to configure your Workplace Collaboration Services server. For information about configuring a Workplace Collaboration Services server, refer to Chapter 4, “Installation and initial configuration” on page 77.

## 3.4 Preparing the Domino server for LDAP

In this section, we explain how to prepare a Domino Enterprise server for LDAP for use by a Workplace Collaboration Services server. The Domino Directory (names.nsf) is a familiar and easy-to-manage LDAP directory for most. If you are currently using Domino in your environment, you may want to leverage it for your Workplace Collaboration Services implementation.

Unlike the schemas of other LDAP directories supported by Workplace Collaboration Services, the default schema for the Domino Directory does not provide a unique ID attribute required by Workplace Collaboration Services. If you are running Domino version 6.5.3 or earlier, some modifications to the Domino Directory database design and data are required before it can be used with Workplace Collaboration Services.

**Important:** A hotfix for Domino 6.5.3 is available that is related to the full text indexer, which impacts LDAP searches. This hotfix is required if you are using this version of Domino. The number for this hotfix is SE19246 and the SPR is CSMH65WPRX. You can only obtain the hotfix through Lotus Support or a Web submitted PMR.

Table 3-2 summarizes the tasks that you must perform on your Domino server prior to configuring your first Workplace Collaboration Services server.

*Table 3-2 Checklist of tasks for preparing a Domino Directory for use as an LDAP server*

Task	Required or optional
“Modifying the Domino Directory” on page 58	Required for Domino 6.5.3 or earlier versions only
“Modifying the LDAP configuration” on page 67	Required for all Domino versions
“Setting up the LDAP and DIIOP tasks” on page 69	Required for all Domino versions
“Adding Workplace Collaboration Services Administrative accounts to Domino” on page 72	Optional; required only if read-only access is given to the iSeries Create Workplace Server wizard
“Testing the Domino LDAP server configuration” on page 74	Required for all Domino versions
“Domino Directory changes after upgrading to Domino v6.5.4 or later” on page 75	Required only after upgrading Domino from 6.5.3 or earlier to Domino 6.5.4 or later

### 3.4.1 Modifying the Domino Directory

To use a Domino server as the user repository for Workplace Collaboration Services, you must have a unique identifier for each user. In Domino version 6.5.3 and earlier, the LDAP schema does not have a unique identifier that can be used for Workplace Collaboration Services. The modifications that we make in this section add a new field to the Person, Group, and Server/Certifier forms to fulfill the requirements for Workplace Collaboration Services.

Modifications to the Domino Directory design should take place in the template (pubnames.ntf). However, since the change that we are making is a temporary one that should be removed when you upgrade to Domino 6.5.4 and later, we make our changes directly in the names.nsf database. If you have questions when working with the Domino Designer®, refer to the Domino Designer Help and Domino Administrator Help databases.

**Important:** Perform the following steps only if you are running Domino 6.5.3 or earlier. Also, if your Domino 6.5 LDAP service searches additional Domino directories, it is necessary to make these changes in each additional directory.

Perform the following steps:

1. Using a Domino administrator account, you start the Domino Designer client and open the Domino Directory database (names.nsf). Select **File** → **Database** → **Open**. Select your Domino server and the Domino Directory database (names.nsf).
2. Make a copy of the names.nsf for backup purposes.
  - a. Select **File** → **Database** → **New Copy**.
  - b. Enter the values to choose a destination server and new file name as shown in Figure 3-12. Then click **OK**.

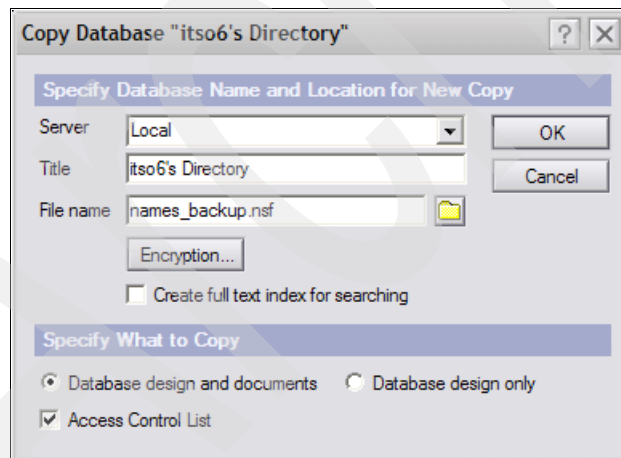


Figure 3-12 Creating a backup copy of names.nsf



3. Open the Person form. In the left pane, select **Forms** and then double-click the **Person** form in the right pane as shown in Figure 3-13.

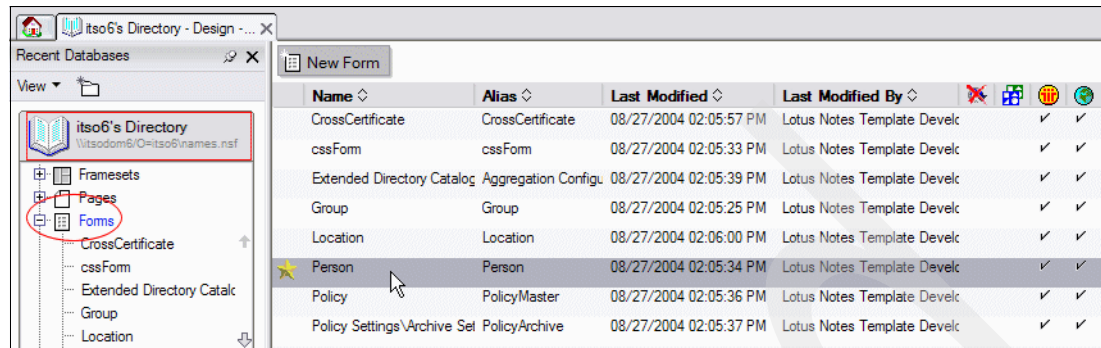


Figure 3-13 Opening the Person form

4. If you see a warning message like the example in Figure 3-14, click **OK** to ignore it.

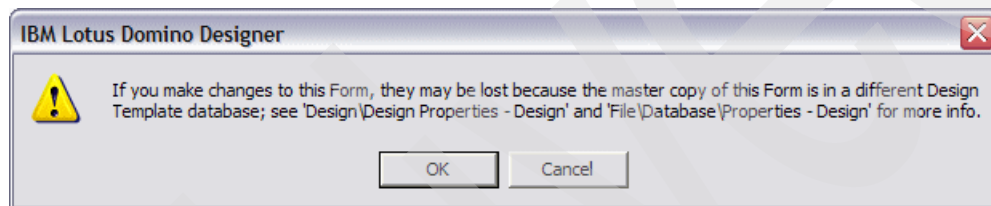


Figure 3-14 Domino Designer warning message

5. Add the DominoUNID field to the Person form:
  - a. Place your cursor at the bottom of the form. Select **Create** → **Field** as shown in Figure 3-15.

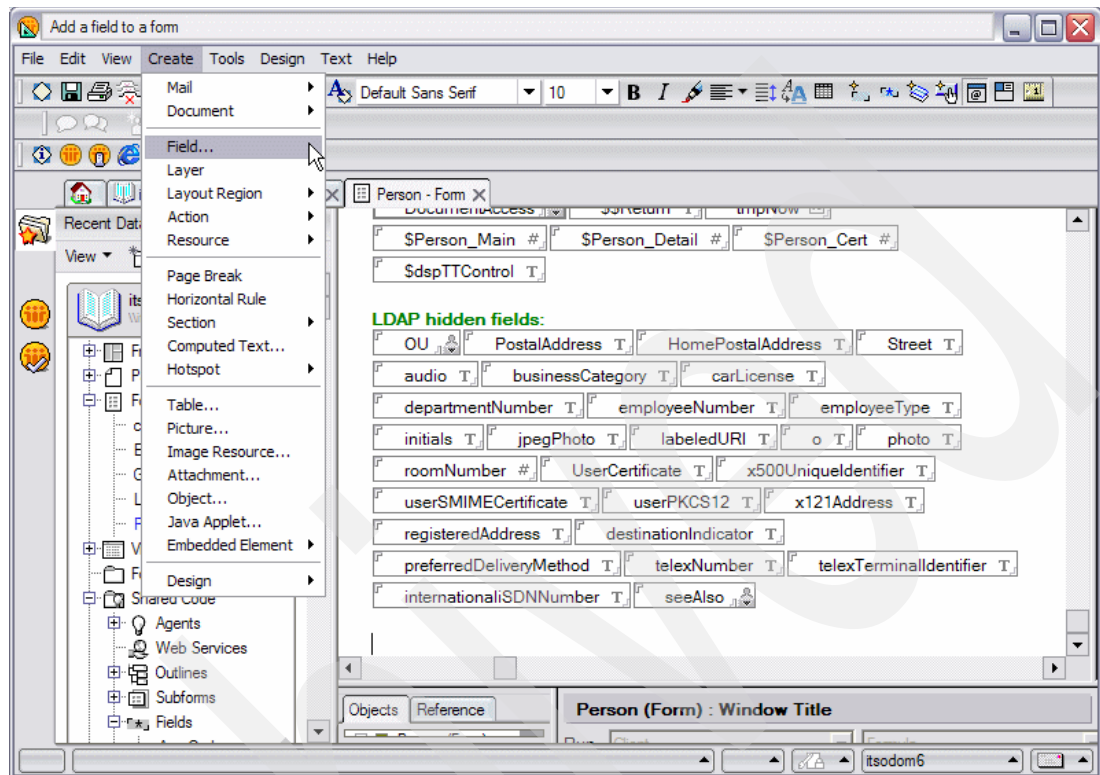


Figure 3-15 Creating a new field in the Person form

- b. In the Field properties window, in the Name field, enter DominoUNID. From the left Type list, select **Text**, and from the right Type list, select **Computed when composed** as shown in Figure 3-16.

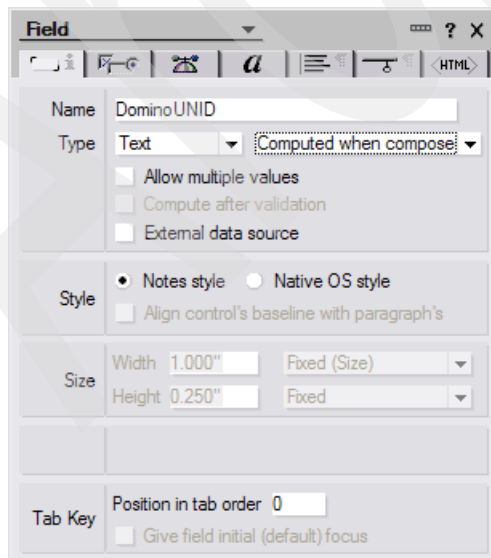


Figure 3-16 DominoUNID field properties

- c. Click the **Hide Paragraph When** tab (the sixth tab from the left of the window) and select all of the Hide paragraph from options as shown in Figure 3-17.

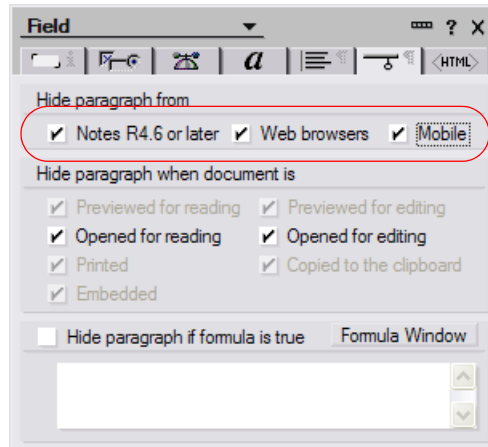


Figure 3-17 Hide paragraph from properties of the DominoUNID field

- d. Close the DominoUNID Field properties window.
- e. Enter the following field value formula into the DominoUNID (Field) : Value pane in the lower right corner of the window as shown in Figure 3-18:

```
@If(dominoUNID != ""; dominoUNID; @Text(@DocumentUniqueID))
```

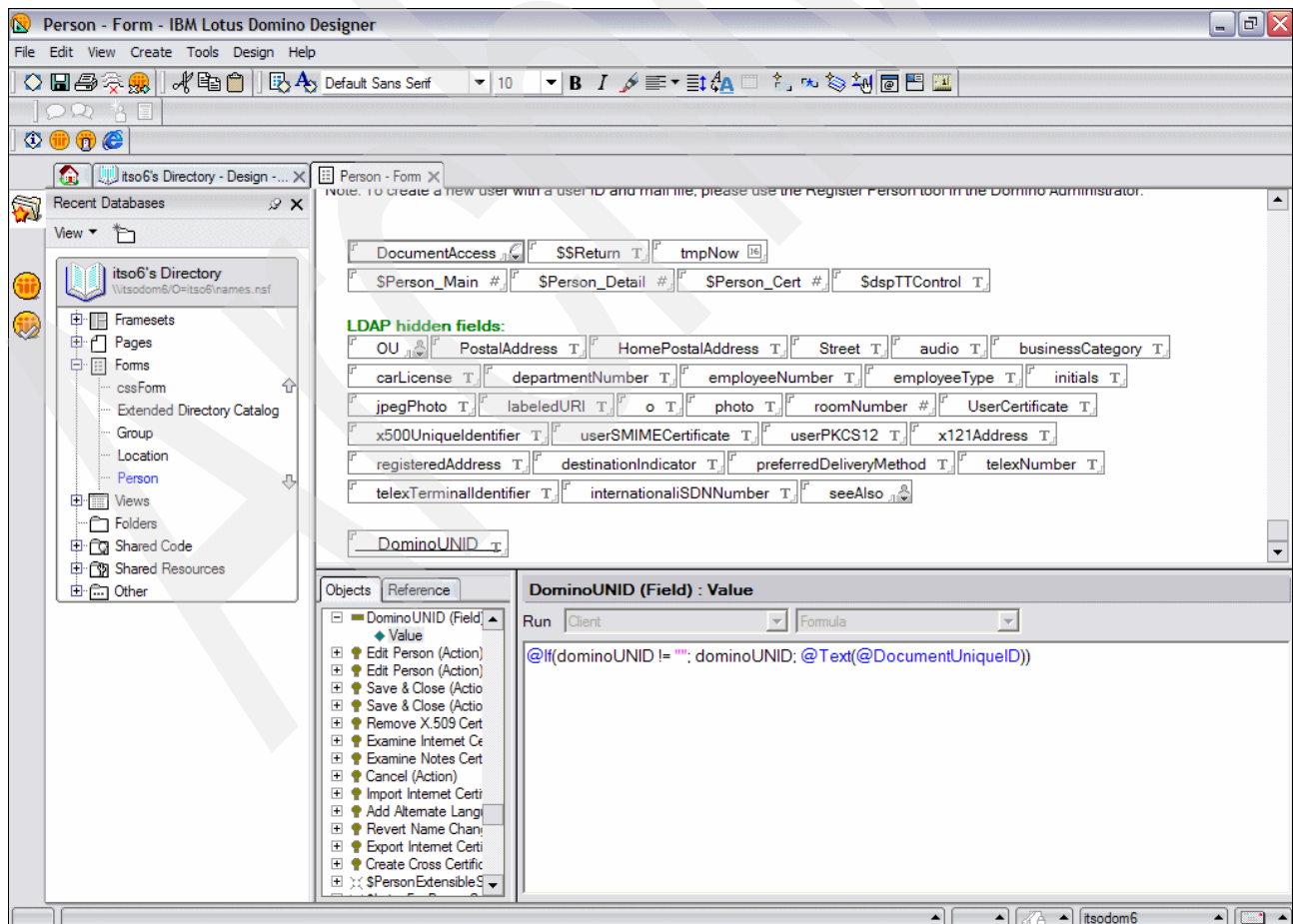


Figure 3-18 Entering a value for the DominoUNID field

- f. Select **Edit** → **Copy** to copy the field.
  - g. Save and close the Person form.
  6. Double-click the **Group** form.
  7. In the Group form, place the cursor at the bottom of the form. Paste the DominoUNID field into the form by clicking the **Edit** menu option and selecting **Paste**. The DominoUNID field should now be copied into the Group form as shown in Figure 3-19.
- Save and close the form.

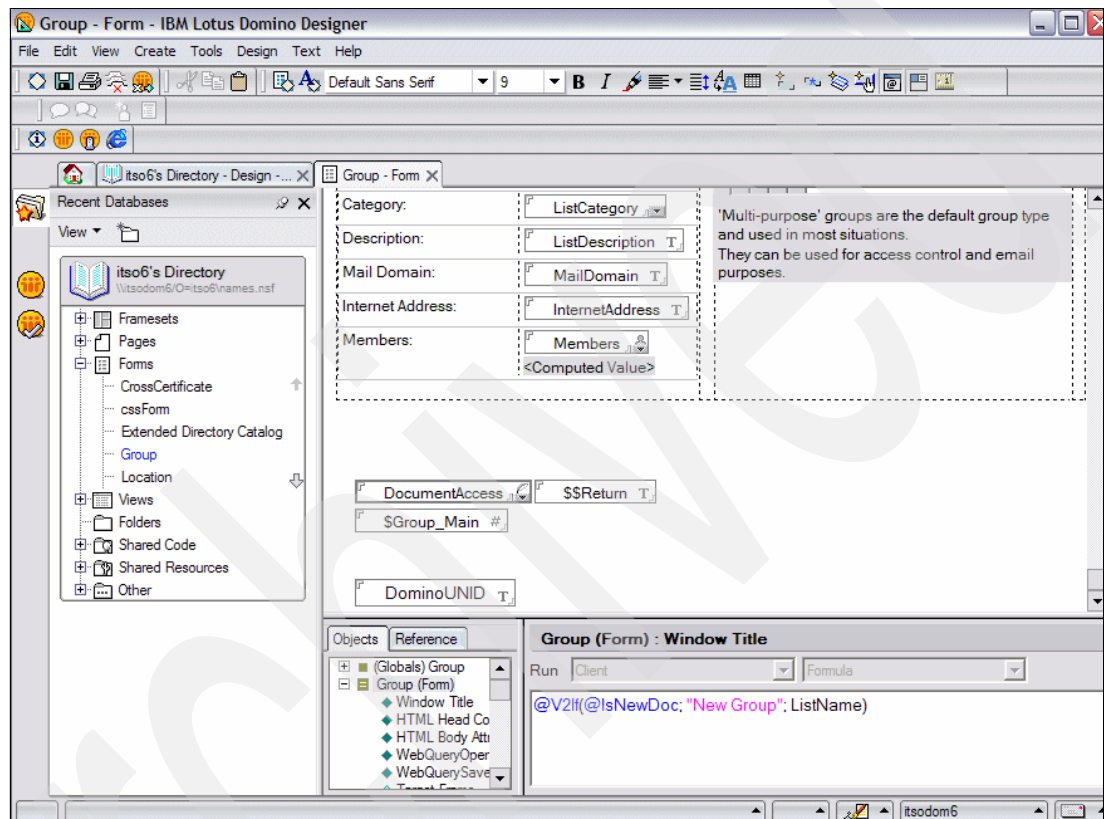


Figure 3-19 Copying the DominoUNID into the Group form

8. Double-click the **Server\Certifier** form.
  9. In the Server\Certifier form, place the cursor at the bottom of the form. Paste the DominoUNID field into the form by selecting **Edit** → **Paste**. The DominoUNID field should now be copied into the form.
- Save and close the form.
10. You must prevent the design task from removing your design changes. Right-click the **Person** form and select **Design Properties**.

11. Click the **Design** tab (the third tab from the left of the window) and select **Prohibit design refresh or replace to modify** as shown in Figure 3-20. Close the Design Document window.

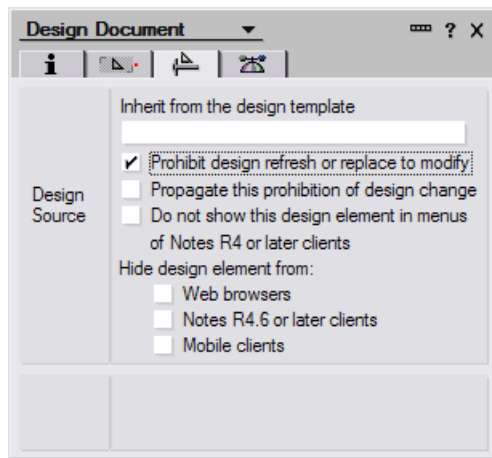


Figure 3-20 Prohibiting design refresh or replace to modify

12. Right-click the **Group** form and select **Design Properties**.
13. Click the **Design** tab (the third tab from the left of the window) and select **Prohibit design refresh or replace to modify**. Close the Design Document window when finished.
14. Right-click the **Server/Certifier** form and select **Design Properties**.
15. Click the **Design** tab (the third tab from the left of the window) and select **Prohibit design refresh or replace to modify**. Close the Design Document window when finished.

The steps that we just completed ensure that any new person, group, or certifier is created with a DominoUNID field. However, it does not modify any existing person, group, or certifier documents. In the following steps, we create an agent to modify the existing documents.

**Note:** The following steps show how to create a simple formula language agent to populate the DominoUNID field. However, this agent requires manual intervention to update the documents. If you are an experienced Domino administrator or designer, you may optionally use a provided Java agent as shown in “Sample Java agent to populate DominoUNID field” on page 65 to update the documents.

Perform the following steps:

1. From the Domino Designer client, expand **Shared Code** in the tree in the left pane and select **Agents**.
2. Click the **New Agent** button.

3. In the Agent properties window, set the Name field to `PopulateDominoUNID` and leave the rest of the fields as the default as shown in Figure 3-21. Then close the Agent window.

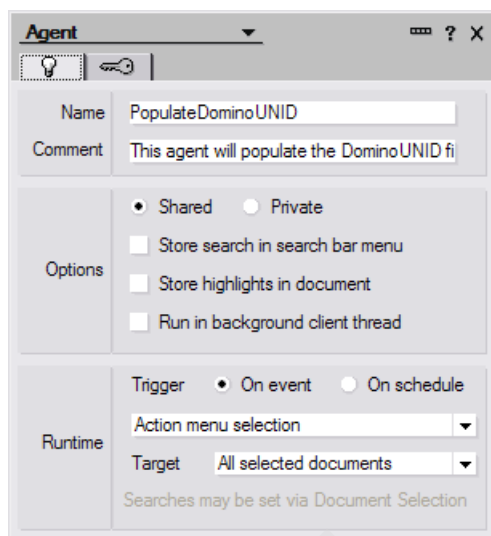


Figure 3-21 *PopulateDominoUNID agent properties*

4. Select **Action** in the center frame to enter the code. Select **Formula** from the right list in the `PopulateDominoUNID(Agent): Action` frame and enter the following formula as shown in Figure 3-22:

```
FIELD dominoUNID := @If(dominoUNID != ""; dominoUNID; @Text(@DocumentUniqueID));
```

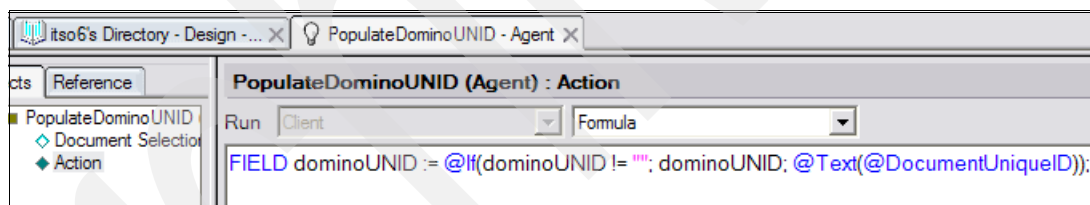


Figure 3-22 *PopulateDominoUNID action formula*

5. Save and close the agent.
6. You must prevent the design task from modifying or removing the agent from the database. Right-click the **PopulateDominoUNID** agent and click **Properties**.
7. In the Properties window, select the **Prohibit design refresh or replace to modify** option.
8. Close the Domino Designer client.
9. You must now run the agent that you created. Open the `names.nsf` (Domino Directory) file from a Lotus Notes client.

- Click the **People** view and select all the people as shown in Figure 3-23. Then select **Actions** → **PopulateDominoUNID** from the menu bar.

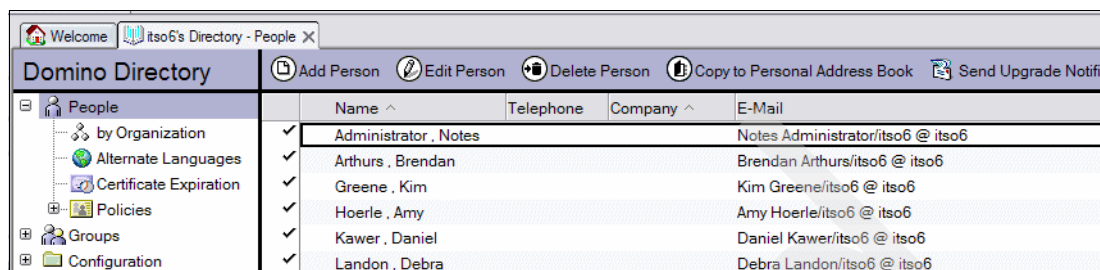


Figure 3-23 Updating all existing person documents with the DominoUNID field

- Verify that the agent worked successfully by viewing the document properties for a Person document. Right-click any Person document and select **Document Properties** from the pop-up menu.
- In the Document window, select the **Fields** tab (second from the left). Verify that the DominoUNID field appears in the list with a value as shown in Figure 3-24. Do this for multiple documents to make sure that the change was made to all documents.

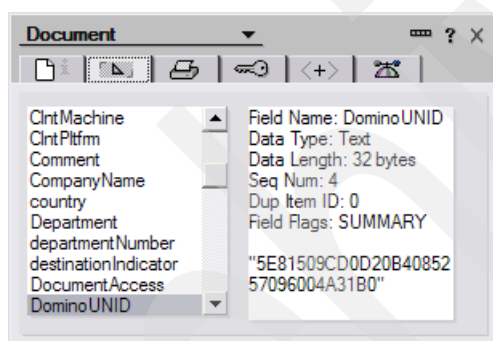


Figure 3-24 Person document properties after running the PopulateDominoUNID agent

- Use the same process to select all groups and certificates and run the PopulateDominoUNID agent against those documents as well. Note that certificates can be found under the Configuration folder.

## Sample Java agent to populate DominoUNID field

Example 3-3 shows a sample Java agent to populate the DominoUNID field. This agent can be used as an alternative to the agent demonstrated in the previous steps. Refer to Appendix E, “Additional material” on page 533, for information about obtaining this sample Java agent.

Example 3-3 Sample Java agent (ExtIidUpdate.java) to populate the DominoUNID field

```

/*
 * Created on November 15, 2004 This agent needs to be placed in the Domino
 * Directory. Running it, will populate existing People, Group, and Cert
 * documents with a DominoUNID field. This field does not exist in the default
 * Domino 6.5.3 or earlier LDAP schema.
 */

package workplace;
import lotus.domino.*;

```



```

public class ExtIdUpdate extends AgentBase {
    public void NotesMain() {
        try {
            Session session = getSession();
            AgentContext agentContext = session.getAgentContext();
            Database dbContext = agentContext.getCurrentDatabase();

            //-- Update the documents in the People, Groups, and Certificates views.
            View vwPeople = dbContext.getView("People");
            updateDocs(vwPeople);
            vwPeople.recycle();

            View vwGroups = dbContext.getView("Groups");
            updateDocs(vwGroups);
            vwGroups.recycle();

            View vwCerts = dbContext.getView("Certificates");
            updateDocs(vwCerts);
            vwCerts.recycle();

        } //- end try
        catch (NotesException ne) {
            System.out.println("NotesException: " + ne.id + " - " + ne.text);
            ne.printStackTrace();
        } //- end catch, NotesException.
        catch (Exception e) {
            System.out.println("Exception: " + e.getMessage());
            e.printStackTrace();
        } //- end catch, Exception.
    } //- end method, NotesMain.

    public void updateDocs(View vwUpdate) {
        try {
            //-- For the given view, loop through its docs and write the DominoUNID field.
            Document docUpdate = vwUpdate.getFirstDocument();
            Document docNextUpdate = null;
            while (docUpdate != null) {
                docNextUpdate = vwUpdate.getNextDocument(docUpdate);
                docUpdate.replaceItemValue("DominoUNID", docUpdate.getUniversalID());
                docUpdate.save(true, false);
                docUpdate.recycle();
                docUpdate = docNextUpdate;
            } //- end while, docUpdate.
        } //- end try
        catch (NotesException ne) {
            System.out.println("NotesException: " + ne.id + " - " + ne.text);
            ne.printStackTrace();
        } //- end catch, NotesException.
        catch (Exception e) {
            System.out.println("Exception: " + e.getMessage());
            e.printStackTrace();
        } //- end catch, Exception.
    } //- end method, UpdateDocs
} //- end class, ExtIdUpdate

```

---



### 3.4.2 Modifying the LDAP configuration

You must also add or edit the Global Configuration document to include the necessary LDAP attribute types. To add the attribute types:

1. Open the Domino Administrator client.
2. Click the **Configuration** tab.
3. In the left frame, select **Server** → **Configurations**.
4. Open the Global Configuration document, or create one if it does not already exist. The Global Configuration document has a server name of \* - [All Servers]. To create a new Global Configuration document, click **Add Configuration**. Then on the Basics page of Configuration Settings, for the Use these settings as the default settings for all servers option, select **Yes** as shown in Figure 3-25.

Configuration Settings	
Basics   LDAP   Router/SMTP   MIME   NOTES.INI Settings   Domino Web Access   IMAP   SMTP	
<b>Basics</b>	
Use these settings as the default settings for all servers:	<input checked="" type="checkbox"/> Yes
OR	
Group or Server name:	* - Default -
Type-ahead:	<input type="checkbox"/> Enabled
International MIME Settings for this document:	<input type="checkbox"/> Enabled
IMAP server returns exact size of message:	<input type="checkbox"/> Enabled
POP3 server returns exact size of message:	<input type="checkbox"/> Disabled
Extract calendar details:	<input type="checkbox"/> Enabled
Smart Upgrade Database link:	<input type="checkbox"/> Disabled
License Tracking:	<input type="checkbox"/> Disabled
Minimum Client Level:	1
Maximum Client Level:	1
Comments:	

Figure 3-25 Creating or modifying the Global Configuration document

5. Click the **LDAP** tab, and click **Select Attribute Types**.

**Note:** You do not see the LDAP tab until you select the Use these settings as the default settings for all servers option.

6. In the LDAP Attribute Type Selection window (Figure 3-26), in the Object Classes field, type an asterisk (\*) and click **Display Attributes**.

Select the following attributes and then click **Add**:

- DominoUNID
- HTTP-HostName
- MailFile
- MailServer
- NetAddresses
- Manager
- supportedExtension
- vendorName
- vendorVersion

**Tip:** The HTTP-HostName, MailFile, MailServer, NetAddresses, and Manager fields are only required for integration with Domino. If you are not planning to use the Domino Web Access or People Finder portlets, only add the DominoUNID field. The supportedExtension, vendorName, and vendorVersion attributes should be listed by default. If they are not listed, you cannot use the IBM Web Administration for iSeries Create IBM Workplace wizard to configure to a Workplace Collaboration Services server.

Click **OK** to finish adding the attributes in the LDAP Type Selection window.

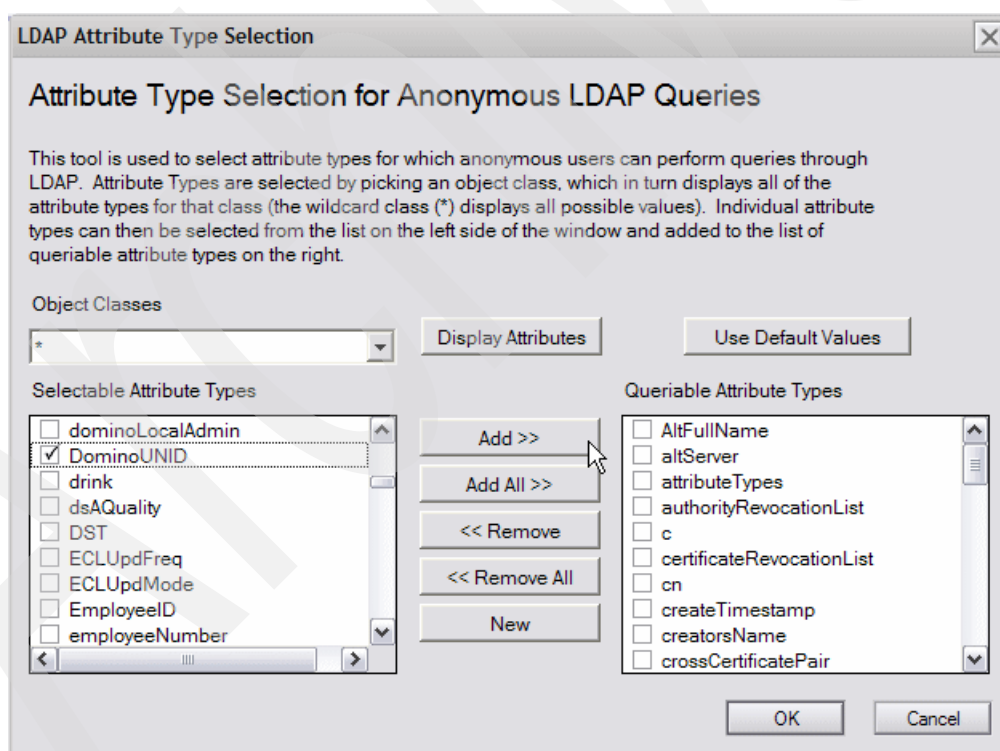


Figure 3-26 Attribute Type Selection for Anonymous LDAP Queries

7. You return to the Configuration Settings document. For the Allow LDAP users write access field, select **Yes** or **No** based on your business requirements. For help on determining which value to select, refer to 3.2, “Read/write or read-only access to the directory server” on page 44. For Automatically Full Text index Domino Directory field, select **Yes** as shown in Figure 3-27.

**Note:** An LDAP search without a full text index is a *linear search*. Create a full text index to improve LDAP search performance.

Allow LDAP users write access:	<input type="radio"/> Yes <input checked="" type="radio"/> No
Timeout:	0 seconds
Maximum number of entries returned:	0
Minimum characters for wildcard search:	1
Allow Alternate Language Information processing:	<input type="radio"/> Yes <input checked="" type="radio"/> No
Rules to follow when this directory is the primary directory, and there are multiple matches on the distinguished name being compared/modified:	<input checked="" type="radio"/> Don't modify any <input type="radio"/> Modify first match <input type="radio"/> Modify all matches
Automatically Full Text Index Domino Directory?	<input checked="" type="radio"/> Yes <input type="radio"/> No

Figure 3-27 Additional LDAP settings

8. Save and close the Configuration Settings document.
9. Reload the LDAP schema by entering the following command from the Domino server console:  

```
tell ldap reloadschema
```

**Tip:** Our testing has shown that reloading the schema is not always sufficient. To be safe, consider restarting the Domino server prior to configuring your Workplace Collaboration Services server.

### 3.4.3 Setting up the LDAP and DIIOP tasks

Both the LDAP and DIIOP tasks must be running under the Domino server for proper integration with Workplace Collaboration Services. Perform the following steps to make sure that these tasks are configured properly:

1. Open the Domino Directory (names.nsf) and navigate to **Configuration** → **Servers** → **All Server Documents** and double-click the server document for your Domino server.

- Click the **Ports** → **Internet Ports** → **Directory** tab and verify that the LDAP port is enabled as shown in Figure 3-28.

Web	Directory	Mail	IIOP	Remote Debug Manager
<b>Directory (LDAP)</b>				
TCP/IP port number:	389			
TCP/IP port status:	Enabled			
Enforce server access settings:	No			
Authentication options:				
Name & password:	Yes			
Anonymous:	Yes			
SSL port number:	636			
SSL port status:	Disabled			
Authentication options:				
Client certificate:	No			
Name & password:	No			
Anonymous:	Yes			

Figure 3-28 Directory (LDAP) settings

- Select the **Ports** → **Internet Ports** → **IIOP** tab and verify that the IIOP port is enabled as shown in Figure 3-29.

Web	Directory	Mail	IIOP	Remote Debug Manager
<b>Remote Java/Domino IIOP</b>				
TCP/IP port number:	63148			
TCP/IP port status:	Enabled			
Enforce server access settings:	No			
Authentication options:				
Name & password:	Yes			
Anonymous:	Yes			
SSL port number:	63149			
SSL port status:	Disabled			
Authentication options:				
Client certificate:	N/A			
Name & password:	No			
Anonymous:	Yes			

Figure 3-29 IIOP port settings

- Click **Save and Close** to exit the Domino server document.
- The LDAP and IIOP tasks should start when the Domino server starts. If you know this is already happening, you can skip to 3.4.4, “Adding Workplace Collaboration Services Administrative accounts to Domino” on page 72. Otherwise use the Change Domino Server (CHGDOMSVR) CL command to modify the Domino server configuration:
  - End the Domino server by entering the following End Domino Server (ENDDOMSVR) CL command:  

```
ENDDOMSVR DominoServerName
```

 Here *DominoServerName* represents your Domino server name.

- b. Change the Domino server configuration by entering the following Change Domino Server (CHGDOMSVR) CL command:

CHGDOMSVR *DominoServerName*

Here *DominoServerName* represents your Domino server name.

- c. Modify the Web browsers and Directory services parameters to include \*IIOP and \*LDAP as shown in Figure 3-30. Press Enter.

Change Domino Server (CHGDOMSVR)

Type choices, press Enter.

Server name . . . . . > 'ITSODOM6'

Additional server ID:

ID file's password . . . . .	*NONE	*SAME, GMT, EST, CST, MST ...
Time zone . . . . .	CST	*SAME, *YES, *NO
Daylight savings time . . . . .	*YES	*SAME, *NONE, *ALL, *IIOP...
<b>Web browsers</b> . . . . .	<b>*HTTP</b>	
	<b>*IIOP</b>	
Internet mail packages . . . . .	*SMTP	*SAME, *NONE, *ALL, *IMAP ...
+ for more values		
<b>Directory services</b> . . . . .	<b>*LDAP</b>	<b>Character value, *SAME...</b>
Connection services . . . . .	*NONE	*SAME, *DECS, *NONE

More...

F3=Exit   F4=Prompt   F5=Refresh   F10=Additional parameters   F12=Cancel  
F13=How to use this display   F24=More keys

Figure 3-30 Change Domino Server to add LDAP and IIOP tasks

- d. Start the Domino server by entering the following Start Domino Server (STRDOMSVR) CL command:

STRDOMSVR *DominoServerName*

Here *DominoServerName* represents your Domino server name.

**Note:** If the LDAP task does not start after you make these changes, make sure that the line DisableLDAPOnAdmin=1 does not exist in the Domino server's notes.ini file. If you see this entry, remove it. To review the notes.ini file, use the Work with Domino Servers (WRKDOMSVR) CL command and type option 13 (Edit Notes.ini) next to your Domino server.

### 3.4.4 Adding Workplace Collaboration Services Administrative accounts to Domino

If you are planning to give read/write access to Workplace Collaboration Services, be aware that in order for users to sign up or edit their profile, the LDAP administrative account given to the IBM Web Administration for iSeries Create IBM Workplace wizard must have manager access to the Domino Directory (names.nsf). This user must also have Create documents and Delete documents authorities selected. Finally, this user must have the following roles:

- ▶ GroupCreator
- ▶ GroupModifier
- ▶ UserCreator
- ▶ UserModifier

To view the authority for a user to your Domino Directory:

1. Open the Lotus Notes client.
2. Open the Domino Directory (names.nsf) for your Domino server.
3. Click the **File** menu option and select **Database** → **Access Control** to view the Access Control List.
4. In the Access Control List window, select the entry for the user that you want to use as the LDAP Administrator in the IBM Web Administration for iSeries Create IBM Workplace wizard. The authority that this user must have is shown in Figure 3-31.

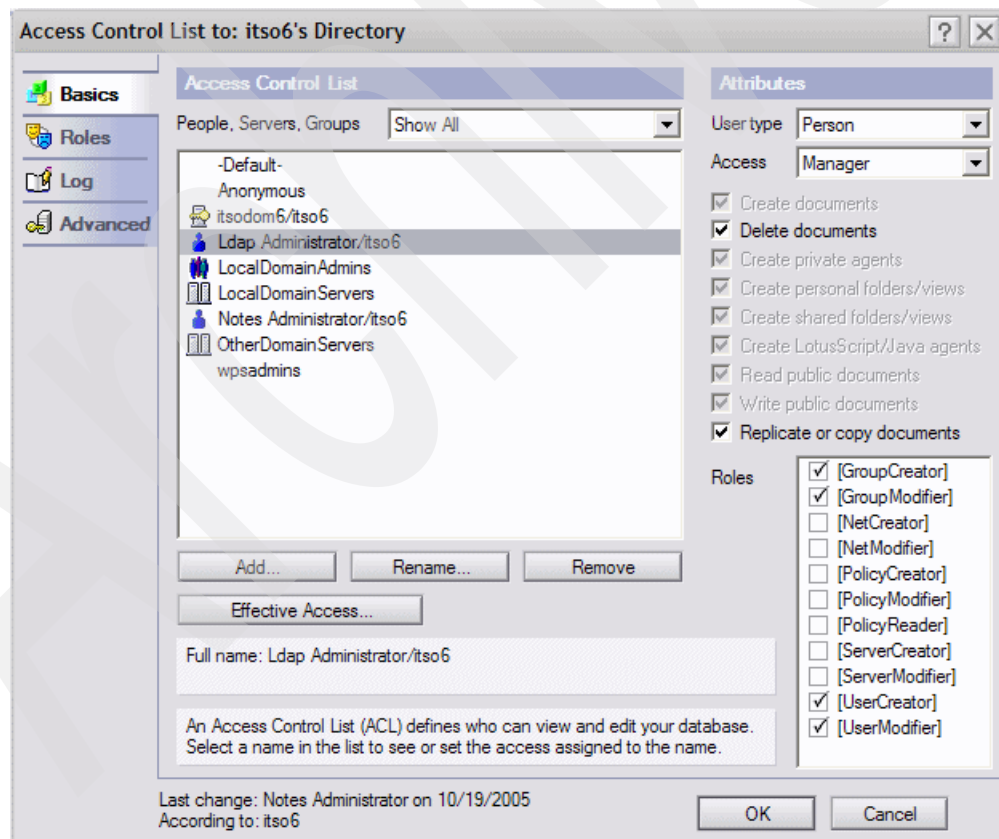


Figure 3-31 Security required by the iSeries Create IBM Workplace wizard

Close the Access Control List to window when you are finished reviewing the authority. If the authority matches Figure 3-31 and you are going to give write access to the iSeries Create IBM Workplace wizard, you can skip the steps that follow.

If you are only giving read access to the IBM Web Administration for iSeries Create Workplace wizard, you must create a Workplace Collaboration Services administrator group and account such a wpsadmin user and a wpsadmins group. To create a Workplace Collaboration Services administrator user and administration group:

1. Open Domino Administrator and click the **People and Groups** tab.
2. Select **People** and click **Add Person**. Complete the fields as shown in Table 3-3 and demonstrated in Figure 3-32, where *wpsadmin* represents your Workplace Collaboration Services administrator.

Table 3-3 Values used to create the wpsadmin Person document

Parameter	Value
Last name	wpsadmin
User name	wpsadmin/YourOrganization wpsadmin
Short name/UserID	wpsadmin
Internet address	wpsadmin@yourdomain.com
Internet password	password of your choice

The screenshot shows the IBM Domino Administrator window titled 'wpsadmin/itso6 - IBM Domino Administrator'. The 'Person: wpsadmin/itso6' document is open, with the 'Basics' tab selected. The 'Basics' tab contains the following fields:

- First name: [ ]
- Middle name: [ ]
- Last name: wpsadmin
- User name: wpsadmin/itso6
- Alternate name: [ ]
- Short name/UserID: wpsadmin
- Personal title: [ ]
- Generational qualifier: [ ]
- Internet password: [ ]
- Preferred language: [ ]

The 'Mail' tab is also visible, showing the following fields:

- Mail system: Notes
- Domain: [ ]
- Mail server: [ ]
- Mail file: [ ]
- Forwarding address: [ ]
- Internet address: wpsadmin@itsowse1.rchland.ibm.com
- Format preference for incoming mail: Keep in senders' format
- When receiving unencrypted mail, encrypt before storing in your mailfile: No

The 'Real-Time' tab is partially visible at the bottom.

Figure 3-32 Creating the wpsadmin Person document

3. Click the **Save & Close** button to exit the Person document.

4. Select **Groups** and click **Add Group**. Complete the fields as shown in Table 3-4 and demonstrated in Figure 3-33, where *wpsadmin* represents your Workplace Collaboration Services administrator and *wpsadmins* represents your administration group.

Table 3-4 Values used to create the *wpsadmins* Group document

Parameter	Value
Group name	wpsadmins
Group type	Multi-purpose
Members	wpsadmin/YourOrganization

The screenshot shows a web-based configuration interface for a 'Multi-purpose group'. It has three tabs: 'Basics', 'Comments', and 'Administration'. The 'Basics' tab is active. The form contains the following fields:

- Group name: wpsadmins
- Group type: Multi-purpose (dropdown menu)
- Category: (dropdown menu)
- Description: (empty text box)
- Mail Domain: (empty text box)
- Internet Address: (empty text box)
- Members: wpsadmin/itsodm6 (dropdown menu)

Figure 3-33 Creating the *wpsadmins* Group document

5. Click the **Save & Close** button to exit the Group document.

### 3.4.5 Testing the Domino LDAP server configuration

Running an **ldapsearch** command against the LDAP directory indicates whether you have configured your Domino LDAP server correctly. If you prefer a GUI, third-party products are available on the Internet for download.

In the following examples, we perform an **ldapsearch** from a Windows command prompt. In Example 3-4, we verify that the DominoUNID can be returned for a Domino user. In our example, we created a Domino user called LDAP Administrator. We use the following **ldapsearch** command, where *itsodm6* is the host name of our Domino server:

```
ldapsearch -h itsodm6 -p 389 "cn=LDAP Administrator"
```

Example 3-4 Running *ldapsearch* to return the entry for the LDAP administrator

```
C:\Documents and Settings\Administrator>ldapsearch -h itsodm6 -p 389 "cn=LDAP Administrator"
```

```
CN=Ldap Administrator,0=itsodm6
objectclass=dominoPerson
objectclass=inetOrgPerson
objectclass=organizationalPerson
objectclass=person
objectclass=top
dominounid=789FFCB95562ACA18625709E005B98AA
```



```
givenname=Ldap
sn=Administrator
cn=LDAP Administrator
uid=LAdministrator
```

---

If you do not see the DominoUNID attribute returned, your LDAP server is not ready for use with Workplace Collaboration Services. Return to 3.4, “Preparing the Domino server for LDAP” on page 57, for help on configuring your Domino LDAP server.

If you are not going to allow write access to the Domino LDAP directory, you must make sure that the wpsadmin person and wpsadmins group have been setup properly as shown in Example 3-5. In our example, we use the following `ldapsearch` command, where *itsodom6* is the name of our Domino server:

```
ldapsearch -h itsodom6 -p 338 cn=wps*
```

*Example 3-5 Running ldapsearch to return the entries for wpsadmin and wpsadmins*

---

```
C:\Documents and Settings\Administrator>ldapsearch -h itsodom6 -p 389 cn=wps*
CN=wpsadmin,0=itso6
mail=wpsadmin@itsowse1.rchland.ibm.com
objectclass=dominoPerson
objectclass=inetOrgPerson
objectclass=organizationalPerson
objectclass=person
objectclass=top
dominounid=CB41205ACE9994E0862570970050FFAB
sn=wpsadmin
cn=wpsadmin
uid=wpsadmin
CN=wpsadmins
cn=wpsadmins
mail=wpsadmins@rchland.ibm.com
objectclass=dominoGroup
objectclass=groupOfNames
objectclass=top
member=CN=wpsadmin,0=itso6
dominounid=414035F3AFE72F786257097005214F0
```

---

### 3.4.6 Domino Directory changes after upgrading to Domino v6.5.4 or later

The previous sections explain how to modify the Domino Directory to integrate with Workplace Collaboration Services when running Domino versions 6.5.3 or lower. This section explains the steps to take advantage of the new changes with the LDAP server that is part of Domino version 6.5.4 or later.

**Important:** You only need to follow these steps if you modified the design of your Domino Directory when you were at Domino v6.5.3 or earlier and have now upgraded your server to Domino v6.5.4 or later.

1. Open the Domino Directory (names.nsf) in the Domino Designer client.
2. In the left pane, click **Forms** and right-click the **Person** form.
3. Select **Design properties**.
4. Clear the **Prohibit design refresh or replace to modify** option.
5. Close the Design properties box.

6. Perform the same actions from steps 2 through 5 on the **Group** and **Server\Certifier** forms.
7. Click **Shared Code** → **Agents** and remove the **PopulateDominoUNID** agent if it exists in your database.
8. Refresh the design of the Domino Directory with the latest template by selecting **File** → **Database** → **Refresh Design**.

The changes are now complete, and your Domino Directory should be updated with the latest design for the version of Domino you are running. All previous modifications made in the server configuration document are still valid and do not need to be changed.

## Installation and initial configuration

In this chapter, we guide you through the installation and initial configuration of a Workplace Collaboration Services server on the iSeries server. In order for the installation to run smoothly, you must ensure that you have met all prerequisites described in Chapter 2, “Prerequisites” on page 15. In this chapter, we give you a detailed, step-by-step guide to performing the different installation and configuration options using either a graphical interface or an i5/OS console mode.

The following topics are covered in this chapter:

- ▶ Installation and configuration roadmaps
- ▶ Installation of the Workplaces Collaboration Services product code
- ▶ Configuration of a Workplace Collaboration Services server using one of the following methods:
  - IBM Web Administration for iSeries Create IBM Workplace wizard
  - Custom configuration

## 4.1 Installation and configuration roadmaps

In the following sections, we provide an overview of the installation and configuration options for deploying Workplace Collaboration Services on the iSeries server. There are several different paths you can take to install and configure Workplace Collaboration Services. In this redbook, we guide you down the recommended path for successfully installing Workplace Collaboration Services on your iSeries server and then successfully configuring your first Workplace Collaboration Services server.

### 4.1.1 Installation options

The Workplace Collaboration Services product installs on i5/OS as deployed from an archive set of install media, not as a traditional product installation. The install media consists of a previously saved Workplace Collaboration Services server that, when restored, gives you a WebSphere Application Server instance, a WebSphere Portal instance that sits on top of the WebSphere Application Server, and a Workplace Collaboration Services server. This installation method is referred to as an *archive install*.

The archive install differs considerably from previous versions of Workplace Collaboration Services on other platforms in that historically the base components of WebSphere Application Server and WebSphere Portal Server were installed and configured. Then the Workplace components were deployed into this environment. While this was an effective deployment method, it required an additional amount time to complete and had more opportunity for errors to be introduced into the process through numerous elements of manual intervention.

**Note:** Workplace Collaboration Services version 2.5 is the first release to be supported on the iSeries server.

Another outcome of the archive install is that Workplace Collaboration Services does not display as a normal software resource when viewed with the Display Software Resources (DSPSFWRSC) CL command. To verify that the Workplace Collaboration Services version 2.5 code is installed on your iSeries server, you can check for the i5/OS integrated file system directory path of /QIBM/ProdData/Workplace/WCS25.

There are two main installation types for the Workplace Collaboration Services product code, a *remote graphical install* and a *local console install*. These installation types allow for different options for the location of the physical install media. The code can be installed from the i5/OS integrated file system or from the CD drive of the iSeries server. Or additionally the remote install allows you to install from a local PC workstation.

Figure 4-1 illustrates the installation roadmap for a remote graphical or local console install. In both cases, the Workplace Collaboration Services version 2.5 product code is installed to the /QIBM/ProdData/Workplace/WCS25 directory on the iSeries server.

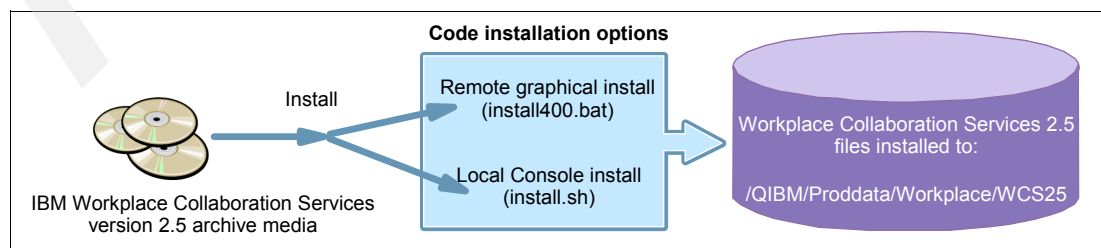


Figure 4-1 Installation roadmap of Workplace Collaboration Services 2.5 on the iSeries server

For details about installing the Workplace Collaboration Services 2.5 code on the iSeries server, see 4.2, “Installing Workplace Collaboration Services” on page 80.

## 4.1.2 Configuration options

After the Workplace Collaboration Services product code is installed, you can choose from several options to configure a Workplace Collaboration Services server. Figure 4-2 illustrates these different configuration options. As Figure 4-2 shows, after the code is installed, you can either choose to use the IBM Web Administration for iSeries Create IBM Workplace configuration wizard (the recommended method) or do a custom configuration.

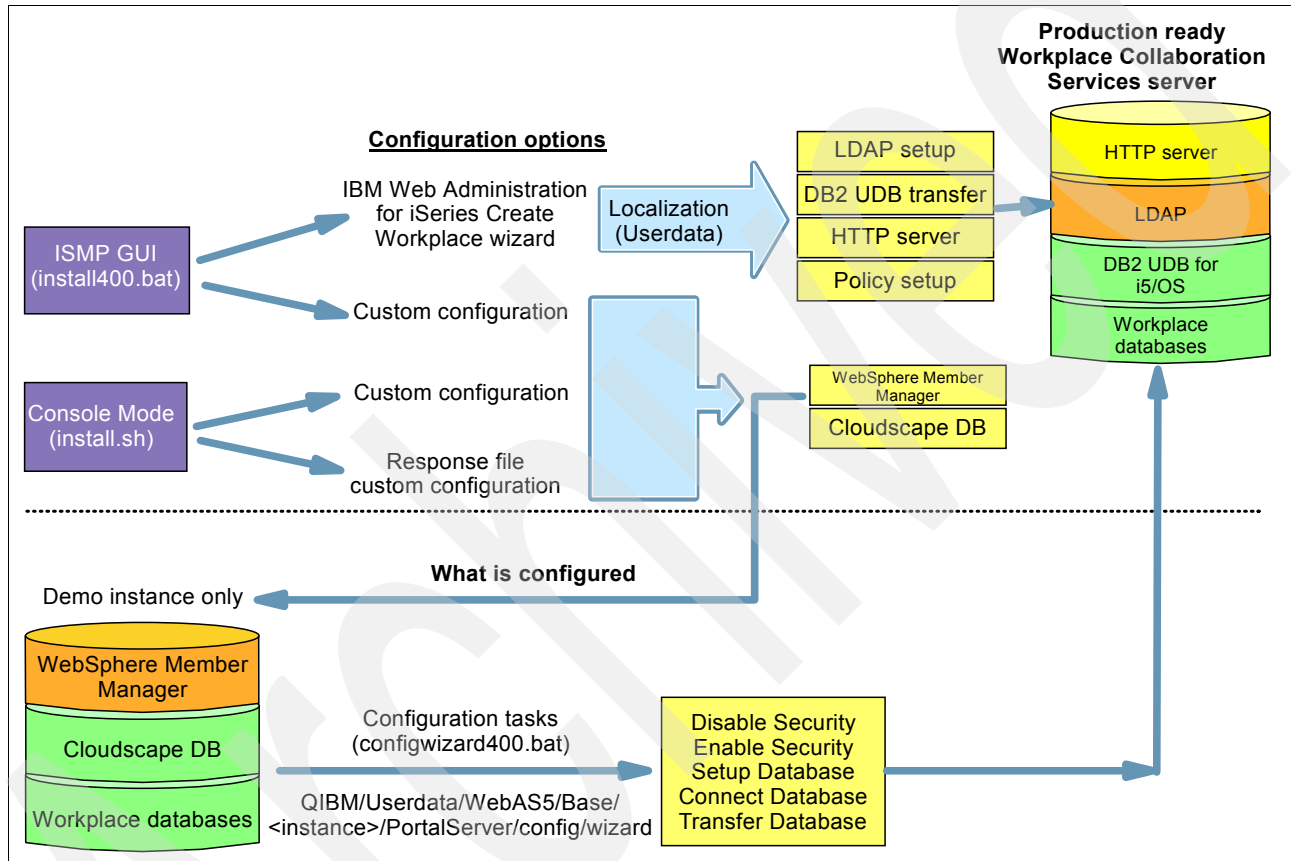


Figure 4-2 Configuration roadmap for Workplace Collaboration Services 2.5 on the iSeries server

The IBM Web Administration for iSeries Create IBM Workplace configuration wizard performs the following actions, greatly simplifying the configuration process:

- ▶ HTTP server creation
- ▶ DB2 Universal Database transfer
- ▶ Document rendering (Virtual Network Computing (VNC) or X Virtual Frame Buffer (XVFB)) server creation
- ▶ Lightweight Directory Access Protocol (LDAP) security enablement
- ▶ Mail configuration

For step-by-step details about configuring a Workplace Collaboration Services server using the IBM Web Administration for iSeries Create IBM Workplace configuration wizard, see 4.3, “Using the iSeries Create IBM Workplace wizard” on page 97.

**Attention:** We recommend that you complete the configuration of each Workplace Collaboration Services server on the iSeries server by using the IBM Web Administration for iSeries Create IBM Workplace configuration wizard. While it is possible to manually configure a Workplace Collaboration Services server using the custom configuration option, this method is more complex and potentially error prone.

Using the custom configuration, all of the configuration tasks that we previously described must be done manually. For step-by-step details on how to configure a Workplace Collaboration Services server using the custom configuration method, see 4.4, “Custom configuration” on page 122.

## 4.2 Installing Workplace Collaboration Services

This section covers the two main installation methods that are available for installing Workplace Collaboration Services on the iSeries server:

- Remote (graphical) installation

This type of installation is graphical in nature and requires a Microsoft Windows-based workstation with the necessary network connectivity to the iSeries server. The installation media can be located on the local PC workstation. However, keep in mind that if the installation media is located on the PC workstation, the installation process copies the files across the network to the iSeries server, so it can take considerably more time to install.

See 4.2.1, “Remote (graphical) installation” on page 81, for details about how to do a remote install.

- Local console installation

This type of installation uses the i5/OS 5250 emulation terminal interface and actually runs in the Qshell environment. The installation media must be located on the iSeries server in either in the local CD-ROM drive or integrated file system.

See 4.2.2, “Local console installation” on page 89, for details about doing a console install.

**Tip:** The quickest installation method is to use the local console installation method with the Workplace Collaboration Services product code located in a directory in the i5/OS integrated file system. The configuration and speed of your network can greatly affect the time it takes to install the product code when using a remote install. Therefore, if you have a slow or complicated network or are using some virtual private network (VPN) clients, we recommend that you use a local console installation method.

**Important:** Before you install Workplace Collaboration Services, make sure that your WebSphere Application Server subsystem is started. If it is not started, use the following Start Subsystem (STRSBS) CL command to start it:

```
STRSBS SBSD(QEJBAS5/QEJBAS5)
```

You do not need to start this subsystem if you are planning to use the IBM Web Administration for iSeries Create IBM Workplace wizard because it automatically starts this subsystem for you.

Before you install the Workplace Collaboration Services product code, you must make sure that the host servers are started on the iSeries server:

1. The subsystems QUSRWRK, QSYSWRK and QSERVER must be running in order to start the host servers. On an i5/OS command line, enter the following Start Subsystem (STRSBS) CL command together with the subsystem name:

```
STRSBS SBS(SUBSYSTEM)
```

2. Make sure the host servers are started. On an i5/OS command line, enter the following Start Host Server (STRHOSTSVR) CL command:

```
STRHOSTSVR SERVER(*ALL)
```

### 4.2.1 Remote (graphical) installation

The remote installation method is fully graphical in nature and is suited for an administrator who is more comfortable with this interface. It allows for the installation media to be run from a Microsoft Windows-based workstation as opposed from the iSeries server's integrated file system or CD-ROM drive.

**Important:** The Workplace Collaboration Services installation media comes as a DVD or a set of CDs. You must enter the following Change Optical Attributes (CHGOPTA) CL command to access the media from an iSeries server:

```
CHGOPTA EXTMEFMT(*YES)
```

Perform the following steps to do a remote installation from a Microsoft Windows-based workstation. In our example shown here, we do a remote install with the installation media located on the local PC workstation.

**Tip:** Turn off any screen savers and pop-up blockers, as well as disable all personal firewalls because they may affect the remote installation process.

1. Navigate to the Workplace Collaboration Services installation media.
2. Double-click the **install400.bat** file to run it.

3. An MS-DOS® window (Figure 4-3) opens as the InstallShield environment prepares to launch into the installer. This may take a few minutes.

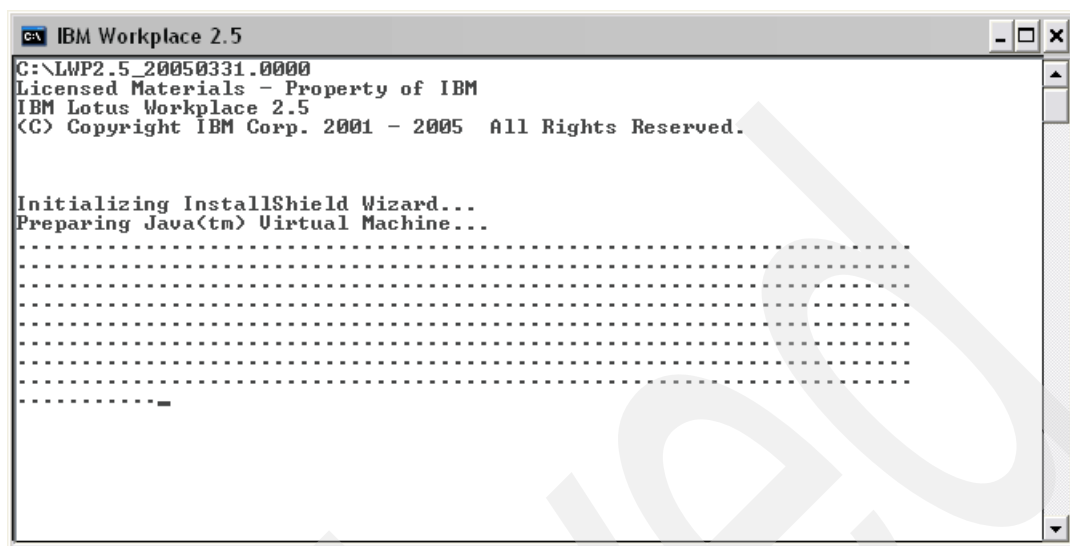


Figure 4-3 MS-DOS window

4. Sign on to the iSeries server (Figure 4-4). Remember that to install Workplace Collaboration Services, you must have an i5/OS user profile with at least the special authorities of \*ALLOBJ, \*IOSYSCFG, and \*JOBCTL. Click **OK** to continue.

**Tip:** Minimize all open windows on your desktop because the Signon to the Server window appears in the background.

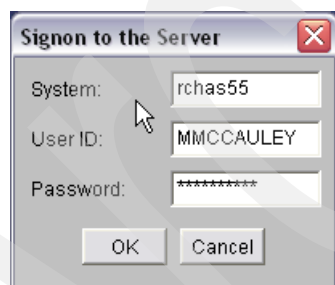


Figure 4-4 Signing on to the iSeries server

5. Select the appropriate language to use (Figure 4-5). The default value is English. Click **OK** to continue.

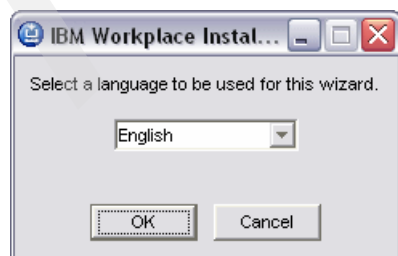


Figure 4-5 Choosing the install wizard language



6. The Welcome to IBM Workplace window (Figure 4-6) opens. This window provides an introduction to the IBM Workplace installation and includes a link to the Workplace Collaboration Services InfoCenter. Click **Next** to continue the installation process.

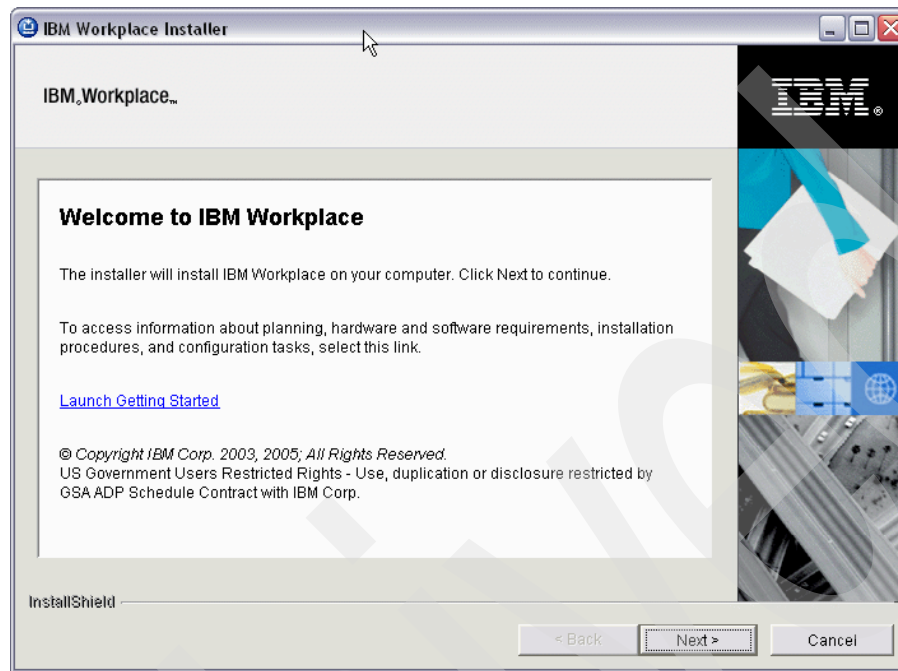


Figure 4-6 Welcome to IBM Workplace

7. A prerequisites checker is displayed for a brief period and verifies the following items:
  - i5/OS V5R3 or later is installed.
  - The user profile supplied has \*ALLOBJ, \*IOSYSCFG, and \*JOBCTL special authorities.

8. In the License selection window (Figure 4-7), select the appropriate Workplace Collaboration Services products to install for which you have licenses and click **Next**.

**Tip:** Select all the products for which you have licenses. Selecting only the IBM Workplace Collaboration Services 2.5 check box *does not* install all of the products.

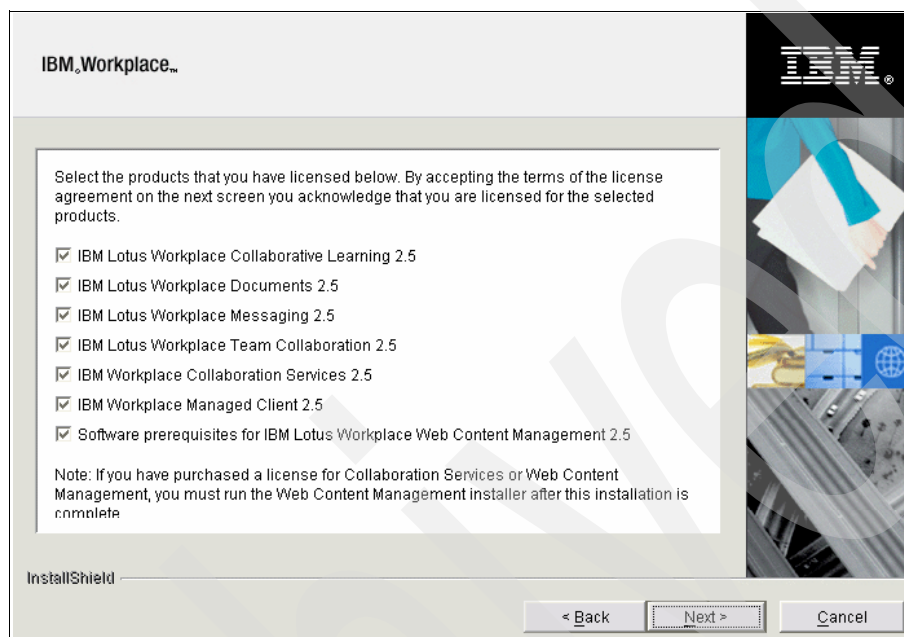


Figure 4-7 Selecting the Workplace Collaboration Services products to install

9. Review the Software License Agreement (Figure 4-8) and select **I accept the terms in the license agreement**. You must accept this agreement for the installation process to be completed. Click **Next**.

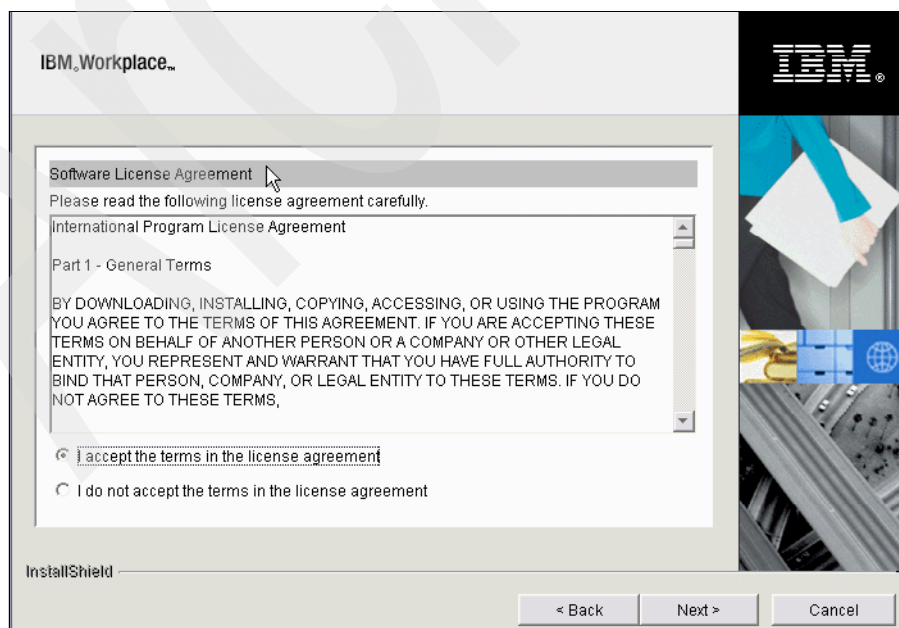


Figure 4-8 Software License Agreement

10. The installer does not provide a choice for the installation location on the iSeries server and installs the code to the i5/OS directory path of /QIBM/ProdData/Workplace/WCS25 (Figure 4-9). Click **Next** to start the installation of the product code to the iSeries server.

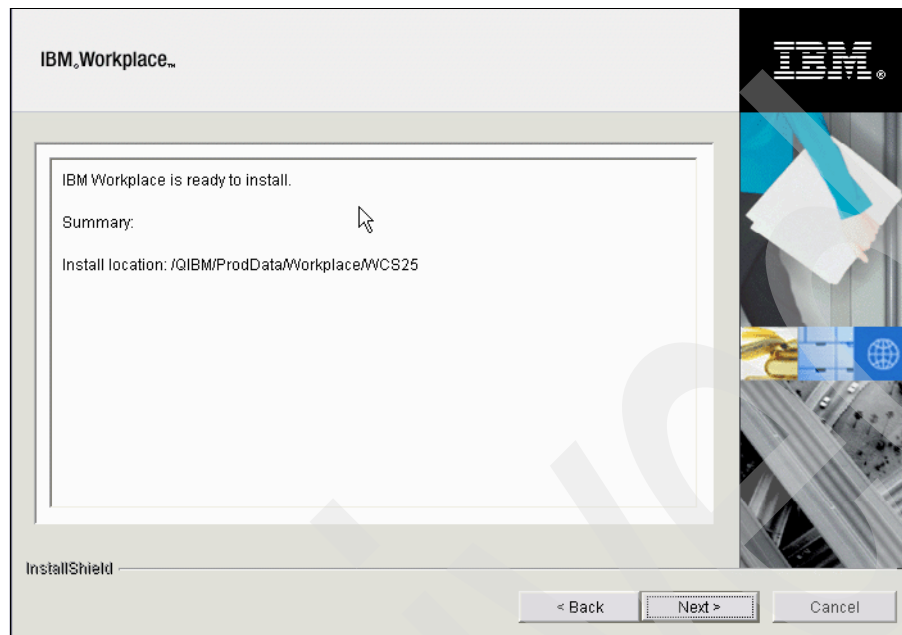


Figure 4-9 Product installation location

11. A status bar is displayed to indicate how much of the installation has completed. After it has completed, the Next button becomes active. Click **Next** to continue the installation.

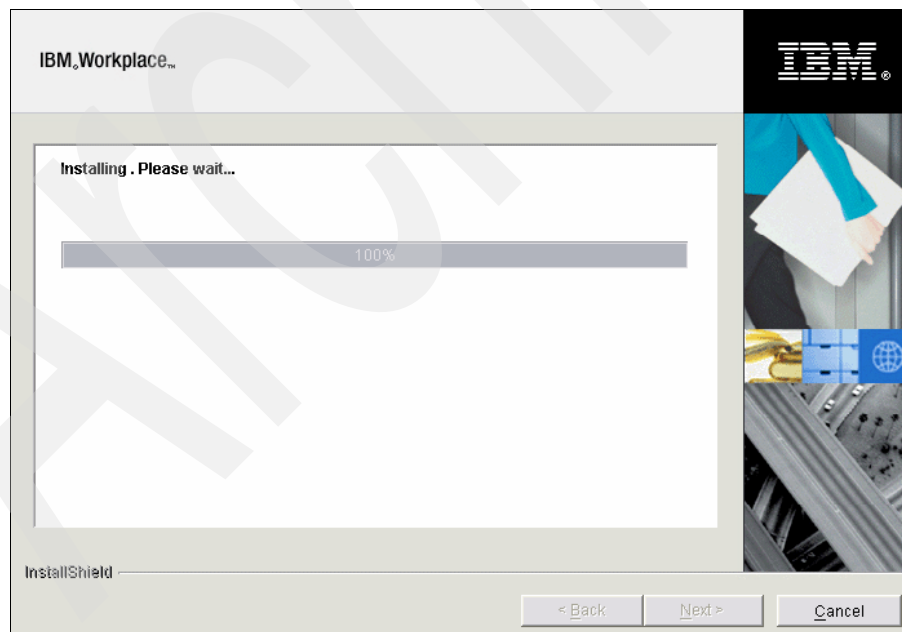


Figure 4-10 Installation progress indicator bar

12. A confirmation message is displayed (Figure 4-11) and indicates either the success or failure of the Workplace Collaboration Services product installation. Click **Next** to continue to the configuration of the first Workplace Collaboration Services server.

**Note:** When the successful installation confirmation message is displayed, the Workplace Collaboration Services product code is installed. At this point, you can either cancel or continue the configuration at a later time (see 4.3, “Using the iSeries Create IBM Workplace wizard” on page 97).

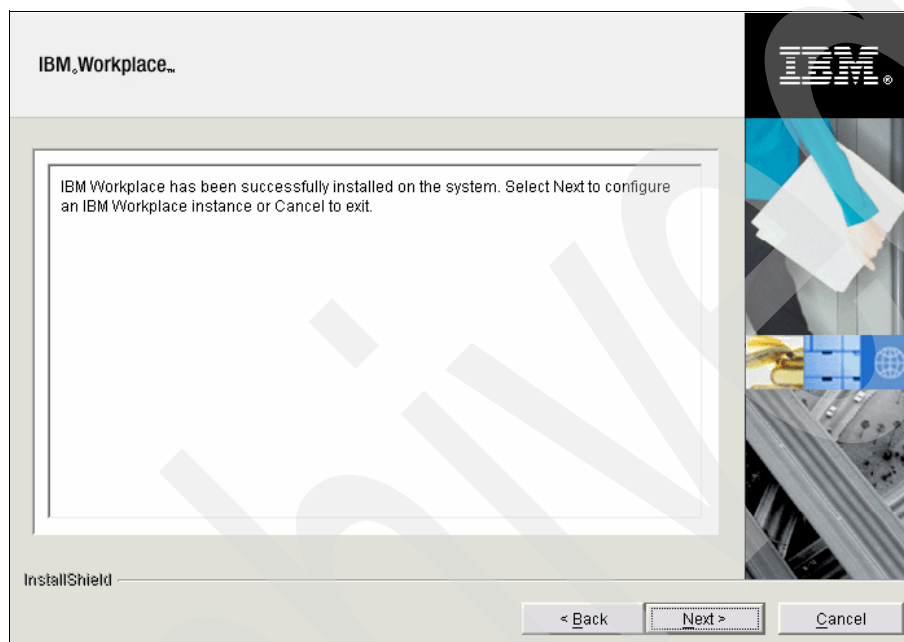


Figure 4-11 Confirmation of the Workplace Collaboration Services product installation

13. After the Workplace Collaboration Services product code is installed, you see a window like the example in Figure 4-12. Choose one of the following Workplace Collaboration Services server configuration options:

- **IBM Workplace setup wizard for i5/OS (recommended):** This option uses the IBM Web Administration for iSeries Create IBM Workplace wizard to configure a Workplace Collaboration Services server. This is *the recommended approach*.  
For the recommended configuration path, select **IBM Workplace setup wizard for i5/OS** and click **Next** to start the configuration process.
- **Custom configuration:** This option requires additional manual steps to be completed for a Workplace Collaboration Services server configuration.  
For some reason, if you need to do a custom configuration, select **Custom configuration** and go to 4.4, “Custom configuration” on page 122, to configure a Workplace Collaboration Services server using the custom or manual configuration.

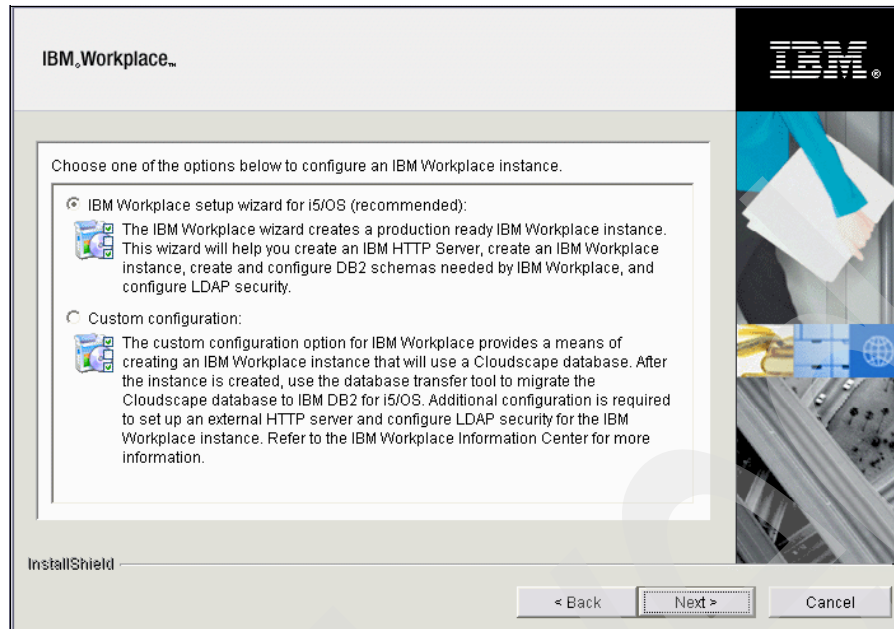


Figure 4-12 Configuration options

14. At this point, a dependency checker is run to check if the correct products and required program temporary fixes (PTFs) are installed on the iSeries server. If the dependency checker discovers any missing products or required PTFs from your iSeries server, you cannot continue. You then see a window similar to the example in Figure 4-13.

You must install the listed PTFs or products before you continue with the configuration process.

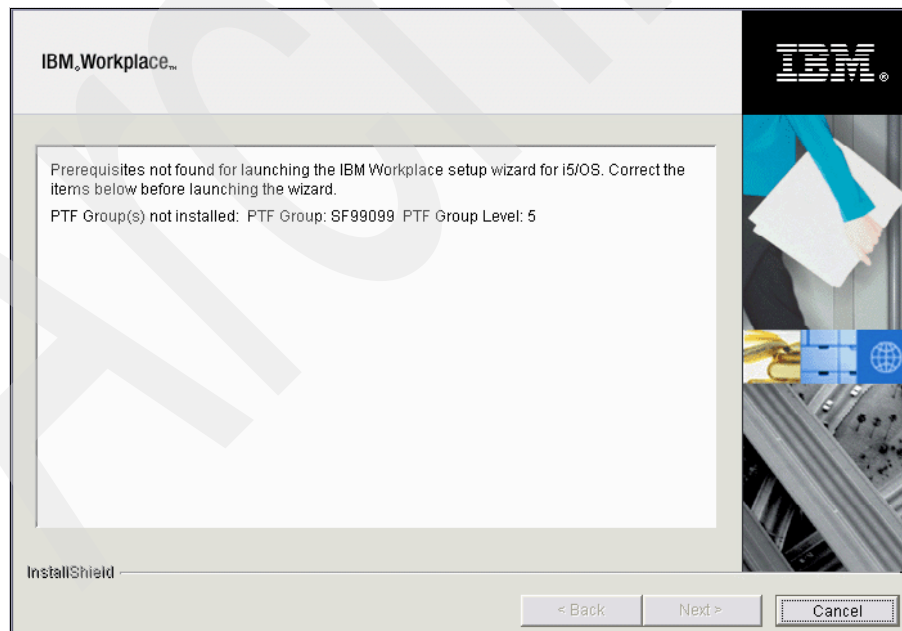


Figure 4-13 Prerequisites not found display

15. In the final window that is displayed (Figure 4-14), click the **Launch the IBM workplace setup wizard for i5/OS** link to start the configuration process. Go to 4.3, “Using the iSeries Create IBM Workplace wizard” on page 97, for the step-by-step configuration details.

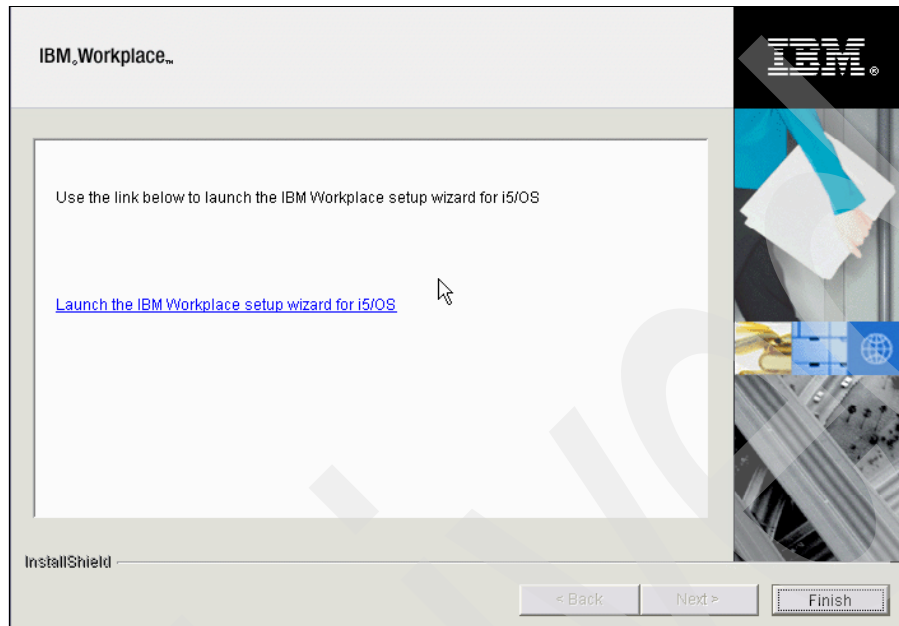


Figure 4-14 Launching the IBM Workplace setup wizard for i5/OS

## Troubleshooting installation problems

In this section, we list some possible problems that you might encounter during the remote (graphical) installation of Workplace Collaboration Services and their solutions.

- ▶ If the installation failed for no apparent reason, you can check the `lwinstalllog.txt` log file, which is located in the i5/OS directory path of `/tmp/InstallShield`. Correct the problems and retry the installation.
- ▶ If you had previous problems when installing the Workplace Collaboration Services product code using the remote (graphical) installer, this can happen for several reasons. For example, you might have had network connection problems or you chose to cancel during the installation. This can leave the installation in an unstable state. Therefore, we recommend that you start a fresh installation. Perform the following steps:
  - a. If the display remains active on the PC workstation, end the Windows application called “IBM Workplace Installer” using the Windows task manager.
  - b. To view all the i5/OS jobs that are running under the user profile logged on to the iSeries, enter the following Work with Object Locks (WRKOBJLCK) CL command:  

```
WRKOBJLCK userprofile
```

Here *userprofile* represents the user profile used during the installation process.
  - c. Find the job called QPOZSPWP and end it.
  - d. Remove the lock file `/tmp/InstallShield/lwai/lwinstall.lockfile` from the i5/OS integrated file system.



- If the IBM HTTP Administration Server is not active, you see a window like the example in Figure 4-15. Click **Next** to start the IBM HTTP Administration Server. When the IBM HTTP Administrative Server is started, you see the window shown in Figure 4-14.

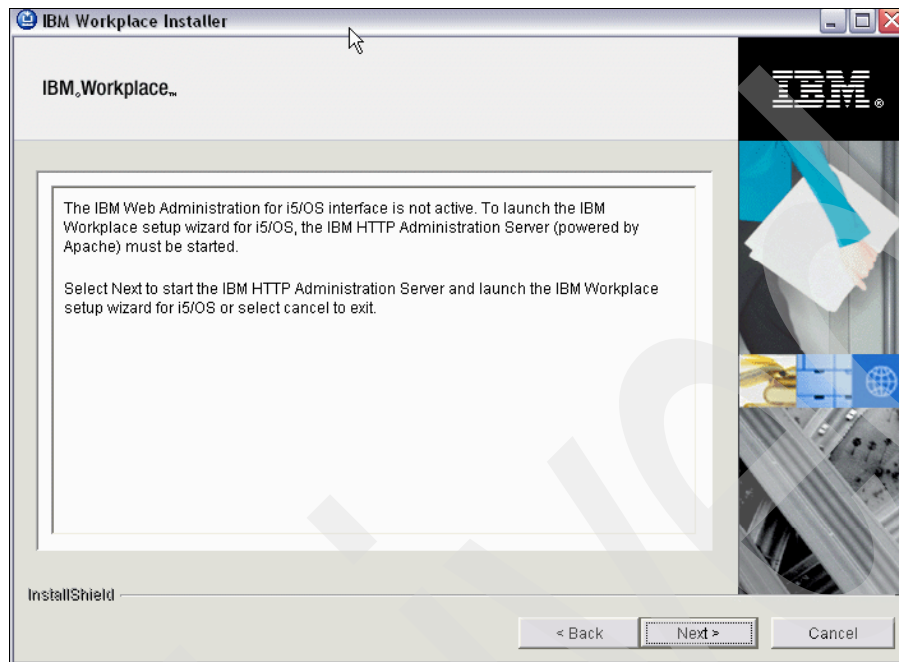


Figure 4-15 IBM Web Administration for i5/OS (HTTP Administration Server) not active

## 4.2.2 Local console installation

The local console installation method uses the i5/OS 5250 emulation terminal interface and actually runs a script in the Qshell environment. The Workplace Collaboration Services installation media must be located on the iSeries server in either the local CD-ROM drive or copied into the integrated file system.

The local console install is the same as the remote install in that it asks you for the same types of input. However, some of the keystrokes differ due to the different user interface (graphical verses 5250 emulation).

Perform the following steps to do a local console install. In our example shown here, we do a local console install with the installation media located in the i5/OS integrated file system directory /WorkplaceCollaborationServices25.

**Important:** The Workplace Collaboration Services installation media comes as a DVD or a set of CDs. You must enter the following Change Optical Attributes (CHGOPTA) CL command to access the media from an iSeries server:

```
CHGOPTA EXTMEFMT(*YES)
```

1. Sign on to an iSeries server 5250 emulation session. To install Workplace Collaboration Services, you must have a user profile with the at least the special authorities of \*ALLOBJ, \*IOSYSCFG, and \*JOBCTL.
2. From the 5250 emulation session command line, enter the Qshell environment by typing the Start Qshell (STRQSH) command and pressing Enter.

```
STRQSH
```

3. Navigate to the directory where the Workplace Collaboration Services installation media is located. For our example, as shown in Figure 4-16, the installation media was located in the integrated file system directory of /WorkplaceCollaborationServices25. Navigate to the LWPServer folder in this directory which contains the install.sh executable file, which you need to run to start the installation process of Workplace Collaboration Services.

```
cd /WorkplaceCollaborationServices25/LWPServer
```

```
QSH Command Entry

$
===> cd /WorkplaceCollaborationServices25/LWPServer

F3=Exit   F6=Print F9=Retrieve F12=Disconnect
F13=Clear F17=Top  F18=Bottom F21=CL command entry
```

*Figure 4-16 Locating the installer application*

4. Run the install.sh file by typing the following command on the Qshell command line (Figure 4-17) and then press Enter.

```
install.sh
```

```
QSH Command Entry

$
> cd /WorkplaceCollaborationServices25/LWPServer
$

===> install.sh

F3=Exit   F6=Print F9=Retrieve F12=Disconnect
F13=Clear F17=Top  F18=Bottom F21=CL command entry
```

*Figure 4-17 Running the Workplace Collaboration Services installer program*



5. Select the appropriate language to use for the installer (Figure 4-18). The default value is English. Press Enter to accept English as the language used and then type 0 and press Enter to continue.

```
QSH Command Entry

Select a language to be used for this wizard.

[X] 1 - English
[ ] 2 - French
[ ] 3 - German
[ ] 4 - Italian
[ ] 5 - Japanese
[ ] 6 - Korean
[ ] 7 - Portuguese (Brazil)
[ ] 8 - Simplified Chinese
[ ] 9 - Spanish
[ ] 10 - Traditional Chinese

To select an item enter its number, or 0 when you are finished: [0]

==> 0

F3=Exit  F6=Print  F9=Retrieve  F12=Disconnect
F13=Clear  F17=Top  F18=Bottom  F21=CL command entry
```

Figure 4-18 Selecting the installer language

6. On the Welcome to IBM Workplace display (Figure 4-19), press Enter to select the default value of 1 for Next to continue the installation process.

```
QSH Command Entry

-----
Welcome to IBM Workplace

The installer will install IBM Workplace on your computer. Click Next to
continue.

Copyright IBM Corp. 2003, 2004; All Rights Reserved. US Government Users
Restricted Rights - Use, duplication or disclosure restricted by GSA ADP
Schedule Contract with IBM Corp.

Press 1 for Next, 3 to Cancel or 4 to Redisplay [1]

==>

F3=Exit  F6=Print  F9=Retrieve  F12=Disconnect
F13=Clear  F17=Top  F18=Bottom  F21=CL command entry
```

Figure 4-19 Welcome to IBM Workplace

7. In the license selection display (Figure 4-20), you can choose the products that you want to install. Select the appropriate Workplace Collaboration Services products that you are licensed for to install and press Enter. In our example, we select all the numbers to install all the Workplace Collaboration Services products by entering the number of each option and pressing Enter after each selection.

When you are finished selecting the Workplace Collaboration Services products, type option 0 and press Enter to continue.

```
QSH Command Entry

To select an item enter its number, or 0 when you are finished: [0]
> 7

[X] 1 - IBM Lotus Workplace Collaborative Learning 2.5
[X] 2 - IBM Lotus Workplace Documents 2.5
[X] 3 - IBM Lotus Workplace Messaging 2.5
[X] 4 - IBM Lotus Workplace Team Collaboration 2.5
[X] 5 - IBM Workplace Collaboration Services 2.5
[X] 6 - IBM Workplace Managed Client 2.5
[X] 7 - Software prerequisites for IBM Lotus Workplace Web Content Management
    2.5

To select an item enter its number, or 0 when you are finished: [0]

==> 0

F3=Exit  F6=Print F9=Retrieve F12=Disconnect
F13=Clear F17=Top  F18=Bottom F21=CL command entry
```

Figure 4-20 Selecting the Workplace Collaboration Services products to install

8. Read the information presented about installing Web Content Management (Figure 4-21). Enter option 1 and press Enter to continue.

```
QSH Command Entry

[X] 6 - IBM Workplace Managed Client 2.5
[X] 7 - Software prerequisites for IBM Lotus Workplace Web Content Management
    2.5

To select an item enter its number, or 0 when you are finished: [0]
0

Note: If you have purchased a license for Collaboration Services or Web Content
Management, you must run the Web Content Management installer after this
installation is complete.

Press 1 for Next, 2 for Previous, 3 to Cancel or 4 to Redisplay [1]

==> 1

3=Exit  F6=Print F9=Retrieve F12=Disconnect
13=Clear F17=Top  F18=Bottom F21=CL command entry
```

Figure 4-21 Information about installing Web Content Management

9. You see the software license agreement (Figure 4-22), which you can view, accept, or decline. Read the license agreement, type option 1, and press Enter to accept the license agreement and continue with the installation process.

```
QSH Command Entry

This Agreement includes Part 1 - General Terms, Part 2 -
Country-unique Terms (if any), License Information, and
Proof of Entitlement and is the complete agreement between
You and IBM regarding the use of the Program. It replaces
any prior oral or written communications between You and
IBM concerning Your use of the Program. The terms of Part 2
and License Information may replace or modify those of Part
1. To the extent there is a conflict between the terms of

Press Enter to continue viewing the license agreement, or, Enter 1 to
accept the agreement, 2 to decline it or 99 to go back to the previous
screen.

===> 1

F3=Exit  F6=Print F9=Retrieve F12=Disconnect
F13=Clear F17=Top  F18=Bottom F21=CL command entry
```

Figure 4-22 Software License Agreement

10. The location where the Workplace Collaboration Services product will be installed is displayed (Figure 4-23). Press Enter to start the product install.

```
QSH Command Entry

>

-----
IBM Workplace is ready to install.

Summary:

Install location: /QIBM/ProdData/Workplace/WCS25

Press 1 for Next, 2 for Previous, 3 to Cancel or 4 to Redisplay [1]

===>
```

Figure 4-23 Product installation location

11.The Workplace Installer display now shows the progress of the Workplace Collaboration Services product installation (Figure 4-24).

```
QSH Command Entry

Install location: /QIBM/ProdData/Workplace/WCS25

Press 1 for Next, 2 for Previous, 3 to Cancel or 4 to Redisplay [1]
> 1

Installing IBM Workplace. Please wait...

|-----|-----|-----|-----|
0%       25%     50%     75%     100%
|||||||||||||

===>

F3=Exit  F6=Print F9=Retrieve F12=Disconnect
F13=Clear F17=Top  F18=Bottom F21=CL command entry
```

Figure 4-24 Installation progress indicator bar

12.After the installation is completed, a successfully installed message is displayed with the option to either configure a Workplace Collaboration Services server or to cancel (Figure 4-25). Type option 1 and press Enter to continue.

```
QSH Command Entry

|-----|-----|-----|-----|
0%       25%     50%     75%     100%
|||||||||||||||||||||||||||||||||

Creating uninstaller...

-----
IBM Workplace has been successfully installed on the system. Select Next to
configure an IBM Workplace Collaboration Services server or Cancel to exit.

Press 1 for Next, 3 to Cancel or 4 to Redisplay [1]

===> 1

F3=Exit  F6=Print F9=Retrieve F12=Disconnect
F13=Clear F17=Top  F18=Bottom F21=CL command entry
```

Figure 4-25 Confirmation of the Workplace Collaboration Services product installation

13. After the Workplace Collaboration Services product code is installed, you see a display like the example in Figure 4-26. Choose one of the following Workplace Collaboration Services server configuration options:

- **IBM Workplace setup wizard for i5/OS (recommended):** This option uses the IBM Web Administration for iSeries Create IBM Workplace wizard to configure a Workplace Collaboration Services server. This is *the recommended approach*.
- **Custom configuration:** This option requires additional manual steps to be completed for a Workplace Collaboration Services server configuration.

For some reason, if you must do a custom configuration, select Custom configuration and go to 4.4, “Custom configuration” on page 122, to configure a Workplace Collaboration Services server using the custom or manual configuration.

Press Enter to accept the default selection of IBM Workplace setup wizard for i5/OS.

QSH Command Entry

[X] 1 - IBM Workplace setup wizard for i5/OS (recommended):

The IBM Workplace wizard creates a production ready IBM Workplace instance. This wizard will help you create an IBM HTTP Server, create an IBM Workplace Collaboration Services server, create and configure DB2 schemas needed by IBM Workplace, and configure LDAP security.

[ ] 2 - Custom configuration:

The custom configuration option for IBM Workplace provides a means of creating an IBM Workplace Collaboration Services server that will use a Cloudscape database.

After the instance is created, use the database transfer tool to migr

Figure 4-26 Configuration options

14. At this point, a dependency checker is run to check if the correct products and required PTFs are installed on the iSeries server. If the dependency checker discovers any missing products or required PTFs from your iSeries server, you cannot continue. Then you see a display similar to the example in Figure 4-27.

You must install the listed PTFs or products before you continue with the configuration process.

```
QSH Command Entry

Press 1 for Next, 2 for Previous, 3 to Cancel or 4 to Redisplay [1]
> 1

-----
Prerequisites not found for launching the IBM Workplace setup wizard for i5/OS.
Correct the items below before launching the wizard.

PTF Group(s) not installed:  PTF Group: SF99099  PTF Group Level: 5

Press 3 to Cancel or 4 to Redisplay [3]

====>
F3=Exit  F6=Print F9=Retrieve F12=Disconnect
F13=Clear F17=Top  F18=Bottom  F21=CL command entry
```

Figure 4-27 Prerequisites not found display

15. In the final display (Figure 4-28), you see a URL link to the iSeries Create IBM Workplace wizard. Note that *localhost* is the name of your iSeries server. Open a Web browser and enter the URL that is provided. See 4.3, “Using the iSeries Create IBM Workplace wizard” on page 97, for step-by-step configuration details. Type option 3 and press Enter to complete the installation process.

```
QSH Command Entry

To select an item enter its number, or 0 when you are finished: [0]
> 0

Press 1 for Next, 2 for Previous, 3 to Cancel or 4 to Redisplay [1]
>

-----
Use the link below to launch the IBM Workplace setup wizard for i5/OS

http://localhost:2001/HTTPAdmin?entry=express.taskCreateWorkplace

Press 3 to Finish or 4 to Redisplay [3]

====> 3

F3=Exit  F6=Print F9=Retrieve F12=Disconnect
F13=Clear F17=Top  F18=Bottom  F21=CL command entry
```

Figure 4-28 URL for launching the IBM Workplace setup wizard for i5/OS

## 4.3 Using the iSeries Create IBM Workplace wizard

The iSeries Create IBM Workplace wizard is part of the IBM Web Administration for iSeries. It is used to configure a Workplace Collaboration Services server for a production ready environment. On the iSeries server, multiple Workplace Collaboration Services servers can be configured and run at the same time depending on the hardware resources that are available. Each Workplace Collaboration Services server must have a unique name and have its own HTTP server, mail server, portal server, application server, and databases related to the specific server.

**Attention:** Trying to create more than one Workplace Collaboration Services server at a time can have adverse affects. We recommend that, if you require more than one server, then create one Workplace Collaboration Services server at a time and wait until one server is created before you start to create another.

### 4.3.1 Configuring a Workplace Collaboration Services server on iSeries

We recommend that you complete the configuration of each Workplace Collaboration Services server by using the iSeries Create IBM Workplace wizard. The wizard gives you a production ready, working Workplace Collaboration Services environment. While it is possible to manually configure a Workplace Collaboration Services server using the custom configuration, the manual method is more complex and potentially error prone.

To configure a Workplace Collaboration Services server:

1. Start the iSeries HTTP Administration Server by using one of the following options if it is not already started:
  - From iSeries Navigator, click **Network** → **Servers** → **TCP/IP**. Right-click **HTTP Administration** and then click **Start**.
  - From an i5/OS command line, type the following Start TCP/IP Server (STRTCPSVR) command:  

```
STRTCPSVR SERVER(*HTTP) HTTPSVR(*ADMIN)
```
2. Open a Web browser and start the IBM Web Administration for iSeries by entering the following URL where *iSeriesHostName* is the fully qualified host name of your iSeries server:  

```
http://iSeriesHostName:2001
```
3. You are prompted to log on to IBM Web Administration for iSeries. The i5/OS user profile must have at least the special authorities of \*ALLOBJ, IOYSCFG, and \*JOBCTL to configure a Workplace Collaboration Services server.

**Note:** If you want the iSeries Create IBM Workplace wizard to create a database owner user profile for the Workplace Collaboration Services server databases, you also need \*SECADM authority.

4. From the iSeries Tasks window, click **IBM Web Administration for iSeries**.
5. On the IBM Web Administration for iSeries page (Figure 4-29) that opens, click the **Setup** tab.

The iSeries Create IBM Workplace wizard guides you through a series of steps that prompt you for information required to configure a Workplace Collaboration Services server. When you start the wizard and then decide to stop part-way through, all

information is lost because the wizard does not save any information until you click the Finish button. At the point where you click Finish, the configuration process starts.

**Important:** If you plan to install the IBM Workplace Managed Client in your Workplace environment at the same time as the wizard is run, follow the steps in 6.3, “Deploying the IBM Workplace Managed Client” on page 266, before you continue.

6. On the IBM Web Administration of iSeries page, one of the first features you should use is the (i) information link, which is to the right of the Create a New IBM Workplace environment link in the right panel of the Web browser. This link takes you to a page where you can find the list of the latest PTFs that are required, news, and so on.

Click **Create IBM Workplace** in the left panel or click **Create a New IBM Workplace environment** in the right panel (Figure 4-29).

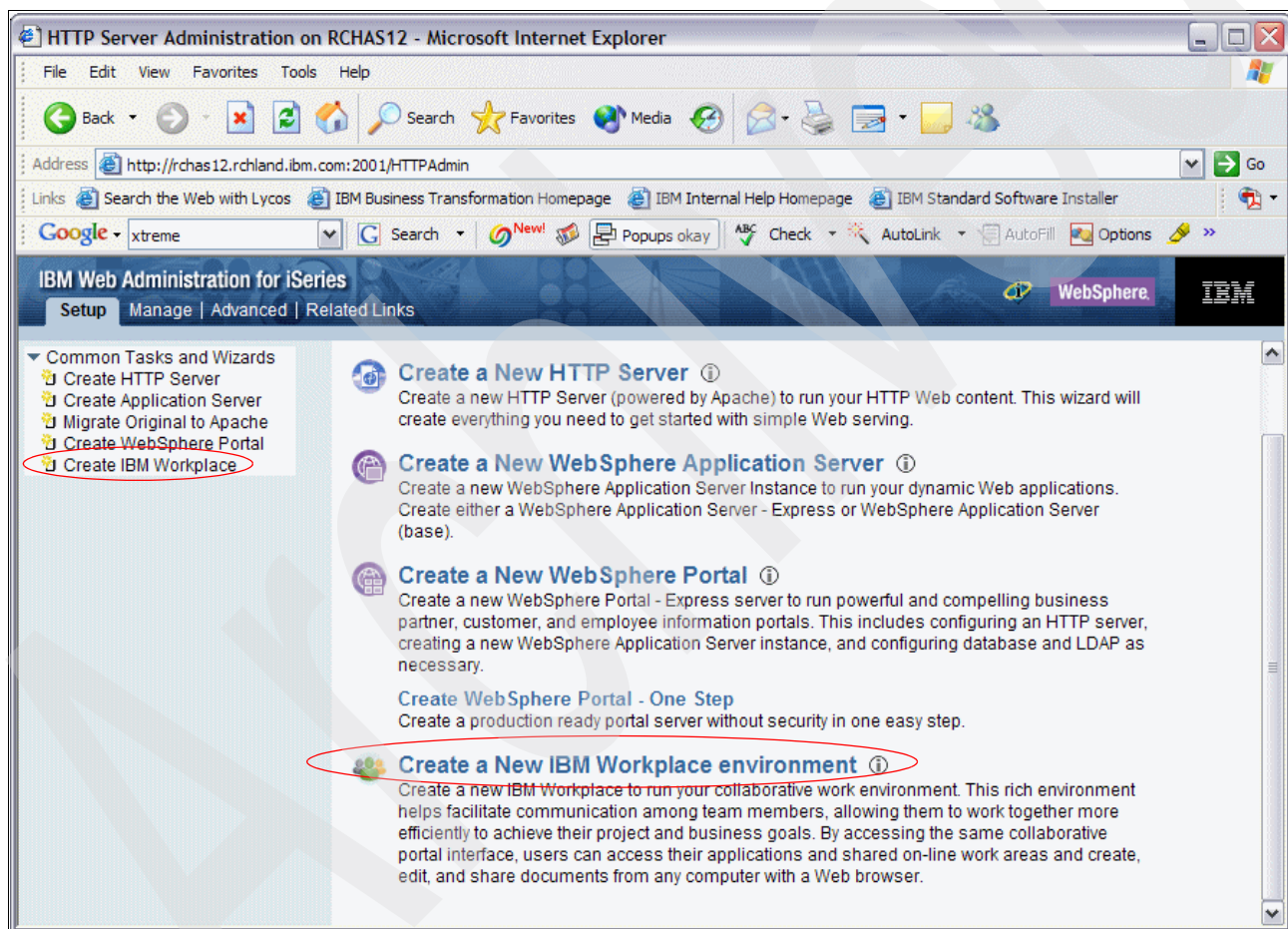


Figure 4-29 IBM Web Administration for iSeries, Setup tab



7. An informational panel (Figure 4-30) is displayed that describes the technologies that are used to make create the Workplace environment. Although you do not have to directly interact with these technologies when using this wizard, we recommend that you read this section to make sure that you are aware of what is being used. Click **Next** to continue.

**Attention:** Do not resize the Web browser window when using the wizard. Otherwise you return to the start again and all of the information that you entered is lost. Also, disable any pop-up blockers.

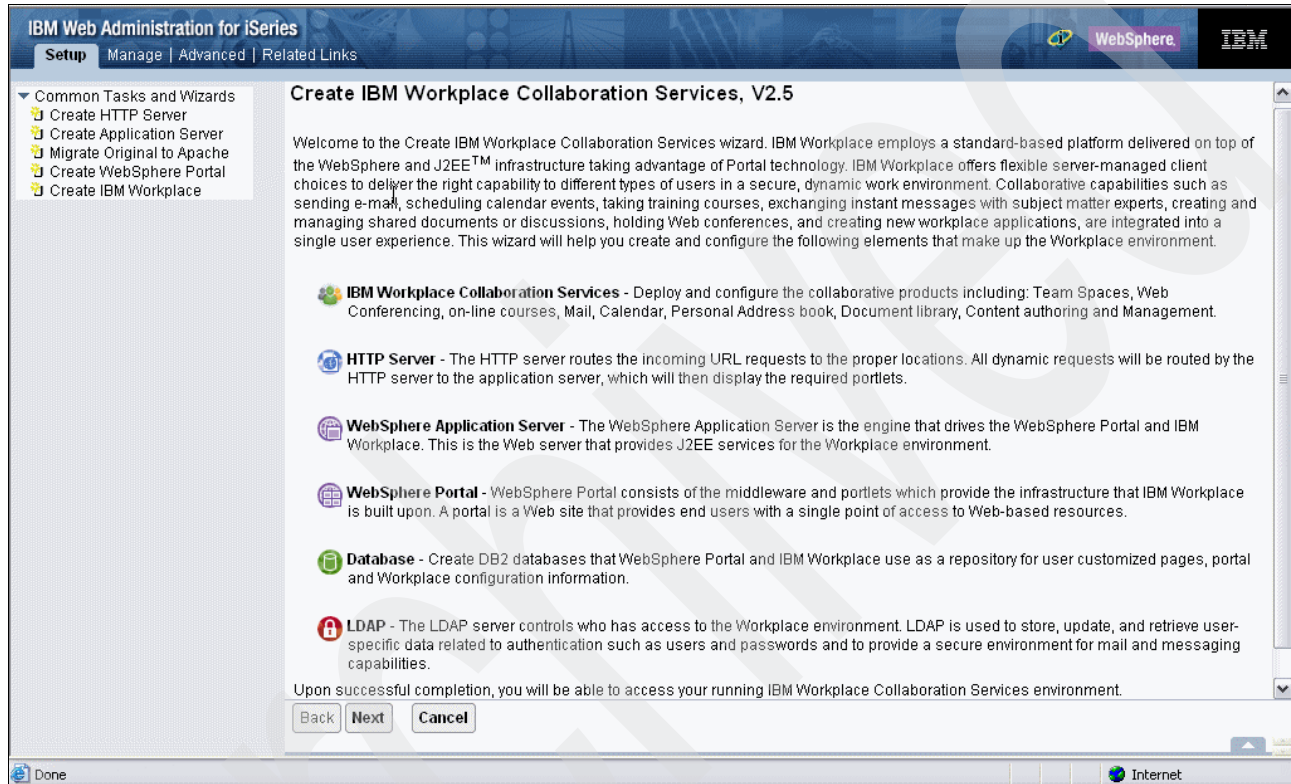


Figure 4-30 Create IBM Workplace wizard

8. If you have multiple versions of Workplace code installed, or you have Workplace Services Express installed, the wizard prompts you to select which Workplace product you want to create a server of (Figure 4-31). Select **IBM Workplace Collaboration Services V2.5** and click **Next**.

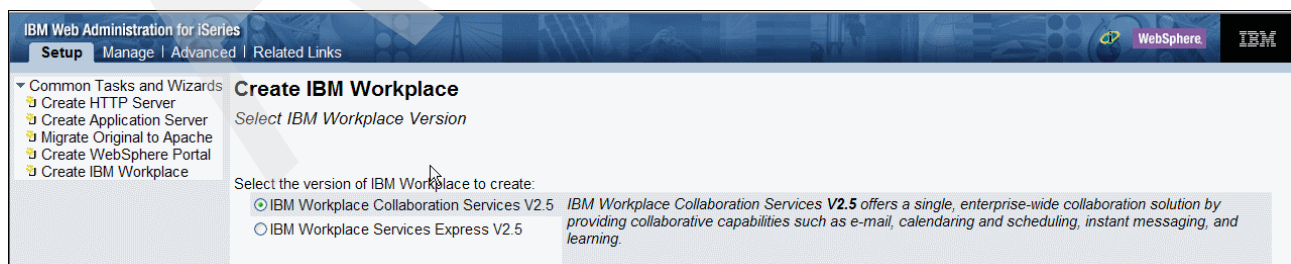


Figure 4-31 Selecting the IBM Workplace product and version to configure

9. At this point, a dependency checker is run to verify that the correct products and PTFs are installed on your iSeries server. You are not allowed to continue if these prerequisites are not met. If the prerequisites are not met, you see a panel similar to the one in Figure 4-32.

**Note:** The dependency checker is based on the IBM HTTP Server licensed program 5722-DG1. We recommend that you install the latest PTF group for this product (SF99099 for V5R3). Then any updated PTFs required for Workplace Collaboration Services are highlighted by the wizard, and you must install them before continuing.

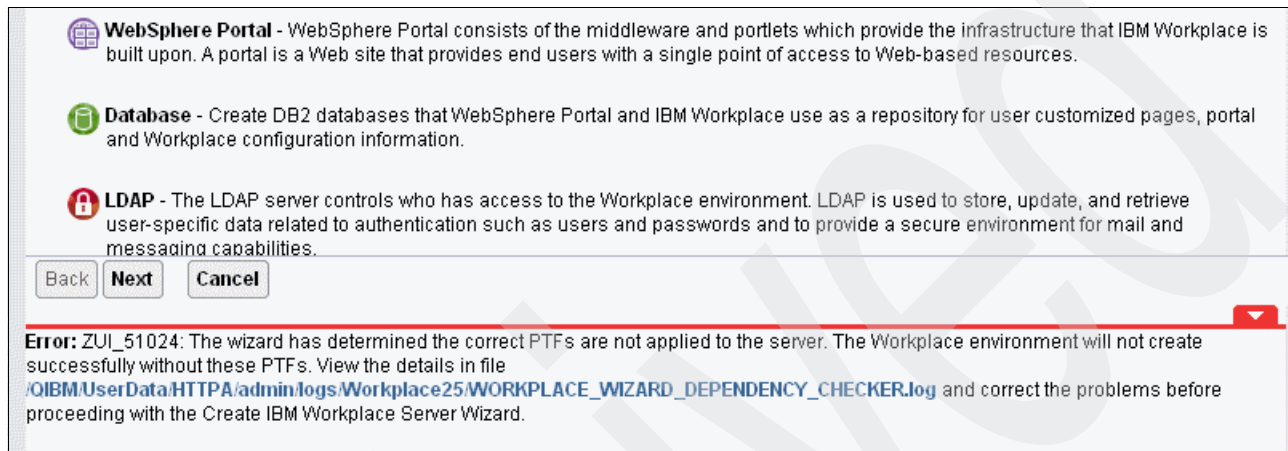


Figure 4-32 Dependency checker error message

If you click the hot link in the error message, a separate window opens with the log information as shown in Figure 4-33.

```
#####
#
# IBM Workplace 2.5.x PTF Requirements File
#
# This file records individual and PTF group information that
# may affect the ability for IBM Web Administration for iSeries
# to create Workplace servers. If this file contains any
# errors, there are PTFs that are missing from this system (or
# there are special PTFs applied on this system) that will not
# allow a workplace server to be successfully created. The IBM
# Web Administration for iSeries interface cannot be used to
# configure an IBM Workplace server until the errors have been
# fixed. If this file contains warnings, an IBM Workplace
# server can still be created although potential PTF issues may
# be encountered.
#
# File created: 05-05-2005 14:20:35
#
#####
**** START OF INDIVIDUAL PTF INFORMATION FOR THIS ISERIES ****
-----
ERROR: This PTF, or a superseding PTF, is not applied on your system. This PTF
is required by IBM Workplace.
PTF ID: S117053 Product ID: 5722SS1 Release: V5R3M0
-----
ERROR: This PTF, or a superseding PTF, is not applied on your system. This PTF
is required by IBM Workplace.
PTF ID: S117274 Product ID: 5722SS1 Release: V5R3M0
-----
***** END OF INDIVIDUAL PTF INFORMATION FOR THIS ISERIES *****
***** END OF FILE *****
```

Figure 4-33 Dependency checker log

10. A unique default value is entered by the wizard for the WebSphere Application Server name that will host the Workplace Collaboration Services server (Figure 4-34). You can leave this as the default name or change it to a more meaningful name for your environment. This name must be unique because you cannot continue without a unique name. You can also add a description here.

Within this new Workplace Collaboration Services server, the following application servers are created:

- Server1, which is the default application server
- WebSphere\_Portal server, which supports the WebSphere Portal infrastructure
- Mail\_Server\_1, which runs the mail services and messaging related tasks

**Note:** At the time of writing this redbook, there was limit of 14 characters for the server name.

Another useful feature of the wizard is the help files. As shown in Figure 4-34, click the ? icon.

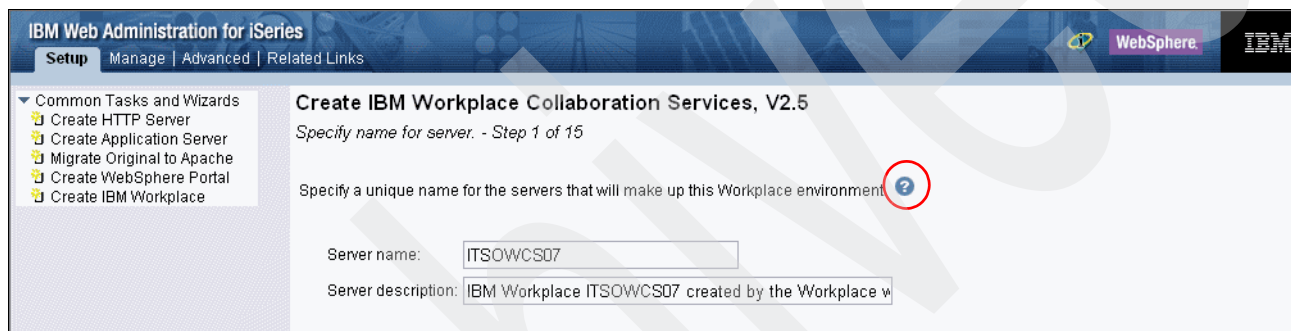


Figure 4-34 Defining the Workplace Collaboration Services server name and description

Then the help file opens for each particular step (Figure 4-35). Click **Next** to continue.

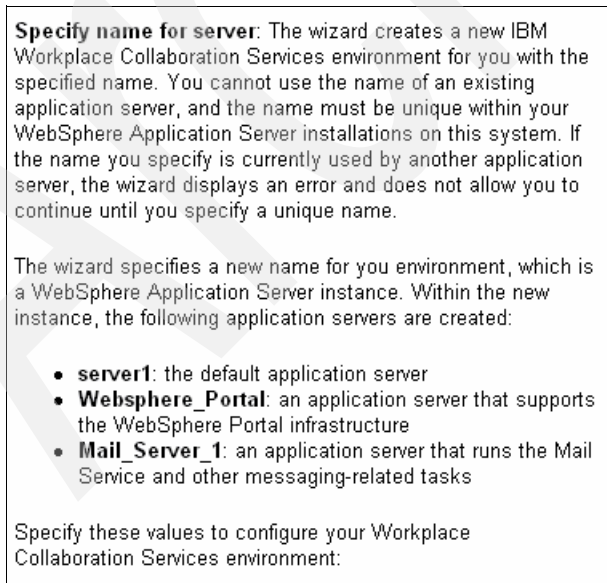


Figure 4-35 Help window for step 1

11. The Enable Workplace Collaboration Components panel (Figure 4-36) mirrors the selections that were made during the installation of the Workplace Collaboration Services product code (Figure 4-7 on page 84 or Figure 4-20 on page 92).

If a particular product was not selected during installation of the product code, it is unavailable in this panel. If it was selected during installation of the product code, it is displayed with a check mark next to it (Figure 4-36).

If you have a license for the IBM Workplace Managed client and followed the steps in 6.3, “Deploying the IBM Workplace Managed Client” on page 266, then the IBM Workplace Managed client can be deployed within this Workplace Collaboration Services server by the wizard and the option is selectable. Otherwise this option is unavailable.

**Important:** If you have a license for the IBM Workplace Managed client and have not installed the code on the iSeries server, install it now. Follow the steps in 6.3, “Deploying the IBM Workplace Managed Client” on page 266, and then return to step 6 on page 98.

Click **Next** to continue the configuration process.

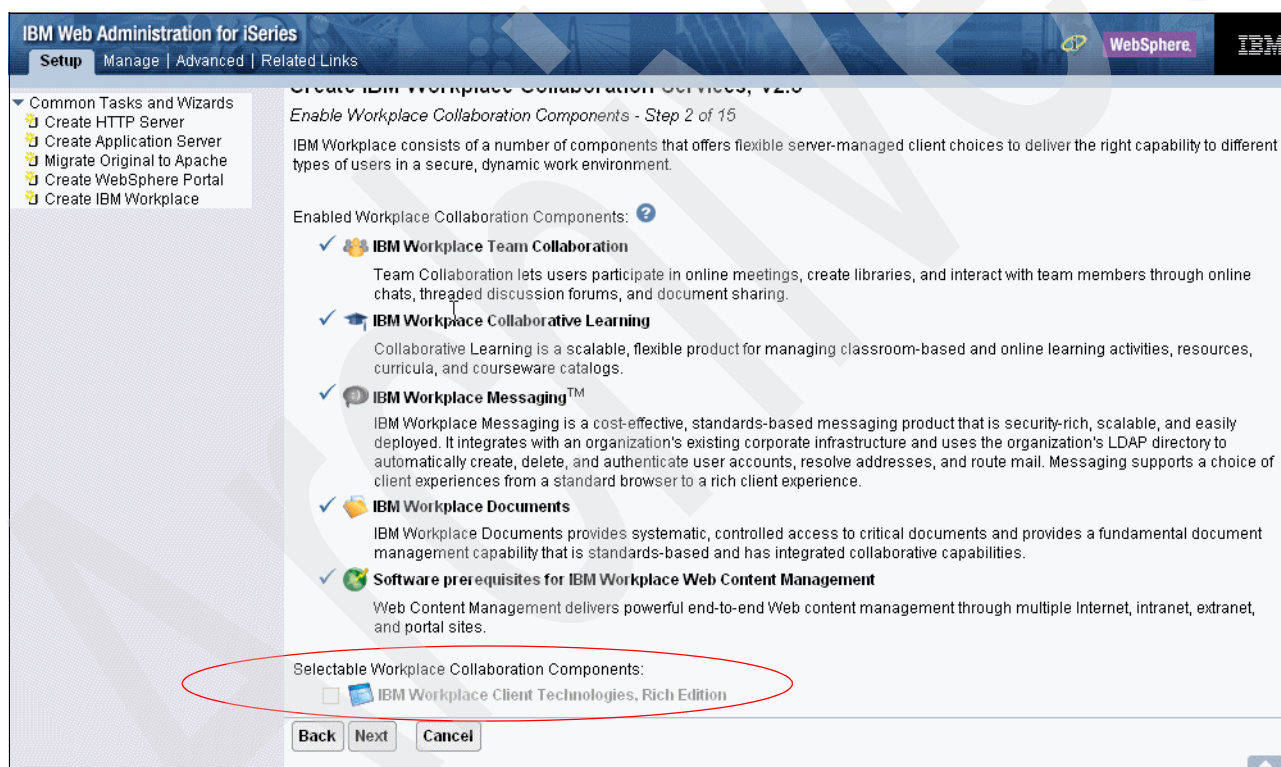


Figure 4-36 Enabling the Workplace Collaboration components

12. In the Specify Host Name for Workplace Environment panel (Figure 4-37), associate the Workplace Collaboration Services server with a host name that is already configured on the system. Click the drop-down list for Host name to see the fully qualified host names that are available and select one. These values must be in the iSeries server host table or on your Domain Name System (DNS) server.

**Note:** The fully qualified hostname entry must be entered first in the iSeries server host table or your DNS. If the fully qualified host name is not listed first, the wizard does not show the host name in the Host name drop-down list. Refer to 2.4.4, “Network requirements” on page 30, for more details.

**Tip:** If you modify the iSeries server host table after you start the wizard, the new entries are not available in the wizard. To update the available options, restart the wizard.

Click **Next** to continue.

**Create IBM Workplace Collaboration Services, V2.5**  
*Specify Host Name for Workplace Environment - Step 3 of 15*

Each Workplace environment requires an association with a dedicated host name value. It is recommended that TCP/IP be configured such that your host name value is fully qualified and defined in your DNS.

Select the host name for this IBM Workplace: ?

Host name: Select one

- Select one
- ITSOWCS07.RCHLAND.IBM.COM
- ITSOWCS08.RCHLAND.IBM.COM
- RCH55D1.RCHLAND.IBM.COM

Figure 4-37 Selecting the fully qualified host name for the Workplace Collaboration Services server



13. After you select the host name, you see the ports that are required for use by Workplace Collaboration Services (Figure 4-38). If any of these ports are already bound to another service on the host name that you selected, a warning message is displayed. If this happens, check that any services running on these ports on your iSeries server are bound to a specific host name rather than to all host names. Also make sure that no services are bound to the required ports on the host name that you selected.

To see which ports are currently in use on your iSeries server, you can use the Work with TCP/IP Network Status (NETSTAT) CL command, option 3 (Work with TCP/IP connection status), to view the ports in use.

**Note:** The NETSTAT command only displays ports that are bound at the time when the command is issued. If servers are stopped, the ports that they use are not displayed.

You also have the option to select POP3 and IMAP. If you do not require these services, clear the check boxes. Verify that no errors are displayed in the lower pane and click **Next** to continue.

**Create IBM Workplace Collaboration Services, V2.5**  
*Specify Host Name for Workplace Environment - Step 3 of 15*

Each Workplace environment requires an association with a dedicated host name value. It is recommended that TCP/IP be configured such that your host name value is fully qualified and defined in your DNS.

Select the host name for this IBM Workplace: ?

Host name:

The following ports will be bound to the selected host name:

Activate service	Service name	Unsecured and Secure Port value	Service description
<input checked="" type="checkbox"/>	SIP	5060 - TCP	Session Initiated Protocol - a protocol used for Internet conferencing and instant messaging.
<input checked="" type="checkbox"/>	SMTP	25 - TCP	Simple Mail Transfer Protocol - a protocol used to send e-mail between servers.
<input checked="" type="checkbox"/>	POP3	110 - TCP	Post Office Protocol - a protocol used to retrieve e-mail from an e-mail server.
<input checked="" type="checkbox"/>	IMAP	143 - TCP	Internet Message Access Protocol - a protocol used to retrieve e-mail from an e-mail server.

Figure 4-38 Ports required by the Workplace Collaboration Services server

14. If any of the protocols are in use, then you see a warning message similar to the one shown at the bottom of Figure 4-39. In our example, a red warning triangle is displayed for the SMTP service next to 25-TCP, indicating that this port is in use. Although you are allowed to continue, click the **Click here for more information** hyperlink at bottom of the window to determine how to resolve the problem. We recommend that you resolve any problems listed here before you configure the Workplace Collaboration Services server.

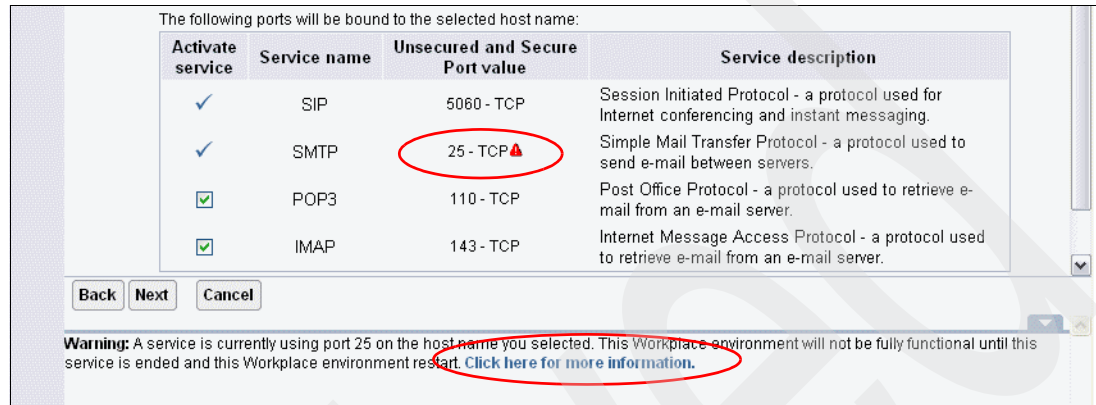


Figure 4-39 Port in use warning message

15. The Workplace Messaging settings are now configured as shown in Figure 4-40. The e-mail domain name by default is set to the previously selected fully qualified host name. If additional values are required, click **Add**.

You can also add DNS server information here. By default, the DNS server of the iSeries server is used. To specify your company's domain name server, click **Add** at the bottom of the panel and enter your DNS information of host name or IP address.

An example of when you may want to change these settings is if an existing infrastructure is in place for one company. If this company merges with another company, you then add DNS settings or IP addresses of DNS servers that resolve the names and addresses and provide Mail Exchange (MX) attributes for the new company. For SMTP inbound connection filters to work, a DNS server must be provided.

After you add any messaging or DNS values, click **Next**. You can change these values at a later date by using the WebSphere Application Server Administrative Console.

**Create IBM Workplace Collaboration Services, V2.5**  
*Configure IBM Workplace Messaging - Step 4 of 15*

Workplace Messaging allows users to send and receive e-mail messages, maintain and manage calendar events, schedule meetings, and maintain and manage contact information for people and for group mailing lists.

Specify the domain value for your company's e-mail domain name. Additional mail service domains that you wish to be considered local may also be specified. ?

Specify e-mail domain names:

E-mail domain names	
Inherited	ITSOWCS07.RCHLAND.IBM.COM

Add

Domain Name Servers (DNS) maintain lists of known domain names, IP addresses, and Mail Exchange (MX) attributes. Domain names (e.g., hostname.com) are more easily remembered by people, whereas IP addresses (e.g., 1.2.3.4) are understood by machines and is what is used by the Internet. Therefore, DNS systems are used to translate domain names into their corresponding IP addresses as well as determine how to route mail addressed for domain names based on the MX attributes.

Specify one or more Domain Name Servers used by your company:

DNS server name	
Example	hostname.com
Example	1.2.3.4

Add

Back Next Cancel

Figure 4-40 Defining the mail domain parameters



16. As shown in Figure 4-41, you can set several general mail settings for the mail cell:

- *Junk mail filter*: Allows the automatic filtering of junk e-mail. If No is selected, junk e-mail must be filtered and deleted manually.
- *Empty trash/Junk mail folder every*: Specifies how long you want to keep trash and junk mail. The default retention period is 6 days.
- *Maximum outbound SMTP message size*: Defines the maximum message size for outbound mail. The default value is 2000 KB. Set to No Limit if no size restrictions are required.
- *Maximum inbound SMTP size*: Defines the maximum message size for inbound mail. The default value is 2000 KB. Set to No Limit if no size restrictions are required.

You can set the following messaging attributes for the default mail user policy:

- *Mail account size*: Sets the maximum size a mail file can grow to. The default size is 60 MB.
- *Automatically create mailboxes*: Mailboxes can be created automatically for users who have entries in the container selected as the User Parent distinguished name (DN). If No is selected, the administrator must create the mailboxes manually.

Click **Next** to continue with the configuration process.

**Create IBM Workplace Collaboration Services, V2.5**  
Configure IBM Workplace Messaging - Step 5 of 15

Workplace Messaging allows users to send and receive e-mail messages, maintain and manage calendar events, schedule meetings, and maintain and manage contact information for people and for group mailing lists.

The following messaging attributes may be specified for the Mail Cell: ?

Junk mail filter:  ▼

Empty trash/junk mail folder every:  Days ▼

Maximum outbound SMTP message size:  Kilobytes ▼ or... ▼

Maximum inbound message size:  Kilobytes ▼ or... ▼

The following messaging attributes may be specified for Mail 'Default User Policy'

Mail account size:  Megabytes ▼

Automatically create mailboxes:  ▼

Figure 4-41 Defining additional mail parameters

17. Several servers are created by the wizard. Within each server is a number of services that are run, with each one needing to be on a unique port. Some examples include HTTP transport service, SOAP service, name service, and a number of other services that are needed to perform processing. You must provide a port block range of 100 successive ports that are free across all TCP/IP addresses on the iSeries server.

The iSeries Create IBM Workplace wizard suggests a default value (Figure 4-42). Unless you have a specific reason to do otherwise, use this default. If you enter a different value, the wizard checks to see if this 100 port range is free. The wizard then assigns ports to each internal service. For example, if you used port 30700 as the first port, the wizard configures all ports from 30700 to 30799.

For a complete listing of all the internal port assignments, see Appendix B, “IBM Workplace Collaboration Services ports” on page 515.

**Note:** To view ports that are in use on the iSeries server, you can use the Network Status (NETSTAT) CL command, option 3.

After you enter the first port in port block range, click **Next**.

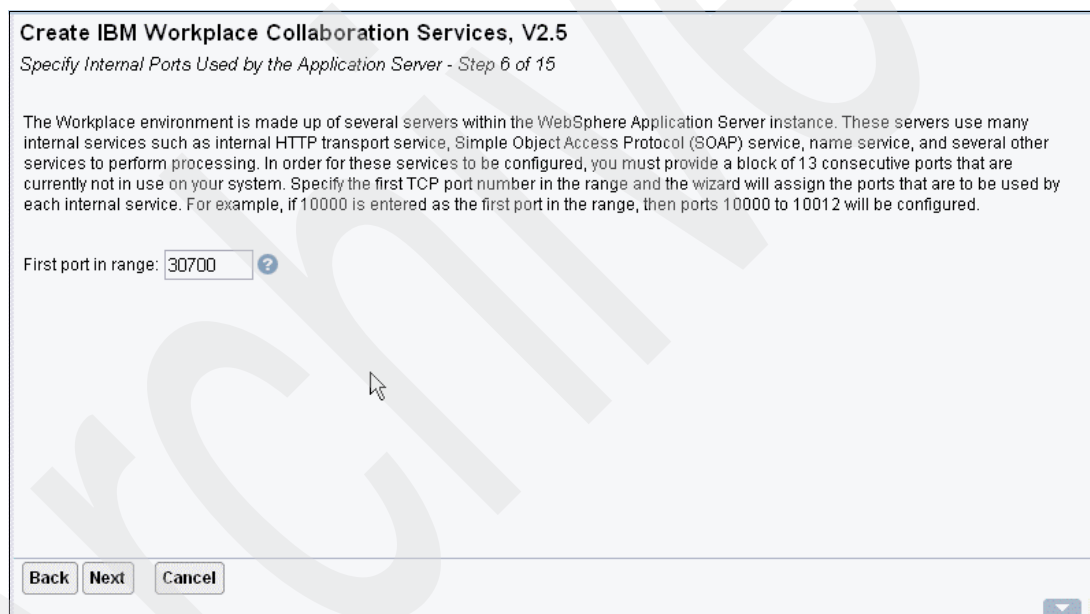


Figure 4-42 Defining port block range for the Workplace Collaboration Services server

18. To successfully run a Workplace Collaboration Services server, an HTTP Server (powered by Apache) must be associated with the application server. The HTTP server routes URL requests to the application server. By default, the HTTP server name is the same as the Workplace Collaboration Services server name. You can change this name if required, but you cannot use an existing HTTP server.

The TCP/IP address and port number must also be specified here. If you are planning to use port 80, make sure that any servers that use port 80 are bound to a specific IP address. If port 80 is not in use or is bound to specific IP address, the port entered by default is port 80. However if port 80 is in use, the default port entered is the initial port block range that you specified plus 99. See Figure 4-43.

Click **Next** to continue.

**Create IBM Workplace Collaboration Services, V2.5**  
*Create a new HTTP server (powered by Apache) - Step 7 of 15*

The application server requires an association with a HTTP server. A new HTTP server (powered by Apache) will be created and configured to route the incoming URL requests to this application server. ?

HTTP server name:

HTTP server description:

Your HTTP server will listen for requests on a the IP address specified for the Workplace environment.

On which IP address and TCP port would you like your HTTP server to listen?

IP address/Hostname:

Port:

**Note:** Most browsers make requests to port 80 by default.

Figure 4-43 Creating the HTTP server

19. To create the DB2 Universal Database databases associated with a Workplace Collaboration Services server, a user ID must be associated with these databases with this user profile as the owner. It must be an i5/OS user profile. You can create a collection based on an existing user profile, create a new user profile, or create a new collection on a remote server. See Figure 4-44.

If you select an existing user, then this user must have a user profile with at least \*USER authority and maximum allowed storage set to No maximum. To create a new user, you must have \*SECADM authority, or this option is not displayed.

**Attention:** Be careful when choosing this user. After it is created, you cannot change it. We recommend that you create a new user ID for this role. See 2.4.1, “Installation and configuration user profiles” on page 27, for more information.

You also have the option of having the database names created based on the purpose or the Workplace Collaboration Services server name. Table 4-1 shows the names of the databases that are created based on either the purpose or server name. Numbers are appended to the end for each additional database for each Workplace Collaboration Services server that is created. For our example, the database names shown are based on Workplace Collaboration Services server name of ITSOWCS07.

Table 4-1 Database names for a Workplace Collaboration Services server

Databases based on purpose	Databases based on server name
Common database - LWPCOMM	Common database-ITSOWCS071
Learning server database - LWPLMS	Learning server database-ITSOWCS072
Delivery Server database - LWPLDS	Delivery Server database-ITSOWCS073
Messaging database - LWPMMSG	Messaging database-ITSOWCS074
Message Archive database - LWPARC	Message Archive database-ITSOWCS075
WebSphere Portal - PORTALDB	WebSphere Portal - ITSOWCS071

Click **Next** to continue.

Create IBM Workplace Collaboration Services, V2.5

Create DB2 Databases for Workplace environment - Step 8 of 15

IBM Workplace requires several databases to store customized portal information, settings, web pages and configuration information for the Workplace environment. The DB2 databases can be created on this local i5/OS server or on a remote i5/OS server to be used by this Workplace. See the summary page for the names of the schemas to be created.

The databases being created need to be owned by an i5/OS user ID. It is recommended that a special user ID be specified whose only purpose is to own the database. This prevents the database from being associated with a specific user whose user ID may be removed in the future. This specified user ID must have a password associated with it. Using a User ID named 'WPSDBUSER' is recommended.

Specify where to create the collection, schema, or library name to use for the databases: ?

☒ Create new collections on this local i5/OS server. Specify an existing user ID to own the databases

User ID: wpsdbuser

Password: .....

☐ Create new collections on this local i5/OS server. Create a new user ID to own the databases.

☐ Create new collections on a remote i5/OS server

Specify database naming method:

☒ Name databases based on their purpose. e.g. PORTALDB1, LWPMMSG1, LWPLMS1, ...

☐ Name databases based on the server name. e.g. ITSOWCS071,ITSOWCS072,ITSOWCS073, ...

BackNextCancel

Figure 4-44 Creating the DB2 Universal Database databases

20. You can allow the wizard to configure security using LDAP (recommended) to work with your Workplace Collaboration Services server, or you can select the option to not configure security with LDAP at this time (Figure 4-45).

If you choose the option not to configure security with LDAP at this time, WebSphere Member Manager is used to store user information. To switch to LDAP at a later time, you must use the manual configuration option to enable LDAP security. Refer to “Enabling security” on page 153.

If you want the wizard to configure security using LDAP, you must make sure that your LDAP server is configured and running. For more information about configuring LDAP to support a Workplace Collaboration Services server, see Chapter 3, “Preparing your directory server” on page 41.

To configure LDAP security (Figure 4-45):

- a. Select **Configure security using LDAP now (Recommended)**.
- b. In the LDAP server host name field, enter the fully qualified host name of your LDAP server.
- c. In the LDAP port field, enter the port to which your LDAP server is bound. Unless you specified a nonstandard port when setting up your LDAP server, this should be the default value of 389.
- d. Click **Next** to continue.

**Create IBM Workplace Collaboration Services, V2.5**  
Secure Application Server and Workplace Environment with LDAP - Step 9 of 15

Securing the IBM Workplace is critical for protecting your organization's resources. If selected, the wizard will configure security using LDAP for the Workplace environment, based on the following:

- Global security will be turned on for the application server.
- Access to an LDAP server will be required. This will be the repository of users and will provide security for the Workplace environment.
- The LDAP server must be active, and a user and password that can access the directory will need to be provided.
- The wizard will update the LDAP server with the application server and Workplace environment information, if necessary.
- Single Signon (SSO) will be configured for the application server.
- WebSphere Member Manager (WMM) and a look-aside database will be configured to store additional information for the users of IBM Workplace.

Specify security options for the Workplace environment: ?

☒ Configure security using LDAP now. (Recommended)

Specify LDAP server information:

LDAP server host name:  e.g. "hostname.domain.com"

LDAP port:

☐ Configure security using LDAP at a later time.

Figure 4-45 Specifying an LDAP server

21. Depending on the way in which you manage your LDAP directory, you may choose to give Workplace Collaboration Services write access to the LDAP directory or restrict it to read-only access. Write access allows Workplace Collaboration Services to create and update directory entries. This allows users to create new Workplace Collaboration Services accounts for themselves and to update their account details. This is the best method to use if you do not plan to use the LDAP directory other than for Workplace Collaboration Services and if you are the administrator of the LDAP server.

**Note:** It is easier to configure a Workplace Collaboration Services server to work with your LDAP directory if you give the server write access to the LDAP directory.

Read-only access is the best method to use in the following situations:

- You want to manage the LDAP directory independently of Workplace Collaboration Services.
- You do not want to allow users to update their profiles or to create profiles for themselves.
- You do not manage the LDAP server that you are using for Workplace Collaboration Services user information.

For more information about read/write access versus read-only access, refer to 3.2, “Read/write or read-only access to the directory server” on page 44.

If you want to give Workplace Collaboration Services *write access* to your LDAP directory:

- a. Select **Allow write access to the LDAP directory** (Figure 4-46).
- b. In the LDAP user DN field, enter the DN of an LDAP user that has write permissions on the containers that you will use to store user and group information.
- c. In the LDAP user password field, enter the password for this LDAP user.

LDAP Configuration Parameters - Step 10 of 15

Security for the Workplace environment can be configured with write access or read-only access to the LDAP directory information. Write access allows the Workplace server to update and manage user information. Read-only access will not allow the Workplace server to update user information in the LDAP directory.

Specify the access method: ?

☒ Allow write access to the LDAP directory.

Specify an LDAP user DN that has write access to the LDAP directory. The LDAP administrator value is recommended.

LDAP user DN:  e.g. cn=admin

LDAP user password:

☐ Allow read-only access to the LDAP directory.

Back Next Cancel

Figure 4-46 LDAP configuration parameters

If you decide to provide *read-only access* to your LDAP directory:

- a. Select **Allow read-only access to the LDAP directory**.
- b. In the LDAP user DN field, enter the DN of an LDAP user that does *not* have write permissions on the LDAP directory.
- c. In the LDAP user password field, enter the password for this LDAP user.

**Note:** It is possible to give your Workplace Collaboration Services server write access to the LDAP directory and still prevent users from creating their own user profiles. See “Removing the Sign up link” on page 530, for details.

After you enter the appropriate information, click **Next**.

22. Workplace Collaboration Services requires containers in your LDAP directory to store user and group information. Specify the DN of the containers in your LDAP directory under which Workplace Collaboration Services users and groups will be stored (Figure 4-47). If they already exist, you can select them by clicking the **Browse** button.

If you are using an existing LDAP directory in read-only mode, these containers should already exist. At a minimum, they should contain a user and group to be assigned the administrator role in Workplace Collaboration Services.

If you are using an existing LDAP directory in read-write mode, you may use existing containers if the directory already contains information about the users that you want to provision for Workplace Collaboration Services.

If you are using a new LDAP directory, or if your LDAP directory does not already contain entries for the Workplace Collaboration Services users, you can specify the DN of new containers. These will be created automatically by the wizard during the process of creating a new Workplace Collaboration Services server provided you have read-write access to the LDAP directory.

Depending on the directory server that you are using, the default values for these containers vary:

- If you are using IBM Directory Server as the LDAP server for the Workplace Collaboration Services server, the parent DN for user information is typically:

`cn=users,DC=SERVER,DC=SUBDOMAIN,DC=DOMAIN,DC=TLD`

The parent DN for group information is typically:

`cn=groups,DC=SERVER,DC=SUBDOMAIN,DC=DOMAIN,DC=TLD`

In both of these examples, SERVER, SUBDOMAIN, DOMAIN, and TLD should be replaced with the appropriate sections of your iSeries server's fully qualified domain name.

The default values suggested by the iSeries Create IBM Workplace wizard should be appropriate in most cases (Figure 4-47).

**Create IBM Workplace Collaboration Services, V2.5**  
LDAP Configuration Parameters - Step 11 of 15

IBM Workplace utilizes LDAP to store user information for authentication purposes. Below is where the users and groups for the Workplace environment will reside in your LDAP directory.

Information describing user entries ?

Parent DN:

Object class:  ▼

Naming attribute:  ▼

Information describing the administrative group entry

Parent DN:

Object class:  ▼

Naming attribute:  ▼

Member attribute: uniqueMember

Figure 4-47 Specifying user, group containers when using IBM Directory Server as the LDAP server

- If you are using Domino as the LDAP server for this Workplace Collaboration Services server, the parent DN for user information is typically:  
*o=organization*

In this example, replace *organization* with the name of your Domino domain.

The parent DN for group information is typically the root of the Domino LDAP tree, which can be represented as *\*ROOT* in the Parent DN field. See Figure 4-48.

See Chapter 3, “Preparing your directory server” on page 41, for further details about setting up and populating your LDAP directory.

After you enter the required information, click **Next**.

**Create IBM Workplace Collaboration Services, V2.5**  
LDAP Configuration Parameters - Step 11 of 15

IBM Workplace utilizes LDAP to store user information for authentication purposes. Below is where the users and groups for the Workplace environment will reside in your LDAP directory.

Information describing user entries ?

Parent DN:

Object class:  ▼

Naming attribute:  ▼

Information describing the administrative group entry

Parent DN:

Object class:  ▼

Naming attribute:  ▼

Member attribute: member

Figure 4-48 Specifying user and group containers when using Domino as the LDAP server



23. In the next panel (Figure 4-49), you can enter details of the administrative user and group for your Workplace Collaboration Services server. Workplace Collaboration Services requires an administrative user and administrative group entry in the LDAP directory.

The administrative user has full access to Workplace Collaboration Services and WebSphere Application Server configuration settings. It is considered a best practice to have a dedicated entry in the LDAP directory for the administrative user and not to use this account for tasks other than administering the Workplace environment.

The administrative user is automatically added to the administrative group. If you need to give other users administrative access at a later time, you can do so by adding them to the administrative group which you specify here. Refer to Chapter 3, “Preparing your directory server” on page 41, for details about how to add users to your LDAP directory.

Enter the details of the administrative user and group and click **Next**.

Figure 4-49 Specifying an administrative user and group

24. If the local domain name is incorrectly set, an error message is displayed at the bottom of the panel as shown in Figure 4-50. You see the name of the Workplace Collaboration Services administrator together with the local domain that was specified previously. You can go back to step 15 on page 106 now and correct the domain, modify the user entry in the LDAP directory to correct the e-mail address, or configure the mail domain at a later time using the WebSphere Application Server Administrative Console.

Figure 4-50 Error message on incorrect mail domain for the administrative user

25. Single sign-on (SSO) is a mechanism that allows a single user to have sign-on action to provide authentication to multiple servers without re-authenticating when connecting to other servers than the one to which the user originally authenticated. Workplace Collaboration Services supports Lightweight Third Party Authentication (LTPA) for Web server access for SSO.

LTPA provides SSO to multiple Web servers and Web application servers. It is useful when your Workplace Collaboration Services server requires access to information from other servers, such as Domino, QuickPlace, Sametime, or WebSphere Application Server. You can configure LTPA SSO on the configuration page shown in Figure 4-51.

The SSO domain name parameter specifies which servers can be accessed within the SSO environment. If your Workplace Collaboration Services server does not require access to information from other Web servers, or if those servers are running on the same host name as your Workplace Collaboration Services server, limit the SSO domain to your server's host name by selecting the first option.

If your Workplace Collaboration Services server requires access to information from Web servers running on other hosts, select the second option. You can then specify the domain name that you want to use for SSO.

The SSO domain name parameter should be as qualified as possible while still including all servers that you want to give access to using SSO. For example, you have three servers:

- **Server 1:** server1.subdomain.domain.com
- **Server 2:** server2.subdomain.domain.com
- **Server 3:** server3.subdomain2.domain.com

To use SSO with server 1 and server 2, specify a domain name of subdomain.domain.com. This prevents server 3 from being included. To include server3, specify a domain of domain.com. This allows any server in domain.com and its subdomains to be configured for SSO.

**Note:** The domain parameter for LTPA SSO must be at least two elements long. The iSeries Create IBM Workplace wizard does not allow you to specify shorter domains.

After you enter the required information, click **Next**.

signon action permits access to multiple Web servers without the need to re-authenticate. The domain name identifies the Web servers that can be accessed within the SSO environment. SSO is useful when your Portal server needs to access information from other Web servers such as Domino, QuickPlace, Sametime, or WebSphere Application Servers.

- If your Workplace environment does not require information from other Web servers, the SSO domain should be limited to this Web server's host name.
- If your Workplace environment requires information from other Web servers, you will need to specify an SSO domain name. This domain name must be the portion of the fully qualified Domain Name System (DNS) host name that is shared by all Web servers participating in your SSO environment. When accessing any of the Web servers in the SSO environment, you will only need to authenticate one time.

Specify SSO domain: ?

☐ Limit SSO domain to this Web server's hostname

☒ Include other Web servers in your SSO environment

SSO domain name:  e.g. "domain.com"

Examples: Based on the following server hostnames, the corresponding SSO domain name would be:

Workplace	Additional server	SSO domain name
workplace.subdomain1.acme.com	sametime.subdomain1.acme.com	subdomain1.acme.com
workplace.subdomain1.acme.com	domino.subdomain2.acme.com	acme.com

Back Next Cancel

Figure 4-51 Web server SSO configuration

26. If you decide to include other Web servers in your SSO environment, you are prompted to enter a password to encrypt the LTPA keys with (Figure 4-52). In the LTPA password and Confirm password fields, enter a password and click **Next**.

**Create IBM Workplace Collaboration Services, V2.5**

Configure Lightweight Third Party Authentication (LTPA) for Web Server Single Signon (SSO) Environment - Step 14 of 15

Lightweight Third Party Authentication (LTPA) is the mechanism used to implement Web Server SSO. LTPA is a set of tokens or cookies which provide a means to share authentication and access control information between Web servers. The information in these tokens uniquely identifies the user. LTPA keys will be created by this application server. These keys must be exported from this application server and imported into the other application servers in your SSO environment. When importing these keys into the other application servers, a password is necessary to encrypt and decrypt the LTPA keys.

If you forget the LTPA keys password or need to change it, use the WebSphere Application Server Administrative Console. After changing the password, you will need to generate and export new LTPA keys and import these new keys into other application servers and into the SSO configuration for Domino servers.

LTPA password:  Important - Keep this for future reference ?

Confirm password:

Back Next Cancel

Figure 4-52 Specifying the LTPA password for SSO

27. In the Summary panel (Figure 4-53), you see details about the information that has been captured from the information that you entered and about other components such as the VNC server that will be configured. The Workplace Collaboration Services environment uses the VNC server or XVFB server, which is created by the wizard, to display documents in a standard format such as PDF. For more information, see 7.5.4, “X Virtual Frame Buffer versus Virtual Network Computing” on page 362.

This summary also includes other information about the database, server, security, Workplace components, Portal, messaging, and learning. It includes the ports used, names of components, mail addresses, and enabled products. For a full list of what is shown in the summary, see Appendix C, “Workplace Collaboration Services configuration summary” on page 519.

To keep a record of all the configuration parameters that you have chosen, the Summary panel gives you the opportunity to print a summary using the Printable Summary button. You can also obtain this information from the viewable summary after the wizard has completed.

After you review the information and verify that it is correct, click **Finish** to start the configuration of your Workplace Collaboration Services server.

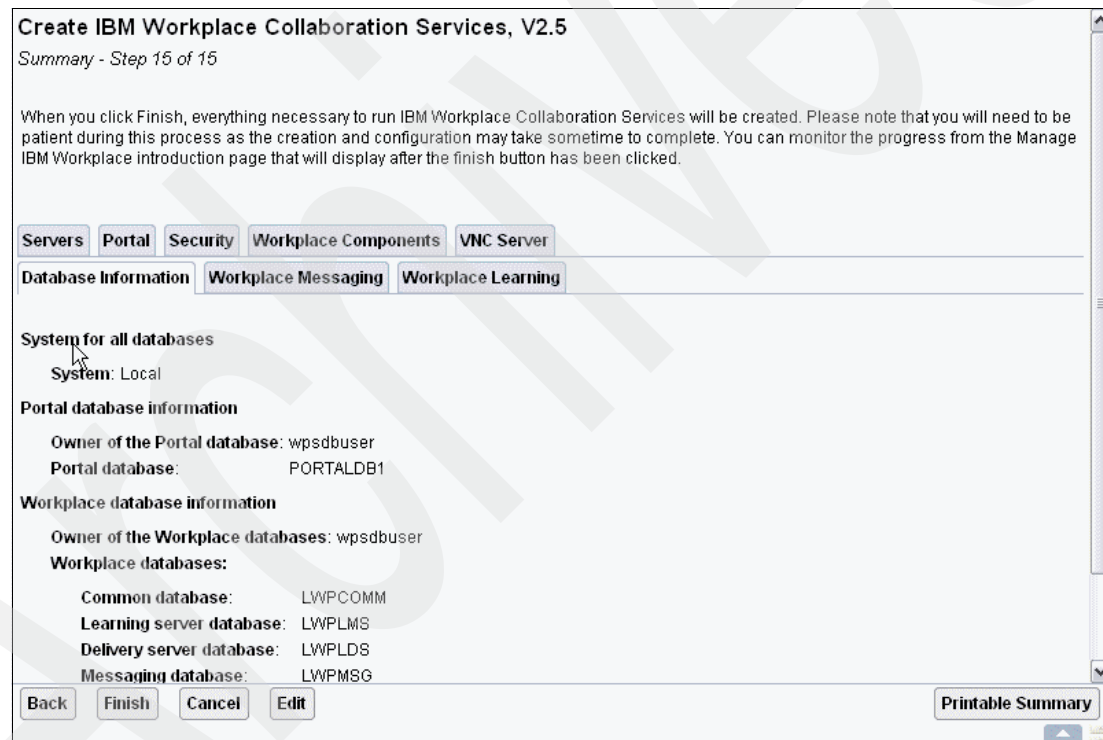


Figure 4-53 Workplace Collaboration Services server configuration summary

28. When the configuration wizard starts, a panel is displayed that gives a visual indication of all stages of the configuration process (Figure 4-54). The configuration process can take a long time. In our tests, it took three hours and 30 minutes to create a Workplace Collaboration Services server.

**Tip:** During the configuration process, you may close your Web browser and return to IBM Web Administration for iSeries to see how the configuration is progressing.

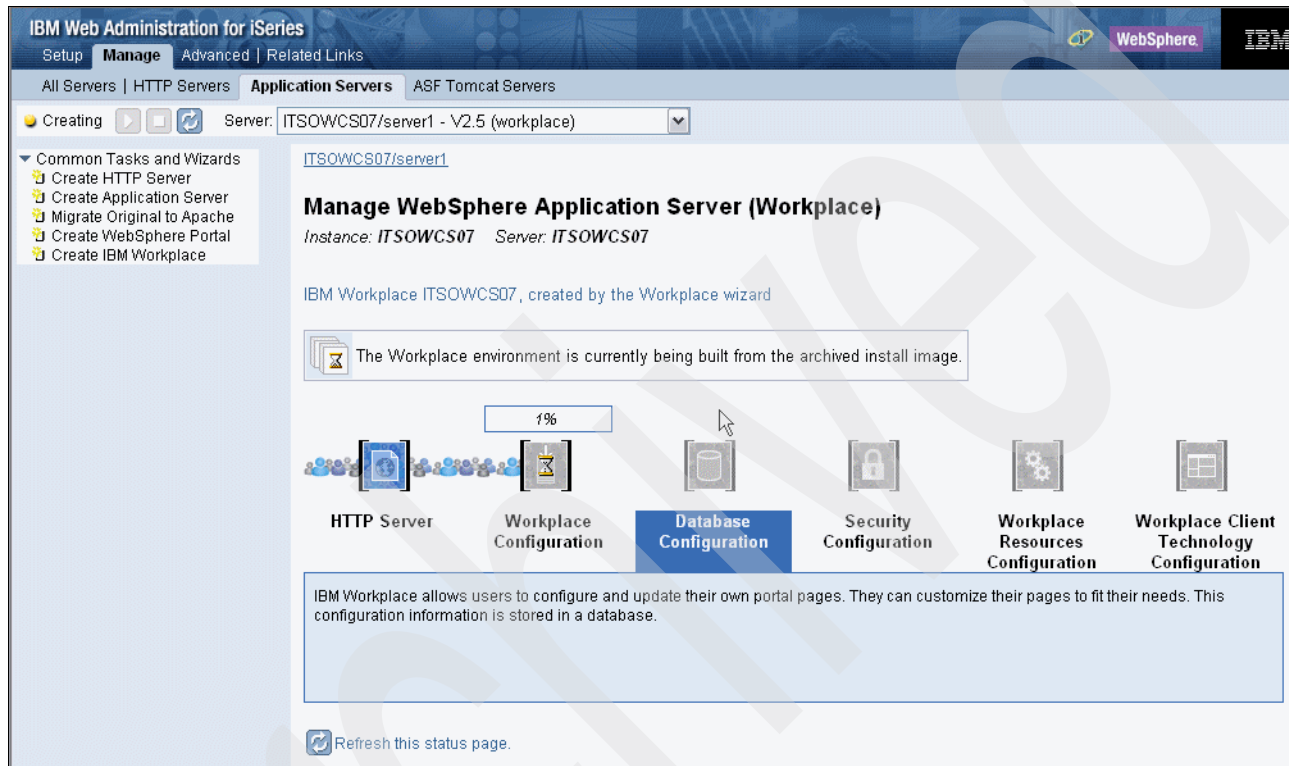


Figure 4-54 Workplace Collaboration Services server configuration progress indicator

29. After the Workplace Collaboration Services server is created using the wizard, it is started automatically. A URL link is also created that enables you to access your Workplace Collaboration Services server as shown in Figure 4-55. Click the link to access the Workplace Collaboration Services server.

**Note:** You can display all of your initial configuration options from the View Create Summary link located on the left navigation pane under the Problem Determination section.

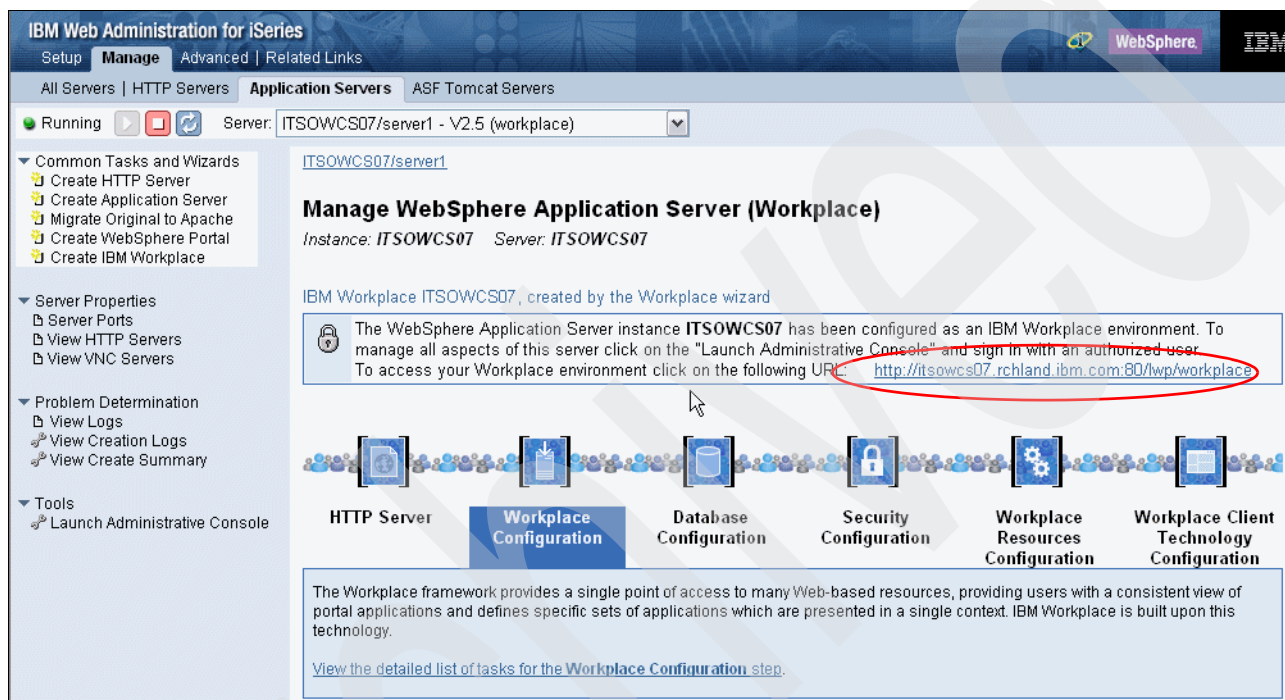


Figure 4-55 Workplace Collaboration Services server URL link

30. On the Workplace Collaboration Services server initial login page (Figure 4-56), click **Log in**.

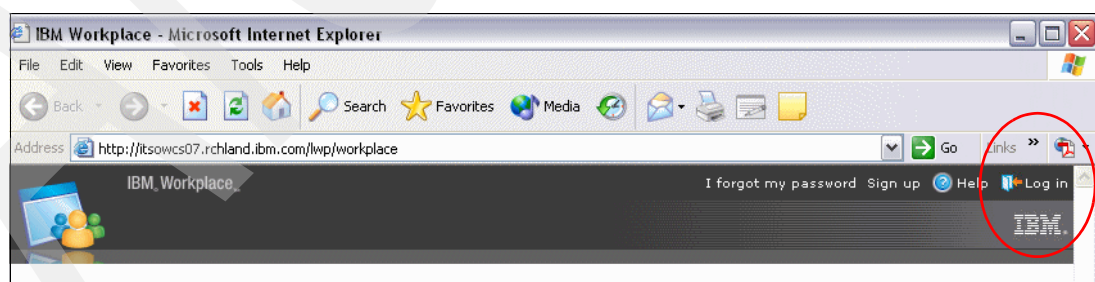


Figure 4-56 Workplace Collaboration Services server, initial login



31. Enter your user ID and password as stored in the LDAP directory and click the **Log in** button. See Figure 4-57.

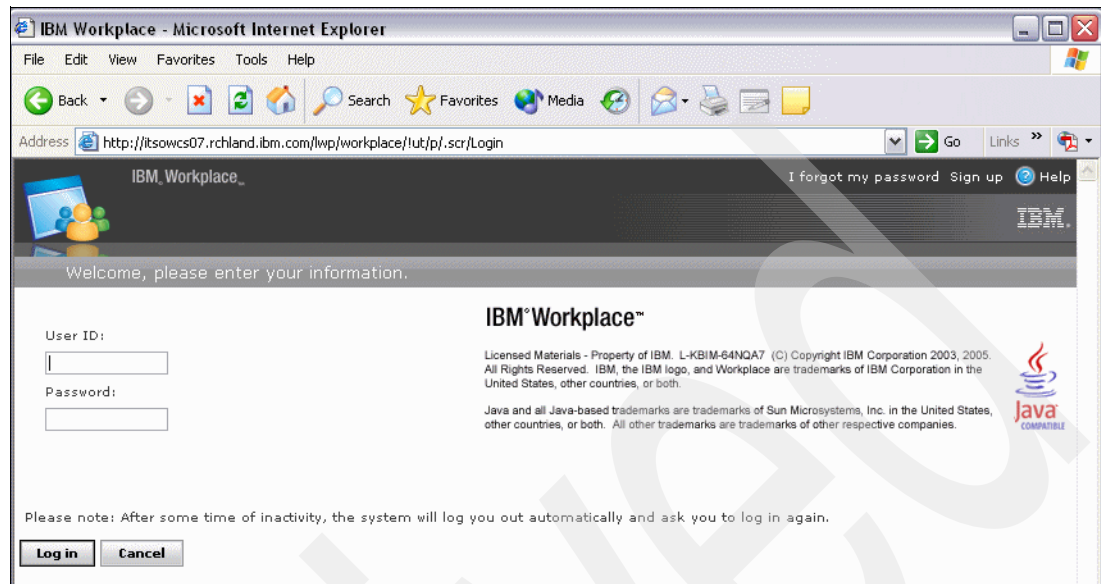


Figure 4-57 Logging in with a user name and password

The default IBM Workplace Collaboration Services Welcome page is displayed (Figure 4-58).

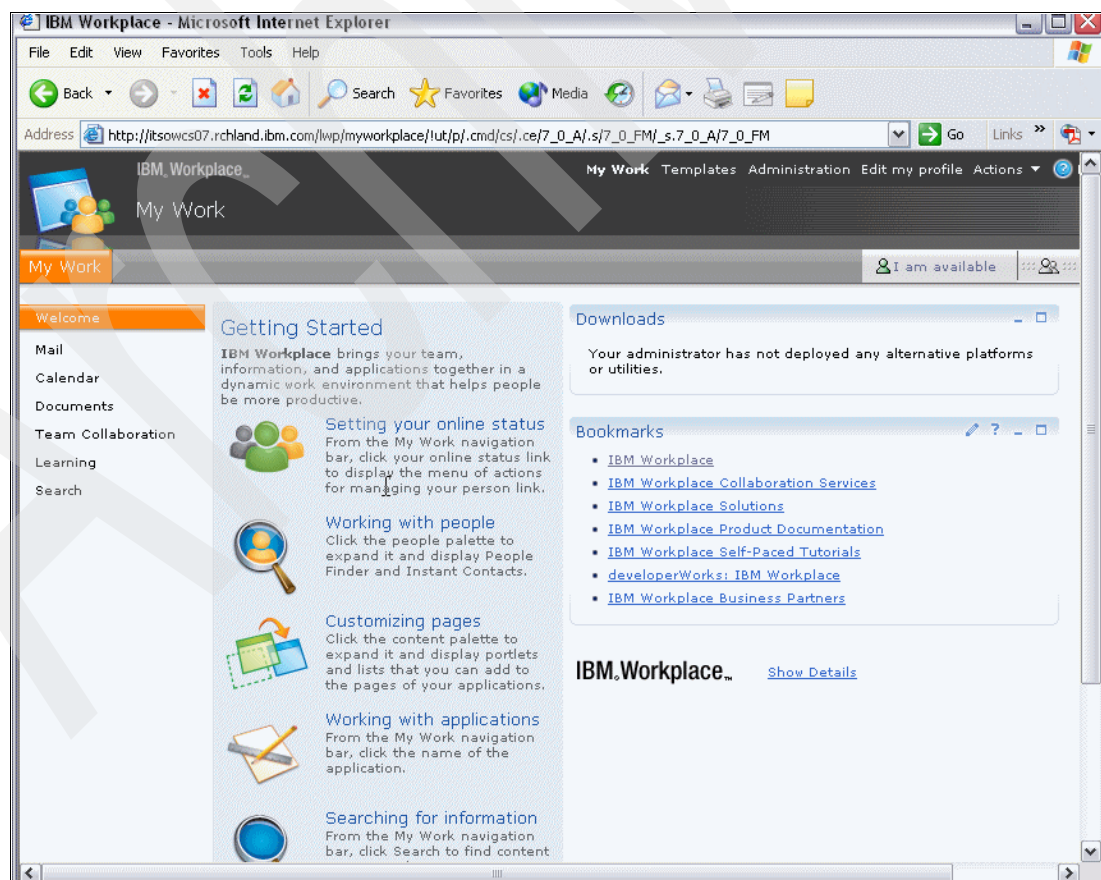


Figure 4-58 Workplace Collaboration Services default Welcome page

### 4.3.2 Initial testing and usage

After you successfully log into the Workplace Collaboration Services server, you should perform some basic tests, such as the following examples, to confirm the proper operation of the Workplace Collaboration Services server:

- ▶ Confirm presence awareness
- ▶ Compose a mail message and send it to yourself
- ▶ Create a teamspace
- ▶ Create a document library
- ▶ Create a Web conference
- ▶ Navigate to learning components

For details about administering your Workplace Collaboration Services server, refer to Chapter 5, “Administration” on page 197.

## 4.4 Custom configuration

In this section, we address the custom configuration options for an Workplace Collaboration Services 2.5 server on i5/OS.

**Attention:** We recommend that you complete the configuration of each Workplace Collaboration Services server on the iSeries server by using the IBM Web Administration for iSeries Create IBM Workplace wizard. See 4.3, “Using the iSeries Create IBM Workplace wizard” on page 97, for details. This method gives you a production ready, working Workplace Collaboration Services environment.

While it is possible to manually configure a Workplace Collaboration Services server using the custom configuration option, this custom method is more complex and potentially error prone. Only use the custom configuration unless absolutely necessary.

As shown in Figure 4-59, there are three custom configuration options:

- ▶ “Remote IBM Workplace Installer (install400.bat)” on page 124
- ▶ “Local console mode (install.sh)” on page 138
- ▶ “Local console mode (install.sh) with a custom response file” on page 145



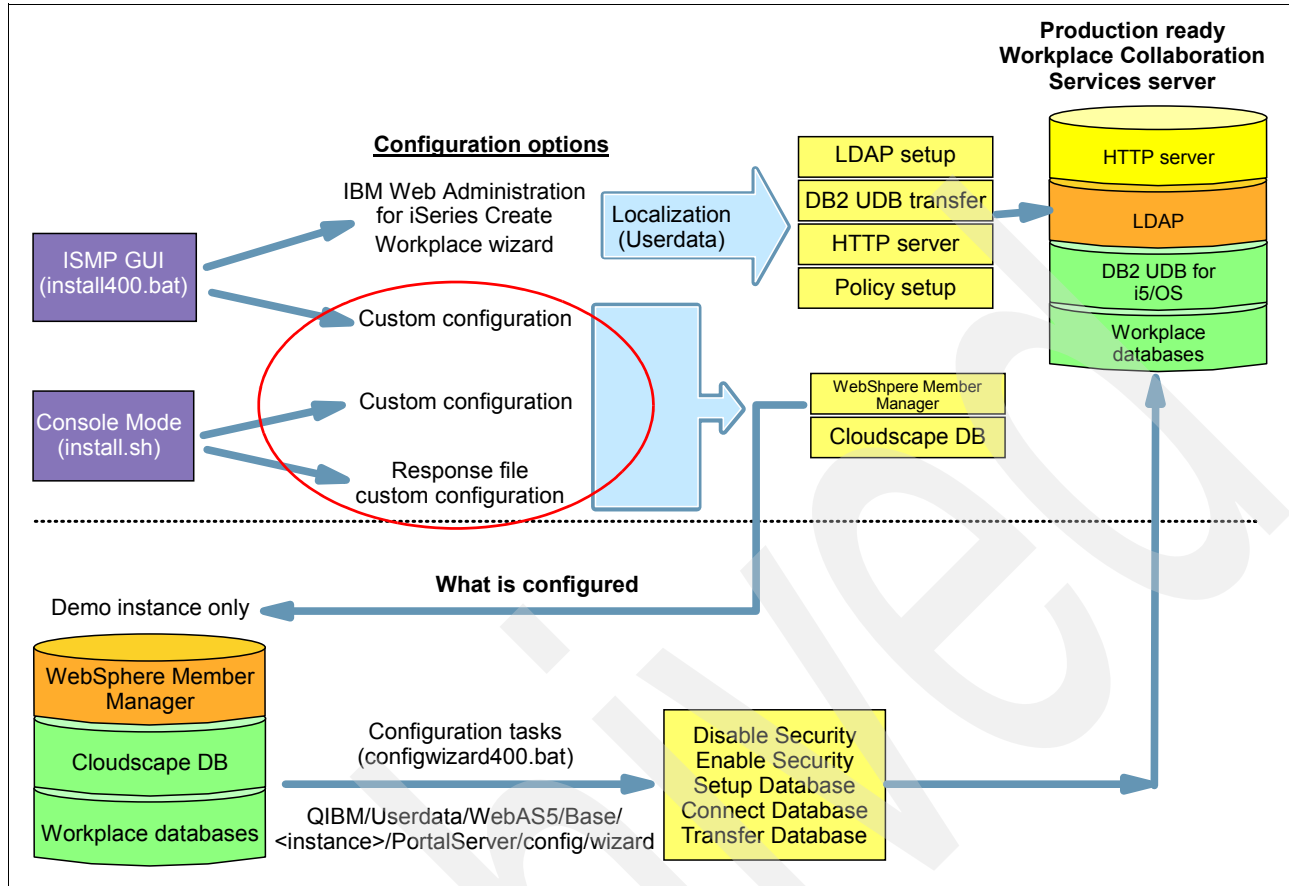


Figure 4-59 Custom configuration roadmap

After the initial custom configuration, you must manually configure the following servers and environments:

- ▶ Convert security from WebSphere Member Manager to LDAP.
- ▶ Transfer data from the IBM Cloudscape™ database to DB2 Universal Database databases.
- ▶ Configure an external HTTP server.

In order for the Workplace Collaboration Services server to be ready for production use, the ISMP GUI Configuration wizard (configwizard400.bat) must convert and configure these servers and environments. When completed, the LDAP, Workplace databases, and HTTP server are ready for production use. Use the following steps to get your Workplace Collaboration Services server production ready:

1. Configure the LDAP directory. See 4.4.4, “Configuring the LDAP directory” on page 145.
  - Disable security.
  - Enable security.
2. Transfer data from the Cloudscape database to the DB2 Universal Database databases on the iSeries server. See 4.4.5, “Transferring Cloudscape data to IBM DB2 Universal Database for iSeries” on page 166.
  - Start and stop Cloudscape.
  - Create and set up the schema for IBM DB2 Universal Database for iSeries.

3. Configure an external HTTP server for use with your Workplace Collaboration Services server. See 4.4.6, “Configuring an external IBM HTTP Server” on page 183.

#### 4.4.1 Remote IBM Workplace Installer (install400.bat)

After the Workplace Collaboration Services code is installed, the remote Workplace Installer can be used to custom configure a Workplace Collaboration Services server. This configuration option is graphical in nature and requires a Microsoft Windows based workstation with the necessary network connectivity to the iSeries server.

The Workplace Collaboration Services media can be located on the local workstation or can be on located on the i5/OS integrated file system. Keep in mind that if the installation media is located on the workstation, the configuration process copies the files across the network to the iSeries server. This can add considerably more time to the configuration process.

**Note:** This section documents the custom configuration path after the installation is complete. In this example, the Workplace Collaboration Services media is located on the local PC workstation.

Perform the following steps to custom configure a Workplace Collaboration Services server on i5/OS using the remote Workplace Installer (install400.bat):

1. Access the Workplace Collaboration Services version 2.5 for i5/OS media on the local workstation.
2. Open the LWPServer directory and double-click **install400.bat** to launch the remote IBM Workplace Installer, as shown in Figure 4-60.

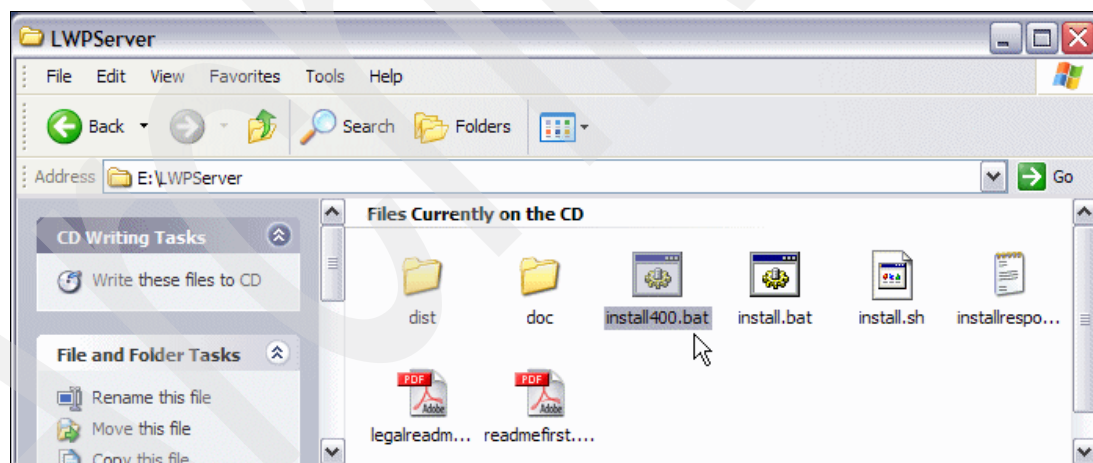


Figure 4-60 Launching the remote IBM Workplace Installer

3. A Windows command prompt window (Figure 4-61) opens as the InstallShield environment prepares to launch into the installer. This may take a few minutes.

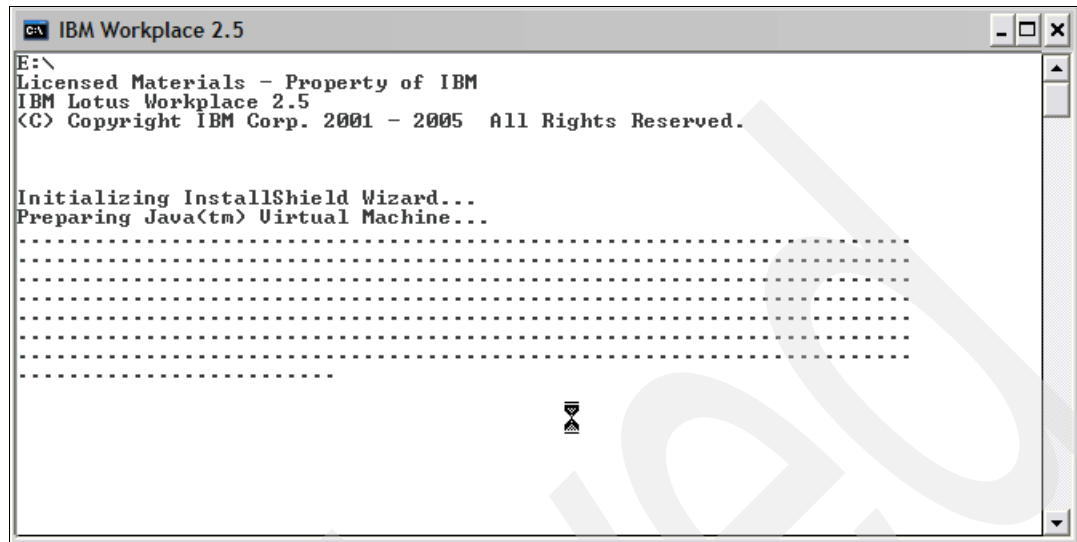


Figure 4-61 Initializing InstallShield wizard

4. In the Signon to the Server window (Figure 4-62), sign on to the iSeries server. Refer to 2.4.1, “Installation and configuration user profiles” on page 27, for the special authorities required by this user profile. Click **OK**.

**Tip:** Minimize all open windows because the Signon window may appear in the background.

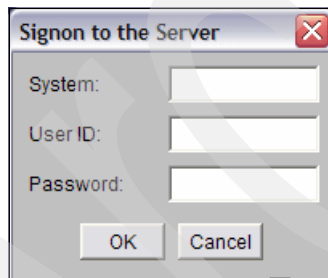


Figure 4-62 Signing on to the iSeries server

5. Select the appropriate language to use for the wizard (Figure 4-63). The default value is English. Click **OK**.

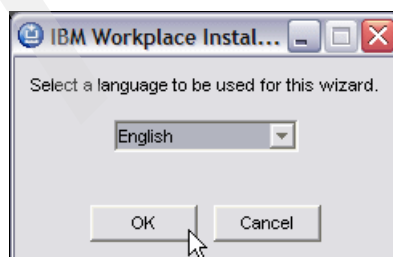


Figure 4-63 Selecting the language for the wizard

6. The Welcome to IBM Workplace window (Figure 4-64) opens. It provides an introduction to the IBM Workplace Installer and includes a link to the Workplace Collaboration Services Information Center. Click **Next** to continue.

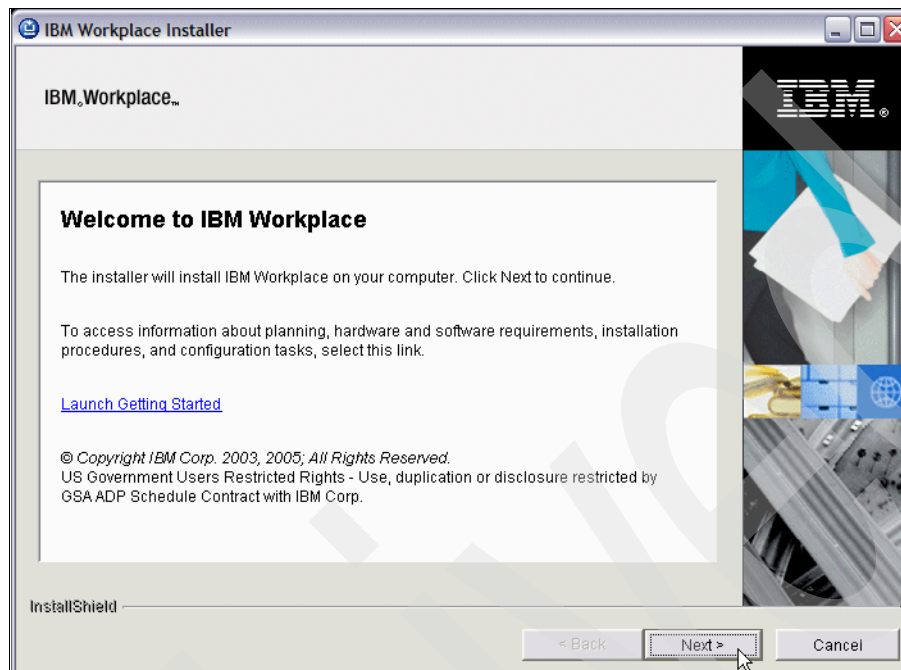


Figure 4-64 Welcome to IBM Workplace Installer

7. The Workplace Installer checks for required operating system and software prerequisites as shown in Figure 4-65.

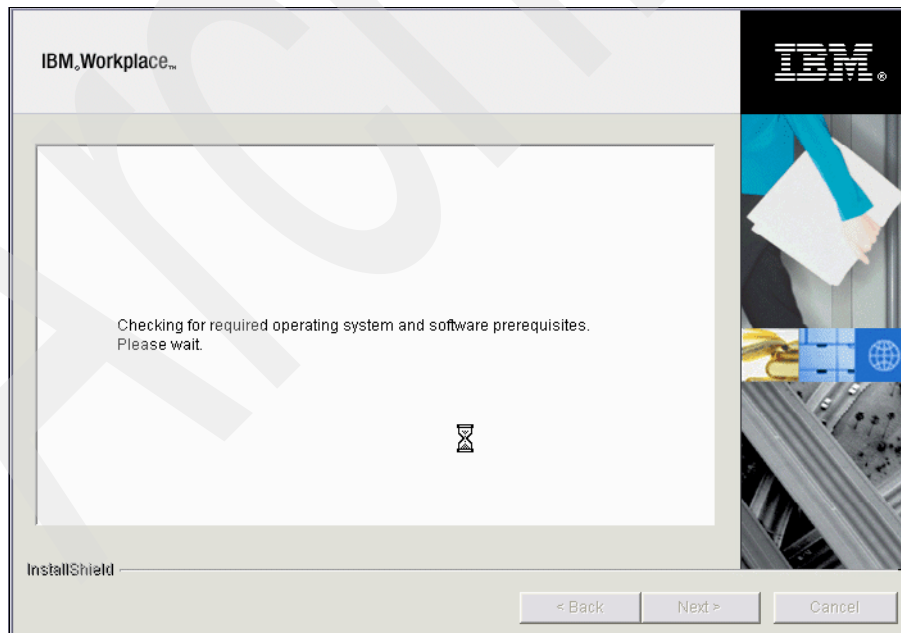


Figure 4-65 Workplace Installer checker

8. With the installation completed earlier, the Workplace Installer recognizes that IBM Workplace is already installed on the system, as shown in Figure 4-66. Click **Next** to configure a Workplace Collaboration Services server.

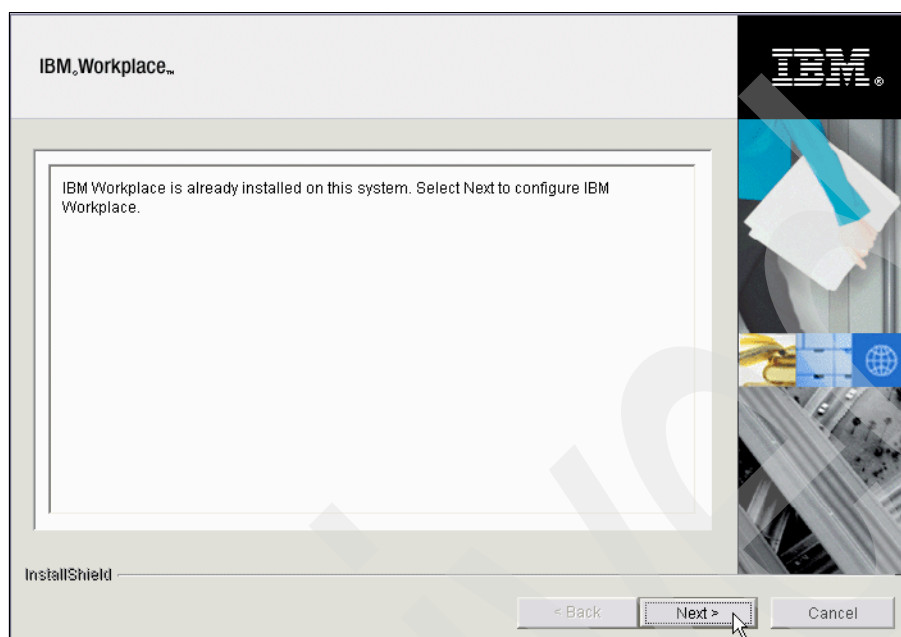


Figure 4-66 Workplace Installer recognizing Workplace Collaboration Services already installed

9. The Workplace Installer prompts for the desired configuration option. Select **Custom configuration**, as shown in Figure 4-67. Click **Next**.

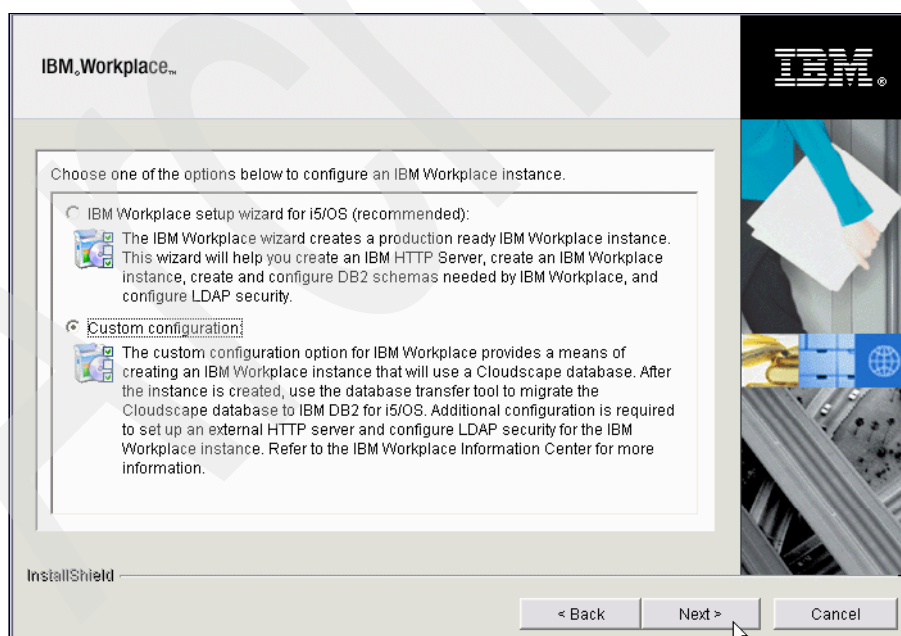


Figure 4-67 Selecting the custom configuration option for a Workplace Collaboration Service server

10. The Workplace Installer checks again for required operating system and software prerequisites (Figure 4-68).

**Tip:** In our testing, the checker found that the QEJBAS5 subsystem was not started. This is not a prerequisite for installation, but it is for the configuration. Use the following i5/OS CL command to start this subsystem:

```
STRSBS QEJBAS5/QEJBAS5
```

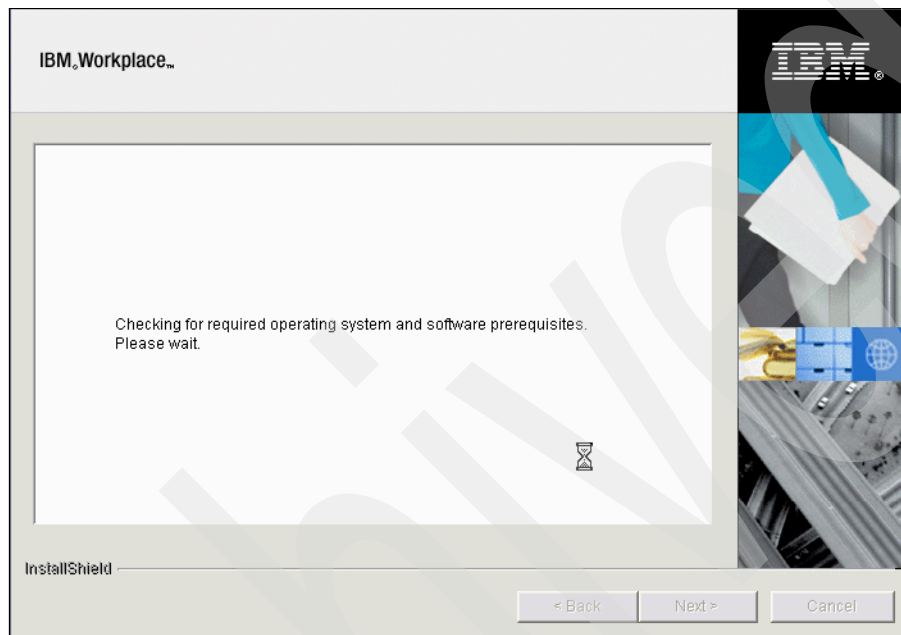
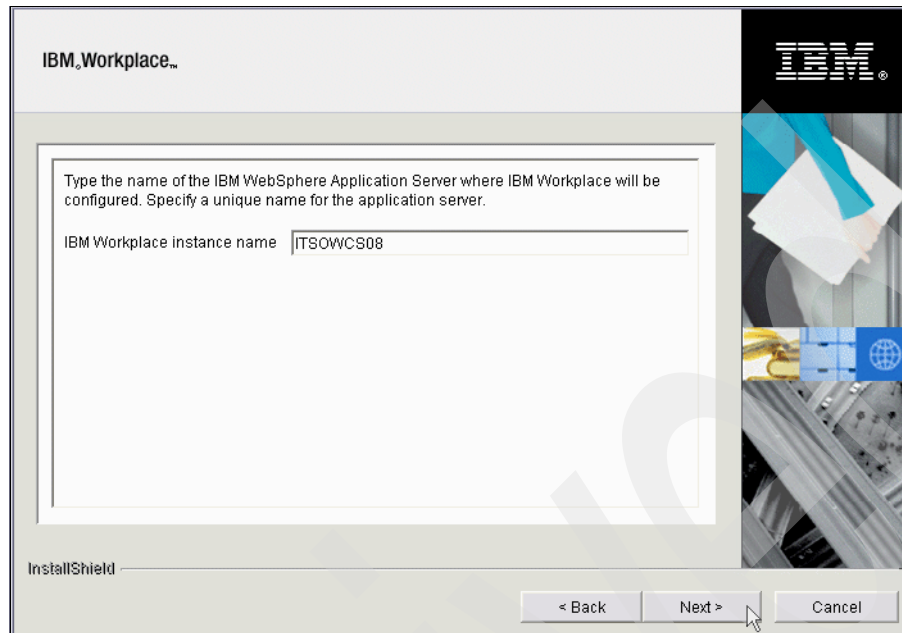


Figure 4-68 Checking for required operating system and software prerequisites



11. Enter the name of the Workplace Collaboration Services server, as shown in Figure 4-69. This must be a unique name for the Workplace Collaboration Services server. Click **Next**.

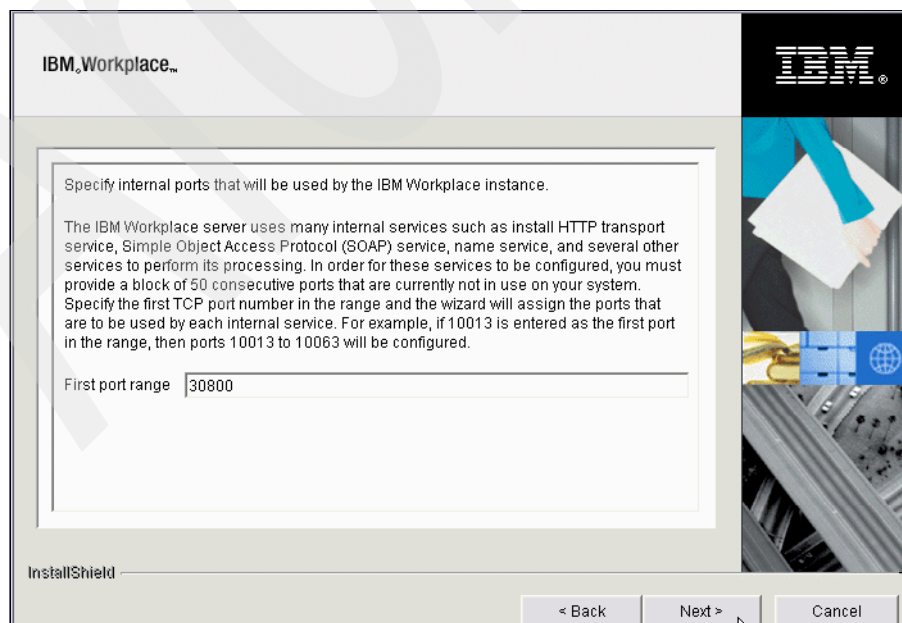


The screenshot shows the 'IBM Workplace' installation window. The title bar says 'IBM Workplace...'. The main content area has a text box with the instruction: 'Type the name of the IBM WebSphere Application Server where IBM Workplace will be configured. Specify a unique name for the application server.' Below this is a text input field labeled 'IBM Workplace instance name' with the value 'ITSOWCS08' entered. At the bottom, there are three buttons: '< Back', 'Next >', and 'Cancel'. The 'Next >' button is highlighted with a mouse cursor. The IBM logo is in the top right corner, and a vertical sidebar on the right shows a person holding a document and a globe icon.

Figure 4-69 Entering the Workplace Collaboration Services server unique name

12. Select the appropriate TCP/IP port range for the Workplace Collaboration Services server being configured (Figure 4-70). Click **Next**.

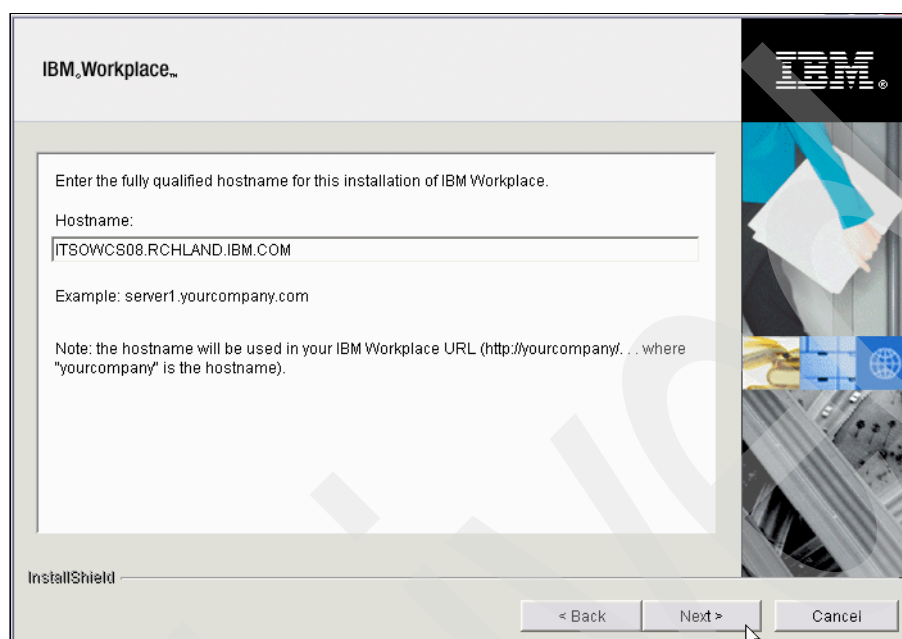
**Important:** It is critical the port block does not have a conflict since this prevents proper operation of a Workplace Collaboration Services server. These ports are used for numerous components within a Workplace Collaboration Services server. Refer to Appendix B, “IBM Workplace Collaboration Services ports” on page 515.



The screenshot shows the 'IBM Workplace' installation window. The title bar says 'IBM Workplace...'. The main content area has a text box with the instruction: 'Specify internal ports that will be used by the IBM Workplace instance.' Below this is a text input field labeled 'First port range' with the value '30800' entered. The text box also contains a detailed explanation: 'The IBM Workplace server uses many internal services such as install HTTP transport service, Simple Object Access Protocol (SOAP) service, name service, and several other services to perform its processing. In order for these services to be configured, you must provide a block of 50 consecutive ports that are currently not in use on your system. Specify the first TCP port number in the range and the wizard will assign the ports that are to be used by each internal service. For example, if 10013 is entered as the first port in the range, then ports 10013 to 10063 will be configured.' At the bottom, there are three buttons: '< Back', 'Next >', and 'Cancel'. The 'Next >' button is highlighted with a mouse cursor. The IBM logo is in the top right corner, and a vertical sidebar on the right shows a person holding a document and a globe icon.

Figure 4-70 Specifying the Workplace Collaboration Services server TCP/IP port range

13. Enter the fully qualified host name of the Workplace Collaboration Services server that is being configured (Figure 4-71). This name should resolve either via a local host entry or DNS. The host name is used within the Workplace Collaboration Services server to define the host used for communications between the client and the server. Click **Next**.



The screenshot shows the 'IBM Workplace' installation window. The title bar says 'IBM Workplace..'. The main content area has a heading 'Enter the fully qualified hostname for this installation of IBM Workplace.' Below this is a text field labeled 'Hostname:' containing the text 'ITSOWCS08.RCHLAND.IBM.COM'. An example 'server1.yourcompany.com' is shown below the field. A note states: 'Note: the hostname will be used in your IBM Workplace URL (http://yourcompany/... where "yourcompany" is the hostname).' The bottom of the window features an 'InstallShield' progress bar and three buttons: '< Back', 'Next >', and 'Cancel'. A mouse cursor is pointing at the 'Next >' button. On the right side, there is a vertical strip with the IBM logo and a graphic of a person holding a document.

Figure 4-71 Specifying the fully qualified host name for the Workplace Collaboration Services server

14. Enter the Workplace Collaboration Services server administrator user ID and password (Figure 4-72). Click **Next**.

**Note:** At this point, this user is added only to the Workplace Member Manager.



The screenshot shows the 'IBM Workplace' installation window. The title bar says 'IBM Workplace..'. The main content area has a heading 'Enter the IBM Workplace administrative user ID and password. This user ID is only used to log into IBM Workplace with administrator authority and is not related to any user IDs used to access the operating system itself.' Below this are three text fields: 'Administrator user ID' containing 'wpsadmin', 'Password' containing '\*\*\*\*\*', and 'Confirm password' containing '\*\*\*\*\*'. The bottom of the window features an 'InstallShield' progress bar and three buttons: '< Back', 'Next >', and 'Cancel'. A mouse cursor is pointing at the 'Next >' button. On the right side, there is a vertical strip with the IBM logo and a graphic of a person holding a document.

Figure 4-72 Defining the Workplace Collaboration Services server administrator ID and password



15. Review the configuration options that will be used to configure the Workplace Collaboration Services server (Figure 4-73). If you need to change these options, click the **Back** button to navigate to the necessary window. Otherwise, click **Next**.

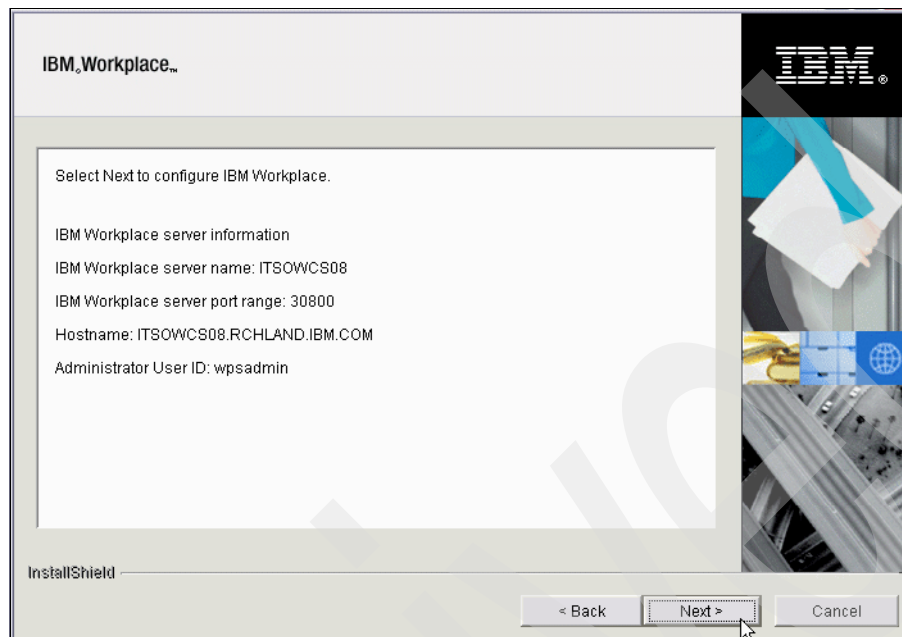


Figure 4-73 Confirming the Workplace Collaboration Services server configuration options

16. A progress indicator is displayed as the Workplace Collaboration Services server is configured (Figure 4-74). This process can take between one to two hours depending on the size of the system.

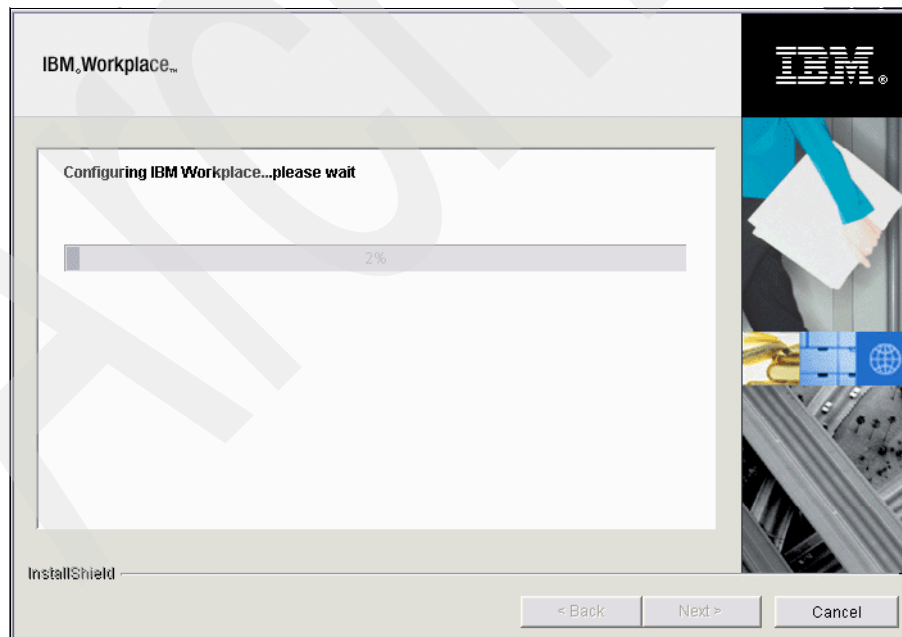


Figure 4-74 Workplace Collaboration Services server configuration progress bar

17. The window indicates either a success or failure of the Workplace Collaboration Services server configuration. Figure 4-75 shows an example of the message that you see for a successful configuration. Click **Finish**.

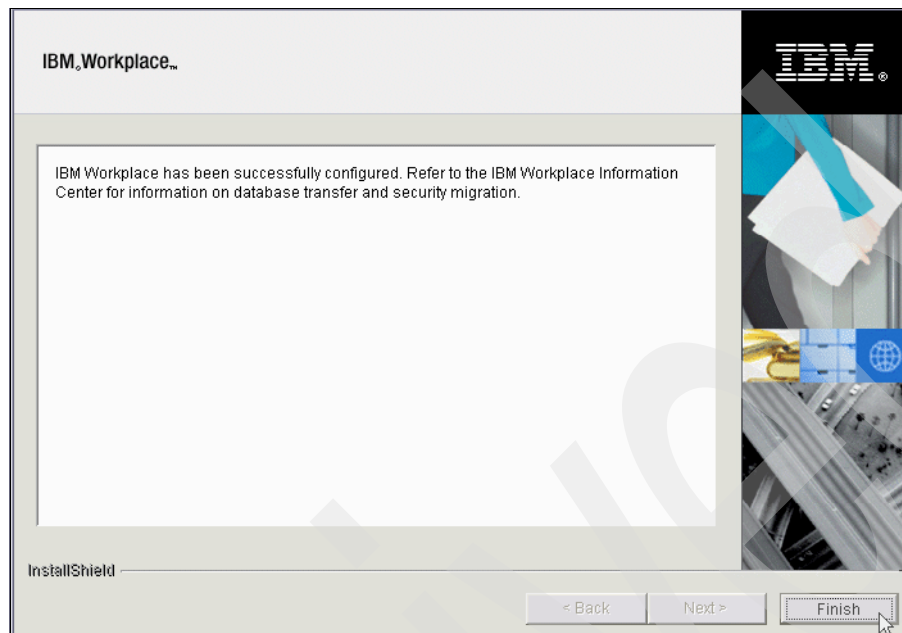


Figure 4-75 Workplace Collaboration Services server configuration confirmation

At this point, the Workplace Collaboration Services server is configured on the iSeries server using a Cloudscape database and WebSphere Member Manager as the user registry. You can verify the configuration directories and files on the iSeries by accessing the `/QIBM/UserData/WebAS5/Base/instance` integrated file system directory, where *instance* is the name of the Workplace Collaboration Services server.

Figure 4-76 provides an example of what should be in the directory from Windows Explorer.

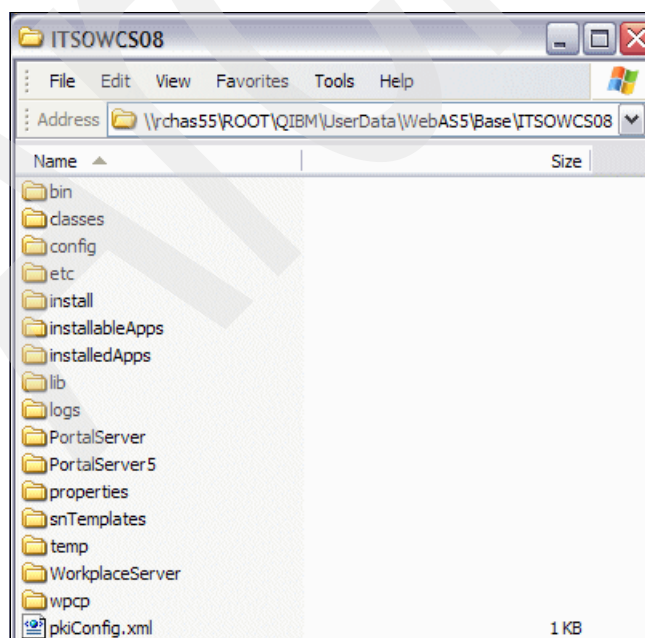


Figure 4-76 Verifying the Workplace Collaboration Services server configuration directories and files

## Verifying the custom configuration

The Cloudscape database and a local WebSphere user registry (WebSphere Member Manager) are not a supported environment. However we recommend this environment to start the Workplace Collaboration Services server to verify that it is functional at this point.

**Important:** The Workplace Collaboration Services server is not ready for production use at this point. Before we continue, we only verify that the custom configuration is functional.

### Starting the Cloudscape database server

To start the Cloudscape database server of the newly custom configured Workplace Collaboration Services server, perform the following steps:

1. From a 5250 emulation session on the iSeries server, type the STRQSH CL command and press Enter to access the Qshell environment.
2. From within the Qshell environment, type the following command to start the Cloudscape database server, where *instance* is the name of the custom configured Workplace Collaboration Services server:

```
cd /  
cd QIBM/UserData/WebAS5/Base/instance/PortalServer/rootscripts/subtasks  
startNetworkServer.sh -verbose
```

3. At this point, the Cloudscape database server is started. To verify that it is started, enter the following command from the same directory:

```
checkNetworkServer.sh -verbose
```

Figure 4-77 shows an example of running these commands from Qshell.

```
QSH Command Entry  
  
$  
> cd /  
$  
> cd QIBM/UserData/WebAS5/Base/itsowcs08/PortalServer/rootscripts/subtasks  
$  
> startNetworkServer.sh -verbose  
CPC1221: Job 083716/QEJB5VR/CS_30849 submitted to job queue QEJBJOBQ in library  
QEJBAS5.  
$  
> checkNetworkServer.sh -verbose  
Connection obtained for host: localhost, port number 30849.  
$  
  
===>  
F3=Exit F6=Print F9=Retrieve F12=Disconnect  
F13=Clear F17=Top F18=Bottom F21=CL command entry
```

Figure 4-77 Starting the Cloudscape database server

**Tip:** To stop the Cloudscape database server, use the following Qshell commands:

```
cd /  
cd QIBM/UserData/WebAS5/Base/instance/PortalServer/rootscripts/subtasks  
stopNetworkServer.sh -verbose
```

### **Starting the Workplace Collaboration Services server**

Starting the Workplace Collaboration Services server only starts the WebSphere\_Portal, Mail\_Server\_1, and the Cloudscape servers if they are not already running. It does *not* start the Server1 server, but this is not required until we address LDAP security and the transfer of Cloudscape data. The only server that must be started for this initial test of the Workplace Collaboration Services server is WebSphere\_Portal.

You can start the WebSphere\_Portal server through the IBM Web Administration for iSeries or through the Qshell environment. Since the Cloudscape database server was started from the i5/OS Qshell environment in the previous section, this section shows you how to start the WebSphere\_Portal server from the Qshell environment as well. For information about starting a Workplace Collaboration Services server with IBM Web Administration for iSeries, refer to 5.2, “Starting and stopping Workplace Collaboration Services” on page 203.

To start the WebSphere\_Portal server from Qshell, perform the following steps:

1. From a 5250 emulation session on the iSeries server, type the STRQSH CL command and press Enter to access the Qshell environment.
2. From within the Qshell environment, enter the following command to start the WebSphere\_Portal server, where *instance* is the name of the custom configured Workplace Collaboration Services server:

```
cd /
cd QIBM/UserData/WebAS5/Base/instance/PortalServer/rootscripts/subtasks
startPortalServer.sh
```

**Note:** The initial starting of the WebSphere\_Portal server takes some time. In our lab, the first start after the custom configuration took about 30 minutes.

Figure 4-78 shows an example of running these commands from Qshell.

```
QSH Command Entry
$
> cd QIBM/UserData/WebAS5/Base/itsowcs08/PortalServer/rootscripts/subtasks
$
> startNetworkServer.sh -verbose
CPC1221: Job 083716/QEJBVR/CS_30849 submitted to job queue QEJBJOBQ in library
QEJBAS5.
$
> checkNetworkServer.sh -verbose
Connection obtained for host: localhost, port number 30849.
$
> startPortalServer.sh
CPC1221: Job 083782/QEJBVR/WEBSPPHERE_ submitted to job queue QEJBJOBQ in
library QEJBAS5.
EJB6123: Application server started.
Cause . . . . : Application server WebSphere_ in PME instance
ITSOWCS08 has started and is ready to accept connections on admin port
30810.
$

===>
F3=Exit F6=Print F9=Retrieve F12=Disconnect
F13=Clear F17=Top F18=Bottom F21=CL command entry
```

Figure 4-78 Starting the WebSphere\_Portal server

3. At this point, the Workplace Collaboration Services server is ready for initial testing. You can verify that the required WebSphere\_Portal server is running from the IBM Web Administration for iSeries, as shown in Figure 4-79.

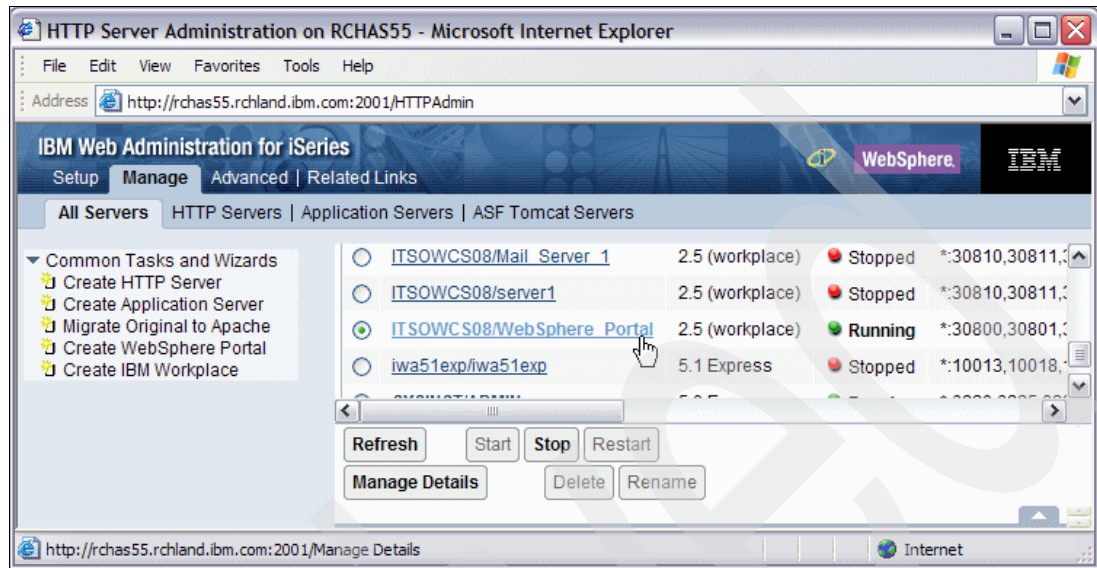


Figure 4-79 Verifying that WebSphere\_Portal is running

### Testing the custom configured Workplace Collaboration Services server

At this point, the only test that we recommend is to do a successful login to the Workplace Collaboration Services server. To perform this, access a workstation that can resolve the fully qualified host name of the Workplace Collaboration Services server. Then use a ping test to verify that the workstation can successfully reach the IP and host name of the Workplace Collaboration Services server, as shown in Figure 4-80.

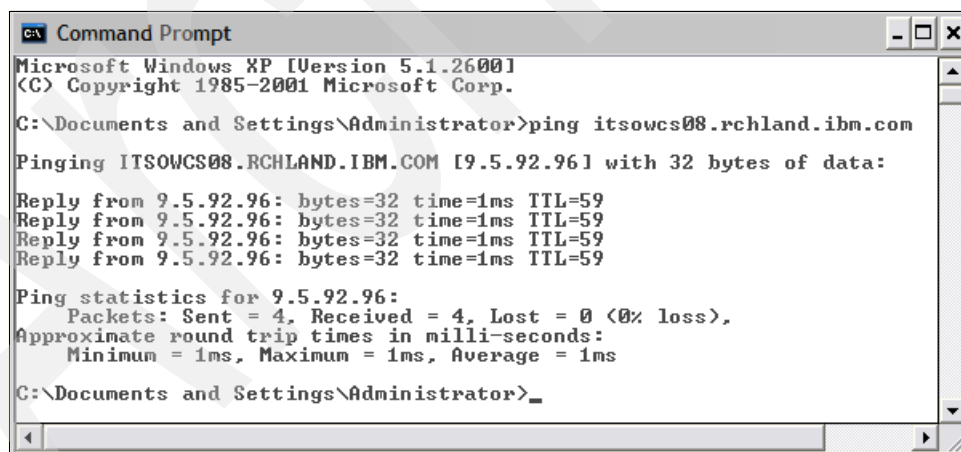


Figure 4-80 Verifying the Workplace Collaboration Services server is resolvable from the workstation

Perform the following steps to verify that the custom configured Workplace Collaboration Services server is functional:

1. Open a Web browser and enter the following URL, where *instance* is the fully qualified host name and *<portblock>+9* is the configured starting port range plus 9 of the Workplace Collaboration Services server. This port number is the internal HTTP port for the Workplace Collaboration Services server since an external HTTP has not yet been configured.

`http://instance:<portblock>+9/lwp/workplace`

In this example, we use:

`http://itsowcs08.rchland.ibm.com:30809/lwp/workplace`

2. In the IBM Workplace window (Figure 4-81), click **Log in**, in the upper right corner of the window.

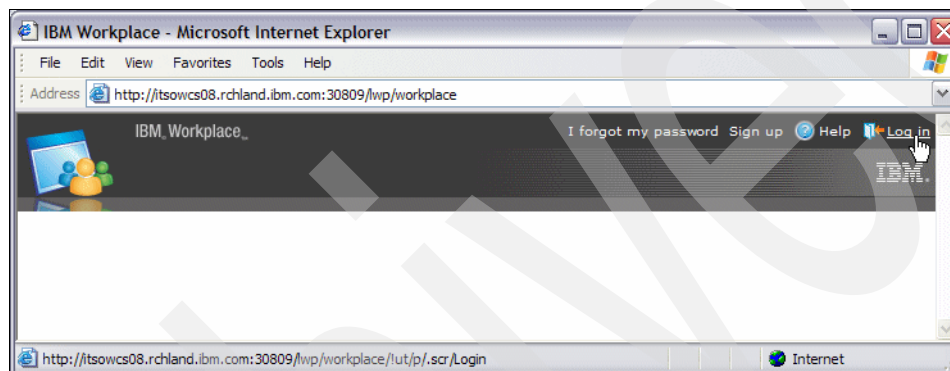


Figure 4-81 Accessing the Workplace Collaboration Services server

3. On the next page (Figure 4-82), enter the administrator user ID and password specified during the custom configuration and click **Log in**.

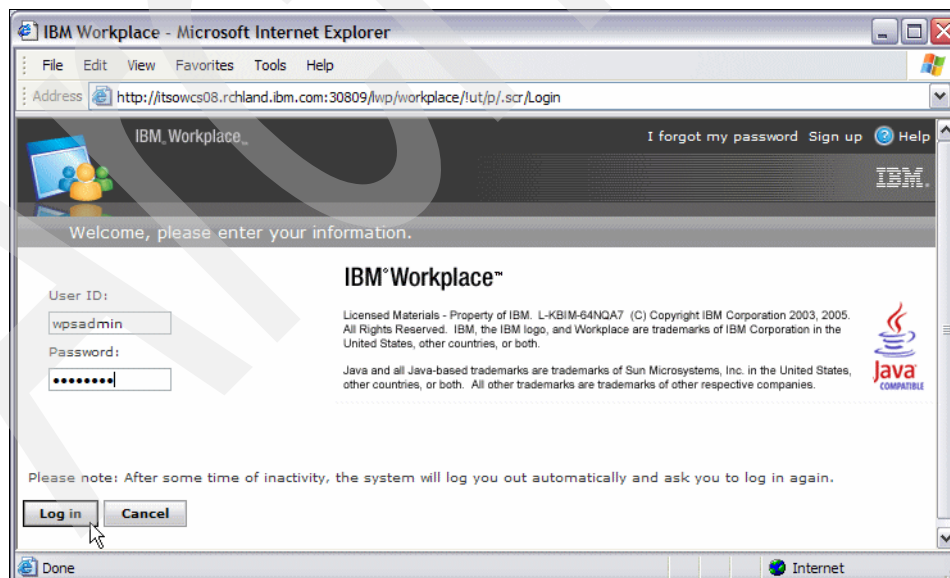


Figure 4-82 Logging into the Workplace Collaboration Services server



The Workplace Collaboration Services server default Welcome page is displayed as shown in Figure 4-83.

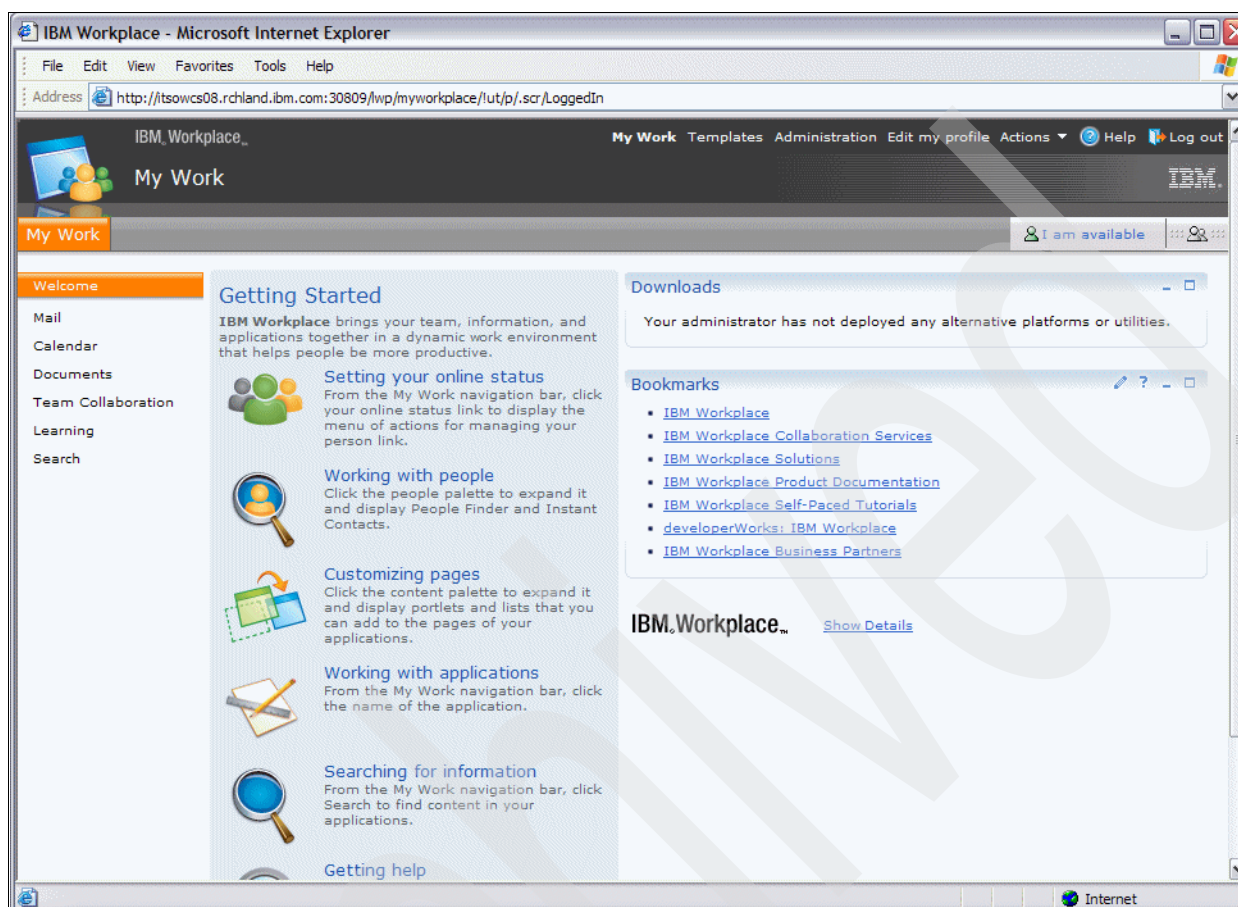


Figure 4-83 Workplace Collaboration Services server default Welcome page

After you successfully test the Workplace Collaboration Services server with the Cloudscape database and the local WebSphere user registry, the DB2 Universal Database and LDAP directories must be converted to successfully run a production ready Workplace Collaboration Services server. You must also configure an external HTTP server before the Workplace Collaboration Services server is ready for production use.

To continue preparing the Workplace Collaboration Services server for production use, refer to the following sections and do the configuration in the order shown:

- ▶ 4.4.4, “Configuring the LDAP directory” on page 145
- ▶ 4.4.5, “Transferring Cloudscape data to IBM DB2 Universal Database for iSeries” on page 166
- ▶ 4.4.6, “Configuring an external IBM HTTP Server” on page 183

**Important:** We strongly recommend that you configure and enable LDAP security before you transfer the Cloudscape database to DB2 Universal Database.

If you plan to use the IBM Workplace Managed Client, you must perform additional configuration steps as explained in Chapter 6, “IBM Workplace Managed Client” on page 255.

## 4.4.2 Local console mode (install.sh)

The second custom configuration option is performed locally on the iSeries server in the Qshell environment. The Workplace Collaboration Services installation media must be located on the iSeries server in either the local CD-ROM drive or copied into the integrated file system.

After the Workplace Collaboration Services is installed, the local console installer can be used to custom configure a Workplace Collaboration Services server. The local console install is the same as the remote install in that it asks you for the same types of input. However, some of the keystrokes differ due to the different user interface (graphical verses 5250 emulation).

In this section, we document the custom configuration process after the installation is complete. In this example, the Workplace Collaboration Services 2.5 for i5/OS media is located on the i5/OS optical drive. Perform the following steps to do a custom configuration a Workplace Collaboration Services server locally on the iSeries server in the Qshell environment using the local console installer:

**Important:** The Workplace Collaboration Services installation media comes as a DVD or a set of CDs. You must enter the following Change Optical Attributes (CHGOPTA) CL command to access the media from an iSeries server:

```
CHGOPTA EXTMEFMT(*YES)
```

1. Sign on to an iSeries server 5250 emulation session. To configure a Workplace Collaboration Services server, you must have a user profile with at least the special authorities of \*ALLOBJ, \*IOSYSCFG, and \*JOBCTL.
2. From the 5250 emulation session command line, type the Start Qshell (STRQSH) CL command and press Enter to enter the Qshell environment:  
STRQSH
3. Navigate to where the Workplace Collaboration Services installation media is located. In our example (see Figure 4-84), the installation media is located in the i5/OS optical drive. Navigate to the LWPServer folder in this directory that contains the install.sh executable file. You must run this file to start the custom configuration process of a Workplace Collaboration Services server:

```
cd /  
/qopt/C83ZEML/LWPServer/install.sh
```

### QSH Command Entry

```
> cd /  
$  
> /qopt/C83ZEML/LWPServer/install.sh  
Licensed Materials - Property of IBM  
IBM Lotus Workplace 2.5  
(C) Copyright IBM Corp. 2001 - 2005 All Rights Reserved.  
  
Attaching Java program to /qopt/C83ZEML/LWPServer/dist/lwpinstall.jar.  
  
===>  
F3=Exit F6=Print F9=Retrieve F12=Disconnect  
F13=Clear F17=Top F18=Bottom F21=CL command entry
```

Figure 4-84 Launching the local console installer



4. The installer displays the Welcome to IBM Workplace information, as shown in Figure 4-85. Type 1 and press Enter to continue.

```
QSH Command Entry

-----

Welcome to IBM Workplace

The installer will install IBM Workplace on your computer. Click Next to
continue.

Copyright IBM Corp. 2003, 2005; All Rights Reserved. US Government Users
Restricted Rights - Use, duplication or disclosure restricted by GSA ADP
Schedule Contract with IBM Corp.

Press 1 for Next, 3 to Cancel or 4 to Redisplay [1]

==> 1
F3=Exit F6=Print F9=Retrieve F12=Disconnect
F13=Clear F17=Top F18=Bottom F21=CL command entry
```

Figure 4-85 Welcome to IBM Workplace information

5. The installer checks for the required operating system and software prerequisites. When complete, it recognizes that IBM Workplace Collaboration Services is already installed on the system (see Figure 4-86). Type 1 and press Enter to continue.

```
QSH Command Entry

Copyright IBM Corp. 2003, 2005; All Rights Reserved. US Government Users
Restricted Rights - Use, duplication or disclosure restricted by GSA ADP
Schedule Contract with IBM Corp.

Press 1 for Next, 3 to Cancel or 4 to Redisplay [1]
> 1

Checking for required operating system and software prerequisites. Please wait.

-----

IBM Workplace is already installed on this system. Select Next to configure IBM
Workplace.

Press 1 for Next, 3 to Cancel or 4 to Redisplay [1]

==> 1
F3=Exit F6=Print F9=Retrieve F12=Disconnect
F13=Clear F17=Top F18=Bottom F21=CL command entry
```

Figure 4-86 Installer checking requirements and finding previous installation of IBM Workplace

6. The configuration options are displayed, where the IBM Workplace setup wizard for i5/OS is the default. Type 2 for the Custom configuration option and press Enter. See Figure 4-87. Type 0 to confirm your choice and press Enter.

```
QSH Command Entry

[ ] 1 - IBM Workplace setup wizard for i5/OS (recommended):
    The IBM Workplace wizard creates a production ready IBM Workplace instance. This
    wizard will help you create an IBM HTTP Server, create an IBM Workplace
    Collaboration Services server, create and configure DB2 schemas needed by IBM
    Workplace, and configure LDAP security.

[X] 2 - Custom configuration:
    The custom configuration option for IBM Workplace provides a means of creating an
    IBM Workplace Collaboration Services server that will use a Cloudscape database.
    After the instance is created, use the database transfer tool to migrate
    the Cloudscape database to IBM DB2 for i5/OS. Additional configuration is
    required to set up an external HTTP server and configure LDAP security for the IBM
    Workplace Collaboration Services server. Refer to the IBM Workplace Information
    Center for more information.

To select an item enter its number, or 0 when you are finished: [0]

==> 2
F3=Exit F6=Print F9=Retrieve F12=Disconnect
F13=Clear F17=Top F18=Bottom F21=CL command entry
```

Figure 4-87 Selecting Custom configuration

7. To begin the configuration, type 1 and press Enter.
8. The installer again checks for the required operating system and software prerequisites and then prompts for the Workplace Collaboration Services server name as shown in Figure 4-88. Enter a name and press Enter. For our example, we call our Workplace Collaboration Services server ITSOWCS05.

```
QSH Command Entry

To select an item enter its number, or 0 when you are finished: [0]
> 0
Press 1 for Next, 2 for Previous, 3 to Cancel or 4 to Redisplay [1]
> 1
Checking for required operating system and software prerequisites. Please wait.
-----
Type the name of the IBM WebSphere Application Server where IBM Workplace will
be configured. Specify a unique name for the application server.

IBM Workplace Collaboration Services server name [ ]

==> ITSOWCS05
F3=Exit F6=Print F9=Retrieve F12=Disconnect
F13=Clear F17=Top F18=Bottom F21=CL command entry
```

Figure 4-88 IBM Workplace Collaboration Services server name prompt

9. Type 1 and press Enter to continue.

10. Specify the internal ports that will be used by the Workplace Collaboration Services server, as shown in Figure 4-89. Enter the starting port number and press Enter.

```
QSH Command Entry

> 1

-----
Specify internal ports that will be used by the IBM Workplace Collaboration Services
server.

The IBM Workplace server uses many internal services such as install HTTP
transport service, Simple Object Access Protocol (SOAP) service, name service,
and several other services to perform its processing. In order for these
services to be configured, you must provide a block of 50 consecutive ports
that are currently not in use on your system. Specify the first TCP port number
in the range and the wizard will assign the ports that are to be used by each
internal service. For example, if 10013 is entered as the first port in the
range, then ports 10013 to 10063 will be configured.

First port range []

==> 30500
F3=Exit F6=Print F9=Retrieve F12=Disconnect
F13=Clear F17=Top F18=Bottom F21=CL command entry
```

Figure 4-89 Specify the internal ports

11. Type 1 and press Enter to continue.
12. Enter the fully qualified host name of the Workplace Collaboration Services server that is being configured, as shown in Figure 4-90. This name should resolve either via a local host entry or DNS. The host name will be used within the Workplace Collaboration Services server to define the host used for communications between the client and the server. Press Enter.

```
QSH Command Entry

First port range []
> 30500

Press 1 for Next, 2 for Previous, 3 to Cancel or 4 to Redisplay [1]
> 1

-----
Enter the fully qualified hostname for this installation of IBM Workplace.

Hostname:

Enter a value: []

==> itsowcs05.rchland.ibm.com
F3=Exit F6=Print F9=Retrieve F12=Disconnect
F13=Clear F17=Top F18=Bottom F21=CL command entry
```

Figure 4-90 Specifying the fully qualified host name Workplace Collaboration Services server

13. Type 1 and press Enter to continue.

14. Enter the Workplace administrator user ID and password that will be used for this Workplace Collaboration Services server as shown in Figure 4-91. Type the administrator user ID and press Enter.

**Note:** At this point, this user is only added to the Workplace Member Manager.

```
QSH Command Entry

Press 1 for Next, 2 for Previous, 3 to Cancel or 4 to Redisplay [1]
> 1

-----

Enter the IBM Workplace administrative user ID and password. This user ID is
only used to log into IBM Workplace with administrator authority and is not
related to any user IDs used to access the operating system itself.

Administrator user ID []

==> wpsadmin
F3=Exit F6=Print F9=Retrieve F12=Disconnect
F13=Clear F17=Top F18=Bottom F21=CL command entry
```

Figure 4-91 Entering the IBM Workplace administrator user ID

15. Type 1 and press Enter to continue.
16. The installer prompts for the administrator user ID password. Enter the password and press Enter.
17. A confirmation password prompts you to verify that the password is correct. Enter the password again and press Enter.
18. Type 1 and press Enter to continue.
19. Review the configuration options that will be used to configure the Workplace Collaboration Services server, as shown in Figure 4-92. If any option needs to be changed, type 2 and press Enter to access the previous display or displays. Type 1 and press Enter to confirm the options.

```
QSH Command Entry

Press 1 for Next, 2 for Previous, 3 to Cancel or 4 to Redisplay [1]
> 1

-----

Select Next to configure IBM Workplace.

IBM Workplace server information
IBM Workplace server name: ITS0WCS05
IBM Workplace server port range: 30500
Hostname: itsowcs05.rchland.ibm.com
Administrator User ID: wpsadmin

Press 1 for Next, 2 for Previous, 3 to Cancel or 4 to Redisplay [1]
====> 1
F3=Exit F6=Print F9=Retrieve F12=Disconnect
F13=Clear F17=Top F18=Bottom F21=CL command entry
```

Figure 4-92 Reviewing the configuration options

20. A progress indicator is displayed (Figure 4-93) as the Workplace Collaboration Services server is configured. This process can take between one to two hours depending on the size of your system.

```
QSH Command Entry

IBM Workplace server name: ITSOWCS05
IBM Workplace server port range: 30500
Hostname: itsowcs05.rchland.ibm.com
Administrator User ID: wpsadmin

Press 1 for Next, 2 for Previous, 3 to Cancel or 4 to Redisplay [1]
> 1

Configuring IBM Workplace...please wait

|-----|-----|-----|-----|
0%      25%    50%    75%    100%
|||||

===>
F3=Exit  F6=Print F9=Retrieve F12=Disconnect
F13=Clear F17=Top  F18=Bottom F21=CL command entry
```

Figure 4-93 Workplace Collaboration Services server configuration progress bar

21. The wizard indicates either a success or failure of the Workplace Collaboration Services server configuration as shown in Figure 4-94. Type 3 and press Enter to complete the configuration.

```
QSH Command Entry

Press 1 for Next, 2 for Previous, 3 to Cancel or 4 to Redisplay [1]
> 1

Configuring IBM Workplace...please wait

|-----|-----|-----|-----|
0%      25%    50%    75%    100%
|||||

-----
IBM Workplace has been successfully configured. Refer to the IBM Workplace
Information Center for information on database transfer and security migration.

Press 3 to Finish or 4 to Redisplay [3]

===> 3
F3=Exit  F6=Print F9=Retrieve F12=Disconnect
F13=Clear F17=Top  F18=Bottom F21=CL command entry
```

Figure 4-94 IBM Workplace Collaboration Services server successfully configured

22. Press F12 to exit Qshell.

At this point, the Workplace Collaboration Services server is configured on the iSeries server using a Cloudscape database and WebSphere Member Manager as the user registry. You

can verify the configuration directories and files on the iSeries by accessing the integrated file system directory /QIBM/UserData/WebAS5/Base/*instance*, where *instance* is the name of the Workplace Collaboration Services server.

Figure 4-95 shows an example of what should be in the directory from Windows Explorer.

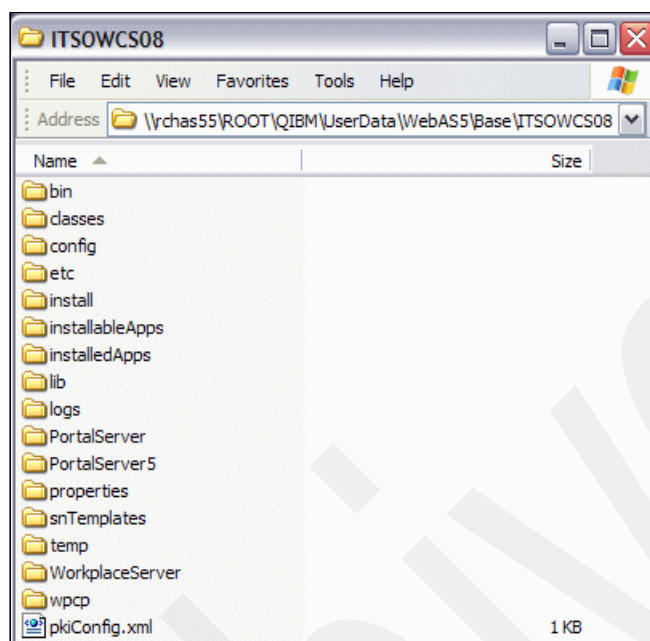


Figure 4-95 Verifying the Workplace Collaboration Services server configuration directories and files

## Verifying the custom configuration

The Cloudscape database and a local WebSphere user registry (WebSphere Member Manager) is not a supported environment. However, we recommend that you start the Workplace Collaboration Services server to verify that it is functional at this point.

**Important:** The Workplace Collaboration Services server is not ready for production use at this point. Before continuing, we only verify that the custom configuration is functional.

For details about verifying that your custom configuration is correct, see “Verifying the custom configuration” on page 133.

After you successfully test the Workplace Collaboration Services server with the Cloudscape database and the local WebSphere user registry, you must convert the DB2 Universal Database and LDAP directories to successfully run a production ready Workplace Collaboration Services server. You must also configure an external HTTP server before the Workplace Collaboration Services server is ready for production use.

To continue preparing the Workplace Collaboration Services server for production use, refer to the following sections and do the configuration in this order:

- ▶ 4.4.4, “Configuring the LDAP directory” on page 145
- ▶ 4.4.5, “Transferring Cloudscape data to IBM DB2 Universal Database for iSeries” on page 166
- ▶ 4.4.6, “Configuring an external IBM HTTP Server” on page 183

**Important:** We strongly recommend that you configure and enable LDAP security before you transfer the Cloudscape database to DB2 Universal Database.

If you plan to use the IBM Workplace Managed Client, you must perform additional configuration steps as explained in Chapter 6, “IBM Workplace Managed Client” on page 255.

### 4.4.3 Local console mode (install.sh) with a custom response file

Workplace Collaboration Services can be installed and configured from a command prompt with a response file. This method makes displaying the graphical interface and waiting for user input unnecessary. It is useful when you want to install Workplace Collaboration Services on multiple iSeries servers using a similar configuration or when it is impractical to manually enter responses during installation.

For information about creating the response file and the custom configuring a Workplace Collaboration Services server with a response file, refer to the Workplace Collaboration Services Information Center at the following Web address:

<http://publib.boulder.ibm.com/infocenter/lwpphelp/index.jsp>

### 4.4.4 Configuring the LDAP directory

By default, Workplace Collaboration Services stores user account information in a custom local user registry database. This local user registry is based upon WebSphere Member Manager. For the Workplace Collaboration Services server to be integrated into a typical environment, security must be transferred to an LDAP directory. Common attributes, such as names, e-mail addresses, telephone numbers, and authentication credentials, are stored in the LDAP directory after the security transfer. Other attributes that are particular to Workplace Collaboration Services are stored in a lookaside database. WebSphere Member Manager manages the user and group lookups to the LDAP directory and lookaside database.

Configuring a Workplace Collaboration Services server to use an LDAP directory is referred to as “enabling LDAP security”. The Enable LDAP Security option provided with the Configuration wizard (configwizard400.bat) can be used to complete this task. The wizard requires a supported and functioning LDAP directory server. If you are using the IBM Directory Server, configure it prior to the Workplace Collaboration Services installation. For configuration information about the IBM Directory Server and other types of LDAP servers with Workplace Collaboration Services 2.5, refer to Chapter 3, “Preparing your directory server” on page 41.

The recommended approach for enabling an LDAP directory for a Workplace Collaboration Services server is to use the IBM Web Administration for iSeries Create Workplace wizard. However, this option is not available if the Workplace Collaboration Services server was custom configured. It is also possible to manually transfer security to an LDAP directory with the Configuration wizard (configwizard400.bat) using these steps:

1. Disable security

This option removes the current security configuration. The Workplace Collaboration Services server *cannot* be operated without security enabled.

2. Enable security

This option applies a set of security parameters to the Workplace Collaboration Services server. These settings vary by directory type and if any, an environment’s LDAP customizations.

For additional information, the Workplace Information Center (on the Web at the following address) provides information about disabling and enabling a supported LDAP server:

<http://www.ibm.com/developerworks/workplace/documentation/collaborationservices/>

## Disabling security

The Configuration wizard (configwizard400.bat) is used to first disable LDAP security. There are two options to launch the Configuration wizard:

- From the Workplace Collaboration Services server directory  
\\QIBM\UserData\WebAS5\Base\instance\PortalServer\config\wizard\ (see Figure 4-96)

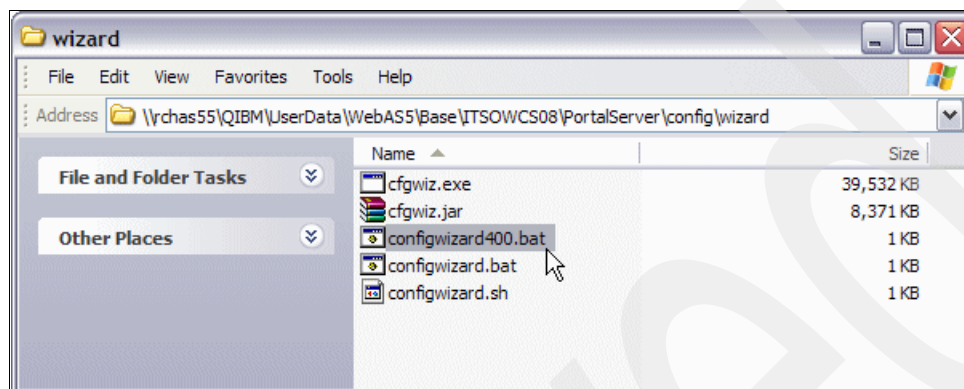


Figure 4-96 Launching the configwizard400.bat file

- Locally from a PC workstation after you copy the cfgwiz.exe from the Workplace Collaboration Services server directory

**Note:** The tmp directory on the local workstation was only used as an example. You can use any directory on the workstation.

We recommend that you run the Configuration wizard locally by copying the cfgwiz.exe file to a PC workstation. Perform the following steps to run the Configuration wizard locally to connect to the Workplace Collaboration Services server configuration and disable security:

**Important:** Make sure that the Cloudscape database server and Server1 servers are running and that the WebSphere\_Portal and Mail\_Server\_1 servers are stopped before you run the Configuration wizard. See “Starting the Cloudscape database server” on page 133 for information about starting and stopping the Cloudscape database server. Also see 5.2, “Starting and stopping Workplace Collaboration Services” on page 203, for information about stopping and starting the other servers.



1. After you copy the `cfgwiz.exe` file from the Workplace Collaboration Services server directory, double-click **cfgwiz.exe** to launch this file on the local PC workstation. This creates an InstallShield Wizard to prepare the Java virtual machine (JVM), as shown in Figure 4-97.

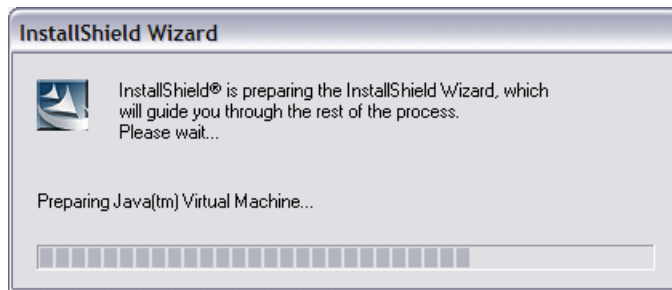


Figure 4-97 InstallShield preparing the JVM

2. When prompted, sign on to the iSeries server (Figure 4-98). Refer to 2.4.1, “Installation and configuration user profiles” on page 27, for the special authorities required by this user profile. Click **OK**.

**Tip:** Minimize all open windows, because the Signon to the Server window may appear in the background. Also disable any pop-up blockers.

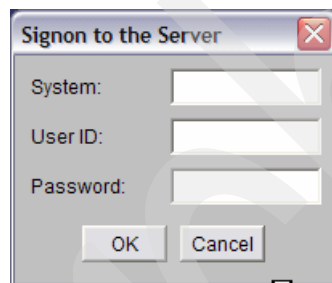


Figure 4-98 Signing on to the iSeries server

3. Select the appropriate language to use for the wizard (Figure 4-99). The default value is English. Click **OK**.

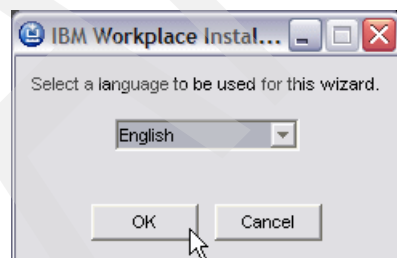


Figure 4-99 Selecting a language for the configuration wizard

4. After the initializing wizard completes, specify the Workplace Collaboration Services server for this wizard to configure as shown in Figure 4-100. Click **Next**.

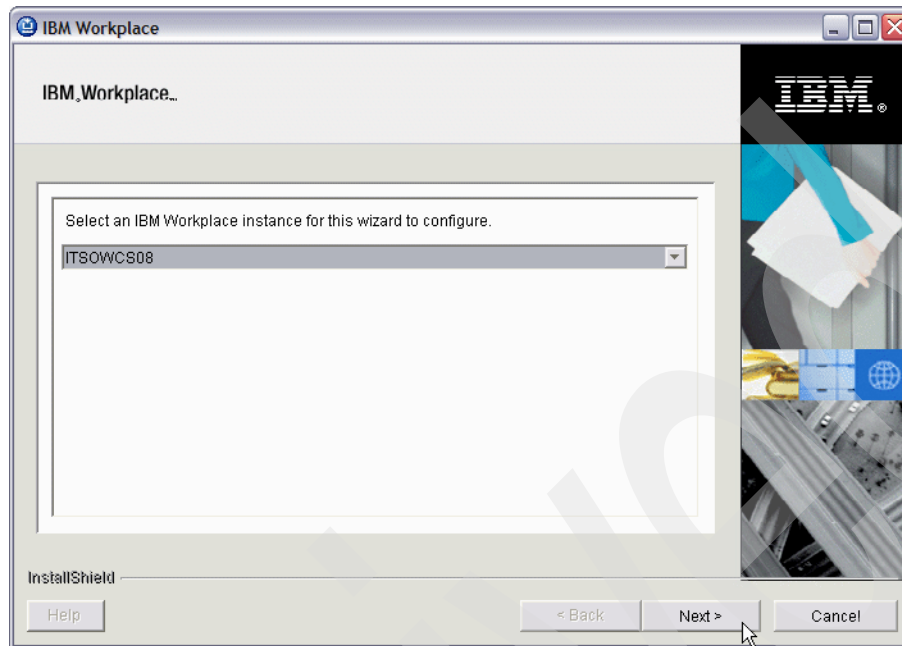


Figure 4-100 Specifying the Workplace Collaboration Services server to disable security

5. Select **Disable security**, as shown in Figure 4-101. Click **Next**.

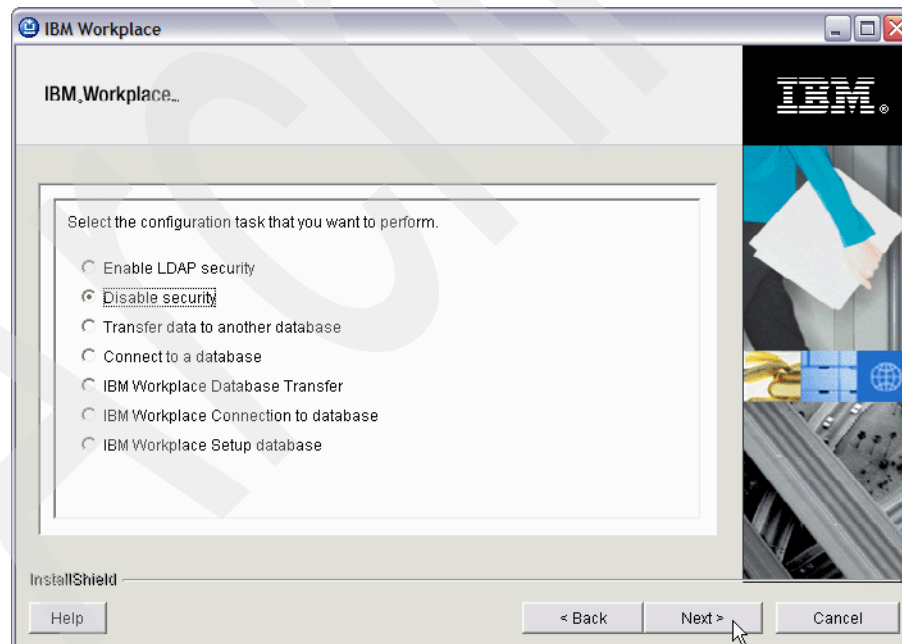


Figure 4-101 Selecting Disable security

6. Enter the Workplace Collaboration Services server administrator user ID and password, as shown in Figure 4-102. Click **Next**.

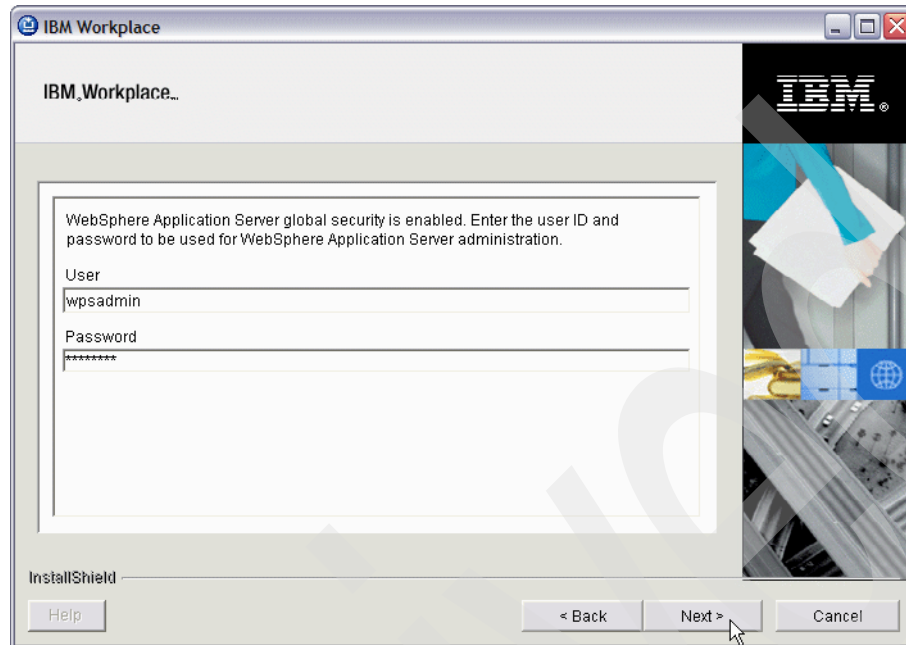


Figure 4-102 Workplace Collaboration Services server administrator user ID and password

7. Enter an optional helper file location for the configured LDAP server, as shown in Figure 4-103. Use the path and file name for the wpconfig.properties file, which is located in the Workplace Collaboration Services server directory. The wpconfig.properties file is located in the \QIBM\UserData\WebAS5\Base\instance\PortalServer\config\ directory on the iSeries server, where *instance* is the Workplace Collaboration Services server name.

Through this window, you can load in a properties file for the current session's use. This enables you to use properties from a properties file that you may have already completed before, the current wpconfig.properties file, a helper properties file provided by portal, or no property file at all.

To use a helper file provided by portal, click the **Browse** button and browse to the correct helper file in the \QIBM\UserData\WebAS5\Base\instance\PortalServer\config\helpers directory, where *instance* is the Workplace Collaboration Services server name.

Click **Next**.

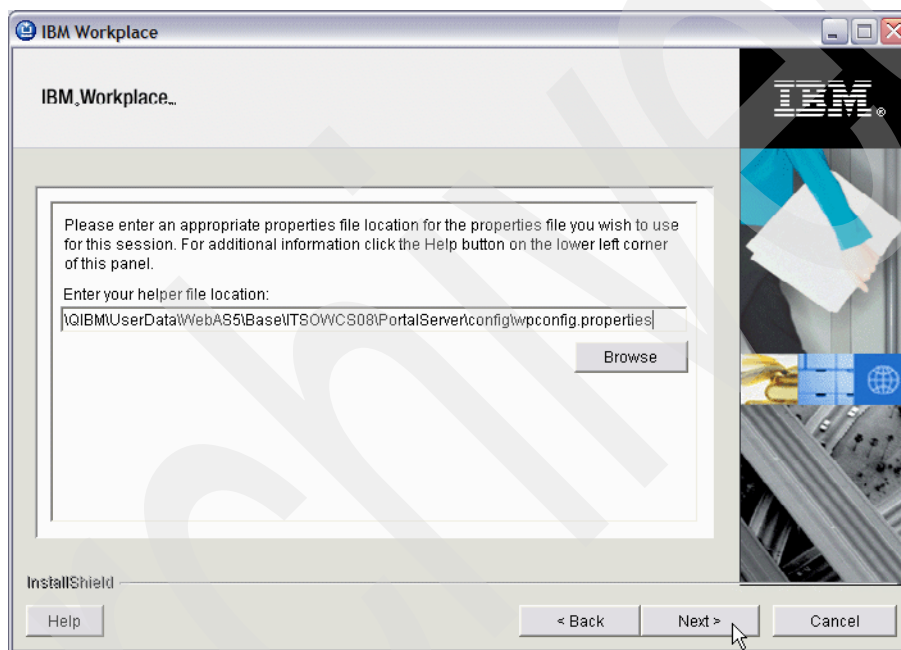


Figure 4-103 Specifying the helper file location for the configured LDAP server

8. As shown in Figure 4-104, the Configuration wizard retrieves the LDAP security values from the helper file. Click **Next**.

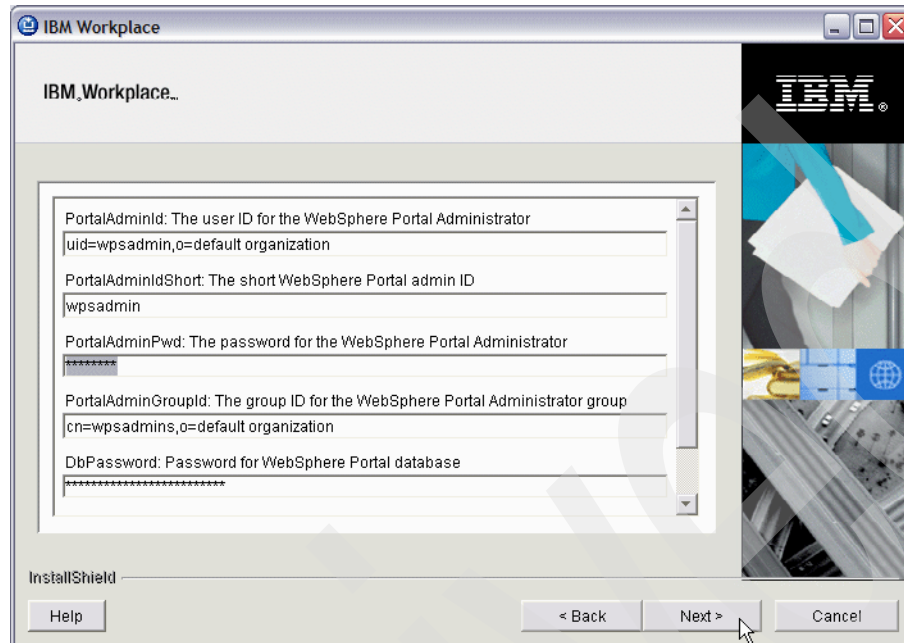


Figure 4-104 Retrieved values from the `wpconfig.properties` file

9. The Configuration wizard is now ready to disable security, as shown in Figure 4-105. Click **Next**.

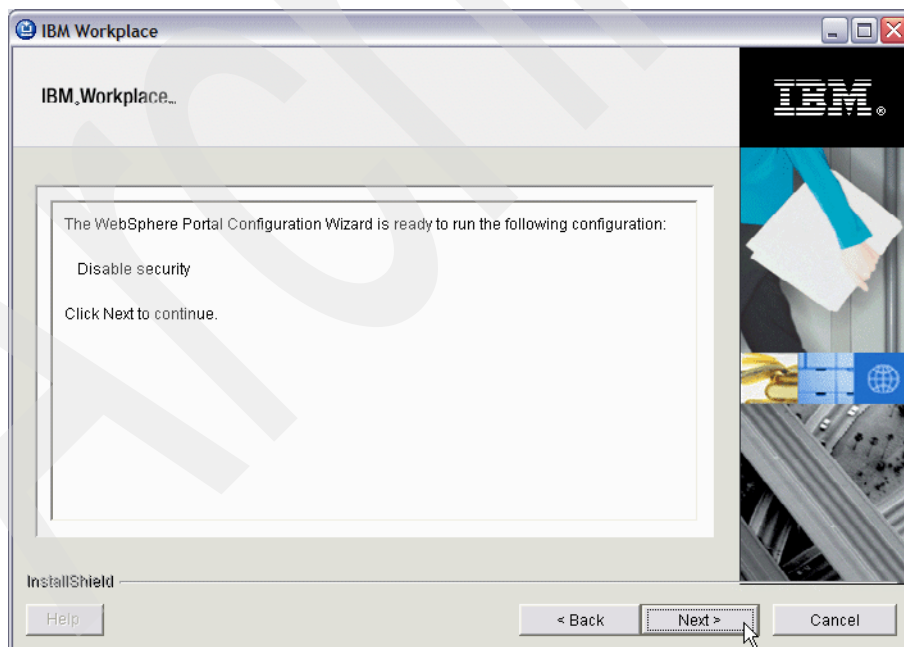


Figure 4-105 Ready to begin disabling security

10. The Configuration wizard begins the process of disabling security. Monitor the status bar, and the log file if desired (see Figure 4-106). You can find the log file in the /QIBM/UserData/WebAS5/Base/*instance*/PortalServer/log/configwizard.log directory, on the iSeries server, where *instance* is the Workplace Collaboration Services server.

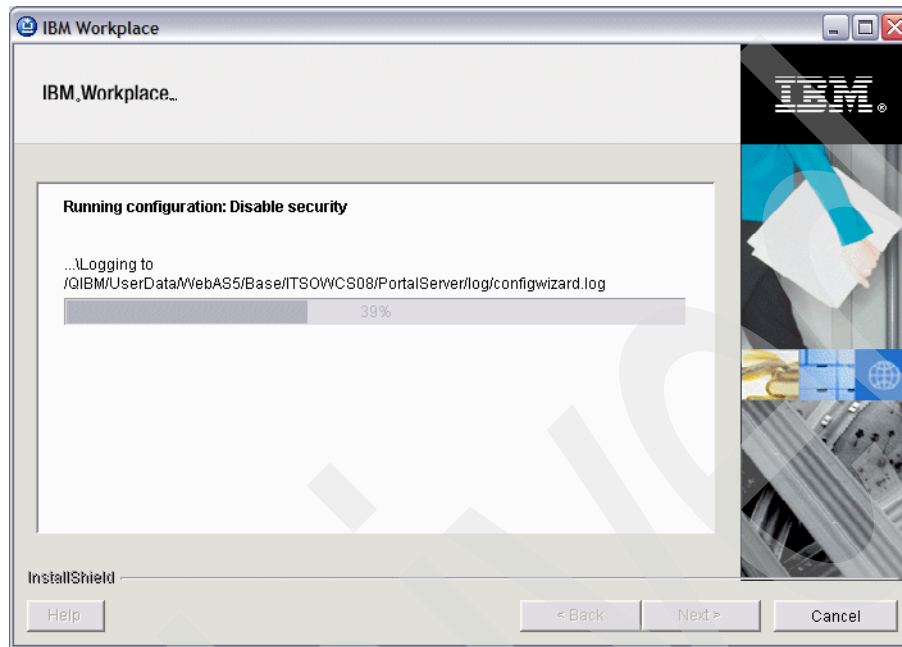


Figure 4-106 Running configuration: Disable security

11. After the Configuration wizard successfully disables security, the Run Wizard Again and Finish buttons are available. Figure 4-107 shows an example of a successfully disabled security.

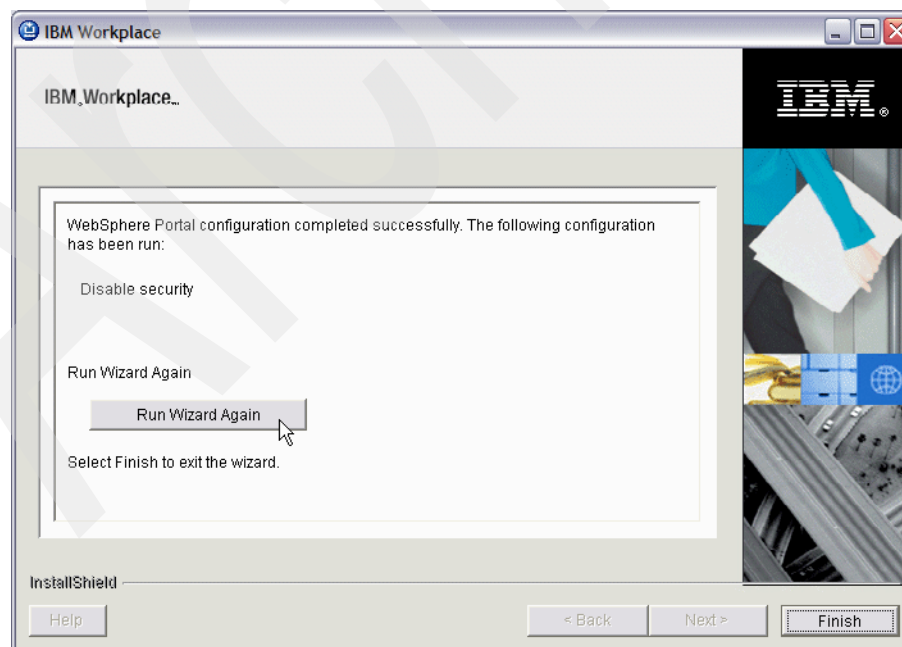


Figure 4-107 Successfully disabled security

At this point, security is disabled. The Workplace Collaboration Services server *will not* run successfully without security enabled. If you click **Finish** to exit the configuration wizard, you must follow steps 1 through 6 on page 149 to reconnect to the Configuration wizard to enable security with LDAP. We recommend that you click **Run Wizard Again** to enable LDAP security because the required servers are still running from disabling security.

For more information about Disabling LDAP security, refer to the Workplace Collaboration Services Information Center at the following Web address:

<http://publib.boulder.ibm.com/infocenter/lwpphelp/index.jsp>

## Enabling security

Configuring Workplace Collaboration Services to use an LDAP directory is referred to as “enabling LDAP security”. You use the Enable LDAP Security option provided with the Configuration wizard to complete this task. The wizard requires a supported and functioning LDAP directory server. The file used to launch the Configuration wizard is configwizard400.bat. IBM Web Administration for iSeries can only be used to enable LDAP security if the Workplace Collaboration Services server was not custom configured. This section explains how to use the Configuration wizard option for enabling LDAP security.

As discussed in “Disabling security” on page 146, we recommend that you run the Configuration wizard locally by copying the cfgwiz.exe to a PC workstation. If you chose the Run Wizard Again option after disabling security, as shown in Figure 4-107 on page 152, skip to step 5 on page 156 and select **Enable Security**. If the Configuration wizard must be started again, perform the following steps to run the Configuration wizard locally and connect to the Workplace Collaboration Services server configuration and enable LDAP security:

**Important:** Make sure the Cloudscape database server and Server1 servers are running, and the WebSphere\_Portal and Mail\_Server\_1 servers are stopped before running the Configuration wizard. See “Starting the Cloudscape database server” on page 133 for information about starting and stopping the Cloudscape database server. Also refer to 5.2, “Starting and stopping Workplace Collaboration Services” on page 203, for information about stopping and starting the other servers.

1. After you copy the cfgwiz.exe file from the Workplace Collaboration Services server directory, double-click the **cfgwiz.exe** file to launch it on the local PC workstation. This launches an InstallShield Wizard to prepare the JVM, as shown in Figure 4-108.

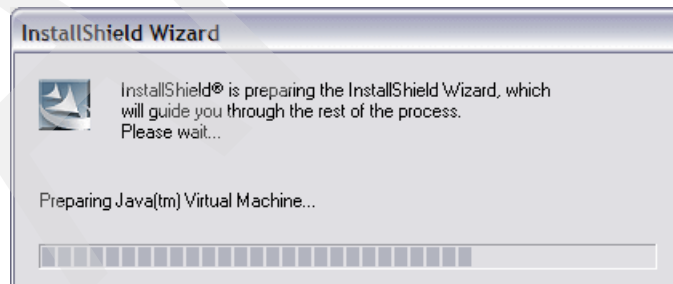


Figure 4-108 InstallShield preparing the JVM

2. When prompted, sign on to the iSeries server (Figure 4-109). Refer to 2.4.1, “Installation and configuration user profiles” on page 27, for the special authorities required by this user profile. Click **OK**.

**Tip:** Minimize all open windows, because the Signon to the Server window may appear in the background. Also disable any pop-up blockers.

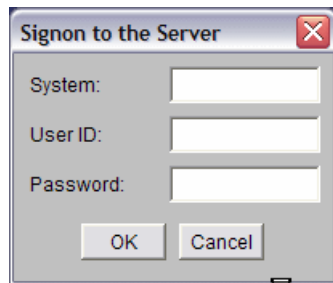


Figure 4-109 Signing on to the iSeries server

3. Select the appropriate language to be used for the wizard (Figure 4-110). The default value is English. Click **OK**.

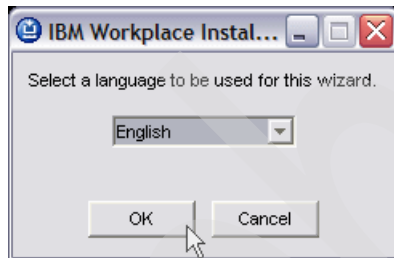


Figure 4-110 Selecting a language for the configuration wizard



4. After the initializing wizard completes, specify the Workplace Collaboration Services server for this wizard to configure as shown in Figure 4-111. Click **Next**.

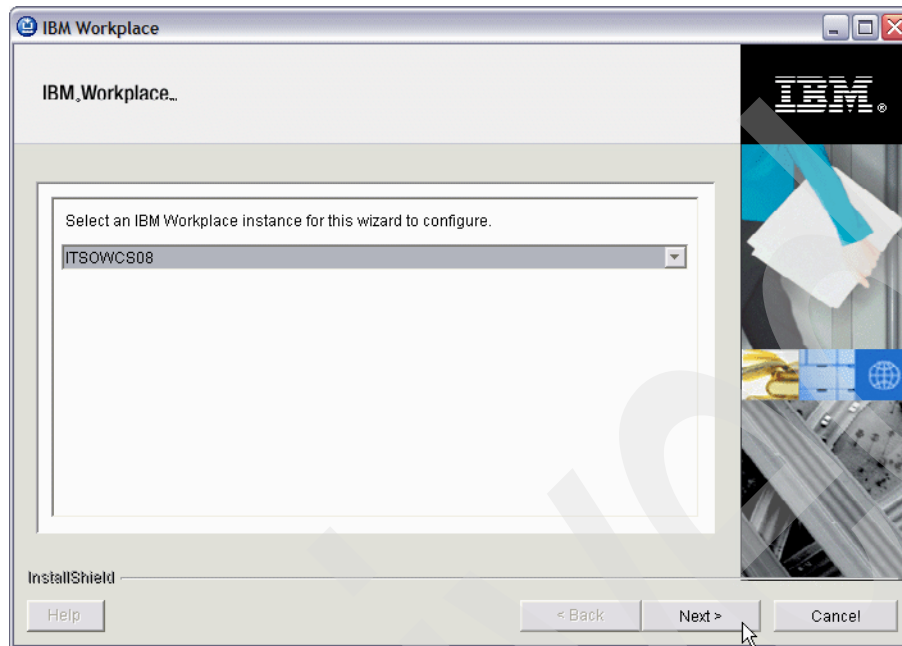


Figure 4-111 Specifying the Workplace Collaboration Services server to disable security

5. Select **Enable LDAP security**, as shown in Figure 4-112. Click **Next**.

**Note:** If you chose the Run Wizard Again option after disabling security, you do not have to provide the Workplace Collaboration Services administrator user ID and password. If relaunching the Configuration wizard to enable LDAP security, you must provide Workplace Collaboration Services administrator credentials as shown in Figure 4-102 on page 149.

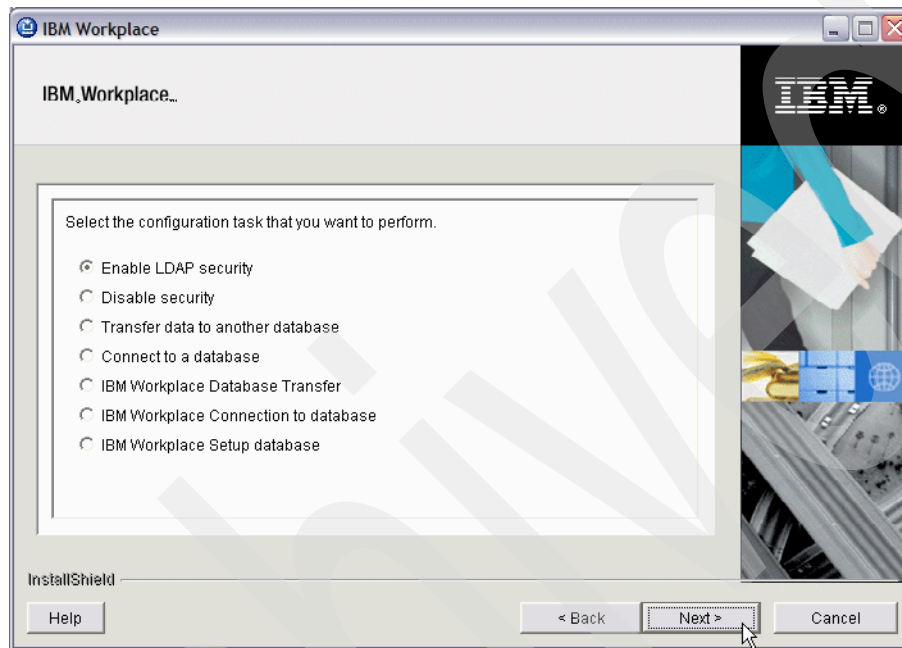


Figure 4-112 Enabling LDAP security

6. In this example, we enable LDAP security on a remote i5/OS IBM Directory Server. Select **IBM Tivoli Directory Server**, as shown in Figure 4-113, and click **Next**.

**Note:** The Configuration wizard identifies the IBM Directory Server on i5/OS as IBM Tivoli Directory Server.

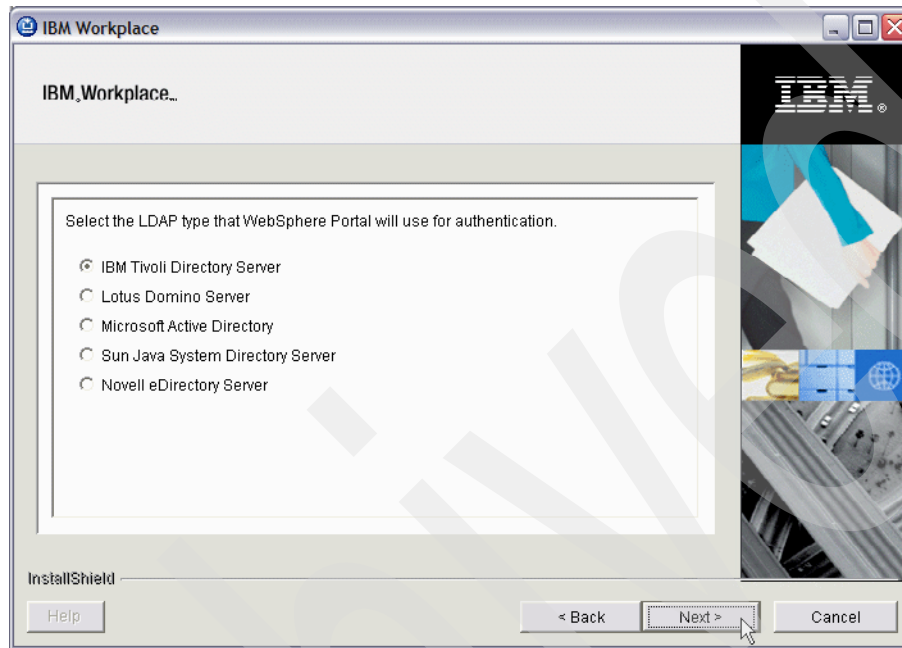


Figure 4-113 Selecting IBM Tivoli Directory Server

7. Enter an optional helper file path and file name for the configured LDAP server, as shown in Figure 4-114. In this panel, you can load in a properties file for the current session's use. This allows you to use properties from a properties file that you may have already completed before, the current wpconfig.properties file, a helper properties file provided by portal, or no property file at all.

To use a helper file provided by portal, click the **Browse** button. Then browse to the correct helper file in the \QIBM\UserData\WebAS5\Base\instance\PortalServer\config\helpers directory, where *instance* is the Workplace Collaboration Services server name. The helper file does not have to be completely updated for your environment. The Configuration wizard prompts you for all the values that are required. The helper file values are populated by the Configuration wizard if required for enabling LDAP security. Click **Next**.

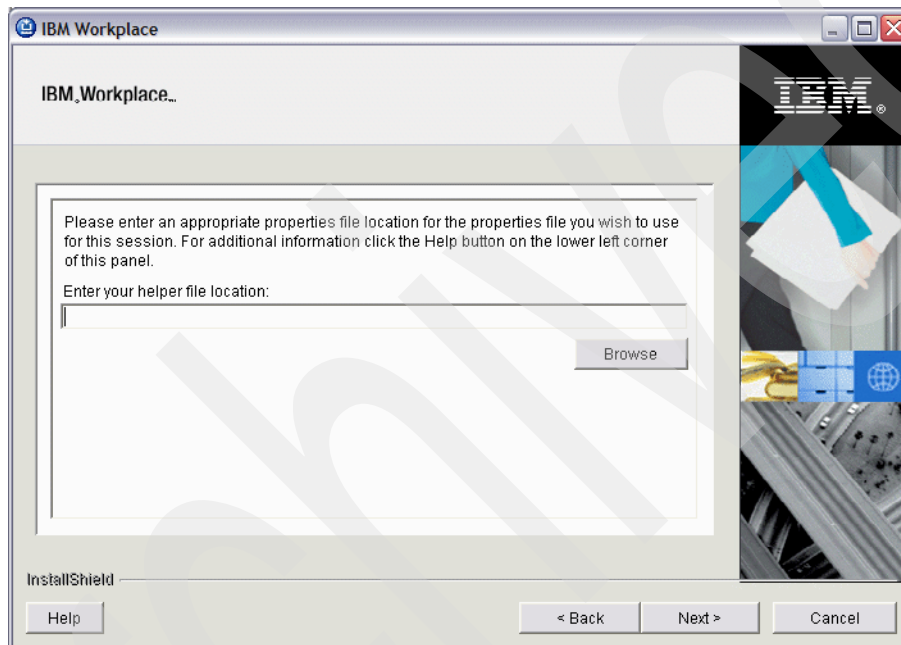


Figure 4-114 Specifying the helper file location for the configured LDAP server

8. In this example in which we enable LDAP security against an i5/OS IBM Directory server configured for Workplace Collaboration Services use, the helper file security\_ibm\_dir\_server.properties was updated for our example. Figure 4-115 shows what was updated in the security\_ibm\_dir\_server.properties helper file prior to enabling LDAP security against our i5/OS IBM Directory Server.

**Note:** Only the updated values are shown in Figure 4-115. The remaining values in the security\_ibm\_dir\_server.properties were left at the defaults.

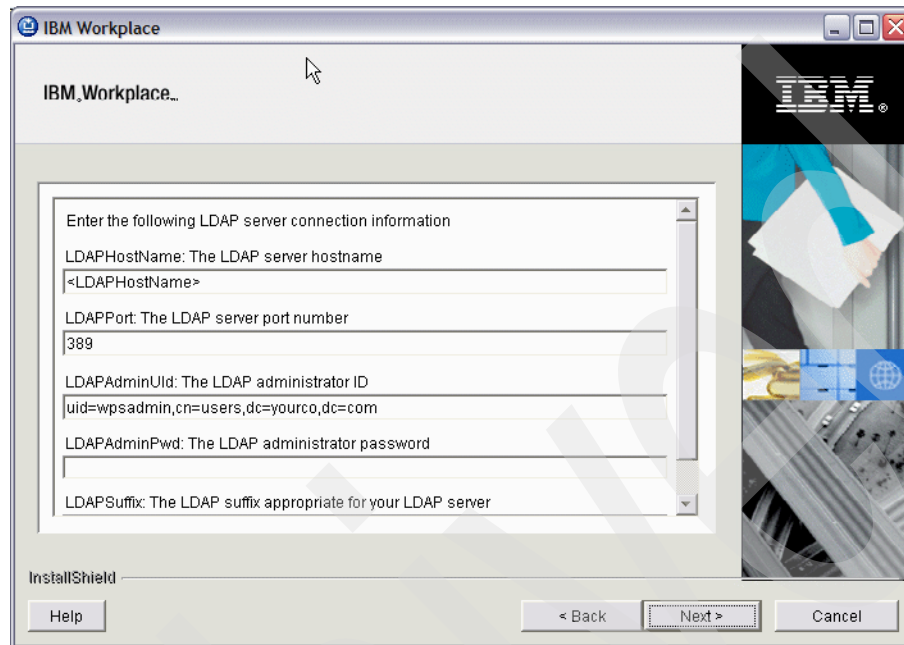
Refer to the Workplace Collaboration Services Information Center for more information about creating, editing, or using a helper file when enabling LDAP security:

<http://publib.boulder.ibm.com/infocenter/lwpphelp/index.jsp>

```
#####
# WebSphere Application Server Properties
#####
# WasUserId: The user ID for WebSphere Application Server security authentication
WasUserId=uid=wpsadmin,cn=users,o=itso
# WasPassword: The password for WebSphere Application Server security authentication
WasPassword=wpsadmin
# WpsHostName: The name of the WebSphere Portal host
# Note: a fully-qualified hostname is required to set up security and to communicate
#       with the Portal after security is enabled.
WpsHostName=itsowcs08.rchland.ibm.com
#####
# Portal Config Properties
#####
# PortalAdminId: The user ID for the WebSphere Portal Administrator
PortalAdminId=uid=wpsadmin,cn=users,o=itso
# PortalAdminIdShort: The short WebSphere Portal admin ID
PortalAdminIdShort=wpsadmin
# PortalAdminPwd: The password for the WebSphere Portal Administrator
PortalAdminPwd=wpsadmin
# PortalAdminGroupId: The group ID for the WebSphere Portal Administrator group
PortalAdminGroupId=cn=wpsadmins,cn=groups,o=itso
# PortalAdminGroupIdShort: The WebSphere Portal admin group ID
PortalAdminGroupIdShort=wpsadmins
#####
# WebSphere Portal Security LTPA and SSO configuration
#####
# LTPAPassword: Specifies the password to encrypt and decrypt the LTPA keys.
LTPAPassword=password
# SSODomainName: Specifies the domain name for all Single Sign-on hosts.
SSODomainName=
#####
# LDAP Properties Configuration
#####
# LDAPHostName: The LDAP server hostname
LDAPHostName=RCHAS12.RCHLAND.IBM.COM
# LDAPAdminUid: The LDAP administrator ID
LDAPAdminUid=cn=Administrator
#####
# Advanced LDAP Configuration
#####
# LDAPSuffix: The LDAP suffix appropriate for your LDAP server
LDAPSuffix=0=ITSO
#LDAPBindID: The user ID for LDAP Bind authentication
LDAPBindID=uid=wpsadmin,cn=users,o=ITSO
#####
# Advanced LDAP Configuration
#####
# LDAPSuffix: The LDAP suffix appropriate for your LDAP server
LDAPSuffix=0=ITSO
#LDAPReuseConnection: Should set to true by default to reuse the LDAP connection.
LDAPReuseConnection=true
```

Figure 4-115 The security\_ibm\_dir\_server.properties helper file for enabling security

9. As shown in Figure 4-116, the Configuration wizard retrieves the helper file values and prompts for the required settings not specified. In this example, the Configuration wizard prompts for the LDAP server connection information that was not specified in the helper file. Update the required fields for your environment, and click **Next** to continue.



The screenshot shows the 'IBM Workplace' configuration window. The title bar reads 'IBM Workplace'. The main content area is titled 'IBM Workplace...' and contains a list of LDAP server connection information prompts. The prompts are: 'LDAPHostName: The LDAP server hostname' with a text field containing '<LDAPHostName>', 'LDAPPort: The LDAP server port number' with a text field containing '389', 'LDAPAdminUid: The LDAP administrator ID' with a text field containing 'uid=wpsadmin,cn=users,dc=yourco,dc=com', 'LDAPAdminPwd: The LDAP administrator password' with an empty text field, and 'LDAPSuffix: The LDAP suffix appropriate for your LDAP server' with a text field. At the bottom of the window, there is an 'InstallShield' logo, a 'Help' button, and a navigation bar with '< Back', 'Next >', and 'Cancel' buttons. The 'Next >' button is highlighted.

Figure 4-116 Specifying the required LDAP security settings

10. After validating the input, the Configuration wizard continues to prompt for the required values, as shown in Figure 4-117. Make changes where needed and click **Next**.

**Tip:** At each stage, verify that the values that the wizard reads from the helper file are correct. Accurate values are essential for proper LDAP directory configuration.

The wizard may not read the domain name specified for the SSODomainName property from the helper file. In this case, be sure to type the SSO domain name again in the wizard.

If you change a distinguished name, the LdapUserPrefix, or the LdapGroupPrefix, remember to use lowercase characters.

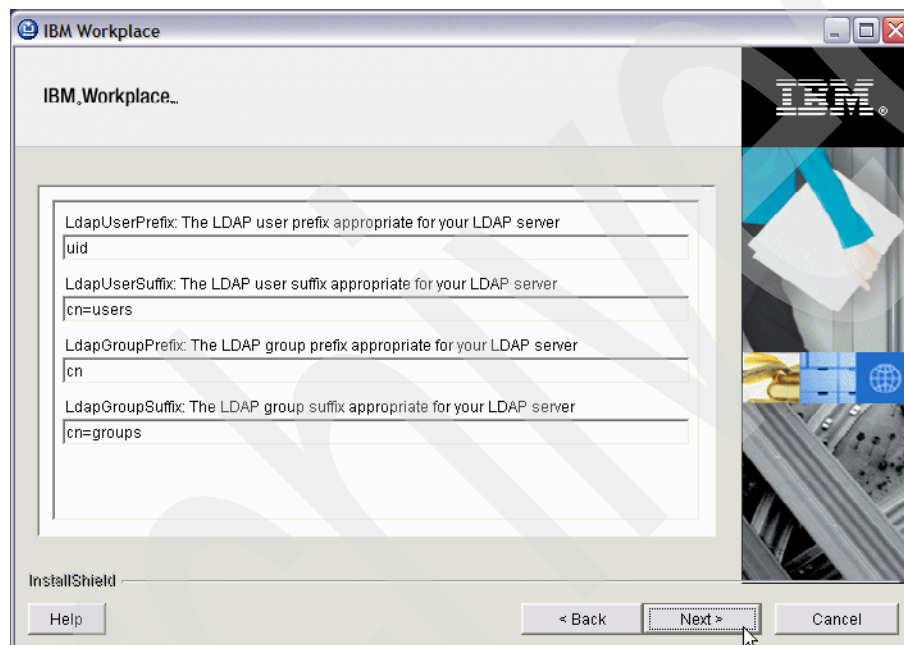
The screenshot shows the 'IBM Workplace' configuration window. The title bar says 'IBM Workplace'. Inside, the text 'IBM Workplace...' is at the top. Below it, there are four text input fields with labels: 'LdapUserPrefix: The LDAP user prefix appropriate for your LDAP server' (containing 'uid'), 'LdapUserSuffix: The LDAP user suffix appropriate for your LDAP server' (containing 'cn=users'), 'LdapGroupPrefix: The LDAP group prefix appropriate for your LDAP server' (containing 'cn'), and 'LdapGroupSuffix: The LDAP group suffix appropriate for your LDAP server' (containing 'cn=groups'). At the bottom left is an 'InstallShield' logo and a 'Help' button. At the bottom right are '< Back', 'Next >', and 'Cancel' buttons. A mouse cursor is pointing at the 'Next >' button. On the right side of the window, there is a vertical strip with the IBM logo and some graphical elements.

Figure 4-117 Specifying the required settings to enable LDAP security

11. Continue to verify the LDAP security settings and make changes where needed (Figure 4-118). The passwords for the WebSphere Portal, WebSphere Member Manager, and Workplace Collaboration Services databases are required. These values are not included in the helper file, so you must enter them manually. These passwords can be any text value, but do not leave them blank. Then click **Next**.

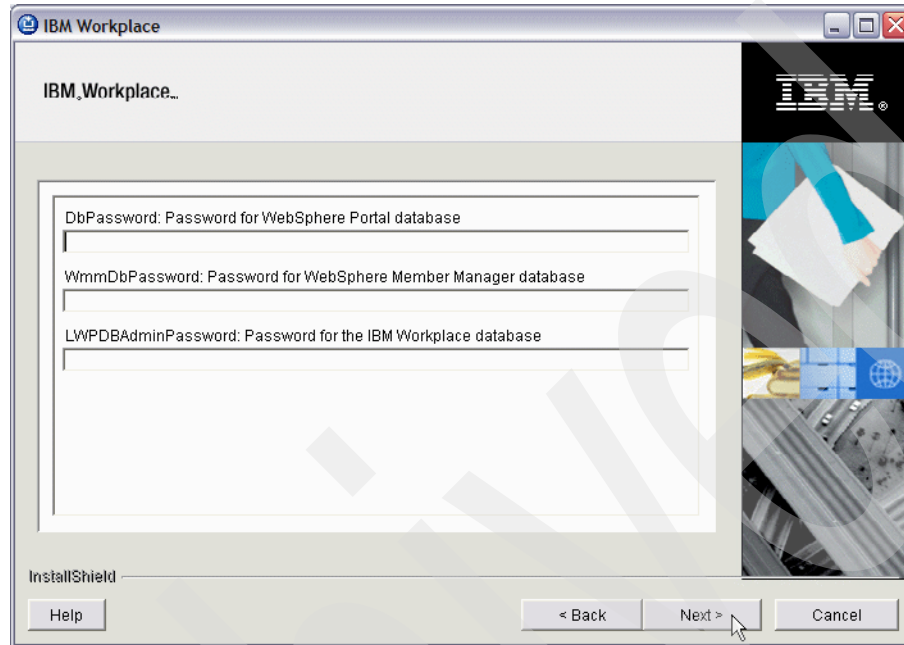


Figure 4-118 Specifying the database passwords

12. Continue to verify the LDAP security settings and make changes where needed. After you verify all LDAP security settings, the Configuration wizard is ready to enable LDAP security for the Workplace Collaboration Services server (Figure 4-119). Click **Next**.

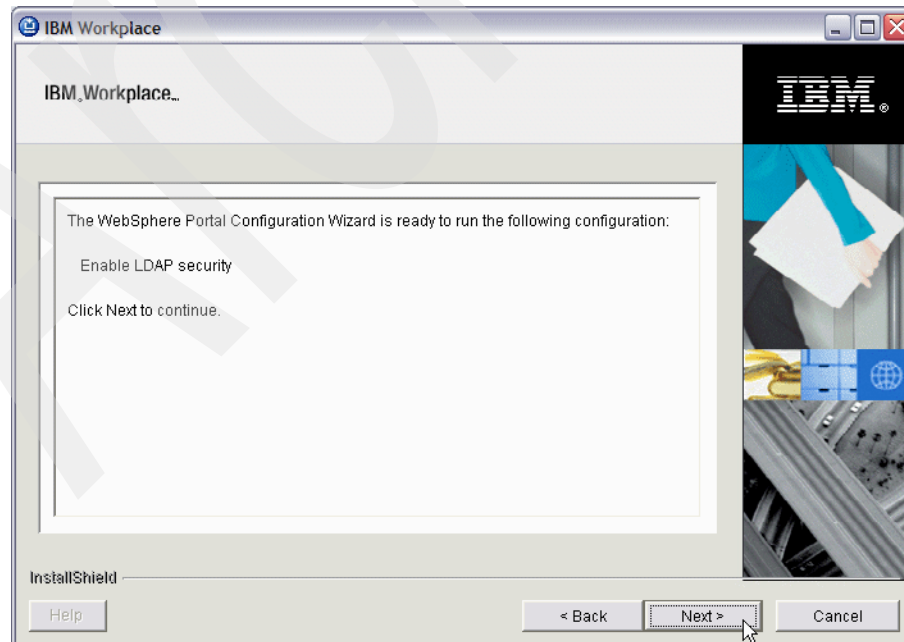


Figure 4-119 Configuration wizard ready to enable LDAP security



13. The Configuration wizard begins the process of enabling LDAP security. Monitor the status bar and the log file if desired as shown in Figure 4-120. You can find the log file in the /QIBM/UserData/WebAS5/Base/*instance*/PortalServer/log/configwizard.log directory on the iSeries server, where *instance* is the Workplace Collaboration Services server name.

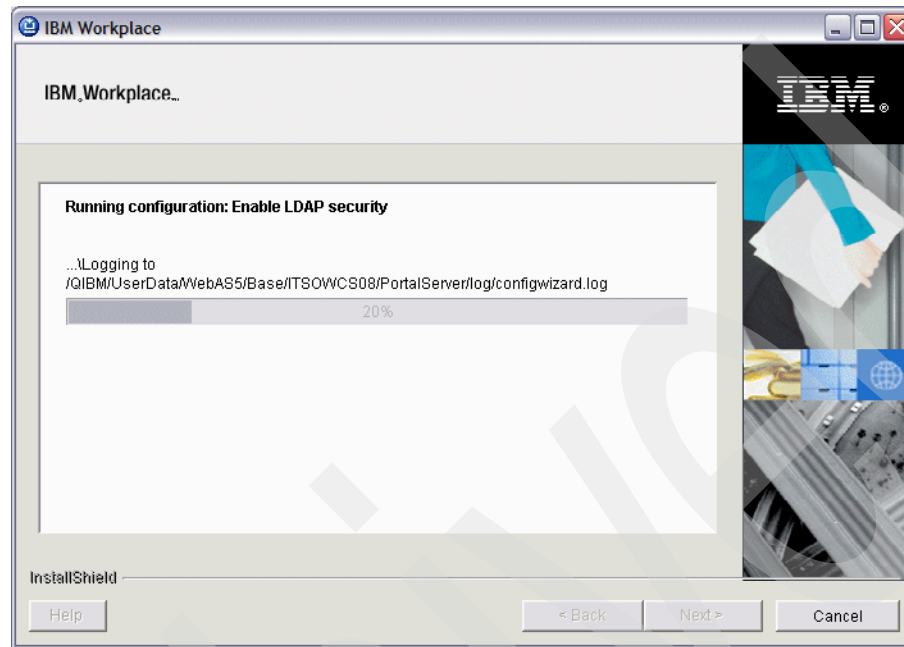


Figure 4-120 Enabling LDAP security

14. When the configuration is successfully completed, you can either click Run Wizard Again or click Finish as shown in Figure 4-121. In this example, we click **Finish** to complete the enabling of LDAP security for the Workplace Collaboration Services server.

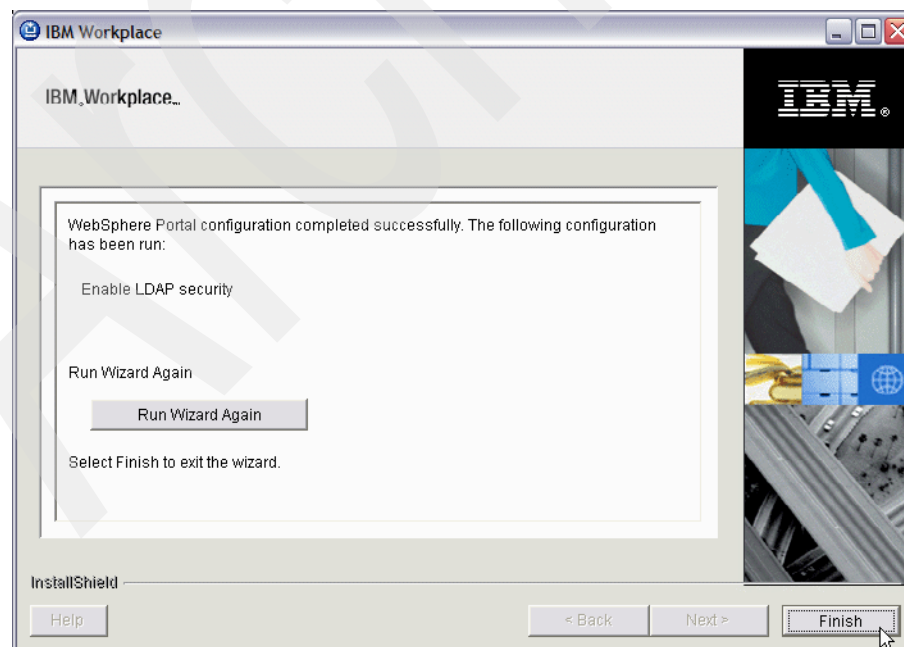


Figure 4-121 Enabling LDAP security completed successfully

If the configuration does not complete successfully, follow these steps:

- a. Open the configwizard.log and configwizardlog.txt files to help you troubleshoot errors and determine the correct values. You can find these files in the following directories on the iSeries server, where *instance* is the Workplace Collaboration Services server name:

- /QIBM/UserData/WebAS5/Base/*instance*/PortalServer/log/configwizard.log
- /QIBM/UserData/WebAS5/Base/*instance*/PortalServer/log/configwizardlog.txt

**Tip:** Rename the two log files to reflect the configuration task chosen so that you can find them easily if you need them in the future.

- b. Correct any incorrect values in the helper file and repeat the previous steps.

The Workplace Collaboration Services server is now enabled with security using a supported LDAP server.

## Verifying the LDAP security configuration

To verify the custom configuration of enabling LDAP security with the i5/OS IBM Directory Server:

1. Stop and restart the database server. At this point in our example, Cloudscape is still the database server. From within the Qshell environment, enter the following command to start the Cloudscape database server, where *instance* is the name of the Workplace Collaboration Services server:

```
cd /QIBM/UserData/WebAS5/Base/instance/PortalServer/rootscripts/subtasks
startNetworkServer.sh -verbose
```

At this point, the Cloudscape server is started. To verify that the Cloudscape database server has remained started, from Qshell, enter the following command from the same directory:

```
checkNetworkServer.sh -verbose
```

2. Start the WebSphere\_Portal server for the Workplace Collaboration Services server. You can do this by using IBM iSeries Web Administration or Qshell. The steps provided are an example of starting from Qshell:
  - a. Enter the STRQSH CL command on an i5/OS command line to start Qshell Interpreter.
  - b. Enter the following Qshell command to start the WebSphere\_Portal server, where *instance* is the Workplace Collaboration Services server name:

```
/qibm/proddata/webas5/pme/bin/startServer WebSphere_Portal -instance instance
```

Figure 4-122 shows an example of starting a Workplace Collaboration Services server called ITSOWCS08.

```

QSH Command Entry

>/qibm/proddata/webas5/pme/bin/startServerWebSphere_Portal -instance itsowcs08
CPC1221: Job 084414/QEJBSVR/WEBSPPHRE_ submitted to job queue QEJBJOBQ in
library QEJBAS5.
EJB6123: Application server started.
Cause . . . . . : Application server WebSphere_ in PME instance
itsowcs08 has started and is ready to accept connections on admin port
30810.
$

===>
F3=Exit F6=Print F9=Retrieve F12=Disconnect
F13=Clear F17=Top F18=Bottom F21=CL command entry

```

Figure 4-122 Starting the WebSphere\_Portal server from Qshell

3. Open a Web browser and enter the following URL, where *instance* is the fully qualified host name and *<portblock>+9* is the configured port range plus 9 of the Workplace Collaboration Services server. This port number is the internal HTTP port for the Workplace Collaboration Services server since an external HTTP has not yet been configured.

`http://instance:<portblock>+9/lwp/workplace`

In this example, we use:

`http://itsowcs08.rchland.ibm.com:30809/lwp/workplace`

4. After the Web browser connects to the Workplace Collaboration Services server, click **Log in** and authenticate with the user ID and password of the Workplace Collaboration Services server administrator. This results in a successful test of the custom configured Workplace Collaboration Services server for enabling LDAP security (see Figure 4-123).

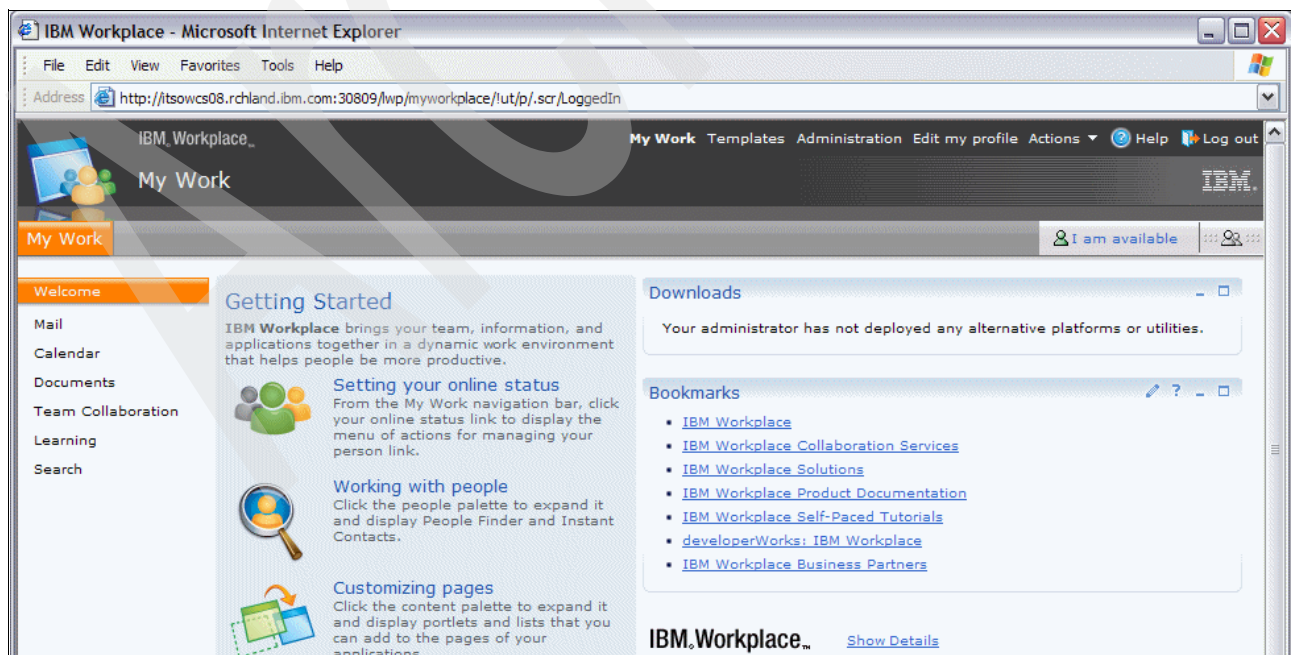


Figure 4-123 Workplace Collaboration Services server default Welcome page

#### 4.4.5 Transferring Cloudscape data to IBM DB2 Universal Database for iSeries

By default, Workplace Collaboration Services is installed with some predefined data stored in the IBM Cloudscape database management system (DBMS). Data for IBM WebSphere Portal, installed along with Workplace Collaboration Services 2.5, is also stored in Cloudscape.

Cloudscape is sufficient for use in demo installations. However, for a production environment, we recommend that you use a more robust DBMS product for storing Workplace Collaboration Services data. This section explains how to transfer data from Cloudscape to IBM DB2 Universal Database for iSeries.

For additional information about the Cloudscape transfer to other DB2 Universal Database servers, refer to the “Transferring data to DB2 Universal Database” section in the Workplace Collaboration Services Information Center:

<http://publib.boulder.ibm.com/infocenter/lwpphelp/index.jsp>

Transferring data to IBM DB2 Universal Database for iSeries involves the following tasks, which you *must* complete in the following sequence:

1. Create a database in IBM DB2 Universal Database for iSeries and set up its schemas. See for “Creating and setting up the schema for IBM DB2 Universal Database for iSeries” on page 168 for details.
2. Transfer WebSphere Portal data to IBM DB2 Universal Database for iSeries. See “Transferring WebSphere Portal data to IBM DB2 Universal Database for iSeries” on page 172 for details.
3. Transfer Workplace Collaboration Services data from Cloudscape to IBM DB2 Universal Database for iSeries. See “Transferring Workplace data to IBM DB2 Universal Database for iSeries” on page 179 for details.
4. Update the IBM DB2 Universal Database for iSeries settings.

Each step is performed from the Configuration wizard (configwizard400.bat). See Figure 4-124.

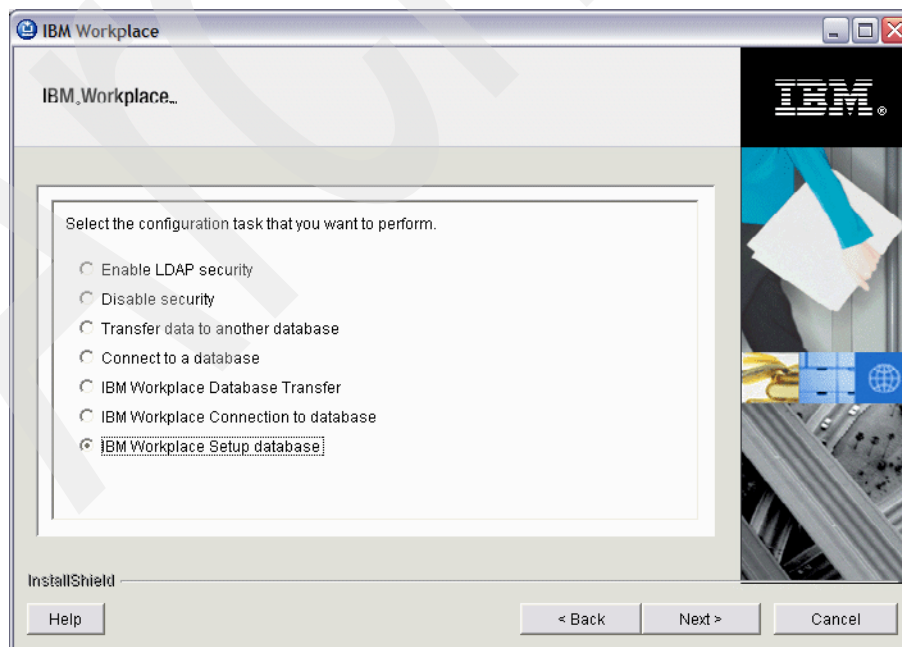


Figure 4-124 Configuration tasks for custom configuration

**Important:** Make sure that the Cloudscape database server and Server1 servers are running, and the WebSphere\_Portal and Mail\_Server\_1 servers are stopped before you run the Configuration wizard. See “Starting the Cloudscape database server” on page 133 for information about starting and stopping the Cloudscape database server. Also refer to 5.2, “Starting and stopping Workplace Collaboration Services” on page 203, for information about stopping and starting the other servers.

## Verifying that the Cloudscape database server is running

To verify that the Cloudscape database server is running:

1. Enter the STRQSH CL command from a 5250 emulation session on the iSeries server to start the Qshell environment.
2. Enter the following Qshell commands to verify that the Cloudscape database server is started:

```
cd /QIBM/UserData/WebAS5/Base/<InstanceName>/PortalServer/rootscripts/subtasks
checkNetworkServer.sh -verbose
```

If the Cloudscape database server is running, you should see the output shown in Figure 4-125. In this example, the instance itsowcs05 is running in the port range of 30500. Since this Cloudscape server uses a port of this base plus 49, it shows a port of 30549. This value can be different on your system.

If the Cloudscape database server is not running, an I/O exception occurs. See “Starting the Cloudscape database server” on page 133 for information about starting the Cloudscape database server.

```
> /qibm/userdata/webas5/base/itsowcs05/portalserver/rootscripts/subtasks/checkne
tworkserver.sh -verbose
Connection obtained for host: localhost, port number 30549.
$
```

Figure 4-125 Verifying the Cloudscape database server is running

3. Press F12 to exit the Qshell environment.

To start or verify that the Server1 server is running, use the IBM Web Administration for iSeries. Figure 4-126 shows an example of how you can verify the status of this server.

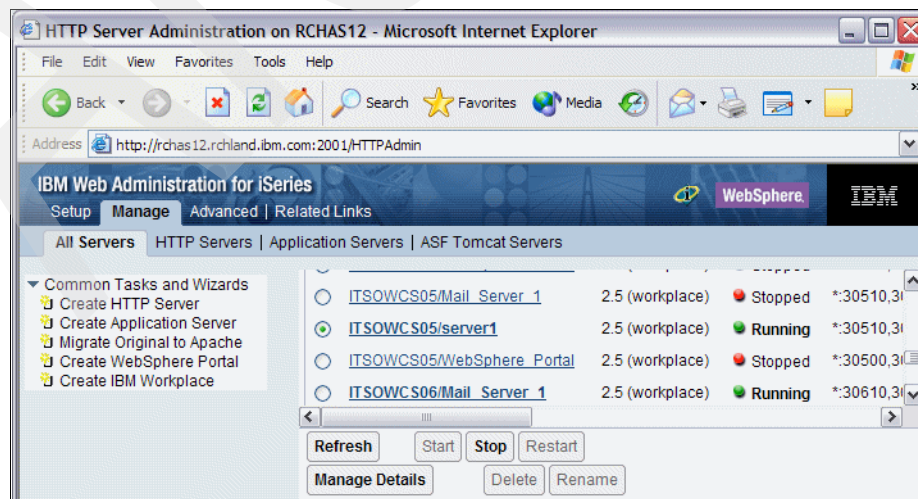


Figure 4-126 Checking the status of Server1

## Creating and setting up the schema for IBM DB2 Universal Database for iSeries

Perform the following steps from the Configuration wizard (configwizard400.bat) for the creation and schema setup of the Workplace Collaboration Services server databases in IBM DB2 Universal Database for iSeries:

1. From the Configuration wizard, select **IBM Workplace Setup Database** and click **Next**.  
See Figure 4-124 on page 166.
2. In the next panel (Figure 4-127), select **IBM DB2 for iSeries** and click **Next**.

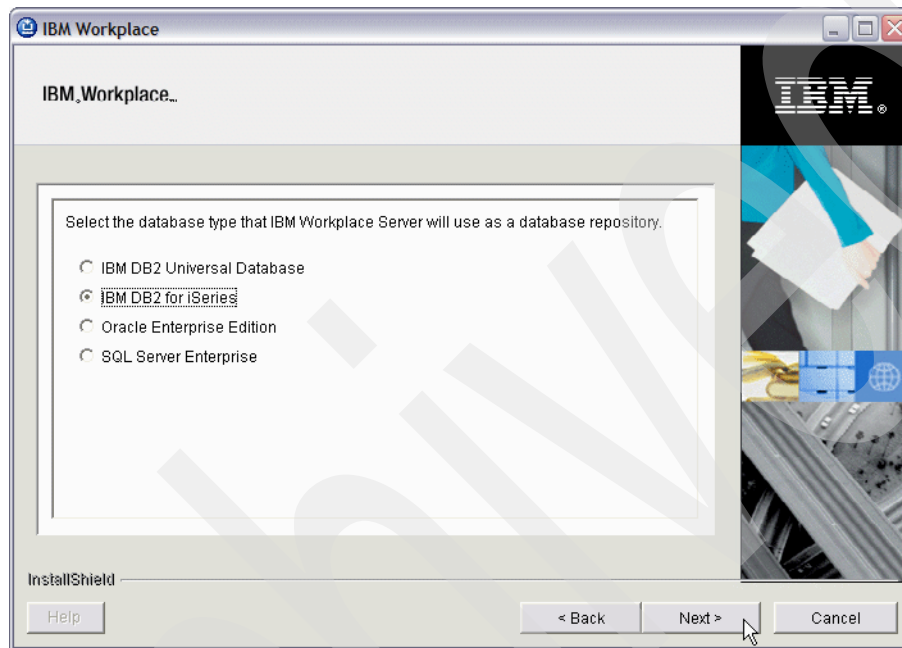


Figure 4-127 Selecting IBM DB2 for iSeries



3. Verify or specify the LWPDBDriver and LWPDbLibrary. In our example, we kept the default values as shown in Figure 4-128. Click **Next**.

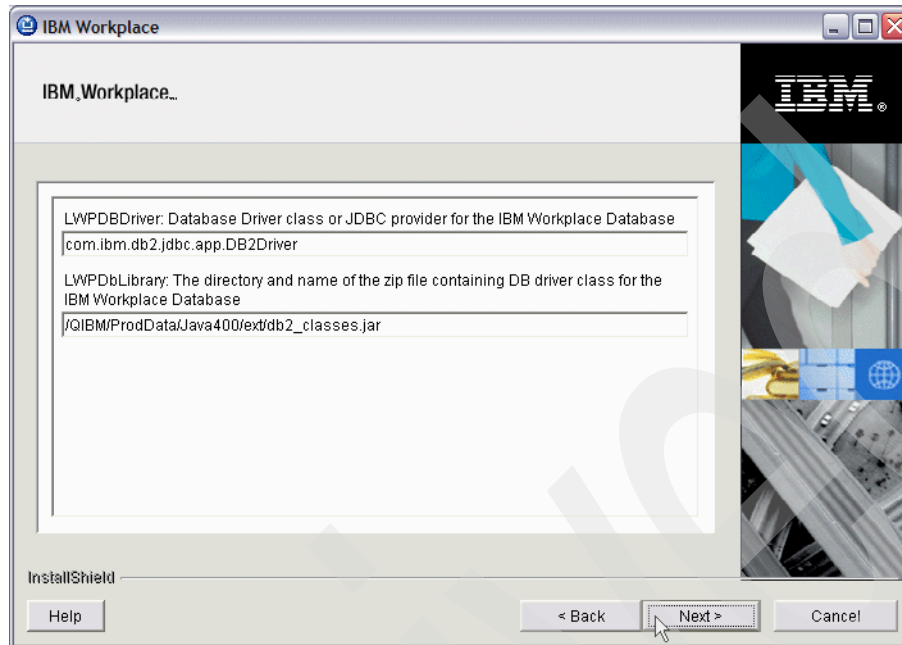


Figure 4-128 Specifying LWPDBDriver and LWPDbLibrary

4. Specify the parameters about the new database (Figure 4-129). Click **Next**.

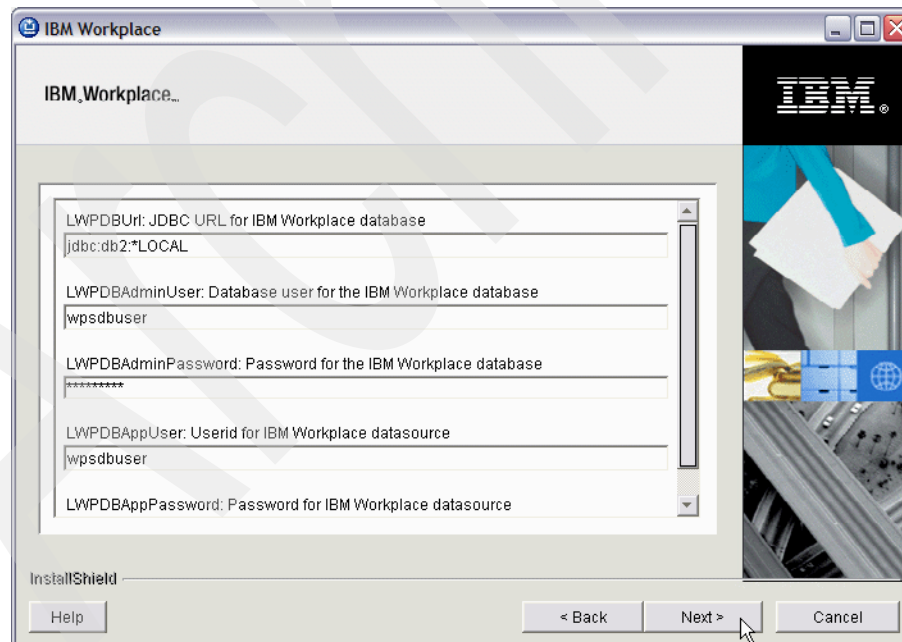


Figure 4-129 Required parameters for the database creation

5. In the next panel (Figure 4-130), the LWPDSuffix is requested. The LWPDBSuffix is not required for IBM DB2 for iSeries. For iSeries, this parameter is not required and can be left blank. Click **Next**.

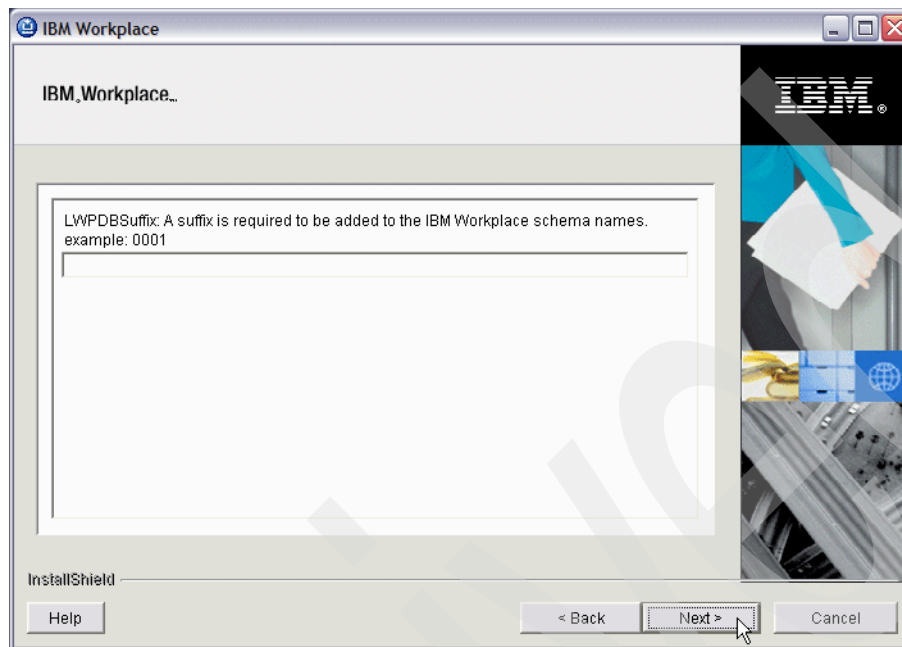


Figure 4-130 Requesting the LWPDBSuffix

6. You may experience a delay before the Configuration wizard starts running the configuration. When it starts, you see the status of the configuration as shown in Figure 4-131.

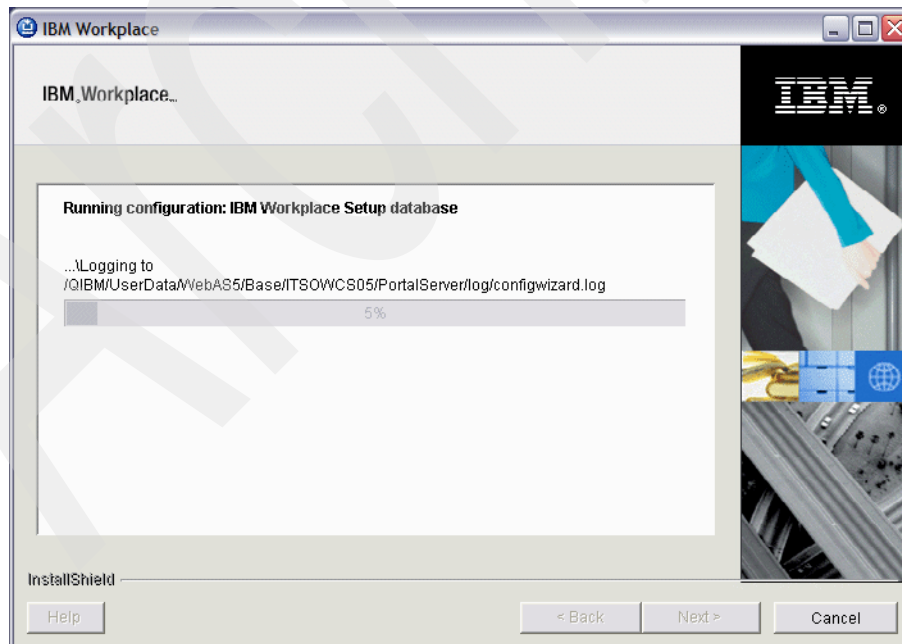


Figure 4-131 Wizard running the configuration to set up the DB2 Universal Database databases



7. The location of the IBM Workplace Setup database scripts is displayed as shown in Figure 4-132. Be sure to select the **Do you wish this setup wizard to run these scripts now?** check box. Click **Next**.

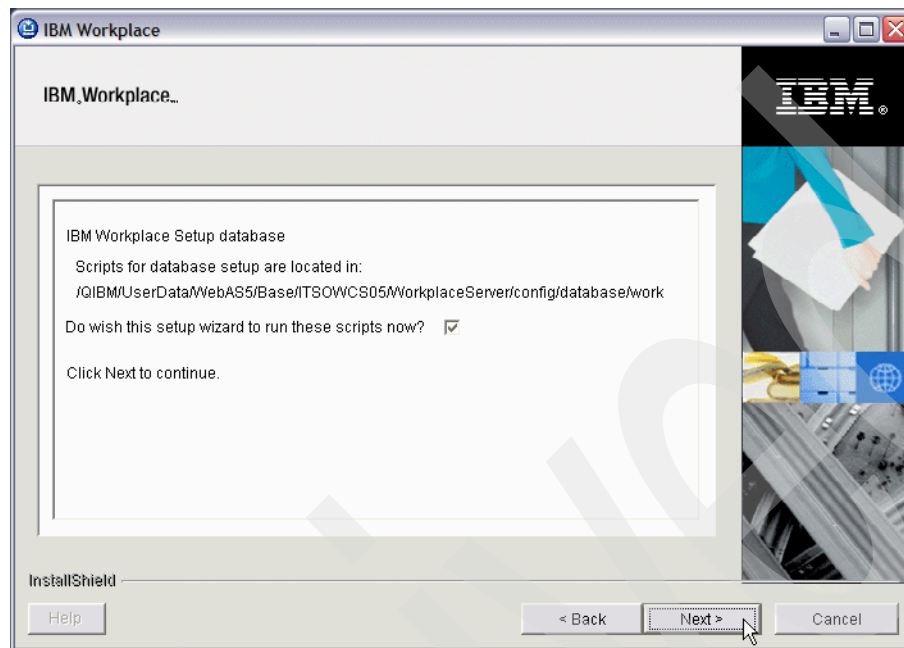


Figure 4-132 IBM Workplace Setup database script locations

8. You may experience a delay, but the Configuration wizard continues running the configuration. You see the status of the configuration as shown in Figure 4-133.

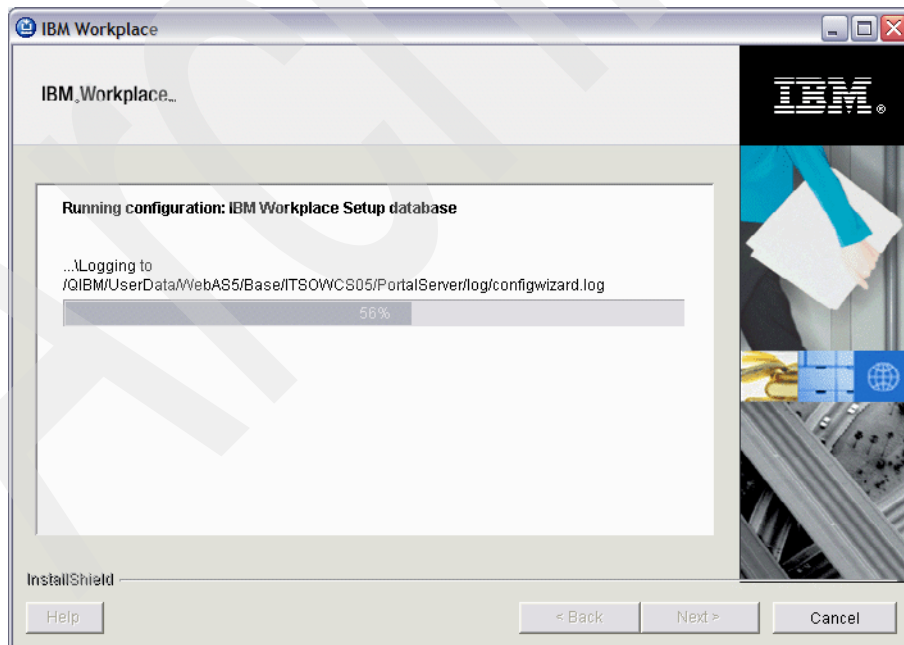


Figure 4-133 Wizard running the configuration to set up the DB2 Universal Database databases

- When completed, the Configuration wizard prompts you to click either Finish or Run Wizard Again, as shown in Figure 4-134. Click **Run Wizard Again** to start the Transfer of WebSphere Portal data.

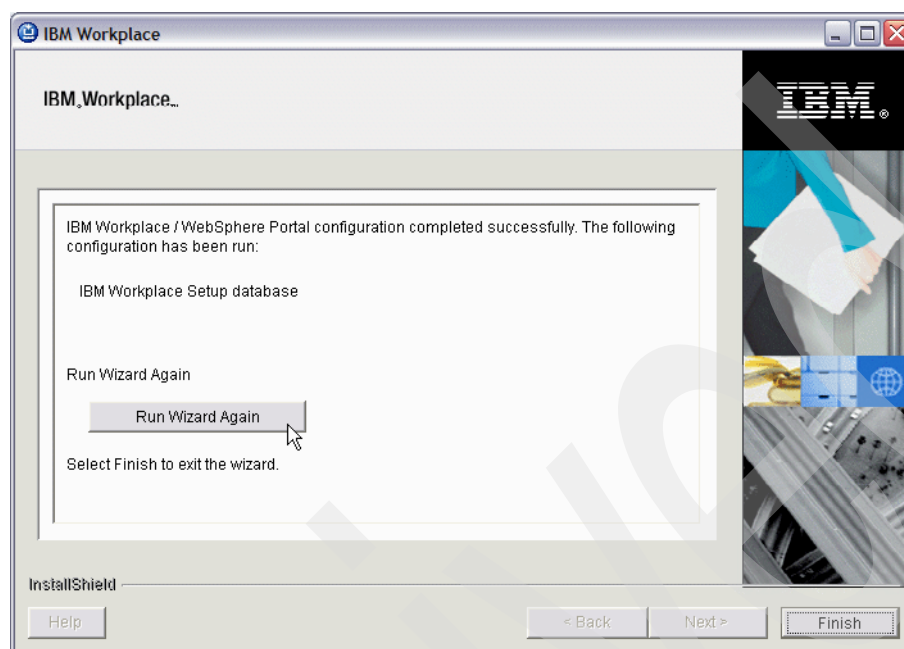


Figure 4-134 Selecting to run the Configuration wizard again

### Transferring WebSphere Portal data to IBM DB2 Universal Database for iSeries

Perform the following steps from the Configuration wizard (configwizard400.bat) for the transfer of the WebSphere Portal data to IBM DB2 Universal Database for iSeries:

- Refer to “Verifying that the Cloudscape database server is running” on page 167 to verify that the Cloudscape database server is started.
- From the Configuration wizard, select **Transfer Data to Another Database** and click **Next**. See Figure 4-124 on page 166.

3. Specify the user ID and password of the WebSphere Application Server administrator (Figure 4-135). Click **Next**.

**Note:** If you chose the Run Wizard Again option, you do not have to provide the Workplace Collaboration Services administrator user ID and password. If you are relaunching the Configuration wizard, you are prompted to provide the Workplace Collaboration Services administrator credentials as shown in Figure 4-135.

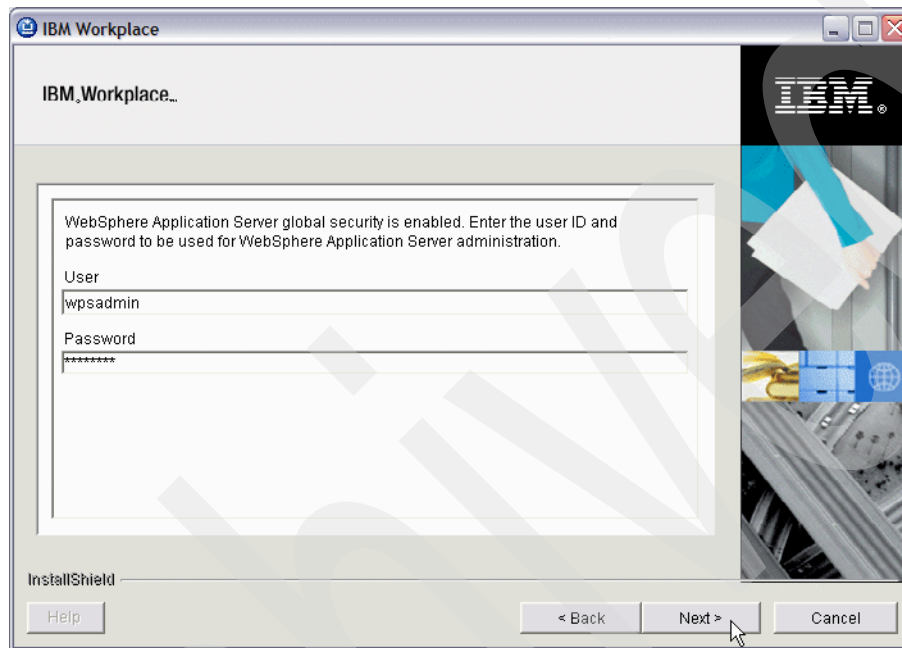


Figure 4-135 Specifying the WebSphere Application Server administrator user ID and password

4. Specify the LDAP administrator user ID and password (Figure 4-136). Click **Next**.

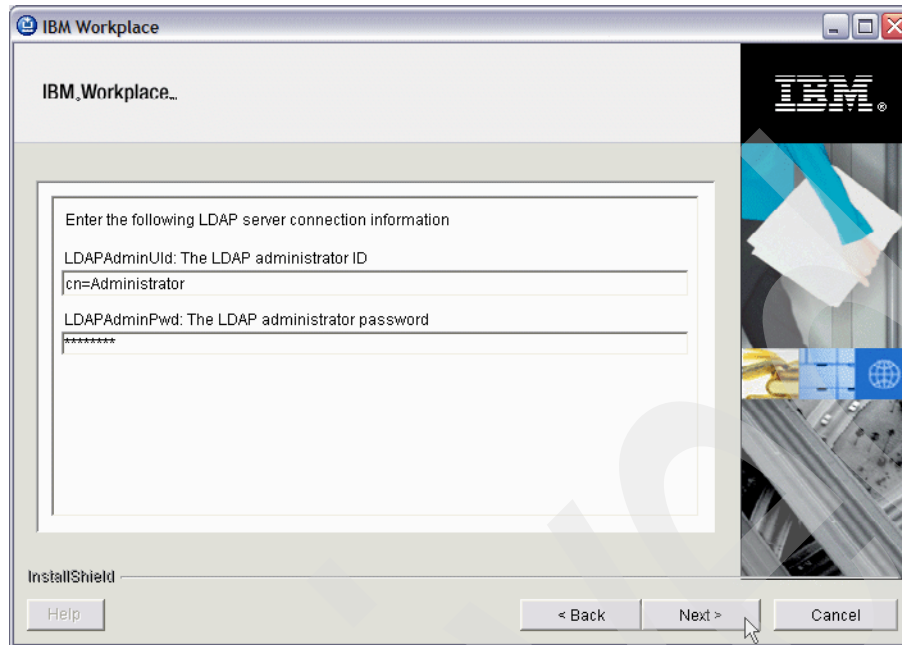


Figure 4-136 Specifying the LDAP administrator user ID and password

5. In the next panel (Figure 4-137), select **IBM DB2 for iSeries** and click **Next**.

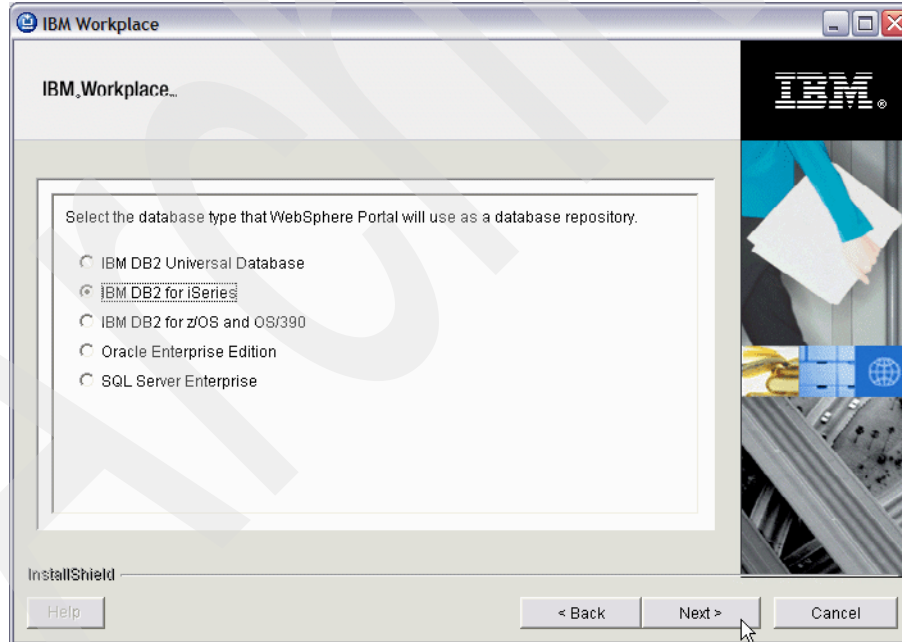


Figure 4-137 Selecting the database repository

6. Enter or verify the location of the properties file as shown in Figure 4-138. We recommend that you use the default properties file of `/QIBM/UserData/WebAS5/Base/instance/PortalServer/config/helpers/transfer_db2_iseries.properties`, for example, where *instance* is the Workplace Collaboration Services server name.

Click **Next**.

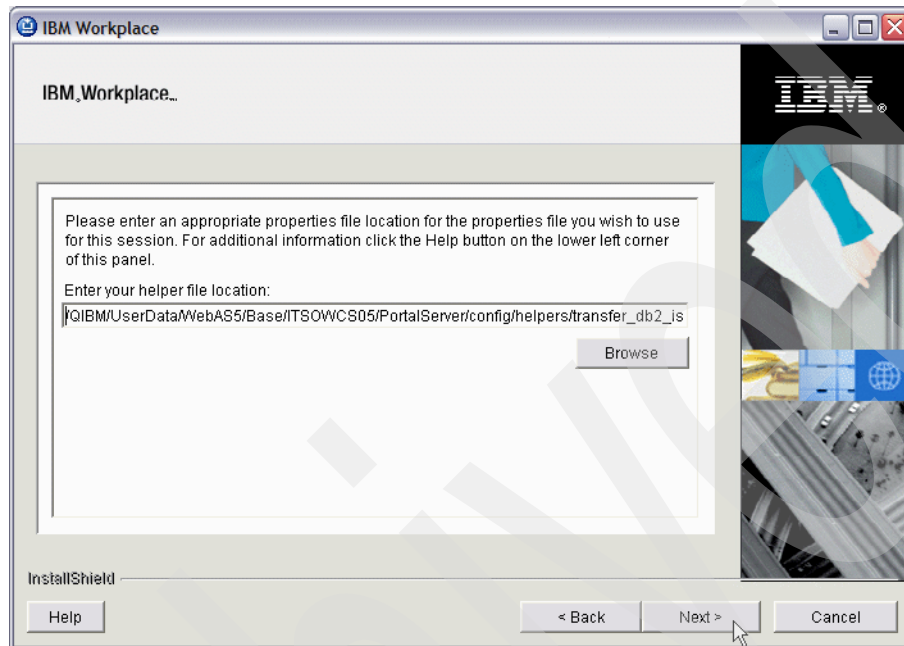


Figure 4-138 Specifying the properties file location

7. Verify or change the database drivers and library, as shown in Figure 4-139. Click **Next**.

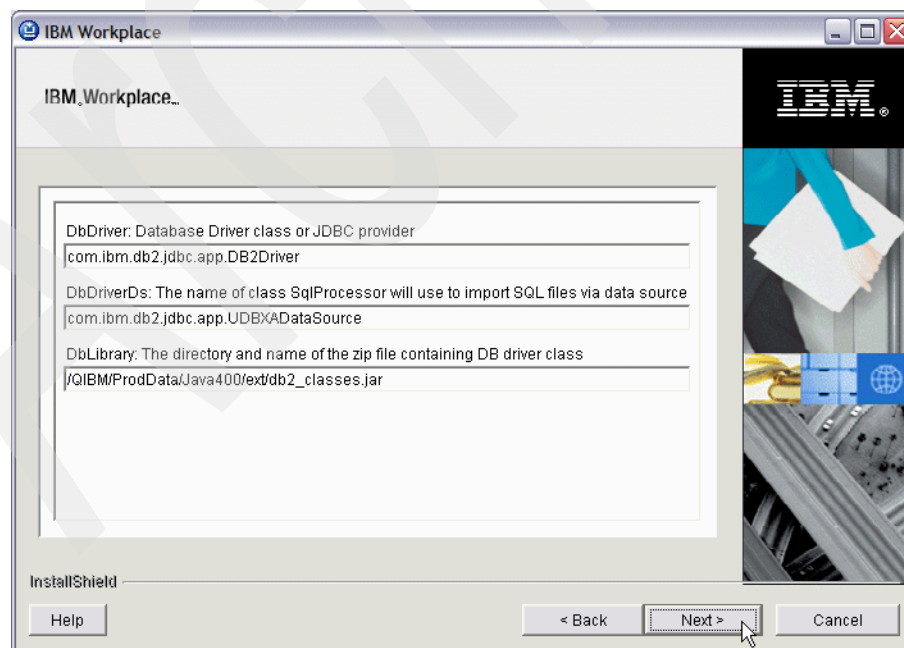
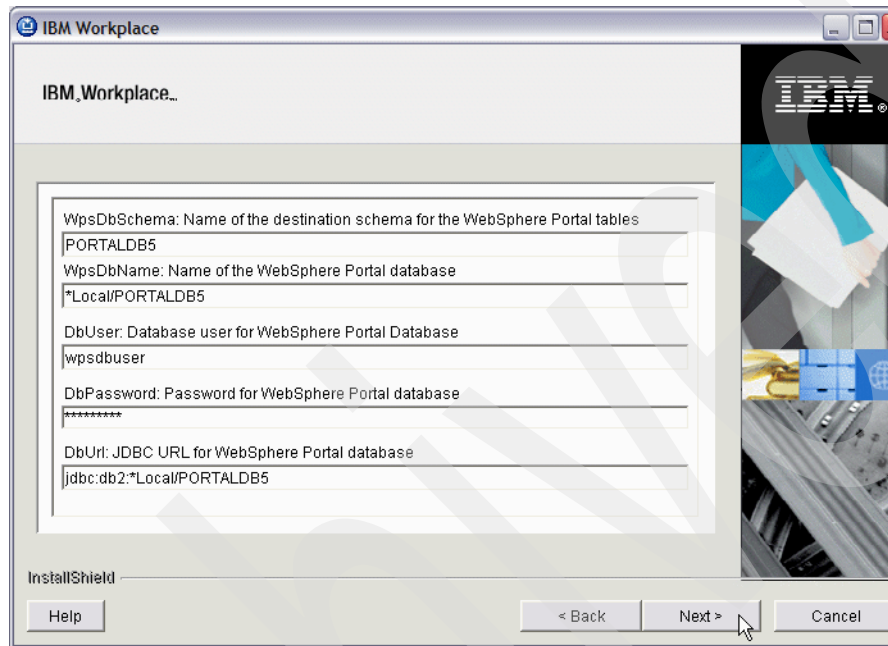


Figure 4-139 Verifying the database drivers and library

8. Enter the WebSphere Portal schema, database, user ID, password, and URL. In the example in Figure 4-140, PORTALDB05 is the name given to the WpsDbSchema.

**Note:** The WebSphere Portal schema (in our example this is *PORTALDB05*) refers to the i5/OS library where the WebSphere Portal data will be stored.

Click **Next**.



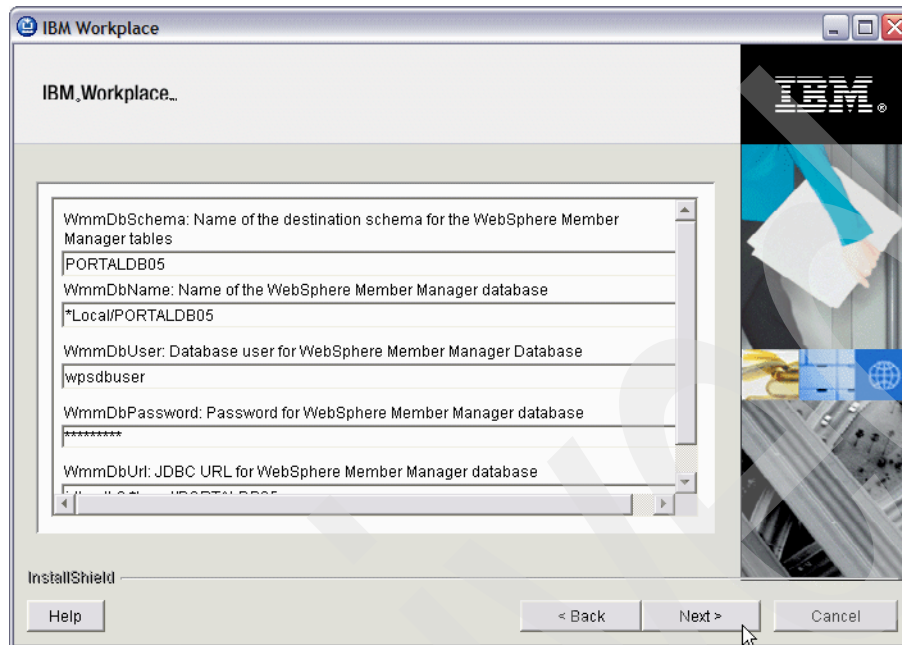
The screenshot shows a dialog box titled "IBM Workplace" with a sub-header "IBM\_Workplace...". It contains several input fields for database configuration:

- WpsDbSchema:** Name of the destination schema for the WebSphere Portal tables. Value: PORTALDB5
- WpsDbName:** Name of the WebSphere Portal database. Value: \*Local/PORTALDB5
- DbUser:** Database user for WebSphere Portal Database. Value: wpsdbuser
- DbPassword:** Password for WebSphere Portal database. Value: \*\*\*\*\*
- DbUrl:** JDBC URL for WebSphere Portal database. Value: jdbc:db2:\*Local/PORTALDB5

At the bottom, there is an "InstallShield" label, a "Help" button, and navigation buttons: "< Back", "Next >" (with a mouse cursor over it), and "Cancel".

Figure 4-140 Specifying the WebSphere Portal database information

9. Enter the WebSphere Member Manager schema, database, user ID, password, and URL. In the example in Figure 4-141, PORTALDB05 is the name given to the WmmDbSchema. Click **Next**.



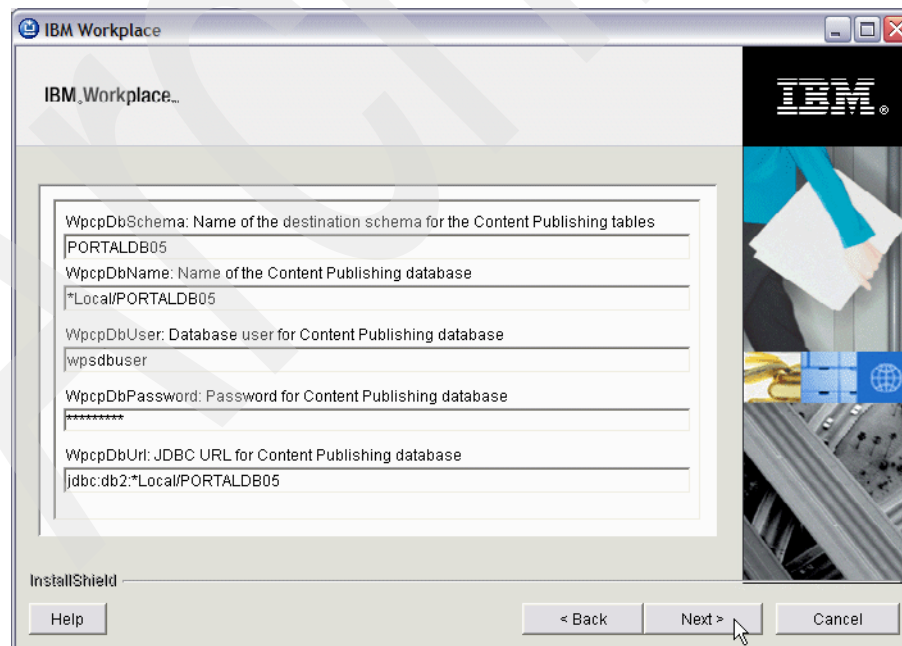
The screenshot shows the 'IBM Workplace' installation window. The title bar says 'IBM Workplace'. The main area is titled 'IBM\_Workplace...'. It contains a list of configuration fields for the WebSphere Member Manager database:

- WmmDbSchema: Name of the destination schema for the WebSphere Member Manager tables. Value: PORTALDB05
- WmmDbName: Name of the WebSphere Member Manager database. Value: \*Local/PORTALDB05
- WmmDbUser: Database user for WebSphere Member Manager Database. Value: wpsdbuser
- WmmDbPassword: Password for WebSphere Member Manager database. Value: \*\*\*\*\*
- WmmDbUrl: JDBC URL for WebSphere Member Manager database. Value: jdbc:db2:\*Local/PORTALDB05

At the bottom, there is an 'InstallShield' logo and three buttons: 'Help', '< Back', and 'Next >', and a 'Cancel' button. A mouse cursor is pointing at the 'Next >' button.

Figure 4-141 Specifying the WebSphere Member Manager database information

10. Enter the Content Publishing schema, database, user ID, password, and URL. In the example in Figure 4-142, PORTALDB05 is the name given to the WpcpDbSchema. Click **Next**.



The screenshot shows the 'IBM Workplace' installation window. The title bar says 'IBM Workplace'. The main area is titled 'IBM\_Workplace...'. It contains a list of configuration fields for the Content Publishing database:

- WpcpDbSchema: Name of the destination schema for the Content Publishing tables. Value: PORTALDB05
- WpcpDbName: Name of the Content Publishing database. Value: \*Local/PORTALDB05
- WpcpDbUser: Database user for Content Publishing database. Value: wpsdbuser
- WpcpDbPassword: Password for Content Publishing database. Value: \*\*\*\*\*
- WpcpDbUrl: JDBC URL for Content Publishing database. Value: jdbc:db2:\*Local/PORTALDB05

At the bottom, there is an 'InstallShield' logo and three buttons: 'Help', '< Back', and 'Next >', and a 'Cancel' button. A mouse cursor is pointing at the 'Next >' button.

Figure 4-142 Specifying the Content Publishing database information



11. Enter the Feedback schema, database, user ID, password, and URL. In the example in Figure 4-143, PORTALDB05 is the name given to the WpcpDbSchema. Click **Next**.

The screenshot shows the 'IBM Workplace' configuration wizard window. The title bar says 'IBM Workplace'. The main area contains several labeled text input fields: 'FeedbackSchema: Name of the destination schema for the Feedback tables' with the value 'PORTALDB05'; 'FeedbackDbName: Name of the Feedback database' with the value '\*Local/PORTALDB05'; 'FeedbackDbUser: Database user for Feedback database' with the value 'wpsdbuser'; 'FeedbackDbPassword: Password for Feedback database' with a masked password '\*\*\*\*\*'; and 'FeedbackDbUrl: JDBC URL for Feedback database' with the value 'jdbc:db2:\*Local/PORTALDB05'. At the bottom, there is an 'InstallShield' logo, a 'Help' button, and navigation buttons '< Back', 'Next >', and 'Cancel'. A mouse cursor is pointing at the 'Next >' button. The right side of the window features an IBM logo and a vertical image strip showing a person holding a document and a server rack.

Figure 4-143 Specifying the Feedback database information

12. The Configuration wizard is now ready to run the database transfer as shown in Figure 4-144. Click **Next**.

The screenshot shows the 'IBM Workplace' configuration wizard window at a later stage. The main text area displays: 'The WebSphere Portal Configuration Wizard is ready to run the following configuration:', followed by 'Transfer data to another database' and 'Click Next to continue.' Below this text is a large empty rectangular box. At the bottom, the 'InstallShield' logo, 'Help' button, and navigation buttons '< Back', 'Next >', and 'Cancel' are visible. A mouse cursor is pointing at the 'Next >' button. The right side of the window features an IBM logo and a vertical image strip showing a person holding a document and a server rack.

Figure 4-144 Configuration wizard ready to run the database transfer



13. When completed, you can choose to click Finish or Run Wizard Again (Figure 4-145). Click **Run Wizard Again** to start the transfer of Workplace data.

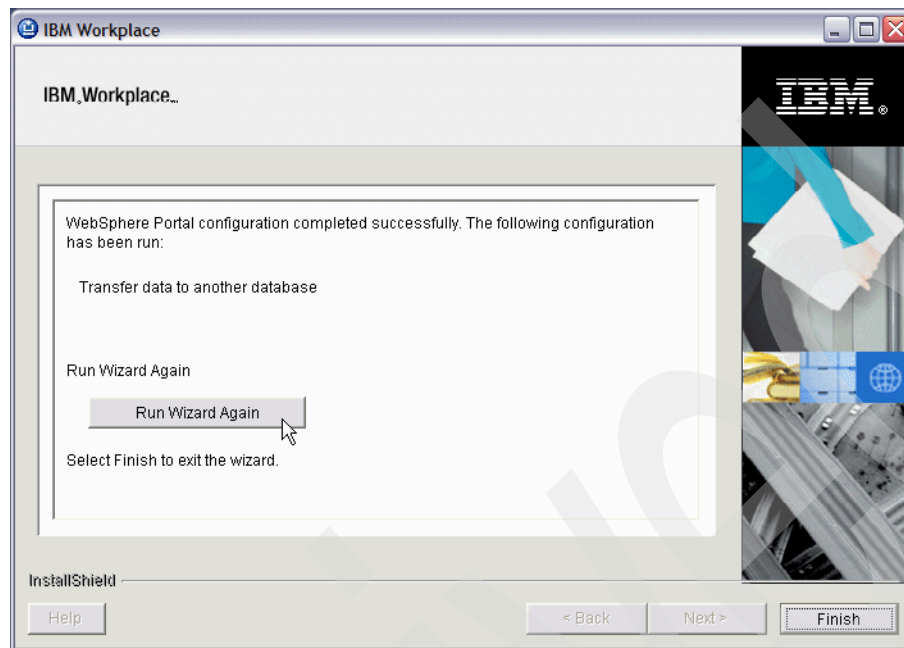


Figure 4-145 WebSphere Portal transfer completed successfully

### Transferring Workplace data to IBM DB2 Universal Database for iSeries

Perform the following steps from the Configuration wizard (configwizard400.bat) for the transfer of the Workplace data to IBM DB2 Universal Database for iSeries:

1. With the WebSphere\_Portal and Mail\_Server\_1 servers still ended, the Cloudscape database server must also be ended. From the Qshell environment, enter the following command:

```
/QIBM/UserData/WebAS5/Base/instance/PortalServer/rootscripts/subtasks/  
stopNetworkServer.sh
```

Refer to “Verifying that the Cloudscape database server is running” on page 167 for details.

2. From the Configuration wizard, select **IBM Workplace Database Transfer** and click **Next**. See Figure 4-124 on page 166.

3. In the next panel (Figure 4-146), select **IBM DB2 for iSeries**. Click **Next**.

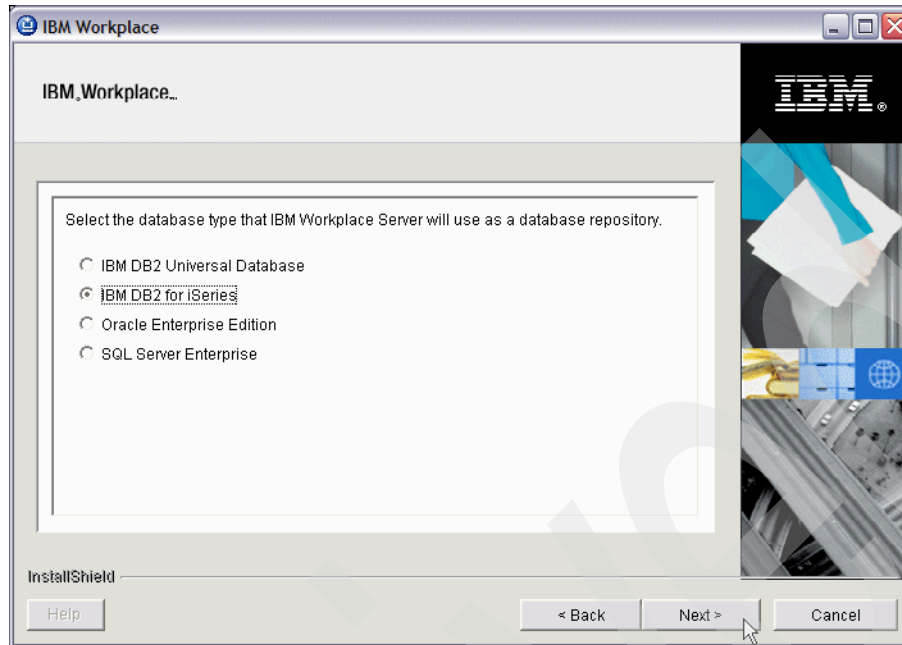


Figure 4-146 Selecting IBM DB2 for iSeries

4. Verify or change the database drivers and library (Figure 4-147). Click **Next**.

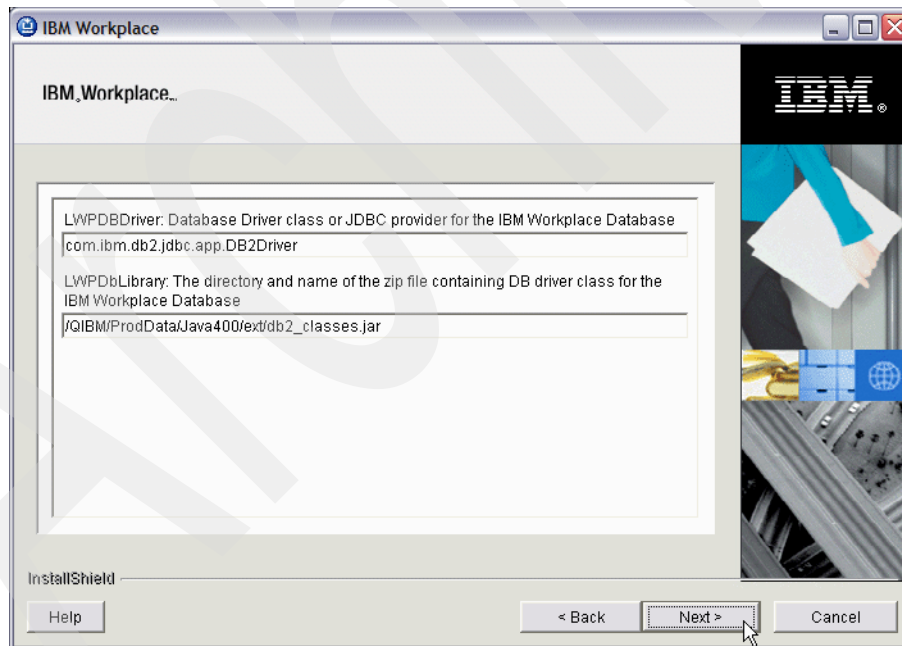


Figure 4-147 Verifying the database drivers and library

5. Enter the database user ID and password (see Figure 4-148) and click **Next**.

**Tip:** Always type the password yourself because the default value may not be correct.

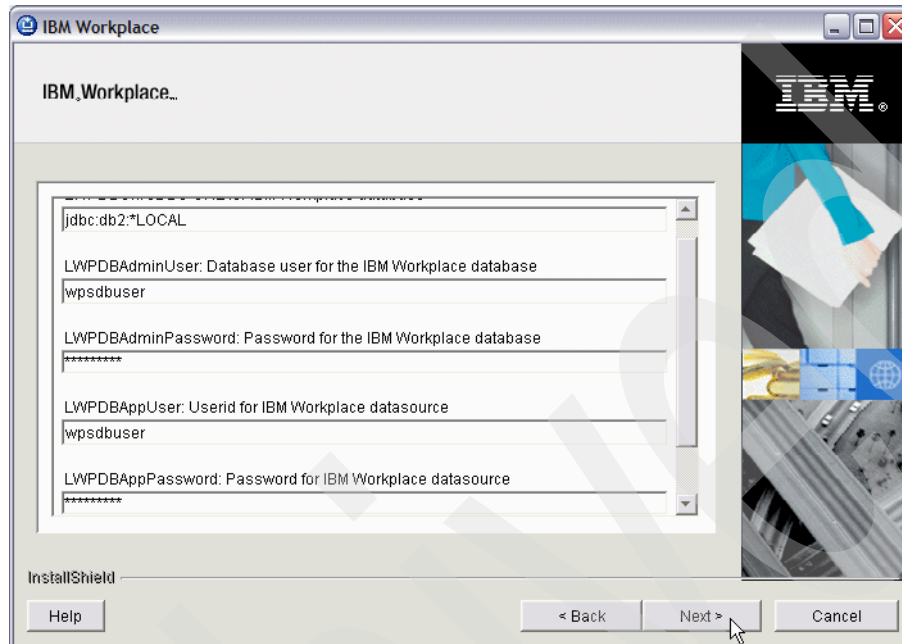


Figure 4-148 Specifying the Workplace database information

6. The Configuration wizard is now ready to run the database transfer. See Figure 4-149. Click **Next**.

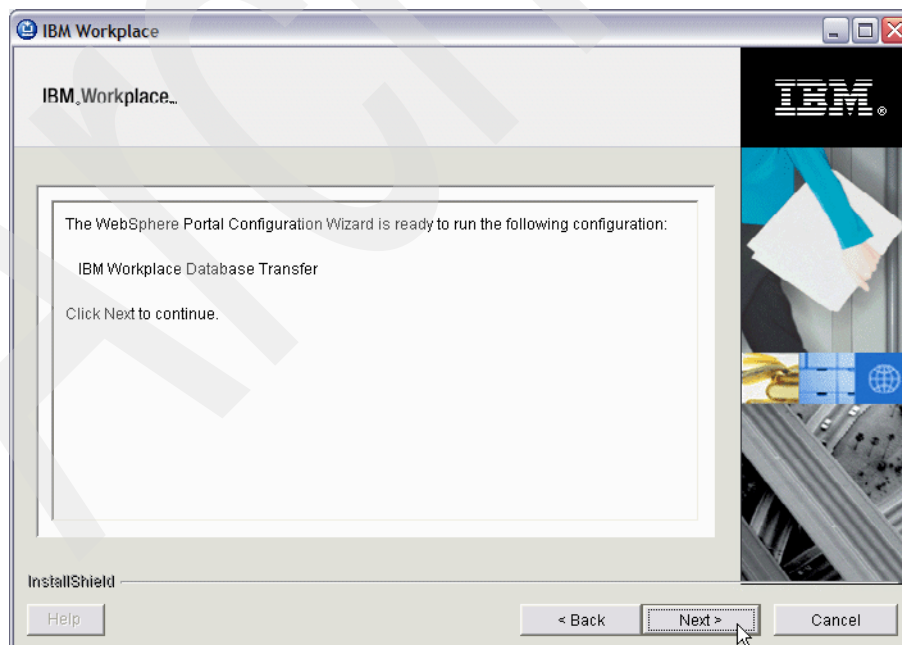


Figure 4-149 Configuration wizard ready to run the database transfer

7. A status bar is displayed while the configuration is in process as shown in Figure 4-150.

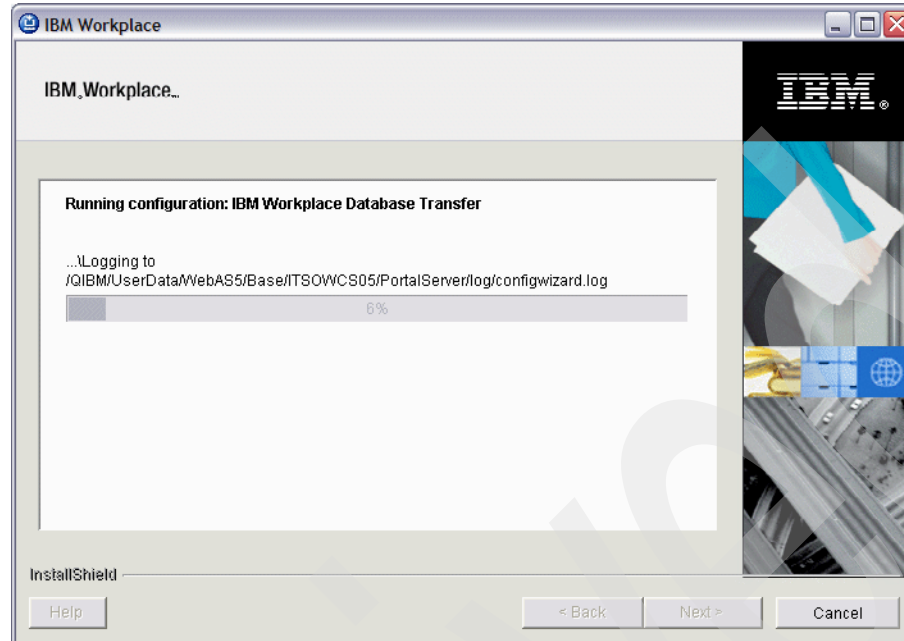


Figure 4-150 Database transfer in progress

8. When configuration is completed, you can choose to click either Finish or Run Wizard Again (Figure 4-151). Click **Finish** to close the Configuration wizard.

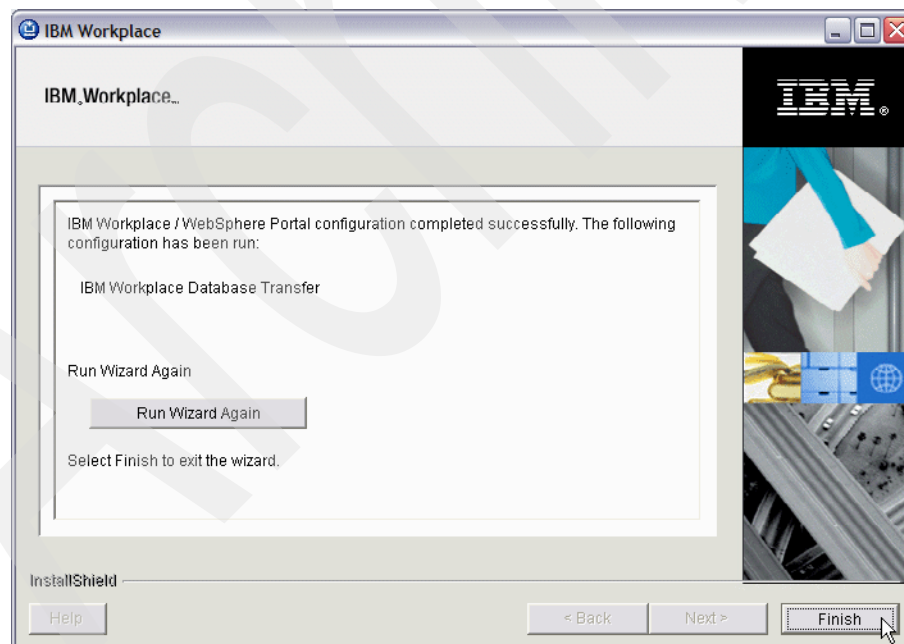


Figure 4-151 Workplace database transfer completed successfully

9. Start the WebSphere\_Portal server and test the Workplace Collaboration Services server. Refer to "Verifying the LDAP security configuration" on page 164 for details.

## 4.4.6 Configuring an external IBM HTTP Server

The custom configuration of a Workplace Collaboration Services server does not include the HTTP server. In this section, we discuss the configuration and implementation of an IBM HTTP Server (powered by Apache) for a Workplace Collaboration Services server. For additional information about creating and configuring other supported HTTP servers, refer to “Configuring the HTTP server” in the Workplace Collaboration Services Information Center:

<http://publib.boulder.ibm.com/infocenter/lwpphelp/index.jsp>

The HTTP Server is used by the Workplace Collaboration Services server to provide all of the Web browser-based interfaces and contains the WebSphere Portal server HTTP plug-in. For more information about the WebSphere Portal HTTP plug-in, refer to the WebSphere Portal Information Center:

<http://publib.boulder.ibm.com/infocenter/wp51help/index.jsp?topic=/com.ibm.wp.ent.doc/welcome.html>

**Note:** In this section, we presume the IBM Web Administration for iSeries server is started. If necessary, you can start it by using the following Start TCP/IP Servers (STRTCPSVR) i5/OS CL command:

```
STRTCPSVR SERVER(*HTTP) HTTPSVR(*ADMIN)
```

In this section, we address the following steps for adding an HTTP Server to a Workplace Collaboration Services server:

1. “Configuring the IBM HTTP Server (powered by Apache)” on page 183
2. “Configuring the IBM HTTP Server with Workplace” on page 189
3. “Updating the plug-in for the Workplace Collaboration Services server” on page 192
4. “Connecting the Workplace server to the HTTP Server” on page 193

### Configuring the IBM HTTP Server (powered by Apache)

The first step in enabling an HTTP server for a Workplace Collaboration Services server is to create it. If the HTTP server is already created, skip to “Configuring the IBM HTTP Server with Workplace” on page 189.

IBM Web Administration for iSeries includes a Web-based interface for creating a new IBM HTTP Server instance. To create a new HTTP server using the Create HTTP Server wizard:

1. Point your Web browser to the following URL, where *iSeriesHostName* is the fully qualified host name of the iSeries server:

`http://iSeriesHostName:2001`

In this example, we use:

`http://rchas12.rchland.ibm.com:2001`

2. When prompted, enter a valid i5/OS user profile and password with at least \*ALLOBJ,\*IOSYSCFG, and \*JOBCTL special authorities. Click **OK**.
3. From the iSeries Tasks Web page, click the **IBM Web Administration for iSeries** link.

4. On the IBM Web Administration for iSeries page, click the **Manage** → **HTTP Servers** tabs, and under Common Tasks and Wizards, select **Create HTTP Server**. See Figure 4-152.

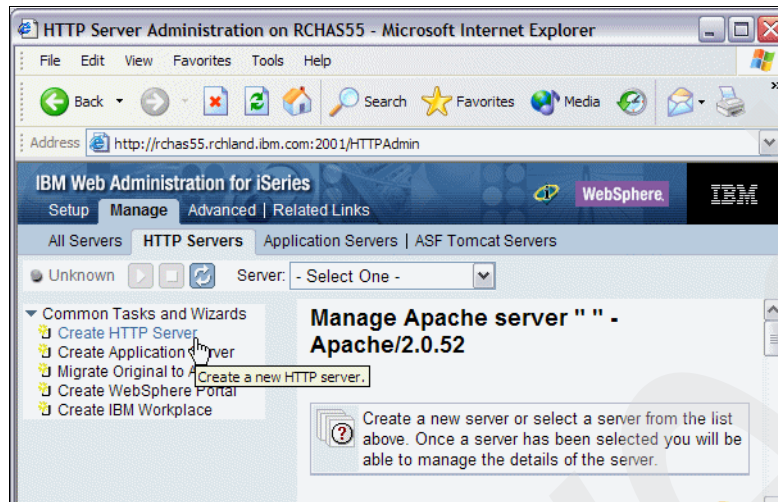


Figure 4-152 IBM Web Administration for iSeries, Create HTTP Server

5. In the Create HTTP Server wizard that is displayed (Figure 4-153), in the Server name field, enter the Workplace Collaboration Services server name. This is the name of the HTTP server. In the Server description field, enter a description for the Workplace HTTP server. Click **Next**.



Figure 4-153 Specifying the HTTP server name



6. In the Server root field, enter or verify the directory location. This directory contains the configuration files, logs, and documents for the HTTP server. The default value is `/www/instance`, where *instance* is the HTTP server name. See Figure 4-154. Click **Next**.

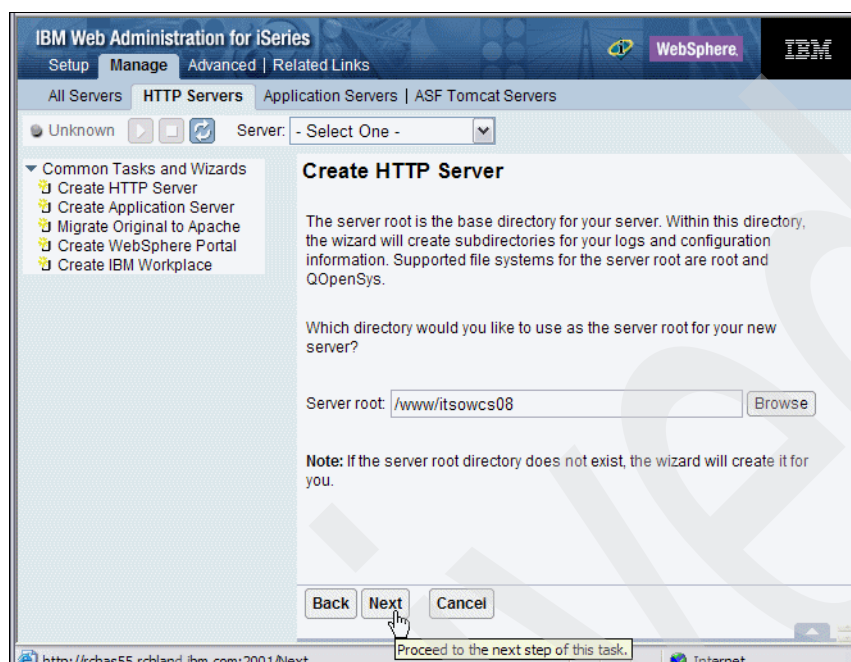


Figure 4-154 Specify the server root location

7. In the Document root field, enter or verify the HTML document root (Figure 4-155). This directory is used to contain local content for the HTTP server. For Workplace Collaboration Services, this mainly consists of Collaborative Learning course content. The default value is `/www/instance/htdocs`, where *instance* represents the HTTP server name. Click **Next**.

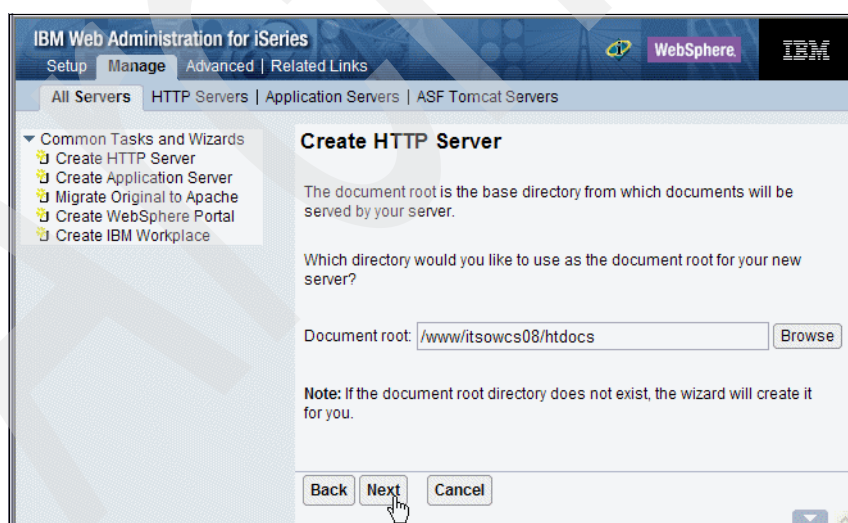
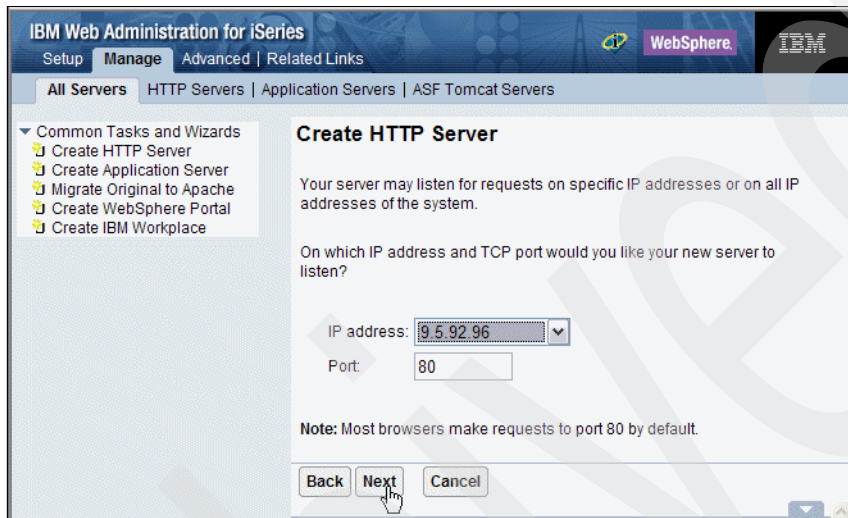


Figure 4-155 Specifying the document root

8. Select the TCP/IP address and port number for the HTTP server to bind to, as shown in Figure 4-156. The wizard is retrieving the configured TCP/IP addresses from the i5/OS.

**Important:** We recommend that you do not leave the IP address field at the default of All IP Addresses. The HTTP server should be bound to the same IP address as the Workplace Collaboration Services server.

Click **Next**.



IBM Web Administration for iSeries

Setup | **Manage** | Advanced | Related Links

All Servers | HTTP Servers | Application Servers | ASF Tomcat Servers

Common Tasks and Wizards

- Create HTTP Server
- Create Application Server
- Migrate Original to Apache
- Create WebSphere Portal
- Create IBM Workplace

### Create HTTP Server

Your server may listen for requests on specific IP addresses or on all IP addresses of the system.

On which IP address and TCP port would you like your new server to listen?

IP address: 9.5.92.96

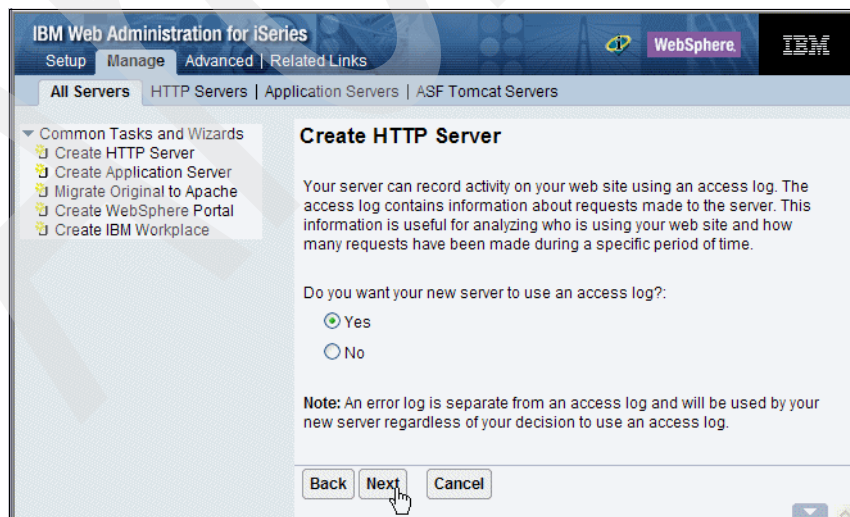
Port: 80

Note: Most browsers make requests to port 80 by default.

Back Next Cancel

Figure 4-156 Selecting the HTTP server network settings

9. As shown in Figure 4-157, for Do you want your new server to use an access log?, select **Yes** or **No**. This log type writes a log entry under the `/www/instance/logs` directory for each HTTP request the server processes, where *instance* is the HTTP server name. With any additional logging, there can be performance implications. You can disable this logging if you desire after the HTTP server is created. We recommend that you leave access logging enabled during the creation of the HTTP server. Click **Next**.



IBM Web Administration for iSeries

Setup | **Manage** | Advanced | Related Links

All Servers | HTTP Servers | Application Servers | ASF Tomcat Servers

Common Tasks and Wizards

- Create HTTP Server
- Create Application Server
- Migrate Original to Apache
- Create WebSphere Portal
- Create IBM Workplace

### Create HTTP Server

Your server can record activity on your web site using an access log. The access log contains information about requests made to the server. This information is useful for analyzing who is using your web site and how many requests have been made during a specific period of time.

Do you want your new server to use an access log?:

☒ Yes

☐ No

Note: An error log is separate from an access log and will be used by your new server regardless of your decision to use an access log.

Back Next Cancel

Figure 4-157 Choosing to access the log



10. For the Specify the time to keep the log files prompt, specify how the log files should be managed on the server. The default value is to delete the logs after seven days, as shown in Figure 4-158. Click **Next**.

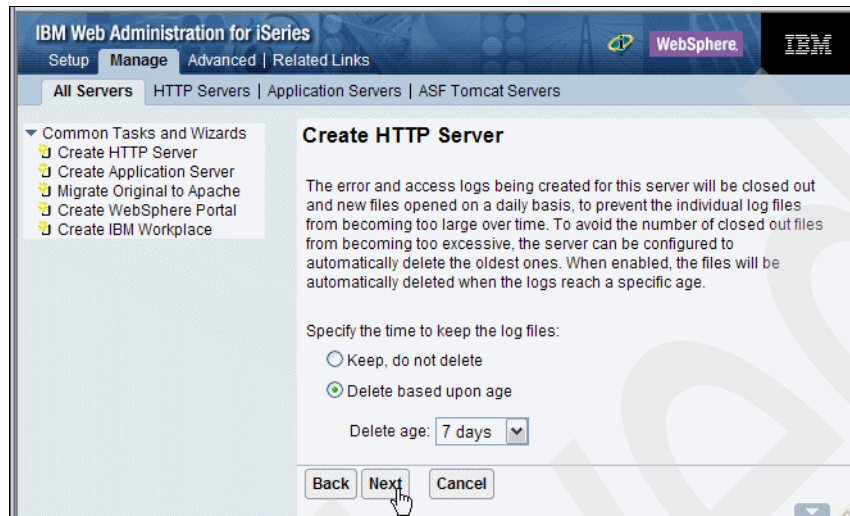


Figure 4-158 Configuring log maintenance interval

11. Review the settings provided within the wizard (Figure 4-159). If you need to change any items, click the **Back** button to navigate to the respective section. Click **Finish** to complete the wizard and start the configuration of the new HTTP server.

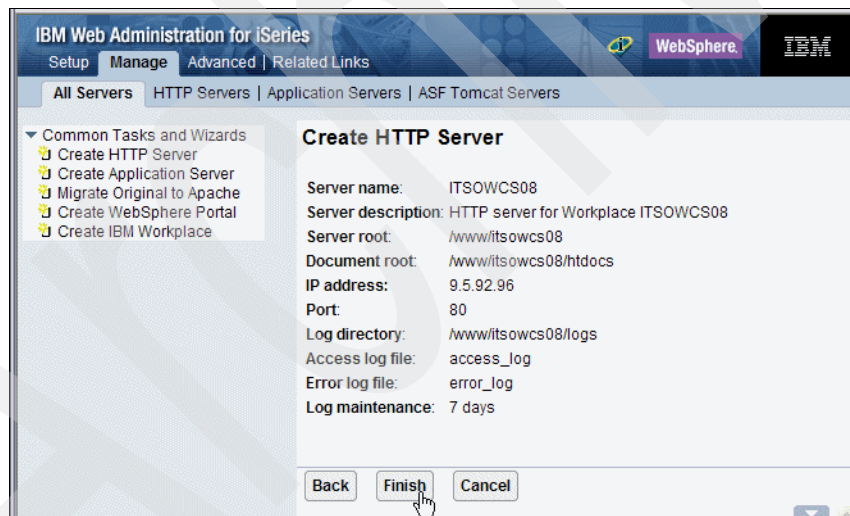


Figure 4-159 HTTP server creation summary review

12. The IBM HTTP Server is now configured and ready to be started. After you click Finish, the wizard redirects the Web browser to a new HTTP manage display. You can start the IBM HTTP Server by clicking the **Start** button, as shown in Figure 4-160.

**Note:** You can also start the IBM HTTP Server from an i5/OS command line by using the following Start TCP/IP Server (STRTCPSVR) CL command to start the server, where *instance* is the HTTP server name:

```
STRTCPSVR SERVER(*HTTP) HTTPSVR(instance)
```

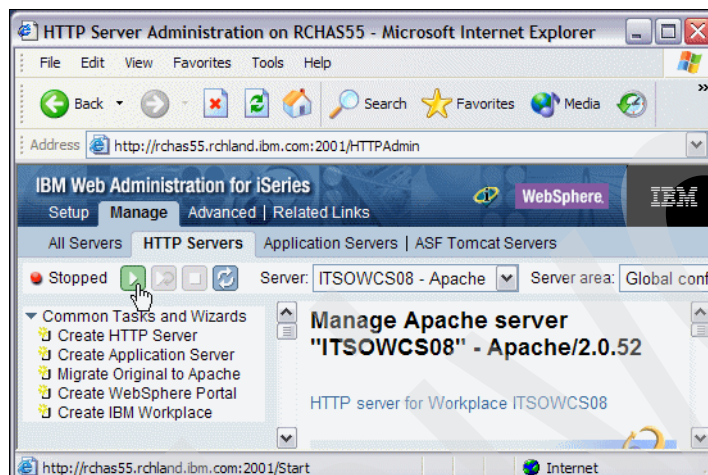


Figure 4-160 Starting the IBM HTTP Server

13. To test the new IBM HTTP Server, point your Web browser to the following URL, where *serverhostname* is the fully qualified host name of the IBM HTTP Server:

`http://serverhostName`

In this example, we use:

`http://itsowcs08.rchland.ibm.com`

If the HTTP server is functional, it should display the window shown in Figure 4-161.



Figure 4-161 Testing the IBM HTTP Server

## Configuring the IBM HTTP Server with Workplace

If you used the IBM Web Administration for iSeries Create IBM Workplace wizard to configure a Workplace Collaboration Services server, you have already created a local external HTTP server. You *must* follow the instructions in this section *only* if you did *not* use the IBM Web Administration for iSeries Create IBM Workplace wizard or if you want to configure a remote external HTTP server.

In this section, we assume that you have already created the HTTP server as explained in “Configuring the IBM HTTP Server (powered by Apache)” on page 183. You can perform the configuration process in this section from an i5/OS command line or through the IBM Web Administration for iSeries. In this section, we document the i5/OS command line process. For instructions on accessing the HTTP configuration file through the IBM Web Administration for iSeries, see 7.7.3, “Enabling GZIP compression” on page 371.

**Important:** If you are configuring an IBM HTTP Server with Workplace that is not on the same iSeries server, make sure the \*BASE version of WebSphere Application Server is installed.

To configure the IBM HTTP Server with Workplace Collaboration Services 2.5:

**Note:** The IBM HTTP Server does not have to be ended during this configuration, but you must restart it to enable it for use with Workplace Collaboration Services.

1. Access an i5/OS command line. Make sure that your i5/OS user profile has at least \*ALLOBJ, \*IOSYSCFG, and \*JOBCTL special authorities.
2. Find the **httpd.conf** file, located in the `/www/instance/conf/` directory and make a backup copy of the file, where *instance* is the IBM HTTP Server.
3. Enter the following Edit File (EDTF) CL command to edit the httpd.conf file, where *instance* is the IBM HTTP Server:

```
EDTF '/www/instance/conf/httpd.conf'
```

4. At the top of the file, replace the LoadModule line with the appropriate version that you installed and for the platform on which it is running. Also add the WebSpherePluginConfig, where *instance* is the Workplace Collaboration Services server name:

```
LoadModule ibm_app_server_http_module /QSYS.LIB/QEJBAS5.LIB/QSVTIHSAH.SRVPGM
WebSpherePluginConfig /QIBM/UserData/WebAS5/Base/ITSOWCS05/config/cells/plugin-cfg.xml
```

**Note:** Replace the Load Module with the `ibm_app_server_http_module`. The default that is replaced is:

```
LoadModule deflate_module /QSYS.LIB/QHTTPSVR.LIB/QZSRCORE.SRVPGM
```

Figure 4-162 provides an example of these entries for our Workplace Collaboration Services server of ITSOWCS05.

```

Edit File: /www/itsowcs05/conf/httpd.conf
Record :   1  of   29 by 10          Column :   1  101 by 126
Control :

CMD
....+....1....+....2....+....3....+....4....+....5....+....6....+....7....+....8....+...
.9....+....0....+....1....+....2....+..
*****Beginning of data*****
LoadModule ibm_app_server_http_module /QSYS.LIB/QEJBAS5.LIB/QSVTIHSAH.SRVPGM
WebSpherePluginConfig/QIBM/UserData/WebAS5/Base/ITSOWCS05/config/cells/plugin-cfg.xml
# Configuration originally created by Create HTTP Server wizard on Sun May 22 22:42:36
# CDT 2005
Listen 9.5.92.93:80
DocumentRoot /www/itsowcs05/htdocs
Options -ExecCGI -FollowSymLinks -SymLinksIfOwnerMatch -Includes -IncludesNoExec
-Indexes -MultiViews
LogFormat "%h%l%u%t \"%r\" %>s %b \"%{Referer}i\" \"%{User-Agent}i\"" combined
LogFormat "%{Cookie}n \"%r\" %t" cookie
LogFormat "%{User-agent}i" agent
LogFormat "%{Referer}i -> %U" referer
LogFormat "%h%l%u%t \"%r\" %>s %b" common
CustomLog logs/access_log combined
LogMaint logs/access_log 7 0
LogMaint logs/error_log 7 0
SetEnvIf "User-Agent" "Mozilla/2" nokeepalive
SetEnvIf "User-Agent" "JDK/1\0" force-response-1.0
SetEnvIf "User-Agent" "Java/1\0" force-response-1.0

F2=Save  F3=Save/Exit  F12=Exit  F15=Services  F16=Repeat find  F17=Repeat change
F19=Left  F20=Right

```

Figure 4-162 Updating the httpd.conf file

5. Add the following line to the httpd.conf file, as shown in Figure 4-163. We recommend that you add this line after the last SetEnvIf entry:

AddType application/zip zip jar

```
Edit File: /www/itsowcs05/conf/httpd.conf
Record : 10 of 28 by 10          Column : 1 58 by 126
Control :

CMD
....+....1....+....2....+....3....+....4....+....5....+....6....+....7....+....8....+...
.9....+....0....+....1....+....2....+..
LogFormat "%h %l %u %t \"%r\" %>s %b" common
CustomLog logs/access_log combined
LogMaint logs/access_log 7 0
LogMaint logs/error_log 7 0
SetEnvIf "User-Agent" "Mozilla/2" nokeepalive
SetEnvIf "User-Agent" "JDK/1\\.0" force-response-1.0
SetEnvIf "User-Agent" "Java/1\\.0" force-response-1.0
SetEnvIf "User-Agent" "RealPlayer 4\\.0" force-response-1.0
SetEnvIf "User-Agent" "MSIE 4\\.0b2;" nokeepalive
SetEnvIf "User-Agent" "MSIE 4\\.0b2;" force-response-1.0
AddType application/zip zip jar
<Directory />
    Order Deny,Allow
    Deny From all
</Directory>
<Directory /www/itsowcs05/htdocs>
    Order Allow,Deny
    Allow From all

F2=Save  F3=Save/Exit  F12=Exit  F15=Services  F16=Repeat find  F17=Repeat change
F19=Left  F20=Right
```

Figure 4-163 Updating the httpd.conf file

6. Press F3 to save your changes.
7. Press F3 again to close the file.

## Updating the plug-in for the Workplace Collaboration Services server

To update the plug-in for the Workplace Collaboration Services server:

1. Make sure that the WebSphere\_Portal server associated with your Workplace Collaboration Services server is started. Refer to 5.2, “Starting and stopping Workplace Collaboration Services” on page 203, for details.
2. From the IBM Web Administration for iSeries, launch the WebSphere Application Server Administrative Console, as shown in Figure 4-164.

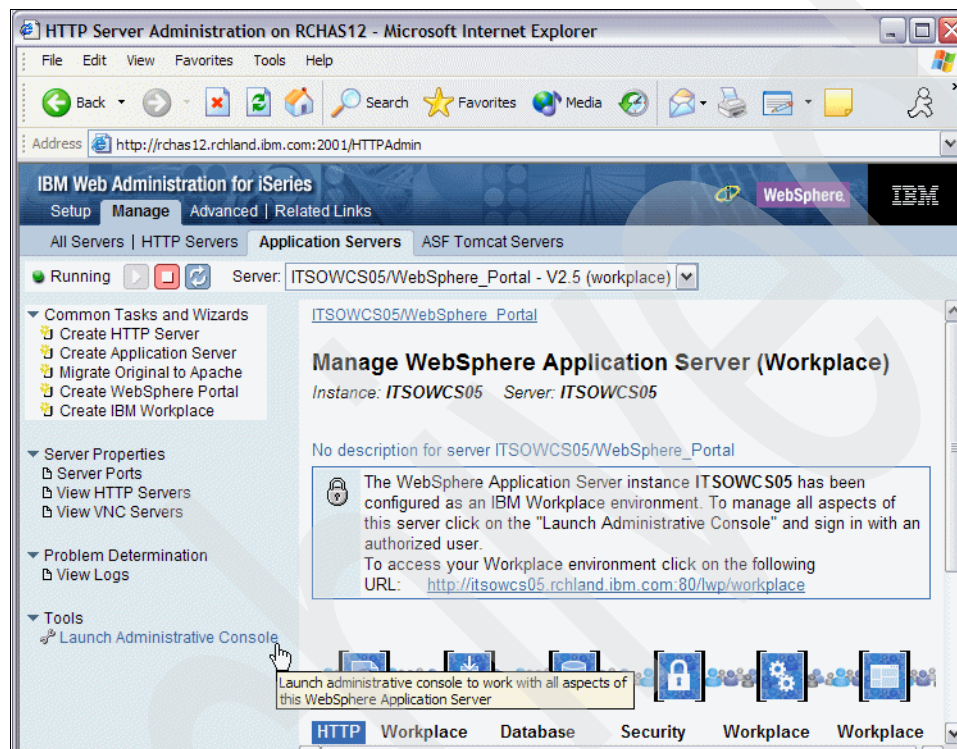


Figure 4-164 Launching the WebSphere Application Server Administrative Console

3. Sign on to the WebSphere Application Server Administrative Console with the administrator user ID and password
4. Click **Environment** → **Update Web Server Plugin**.

5. In the Update Web server plugin configuration panel (Figure 4-165), click **OK**.

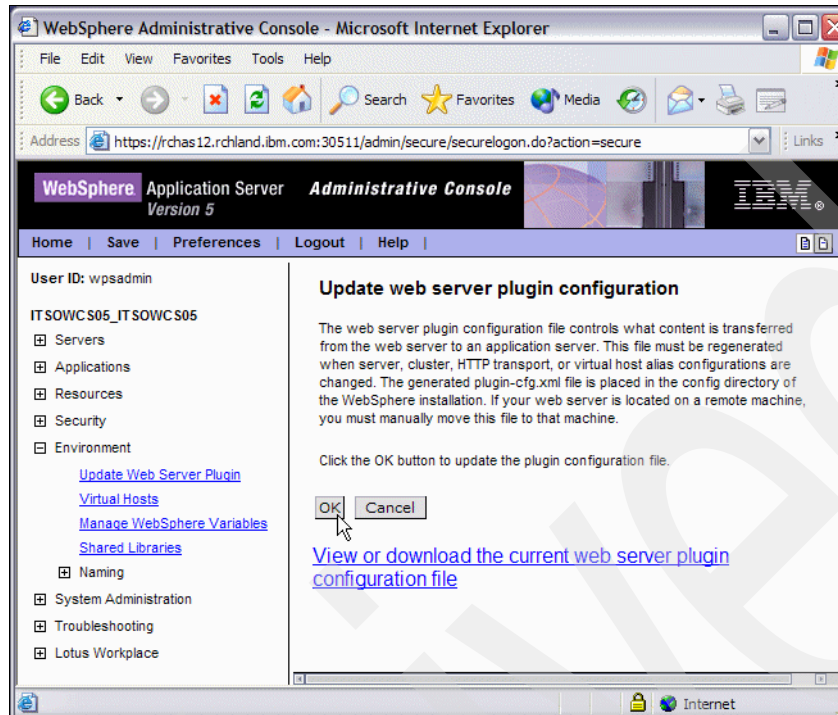


Figure 4-165 Updating the Web server plugin configuration

This result is the following message:

The web server plugin configuration was updated successfully.

**Note:** If the HTTP Server is a remote, copy the updated HTTP plug-in (plugin-cfg.xml) from the WebSphere Application Server to the remote HTTP Server directory.

## Connecting the Workplace server to the HTTP Server

You must update the Workplace Collaboration Services server settings to connect to an IBM HTTP Server.

**Note:** Follow the instructions in this section *only* if you did not use the IBM Web Administration for iSeries Create Workplace wizard or if you want to configure a remote external HTTP server.

1. Make a backup copy of the following files, where *instance* is the Workplace Collaboration Services server name:
  - /QIBM/UserData/WebAS5/Base/*instance*/config/cells/*instance\_instance*/resources.xml
  - /QIBM/UserData/WebAS5/Base/*instance*/PortalServer/config/wpconfig.properties
  - All files in /QIBM/UserData/WebAS5/Base/*instance*/WorkplaceServer/properties
2. Using a text editor, update the WpsHostName and WpsHostPort in the wpconfig.properties files, and then save the file. By default the Workplace Collaboration Services server listens on the internal HTTP port, so you must change it to port 80.



- **WpsHostName:** If you are using a local HTTP server, this value is the host name of the Workplace Collaboration Services server. If you are using a remote HTTP server, this value is the host name of the system where you installed the HTTP server.
- **WpsHostPort:** This is the port number that your HTTP server uses to listen for HTTP traffic. For an external HTTP server, change this number from the default 9081 to 80, unless you set up a port other than 80 for HTTP traffic.

In this example, we use:

```
WpsHostName=itsowcs05.rchland.ibm.com
WpsHostPort=80
```

3. Run the WPSconfig script to read the values in the wpconfig.properties file and perform the configuration functions based on these values:
  - a. Verify that the HTTP server is running.
  - b. Shut down the Workplace Collaboration Services server.
  - c. Enter the STRQSH CL command on an i5/OS command line to start the Qshell Interpreter.
  - d. Enter the following commands, where *instance* is the name of the Workplace Collaboration Services server:

```
cd /QIBM/UserData/WebAS5/Base/instance/PortalServer/config
WPSconfig.sh lwp-httpserver-config -DLWPDBAdminUser=<admin_user>
-DLWPDBAdminPassword=<password> -DLWPDBAppUser=<db_app_user>
-DLWPDBAppPassword=<db_app_user_password> >httpsettings.logwhere
```

**Note:** DLWPDBAdminUser and DLWPDBAdminPassword are the name and password of the database administrator. If you are using the default IBM Cloudscape database, use “lwpadmin” for both values. DLWPDBAppUser and DLWPDBAppPassword are the name and password of the administrator of the WebSphere Portal database.

Figure 4-166 shows an example of running this command from Qshell.

QSH Command Entry

```
$
> cd /QIBM/UserData/WebAS5/Base/itsowcs05/PortalServer/config
$
> WPSconfig.sh lwp-httpserver-config -DLWPDBAdminUser=wpsdbuser
-DLWPDBAdminPassword=wpsdbuser -DLWPDBAppUser=wpsadmin -DLWPDBAppPa
ssword=wpsadmin >httpsettings.logwhere
$

===>
F3=Exit F6=Print F9=Retrieve F12=Disconnect
F13=Clear F17=Top F18=Bottom F21=CL command entry
```

Figure 4-166 Running WPSconfig.sh from Qshell

- e. Check the httpsettings.log log file to make sure the update completed successfully.



4. Restart the IBM HTTP Server and start the Workplace Collaboration Services server.
5. To test the external IBM HTTP Server, access the Workplace Collaboration Services server with the following URL:

`http://instance/lwp/workplace`

In this example, we use:

`http://itsowcs05.rchland.ibm.com/lwp/workplace`

Figure 4-167 shows an example after successfully authenticating to the Workplace Collaboration Services server.

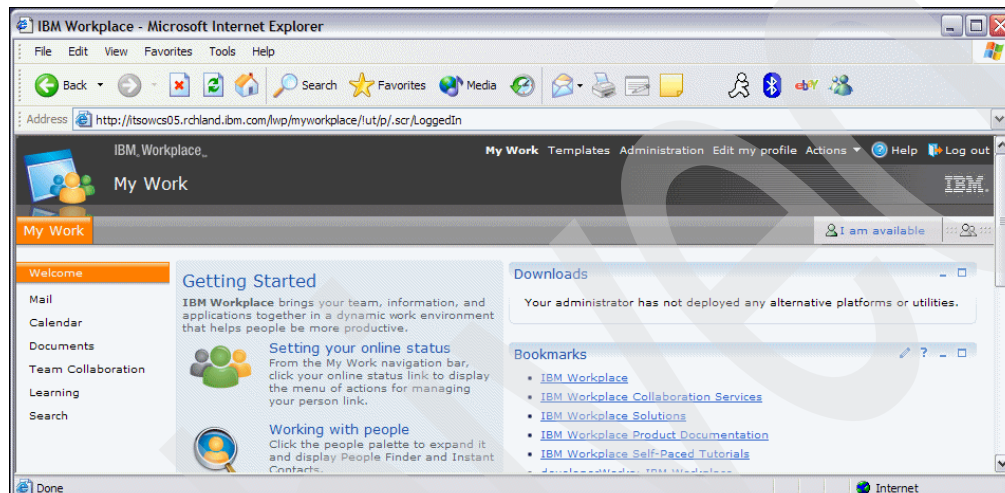


Figure 4-167 Using the external IBM HTTP Server to access Workplace Collaboration Services

Archived

# Administration

In this chapter, we introduce you to Workplace Collaboration Services administration on an iSeries server. In addition to learning about the administration console options and security settings, you learn how to perform the following administration tasks:

- ▶ Starting and stopping a Workplace Collaboration Services server
- ▶ Verifying a Workplace Collaboration Services server is active
- ▶ Adding additional administrators
- ▶ Working with Workplace Collaboration Services mail
- ▶ Defining policies
- ▶ Using Lmadm commands
- ▶ Removing a Workplace Collaboration Services server
- ▶ Deleting the Workplace Collaboration Services product code

## 5.1 Administration console options

The following administration consoles are available for the administrator of Workplace Collaboration Services:

- ▶ IBM Web Administration for iSeries
- ▶ IBM WebSphere Application Server Administrative Console
- ▶ IBM WebSphere Portal administration
- ▶ Lmadmin commands

These administration consoles, which are explained in the following sections, allow you to complete a wide range of administration tasks within the Workplace Collaboration Services environment. Some of the administration consoles are designed to complete specific tasks, and other tasks can be completed from multiple administration consoles. For example, you can start and stop a Workplace Collaboration Service server by using IBM Web Administration for iSeries or Lmadmin commands.

### 5.1.1 IBM Web Administration for iSeries

IBM Web Administration for iSeries (Figure 5-1) is an iSeries server specific, graphical user interface (GUI) that allows for the functions of starting, stopping, and deleting the specific components that make up the Workplace Collaboration Services environment.

The tasks that you can perform from the IBM Web Administration for iSeries include:

- ▶ Starting a Workplace Collaboration Services server
- ▶ Stopping a Workplace Collaboration Services server
- ▶ Deleting a Workplace Collaboration Services server
- ▶ Creating a new Workplace Collaboration Services server using the Create Workplace wizard

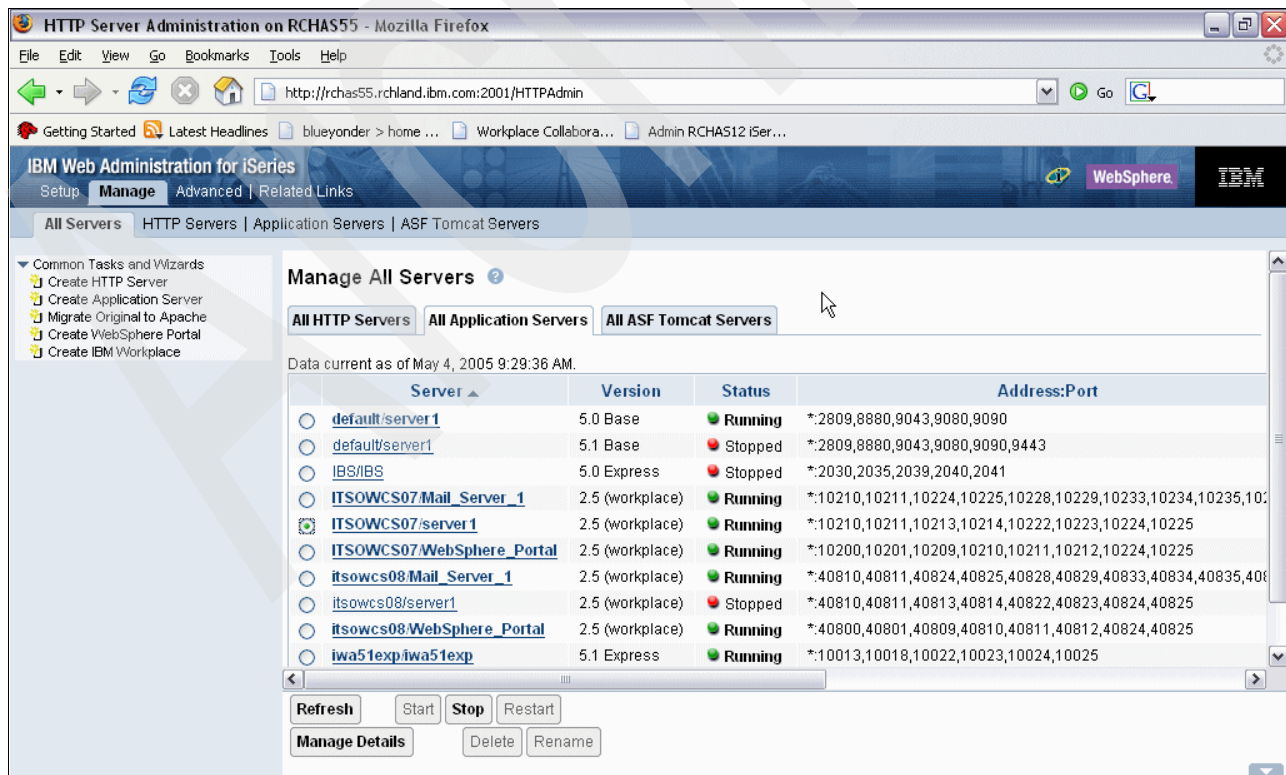


Figure 5-1 IBM Web Administration for iSeries

## Accessing IBM Web Administration for iSeries

To access IBM Web Administration for iSeries:

1. Make sure the iSeries HTTP Administration Server is running. You can start the iSeries HTTP Administration Server by using one of the following options:
  - From iSeries Navigator, click **Network** → **Servers** → **TCP/IP**. Right-click the **HTTP Administration** in the right pane and click **Start**.
  - From an i5/OS command line, enter the following Start TCP/IP Server (STRTCPSVR) command:  

```
STRTCPSVR SERVER(*HTTP) HTTPSVR(*ADMIN)
```
2. Point your Web browser to your fully qualified iSeries host name on port 2001:  
`http://iSeriesHostName.domain:2001`  
In this example, we use:  
`http://rchas12.rchland.ibm.com:2001`
3. When prompted, log on to the IBM Web Administration for iSeries with your i5/OS user profile and password. Click **OK**.
4. On the iSeries Tasks menu, click **IBM Web Administration for iSeries**. This returns you to the last server that you administered.

### 5.1.2 IBM WebSphere Application Server Administrative Console

The IBM WebSphere Application Server Administrative Console (Figure 5-2) is the main administration console that you use to administer your Workplace Collaboration Services server. This console allows you to make persistent changes within your Workplace Collaboration Services environment.

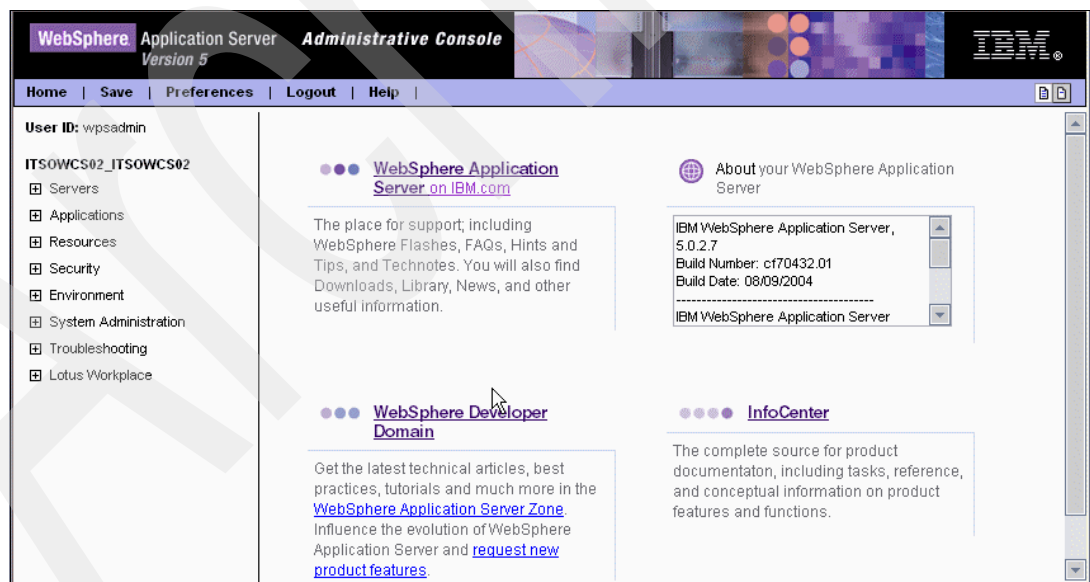


Figure 5-2 IBM WebSphere Application Server Administrative Console

Some configurations that you can modify from the WebSphere Application Server Administrative Console include:

- ▶ User policies
- ▶ Security (such as configuring single sign-on)
- ▶ Performance tuning

- ▶ Archiving
- ▶ Directory settings
- ▶ Mail settings
- ▶ Session Initiation Protocol (SIP, Web conference and instant messaging) settings

## Accessing the WebSphere Application Server Administrative Console

If you know the direct URL to access the WebSphere Application Server Administrative Console, you can enter it into your Web browser manually. Alternatively, you can use a link that is provided for you in IBM Web Administration for iSeries. To access the WebSphere Application Server Administrative Console from IBM Web Administration for iSeries:

1. From the IBM Web Administration for iSeries window, select your Workplace Collaboration Services server:
  - a. Click the **Manage** tab.
  - b. Click the **Application Servers** tab.
  - c. In the Server list, select your Workplace Collaboration Services server name.
2. In the left pane, click **Launch Administrative Console** to launch the WebSphere Application Server Administrative Console. See Figure 5-3.

**Note:** Be aware that when you select Launch Administrative Console from any one of the Workplace Collaboration Services servers (Mail\_Server\_1, Server1, or WebSphere\_Portal), you go to the same WebSphere Application Server Administrative Console.

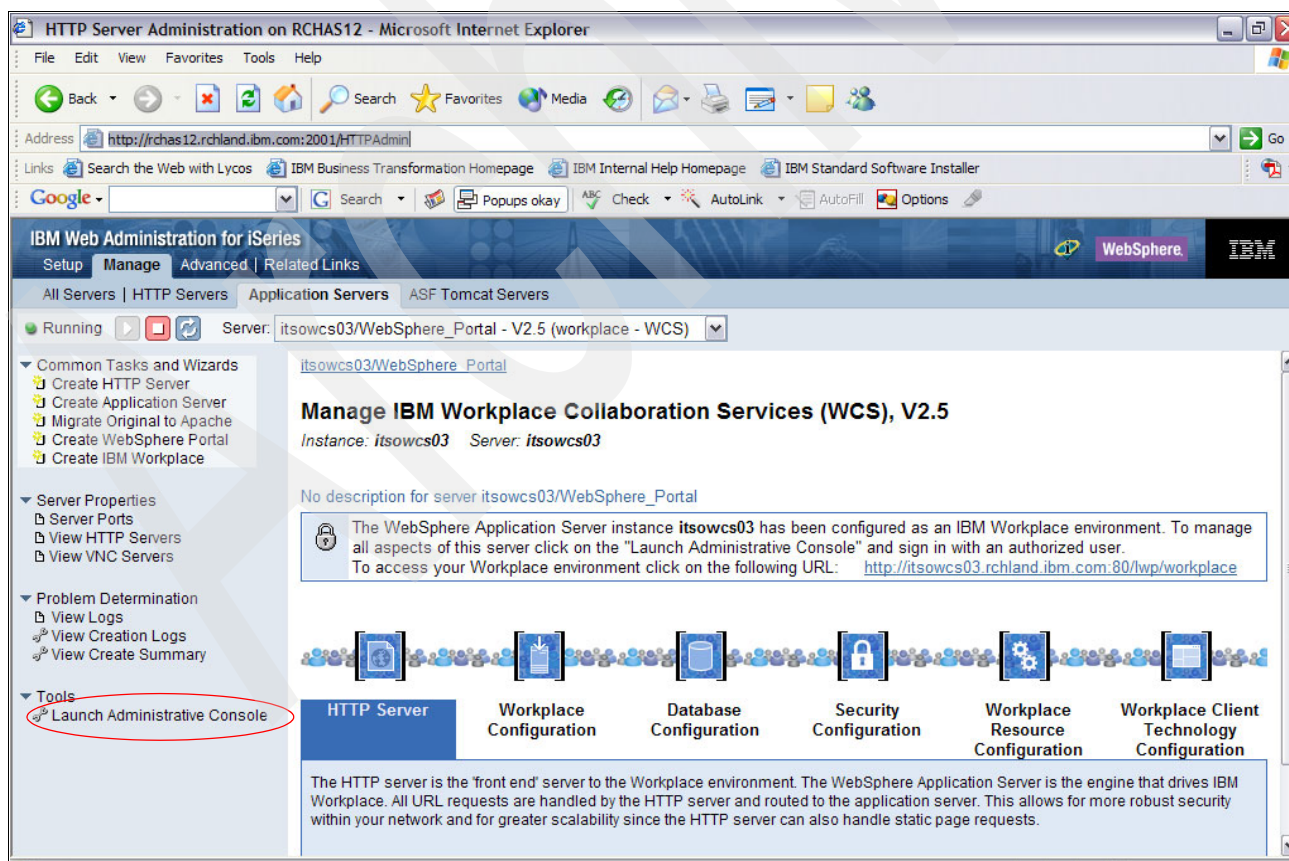


Figure 5-3 Launching the WebSphere Application Server Administrative Console



3. A new Web browser window opens with a logon page for the WebSphere Application Server Administrative Console as shown in Figure 5-4. You must log into the console using the administrator user ID and password that you specified as part of the configuration process of the Workplace Collaboration Services server. For our example, we enter wpsadmin.

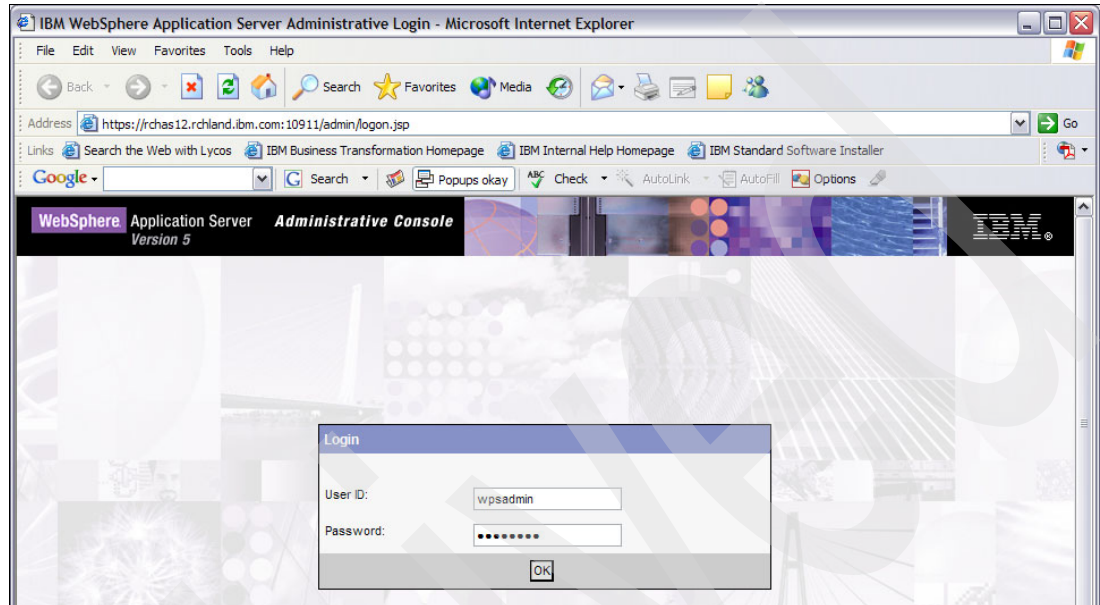


Figure 5-4 WebSphere Application Server Administrative Console logon page

### 5.1.3 IBM WebSphere Portal administration

WebSphere Portal administration (Figure 5-5) is where you set application-level policies for team spaces, document library management, and other applications. You can also set scheduled tasks for specific applications. You can manage the following tasks within WebSphere Portal administration:

- ▶ Document libraries
- ▶ Task scheduler for applications and Web conferences
- ▶ Web conference policies
- ▶ Application policies

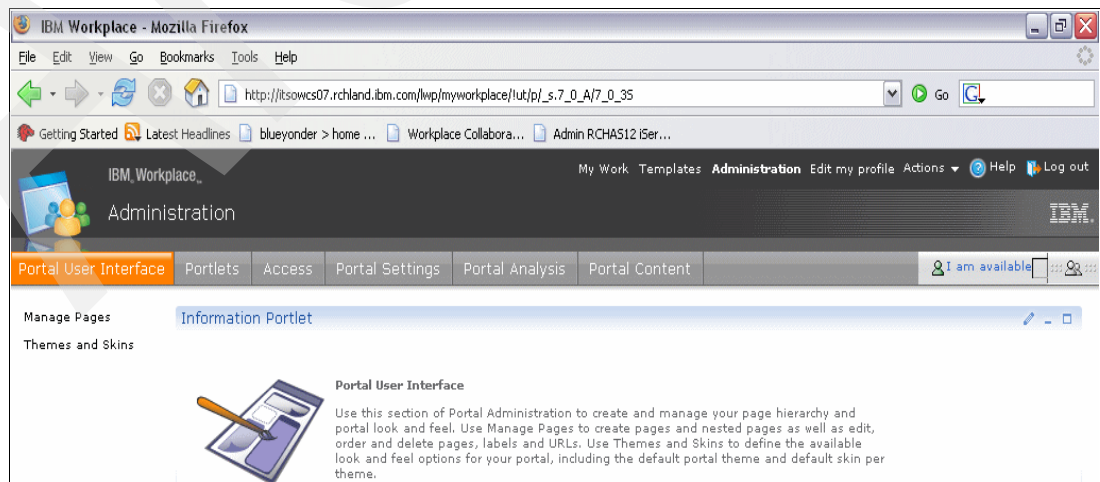


Figure 5-5 IBM WebSphere Portal administration

## Accessing WebSphere Portal administration

To access the WebSphere Portal administration, you must first log into the Workplace Collaboration Services server as the administrator. At the top of the Welcome page, click **Administration** to access the WebSphere Portal administration. See Figure 5-6.

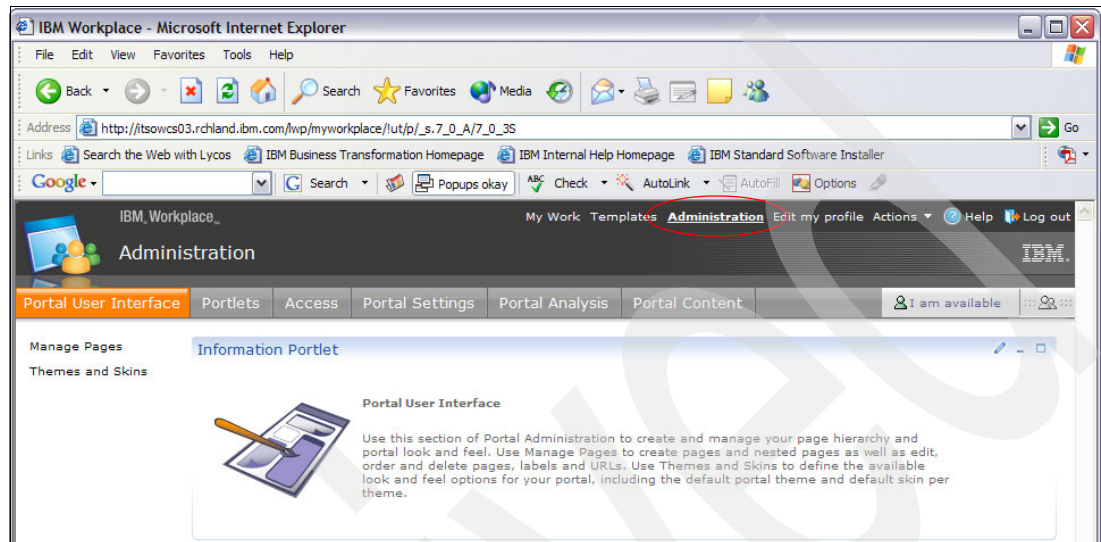


Figure 5-6 WebSphere Portal administration page

### 5.1.4 Lmadmin command line interface

The Lmadmin command line interface uses different types of commands to administer your Workplace Collaboration Services environment. For example, Lmadmin commands are used to administer various aspects of the Workplace Collaboration Services messaging. Qshell commands are used for a number of tasks such as starting and stopping the servers. The following examples are tasks that you can manage or tasks that you can perform with various Lmadmin commands that are run from the Qshell environment:

- ▶ Mail administration
- ▶ Messaging accounts
- ▶ Mail services
- ▶ Post Office Protocol 3 (POP3)
- ▶ Internet Message Access Protocol (IMAP)
- ▶ Simple Mail Transfer Protocol (SMTP) inbound filtering
- ▶ Find user policies
- ▶ Set user policies
- ▶ Import applications
- ▶ Find applications
- ▶ Delete applications
- ▶ Start servers
- ▶ Stop servers
- ▶ Delete servers

#### Access to the Lmadmin command line interface

For information about how to access the Lmadmin command line interface, refer to 5.8.1, “Starting the Lmadmin command service” on page 244.



## 5.2 Starting and stopping Workplace Collaboration Services

You have two options when you start and stop your Workplace Collaboration Services server. You can use the graphical interface of IBM Web Administration for iSeries (recommended) or use i5/OS and Qshell commands. IBM Web Administration for iSeries contains graphical wizards that you can use to start and stop the Workplace Collaboration Services server.

**Note:** Apart from the fact that one option is a GUI-based display and the other option is a command line interface, the most noticeable difference is that you can start or stop all of the servers at the same time or control each one individually using IBM Web Administration for iSeries. However, when using Qshell commands, you must start or stop each server individually.

### 5.2.1 Starting Workplace Collaboration Services using the wizard

To start the a Workplace Collaboration Services server using the IBM Web Administration for iSeries start wizard:

1. Access IBM Web Administration for iSeries by pointing your Web browser to your fully qualified iSeries host name on port 2001:  
`http://iSeriesHostName.domain:2001`  
In this example, we use:  
`http://rchas12.rchland.ibm.com:2001`
2. When prompted, log on to the IBM Web Administration for iSeries by entering your i5/OS user profile and password. Click **OK**.
3. On the iSeries Tasks menu, click **IBM Web Administration for iSeries**. You return to the last server that you administered.

4. To manage your Workplace Collaboration Services server, select your server:

**Important:** The Lightweight Directory Access Protocol (LDAP) server must be started before the Workplace Collaboration Services server is started. If the LDAP server is not started, the Workplace Collaboration Services server will not start.

- a. Click the **Manage** tab.
- b. Click the **Application Servers** tab.
- c. In the Server list, select your Workplace Collaboration Services server name.
- d. In the upper left corner, click the green square with a white triangle to start the Workplace Collaboration Services server as shown in Figure 5-7.



Figure 5-7 Starting Workplace Collaboration Services server

Alternatively, you can click the **All Servers** tab and then the **All Application Servers** subtab on which you see all of the application servers that are configured on the iSeries server. You can then select your Workplace Collaboration Services server and click **Start** (Figure 5-8).

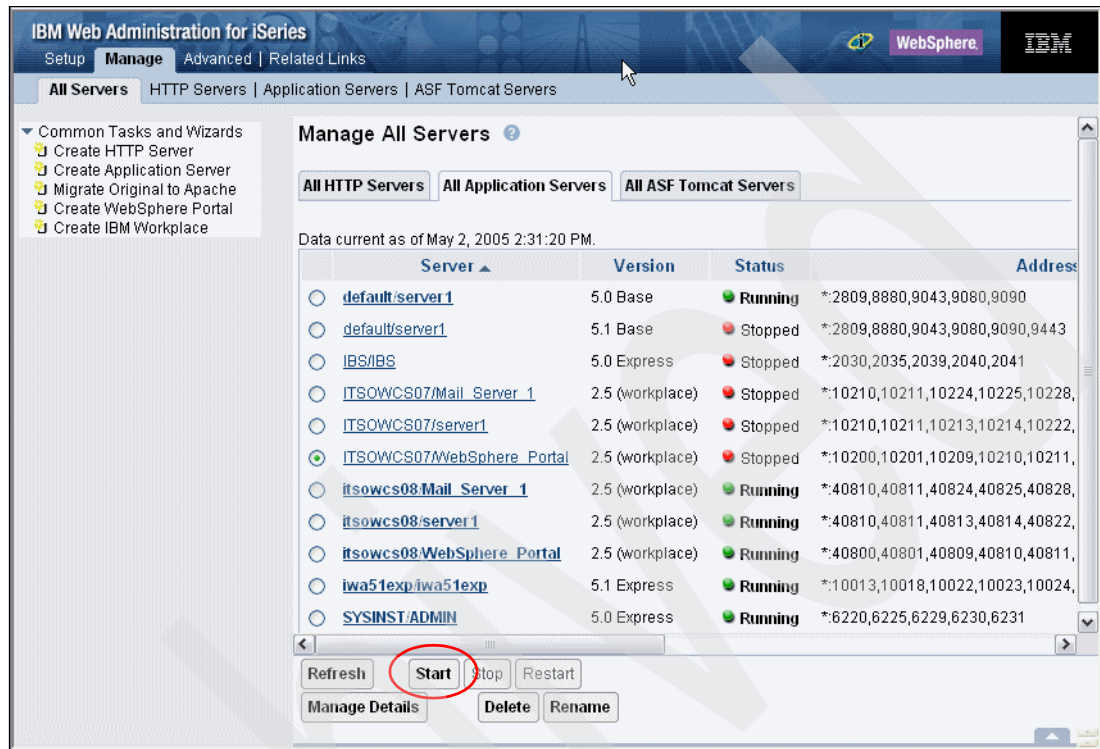


Figure 5-8 IBM Web Administration for iSeries, All Application Servers tab

5. All of the servers associated with the specific Workplace Collaboration Services instance are displayed as shown in Figure 5-9. If you ended only one server, for example if you changed a policy setting and only need to restart Mail\_Server\_1, this panel only shows a check box for the server that is not started. If for some other reason you only want to start one specific server, then clear the other check boxes. The servers that can be started here are WebSphere\_Portal, Server1, Mail\_Server\_1, the document rendering server, and the HTTP server.

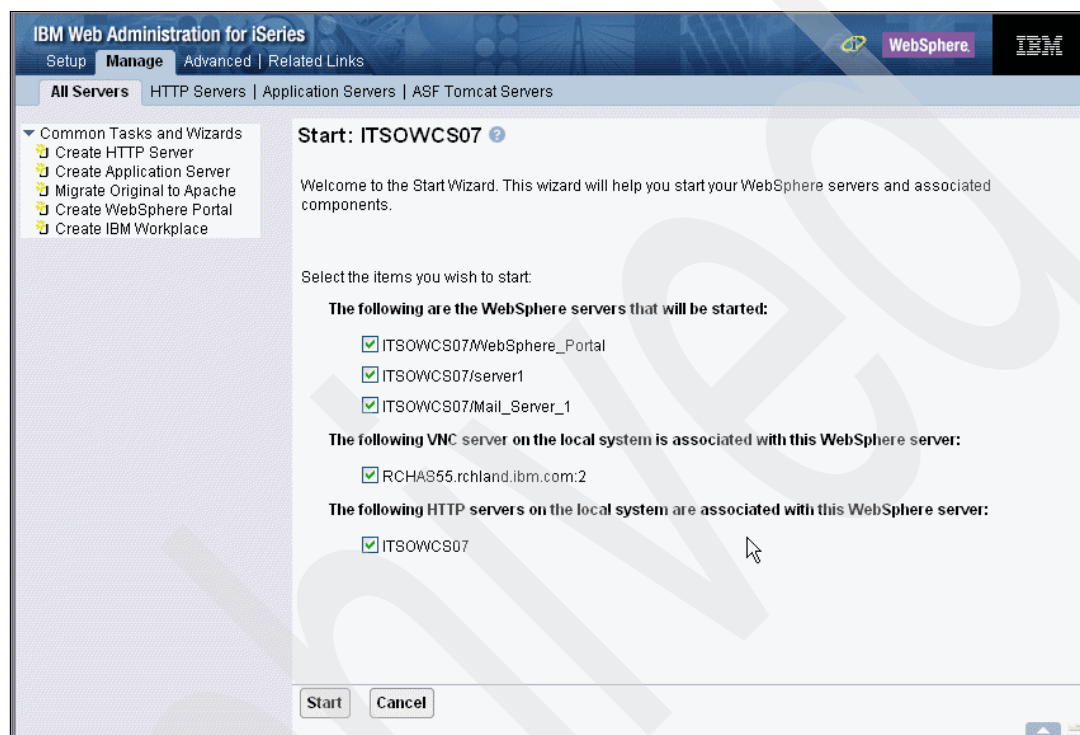


Figure 5-9 IBM Web Administration for iSeries, start wizard

## 5.2.2 Starting Workplace Collaboration Services using commands

i5/OS and Qshell commands are an alternative way to start a Workplace Collaboration Services server. Perform the following steps to start a Workplace Collaboration Services server using i5/OS and Qshell commands:

1. Enter the STRQSH command from an i5/OS command line to start the Qshell environment.
2. To start Server1, run the following Qshell command, where *InstanceName* represents your Workplace Collaboration Services server name, *UserName* represents your administrator user, and *Password* represents the password:

```
/qibm/proddata/webas5/pme/bin/startserver server1 -instance InstanceName -UserName
UserName -password Password
```

**Important:** The command for server names is case sensitive. For example, server1 must be lowercase “s”, WebSphere\_Portal must have a capital “W”, “S”, and “P” and Mail\_Server\_1 must have a capital “M” and “S”.

In Figure 5-10, *itsowcs07* is the instance name, *wpsadmin* is the user name, and *password* is the password.

```
QSH Command Entry

$
> qibm/proddata/webas5/pme/bin/startserver server1 -instance itsowcs07 -username
wpsadmin -password password
CPC1221: Job 073787/QEJBVR/SERVER1 submitted to job queue QEJBJOBQ in
library QJBAS5.
EJB6123: Application server started.
Cause . . . . . : Application server server1 in PME instance itsowcs07
has started and is ready to accept connections on admin port 10224.

$
===>
```

Figure 5-10 Starting *server1* from the Qshell environment

3. To start WebSphere\_Portal, run the following command in Qshell, where *InstanceName* represents your Workplace Collaboration Services server name, *UserName* represents your administrator user, and *Password* represents the password:

```
/qibm/proddata/webas5/pme/bin/startserver WebSphere_Portal -instance InstanceName
-username UserName -password Password
```

In Figure 5-11, *itsowcs07* is the instance name, *wpsadmin*, is the user name and *password* is the password.

```
QSH Command Entry

$
> qibm/proddata/webas5/pme/bin/startserver WebSphere_Portal -instance itsowcs07
-username wpsadmin -password password
CPC1221: Job 073845/QEJBVR/WEBSPPHERE_ submitted to job queue QEJBJOBQ in
library QJBAS5.
EJB6123: Application server started.
Cause . . . . . : Application server WebSphere_ in PME instance
itsowcs07 has started and is ready to accept connections on admin port
10210.

$
===>
```

Figure 5-11 Starting *WebSphere\_Portal* from the Qshell environment

4. To start the Mail\_Server\_1, enter the following command in the Qshell, where *InstanceName* represents your Workplace Collaboration Services server name, *UserName* represents your administrator user, and *Password* represents the password:

```
/qibm/proddata/webas5/pme/bin/startserver Mail_Server_1 -instance InstanceName -username
UserName -password Password
```

In Figure 5-12, *itsowcs07* is the instance name, *wpsadmin* is the username, and *password* is the password.

```
QSH Command Entry
$
> /qibm/proddata/webas5/pme/bin/startserver Mail_Server_1 -instance itsowcs07
   -username wpsadmin -password wpsadmin
CPC1221: Job 071428/QEJBSVR/MAIL_SERVE submitted to job queue QEJBJOBQ in
library QEJBAS5.
EJB6123: Application server started.
Cause . . . . . : Application server Mail_Serve in PME instance
                  itsowcs07 has started and is ready to accept connections on admin port 0.
$
===>
```

Figure 5-12 Starting Mail\_Server1 from the Qshell environment

5. Workplace Collaboration Services requires a document rendering server to display documents to the user. If you applied PTF SI20496, you have the option to use a Virtual Network Computing (VNC) server or an X Virtual Frame Buffer (XVFB) server. If you do not have this PTF, your only option is a VNC server. We demonstrate starting both servers. However in your environment, you should only start one, *the XVFB server*.

Before you can start either server, you must know the display number that is assigned to it. To determine number, this refer to the printable configuration summary for your server, as described in Appendix C, “Workplace Collaboration Services configuration summary” on page 519.

- To start the XVFB server, enter the following command on a i5/OS command line:

```
CALL QP2TERM
```

Then enter the following command, where *DisplayNumber* represents the display number for your server:

```
/usr/bin/X11/X -vfb :DisplayNumber
```

Your display number is echoed back to you as shown in Figure 5-13. Press F3 to exit.

```
$
> /usr/bin/X11/X -vfb :88
:88
===>

F3=Exit  F6=Print  F9=Retrieve  F11=Truncate/Wrap
F13=Clear F17=Top  F18=Bottom  F21=CL command entry
```

Figure 5-13 Starting the XVFB document rendering server

Alternatively, you can use an i5/OS command to start the XVFB server, where *DisplayNumber* represents the display number for your server:

```
SBMJOB CMD(CALL PGM(QP2SHELL) PARM('/usr/bin/X11/X' '-vfb' ':DisplayNumber'))
JOB(XVFB) JOBQ(QSYSNOMAX) USER(QEJBSVR) ALWMLTTHD(*YES)
```

- To start the VNC server, enter the following command on an i5/OS command line, where *DisplayNumber* represents the display number for your server as demonstrated in Figure 5-14:

```
SBMJOB CMD(CALL PGM(QP2SHELL)
PARM('/QOpenSys/QIBM/ProdData/DeveloperTools/vnc/vncserver_java' ':DisplayNumber'))
USER(QEJBSVR) JOBQ(QSYSNOMAX)
```

Command Entry		RCHAS12
		Request level: 1
Previous commands and messages:		
> SBJOB CMD(CALL PGM(QP2SHELL) PARM('/QOpenSys/QIBM/ProdData/DeveloperTools/vnc/vncserver_java' ':4')) JOBQ(QSYSNOMAX) USER(QEJBSVR)		
Job 324348/QEJBSVR/QDFTJOB submitted to job queue QSYSNOMAX in library QSYS.		
		Bottom
Type command, press Enter.		
===>		
F3=Exit	F4=Prompt	F9=Retrieve
F11=Display full	F12=Cancel	F13=Information Assistant
		F24=More keys

Figure 5-14 Starting the VNC document rendering server

6. Start the HTTP server using the following Start TCP/IP Server (STRTCPSVR) CL command, where the value in the httpsvr parameter is the Workplace Collaboration Services HTTP server name. In our example, the name of the Workplace Collaboration Services HTTP server is *itsowcs07*:

```
strtcpsvr server(*http) httpsvr(ITSOWCS07)
```

### 5.2.3 Stopping Workplace Collaboration Services using the wizard

Perform the following steps to stop a Workplace Collaboration Services server using IBM Web Administration for iSeries stop wizard:

1. To access IBM Web Administration for iSeries, point your Web browser to your fully qualified iSeries host name on port 2001:  

```
http://iSeriesHostName.domain:2001
```

In this example, we use:  

```
http://rchas12.rchland.ibm.com:2001
```
2. When prompted, log on to the IBM Web Administration for iSeries by entering your i5/OS user profile and password. Click **OK**.
3. On the iSeries Tasks menu, click **IBM Web Administration for iSeries**. This returns you to the last server that you administered.
4. Click the **All Servers** tab and then the **All Application Servers** subtab.

5. You see all of the application servers configured on this iSeries server. To stop the servers associated with your Workplace Collaboration Services server using the IBM Web Administration for iSeries stop wizard, select any server with the instance name that you are stopping (Figure 5-15). Then click **Stop**.

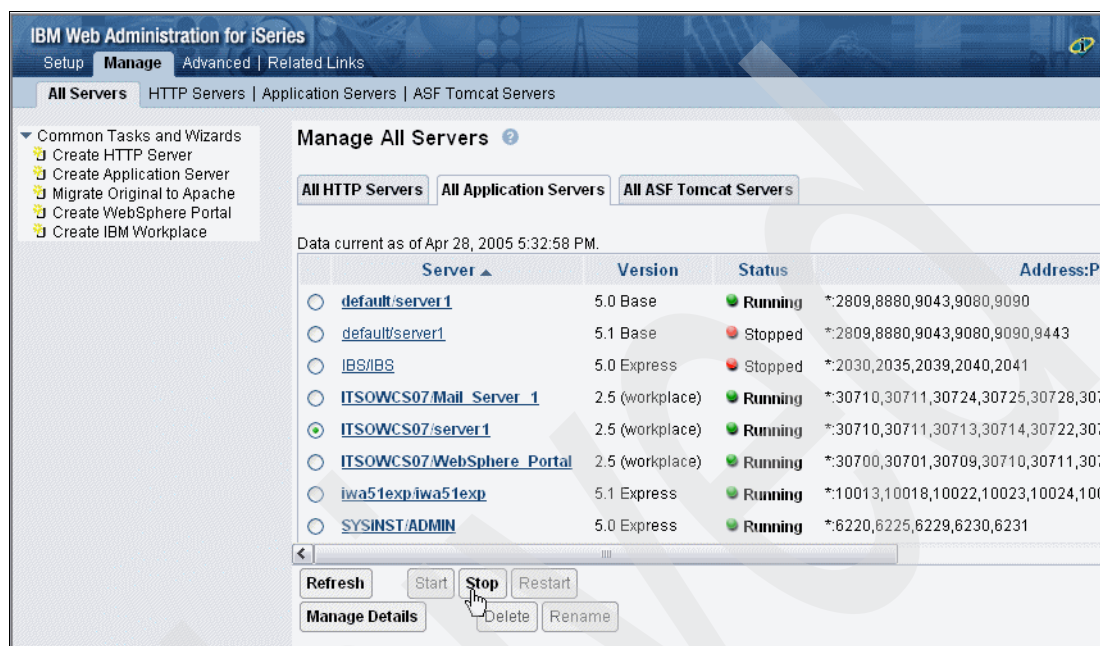


Figure 5-15 Selecting server to stop from IBM Web Administration for iSeries

6. In the next panel, you can select the servers that you want to stop (Figure 5-16). By default, all servers are selected. Clicking the Stop button stops the entire Workplace Collaboration Services server. This includes Mail\_Server\_1, WebSphere\_Portal, server1, HTTP server, and the document rendering server. To stop only one specific server, then clear the boxes next to the servers that you do not want to stop and click **Stop**.

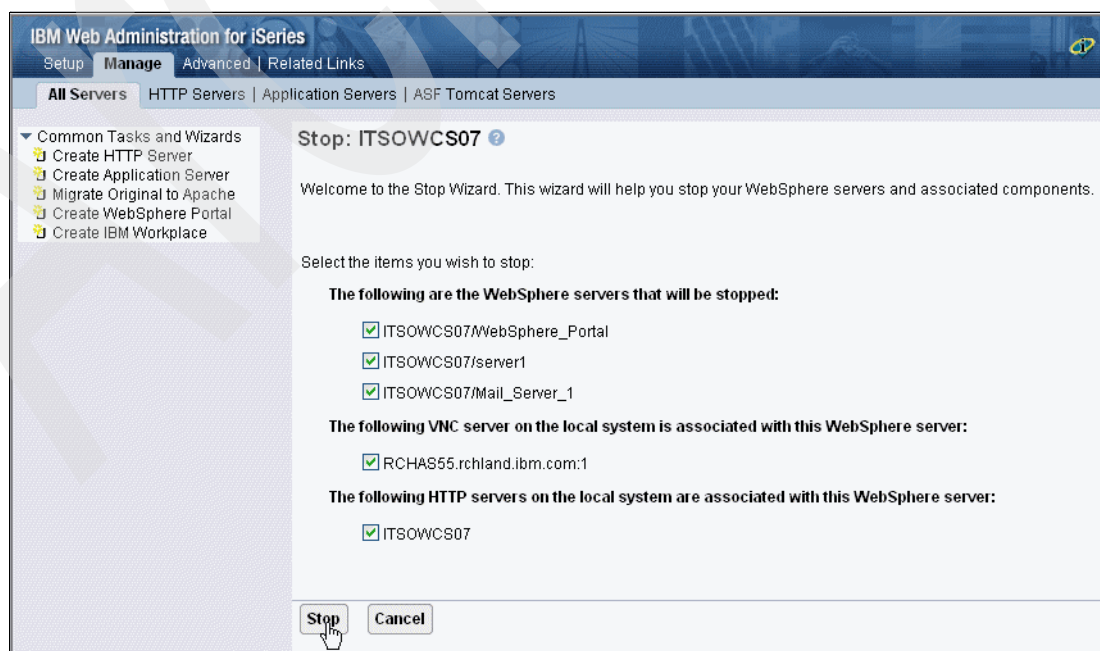


Figure 5-16 IBM Web Administration for iSeries Stop wizard



The status of the servers changes from Running to Stopping. This eventually changes to a status of *Stopped* (Figure 5-17).



Figure 5-17 IBM Web Administration for iSeries, application server status

## 5.2.4 Stopping Workplace Collaboration Services using commands

As an alternative to using IBM Web Administration for iSeries to stop the servers associated with a Workplace Collaboration Services server, you can use Qshell commands as explained in the following steps:

1. Enter the STRQSH command on an i5/OS command line to start the Qshell environment.
2. To stop Server1, type the following command in Qshell, where *InstanceName* represents your Workplace Collaboration Services server name, *UserName* represents the administrator user, and *Password* represents the password:

```
/qibm/proddata/webas5/pme/bin/stopserver server1 -instance InstanceName -UserName
UserName -password Password
```

In Figure 5-18, *itsowcs07* is the instance name, *wpsadmin* is the user name, and *password* is the password.



Figure 5-18 Stopping Server1 from the Qshell environment

3. To stop the Mail\_Server\_1 server, type the following command in Qshell, where *InstanceName* represents your Workplace Collaboration Services server name, *UserName* represents the administrator user, and *Password* represents the password:

```
/qibm/proddata/webas5/pme/bin/stopserver Mail_Server_1 -instance InstanceName -username  
UserName -password Password
```

In Figure 5-19, *itsowcs07* is the instance name, *wpsadmin* is the username, and *password* is the password.

```
QSH Command Entry  
$  
> /qibm/proddata/webas5/pme/bin/stopServer Mail_Server_1 -instance itsowcs07 -username  
wpsadmin -password wpsadmin  
ADMU0116I: Tool information is being logged in file  
          /QIBM/UserData/WebAS5/Base/ITSOWCS07/logs/Mail_Server_1/stopServer  
          .log  
ADMU3100I: Reading configuration for server: Mail_Server_1  
ADMU3201I: Server stop request issued. Waiting for stop status.  
ADMU4000I: Server Mail_Server_1 stop completed.  
$  
==>
```

Figure 5-19 Stopping Mail\_Server\_1 from the Qshell environment

4. To stop the WebSphere\_Portal server, enter the following command in Qshell, where *InstanceName* represents your Workplace Collaboration Services server name, *UserName* represents the administrator user, and *Password* represents the password:

```
/qibm/proddata/webas5/pme/bin/stopserver WebSphere_Portal -instance InstanceName  
-username UserName -password Password
```

In Figure 5-20, *itsowcs07* is the instance name, *wpsadmin* is the username, and *password* is the password.

```
QSH Command Entry  
$  
> /qibm/proddata/webas5/pme/bin/stopServer WebSphere_Portal -instance itsowcs07  
-username wpsadmin -password wpsadmin  
ADMU0116I: Tool information is being logged in file  
          /QIBM/UserData/WebAS5/Base/ITSOWCS07/logs/WebSphere_Portal/stopSer  
          ver.log  
ADMU3100I: Reading configuration for server: WebSphere_Portal  
ADMU3201I: Server stop request issued. Waiting for stop status.  
ADMU4000I: Server WebSphere_Portal stop completed.  
$  
==>
```

Figure 5-20 Stopping WebSphere\_Portal server from the Qshell environment

5. Workplace Collaboration Services requires a document rendering server to display documents to the user. If you applied PTF SI20496, you have the option to use a VNC server or an XVFB server. If you do not have this PTF, your only option is to use a VNC server. We demonstrate ending both servers. However in your environment, you only have one active document rendering server.

Before you can end the server, you must know which server you are running and the display number assigned to your server. To determine the display number, refer to the

printable configuration summary for your server, as described in Appendix C, “Workplace Collaboration Services configuration summary” on page 519.

- a. On an i5/OS command line, enter the following command to start i5/OS PASE (Portable Application Solutions Environment):

```
CALL Qp2term
```

- b. Enter the following i5/OS PASE command, where *DisplayNumber* represents the display number used by your Workplace Collaboration Services server:

```
ps gauw | grep :DisplayNumber
```

- c. Review the output to determine if the server is a VNC or an Xvfb server. In Figure 5-21, you can see that display number 99 is an Xvfb server and that display number 4 is a VNC server. If you are running an Xvfb server, make a note of the process number. In our example, the process number is 26529.

```
$
> ps gauw | grep :99
ahoerle 26529 0.0 0.0 16388 0 -A 13:24:17 0:00 /usr/bin/X11/X -vfb :99
$
> ps gauw | grep :4
qejsvr 26506 2.0 0.0 181304 0 -A 13:05:10 6:40 /usr/lib/start32
qejsvr 25939 1.1 0.0 167248 0 -A 11:15:45 8:29 /usr/lib/start32
ahoerle 26588 0.0 0.0 11848 0 -A 13:42:26 0:00 /QOpenSys/usr/bin/-sh -i
qejsvr 26559 0.0 0.0 4976 0 -A 13:27:20 0:00
/QOpenSys/QIBM/ProdData/DeveloperTools/vnc/Xvnc :4 -desktop X -httpd
$

===>

F3=Exit F6=Print F9=Retrieve F11=Truncate/Wrap
F13=Clear F17=Top F18=Bottom F21=CL command entry
```

Figure 5-21 Viewing active document rendering servers

- d. If you are running the VNC server, enter the following command on an i5/OS command line to end the VNC server, where *DisplayNumber* represents the display number used by your Workplace Collaboration Services server. See Figure 5-22.

```
SBMJOB CMD(CALL PGM(QP2SHELL)
PARM('/QOpenSys/QIBM/ProdData/DeveloperTools/vnc/vncserver_java' ':DisplayNumber'
'-kill')) USER(QEJSVR) JOBQ(QSYSNOMAX)
```

```
Command Entry RCHAS12
Request level: 1

Previous commands and messages:
> SBJJOB CMD(CALL PGM(QP2SHELL) PARM('/QOpenSys/QIBM/ProdData/DeveloperTools/vnc/vncserver_java' ':4' '-kill')) JOBQ(QSYSNOMAX) USER(QEJSVR)
Job 324348/QEJSVR/QDFTJOB submitted to job queue QSYSNOMAX in library QSYS.

Type command, press Enter.
===>

F3=Exit F4=Prompt F9=Retrieve F10=Include detailed messages
F11=Display full F12=Cancel F13=Information Assistant F24=More keys
```

Figure 5-22 Stopping the VNC document rendering server

- e. If you are running an Xvfb server, enter the following command on an i5/OS PASE (call `qp2term`) command prompt, where *ProcessNumber* represents the process number that you identified in step c on page 213 (Figure 5-23):

```
kill ProcessNumber
```

```
$
> ps auxx | grep :99
ahoerle 26529 0.0 0.0 16388 0 -A 13:24:17 0:00 /usr/bin/X11/X -vfb :99
$
> kill 26529
$
> ps auxx | grep :99
$

===>

F3=Exit F6=Print F9=Retrieve F11=Truncate/Wrap
F13=Clear F17=Top F18=Bottom F21=CL command entry
```

Figure 5-23 Stopping the Xvfb document rendering server

6. Stop the HTTP server using the following End TCP/IP Server (ENDTCPSVR) CL command, where the value in the `httpsvr` parameter is the Workplace Collaboration Services HTTP server's name. In our example, the name of the Workplace Collaboration Services HTTP server is `itsowcs07`:

```
endtcpsvr server(*http) httpsvr(ITSOWCS07)
```

## 5.3 Verifying that a Workplace Collaboration Services server is active

When you start the Workplace Collaboration Services server, you can verify that all of the jobs are active and running normally. To be sure the Workplace Collaboration Services server is fully functional, you must verify that multiple servers are running. These servers include the LDAP server, the external HTTP server, the document rendering server, and the Workplace Collaboration Services application servers.

The LDAP server should be running before you start the Workplace Collaboration Services server; we do not cover that here. Refer to your LDAP server's documentation for information about starting the LDAP server and the steps to verify that the LDAP server is running.

In 4.3, "Using the iSeries Create IBM Workplace wizard" on page 97, you see how to configure the IBM HTTP Server for iSeries within the iSeries Create IBM Workplace wizard. In the wizard, the HTTP server name defaults to the same name as the Workplace Collaboration Services server name. When the IBM HTTP Server that is being used by your Workplace Collaboration Services server starts, you see five jobs running under the QHTTTPSVR subsystem with your Workplace Collaboration Services server name. To determine the name of the IBM HTTP Server for iSeries instance that is being used, refer to Appendix C, "Workplace Collaboration Services configuration summary" on page 519.

The document rendering server is started in the background when you start the Workplace Collaboration Services server via IBM Web Administration for iSeries. To verify that the document rendering server is active, you must know the display number for your document rendering server. You can find this number in the printable summary document created by the iSeries Create IBM Workplace wizard. For information about locating the display number of

the document rendering server, refer to Appendix C, “Workplace Collaboration Services configuration summary” on page 519.

To verify that the document rendering server is active:

1. Log onto the iSeries server with a 5250 session.
2. Enter the following CL command to access i5/OS PASE:

```
call qp2term
```

3. Enter the following i5/OS PASE command to verify that the job is active:

```
ps gauwx | grep :DisplayNumber
```

Here *DisplayNumber* represents the display number for your document rendering server. See Figure 5-24.

```
$
> ps gauwx | grep :10
qejbshr 16588 0.0 0.0 4976 0 - A Oct 27 0:32 /Q0penSys/QIBM/ProdData/DeveloperTools/vnc/Xvnc :10
-desktop X -httpd
$

===>

F3=Exit    F6=Print  F9=Retrieve F11=Truncate/Wrap
F13=Clear  F17=Top   F18=Bottom F21=CL command entry
```

Figure 5-24 Verifying that a document rendering server is active

A Workplace Collaboration Services server runs in the QEJBAS5 subsystem. In this subsystem, you should see four active jobs for each Workplace Collaboration Services server that is running. These jobs are QJVAEXEC, SERVER1, MAIL\_SERVER\_1 (MAIL\_SERVE), and WEBSPHERE\_PORTAL (WEBSPHERE\_).

- ▶ The QJVAEXEC job is started by the WEBSPHERE\_PORTAL job and is required for instant messaging functionality.
- ▶ The SERVER1 job is used during the initial configuration process to configure the Workplace Collaboration Services server. It is also used to administer the server via the WebSphere Application Server Administrative Console.
- ▶ The WEBSPHERE\_PORTAL job is responsible for responding to all Workplace Collaboration Services user requests.
- ▶ The MAIL\_SERVER\_1 job is responsible for all Workplace Collaboration Services messaging tasks.

There are multiple ways to determine which jobs comprise the Workplace Collaboration Services server. The following sections explain two different methods to make the determination of which jobs belong to your Workplace Collaboration Services server.

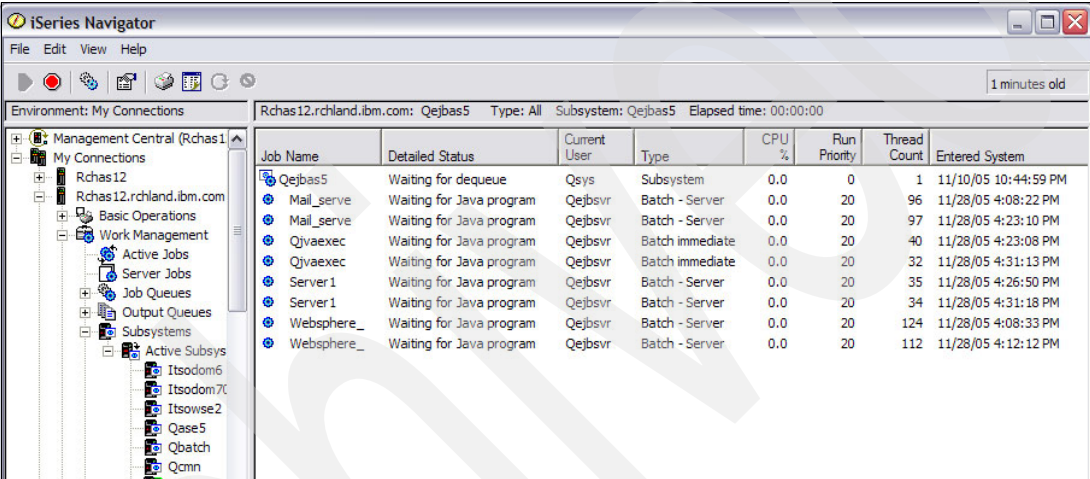
- ▶ The first method uses iSeries Navigator to view job logs and open integrated file system files. It uses the job log and open integrated file system files to determine which jobs belong to your Workplace Collaboration Services server. For information about this method, refer to 5.3.1, “Using iSeries Navigator to view active jobs” on page 216.
- ▶ The second method uses i5/OS CL commands to view job logs and job numbers. It uses the job log and job number to determine which jobs belong to the Workplace Collaboration Services server. For information about this method, refer to 5.3.2, “Using i5/OS CL commands to view active jobs” on page 219.

### 5.3.1 Using iSeries Navigator to view active jobs

To find the jobs that make up the Workplace Collaboration Services server using iSeries Navigator:

1. In the left pane, select **My Connections** → **iSeries system name** → **Work Management** → **Subsystems** → **Active Subsystems** → **Qejbas5** (Figure 5-25). Here you see a Qjvaexec, Server1, Mail\_server\_1 (Mail\_serve), and WebSphere\_Portal (Websphere\_) job for each running Workplace Collaboration Services server.

**Note:** You may not see an even number of Server1, Mail\_serve, Websphere\_, and Qjvaexec jobs if you are running other WebSphere Application Server profiles in the QEJBAS5 subsystem.



iSeries Navigator

File Edit View Help

Environment: My Connections Rchas12.rchland.ibm.com: Qejbas5 Type: All Subsystem: Qejbas5 Elapsed time: 00:00:00 1 minutes old

Job Name	Detailed Status	Current User	Type	CPU %	Run Priority	Thread Count	Entered System
Qejbas5	Waiting for dequeue	Qsys	Subsystem	0.0	0	1	11/10/05 10:44:59 PM
Mail_serve	Waiting for Java program	Qejbsvr	Batch - Server	0.0	20	96	11/28/05 4:08:22 PM
Mail_serve	Waiting for Java program	Qejbsvr	Batch - Server	0.0	20	97	11/28/05 4:23:10 PM
Qjvaexec	Waiting for Java program	Qejbsvr	Batch immediate	0.0	20	40	11/28/05 4:23:08 PM
Qjvaexec	Waiting for Java program	Qejbsvr	Batch immediate	0.0	20	32	11/28/05 4:31:13 PM
Server1	Waiting for Java program	Qejbsvr	Batch - Server	0.0	20	35	11/28/05 4:26:50 PM
Server1	Waiting for Java program	Qejbsvr	Batch - Server	0.0	20	34	11/28/05 4:31:18 PM
Websphere_	Waiting for Java program	Qejbsvr	Batch - Server	0.0	20	124	11/28/05 4:08:33 PM
Websphere_	Waiting for Java program	Qejbsvr	Batch - Server	0.0	20	112	11/28/05 4:12:12 PM

Figure 5-25 Viewing active jobs in the Qejbas5 subsystem with Series Navigator



- If you are running multiple Workplace Collaboration Services servers, you need to know which jobs are associated with each Workplace Collaboration Services server. Right-click a **WebSphere\_** job and click **Job Log**. The job log contains the Workplace Collaboration Services server name as shown in Figure 5-26.

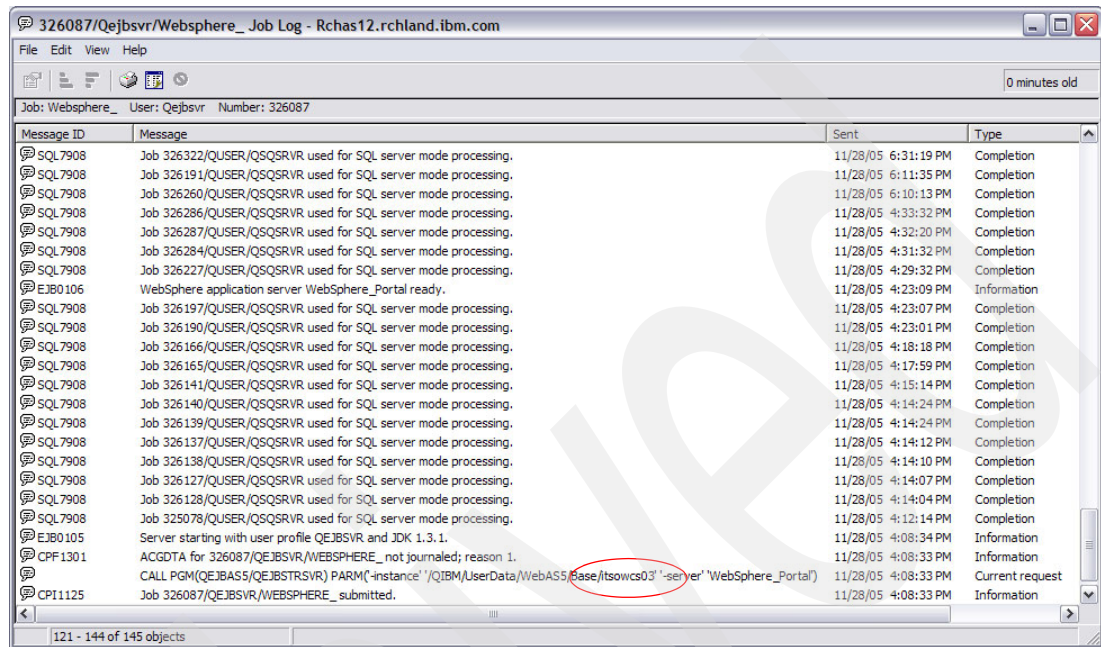


Figure 5-26 Viewing the Websphere\_ Job Log with iSeries Navigator

- To find the correct Server1 and Mail\_Server\_1 (Mail\_serve) jobs, review the job log as you did with the WebSphere\_Portal (WebSphere\_) job.
- To find the correct Qjavexec job, view the open integrated file system objects for the job. You should see files for your Workplace Collaboration Services server in the Qjavaexec job's file system objects list. Right-click **Qjavaexec** and then click **Details** → **Open Files** → **File System Objects** as shown in Figure 5-27.

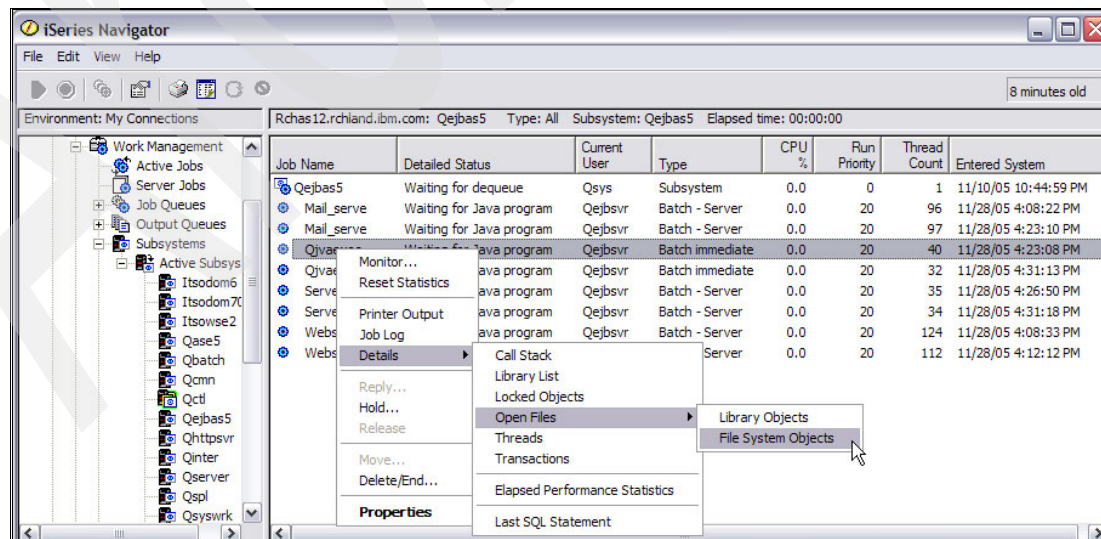


Figure 5-27 Viewing open files system objects for the Qjavaexec job with iSeries Navigator

- In the Qjvaxec File System Objects window (Figure 5-28), review the list of open files. The list is long and you must scroll down to find the group of files that contains the Workplace Collaboration Services server name. You should now be able to determine whether this is the correct Qjvaxec job for your Workplace Collaboration Services server.

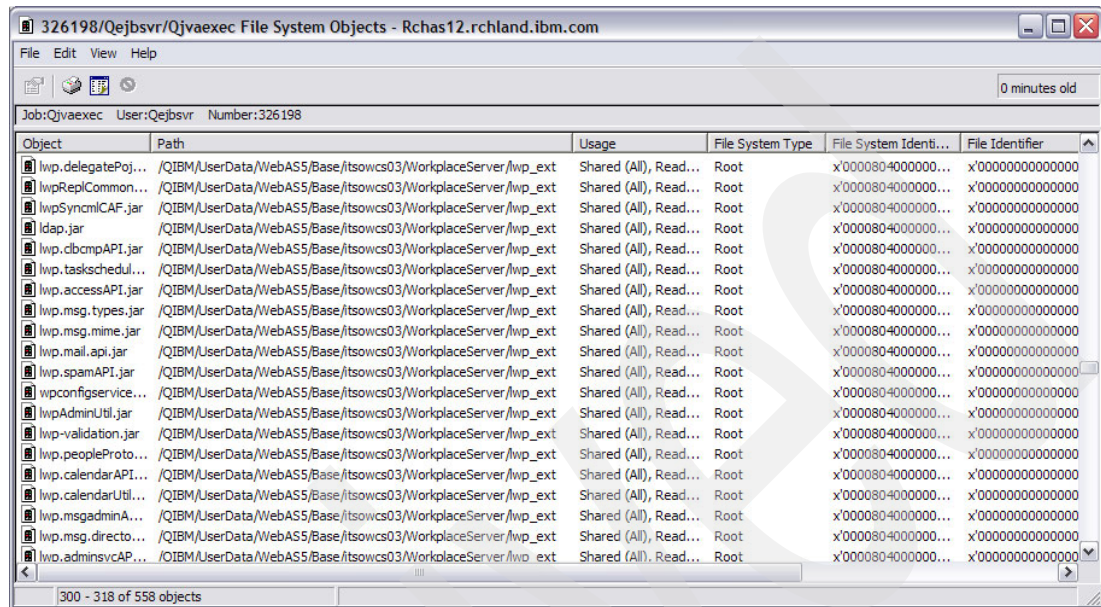


Figure 5-28 Viewing the open file system objects for the Qjvaxec job with iSeries Navigator

- To view the IBM HTTP Server jobs, in the left pane of iSeries Navigator, click **My Connections** → **iSeries system name** → **Work Management** → **Subsystems** → **Active Subsystems** → **Qhttpsvr**. You see five jobs with the name of your IBM HTTP Server as shown in Figure 5-29. These jobs compose the IBM HTTP Server for iSeries.

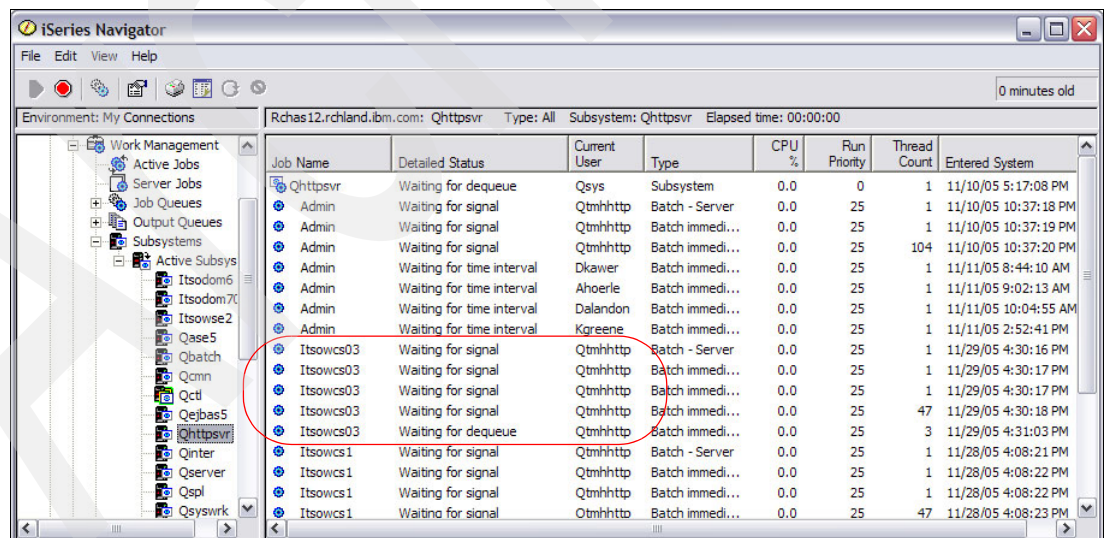


Figure 5-29 Viewing the active jobs in the Qhttpsvr subsystem with iSeries Navigator



### 5.3.2 Using i5/OS CL commands to view active jobs

To find the jobs that make up the Workplace Collaboration Services server using i5/OS CL commands:

1. View all active jobs on the iSeries server. From an i5/OS command line, enter the Work with Active Jobs (WRKACTJOB) CL command.
2. On the Work with Active Jobs display (Figure 5-30), all active jobs are visible and are organized by subsystem. You can find the MAIL\_SERVE, QJVAEXEC, SERVER1, and WEBSPPHERE\_ jobs under the QEJBAS5 subsystem. The IBM HTTP Server jobs run in the QHTTSPVR subsystem.

If you are running multiple Workplace Collaboration Services servers, you need to know which jobs are associated with each Workplace Collaboration Services server. Type option 5 (Work with) next to a WEBSPPHERE\_ job and press Enter.

Work with Active Jobs						
			RCHAS12		11/30/05 13:06:39	
CPU %:	.0	Elapsed time:	00:00:00	Active jobs:	361	
Type options, press Enter.						
2=Change 3=Hold 4=End 5=Work with 6=Release 7=Display message						
8=Work with spooled files 13=Disconnect ...						
Opt	Subsystem/Job	User	Type	CPU %	Function	Status
	QEJBAS5	QSYS	SBS	.0		DEQW
	MAIL_SERVE	QEJBSPV	BCH	.0	* -COMMIT	JVAW
	MAIL_SERVE	QEJBSPV	BCH	.0	* -COMMIT	JVAW
	QJVAEXEC	QEJBSPV	BCI	.0	JVM-com.ibm.ws	JVAW
	QJVAEXEC	QEJBSPV	BCI	.0	JVM-com.ibm.ws	JVAW
	SERVER1	QEJBSPV	BCH	.0	PGM-QEJBSTRSVR	JVAW
	SERVER1	QEJBSPV	BCH	.0	PGM-QEJBSTRSVR	JVAW
	WEBSPPHERE_	QEJBSPV	BCH	.0	* -COMMIT	JVAW
	WEBSPPHERE_	QEJBSPV	BCH	.0	* -COMMIT	JVAW
						More...
Parameters or command						
====>						
F3=Exit	F5=Refresh	F7=Find	F10=Restart statistics			
F11=Display elapsed data	F12=Cancel	F23=More options	F24=More keys			

Figure 5-30 Using WRKACTJOB to find active Workplace Collaboration Services jobs

3. On the Work with Job display, type option 10 (Display job log, if active or on job queue) to view the job log.

4. As shown in Figure 5-31, the first line in the job log contains the Workplace Collaboration Services server name. In our example, the name of the Workplace Collaboration Services server is itsowcs3. Press F3 (Exit) to exit the job log.

```
Display Job Log

Job . . :  WEBSPHERE_  User . . :  QEJBSVR      System:  RCHAS12
Number . . . : 326087

>> CALL PGM(QEJBAS5/QEJBSTRSVR) PARM('-instance' '/QIBM/UserData/WebAS5/Base/
      itsowcs03' '-server' 'WebSphere_Portal')

Bottom

Press Enter to continue.

F3=Exit  F5=Refresh  F10=Display detailed messages  F12=Cancel
F16=Job menu      F24=More keys
```

Figure 5-31 Viewing the job log for the WebSphere\_Portal (WEBSPHERE\_) job

5. You return to the Work with Active Jobs display. To find the correct SERVER1 and Mail\_Server\_1 (MAIL\_SERVE) jobs, you can review the respective job logs as you did with the WebSphere\_Portal (WEBSPHERE\_) job from this display.

Unfortunately, you cannot use this method to find the QJVAEXEC job because the job log for the QJVAEXEC job does not contain the Workplace Collaboration Services server name. To determine which job belongs to your Workplace Collaboration Services server, you can find the QJVAEXEC job that was started at the same time as the SERVER1, MAIL\_SERVE and WEBSPHERE\_ jobs.

Review the job log of the SERVER1 and MAIL\_SERVE jobs to find the ones for your Workplace Collaboration Services server and then make a note of the job numbers. Within i5/OS, jobs are started with a unique and sequential job number.

6. To find the jobs that were started at approximately the same time as the WEBSPHERE\_, MAIL\_SERVE, and SERVER1 jobs of your Workplace Collaboration Services server, you can sort the jobs on the WRKACTJOB display by job number. To view the job numbers in the Work with Active Jobs display, press F11 twice and your display should look similar to the example in Figure 5-32.

Work with Active Jobs						RCHAS12
CPU %:		1.8	Elapsed time:	00:23:22	Active jobs:	362
						11/30/05 13:30:02
Type options, press Enter.						
2=Change 3=Hold 4=End 5=Work with 6=Release 7=Display message						
8=Work with spooled files 13=Disconnect ...						
Opt	Subsystem/Job	User	Number	Type	CPU %	Threads
	QEJBAS5	QSYS	298378	SBS	.0	1
	MAIL_SERVE	QEJBAS5	326040	BCH	.0	96
	MAIL_SERVE	QEJBAS5	326205	BCH	.0	97
	QJVAEXEC	QEJBAS5	326198	BCI	.0	40
	QJVAEXEC	QEJBAS5	326261	BCI	.0	32
	SERVER1	QEJBAS5	326237	BCH	.0	35
	SERVER1	QEJBAS5	326275	BCH	.0	34
	WEBSPHERE_	QEJBAS5	326087	BCH	.3	123
	WEBSPHERE_	QEJBAS5	326126	BCH	.2	112
						More...
Parameters or command						
===>						
F3=Exit F5=Refresh F7=Find F10=Restart statistics F11=Display status						
F12=Cancel F17=Top F18=Bottom F23=More options F24=More keys						

Figure 5-32 Work with Active Jobs view showing job numbers

- To sort all of the jobs by job number, place your cursor on the Number column and press F16. Scroll up and down to find a QJVAEXEC job that started at approximately at the same time as the SERVER1, MAIL\_SERVE, or WEBSPPHERE\_ job. See Figure 5-33.

Work with Active Jobs						RCHAS12
CPU %:		1.8	Elapsed time:	00:19:27	Active jobs:	362
						11/30/05 13:26:06
Type options, press Enter.						
2=Change 3=Hold 4=End 5=Work with 6=Release 7=Display message						
8=Work with spooled files 13=Disconnect ...						
Opt	Subsystem/Job	User	Number	Type	CPU %	Threads
	QSQRVR	QUSER	326226	PJ	.0	1
	QSQRVR	QUSER	326215	PJ	.0	1
	MAIL_SERVE	QEJBSVR	326205	BCH	.0	98
	QJVAEXEC	QEJBSVR	326198	BCI	.0	40
	QSQRVR	QUSER	326197	PJ	.0	1
	QSQRVR	QUSER	326196	PJ	.0	1
	QSQRVR	QUSER	326172	PJ	.0	1
	QSQRVR	QUSER	326163	PJ	.0	1
	QSQRVR	QUSER	326162	PJ	.0	1
						More...
Parameters or command						
==>						
F3=Exit	F5=Refresh	F7=Find	F10=Restart statistics	F11=Display status		
F12=Cancel	F17=Top	F18=Bottom	F23=More options	F24=More keys		

Figure 5-33 Viewing all active jobs sorted by job number in the Work with Active Jobs display

## 5.4 Adding additional administrators

When you created the Workplace Collaboration Services server, you specified a Workplace administrator. In our example, this was wpsadmin. After the Workplace Collaboration Services server is created, wpsadmin is the only user that has administration rights, so you might want to add additional LDAP user entries as administrators.

You can assign the following roles to users in the WebSphere Application Server to allow those users access to specific console functions:

- **Monitor:** This user can view the system state and configuration data, but cannot make any changes.
- **Operator:** This user has the same ability as the monitor plus the ability to perform operational duties, such as starting and stopping servers and services.
- **Configurator:** This user has the same ability as the monitor plus the ability to change configuration settings.
- **Administrator:** This user has the abilities of the monitor, operator, and configurator.

To add an additional administrative user:

1. Make sure your Workplace Collaboration Services server is started. For assistance, refer to 5.2.1, “Starting Workplace Collaboration Services using the wizard” on page 203.
2. Access the WebSphere Application Server Administrative Console by pointing your Web browser to:

`http://fully_qualified_host_name:portblock+10/admin`

In our example, the fully qualified host name is *itsowcs07.rchland.ibm.com*, and the port block is *30700*. In our example, we entered:

`http://itsowcs07.rchland.ibm.com:30710/admin`

This redirects you to the Secure Sockets Layer (SSL)-enabled login page for the WebSphere Application Server Administrative Console as shown in Figure 5-36 on page 224. In our example, the redirected URL is:

`https://itsowcs07.rchland.ibm.com:30711/admin/logon.jsp`

Alternatively you can launch the WebSphere Application Server Administrative Console from IBM Web Administration for iSeries (Figure 5-34).

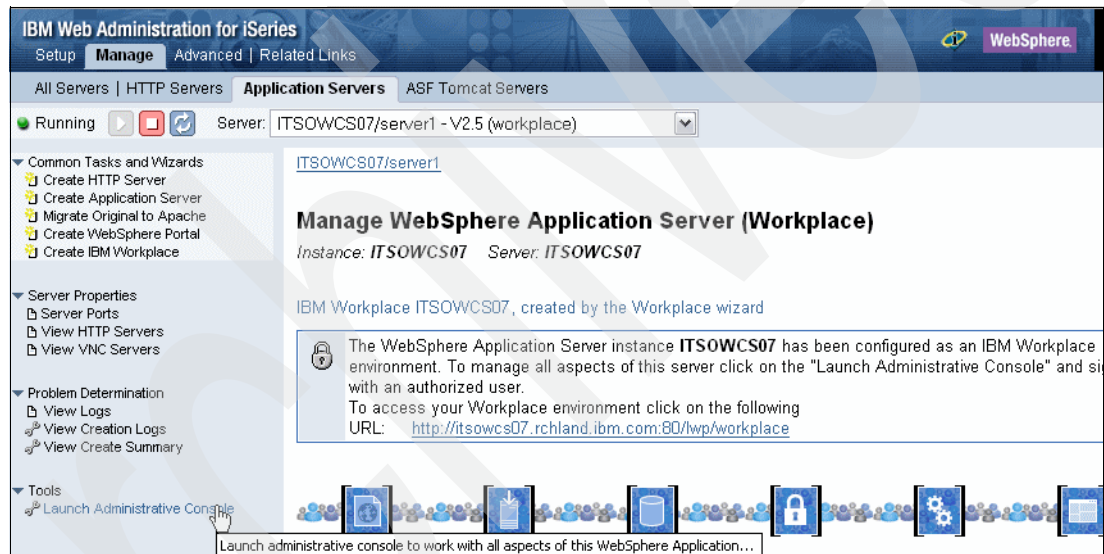


Figure 5-34 Launching the WebSphere Application Server Administrative Console

The Web browser is redirected to an SSL session. This generally results in a security warning as shown in Figure 5-35. This Security Alert dialog is normal. Click **OK** to proceed.



Figure 5-35 WebSphere administration SSL redirection security alert

- Log into the WebSphere Application Server Administrative Console (Figure 5-36). In our example, the user ID is `wpsadmin`. Enter your administration user ID and password, and click **OK** to login.

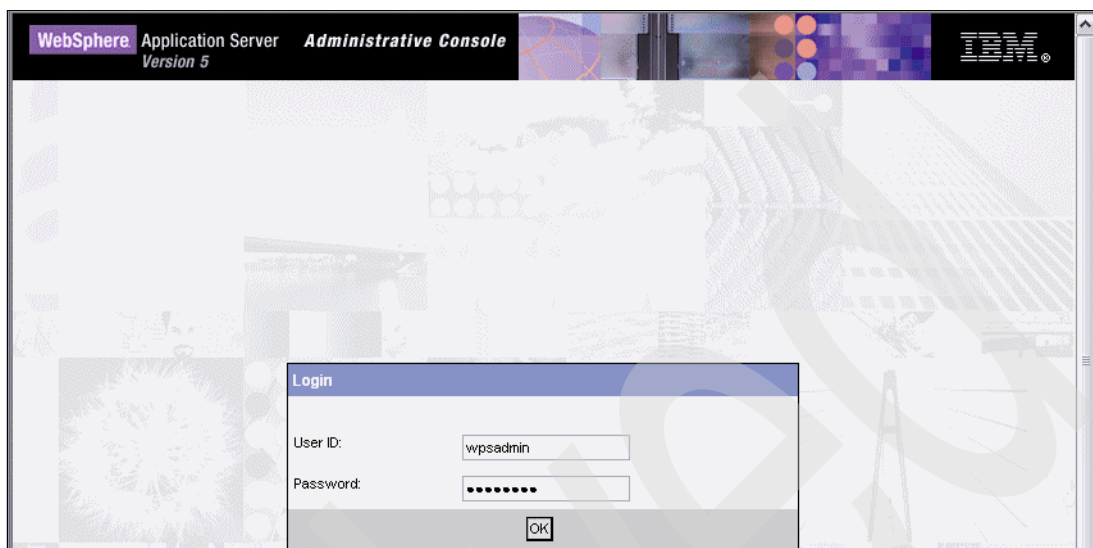


Figure 5-36 Logging on to the WebSphere Application Server Administrative Console

- From the WebSphere Application Server Administrative Console (Figure 5-37), you can change settings within the Workplace Collaboration Services environment by selecting the various options in the left pane. The center panel has useful links to information about the WebSphere Application Server, WebSphere Developer Domain, and the information center. Information about the version of IBM WebSphere Application Server you are using is also displayed.

Change the LDAP user privileges for authorization to the WebSphere Application Server Administrative Console.

- Click **System Administration** → **Console Users**.

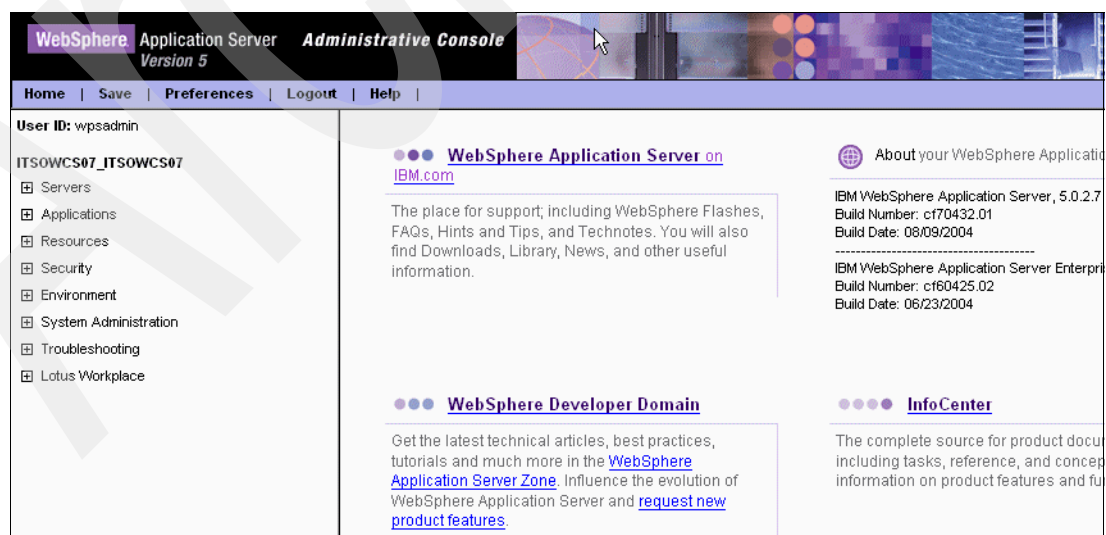


Figure 5-37 WebSphere Application Server Administrative Console

- b. In the Console Users panel, click **Add** (Figure 5-38).



Figure 5-38 Adding console users

- c. In the next panel (Figure 5-39), add the user. Then highlight the administration role that you want the user to perform. Since we are creating an alternative administrator, choose the **Administrator** role. Click **OK**.

Repeat these actions until all users are added for the specific role required within WebSphere Application Server Administrative Console.

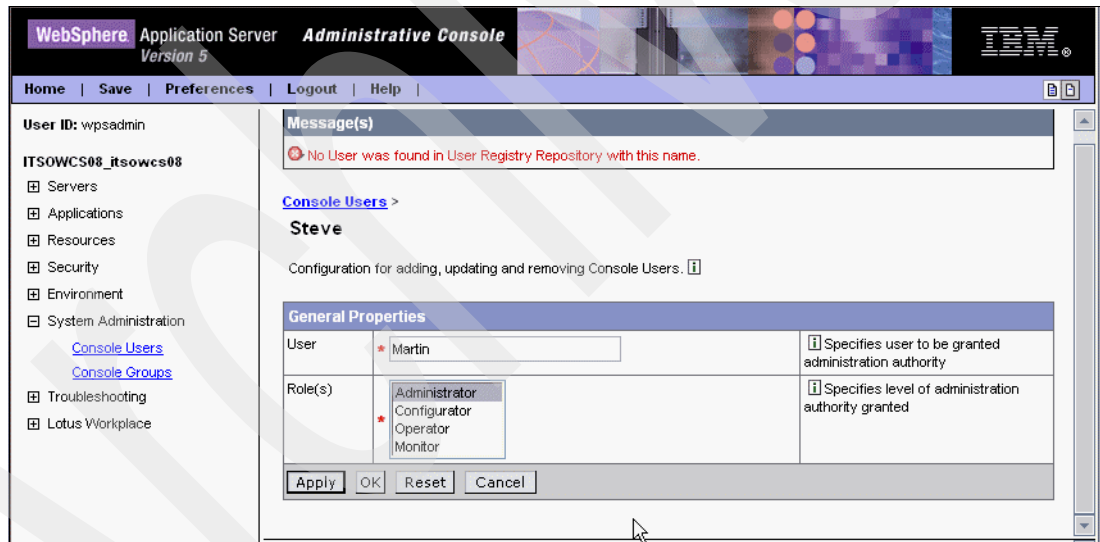


Figure 5-39 Adding a user with the Administrator role

- d. To apply these changes, click **Save** on the menu bar (Figure 5-40).



Figure 5-40 Saving the changes

- e. Click **Save** again in the Messages box (Figure 5-41) to commit these changes.

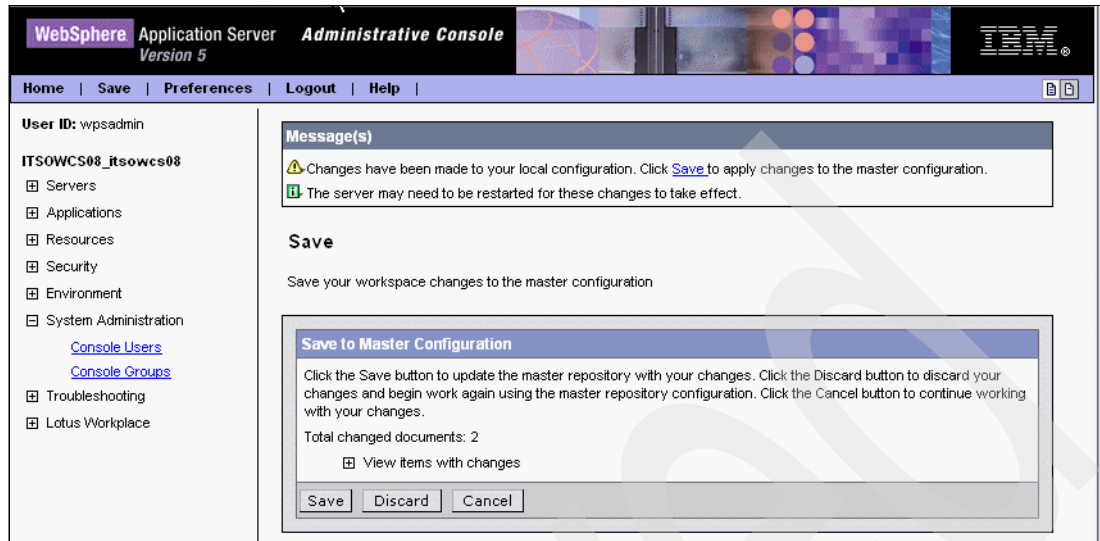


Figure 5-41 Committing the changes

5. The administrators of WebSphere Portal are usually the same users that administrate the WebSphere Application Server Administrative Console. To add users as administrators:
  - a. Click **Applications** → **Enterprise Applications**.
  - b. You should see a list of applications. Click **Next** until you see the WpsAdminconsole application (Figure 5-42).
  - c. Click **WpsAdminConsole**.

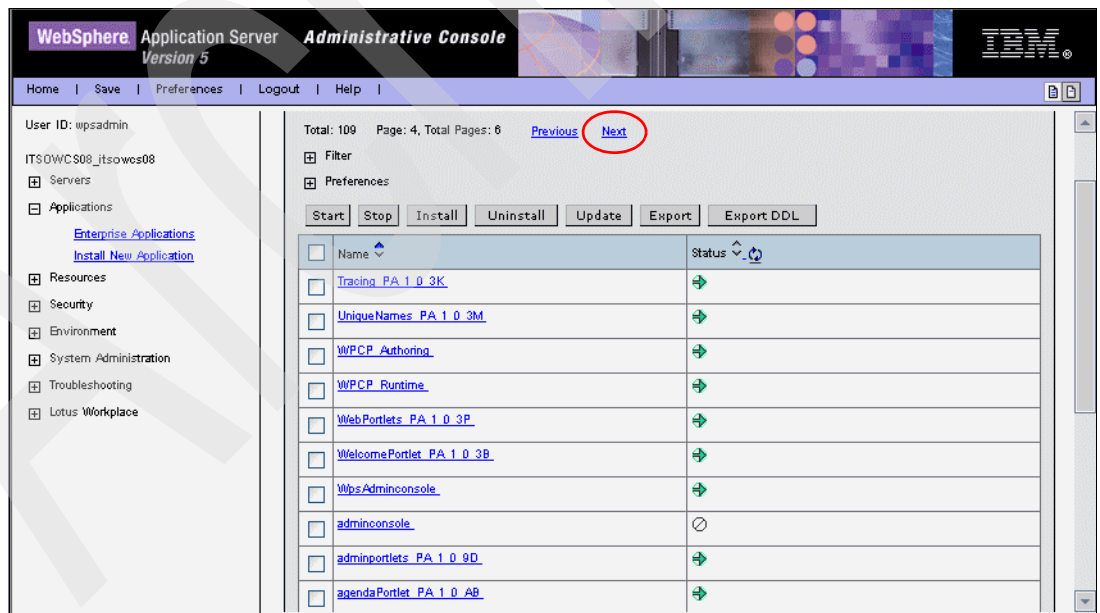


Figure 5-42 Adding a WpsAdminConsole user



- d. In the WPSAdminconsole panel (Figure 5-43), scroll down to Additional Properties section and click **Map security roles to users/groups**.

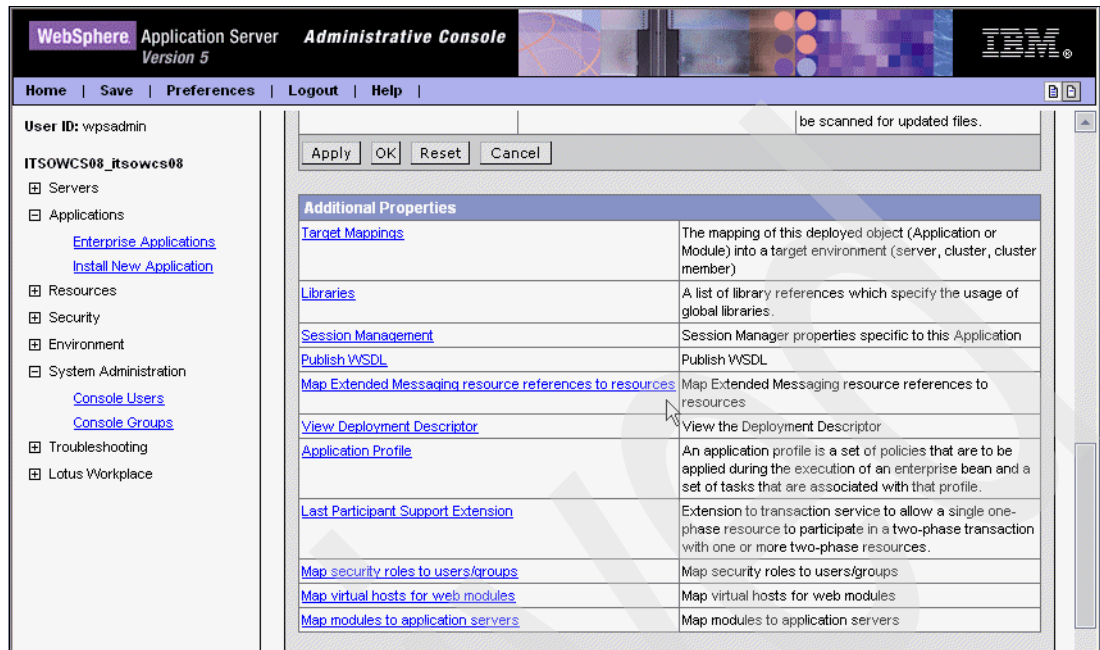


Figure 5-43 WpsAdminconsole page

- e. In the Mapping Users to Roles panel (Figure 5-44), select **administrator** (or the role of your choice) and click **Lookup users**. Note that you can also map groups to roles on this page.

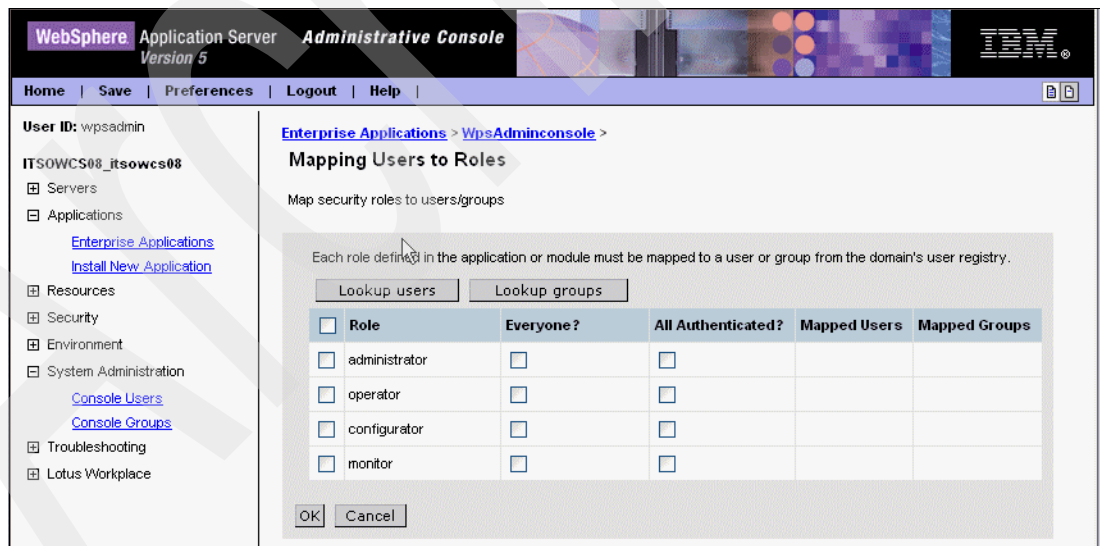


Figure 5-44 Mapping user roles

- f. In the Search LDAP panel (Figure 5-45), enter a search string for the user that you want to add in the Search String box and click **Search**. Any users that are found that have the search string are shown in the Available box. Highlight the correct users and click the **right arrow key**. This moves the users to the selected field. For additional users, repeat the steps by entering a different search string. Click **OK** when all users assigned this role are in the selected field.

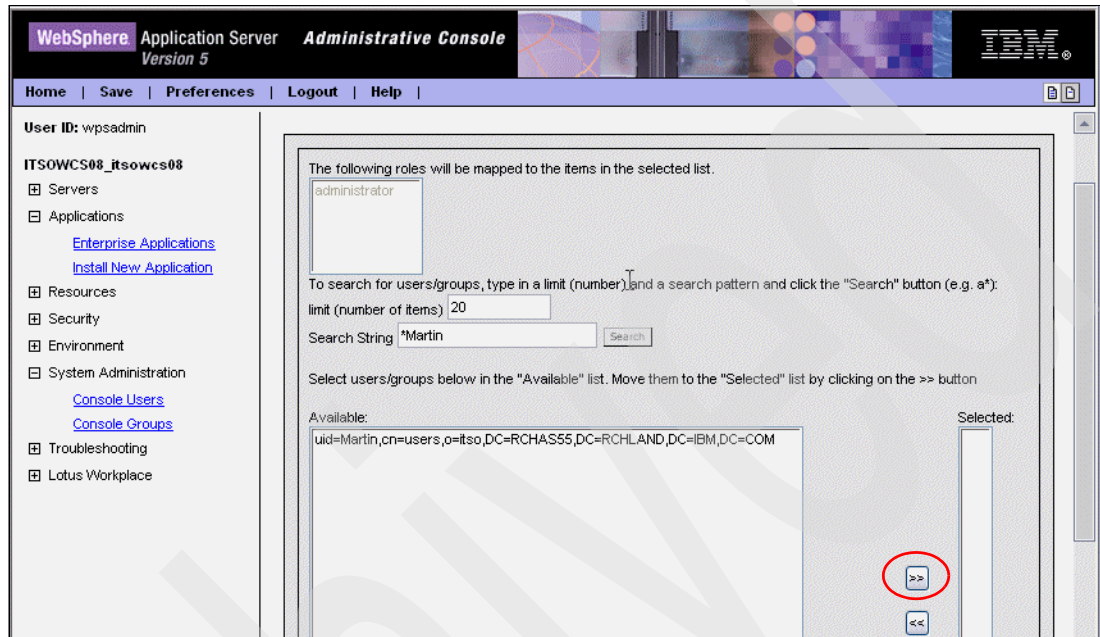


Figure 5-45 Searching and selecting users from the LDAP directory

- g. In the Mapping Users to Roles panel (Figure 5-46), the mapped users are shown along with the role they were assigned. If this is correct, click **Save** and then click **Save** again to commit the changes.

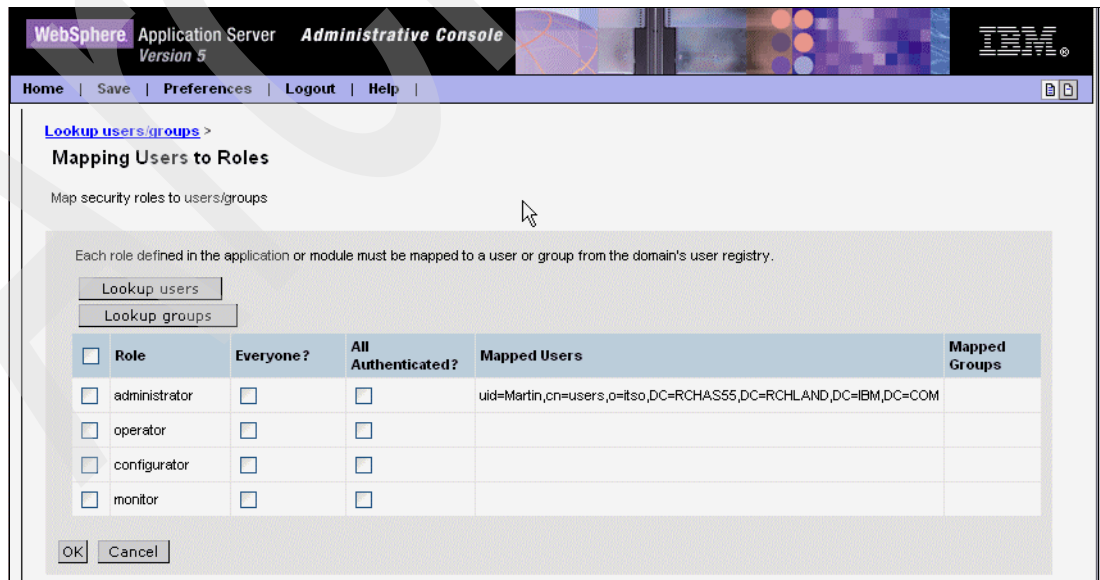


Figure 5-46 Mapping Users to Roles panel

6. Adding security roles to Workplace Collaboration Services Security (LWP\_Security) involves adding the PKIAdmin role. The Public Key Infrastructure (PKI) is used to issue and distribute public keys securely. The PKIAdmin role is needed for certain tasks within Workplace Collaboration Services security.
  - a. In the WebSphere Application Server Administrative Console, click **Applications** → **Enterprise Applications**.
  - b. In the right panel, click **Next** until you see the LWP\_Security application. When you see that application, click **LWP\_security**.
  - c. In the LWP\_Security panel (Figure 5-47), scroll down to the additional properties section and click **Map security roles to users/groups**.

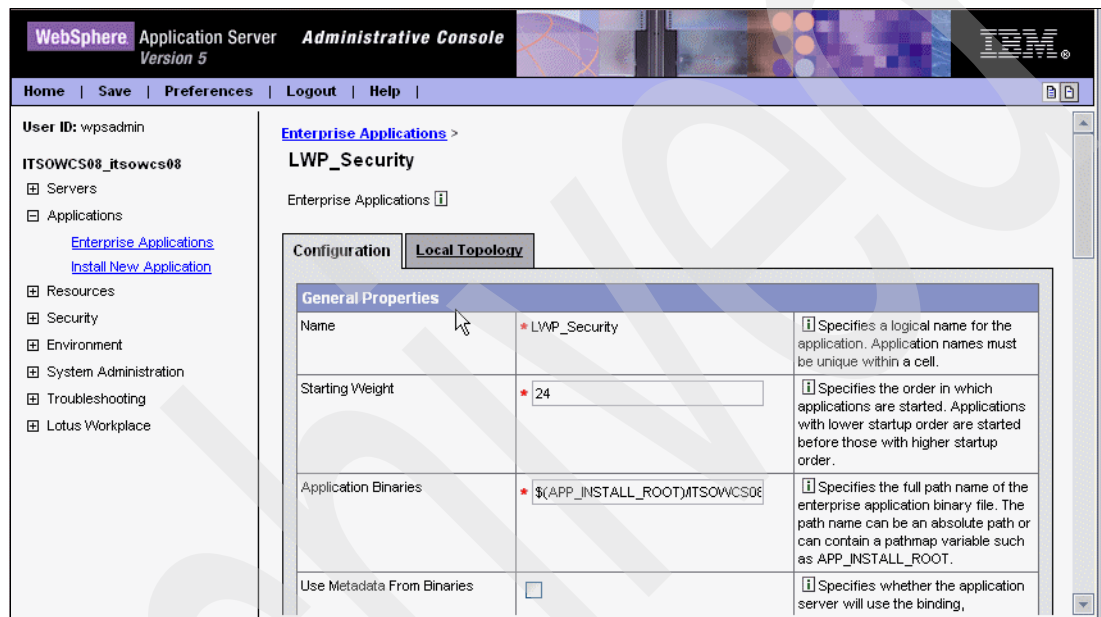


Figure 5-47 LWP\_Security page

- d. In the Mapping Users to Roles panel (Figure 5-48), select **PKIAdmin** and click **Lookup users**.

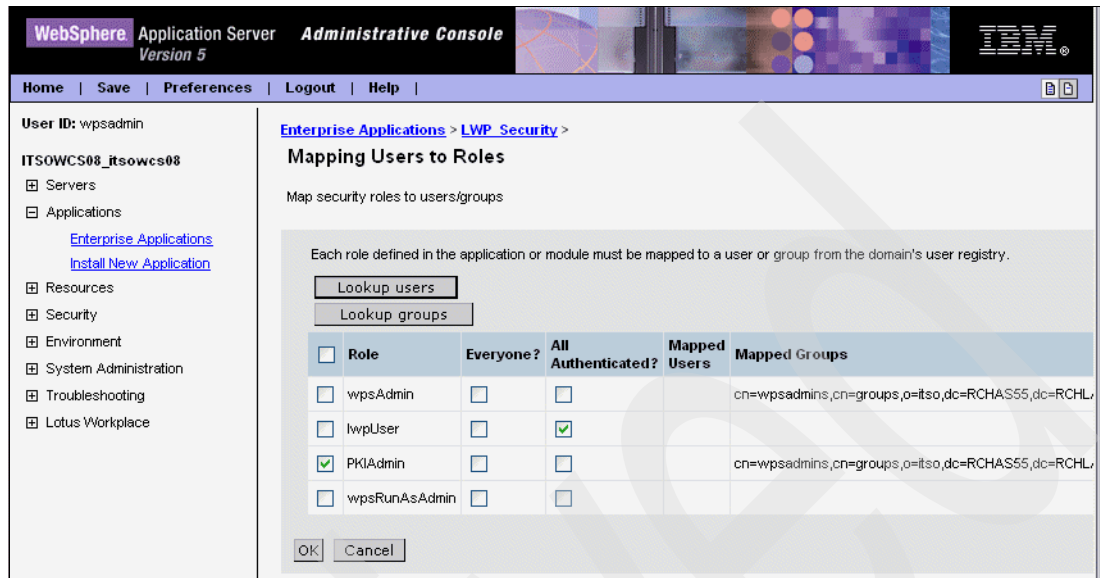


Figure 5-48 Mapping users to roles page

- e. You see the Search LDAP panel, which is similar to the panels for adding WpsAdminconsole users (Figure 5-45 on page 228). To find the LDAP user to add to the role you selected:
  - i. Enter a search string in the Search String box and click **Search**.
  - ii. Any users that are found that have the search string are shown in the Available box. Highlight the correct users and click the **right arrow key**. This moves the users to the selected field. For additional users repeat the steps entering a different search string.
  - iii. Click **OK** when all users assigned this role are in the selected field.
- f. Back on the Mapping Users to Roles panel, click **OK**.
- g. Click **Save** and then click **Save** again to commit the changes.
7. Stop and start your Workplace Collaboration Services server. For assistance, refer to 5.2, "Starting and stopping Workplace Collaboration Services" on page 203.

## 5.5 Workplace Collaboration Services mail

Workplace Collaboration Services Messaging provides a secure mail application that runs on the IBM WebSphere Portal Server and uses IBM DB2 Universal Database for iSeries as the data store. Workplace Collaboration Services Messaging is designed to integrate with an existing corporate infrastructure and use a supported LDAP directory for automatic user account creation, address resolution, and mail routing.

The mail component of Workplace Collaboration Services is the mail service also called the *message transfer agent* (MTA) and is located in the Mail\_Server\_1. It works with the message queue and the DB2 Universal Database database to receive, process, and send mail. Within the mail service, there is SMTP inbound and outbound, a message handler, local delivery, and POP3 and IMAP services. In the following sections, we describe the architecture of Workplace Collaboration Services Messaging and how to configure and administer messaging.



## 5.5.1 Mail cell

Workplace Collaboration Services Messaging uses the same cell and node architecture used by the WebSphere Application Server. The concept of a Workplace Collaboration Services Messaging mail cell is based on the concept of a cell as a logical grouping of one or more nodes in a WebSphere distributed network.

In simple terms, a mail cell is a group of services called a *mail service*. This mail service is actually a set of services that works with the message queue, queue directory, and DB2 Universal Database data store to receive, process, and send mail. These services are:

- ▶ SMTP Inbound service
- ▶ Message Handler service
- ▶ SMTP Outbound/Delivery service
- ▶ POP3 service
- ▶ IMAP service

To see these options, go to the WebSphere Application Server Administrative Console and click **Lotus Workplace** → **Mail Cell-Wide Settings** as shown in Figure 5-49.

The screenshot displays the WebSphere Application Server Administrative Console interface. The top navigation bar includes links for Home, Save, Preferences, Logout, and Help. The left sidebar shows the navigation tree with 'Lotus Workplace' expanded, leading to 'Mail Cell-Wide Settings'. The main content area is titled 'Junk Mail Filter' and contains several configuration fields: 'Enabled' (checked), 'Filtering port' (30237), 'Learning port' (30238), 'Empty junk mail folder after (days)' (30), and 'Empty mail in Trash after (days)' (7). There are also buttons for 'Apply', 'OK', 'Reset', and 'Cancel'. Below the main settings, an 'Additional Properties' section lists various mail services and their descriptions.

Additional Properties	
<a href="#">General Mail services</a>	Properties that apply to all mail servers.
<a href="#">SMTP Inbound</a>	Properties specific to inbound mail.
<a href="#">Filters for SMTP Inbound Connections</a>	Filters that define how the system accepts and rejects inbound mail.
<a href="#">SMTP Outbound/Local Delivery</a>	Properties specific to outbound mail.
<a href="#">POP3</a>	Properties specific to POP3.
<a href="#">IMAP</a>	Properties specific to IMAP.

Figure 5-49 Mail Services

A mail cell also contains the messaging portlets (mail, address book, calendar, and spell check) running on a WebSphere Portal Server, rich client users on the desktop, a WebSphere Application Server Administrative Console to manage cell and server properties, and the supported relational database. The cell uses a single DB2 Universal Database data store and the mail service queue directory (a temporary file store) to store messages before they are delivered.

The mail cell processes mail for one or more domains and relies on WebSphere Member Manager (working with an LDAP directory) for name lookups and mail routing.

Figure 5-50 shows a mail cell configuration on i5/OS.

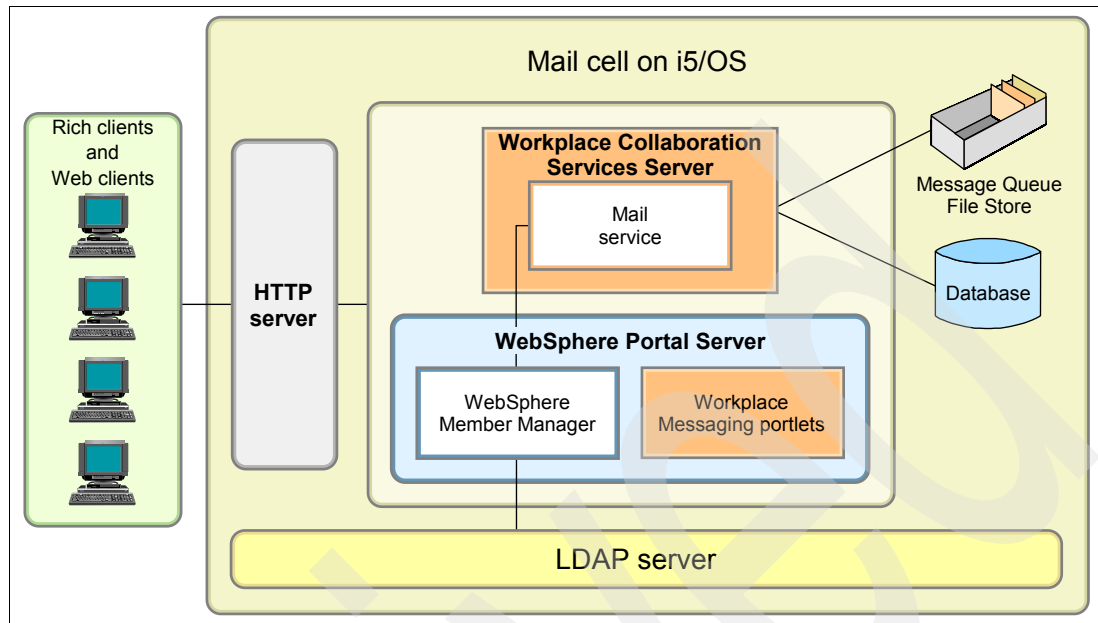


Figure 5-50 Workplace Collaboration Services mail cell on i5/OS

Workplace Collaboration Services Messaging sends and receives mail over SMTP by means of the SMTP Inbound, Message Handler, and SMTP Outbound services, each of which you configure separately. The SMTP Inbound service handles incoming SMTP connections and delivers messages received over those connections to the message queue. It does not handle the subsequent delivery or transfer of those messages. POP3 and IMAP services allow users to send and receive mail from other mail systems.

### 5.5.2 SMTP Inbound service

The SMTP Inbound service receives external mail into the Workplace Collaboration Services Messaging system. The SMTP Inbound service has filters that you configure to prevent delivery from specified services and domains. Inbound mail that does not come from a blocked domain is always handled. Outbound mail is not accepted unless it comes from a known entity.

You can configure the SMTP Inbound Service so that it is not used as an open relay. The mail service's SMTP Outbound service component does not relay messages. It performs local deliveries or relays only to specific hosts. Attempts to relay to unknown hosts will fail. You can set up filters for the SMTP Inbound services in a cell to block connections that may try to use the mail services as a relay host. For more information about how connections are blocked, refer to the "Filters for SMTP Inbound Connections" topic in the Workplace Collaboration Services Information Center located at:

<http://publib.boulder.ibm.com/infocenter/lwpphelp/index.jsp>

### 5.5.3 Message Handler service

The Message Handler service polls the message queue for new messages, expands group and alias names, checks for delivery confirmations, filters message content, and tracks message retry information. The Message Handler service moves messages from the new state to the ready state in the message queue and rejects undeliverable mail. The Message

Handler service processes messages in a virtual queue and sends them along to an unprocessed, local, or external queue.

### 5.5.4 SMTP Outbound/Local Delivery service

The SMTP Outbound/Local Delivery service polls the message queue for mail ready for delivery to recipients inside and outside the mail cell. To determine whether an Internet address is local to the mail cell, the mail service performs the following actions:

- ▶ It checks the Internet domain of the recipient's e-mail address to see if it matches a local domain.
- ▶ If the recipient's e-mail domain is local, the mail service looks up the user in the local directory.
- ▶ If the user is not found, the mail service searches for the recipient in the list of defined mail cells.
- ▶ When the recipient is found, the SMTP Outbound service passes the message off to a SMTP server that knows about the specified mail cell.
- ▶ If the message has a recipient address that does not resolve to the local Workplace Collaboration Services Messaging domain, the mail service identifies the message destination as non-local and must be sent to the Internet.
- ▶ The mail service checks to be sure that the message is not using Workplace Collaboration Services Messaging as a relay host.

**Note:** You can set up rules to restrict outbound messages by categorizing connections as authenticated, trusted, anonymous, suspect, and blocked.

The SMTP Outbound service works with a smart host that you specify when a recipient cannot be found. The smart host service either sends undeliverable mail back to the sender, or sends the mail to another mail system that knows about the recipient.

The SMTP Outbound service performs the following tasks:

- ▶ Reads from a specified list of virtual queues
- ▶ Handles undeliverable mail
- ▶ Retries delivery for a specified number of times of unsuccessfully delivered messages
- ▶ Restricts outbound messages to a specified size
- ▶ Updates records in the message queue to reflect queue status and delivery status
- ▶ Determines if an undeliverable message has expired

### 5.5.5 POP3 service

The POP3 service acts as an intermediary for communications between POP3 mail clients and Workplace Collaboration Services Messaging by letting POP3 mail clients access Workplace Collaboration Services Messaging mail files. The POP3 service uses the LDAP directory to verify the user's credentials. If configured, the POP3 clients can connect to the service over SSL.

Users can have no more than one POP3 session at a time. The service can read only new messages stored in the Inbox folder. The messages are then downloaded to the POP3 client. You can configure the maximum length of a POP3 service session and the maximum number of concurrent sessions allowed.

### 5.5.6 IMAP service

The IMAP service acts as an intermediary for communications between IMAP mail clients and Workplace Collaboration Services Messaging by letting IMAP mail clients access Workplace Collaboration Services Messaging mail files. The IMAP service differs from the POP3 service in that users are not required to download messages to a local computer to read and manipulate them. Users can work with messages over the network while the messages remain on the server.

After connecting to the IMAP service, IMAP mail clients can perform the following tasks:

- ▶ Access messages on the mail server.
- ▶ Retrieve messages from the mail server and store them locally.
- ▶ Copy messages for offline use and then later synchronize with mail on the server.

You can set up Workplace Collaboration Services Messaging and other mail systems to route messages between each other, whether they exist in the same Internet domain and use a shared directory.

### 5.5.7 Mail cell settings

Three types of settings can be configured in a mail cell:

- ▶ General mail settings

This includes Domain Name System (DNS) servers, mail cell name, postmaster e-mail address, and local domain names, and they apply to all servers and services within the cell.

- ▶ Mail service settings that apply to all servers

The settings for SMTP Inbound, SMTP Outbound, POP3, IMAP, and general mail services apply to all servers in the cell.

- ▶ Single server mail server settings

At a more granular level, the previous settings can also be set at a single server level. There are also additional settings that give you more control over your environment.

#### General mail settings

The general mail settings and their definitions are as follows:

- ▶ Domains that are considered local

Enter the host name or IP address that is considered local. If you have multiple names, use a comma to separate them. You can also use an asterisk as a wildcard to indicate that any domain is local.

- ▶ Default domain name

This is the outbound domain name that is automatically added to group names and addresses without a domain name. For example, if the default domain name is defined as itso.com and you have a group name of residents as an address, the Workplace Messaging adds itso.com to the end, resulting in a mail address of residents@itso.com.

- ▶ Postmaster mail address

This address is where system reports and e-mails addressed to the postmaster are sent.

- ▶ Dead letter address

Any mail that is not delivered is classified as dead mail. In this setting, you specify who to forward this dead mail to; if no name is given, this mail remains in the mail service queue. To delete from the mail service queue, use the Lmadm command **reapdeadmessages**.



- Send notification when mail account status changes  
If you place a check mark in this box, the postmaster receives an e-mail if the account is created, deleted, or fails to create.
- Send notification for these mail account events  
This setting relates to the previous setting of when a mail account status changes. Here you select the specific item to send to the postmaster, either to be notified if accounts are created, accounts are deleted, or accounts fail to create.
- Remove mail deletion stubs after (days)  
This setting allows you type in the number of days that you require the server to retain deletion stubs. The deletion stubs are used for the synchronization between a user's Web browser client or a user's rich client.  
  
When messages are deleted from the user's Web browser client, deletion stubs replace the message on the server. The next time the user uses the rich client and synchronizes with the server, messages from the rich client are deleted based on the deletion stubs. The default value for the deletion stubs is 90 days. If a user does not use the rich client within the 90 days, the previously deleted messages are treated as new messages by the server.

## Modifying general mail settings

To change any of the general mail settings:

1. Log into the WebSphere Application Server Administrative Console.
2. Click **Lotus Workplace** → **Users** → **Mail Cell-Wide Settings**.

You see the general mail settings in the right panel (Figure 5-51). Junk mail settings are also defined here. Refer to 5.5.9, "Spam" on page 236, for more information.

WebSphere Administrative Console - Microsoft Internet Explorer																				
Address: <a href="https://rchas12.rchland.ibm.com:30111/admin/secure/securelogin.do?action=secure">https://rchas12.rchland.ibm.com:30111/admin/secure/securelogin.do?action=secure</a>																				
<b>WebSphere Application Server Administrative Console</b> Version 5																				
Home   Save   Preferences   Logout   Help																				
User ID: wpsadmin <b>ITSOWCS01_ITSOWCS01</b> Servers Applications Resources Security Environment System Administration Troubleshooting Lotus Workplace Licenses Directories Archive Users Mail Cell-Wide Settings SIP Cell-Wide Settings Workplace Client Certificate Store	<table border="1"> <tr> <td>Send notification when mail account status changes</td> <td><input checked="" type="checkbox"/></td> <td></td> </tr> <tr> <td>Send notification for these mail account events</td> <td> <input checked="" type="checkbox"/> Account creation failure  <input type="checkbox"/> Account creation success  <input type="checkbox"/> Account deletion               </td> <td>                 Select the mail account event type to have an automatic notification sent to the postmaster.               </td> </tr> <tr> <td>Remove mail deletion stubs after (days)</td> <td>90</td> <td>Type the number of days to retain mail deletion stubs for the mail cell.</td> </tr> <tr> <td>Junk Mail Filter</td> <td> <input checked="" type="checkbox"/> Enabled                  Filtering port: 30151                  Learning port: 30152               </td> <td>                 Select to use the junk mail filter. The junk mail filter examines each incoming message for characteristics of spam, and delivers the message to the user's junk mail folder if appropriate. Changing these properties requires restarting the server.               </td> </tr> <tr> <td>Empty junk mail folder after (days)</td> <td>6</td> <td>Type the number of days after which junk mail in the user's junk mail folder will be automatically marked for deletion.</td> </tr> <tr> <td>Empty mail in Trash after (days)</td> <td>6</td> <td>Type the number of days after which mail in a user's Trash folder will be automatically marked for deletion.</td> </tr> </table>	Send notification when mail account status changes	<input checked="" type="checkbox"/>		Send notification for these mail account events	<input checked="" type="checkbox"/> Account creation failure <input type="checkbox"/> Account creation success <input type="checkbox"/> Account deletion	Select the mail account event type to have an automatic notification sent to the postmaster.	Remove mail deletion stubs after (days)	90	Type the number of days to retain mail deletion stubs for the mail cell.	Junk Mail Filter	<input checked="" type="checkbox"/> Enabled Filtering port: 30151 Learning port: 30152	Select to use the junk mail filter. The junk mail filter examines each incoming message for characteristics of spam, and delivers the message to the user's junk mail folder if appropriate. Changing these properties requires restarting the server.	Empty junk mail folder after (days)	6	Type the number of days after which junk mail in the user's junk mail folder will be automatically marked for deletion.	Empty mail in Trash after (days)	6	Type the number of days after which mail in a user's Trash folder will be automatically marked for deletion.	For more details about the dead mail service, see the dead mail service documentation. dead mail remains in the mail service queue until you use the Inadmind tool to delete it.
Send notification when mail account status changes	<input checked="" type="checkbox"/>																			
Send notification for these mail account events	<input checked="" type="checkbox"/> Account creation failure <input type="checkbox"/> Account creation success <input type="checkbox"/> Account deletion	Select the mail account event type to have an automatic notification sent to the postmaster.																		
Remove mail deletion stubs after (days)	90	Type the number of days to retain mail deletion stubs for the mail cell.																		
Junk Mail Filter	<input checked="" type="checkbox"/> Enabled Filtering port: 30151 Learning port: 30152	Select to use the junk mail filter. The junk mail filter examines each incoming message for characteristics of spam, and delivers the message to the user's junk mail folder if appropriate. Changing these properties requires restarting the server.																		
Empty junk mail folder after (days)	6	Type the number of days after which junk mail in the user's junk mail folder will be automatically marked for deletion.																		
Empty mail in Trash after (days)	6	Type the number of days after which mail in a user's Trash folder will be automatically marked for deletion.																		

Figure 5-51 General mail settings

3. If any of your DNS settings have changed or you need to add new ones, scroll down in the Mail Cell-Wide settings and click **General Mail Services**. Enter the information you want to change about your DNS server settings (Figure 5-52). You must restart Mail\_Server\_1 for the changes to take affect.

When you are finished modifying the mail settings, click **Apply** or **OK**.

General Mail services	
Use this panel to view or change properties for all servers in this cell. To change the properties for a single server on a single node in this cell, go to <a href="#">Servers -&gt; Application Servers</a> .	
General Properties	
DNS servers	<input type="text"/> <div> <i>i</i> Type host names or IP addresses of DNS servers that resolve names and addresses and provide MX attributes. For example: Server1.lotus.com, server2.lotus.com </div>
Network path of the mail service queue directory:	<input type="text" value="/Q/IBMUserData/WebAS5/Base/TSO"/> <div> <i>i</i> Type the path so that servers on the network can access the message queue. </div>
<input type="button" value="Apply"/> <input type="button" value="OK"/> <input type="button" value="Reset"/> <input type="button" value="Cancel"/>	

Figure 5-52 DNS settings

4. Click **Save** and then click **Save** again to commit the changes.

## 5.5.8 Mail archiving

When messages have expired or been deleted by the user, the archive utility within Workplace Collaboration Services Messaging saves them to disk. Messages expire based on the settings in a policy for the disk space quota. When this quota is reached, the messages are automatically deleted. The deleted messages can be found in the user's trash folder, which by default, is emptied automatically every seven days.

Enabling archiving allows you to archive any messages that have been deleted or expired. It includes junk mail, but not calendar, address book, or other Workplace Collaboration Services data. To enable archiving, refer to 9.6.4, "Archive process" on page 447.

## 5.5.9 Spam

Messages that are delivered to a user's messaging account are examined. If they appear to be spam, they can be sent to the junk mail folder. The junk mail filter uses two ways to identify junk mail for each specific user. These methods are based on known spam characteristics of e-mail and characteristics learned from what the user previously identified as spam.

Points are assigned to messages that are identified by the user as junk mail, which increases gradually with each similar message received that is identified as junk mail. These points are reduced if mail is not classified as junk mail. The points range from 0 to 1000, and as the user identifies a message as junk mail, these points are increased. To be considered junk mail, the message must have greater than 900 points.

### Junk mail settings

Within the Mail Cell-Wide settings, you can change a couple of options regarding the junk mail filter:

1. Log into the IBM WebSphere Application Server Administrative Console, and select **Lotus Workplace** → **Mail Cell-Wide Settings**. The general mail settings are displayed (Figure 5-51 on page 235).

2. Scroll down and you see that the junk mail filter is enabled by default. You can disable setting by clearing the box. Just below this setting, the ports are defined for the filtering port and the learning port. If the iSeries Create IBM Workplace wizard was used to create the Workplace Collaboration Services server, the default ports for these are the port block range for which you entered +51 for the filtering port and +52 for the learning port.

**Tip:** Messages can occasionally be classified as spam and deleted when they are not truly spam. To counteract this problem, archiving can be used to maintain backups of deleted, expired, and junk mail. For information about archiving, refer to 9.6.4, “Archive process” on page 447.

3. Scroll farther down in the Mail Cell-Wide settings, and you can change the default period for junk mail to be kept. The default is six days.

### 5.5.10 Anti-virus

At the time of writing this redbook, no current dedicated anti-virus software was available for Workplace Collaboration Services on the i5/OS. Although the MTA has a well-defined handler interface that supports anti-virus scanning software. This application programming interface (API) is currently available to IBM Business Partners.

## 5.6 Defining policies

Policies can be based at either a user level or a workplace level. User policies within the Workplace Collaboration Services server refer to the levels of access the user has to features that are available within the environment. One policy can be assigned to all users, to different groups of users, or to one specific user.

#### ► User-level policies

Policies at a user level allow control over what a user has access to. A policy might grant access to mail and calendar, but not to other features such as instant messaging. They can be used for the automation of messaging account creation and rich client encryption settings. By default, users have access to most products and features, so it might be necessary to assign policies to deny access to some of the functionality that the user is given by default. Policies can be assigned to everyone or based on a group policy; if a user is not assigned a policy, then a default one is given.

#### ► Workplace-level policies

Workplace-level policies define conditions where limits and actions are set. For example, if an application policy is set to have a maximum size of 50 MB, a setting is available to automatically send an e-mail to the user or the application can have a warning posted in the information portlet as the size increases towards the limit that was set. When the limit is almost reached, the action automatically starts. These limits and action refer to the status of applications and Web conferences. The policies are used to monitor the size and inactivity within the applications and Web conferences in order that the capacity of the server can be managed.

Settings within a workplace application policy are the application size limit and number of days it has not been used. These policies can be used against team spaces, document libraries, and other non-Web conference applications. Settings within a Web conference policy are the number of days to keep the Web conference; the action can be to notify the user that this Web conference has reached the expiry date and will be deleted from the server. This gives the user a chance to archive the material or ask for an extension.

A default policy is assigned to each Web conference that is created. This default policy can be replaced with one that you create and can be assigned to a Web Conference or an application at any time. To use the policy, the type of object must match. For example, a Web conference policy cannot be assigned to a team space. Policies can be edited, deleted, and viewed, and you can also see the applications and Web Conferences to which the policy is applied.

### 5.6.1 Creating user policies

In this section, we explain how to create a new policy. First, you must determine how you are going to assign these policies. There are two ways to do this: using the directory-policy attribute method and DN scope-matching. The most flexible way to assign policies is to set a directory policy attribute `ibm-lwpUserPolicy` in the IBM WebSphere Member Manager lookaside database. Using this method allows different policies to be set within the same DN scope.

The policy attribute `ibm-lwpUserPolicy` in the WebSphere Member Manager lookaside database stores a policy name in each WebSphere Member Manager profile. When you run the Lmadm `setUserPolicyFromFile` command, member profiles are updated with the new policy name.

Policies based on *scope of policy* are assigned to users based on the matching the DN to the DN scope defined in the policy. This is the default method. The policy that applies to a set of users must have a unique scope. DNs follow the order from the most distinct to the most common. For example, in “cn=Martin McCauley, ou=Sales, ou=Florida, O=Acme, c=US”, “cn” is the most distinct and “c” is the most common. Policies are assigned based on the attributes of the distinguished name.

To set the method of assigning user policies:

1. Log into the WebSphere Application Server Administrative Console. In the left navigation pane, click **Lotus Workplace** → **Users** → **Manage User policies**. Then in the right panel, click the **Policy Assignment** button. See Figure 5-53.

**Note:** When the initial policy assignment method is set, try to not change it because the users must be reassigned to policies.

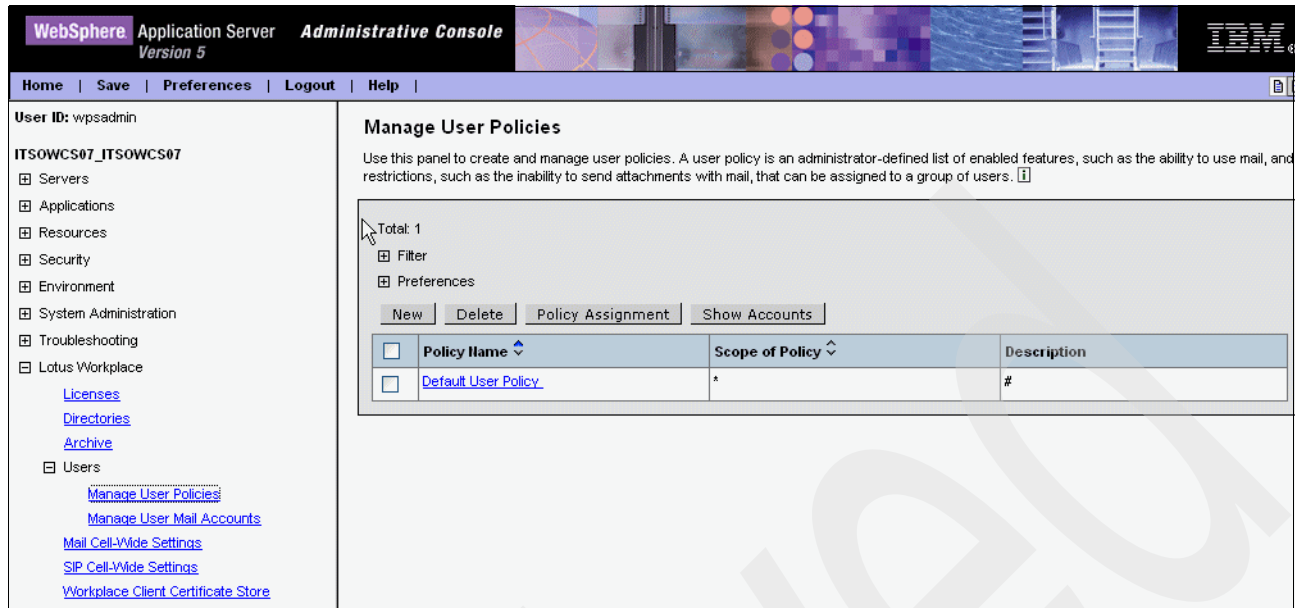


Figure 5-53 Managing user policies

2. In the Manage User Policies, Add panel (Figure 5-54), you have the option to choose the policy assignment method of DN matching or the WebSphere Member Manager policy attribute.
  - a. Choose the policy assignment method that you require.
  - b. Click **Apply** or **OK**.
  - c. Click **Save** and then click **Save** again to commit the changes.
  - d. If you changed the policy-assignment method, you must restart the Workplace Collaboration Services server.



Figure 5-54 Policy assignment method

3. To create a new policy, in the left navigation pane, click **Lotus Workplace** → **Users** → **Manage User Policies**. Then in the right panel, click **New** to create a new policy.

4. In the Add User Policy panel, perform the following actions:
  - a. Type a name for the policy (this must be unique) and a description.
  - b. If policies are assigned based on DN scope, the Scope of policy field must be filled in with the DN format. For example, to assign policies to all members of marketing, you can use the following DN scope:  
`ou=Marketing, ou=New York, o=Acme, c=US`  
 Leave the Scope of policy field blank if your method of assigning policies is based on a policy attribute.
  - c. Select the options for this particular policy. For example, you might not want the users of this policy to have access to instant messaging. In this case, you clear the **Allow instant messaging** box as shown in Figure 5-55.

WebSphere Application Server Administrative Console			
Home   Save   Preferences   Logout   Help			
User ID: wpsadmin ITSOWCS07 ITSOWCS07 Servers Applications Resources Security Environment System Administration Troubleshooting Lotus Workplace <a href="#">Licenses</a> <a href="#">Directories</a> <a href="#">Archive</a> Users <a href="#">Manage User Policies</a> <a href="#">Manage User Mail Accounts</a> <a href="#">Mail Cell-Wide Settings</a> <a href="#">SIP Cell-Wide Settings</a>	Allow Web conferencing	<input checked="" type="checkbox"/> Attend <input checked="" type="checkbox"/> Schedule	user can create a Workplace application from the template. ⓘ Select Attend to allow users to attend Web conferences, and select Schedule to allow users to schedule Web conferences.
	Allow instant messaging	<input type="checkbox"/>	ⓘ Select to allow users to use instant messaging, to see who is online, and to start chats.
	Allow activity explorer	<input type="checkbox"/>	ⓘ Select to allow users to collaborate using activity threads which

Figure 5-55 Policy attributes

**Note:** In order for a changed policy to take effect, a user must log out and back in again. There is also a time delay from 15 minutes to an hour, so it is best to change policies at the end of the day.

- d. When you are finished modifying the policy, click **Apply** or **OK**.
- e. Click **Save** and then click **Save** again to commit the changes.

## 5.7 Mail task scheduling

The mail cell contains one mail task scheduler that performs a number of operations from cleaning up deleted mail messages to backing up users messaging accounts. To schedule when this task is run:

1. Log in to the WebSphere Application Server Administrative Console.
2. In the left navigation pane, click **Servers** → **Application Servers**.



3. In the Application Servers panel (Figure 5-56), click **Mail\_Server\_1**. Mail\_Server\_1 contains the mail task scheduler service for Workplace Collaboration Services.

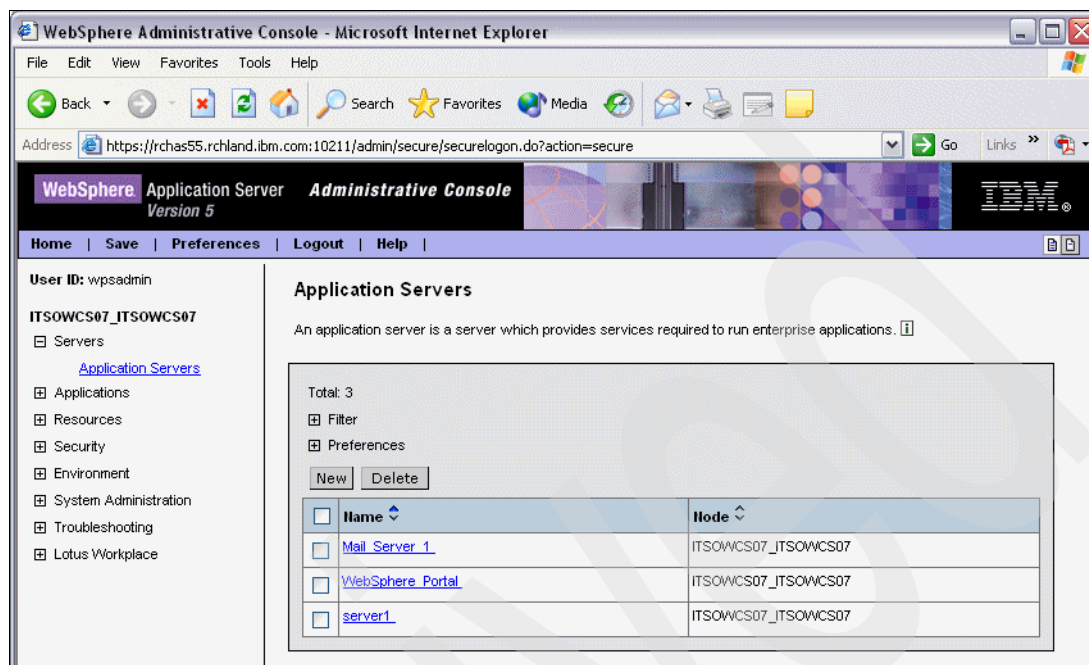


Figure 5-56 Selecting the Mail\_Server\_1 application server

4. In the Mail\_Server\_1 panel (Figure 5-57), scroll down to the Additional Properties section and click **Workplace Mail Services**.

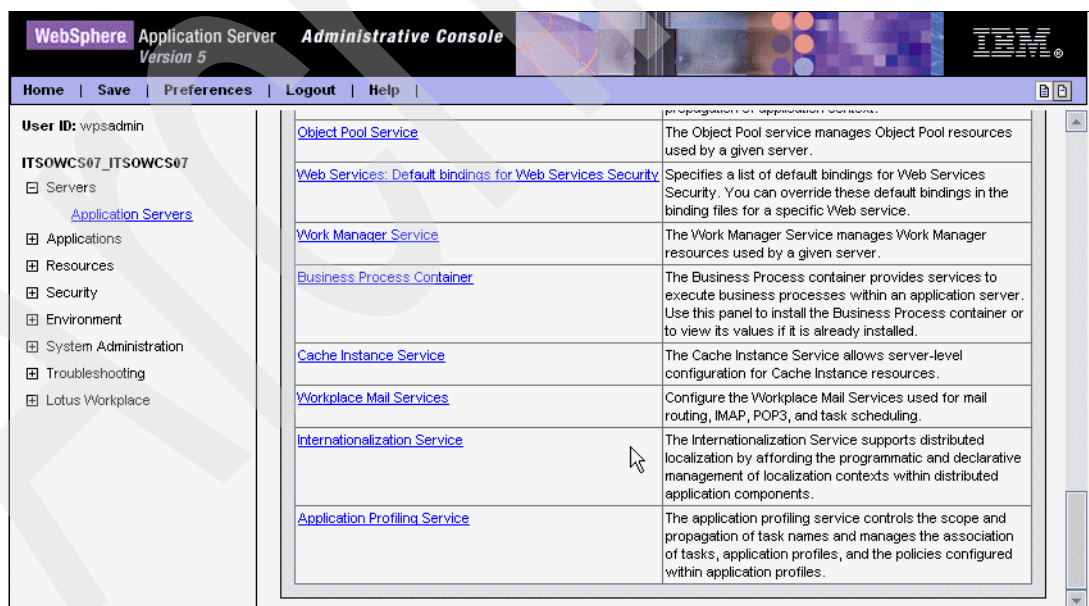


Figure 5-57 Selecting Workplace Mail Services under Mail\_Server\_1

5. In the Workplace Mail Services panel (Figure 5-58), click **Task Scheduler Service**.

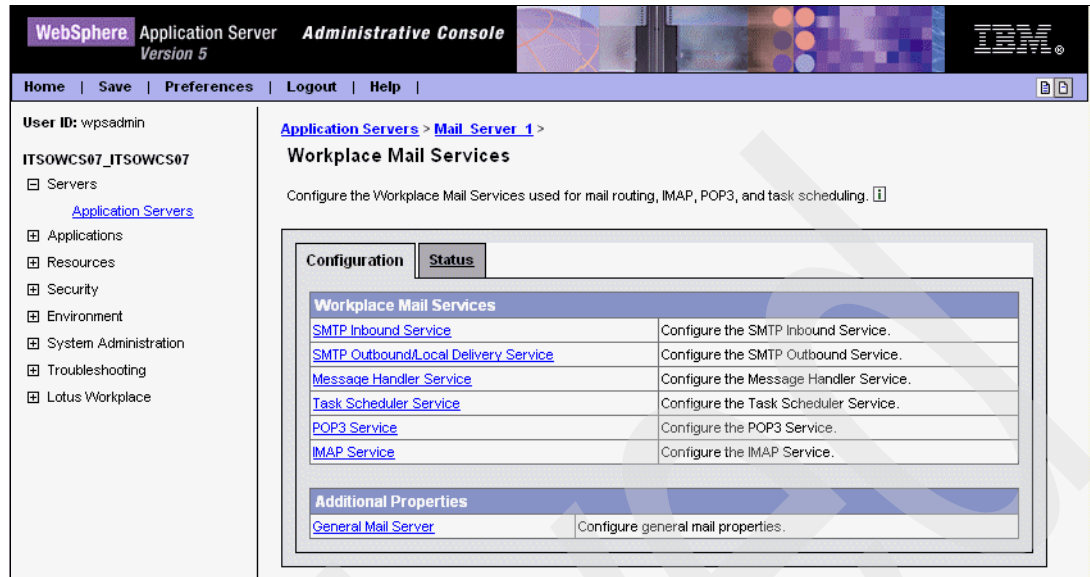


Figure 5-58 Workplace Mail Services page

6. In the Task Scheduler panel (Figure 5-59), you can set the status of the mail service tasks. The task scheduler is enabled by default. For example, to set up automatic archiving:
  - a. Click **Archive**.



Figure 5-59 Task Scheduler page



- b. In the Archive panel (Figure 5-60), select **Enable** and enter the schedule that you want to run the archiving. Click **Apply** or **OK**.

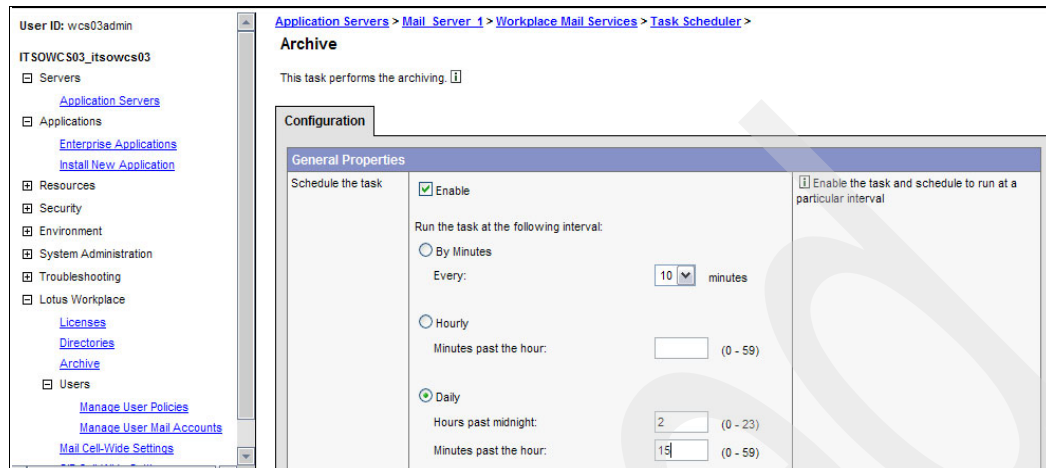


Figure 5-60 Enabling the automatic archive task

- c. Click **Save** and then click **Save** again to commit the changes.

## 5.8 Lmadmin commands

The Lmadmin commands are used to complete administrative tasks and mail service administration including:

- ▶ Administration
- ▶ Accounts
- ▶ Message queues
- ▶ Mail services
- ▶ POP3 services
- ▶ IMAP service
- ▶ Configuration settings
- ▶ Nesting and output
- ▶ SMTP inbound filtering
  - Blocked connections
  - Suspect connections
  - Anonymous connections
  - Trusted connections
  - Authenticated connections

**Note:** Some of the Lmadmin commands are not persistent. They will be lost when the Workplace Collaboration Services server is restarted and should be used only for runtime changes. If you need the settings to be persistent, use the WebSphere Application Server Administrative Console. For additional information about changing mail settings, refer to 5.5.7, “Mail cell settings” on page 234.

## 5.8.1 Starting the Lmadm command service

Before you can run any Lmadm commands, you must start the Lmadm command service:

1. On an i5/OS command line, enter the following command to start the Qshell environment:

```
STRQSH
```

2. On the Qshell command line, enter the following command, where *InstanceName* represents the name of your Workplace Collaboration Services server as shown in Figure 5-61:

```
cd /qibm/userdata/webas5/base/InstanceName/workplaceserver/bin
```

QSH Command Entry
\$
cd /qibm/userdata/webas5/base/itsowcs07/workplaceserver/bin
\$

Figure 5-61 Changing directory in Qshell

3. The SOAP\_CONNECTOR\_PORT port number from Mail\_Server\_1 is required to start the Lmadm command service. For the iSeries, this is the port block that you set up during initial configuration +29. In our example, we set up a port block of 30700, so the port for starting Lmadm is 30729. For help on finding the port, refer to Appendix C, "Workplace Collaboration Services configuration summary" on page 519.
4. At the Qshell command prompt, enter the following command to start the Lmadm command service (see Figure 5-62):

```
Lmadm.sh -user UserName -password password -port SOAPPort -host HostName
```

Note the following explanation:

- *UserName* represents your Workplace Collaboration Services administrator ID.
- *password* represents the password.
- *SOAPPort* represents the port number you found in the previous step.
- *HostName* represents the host name of your Workplace Collaboration Services server.

QSH Command Entry
importappcat.jacl      migrateTAI.jacl
importappcat.sh      migrateTAI.sh
\$
> Lmadm.sh -user wpsadmin -password wpsadmin -port 30729 -host itsowcs07.rchl
and.ibm.com
WASX7209I: Connected to process "Mail_Server_1" on node ITSOWCS07_ITSOWCS07 u
sing SOAP connector; The type of process is: UnManagedProcess
WASX7029I: For help, enter: "\$Help help"
wsadmin>

Figure 5-62 Starting the Lmadm command service

After the Lmadm command service is started, you can use the various Lmadm commands to administer your messaging settings. An example of the **report** and **delete** commands are shown in the following sections. For additional Lmadm commands, refer to the Workplace Collaboration Services Information center at:

<http://publib.boulder.ibm.com/infocenter/lwpphelp/index.jsp>

## 5.8.2 Lmadmin report command

The **report** command allows a report to be created about the contents of the message queue and displays this report in the console. Five reports are available, including:

- ▶ **All:** Shows all messages in the queue
- ▶ **Type:** Shows all messages broken down by type
- ▶ **Locked:** Shows only locked messages
- ▶ **Domain:** Shows messages by domain of origin
- ▶ **Dead:** Shows only dead messages

The syntax of the command is **/report [report type]**, for example (see Example 5-1):

```
lm mail /report All
```

*Example 5-1 Output of the lm mail /report All Lmadmin command*

```
> lm mail /report All
=====
Message ID:      FC9G09055C533AC4A5280DDB7443CF000016
Queue ID:        A
State:           MessageState:Retry(3)
From:            wuser1@itsowcs03.rchland.ibm.com
File Name:       /QIBM/UserData/WebAS5/Base/itsowcs03/WorkplaceServer/qfilestore/A/A/msg2263DD4C-107BDF162F2
                  -0.qmsg
Received Time:   11/23/05 10:25 AM
Retry Time:      11/23/05 10:30 AM
Retry Count:     1
Priority:         DeliveryPriority:Normal(4)
Source:          MessageSource:Authenticated(3)
Size:            614

Recipients                               State
-----
muser2@itsowcs1.rchland.ibm.com           DeliveryState:Ready(2)
muser1@itsowcs1.rchland.ibm.com           DeliveryState:Ready(2)

wuser1@itsowcs03.rchland.ibm.com           DeliveryState:Delivered(3)
wuser2@itsowcs03.rchland.ibm.com           DeliveryState:Delivered(3)
=====
Message ID:      BD8G09055C533AC4A5280DDB7443CF000029
Queue ID:        A
State:           MessageState:Unprocessed(1)
From:            wuser1@itsowcs03.rchland.ibm.com
File Name:       /QIBM/UserData/WebAS5/Base/itsowcs03/WorkplaceServer/qfilestore/A/B/msg2263DD4C-107BDF162F2
                  -1.qmsg
Received Time:   11/23/05 10:30 AM
Retry Time:      11/23/05 10:30 AM
Retry Count:     0
Priority:         DeliveryPriority:Normal(4)
Source:          MessageSource:Authenticated(3)
Size:            551
```

Recipients	State
wcs03admin@itsowcs03.rchland.ibm.com	DeliveryState:Unprocessed(1)
wpsadmin@itsowcs1.rchland.ibm.com	DeliveryState:Unprocessed(1)
=====	
Total number of messages 6	

### 5.8.3 Lmadmin DeleteMessage command

The **DeleteMessage** command deletes messages from the message queue. You must use at least one option with this command. The syntax of this command is as follows:

```
DeleteMessage [-msgid messageid [/force] [-expire date] [-threshold threshold]
```

The parameters are defined as follows:

- ▶ **-msgid:** The message ID is for the message that you want to delete from the message queue.
- ▶ **/force:** The force option forces the deletion of a message in any state.
- ▶ **/expire date:** This option deletes all dead messages from the message queue that are older than the specified date.
- ▶ **/threshold:** Using the expire date option, you select the number of milliseconds, and any message older than the specified number of milliseconds is deleted from the message queue.

In the following sections, we provide two examples. In the first example, we delete dead messages based on the date. In the second example, we delete a message based on its message ID.

#### Deleting dead messages older than 60 days

We run the following command, which generates the output shown in Figure 5-63:

```
lm deletemessage -expire 60
```

QSH Command Entry
<pre>&gt; lm deletemessage -expire 60 No messages to delete were found. wsadmin&gt;</pre>

Figure 5-63 DeleteMessages based on date

#### Deleting a message based on a message ID

In this example, we have a message pending for a user at another domain. We are going to delete this message before it can be delivered by providing the message ID. Note that we obtained the message ID using the **report** command documented in 5.8.2, “Lmadmin report command” on page 245.

We run the following command, which generates the output shown in Figure 5-64:

```
lm deletemessage -msgid BD8G09055C533AC4A5280DDB7443CF000029 /force
```

**Tip:** Use the /force option to delete a message that is not dead.

```
> lm deletemessage -msgid BD8G09055C533AC4A5280DDB7443CF000029 /force
CLHAF0036I: Message BD8G09055C533AC4A5280DDB7443CF000029 deleted.
wsadmin>
```

Figure 5-64 Deleting a pending message from the message queue

## 5.9 Security settings

To protect your organization's resources and assets within the Workplace Collaboration Services environment, security is a vital component. To make the job of handling the security easier, the Workplace Collaboration Services allows all security-related tasks to be configured in one central location on the server, even down to the managed client where security takes place at a server level.

You must plan for security considerations before you configure any servers or users. We recommend that you review the WebSphere Portal security documentation because the same security methodology can be used for WebSphere Portal and Workplace Collaboration Services. Here are some suggested resources:

- ▶ *Develop and Deploy a Secure Portal Solution Using WebSphere Portal V5 and Tivoli Access Manager V5.1*, SG24-6325
- ▶ The WebSphere Portal 5.0.2 for iSeries Information Center  
<http://publib.boulder.ibm.com/pvc/wp/502/smbi/en/InfoCenter/index.html>

## 5.10 Removing a Workplace Collaboration Services server

There may be a time when you want to remove an Workplace Collaboration Services server. The steps in this section show you how to remove a Workplace Collaboration Services server using IBM Web Administration for iSeries.

As part of the deletion process you are expected to know a number of configuration options that were selected in the iSeries Create IBM Workplace wizard. We recommend that you print a copy of the Printable Summary generated by the iSeries Create IBM Workplace wizard and keep it with you when performing the following steps. To access the printable summary, refer to Appendix C, "Workplace Collaboration Services configuration summary" on page 519.

To remove a Workplace Collaboration Services server:

1. From the IBM Web Administration for iSeries window, select your Workplace Collaboration Services server:
  - a. Click the **Manage** tab.
  - b. Click the **All Servers** tab.
  - c. Click the **All Application Servers** tab as shown in Figure 5-65.
  - d. If your Workplace Collaboration Services server is not ended, end it now. For assistance in stopping the server, refer to 5.2.3, “Stopping Workplace Collaboration Services using the wizard” on page 209.
  - e. Scroll through the list of application servers to find the Workplace Collaboration Services server you want to remove. Select either the **Server1**, **WebSphere\_Portal**, or the **Mail\_Server\_1** entry for your Workplace Collaboration Services server and click **Delete**.

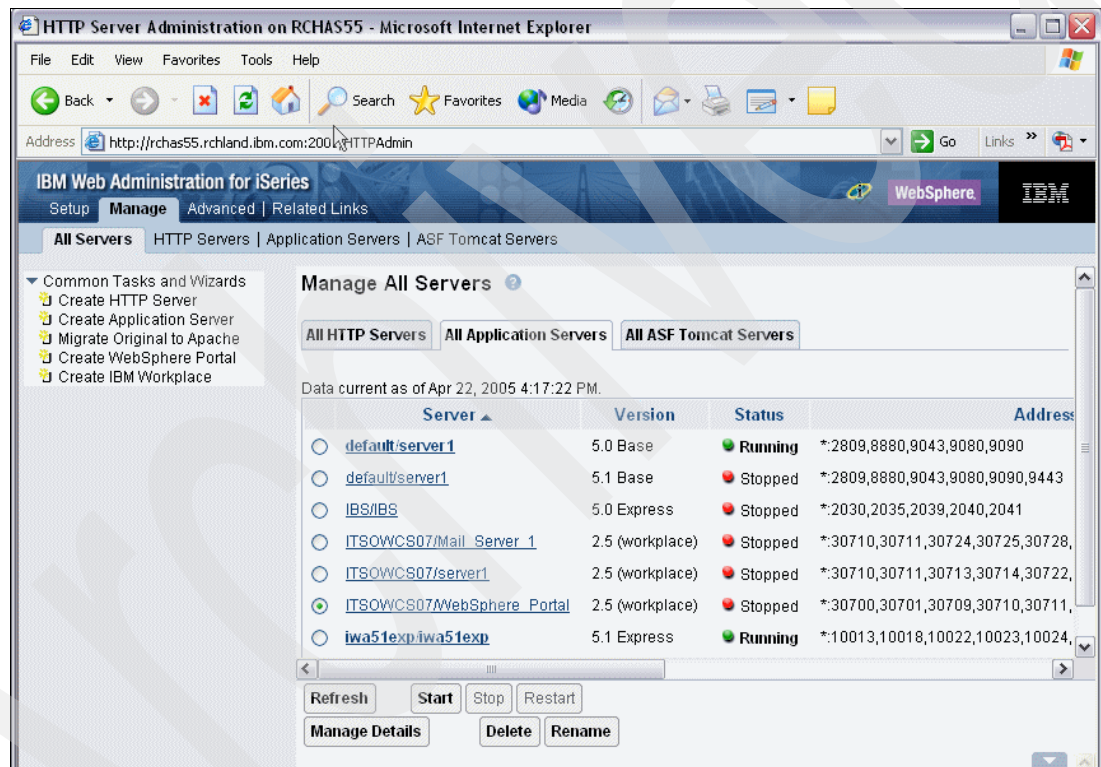


Figure 5-65 Managing all application servers from the IBM Web Administrator for iSeries tool

2. In the next panel, you see the Delete wizard (Figure 5-66). We recommend that you remove the HTTP server with the Workplace Collaboration Services server. The wizard does not remove the DB2 Universal Database databases by default.

Select each of the local database collections, libraries, or schemas that are associated with this Workplace Collaboration Services server to allow the Delete wizard to remove them from the system. Review the selections for deletion and click **Next**.

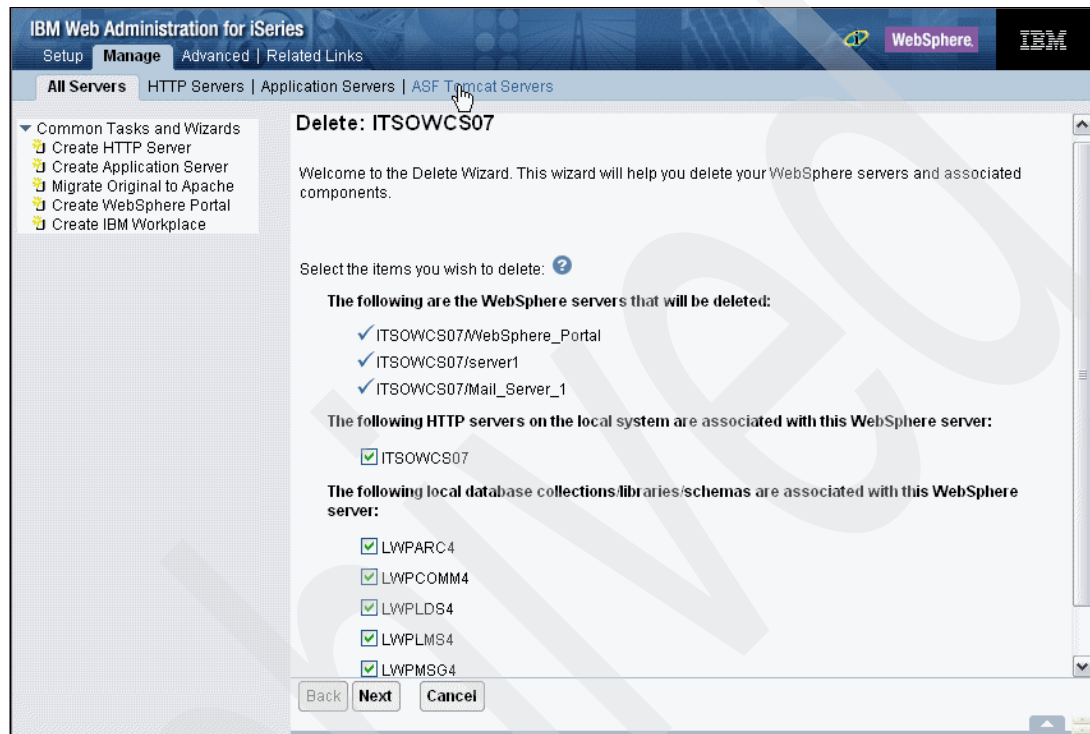


Figure 5-66 Confirming selections for deletions within the Delete wizard

3. In the Delete summary panel (Figure 5-67), click **Delete** to finish removing the Workplace Collaboration Services server.

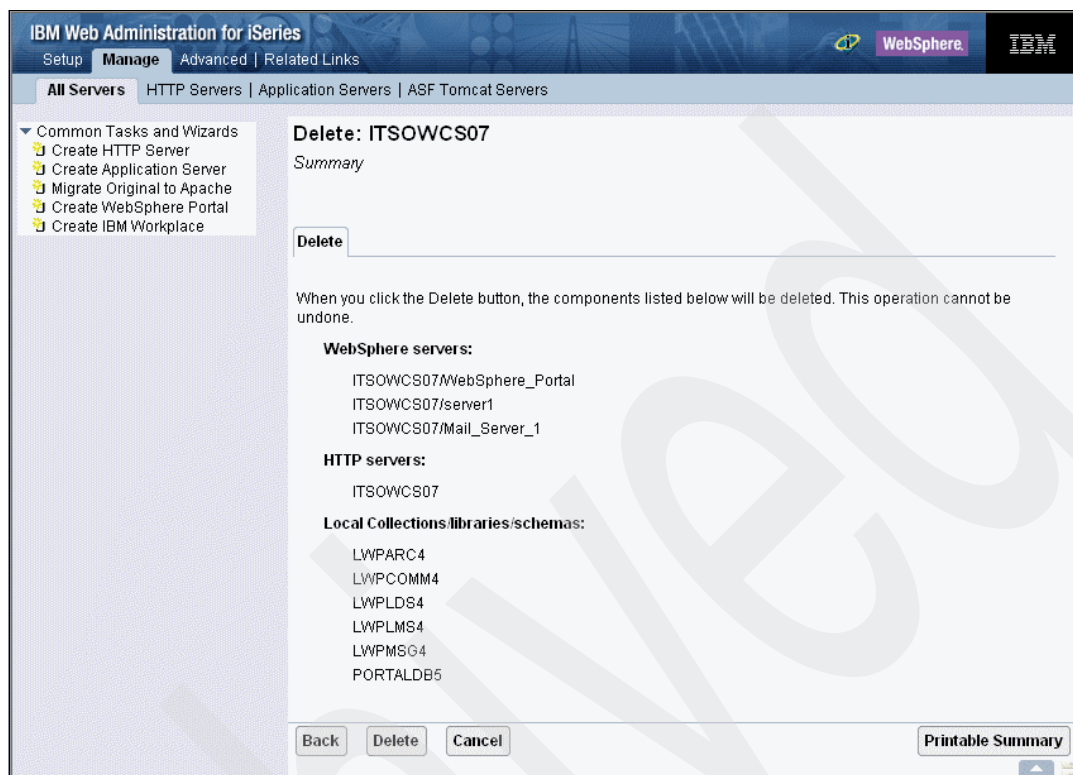


Figure 5-67 Delete summary panel

4. At this point, the deletion is in process. You return to the Manage All Application Servers panel, where you should see that your Workplace Collaboration Services server has a status of *deleting*.
5. When the Delete wizard completes, no status message are displayed. The Workplace Collaboration Services server is either removed from the list or shows a status of *deleted*.  
If you see that the server is in a deleted status, a file was in use and the Delete wizard was unable to remove the `/QIBM/UserData/WebAS5/Base/InstanceName` directory, where *InstanceName* represents your Workplace Collaboration Services server name. Remove the directory manually from a mapped drive and the Workplace Collaboration Services server will disappear from the list.

**Note:** In our testing, we had to manually remove the `/QIBM/UserData/WebAS5/Base/InstanceName` directory via a mapped drive.



6. If you chose to delete the DB2 Universal Database databases in the Delete wizard, you can skip this step. However, if you did *not* choose to have the Delete wizard remove the DB2 Universal Database databases, you can delete them now.

You must manually delete the libraries used by your Workplace Collaboration Services server. Assuming the default naming convention based on your Workplace Collaboration Services server name, perform the following steps to remove the libraries:

**Note:** In our testing, we found that not all libraries were deleted. We recommend that you verify that all libraries are properly deleted.

- a. Enter the following Work with Libraries (WRKLIB) CL command:

```
wrklib InstanceName*
```

Here *InstanceName* represents your Workplace Collaboration Services server name.

If you chose to name the libraries based on purpose, use the following CL command for each library used by your Workplace Collaboration Services server:

```
wrklib LibraryName
```

- b. On the Work with Libraries display, type 4 (Delete) next to each library and press Enter as shown in Figure 5-68.

Work with Libraries

Type options, press Enter.

1=Create	2=Change	3=Copy	4=Delete	5=Display	6=Print
8=Display library description	9=Save	10=Restore			
11=Save changed objects	12=Work with objects	14=Clear			

Opt	Library	Attribute	ASP Device	Text
4	ITSOWCS07	PROD		COLLECTION - created by SQL
4	ITSOWCS071	PROD		COLLECTION - created by SQL
4	ITSOWCS078	PROD		COLLECTION - created by SQL
4	ITSOWCS072	PROD		COLLECTION - created by SQL
4	ITSOWCS073	PROD		COLLECTION - created by SQL
4	ITSOWCS074	PROD		COLLECTION - created by SQL
4	ITSOWCS075	PROD		COLLECTION - created by SQL

Bottom

Parameters for options 1, 2, 3, 5, 8, 9, 10, 11 and 12 or command  
 ===>

F3=Exit	F4=Prompt	F5=Refresh	F9=Retrieve	F11=Display names only
F12=Cancel	F16=Repeat position to	F17=Position to		

Figure 5-68 Deleting all libraries associated with the ITSOWCS07 server

- c. On the Confirm Delete of Libraries display, press Enter to confirm the deletion request.

- d. It is possible that you might see a Display Program Messages display with the error message “Receiver QSQJRN0001 in LibraryName never fully saved. (I C)” when deleting the DB2 Universal Database libraries. If this happens, type I to allow the deletion to continue. This may occur multiple times as shown in Figure 5-69.

```
Display Program Messages

Job 241463/AHOERLE/QPADEV0006 started on 10/20/05 at 08:48:45 in subsystem Q
Maximum number of records reached for file QSYSPRT. (C R NOMAX 1-999999)
NOMAX
Receiver QSQJRN0001 in ITSOWCS075 never fully saved. (I C)
I
Receiver QSQJRN0002 in ITSOWCS075 never fully saved. (I C)
I
Receiver QSQJRN0002 in ITSOWCS074 never fully saved. (I C)
I
Receiver QSQJRN0001 in ITSOWCS072 never fully saved. (I C)
I
Receiver QSQJRN0001 in ITSOWCS074 never fully saved. (I C)

F3=Exit  F12=Cancel
```

Figure 5-69 Error Receiver QSQJRN0001 in ITSOWCS075 never fully saved message

7. If you used a separate user profile to own all objects used by this Workplace Collaboration Services server, you can delete it now. The Delete wizard does not delete the user profile. Enter the following Delete User Profile (DLTUSRPRF) CL command:

```
DLTUSRPRF USRPRF(DB2OwnerProfile) OWNNOBJOPT(*DLT)
```

Here *DB2OwnerProfile* represents the name of the user profile that you selected during the configuration of the Workplace Collaboration Services server.

**Attention:** The OWNNOBJOPT(\*DLT) parameter in the DLTUSRPRF command removes all objects owned by that user profile. If you are using the same user profile to own the DB2 Universal Database data for other Workplace Collaboration Services servers, *do not delete the profile* at this time.

Now no references to the Workplace Collaboration Services server should remain.

## 5.11 Deleting Workplace Collaboration Services product code

To remove the Workplace Collaboration Services product code from the iSeries server.

1. Start Qshell (STRQSH) and navigate to the following directory:

```
cd /QIBM/ProdData/Workplace/WCS25/Workplaceserver/uninstall
```

2. Enter the following command:

```
uninstall.sh
```

3. The default language is English. Type 0 if English is the correct language, or choose the correct language option and press Enter. Then type 0 and press Enter to continue in the chosen language.

4. You see a message stating that the Workplace Collaboration Services product is ready to uninstall as shown in Figure 5-70. Type 1 and press Enter to continue uninstalling.

```
QSH Command Entry

To select an item enter its number, or 0 when you are finished: [0]
> 0

-----
Welcome to Workplace Collaboration Services

Workplace Collaboration Services is ready to uninstall. Select Next to continue.

Press 1 for Next, 3 to Cancel or 4 to Redisplay [1]

==> 1
```

Figure 5-70 Ready to uninstall Workplace Collaboration Services

5. You see the message “Uninstalling IBM Workplace” on the display. When the process is complete, the display shows a message stating, “Error is found getting the current working directory.” See Figure 5-71.

```
QSH Command Entry

Welcome to Workplace Collaboration Services

Workplace Collaboration Services is ready to uninstall. Select Next to continue.

Press 1 for Next, 3 to Cancel or 4 to Redisplay [1]
> 1

Uninstalling IBM Workplace...
qsh: 001-0011 Error found getting current working directory. No such path or
directory.
$
```

Figure 5-71 Uninstall complete

6. At this point, the Workplace Collaboration Services code has been deleted from the iSeries server. Press F3 to exit the Qshell environment.

Archived

# IBM Workplace Managed Client

In this chapter, we discuss the IBM Workplace Managed Client, how it fits into the overall IBM Workplace product set, and how it delivers improvements in user productivity. We also provide a high-level introduction to the IBM Workplace Managed Client and step-by-step instructions on how to install and deploy the provisioning server and the client.

We cover the following topics:

- ▶ Introduction to IBM Workplace Managed Client
- ▶ IBM Workplace Managed Client Technology architecture
- ▶ Key features of the IBM Workplace Managed Client
- ▶ Installation and deployment of the client
- ▶ Installation process on a Windows client
- ▶ Uninstallation of the IBM Workplace Managed Client

**Note:** The IBM Workplace Managed Client is a separately purchased licensed program. With the initial release of IBM Workplace Collaboration Services version 2.5 and at the time this redbook was written, the IBM Workplace Managed Client is in managed availability only. This means that it is available only upon request from IBM as part of a managed deployment for customers and Business Partners that are interested in evaluating, piloting, and deploying Managed Client editions.

For more information about obtaining the license and the code, contact your IBM sales representative directly. See the IBM Workplace Managed Client Web site at the following address for additional information about obtaining the Workplace Managed Client software:

<http://www.lotus.com/products/product5.nsf/wdocs/workplaceclienttech>

## 6.1 IBM Workplace Managed Client overview

IBM Workplace Managed Client is the foundation framework for building the next-generation desktop that enables end-users to have the functionality they require to do their work while minimizing the total cost of ownership (TCO) for an organization. IBM Workplace Managed Client provides the power of a full rich client application with the ease of use and delivery of a Web browser.

The technology framework is built primarily on open standards and provides the combined benefits to customers who require both a rich user experience and the manageability of a Web browser-based solution. Reaching from desktop to mobile devices, the IBM Workplace Managed Client is a flexible, manageable, and extensible client with security features for businesses that require true On Demand capabilities.

The IBM Workplace Managed Client does not replace the option of using a Web browser to access Workplace Collaboration Services. It delivers an additional option for end users who need a richer client that overcomes some of the limitations of using a Web browser, without incurring the costs inherent with supporting this kind of client, and provides offline support. Figure 6-1 illustrates this design goal.

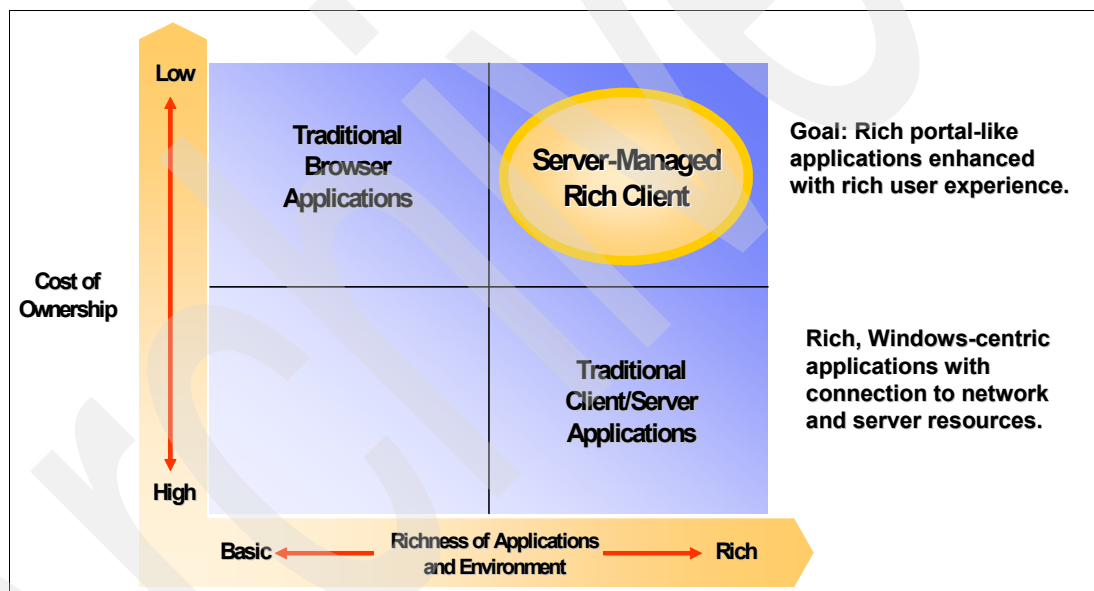


Figure 6-1 The design goal: rich user experience with low TCO

### 6.1.1 IBM Workplace Managed Client features

IBM Workplace Managed Client includes the following key features:

- Rich document editing

Industry de facto standard documents, spreadsheets, presentations, and project plans can be created, edited, and shared using fully functional in-built editors without the need for additional expensive, heavyweight applications. There is also plug-in support for many document-editing and application run-time environments, such as Microsoft Office, Lotus Notes, or specialized applications.

- Self-service provisioning

Users can install and configure the application in a few minutes with negligible resource from IT administrators. Administrators can use policy-based controls to enable certain

users access to easily download the Managed Client application. Updates to capabilities can also be delivered in this transparent manner with minimum overhead to the organization.

- ▶ **Multiplatform support for Linux and Windows**

IBM Workplace Managed Client provides support for both Web-based and Eclipse technology-based applications. Customers can have the flexibility to build and deploy applications in a way that helps optimize their on demand infrastructures.

- ▶ **Application extensibility**

Powerful features enable user to retrieve and manipulate data from multiple sources and create simple collaborative applications.

- ▶ **Activity Explorer**

This feature enables users to improve productivity by seeing their work in a graphical format and collaborating in their own context.

- ▶ **Enhanced team work**

Project information can be rapidly shared among extended teams. Instant messaging provides immediate feedback from colleagues. And a new rich editor allows project managers to create and maintain standard format project plans.

- ▶ **Secure offline working**

All data is securely held on a central server or encrypted in a local data store that also allows users to work when disconnected from the network and then synchronize at their convenience.

IBM Workplace Managed Client moves beyond the Web browser, enabling not only Web browser capabilities, but also the ability to securely and incrementally download, update, and intelligently cache the next generation of “rich” and hybrid client applications. These applications run locally on the end user’s workstation using an encrypted, synchronized content store with security features and offline or disconnected capabilities. Such applications will harness the full power of the user’s workstation to deliver the state-of-the-art in capability and performance while continuing to be centrally deployed, upgraded, and administered at the server, side by side with the Web browser-based applications.

## **6.1.2 IBM Workplace Managed Client architecture**

IBM Workplace Managed Client is built on multiple layers of software that ultimately deliver an application to the end-user. Each layer represents a set of reusable components that have been developed to provide services to other software components, creating building blocks whose individual parts make up a greater whole.

Over the past few years, significant advances have been made in the area of software componentization and the adoption of open standards to help solution providers deliver their solutions faster and better. At the same time, organizations are actively seeking methods of integrating their existing business processes in order to drive productivity, security, communication, and data management. These trends, requirements from customers and improved approaches to systems development, are combining to facilitate the building of solutions.

Additionally, the industry is experiencing an increased adoption of alternative desktop operating environments, such as Linux. As a result of these shifts, many sources are now providing open-sourced applications (such as products based on the Eclipse open source framework and Linux) to assist in meeting a variety of customer needs given the flexibility that such solutions provide. This technology stack is underpinned by Java and Eclipse.

With the release of IBM Workplace and Workplace Client Technology™ products, IBM has built on decades of experience of building and delivering complex applications, to re-use much of this expertise and combine many of the components that have been developed over this period to deliver innovative solutions. In particular, they have re-used the knowledge gained in building scalable and secure server-side solutions with functionally rich client-side and mobile applications built on their experience of Everyplace mobile solutions.

Figure 6-2 illustrates how this layered set of components can be built upon to create new applications that fulfill a business purpose.

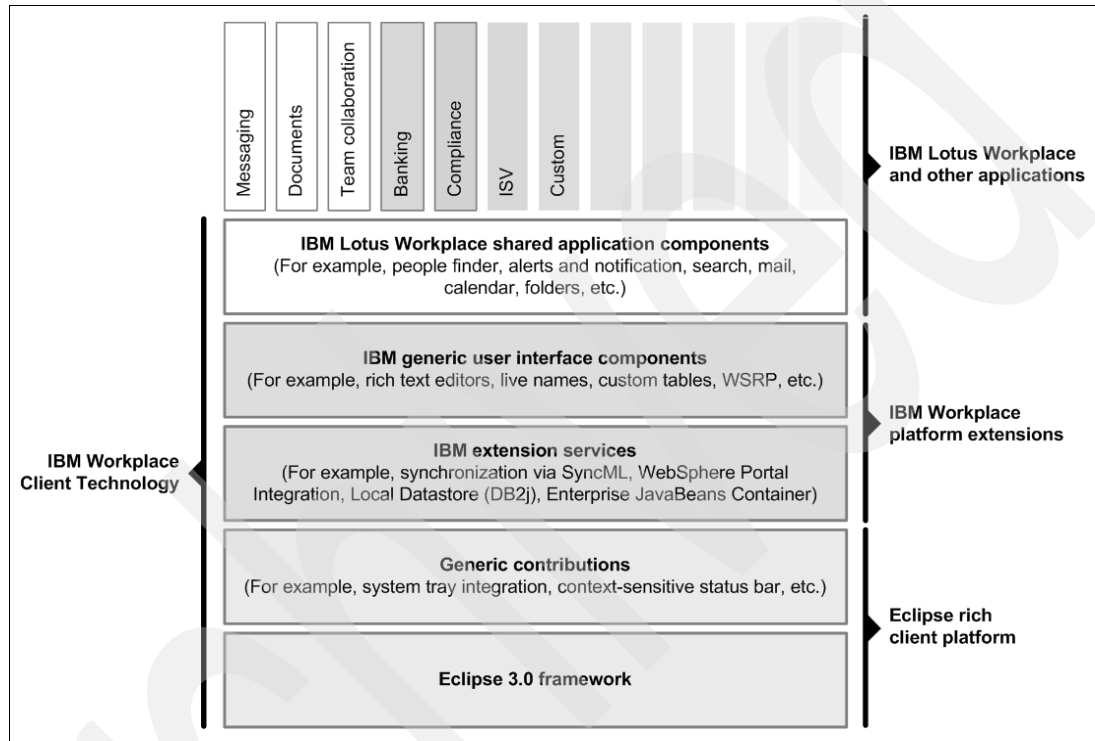


Figure 6-2 IBM Workplace Managed Client conceptual stack

The core platform is based on the Eclipse framework, which provides the Java run-time environment for general desktop applications, an application user interface, and a flexible architecture that is easily extended and supports multiple operating systems. Add-on generic contributions are being developed through a cooperative effort between IBM and Eclipse.

IBM extension services consists of value-added capabilities that Lotus holds for its own applications, such as synchronization via SyncML, credential store for security, single sign-on (SSO) for user convenience, simplified access management, and more. WebSphere Portal software is used as the aggregation framework.

The IBM generic user interface layer provides reusable components, such as a rich text editor, live names, and custom tables that tie into extension services and can be used in applications built either by IBM or other application providers.

IBM Workplace Shared Application Components comprise the Workplace collaboration platform. It can be assembled to create such Lotus products as IBM Lotus Mail, IBM Workplace Documents, and other applications that third-parties can build.



### 6.1.3 More about Eclipse framework architecture

Eclipse is an open source integrated development environment (IDE) that provides a framework to build rich Java-based applications. It provides application building blocks, user interface (UI) constructs, platform runtime, a help mechanism, and an extensible framework that allows contributors to develop plug-ins to extend functionality.

The concepts of the Eclipse framework were originally developed by IBM who handed it over to the open source community to foster it as an open standard way to build Java-based applications. Eclipse has rapidly developed into a rich, open source code base. It has core services, extension points, and a shared programming model for tools development that is available royalty-free to vendors who build tools on Eclipse and can be run on a number of client platforms, such as Microsoft Windows and Linux operating systems.

Figure 6-3 shows examples of some of the components delivered in by the Eclipse framework and illustrates how the individual component can be combined to create a whole that is greater than the sum of the parts.

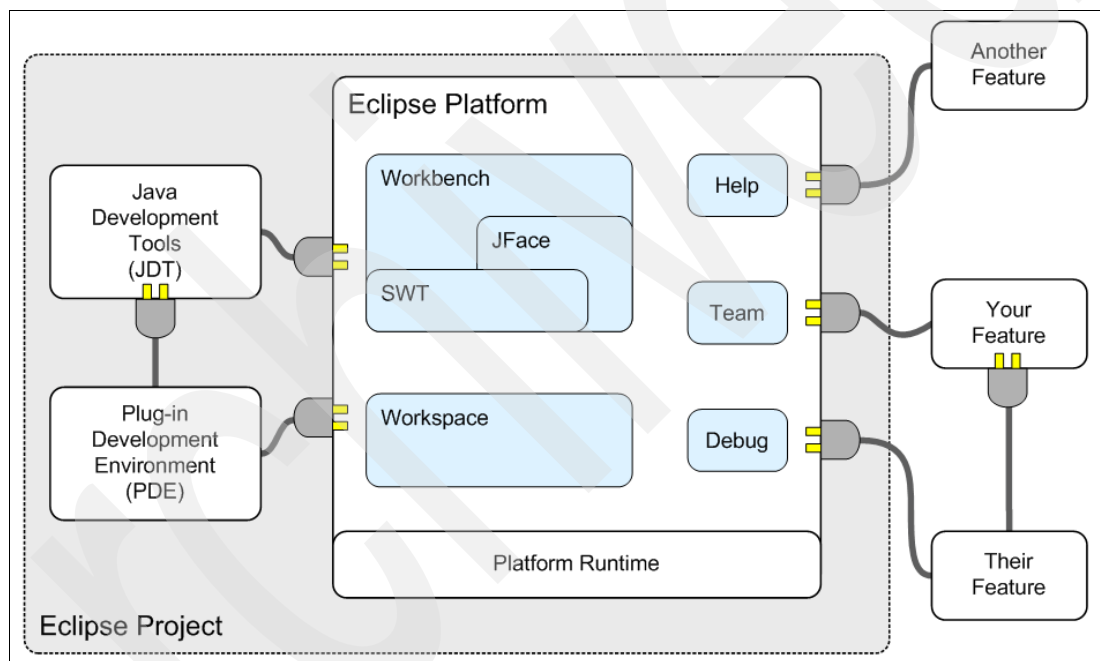


Figure 6-3 Architectural overview of the Eclipse framework

IBM has already used the Eclipse framework as the foundation for its own IDE offering, IBM Rational® Application Developer. With this product range, IBM has enhanced the core capabilities from Eclipse, such as the user interface, with our own value-adding extensions, such as for RPG developers or functionality to develop Java applications based on Java 2 Platform, Enterprise Edition (J2EE), standard versions 1.3 or 1.4.

The IDE allows a developer to remain within one development tool, but enables them to work on different aspects of the application, for example, the mainline code, be it Java, RPG or another language, and the user interface, most likely written using HTML and JavaServer™ Pages™ (JSP™). The IDE only allows the developer to perform actions that are applicable within the particular tool, for example, enter HTML code within an HTML perspective. This approach has been successfully repeated with the use of Eclipse as the foundation for the IBM Workplace Managed Client. You can find more information about the Eclipse framework at the following Web address:

<http://www.eclipse.org>

## 6.2 Key features of IBM Workplace Managed Client

Some of the key features of the IBM Workplace Managed Client include:

- Dynamic/server-based provisioning
- Policy-based administration
- Dynamic page assembly
- Offline secure store and synchronization
- Application development support

In the following sections, we explain these features in more detail.

### 6.2.1 Dynamic/server-based provisioning

IBM Workplace Managed Client plugs into the Workplace administration framework so that customers can build on the power of that infrastructure to deploy and manage IBM Workplace Managed Client users. The provisioning server, or the server side of the managed client, enables users with the IBM Workplace Collaboration Services capabilities when they use the IBM Workplace Managed Client on their desktops. When end users log on and download IBM Workplace Managed Client, they are provisioned automatically with the applications and configuration data that their administrator specified for their category of requirements. These applications are refreshed seamlessly when more recent versions become available or are removed when the user no longer has a business need for them.

The granularity of the client component-based architecture means that only those components of the platform or application that have changed are refreshed. This ability to seamlessly upgrade and refresh not only the applications but the IBM Workplace Managed Client itself combines to help reduce the TCO of rich applications to a level close to that incurred by Web browser-based applications.

Figure 6-4 illustrates the steps in the process of provisioning the components of a Workplace Managed Client.

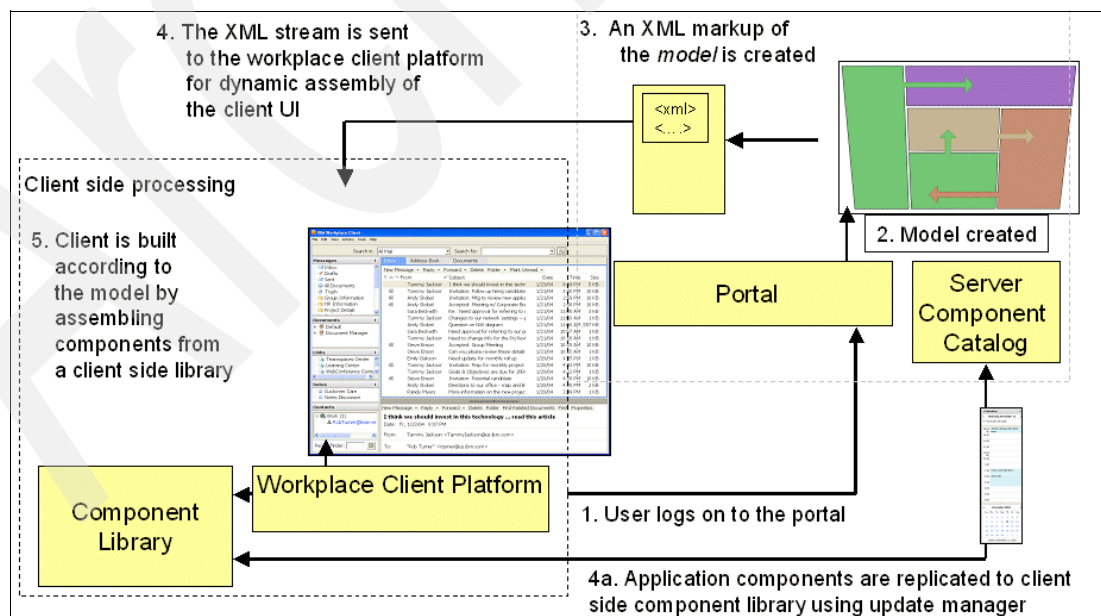


Figure 6-4 Provisioning process for a Workplace Managed Client

The provisioning server should be installed and deployed first before users can download the managed client to their desktops. For more information, see 6.3, “Deploying the IBM Workplace Managed Client” on page 266.

## 6.2.2 Policy-based administration

In an IBM Workplace Managed Client environment, administrators manage what is available to the client through the use of policies. These administration policies define the capabilities, including applications and information, that are available to specific sets of users.

For example, a policy called Marketing Group can be configured to define the capabilities that will be supported for users within the enterprise who are defined in that category. Within that policy, the administrator can specify the IBM Workplace Managed Client applications that should be available to those users. The administrator can specify that the standard Mail, Calendar, Document Management, Activity Explorer, and Discussions applications will be dynamically provisioned for the Marketing Group and that the enterprise’s custom Human Resource receive a different selection of applications. Policies also set the option to make the client downloadable from the Workplace Collaboration Services Welcome page.

To set these policies:

1. Open a Web browser and go to the WebSphere Application Server Administrative Console of your Workplace Collaboration Services server. Sign in with the administrator user ID (Figure 6-5).

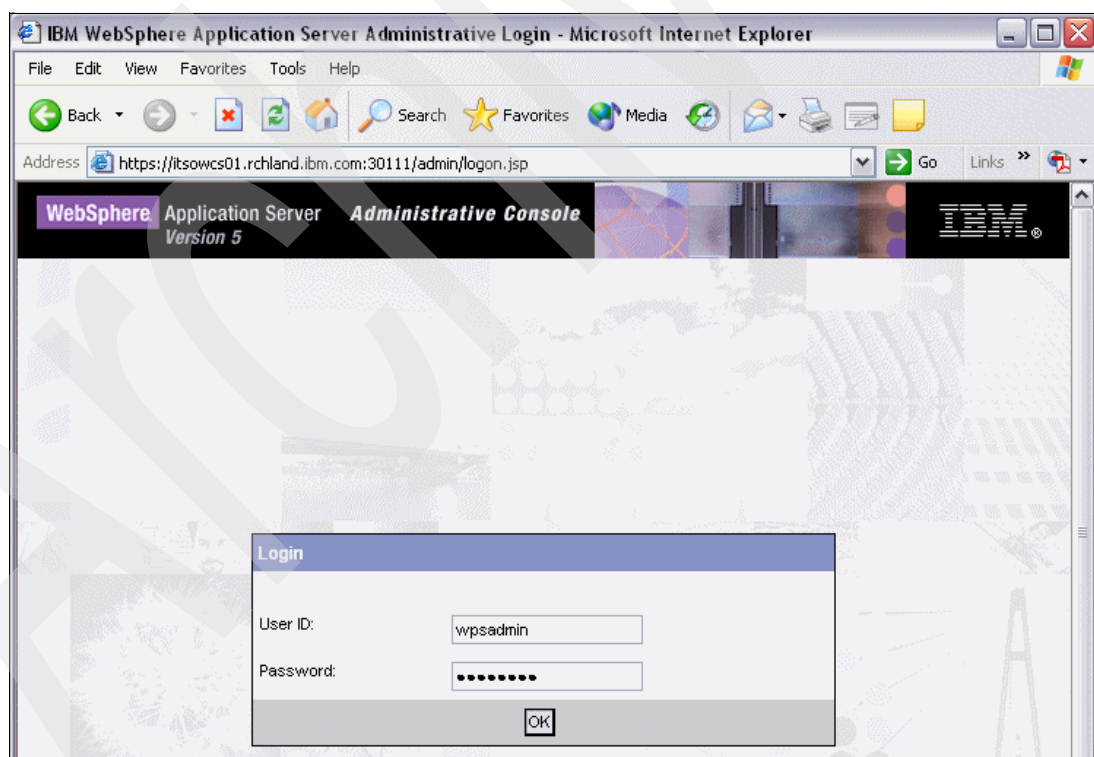


Figure 6-5 Signing in to the WebSphere Application Server Administrative Console

2. In the left navigation pane of the Administrative Console (Figure 6-6), click **Lotus Workplace** → **Users** → **Manage User Policies**.

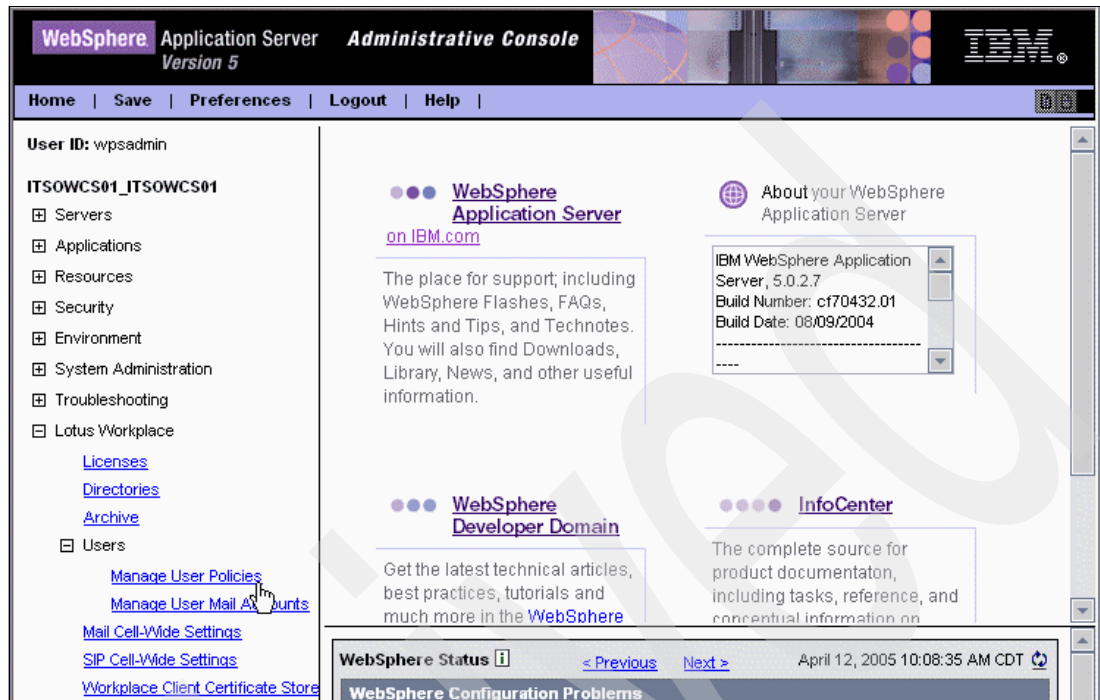


Figure 6-6 Selecting Manage User Policies

3. In the Manage User Policies panel (Figure 6-7), click the **Default User Policy** link. In our example, we are using the default user policy, but you can create a new one.

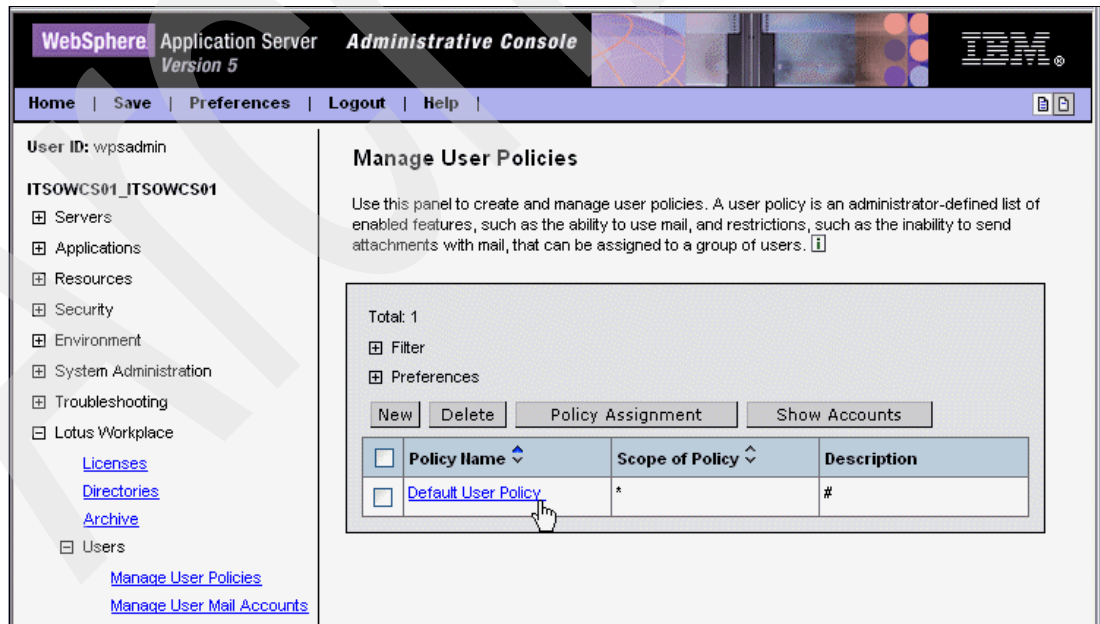


Figure 6-7 Manage User Policies page, selecting the Default User Policy

4. In the Default User Policy panel, scroll down to the Allowed clients section, and select the **Rich client** option (Figure 6-8). Click **OK**.

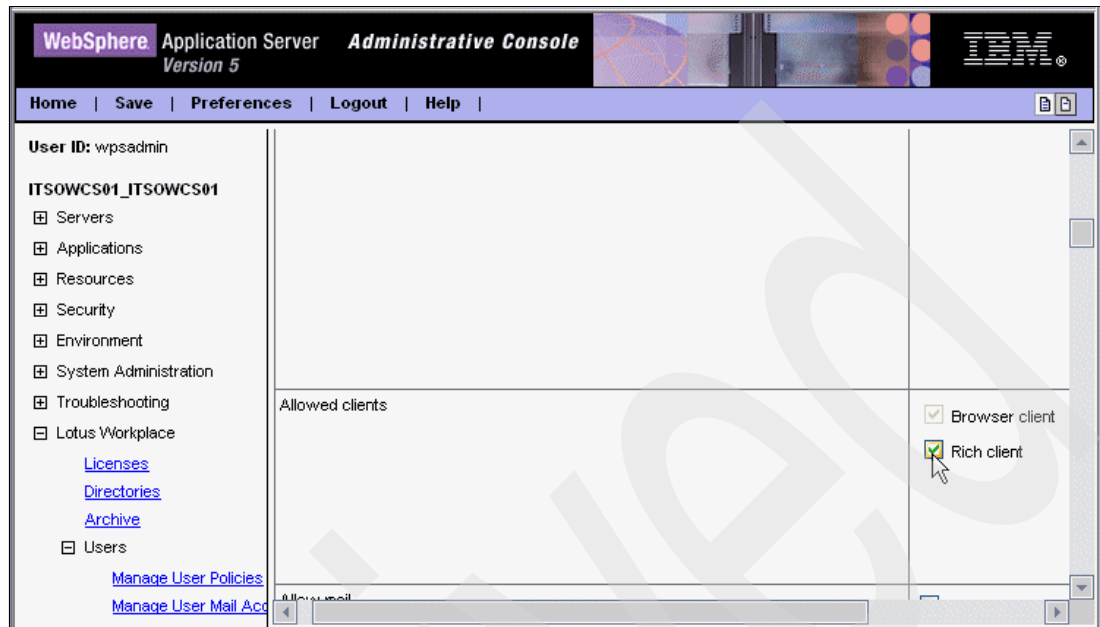


Figure 6-8 Allowed clients section

With this policy, you are allowing the users to download the managed client in their workstations, but the provisioning server (the server side of the managed client) must be installed in the server first so the users can download it. For more information, see 6.2.1, “Dynamic/server-based provisioning” on page 260, and 6.3, “Deploying the IBM Workplace Managed Client” on page 266.

There are some other policies that you can set for the managed client users, such as the use of the Activity Explorer or the Lotus Notes applications plug-in. You can select those features in this policy document as well.

### 6.2.3 Dynamic page assembly

The IBM Workplace Managed Client configuration and page assembly are dynamically built, on-demand, driven through the portal server itself, using portlets that support a rich client platform “markup language” as a markup type. The configuration assembly consists of a description of components that are required on the client platform to realize views and connect to services on the portal to support data access and manipulation.

The WebSphere Portal Server recognizes the user and determines which components and information they are allowed. Then it assembles and packages this information in the appropriate format, such as HTML or XML, making it ready to deliver to the relevant Workplace Managed Client device. The device then receives the information and renders it for the client device.

Figure 6-9 illustrates the process in more detail. The following numbers correspond to those in the diagram.

1. IBM Workplace Managed Client Application Manager authenticates to the WebSphere Portal using the client user’s name and password to a pre-established portal account. A Lightweight Third Party Authentication (LTPA) SSO token is passed back to the client as



the result of a successful logon that will be used in subsequent communication with the portal.

2. Using a URL to a portal page, the Workplace client retrieves the page from the portal. The request includes device-type information that lists the full Workplace client as the device type, causing the aggregator to emit a markup language document that describes the required components, views, layout information, and update information.
3. The Application Manager queries the Update Manager using component information from the markup language to retrieve any missing or updated components to the Workplace client. A restart of the client may be required at this point, depending on the type of components that are retrieved.
4. When all required components are present, the Application Manager passes control to the Page Builder, which aggregates one or more views to create a perspective.
5. Each view may connect to services, as described in the markup language, on the server for access to relevant data.
6. At this point, the page is fully constructed and presented to the end user on their client for interaction.

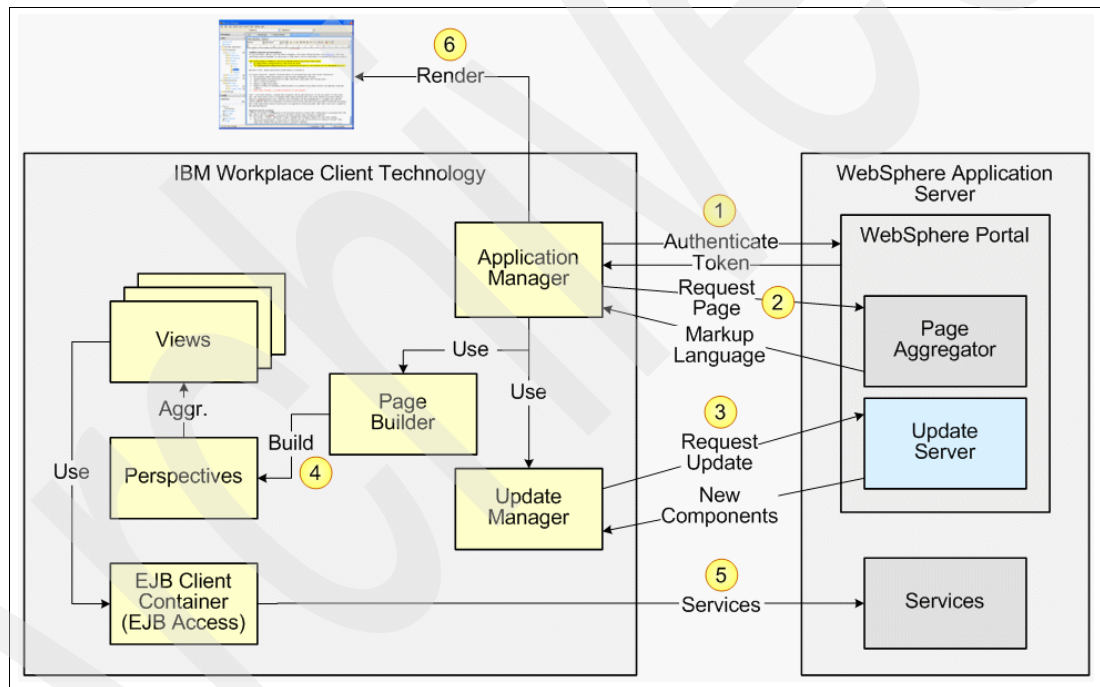


Figure 6-9 IBM Workplace Managed Client dynamic page assembly process

It is important to highlight a concept that is not shown in Figure 6-9, which is the offline capabilities. The page assembly process is similar when users are functioning with the IBM Workplace Managed Client in offline mode. However, the server-side services are replaced by local services and data storage that are not represented in the basic online page assembly process that is illustrated in Figure 6-9.

## 6.2.4 Offline secure store and synchronization

IBM Workplace Managed Client also provides a storage system that supports multiple kinds of local document stores according to the needs of a given business component, which has diverse storage schemas and matching business logic. Initial application components that are supported are the offline Messaging e-mail store and a slimmed-down personal version of the

WebSphere Portal Document Management system for local storage on the end user's machine.

This local datastore is based on the IBM Cloudscape Java-based relational database (RDB) technology. IBM Cloudscape provides developers a small-footprint, standards-based Java database that can be tightly embedded into any Java-based solution. It provides for a silent-install, zero-administration database that supports complex SQL transactions. Additionally, it supports data encryption on disk via Java Cryptography Extensions for secure operation and data storage.

Applications that are written to IBM Workplace Managed Client automatically inherit the ability to use the offline secure store as their storage mechanism. The platform also provides the necessary APIs for ISVs to use the offline secure store to extend the capabilities of their applications. The data in the local store is encrypted, providing additional security for user data over local file system controls.

This offline secure storage technology is provided with a full synchronization capability, which is managed by an IBM Workplace Managed Client Sync Manager. This Sync Manager allows users to synchronize data between their offline local store and the server-based copy in a secure and managed manner. IBM Workplace Managed Client synchronization leverages the SyncML protocol. The SyncML protocol is an industry initiative to develop and promote an industry-wide single, common data synchronization protocol.

Figure 6-10 shows the replication model of the IBM Workplace Client Technology.

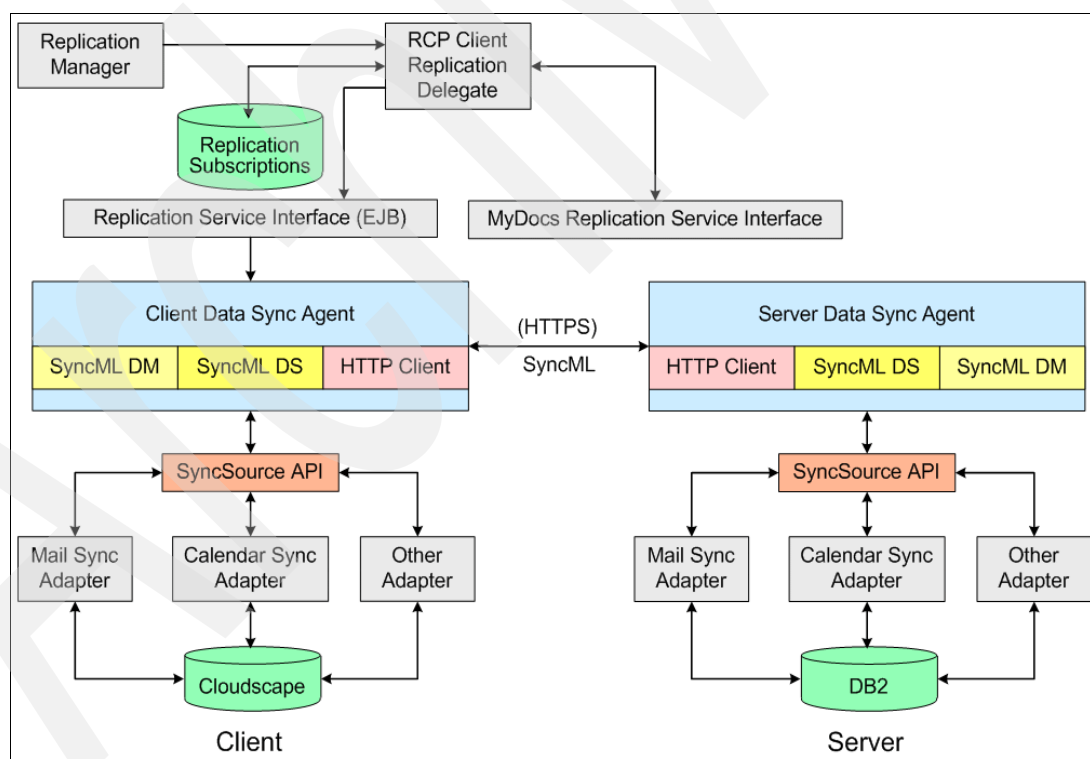


Figure 6-10 Workplace Managed Client replication service

For more information about SyncML, see the Open Mobile Alliance Web site at the following Web address:

<http://www.openmobilealliance.org/tech/affiliates/syncml/syncmlindex.html>



## 6.2.5 Application development support

IBM Workplace Managed Client provides the capabilities that enable end users and independent software vendors (ISVs) to build their own applications based on the platform or to extend the applications already provided with the platform itself. At a basic level, applications to leverage the IBM Workplace Managed Client can be built by creating Eclipse plug-ins whose parts are then aggregated together into a visual experience using a concept called *templates*.

These aggregations can also include parts that are shipped with the platform or acquired from third parties. At a more advanced level, coarser-grained parts (Eclipse views and editors) can be built using the standard Eclipse UI framework via Java JFace and Standard Widget Toolkits (SWT). In fact, special-purpose platform parts, such as the calendar viewer, navigator, and buddy list, can be used directly.

Capabilities can also be added without writing completely new UI parts in Java, and instead by extending or customizing existing parts. The Eclipse platform, upon which IBM Workplace Managed Client is based, is structured around the concept of extension points. Plug-ins can define their own extension points or simply add extensions to the extension points of other plug-ins. *Extension points* are well-defined places in the system where other application plug-ins can contribute functionality.

This extension point architecture is used in application parts to allow for the standard addition of actions, menu items, toolbar items, and so on. Of course, truly leveraging the full capabilities of IBM Workplace Managed Client goes beyond the creation of Eclipse plug-ins or user interfaces to the creation of backend distributed components, which take advantage of the additional services and capabilities that this platform provides on top of the basic Eclipse framework (for example, Enterprise JavaBean (EJB™) components, and data storage and synchronization).

Applications can also be written using the Workplace Designer.

**Note:** At the time this redbook was written, the Workplace Designer is not included with Workplace Collaboration Services, but it is available as a technology preview.

## 6.3 Deploying the IBM Workplace Managed Client

In this section, we explain the steps required to install and deploy the IBM Workplace Managed Client software. The installation process is straightforward. However, it is important to understand the steps involved to assist in planning, deploying, and any troubleshooting problems that may occur.

The IBM Workplace Managed Client has capabilities that are conceptually similar to the traditional Lotus Notes client in that it can offer stand-alone capabilities when disconnected from the network. However, its true power is unleashed when it is used to connect to a server and interchange information between colleagues, customers or suppliers, allowing users to collaborate within and beyond their immediate team, to the benefit of the organization as a whole. Like the familiar Lotus Notes client, the IBM Workplace Managed Client has a secure local datastore and rich editing capabilities. It also has the ability to work independently of the server using the capability to synchronize with the server to receive and send updates, not just of data but also application functionality.

To make the IBM Workplace Managed Client available to the Workplace Collaboration Services users, you must install the provisioning server first. The provisioning server enables

the users with the IBM Workplace Collaboration Services capabilities when they use the IBM Workplace Managed Client on their desktops.

The options for the provisioning server installation are:

- If you are configuring a new Workplace Collaboration Services server using the IBM Web Administration for iSeries wizard

When you use this procedure, the IBM Workplace Managed Client components are installed while the IBM Workplace Collaboration Services server is being created. See 6.3.1, “Configuring a new Workplace Collaboration Services server” on page 267, for details.

- If you are installing to an existing Workplace Collaboration Services server

Refer to 6.3.2, “Existing IBM Workplace Collaboration Services server” on page 271, to learn about the options that are available.

**Important:** Since the IBM Workplace Managed Client code comes in two *multiplatform* CDs, a change is required in the iSeries server to access the files. You must enter the following Change Optical Attributes (CHGOPTA) CL command before you place the BM Workplace Managed Client CD in the iSeries drive:

```
CHGOPTA EXTMEFMT(*YES)
```

### 6.3.1 Configuring a new Workplace Collaboration Services server

If you are configuring a new Workplace Collaboration Service server using the iSeries Create IBM Workplace wizard, the Workplace Managed Client provisioning server can also be installed at the same time.

**Note:** In our examples for the provisioning server installation, the code was located in the /WorkplaceCollaborationServices25/setup directory. This code is in the IBM Workplace Managed Client CDs. If you downloaded the code, perform the following steps:

1. Copy the downloaded files onto the iSeries server into a directory of your choice, for example, /download.
2. Extract the files using the following command:

```
pax -rv -C 819 -f /download/filename.tar
```

In this example, we enter:

```
pax -rv -C 819 -f /download/C85QURL.tar
```

To configure a new Workplace Collaboration Service server:

1. Log on to the iSeries server with a user profile that has \*ALLJOB authority.
2. Type STRQSH on an i5/OS command line and press Enter to start Qshell Interpreter.
3. On the QSH Command Entry display, create a directory called WCT25 to hold the Workplace Managed Client setup files in the Workplace Collaboration Services product directory by entering the following command:  

```
mkdir -p /QIBM/ProdData/Workplace/WCT25
```
4. Copy the two IBM Workplace Managed Client directories (WorkplaceSCI1 and WorkplaceSCI2) from the CDs or from the path where the code is located to the new directory.

**Note:** After you complete this copy, the managed client code is available for the next new IBM Workplace Collaboration Services servers that are created using the IBM Administration for iSeries Create Workplace wizard.

- a. Insert the first CD for the Workplace Managed Client installation and change to the setup directory. In our example, we change to the directory where the code is located, using the following command (Figure 6-11):

```
cd /WorkplaceCollaborationServices25/setup
```

```
QSH Command Entry

$
> mkdir -p /QIBM/ProdData/Workplace/WCT25
$
> cd /WorkplaceCollaborationServices25/setup
$

===>

F3=Exit  F6=Print  F9=Retrieve  F12=Disconnect
F13=Clear  F17=Top  F18=Bottom  F21=CL command entry
```

Figure 6-11 Changing to the Workplace Managed Client setup directory

- b. Copy the WorkplaceSCI1 directory under the Setup directory to the new WCT25 directory with the following command:

```
cp -R WorkplaceSCI1 /QIBM/ProdData/Workplace/WCT25
```

- c. Insert the second Workplace Managed Client CD and copy the WorkplaceSCI2 directory under the Setup directory to the WCT25 directory with the following command:

```
cp -R WorkplaceSCI2 /QIBM/ProdData/Workplace/WCT25
```

See Figure 6-12.

```
QSH Command Entry

$
> mkdir -p /QIBM/ProdData/Workplace/WCT25
$
> cd /WorkplaceCollaborationServices25/setup
$
> ls
WorkplaceSCI1  WorkplaceSCI2
$
> cp -R WorkplaceSCI1 /QIBM/ProdData/Workplace/WCT25
$
> cp -R WorkplaceSCI2 /QIBM/ProdData/Workplace/WCT25
$

===>

F3=Exit  F6=Print  F9=Retrieve  F12=Disconnect
F13=Clear  F17=Top  F18=Bottom  F21=CL command entry
```

Figure 6-12 Copying the Workplace Managed Client directories to the WCT25 directory

5. To authorize the IBM Web Administration for iSeries Create Workplace wizard to access the setup files, change the ownership of the WCT25 directory.

a. Change to the IBM Workplace Collaboration Services product directory:

```
cd /QIBM/ProdData/Workplace
```

b. Change the ownership of the WCT25 directory to QSYS (see Figure 6-13):

```
chown -R QSYS /QIBM/ProdData/Workplace/WCT25
```

```
QSH Command Entry

$
> ls
WorkplaceSCI1  WorkplaceSCI2
$
> cp -R WorkplaceSCI1 /QIBM/ProdData/Workplace/WCT25
$
> cp -R WorkplaceSCI2 /QIBM/ProdData/Workplace/WCT25
$
>
$
> cd /QIBM/ProdData/Workplace
$
> chown -R QSYS /QIBM/ProdData/Workplace/WCT25
$

===>

F3=Exit  F6=Print  F9=Retrieve  F12=Disconnect
F13=Clear  F17=Top  F18=Bottom  F21=CL command entry
```

*Figure 6-13 Changing ownership of the WCT25 directory*

6. You are ready to configure your Workplace Collaboration Services server. Refer to 4.3, “Using the iSeries Create IBM Workplace wizard” on page 97, for details.

Notice in Figure 6-14 that the IBM Workplace Client Technologies, Rich Edition option is available. This is because the Workplace Managed Client code has been copied into the /QIBM/ProdData/Workplace/WCT25 directory on the iSeries server. Select **IBM Workplace Client Technologies, Rich Edition** to enable these components to be installed so the users can download the IBM Workplace Managed Client.

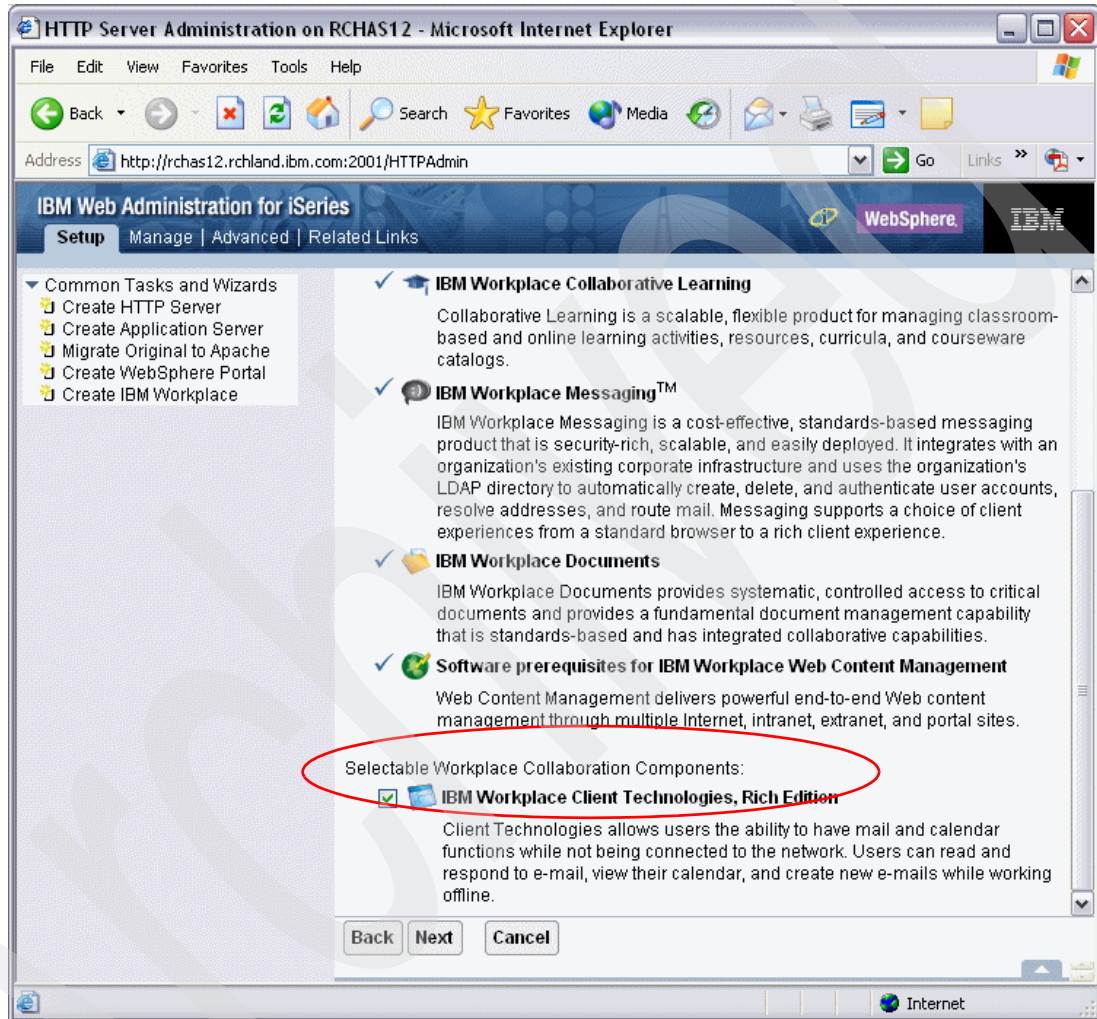


Figure 6-14 Selecting the IBM Workplace Client Technologies, Rich Edition option

7. Verify that the policy in the WebSphere Application Server Administrative Console to allow the users to download the IBM Workplace Managed Client components is already set. See 6.2.2, “Policy-based administration” on page 261, for details.

Users are now allowed to download the Workplace Managed Client from the IBM Workplace Collaborative Services Welcome page. See 6.4, “Client installation details for Microsoft Windows” on page 292, for details about installing and configuring the Workplace Managed Client on a PC workstation.

### 6.3.2 Existing IBM Workplace Collaboration Services server

In this section, we explain the installation options that are available for installing the IBM Workplace Managed Client provisioning server on an existing Workplace Collaboration Services server.

**Note:** Be sure that your Workplace Collaboration Services server is up and running before you perform either of the following options. After installation, the managed client is available only for this particular Workplace Collaboration Services server.

In this environment, you have three options:

- ▶ Use the GUI or Installshield when you are installing the provisioning server remotely from a PC workstation to an existing Workplace Collaboration Services server.
- ▶ Use a Qshell Interpreter on the iSeries when you are installing the provisioning server locally from an iSeries server to an existing Workplace Collaboration Services server.

**Note:** This method is faster since the files are either in the local iSeries server CD drive or copied to the iSeries server integrated file system.

- ▶ Use a response file either with the GUI method or from the console in the iSeries using a Qshell Interpreter. For more information about the response file, see “Installing the rich client provisioning server using a response file” in the IBM Workplace Collaboration Services Information Center at the following address:

[http://publib.boulder.ibm.com/infocenter/iwphelp/v2r5m1/index.jsp?topic=/com.ibm.wcs.ic.doc\\_2.5.1/infocenter/i\\_inst\\_t\\_silentinstw32\\_rich\\_client.html](http://publib.boulder.ibm.com/infocenter/iwphelp/v2r5m1/index.jsp?topic=/com.ibm.wcs.ic.doc_2.5.1/infocenter/i_inst_t_silentinstw32_rich_client.html)

#### Provisioning server installation using the Installshield

The provisioning server can be installed using a graphical installation program from a PC workstation connected to the iSeries server.

**Attention:** Run the graphical installation program from the CD *in the local PC workstation*. Do *not* run this program from the iSeries server using a map drive since you can experience timeout issues.

Use the following steps to perform this installation:

1. Insert the first CD for the IBM Workplace Managed Client in your Windows PC workstation.
2. Open the WorkplaceSCI1 directory under the Setup directory.
3. Double-click the **setupi5OS.bat** file to run it.
4. The installation wizard launches where you are prompted to sign on to the iSeries server.

5. Choose the language to be used for the wizard (Figure 6-15). Click **OK**.



Figure 6-15 Selecting the language for the installation wizard

6. In the Welcome to IBM Workplace rich client provisioning components panel (Figure 6-16), click **Next**.

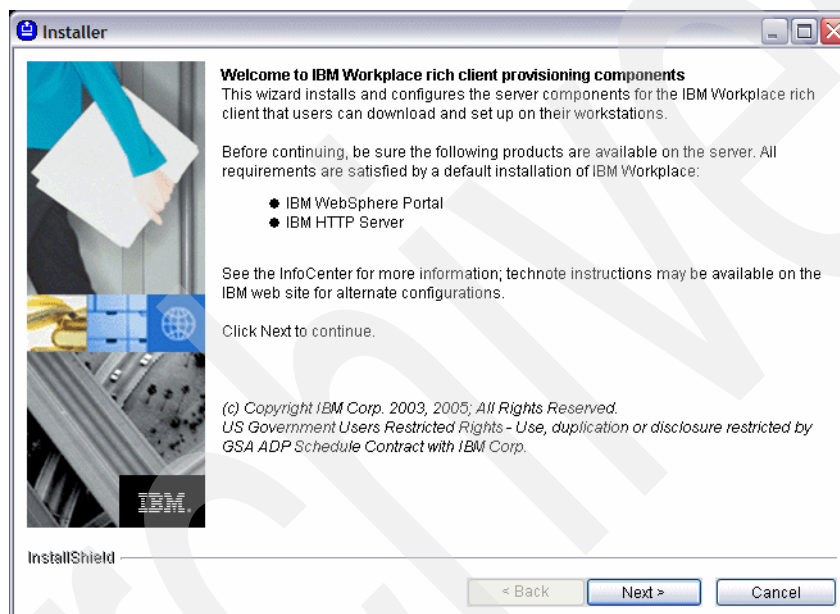


Figure 6-16 Welcome page of the IBM Workplace rich client installation wizard



7. In the Software License Agreement panel (Figure 6-17), click **I accept the terms in the software license agreement** and click **Next**.

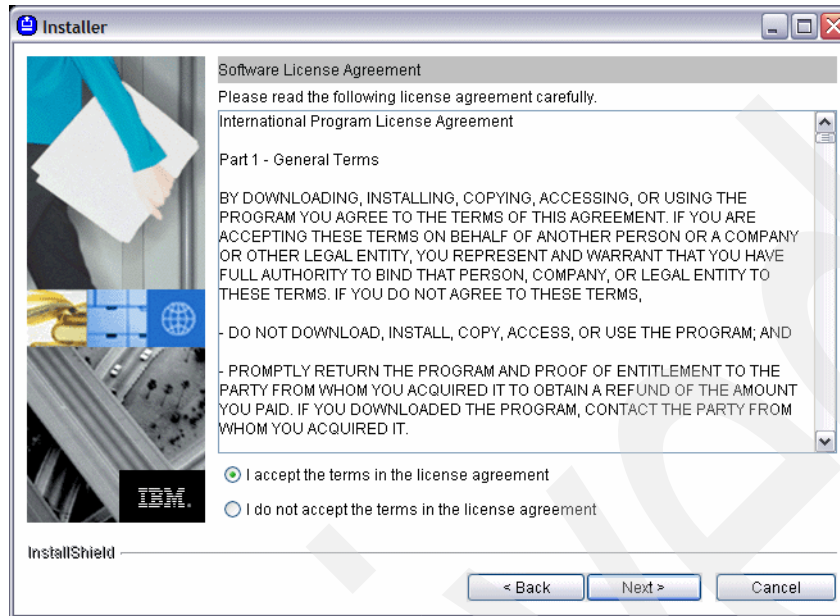


Figure 6-17 License agreement

8. For the type of setup, choose **Typical** and click **Next** (Figure 6-18).

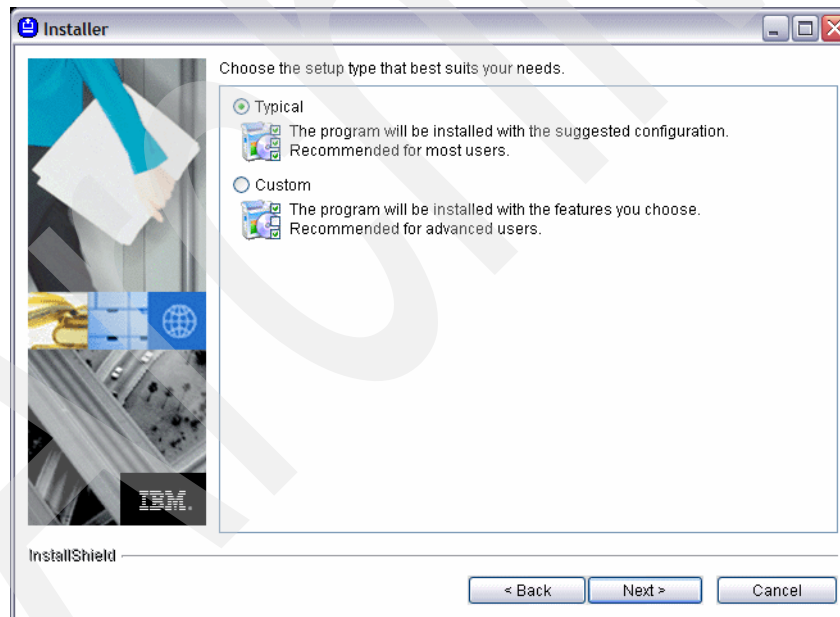


Figure 6-18 Selecting the setup type

9. Type the values for the Workplace Collaboration Services server name and the portal administrator user ID and password. Then click **Next**. See Figure 6-19.



Select a portal server instance. Portal content, such as pages, portlets, WARs, shared libraries, and links, will be deployed to the selected server. The recommended configuration uses a portal server that came with an IBM Workplace server. The portal server must be running and available to run setup scripts before clicking Next to continue. Note: For security reasons the password will not be saved.

Select an instance name for IBM WebSphere Application Server or IBM Workplace S...

ITSOWCS04

Portal administrator User ID:

wpsadmin

Portal administrator password:

\*\*\*\*\*

Confirm administrator password:

\*\*\*\*\*

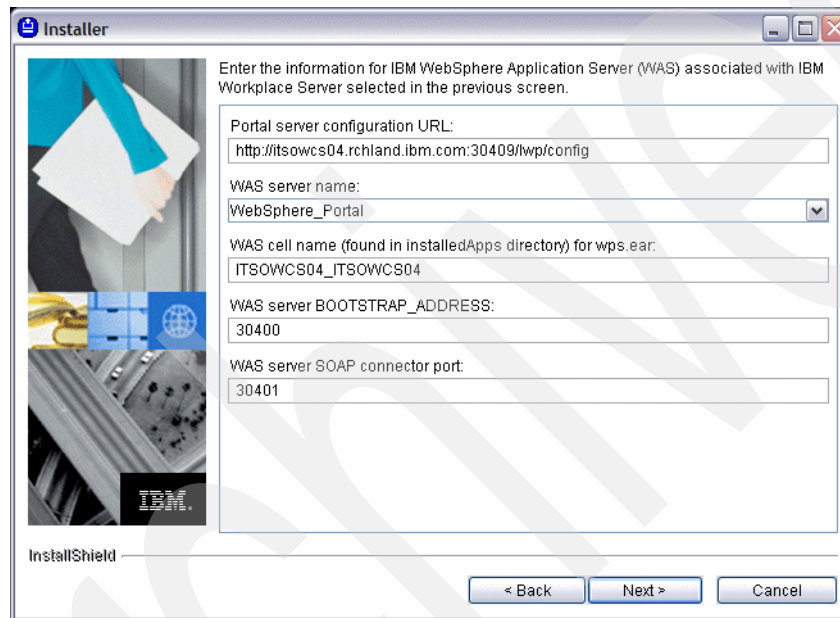
InstallShield

< Back Next > Cancel

Figure 6-19 Portal instance name and administrator ID

10. Accept the defaults for the WebSphere Portal Server URL and for the WebSphere Application Server information (Figure 6-20). The WebSphere Application Server server `BOOTSTRAP_ADDRESS` value should be the first port in your port block for the Workplace Collaboration Services server and the SOAP connector port should be the first port in the block plus 1. Click **Next**.

**Note:** If the fields in this page are blank or the URL is broken, then you must regenerate the Web server plug-in configuration file in the WebSphere Application Server Administrative Console. To regenerate the plug-in, in the WebSphere Application Server Administrative Console in the left navigation frame, click **Environment** → **Update Web Server Plugin** and then click **OK**. After the plug-in update is complete, you should start the installation wizard again.



Installer

Enter the information for IBM WebSphere Application Server (WAS) associated with IBM Workplace Server selected in the previous screen.

Portal server configuration URL:

WAS server name:

WAS cell name (found in InstalledApps directory) for wps.ear:

WAS server BOOTSTRAP\_ADDRESS:

WAS server SOAP connector port:

InstallShield

< Back   Next >   Cancel

Figure 6-20 Information about the IBM WebSphere Application Server

11. Select the IBM HTTP Server used by your Workplace Collaboration Services server (Figure 6-21). Click **Next**.

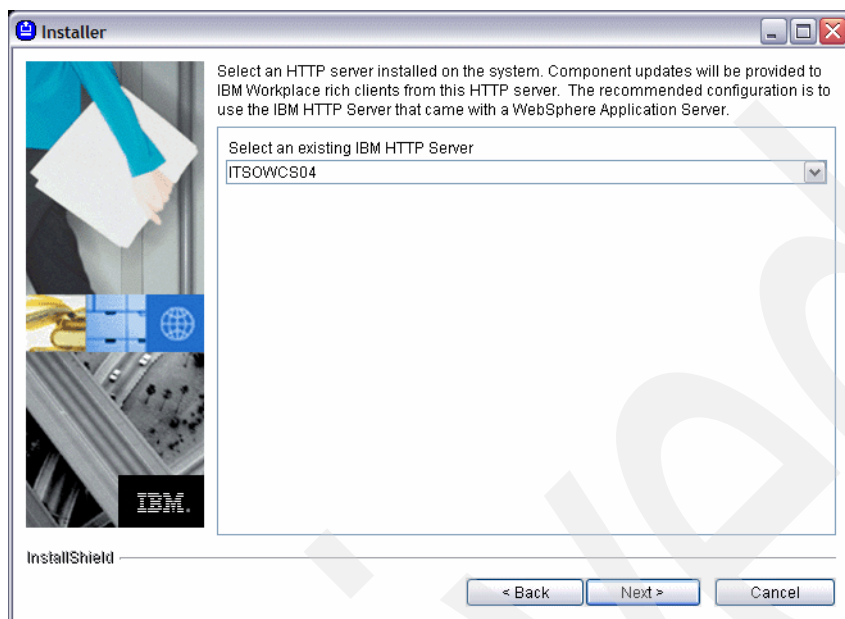


Figure 6-21 HTTP Server

12. Read the summary information (see Figure 6-22) and click **Next**.

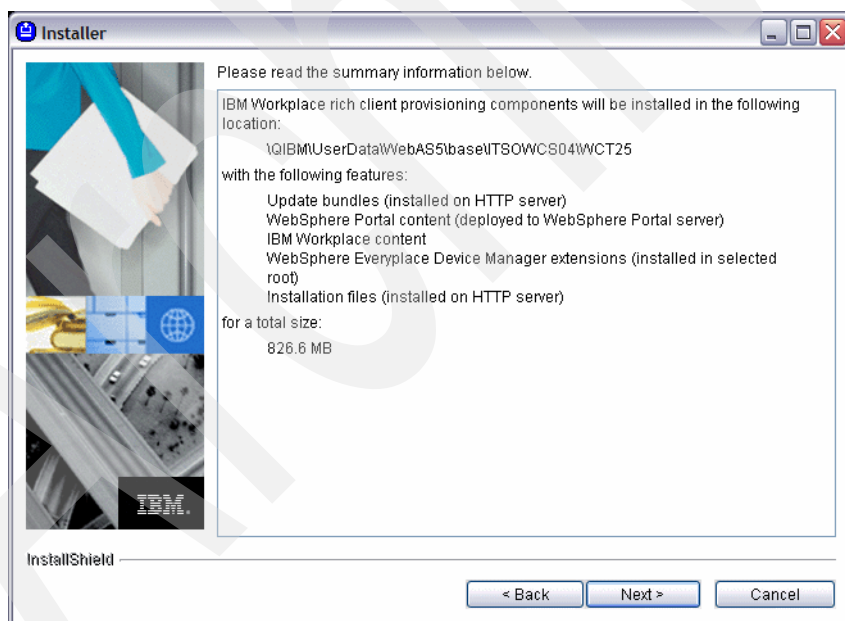


Figure 6-22 Summary information for the provisioning server installation

13. The components start installing (Figure 6-23). When prompted, insert disk 2 or select the folder where the files are located. This process can take about 45 minutes, but depends on the connection speed to the iSeries server. If you receive error messages at this point, the program creates logs for you.



Figure 6-23 Installing IBM Workplace rich client provisioning components

14. Read the additional steps to be taken with the WebSphere Portal Server and click **Next**. See Figure 6-24.

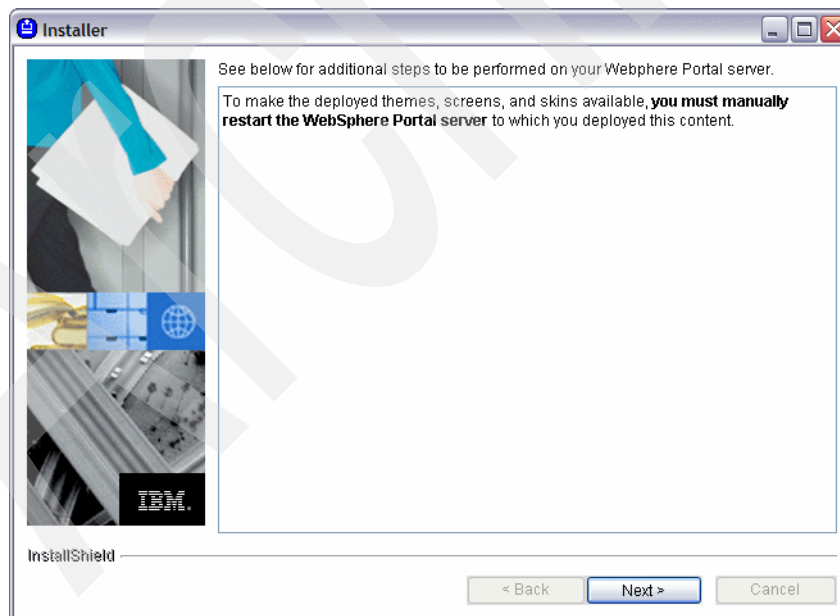


Figure 6-24 Additional steps for the WebSphere Portal Server

15. In the last panel, click **Finish** (Figure 6-25).

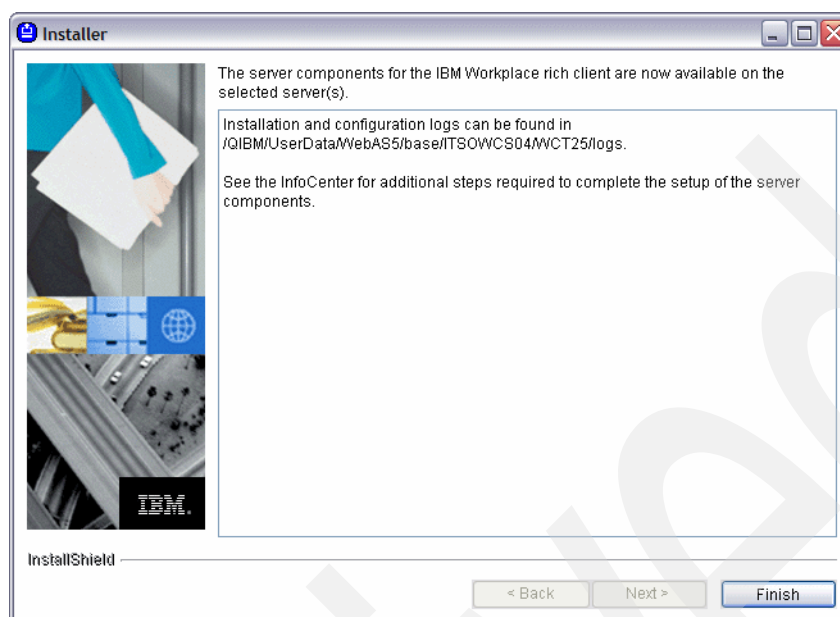


Figure 6-25 Finishing the provisioning server installation

16. Change the policy in the WebSphere Application Server Administrative Console to allow the users to download the IBM Workplace Managed Client from their Web browser. See 6.2.2, “Policy-based administration” on page 261.
17. Restart all the servers in your Workplace Collaboration Services server by using the IBM Web Administration for iSeries interface. See 5.2, “Starting and stopping Workplace Collaboration Services” on page 203, for details.

After you perform these steps, users are allowed to download the rich client from the IBM Workplace Collaboration Services Welcome page. See 6.4, “Client installation details for Microsoft Windows” on page 292, for details about installing and configuring the Workplace Managed Client on a PC workstation.

### Provisioning server installation using the Qshell Interpreter

Perform the following steps to install the provisioning server using the Qshell Interpreter on the iSeries server:

1. Log on to the iSeries server with a user profile that has \*ALLJOB authority.
2. Type STRQSH on an i5/OS command line to start the Qshell Interpreter. Press Enter.
3. Create a directory called WCT25 under the Workplace Collaboration Services product directory and copy the WorkplaceSCI1 and Workplace SCI2 directories there.

Although you can perform this installation from the CDs in the local drive of the iSeries server, we recommend that you copy the two IBM Workplace Managed Client directories (WorkplaceSCI1 and Workplace SCI2) from the two installation CDs to this new WCT25 directory. That way when additional Workplace Collaboration Services servers are created using the iSeries Create Workplace wizard, these new servers are ready to install the rich client components.

For more information about how to copy these directories to the iSeries server using a Qshell Interpreter, see steps 3 and step 4 on page 267. If you prefer, you can use a mapped drive or iSeries Navigator to copy the files.

4. Run the `setupi5OS.sh` file from the `WorkplaceSCI1` directory as shown in Figure 6-26.

```
QSH Command Entry

> cd /QIBM/ProdData/Workplace/WCT25/WorkplaceSCI1
$
> setupi5OS.sh
Licensed Materials - Property of IBM
IBM Workplace 2.5
(C) Copyright IBM Corp. 2001 - 2004 All Rights Reserved.

Using /QIBM/ProdData/Java400/jdk14
Attaching Java program to /QIBM/ProdData/Workplace/WCT25/WorkplaceSCI1/data.jar.

===>

F3=Exit  F6=Print F9=Retrieve F12=Disconnect
F13=Clear F17=Top  F18=Bottom F21=CL command entry
```

Figure 6-26 Installing the Workplace Managed Client provisioning server

5. Choose the language to use for the installation wizard. Type the number for the language option and press Enter. Type 0 when finished and press Enter to continue (Figure 6-27).

```
QSH Command Entry

Select a language to be used for this wizard.

[X] 1 - English
[ ] 2 - French
[ ] 3 - German
[ ] 4 - Italian
[ ] 5 - Japanese
[ ] 6 - Korean
[ ] 7 - Portuguese (Brazil)
[ ] 8 - Simplified Chinese
[ ] 9 - Spanish
[ ] 10 - Traditional Chinese

To select an item enter its number, or 0 when you are finished: [0]

===> 0

F3=Exit  F6=Print F9=Retrieve F12=Disconnect
F13=Clear F17=Top  F18=Bottom F21=CL command entry
```

Figure 6-27 Selecting a language for the installation wizard

6. On the next display, type 1 to continue and press Enter (Figure 6-28).

```
QSH Command Entry

See the InfoCenter for more information; technote instructions may be available
on the IBM web site for alternate configurations.

Click Next to continue.

(c) Copyright IBM Corp. 2003, 2005; All Rights Reserved.
US Government Users Restricted Rights - Use, duplication or disclosure
restricted by GSA ADP Schedule Contract with IBM Corp.

Press 1 for Next, 3 to Cancel or 4 to Redisplay [1]

===> 1

F3=Exit  F6=Print F9=Retrieve F12=Disconnect
F13=Clear F17=Top F18=Bottom F21=CL command entry
```

Figure 6-28 Continuing with the installation wizard

7. On the next display, press Enter to view the software license agreement (Figure 6-29). Type 1 to accept the license agreement and press Enter.

```
QSH Command Entry

Press 1 for Next, 3 to Cancel or 4 to Redisplay [1]
> 1

-----
Software Licensing Agreement
Press Enter to display the license agreement on your screen. Please
read the agreement carefully before installing the Program. After
reading the agreement, you will be given the opportunity to accept it
or decline it. If you choose to decline the agreement, installation
will not be completed and you will not be able to use the Program.

===>

F3=Exit  F6=Print F9=Retrieve F12=Disconnect
F13=Clear F17=Top F18=Bottom F21=CL command entry
```

Figure 6-29 Software license agreement



8. Type 1 again and press Enter to continue (Figure 6-30).

```
QSH Command Entry

Proof of Entitlement and is the complete agreement between
You and IBM regarding the use of the Program. It replaces
any prior oral or written communications between You and
IBM concerning Your use of the Program. The terms of Part 2
and License Information may replace or modify those of Part
1. To the extent there is a conflict between the terms of

Press Enter to continue viewing the license agreement, or, Enter 1 to accept
the agreement, 2 to decline it or 99 to go back to the previous screen.

> 1

Press 1 for Next, 2 for Previous, 3 to Cancel or 4 to Redisplay [1]

===> 1

F3=Exit F6=Print F9=Retrieve F12=Disconnect
F13=Clear F17=Top F18=Bottom F21=CL command entry
```

Figure 6-30 Accepting the license agreement

9. Type 1 to choose the Typical setup and press Enter. Type 0 when you are finished and press Enter (Figure 6-31).

```
QSH Command Entry

-----
Choose the setup type that best suits your needs.

[X] 1 - Typical
The program will be installed with the suggested configuration.
Recommended for most users.

[ ] 2 - Custom
The program will be installed with the features you choose.
Recommended for advanced users.

To select an item enter its number, or 0 when you are finished: [0]

===> 0

F3=Exit F6=Print F9=Retrieve F12=Disconnect
F13=Clear F17=Top F18=Bottom F21=CL command entry
```

Figure 6-31 Selecting the setup type

10. In the next display, type 1 to and press Enter to continue (Figure 6-32).

```
QSH Command Entry

[X] 1 - Typical
    The program will be installed with the suggested configuration.
    Recommended for most users.

[ ] 2 - Custom
    The program will be installed with the features you choose.
    Recommended for advanced users.

To select an item enter its number, or 0 when you are finished: [0]
> 0

Press 1 for Next, 2 for Previous, 3 to Cancel or 4 to Redisplay [1]

===> 1

F3=Exit  F6=Print  F9=Retrieve  F12=Disconnect
F13=Clear F17=Top   F18=Bottom  F21=CL command entry
```

Figure 6-32 Continuing with the installation wizard

11. Select the Workplace Collaboration Services server name for this installation by typing the number of the server and pressing Enter. Type 0 and press Enter when finished (Figure 6-33).

```
QSH Command Entry

The portal server must be running and available to run setup scripts
before clicking Next to continue. Note: For security reasons the password will
not be saved.

Select an instance name for IBM WebSphere Application Server or
IBM Workplace Server

[ ] 1 - ITSOWCS04
[ ] 2 - ITSOWCS06
[X] 3 - ITSOWCS01

To select an item enter its number, or 0 when you are finished: [0]

===> 0

F3=Exit  F6=Print  F9=Retrieve  F12=Disconnect
F13=Clear F17=Top   F18=Bottom  F21=CL command entry
```

Figure 6-33 Selecting the Workplace Collaboration Services server name

12.Type the WebSphere Portal administrator user ID and press Enter (Figure 6-34).

```
QSH Command Entry

To select an item enter its number, or 0 when you are finished: [0]
> 3

[ ] 1 - ITSOWCS04
[ ] 2 - ITSOWCS06
[X] 3 - ITSOWCS01

To select an item enter its number, or 0 when you are finished: [0]
> 0

Portal administrator User ID: []

==> wpsadmin

F3=Exit  F6=Print F9=Retrieve F12=Disconnect
F13=Clear F17=Top  F18=Bottom F21=CL command entry
```

Figure 6-34 WebSphere Portal administrator user ID

13.Type the WebSphere Portal administrator password and press Enter (Figure 6-35).

```
QSH Command Entry

[ ] 1 - ITSOWCS04
[ ] 2 - ITSOWCS06
[X] 3 - ITSOWCS01

To select an item enter its number, or 0 when you are finished: [0]
> 0

Portal administrator User ID: []
> wpsadmin

Portal administrator password:

==> wpsadmin

F3=Exit  F6=Print F9=Retrieve F12=Disconnect
F13=Clear F17=Top  F18=Bottom F21=CL command entry
```

Figure 6-35 WebSphere Portal administrator password

14. Type the WebSphere Portal administrator password again to confirm it and press Enter (Figure 6-36).

```
QSH Command Entry

To select an item enter its number, or 0 when you are finished: [0]
> 0

Portal administrator User ID: []
> wpsadmin

Portal administrator password:
> password

Confirm administrator password:

===> password

F3=Exit  F6=Print  F9=Retrieve  F12=Disconnect
F13=Clear F17=Top  F18=Bottom  F21=CL command entry
```

Figure 6-36 Portal administrator user information

15. In the next display, type 1 and press Enter to continue the installation (Figure 6-37).

```
QSH Command Entry

Portal administrator User ID: []
> wpsadmin

Portal administrator password:
> wpsadmin

Confirm administrator password:
> wpsadmin

Press 1 for Next, 2 for Previous, 3 to Cancel or 4 to Redisplay [1]

===> 1

F3=Exit  F6=Print  F9=Retrieve  F12=Disconnect
F13=Clear F17=Top  F18=Bottom  F21=CL command entry
```

Figure 6-37 Continuing the installation

16. Accept the default for the WebSphere Portal URL and press Enter (Figure 6-38).

**Note:** For the following steps in this wizard, if the fields in these pages are blank (no default values) or the URL for the WebSphere Portal server is broken, then you must regenerate the Web server plug-in configuration file in the WebSphere Application Server Administrative Console. To regenerate the plug-in in the WebSphere Application Server Administrative Console in the left navigation frame, click **Environment** → **Update Web Server Plugin** and then click **OK**. After the plug-in update is complete, start the installation wizard again.

```
QSH Command Entry

Confirm administrator password:
> wpsadmin

Press 1 for Next, 2 for Previous, 3 to Cancel or 4 to Redisplay [1]
> 1

-----
--
Enter the information for IBM WebSphere Application Server (WAS) associated
with IBM Workplace Server selected in the previous screen.

Portal server configuration URL:
[http://ITSOWCS01.RCHLAND.IBM.COM:30109/1wp/config]

===>

F3=Exit  F6=Print  F9=Retrieve  F12=Disconnect
F13=Clear F17=Top  F18=Bottom  F21=CL command entry
```

Figure 6-38 WebSphere Portal URL configuration

17. Type the number of the WebSphere Application Server name and press Enter to accept the name. Type 0 and press Enter when finished (Figure 6-39).

```
QSH Command Entry

Enter the information for IBM WebSphere Application Server (WAS) associated
with IBM Workplace Server selected in the previous screen.

Portal server configuration URL:
[http://ITSOWCS01.RCHLAND.IBM.COM:30109/lwp/config]
>

WAS server name:

[X] 1 - WebSphere_Portal
[ ] 2 - server1

To select an item enter its number, or 0 when you are finished: [0]

===> 0

F3=Exit  F6=Print  F9=Retrieve  F12=Disconnect
F13=Clear F17=Top  F18=Bottom  F21=CL command entry
```

Figure 6-39 WebSphere Application Server name

18. Accept the default WebSphere Application Server cell name (Figure 6-40) and press Enter.

```
QSH Command Entry

>

WAS server name:

[X] 1 - WebSphere_Portal
[ ] 2 - server1

To select an item enter its number, or 0 when you are finished: [0]
> 0

WAS cell name (found in installedApps directory) for wps.ear:
[ITSOWCS01_ITSOWCS01]

===>

F3=Exit  F6=Print  F9=Retrieve  F12=Disconnect
F13=Clear F17=Top  F18=Bottom  F21=CL command entry
```

Figure 6-40 WebSphere Application Server cell name

19. Accept the default WebSphere Application server BOOTSTRAP\_ADDRESS number. This should be the first port in the port block for this Workplace Collaboration Services server (Figure 6-41). Press Enter.

```
QSH Command Entry

[X] 1 - WebSphere_Portal
[ ] 2 - server1

To select an item enter its number, or 0 when you are finished: [0]
> 0

WAS cell name (found in installedApps directory) for wps.ear:
[ITSOWCS01_ITSOWCS01]
>

WAS server BOOTSTRAP_ADDRESS: [30100]

===>

F3=Exit  F6=Print  F9=Retrieve  F12=Disconnect
F13=Clear F17=Top  F18=Bottom  F21=CL command entry
```

Figure 6-41 WebSphere Application Server bootstrap address

20. Accept the default WebSphere Application Server SOAP connector port (Figure 6-42). This should be the first port in the port block of the Workplace Collaboration Services server plus 1. Press Enter.

```
QSH Command Entry

To select an item enter its number, or 0 when you are finished: [0]
> 0

WAS cell name (found in installedApps directory) for wps.ear:
[ITSOWCS01_ITSOWCS01]
> ITSOWCS01_ITSOWCS01

WAS server BOOTSTRAP_ADDRESS: [30100]
>

WAS server SOAP connector port: [30101]

===>

F3=Exit  F6=Print  F9=Retrieve  F12=Disconnect
F13=Clear F17=Top  F18=Bottom  F21=CL command entry
```

Figure 6-42 WebSphere Application Server SOAP connector

21. In the next display, type 1 and press Enter to continue (Figure 6-43).

```
QSH Command Entry

WAS cell name (found in installedApps directory) for wps.ear:
[ITSOWCS01_ITSOWCS01]
>

WAS server BOOTSTRAP_ADDRESS: [30100]
>

WAS server SOAP connector port: [30101]
>

Press 1 for Next, 2 for Previous, 3 to Cancel or 4 to Redisplay [1]

==> 1

F3=Exit  F6=Print F9=Retrieve F12=Disconnect
F13=Clear F17=Top  F18=Bottom F21=CL command entry
```

Figure 6-43 WebSphere Application Server information

22. Select the IBM HTTP Server configured for your Workplace Collaboration Services server by typing its number and pressing Enter. Type 0 and press Enter when finished (Figure 6-44).

```
QSH Command Entry

provided to IBM Workplace rich clients from this HTTP server. The recommended
configuration is to use the IBM HTTP Server that came with a WebSphere
Application Server.

Select an existing IBM HTTP Server

[ ] 1 - APACHEDFT
[ ] 2 - ITSOWCS04
[ ] 3 - ITSOWCS06
[ ] 4 - ITSOWCS01
[ ] 5 - QIPPSVR
[ ] 6 - IBS

To select an item enter its number, or 0 when you are finished: [0]

==> 4

F3=Exit  F6=Print F9=Retrieve F12=Disconnect
F13=Clear F17=Top  F18=Bottom F21=CL command entry
```

Figure 6-44 HTTP Server selection



23. In the next display, type 1 and press Enter to continue (Figure 6-45).

```
QSH Command Entry

[ ] 1 - APACHEDFT
[ ] 2 - ITSOWCS04
[ ] 3 - ITSOWCS06
[X] 4 - ITSOWCS01
[ ] 5 - QIPPSVR
[ ] 6 - IBS

To select an item enter its number, or 0 when you are finished: [0]
> 0

Press 1 for Next, 2 for Previous, 3 to Cancel or 4 to Redisplay [1]

==> 1

F3=Exit  F6=Print F9=Retrieve F12=Disconnect
F13=Clear F17=Top  F18=Bottom  F21=CL command entry
```

Figure 6-45 Continuing with the installation wizard

24. Again in the next display, type 1 and press Enter again to continue (Figure 6-46).

```
QSH Command Entry

Update bundles (installed on HTTP server)
WebSphere Portal content (deployed to WebSphere Portal server)
IBM Workplace content
WebSphere Everyplace Device Manager extensions (installed in selected root)
Installation files (installed on HTTP server)

for a total size:

826.6 MB

Press 1 for Next, 2 for Previous, 3 to Cancel or 4 to Redisplay [1]

==> 1

F3=Exit  F6=Print F9=Retrieve F12=Disconnect
F13=Clear F17=Top  F18=Bottom  F21=CL command entry
```

Figure 6-46 Continuing with the installation wizard

25. The IBM Workplace Managed Client components are now installing (see Figure 6-47).

```
QSH Command Entry

Update bundles (installed on HTTP server)
WebSphere Portal content (deployed to WebSphere Portal server)
IBM Workplace content
WebSphere Everyplace Device Manager extensions (installed in selected root)
Installation files (installed on HTTP server)

for a total size:

826.6 MB

Press 1 for Next, 2 for Previous, 3 to Cancel or 4 to Redisplay [1]
> 1

Installing IBM Workplace rich client provisioning components. Please wait...

===>

F3=Exit  F6=Print F9=Retrieve F12=Disconnect
F13=Clear F17=Top F18=Bottom F21=CL command entry
```

Figure 6-47 Installing the IBM Workplace Managed Client components

26. The installation starts and after some minutes, it asks for disk 2 where the WorkplaceSCI2 directory is. Specify the path to that directory and press Enter.

27. Type 1 and press Enter to continue the installation. The installation process can take about 30 minutes. See Figure 6-48.

```
QSH Command Entry

Installing IBM Workplace rich client provisioning components. Please wait...

|-----|-----|-----|-----|
0%       25%      50%      75%      100%
|||||||

Please insert disk 2. [/QIBM/ProdData/Workplace/WCT25/WorkplaceSCI1]
> /QIBM/ProdData/Workplace/WCT25/WorkplaceSCI2

1. OK
2. Cancel

[1]

===> 1

F3=Exit  F6=Print F9=Retrieve F12=Disconnect
F13=Clear F17=Top F18=Bottom F21=CL command entry
```

Figure 6-48 Entering the path for the WorkplaceSCI2 directory

28. In the next display, type 1 and press Enter to continue (Figure 6-49).

```
QSH Command Entry

|-----|-----|-----|-----|
0%       25%      50%      75%     100%
|||||
-----
--
See below for additional steps to be performed on your WebSphere Portal server
.

To make the deployed themes, screens, and skins available, you must manually
restart the WebSphere Portal server to which you deployed this content.

Press 1 for Next or 4 to Redisplay [1]

===>

F3=Exit  F6=Print F9=Retrieve F12=Disconnect
F13=Clear F17=Top  F18=Bottom F21=CL command entry
```

Figure 6-49 Continuing with the installation wizard

29. Type 3 and press Enter to finish the installation (Figure 6-50).

```
QSH Command Entry

-----
The server components for the IBM Workplace rich client are now available on
the selected server(s).

Installation and configuration logs can be found in
/QIBM/UserData/WebAS5/base/ITSOWCS01/WCT25/logs.

See the InfoCenter for additional steps required to complete the setup of the
server components.

Press 3 to Finish or 4 to Redisplay [3]
> 3
$

===>

F3=Exit  F6=Print F9=Retrieve F12=Disconnect
F13=Clear F17=Top  F18=Bottom F21=CL command entry
```

Figure 6-50 Finishing the installation

30. Change the policy in the WebSphere Application Server Administrative Console to allow the users to download the IBM Workplace Managed Client from their Web browser. See 6.2.2, "Policy-based administration" on page 261.
31. Restart all the servers in your Workplace Collaboration Services server. You can do this by using the IBM Web Administration for iSeries interface. See 5.2, "Starting and stopping Workplace Collaboration Services" on page 203, for details.

After you perform these steps, users are allowed to download the rich client from the IBM Workplace Collaboration Services Welcome page. See 6.4, “Client installation details for Microsoft Windows” on page 292, for details about installing and configuring the Workplace Managed Client on a PC workstation.

## 6.4 Client installation details for Microsoft Windows

In this section, we explain the installation process of the Workplace Managed Client on a Windows workstation. Before you start the Workplace Managed Client installation, refer to the software and hardware requirements in 2.7.2, “IBM Workplace Managed Client” on page 37.

**Reminder:** To install the IBM Workplace Managed Client on the PC workstation, the user who starts the installation process *must* have administration rights on the PC workstation. This user needs access level only for the rich client installation.

1. Open a Web browser and log in to the IBM Workplace Collaboration Services server (Figure 6-51). Type your user name and password and click **Log In**.

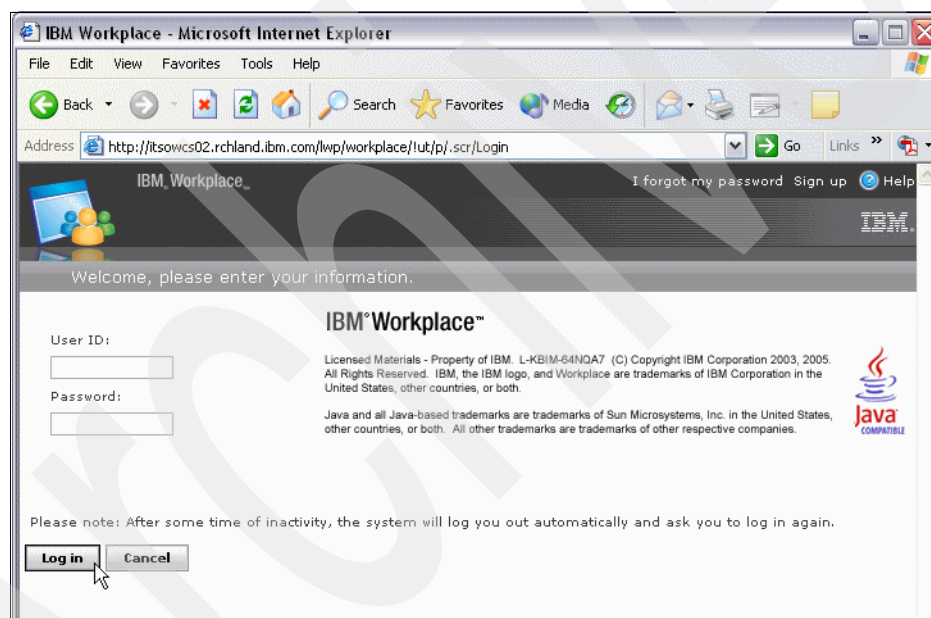


Figure 6-51 Workplace Collaboration Services login page

2. Under the Downloads section of the Welcome page, click **IBM Workplace rich client** (Figure 6-52).

**Important:** If you do not set the policies correctly, the Downloads portlet will be empty. See 6.2.2, “Policy-based administration” on page 261, for details.

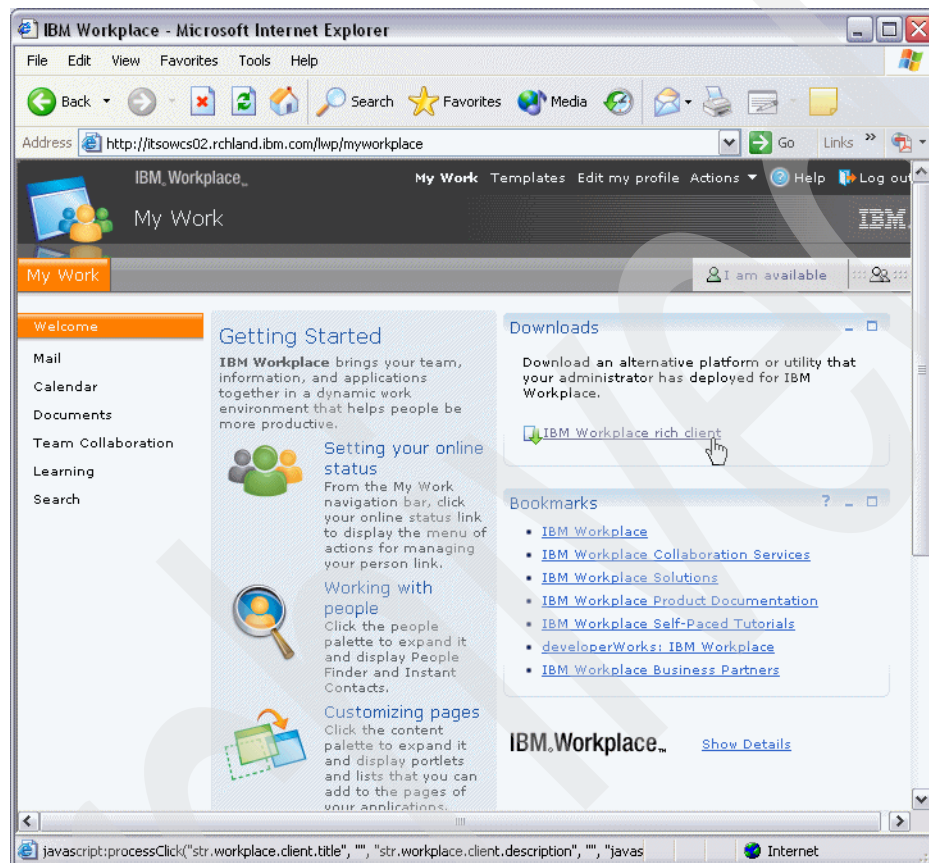


Figure 6-52 IBM Workplace rich client link

3. On the IBM Workplace rich client page, click **Start Download** (Figure 6-53).

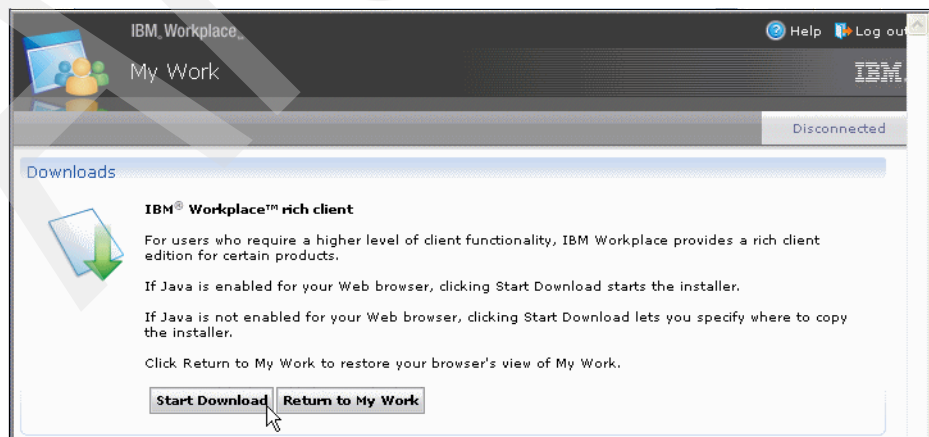


Figure 6-53 Start Download button for IBM Workplace rich client

4. A Security Warning window (Figure 6-54) might open and ask if you want to install the IBM Workplace Rich Client software downloader. Select **Always trust content from International Business Machines Corporation** so this window doesn't open again next time you try to install the workplace rich client and click **Yes**. Or just click **Yes** and you see the same security warning window next time you install the rich client.



Figure 6-54 Trust content window

5. The IBM Workplace rich client installer starts downloading on the PC workstation (Figure 6-55).

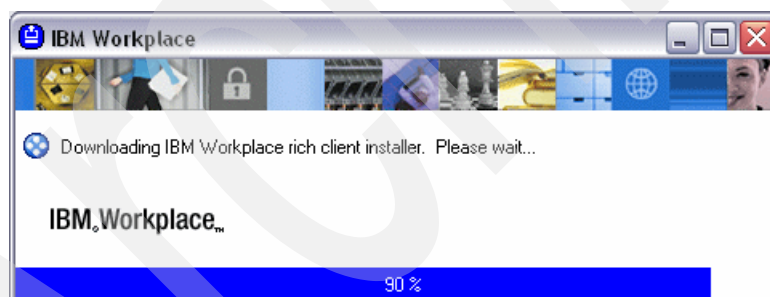


Figure 6-55 Downloading the rich client installer

6. In the Welcome to IBM Workplace rich client panel (Figure 6-56), click **Next**.



Figure 6-56 Rich client installation wizard

7. In the Software License Agreement panel (Figure 6-57), select **I accept the terms in the license agreement** and click **Next**.

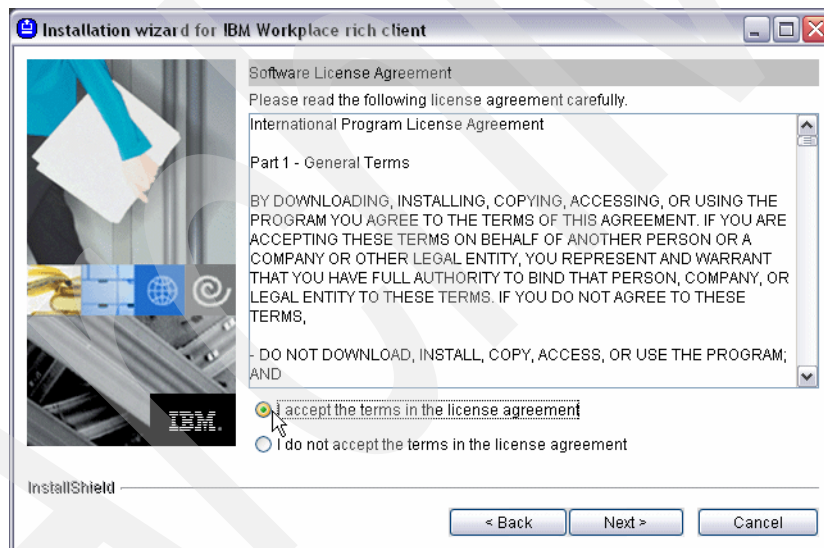


Figure 6-57 Software License Agreement

8. In the next panel, click **Next** to accept the default directory to install the rich client, or change it by clicking the **Browse** button (Figure 6-58).

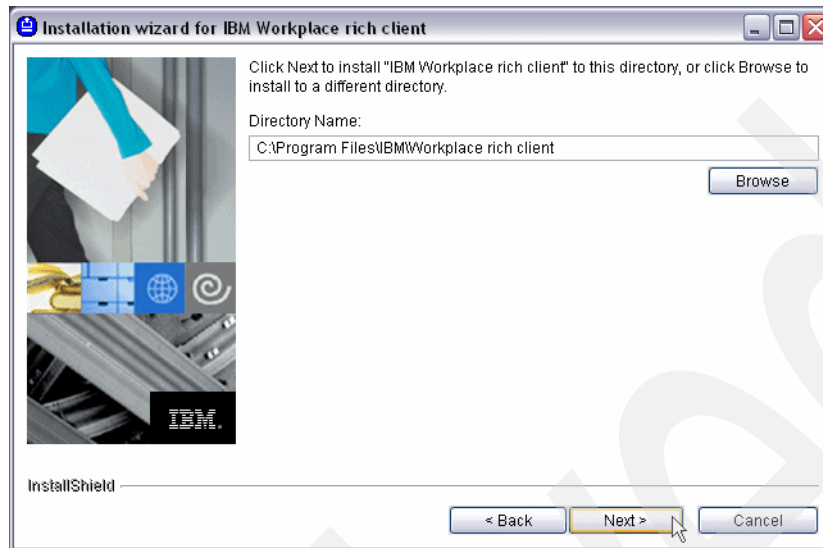


Figure 6-58 Installation directory for the IBM Workplace rich client

9. Read the summary information and click **Next** to begin the installation (Figure 6-59).

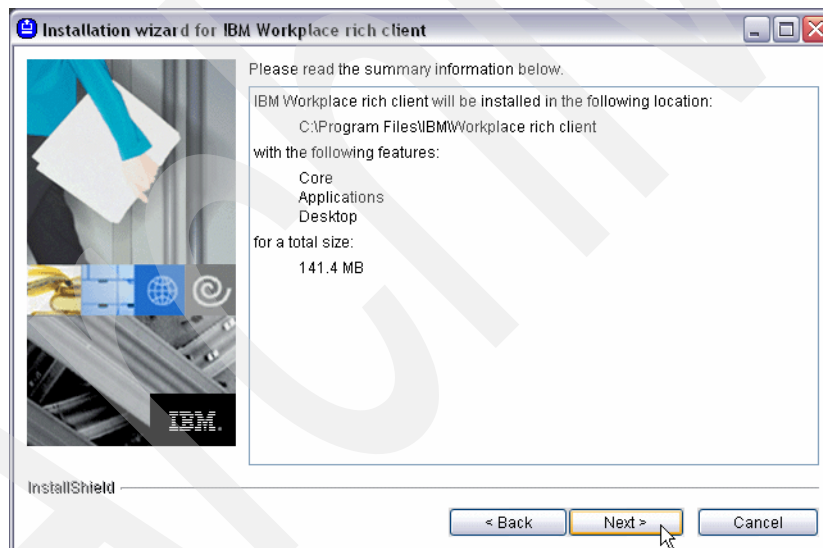


Figure 6-59 Summary information for the rich client installation



10. The installation files are now being copied to the PC workstation (Figure 6-60).

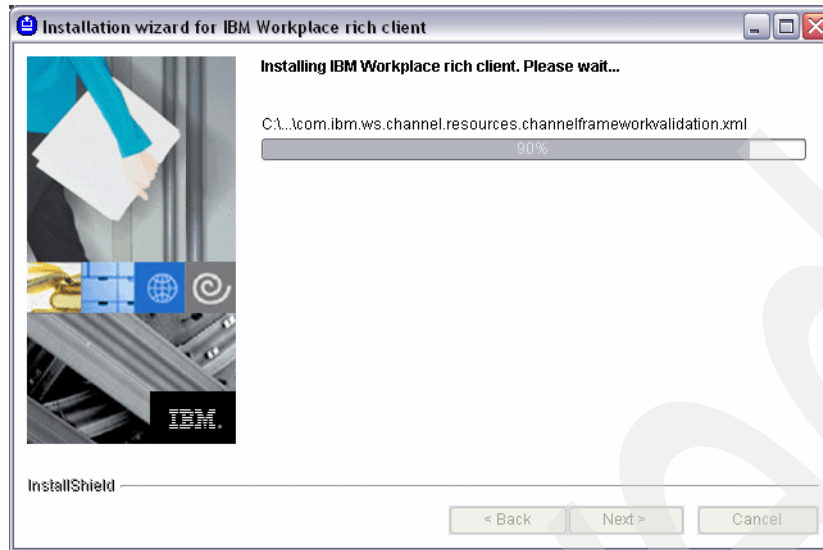


Figure 6-60 Installing the rich client

11. When the installation finishes, you see the summary information panel (Figure 6-61).  
Click **Next** on this panel to open the rich client.

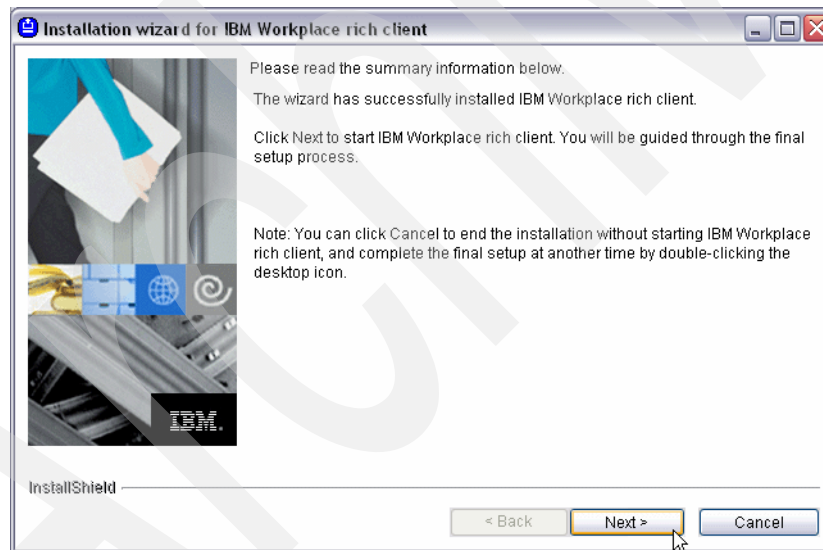
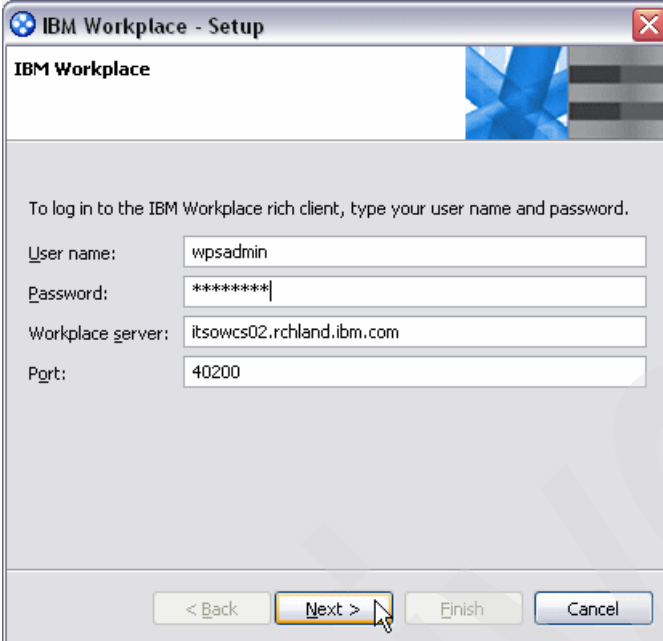


Figure 6-61 Installation of the IBM Workplace rich client completed

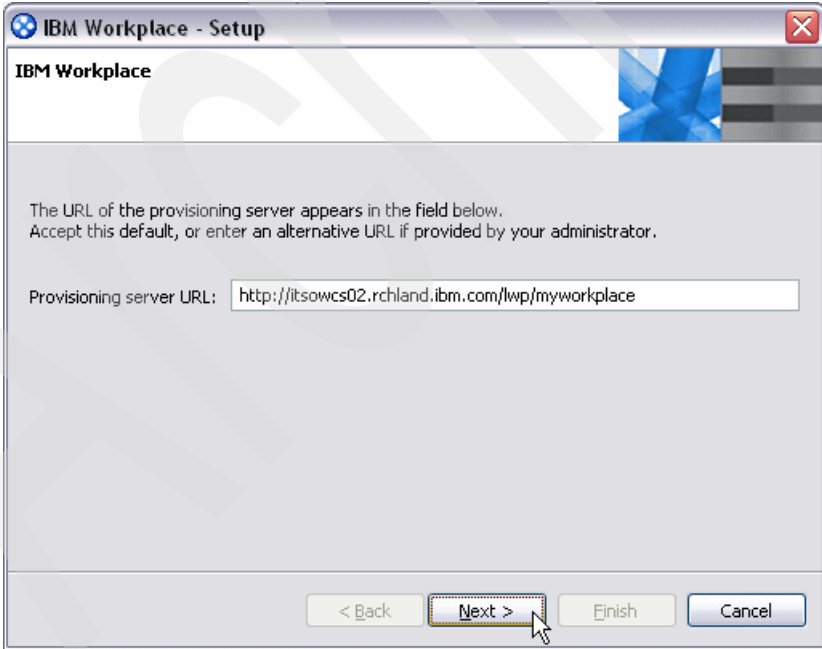
12. In the IBM Workplace - Setup window, enter your user name and password and click **Next** (Figure 6-62).



The screenshot shows the 'IBM Workplace - Setup' window. It has a title bar with a blue icon and a close button. The main area is titled 'IBM Workplace' and contains the instruction: 'To log in to the IBM Workplace rich client, type your user name and password.' Below this are four input fields: 'User name:' with 'wpsadmin', 'Password:' with '\*\*\*\*\*', 'Workplace server:' with 'itsowcs02.rchland.ibm.com', and 'Port:' with '40200'. At the bottom are four buttons: '< Back', 'Next >', 'Finish', and 'Cancel'. A mouse cursor is pointing at the 'Next >' button.

Figure 6-62 Logging in to the rich client

13. Confirm the provisioning server URL and click **Next** (Figure 6-63).



The screenshot shows the 'IBM Workplace - Setup' window. It has a title bar with a blue icon and a close button. The main area is titled 'IBM Workplace' and contains the instruction: 'The URL of the provisioning server appears in the field below. Accept this default, or enter an alternative URL if provided by your administrator.' Below this is a single input field labeled 'Provisioning server URL:' containing the text 'http://itsowcs02.rchland.ibm.com/lwp/myworkplace'. At the bottom are four buttons: '< Back', 'Next >', 'Finish', and 'Cancel'. A mouse cursor is pointing at the 'Next >' button.

Figure 6-63 Provisioning server URL

14. Click **Finish** to restart the rich client so the configuration process can continue (Figure 6-64).

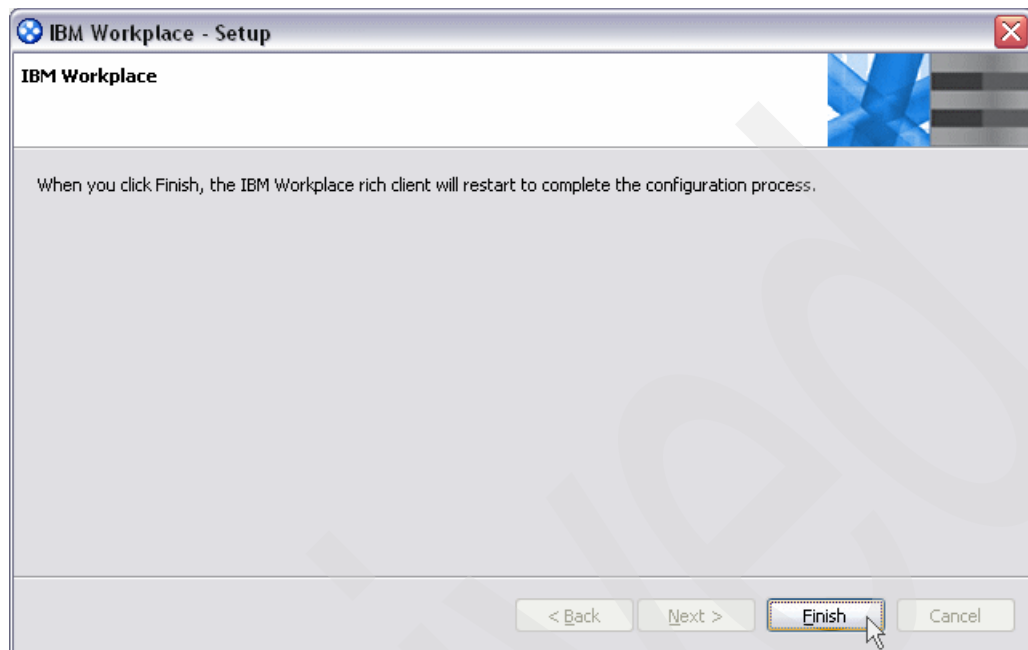


Figure 6-64 Restarting the rich client

15. Type your password and click **Log In** (Figure 6-65).

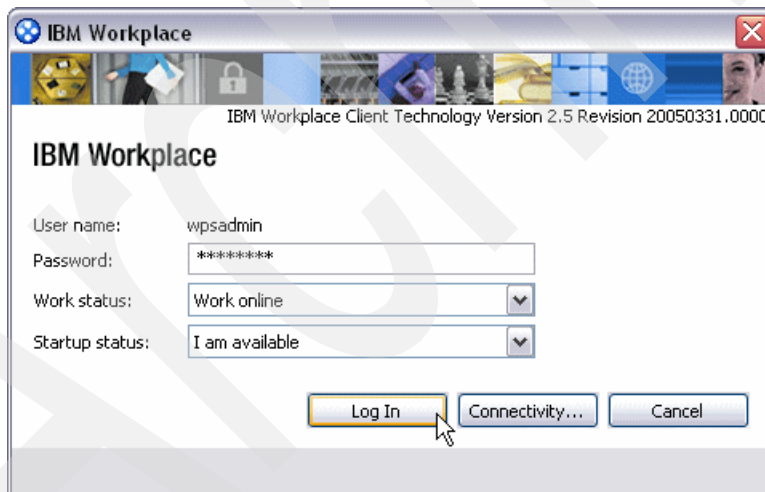


Figure 6-65 Logging into the rich client

16. The rich client configuration process continues (Figure 6-66).

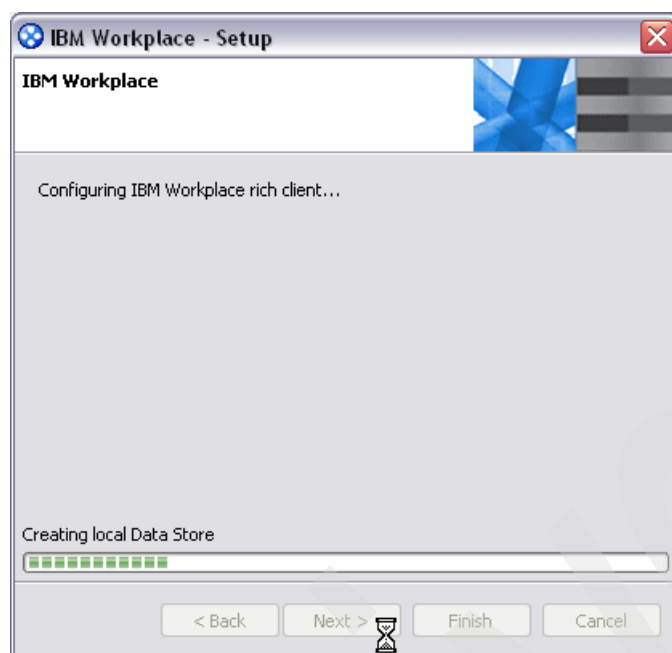


Figure 6-66 Configuration of rich client

17. In the Trust Certificate window (Figure 6-67), click **Yes** to accept the new certificate.

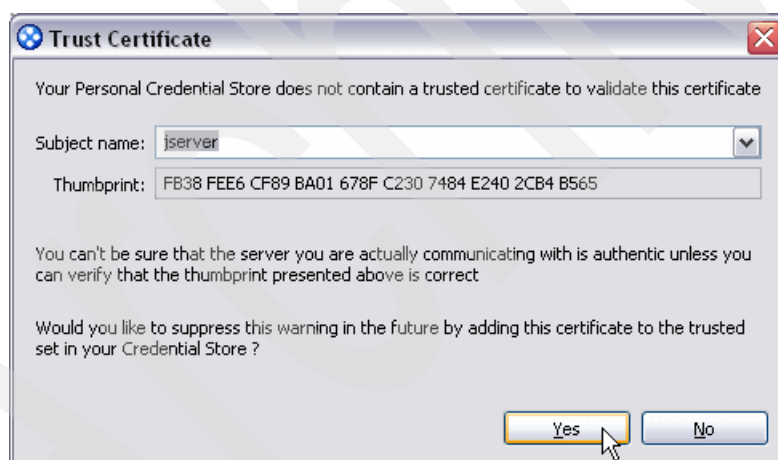


Figure 6-67 Trust Certificate

18. The IBM Workplace Managed Client or rich client is now installed and configured in your PC workstation. Click **Finish** (Figure 6-68).

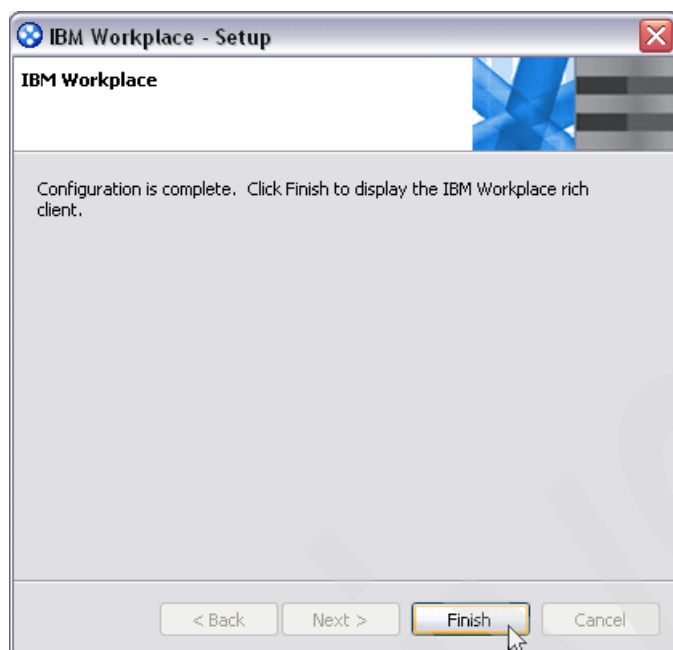


Figure 6-68 Rich client configuration finishes

You can now start using the IBM Workplace Managed Client or rich client (Figure 6-69).

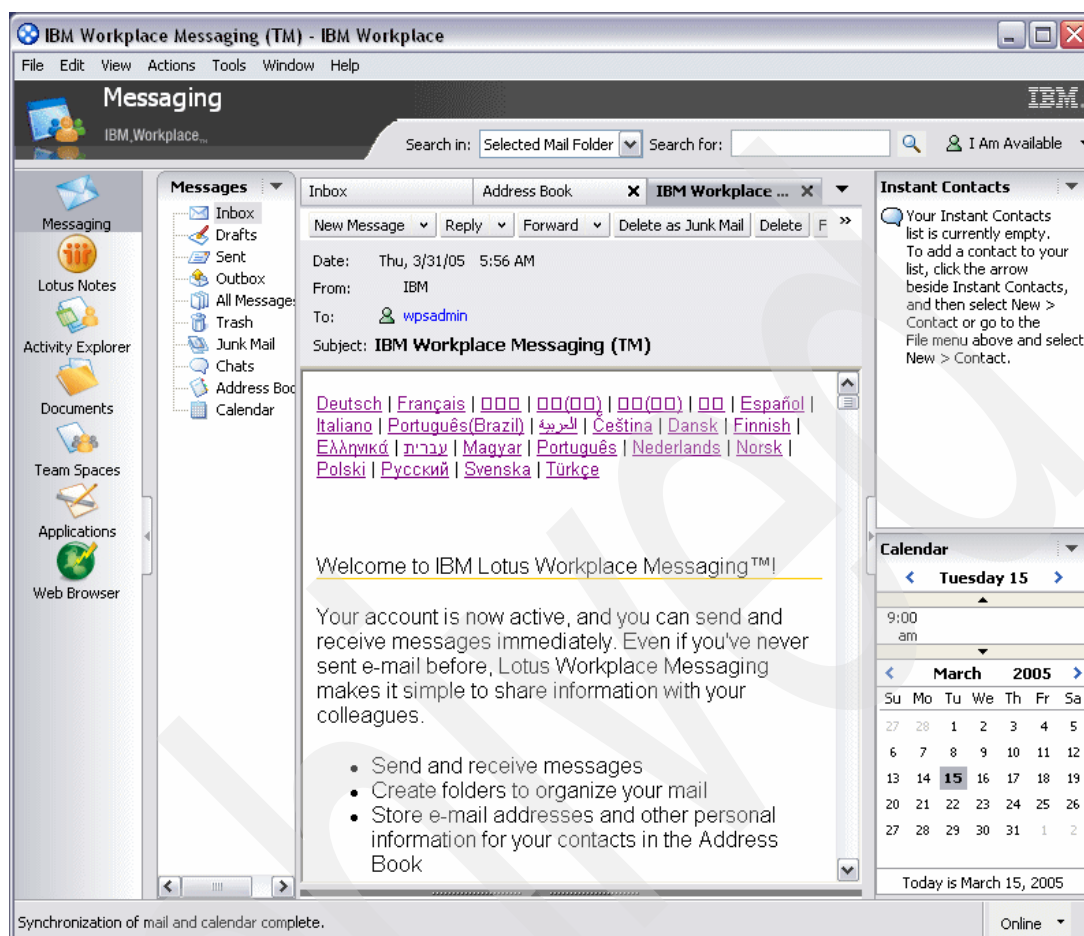


Figure 6-69 IBM Workplace Managed Client

The Workplace Managed Client should now be installed in the directory that you specified during rich client installation. The default directory is C:\Program Files\IBM\Workplace rich client. Your local data storage for the rich client then should be under C:\Documents and Settings\username\IBM\RCP\unid\username. You can check the logs directory under this path as well.

**Important:** After the rich client is installed, some of the features may not be there, such as the Activity Explorer icon. To make those features available to the users, go to the policy settings in the WebSphere Application Server Administrative Console to enable them. See 6.2.2, “Policy-based administration” on page 261, for details.

## 6.4.1 Lotus Notes client and IBM Workplace Managed Client

You can allow users to run native Lotus Notes applications such as Notes mail, calendaring, or discussion databases using the IBM Workplace Managed Client interface. To work with Notes applications in the rich client:

1. Install the Lotus Notes client version 7 in the Windows PC where the rich client is installed.
2. In the User Policies section in the WebSphere Application Server Administrative Console, enable the use of Lotus Notes applications in the rich client by selecting the check box in

the Allow Notes applications plug-in section. See 6.2.2, “Policy-based administration” on page 261, for details.

3. Open your IBM Workplace Managed Client.
4. Click the **Lotus Notes** icon and start working with your Notes client (Figure 6-70).

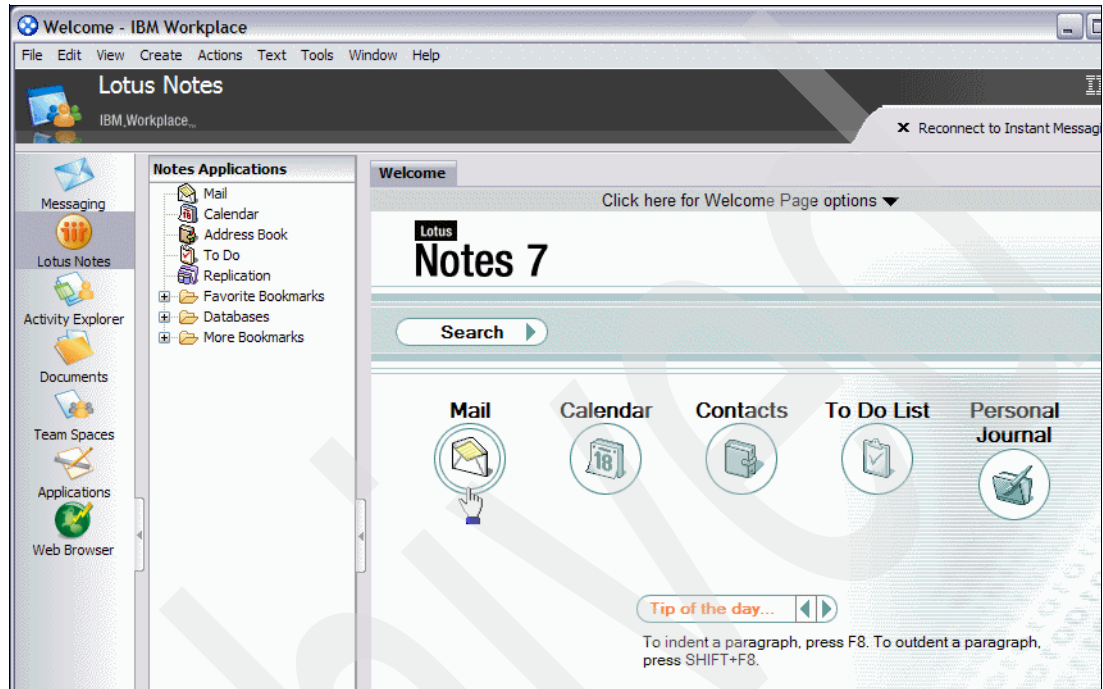


Figure 6-70 Lotus Notes plug-in for the IBM Workplace Managed Client

## 6.5 Uninstalling the IBM Workplace Managed Client

In the following sections, we explain the uninstallation process of the Workplace Managed Client from a Windows workstation along with the process for removing the provisioning server. For information about uninstalling from a Windows workstation, refer to 6.5.1, “Uninstalling on a Windows workstation” on page 303. For information about uninstalling the provisioning server, refer to 6.5.2, “Uninstalling the provisioning server” on page 307.

### 6.5.1 Uninstalling on a Windows workstation

To do a complete uninstall of the IBM Workplace Managed Client from a Windows workstation:

1. On your Windows workstation, click **Start** → **Settings** → **Control Panel** and double-click the **Add or Remove Programs** icon.

2. In the list of programs, select **IBM Workplace rich client** and click the **Change/Remove** button (Figure 6-71).

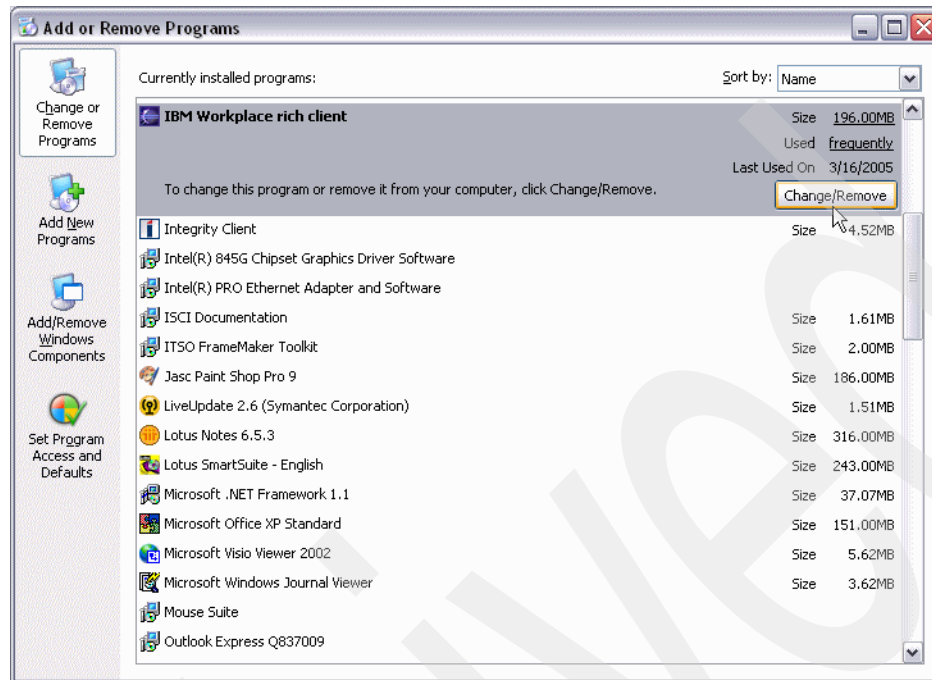


Figure 6-71 Adding or removing programs from a Windows workstation

3. The Uninstallation wizard to remove the IBM Workplace rich client starts. In the Welcome panel (Figure 6-72), click **Next**.

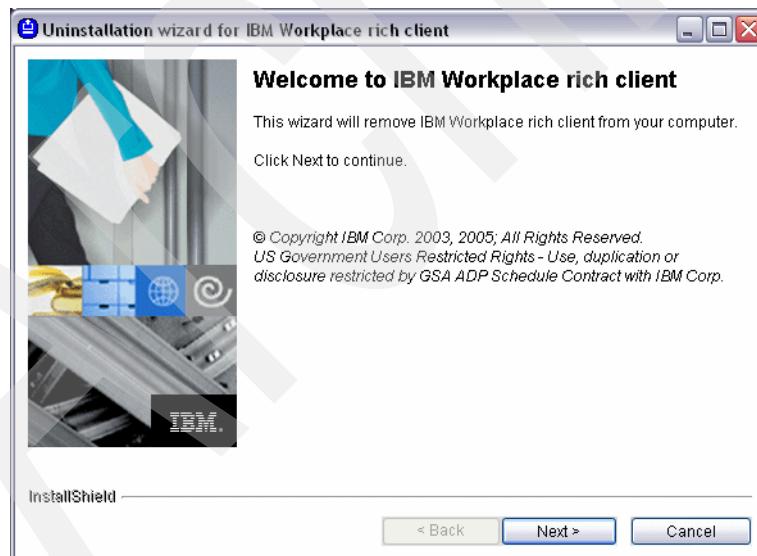


Figure 6-72 Uninstall wizard for the rich client



4. To delete *all* local user data and configuration settings for the rich client, select **Yes** and click **Next**. See Figure 6-73.

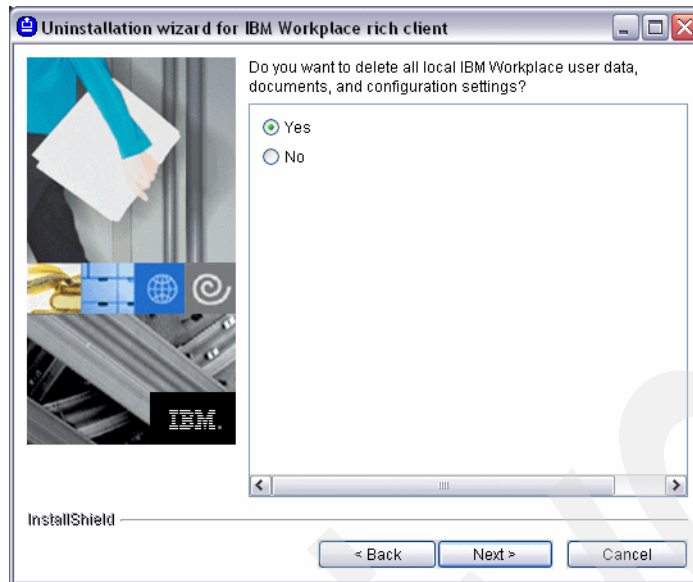


Figure 6-73 Deleting the local user data

5. Read the summary information and click **Next** (Figure 6-74).

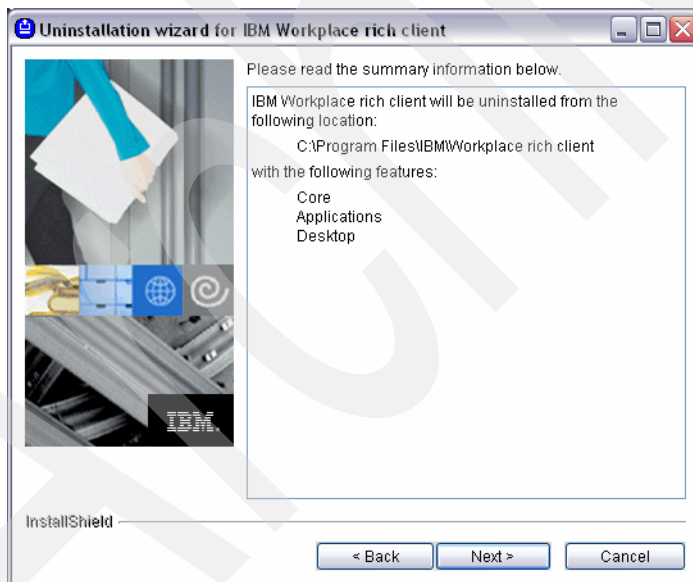


Figure 6-74 Uninstallation wizard summary information

6. The rich client is uninstalled from your system. Click **Next** (Figure 6-75).

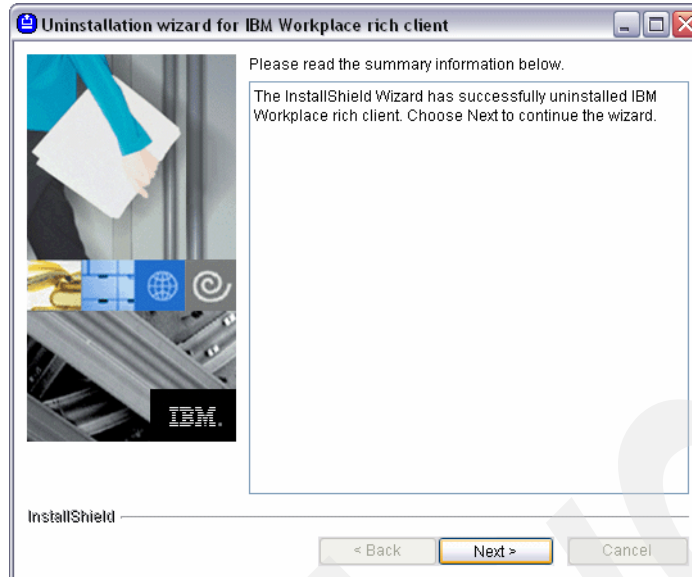


Figure 6-75 The uninstallation finishes

7. Click **Yes, restart my computer** (Figure 6-76).

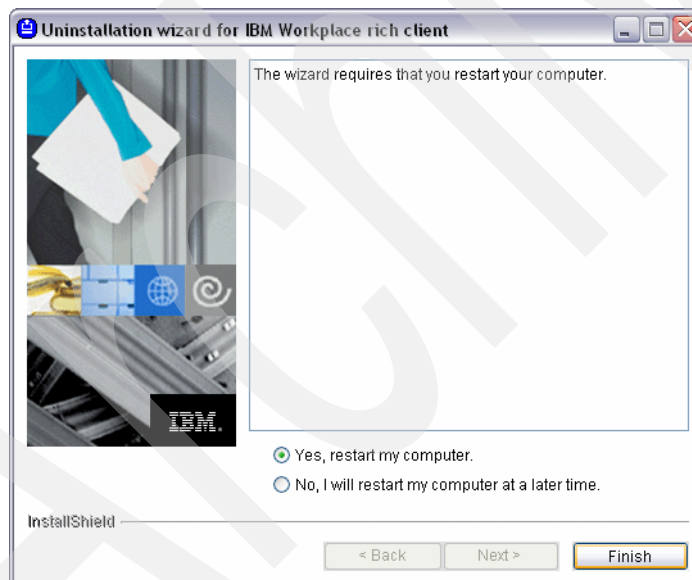


Figure 6-76 Restarting the computer

- Go to the path where the rich client was installed, for example, C:\Program Files\IBM and manually delete the Workplace rich client directory (Figure 6-77).

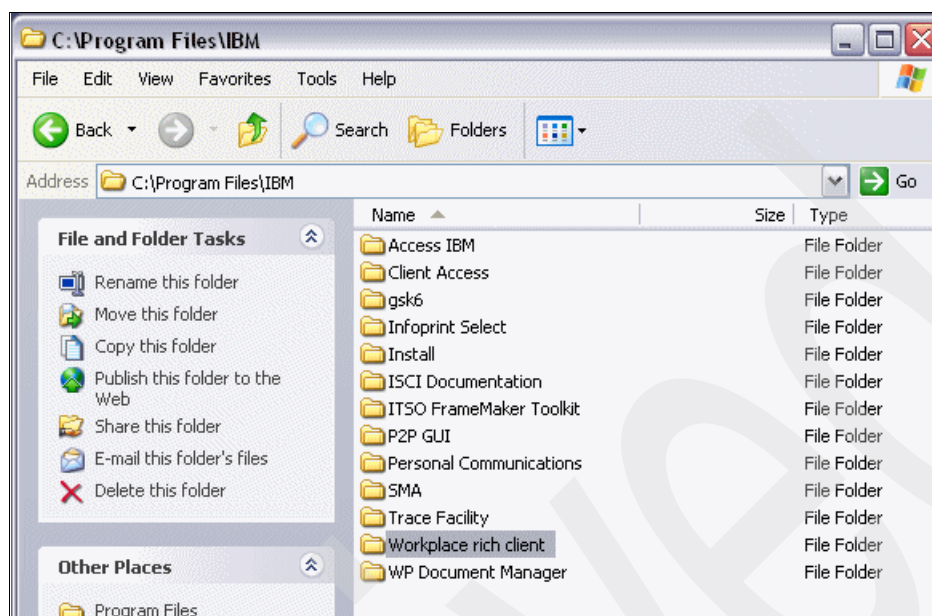


Figure 6-77 Deleting the rich client directory

- Go to C:\Documents and Settings\Windows username\IBM and manually delete the RCP directory (Figure 6-78).

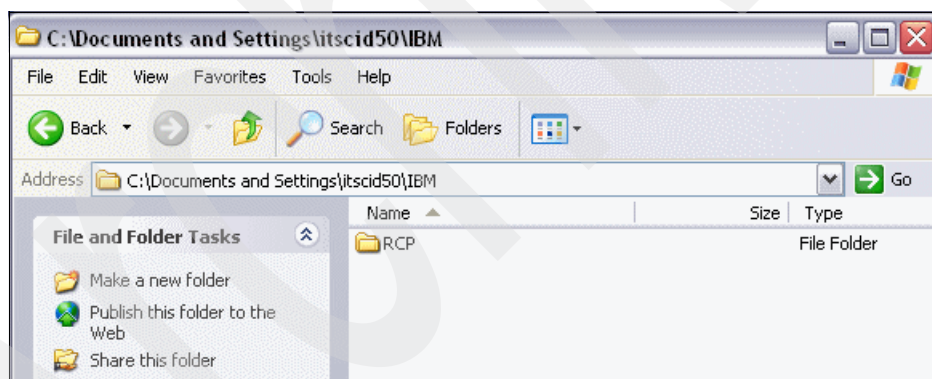


Figure 6-78 Deleting the remaining directories

Now IBM Workplace Managed Client and any of the rich client local user data is no longer on the Windows workstation.

## 6.5.2 Uninstalling the provisioning server

You can uninstall the provisioning server from the IBM Workplace Collaboration Services environment in case the administrator does not want to allow the users to download the IBM Workplace Managed Client anymore.

**Note:** With this procedure, the Workplace Managed Client code is uninstalled from a particular Workplace Collaboration Services server only.

To uninstall the provisioning server from a particular Workplace Collaboration Services server on the iSeries server:

1. Log on to the iSeries server with a user profile with \*ALLJOB authority.
2. Type the STRQSH CL command to start a Qshell Interpreter session.
3. Change to the /QIBM/UserData/WebAS5/Base/instance name/WCT25/\_uninst directory using the cd command as shown in Figure 6-79.

```
QSH Command Entry

$

==> cd /QIBM/UserData/WebAS5/Base/ITSOWCS01/WCT25/_uninst

F3=Exit  F6=Print F9=Retrieve F12=Disconnect
F13=Clear F17=Top  F18=Bottom F21=CL command entry
```

Figure 6-79 Changing to the uninstall directory

4. Run the **i50Suninstall.sh** script file and press Enter (Figure 6-80).

```
QSH Command Entry

$
> cd /QIBM/UserData/WebAS5/Base/ITSOWCS01/WCT25/_uninst
$
> ls
i50Suninstall.sh      uninstall.dat      uninstall.jar
$

==> i50Suninstall.sh

F3=Exit  F6=Print F9=Retrieve F12=Disconnect
F13=Clear F17=Top  F18=Bottom F21=CL command entry
```

Figure 6-80 Executing the uninstall file

5. Select a language to use by typing its number and pressing Enter. Type 0 when finished and press Enter (Figure 6-81).

```
QSH Command Entry

Select a language to be used for this wizard.

[X] 1 - English
[ ] 2 - French
[ ] 3 - German
[ ] 4 - Italian
[ ] 5 - Japanese
[ ] 6 - Korean
[ ] 7 - Portuguese (Brazil)
[ ] 8 - Simplified Chinese
[ ] 9 - Spanish
[ ] 10 - Traditional Chinese

To select an item enter its number, or 0 when you are finished: [0]

==> 0

F3=Exit F6=Print F9=Retrieve F12=Disconnect
F13=Clear F17=Top F18=Bottom F21=CL command entry
```

Figure 6-81 Select the language for the uninstall wizard

6. In the next display, type 1 to continue and press Enter (Figure 6-82).

```
QSH Command Entry

The InstallShield Wizard will uninstall IBM Workplace rich client provisioning
components from your computer.
To continue, choose Next.

IBM Workplace rich client provisioning components

Press 1 for Next, 3 to Cancel or 4 to Redisplay [1]

==> 1

F3=Exit F6=Print F9=Retrieve F12=Disconnect
F13=Clear F17=Top F18=Bottom F21=CL command entry
```

Figure 6-82 Typing 1 to continue

7. Select the rich client components to be uninstalled or accept the default where each component in the list will be uninstalled (Figure 6-83). Type 0 and press Enter to continue.

**Tip:** To deselect or select all of the components in one step, type -1. You can press the Page Up key to see the previous page.

```
QSH Command Entry

2. [x] Update bundles (installed on HTTP server)
3. [x] WebSphere Portal content (deployed to WebSphere Portal server)
4. [x] IBM Workplace content
5. [x] WebSphere Everyplace Device Manager extensions (installed in selected
root)
6. [x] Installation files (installed on HTTP server)

Other options:

-1. Deselect 'IBM Workplace rich client provisioning components'
0. Continue uninstalling

Enter command [0]

==> 0

F3=Exit F6=Print F9=Retrieve F12=Disconnect
F13=Clear F17=Top F18=Bottom F21=CL command entry
```

Figure 6-83 Selecting the components to uninstall

8. Type the portal administrator user ID and press Enter (Figure 6-84). In our example, the portal administrator is wpsadmin.

```
QSH Command Entry

Press 1 for Next, 2 for Previous, 3 to Cancel or 4 to Redisplay [1]
> 1

-----
Enter the administrator User ID and password for the WebSphere Portal server
where the provisioning components are deployed. Portal content that supports
the rich client will be automatically removed. Note, for security reasons, the
password will not be saved.

Portal administrator User ID: [wpsadmin]

==> wpsadmin

F3=Exit F6=Print F9=Retrieve F12=Disconnect
F13=Clear F17=Top F18=Bottom F21=CL command entry
```

Figure 6-84 Entering the portal administrator ID

9. Type the portal administrator password and press Enter. Type the password again to confirm (Figure 6-85) and press Enter.

```
QSH Command Entry

where the provisioning components are deployed. Portal content that supports
the rich client will be automatically removed. Note, for security reasons, the
password will not be saved.

Portal administrator User ID: [wpsadmin]
>

Portal administrator password:
> password

Confirm administrator password:

==> password

F3=Exit F6=Print F9=Retrieve F12=Disconnect
F13=Clear F17=Top F18=Bottom F21=CL command entry
```

*Figure 6-85 Entering the portal administrator password*

10. In the next display, type 1 to continue (Figure 6-86).

```
QSH Command Entry

Portal administrator User ID: [wpsadmin]
> wpsadmin

Portal administrator password:
> password

Confirm administrator password:
> password

Press 1 for Next, 2 for Previous, 3 to Cancel or 4 to Redisplay [1]

==> 1

F3=Exit F6=Print F9=Retrieve F12=Disconnect
F13=Clear F17=Top F18=Bottom F21=CL command entry
```

*Figure 6-86 Continuing with the uninstall wizard*

11.Type 1 again in the next display to continue (Figure 6-87).

```
QSH Command Entry

following location:

/QIBM/UserData/WebAS5/base/ITSOWCS01/WCT25

with the following features:

Update bundles (installed on HTTP server)
WebSphere Portal content (deployed to WebSphere Portal server)
IBM Workplace content
WebSphere Everyplace Device Manager extensions (installed in selected root)
Installation files (installed on HTTP server)

Press 1 for Next, 2 for Previous, 3 to Cancel or 4 to Redisplay [1]

==> 1

F3=Exit  F6=Print F9=Retrieve F12=Disconnect
F13=Clear F17=Top F18=Bottom F21=CL command entry
```

Figure 6-87 Continuing with the uninstall wizard

12.The components start uninstalling. This can take some minutes (Figure 6-88).

```
QSH Command Entry

with the following features:

Update bundles (installed on HTTP server)
WebSphere Portal content (deployed to WebSphere Portal server)
IBM Workplace content
WebSphere Everyplace Device Manager extensions (installed in selected root)
Installation files (installed on HTTP server)

Press 1 for Next, 2 for Previous, 3 to Cancel or 4 to Redisplay [1]
> 1

Uninstalling IBM Workplace rich client provisioning components...
<!-- IBM Workplace Services Express/5.0.2.2 build 020 exported on Tue Apr 19

==>

F3=Exit  F6=Print F9=Retrieve F12=Disconnect
F13=Clear F17=Top F18=Bottom F21=CL command entry
```

Figure 6-88 Starting the uninstallation of the rich client components



13.Type 3 to finish and press Enter (Figure 6-89).

```
QSH Command Entry

Loading from file database.xml ...
Error code =-1
<!-- IBM Workplace Services Express/5.0.2.2 build 020 exported on Tue Apr 19
17:38:40 CDT 2005 from RCHAS12.RCHLAND.IBM.COM/9.5.92.83 -->
<!-- 1/2 [markup name=rcpm1] -->
<!-- 2/2 [client uniqueness=wps.client.rcpm1] -->

-----

The InstallShield Wizard has successfully uninstalled IBM Workplace rich client
provisioning components. Choose Finish to exit the wizard.
Press 3 to Finish or 4 to Redisplay [3]

===>

F3=Exit  F6=Print F9=Retrieve F12=Disconnect
F13=Clear F17=Top F18=Bottom F21=CL command entry
```

Figure 6-89 Finishing the rich client uninstall wizard

**Tip:** Optionally, you can delete the logs directory in the /QIBM/UserData/WebAS5/Base/*instance name*/WCT25/ directory.

14. After the uninstalling process, you may still see the link to download the rich client from the IBM Workplace Collaboration Services Web page. If you click it and then click Start Download, it no longer works.

To remove the link, go to the User Policies page in the WebSphere Application Server Administrative Console and, in the Allowed clients field, clear the Rich client option. For more information, see 6.2.2, “Policy-based administration” on page 261.

Archived



## Performance tuning Workplace Collaboration Services

In this chapter, we provide tuning tips ranging from optimizing i5/OS performance to tuning the various aspects of a Workplace Collaboration Services environment. We take you through the iSeries architecture and explain how the components of Workplace Collaboration Services fit within this architecture. With this base understanding, you learn how you can optimize your Workplace Collaboration Services computing environment to achieve the best performance.

## 7.1 iSeries architecture

The iSeries architecture implements many different functions in subsystems. Subsystems can be thought of as isolated areas in the operating system memory that allow functions to run, segmented from other workloads.

Several components comprise a Workplace Collaboration Services server. This includes the IBM HTTP Server that services HTTP traffic to and from the Workplace Collaboration Services server. Table 7-1 identifies the jobs that comprise the IBM HTTP Server associated with a Workplace Collaboration Services server. These server jobs run under the subsystem QHTTSPVR. The IBM HTTP Server jobs have a run priority of 25. We discuss the effect of run priorities in 7.3.3, “Run priority tuning” on page 323.

Table 7-1 IBM HTTP Server jobs

Job name	Run priority	Job function
WCSServer <sup>1</sup>	25	QZHBMAIN
WCSServer <sup>1</sup>	25	QZSRLOG
WCSServer <sup>1</sup>	25	QZSRHTTP

<sup>1</sup>By default, the name of the HTTP job is the same name as the Workplace Collaboration Services server name.

Table 7-2 lists the server jobs that are associated with each Workplace Collaboration Services server. These jobs run in the QEJBAS5 subsystem by default. You can optionally change these jobs to run in a separate subsystem. To use specially created CL commands to change the Workplace Collaboration Services jobs so they run in a separate subsystem, see 7.3.4, “Changing the subsystem Workplace Collaboration Services jobs run in” on page 325.

The Workplace Collaboration Services server jobs have a run priority of 20. This is important to note if you have any 5250-based interactive workloads running on the same iSeries server or in the same logical partition (LPAR).

Table 7-2 Workplace Collaboration Services server jobs

Job name	Run priority	Job function
QJVAEXEC	20	This job is started by the WebSphere_Portal (WEBSHERE_) job and is required for instant messaging functionality.
SERVER1	20	This job is used during the initial configuration process of a Workplace Collaboration Services server. It also provides administration services for the Workplace Collaboration Services server through the WebSphere Application Server Administrative Console. During normal server operation, this server may be ended.
WEBSHERE_	20	This job is responsible for responding to all Workplace Collaboration Services user requests.
MAIL_SERVE	20	This job is responsible for providing Workplace Collaboration Services messaging.

The two Lightweight Directory Access Protocol (LDAP) server choices that run on the iSeries server are the IBM Directory Server and Lotus Domino. The IBM Directory Server runs under the QSYSWRK subsystem and is comprised of the QDIRSRV job shown in Table 7-3. The run priority of the IBM Directory Server is 50.

Table 7-3 IBM Directory Server job

Job name	Run priority	Job function
QDIRSRV	50	IBM Directory Server

Each Lotus Domino server also runs in its own subsystem. Table 7-4 lists the Lotus Domino jobs that are associated with providing LDAP services for a Workplace Collaboration Services server. Lotus Domino jobs run at run priority 20 by default.

Table 7-4 Lotus Domino jobs associated with providing LDAP services

Job name	Run priority	Job function
DIIOP	20	Required for integration between Domino and Workplace Collaboration Services
HTTP	20	Enables a Domino server to act as a Web server
LDAP	20	Enables a Domino server to provide LDAP directory services to LDAP clients
QNNINSTS	20	The watch-dog job that makes sure the Domino server is active
SERVER	20	Executes requests made to the Domino server

## 7.2 Performance assessment and tuning methodology

With different environments that are involved in supporting a Workplace Collaboration Services server, this section is designed to help you understand where you should start when working on a performance issue with a Workplace Collaboration Services implementation.

When addressing a performance concern, you must look at the whole application environment to properly assess what is causing the performance problem and to determine how to remedy the situation. This means that you need to look at the iSeries server to see if there are any bottlenecks on the system. To learn how to gain the most from your iSeries performance by using the automatic performance adjustor and properly tuning memory, run priorities, and disk on the system, see 7.3, “i5/OS tuning” on page 318.

Figure 7-1 shows the different services that are required for running a Workplace Collaboration Services server.

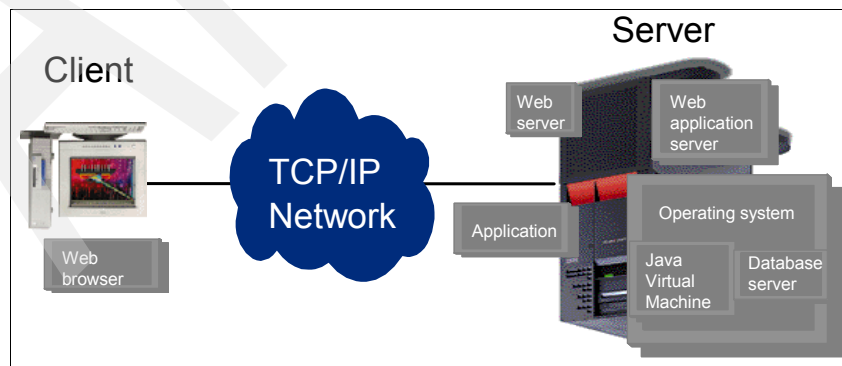


Figure 7-1 Workplace Collaboration Services environment

We see that all end user interaction comes from a Web browser and flows over TCP/IP to communicate with the server. If your iSeries server itself does not have any bottlenecks, it is important to address network performance and ensure there are not any bottlenecks for TCP/IP. For tips about optimizing TCP/IP on your iSeries server, see 7.4, “Network tuning” on page 332. Additionally, refer to 7.7.3, “Enabling GZIP compression” on page 371, for help with improving overall network bandwidth.

When you know the iSeries server and the network are not a bottleneck, you must look at the different aspects of Workplace Collaboration Services to determine which areas can cause performance issues. Looking at Figure 7-1, you need to assess and tune as appropriate the Workplace Collaboration Services server, the IBM HTTP Server, the LDAP server being used by the Workplace Collaboration Services server, and the underlying DB2 Universal Database files that support the Workplace Collaboration Services server. Additionally, each Workplace Collaboration Services server implements a Java virtual machine (JVM). Therefore you must also examine the JVM and tune it as appropriate.

You can find recommendations for Workplace Collaboration Services tuning in 7.5, “Workplace Collaboration Services tuning” on page 340. For tuning advice regarding the underlying JVMs that support a Workplace Collaboration Services, see 7.6, “Java tuning” on page 363.

We address performance recommendations for the IBM HTTP Server in 7.7, “IBM HTTP Server tuning” on page 367. For DB2 Universal Database performance optimization information, see 7.8, “Database tuning” on page 378.

The discussion in 7.1, “iSeries architecture” on page 316, presents two LDAP server choices that run on the iSeries server. If you have chosen to use the IBM Directory Server, refer to 7.9, “IBM Directory Server tuning” on page 396, for tuning tips. If you have chosen Lotus Domino for your LDAP server, refer to 7.10, “Lotus Domino LDAP tuning” on page 398, to learn how to optimize Domino LDAP for a Workplace Collaboration Services implementation.

## 7.3 i5/OS tuning

There are a number of different aspects of i5/OS performance. This section shows you how to use and optimize:

- ▶ Automatic performance adjustor
- ▶ Memory tuning
- ▶ Run priority tuning
- ▶ Running a Workplace Collaboration Services server in its own subsystem
- ▶ System values affecting i5/OS performance
- ▶ Disk tuning

### 7.3.1 Automatic performance adjustor

The i5/OS ships with a utility called the *automatic performance adjustor*. The automatic performance adjustor continuously analyzes and dynamically adjusts where CPU and memory resources are applied. The performance adjustor uses a set of algorithms that look at the run characteristics of jobs in the system to determine the amount of memory and CPU to allocate to different memory pools in the system.

By default, there are four memory pools on each iSeries server:

- ▶ Machine pool (\*MACHINE) is reserved for running below the machine interface (MI) operating system code.
- ▶ Base pool (\*BASE) is the memory pool where various jobs execute including:
  - Workplace Collaboration Services
  - IBM HTTP Server
  - Lotus Domino
  - IBM Directory Server
  - Batch jobs
- ▶ Interactive pool (\*INTERACT) is the memory pool where interactive workloads run.
- ▶ Spool pool (\*SPOOL) is the memory pool where printing functions run.

**Note:** There may be additional memory pools on your system. These memory pools can either be shared or private.

The automatic performance adjustor is controlled through a system value called QPFRADJ. This system value can be set to one of the following values:

- 0** This value turns off automatic adjustment.
- 1** Automatic adjustment happens only at initial program load (IPL).
- 2** Automatic adjustment occurs at IPL and dynamically throughout system operation.
- 3** Automatic adjustment only occurs during normal system operation; no adjustment is made during IPL.

The default setting for this value is 2, meaning that automatic adjustment occurs when the system does an IPL and continues while the system is running. This is the best setting for this system value and allows the tool to move resources where they are most needed.

To see the value that the automatic performance adjustor is set to on your system, enter the following Display System Value (DSPSYSVAL) command:

```
DSPSYSVAL QPFRADJ
```

**Tip:** If the automatic performance adjustor is turned off on your system, use the following Change System Value (CHGSYSVAL) CL command to enable automatic performance adjustment:

```
CHGSYSVAL SYSVAL(QPFRADJ) VALUE(2)
```

## 7.3.2 Memory tuning

It is important to make sure that you can use memory appropriately. Each memory pool has a setting specified for the minimum and maximum percentage of memory that should be allocated to the pool. These minimums and maximums are used by the automatic performance adjustor to determine which pools to move more memory to or take memory from.

### Minimum settings for memory pools

The default minimum settings leave 5% of memory in the interactive pool and 1% of memory in the spool pool. If you are not using this memory with your workload requirements, you need to lower the minimum memory sizes for these memory pools, allowing the automatic performance adjustor to move the memory to pools where it is needed the most.

The system used in our environment for this redbook has 32 Gb of memory installed. We use services from Workplace Collaboration Services servers, IBM HTTP Servers, IBM Directory Server, and Lotus Domino servers. All of these servers run out of the base memory pool by default. Because of the default minimum settings of 5% for interactive and 1% for spool, we have almost 1.6 Gb of memory that is unable to be used on our iSeries server.

Use the Work with System Status (WRKSYSSTS) CL command to see how memory is allocated on your system. Figure 7-2 shows an example of the display that you see after you run the WRKSYSSTS command. With the default minimum memory settings on our system, 1580.70 MB of memory resides in the interactive memory pool (system pool 3) that is unable to be used. An additional 15.25 MB of memory is left unused in the spool pool (system pool 4).

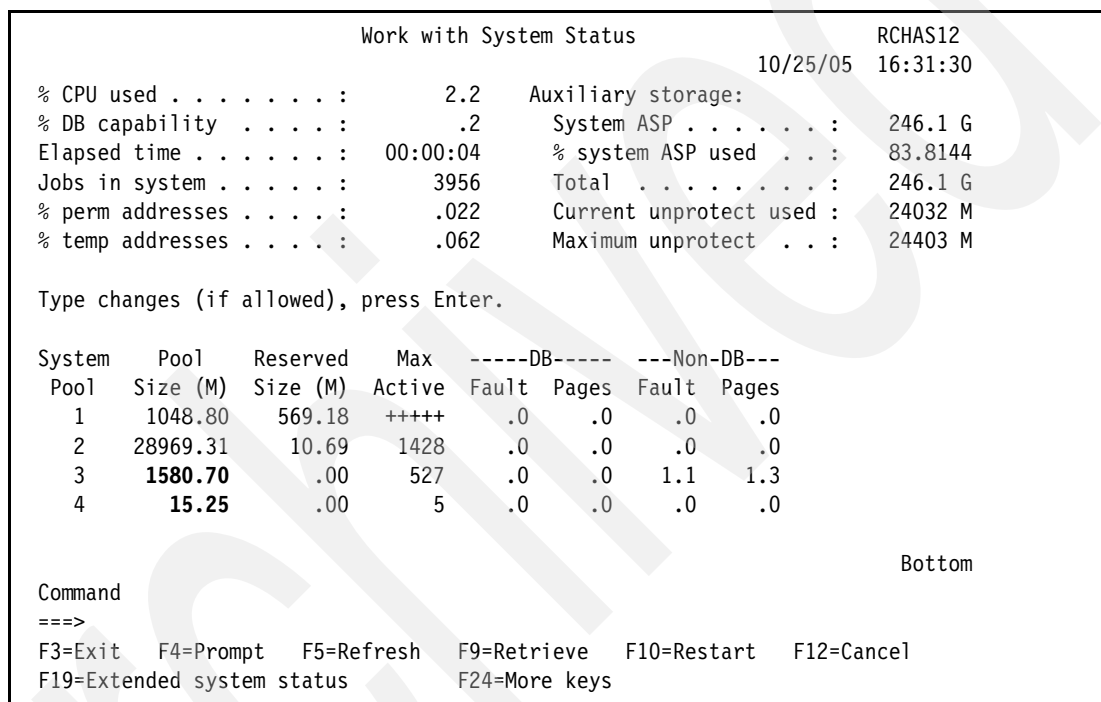


Figure 7-2 WRKSYSSTS showing memory being wasted in the interactive and spool pools

The following list explains each of the columns shown in the Work with System Status display (Figure 7-2):

- **System Pool:** Lists the number of the memory pool
- **Pool Size (M):** Shows the size of the memory pool in MB
- **Reserved Size (M):** Shows the minimum amount of memory that is required to remain in the memory pool
- **Max Active:** Represents the number of jobs or threads that can be concurrently active in the memory pool at the same time
- **DB Fault:** The number of faults per second that is associated with DB2 Universal Database database objects
- **DB Pages:** The number of pages per second that is happening with DB2 Universal Database database objects



- **Non-DB Fault:** The number of non-DB2 Universal Database faults per second that is happening in a memory pool
- **Non-DB Pages:** The number of pages per second that is happening with non-DB2 Universal Database database objects

## Enabling utilization of memory

To remedy the situation of having unused memory remain in the interactive and spool pools, use the Work with Shared Pools (WRKSHRPOOL) CL command to change the minimum amount of memory that is required to remain in these memory pools:

1. From a 5250 emulation session command line, type the WRKSHRPOOL command.
2. On the Work with Shared Pools display, press the F11 key to display the tuning data. Figure 7-3 shows the default minimum memory sizes of 5% and 1% respectively for the interactive (\*INTERACT) and spool (\*SPOOL) memory pools.

```

Work with Shared Pools
System: RCHAS12

Main storage size (M) . . : 31614.06

Type changes (if allowed), press Enter.

-----Size %-----  -----Faults/Second-----
Pool      Priority  Minimum  Maximum  Minimum  Thread  Maximum
*MACHINE   1         2.53     100      10.00     .00     10.00
*BASE      1         4.99     100       5.00     .50     200
*INTERACT  2         5.00     100      10.00     2.00     100
*SPOOL     2         1.00     100       5.00     1.00     100
*SHRPOOL1  2         1.00     100      10.00     2.00     100
*SHRPOOL2  2         1.00     100      10.00     2.00     100
*SHRPOOL3  2         1.00     100      10.00     2.00     100
*SHRPOOL4  2         1.00     100      10.00     2.00     100
*SHRPOOL5  2         1.00     100      10.00     2.00     100
*SHRPOOL6  2         1.00     100      10.00     2.00     100

More...

Command
===>
F3=Exit  F4=Prompt  F5=Refresh  F9=Retrieve  F11=Display text
F12=Cancel

```

Figure 7-3 Work with Shared Pools display showing the tuning data

- To change the minimum amount of memory allocated to these memory pools, type over the existing values.

**Tip:** If you are not using interactive or spool services on your iSeries server, you can reduce these values to smaller amounts such as 0.50 and 0.05, respectively.

Press Enter for the changes to take effect.

When you have completed making your changes, the display should look similar to the one shown in Figure 7-4.

```

Work with Shared Pools
System: RCHAS12

Main storage size (M) . . : 31614.06

Type changes (if allowed), press Enter.

-----Size %-----
Pool      Priority  Minimum  Maximum  Minimum  Thread  Maximum
*MACHINE   1         2.53     100      10.00     .00     10.00
*BASE      1         4.99     100       5.00     .50     200
*INTERACT  2          .50     100      10.00     2.00     100
*SPOOL     2          .05     100       5.00     1.00     100
*SHRPOOL1  2          1.00     100      10.00     2.00     100
*SHRPOOL2  2          1.00     100      10.00     2.00     100
*SHRPOOL3  2          1.00     100      10.00     2.00     100
*SHRPOOL4  2          1.00     100      10.00     2.00     100
*SHRPOOL5  2          1.00     100      10.00     2.00     100
*SHRPOOL6  2          1.00     100      10.00     2.00     100

More...

Command
===>
F3=Exit  F4=Prompt  F5=Refresh  F9=Retrieve  F11=Display text
F12=Cancel

*INTERACT changed, but may be adjusted.
+

```

Figure 7-4 Reduced minimum sizes for the interactive and spool memory pools

**Important:** You might have workloads that run in the evening that cause memory to be moved from the memory pool hosting the Workplace Collaboration Services servers. In this case, we recommend that you set the minimum size of that memory pool to a larger value than the default. Increasing this value is necessary to ensure that the JVM has ample memory to accommodate the JVM heap size.

The default memory pool for Workplace Collaboration Services servers is pool 2 or \*BASE. This pool has a minimum memory size of 4.99% of the memory on the system. If you are running Workplace Collaboration Services servers in this memory pool and have other workloads executing that reduce the memory significantly in the \*BASE pool, change the minimum value for \*BASE to a higher value.

For details about how to set the JVM heap size, see “Setting the heap size” on page 364. When you know the optimal JVM heap size for your environment, you will have the information required to set the minimum size for the memory pool in which the Workplace Collaboration Services servers are running.

## Faulting rates

Faulting occurs when a job running requests a page of information that is not in main memory. The job that requested the page is now forced to wait for the page of information to be retrieved from disk. When the page has been retrieved and is ready to be used, the job can continue processing. Because the job is interrupted and must stop and wait for the page to be read or “faulted” into memory, it is important to keep the number of faults per second at acceptable faulting rates.

Table 7-5 summarizes acceptable faulting rates for the machine and base memory pools.

Table 7-5 Memory pool faulting guidelines

Memory pool	Maximum database and non-database faults per second
Machine pool (pool 1)	10
Base pool (pool 2) <sup>1</sup>	100-150 per physical processor <sup>2</sup>

1. Workplace Collaboration Services, IBM HTTP Server, IBM Directory Server, and Lotus Domino servers all run in the base memory pool by default. If you have moved any of these services to a different memory pool, apply these faulting guidelines to the appropriate memory pool.

2. The number of faults per second that can be tolerated on a system before it affects performance depends on the number of disk arms. Systems that have a large number of disk arms, for example 30 arms or more, can handle much higher faulting rates before performance is affected.

**Important:** If the amount of memory that is available in the memory pool the Workplace Collaboration Services server is running in drops to a level below the JVM heap size, faulting rates can quickly climb into the thousands. To determine the heap size requirements for your Workplace Services Express server, refer to “Setting the heap size” on page 364.

If you are using the automatic performance adjustor (QPFRADJ), this utility looks for a pattern of three consecutive intervals of unacceptable faulting rates in a memory pool. If unacceptable faulting rates occur, QPFRADJ moves more memory to the pool that is in most need of additional memory. QPFRADJ may also reduce the activity level to lower the number of jobs executing concurrently in a memory pool to reduce faulting rates.

### 7.3.3 Run priority tuning

The automatic performance adjustor uses the run priority of specific jobs to determine which memory pools should receive more memory and CPU run cycles. The run cycles are set by controlling the maximum activity level of a memory pool. The maximum activity level is shown in the Max Active column in Figure 7-2 on page 320. Activity level is particularly important in a Workplace Collaboration Services environment because of the number of threads running under each of the jobs providing services to each server.

Refer to the following tables to see the run priorities of each of the components that can comprise a Workplace Collaboration Services environment:

- ▶ For IBM HTTP Server, see Table 7-1 on page 316.
- ▶ For Workplace Collaboration Services, see Table 7-2 on page 316.
- ▶ For IBM Directory Server, see Table 7-3 on page 317.
- ▶ For Lotus Domino, see Table 7-4 on page 317.

It is necessary to understand the runtime priorities of these components so you can adjust the runtime priorities if appropriate. When you adjust the runtime priorities, you must also understand how the dynamic priority scheduler works on the iSeries.

The dynamic priority scheduler uses runtime priorities to determine which jobs are in most need of memory, CPU resources, or both. It is responsible for making sure that no jobs are starved for resources while ensuring that no one high priority job monopolizes the CPU. It analyzes the runtime priority of a job in addition to the amount of time that the job has been waiting for CPU. If a job has been starved for CPU, the dynamic priority scheduler internally increases the runtime priority of a job until it has the required CPU resources.

**Note:** A plus sign (+) next to the runtime priority of a job indicates that the dynamic priority scheduler has internally increased its priority to ensure it is getting the required CPU resources.

The rate at which the dynamic priority scheduler increases the runtime priority of a specific job depends on which band it is in. The runtime priority bands on the iSeries server are as follows:

- ▶ Band 0: 0-9 (system tasks)
- ▶ Band 1: 10-16
- ▶ Band 2: 17-22
- ▶ Band 3: 23-35
- ▶ Band 4: 36-46
- ▶ Band 5: 47-51
- ▶ Band 6: 52-89
- ▶ Band 7: 90
- ▶ Band 8: 91
- ▶ Band 9: 92
- ▶ Band 10: 93
- ▶ Band 11: 94
- ▶ Band 12: 95
- ▶ Band 13: 96
- ▶ Band 14: 97
- ▶ Band 15: 98
- ▶ Band 16: 99

**Tip:** The lower a runtime priority number is on the i5/OS, the higher a job's runtime priority is. This means that a job with a runtime priority of 20 receives more CPU and memory resources than a job with a runtime priority of 30 or 40.

A memory pool has an activity level associated with it that specifies the number of threads that can actively using the processor or processors at the same time from that memory pool. When more threads are started than are allowed to concurrently execute due to the activity level control, the excess threads are forced to wait for an available activity level slot before they can run. The number of threads that are running (active threads) refers to the number of threads that are eligible to compete for a processor and that count against the activity level for a memory pool. Active threads do *not* include threads that are:

- ▶ Waiting for input
- ▶ Waiting for a message
- ▶ Waiting for a device to be allocated
- ▶ Waiting for a file to be opened
- ▶ Ineligible (threads that are ready to run but the memory pool activity is at its maximum)

**Note:** The activity level does not restrict the number of jobs that can be initiated. It specifies the maximum number of threads that can be in memory at the same time. A job can have multiple threads active under it.

When more threads are concurrently active than available memory, paging and faulting can become a problem. For details about acceptable paging and faulting rates, see “Faulting rates” on page 323.

### 7.3.4 Changing the subsystem Workplace Collaboration Services jobs run in

The default subsystem for all Workplace Collaboration Services servers is the QEJBAS5 subsystem. There are times when it may be more appropriate to run a Workplace Collaboration Services server in a separate subsystem. Some reasons include better control over memory management, better control over runtime priorities, or aid in JVM heap analysis.

A sample utility is available that allows Workplace Collaboration Services servers to be moved to a run in a different subsystem. This utility is a set of CL programs that are packaged in a save file called *lwptools.savf*. See Appendix E, “Additional material” on page 533, for information about downloading this save file.

#### Installing the utility on the iSeries server

To install the library that contains the CL programs for changing the subsystem in which the Workplace Collaboration Services server jobs run:

1. Download the save file, *lwptools.savf*. See Appendix E, “Additional material” on page 533, for information about downloading this save file.
2. Create a library on the iSeries server to hold the contents of the save file using the Create Library (CRTLIB) CL command. In this example, we enter:

```
crtlib lwptools
```

3. Create a save file in the library that you just created to hold the save file that you downloaded in step 1 using the Create Save File (CRTSAVF) CL command:

```
crtsave file(lwptools/lwptools)
```

4. Send the utility from your PC to the iSeries server using File Transfer Protocol (FTP):
  - a. Open a DOS prompt command and change to the directory on the PC where you downloaded the save file.
  - b. Using FTP as explained in the following steps, send the save file to the save file that you just created on your iSeries server. See Figure 7-5 for an example.
    - i. Type the following command:

```
ftp iSeriesServerName
```

- ii. Enter your iSeries user name.

- iii. Enter your iSeries user name password.

- iv. Type the following commands in the order shown when prompted:

```
bin
```

```
put lwptools.savf /qsys.lib/lwptools.lib/lwptools.savf
```

```
quit
```

```

C:\>ftp rchas12
Connected to RCHAS12.rchland.ibm.com.
220-QTCP at RCHAS12.RCHLAND.IBM.COM.
220 Connection will close if idle more than 166666 minutes.
User (RCHAS12.rchland.ibm.com:(none)): kgreene
331 Enter password.
Password:
230 KGREENE logged on.
ftp> bin
200 Representation type is binary IMAGE.
ftp> put lwptools.savf /qsys.lib/lwptools.lib/lwptools.savf
200 PORT subcommand request successful.
150 Sending file to member LWPTOOLS in file LWPTOOLS in library LWPTOOLS.
250 File transfer completed successfully.
ftp: 494208 bytes sent in 0.98Seconds 501.73Kbytes/sec.
ftp> quit
221 QUIT subcommand received.

```

Figure 7-5 Sending the *lwptools.savf* file to the iSeries server using FTP

- Now that the utility is sent to the iSeries server, restore the objects from the save file using the following Restore Objects (RSTOBJ) CL command:

```
RSTOBJ OBJ(*ALL) SAVLIB(LWPTOOLS) DEV(*SAVF) SAVF(LWPTOOLS/LWPTOOLS)
```

- Add the LWPTOOLS library to your library list using the following Add Library List Entry (ADDLIBLE) CL command.

```
ADDLIBLE LIB(LWPTOOLS)
```

You are now ready to use the CL programs in LWPTOOLS library to change the subsystem in which the Workplace Collaboration Services server jobs run.

## Creating a new subsystem description

The CL program provided in the LWPTOOLS library to start a Workplace Collaboration Services server requires that a new subsystem description is created. The name of the subsystem description should match the name of your Workplace Collaboration Services server.

To create the new subsystem description, use the Create Workplace Subsystem (CRTLWPSBS) CL command:

```
LWPTOOLS/CRTLWPSBS INSTANCE(ITSOWCS05)
```

This command creates a subsystem called ITSOWCS05 in the library LWPTOOLS. Replace the instance name, *ITSOWCS05*, with the name of your Workplace Collaboration Services server.

## Starting a Workplace server in its own subsystem

Next you must start the Workplace Collaboration Services server in the new subsystem that you created. You do this by issuing the Start Workplace Server (STRLWPSVR) CL command:

```
LWPTOOLS/STRLWPSVR
```

When you type this command, you see the Start Workplace Server display as shown in Figure 7-6. Provide the name of the Workplace Collaboration Services server and specify the server jobs that you want to start.

Start Workplace Server (STRLWPSVR)

Type choices, press Enter.

WAS Instance Name . . . . .	itsowcs05	NAME	
Start WebSphere_Portal . . . . .	*YES	*YES *NO	
Start Mail_Server_1 . . . . .	*YES	*YES *NO	
Start server1 . . . . .	*NO	*YES *NO	
Clear logs . . . . .	*YES	*YES *NO	

Bottom

F3=Exit   F4=Prompt   F5=Refresh   F12=Cancel   F13=How to use this display  
F24=More keys

Figure 7-6 Starting a Workplace Collaboration Services server in its own subsystem

You can also type the Start Workplace Server (STRLWPSVR) CL command directly:

```
STRLWPSVR INSTANCE(itsowcs05) STR_WPS(*YES) STR_MS1(*YES) STR_SVR1(*NO) CLR_LOGS(*YES)
```

Example 7-1 shows the contents of the STRLWPSVR program.

Example 7-1 Contents of CL program STRLWPSVR

```
PGM          PARM(&INSTANCE &STR_WPS &STR_MS1 &STR_SVR1 +
                &CLR_LOGS)
DCL          VAR(&INSTANCE) TYPE(*CHAR) LEN(10)
DCL          VAR(&STR_WPS) TYPE(*CHAR) LEN(4)
DCL          VAR(&STR_MS1) TYPE(*CHAR) LEN(4)
DCL          VAR(&STR_SVR1) TYPE(*CHAR) LEN(4)
DCL          VAR(&CLR_LOGS) TYPE(*CHAR) LEN(4)

DCL          VAR(&TOOLS_LIB) TYPE(*CHAR) LEN(10) +
                VALUE(LWPTOOLS)
DCL          VAR(&LWP_HOME) TYPE(*CHAR) LEN(100)
DCL          VAR(&STRWPSCMD) TYPE(*CHAR) LEN(200)
DCL          VAR(&STRMS1CMD) TYPE(*CHAR) LEN(200)
DCL          VAR(&STRSVR1CMD) TYPE(*CHAR) LEN(200)
DCL          VAR(&CLRLOGCMD) TYPE(*CHAR) LEN(200)

CHGVAR       VAR(&LWP_HOME) +
                VALUE('/qibm/userdata/webas5/base/' *TCAT +
                &INSTANCE *TCAT '/workplaceserver')

/*****
/* START THE SUBSYSTEM IN CASE IT IS STOPPED */
STRSBS      SBSD(&TOOLS_LIB/&INSTANCE)
MONMSG      MSGID(CPF1010)

/*****

IF          COND(&STR_WPS *EQ *NO) THEN(GOTO +
                CMDLBL(LBL_MS1_0))

IF          COND(&CLR_LOGS *EQ *NO) THEN(GOTO +
                CMDLBL(LBL_WPS_1))
```

```

/* BUILD THE QSHELL COMMAND TO CLEAR THE WEBSHERE_PORTAL LOGS */
CHGVAR      VAR(&CLRLOGCMD) VALUE('rm ' *CAT +
                                &LWP_HOME *TCAT +
                                '/../PortalServer/log/*.log')
SBMJOB      CMD(QSH CMD(&CLRLOGCMD)) JOB(CLRLOGWPS) +
                                JOBD(*USRPRF) JOBQ(&TOOLSlib/&INSTANCE)
/* BUILD THE QSHELL COMMAND TO START WEB_SPHERE_PORTAL */
LBL_WPS_1:  CHGVAR      VAR(&STRWPSCMD) +
                                VALUE('/qibm/userdata/webas5/base/' *TCAT +
                                &INSTANCE *TCAT +
                                '/workplaceserver/bin/strlwpsvr.sh +
                                WebSphere_Portal -instance ' *CAT +
                                &INSTANCE *CAT ' -toolslib ' *CAT &TOOLSlib)
/* START THE WEBSHERE_PORTAL */
SBMJOB      CMD(QSH CMD(&STRWPSCMD)) JOB(STRLWPSVR) +
                                JOBD(*USRPRF) JOBQ(&TOOLSlib/&INSTANCE)

/*****
LBL_MS1_0:  IF          COND(&STR_MS1 *EQ *NO) THEN(GOTO +
                                CMDLBL(LBL_SVR1_0))

                                IF          COND(&CLR_LOGS *EQ *NO) THEN(GOTO +
                                CMDLBL(LBL_MS1_1))

/* BUILD THE QSHELL COMMAND TO CLEAR THE MAIL_SERVER_1 LOGS */
CHGVAR      VAR(&CLRLOGCMD) VALUE('rm ' *CAT &LWP_HOME +
                                *TCAT '/../logs/Mail_Server_1/*.log')
SBMJOB      CMD(QSH CMD(&CLRLOGCMD)) JOB(CLRLOGMS1) +
                                JOBD(*USRPRF) JOBQ(&TOOLSlib/&INSTANCE)
/* BUILD THE QSHELL COMMAND TO START MAIL_SERVER_1 */
LBL_MS1_1:  CHGVAR      VAR(&STRMS1CMD) +
                                VALUE('/qibm/userdata/webas5/base/' *TCAT +
                                &INSTANCE *TCAT +
                                '/workplaceserver/bin/strlwpsvr.sh +
                                Mail_Server_1 -instance ' *CAT &INSTANCE +
                                *CAT ' -toolslib ' *CAT &TOOLSlib)
/* START THE MAIL_SERVER_1 */
SBMJOB      CMD(QSH CMD(&STRMS1CMD)) JOB(STRLWPSVR) +
                                JOBD(*USRPRF) JOBQ(&TOOLSlib/&INSTANCE)

/*****
LBL_SVR1_0: IF          COND(&STR_SVR1 *EQ *NO) THEN(GOTO +
                                CMDLBL(LBL_END))

                                IF          COND(&CLR_LOGS *EQ *NO) THEN(GOTO +
                                CMDLBL(LBL_SVR1_1))

/* BUILD THE QSHELL COMMAND TO CLEAR THE SERVER1 LOGS */
CHGVAR      VAR(&CLRLOGCMD) VALUE('rm ' *CAT &LWP_HOME +
                                *TCAT '/../logs/server1/*.log')
SBMJOB      CMD(QSH CMD(&CLRLOGCMD)) JOB(CLRLOGSV1) +
                                JOBD(*USRPRF) JOBQ(&TOOLSlib/&INSTANCE)

/* BUILD THE QSHELL COMMAND TO START SERVER1 */
LBL_SVR1_1: CHGVAR      VAR(&STRSVR1CMD) +
                                VALUE('/qibm/userdata/webas5/base/' *TCAT +
                                &INSTANCE *TCAT +
                                '/workplaceserver/bin/strlwpsvr.sh +
                                server1 -instance ' *CAT &INSTANCE *CAT +
                                ' -toolslib ' *CAT &TOOLSlib)

```



```

/* START THE SERVER1                                     */
      SBMJOB      CMD(QSH CMD(&STRSVR1CMD)) JOB(STRLWPSVR) +
                  JOBQ(*USRPRF) JOBQ(&TOOLSLIB/&INSTANCE)
/*****
LBL_END:      ENDPGM

```

## Ending a Workplace server that has been started in its own subsystem

After the Workplace Collaboration Services server is started, you can work with the server through the WebSphere Application Server Administrative Console. This graphical interface allows you to end the Workplace Collaboration Services server, or you can use the End Workplace Server (ENDLWPSVR) CL command, for example:

LWPTOOLS/ENDLWPSVR

In the End Workplace Server (ENDLWPSVR) display shown in Figure 7-7, provide the name of the Workplace Collaboration Services server and specify the jobs that you want to end.

End Workplace Server (ENDLWPSVR)

Type choices, press Enter.

WAS Instance Name . . . . .	itsowcs05	NAME
WAS Admin User . . . . .	wpsadmin	
WAS Admin Password . . . . .	password	
End WebSphere_Portal? . . . . .	*YES	*YES *NO
End Mail_Server_1? . . . . .	*YES	*YES *NO
End server1? . . . . .	*YES	*YES *NO

Bottom

F3=Exit   F4=Prompt   F5=Refresh   F12=Cancel   F13=How to use this display  
F24=More keys

Figure 7-7 Ending a Workplace Collaboration Services server in its own subsystem

You can also type the End Workplace Server (ENDLWPVR) CL command directly:

```

ENDLWPVR INSTANCE(itsowcs05) USERNAME(wpsadmin) PASSWORD(password) END_WPS(*YES)
END_MS1(*YES) END_SVR1(*YES)

```

## Deleting the subsystem description

If you no longer need the ability to start a Workplace Collaboration Services server in its own subsystem, you can use the Delete Workplace Server (DLTLWPSBS) CL command to clean up the subsystem description that you previously created. In this case, you type the Delete Workplace Server (DLTLWPSBS) CL command:

```
DLTLWPSBS INSTANCE(itsowcs05)
```

Replace *INSTANCE* with the name of your Workplace Collaboration Services server that you had created the subsystem description for and press Enter.

### 7.3.5 System values that affect i5/OS performance

There are two system values that you should check on your system to ensure that you can obtain the best performance. These are the maximum activity level of a system (QMAXACTLVL) and processor multitasking (QPRCMLTTSK).

#### QMAXACTLVL

The QMAXACTLVL system value specifies the number of threads that can compete at the same time for memory and processor resources. For all active subsystems, the sum of all threads running in all memory pools cannot exceed the value you specify. If a thread cannot be processed because the activity level has been reached, the thread waits until another thread reaches a time slice or a long wait. The default setting for this value is \*NOMAX.

You can use the Display System Value (DSPSYSVAL) CL command to see the value that this system value is set to. If the value is not set to \*NOMAX, use the CHGSYSVAL CL command to change the value to \*NOMAX:

```
CHGSYSVAL SYSVAL(QMAXACTLVL) VALUE(*NOMAX)
```

#### QPRCMLTTSK

The QPRCMLTTSK system value controls whether to enable the individual SMP processors to concurrently execute multiple instruction streams. Each instruction stream belongs to separate tasks or threads. When enabled, each individual processor is concurrently executing multiple tasks at the same time. The effect of its use is likely to increase the performance capacity of a system or improve the responsiveness of a multi threaded application. Running multiple instruction streams at the same time does not improve the performance of any given task. Changes to the system value do not take effect until the next IPL.

The default setting of the i5/OS system value QPRCMLTTSK may be incorrect for some V5R3M0 installations. The QPRCMLTTSK system value determines whether the hardware multithreading feature of the processor, if available, is enabled, disabled, or controlled by the operating system.

For details about how to set this system value appropriately for your specific system, see APAR II13981 available on the Web at the following address:

[http://www-912.ibm.com/n\\_dir/nas4apar.nsf/0/a4eaa9d8cb2ab5dd86256f690056c078?OpenDocument](http://www-912.ibm.com/n_dir/nas4apar.nsf/0/a4eaa9d8cb2ab5dd86256f690056c078?OpenDocument)

### 7.3.6 Disk tuning

The single-level store architecture of the iSeries server ensures that data is spread evenly across all disk units on the system. There are also special input/output processors (IOPs) that help retrieve data from the disk to provide for efficient input/output (I/O) processing. Because of this architecture, it is important that you have enough disk arms on your iSeries server to properly balance the I/O.

To determine if disk is a bottleneck on your iSeries server, examine the disk utilization of each individual disk unit. It is important that no one disk arm exceeds the % busy utilization guideline for the specific disk units in your system.

Table 7-6 lists the different disk unit types and acceptable utilization guidelines based on the type of input/output adapter (IOA) used with the disk units.

Table 7-6 Disk utilization guidelines

Disk type	Speed (RPM)	Utilization guideline (% busy) with older IOAs	Utilization guideline (% busy) with 2757 or 2780 IOAs
6717	10K	30%	40%
6718	10K	30%	40%
6719	10K	30%	40%
4326	15K	40%	50%
4327	15K	40%	50%
4328	15K	40%	60%

Use the Work with Disk Status (WRKDSKSTS) CL command to monitor disk utilization. Figure 7-8 shows an example of a *healthy* disk configuration. This system has eight disk arms. The I/O is spread evenly among the disk arms, with the highest disk utilization at 34% and the lowest at 29%. The disk utilization guidelines for these disk units is 40%.

**Important:** When looking at disk utilization, use the % Busy column. The % Used column shows how full each disk unit is.

Work with Disk Status										
RCHAS12										
11/03/05 15:35:28										
Elapsed time: 00:08:24										
Unit	Type	Size (M)	% Used	I/O Rqs	Request Size (K)	Read Rqs	Write Rqs	Read (K)	Write (K)	% Busy
1	4326	30769	83.4	38.7	9.9	11.3	27.3	18.3	6.4	30
2	4326	30769	83.4	40.8	8.4	10.9	29.8	15.4	5.8	34
3	4326	30769	83.5	38.9	8.7	9.9	28.9	15.9	6.2	30
4	4326	30769	83.4	35.8	11.1	11.6	24.2	21.9	5.8	29
5	4326	30769	83.4	32.9	10.2	10.9	22.0	17.7	6.5	30
6	4326	30769	83.4	39.6	9.4	11.2	28.4	18.0	6.0	30
7	4326	30769	83.4	43.9	8.9	12.1	31.7	16.7	5.9	31
8	4326	30769	83.4	38.1	9.8	11.3	26.8	17.5	6.5	30
Bottom										
Command										
===>										
F3=Exit F5=Refresh F12=Cancel F24=More keys										

Figure 7-8 Healthy disk I/O percent busy

Figure 7-9 shows an example of an *unhealthy* disk configuration. The disk utilization ranges from 63% - 74%. Not only is the utilization too high, but the utilization across disk arms is quite unbalanced. To remedy the over utilization situation, more disk arms must be added to the system. To address the disk arm balance issue, refer to “Balancing I/O across disk arms” on page 332.

Work with Disk Status										RCHAS12
Elapsed time: 00:01:03										11/07/05 16:33:21
Unit	Type	Size (M)	% Used	I/O Rqs	Request Size (K)	Read Rqs	Write Rqs	Read (K)	Write (K)	% Busy
1	4326	30769	98.5	78.3	13.0	19.2	59.0	12.8	13.0	72
2	4326	30769	98.5	68.4	12.5	14.2	54.1	12.5	12.6	74
3	4326	30769	98.5	78.4	11.4	15.5	62.9	12.5	11.2	68
4	4326	30769	98.6	67.3	11.7	17.5	49.7	11.5	11.7	74
5	4326	30769	98.5	72.5	13.1	16.5	55.9	14.4	12.7	73
6	4326	30769	98.5	68.3	12.1	16.5	51.8	12.6	11.9	63
7	4326	30769	98.5	68.6	13.5	16.1	52.4	14.9	13.0	72
8	4326	30769	98.5	68.4	12.0	15.8	52.6	11.7	12.1	64

Command  
 ===>  
 F3=Exit F5=Refresh F12=Cancel F24=More keys

Bottom

Figure 7-9 Unhealthy disk I/O percent busy

## Balancing I/O across disk arms

When data is added to the iSeries server, the operating system attempts to balance the data across all disk arms. As data is deleted and added to the system, some disk arms can contain data that is more frequently accessed than data on other arms.

Operating system utilities are available that can help to rebalance data across disk arms. The Trace ASP Balance (TRCASPBAL) CL command is used to collect usage statistics. After the data is collected, the Start ASP Balance (STRASPBAL) CL command is used to rebalance data as appropriate.

For more details about using these utilities, refer to IBM Software Technical Document number 16803317, available on the Web at the following address:

[http://www-912.ibm.com/s\\_dir/slkbase.NSF/0/80a0c71876d5a872862567ca00770cb0?OpenDocument](http://www-912.ibm.com/s_dir/slkbase.NSF/0/80a0c71876d5a872862567ca00770cb0?OpenDocument)

## 7.4 Network tuning

In this section, we provide tips on optimizing your i5/OS network by adjusting the TCP/IP buffer sizes, duplex settings, frame sizes, and maximum transmission unit (MTU) sizes. Additionally we show you how to identify whether your network is experiencing Address Resolution Protocol (ARP) storms and how to fix this problem if it exists.

### 7.4.1 TCP/IP buffer sizes

The communication mechanism used extensively by Workplace Collaboration Services is *TCP/IP sockets*. A TCP/IP socket connection uses send and receive buffer sizes to define the size of the packet of data that is sent over the wire. You can adjust the size of the send and receive buffers to determine flow control. The buffer sizes determine how much data can be sent before flow control is interrupted to send or receive another packet of data.

If the window size as defined by the TCP/IP buffers is too small, the receive window buffer can be frequently overrun, and the flow control mechanism halts sending data until the application can empty the receive buffer. Flow control can use a significant amount of CPU time. It can result in additional network latency due to the stop and start nature on the receive and send side of the socket connection.

Because of this fact, we recommend that you increase the send and receive buffer sizes from their default 8K values to avoid flow control under normal operating conditions. A larger buffer size reduces the potential for flow control to occur, thus improving CPU utilization. If the TCP/IP buffers are too large and applications are not consuming data fast enough, system performance may be adversely affected. The goal is to avoid flow control, but not allow more data to buffer up than the system has the capacity to process.

The optimal buffer size depends on several network environment factors including:

- ▶ Types of switches and systems
- ▶ Acknowledgment timing
- ▶ Error rates and network topology
- ▶ Memory size
- ▶ Data transfer size

System-wide settings can override the default 8K size for TCP/IP socket connections. The recommended send and receive buffer size to reduce flow control and not adversely affect performance is 65536. This reduces both flow control occurrences and reduce CPU cost.

To change the system wide value, you use the Change TCP/IP Attributes (CHGTCPA) CL command. This command allows you to change both the send and receive buffer sizes.

To change the TCP/IP send and receive buffer sizes:

1. Log on to the iSeries server with a user profile that has \*SECADMIN authority.
2. Enter the CHGTCPA CL command and press F4 to prompt it.

3. In the Change IP Attributes (CHGTCPA) display, specify the TCP receive buffer size (TCPRCVBUF) and TCP send buffer size (TCPSNDBUF). In our testing environment, these parameters were set to 65536, as shown in Figure 7-10. Press Enter. Changes to the TCP/IP attributes take effect immediately.

```

Change TCP/IP Attributes (CHGTCPA)

Type choices, press Enter.

TCP keep alive . . . . . TCPKEEPALV      120
TCP urgent pointer . . . . . TCPURGPTR      *BSD
TCP receive buffer size . . . . . TCPRCVBUF    > 65536
TCP send buffer size . . . . . TCPSNDBUF    > 65536
TCP R1 retransmission count . . . . . TCPR1CNT      3
TCP R2 retransmission count . . . . . TCPR2CNT      16
TCP minimum retransmit time . . . . . TCPMINRTM     250
TCP closed timewait timeout . . . . . TCPCLTIMO     120
TCP close connection message . . . . . TCPCNMSG      *THRESHOLD
UDP checksum . . . . . UDPCKS      *YES
Path MTU discovery:      IPPATHMTU
  Enablement . . . . .      *YES
  Interval . . . . .      10
IP datagram forwarding . . . . . IPDTGFWD      *NO
IP source routing . . . . . IPSRCRTG      *YES
IP reassembly time-out . . . . . IPRSBTMO      10
More...

F3=Exit  F4=Prompt  F5=Refresh  F10=Additional parameters  F12=Cancel
F13=How to use this display  F24=More keys

```

Figure 7-10 Change TCP/IP Attributes (CHGTCPA) display

**Note:** Use care when setting the TCP/IP buffer size on older networks. You also want to monitor the number of retransmissions taking place on a given line before you change this setting to the 65536 send and receive buffer size. If there are several retransmits on a given line, we recommend that you do not set the size of the TCP/IP buffer size to 65536.

## 7.4.2 Optimizing line description settings

In this section, we show you how to optimize line description settings.

### Duplex settings

The duplex settings for a line description are either HALF or FULL. The best performance is with FULL duplex. However, the duplex setting on the line description must match the setting on the port on the switch if the line is connected to a switch.

- If the line is connected directly to a 8271 Ethernet switch, the switch's port is FULL duplex. Therefore set the duplex setting on the Ethernet line description to FULL.
- If the line is connected to a "stackable" hub, then set the duplex setting on the line to HALF to match the hub setting.

Be aware that setting the duplex setting to AUTO may not have the results that you are expecting. You want to explicitly set the duplex setting to HALF or FULL. To set the duplex setting, use the Change Line Desc (Ethernet) (CHGLINETH) CL command, for example:

```
CHGLINETH LIND(<line_name>) DUPLEX(*FULL)
```

## MAXFRAME size

The MAXFRAME size line description parameter specifies the maximum frame size that can be transmitted and received on a line description. Maximizing the frame size in a LAN environment is important and supplies the best performance for large transfers. Having configured a large frame size does not negatively impact performance for small transfers. Both the iSeries server and the other link stations must be configured for large frames. Otherwise, the smaller of the two maximum frame size values is used in transferring data. Bridges may also limit the maximum frame size.

The MAXFRAME size parameter should be set as follows:

- ▶ 1496 for < 1 Gb Ethernet
- ▶ 8996 for 1 Gb Ethernet

To set the maximum frame size, use the CHGLINETH CL command, for example:

```
CHGLINEETH LIND(<line_name>) MAXFRAME(xxxx)
```

## MTU size

The MTU size is the maximum number of bytes allowed in any datagram. By increasing the value of this parameter, you can reduce the overall number of transmissions, and therefore, increase the potential capacity of the CPU and the IOP.

Similar parameters exist on the client. The negotiated value is the minimum of the server and client (and perhaps any bridges or routers). Therefore, increase them all. The recommended setting varies depending on the communications protocol that is being used:

- ▶ 4 Mb token ring = 4060
- ▶ 16 Mb token ring = 16388
- ▶ Ethernet 802.3 = 1492
- ▶ Ethernet version 2 = 1500

To change the MTU size, perform the following steps:

1. On an i5/OS command line, type the Configure TCP/IP (CFGTCP) CL command and press Enter.
2. On the Configure TCP/IP display, type option 2 (Work with TCP/IP Routes) and press Enter.
3. On the Work with TCP/IP Routes display, type option 2 in the Opt column, next to the IP address used by your Workplace Collaboration Services server, and press Enter.
4. On the Change TCP/IP Route display, type the recommendation from the previous list in the Maximum transmission unit (MTU) parameter and press Enter.

## 7.4.3 Network routing: ARP storms

In this section, we describe an issue that can occur with the load balancing feature of the iSeries network. This problem can occur on your system only if you have more than one network interface card (NIC) installed and have intelligent switches that use dynamic route tables.

## Summary of the problem

You can configure the iSeries server to load balance network traffic across any number of network interfaces that share a common route. For example, serverA has four network interfaces on four separate network adapters:

- ▶ 10.1.1.1
- ▶ 10.1.1.2
- ▶ 10.1.1.3
- ▶ 10.1.1.4

A single default route is defined to 10.1.1.5 as shown in the default route configuration in Figure 7-11.

Work with TCP/IP Routes					System:	RCHAS12
Type options, press Enter.						
1=Add 2=Change 4=Remove 5=Display						
Opt	Route Destination	Subnet Mask	Next Hop	Preferred Interface		
	*DFTRROUTE	*NONE	10.1.1.5	*NONE		
					Bottom	
F3=Exit	F5=Refresh	F6=Print list	F11=Display type of service			
F12=Cancel	F17=Top	F18=Bottom				

Figure 7-11 CFGTCP option 2 on the Work with TCP/IP Routes display

As a result, any adapter can be used to send data from the system. Requests received on 10.1.1.1 may be responded to from the network adapter with the 10.1.1.4 interface. The response carries the 10.1.1.1 return address and the 10.1.1.4 Media Access Control (MAC) address.

All TCP network traffic contains the IP address and the MAC address of the network adapter. In this situation, the address 10.1.1.1 can be sent with the MAC address of any one of the network adapters. This is a valid configuration on the iSeries server.

Some intelligent switches, such as the Cisco 6509 series, dynamically generate a route table that includes not only the IP address of each host, but the MAC address of the adapter that owns the IP address. As a result, when the iSeries server sends a frame with the IP address of 10.1.1.1 and the MAC address from the 10.1.1.4 adapter, the switch purges the entries for both adapters from its internal table assuming that both are in error. The switch then sends an ARP broadcast to generate new table entries. This creates two performance issues:

- ▶ Traffic inbound to the iSeries server is held at the switch, pending the update to its table.
- ▶ The ARP broadcast is repeated frequently, creating a network constraint.

## Identifying the problem

The following steps help you determine if you are experiencing this problem. This issue cannot occur unless you have more than one active NIC.

1. Determine the number of active NICs on your system:
  - a. Start iSeries Navigator.
  - b. Expand **Network** → **TCP/IP Configuration** → **Lines**.



- c. In the right pane, keep in mind that one line corresponds to one NIC; count the number of active lines.
  - Do *not* count the line called LOOPBACK.
  - Confirm that the status of the line is *Active*.
  - Figure 7-12 shows only one active line, which means that there is only one active NIC on this iSeries server at this time, and the problem cannot occur in this example. If multiple NICs are active, then continue with the next step.

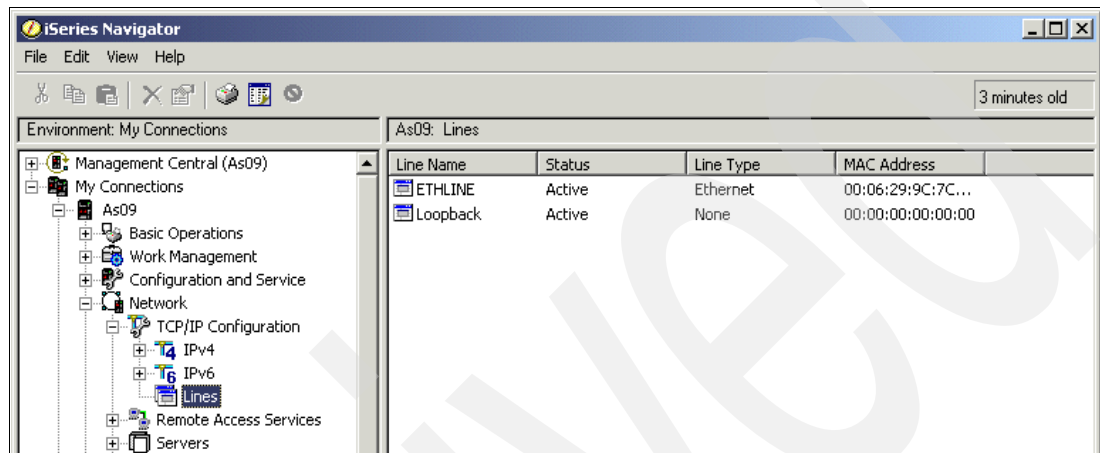


Figure 7-12 iSeries Navigator displaying active lines

2. If more than one NIC is active on the system, then you must check the TCP/IP routes and see if they are bound to specific interfaces. This issue cannot occur if each active NIC has its own preferred route defined.
  - a. In a 5250 emulation session, type the CFGTCP CL command.
  - b. Type option 2 (Work with TCP/IP Routes) and press Enter.

**Note:** The problem described in this section can occur at your site if you have multiple active NICs but only one configured route for all interfaces as shown in Figure 7-11.

3. Determine if your hardware (router or switch) is configured to use dynamic route tables. Each router or switch is different, so you may be required to ask your network administrator. If the router or switch is configured to use dynamic route tables, then you can experience this problem. If your router or switch is using static route tables or does not store the MAC address, then this issue does not occur.
4. If your configuration *can* experience this problem, it does not mean that you are experiencing performance problems because of it. To see how much this type of configuration is affecting your network performance, do a communications trace and look for ARP broadcasts and changing MAC addresses.
  - a. Start the communications trace using the Start Communication Trace (STRCMNTRC) CL command:

```
STRCMNTRC CFGOBJ(ETHLINE) CFGTYPE(*LIN) MAXSTG(16M) USRDTA(*CALC)
```

The CFGOBJ parameter is the name of one of the active lines that you found in step 1.

**Notes:** You may have to run a trace on each active line to look for this problem. Do *not* trace the LOOPBACK line.

- b. Let the trace run for a few minutes and then end it using the End Communication Trace (ENDCMNTRC) CL command:

```
ENDCMNTRC CFGOBJ(ETHLINE) CFGTYPE(*LIN)
```

- c. Print the communications trace with the Print Communication Trace (PRTCMNTRC) CL command:

```
PRTCMNTRC CFGOBJ(ETHLINE) CFGTYPE(*LIN) CODE(*ASCII) SLTCTLD(*ALL) FMTTCP(*YES)
FMTBCD(*YES)
```

Notice that the data is formatted for TCP/IP and Broadcast data.

- d. Review the communications trace and look for:

- A high number of ARP broadcasts
- Changing MAC addresses in a single conversation

You can use the following command and type option 5 to display the QPCSMPT file that contains the communications trace data:

```
WRKJOB OPTION(*SPLF)
```

- e. To find ARP broadcasts, search for the word ARP (all uppercase letters). Use the Find field and the F16 key to search the spool file.

- f. Count the number of times an ARP broadcast occurs in your trace.

Use your own judgment to determine if you are seeing too many ARP broadcasts. For example, if you run a three minute trace and count 50 ARP broadcasts, then consider changing your TCP/IP configuration to fix this problem.

Figure 7-13 shows an example of an ARP broadcast in an iSeries communications trace.

Display Spooled File									
File	QPCSMPT						Page/Line	20/31	
Control							Columns	1 - 78	
Find	<u>ARP</u>								
*...+...1...+...2...+...3...+...4...+...5...+...6...+...7...+...									
70	S	40	13:33:53.49525		0000C07AC01		0006299C7C99		
		Frame Type :		IP	DSCP: 0		Length: 4		
		Src Addr:		10.1.1.14	Dest Addr:		1		
		IP Options :		NONE					
		TCP		Src Port: 80,Unassigned		Dest Port:			
		SEQ Number:		0 ('00000000'X)		ACK			
		Code Bits:		ACK RST		Window			
71	R	50	13:33:58.13039		FFFFFFFFFFFF		0004AC5EB196		
		Frame Type :		ARP	Src Addr: 10.1.1.5		D		
		ARP Header :		00010800060400010004AC5EB19609055C2F000000					
		Data		0000000000000000 0000000000000000 000036CA5863					
		COMMUNICATIONS TRACE		Title:		11/11/05			
Record	Data	Record			Controller	Destination	Source		
Number	S/R	Length	Timer	Name		MAC Address	MAC Address		
More...									
F3=Exit F12=Cancel F19=Left F20=Right F24=More keys									

Figure 7-13 Example of an ARP broadcast in a communications trace

- g. To identify a changing MAC address, search for a conversation on the port that is providing the communication service. In this example, we use port 1352, which is used by Lotus Domino.

Search for 1352 followed by a comma. Use the Find field and the F16 key to follow a conversation and watch the MAC addresses.

Figure 7-14 shows an example of a conversation where the source MAC address is changing even though the source IP address is the same.

**Note:** Communications traces can be difficult to read. An option in the IBM Support Library Tools (QSPTLIB) can take a communications trace and break out a single conversation. Use option 6 of the QSPTLIB/CMTMENU menu or the QSPTLIB/EXTTCPTRC CL command to extract TCP/IP trace information.

You can obtain the IBM Support Library Tools for OS/400 as PTF SE16633 for V5R3M0. Follow the instructions received with the download to restore the library to your iSeries server.

If you are not using the QSPTLIB tools, keep in mind the following points:

- ▶ A single conversation is defined by the port pair (the source port and the destination port) and the source and destination addresses. In Figure 7-14, the port pair is 1352 and 3853.
- ▶ To determine if the MAC address is changing, you must find two packets that are sent from the iSeries in a *single* conversation to the same destination that has different source MAC addresses. In Figure 7-14, notice that:
  - The two packets are in the same conversation (port pair: 1352/3853) and are both going in the same direction (source address for both packets 10.1.1.4, which is the iSeries in this example).
  - The source MAC address for those two packets are different: one is 000944AF54BC and the other is 00000C07AC01.

Display Spooled File						
File . . . . .	QPCSMPT			Page/Line	22/4	
Control . . . . .				Columns	23 - 100	
Find . . . . .	<u>1352,</u>					
..+...3...+...4...+...5...+...6...+...7...+...8...+...9...+...0						
Record	Controller	Destination	Source	Frame	Numb	
Timer	Name	MAC Address	MAC Address	Format	Command	Sent
-----						
13:34:02.14924		0006299C7C99	<b>000944AF54BC</b>	ETHV2	Type: 0800	
Frame Type :	IP	DSCP: 0	Length: 40	Protocol: TCP		
	<b>Src Addr: 10.1.1.4</b>		Dest Addr: 10.1.1.16		Fra	
IP Options :	NONE					
TCP . . . :	<b>Src Port: 1352,Unassigned</b>		<b>Dest Port: 3853,Unassigned</b>			
	SEQ Number: 1276843135 ('4C1B147F'X)		ACK Number: 1771096846 ('			
	Code Bits: ACK		Window: 65340 TCP Option: N			
13:34:02.20190		0006299C7C99	<b>00000C07AC01</b>	ETHV2	Type: 0800	
Frame Type :	IP	DSCP: 0	Length: 158	Protocol: TCP		
	<b>Src Addr: 10.1.1.4</b>		Dest Addr: 10.1.1.16		Fra	
IP Options :	NONE					
TCP . . . :	<b>Src Port: 1352,Unassigned</b>		<b>Dest Port: 3853,Unassigned</b>			
	SEQ Number: 1276843135 ('4C1B147F'X)		ACK Number: 1771096846 ('			
	Code Bits: ACK PSH		Window: 8192 TCP Option: N			

Figure 7-14 Example of a changing MAC address in a conversation

## Fixing the problem

If you determine that ARP storms are happening on your system and they are affecting your network performance, then you need to change the TCP/IP routing to fix this problem. There are two methods to correct this problem (you only need to use one method):

- ▶ Change the router or switch to use static entries for the system. By creating static entries, the device never purges its table, thus avoiding the performance issues.
- ▶ Change the TCP/IP configuration on the iSeries server so that each active NIC has its own preferred route. Run the Add TCP/IP Route (ADDTCPRTE) CL command to create a TCP/IP route for each interface.

```
ADDTCPRTE RTEDEST(*DFTRROUTE) SUBNETMASK(*NONE) NEXTHOP('10.1.1.5') BINDIFC('10.1.1.2')
```

**Note:** Adding the additional TCP/IP routes is the preferred method for solving ARP storms.

Figure 7-15 shows an example of preferred bindings on the Work with TCP/IP Routes display.

Work with TCP/IP Routes				
Type options, press Enter. 1=Add 2=Change 4=Remove 5=Display				System: RCHAS12
Opt	Route Destination	Subnet Mask	Next Hop	Preferred Interface
	*DFTRROUTE	*NONE	10.1.1.5	10.1.1.1
	*DFTRROUTE	*NONE	10.1.1.5	10.1.1.2
	*DFTRROUTE	*NONE	10.1.1.5	10.1.1.3
	*DFTRROUTE	*NONE	10.1.1.5	10.1.1.4
				Bottom
F3=Exit	F5=Refresh	F6=Print list	F11=Display type of service	
F12=Cancel	F17=Top	F18=Bottom		

Figure 7-15 CFGTCP option 2 with preferred bindings

## 7.5 Workplace Collaboration Services tuning

Workplace Collaboration Services performance can be impacted in a number of different ways. This section shows you how to:

- ▶ Optimize startup times by using a classloader cache file
- ▶ Tune the WebSphere Portal server associated with your Workplace Collaboration Services server
- ▶ Take advantage of Edge Side Include (ESI) caching
- ▶ Use X Virtual Frame Buffer (XVFB) to improve document rendering services

**Note:** Many of the tuning adjustments discussed in this section will be applied automatically by a Workplace Collaboration Services deployment script in a future release of the Workplace Collaboration Services product.

## 7.5.1 Startup performance tuning

You can improve the startup time of the Workplace Collaboration Services server by making call caching changes to the JVM environment. In our lab environment, this change reduced the overall startup time of the WebSphere\_Portal server from 30 minutes to 10 to 12 minutes. The caching change involves two steps:

1. Create a Classloader Cache file on the i5/OS file system.
2. Configure the Workplace JVMs to use the classloader cache file.

For more information about the classloader cache, see page 4 of the *Basic Java Performance for iSeries* guide, which is available on the Web at the following address:

<http://www.ibm.com/servers/eserver/iseries/perfmgmt/pdf/BasicJavaPerf.pdf>

### Creating a classloader cache file on the i5/OS file system

The first step involved in improving the startup times of a Workplace Collaboration Services server is to create the classloader cache file. This file resides in the integrated file system on the i5/OS. The classloader cache is a feature that allows the JVM to remember classes that have been loaded with user classloaders. This feature improves the startup performance of classes loaded by user classloaders. It allows Java programs created by user classloaders to be cached for reuse, avoiding Java program creation and bytecode verification during the initial class loading.

You must select a location for the classloader cache file. We recommend that you do not place the classloader cache file in a temporary directory, because it may get deleted. In our example, we created the classloadercache.jar file in the /cache directory.

The following steps explain how to create the classloadercache.jar file from the Qshell environment on the iSeries server.

**Note:** You only need to create the classloader cache file one time on an iSeries server because multiple Workplace Collaboration Services servers can use this file.

1. From an i5/OS command line, run the STRQSH command to access the Qshell environment.
2. Switch to the directory where the JAR file will reside. Make the directory first using the `mkdir` command if necessary.  

```
mkdir /cache  
cd /cache
```
3. Create a dummy file to place the JAR file. The name can be anything; we used *example*:  

```
touch example
```
4. Build the JAR file using the `jar` command. In this example, we create a JAR file called `classloadercache.jar`:  

```
jar -cf classloadercache.jar example
```
5. Clean up the dummy file that was created using the `touch` command from step 3:  

```
rm example
```

Figure 7-16 shows the results of these commands from within Qshell.

```
QSH Command Entry

$
> mkdir /cache
$
> cd /cache
$
> touch example
$
> jar -cf classloadercache.jar example
$
> rm example
$

===>

F3=Exit  F6=Print  F9=Retrieve  F12=Disconnect
F13=Clear F17=Top  F18=Bottom  F21=CL command entry
```

Figure 7-16 Creating the classloadercache.jar file from Qshell environment

6. Press F3 to exit Qshell.
7. The classloadercache.jar file is now created on the i5/OS file system and is ready for use by the Workplace Collaboration Services server. We recommend that you change the ownership by entering the following command:

```
CHGOWN OBJ('/cache/classloadercache.jar') NEWOWN(QEJBSVR)
```

### Configuring the JVMs to use the classloader cache file

Now that the classloader cache file has been created, you must enable its use in the JVMs that will be used by the Workplace Collaboration Services servers. You use the WebSphere Application Server Administrative Console to enable the Workplace JVMs to use the classloader cache.

In this section, you define new Java system properties that is set in the memory of this JVM to improve startup performance of the WebSphere\_Portal server. You define the following properties:

- ▶ *os400.define.class.cache.file* is required to enable the Java user classloader cache function. This property is set to the full path name of a valid .jar file that holds the Java program objects. This is the classloader cache file that you created in “Creating a classloader cache file on the i5/OS file system” on page 341.
- ▶ *os400.define.class.cache.hours* specifies how long an unused Java program persists in the cache. When the timeout is reached, the Java program is removed from the class. This value is specified in an interval of hours.
- ▶ *os400.define.class.cache.maxpgms* specifies the maximum number of Java programs that the cache can hold. When the value specified is reached, the least recently accessed Java program is replaced.

To define these new properties:

1. Open the WebSphere Application Server Administrative Console for the Workplace Collaboration Services server. For details, see “Accessing the WebSphere Application Server Administrative Console” on page 200.
2. Log in as the Workplace Collaboration Services administrator.
3. In the left navigation pane, click **Servers** → **Application Servers** (Figure 7-17).
4. In the Application Servers panel on the right, select the **WebSphere\_Portal** server (Figure 7-17).



Figure 7-17 WebSphere Application Server Administrative Console

5. In the WebSphere\_Portal panel, scroll down to the Additional Properties section and select **Process Definition** as shown in Figure 7-18.

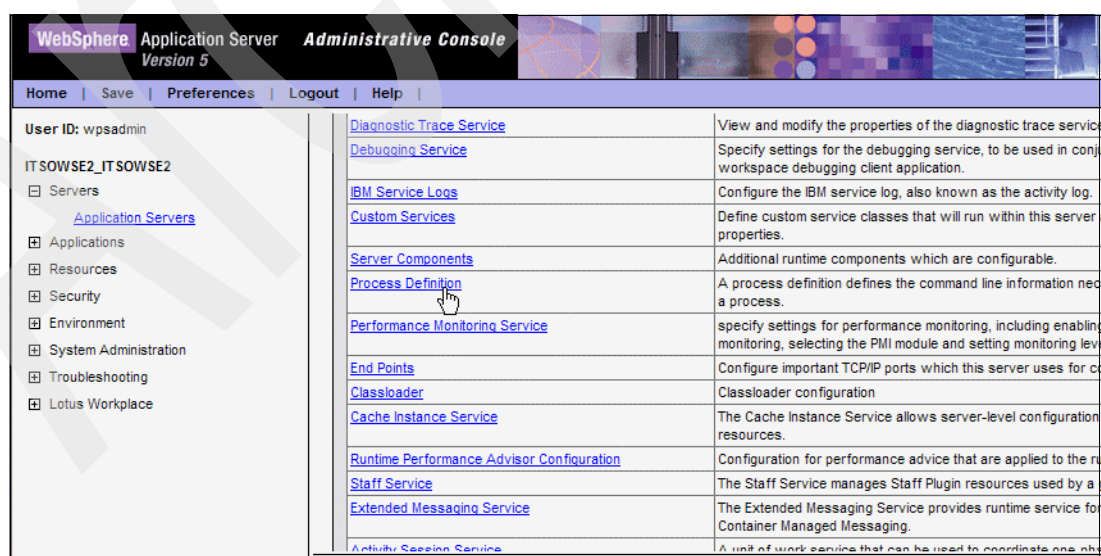


Figure 7-18 Selecting the Process Definition property

6. In the Process Definition panel, under the Additional Properties section, select **Java Virtual Machine** as shown in Figure 7-19.

Additional Properties	
<a href="#">Java Virtual Machine</a>	Advanced Java virtual machine settings.
<a href="#">Process Execution</a>	A set of properties that control how the operating system process executes, such as RunAs permissions, Umask, process priority.
<a href="#">Process Logs</a>	A set of properties that control how the process native input/output streams are directed.
<a href="#">Environment Entries</a>	A list of settings to be added to the execution environment for the process.
<a href="#">Monitoring Policy</a>	A set of properties that control how the process is monitored by the node agent.
<a href="#">Logging and Tracing</a>	Specify Logging and Trace settings for this server.

Figure 7-19 Selecting the Java Virtual Machine property

7. In the Java Virtual Machine panel, under the Additional Properties section, select **Custom Properties** as shown in Figure 7-20.

Additional Properties	
<a href="#">Custom Properties</a>	Java system properties to be set in the memory for this JVM.

Figure 7-20 Selecting Custom Properties

8. Add the following three Java system properties that will be associated with the JVM for this WebSphere\_Portal server:
  - os400.define.class.cache.file
  - os400.define.class.cache.hours
  - os400.define.class.cache.maxpgms
  - a. Click the **New** button to define a new Custom Property.
  - b. In the New panel (Figure 7-21), type the following values for the Name and Value parameters and click **OK**:
    - Name: os400.define.class.cache.file
    - Value: /cache/classloadercache.jar

The screenshot shows the IBM Administrative Console interface. The breadcrumb trail at the top reads: [Application Servers](#) > [WebSphere\\_Portal](#) > [Process Definition](#) > [Java Virtual Machine](#) > [Custom Properties](#) > **New**. Below the breadcrumb, there is a description: "Specifies arbitrary name/value pairs of data, where the name is a property key and the value is a string value which can be used to set internal system configuration properties." The main section is titled "Configuration" and contains a "General Properties" table. The table has three rows: "Name" with the value "os400.define.class.cache.file", "Value" with the value "/cache/classloadercache.jar", and "Description" which is empty. To the right of each row is a help icon and a description: "Specifies the name (or key) for the property.", "Specifies the value paired with the specified name.", and "Provides information about the name-value pair." respectively. At the bottom of the dialog are four buttons: "Apply", "OK", "Reset", and "Cancel".

Figure 7-21 Defining the new custom properties for os400.define.class.cache.file

- c. Under the Additional Properties section, select **Custom Properties** as shown in Figure 7-20.



- d. Click the **New** button to define a new Custom Property.
- e. In the New panel (Figure 7-22), type the following values for the Name and Value parameters and click **OK**:
  - Name: `os400.define.class.cache.hours`
  - Value: 168

The screenshot shows the 'Administrative Console' interface with the 'New' panel selected. The breadcrumb trail is 'Application Servers > WebSphere Portal >'. The panel title is 'New'. Below the title is a description: 'Specifies arbitrary name/value pairs of data, where the name is a property key and the value is a string value which can be used to set internal system configuration properties.' A 'Configuration' tab is active. Under the 'General Properties' section, there are three fields: 'Name' with the value 'os400.define.class.cache.hours', 'Value' with the value '168', and 'Description' which is empty. To the right of these fields are three informational icons with descriptions: 'Specifies the name (or key) for the property.', 'Specifies the value paired with the specified name.', and 'Provides information about the name-value pair.' At the bottom are buttons for 'Apply', 'OK', 'Reset', and 'Cancel'.

Figure 7-22 Defining the new custom properties for `os400.define.class.cache.hours`

- f. Under the Additional Properties section, select **Custom Properties** as shown in Figure 7-20.
- g. Click the **New** button to define a new Custom Property.
- h. In the New panel (Figure 7-23), type the following values for the Name and Value parameters:
  - Name: `os400.define.class.cache.maxpgms`
  - Value: 40000

The screenshot shows the 'Administrative Console' interface with the 'New' panel selected. The breadcrumb trail is 'Application Servers > WebSphere Portal >'. The panel title is 'New'. Below the title is a description: 'Specifies arbitrary name/value pairs of data, where the name is a property key and the value is a string value which can be used to set internal system configuration properties.' A 'Configuration' tab is active. Under the 'General Properties' section, there are three fields: 'Name' with the value 'os400.define.class.cache.maxpgms', 'Value' with the value '40000', and 'Description' which is empty. To the right of these fields are three informational icons with descriptions: 'Specifies the name (or key) for the property.', 'Specifies the value paired with the specified name.', and 'Provides information about the name-value pair.' At the bottom are buttons for 'Apply', 'OK', 'Reset', and 'Cancel'.

Figure 7-23 Defining the new custom properties for `os400.define.class.cache.maxpgms`

- i. In the Message(s) box, click **Save** to save and apply the changes to the master configuration file as shown in Figure 7-24.

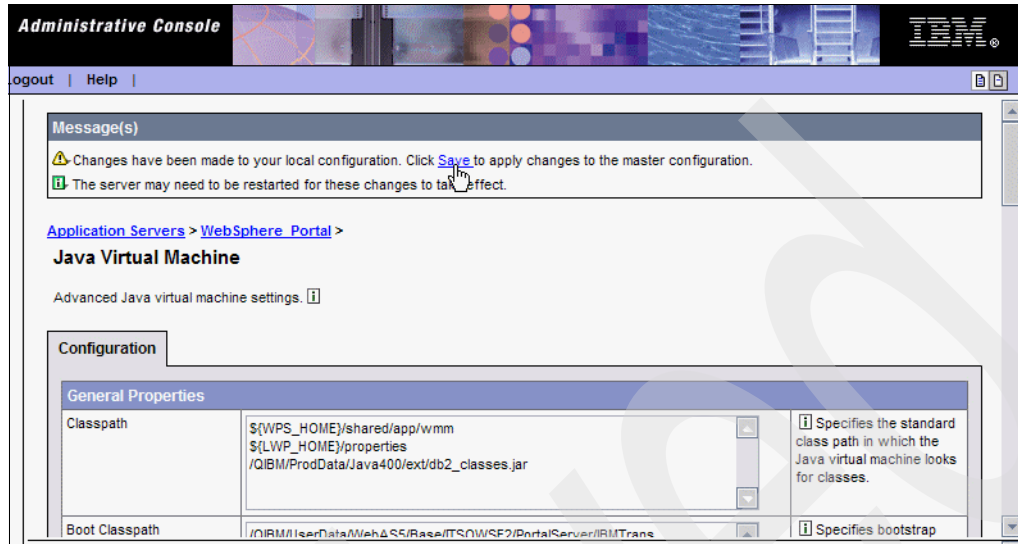


Figure 7-24 Applying the changes to the master configuration

9. Click **Save** as shown in Figure 7-25 to save the changes to the master configuration.

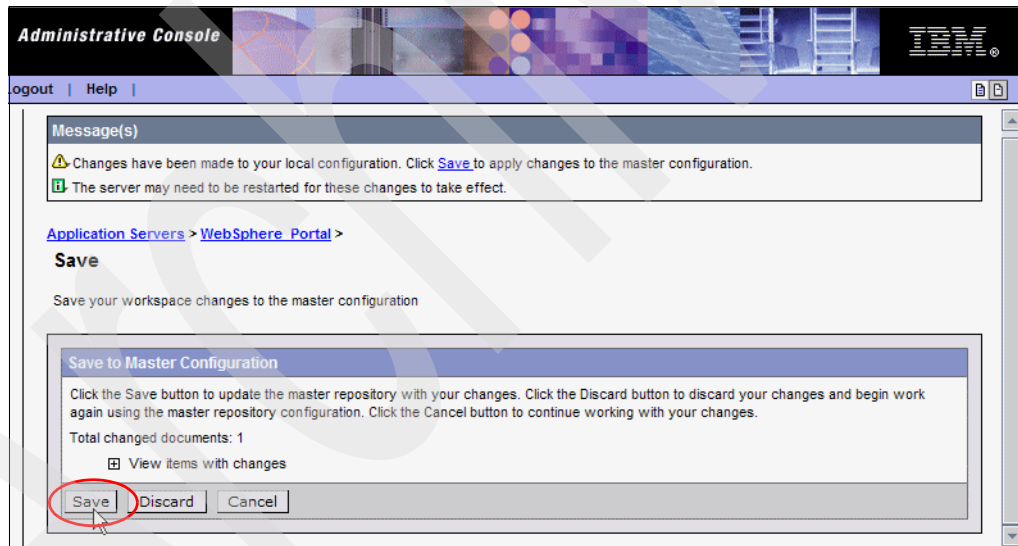


Figure 7-25 Saving the changes to the master configuration

10. Repeat steps 4 on page 343 through step 9 on page 346 for the Mail\_Server\_1 server as well.
11. Stop and restart both the WebSphere\_Portal server and the Mail\_Server\_1 server to enable the custom properties that you just created.

### **Verifying that the classloader cache file is being used**

When the WebSphere\_Portal server is restarted, the JVM in which it is running uses the new properties that you just created. Any typos in the properties that you added cause them to not be used by the WebSphere\_Portal server's JVM.

To verify that the JVM is really using the classloader cache file that you created and have now pointed the WebSphere\_Portal server to, use the Display Java Program (DSPJAVPGM) CL command:

```
DSPJAVPGM CLSF('/cache/classloadercache.jar')
```

Figure 7-26 shows an example of the information that is displayed for this file. The key value to observe is the number associated with Java programs. The value here should grow as the Workplace Collaboration Services server's WebSphere Portal server starts and user activity begins.

**Note:** Displaying the classloader cache file from the i5/OS is not dynamically updated. Exit and display the file again to view updated statistics.

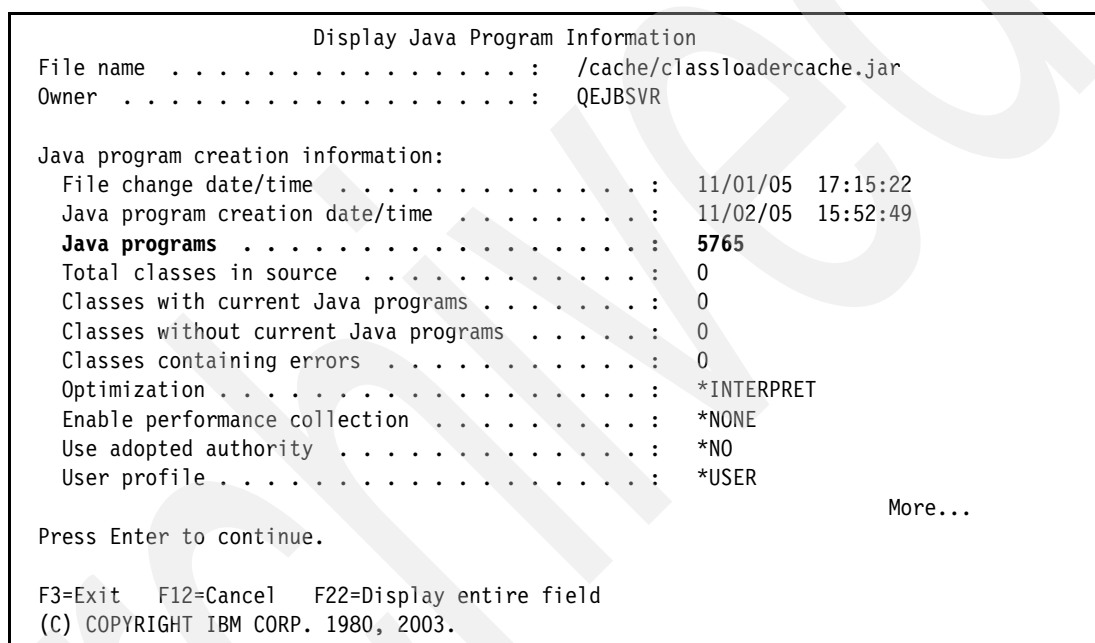


Figure 7-26 Display Java Program Information

## 7.5.2 Workplace Collaboration Services WebSphere Portal tuning

The critical elements that you should address to optimize the Workplace Collaboration Services WebSphere Portal server include:

- ▶ Connection pools
- ▶ WebSphere Portal server settings
- ▶ Statement cache size

We examine each of these tuning elements in the sections that follow.

### Connection pools

In this section, we focus on setting the minimum and maximum connections in each of the connection pools. The minimum and maximum connection pool values that are changed in this section from the WebSphere Application Server Administrative Console are listed in Table 7-7, Table 7-8, and Table 7-9. These are *initial* values that you should use as starting points. We recommend that you do *not* keep the minimum connections at the default value of 1 when running on i5/OS.

You adjust the connection pool minimum and maximum settings for the following Java Database Connectivity (JDBC™) providers:

- ▶ lwp25JDBC
- ▶ wpcp50JDBC
- ▶ wps50JDBC

**Note:** Monitor the initial recommended values and adjust them to optimize performance in your specific Workplace Collaboration Services environment.

Table 7-7 shows the recommended maximum and minimum connection pool sizes for the lwp25JDBC provider. The Default value max/min column lists the default setting for the values, and the Recommended value max/min column lists the recommended initial setting.

*Table 7-7 Recommended initial values for the lwp25JDBC provider*

Connection pool value	Default value max/min	Recommended value max/min
Resources → JDBC Providers → lwp25JDBC → Data Sources → lwpApp → Connection Pool	40/1	50/50

Table 7-8 lists the maximum and minimum connection pool sizes for the wpcp50JDBC provider.

*Table 7-8 Recommended initial values for the wpcp50JDBC JDBC provider*

Connection pool value	Default value max/min	Recommended value max/min
Resources → JDBC Providers → wpcp50JDBC → Data Sources → feedback5 → Connection Pool	10/1	50/30
Resources → JDBC Providers → wpcp50JDBC → Data Sources → wpcpdfds → Connection Pool	10/1	50/30
Resources → JDBC Providers → wpcp50JDBC → Data Sources (Version 4) → feedbackDS → Connection Pool	30/1	50/30
Resources → JDBC Providers → wpcp50JDBC → Data Sources (Version 4) → persDS → Connection Pool	30/1	50/30
Resources → JDBC Providers → wpcp50JDBC → Data Sources (Version 4) → wcmDS → Connection Pool	30/1	64/64

Table 7-9 lists the recommended maximum and minimum connection pool settings for the wps50JDBC provider.

*Table 7-9 Recommended initial values for the wps50JDBC JDBC provider*

Connection pool value	Default value max/min	Recommended value max/min
Resources → JDBC Providers → wps50JDBC → Data Sources → wmmDS → Connection Pool	10/1	50/30
Resources → JDBC Providers → wps50JDBC → Data Sources → wps50DS → Connection Pool	10/1	50/50

The WebSphere Application Server Administrative Console is used to access the connection pool settings for the Workplace Collaboration Services server.

**Important:** Changes to the connection pool settings require that you restart the Workplace Collaboration Services server to enable them.

To set the recommended initial values of the connection pools:

1. Open the WebSphere Application Server Administrative Console for the Workplace Collaboration Services server. For details, see “Accessing the WebSphere Application Server Administrative Console” on page 200.
2. Log in as the Workplace Collaboration Services administrator.
3. Under the Workplace Collaboration Services server, expand **Resources** and select **JDBC Providers** as shown in Figure 7-27.



Figure 7-27 WebSphere Application Server Administrative Console

4. In the JDBC Providers panel (Figure 7-28), scroll down and click **lwp25JDBC**.

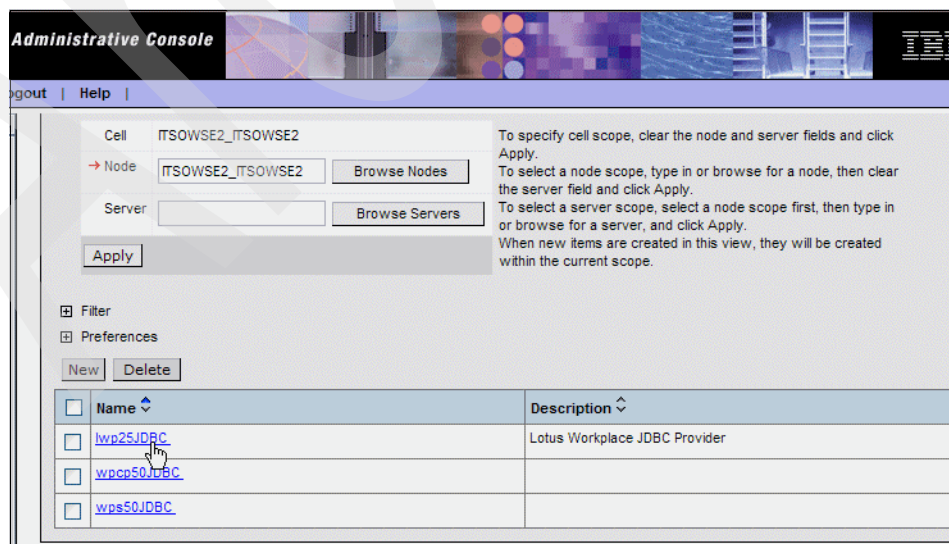


Figure 7-28 Selecting lwp25JDBC from the JDBC Providers panel

5. In the lwp25JDBC panel (Figure 7-29), under the Additional Properties section, select **Data Sources**.

Additional Properties	
<a href="#">Data Sources</a>	Data Source is used by the application to access the data from the database. A data source is created under a JDBC provider which provides the specific JDBC driver implementation class.
<a href="#">Data Sources (Version 4)</a>	This is the WebSphere 4.x data source that uses the WebSphere old ConnectionManager architecture. All the EJB1.x modules must use this data source.

Figure 7-29 Selecting Data Sources under Additional Properties for lwp25JDBC

6. In the Data Sources panel (Figure 7-30), select **lwpApp**.

JDBC Providers > lwp25JDBC >

### Data Sources

Data Source is used by the application to access the data from the database. A data source is created under a JDBC provider which provides the specific JDBC driver implementation class. [i]

Total: 1

☐ Filter

☐ Preferences

<input type="checkbox"/>	Name ▾	JNDI Name ▾	Description ▾	Category ▾
<input type="checkbox"/>	<a href="#">lwpApp</a>	jdbc/lwpApp	Workplace DataSource	

Figure 7-30 Selecting lwpApp under Resources → JDBC Providers → lwp25JDBC → Data Sources

7. In the lwpApp panel, under Additional Properties (Figure 7-31), select **Connection Pool**.

Additional Properties	
<a href="#">Connection Pool</a>	An optional set of connection pool settings.
<a href="#">Custom Properties</a>	Properties that may be required for Resource Providers and Resource Factories. For example, most database vendors require additional custom properties for data sources that will access the database.

Figure 7-31 Selecting Connection Pool

8. Under General Properties, set both the Maximum Connections and Minimum Connections to an initial value of 50 as shown in Figure 7-32.

**Note:** The value of 50 connections is used as a starting point and can be adjusted to meet a Workplace Collaboration Services environment. We recommend that you do *not* keep the minimum connections at the default value of 1 when running on i5/OS.

The screenshot shows the 'Connection Pools' configuration window. The 'General Properties' tab is active. The 'Scope' is set to 'cells:ITSOWCS05\_ITSOWCS05.nodes:ITSOWCS05\_ITSOWCS05'. The 'Connection Timeout' is set to 1800 seconds. The 'Max Connections' and 'Min Connections' are both set to 50. Information icons are present for each property.

General Properties		
Scope	cells:ITSOWCS05_ITSOWCS05.nodes:ITSOWCS05_ITSOWCS05	<i>i</i> The scope of the configured resource. This value indicates the configuration location for the configuration file.
Connection Timeout	1800 seconds	<i>i</i> Interval, in seconds, after which a connection request times out and a <code>ConnectionWaitTimeoutException</code> is thrown.
Max Connections	50 connections	<i>i</i> The maximum number of <code>ManagedConnections</code> that can be created in this pool.
Min Connections	50 connections	<i>i</i> The minimum number of <code>ManagedConnections</code> that should be maintained.

Figure 7-32 Setting the Max and Min Connections

9. Click **Apply** to begin the process of saving these values.
10. In the Messages box, click **Save** to save the values. When you click Save, the Save to Master Configuration panel is displayed. Click the **Save** button to complete the saving of the connection pool values to the master configuration. See Figure 7-33.

The screenshot shows the 'Save to Master Configuration' dialog box. It contains a message: '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.' Below the message, it says 'JDBC Providers > lwp25JDBC > Data Sources > lwpApp > Connection Pools > Save'. The dialog box has a title bar 'Save to Master Configuration' and a description: '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: 1. View items with changes'. At the bottom, there are three buttons: 'Save', 'Discard', and 'Cancel'. The 'Save' button is circled in red.

Figure 7-33 Saving the connection pool values to the master configuration

11. You return to the main page for the Workplace Collaboration Services server that you are administering.
12. Under Resources, click **JDBC Providers** again as shown in Figure 7-27 on page 349.
13. Using Table 7-8 on page 348 as a guide, change the connection pool settings for the *wpcp50JDBC* JDBC provider.



14. Save the maximum and minimum wpcp50JDBC connection pool values.
15. Under Resources, click **JDBC providers** again. See Figure 7-27 on page 349.
16. Using Table 7-9 on page 348 as guide, change the connection pool settings for the *wps50JDBC* JDBC provider.
17. Save the minimum and maximum wps50JDBC connection pool values.

**Important:** Before you move on to the next step, *save* the changes made to each connection pool.

18. After you change and save all the connection pool values, stop and restart the Workplace Collaboration Services server.

After the new connection pool values are enabled, monitor the performance and adjust these values to meet your Workplace Collaboration Services server environment needs. Use the Tivoli Performance Viewer to monitor performance. For details about how to use the Tivoli Performance Viewer, see “Monitoring performance with Tivoli Performance Viewer (TPV)” in the WebSphere Application Server Express Version 6.0.x Information Center at the following address:

[http://publib.boulder.ibm.com/infocenter/wasinfo/v6r0/index.jsp?topic=/com.ibm.websphere.express.doc/info/exp/ae/tprf\\_tpvmonitor.html](http://publib.boulder.ibm.com/infocenter/wasinfo/v6r0/index.jsp?topic=/com.ibm.websphere.express.doc/info/exp/ae/tprf_tpvmonitor.html)

## WebSphere Portal server setting

In this section, we discuss the recommended changes in the WebSphere Portal server to optimize performance when running on i5/OS. The WebSphere Application Server Administrative Console is used to set these values to begin optimizing performance. Table 7-10 lists the recommended WebSphere\_Portal settings.

Table 7-10 WebSphere\_Portal recommended settings

WebSphere_Portal server setting	Default value min/max	Recommended value min/max
Server → Application Server → WebSphere_Portal → Web Container → Thread Pool	10/50	50/50
Server → Application Server → WebSphere_Portal → Logging and Tracing → IBM Service Logs → Message Filtering	Log all messages	Log error



After you log into the WebSphere Application Server Administrative Console, perform the following steps to set the initial recommended values.

1. Under the Workplace Collaboration Services server, expand the **Servers** and select **Application Servers**. See Figure 7-34.
2. In the Application Servers panel on the right (Figure 7-34), select **WebSphere\_Portal**.

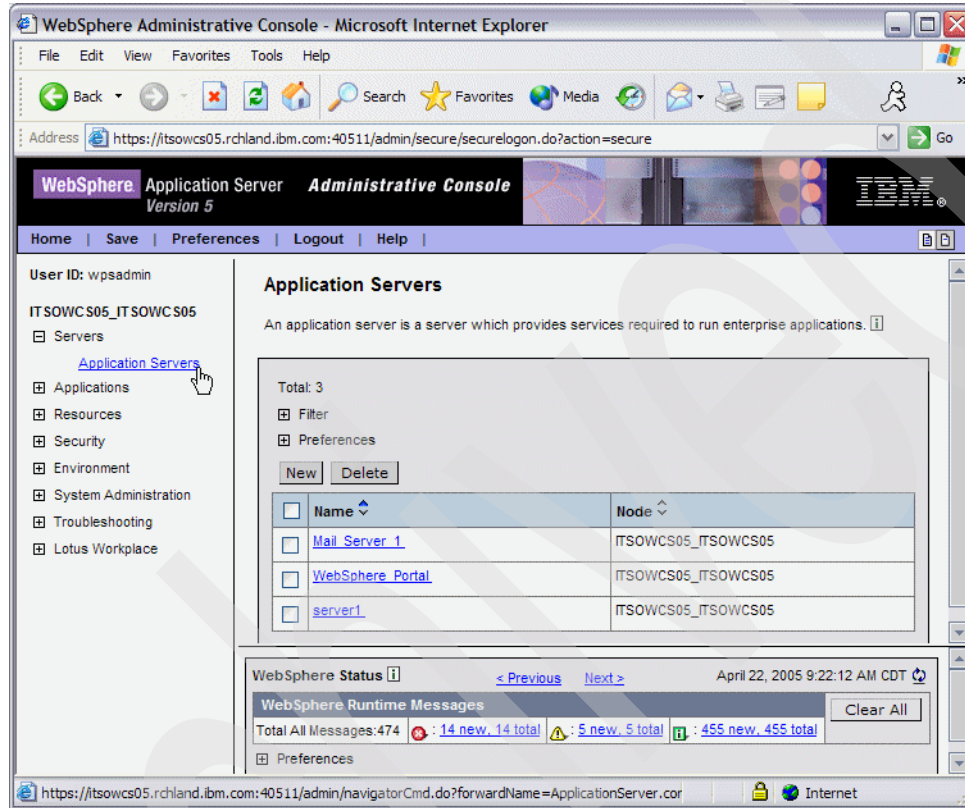


Figure 7-34 WebSphere Application Server Administrative Console

3. In the WebSphere\_Portal panel, under the Additional Properties section, click **Web Container** (Figure 7-35).

Additional Properties	
<a href="#">Transaction Service</a>	Specify settings for the Transaction Service, as well as manage active transaction locks.
<a href="#">Web Container</a>	Specify thread pool and dynamic cache settings for the container. Also, specify session manager settings such as persistence and tuning parameters, and HTTP transport settings.

Figure 7-35 Selecting Web Container under Additional Properties

4. In the Web Container panel, under the Additional Properties section, click **Thread Pool** (Figure 7-36).

Additional Properties	
<a href="#">Thread Pool</a>	The thread pool settings for the Web container
<a href="#">Session Management</a>	Configure the session manager associated with this webcontainer
<a href="#">HTTP transports</a>	Configure the HTTP transports associated with this webcontainer
<a href="#">Custom Properties</a>	Additional custom properties for this runtime component. Some components may make use of custom configuration properties which can be defined here.

Figure 7-36 Selecting Thread Pool under Additional Properties

5. In the Thread Pool panel, under General Properties, set the Minimum and Maximum Size to 50. See Figure 7-37.

**Note:** The default maximum size for the thread pool is 50. You do not need to change this setting unless it was previously altered.

[Application Servers](#) > [WebSphere Portal](#) > [Web Container](#) >

### Thread Pool

A thread pool allows components of the server to reuse threads to eliminate the need to create new threads at runtime. Creating new threads is typically a time and resource intensive operation. [i](#)

Configuration

General Properties		
Minimum Size	* 50 threads	<a href="#">i</a> Specifies the minimum number of threads to allow in the pool.
Maximum Size	* 50 threads	<a href="#">i</a> Specifies the maximum number of threads to allow in the pool.

Figure 7-37 Setting the Minimum and Maximum Size threads

6. Click **Apply** to begin the process of saving these values.
7. Click **Save** to continue saving the values. See Figure 7-33 on page 351 for an example.
8. Click the **Save** button to complete the saving of the Thread Pool Properties as shown in Figure 7-33 on page 351.
9. In the navigation pane, select **Servers** → **Application Servers** → **WebSphere\_Portal**.

10. In the WebSphere\_Portal panel (Figure 7-38), under the Additional Properties section, click **Logging and Tracing**.

Additional Properties	
<a href="#">Transaction Service</a>	Specify settings for the Transaction Service, as well as manage active transaction locks.
<a href="#">Web Container</a>	Specify thread pool and dynamic cache settings for the container. Also, specify session manager settings such as persistence and tuning parameters, and HTTP transport settings.
<a href="#">EJB Container</a>	Specify cache and datasource information for the container.
<a href="#">Dynamic Cache Service</a>	Specify settings for the Dynamic Cache service of this server.
<a href="#">Logging and Tracing</a>	Specify Logging and Trace settings for this server.

Figure 7-38 Selecting Logging and Tracing for WebSphere\_Portal

11. In the Logging and Tracing panel (Figure 7-39), click **IBM Service Logs**.

Logging and Tracing	
Configure logs and specify trace settings.	
<a href="#">Diagnostic Trace</a>	View and modify the properties of the diagnostic trace service.
<a href="#">JVM Logs</a>	View and modify the settings for the Java Virtual Machine (JVM) System.out and System.err logs.
<a href="#">Process Logs</a>	View or modify settings for specifying the files to which standard out and standard error streams write.
<a href="#">IBM Service Logs</a>	Configure the IBM service log, also known as the activity log.

Figure 7-39 Selecting IBM Service Logs under Logging and Tracing

12. In the IBM Service Logs panel (Figure 7-40), change the Message Filter field from Log all messages to **Log error**.

**Note:** Lowering the level of logging is a trade-off between optimizing performance and providing the necessary logging required in your operating environment. Consider this trade-off for each individual Workplace Collaboration Services server prior to making the error logging change.

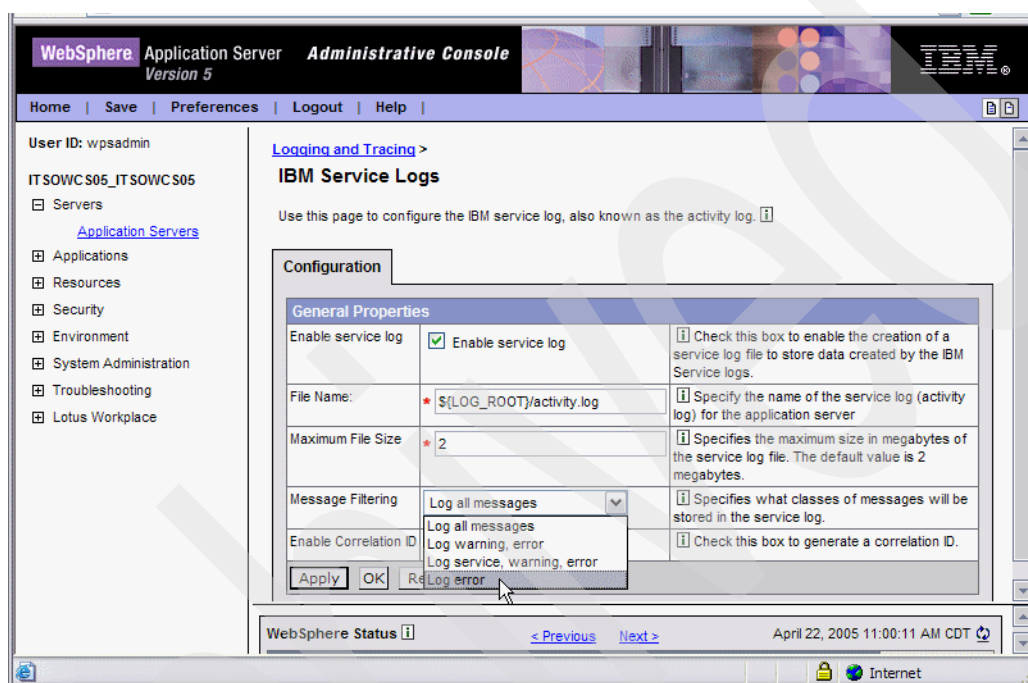


Figure 7-40 Setting the Message Filtering field to Log error

13. Click **Apply** to begin the process of saving these values.
14. Click **Save** to continue saving the values. See Figure 7-33 on page 351 as an example.
15. Click the **Save** button to complete the saving of the properties as shown Figure 7-33 on page 351.
16. Repeat steps 2 on page 353 through step 15 on page 356 for the Mail\_Server\_1 server.
17. Stop and restart both the WebSphere\_Portal server and the Mail\_Server\_1 server to enable these settings.

### Statement cache size

The statement cache is used to hold database queries that have gone through the prepare phase. The prepare phase is required so the database engine, DB2 Universal Database in our case, can parse the SQL text and perform the steps necessary to put the query into a form that the database can understand. After a database query is prepared, it can be executed over and over again without going through the prepare step. These prepared statements are placed in the statement cache, making it important that the size of the statement cache is set correctly.

For most implementations, you need to increase the size of the default statement cache of a Workplace Collaboration Services server. The actual increase varies by environment. The

default statement cache size of 10 is typically too low for most production environments and therefore needs to be increased.

For details about how to determine whether you need to increase the statement cache size on Workplace Collaboration Services server, refer to the paper *Tuning the WebSphere Prepared Statement Cache*, which you can find on the Web at the following address:

<http://www.ibm.com/servers/eserver/iseriess/perfmgmt/pdf/stmntcache.pdf>

**Tip:** It is important to increase the statement cache size when the connection pool sizes are increased. You can monitor the statement cache by using the Tivoli Performance Viewer.

You can change the statement cache size from the WebSphere Application Server Administrative Console. After you log into the WebSphere Application Server Administrative Console, perform the following steps to set the initial recommended value:

1. Under the Workplace Collaboration Services server, expand the **Resources** view and select **JDBC Providers**, as shown in Figure 7-27 on page 349.
2. In the JDBC Providers panel (Figure 7-41), scroll down and select **lwp25JDBC**.

<input type="checkbox"/>	Name ↕	Description ↕
<input type="checkbox"/>	<a href="#">lwp25JDBC</a>	Lotus Workplace JDBC Provider
<input type="checkbox"/>	<a href="#">wpcp50JDBC</a>	
<input type="checkbox"/>	<a href="#">wps50JDBC</a>	

Figure 7-41 Selecting lwp25JDBC from Resources → JDBC Providers

3. In the lwp25JDBC panel (Figure 7-42), under the Additional Properties section, click **Data Sources**.

Additional Properties	
<a href="#">Data Sources</a>	Data Source is used by the application to access the data from the database. A data source is created under a JDBC provider which provides the specific JDBC driver implementation class.
<a href="#">Data Sources (Version 4)</a>	This is the WebSphere 4.x data source that uses the WebSphere old ConnectionManager architecture. All the EJB1.x modules must use this data source.

Figure 7-42 Selecting Data Sources from JDBC Providers → lwp25JDBC

4. In the Data Sources panel (Figure 7-43), select **lwpApp**.

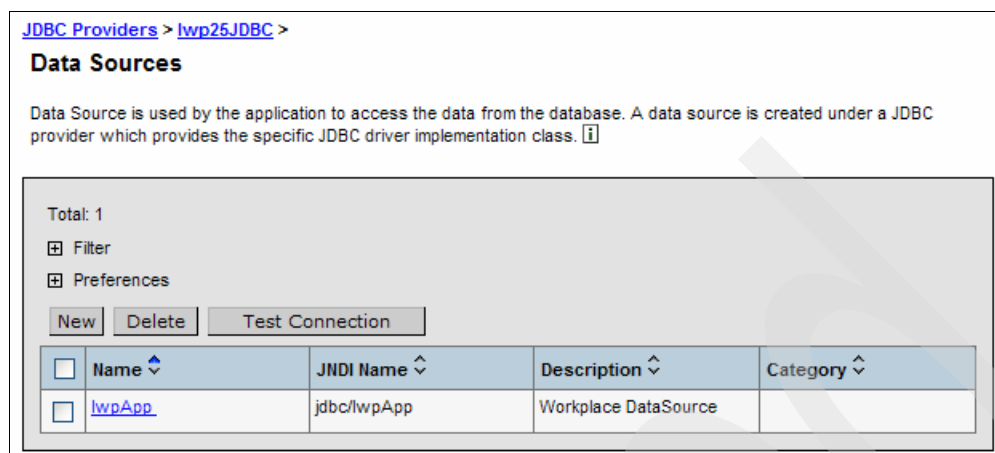


Figure 7-43 Selecting **lwpApp**

5. In the **lwpApp** panel (Figure 7-44), change the Statement Cache Size field to a higher value than the default of 10. The recommended starting value is 100.

Statement Cache Size	<input type="text" value="100"/>	statements
----------------------	----------------------------------	------------

Figure 7-44 Changing the Statement Cache Size field

6. Click **Apply** to begin the process of saving these values.
7. Click **Save** to continue saving the values. See Figure 7-33 on page 351 for an example.
8. Click the **Save** button to complete the saving of the Statement Cache Size as shown in Figure 7-33 on page 351.
9. Stop and restart the Workplace Collaboration Services server to enable the change.

### 7.5.3 Configuring Edge Side Include caching

This section explains how to enable the Web server plug-in containing the built-in Edge Side Include (ESI) processor. The ESI processor has the ability to cache whole pages as well as fragments, providing a higher cache hit ratio. The cache implemented by the ESI processor is an in-memory cache, not a disk cache. Therefore, the cache entries are not saved when the Web server is restarted.

**Note:** The ESI cache is effective only while the Workplace Collaboration Services server is running. If you restart the server, all pages must be recached.

For more information, refer to “Configuring Edge Side Include caching” in the WebSphere Information Center on the Web at the following address:

[http://publib.boulder.ibm.com/infocenter/wsphelp/index.jsp?topic=/com.ibm.websphere.nd.doc/info/ae/ae/tprf\\_esiedgecaching.html](http://publib.boulder.ibm.com/infocenter/wsphelp/index.jsp?topic=/com.ibm.websphere.nd.doc/info/ae/ae/tprf_esiedgecaching.html)

We recommend that you end the Workplace Collaboration Services server to enable the ESI processor. Perform the following steps to enable the ESI processor:

**Important:** If Secure Sockets Layer (SSL) is enabled, enabling the ESI processor is not supported and should be left disabled.

1. Stop the Workplace Collaboration Services server. See 5.2, “Starting and stopping Workplace Collaboration Services” on page 203, for details.
2. From an i5/OS command line, edit the plugin-cfg.xml file using the Edit File (EDTF) CL command. The plugin-cfg.xml file is found in the /QIBM/UserData/WebAS5/base/*WCSServerName*/config/cells/ directory, where *WCSServerName* is the name of the Workplace Collaboration Services server. Figure 7-45 shows an example of the contents of this file.

**Note:** You are unable to edit the plugin-cfg.xml file from the iSeries Navigator interface.

```
Edit File: /qibm/userdata/webas5/base/ITS0WCS05/config/cells/plugin-cfg.xml
Record :      1  of      359 by 8      Column :      1      91 by 74
Control :

CMD ....+....1....+....2....+....3....+....4....+....5....+....6....+....7....+
*****Beginning of data*****
<?xml version="1.0" encoding="ISO-8859-1"?>
<Config ASDisableNagle="false" AcceptAllContent="false"
  AppServerPortPreference="HostHeader" ChunkedResponse="false"
  IISDisableNagle="false" IISPluginPriority="High"
  IgnoreDNSFailures="false" RefreshInterval="60"
  ResponseChunkSize="64" VHostMatchingCompat="false">
  <Log LogLevel="Error" Name="/QIBM/UserData/WebAS5/Base/ITS0WCS05/logs/ht
  <Property Name="ESIEnable" Value="false"/>
  <Property Name="ESIMaxCacheSize" Value="1024"/>
  <Property Name="ESIInvalidationMonitor" Value="false"/>
  <VirtualHostGroup Name="default_host">
    <VirtualHost Name="*:10222"/>
    <VirtualHost Name="*:80"/>
    <VirtualHost Name="*:10223"/>

F2=Save  F3=Save/Exit  F12=Exit  F15=Services  F16=Repeat find
F17=Repeat change  F19=Left  F20=Right
```

Figure 7-45 Editing the plugin-cfg.xml file

- Find the parameter `<Property Name="ESIEnable" Value="false"/>` and change it to `<Property Name="ESIEnable" Value="true"/>`, as shown in Figure 7-46.
- Adjust the value of parameter `<Property Name="ESIMaxCacheSize" Value="1024"/>` also shown in Figure 7-46. Set the `ESIMaxCacheSize` to a size that is large enough to hold statically served images and pages that the Workplace Collaboration Services server will serve. If you have a lot of statically served pages and images, increase the size upward from the default 1 Mb value.

**Note:** Refer to the article “Optimizing Static-File Serving in a WebSphere Application,” which contains information about how to set the ESI cache size, at the following Web address:

<http://www.eservercomputing.com/ME2/Audiences/dirmod.asp?sid=&nm=&type=Publishing&mod=Publications%3A%3AArticle&mid=8F3A7027421841978F18BE895F87F791&AudID=1E8FEE745A284521B6CFB3FD70B49099&tier=4&id=54E37DA2F24341BC84C0F25B5A41218D>

```

Edit File: /qibm/userdata/webas5/base/ITSOWCS05/config/cells/plugin-cfg.xml
Record :      1    of      359 by      8      Column :      1    91 by      74
Control :

CMD .....1.....2.....3.....4.....5.....6.....7.....
*****Beginning of data*****
<?xml version="1.0" encoding="ISO-8859-1"?>
<Config ASDisableNagle="false" AcceptAllContent="false"
  AppServerPortPreference="HostHeader" ChunkedResponse="false"
  IISDisableNagle="false" IISPluginPriority="High"
  IgnoreDNSFailures="false" RefreshInterval="60"
  ResponseChunkSize="64" VHostMatchingCompat="false">
  <Log LogLevel="Error" Name="/QIBM/UserData/WebAS5/Base/ITSOWCS05/logs/ht
  <Property Name="ESIEnable" Value="true"/>
  <Property Name="ESIMaxCacheSize" Value="1024"/>
  <Property Name="ESIInvalidationMonitor" Value="false"/>
  <VirtualHostGroup Name="default_host">
    <VirtualHost Name="*:1022"/>
    <VirtualHost Name="*:80"/>
    <VirtualHost Name="*:1023"/>

F2=Save  F3=Save/Exit  F12=Exit  F15=Services  F16=Repeat find
F17=Repeat change  F19=Left  F20=Right

```

Figure 7-46 Setting property ESI Enabled to true

- Press F3 twice to save and exit the file.
- Start the Workplace Collaboration Services server to enable the ESI processor.

### Setting the ESI timeout for the JVM

An ESI timeout value is also associated with the JVM. The value specified for the `KeepAliveTimeout` and JVM ESI timeout values must match. If you change the default setting for `KeepAliveTimeout`, you must increase the ESI timeout value from the default of 300 seconds (5 minutes). To increase the ESI timeout value to a higher value, set the property `-Dcom.ibm.com.servlet.file.esi.timeOut` for the JVM associated with the WebSphere\_Portal server.



To set the JVM ESI timeout value:

1. Open the WebSphere Application Server Administrative Console for the Workplace Collaboration Services server. For details, see “Accessing the WebSphere Application Server Administrative Console” on page 200.
2. Log in as the Workplace Collaboration Services administrator.
3. In the left navigation pane, select **Servers** → **Application Servers** as shown in Figure 7-47.

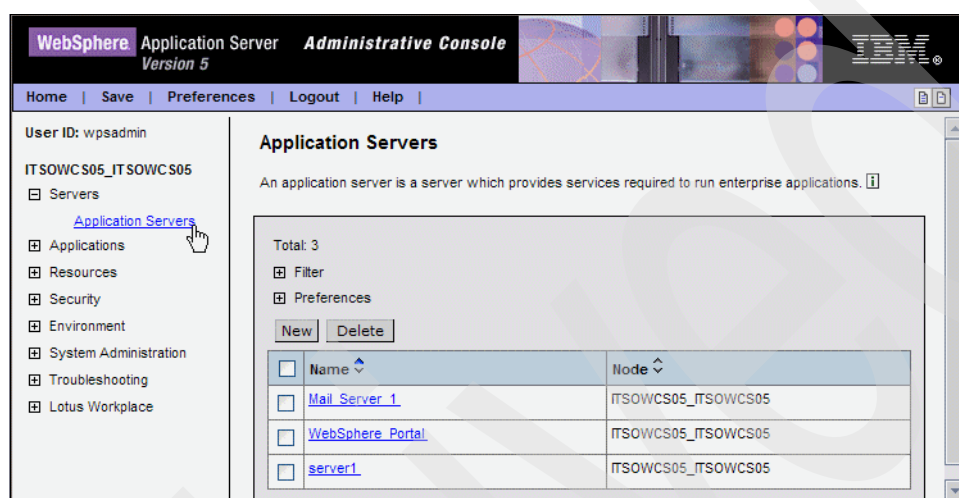


Figure 7-47 WebSphere Application Server Administrative Console

4. In the Application Servers panel, click the **WebSphere\_Portal** link.
5. In the WebSphere\_Portal panel, under the Additional Properties section, click the **Process Definition** link.
6. In the Process Definition panel, under the Additional Properties section, click the **Java Virtual Machine** link.
7. In the Java Virtual Machine panel, scroll down to the Generic JVM arguments field. Add the value `-Dcom.ibm.servlet.file.esi.timeout=900` as shown in Figure 7-48. If you set

the ESI timeout value to something other than 15 minutes, change the value here as appropriate. Click **OK**.

**Note:** If there is already an argument in the Generic JVM arguments field, place a space after that argument and add the new `-Dcom.ibm.servlet.file.esi.timeout=900` value.

The screenshot shows the WebSphere Administrative Console interface. The top navigation bar includes 'Home', 'Save', 'Preferences', 'Logout', and 'Help'. The left sidebar shows a tree view with 'Servers' selected. The main content area displays configuration settings for a server. The 'Generic JVM arguments' field is highlighted, showing the value `-Djava.compiler=NONE -Xdebug -Xnoc` and the newly added `-Dcom.ibm.servlet.file.esi.timeout=900`. Other fields include 'Debug Mode' (unchecked), 'Debug arguments' (empty), 'Executable JAR file name' (empty), and 'Disable JIT' (unchecked). A mouse cursor is pointing at the 'Generic JVM arguments' field.

Figure 7-48 Setting the Generic JVM argument field to `-Dcom.ibm.servlet.file.esi.timeout=900`

8. Click **Save** to save and apply the changes to the master configuration file shown in Figure 7-24 on page 346.
9. Click **Save** as shown Figure 7-25 on page 346 to save the changes to the master configuration.
10. Repeat steps 4 on page 361 through step 9 for the Mail\_Server\_1 server.
11. Restart the Workplace Collaboration Services server.

## 7.5.4 X Virtual Frame Buffer versus Virtual Network Computing

When you start your Workplace Collaboration Services server, you are asked to choose a document rendering service. This document rendering capability is required for the document management portal. Documents produced by many standard applications (such as word processors or spreadsheets) can be viewed as HTML pages using the document conversion services of Workplace Collaboration Services. This document conversion service is provided via one of two mechanisms on the iSeries:

- ▶ Virtual Network Computing (VNC)
- ▶ X Virtual Frame Buffer (XVFB)

The XVFB document rendering service is much more efficient than using the VNC server. To obtain the XVFB server, you must have installed the following items on your iSeries server:

- ▶ 5722-SS1 Option 43
- ▶ 5722-DG1 PTF SI20496

The option to select which document rendering server will be used for a Workplace Collaboration Services server occurs when you start the server. Figure 7-49 shows how you select the XVFB document rendering service.

**Note:** If you do not have PTF SI20496 installed, the only document rendering service you see is VNC.

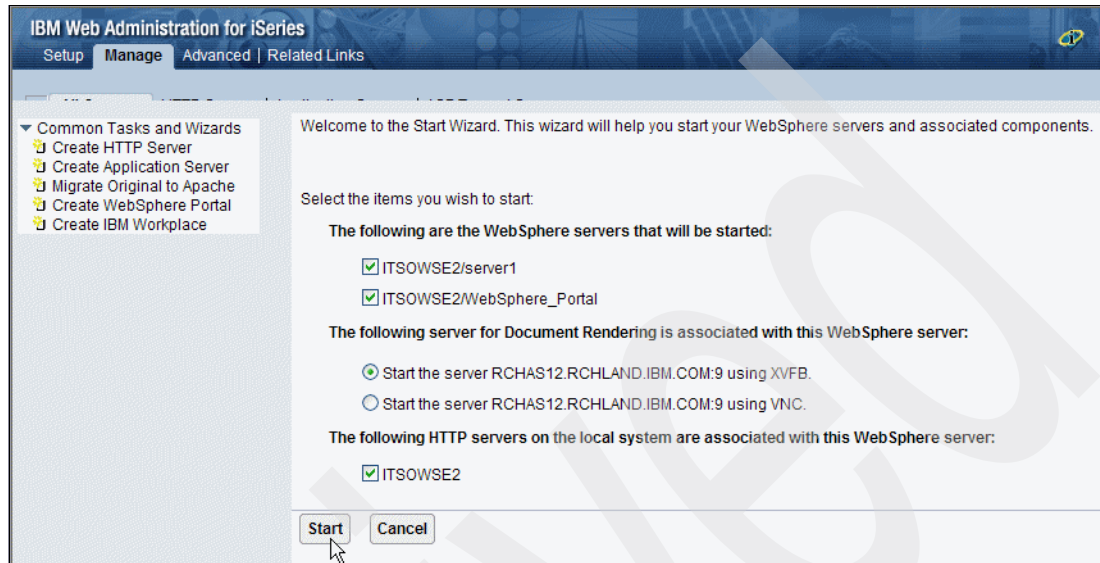


Figure 7-49 Selecting XVFB as a document rendering service

## 7.6 Java tuning

Several JVMs are running within the Workplace Collaboration Services server. Each has specific tuning requirements that must be monitored to determine the exact values for a particular installation. In the following section, we discuss how to set the heap size of the JVM used by the WebSphere Portal server within a Workplace Collaboration Services server.

You can find additional Java tuning recommendations in “Configuring the JVMs to use the classloader cache file” on page 342 and “Connection pools” on page 347.

### 7.6.1 JVM heap sizes

Tuning the initial heap size of the JVM so the garbage collector runs at a suitable interval is critical to achieving optimal performance. The garbage collector should run infrequently enough that it does not cause unnecessary overhead and often enough that the heap size does not grow too large.

The default heap size is 256 MB, but larger values are sometimes necessary, especially on systems with multiple processors. It is key to adjust the heap size for the specific requirements of the Workplace Collaboration Services server to obtain the best performance.

Set the initial heap size for the WebSphere\_Portal server in the Workplace Collaboration Services server to:

- ▶ Initial heap size = 768
- ▶ Maximum heap size = 0

For the Server1 server in the Workplace Collaboration Services server, set the heap size to:

- ▶ Initial heap size = 256
- ▶ Maximum heap size = 0

**Note:** Setting the maximum heap size to 0 is equivalent to setting it to \*NOMAX. This means that garbage collection runs only when the garbage collection threshold is reached. In scenarios where memory is limited, it is helpful to set the maximum heap size to a value that impacts memory less. In limited memory scenarios, we recommend that you use a maximum heap size of 256 MB.

If you do set the maximum heap size to a value other than 0, reduce the initial heap size setting as well.

## Setting the heap size

Perform the following steps to change the JVM heap size:

1. Open the WebSphere Application Server Administrative Console for the Workplace Collaboration Services server. For details, see “Accessing the WebSphere Application Server Administrative Console” on page 200.
2. Log in as the Workplace Collaboration Services administrator.
3. In the left navigation pane, select **Servers** → **Application Servers** as shown in Figure 7-50.
4. In the Application Servers panel (Figure 7-50) on the right, select **WebSphere\_Portal** server.

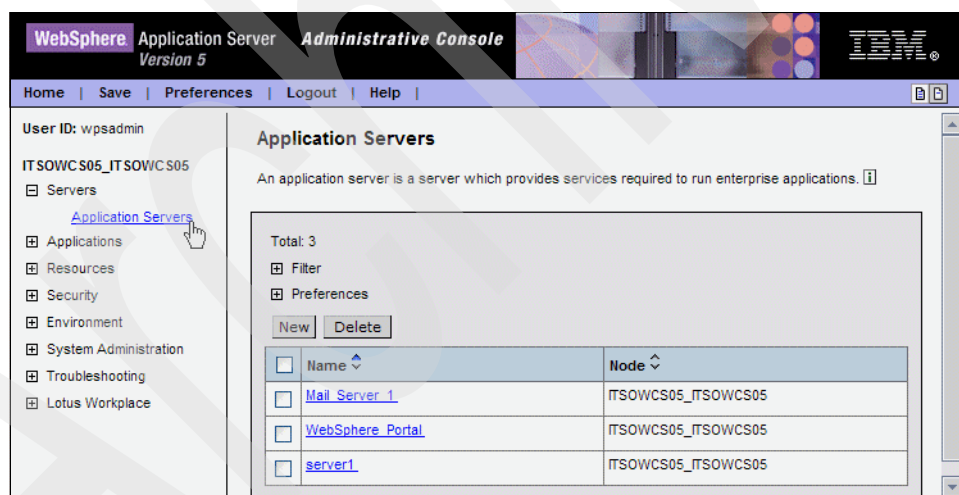


Figure 7-50 WebSphere Application Server Administrative Console

5. In the WebSphere\_Portal panel (Figure 7-51), scroll down to the Additional Properties section and select **Process Definition**.



Figure 7-51 Selecting Process Definition

6. In the Process Definition panel (Figure 7-52), under the Additional Properties section, select **Java Virtual Machine**.

Additional Properties	
<a href="#">Java Virtual Machine</a>	Advanced Java virtual machine settings.
<a href="#">Process Execution</a>	A set of properties that control how the operating system process executes, such as RunAs permissions, Umask, process priority.
<a href="#">Process Logs</a>	A set of properties that control how the process native input/output streams are directed.
<a href="#">Environment Entries</a>	A list of settings to be added to the execution environment for the process.
<a href="#">Monitoring Policy</a>	A set of properties that control how the process is monitored by the node agent.
<a href="#">Logging and Tracing</a>	Specify Logging and Trace settings for this server.

Figure 7-52 Selecting Java Virtual Machine

7. In the Java Virtual Machine panel (Figure 7-53), change the Initial Heap Size parameter as needed. We recommend that you start with 512 MB and adjust it from there. Set the Maximum Heap Size to 0 to allow for an unlimited heap size. Click **OK**.

**Tip:** We recommend that you do *not* set the initial heap size to a size greater than or equal to one-fourth of the total amount of memory in the memory pool where the Workplace Collaboration Services server is running.

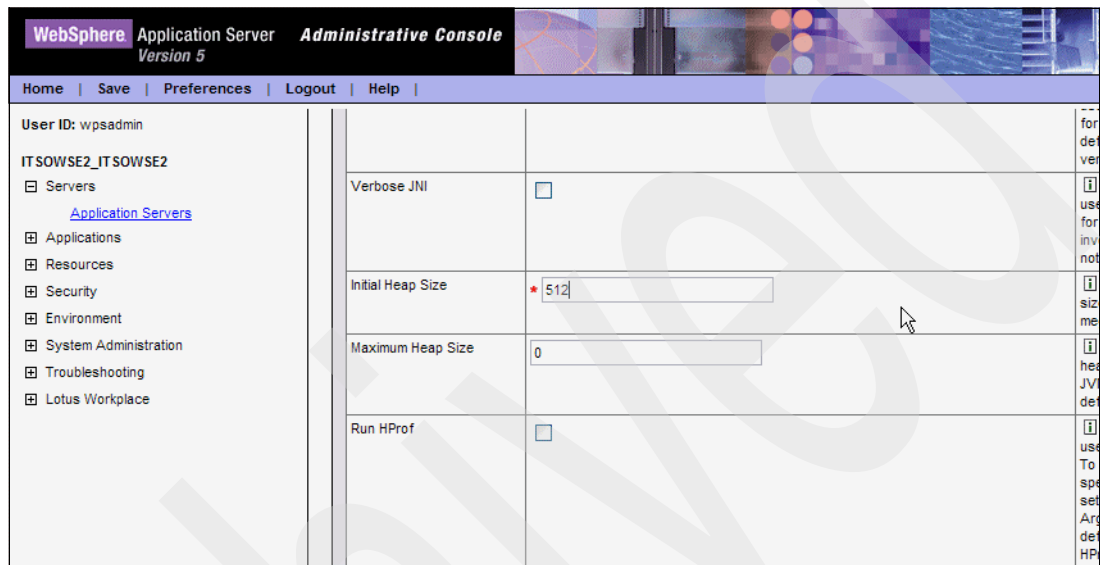


Figure 7-53 Setting the Initial and Maximum Heap Size parameters

8. Click **Save** to save and apply the changes to the master configuration file shown in Figure 7-24 on page 346.
9. Click **Save** as shown Figure 7-25 on page 346 to save the changes to the master configuration.
10. Repeat steps 5 on page 365 through step 9 on page 366 for the Mail\_Server\_1 server.
11. Stop and restart the Workplace Collaboration Services server or servers.

**Note:** If you make multiple changes, wait until you change all settings before you restart the Workplace Collaboration Services server.

For additional information related to setting the Initial Heap Size, refer to the *Tuning Garbage Collection for Java and WebSphere on iSeries* white paper, which is available on the Web at the following address:

<http://www.ibm.com/servers/eserver/iseries/perfmgmt/pdf/tuninggc.pdf>



## 7.7 IBM HTTP Server tuning

The IBM HTTP Server passes requests to the Workplace Collaboration Services server. Therefore, it is necessary to make sure that this piece of the overall architecture is not causing any bottlenecks. In this section, we discuss the following methods for tuning the IBM HTTP Server:

- ▶ Monitoring HTTP real time server statistics
- ▶ Setting HTTP connection time-outs and max keep alive
- ▶ Enabling GZIP compression
- ▶ Disabling unnecessary logging

### 7.7.1 Monitoring HTTP real time statistics

You can use the IBM Web Administration for iSeries interface to access real-time HTTP server statistics for monitoring. These statistics help you to tune the HTTP server to best handle the Workplace Collaboration Services environment workload.

**Tip:** Refer to the IBM Redbook *IBM HTTP Server (powered by Apache): An Integrated Solution for IBM eServer iSeries Servers*, SG24-6716, which provides performance information for the IBM HTTP Server.

To monitor HTTP real-time statistics for the IBM HTTP Server associated with your Workplace Collaboration Services server:

1. Access the IBM Web Administration for iSeries by pointing your Web browser to your fully qualified iSeries host name on port 2001:  
`http://iSeriesHostName.domain:2001`  
In our example, we enter:  
`http://rchas12.rchland.ibm.com:2001`
2. When prompted, enter your i5/OS user profile and password to log on to the IBM Web Administration for iSeries. Click **OK**.
3. From the iSeries Tasks menu, click **IBM Web Administration for iSeries**. You return to the last server that you administered.
4. Click the **Manage** tab and then click the **HTTP Servers** subtab.
5. Make sure that the correct HTTP server for the Workplace Collaboration Services server is selected. As shown in Figure 7-54, we select the IBM HTTP Server of **ITSOWCS05**.

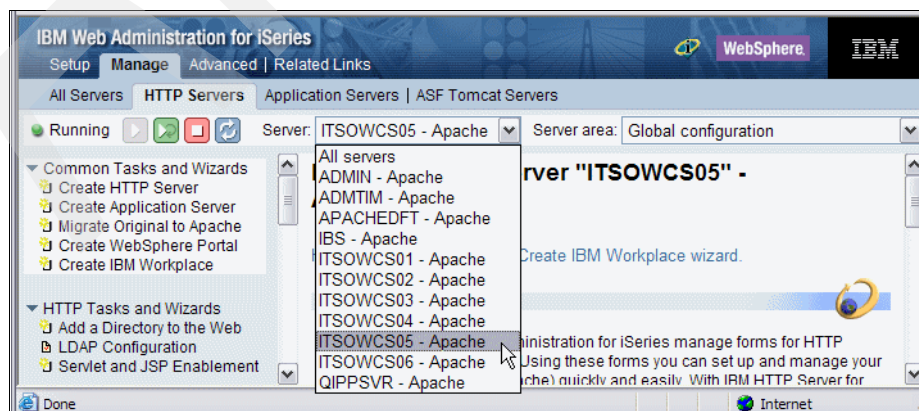


Figure 7-54 Selecting the IBM HTTP Server for the Workplace Collaboration Services server

6. In the left navigation panel, expand **Tools** and select **Real Time Server Statistics** as shown in Figure 7-55.

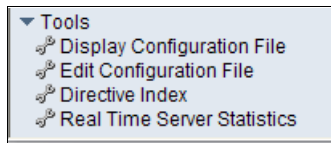


Figure 7-55 Selecting Real Time Server Statistics

7. In the HTTP Real Time Server Statistics panel (Figure 7-56), for a quick glance at how the HTTP server is performing, click the **Averages** tab. This tab provides statistics for the averages of the total time of activity shown for the type of associated server which is identified at the top of the column. You also see the average time of non-cached and cached activity completed by the enabled function.

If you see a concern with a specific average statistic, such as the average time spent serving non-cached data, look at the Absolute or Absolute and Delta tabs for more details. Refer to the IBM Redbook *IBM HTTP Server (powered by Apache): An Integrated Solution for IBM eServer iSeries Servers*, SG24-6716, for information about these performance statistics.

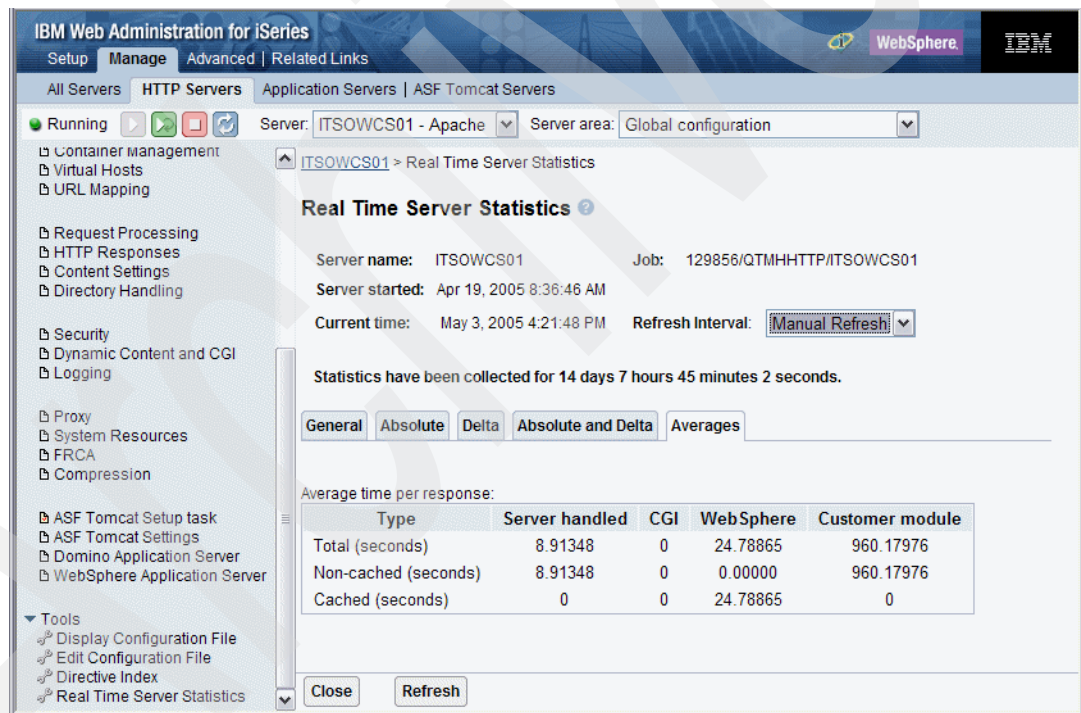


Figure 7-56 HTTP Server Real Time Server Statistics data

## 7.7.2 HTTP Connection Timeouts and Max Keep Alive

You can access the IBM HTTP Server connection parameters from the IBM Web Administration for iSeries interface. In this section, we address the following parameters:

- ▶ KeepAliveTimeout
- ▶ KeepAlive
- ▶ MaxKeepAliveRequests



## KeepAliveTimeout

The KeepAliveTimeout setting is used to control whether the HTTP server works with persistent connections. Persistent connections enable a single TCP/IP connection to be used for multiple HTTP requests. When the HTTP server runs with persistent connections, the KeepAliveTimeout setting determines the number of seconds that the server waits for subsequent requests before it closes the connection.

If this value is too low, the HTTP server can be impacted in terms of performance since connections can close frequently. If this value is too high, the HTTP server can have many connections open and can run out of resources.

We recommend that you set the KeepAliveTimeout to *10-15 minutes* as a starting point. The default setting is 5 minutes.

**Tip:** When increasing the setting for KeepAliveTimeout, keep in mind that a higher value may increase contention for HTTP server processes. If you are running out of HTTP processes, decrease this value.

## KeepAlive

This KeepAlive setting enables a single TCP/IP connection to be used for multiple HTTP requests (persistent connections). Normally, each HTTP request uses a separate connection. Reusing a single connection reduces the connection open and close overhead, thereby improving performance for the client. KeepAlive should be set to *Enabled*.

## MaxKeepAliveRequests

The MaxKeepAliveRequests setting allows an unlimited number of requests on a single TCP/IP connection. We recommend that you set MaxKeepAliveRequests to *0*. Setting this value to 0 means that there is no maximum setting for MaxKeepAliveRequests.

## Changing or verifying the parameter settings

To change or verify the parameter settings mentioned in the previous sections:

1. Access the IBM Web Administration for iSeries by pointing your Web browser to your fully qualified iSeries host name on port 2001:

`http://iSeriesHostName.domain:2001`

In our example, we enter:

`http://rchas12.rchland.ibm.com:2001`

2. When prompted, enter your i5/OS user profile and password to log on to the IBM Web Administration for iSeries. Click **OK**.
3. From the iSeries Tasks menu, click **IBM Web Administration for iSeries**. You return to the last server that you administered.
4. Click the **Manage** tab and then click the **HTTP Servers** subtab.
5. Make sure that the correct HTTP server for the Workplace Collaboration Services server is selected.

6. In the left navigation pane, select **System Resources** as shown in Figure 7-57.

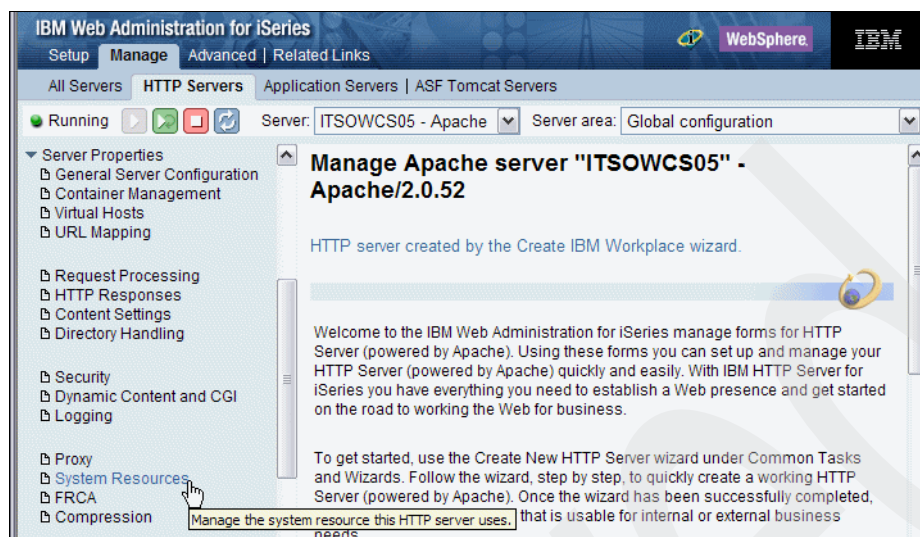


Figure 7-57 Accessing the HTTP System Resources

7. In the System Resources panel (Figure 7-58), verify or change the following parameters:
- For Connection time-out (KeepAliveTimeout), specify 10–15 **minutes**. The default time is 5 minutes.
  - For Allow persistent connections (KeepAlive), select **Enabled**.
  - For Maximum requests per connection (MaxKeepAliveRequests), type 0.

**Tip:** These values are recommendations that we found in our testing to improve the performance of the HTTP server. The actual values may vary in your environment and should be tested.

Click **Apply** and then click **OK** to save the changes.

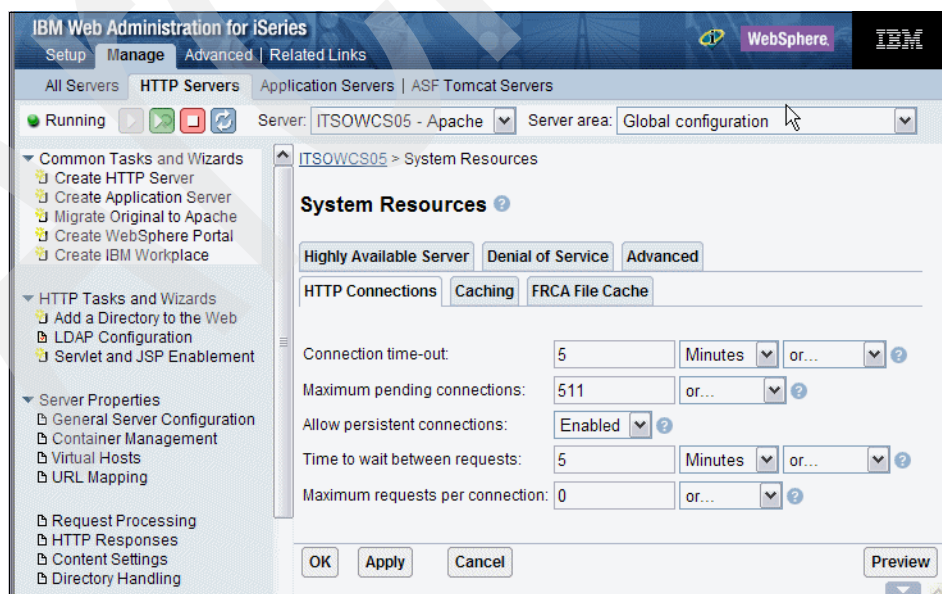


Figure 7-58 System Resources settings for the IBM HTTP Server

8. Stop and restart the Workplace Collaboration Services HTTP server to apply the changes.

### 7.7.3 Enabling GZIP compression

Enabling GZIP compression can result in a significant improvement in bandwidth utilization. Enabling GZIP compresses the data between the server and the Web browser, typically improving the response time. The amount of response time improvement varies depending on your network bandwidth. If you already have a fast network, the amount of improvement seen by end users is smaller than if you have a slower network infrastructure. Even if end users do not see much of a performance improvement with this change, it is still worthwhile to enable it as overall network bandwidth improves.

**Note:** Enabling GZIP compression requires additional CPU cycles, making it a trade-off with increased network bandwidth. Consider this trade-off when choosing to enable GZIP compression. Typically the extra CPU resources required are offset by the performance improvement seen in bandwidth constrained environments.

To enable GZIP compression, modify the HTTP Configuration file as explained in the following steps:

**Important:** We recommend that you back up the configuration file prior to making any changes. A damaged configuration file can cause the server to not restart.

1. Access the IBM Web Administration for iSeries by pointing your Web browser to your fully qualified iSeries host name on port 2001:  
`http://iSeriesHostName.domain:2001`  
In our example, we enter:  
`http://rchas12.rchland.ibm.com:2001`
2. When prompted, enter your i5/OS user profile and password to log on to the IBM Web Administration for iSeries. Click **OK**.
3. From the iSeries Tasks menu, click **IBM Web Administration for iSeries**. You return to the last server that you administered.
4. Click the **Manage** tab and then click the **HTTP Servers** subtab.
5. Make sure that the correct HTTP server for the Workplace Collaboration Services server is selected.
6. For the Server area field, select **Directory /www/server/htdoc**, where *server* is the name of your IBM HTTP Server (see Figure 7-59).

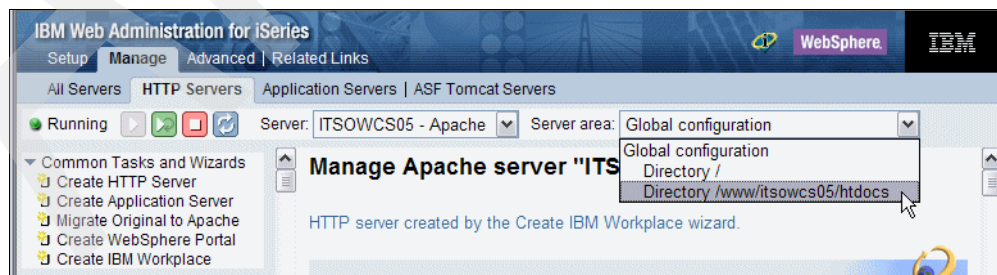


Figure 7-59 Selecting the Server area for the IBM HTTP Server

7. In the left navigation pane, expand **Tools** and, select **Edit Configuration File** as shown in Figure 7-60.

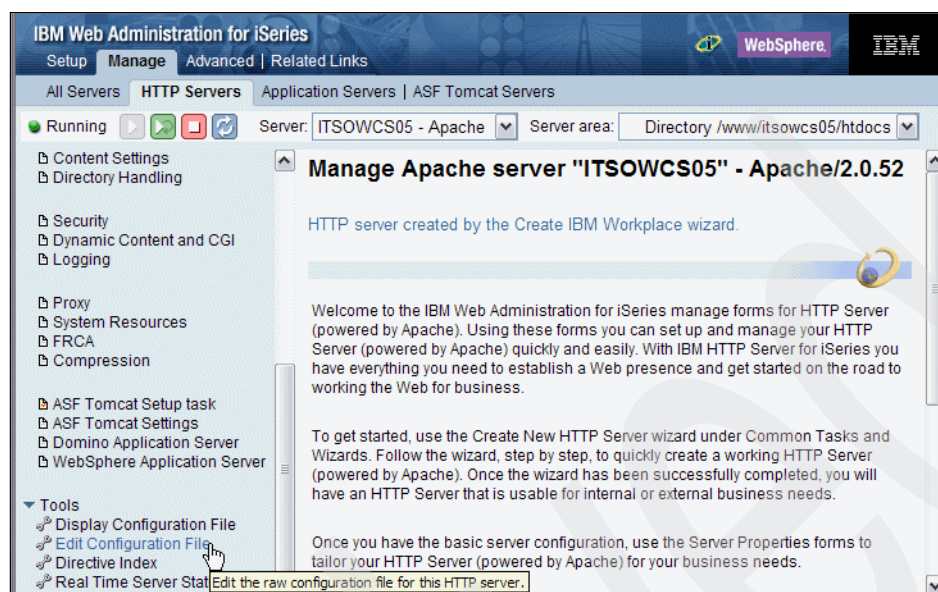


Figure 7-60 Selecting Edit Configuration File

8. The selected file `/www/server/conf/httpd.conf` (where *server* is the name of your IBM HTTP Server) is now displayed for editing as shown in Figure 7-61.

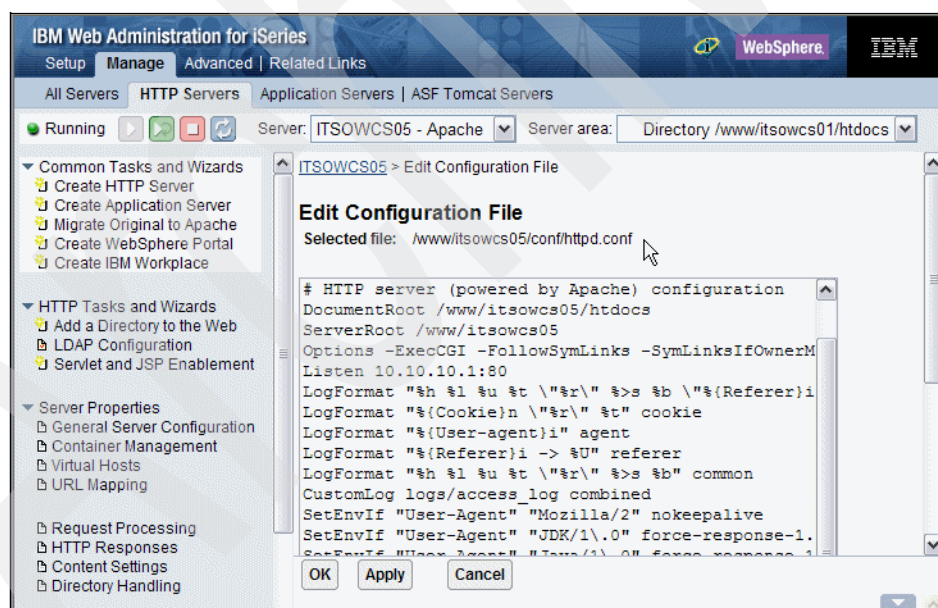


Figure 7-61 The IBM HTTP Server configuration file

Use Figure 7-62 as a guide when editing this configuration file. The parameters in Table 7-11 explain some of the more common parameters that you might want to add to the configuration file of your Workplace Collaboration Services HTTP server.

**Important:** You must add the LoadModule parameter before any of the other parameters shown in Table 7-11. The best practice is to add this parameter to the first line of the configuration file. Besides the LoadModule parameter, the location of these parameters in the configuration file is not critical.

Refer to the following Web address for additional information about these parameters and their functionality being added to the IBM HTTP Server configuration file:

[http://httpd.apache.org/docs-2.0/mod/mod\\_deflate.html](http://httpd.apache.org/docs-2.0/mod/mod_deflate.html)

Table 7-11 Parameters to add to the IBM HTTP Server configuration file

Parameter	Description
LoadModule deflate_module /QSYS.LIB/QHTTSPVR.LIB/QZSRCORE.SRVPGM	Add the LoadModule necessary for the Apache module to support GZIP compression.
LogFormat "%r" %{outstream}n/%{instream}n (%{ratio}n%%)" deflate	Define a new log type for the deflated output.
CustomLog logs/deflate_log deflate	Define the location for the deflate log (path relative to the www/<server> directory).
LogMaint logs/deflate_log 7 0	Define log maintenance for the deflate log. This deletes all logs older than seven days.
AddType application/zip .jar	Define a new mime type for the Workplace Managed Client. This improves the download performance of the Workplace Managed Client.
SetOutputFilter DEFLATE	Define the GZIP output filter, in this case only compressing outbound traffic.
DeflateFilterNote Input instream DeflateFilterNote Output outstream DeflateFilterNote Ratio ratio	Define the variables used in the deflate log.
SetEnvIf "User-Agent" "^." no-gzip	Disable compression for all requests.
SetEnvIf "User-Agent" "MSI[E].(5.5 6.0);" !no-gzip	Enable compression for Microsoft Internet Explorer V5.x and V6.x browsers.
SetEnvIf "User-Agent" "^Mozilla/5.0" !no-gzip	Enable compression for Mozilla V5.0 based Web browser.
SetEnv gzip-only-text/html 1	Enable compression only for content with text or HTML MIME content type.
SetEnvIfNoCase Request_URI "\.(js css)\$" gzip-only-text/html=0	Enable compression for content URI that ends with .js (JavaScript™) or .css (cascading style sheets).

Figure 7-62 shows an example of the IBM HTTP Server configuration file for the Workplace Collaboration Services server, after GZIP compression was enabled.

**Tip:** Click **Wider** at the bottom of the Edit Configuration File display to increase the edit window. Make sure that you complete the resizing of the edit window prior to making any changes to the configuration file; otherwise your changes will be lost.



```

WebSpherePluginConfig /QIBM/UserData/WebAS5/Base/ITSOWCS05/config/cells/plugin-cfg.xml
LoadModule ibm_app_server_http_module /QSYS.LIB/QEJBAS5.LIB/QSVTIHSAH.SRVPGM
# Added the necessary Apache module to support GZIP compression
LoadModule deflate_module /QSYS.LIB/QHTTSPVR.LIB/QZSRCORE.SRVPGM
# HTTP server (powered by Apache) configuration
DocumentRoot /www/ITSOWCS05/htdocs
ServerRoot /www/ITSOWCS05
Options -ExecCGI -FollowSymLinks -SymLinksIfOwnerMatch -Includes -IncludesNoExec -Indexes -MultiViews
Listen 9.5.92.26:80
MaxKeepAliveRequests 0
LogFormat "%h %l %u %t \"%r\" %>s %b \"%{Referer}i\" \"%{User-Agent}i\"" combined
LogFormat "%{Cookie}n \"%r\" %t" cookie
LogFormat "%{User-agent}i" agent
LogFormat "%{Referer}i -> %U" referer
LogFormat "%h %l %u %t \"%r\" %>s %b" common
# Define a new log type for the deflated output
LogFormat "%r\" %{outstream}n/%{instream}n (%{ratio}n%)" deflate
CustomLog logs/access_log combined
# Define the location for the deflate log (path relative to the www/<server> directory)
CustomLog logs/deflate_log deflate
#Define custom maintenance for the deflate log. Will delete all logs older than 7 days
LogMaint logs/deflate_log 7 0
SetEnvIf "User-Agent" "Mozilla/2" nokeepalive
SetEnvIf "User-Agent" "JDK/1\0" force-response-1.0
SetEnvIf "User-Agent" "Java/1\0" force-response-1.0
SetEnvIf "User-Agent" "RealPlayer 4\0" force-response-1.0
SetEnvIf "User-Agent" "MSIE 4\0b2;" nokeepalive
SetEnvIf "User-Agent" "MSIE 4\0b2;" force-response-1.0
# Define the gzip output filter. In this case we are only compressing outbound traffic
SetOutputFilter DEFLATE
# Define variables used in the deflate log
DeflateFilterNote Input instream
DeflateFilterNote Output outstream
DeflateFilterNote Ratio ratio
# Enable compression for MS IE Browsers v5.x and v6.x
SetEnvIf "User-Agent" "MSI[E].(5\5|6\0);" !no-gzip
# Enable compression for Mozilla v5.0 based browser
SetEnvIf "User-Agent" "^Mozilla/5.0" !no-gzip
# Enable compression for content with text/html mime content type
SetEnv gzip-only-text/html 1
# Enable compression for content URI that ends with .js (JavaScript) or .css (Cascading # style sheets)
SetEnvIfNoCase Request_URI "\.(js|css)$" gzip-only-text/html=0
<Directory />
    Order Deny,Allow
    Deny From all
</Directory>
<Directory /www/ITSOWCS05/htdocs>
    Order Allow,Deny
    Allow From all
</Directory>

```

Figure 7-62 Example of the IBM HTTP Server configuration file after enabling GZIP compression

9. In the Edit Configuration File display, click **Apply** to save the IBM HTTP Server configuration file changes. Then click **OK**.
10. Stop and restart the Workplace Collaboration Services HTTP server to apply any changes.

## Example of the deflate\_log

As a result of enabling a new custom log file, a new log file is created call *deflate\_log*. This log is located in the directory specified in the HTTP server configuration file. In our example, we specified a directory of logs within the HTTP server's directory. We accomplished this by adding the following line to the HTTP server configuration file:

```
CustomLog logs/deflate_log deflate
```

In our example, the complete directory path to the deflate\_log file is */www/server/logs/deflate\_log*, where *server* is the IBM HTTP Server name.

Figure 7-63 provides an example of this log file's contents. The values displayed to the right of HTTP/1.1 show the output size sent to the Web browser and the original size of the content. The percentage is the difference. Refer to the deflate\_log file to determine how much the over-the-wire content is reduced. For example, Figure 7-63 shows that over-the-wire size of content was reduced by 32%.

It is important to understand that only content that uses the MIME type of text or HTML and any files with the extension of .js (JavaScript) or .css (cascading style sheets) are compressed.

**Note:** After you verify that GZIP compression is enabled for your server, follow the steps in 7.7.4, "Disabling HTTP logging" on page 375, to disable any unnecessary logging.

```
"GET /lwp/myworkplace/!ut/p/.scr/LoggedIn HTTP/1.1" 7841/41657 (18%)
"GET /lwp/themes/html/workplace/dragNdrop.css HTTP/1.1" 424/1710 (24%)
"GET /lwp/themes/html/workplace/dragNdrop.js HTTP/1.1" 5565/27497 (20%)
"GET /lwp/themes/html/workplace/flyout.js HTTP/1.1" 2477/17055 (14%)
"GET /lwp/themes/html/workplace/ie/en/Styles.css HTTP/1.1" 9099/57722 (15%)
"GET /lwp/themes/html/workplace/ie/en/HelpStyles.css HTTP/1.1" 960/4391 (21%)
"GET /lwp/themes/html/workplace/ie/en/LWP_Styles.css HTTP/1.1" 4482/25855 (17%)
"GET /lwp/themes/html/workplace/actionMenu.js HTTP/1.1" 864/3649 (23%)
"GET /lwp/menu/menu_service.js HTTP/1.1" 3428/10529 (32%)
"GET /lwp/peopleawareness/peopleawareness_service.js HTTP/1.1" 2171/5900 (36%)
"GET /lwp/peopleawareness/person.js HTTP/1.1" 10754/42886 (25%)
"GET /lwp/peopleawareness/context_ie.js HTTP/1.1" 8138/41006 (19%)
"GET /lwp/themes/html/workplace/bannerGraphicTop.jpg HTTP/1.1" -/- (-%)
"GET /lwp/images/dot.gif HTTP/1.1" -/- (-%)
"GET /lwp/themes/html/workplace/lotusWordmark.jpg HTTP/1.1" -/- (-%)
"GET /lwp/themes/html/workplace/clearPixel.gif HTTP/1.1" -/- (-%)
```

Figure 7-63 Example of the deflate\_log content

## 7.7.4 Disabling HTTP logging

The level of HTTP logging required depends on the environment. For example, in a development and test environment, logging levels are often required to be set at the highest levels possible. This requirement changes when you move to a production environment. HTTP logging takes additional resources on the server. All unnecessary HTTP logging should be disabled for a production server.

The only logging that should be enabled for a production environment is *error logging*. To disable all other logging, edit the HTTP server configuration file and comment out the following lines as explained in the following steps:

- ▶ #CustomLog logs/access\_log combined
- ▶ #CustomLog logs/deflate\_log deflate

**Important:** We recommend that you back up the configuration file prior to making any changes. A damaged configuration file can cause the server to not restart.

1. Access the IBM Web Administration for iSeries by pointing your Web browser to your fully qualified iSeries host name on port 2001:  
`http://iSeriesHostName.domain:2001`  
In our example, we enter:  
`http://rchas12.rchland.ibm.com:2001`
2. When prompted, enter your i5/OS user profile and password to log on to the IBM Web Administration for iSeries. Click **OK**.
3. From the iSeries Tasks menu, click **IBM Web Administration for iSeries**. You return to the last server that you administered.
4. Click the **Manage** tab and then click the **HTTP Servers** subtab.
5. Make sure that the correct HTTP server for the Workplace Collaboration Services server is selected.
6. For the Server area field, select **Directory /www/server/htdocs**, where *server* is the name of your IBM HTTP Server. See Figure 7-64.

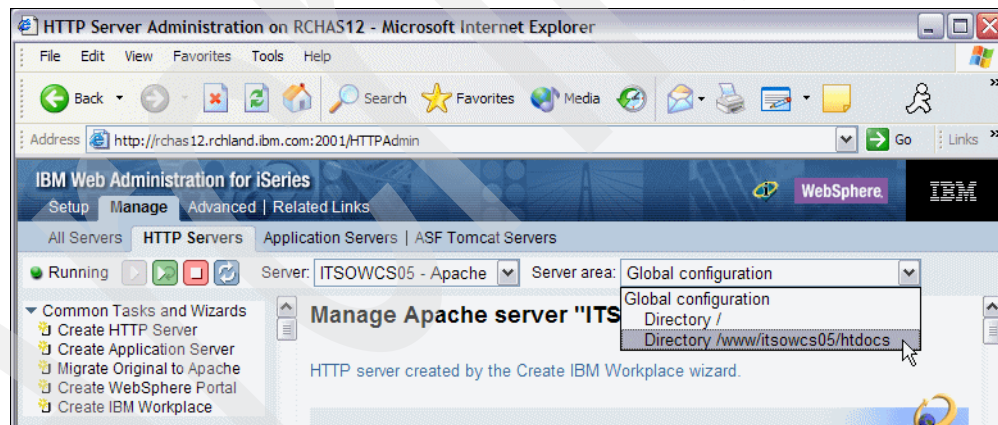


Figure 7-64 Selecting the Server area for the IBM HTTP Server



7. In the left navigation pane, expand **Tools** and select **Edit Configuration File** as shown in Figure 7-65.

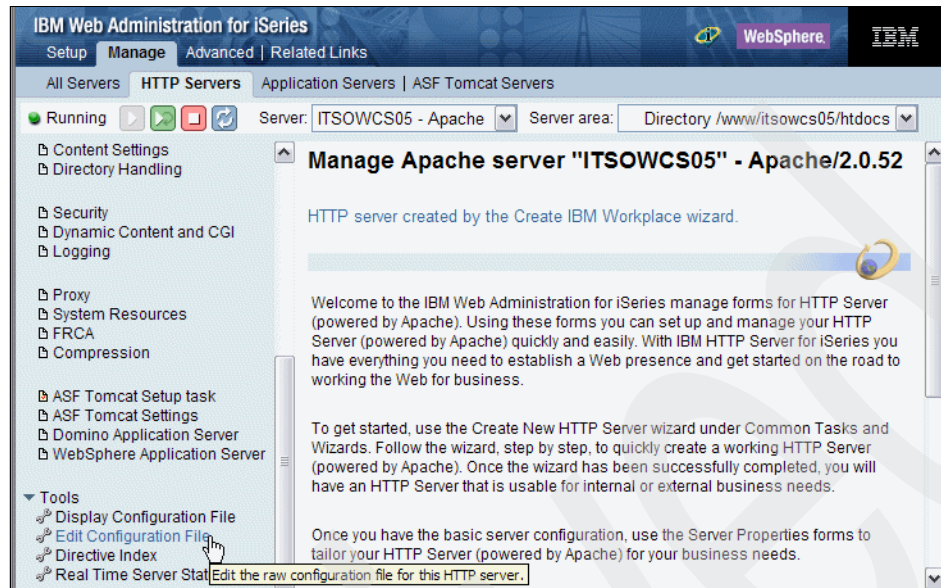


Figure 7-65 Selecting Edit Configuration File

8. The selected file `/www/server/conf/httpd.conf`, where `server` is the name of your IBM HTTP Server, is now displayed for editing in the Edit Configuration File panel (Figure 7-66). Comment out the following lines by typing a pound sign (#) in front of each line:

```
#CustomLog logs/access_log combined
#CustomLog logs/deflate_log deflate
```

Click **Apply** and then click **OK** to save the IBM HTTP Server configuration file changes.

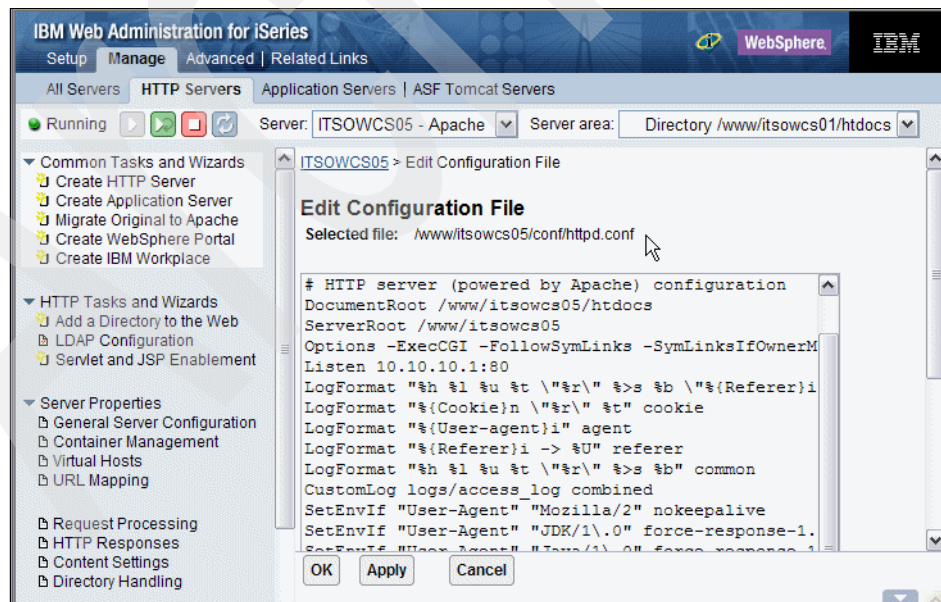


Figure 7-66 The IBM HTTP Server configuration file

9. Stop and restart the Workplace Collaboration Services HTTP server to apply any changes.

## 7.8 Database tuning

The storage container for Workplace Collaboration Services on iSeries is DB2 Universal Database. In this section, we address how you can fine-tune this storage container to achieve the best performance for your Workplace Collaboration Services servers.

We discuss the following topics in this section:

- ▶ A system value that affects statistics available for the new Query Engine
- ▶ How to monitor database performance
- ▶ How to create database indexes to optimize the database performance engine

### 7.8.1 System value for the new SQL Query Engine

V5R2 introduced a new optimizer called the SQL Query Engine (SQE). The system value QDBFSTCCOL (database file statistics collection) controls the level of database statistics that are collected and used by the query optimizer. The statistics gathered are used to control runtime behavior of the query optimizer.

#### QDBFSTCCOL: Database file statistics collection

You can set the QDBFSTCCOL system value to one of the following four values:

- \*ALL** The default setting and allows all statistics to be collected in the background
- \*SYSTEM** Allows only system-requested statistics to be collected in the background
- \*USER** Allows only user-requested statistics to be collected in the background
- \*NONE** Restricts everyone from creating statistics in the background; does not prevent immediate user-requested statistics from being collected

The setting chosen for QDBFSTCCOL system value affects the level of database statistics that are available to the new query optimizer when processing queries.

**Note:** You can turn off the i5/OS system value QDBFSTCCOL to disable database statistics auto refresh, since the auto refresh uses CPU during run time. We recommend that you leave on the auto refresh to keep the database statistics up to date.

### 7.8.2 Monitoring database performance

i5/OS provides statistics that you can use to monitor performance of your database environment. You can use a tool called the *database monitor* to collect and view statistics for all columns of data in all tables for a given library on the system. You accessed this tool using iSeries Navigator interface.

We use the database monitor tool to monitor the DB2 Universal Database databases that provide the underlying infrastructure for a Workplace Collaboration Services server. We want to monitor a particular library that contains the WebSphere Portal databases. Use the procedure explained in Appendix C, “Workplace Collaboration Services configuration summary” on page 519, to determine the WebSphere Portal database, or schema, associated with your Workplace Collaboration Services server.

The WebSphere Portal schema associated with the Workplace Collaboration Services server in our example is PORTALDB2. We create a database monitor over that library to capture statistics about the databases in this library used by the Workplace Collaboration Services server.

**Tip:** Monitoring database performance helps to determine whether performance issues with Workplace Collaboration Services servers are related to the underlying DB2 Universal Database libraries or with the LDAP server.

## Creating an SQL performance monitor

Before you create the performance monitor, you must create or identify a library in which to store the data. In our example, we create a library call ITSOWCS05 to hold database statistics for our Workplace Collaboration Services server database access.

You can create a summary or detailed SQL performance monitor against the Workplace Collaboration Services databases using iSeries Navigator. Perform the following steps to create the library to store SQL performance monitor data and to create the SQL performance monitor:

1. Use the CRTLIB CL command to create a library to store the SQL performance data. In the following example, replace *ITSOWSE2* with the name you want to give this library.

```
CRTLIB LIB(ITSOWSE2) TEXT('Library to store SQL performance statistics')
```

2. Start Series Navigator and access your iSeries server. When prompted, enter a valid i5/OS user profile and password with at least \*ALLOBJ, \*IOSYSCFG, and \*JOBCTL special authorities.
3. Click **My Connections** → **iSeries system name** → **Databases** → **S65d0acd** → **Schemas** to view the database or databases and their schemas. Right-click **Schemas** and click **Select Schemas to Display**. See Figure 7-67.

**Note:** The schema name shown is the relational database directory entry for the iSeries server. In our lab environment, the relational database directory entry is S65d0acd.

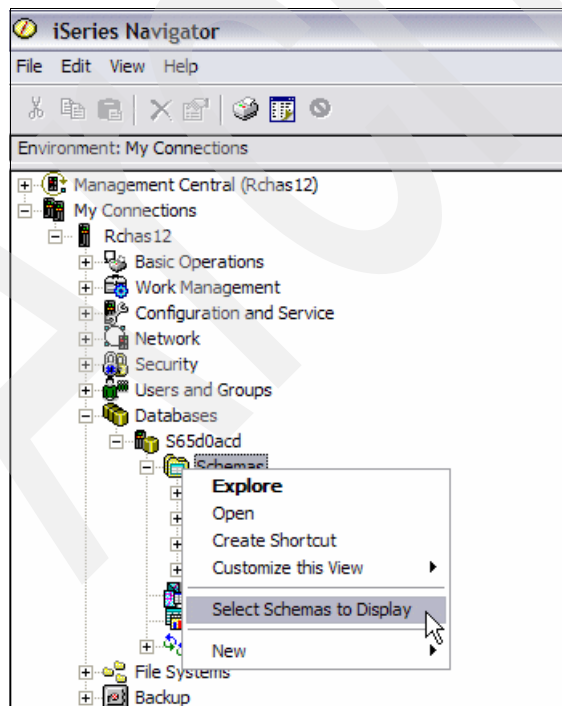


Figure 7-67 Selecting the option Select Schemas to Display

4. In the Select Schemas to Display window (Figure 7-68), perform the following steps:
  - a. Enter the name of the schema or library to display. This is the name of the database that you decided to use to collect the SQL performance statistics in. For our example, we enter the name of the library called ITSOWSE2 that we created in step 1 on page 379.
  - b. Click the **Add** button.

- c. Add the library that contains the WebSphere Portal databases associated with your Workplace Collaboration Services server. In our example, this database is called ITSOWSE26.

If you have not already done so, use the procedure explained in Appendix C, “Workplace Collaboration Services configuration summary” on page 519, to determine the WebSphere Portal database, or schema, associated with your Workplace Collaboration Services server.

The WebSphere Portal database for your Workplace Collaboration Services server is now added to the library list (schema list). This is necessary because you select this library when you create the SQL performance monitor.

- d. Click **OK**.

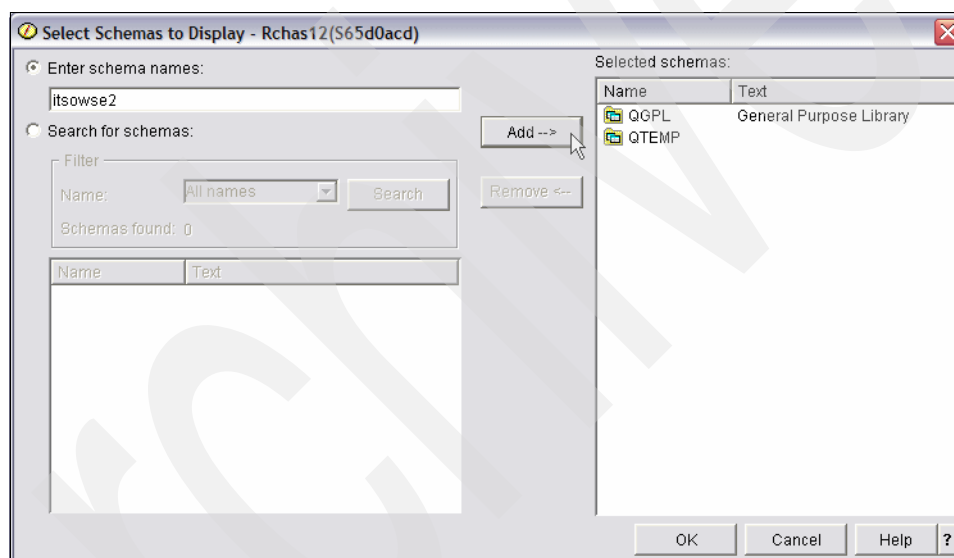


Figure 7-68 Entering the schema name to display

5. Back in iSeries Navigator, click **Schemas** and the Database tasks are displayed in the lower panel of iSeries Navigator as shown in Figure 7-69. In the right side of the lower panel, click **Create new summary SQL performance monitor**.

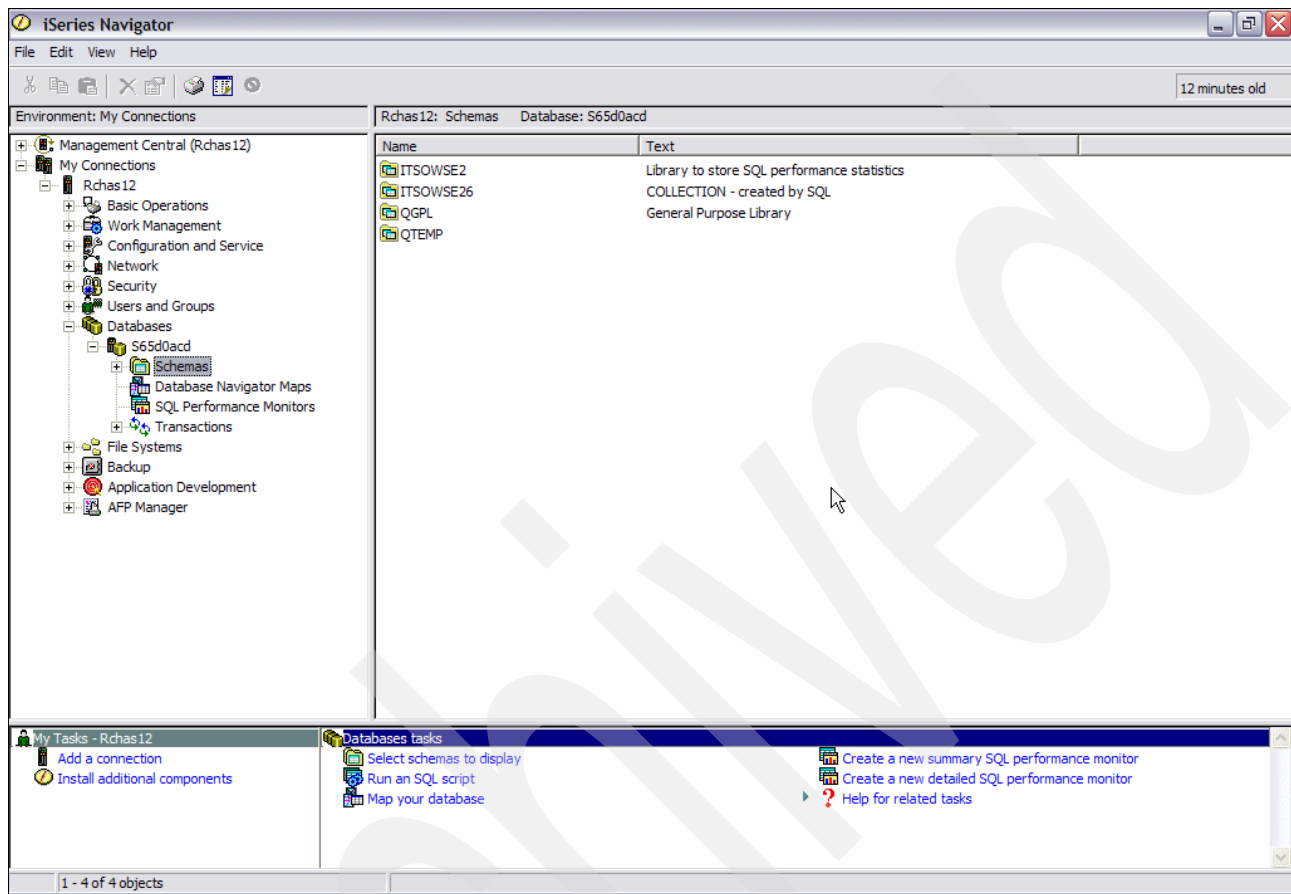


Figure 7-69 Database tasks pane of iSeries Navigator

6. In the New Summary SQL Performance Monitor window (Figure 7-70), provide the following information:
  - a. In the **General** tab, provide the following values:
    - i. In the Name field, type the name of the database monitor. In our example we use Monitor ITSOWSE26 portal db.

**Note:** ITSOWSE26 is the name of the library that contains the WebSphere Portal databases for our Workplace Collaboration Services server.

- ii. In the Schema for saved data field, select the library to store the statistics. We selected **ITSOWSE2**, which as stated previously, was created to store this data.

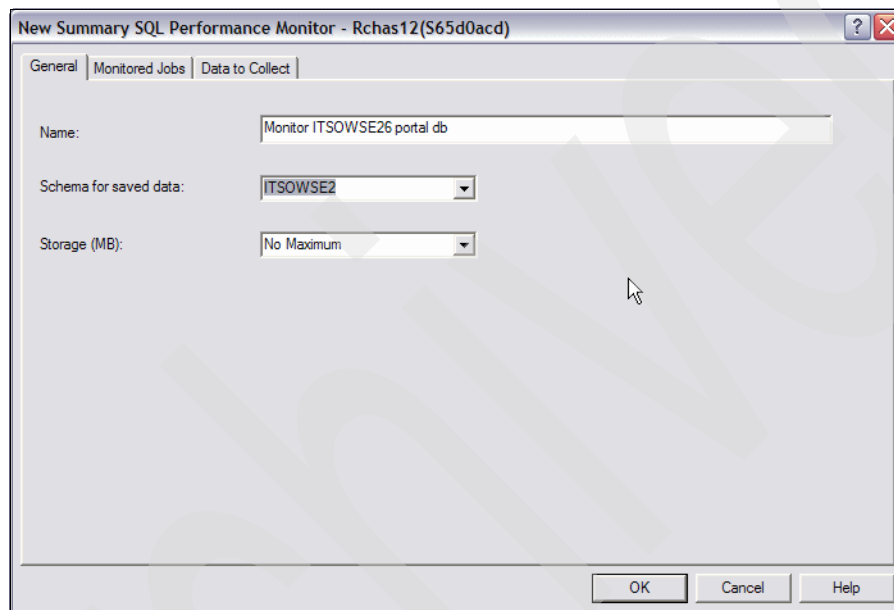


Figure 7-70 Creating the new summary SQL Performance Monitor, General tab

- b. Click the **Monitored Jobs** tab. See Figure 7-71.
      - i. Change the selection from All to **Select from list below**.
      - ii. Click the **Subsystem** column to sort the list of jobs by subsystem.
      - iii. Scroll down to the QEJBAS5 subsystem. Find the QEJBAS5 jobs associated with your Workplace Collaboration Services server. If you have more than one Workplace Collaboration Services server running, see 5.3, "Verifying that a Workplace Collaboration Services server is active" on page 214, to determine which jobs are associated with your Workplace Collaboration Services server.

**Note:** When using this method to determine which jobs are associated with your Workplace Collaboration Services server, note the job numbers at the top of each job log.

iv. Highlight a server job and click the **Select** button to add the server job to the list of selected jobs. Do this for the four server jobs associated with the Workplace Collaboration Services server:

- QJVAEXEC
- SERVER1
- WEBSPHERE\_
- MAIL\_SERVE

**Tip:** To focus on monitoring Workplace Collaboration Services SQL performance, we recommend that you only monitor the server jobs associated with the Workplace Collaboration Services server for which you are gathering performance statistics.

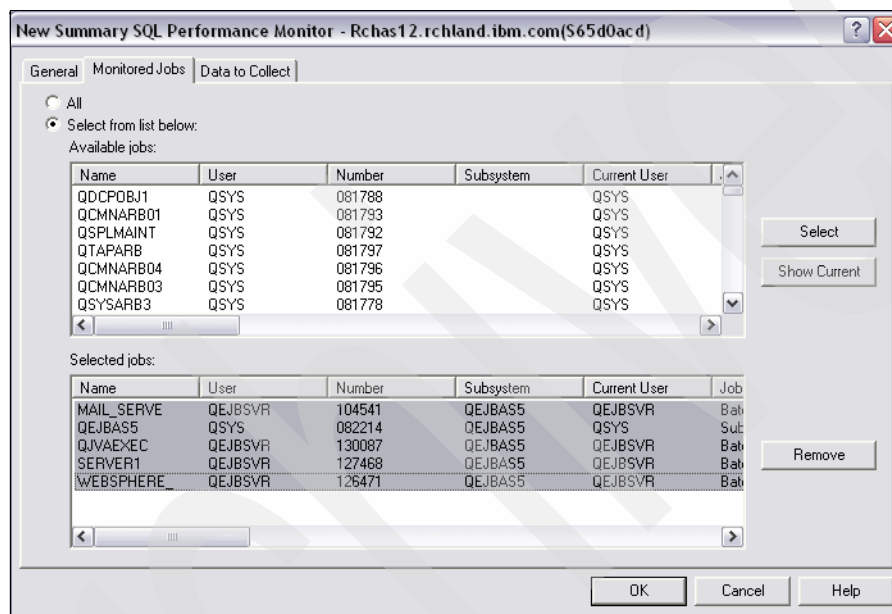


Figure 7-71 Creating the new summary SQL Performance Monitor, Monitored Jobs tab

- c. Click the **Data to Collect** tab (Figure 7-72) and enable the following data to be collected:
- Summary data
  - Statement text
  - Host variable use

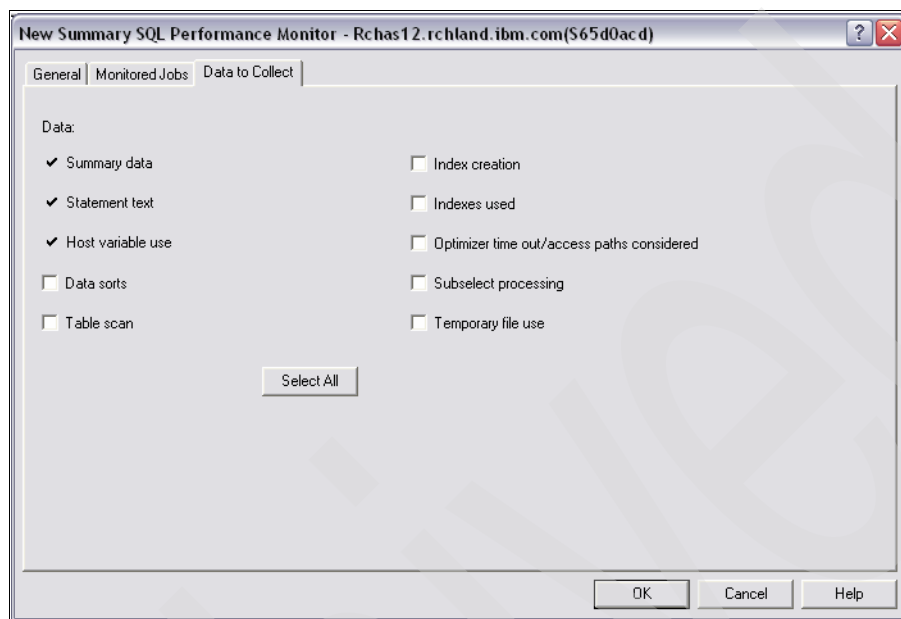


Figure 7-72 Creating the new summary SQL Performance Monitor, Data to Collect tab

- d. Click **OK** to finish creating the new SQL performance monitor.

**Note:** The database performance monitor starts automatically after it is created.



## Viewing the SQL performance monitors

After you collect the database performance monitor statistics for the underlying databases that support your Workplace Collaboration Services server, you can view the database statistics that were collected.

1. In iSeries Navigator, under the Schemas view, click **SQL Performance Monitors** (Figure 7-73).

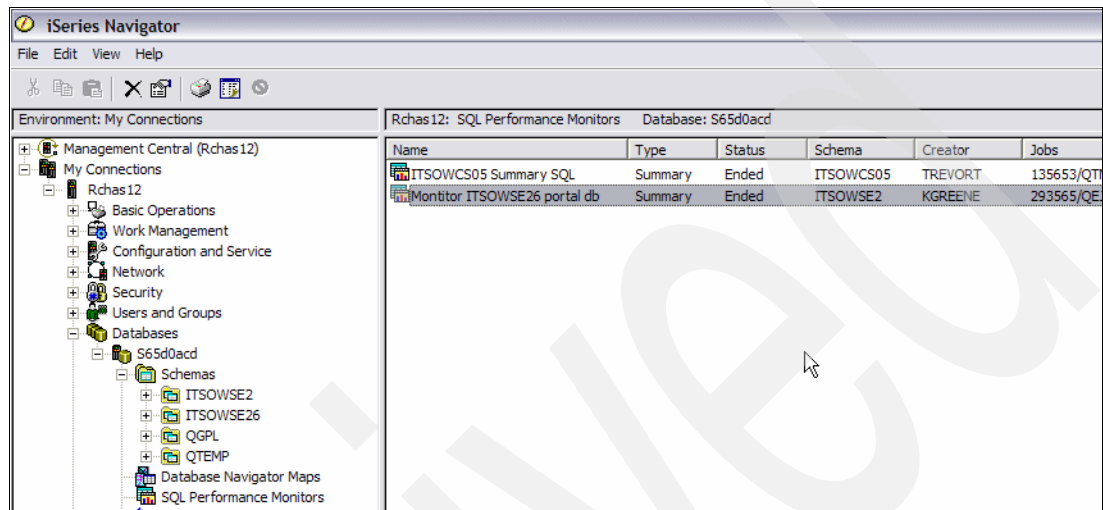


Figure 7-73 Viewing the SQL Performance Monitors

2. End the monitor to view the report details. In the right panel, right-click the summary monitor and select **End** as shown in Figure 7-74.

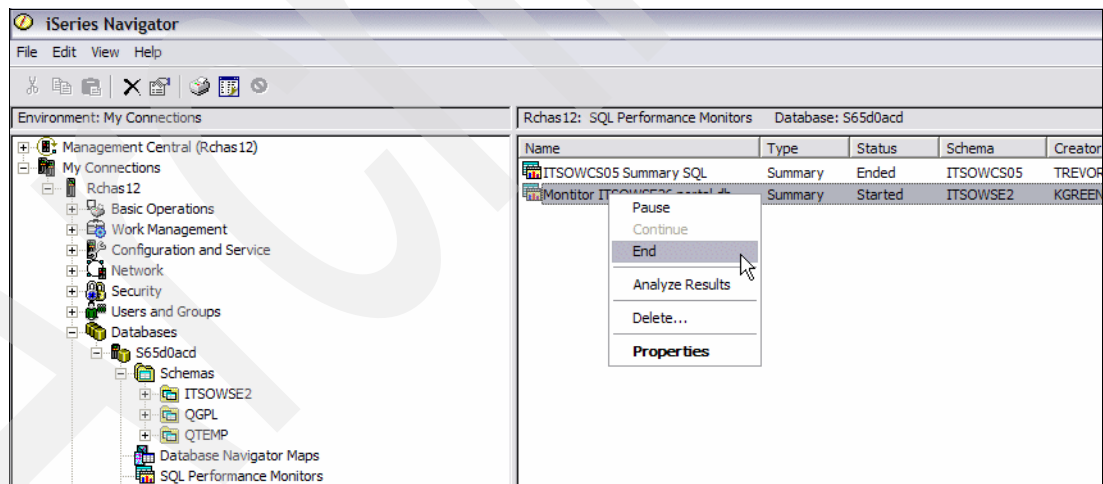


Figure 7-74 Ending the SQL Performance Monitor

3. After the monitor is ended, right-click the summary monitor and select **Analyze Results**. See Figure 7-74.
4. In the Summary SQL Results window (Figure 7-75), complete the following steps:
  - a. On the **Summary Results** tab, select the Collection period and the summary queries.
  - b. Under the **Detailed Results** and **Composite View** tabs, review and select the desired options.
  - c. Back on the **Summary Results** tab, click the **View Results** button.

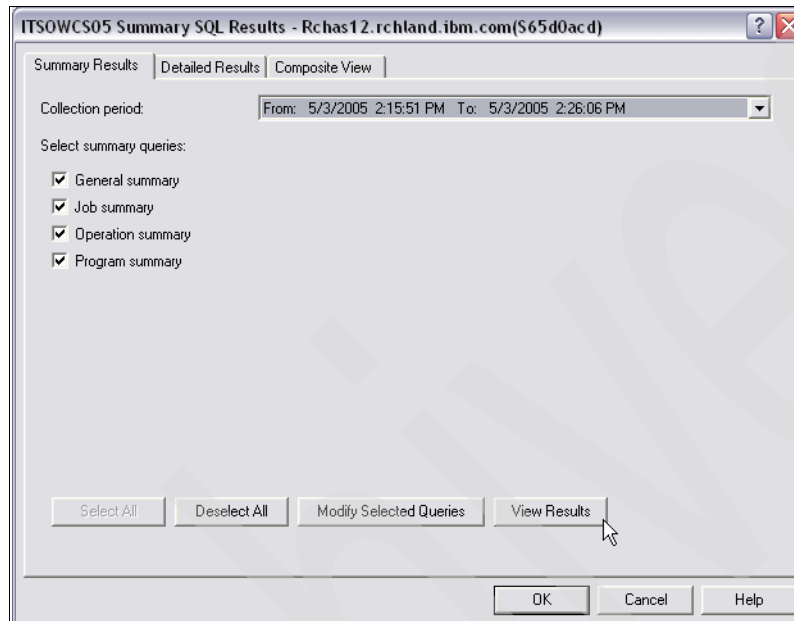


Figure 7-75 Summary SQL Results

The result is a composite query of the summary SQL performance monitor settings. For information about how to interpret the results, refer to the IBM Redbook *Preparing for and Tuning the V5R2 SQL Query Engine on DB2 Universal Database for iSeries*, SG24-6598.

### 7.8.3 Creating database indexes

Creating database indexes can improve performance between a Workplace Collaboration Services server and the database server. Using iSeries Navigator or i5/OS SQL commands, creating database indexes can be a fairly quick and easy procedure. In this section, we provide an example of both of these procedures.

The databases that you want to create the indexes over reside in the WebSphere Portal library or schema associated with your Workplace Collaboration Services server. To determine the name of the WebSphere Portal library for your Workplace Collaboration Services server, refer to Appendix C, “Workplace Collaboration Services configuration summary” on page 519.

## Creating database indexes from iSeries Navigator

You can create database indexes for a Workplace Collaboration Services server using iSeries Navigator. Perform the following steps:

1. Open iSeries Navigator and access your iSeries server.
2. When prompted, enter a valid i5/OS user profile name and password with at least \*ALLOBJ, \*IOSYSCFG, and \*JOBCTL special authorities. Click **OK**.
3. Click **My Connections** → **iSeries system name** → **Databases** → **S65d0acd** → **Schemas** to view the database or databases and their schemas.

In our example, the relational database directory entry name was S65d0acd. In your environment, select the relational database directory name on your iSeries server.

4. By default, iSeries Navigator does not display all the database schemas on the system. To add the database schemas for the Workplace Collaboration Services server:
  - a. Right-click **Schemas** and click **Select Schemas to Display** as shown in Figure 7-76.

**Note:** If you have already selected the schemas to display in “Creating an SQL performance monitor” on page 379, you can skip to step 5 on page 389.

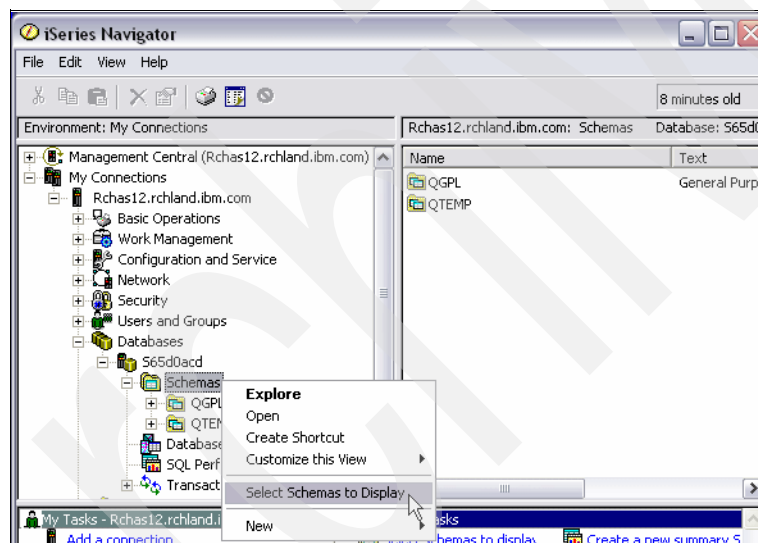


Figure 7-76 Selecting the Schemas to Display option

- b. In the Select Schemas to Display window, choose either **Enter schemas names** or **Search for schemas**. Figure 7-77 shows an example of entering the WebSphere Portal database for a Workplace Collaboration Services server called ITSOWSE2.

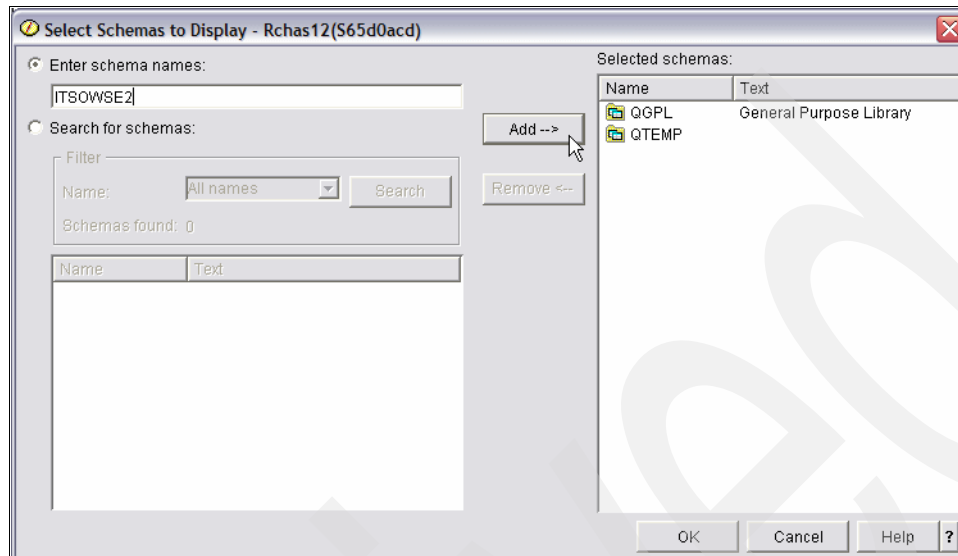


Figure 7-77 Adding a schema name to the selected schema list

- c. Click the **Add** button to add the schema name to the selected schema list.

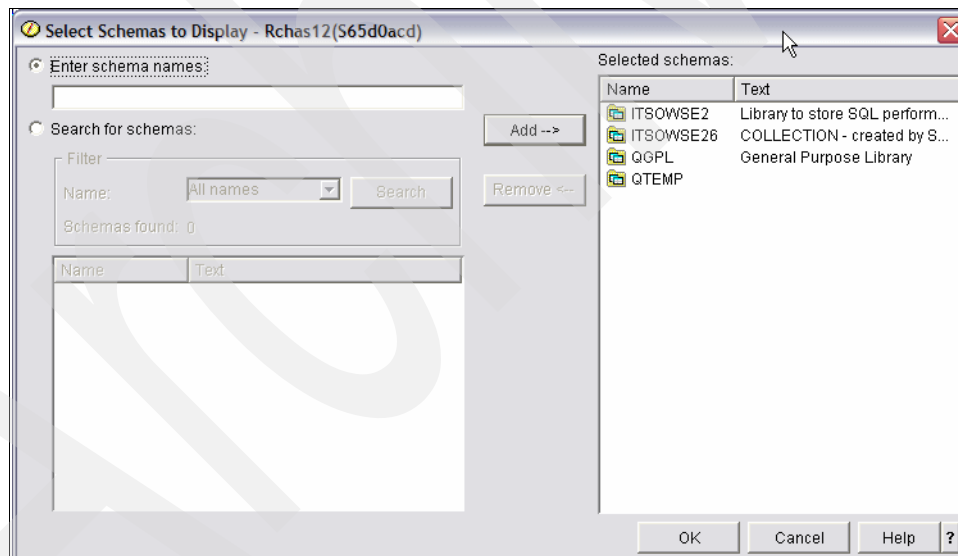


Figure 7-78 Selected schemas after adding

- d. Click **OK**. iSeries Navigator now shows the Workplace Collaboration Services WebSphere Portal library.

5. In the Database tasks panel, located in the lower pane of iSeries Navigator, select **Run an SQL script** as shown in Figure 7-79. This launches an SQL script window to perform the indexing.

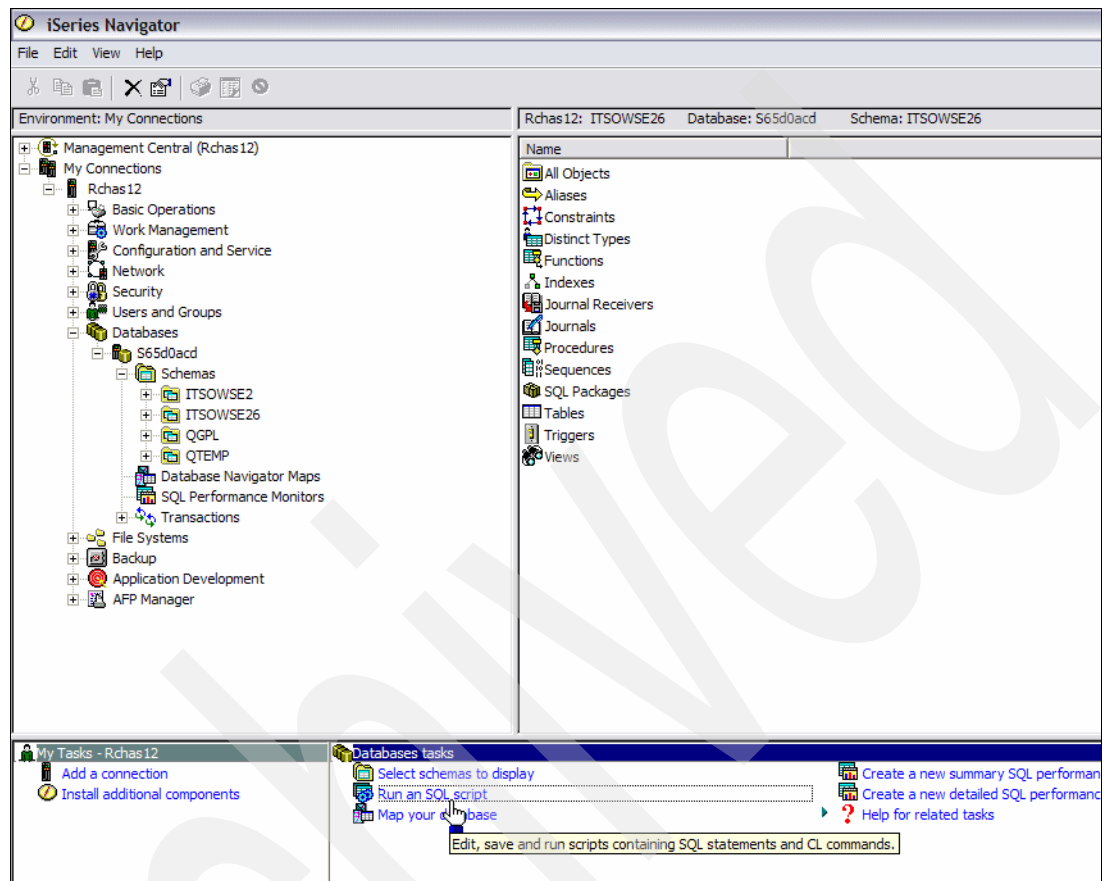


Figure 7-79 Running an SQL script

6. In the Run an SQL script window (Figure 7-80), run the following scripts *individually* and in the order shown to create the database indexes.

**Note:** Replace *portaldb* with the WebSphere Portal database that you are indexing.

- create index portaldb.IX2110D on portaldb.prot\_res (parent\_oid, oid)
- create index portaldb.IX2140B on portaldb.lnk\_user\_role (role\_inst\_oid)
- create index portaldb.lambr\_idxfix1 on portaldb.wmmlambr (WMMLAMBR\_ID, MEMBER\_TYPE)
- create index portaldb.laasval\_idxfix3 on portaldb.wmmlaasval (WMMLAMBR\_ID, WMMLAATR\_ID)
- create index portaldb.laasval\_idxfix2 on portaldb.wmmlaasval (WMMLAMBR\_ID, HAS\_CONTEXT)
- create index portaldb.disresidx2 on portaldb.DISCUSSIONRESOURCE (uri, parenturi, path)
- create index portaldb.disresidx3 on portaldb.DISCUSSIONRESOURCE (uri, rooturi, projectid, workspace)
- create index portaldb.disres\_midx2 on portaldb.DISCUSSIONRES\_M (uri, wpcpguid)
- create index portaldb.metaidx4 on portaldb.wpcpmetadata (wpcpguid, wpcpdeleted)

Figure 7-80 provides an example of entering the first create index script against the WebSphere Portal database ITSOWSE26. Click **Run All** to run the create index script.

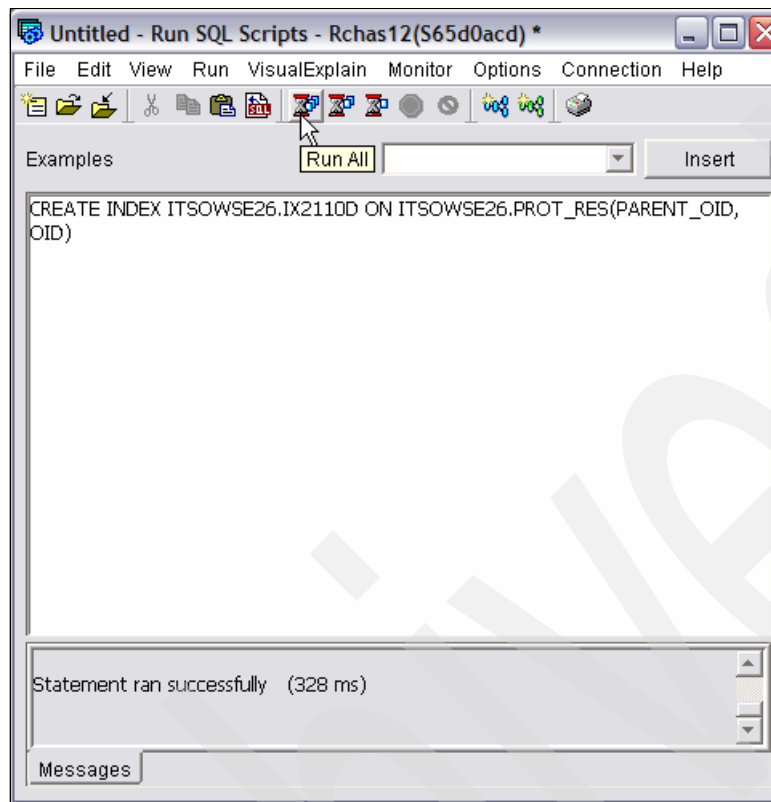


Figure 7-80 Entering the create index SQL script

This results in a “Statement ran successfully” message, as shown in Figure 7-81.

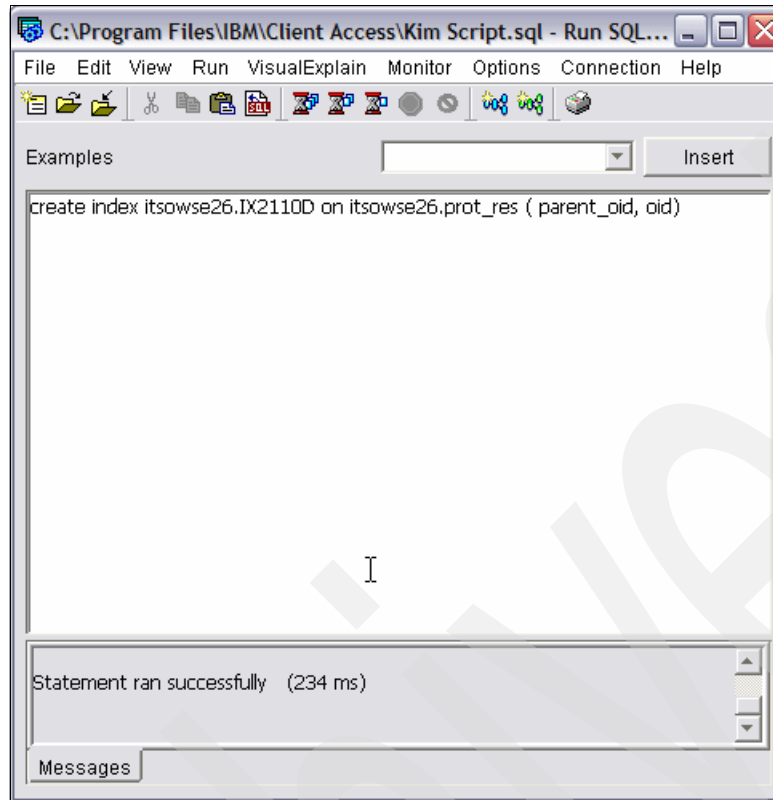


Figure 7-81 Statement ran successfully message

7. Clear the create index script to continue running the next SQL script.
8. Create the remaining indexes listed in step 6 on page 389 using the same procedure you just used to create the first index.
9. After all of the indexes are created, exit the Run SQL Scripts window. Saving the information is optional.

### Changing the object owner of database indexes via iSeries Navigator

For each of the new database indexes created, you must change the owner to the database user profile used during the Workplace Collaboration Services server configuration. You can verify this in Appendix C, “Workplace Collaboration Services configuration summary” on page 519.

1. Open iSeries Navigator and access your iSeries server.
2. When prompted, enter a valid i5/OS user profile and password with at least \*ALLOBJ, \*IOSYSCFG, and \*JOBCTL special authorities.
3. Click **My Connections** → **iSeries system name** → **Databases** → **S65d0acd** → **Schemas** to view the database or databases and their schemas.

In our example, the relational database directory entry name was S65d0acd. In your environment, select the relational database directory name on your iSeries server.

4. Expand **Schemas** and select the WebSphere Portal schema for your Workplace Collaboration Services server.

5. In the right-pane, double-click **Indexes** to view the database indexes created. Figure 7-82 shows an example of selecting the WebSphere Portal database of PORTALDB2.

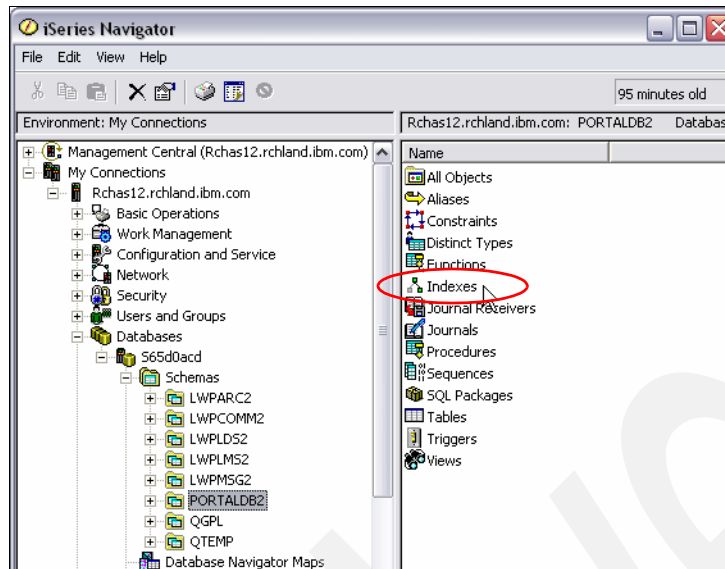


Figure 7-82 Selecting Indexes for the WebSphere Portal database of PORTALDB2

The indexes for the database are now displayed. Notice the owner column in Figure 7-83.

**Note:** Click the column labeled **Owner** to sort the database indexes to see the indexes you created in 7.8.3, “Creating database indexes” on page 386.

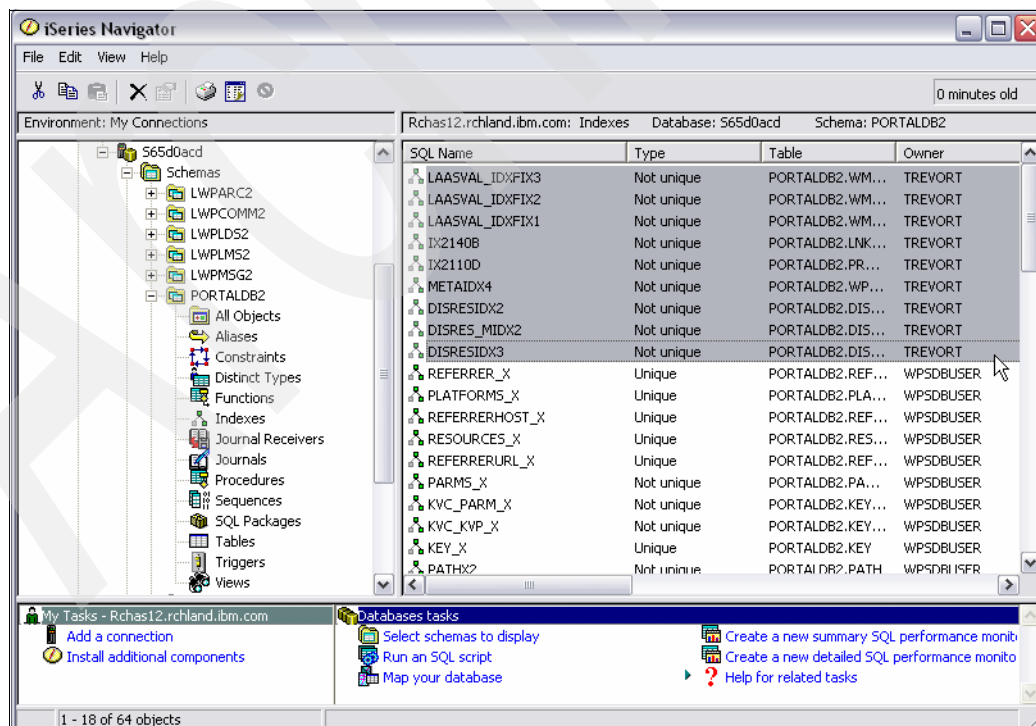


Figure 7-83 Displaying the database indexes



6. Right-click a newly created index and select **Permissions** as shown in Figure 7-84.

**Note:** The Owner column also shows who the original user was that was used to create the initial indexes and databases in our WebSphere Portal schema. In our example, this is user TREVORT. Make note of this index owner, which you need to know later.

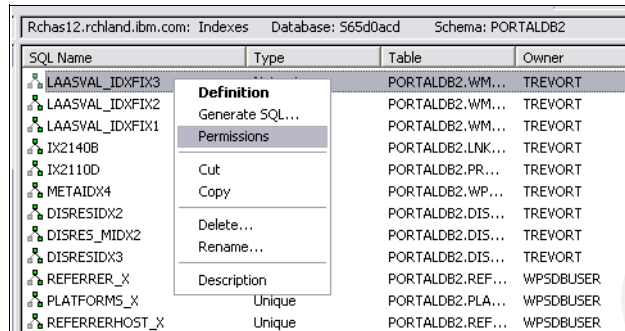


Figure 7-84 Selecting the index permissions

7. In the Permissions window (Figure 7-85), click the **Owner** button.

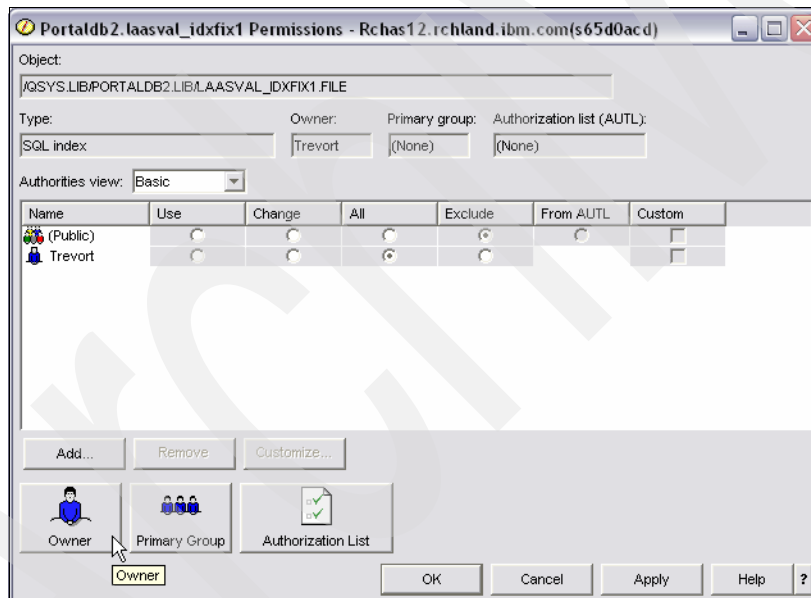


Figure 7-85 Changing ownership of an index

- In the Owner window (Figure 7-85), change the owner to the database profile used to create the databases during the Workplace Collaboration Services server creation. Scroll down to find the original WebSphere Portal schema owner. In our example, this was user WPSDBUSER. Highlight the user and click **OK**.

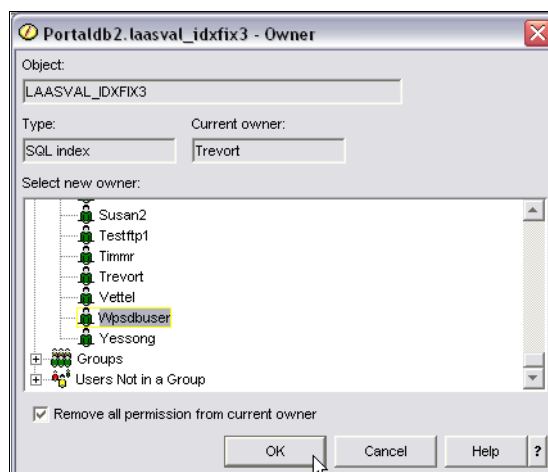


Figure 7-86 Setting the database profile as owner

- In the Permissions window, click **Apply** to see the new owner updated. Click **OK** to exit the Permissions window.
- Perform step 5 on page 392 through step 9 for each remaining newly created indexes.

## Creating database indexes from the i5/OS command line

You can also create the database indexes for a Workplace Collaboration Services server from an i5/OS command line as explained in the following steps:

**Note:** DB2 Query Manager and SQL Developer Kit (5722ST1) \*BASE *must* be installed to run SQL commands from the i5/OS command line.

- Connect to the iSeries server via a 5250 emulation session or access the system console.
- When prompted, enter a valid i5/OS user profile and password with at least \*ALLOBJ, \*IOSYSCFG, and \*JOBCTL special authorities.
- From an i5/OS command line, run the following CL command to start the SQL Interactive Session interface with the naming convention set to \*SQL:

```
STRSQL NAMING(*SQL)
```

Figure 7-87 displays a successful connection to the relational lab database S65D0ACD.

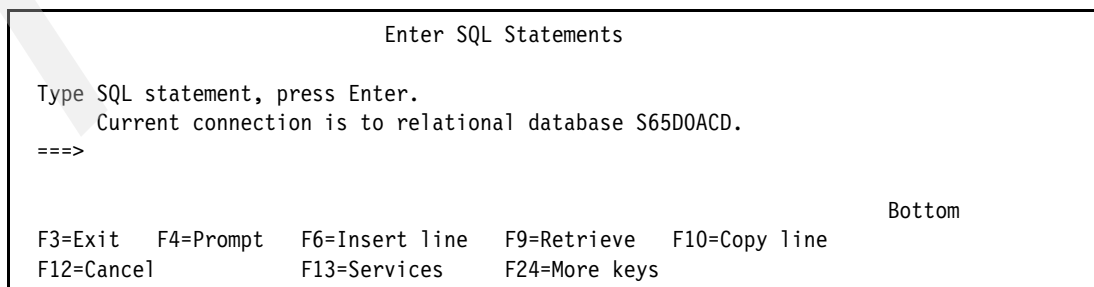


Figure 7-87 Example results of running STRSQL NAMING(\*SQL)

- Run the following scripts in *individually* and in the order shown to create the database indexes.

**Note:** Replace *portaldb* with the WebSphere Portal library you are indexing.

- create index portaldb.IX2110D on portaldb.prot\_res (prot\_00001, oid)
- create index portaldb.IX2140B on portaldb.lnk\_u00001 role\_00001)
- create index portaldb.LMidxfix1 on portaldb.wmm1a00001 (wmm1a00001, membe00001)
- create index portaldb.LAidxfix3 on portaldb.wmm1aasval (wmm1a00004, wmm1a00002)
- create index portaldb.LAidxfix2 on portaldb.wmm1aasval (wmm1a00004, has\_c00001)
- create index portaldb.disresidx2 on portaldb.DISCU00001 (uri, parenturi, path)
- create index portaldb.disresidx3 on portaldb.DISCU00001 (uri, rooturi, projectid, workspace)
- create index portaldb.disresmidx2 on portaldb.DISCU00002 (uri, wpcpguid)
- create index portaldb.metaidx4 on portaldb.wpcpm00001 (wpcpguid, wpcpd00001)

Figure 7-88 shows an example of running the first **create index** script against the WebSphere Portal schema of PORTALDB.

```

Enter SQL Statements

Type SQL statement, press Enter.
> create index PORTALDB.IX2110D on PORTALDB2prot_res (prot_00001, oid)
Index IS2110D created in PORTALDB on table PROT_RES in PORTALDB.
===>

F3=Exit  F4=Prompt  F6=Insert line  F9=Retrieve  F10=Copy line
F12=Cancel  F13=Services  F24=More keys
Bottom

```

Figure 7-88 Example of creating an index

- Run the remaining **create index** scripts in step 4 on page 395 on the schema.
- Press F3 to exit the SQL Statements and type option 1 to save and exit the interactive SQL session.

```

Exit Interactive SQL

Type choice, press Enter.

Option . . . . . 1      1=Save and exit session
                        2=Exit without saving session
                        3=Resume session
                        4=Save session in source file

F12=Cancel

```

Figure 7-89 Exit Interactive SQL

## Changing the object owner of database indexes via i5/OS command line

For each of the new database indexes created, change the owner to the database user profile used during the Workplace Collaboration Services server configuration. You can verify this in Appendix C, “Workplace Collaboration Services configuration summary” on page 519.

From an i5/OS command line, run the Change Object Owner (CHGOBJOWN) CL command against each of the newly created indexes. Set the new owner as the user profile that was used during the Workplace Collaboration Services server configuration.

The following command shows an example of setting the owner as WPSDBUSER against the newly created index IX2110D in the PORTALDB library:

```
CHGOBJOWN OBJ(PORTALDB/IX2110D) OBJTYPE(*FILE) NEWOWN(WPSDBUSER)
```

## 7.9 IBM Directory Server tuning

If you have chosen to use the IBM Directory Server for your LDAP server in your Workplace Collaboration Services server deployment, we recommend that you implement the tuning tips in this section.

### 7.9.1 Nested groups

To obtain the best performance, we recommend that you avoid nested groups within your LDAP directory. *Nested groups* are groups within groups and can cause performance issues with resolution of the groups that are either nested several levels deep or that contain many users.

The reason why nested groups can be a performance concern is because of the security checks that Workplace Collaboration Services performs when a user requests a page. When the page request is received by the server, permission levels of the user are checked against that page and the individual portlets present on that page. Different security levels can be set for each of these elements, meaning that a security check is required to serve up the individual portlets, the portlet contents, and the page as a whole.

The Workplace Collaboration Services server must check the user access before rendering the page, so it can decide what to render according to the different security levels assigned to that user for the different components. When users are in nested groups, getting the nested member can be an intensive task on the LDAP server.

### 7.9.2 Database connections and server threads

The IBM Directory Server defaults to allowing four database connections and server threads. Increasing this value can improve performance. In our testing, we increased this value to 10 and saw some positive results. To access the IBM Directory properties:

1. Open iSeries Navigator and access your iSeries server.
2. When prompted, enter a valid i5/OS user profile and password with at least \*ALLOBJ, \*IOSYSCFG, and \*JOBCTL special authorities. Click **OK**.

- Click **My Connections** → **iSeries system name** → **Network** → **Servers** → **TCP/IP**. In the right pane, scroll down and right-click **Directory** server and select **Properties** as shown in Figure 7-90.

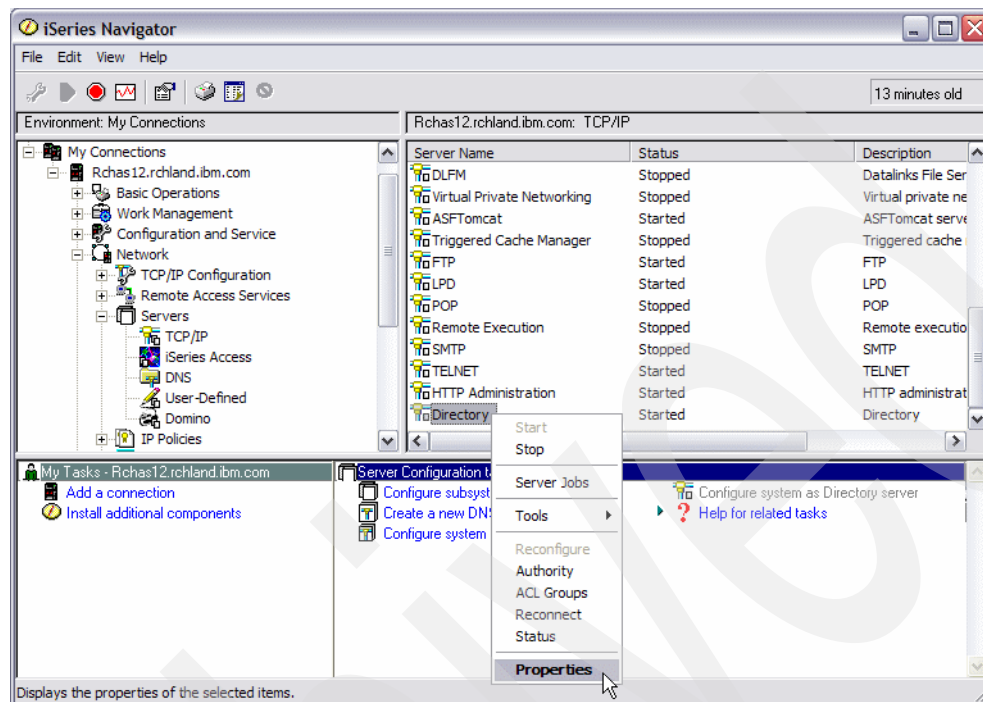


Figure 7-90 Accessing IBM Directory Server properties

- In the Directory Properties window (Figure 7-91), click the **Database/Suffixes** tab. Increase the Database connections and server threads field to a desired setting. In our testing, we set this value to 10. Click **OK**.

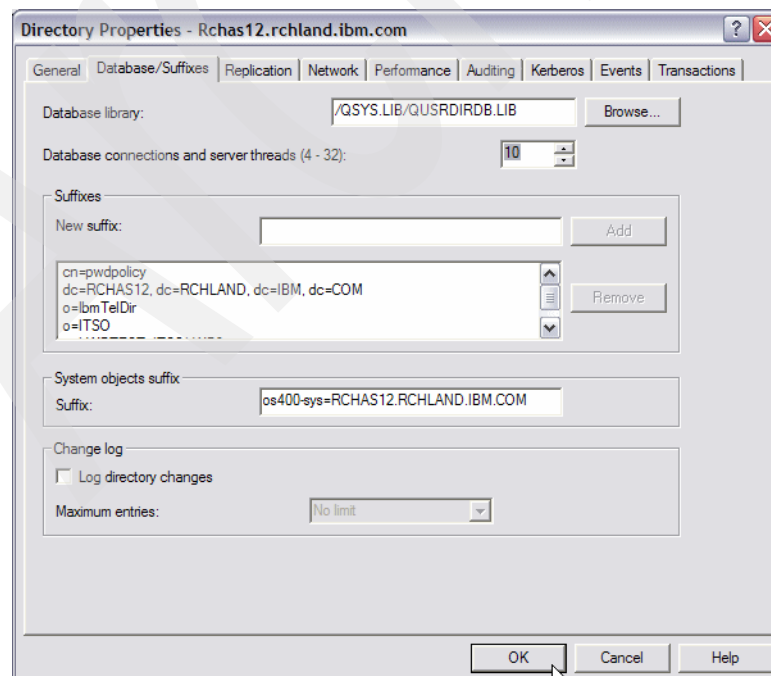


Figure 7-91 Increasing the Database connections and server threads for the IBM Directory Server

5. In the Directory Server Properties window (Figure 7-92), select either **Restart the server now** or **Restart the server later**. Click **OK**.

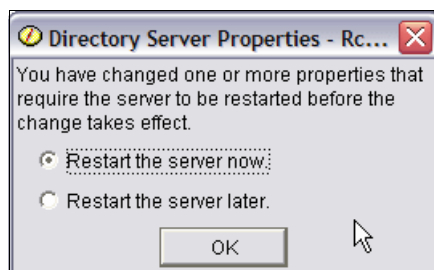


Figure 7-92 Selecting an option for restarting the IBM Directory Server

6. If you have chosen to not restart the IBM Directory Server now, you must stop and restart the IBM Directory Server for the changes to be enabled.

**Tip:** The changes made to the iSeries Navigator to optimize performance are written to the integrated file system on the i5/OS in the directory and file name of `/QIBM/UserData/OS400/DirSrv/ibmslapd.conf`. We recommend that you make all IBM Directory Server configuration changes using iSeries Navigator.

## 7.10 Lotus Domino LDAP tuning

Lotus Domino may be your choice for an LDAP server within your Workplace Collaboration Services deployment. This section contains tips to help you optimize the performance of your Lotus Domino LDAP implementation.

### 7.10.1 Nested groups

For the best performance, we recommend that you avoid nested groups within your LDAP directory. *Nested groups* are groups within groups and can cause performance issues with resolution of the groups that are either nested several levels deep or that contain many users.

The reason why nested groups can be a performance concern is because of the security checks Workplace Collaboration Services performs when a user requests a page. When the page request is received by the server, permission levels of the user are checked against that page and the individual portlets present on that page. Different security levels can be set for each of these elements, meaning that a security check is required to serve the individual portlets, the portlet contents, and the page as a whole.

The Workplace Collaboration Services server must check the user access before rendering the page, so it can decide what to render according to the different security levels assigned to that user for the different components. When users are in nested groups, getting the nested member can be an intensive task on the LDAP server.

### 7.10.2 Full text indexing the Domino directory

When using Lotus Domino to provide LDAP services for the Workplace Collaboration Services server, it is important to make sure the Domino Directory is full text search enabled. Without the full text index created, each Domino LDAP search is a linear search. This means the more users that you have in your directory, the worse the problem becomes.

Perform the following steps to make sure that your Domino Directory has full text indexing enabled:

1. Open the Domino Administrator client.
2. Click the **Configuration** tab.
3. In the left frame, click **Server** → **Configurations**.
4. Open the Global Configuration document, or create one if it does not already exist. The Global Configuration document has a server name of \* - [All Servers]. To create a new Global Configuration document, click **Add Configuration** and select **Use these settings as the default settings for all servers** as shown in Figure 7-93.

**Configuration Settings**

Basics | LDAP | Router/SMTP | MIME | NOTES.INI Settings | Domino Web Access | IMAP | SNM

**Basics**

Use these settings as the default settings for all servers: ☒ Yes

OR

Group or Server name: \* - Default -

Type-ahead:

International MIME Settings for this document: ☐ Enabled

IMAP server returns exact size of message:

POP3 server returns exact size of message:

Extract calendar details: ☐ Enabled

Smart Upgrade Database link:

License Tracking:

Minimum Client Level:

Maximum Client Level:

Comments:

Figure 7-93 Creating or modifying the Global Configuration document

5. In the Configurations Settings document, click the **LDAP** tab. For the Automatically Full Text Index Domino Directory? field, select **Yes** as shown in Figure 7-94. Then click **Save & Close** to save and close the document.

Save & Close Cancel

vendorversion

Allow LDAP users write access: ☐ Yes ☒ No

Timeout:  seconds

Maximum number of entries returned:

Minimum characters for wildcard search:

Allow Alternate Language Information processing: ☐ Yes ☒ No

Rules to follow when this directory is the primary directory, and there are multiple matches on the distinguished name being compared/modified: ☒ Don't modify any ☐ Modify first match ☐ Modify all matches

Automatically Full Text Index Domino Directory? ☒ Yes ☐ No

Enforce schema? ☒ Yes ☐ No

DN Required on Bind? ☐ Yes ☒ No

Encode results in UTF8 for LDAPv2 clients? ☒ Yes ☐ No

Maximum number of referrals:

Figure 7-94 Specifying to automatically full text index the Domino Directory

6. Reload the LDAP schema by entering the following command on the Domino server console:

```
tell ldap reloadschema
```

**Tip:** Our testing has shown that reloading the schema is not always sufficient. To be safe, consider restarting the Domino server.



## Interoperability and coexistence with Lotus products

In this chapter, we discuss how a Workplace Collaboration Services server can be enabled to communicate and coexist with Lotus Domino and Sametime communities. Specifically in this chapter, we examine:

- ▶ Messaging
- ▶ Awareness and instant messaging

Workplace Collaboration Services Messaging uses standards-based Simple Mail Transfer Protocol (SMTP) to route mail between servers and cells and to route incoming and outgoing mail to other mail systems. Workplace Collaboration Services Messaging uses information in the Lightweight Directory Access Protocol (LDAP) directory for user account creation and routing to determine where to route internal messages and uses the Domain Name System (DNS) to route outgoing messages. In this chapter, we also explain how to use this technology to route mail between Workplace Collaboration Services and Lotus Domino.

## 8.1 Mail coexistence

You can integrate your Domino environment with Workplace Collaboration Services Messaging in different ways:

- ▶ Using one LDAP directory
- ▶ Using multiple LDAP directories
- ▶ Using Workplace Collaboration Services and Domino in the same domain:
  - With Domino as the smart host
  - With Workplace Collaboration Services as the smart host
- ▶ Using Workplace Collaboration Services and Domino in different domains

This section provides details for routing mail in the following scenarios:

- ▶ Workplace Collaboration Services and Domino in the same Internet domain where Workplace Collaboration Services is the smart host  
See 8.1.1, “Workplace Messaging and Domino in the same Internet domain” on page 403.
- ▶ Workplace Collaboration Services and Domino in different Internet domains  
See 8.1.2, “Workplace Messaging and Domino in different Internet domains” on page 412.

**Note:** For these scenarios, we use the Domino LDAP directory as the unique directory. You can also have separate LDAP directories, but you must use the Domino Directory Assistance to integrate the second LDAP directory.

Also, to have a successful implementation of these scenarios, we assume that you have already completed the steps in 3.4, “Preparing the Domino server for LDAP” on page 57, to use Domino as your standard LDAP directory.

Before you can understand how the coexistence is configured, you must understand the meaning of a smart host for both Domino and Workplace Collaboration Services.

A *smart host* is a directory server to which SMTP-routed messages are sent when the message recipient cannot be found in the local directory. When you configure Domino to use a smart host, by default, messages destined for users in your domain who are not listed in the Domino Directory are forwarded to the smart host for routing. You can also choose to forward all local mail to the smart host. If you add users with a mail system of “Other Internet Mail,” messages destined for these users are also forwarded to the smart host for routing.

In Workplace Collaboration Services Messaging, a smart host is an SMTP server to which messages are sent when a recipient in the local domain cannot be found in the LDAP directory, when the recipient is not a member of the local cell, or when the recipient does not have an LDAP mail cell attribute that defines an alternate destination. In each of these scenarios, which we discuss in the following sections, you may use one of the following options:

- ▶ One or more Lotus Domino servers for inbound SMTP services
- ▶ One or more Workplace Collaboration Services Messaging servers for inbound SMTP services
- ▶ Both Domino and Workplace Messaging for inbound SMTP services

The Workplace Collaboration Services Messaging Mail Service relies on the cell name of the recipient and the domain part of the e-mail address to properly route mail.

- ▶ If a recipient is in the local Internet domain, but the recipient is not a member of the local messaging cell, the Mail Service attempts to locate a mail cell attribute for the recipient.
- ▶ If no mail cell attribute is found, the message is transferred to the configured smart host.
- ▶ If a cell attribute is found, the Mail Service uses the cell name and the host name of the cell's inbound SMTP server to route the message.

### 8.1.1 Workplace Messaging and Domino in the same Internet domain

When Workplace Collaboration Services Messaging and Domino are in the same Internet domain, you can configure the servers as explained in the following steps. Remember that we are using the same LDAP directory for both mail systems, which is a Domino LDAP directory.

In this case, all of the users are in the same LDAP directory. Some are Workplace Collaboration Services users, and some are Domino users. In this scenario, both mail systems see the users as local users because the servers are using the same Internet domain. Because of this, we need to differentiate the users for both systems.

You must configure the routing between Domino and Workplace Collaboration Services Messaging using a smart host. Perform the following steps to configure the routing from Domino to Workplace Collaboration Services using Workplace Collaboration Services as a smart host for Domino. Your Domino server *must* have the SMTP task configured to send and receive messages. See the Domino Administration help for more details.

In this scenario, all inbound SMTP mail for our domain is received by the Domino server. To configure the servers when Workplace Collaboration Services Messaging and Domino are in the same Internet domain:

**Important:** In this scenario, we configure the Workplace Collaboration Services server as the smart host for Domino. Do *not* configure both servers, Domino and Workplace Collaboration Services, as the smart host for each other at the same time, since this causes loops when the messages are sent. The smart host can be Domino *or* Workplace Collaboration Services, but not both.

1. Using the Lotus Notes client or the Domino Administrator client, select **File** → **Database** → **Open** and open the Domino Directory (Names.nsf file).
2. In the left pane, click the **People** view.
3. Modify the users that you want to become Workplace Collaboration Services users or add new ones to the Domino LDAP directory. You can do this using the Add Person button in the People view.
  - a. If you are modifying an existing Domino user to become a Workplace Collaboration Services user, delete the values in the Domain, Mail File, Mail Server, and Forwarding Address fields.
  - b. The Person document fields should contain the following values for a Workplace Collaboration Services user as shown in Figure 8-1:
    - For Mail system, select **Other Internet Mail**.
    - For First name, type the user's first name.
    - For Last name, type the user's last name.

- For User name, type the hierarchical user name followed by the full name, for example:  
Will Smith/ITSO  
Will Smith
- For Shortname, type the Workplace Collaboration Services user ID.
- For Internet address, use the user's Internet address. Be sure that the domain part of the address matches the local Internet domain name to allow mail delivery and to support automatic mail account creation in the Workplace Collaboration Services server.

**Note:** Do not populate the Forwarding address field in the Person document. The Forwarding address is used when a smart host is not configured or when the user is in another domain.

Person: Will Smith/ITSO will@rchland.ibm.com

Basics | Work/Home | Other | Miscellaneous | Certificates | Roaming | Administration

Basics		Mail	
First name:	Will	Mail system:	Other Internet Mail
Middle name:		Domain:	
Last name:	Smith	Forwarding address:	
User name:	Will Smith/ITSO Will	Internet address:	will@rchland.ibm.com
Alternate name:		<b>Real-Time Collaboration</b>	
Short name/UserID and/or will		Sametime server:	
Internet address for R4.x			
SMTP MTA:			
Personal title:			
Generational qualifier:			
Internet password:			
Preferred language:			

Figure 8-1 Workplace Collaboration Services user in a Domino Directory using smart host

- c. Click **Save & close** to save and close the Person document.

4. Make sure that both Domino and Workplace Collaboration Services are using the same local Internet domain.
  - a. For Domino, if you are using a Global Domain document, write down the local domain name located in the Local primary Internet domain field or in the Alternate Internet domain aliases field (Figure 8-2).

**Domain itsoworkplace**

Basics | Restrictions | Conversions | Comments | Administration

SMTP Address Conversion		X.400 Address Conversion	
Local primary Internet domain:	rchland.ibm.com	Outbound mail restriction:	Restrict to global domain
Alternate Internet domain aliases:	itsowcs.rchland.ibm.com	Country name:	
Internet address lookup:	Enabled <i>convert as follows:</i>	ADMD name:	
<i>If disabled or no match,</i>		PRMD name:	
Local part formed from:	Short name	Domino domain attribute:	None
Domino domain(s) included:	None		
Domino domain(s) position:	Left of '@'		
Domino domain separator:	- period		

Figure 8-2 Global Domain document

- b. If you are not using a Global Domain document, be sure that the local domain name is part of the fully qualified Internet host name in the Domino Server document (Figure 8-3).

**Server : ITSODOMINO1/ITSO**

Basics | Security | Ports | Server Tasks | Internet Protocols | MTAs | Miscellaneous | Transactional Logging | Shared Mail | Administration

Basics				
Server name:	ITSODOMINO1/ITSO		Server build number:	Release 6.5.3
Server title:	Domino 6.5.3 ITSO test server		Routing tasks:	Mail Routing, SMTP
Domain name:	ITSO		SMTP listener task:	Enabled
Fully qualified Internet host name:	ITSODOMINO1.RCHLAND.IBM.COM		Server's phone number(s):	
Cluster name:			CPU count:	2
Load Internet configurations from Server\Internet Sites documents:	Disabled		Operating system:	IBM OS/400
Maximum formula execution time:	120 seconds		Is this a Sametime server?:	No

Figure 8-3 Domino server document

- c. To verify the local domains in Workplace Collaboration Services, on the WebSphere Application Server Administrative Console, select **Lotus Workplace** → **Mail Cell-Wide Settings** and verify the Domains that are considered to be local. The domains specified in this field should match the Domino domains. See Figure 8-4.

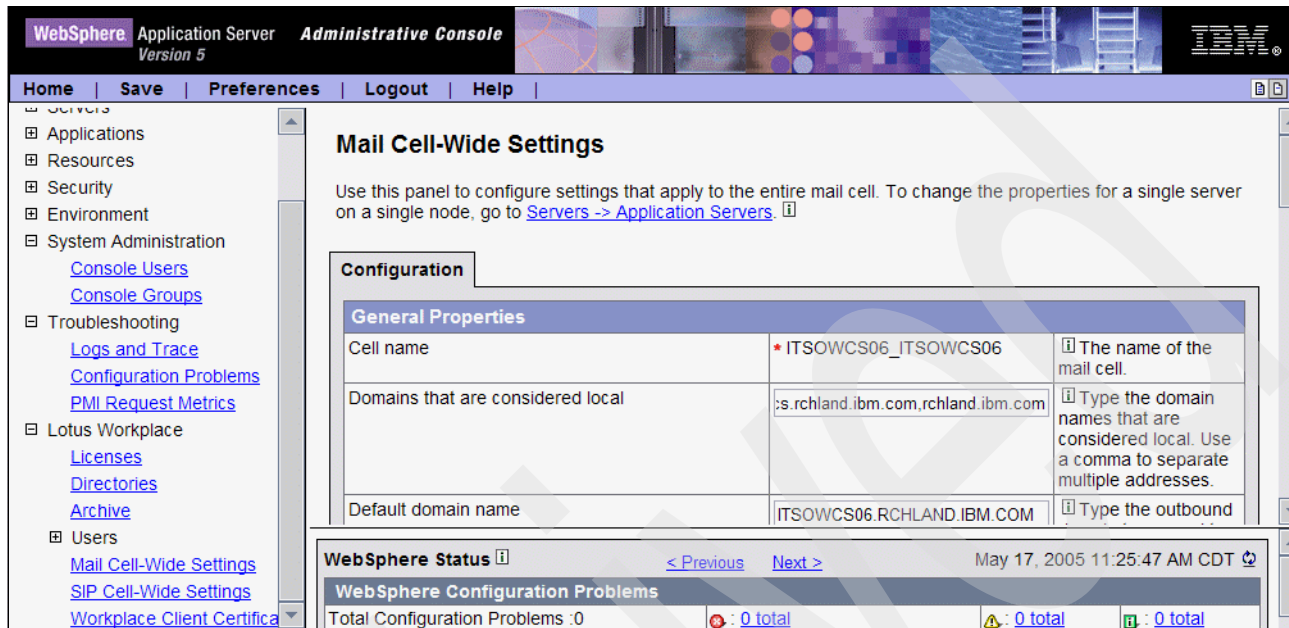


Figure 8-4 WebSphere Application Server Administrative Console

5. Create a Configuration document in Domino, or modify the existing configuration document for your Domino server:
  - a. Using the Lotus Notes client or the Lotus Administrator client, select **File** → **Database** → **Open** and open the Domino Directory (Names.nsf file).
  - b. In the left pane, select the **Configurations** → **Servers** → **Configurations** view.
  - c. Open the Configuration document for your Domino server. See Figure 8-5.
  - d. For SMTP used when sending messages outside of the local Internet domain, select **Enabled**. This allows your Domino server to transfer mail via SMTP.
  - e. In the Configuration Settings document, populate the Local Internet domain smart host field with the host name or IP address of the Workplace Collaboration Services server.
  - f. Click **Save & Close** to save and close the Configuration Settings document.
  - g. If you have more than one Domino server, repeat steps c through f for all of your Configuration documents.

**Note:** The Server Configuration Document does not need to look exactly like the example shown in Figure 8-5. You only need to modify the fields that we mention here.

Save & Close Cancel

## Configuration Settings : \*

Basics | LDAP | Router/SMTP | MIME | NOTES.INI Settings | Domino Web Access | IMAP | SNMP | Activity Logging | Change C

Basics | Restrictions and Controls | Message Tracking | Advanced |

### Router/SMTP Basics

Number of mailboxes:	<input type="text"/>
SMTP used when sending messages outside of the local internet domain:	<input checked="" type="checkbox"/> Enabled <input type="button" value="v"/>
SMTP allowed within the local internet domain:	<input checked="" type="checkbox"/> Disabled <input type="button" value="v"/>
Servers within the local Notes domain are reachable via SMTP over TCP/IP:	<input checked="" type="checkbox"/> Always <input type="button" value="v"/>
Address lookup:	<input checked="" type="checkbox"/> Fullname then Local Part <input type="button" value="v"/>
Exhaustive lookup:	<input checked="" type="checkbox"/> Disabled <input type="button" value="v"/>
Relay host for messages leaving the local internet domain:	<input type="text"/>
Local Internet domain smart host:	<input type="text" value="itsowcs06.rchland.ibm.com"/>
Smart host is used for all local internet domain recipients:	<input checked="" type="checkbox"/> Disabled <input type="button" value="v"/>

Figure 8-5 Domino Configuration Settings document

- Restart the router and update the SMTP configuration. Type the following commands in the Domino server console. You can access the Domino server console via the Domino Administrator client or from a i5/OS command line using the Work with Domino Console (WRKDOMCSL) CL command:

```
restart task router
tell SMTP update config
```

After you configure smart host routing, when Domino receives a message, if the domain part of the recipient's address matches the local Internet domain or one of the alternate Internet domain aliases defined in the Global Domain document, the router looks up the address. If the address is not found, or if the user's mail system is "Other Internet Mail", the router uses SMTP to forward the message to the configured smart host.

In this case, the configured smart host is the host name of the Workplace Collaboration Services Messaging inbound SMTP server for the cell. When the message is transferred to the Workplace Collaboration Services server, the Mail Receiver service determines whether the recipient is a member of the local cell and routes the message accordingly.



- Send a test message from a Domino user to the Workplace Collaboration Services user that you have configured. Figure 8-6 shows the Domino server console routing the message to the Workplace Collaboration Services messaging.

```

Work with Domino Console
Server: ITSODOMIN01

Previous subcommands and messages:

05/05/2005 14:15:38 Router: Message 0069BC80 transferred to ITSOWCS06.RCHLA
ND.IBM.COM for wpsadmin/ITS0@rchland.ibm.com via SMTP
05/05/2005 14:23:34 Recipient in local Internet Domain uses Other Internet
Mail system, forwarding to Smart Host
05/05/2005 14:23:34 Recipient in local Internet Domain uses Other Internet
Mail system, forwarding to Smart Host
05/05/2005 14:23:34 Router: Transferring mail to domain ITSOWCS06.RCHLAND.I
BM.COM (host ITSOWCS06.RCHLAND.IBM.COM [9.5.92.94]) via SMTP
05/05/2005 14:23:34 Router: Transferred 1 messages to ITSOWCS06.RCHLAND.IBM
.COM (host ITSOWCS06.RCHLAND.IBM.COM) via SMTP
05/05/2005 14:23:39 Router: Message 006A61DE transferred to ITSOWCS06.RCHLA
ND.IBM.COM for will@rchland.ibm.com via SMTP
05/05/2005 14:23:39 Router: Message 006A61DE transferred to ITSOWCS06.RCHLA
ND.IBM.COM for wpsadmin@itsowcs.rchland.ibm.com via SMTP
Enter a Domino subcommand.
===>

F3=Exit F5=Refresh F6=Print F9=Retrieve
F17=Top F18=Bottom F21=Command line

```

Figure 8-6 Sending mail to Workplace Collaboration Services user from a Domino user

- The Workplace Collaboration Services user now receives the mail message from Domino user as shown in Figure 8-7.

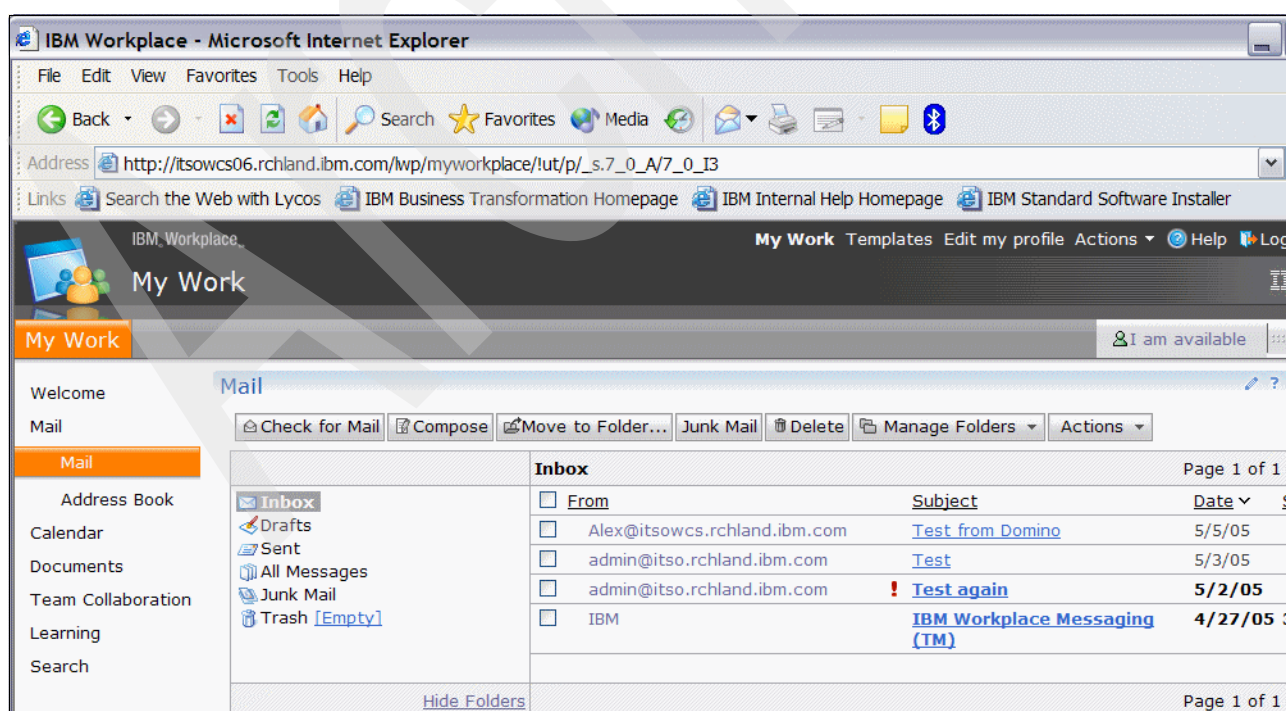


Figure 8-7 Workplace Collaboration Services user inbox



9. Now that you have configured and tested the Domino to Workplace Collaboration Services routing, configure the Workplace Collaboration Services to Domino routing. You can do this using mail cell definitions in Workplace Collaboration Services configuration to indicate where to route the messages.

You can extend the Domino LDAP schema to provide a mail cell attributes for all of your users, or you can use an attribute that already exists, but is not yet used. Domino users can have a cell attribute value of *Domino* and Workplace Collaboration Services users can have a value of *Workplace*. Mail is routed to local domain users based on the cell attribute.

To configure Workplace Collaboration Services Messaging to route Internet mail using cell attributes:

- a. Choose an LDAP attribute that is not used. In our example, we used the `carLicense` attribute.
- b. Populate the attribute you chose for all users in the Domino LDAP directory (`names.nsf`). Create two agents to populate the attribute, one for the Domino users and another one for the Workplace Collaboration Services Messaging users. The value of the `carLicense` attribute for the Domino users is `Domino`, and for the Workplace Collaboration Services Messaging users, it is `Workplace`. See Figure 8-8.

Make sure that you run the agent on the Person documents properly. That is, run the Domino agent on the Domino users and the Workplace agent on the Workplace Collaboration Services users. After that, you can check the document properties in the Person documents to verify the value of `carLicense`. See the Domino Administration Help for details on agent creation.

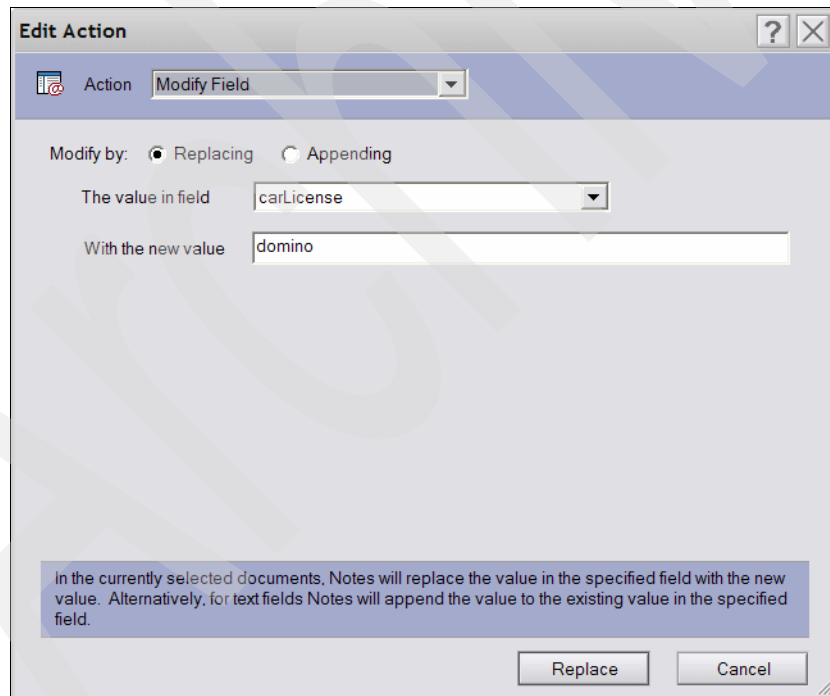


Figure 8-8 Creating an agent in Domino

- c. Add the carLicense attribute (or the attribute you chose) to the list of attributes that can be queried anonymously. Do this in the Domino server Configuration document under the LDAP tab. See Figure 8-9. Follow the steps provided in 3.4.2, “Modifying the LDAP configuration” on page 67, for assistance with this step.

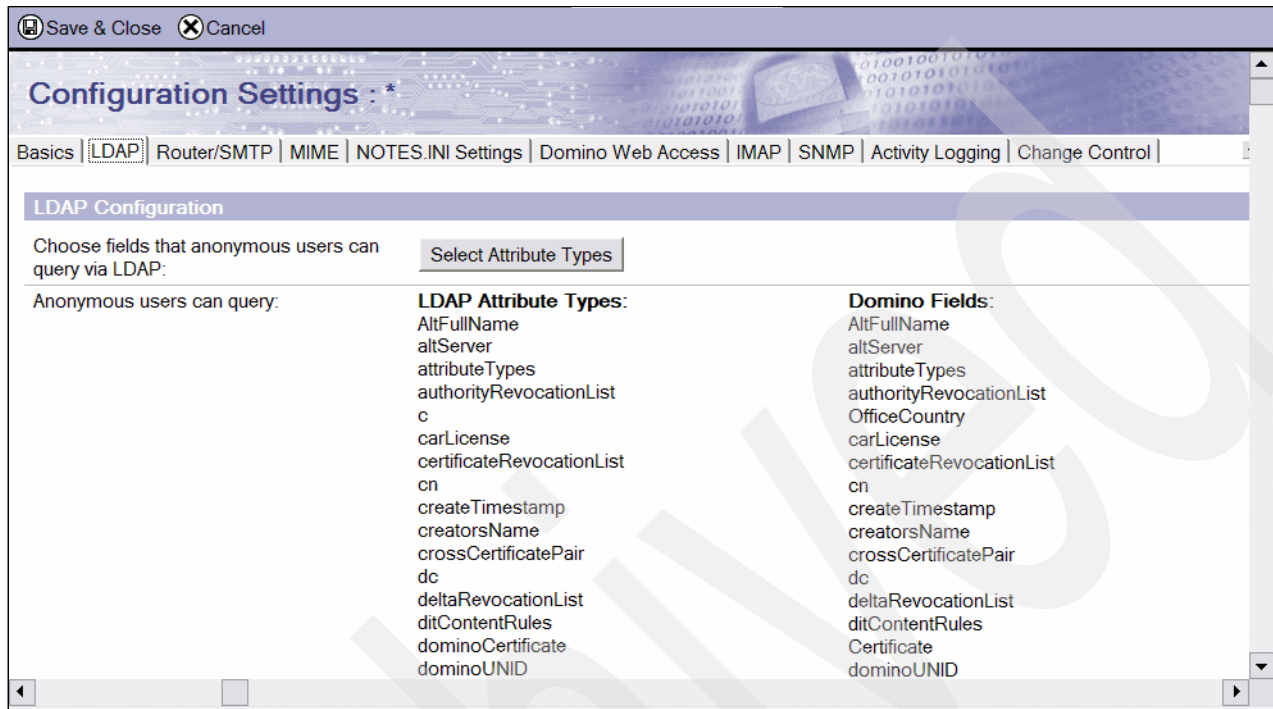


Figure 8-9 Domino attributes in the Global Configuration document

10. Go to the WebSphere Application Server Administrative Console, and in the left navigation pane, select **Lotus Workplace** → **Directories**.
11. In the Directories panel (Figure 8-10), click **Directory Settings for Messaging**.

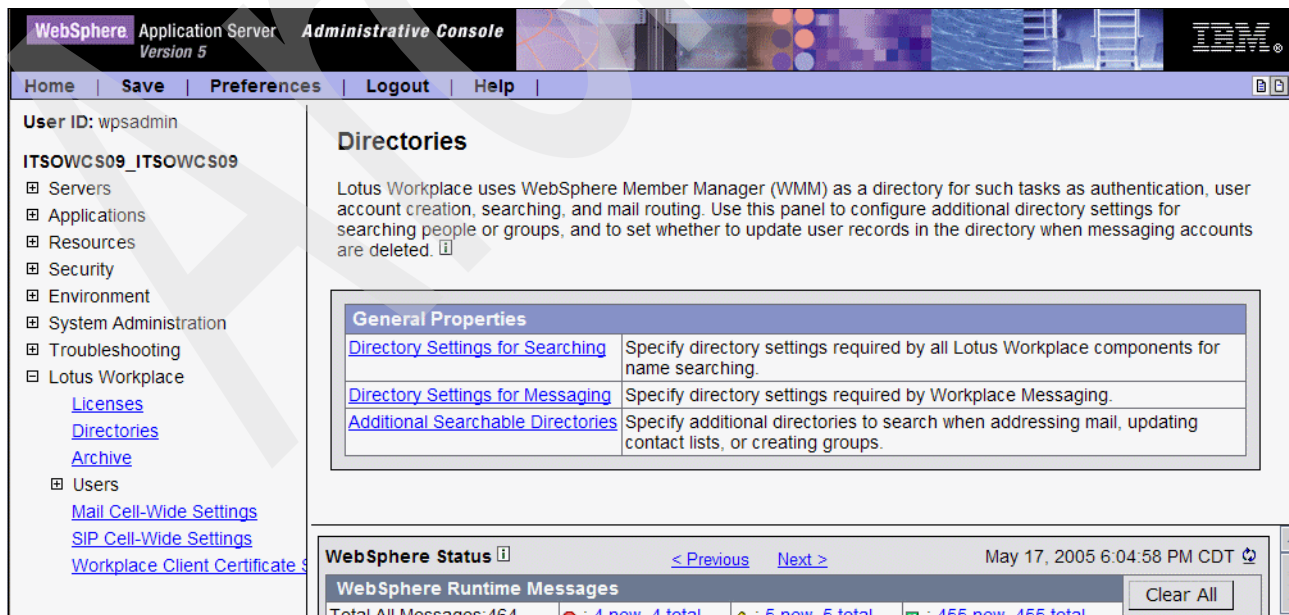


Figure 8-10 WebSphere Application Server Administrative Console

12. In the Directory Settings for Messaging panel (Figure 8-11), scroll down and click **Mail Cells**.

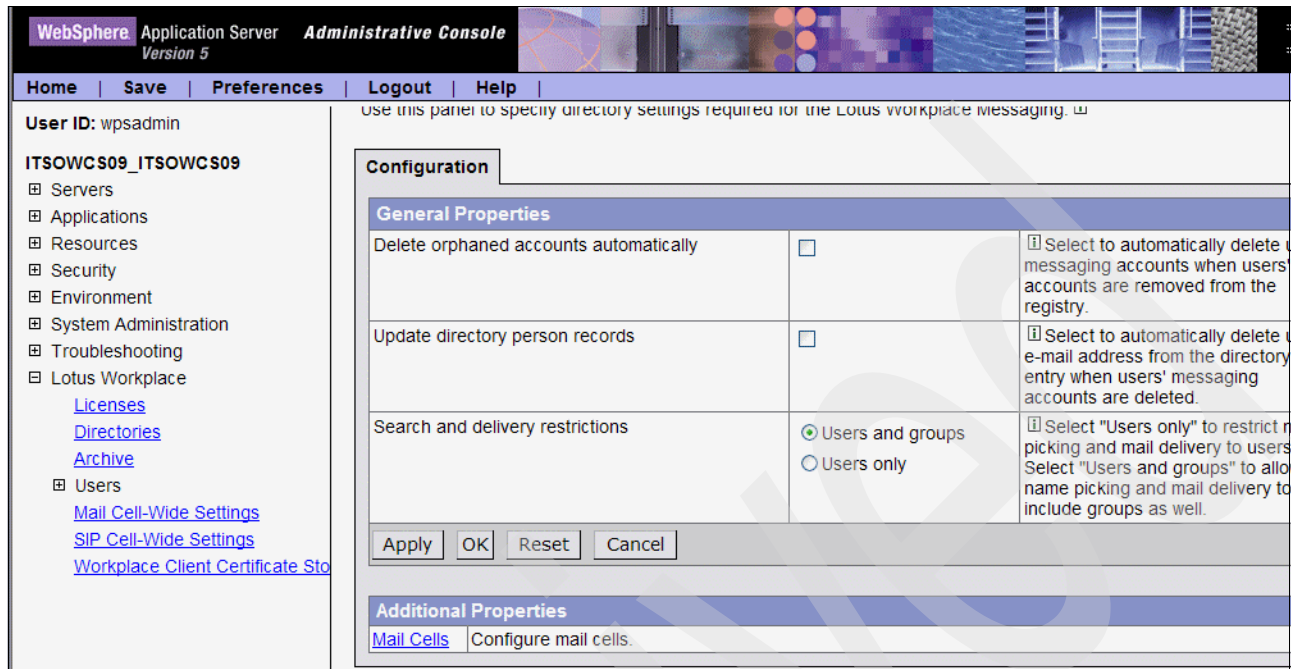


Figure 8-11 Directory Settings for Messaging panel

13. In the Mail Cell panel, we create two new mail cells, one for the Domino users, another one for the Workplace Collaboration Services users. Click **New** to create a new mail cell.
14. The Domino users mail cell definition must point to the Domino server host name. The name for this cell can be anything, as long as it is unique. In our example, we name it `domino1`. The Membership filter for this mail cell should be `(carLicense=domino)`. Note that this may be different if you chose an alternate attribute in step 9 on page 409. See Figure 8-12. Click **OK** to save this mail cell.

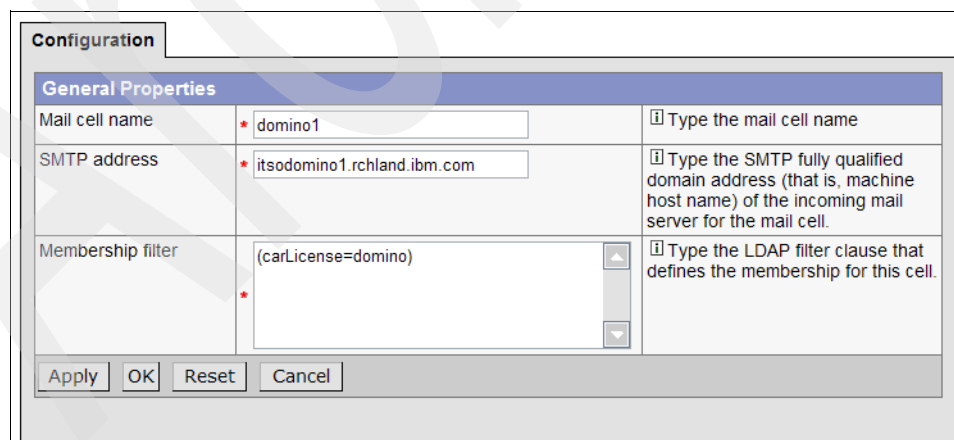


Figure 8-12 Creating the mail cell for Domino users

15. In the Mail Cell panel (Figure 8-13), click **New** to create another mail cell to be used by Workplace Collaboration Services users. This mail cell definition must point to the Workplace Collaboration Services host name. The name for this mail cell definition should match the name of your local mail cell. The Membership filter for this mail cell definition

should be (carLicense=Workplace). This may be different if you chose an alternate attribute in step 9 on page 409. Click **OK** to save this mail cell.

The screenshot shows a 'Configuration' dialog box with a 'General Properties' tab. It contains three input fields: 'Mail cell name' with the value 'ITSOWCS09\_ITSOWCS09', 'SMTP address' with the value 'itsowcs09.rchland.ibm.com', and 'Membership filter' with the value '(carLicense=workplace)'. Each field has a red asterisk icon to its left and a help icon to its right. Below the fields are four buttons: 'Apply', 'OK', 'Reset', and 'Cancel'.

General Properties		
Mail cell name	ITSOWCS09_ITSOWCS09	Type the mail cell name
SMTP address	itsowcs09.rchland.ibm.com	Type the SMTP fully qualified domain address (that is, machine host name) of the incoming mail server for the mail cell.
Membership filter	(carLicense=workplace)	Type the LDAP filter clause that defines the membership for this cell.

Figure 8-13 Creating the mail cell for Workplace Collaboration Service users

16. Click **OK** and then click **Save** to save your changes.
17. Click **Save** again to save the changes to the master configuration.
18. Restart your Workplace Collaboration Services server.

Now that you have configured routing using cell attributes, when Workplace Collaboration Services Messaging receives a message, if the domain part of the recipient's address matches one of the local Internet domains, the Mail Receiver service looks for the user's mail cell attribute and routes the message based on the contained values. Each mail cell attribute contains a cell name and a host name for the cell's inbound SMTP server.

In this case, a Domino user's mail cell attribute contains the host name of a Domino inbound SMTP server. When the message is transferred to the Domino server, the SMTP Listener task determines the location of the recipient, and the message is routed accordingly.

## 8.1.2 Workplace Messaging and Domino in different Internet domains

Deploying Workplace Collaboration Services Messaging and Domino in separate domains is the easiest configuration from a routing perspective. In this scenario, you manage each mail system separately and routing between the systems is handled by DNS lookups. The routing is exactly the same as sending mail to an external Internet domain.

The only additional configuration that you might need to do is in either the DNS server or the host table of the iSeries server. In order for mail to route between Workplace Collaboration Services and Domino, you must be able to resolve the fully qualified host name of the other server. In our testing for this redbook, we used the host table of the iSeries server. However, most of the time, a DNS server is used to resolve the fully qualified host name of the other server. See "Fully qualified host name" on page 32 for details on how to modify the iSeries server host table.

**Note:** If you are using Domino as the LDAP directory server for Workplace Collaboration Services, you must create Person documents in the Domino Directory for the Workplace Collaboration Services users. See "Adding Workplace Collaboration Services users into a Domino Directory" on page 413 for details.

## Adding Workplace Collaboration Services users into a Domino Directory

To create a Workplace Collaboration Services user in the Domino Directory:

1. From the Lotus Notes client or the Domino Administrator client, click **File** → **Database** → **Open** and open Domino Directory (names.nsf file).
2. In the left pane, click the **People** view.
3. Click the **Add Person** button to add new users to the Domino LDAP directory.
4. The Person document fields should contain the following values for a Workplace Collaboration Services user. See Figure 8-14:
  - For First name, type the user's first name.
  - For Last name, type the user's last name.
  - For User name, type the hierarchical user name followed by the full name, for example:  
Will Smith/ITSO  
Will Smith
  - For Shortname, type the Workplace Collaboration Services user ID.
  - For Mail system, select **Other Internet Mail**.
  - For Internet address, type the user's Internet address. Be sure that the domain part of the address matches the local Internet domain name to allow mail delivery and to support automatic mail account creation in the Workplace Collaboration Services server.

The screenshot shows the 'Edit Person' window for a user named 'Will Smith/ITSO' with email 'will@rchland.ibm.com'. The window has tabs for Basics, Work/Home, Other, Miscellaneous, Certificates, Roaming, and Administration. The 'Basics' tab is active, showing fields for First name (Will), Middle name, Last name (Smith), User name (Will Smith/ITSO, Will), Alternate name, Short name/UserID and/or Internet address for R4.x (will), SMTP MTA, Personal title, Generational qualifier, Internet password, and Preferred language. The 'Mail' tab is also visible, showing Mail system (Other Internet Mail), Domain, Forwarding address, and Internet address (will@rchland.ibm.com). The 'Real-Time Collaboration' tab is also visible, showing the Sametime server field.

Figure 8-14 Workplace Collaboration Services user in a Domino Directory

Click **Save & close** to save and close the Person document.

## 8.2 Awareness and instant messaging

In many environments, Workplace Collaboration Services servers coexist with Lotus Sametime servers. These environments can be enabled for awareness and instant messaging capabilities with the implementation of a messaging gateway server. The *IBM Lotus Instant Messaging Gateway* provides the awareness and instant messaging between users in these two communities.

**Important:** At the time this redbook was written, the IBM Lotus Instant Messaging Gateway was not supported with Workplace Collaboration Services 2.5 on i5/OS. It is *estimated* to be supported in a future Workplace Collaboration Services release.

### 8.2.1 IBM Lotus Instant Messaging Gateway

The IBM Lotus Instant Messaging Gateway is a software gateway that enables awareness and instant messaging between a Sametime environment and a Workplace Collaboration Services environment.

The infrastructures to support awareness and instant messaging between the Sametime and Workplace Collaboration Services servers are different. The Sametime server uses an infrastructure based on the proprietary IBM Lotus Virtual Places (VP) protocol, while the Workplace Collaboration Services server uses an infrastructure based on the open standard Session Initiation Protocol (SIP). Because of this difference, the Lotus Instant Messaging Gateway server is required to enable awareness and instant messaging.

The Lotus Instant Messaging Gateway serves as the translator between the Sametime and Workplace Collaboration Services servers to allow coexistence and interoperability. Figure 8-15 shows how the Lotus Instant Messaging Gateway enables awareness and instant messaging between the Workplace Collaboration Services and Sametime servers.

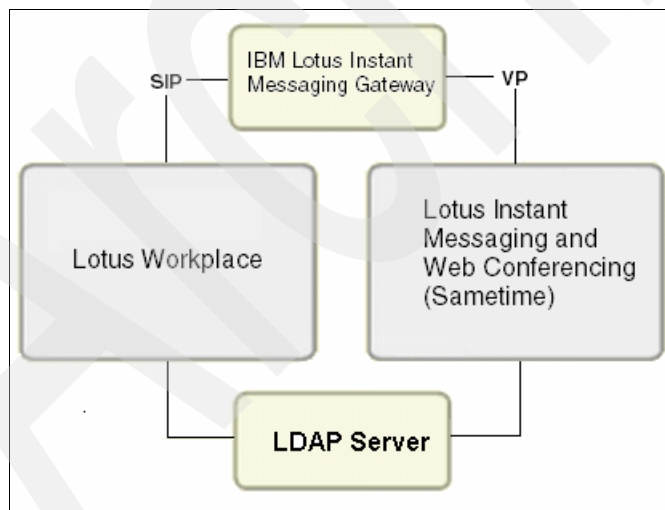


Figure 8-15 The Lotus Instant Messaging Gateway environment



For detailed information about the IBM Lotus Instant Messaging Gateway and how it functions, refer to the Lotus Software white paper, *IBM Lotus Instant Messaging Gateway*, G210-1822, which you can find on the Web at the following address:

[http://www.lotus.com/1dd/doc/uafiles.nsf/docs/imwc651\\_cont/\\$File/IBM%20Lotus%20Instant%20Messaging%20Gateway.pdf](http://www.lotus.com/1dd/doc/uafiles.nsf/docs/imwc651_cont/$File/IBM%20Lotus%20Instant%20Messaging%20Gateway.pdf)

This white paper also discusses the Lotus Instant Messaging Gateway deployment issues associated with the Workplace Collaboration Services and Sametime server environments. Review the following areas to fully understand the deployment of the Lotus Instant Messaging Gateway server in your environment.

- ▶ Supported instant messaging and awareness environments
- ▶ Supported directories
- ▶ Workplace Collaboration Services environment
- ▶ Sametime environment

Archived



## Backup and recovery

In this chapter, we describe the items that you must consider when developing a strategy to provide adequate backup and recovery capabilities for an installation of Workplace Collaboration Services on the iSeries server. This chapter concentrates on detailing the Workplace Collaboration Services specific components that you must back up and recover rather than the details of general i5/OS backup and recovery.

In this chapter, we presume that any items outside this chapter, such as backing up user profiles or configurations devices, are covered by your standard i5/OS operations.

## 9.1 Backing up Workplace Collaboration Services on iSeries

The iSeries server has an excellent reputation for reliability and high availability, but good system administrators need to be prepared for problems that occur from time to time. These problems can include operator or end user errors, such as a user deleting critical e-mails or configuring a setting incorrectly, natural disasters, and hardware failures. In these situations, it is imperative that system administrators have implemented a backup and recovery strategy that supports smooth operations and satisfied users.

Backup and recovery on the iSeries server is a complex topic that requires careful analysis and design of the complete solution. In this chapter, we discuss the important topics that you must consider as part of that process and some guidelines as to how to satisfy the requirements.

When deploying Workplace Collaboration Services on the iSeries server, you must consider how to obtain a consistent backup across several components and potentially a number of host systems, for example, when using an external Lightweight Directory Access Protocol (LDAP) server. This can be a complex objective to achieve, but because of the component orientated architecture of Workplace Collaboration Services, it should be sufficient to back up each system supporting the component individually.

You should be sure that your iSeries server backup strategy includes all components that are related to the Workplace Collaboration Services applications, not only to the product, but also all objects related to your application.

### 9.1.1 Definition of terms and approach

For the purposes of this chapter, we explain the terms presented in the following sections.

#### Backup and recovery

Backup and recovery refers to the ability to save and restore data, whether the data is in files, folders, i5/OS objects, or database contents to cope with:

- ▶ User or operator error, such as an accidental deletion of e-mails
- ▶ Minor data corruption
- ▶ Incorrect configuration changes
- ▶ Ability to transfer from one system to another

#### Disaster recovery

Disaster recovery is the ability to recover a system or infrastructure from system or site-wide disaster, such as hardware failures or natural disasters.

#### Online versus offline backup

An *online backup* is when the application that uses certain objects is active and may hold locks on the objects. For example, Workplace Collaboration Services uses a number of log files to write information about server status. When the server is active, these files are locked. In this redbook, we do not use a pure online backup procedure, but use the Save While Active feature to process checkpoints to minimize the instance downtime to minutes per day. See 9.5.1, “Saving for a daily backup” on page 434, for details.

An *offline backup* is when the application that uses objects has been stopped during the period of time that a backup is performed. This means that the backup is not hindered by the application being in use, and that it is not available to provide the service to the end users. See 9.4.1, “Saving all Workplace Collaboration Services objects” on page 428, for details.

The recommended approach is to perform offline backups. However, having the Workplace Collaboration server unavailable for the length of time required to perform such a backup may not be operationally acceptable to business users. There are trade-offs between running a backup online or offline that depends on your environment and your business requirements.

Unlike other platforms, i5/OS typically locks files being used by Java-based applications, such as Workplace Collaboration Services, preventing them from being copied using standard i5/OS Save commands. To perform an online backup, it is possible to use a combination of the Qshell command `cp` (copy) to create a folder and file copy to a holding area in another part of the integrated file system. This copy can then be backed up using a Save Object (SAV) CL command to provide an alternative recoverable version of the object when it is not possible to perform an offline backup.

**Note:** While this approach is technically feasible, we do not recommend it. This approach can create an inconsistent state that can be detrimental to the recovery process. Currently there is no other alternative for online backup similar to the capabilities delivered by Backup Recovery and Media Services (BRMS) for Domino online backup (SAVDOMBRM).

For the purposes of this chapter, we assume that it is preferred to perform an online backup to maintain server availability, and thus minimize down time. When possible, this chapter makes a number of suggestions as to how you may achieve this without compromising the recovery process.

### Point-in-time recovery

Another important concept to understand when discussing a backup and recovery strategy for a product such as Workplace Collaboration Services is how to achieve a consistent and recoverable state within *individual* components and for the product as a whole. Each individual component needs to achieve point-in-time synchronization to bring itself to a consistent state when doing a backup. However, this is not necessary to achieve synchronization across *all* components that make up an installation of Workplace Collaboration Services.

Due to the modular and flexible design of the architecture, it is possible to back up components individually, thus minimizing the need to perform time-consuming full system backups on a regular basis. For example, at a database or library level, it should be sufficient to obtain a point-in-time synchronization within the objects that make up the database or library at an i5/OS level. However, it is not necessary to take the entire application, that is, the LDAP server, HTTP server, and Workplace Collaboration Services server, offline to achieve this.

A known exception to this is the need to keep the LDAP directory in relative synchronization with the databases storing user data. For example, if the database component is backed up on a daily basis and the LDAP server is only backed up at weekends, it is conceivable that a batch of users created on Monday and working on the system all week will have data backed up during the week. If the system fails on Saturday, there is an inconsistency between the two servers when the latest set of daily backups for the database and weekly backups of the LDAP are recovered. Thus, the users have data in the system, but do not have entries in the LDAP directory that prevent them from accessing their recovered data.

## Data currency

Many of the components, such as the configuration files, in Workplace Collaboration Services are relatively static. When the product is installed and configured, you should not need to modify many of the settings on a regular basis. This means that you only need to back up the configuration files after you make the changes.

Other components, such as the database that contains all the user information and the product data, are highly dynamic and need constant backups to minimize the amount of information lost in the event of a problem.

All this means that when system administrators understand the components, how they work together, and their dependencies, it is possible to design a backup and recovery strategy that provides full recoverability without requiring a full system outage to achieve it.

**Note:** For the purposes of this discussion, we assume that all system components are on a single iSeries server with the possible exception of the LDAP server which can be hosted on a different system. In this chapter, we discuss backing up IBM Tivoli Directory Server on iSeries, but not backing up any of the other supported LDAP servers.

### 9.1.2 Considerations for backup and recovery of a Workplace environment

You need to consider several key aspects of a Workplace Collaboration Services environment when designing and implementing your backup and recovery processes, including:

- ▶ *System criticality:* The underlying business requirements
- ▶ *System availability:* The backup window
- ▶ *System capability:* The personnel and hardware available to perform backups including additional disk if saving the data to disk with a save file (savf)
- ▶ *Data currency:* The frequency that the items that require backup change

Implementation and configuration of a backup and recovery strategy differ for each organization, so it is not possible to be prescriptive about the way systems administrators should configure each component. This chapter offers a number of technical considerations to help you prioritize your backup and recovery strategy and some practical steps to satisfy these requirements. Whatever you decide to do, create a backup and recovery strategy plan, document it, obtain management buy-in, validate the plan, test the plan, and ensure it is included in your existing business continuity plan.

For an introduction into planning backups and disaster recovery on the iSeries server, see the Disaster Recover Plan in the iSeries Information Center at the following Web address:

<http://publib.boulder.ibm.com/infocenter/iseries/v5r3/ic2924/index.htm?info/rzaj1/rzaj1disastr.htm>

Several technical factors have an influence on developing your backup and recovery strategy, such as:

- ▶ The data that needs to be saved
  - Depends on the content and how often it changes
- ▶ When the data must be saved
  - The backup window of time available to save the data
- ▶ How the data is saved
  - Whether to save to an interim format, for example a save file, or save directly to tape

These in turn are impacted by such factors as:

- ▶ The system's ability to save directly to tape using native i5/OS commands
- ▶ Whether there is sufficient disk space to save to a save file (savf) using native i5/OS commands
- ▶ The availability of BRMS to save to tape or save file
- ▶ The capability to save to near-line storage using Tivoli Storage Manager

## 9.2 Architectural components and backup requirements

As discussed in 1.2.2, "Architecture" on page 8, Workplace Collaboration Services architecture is based on a number of technology components. When discussing how to back up a Workplace Collaboration Services installation as a whole, it can be beneficial to break the requirements for these components down into more manageable elements.

Workplace Collaboration Services is comprised of a number of components that reside on the iSeries server, including:

- ▶ Licensed program products (LPPs)
- ▶ Libraries that contain objects including the DB2 Universal Database data
- ▶ Folders and files in the integrated file system

Also, on the Workplace Managed client, you must consider:

- ▶ Program files
- ▶ Local encrypted datastore

### 9.2.1 General iSeries backup process

For more detailed information about backup on the iSeries, see Backup and Recovery under Systems Management in the iSeries Information Center at the following Web address:

<http://publib.boulder.ibm.com/infocenter/iseries/v5r4/index.jsp>

The schematic in Figure 9-1 illustrates the overall processes to back up an iSeries server.

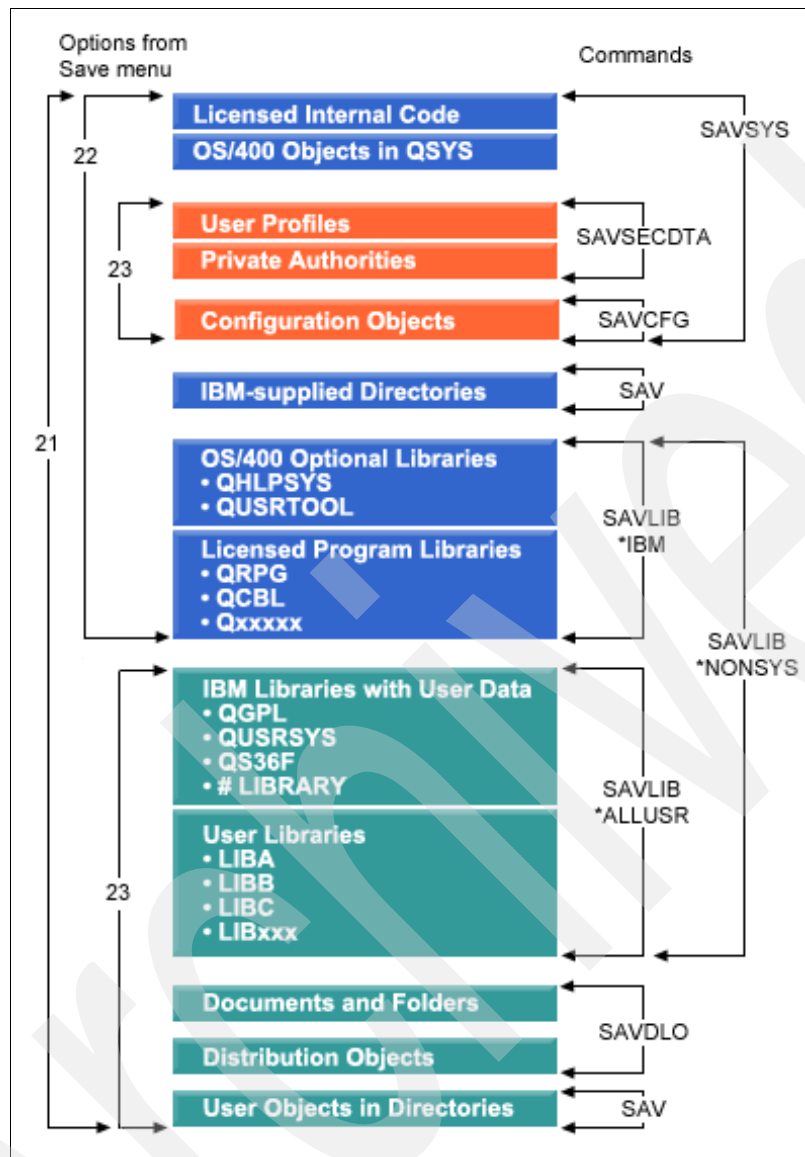


Figure 9-1 Schematic of overall i5/OS backup process

## 9.2.2 Workplace components backup process

Figure 9-2 shows a schematic that describes the overall processes to back up a Workplace Collaboration Services server.

Workplace Component	Baseline Backup	Off-line Backup	On-line Backup
Licensed Program Products	SAVLIGPGM SAV	SAVLIGPGM SAV	SAVLIB SAV
Database DB2	SAVLIB	SAVLIB	Journal + SAVCHGOBJ
IBM HTTP Server	SAV	SAV	cp + SAV
LDAP – IBM Tivoli Directory Server	SAVLIB	SAVLIB	Journal + SAVCHGOBJ
WebSphere Application Server	SAV	SAV	cp + SAV
Lotus Workplace and WebSphere Portal Server	SAV	SAV	cp + SAV
Lotus Workplace Managed Client	xcopy / cp	xcopy / cp	xcopy / cp

Figure 9-2 Schematic overview of a Workplace Collaboration Services backup

## 9.2.3 Workplace Collaboration Services components backup quick reference

Table 9-1 provides a quick reference for the elements that require backup for each component of a Workplace Collaboration Services server and the Save commands that are used to perform the backup. These elements are discussed in further detail later in this chapter with additional information provided.

Table 9-1 Workplace Collaboration Services components backup requirements quick reference

Component	Specific subcomponents	i5/OS commands	Technical criticality	Recommended minimum frequency of backup after initial installation backup
Licensed programs	Not applicable	SAVLICPGM SAVLIB *IBM	Critical	After PTFs
PTFs	Not applicable	SAVLICPGM SAVLIB *IBM	Critical	After changes
DB2 Universal Database	Workplace libraries	SAVLIB Journaling	Critical	Daily
IBM HTTP Server	Programs, configuration and log files	SAV SAVLIB	Important	After changes and weekly

Component	Specific subcomponents	i5/OS commands	Technical criticality	Recommended minimum frequency of backup after initial installation backup
LDAP server (IBM Tivoli Directory Server for iSeries)	DB2 libraries QUSRDIRDB QDIRSRV2 QUSRSYS QUSRDIRCL /QIBM/UserData/OS400/Dirsrv/	SAVLIB Journaling SAV	Critical	After configuration changes and daily
LDAP server (other)	Not applicable	Not applicable. See supplied product documentation.	Critical	After configuration changes and daily
WebSphere Application Server	QIBM/ProdData/WebAS5/Base	SAV	Critical	After changes
Workplace Collaboration Services server	/QIBM/UserData/WebAS5/Base/ <instancename>	SAV	Critical	After configuration changes and weekly
Workplace Managed Client	Local host program files Local datastore	XCOPY for Windows; cpx for Linux	Minimal	After installation or after updates or ad hoc as required
Workplace Installation code	Folders as appropriate	SAV	Minimal	After installation and after updates

## 9.3 Individual components

In the following sections, we discuss the database and LDAP directory components of a Workplace Collaboration Services server. We provide an overview of the subcomponents, the backup requirements of these subcomponents, and the recommended backup frequency.

### 9.3.1 Database components

One of the key benefits of the iSeries server architecture is the tight integration of the database engine, commonly known as DB2 Universal Database, within the i5/OS operating system. This integration makes backing up and recovering databases much simpler than on other platforms, but can cause initial confusion for those who are new to i5/OS because of the differences from database management systems on other platforms, such as DB2 Universal Database for Microsoft Windows or Linux. This section discusses some of these differences to help system administrators who are less familiar with i5/OS to understand the issues when designing a backup and recovery strategy for this component.

On i5/OS, a *database* is simply a collection of physical files that contain data and are used together to serve an application. Logical files are built over these physical files to create indices that provide different views of the data. The i5/OS objects that are the physical and logical files are independent of each other and can be stored in different libraries. However, they are more commonly stored together in one library to provide a logical grouping and to assist management. The library is the logical “container” of the objects and is where the objects are stored. DB2 object names have to be unique within this container.

This is different from a “traditional” database management system on other platforms that tends to view a database as a single entry, even if it is made up from a number of individual



files on disk, represented as a database within the database management system (DBMS) server itself, for example Microsoft SQL Server or Oracle.

## DB2 Universal Database schemas and i5/OS

To help administrators understand DB2 Universal Database on i5/OS, additional functionality has been built into iSeries Navigator to deliver a graphical user interface (GUI). This interface is more intuitive and provides administrators with powerful capabilities without having to know the intricacies of the i5/OS command line interface.

As with other DBMS, the files that make up a DB2 Universal Database database can be viewed in pure SQL terms. Specifically, the *schema* is made up of a set of views that describe tables, views, indexes, packages, procedures, functions, triggers, and constraints. These views are built over the base set of catalog tables in libraries and only include information about objects contained in that schema.

The result is that is essentially the same information that can be displayed in traditional “green screen” format as shown in Figure 9-3 and can have a GUI representation as illustrated in Figure 9-4.

```

Work with Objects

Type options, press Enter.
  2=Edit authority      3=Copy   4=Delete   5=Display authority   7=Rename
  8=Display description 13=Change description

Opt  Object      Type      Library      Attribute      Text
-----
ALIAS00001 *FILE      QUSRDIRDB    PF
ALIAS00002 *FILE      QUSRDIRDB    LF
ALIAS00003 *FILE      QUSRDIRDB    LF
APPUUID     *FILE      QUSRDIRDB    PF
APPUUID_I   *FILE      QUSRDIRDB    LF
AUDIT       *FILE      QUSRDIRDB    PF
AUDIT_I     *FILE      QUSRDIRDB    LF
AUDITADD    *FILE      QUSRDIRDB    PF
AUDITADD_I  *FILE      QUSRDIRDB    LF
AUDITBIND   *FILE      QUSRDIRDB    PF
AUDITLOG    *FILE      QUSRDIRDB    PF

More...

Parameters for options 5, 7 and 13 or command
===>
F3=Exit   F4=Prompt   F5=Refresh   F9=Retrieve   F11=Display names and types
F12=Cancel F16=Repeat position to F17=Position to

```

Figure 9-3 Example of files in a library viewed in traditional green-screen format

SQL Name	Partitioned	Owner	Last Changed	Short Name	T
ALIASOBJECT	No	QDIRSRV	9/15/04 10:33:23 AM	ALIAS00001	
APPUIID	No	QDIRSRV	12/2/04 1:34:21 PM	APPUIID	
AUDIT	No	QDIRSRV	9/15/04 10:33:24 AM	AUDIT	
AUDITADD	No	QDIRSRV	9/15/04 10:33:24 AM	AUDITADD	
AUDITBIND	No	QDIRSRV	9/15/04 10:33:24 AM	AUDITBIND	
AUDITDELETE	No	QDIRSRV	9/15/04 10:33:24 AM	AUDIT00010	
AUDITEXTOPEVENT	No	QDIRSRV	9/15/04 10:33:24 AM	AUDIT00014	
AUDITFAILEDOONLY	No	QDIRSRV	9/15/04 10:33:24 AM	AUDIT00001	
AUDITLOG	No	QDIRSRV	9/15/04 10:33:24 AM	AUDITLOG	
AUDITMODIFY	No	QDIRSRV	9/15/04 10:33:24 AM	AUDIT00008	
AUDITMODIFYDN	No	QDIRSRV	9/15/04 10:33:24 AM	AUDIT00012	
AUDITSEARCH	No	QDIRSRV	9/15/04 10:33:24 AM	AUDIT00006	
AUDITUNBIND	No	QDIRSRV	9/15/04 10:33:24 AM	AUDIT00004	
C	No	QDIRSRV	9/15/04 10:33:24 AM	C	
CMASJA011697	No	QDIRSRV	9/15/04 10:33:24 AM	CMASJ00001	
CN	No	QDIRSRV	9/15/04 10:33:24 AM	CN	
DC	No	QDIRSRV	9/15/04 10:33:24 AM	DC	
DEPARTMENTNUMBER	No	QDIRSRV	9/15/04 10:33:24 AM	DEPAR00001	
DESCRIPTION	No	QDIRSRV	9/15/04 10:33:24 AM	DESCR00001	
DISPLAYNAME	No	QDIRSRV	12/3/04 9:33:00 AM	DISPL00001	
FAX	No	QDIRSRV	9/15/04 10:33:25 AM	FAX	
GIVENNAME	No	QDIRSRV	9/15/04 10:33:25 AM	GIVENNAME	
IBMENTRYUIID	No	QDIRSRV	9/15/04 10:33:25 AM	IBMEN00001	
L	No	QDIRSRV	11/16/04 2:56:41 PM	L	
LDAP_DESC	No	QDIRSRV	9/15/04 10:33:26 AM	LDAP_DESC	
LDAP_ENTRY	No	QDIRSRV	9/15/04 10:33:25 AM	LDAP_ENTRY	
LDAP_GRP_DESC	No	QDIRSRV	9/15/04 10:33:27 AM	LDAP_00004	
MAIL	No	QDIRSRV	9/15/04 10:33:27 AM	MAIL	
MANAGER	No	QDIRSRV	9/15/04 10:33:27 AM	MANAGER	
MEMBER	No	QDIRSRV	9/15/04 10:33:27 AM	MEMBER	

Figure 9-4 Example of files in a library viewed using iSeries Navigator

In addition to this, iSeries Navigator has enhanced functionality for DB2 Universal Database for iSeries above and beyond that found on other platforms. For example, there are powerful data mapping facilities that are not available on other platforms.

## Journals and journal receiver objects

DB2 Universal Database for iSeries logs changes to a table through a process called *journaling*. The i5/OS journal records database object changes by sending information to the *journal receiver*. A journal receiver is analogous to a DB2 Universal Database log file. When a table is created into the schema it is automatically journaled to the journal object created by DB2 Universal Database for iSeries during execution of the CREATE SCHEMA statement.

Even though DB2 Universal Database automatically starts journaling for the table object, it is the users responsibility to manage the journal and journal receiver objects. As you can imagine, these journal receiver objects containing the database changes can become quite large, so ignoring the auto-created journal receivers is not an option unless you have unlimited disk space. However, the journal receiver objects should not be deleted arbitrarily to save disk space. In addition, even though journaling can be stopped for a table, we do not recommend it since applications accessing non-journaled objects are unable to specify an isolation level and the applications cannot issue commit and rollback.

Most iSeries customers use their journal receivers as a core part of their database backup and recovery process. One approach is to save a complete copy of the table backup media once a week and then on a nightly basis just save the changes to the table (for example, the

journal receiver) to back up media and then repeat this process every week. After the journal receiver is backed up, the journal receiver object can be deleted.

You can find more information about the proper steps for saving and deleting journal receiver objects in the Backup and Recovery section, under Systems Management, in the iSeries Information Center at the following Web address:

<http://publib.boulder.ibm.com/infocenter/iseres/v5r4/index.jsp>

### 9.3.2 LDAP server

Discussion about backup and recovery requirements for the LDAP server varies depending on the LDAP server that is being used. This section only covers the native IBM Tivoli Directory Server for iSeries. For information about other LDAP products, refer to the supplied documentation.

IBM Tivoli Directory Server for iSeries stores information in the following locations:

- ▶ The database library (QUSRDIRDB by default), which contains the Directory server contents
- ▶ The QDIRSRV2 library, which is used to store publishing information
- ▶ The QUSRSYS library, which stores various items in objects beginning with QGLD (specify QUSRSYS/QGLD\* to save them)
- ▶ If you configure the Directory server to log directory changes, a database library called QUSRDIRCL that the change log uses
- ▶ The /QIBM/UserData/OS400/Dirsrv/ directory which also stores the LDAP configuration data

When in production, the contents of the LDAP directory change regularly. You should save your database library and the objects in it on a regular basis. You can do this by using standard CL commands such as Save Library (SAVLIB) for the libraries and Save Object (SAV) for the configuration folder. Ideally you should do this when the Directory server has been stopped to avoid any object locks.

Use the following CL command to stop the Directory server before the backup:

```
ENDTCPSVR SERVER(*DIRSRV)
```

Then use the following CL command to restart it after the backup is complete:

```
STRTCPSVR SERVER(*DIRSRV)
```

Depending on the number of entries and, therefore, the size of files containing the LDAP data, it may be feasible to make an offline backup, with the server shutdown, without impacting operational availability. If this is not possible, consider using journalling on key files that are locked during a SAVLIB command.

**Note:** Another option for backup and recovery is to use an LDAP Data Interchange Format (LDIF) export file to back up the contents of the LDAP directory. If required, you can then import this file to recover information. However, we do recommend this approach because it has several limitations, such as the amount of processing and additional disk that is required to implement this approach when compared to using SAVLIB and SAV CL commands.

## 9.4 Full backup and recovery of a Workplace server

In this scenario, we put together a backup and recovery strategy that is recommended when you are about to make administrative or configuration change such as enabling security on a Workplace Collaboration Services server or applying fixes for Workplace Collaboration Services. This way, if you need to restore the Workplace Collaboration Services server to its previous configuration, you will have it available to you.

There are four groups of objects to save for each Workplace Collaboration Services server:

- ▶ The integrated file system directory of the WebSphere Application Server instance for the Workplace Collaboration Services server
- ▶ The external HTTP server associated with the Workplace Collaboration Services server
- ▶ The database schemas that are associated with the Workplace Collaboration Services server, including the WebSphere Portal schemas (See 9.3.1, “Database components” on page 424 for an explanation of the schemas.)
- ▶ The QLWP25 library

**Note:** For the following examples, we reference save files instead of a tape device. If you want to use a tape device, substitute the correct syntax for both the SAV and SAVLIB (as well as RST and RSTLIB) CL commands. See 9.5, “Daily backup procedure” on page 434, for an example that uses a tape device.

### 9.4.1 Saving all Workplace Collaboration Services objects

The following steps explain how to save the Workplace Collaboration Services server data along with the external HTTP server data:

1. End the Workplace Collaboration Services server, including the external HTTP server. For assistance ending the server, refer to 5.2, “Starting and stopping Workplace Collaboration Services” on page 203.

**Important:** If you are going to create save files to copy your Workplace Collaboration Services server data into, you must use the Create Save File (CRTSAVF) CL command. If you will reuse the save files, then use the Clear Save File (CLRSAVF) CL command before you save the data. You only need one save file for step 2 and one save file for step 3, plus one save file for each schema to be saved in step 4.

2. Save the integrated file system directory of the Workplace Collaboration Services server. On the i5/OS command line, enter the following SAV CL command:

```
SAV DEV('/qsys.lib/qgpl.lib/savfname.file')  
OBJ('/qibm/userdata/webas5/base/InstanceName/*')
```

Here *InstanceName* represents the name of your Workplace Collaboration Services server name, for example:

```
SAV DEV('/qsys.lib/qgpl.lib/wcs06.file') OBJ('/qibm/userdata/webas5/base/itsowcs06/*')
```

3. Save the default directory for the external HTTP server associated with the Workplace Collaboration Services server. On an i5/OS command line, enter the following SAV CL command:

```
SAV DEV('/qsys.lib/qgpl.lib/savfname.file') OBJ('/www/InstanceName/*')
```

Here *InstanceName* represents the name of your HTTP server instance, for example:

```
SAV DEV('/qsys.lib/qgpl.lib/http06.file') OBJ('/www/itsowcs06/*')
```

**Note:** In most circumstances, your instance subdirectory is directly underneath the /www directory in the integrated file system root directory. There may be the rare exception to this; refer to your deployment logs if the directory is not found.

4. Determine the schema names associated with the Workplace Collaboration Services server. This includes the Workplace Collaboration Services schemas as well as WebSphere Portal schemas.

**Important:** These properties may contain duplicate values, which is OK. Be sure to note each unique schema name.

- a. The schema names for the Workplace Collaboration Services server are located in the /QIBM/UserData/WebAS5/Base/*InstanceName*/WorkplaceServer/config/database/dbbuild.properties file. Enter the following the commands at a Qshell (STRQSH) command prompt as shown in Figure 9-5:

```
cd /qibm/userdata/webas5/base/InstanceName/workplaceserver/config/database
grep LWP.*Schema= dbbuild.properties
```

Here *InstanceName* represents your Workplace Collaboration Services server name. Ignore the lines beginning with a pound (#) sign. They are comment lines only.

```
$
> cd /qibm/userdata/webas5/base/itsowcs06/workplaceserver/config/database
$
> grep LWP.*Schema= dbbuild.properties
LWPMsgSchema=LWPMSG4
#LWPMsgSchema=LWPCOMM
LWPLMSSchema=LWPLMS4
LWPLDSSchema=LWPLDS4
LWPComSchema=LWPCOMM4
LWPArSchema=LWPARC4
#LWPArSchema=LWPCOMM
$
```

Figure 9-5 Example of the Qshell grep LWP\*.Schema= command

- b. Add the listed Workplace Collaboration Services schema or schemas to your list of libraries to save in step 5.

- c. The schema names for WebSphere Portal are located in the /QIBM/UserData/WebAS5/Base/*InstanceName*/PortalServer/config/wpconfig.properties file. Enter the following commands at a Qshell (STRQSH) command prompt as shown in Figure 9-6:

```
cd /qibm/userdata/webas5/base/InstanceName/portalserver/config
grep Schema= wpconfig.properties
```

Here *InstanceName* represents your Workplace Collaboration Services server name.

```
$
> cd /qibm/userdata/webas5/base/itsowcs06/portalserver/config
$
> grep Schema= wpconfig.properties
WpsDbSchema=PORTALDB4
WpcpDbSchema=PORTALDB4
PznSchema=PORTALDB4
BrbSchema=PORTALDB4
FeedbackSchema=PORTALDB4
WmmDbSchema=PORTALDB4
LWPDmoCSMsgSchema=LWPCOMM
$
$
```

Figure 9-6 Example of the Qshell grep Schema= command

- d. Do not use the LWPDmoCSMsgSchema, but make a note of every WebSphere Portal Schema listed. In Figure 9-6, they are all PORTALDB4. Most likely they are all the same in your list too. Add the listed schema or schemas to your list of libraries to save in step 5.
5. Save all the schemas (i5/OS libraries) that are associated with the Workplace Collaboration Services server. On an i5/OS command line, enter the following SAVLIB CL command:

```
SAVLIB LIB(schemaname) DEV(*SAVF) SAVF(lib/savfname)
```

Repeat this command for each schema (library) that you need to save using a different save file name for each schema.

**Note:** If you used the iSeries Create IBM Workplace Wizard, you only have six schema libraries to save. If you used other methods to configure the Workplace Collaboration Services server, you may have more than six to save. The Workplace Collaboration Services server in this example was configured using the IBM Create Workplace Wizard.

Consider this example:

```
SAVLIB LIB(LWPMSG4) DEV(*SAVF) SAVF(QGPL/LWPMSG4)
SAVLIB LIB(LWPLMS4) DEV(*SAVF) SAVF(QGPL/LWPLMS4)
SAVLIB LIB(LWPLDS4) DEV(*SAVF) SAVF(QGPL/LWPLDS4)
SAVLIB LIB(LWPCOMM4) DEV(*SAVF) SAVF(QGPL/LWPCOMM4)
SAVLIB LIB(LWPARC4) DEV(*SAVF) SAVF(QGPL/LWPARC4)
SAVLIB LIB(PORTALDB4) DEV(*SAVF) SAVF(QGPL/PORTALDB4)
```

6. Save the QLWP25 library. There is a program in this library called during the *Workplace Collaboration Services server startup*. We recommend that you save this library and restore it for a complete backup. Because the data is not tied to any particular Workplace Collaboration Services server, there is no need to specify a Workplace Collaboration Services server name in the SAVLIB command.

On the i5/OS command line, enter the following SAVLIB CL command:

```
SAVLIB LIB(QLWP25) DEV(*SAVF) SAVF(QGPL/q1wp25)
```

## 9.4.2 Restoring all Workplace Collaboration Services objects

In this section, we explain how you can restore a Workplace Collaboration Services server from the save files that were saved in 9.4.1, “Saving all Workplace Collaboration Services objects” on page 428. This is usable in a situation where you need to restore a prior configuration.

1. End the Workplace Collaboration Services server, including the external HTTP server. For assistance in ending the server, refer to 5.2, “Starting and stopping Workplace Collaboration Services” on page 203.
2. Verify the data in the save files is current. To view the content of a save file, enter the following Display Save File (DSPSAVF) CL command at an i5/OS command line:

```
DSPSAVF FILE(LIBRARY/SAVEFILE)
```

Here *SAVEFILE* represents the name of the save file you want to display, and *LIBRARY* represents the name of the library that holds the save file.

3. To restore a clean Workplace Collaboration Services server from the saved data, remove the following data, subdirectories, and schemas:
  - Data and subdirectories in the root of your Workplace Collaboration Services server directory (The root directory must exist in order to use the Restore (RST) CL command.)
  - Data and subdirectories for the external HTTP server instance (The root directory must exist in order to use the Restore (RST) CL command.)
  - DB2 Universal Database schemas (libraries) for your Workplace Collaboration Services server

**Important:** Carefully verify that the correct Workplace Collaboration Services server name precedes the */\** at the end of the first command line (see the following example). Removing the directory path takes some time. Verify that the directory was removed by using either the WRKLNK CL command or iSeries Navigator.

- a. To remove the subdirectories for Workplace Collaboration Services and the external HTTP server, at a Qshell (STRQSH) command prompt, enter the following commands:

```
rm -rf /qibm/userdata/webas5/base/InstanceName/*
rm -rf /www/InstanceName/*
```

Here *InstanceName* represents the name of your Workplace Collaboration Services server name, for example:

```
rm -rf /qibm/userdata/webas5/base/itsowcs06/*
rm -rf /www/itsowcs06/*
```

- b. To delete the DB2 Universal Database schemas, from an i5/OS command line, enter the following Delete Library (DLTLIB) CL command for each schema:

```
DLTLIB SchemaName
```

Here *SchemaName* represents the schema names you found in step 4 on page 429, for example:

```
DLTLIB LWPMSG4
DLTLIB LWPLMS4
DLTLIB LWPLDS4
DLTLIB LWPCOMM4
DLTLIB LWPARC4
DLTLIB PORTALDB4
```

When entering the DLTLIB command, you may encounter the following message:

Receiver QSQJRN1002 in WCS01MSG never fully saved. (I C)

Type I to ignore the error message.

**Tip:** You can avoid this error by ending journaling. To end journaling and delete the journal receiver, enter the following commands before you delete the schema:

```
ENDJRNP  FILE(*ALL) JRN(schema/QSQJRN)
DLTJRN   JRN(schema/QSQJRN)
DLTJRNCV JRNRCV(schema/Q*) DLTOPT(*IGNINQMSG)
```

4. Enter the following Restore Library (RSTLIB) CL command at an i5/OS command line for all the saved libraries (schemas):

```
RSTLIB SAVLIB(SchemaName) DEV(*SAVF) SAVF(Library/SaveFile)
```

Here *SchemaName* represents the schema names you found in step 4 on page 429, *SaveFile* represents the name of the save file that contains the schema, and *Library* represents the name of the library that holds the save file, for example:

```
RSTLIB SAVLIB(LWPMSG4) DEV(*SAVF) SAVF(QGPL/LWPMSG4)
RSTLIB SAVLIB(LWPMSG4) DEV(*SAVF) SAVF(QGPL/LWPLMS4)
RSTLIB SAVLIB(LWPMSG4) DEV(*SAVF) SAVF(QGPL/LWPLDS4)
RSTLIB SAVLIB(LWPMSG4) DEV(*SAVF) SAVF(QGPL/LWPCOMM4)
RSTLIB SAVLIB(LWPMSG4) DEV(*SAVF) SAVF(QGPL/LWPARC4)
RSTLIB SAVLIB(LWPMSG4) DEV(*SAVF) SAVF(QGPL/PORTALDB4)
```

5. Restore the external HTTP server by entering the following command on an i5/OS command line:

```
RST DEV('/qsys.lib/Library.lib/SaveFile.file') OBJ(('www/InstanceName/*'))
```

Here *SaveFile* represents the name of the save file that contains the HTTP instance data, *Library* represents the name of the library that holds the save file, and *InstanceName* represents your Workplace Collaboration Services server name, for example:

```
RST DEV('/qsys.lib/qgpl.lib/http06.file') OBJ(('www/http/itsowcs06/*'))
```

6. The Restore (RST) CL command does not restore QTMHHTTP because it is a private authority. Update the following paths using the Change Authority (CHGAUT) CL command and adding QTMHHTTP with the authority indicated by entering the following commands on an i5/OS command line:

```
CHGAUT OBJ('/www/InstanceName/conf') USER(QTMHHTTP) DTAAUT(*X)
CHGAUT OBJ('/www/InstanceName/htdocs') USER(QTMHHTTP) DTAAUT(*RX)
CHGAUT OBJ('/www/InstanceName/logs') USER(QTMHHTTP) DTAAUT(*RWX)
CHGAUT OBJ('/www/InstanceName/conf/httpd.conf') USER(QTMHHTTP) DTAAUT(*R)
CHGAUT OBJ('/www/InstanceName/htdocs/index.html') USER(QTMHHTTP) DTAAUT(*R)
```



Here *InstanceName* represents the name the external HTTP server instance, for example:

```
CHGAUT OBJ('/www/itsowcs06/conf') USER(QTMHHTTP) DTAAUT(*X)
CHGAUT OBJ('/www/itsowcs06/htdocs') USER(QTMHHTTP) DTAAUT(*RX)
CHGAUT OBJ('/www/itsowcs06/logs') USER(QTMHHTTP) DTAAUT(*RWX)
CHGAUT OBJ('/www/itsowcs06/conf/httpd.conf') USER(QTMHHTTP) DTAAUT(*R)
CHGAUT OBJ('/www/itsowcs06/htdocs/index.html') USER(QTMHHTTP) DTAAUT(*R)
```

7. Restore the directory for the Workplace Collaboration Services server by entering the following command on an i5/OS command line:

```
RST DEV('/qsys.lib/Library.lib/SaveFile.file')
OBJ('/qibm/userdata/webas5/base/InstanceName/*'))
```

Here *SaveFile* represents the name of the save file that contains the Workplace Collaboration Services server data, *Library* represents the name of the library that holds the save file, and *InstanceName* represents your Workplace Collaboration Services server name, for example:

```
RST DEV('/qsys.lib/qgp1.lib/wcs06.file') OBJ('/qibm/userdata/webas5/base/itsowcs06/*'))
```

**Tip:** The Workplace Collaboration Services server restore may take a substantial amount of time. In testing, we observed typical restore times of one to two hours.

8. Update the following paths by adding QTMHHTTP with the authority indicated. The RST command does not restore QTMHHTTP because it is a private authority. Enter the following commands on an i5/OS command line:

```
CHGAUT OBJ('/QIBM/UserData/WebAS5/Base/InstanceName/config/cells/plugin-cfg.xml')
USER(QTMHHTTP) DTAAUT(*RX)
```

```
CHGAUT OBJ('/QIBM/UserData/WebAS5/Base/InstanceName/config/cells') USER(QTMHHTTP)
DTAAUT(*RX)
```

```
CHGAUT OBJ('/QIBM/UserData/WebAS5/Base/InstanceName/config') USER(QTMHHTTP) DTAAUT(*RX)
```

Here *InstanceName* represents the name of your Workplace Collaboration Services server, for example:

```
CHGAUT OBJ('/QIBM/UserData/WebAS5/Base/itsowcs06/config/cells/plugin-cfg.xml')
USER(QTMHHTTP) DTAAUT(*RX)
```

```
CHGAUT OBJ('/QIBM/UserData/WebAS5/Base/itsowcs06/config/cells') USER(QTMHHTTP)
DTAAUT(*RX)
```

```
CHGAUT OBJ('/QIBM/UserData/WebAS5/Base/itsowcs06/config') USER(QTMHHTTP) DTAAUT(*RX)
```

9. Restore the QLWP25 library. If the library already exists (WRKLIB QLWP25), then you are advised to skip this step. Refer to step 6 on page 431 for details about the QLWP25 library. To restore the QLWP25 library, enter the following command on an i5/OS command line:

```
RSTLIB SAVLIB(QLWP25) DEV(*SAVF) SAVF(Library/SaveFile)
```

Here *SaveFile* represents the name of the save file that contains the QLWP25 library, and *Library* represents the name of the library that holds the save file.

10. Start the Workplace Collaboration Services server. See refer to 5.2, "Starting and stopping Workplace Collaboration Services" on page 203, for details.

## 9.5 Daily backup procedure

Workplace Collaboration Service server data should be saved daily, most importantly so a system that may have been restored from a disaster recovery tape may be brought up to date. The system should first have an entire system save schedule implemented as specified in the Disaster Recovery Plan, which you can find at the following Web address:

<http://publib.boulder.ibm.com/infocenter/iseres/v5r3/index.jsp?topic=/rzaj1/rzaj1disastr.htm>

Use the daily backup for restore when it is necessary to make the Workplace Collaboration Service server congruent with the last instance save. A likely scenario might be where a system is recovered from a full system save; only then is the instance data able to be brought up to date.

### 9.5.1 Saving for a daily backup

In this example, we use the Save While Active feature to create checkmarks to keep the data congruent at a precise moment in time. To do this, we require three 5250 emulation sessions, two for executing the actual save commands and one for monitoring checkpoint processing.

In this case, Save While Active does not necessarily mean that the Workplace Collaboration Service server can simply remain active and backed up effectively. Rather, it means that the Workplace Collaboration Service server must be ended briefly and have the checkpoints for both the integrated file system and the schemas processed. Only then can the Workplace Collaboration Service server be restarted. With this approach, downtime is minimized to an acceptable level, usually ten to twenty minutes depending on the time taken to complete the following steps:

1. End your Workplace Collaboration Services server.
2. Create a save file to use for the Workplace Collaboration Services data in the integrated file system. If a save file already exists, clear the file by entering the following Clear Save File (CLRSVAF) CL command on an i5/OS command line:

```
CLRSVAF FILE(Library/SaveFile)
```

Here *SaveFile* represents the name of the save file, and *Library* represents the library to hold the save file, for example:

```
CLRSVAF FILE(QGPL/ITSOWCS06)
```

Wait for the message “Save file ITSOWCS06 in library QGPL cleared” to be displayed.

3. Enter the following SAV CL command with Save While Active set to \*SYNC and specifying a message queue:

```
SAV DEV('/qsys.lib/Library.lib/SaveFile.file') OBJ('/qibm/userdata/webas5/base/InstanceName/*') ('/www/InstanceName/*') SAVACT(*SYNC) SAVACTMSGQ(*WRKSTN)
```

Here *InstanceName* represents the name of your Workplace Collaboration Services server, *SaveFile* represents the name of the save file, and *Library* represents the name of the library holding the save file, for example:

```
SAV DEV('/qsys.lib/qgpl.lib/itsowcs06.file') OBJ('/qibm/userdata/webas5/base/itsowcs06/*') ('/www/itsowcs06/*') SAVACT(*SYNC) SAVACTMSGQ(*WRKSTN)
```

4. Determine the schema names associated with the Workplace Collaboration Services server. This includes the Workplace Collaboration Services schemas as well as the WebSphere Portal schemas. See Step 4 on page 429.
5. From another 5250 emulation session, run the SAVLIB CL command with Save While Active set to \*SYNC for all of the schemas. Specify the sequence number of 1 using

SECNBR(1) if you want to clear the existing tape. Also specify a message queue with SAVACTMSGQ. In this example, we use the default message queue for the workstation.

```
SAVLIB LIB(SchemaLibraries) DEV(TAP01) SEQNBR(1) ENDOPT(*LEAVE) SAVACT(*SYNCLIB)
SAVACTMSGQ(*WRKSTN)
```

Here *SchemaLibraries* represents the names of all of schemas used by WebSphere Portal and Workplace Collaboration Services, for example:

```
SAVLIB LIB(LWPMSG4 LWPLMS4 LWPLDS4 LWPCOMM4 LWPARC4 PORTALDB4) DEV(TAP01) SEQNBR(1)
ENDOPT(*LEAVE) SAVACT(*SYNCLIB) SAVACTMSGQ(*WRKSTN)
```

6. On the third 5250 emulation session, use the following Display Message (DSPMSG) CL command to make sure that the “Save-while-active checkpoint processing complete” message is displayed. Locate the message queues for both the SAV and SAVLIB commands and press F1 on the actual message to verify their time stamps.

```
DSPMSG MessageQueue
```

Here *MessageQueue* represents the name off the message queue specified in step 5 or the name of your workstation if you entered a message queue of \*WRKSTN, for example:

```
DSPMSG QPADEV000B
```

Look for the following message to be displayed:

Save-while-active checkpoint processing complete.

7. When both commands (SAV and SAVLIB) have received the “Save-while-active checkpoint processing complete” message, restart the Workplace Collaboration Services server.

**Tip:** If the Workplace Collaboration Services server is relatively new, the schema libraries may complete their saves before you have a chance to look for the checkpoint notification. Therefore, restart the Workplace Collaboration Services server as soon as the SAV command for the integrated file system receives its checkpoint notification.

8. When the SAV and SAVLIB commands have successfully completed, run the Save Save File Data (SAVSAVFDTA) CL command to save the save file to tape. The integrated file system data is appended on to the tape after the schema library saves.

```
SAVSAVFDTA SAVF(Library/SaveFile) DEV(TAP01) ENDOPT(*REWIND)
```

Here *SaveFile* represents the name of the save file, and *Library* represents the name of the library holding the save file, for example:

```
SAVSAVFDTA SAVF(QGPL/ITSOWCS06) DEV(TAP01) ENDOPT(*REWIND)
```

- Use the following Display Tape (DSPTAP) CL command to verify that the data has been saved correctly (Figure 9-7):

```
DSPTAP DEV(TAP01) DATA(*SAVRST)
```

```

File . . . . . : QPTAPDSP
Control . . . . .
*...+....1....+....2....+....3....+....4....+....5....+....6....+....7....+....
5722SS1 V5R3M0 040528                                TAPE VOLUME INFORMATION                                XFER1
Device . . . . . : TAP01                                Volume . . . . . : XFER1
Owner ID . . . . . : ITSCID04                            Density . . . . . : *QIC5010
Type . . . . . : *SL                                    Code . . . . . : *EBCDIC

```

	Record						
	File	Block	Recg	Record	Block	File	Mvol
Data File Label	Sequence	Format	Tech	Length	Length	Length	Ind
LWMSG4	0000000001	*U	P	00000	032760	0000000350	
LWPLMS4	0000000002	*U	P	00000	032760	0000000540	
LWPLDS4	0000000003	*U	P	00000	032760	0000000115	
LWPCOMM4	0000000004	*U	P	00000	032760	0000001720	
LWPARC4	0000000005	*U	P	00000	032760	0000000079	
PORTALDB4	0000000006	*U	P	00000	032760	0000002963	
SAV20050429	0000000007	*U	P	00000	032760	0000217180	

Figure 9-7 Displaying the contents of a tape

## 9.5.2 Restoring from a daily backup

Use the following steps to restore a Workplace Collaboration Services server with the most current data. In case of a complete disaster, you must first recover the entire system and then get the Workplace Collaboration Services server up to date with the daily backup tape.

- End the Workplace Collaboration Services server and associated external HTTP server.
- To restore a clean Workplace Collaboration Services server from the saved data, remove the following data, subdirectories, and schemas:

- Data and subdirectories contained in the root of your Workplace Collaboration Services server directory

The root directory must exist in order to use the Restore Object (RST) CL command as documented here.

- Data and subdirectories for your HTTP server

The root directory must exist in order to use the RST CL command as documented here.

- DB2 schemas (libraries) for your Workplace Collaboration Services server

**Important:** Carefully verify that the correct Workplace Collaboration Services server name precedes the /\* at the end of the first command line shown in the following example. Removing the directory path takes some time. Verify that the directory was removed by using either the Work with Object Links (WRKLNK) CL command or iSeries Navigator.

- a. To remove the subdirectories for Workplace Collaboration Services and the HTTP servers, at a Qshell (STRQSH) command prompt, enter the following commands:

```
rm -rf /qibm/userdata/webas5/base/InstanceName/*
rm -rf /www/InstanceName/*
```

Here *InstanceName* represents the name of your Workplace Collaboration Services server name, for example:

```
rm -rf /qibm/userdata/webas5/base/itsowcs06/*
rm -rf /www/itsowcs06/*
```

- b. To delete the DB2 Universal Database schemas, from an i5/OS command line enter the following Delete Library (DLTLIB) CL command for each schema:

```
DLTLIB SchemaName
```

Here *SchemaName* represents the schema names you found in step 4 on page 429, for example:

```
DLTLIB LWPMMSG4
DLTLIB LWPLMS4
DLTLIB LWPLDS4
DLTLIB LWPCOMM4
DLTLIB LWPARC4
DLTLIB PORTALDB4
```

When entering the DLTLIB command, you might encounter the following message:

Receiver QSQRN1002 in WCS01MSG never fully saved. (I C)

Type I to ignore the error message to continue.

**Tip:** You can avoid this error by ending journaling. To end journaling and delete the journal receiver, enter the following commands before you delete the schema:

```
ENDJRNP FILE(*ALL) JRN(schema/QSQRN)
DLTJRN JRN(schema/QSQRN)
DLTJRNCV JRNCV(schema/Q*) DLT OPT(*IGNINQMSG)
```

3. Restore the i5/OS libraries (schemas) by entering the following RSTLIB CL command on an i5/OS command line:

```
RSTLIB SAVLIB(InstanceName) DEV(TAP01)
```

Here *InstanceName* represents the name of your Workplace Collaboration Services server. For example, to restore all the schemas with one RSTLIB command, we enter:

```
RSTLIB SAVLIB(LWPMMSG4 LWPLMS4 LWPLDS4 LWPCOMM4 LWPARC4 PORTALDB4) DEV(TAP01)
```

4. Restore the associated integrated file system files for the Workplace Collaboration Services server and external HTTP server:

```
RST DEV('/qsys.lib/tap01.devd') OBJ((' /qibm/userdata/webas5/base/InstanceName/' '))
(' /www/InstanceName/')
```

Here *InstanceName* represents the name of your Workplace Collaboration Services server, for example:

```
RST DEV('/qsys.lib/tap01.devd') OBJ((' /qibm/userdata/webas5/base/itsowcs06/' '))
(' /www/itsowcs06/')
```

**Tip:** The Workplace Collaboration Services server and external HTTP server restores may take a substantial amount of time. During testing, we observed restore times between one and two hours.

5. Update the following paths by using CHGAUT CL command and adding QTMHHTTP with the authority indicated. The RST command does not restore QTMHHTTP because it is a private authority. From an i5/OS command line, enter the following commands:

```
CHGAUT OBJ('/www/InstanceName/conf') USER(QTMHHTTP) DTAAUT(*X)
CHGAUT OBJ('/www/InstanceName/htdocs') USER(QTMHHTTP) DTAAUT(*RX)
CHGAUT OBJ('/www/InstanceName/logs') USER(QTMHHTTP) DTAAUT(*RWX)
CHGAUT OBJ('/www/InstanceName/conf/httpd.conf') USER(QTMHHTTP) DTAAUT(*R)
CHGAUT OBJ('/www/InstanceName/htdocs/index.html') USER(QTMHHTTP) DTAAUT(*R)
CHGAUT OBJ('/QIBM/UserData/WebAS5/Base/InstanceName/config/cells/plugin-cfg.xml')
USER(QTMHHTTP) DTAAUT(*RX)
```

```
CHGAUT OBJ('/QIBM/UserData/WebAS5/Base/InstanceName/config/cells') USER(QTMHHTTP)
DTAAUT(*RX)
```

```
CHGAUT OBJ('/QIBM/UserData/WebAS5/Base/InstanceName/config') USER(QTMHHTTP) DTAAUT(*RX)
```

Here *InstanceName* represents the name of your Workplace Collaboration Services server, for example:

```
CHGAUT OBJ('/www/itsowcs06/conf') USER(QTMHHTTP) DTAAUT(*X)
CHGAUT OBJ('/www/itsowcs06/htdocs') USER(QTMHHTTP) DTAAUT(*RX)
CHGAUT OBJ('/www/itsowcs06/logs') USER(QTMHHTTP) DTAAUT(*RWX)
CHGAUT OBJ('/www/itsowcs06/conf/httpd.conf') USER(QTMHHTTP) DTAAUT(*R)
CHGAUT OBJ('/www/itsowcs06/htdocs/index.html') USER(QTMHHTTP) DTAAUT(*R)
CHGAUT OBJ('/QIBM/UserData/WebAS5/Base/itsowcs06/config/cells/plugin-cfg.xml')
USER(QTMHHTTP) DTAAUT(*RX)
```

```
CHGAUT OBJ('/QIBM/UserData/WebAS5/Base/itsowcs06/config/cells') USER(QTMHHTTP)
DTAAUT(*RX)
```

```
CHGAUT OBJ('/QIBM/UserData/WebAS5/Base/itsowcs06/config') USER(QTMHHTTP) DTAAUT(*RX)
```

6. Restart the Workplace Collaboration Services server.

## 9.6 Backup and recovery for Workplace Collaboration Services Messaging

You must consider several factors when choosing the correct method to back up and recover Workplace Collaboration Services Messaging. It is important to separate the various usage scenarios to best determine which is the best solution for each type of save and restore situation. To simplify it, think of these concepts:

- ▶ Back up all messaging data en masse daily. See 9.5.1, “Saving for a daily backup” on page 434, for details.
- ▶ Use Export and Import in small deployments or for selected sets of users. This is discussed in 9.6.1, “Export process” on page 439.
- ▶ Use archiving for larger sets of users. See 9.6.4, “Archive process” on page 447, for further details.

These capabilities can compliment each other in the same deployment. For example, you can regularly export high profile accounts with a specific policy to get instant data restorations, plus you can archive all users with a default policy to accommodate less urgent requirements.

## 9.6.1 Export process

The **export** command copies a user's messaging data to a zip file stored in a standard location in the integrated file system. It can export in bulk or use a policy to substantiate which data should be exported. You should use this primarily on high visibility mail accounts where instant retrieval is a necessity. You should save the user's messaging data to a standard location outside of the main folder path of the Workplace Collaboration Service server.

### Functional description of the export command

To start the **export** command line, use the following structure:

```
lm export <-user userloginname | -userlistfile filename | -userpolicy polycyname > -path exportpath
```

The parameters are defined as follows:

- ▶ **-user:** The login name of the user whose mail file is to be exported
- ▶ **-userlistfile:** The fully qualified file name of the text file that contains the list of login names of accounts to export
- ▶ **-userpolicy:** The user policy name of a set of users to be exported
- ▶ **-path:** The path where the export file is to reside on disk. The path must be enclosed by single quotation marks and file paths must be entered in the format */directory* using forward slashes. This option overrides the setting in the user account policy.

**Note:** Because the **export** command uses SQL, there are no issues with file locks of any type. Therefore, it is safe to run the **export** command at any time.

### Running the export command in Qshell

To run the **export** command in the Qshell environment:

1. From the i5/OS command line, type the STRQSH CL command and press Enter.
2. At the Qshell command prompt, change to your Workplace Collaboration Services server directory by entering the following command:

```
cd /qibm/userdata/webas5/base/InstanceName/bin
```

Here *InstanceName* represents the name of your Workplace Collaboration Services server, for example:

```
cd qibm/userdata/webas5/base/itsowcs06/bin
```

3. Start the Lmadmin command service. The SOAP\_CONNECTOR\_PORT port number from Mail\_Server\_1 is required to start the Lmadmin command service. For the iSeries server, this is the port block that you set up during the initial configuration plus 29.

In our example, we set up a port block of 30600, so the port number for starting Lmadmin is 30629. For help on finding the port block, refer to Appendix C, "Workplace Collaboration Services configuration summary" on page 519.

At the Qshell command prompt, enter the following command to start the Lmadmin command service (see Figure 9-8):

```
Lmadmin.sh -user UserName -password password -port SOAPPort -host HostName
```

Here, note the following explanation:

- *UserName* represents your Workplace Collaboration Services administrator ID.
- *password* represents the administrator's password.
- *SOAPPort* represents the port number.
- *HostName* represents the host name of your Workplace Collaboration Services server.

- At the Lmadmin command prompt, you can export the mail. For example, to export the mail for the Workplace Collaboration Services administration user, wpsadmin, enter the following command (Figure 9-8):

```
lm export -user wpsadmin -path '/ExportMail'
```

```
$
> cd /qibm/userdata/webas5/base/itsowcs06/WorkplaceServer/bin
$
> lmadmin.sh -user wpsadmin -password wpsadmin -port 30629
WASX7209I: Connected to process "Mail_Server_1" on node ITSOWCS06_ITSOWCS06 using
SOAP connector; The type of process is: UnManagedProcess
WASX7029I: For help, enter: "$Help help"
wsadmin>
> lm export -user wpsadmin -path '/ExportMail'
CLHAF0042I: Exported successfully for wpsadmin
```

Figure 9-8 Running the export command

- You can verify the zip file's existence by using the following `ls -al` command on the Qshell command prompt:

```
ls -al /Dirname
```

Here *Dirname* represents the directory or directory path where the zip file was exported, for example:

```
ls -al /ExportMail
```

## 9.6.2 Scheduled exports

You can also schedule mail exports for designated users with the Task Scheduler. The Task Scheduler is configured in the WebSphere Application Server Administrative Console. To schedule mail exports:

- Open the WebSphere Application Server Administrative Console for your Workplace Collaboration Services server.
- As shown in Figure 9-9, in the left navigation pane, click **Servers** → **Application Servers**. Then in the Application Servers panel on the right, click the **Mail\_Server\_1** server.

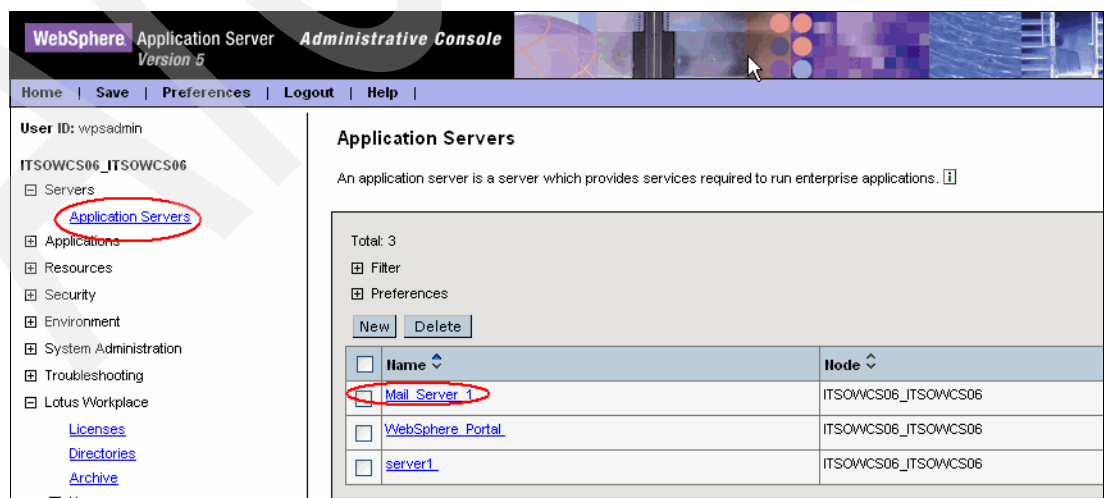


Figure 9-9 Selecting the Mail\_Server\_1 Application Server



3. Under the Additional Properties section, click **Workplace Mail Services**. See Figure 9-10.

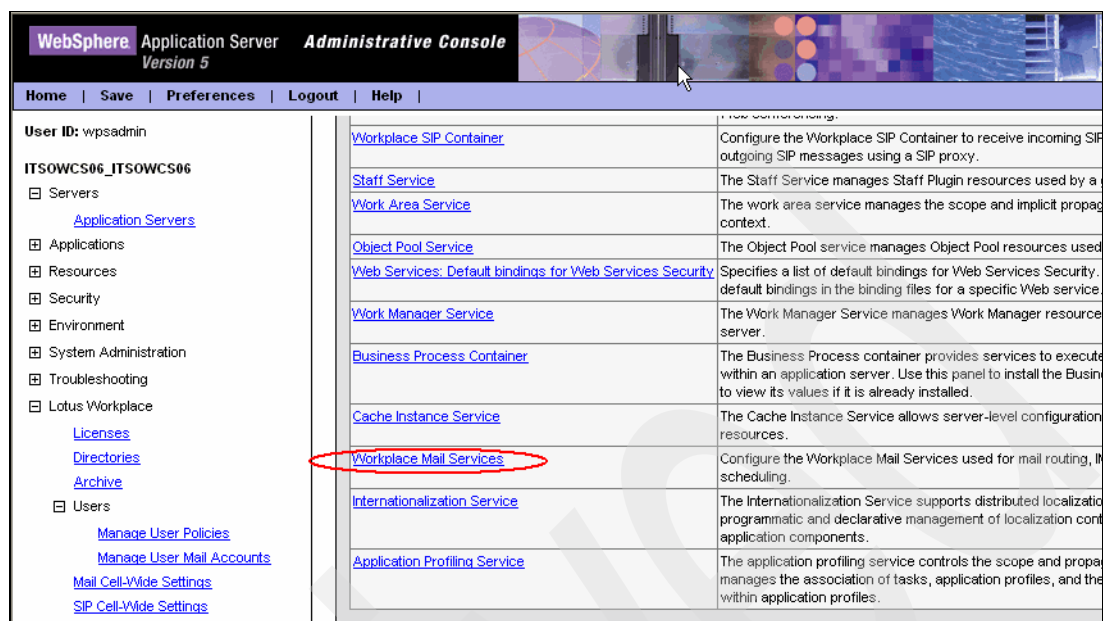


Figure 9-10 Selecting Workplace Mail Services for Mail\_Server\_1

4. In the Workplace Mail Services panel (Figure 9-11), click the **Task Scheduler Service**.

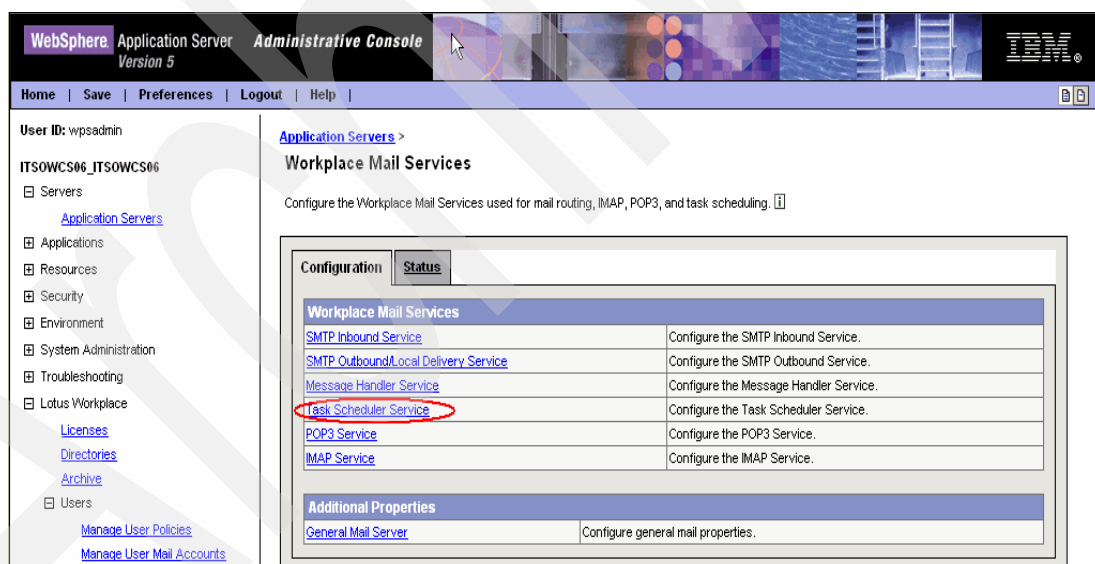


Figure 9-11 Selecting the Task Scheduler Service

5. In the Task Scheduler panel (Figure 9-12), click the **New Export Task** button.

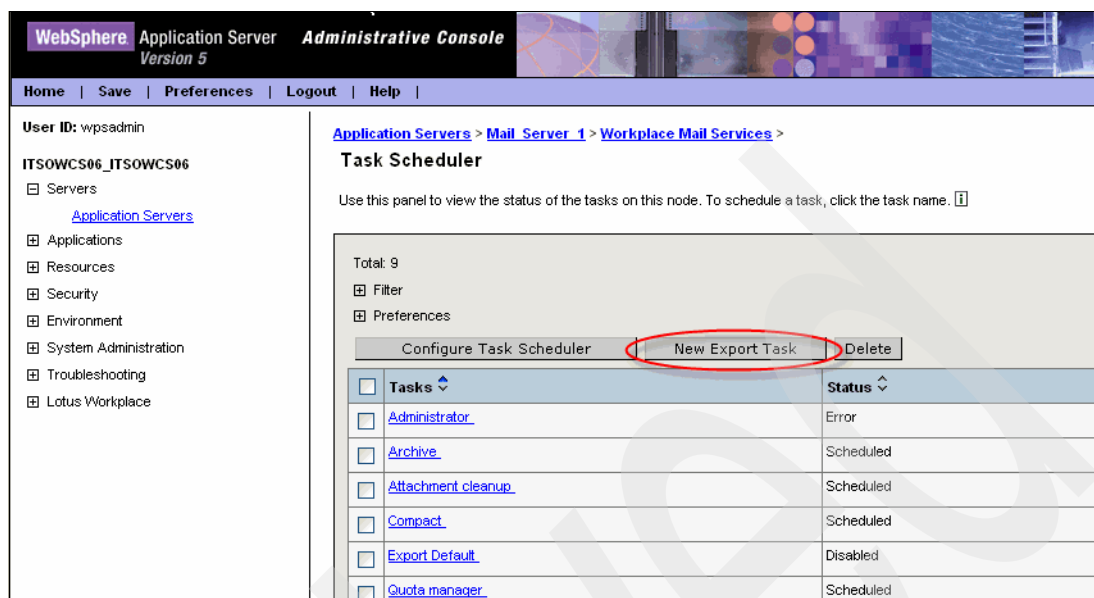


Figure 9-12 Task Scheduler panel

6. In the new Export Task panel (Figure 9-13), enter the Task Name and its attributes. Select the attributes that suit your organization. Click **OK**.

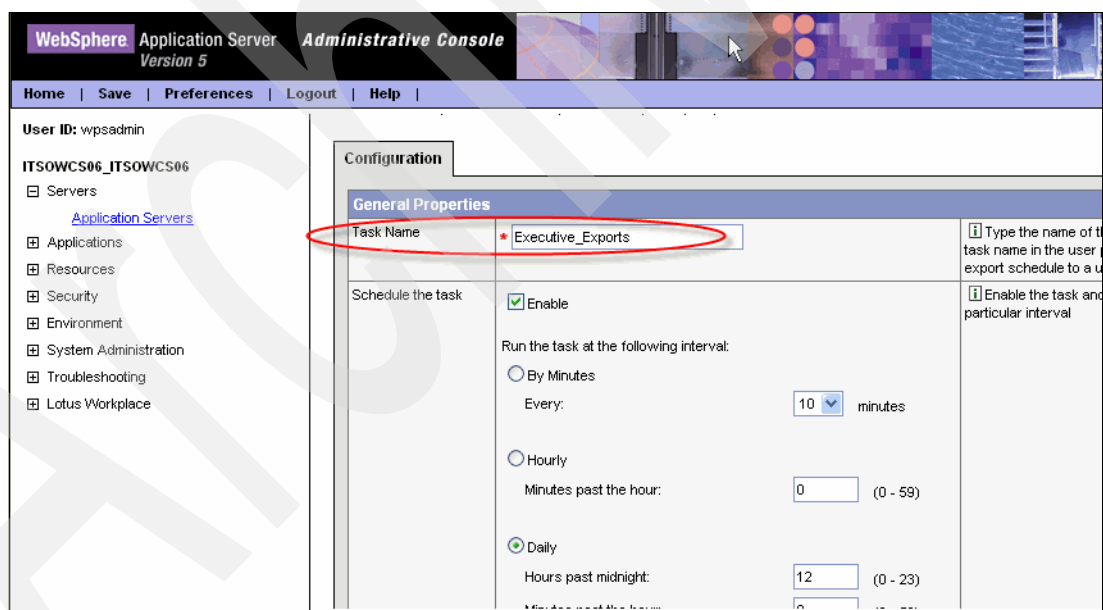


Figure 9-13 Configuring a new scheduled export

7. Click **Save**, then click **Save** again to save your changes to the master configuration.
8. Assign the export task to a user policy. In the left navigation pane of WebSphere Application Server Administrative Console, click **Lotus Workplace** → **Users** → **Manage User Policies**.

9. Select an existing user policy, or create a new user policy for the users whose mail you want to export as shown in Figure 9-14.

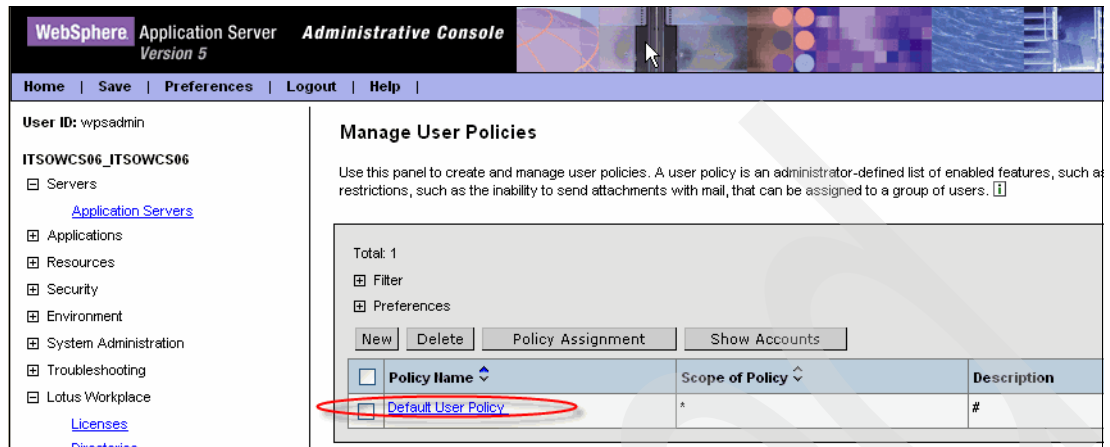


Figure 9-14 Selecting a user policy

10. In the user policy panel (Figure 9-15), scroll down to the bottom and click **Mail Export details**.

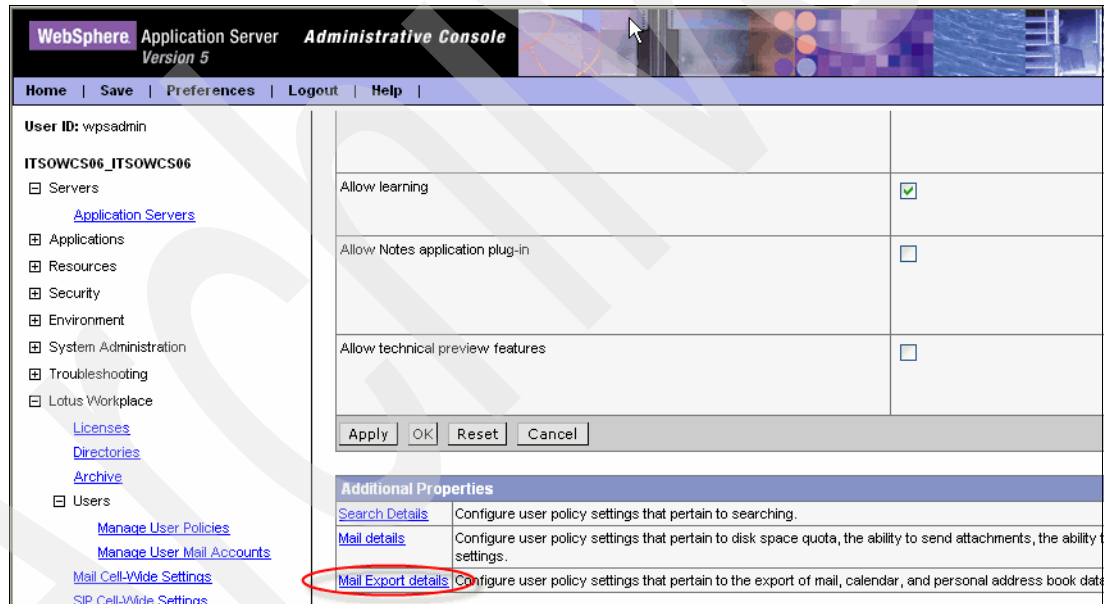


Figure 9-15 Selecting Mail Export details

11. In the Mail Export Details panel (Figure 9-16), for Allow export of mail files, verify that **Enabled** is selected and select attributes that suit your organization. Associate the export task schedule that you created in step 5 on page 442 with the user policy by placing the task name in the Export schedule to use field. Click **OK**.

The screenshot displays the WebSphere Administrative Console interface. The main panel is titled 'Mail Export Details' under the 'Manage User Policies > Default User Policy' path. It contains a 'General Properties' section with several configuration fields. The 'Allow export of mail files' checkbox is checked and highlighted with a red circle. The 'Export schedule to use' dropdown menu is set to 'Executive\_Exports' and is also highlighted with a red circle. Other fields include 'Send notifications to', 'Number of exports to keep' (set to 1), and 'Location of export files' (set to /Executives). The left sidebar shows the navigation tree with 'Users' expanded and 'Manage User Policies' selected. The top navigation bar includes 'Home', 'Save', 'Preferences', 'Logout', and 'Help'.

Figure 9-16 Defining the Mail Export Details to assign the scheduled export to the user policy

12. Click **Save**, and then click **Save** again to save your changes to the master configuration.

### 9.6.3 Import process

The **import** command retrieves the data for a mail user from the stored zip file in the integrated file system and puts the data back into the DB2 Universal Database store where it originated. It restores the messaging data exactly the way it appeared during its last export.

#### Functional description of the import command

To start the **import** command line, use the following structure:

```
lm import <-user | -userlistfile | -userpolicy | -zipfile | -ziplistfile> -path importpath
[-newuser NEWloginname] (not optional when used with -zipfile option) [-newpolicy newpolicy]
```

The parameters are defined as follows:

- ▶ **-user**: The login name of the user whose mail file is to be imported. This is not required if you are importing files using **-userlistfile**, **-zipfile**, or **-ziplistfile**.
- ▶ **-path**: File path specifying location of the file or files to be imported. The path must be surrounded by single quotation marks. This option is required when using **-user** or **-userlistfile**.
- ▶ **-newuser**: For use with the **-zipfile** option only when importing mail from one account to another. Specify the login name for the account to which you are importing the zip file. This option is required only if the login name is different from the login name in the zip file.

- ▶ *-newpolicy*: For use with the *-zipfile* option only when importing mail from one account to another. Specify the policy name for the account to which you are importing the zip file. This option is required only if the policy name is different from the policy in the exported file.
- ▶ *-userpolicy*: The user policy of the group of users whose files are to be imported.
- ▶ *-zipfile*: The fully qualified path and zip file containing the mail data to be imported.
- ▶ *-ziplistfile*: The fully qualified path and text file containing a list of zipfile names. "ZIPFILENAMES" must be the first line of the text file, and the file must not contain blank lines.

## Running the import command in Qshell

To run the **import** command in the Qshell environment:

1. From the i5/OS command line, type the STRQSH CL command and press Enter.
2. At the Qshell command prompt, change to your Workplace Collaboration Services server directory by entering the following command:

```
cd /qibm/userdata/webas5/base/InstanceName/bin
```

Here *InstanceName* represents the name of your Workplace Collaboration Services server, for example:

```
cd /qibm/userdata/webas5/base/itsowcs06/bin
```

3. Start the Lmadmin command service. The SOAP\_CONNECTOR\_PORT port number from Mail\_Server\_1 is required to start the Lmadmin command service. For the iSeries server, this is the port block that you set up during the initial configuration plus 29.

In our example, we set up a port block of 30600, so the port number for starting Lmadmin is 30629. For help on finding the port block, refer to Appendix C, "Workplace Collaboration Services configuration summary" on page 519.

At the Qshell command prompt, enter the following command to start the Lmadmin command service (Figure 9-8):

```
Lmadmin.sh -user UserName -password password -port SOAPPort -host HostName
```

Note the following explanation of the parameters:

- *UserName* represents your Workplace Collaboration Services administrator ID.
- *password* represents the administrator's password.
- *SOAPPort* represents the port number.
- *HostName* represents the host name of your Workplace Collaboration Services server.

4. At the Lmadmin command prompt, you can import the mail. Type the **import** command, specifying the path of the exported ZIP file. You may use either a directory or a full file name if applicable. The **import** command maps the user login name to the account ID and finds the most recently created ZIP file that uses the same account ID.

For example, to import the mail for the Workplace Collaboration Services administrator, **wpsadmin**, from the **/ExportMail** directory, enter the following command at the LM command prompt:

```
lm import -user wpsadmin -path '/ExportMail'
```

See Figure 9-17.

```
$
> cd /qibm/userdata/webas5/base/itsowcs06/WorkplaceServer/bin
$
> lmadmin.sh -user wpsadmin -password wpsadmin -port 30629
WASX7209I: Connected to process "Mail_Server_1" on node ITSOWCS06_ITSOWCS06 using
SOAP connector; The type of process is: UnManagedProcess
WASX7029I: For help, enter: "$Help help"
wsadmin>
> lm import -user wpsadmin -path '/ExportMail'
CLHAF0012I: Imported successfully for wpsadmin
wsadmin>
```

Figure 9-17 Running the import command for the user wpsadmin

### Example of notifications

After an import or export is completed, a notification is sent to the user's inbox. Figure 9-18 shows an example of these notifications.

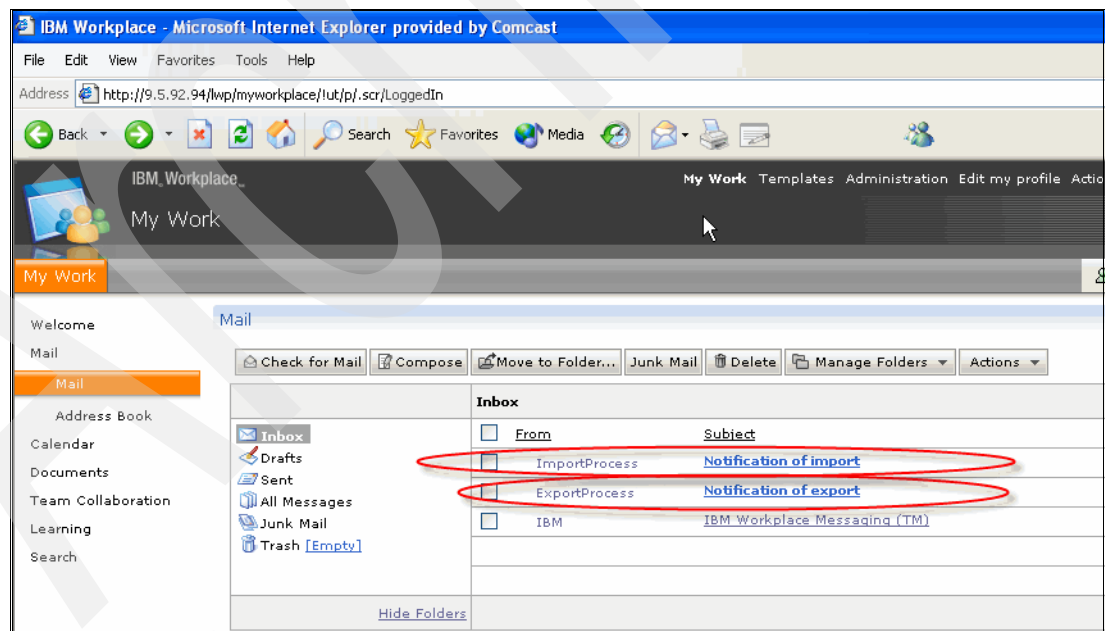


Figure 9-18 Import and export notifications

## 9.6.4 Archive process

Archiving is ideal for restoring mail messages from individual mail accounts, saving all deleted mail, and allowing for operator initiated restoration of selected messages. In this section, we discuss how to best configure archiving and then look at the commands for restoring the archived data.

The archive utility saves expired and deleted messages to the integrated file system of the iSeries server. *Expired messages* are messages that are automatically removed from a user's messaging account when the account exceeds the maximum disk space quota as set in the user policy. *Deleted messages* are messages that are in the user's trash folder. Both types are retrievable by using the Lmadmin **restore** command.

### Functional description of archiving

You can enable archiving in the following ways:

- ▶ Archiving captures mail messages as they exit the system. This is the point at which they are deleted from the Trash folder and are about to be reconciled or compacted.
- ▶ Use a system-wide setting. Either archiving is on or off for the entire mail cell.
- ▶ Use policy-based archiving. Only archive messages for users that belong to a policy that has archiving enabled.
- ▶ Use administrator-based archiving, which is completely transparent to end user.
- ▶ Use administrator-based recovery, where the end user must request the administrator to restore mail messages.
- ▶ The administrator can restore mail messages based on a date range via the Lmadmin restore command.
- ▶ The user is notified by mail that messages have been restored into a Restored Mail folder.

### Configuring archiving

To enable archiving to save expired or deleted mail messages, you must first enable archiving at the cell level for archiving at the user policy level to work. After you select archiving at the cell and policy level, configure the task scheduler to run the Archive and Reconcile Archive tasks on a regular and automatic basis. Perform the following steps:

**Important:** You can use Lmadmin Archive at any time to archive expired or deleted messages. Messages are archived only if users are assigned to a user policy in which archiving is enabled. The following steps explain how to set up a Default User Policy configured for archiving.

1. Create a directory path, for example /tmp/ziparchive, on the iSeries server where the zip archive files are stored. If you do not create this directory, the archive task fails. If you use a different directory path, you must update the directory path variable in step 8 on page 449. To create the directory, enter the following Create Directory (CRTDIR) CL command on an i5/OS command line:

```
CRTDIR DIR('/tmp/ziparchive')
```

**Tip:** It is a good practice to make sure that the QEJBSVR user profile has \*RW authority to the archive directory. The actual files have that authority granted automatically. To change the authority on the zip directory, enter the following Change Authority (CHGAUT) CL command on an i5/OS command line:

```
CHGAUT OBJ('/tmp/ziparchive') USER(QEJBSVR) DTAAUT(*RW)
```

2. You configure the archiving settings in the WebSphere Application Server Administrative Console. Access the console and log in as the Workplace Collaboration Services administrator.
3. To enable archiving at the mail cell level, in the WebSphere Application Server Administrative Console, in the left navigation pane, click **Lotus Workplace** → **Archive**.
4. In the Archive panel (Figure 9-19), select **Enable** to enable archiving of expired and deleted mail for all user accounts. Optionally you can type the number of days to keep deleted messages in the archive before deleting the archive. Workplace Collaboration Services Messaging maintains a 90-day archive by default. Click **OK**.

The screenshot shows the WebSphere Application Server Administrative Console interface. The top banner reads "WebSphere Application Server Administrative Console Version 5". The left navigation pane lists various system components, with "Archive" highlighted under the "Lotus Workplace" section. The main content area is titled "Archive" and contains a "Configuration" tab. Under "General Properties", the "Enabled" checkbox is checked, and the "Maximum days stored" is set to 90. The "Archiving System" is set to "DefaultZipMessageArchive". The "OK" button is circled in red. The right side of the configuration table contains help text for each field.

General Properties		
Enabled	<input checked="" type="checkbox"/>	Select to archive deleted or expired mail for all users in the cell.
Archiving System	DefaultZipMessageArchive	Type the name of the archiving system you are not using the default.
Maximum days stored	90	Type the number of days to keep deleted messages in the archive on disk before deleting the archive.

Buttons: Apply, OK, Reset, Cancel

Additional Properties: Custom Properties (Configure custom properties).

Figure 9-19 Enabling archiving

5. Click **Save**, and then click **Save** again to save your changes to the master configuration.
6. In the WebSphere Application Server Administrative Console, click **Lotus Workplace** → **Archive**.



7. In the Archive panel (Figure 9-20), under the Additional Properties section, click **Custom Properties**.

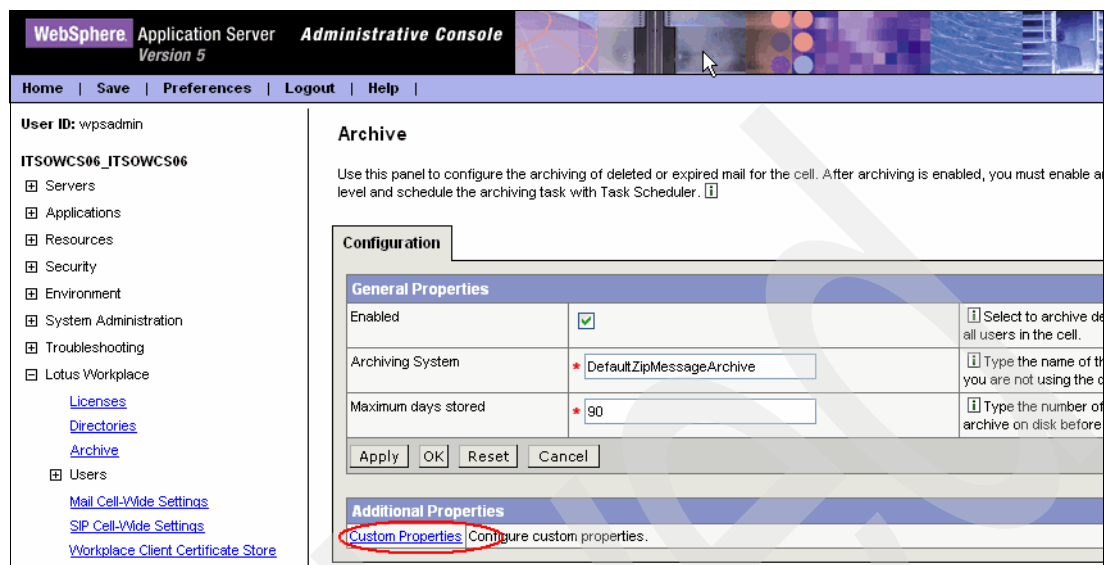


Figure 9-20 Selecting Archive Custom Properties

8. In the Custom Properties panel (Figure 9-21), click **DefaultZipMessageArchivePath**.

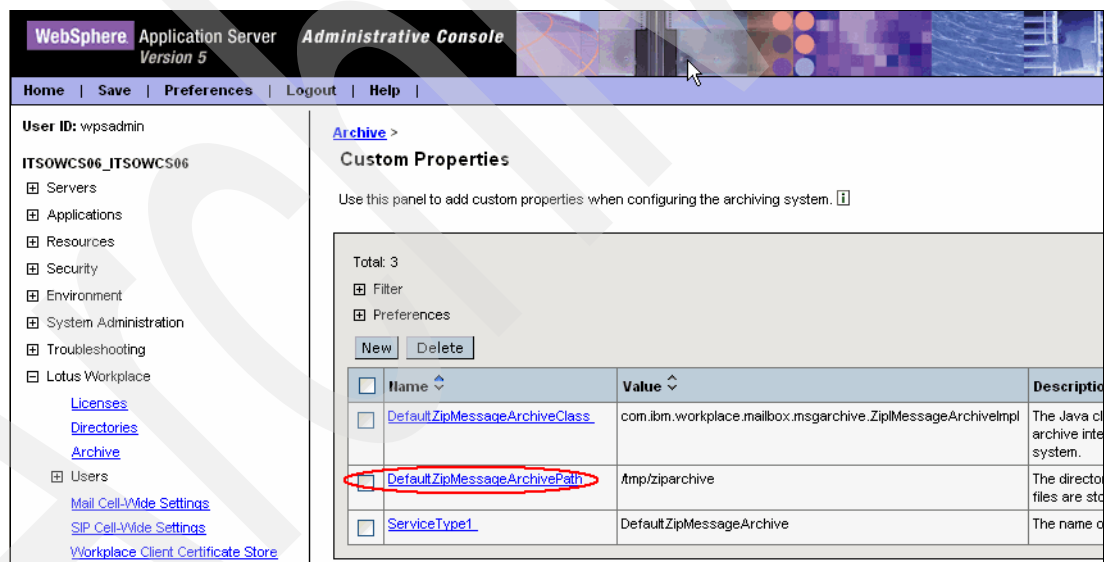


Figure 9-21 Modifying the DefaultZipMessageArchivePath

9. In the DefaultZipMessageArchivePath panel, in the Value field, enter the directory path for the archive. Be sure that the directory exists or create the directory before executing the archive task. Click **OK** or **Apply**.
10. Click **Save**, and then click **Save** again to save your changes to the master configuration.
11. In the navigation pane on the left in the WebSphere Application Server Administrative Console, click **Lotus Workplace** → **Users** → **Manage User Policies**.
12. Select an existing user policy, or create a new user policy for the users whose mail you want to archive.

13. Scroll down to the bottom of the user policy and click **Mail details** as shown in Figure 9-22.

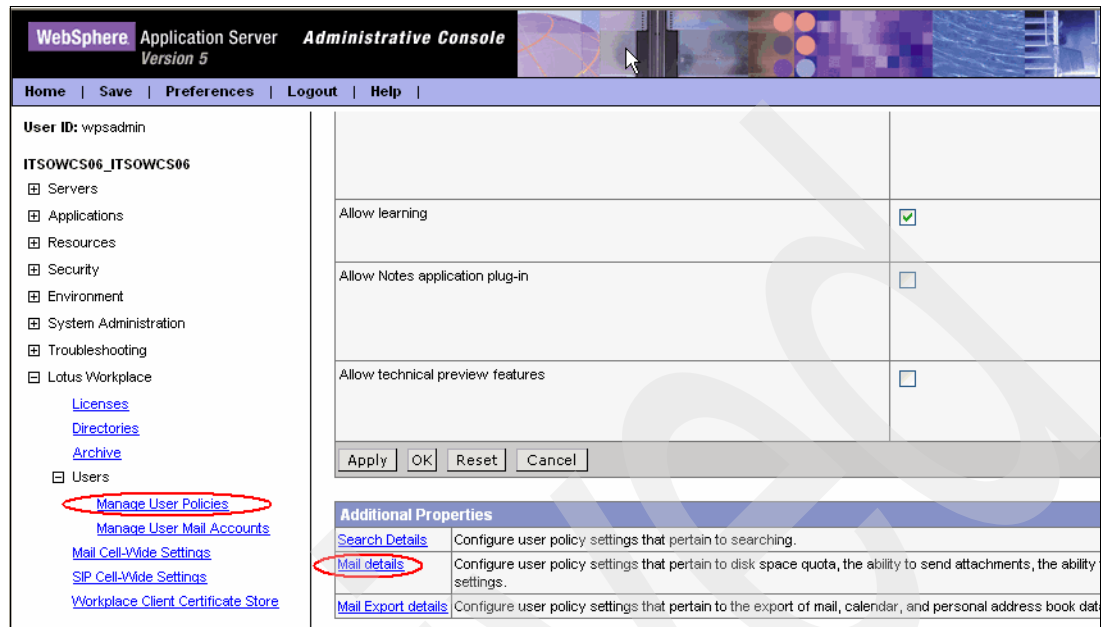


Figure 9-22 Selecting the mail details for a user policy

14. In the Mail Details panel (Figure 9-23), select **Archive mail**. Click **OK**.

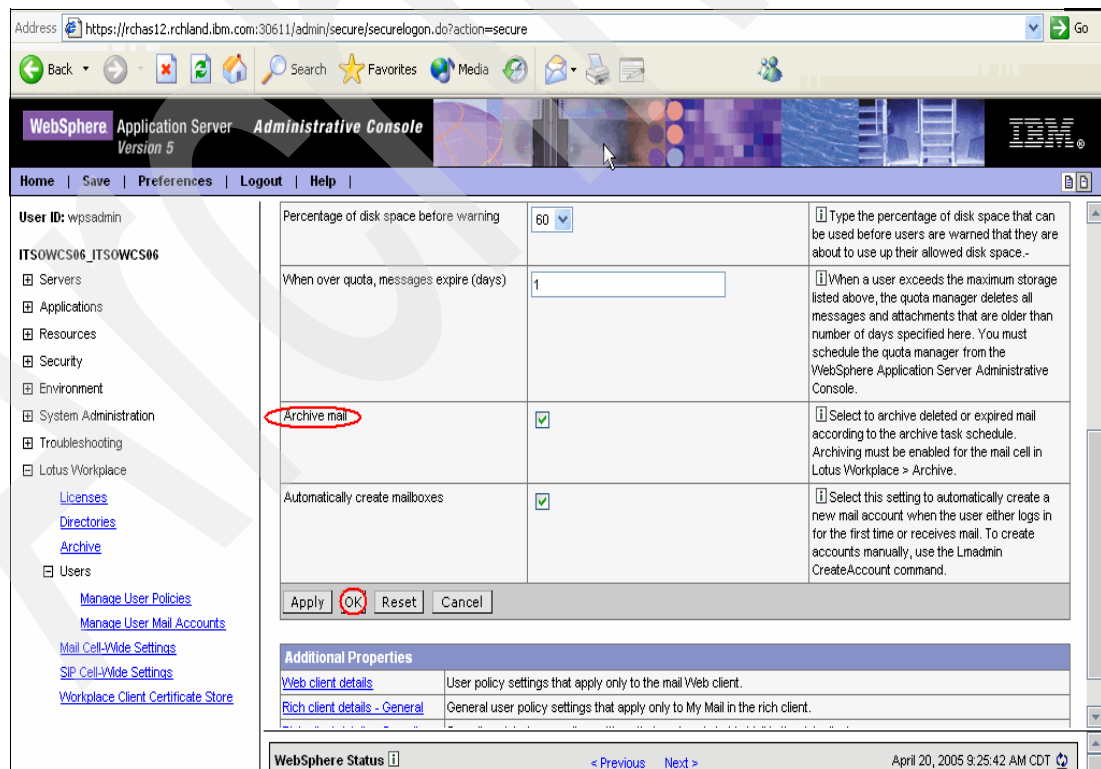


Figure 9-23 Selecting Archive mail

15. Click **Save**, and then click **Save** again to save your changes to the master configuration.

16. In the left navigation pane of the WebSphere Application Server Administrative Console, click **Servers** → **Application Servers**. In the Application Servers panel on the right, click the **Mail\_Server\_1** server. See Figure 9-24.

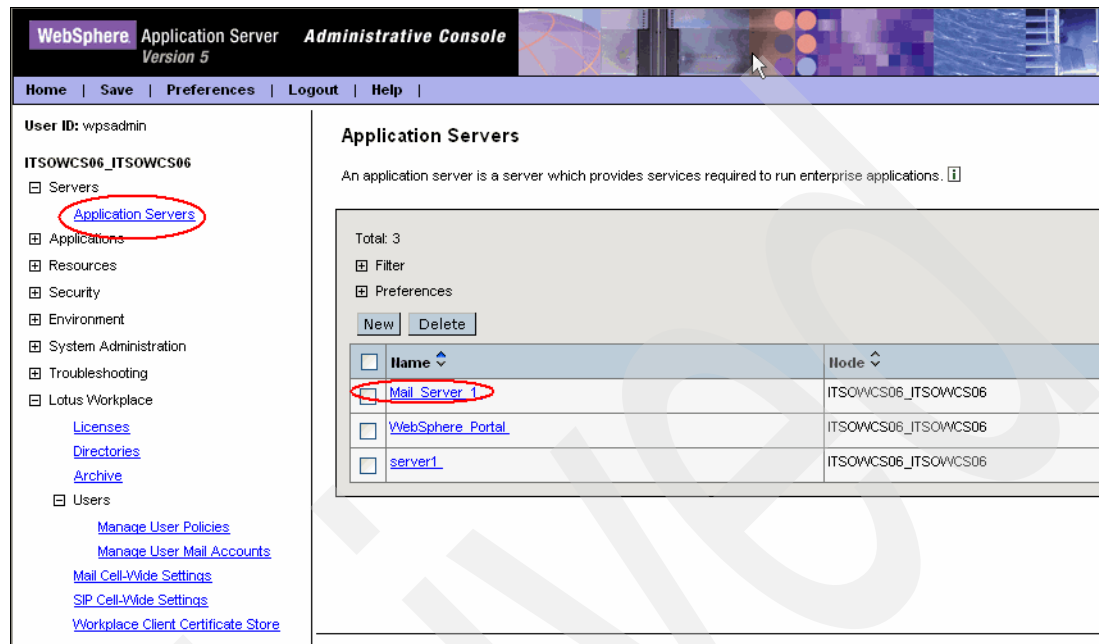


Figure 9-24 Selecting the Mail\_Server\_1 server

17. In the Mail\_Server\_1 panel (Figure 9-25), under the Additional Properties section, click **Workplace Mail Services**.

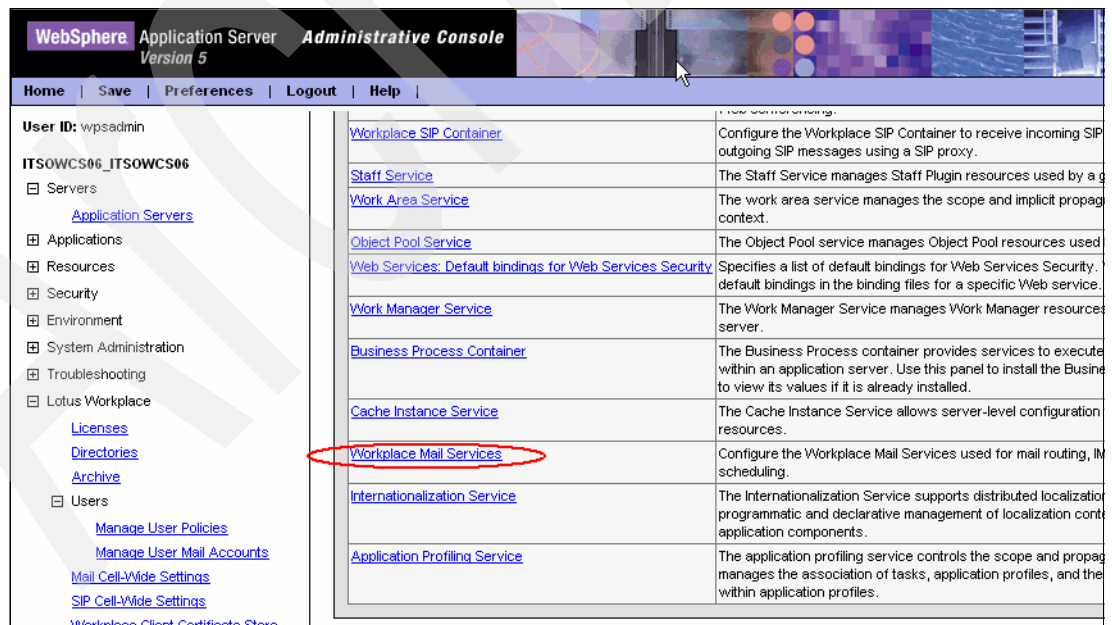


Figure 9-25 Selecting Workplace Mail Services

18. In the Workplace Mail Services panel (Figure 9-26), click the **Task Scheduler Service**.

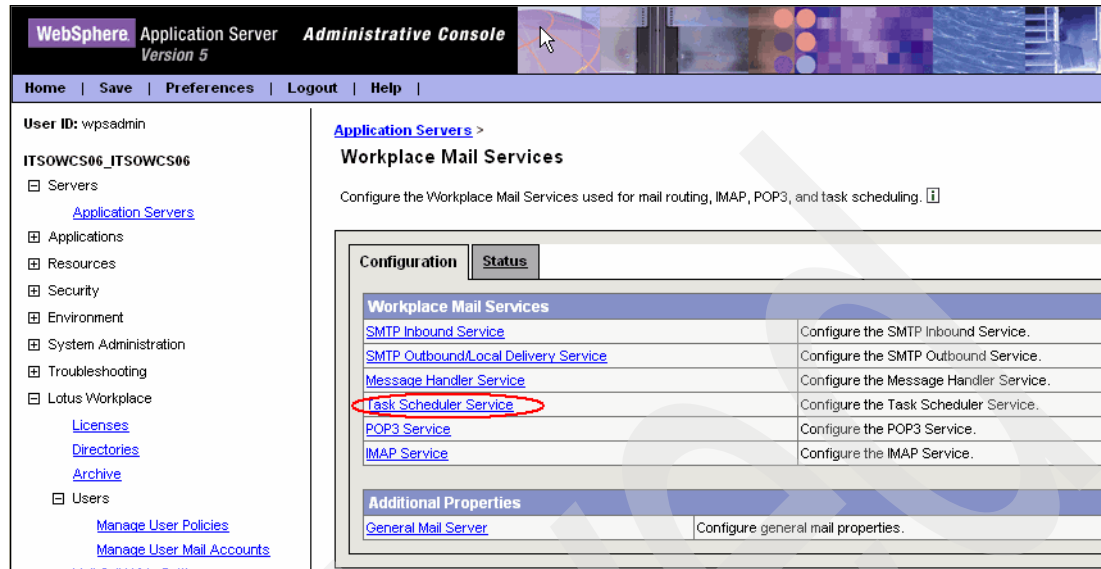


Figure 9-26 Selecting the Task Scheduler Service

19. In the Task Scheduler panel (Figure 9-27), click the **Archive** task.

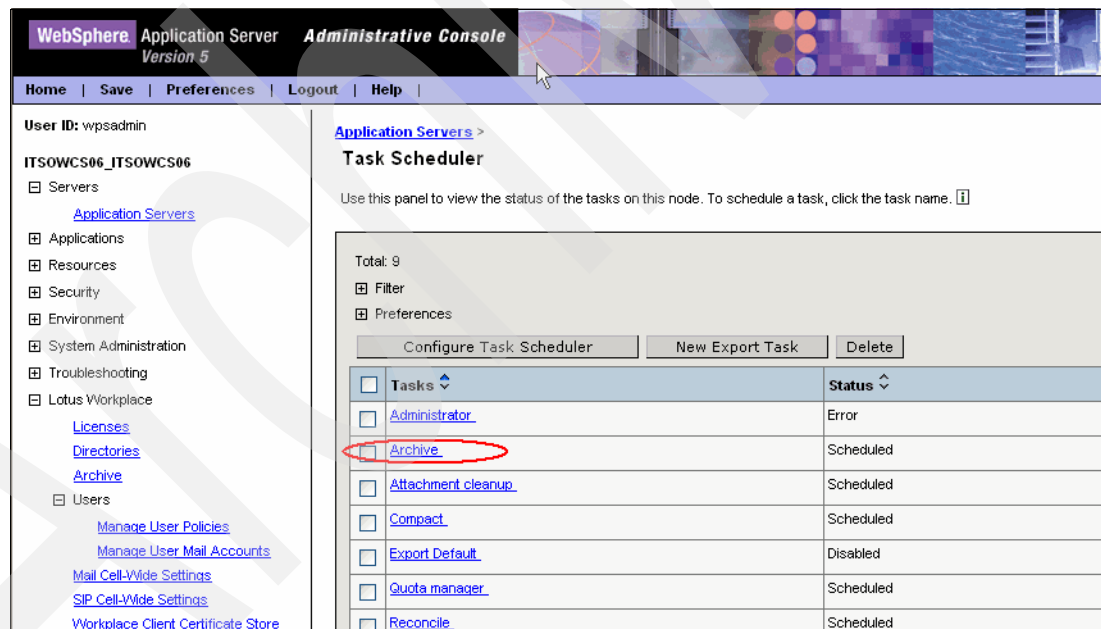


Figure 9-27 Selecting the Archive task

20. In the Archive panel (Figure 9-28), in the Schedule the task field, select **Enable** and set a schedule for the task to run daily during an off-peak period (recommended). Click **OK**.

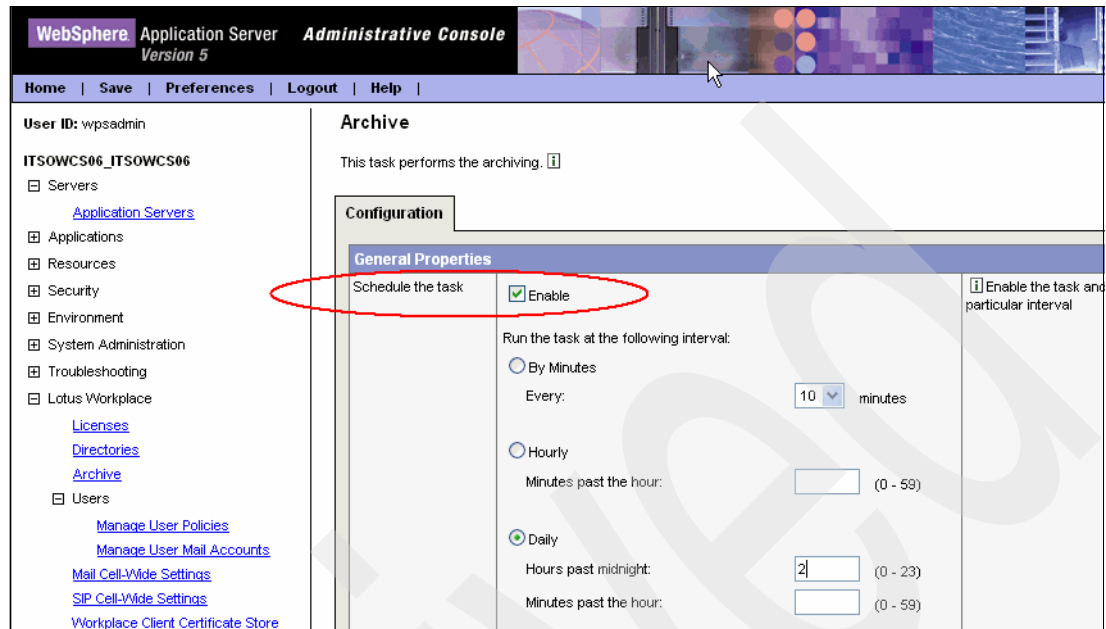


Figure 9-28 Scheduling the archive task

21. Click **Save**, and then click **Save** again to save your changes to the master configuration.
22. In the WebSphere Application Server Administrative Console, select **Servers** → **Application Servers**. Then in the Application Servers panel on the right, click the **Mail\_Server\_1** server. See Figure 9-24 on page 451.
23. In the Mail\_Server\_1 server panel, under the Additional Properties section, click **Workplace Mail Services**. See Figure 9-25 on page 451.
24. In the Workplace Mail Services panel, click **Task Scheduler Service**. See Figure 9-26 on page 452.

25. On the Task Scheduler panel (Figure 9-29), click the **Reconcile Archive** task.

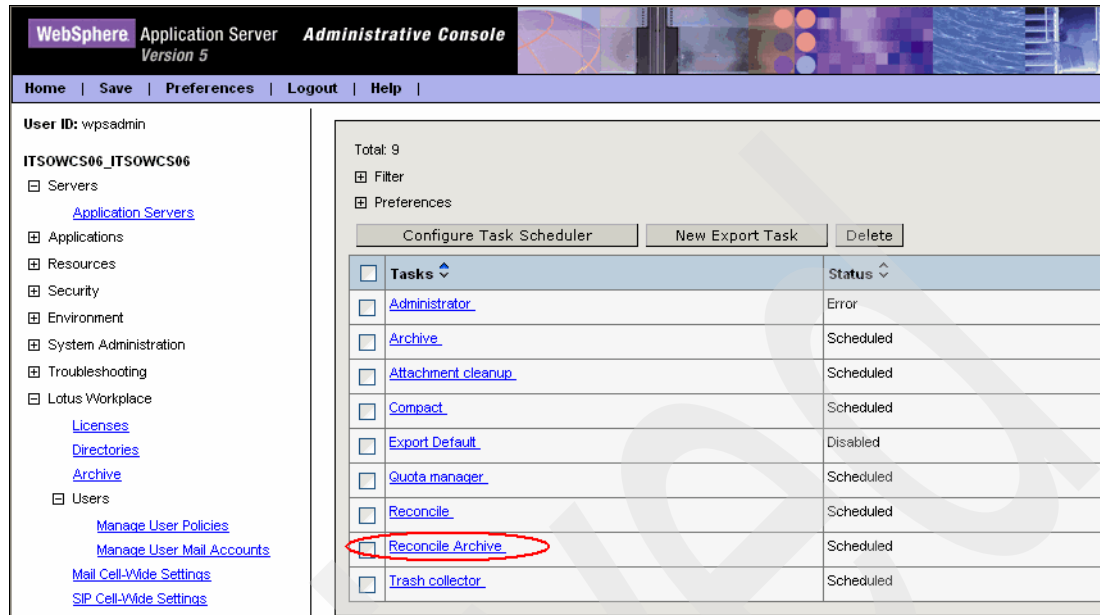


Figure 9-29 Modifying the Reconcile Archive task

26. In the Reconcile Archive panel (Figure 9-30), in the Schedule the task field, select **Enable** and set a schedule for the task to run daily during an off-peak period (recommended). Click **OK**.

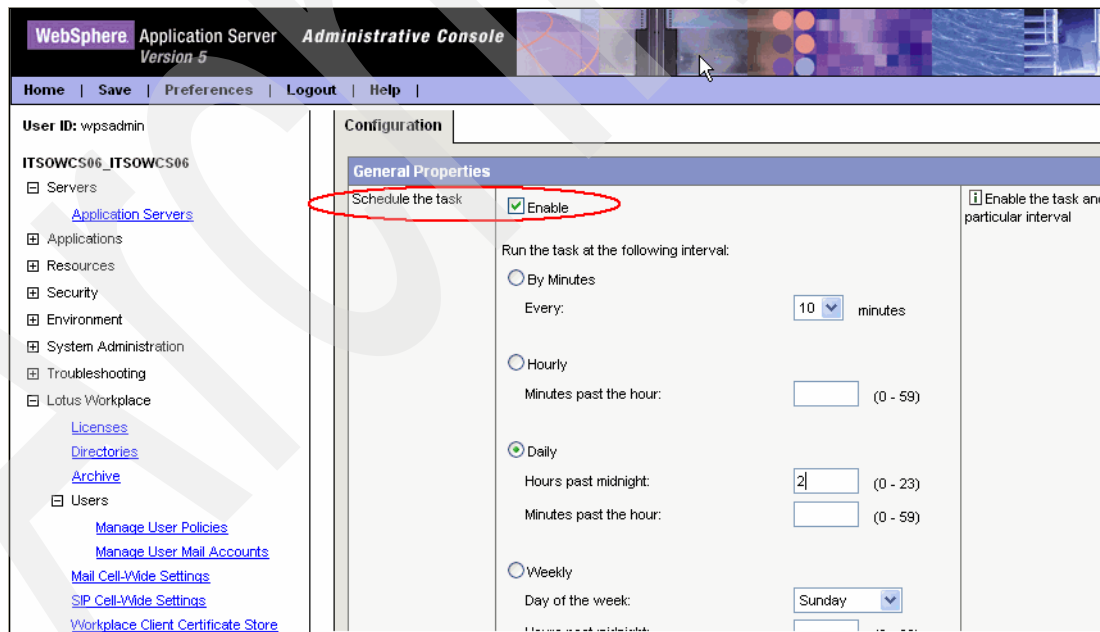


Figure 9-30 Modifying the Reconcile Archive task schedule

27. Click **Save**, and then click **Save** again to save your changes to the master configuration.

28. Restart all the servers. For assistance, refer to 5.2, "Starting and stopping Workplace Collaboration Services" on page 203.

29. Review the list of scheduled tasks to make sure they are in the correct order for archiving. The order should be:

- Trash Collector
- Archive
- Reconcile Archive
- Compact

**Note:** When the tasks for archiving messaging are scheduled in the WebSphere Application Server Administrative Console, the order of operation is significant. The following order for archiving provides the best service:

1. Run the Trash Collector task to set messages in the Trash folder to the archive-ready state on an aged basis.
2. Run the Archive task to place message map entries into to the archive map table of the archive database. If the content has not already been archived, an entry is made for the content in the archive reference table of the archive database and content is sent to the system archive. The Archive task then moves these messages to the next state so they can be reconciled and compacted.
3. Run the Reconcile and Compact tasks to remove various message table entries.

## 9.6.5 Restore command

The **restore** command uses a database archive, which contains a table called *Archive Map*. The **restore** command searches the table for messages that belong to the account and that match the parameters provided in the **restore** command. Messages that suit the parameters for the account are restored to the mailbox in the *RestoredArchiveMessages* folder. A notification message is deposited in the folder in the user's Inbox upon completion. If no folder exists, a new one is created by the command.

### Functional description of the restore command

The **restore** command line requires the following format:

```
lm restore -user LOGINNAME [/preview -from DATE -to DATE]
```

The parameters are defined as follows:

- ▶ **-user:** A required parameter that is the login name of the account to be restored.
- ▶ **-from:** An optional parameter that sets a lower date bound on the messages. The format must be YYYY-MM-DD.
- ▶ **-to:** An optional parameter that sets an upper date bound on the messages. The format must be YYYY-MM-DD.
- ▶ **/preview:** An optional parameter that returns the number of messages and bytes to be restored.

Here are some examples:

```
lm restore -user gsmith
lm restore -user gsmith -from 2004-07-31
lm restore -user gsmith -to 2005-03-30
lm restore -user gsmith /preview -from 2005-02-20 -to 2005-02-28
```

## Running the restore command in Qshell

To run the **restore** command in the Qshell environment:

1. From the i5/OS command line, enter the STRQSH CL command and press Enter.
2. At the Qshell command prompt, change to your Workplace Collaboration Services server directory by entering the following command:

```
cd /qibm/userdata/webas5/base/InstanceName/bin
```

Here *InstanceName* represents the name of your Workplace Collaboration Services server, for example:

```
cd /qibm/userdata/webas5/base/itsowcs06/bin
```

3. Start the Lmadmin command service. The SOAP\_CONNECTOR\_PORT port number from Mail\_Server\_1 is required to start the Lmadmin command service. For the iSeries server, this is the port block that you set up during the initial configuration plus 29.

In our example, we set up a port block of 30600, so the port number for starting Lmadmin is 30629. For help on finding the port block, refer to Appendix C, "Workplace Collaboration Services configuration summary" on page 519.

At the Qshell command prompt, enter the following command to start the Lmadmin command service (Figure 9-31):

```
Lmadmin.sh -user UserName -password password -port SOAPPort -host HostName
```

Note the following explanation:

- *UserName* represents your Workplace Collaboration Services administrator ID.
- *password* represents the administrator's password.
- *SOAPPort* represents the port number.
- *HostName* represents the host name of your Workplace Collaboration Services server.

4. At the Lmadmin command prompt, run the **restore** command. See Figure 9-31. At the Lmadmin command prompt, enter the command:

```
lm restore -user UserName
```

Here *UserName* is the user ID for the user whose mail you want to restore.

```
$
> cd /qibm/userdata/webas5/base/itsowcs06/WorkplaceServer/bin
$
> lmadmin.sh -user wpsadmin -password wpsadmin -port 30629
WASX7209I: Connected to process "Mail_Server_1" on node ITSOWCS06_ITSOWCS06 using
SOAP connector; The type of process is: UnManagedProcess
WASX7029I: For help, enter: "$Help help"
wsadmin>
> lm restore -user wpsadmin
CLHAF0240I: Restored 2 messages totaling 796 bytes
wsadmin>
```

Figure 9-31 Restoring mail for user wpsadmin



Figure 9-32 shows an example of the /tmp/ziparchive directory where the archives are stored.

**Tip:** You may want to consider backing up your archive directory as part of your system's overall daily backup plan.

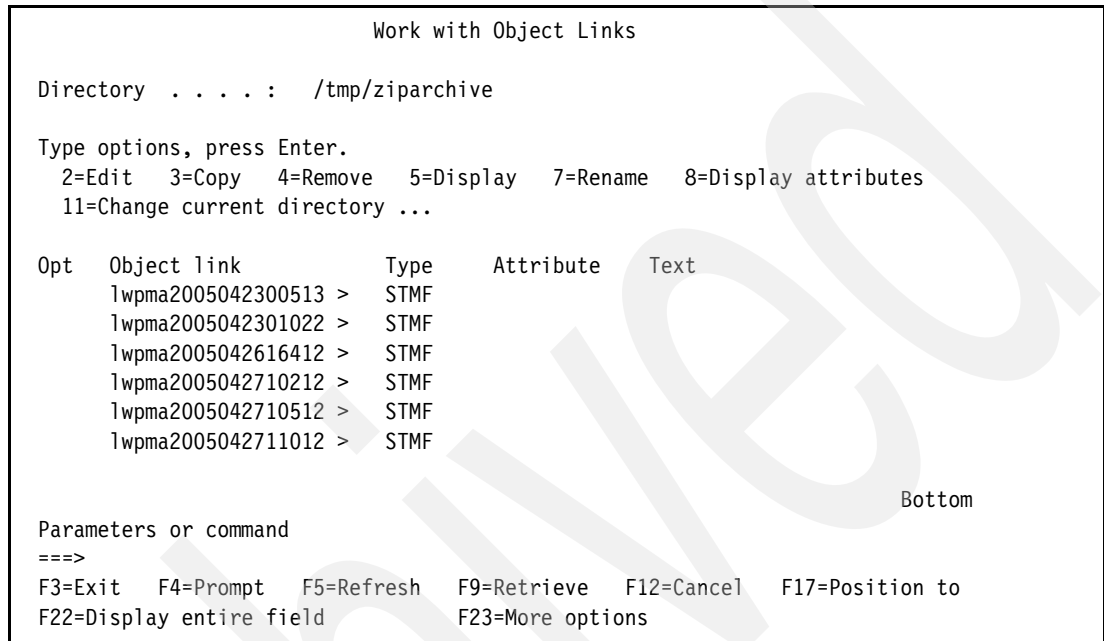


Figure 9-32 Archived objects in the integrated file system on the iSeries server

- After the **restore** command completes, a notification is displayed in the user's Inbox indicating the restoration of mail as shown in Figure 9-33.

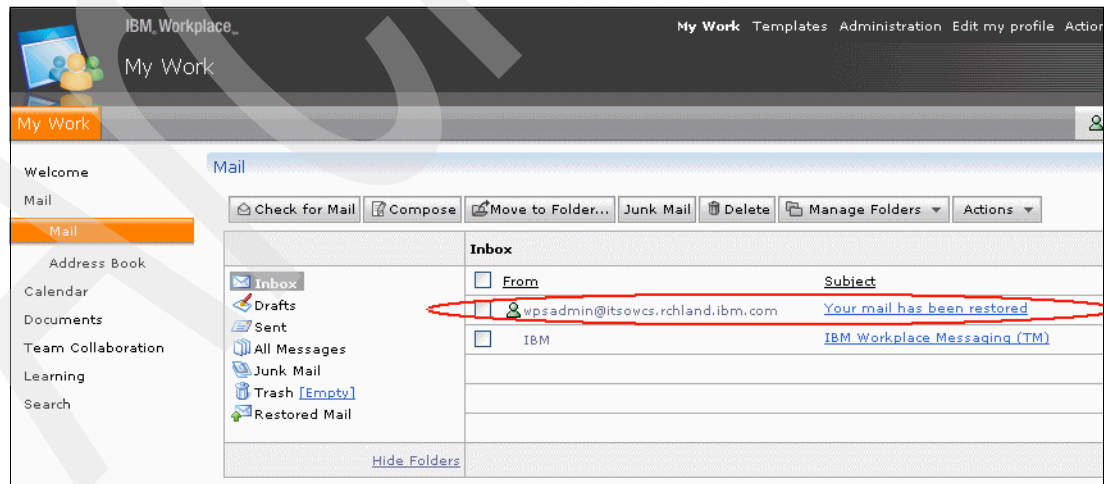


Figure 9-33 Notification of restore

The notification indicates the number of archived messages that were actually restored. In this particular case, there were two as shown in Figure 9-34.

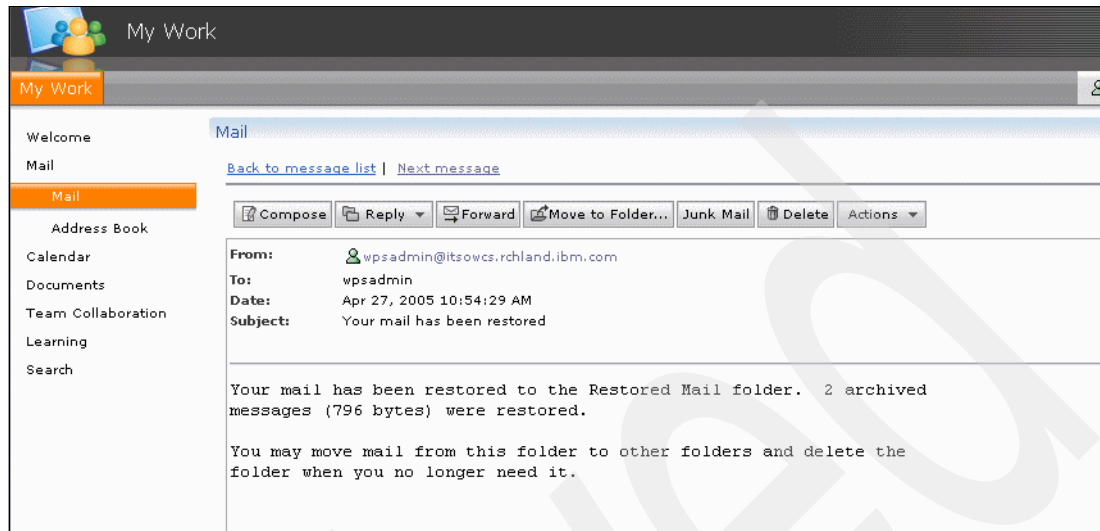


Figure 9-34 Contents of Restore mail notification

6. The Restore Mail folder contains any messages that have been restored and have not yet been moved to another folder as shown in Figure 9-35.

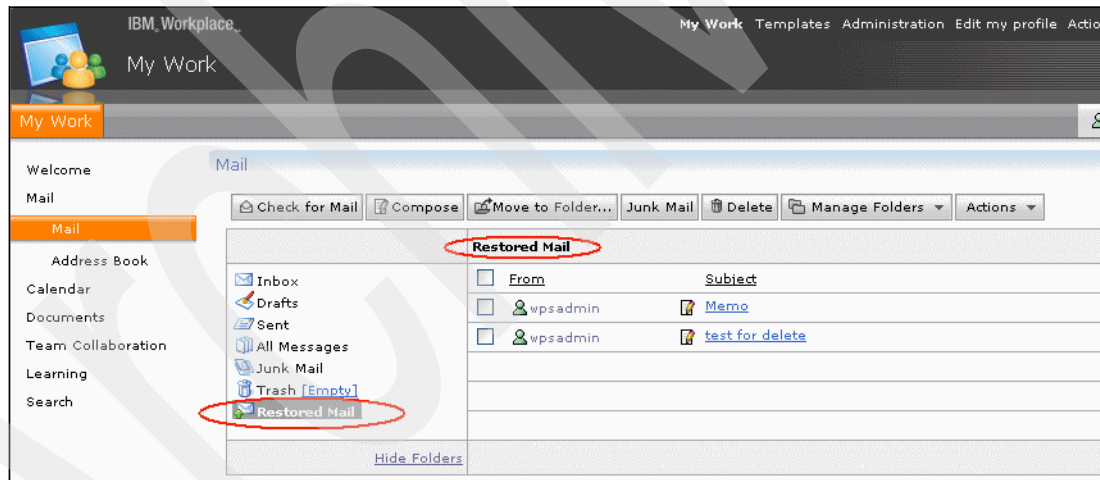


Figure 9-35 The Restored Mail folder



## Troubleshooting

In this chapter, we address analyzing, diagnosing, and remedying problems that you might encounter when installing, configuring, or maintaining the IBM Workplace Collaboration Services environment. We discuss issues that we encountered that are either common to Workplace Collaboration Services on any platform or specific to the i5/OS platform. We show you some of the key troubleshooting techniques that you can use to help solve such problems, with particular reference to issues related to the i5/OS platform.

## 10.1 General techniques and troubleshooting approaches

Troubleshooting a Workplace Collaboration Services infrastructure is not a trivial undertaking and can require a considerable amount of knowledge about a wide range of topics, from fundamental networking issues, through operating system to application level. In such a complex infrastructure, it is essential to follow a structured approach for troubleshooting. Following this approach enables you to break down the problem into manageable areas and know where to focus investigations so you can understand the issues before you make any changes.

### 10.1.1 General approach

When attempting to diagnose and remedy any problems, remember these simple steps:

1. *Identify*: Identify the problem area.
2. *Locate*: Find the most specific symptoms or error messages in the most appropriate log files.
3. *Isolate*: Focus on the most pressing problem.
4. *Repair*: Back up any files or folders that you may need to modify.
5. *Implement a single step change*: Do not make too many changes at any one time; test incrementally.
6. *Test*: Verify that the changes work.

Ask yourself these questions:

- ▶ What has changed?  
If it was working previously, what has happened to change things?
- ▶ Who is the problem actually affecting and not affecting?  
Someone may not be aware of the problem, so it may not be a “problem” to end users at the moment and can be remedied at a more convenient time.
- ▶ Where is the problem area?  
What part of the system is having a problem? Is it the database, HTTP server, application server, portal server, or Workplace Collaboration Services server?
- ▶ What errors are being reported and where?
- ▶ What is working?  
Eliminate the nonproblem areas.
- ▶ What happens if I change this?  
Understand the changes that you plan to make so you can interpret the results.

## 10.2 Logs

Since a Workplace Collaboration Services environment consists of several components, such as the WebSphere Application Server, DB2 database, Lightweight Directory Access Protocol (LDAP) directory, WebSphere Portal Server, and Workplace Collaboration Services server itself, there are a variety of different logs you can access. For example, there are general logs, such as the Java virtual machine (JVM) logs, process logs and the IBM service log (activity log), which have information about the application server process. Some other logs are more

specific to the different components and activities, such as the HTTP plug-in log. We explain the different types of logs in the following sections.

## 10.2.1 Installation logs

You can obtain information about the installation of an IBM Workplace Collaboration Services server in the installation logs. The installation logs for a code installation that are performed using InstallShield are located in the /tmp/InstallShield/lwai integrated file system directory on the iSeries server. Look for the stream file called *lwpinstalllog.txt* in this directory. You can do this by using the following CL command:

```
WRKLNK '/tmp/InstallShield/lwai'
```

Figure 10-1 contains information about the code installation using InstallShield. When the installation is performed, the *lwpinstalllog.txt* and the *productInstalllog.txt* files have the same information. When you perform the configuration of an instance, the *lwpinstalllog.txt* file is overwritten with the configuration information. When you are finished, this file contains the configuration information of the last Workplace Collaboration Services server configured in the system.

**Tip:** After you install the server using InstallShield, we recommend that you copy the /tmp/InstallShield/lwai directory and keep it since the installation log files can be overwritten.

```
Work with Object Links

Directory . . . . : /tmp/InstallShield/lwai

Type options, press Enter.
  2=Edit  3=Copy  4=Remove  5=Display  7=Rename  8=Display attributes
  11=Change current directory ...

Opt  Object link      Type  Attribute  Text
-----
lwpinstalllog.txt    STMF
productInstalllog. > STMF
InstallConfigMessa > STMF
InstallConfigTrace > STMF
InstallConfigTrace > STMF

Parameters or command
===>
F3=Exit  F4=Prompt  F5=Refresh  F9=Retrieve  F12=Cancel  F17=Position to
F22=Display entire field      F23=More options

Bottom
```

Figure 10-1 The *lwpinstalllog.txt* file as shown in the WRKLNK display

By typing option 5 next to lwpinstalllog.txt on the Work with Object Links display, you can view the contents of lwpinstalllog.txt (Figure 10-2).

```

Browse : /tmp/InstallShield/lwai/lwpinstalllog.txt
Record : 1 of 7038 by 18      Column : 1 207 by 131
Control :

....+....1....+....2....+....3....+....4....+....5....+....6....+....7....+....8....+...
.9....+....0....+....1....+....2....+....3.
*****Beginning of data*****
(Apr 18, 2005 1:32:06 PM), lwai.install, com.ibm.wps.install.DeleteFilesAction, msg1,
Deleting files (deleteLwaitracefile)
(Apr 18, 2005 1:32:06 PM), lwai.install, com.ibm.wps.install.DeleteFilesAction, dbg,
Deleting: /tmp/InstallShield/installtraces.txt
(Apr 18, 2005 1:32:06 PM), lwai.install, com.installshield.wizardx.ascii.ModifyFile,
msg2, ASCII file /tmp/InstallShield/installtrac
(Apr 18, 2005 1:32:07 PM), lwai.install, com.installshield.wizardx.ascii.ModifyFile,
msg2, /ADD TEXT AT LINE: 0 POSITION: 0/
(Apr 18, 2005 1:32:07 PM), lwai.install, com.installshield.wizardx.ascii.ModifyFile,
msg2,
(Apr 18, 2005 1:32:07 PM), lwai.install, com.installshield.wizardx.ascii.ModifyFile,
msg2,
(Apr 18, 2005 1:32:07 PM), lwai.install, com.ibm.wps.install.LogEntryAction, msg1,
Logging:
(Apr 18, 2005 1:32:07 PM), lwai.install, com.ibm.wps.install.LogEntryAction, msg1,
Logging:
(Apr 18, 2005 1:32:07 PM), lwai.install, com.ibm.wps.install.LogEntryAction, msg1,
Logging: *** JVM Runtime Properties - START ***
(Apr 18, 2005 1:32:07 PM), lwai.install, com.ibm.wps.install.LogEntryAction, msg1,
Logging: java.runtime.name=Java(TM) 2 Runtime Env
(Apr 18, 2005 1:32:07 PM), lwai.install, com.ibm.wps.install.LogEntryAction, msg1,
Logging: sun.boot.library.path=/QSYS.LIB/QSYS2.LI
(Apr 18, 2005 1:32:07 PM), lwai.install, com.ibm.wps.install.LogEntryAction, msg1,
Logging: java.vm.version=1.3
(Apr 18, 2005 1:32:07 PM), lwai.install, com.ibm.wps.install.LogEntryAction, msg1,
Logging: java.vm.vendor=IBM Corporation
(Apr 18, 2005 1:32:07 PM), lwai.install, com.ibm.wps.install.LogEntryAction, msg1,
Logging: java.vendor.url=http://www.ibm.com
(Apr 18, 2005 1:32:07 PM), lwai.install, com.ibm.wps.install.LogEntryAction, msg1,
Logging: path.separator=:
(Apr 18, 2005 1:32:07 PM), lwai.install, com.ibm.wps.install.LogEntryAction, msg1,
Logging: java.vm.name=Classic VM
(Apr 18, 2005 1:32:08 PM), lwai.install, com.ibm.wps.install.LogEntryAction, msg1,
Logging: file.encoding.pkg=sun.io
(Apr 18, 2005 1:32:08 PM), lwai.install, com.ibm.wps.install.LogEntryAction, msg1,
Logging: user.country=US

F3=Exit  F10=Display Hex  F12=Cancel  F15=Services  F16=Repeat find  F19=Left
F20=Right

```

Figure 10-2 Displaying lwpinstalllog.txt from a 5250 emulation session

Figure 10-3 shows the lwpinstalllog.txt in iSeries Navigator where it is easily retrievable.

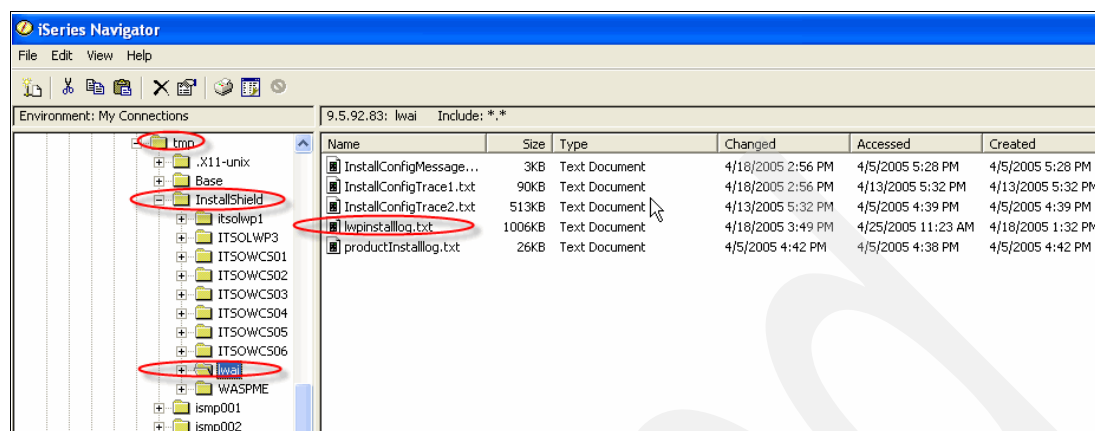


Figure 10-3 Displaying lwpinstalllog.tx from iSeries Navigator

There are also installation logs specific to each Workplace Collaboration Services server. The name of these files are also lwpinstalllog.txt. You can find these files in the /QIBM/UserData/Webas5/Base/InstanceName/WorkplaceServer/log integrated file system directory on the iSeries server.

## 10.2.2 Configuration logs

When a Workplace Collaboration Services server is created using the iSeries Create IBM Workplace wizard, several scripts and tasks are executed in different steps:

- ▶ Workplace configuration
- ▶ Database configuration
- ▶ Security configuration
- ▶ Workplace Resources configuration
- ▶ Workplace Client Technology configuration

Each of these configurations have different logs associated with them. To access these logs:

1. Access the IBM Web Administration for iSeries by pointing your Web browser to your fully qualified iSeries host name on port 2001:

`http://iSeriesHostName.domain:2001`

In our example, we enter:

`http://rchas12.rchland.ibm.com:2001`

2. When prompted, enter your i5/OS user profile and password to log on to the IBM Web Administration for iSeries. Click **OK**.
3. From the iSeries Tasks menu, click **IBM Web Administration for iSeries**. You return to the last server that you administered.
4. Click the **Manage** tab and then click the **Application Servers** tab.
5. From the Server list, select the application server that you want to look at (Mail\_Server\_1, Server1, or WebSpherePortal).

- In the left navigation pane, expand Problem Determination and click **View Logs**. This takes you to the runtime logs for the application server you selected. You see tabs for the WebSphere Application Server logs and the Portal logs as shown in Figure 10-4.



Figure 10-4 IBM Web Administration for iSeries, viewing logs

- In the left navigation pane, under Problem Determination, click **View Creation Logs**.
- The logs that you see (Figure 10-5) are generated when the Workplace Collaboration Services server is created. Click the log file name to see the detailed information.

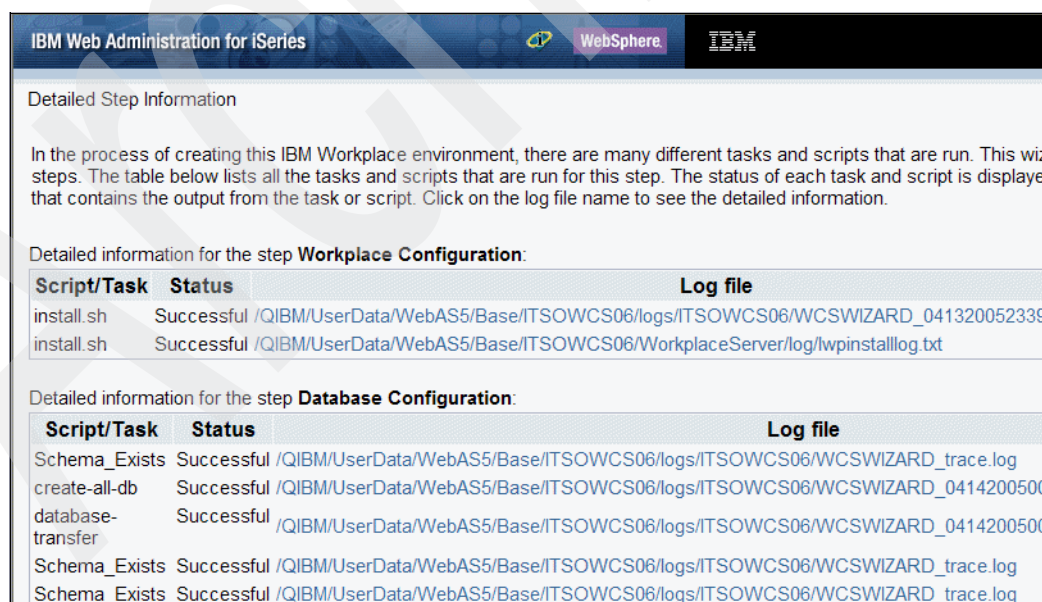


Figure 10-5 Viewing the creation logs



### 10.2.3 JVM logs

The JVM logs hold the stream that comes out of the System.out and System.err files. One log file is specified as SystemOut.log and another one as SystemErr.log. The SystemOut.log file is used to monitor the health of the application server. This log can be used for problem determination as well, but some other logs, such as the IBM service log, are more appropriate. The SystemErr.log file holds information originated from a call to a JVM function such as Exception.printStackTrace(). This file can be used for problem analysis.

The application server components and other applications, such as IBM Workplace Collaborative Learning, write system messages to these logs.

You can configure and access the JVM logs through the WebSphere Application Server Administrative Console as explained in the following steps:

1. Open the WebSphere Application Server Administrative Console and log in as the administrator.
2. In the left navigation pane, click **Troubleshooting** → **Logs and Trace**. In the Logging and Tracing panel (Figure 10-6) on the right, click the server of your instance that you want to monitor. In this example, we click **Mail\_Server\_1**.

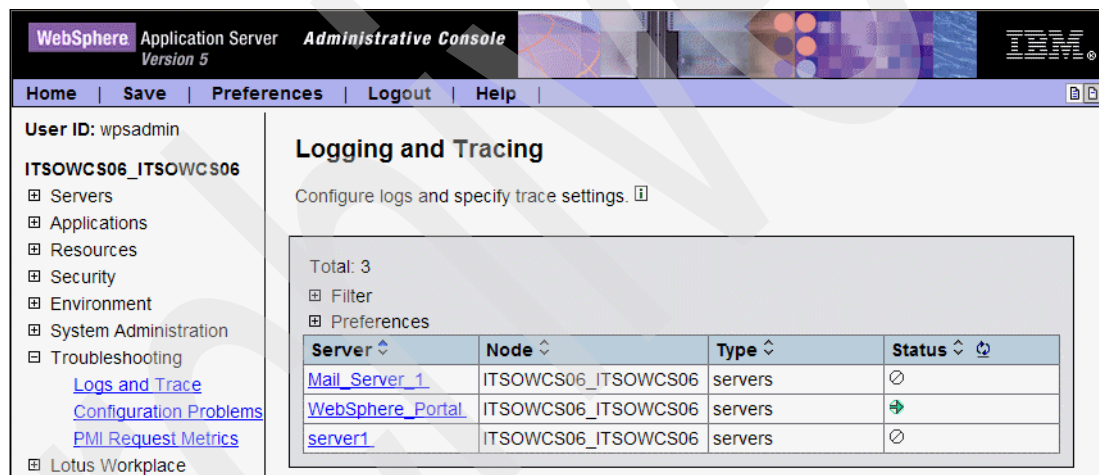


Figure 10-6 WebSphere Application Server Administrative Console, selecting Logs and Trace

3. In the server panel, Mail\_Server\_1 in this example (Figure 10-7), click **JVM logs**.

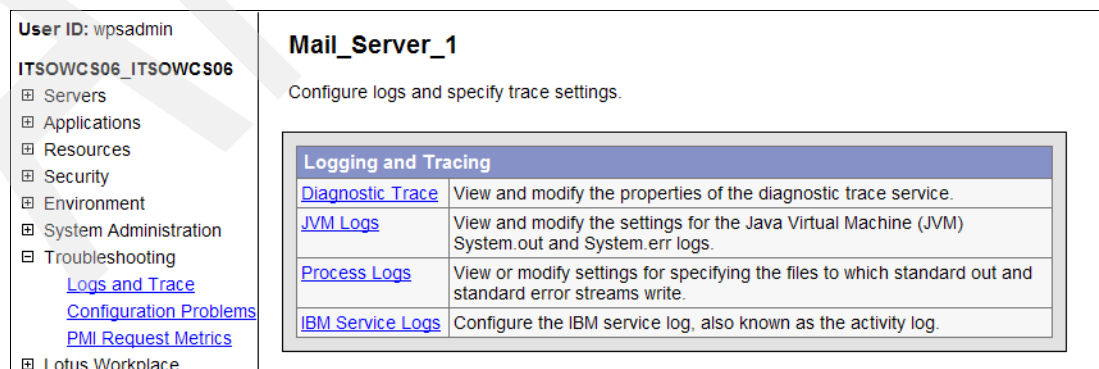


Figure 10-7 Logging and Tracing

4. In the JVM Logs panel (Figure 10-8), complete the following tasks:
  - a. On the **Configuration** tab, you can configure details about the System.out and System.err output log files, such as the name of the log file, the size, and the rotation time. If you make any changes to these settings, you must restart the Workplace Collaboration Services server for the change to take effect.

**Note:** At the bottom of the WebSphere Application Server Administrative Console, you see a WebSphere Status section (Figure 10-8). In this section, you can see WebSphere configuration problems such as error, warning, and informative messages.

[Mail\\_Server\\_1](#) >

## JVM Logs

Use this page to view and modify the settings for the Java Virtual Machine (JVM) System.out and System.err logs. ⓘ

**Configuration**
**Runtime**

General Properties		
<b>System.out</b>		
File Name:	* {ROOT}/Mail_Server_1/SystemOut.log	ⓘ The name of the System.out file.
File Formatting	Basic (Compatible) ▼	ⓘ The format to use in saving the System.out file.
Log File Rotation	<input checked="" type="checkbox"/> File Size Maximum Size <input type="text" value="1"/> MB <input type="checkbox"/> Time Start Time <input type="text" value="24"/> Repeat Time <input type="text" value="24"/> hours	ⓘ Specify the policy, if any to use in rotating System files.
Maximum Number of Historical Log Files	<input type="text" value="1"/>	ⓘ Specify the number of rotated System.out log files.
Installed Application Output	<input checked="" type="checkbox"/> Show application print statements <input checked="" type="checkbox"/> Format print statements	ⓘ Specify whether System.out print statement output and formatted
<b>System.err</b>		
File Name:	* \${LOG_ROOT}/Mail_Server_1/System	ⓘ The name of the System.err file.

**WebSphere Status** ⓘ
 [< Previous](#)
[Next >](#)
May 12, 2005 3:30:

**WebSphere Configuration Problems**

Total Configuration Problems :6	: 1 total	: 5 total	: 0 total
---------------------------------	-----------	-----------	-----------

Figure 10-8 JVM Logs configuration panel

- b. On the **Runtime** tab of the JVM Logs panel (Figure 10-9), you can click the **View** button to see the content of the logs. You can refresh the file while watching it.

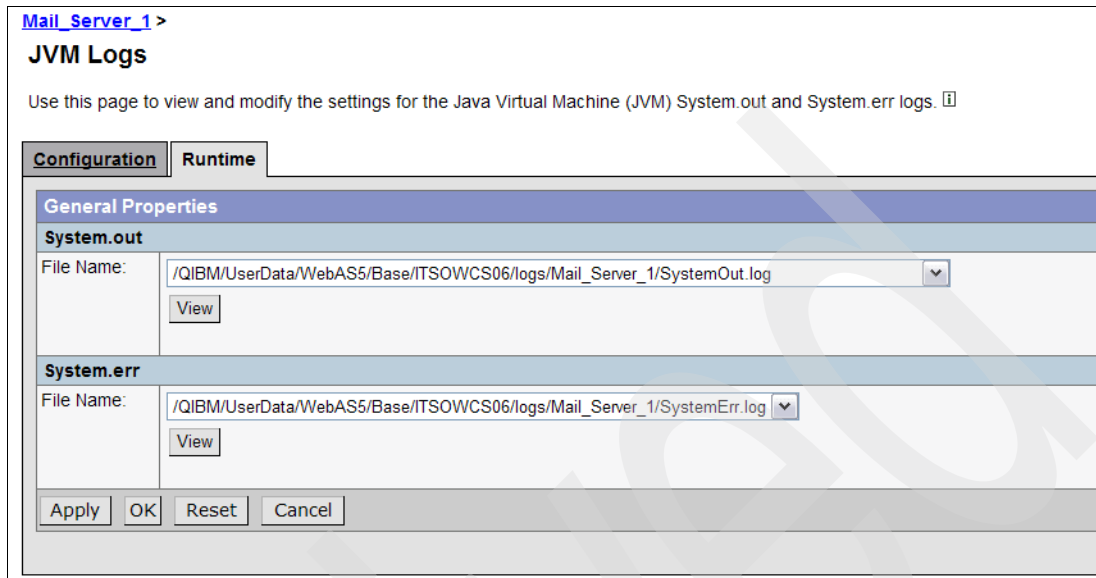


Figure 10-9 JVM Logs Runtime panel

When you click the View button, you see the contents of the file as shown in Figure 10-10.

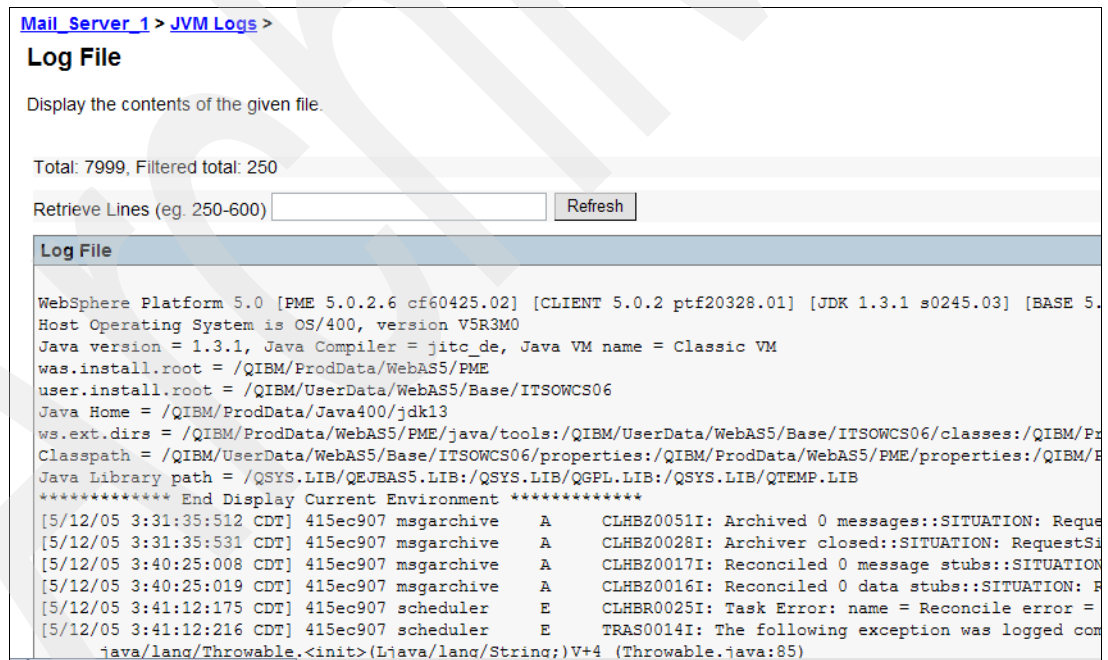


Figure 10-10 Viewing a JVM log

## 10.2.4 Process logs

There are two output files for the stdout and stderr streams of the WebSphere Application Server processes. Native code writes information to these files. JVM can write information to them as well. These streams are redirected to log files at application server startup and are written by native modules. By default, the names for these files are *native\_stdout.log* and *native\_stderr.log*.

The process logs cannot be configured like JVM logs. You cannot configure the size of the file or a rotation. These logs are empty or do not have much information, that is why they are not configured.

To see the process logs:

1. Open the WebSphere Application Server Administrative Console and log in as the administrator.
2. In the navigation pane on the right, select **Troubleshooting** → **Logs and Trace**. In the right panel, click the instance application server you want to monitor. In this example, we click **Mail\_Server\_1**. See Figure 10-6 on page 465.
3. In the server panel, which is Mail\_Server\_1 in this example, click **Process Logs**. See Figure 10-7 on page 465.
4. In the Process Logs panel, the two tabs lead you to additional information:
  - On the Configuration tab (Figure 10-11), you see the names of the log files.

Mail\_Server\_1 >  
**Process Logs**

Use this page to view or modify settings for specifying the files to which stdout and stderr streams write. ⓘ

**Configuration** **Runtime**

**General Properties**

Stdout File Name *	D:\OTJ\Mail_Server_1\native_stdout.log	ⓘ Use this field on the configuration tab to specify the name to be used for the stdout file. Use this field on the runtime tab in conjunction with the View button to view the contents of the stdout file.
Stderr File Name *	D:\OTJ\Mail_Server_1\native_stderr.log	ⓘ Use this field on the configuration tab to specify the name to be used for the stderr file. Use this field on the runtime tab in conjunction with the View button to view the contents of the stderr file.

Apply OK Reset Cancel

Figure 10-11 Process logs, Configuration tab

- On the Runtime tab (Figure 10-12), you can see the contents of the log files by clicking the View button.

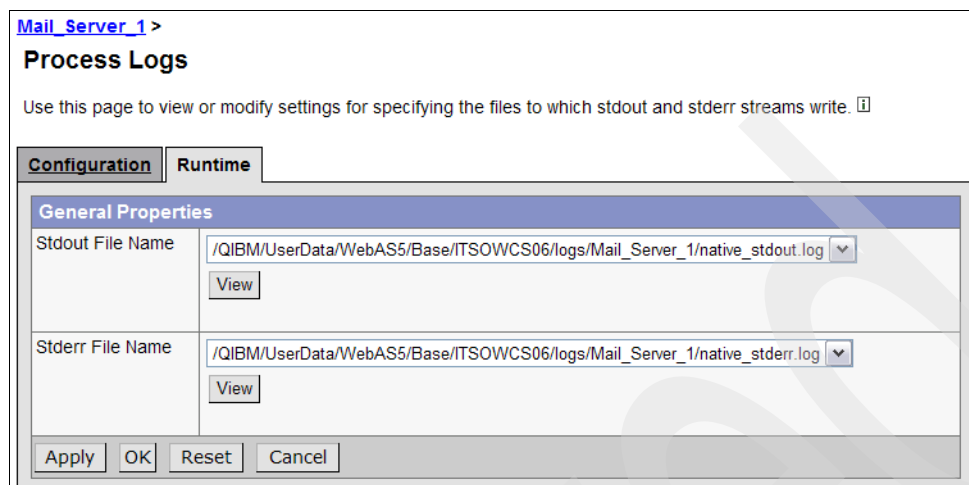


Figure 10-12 Process logs, Runtime tab

### 10.2.5 IBM service log

The IBM service log, or *activity log*, holds messages written by the WebSphere Application Server to the System.out streams and some other information that can be important when problems are analyzed. This file is in binary format, so you need a special tool called the *Log Analyzer* to correctly view the file. This tool provides additional diagnostic information, and the file has capabilities that can be required for IBM support.

To access the configuration for the IBM service log, perform the following these steps:

1. Open the WebSphere Application Server Administrative Console and log in as the administrator.
2. In the navigation pane on the left, click **Troubleshooting** → **Logs and Trace**. In the right panel, click the instance application server you want to monitor. In this example, we click **Mail\_Server\_1**. See Figure 10-6 on page 465.
3. In the server panel, which is Mail\_Server\_1 in this example, click **IBM Service Logs**. See Figure 10-7 on page 465.

4. In the IBM Service Logs panel, on the Configuration tab, you can enable the creation of this log file and configure it. See Figure 10-13.

You must restart the Workplace Collaboration Services server for the changes to take effect. If you change the log file name, the new one must have the .log extension and the run time must have write access to it.

**Note:** You can find the activity.log file in the /QIBM/UserData/WebAS5/Base/*InstanceName*/logs integrated file system directory. By default, there is only one activity.log for all the server processes in a node.

Mail\_Server\_1 >  
**IBM Service Logs**

Use this page to configure the IBM service log, also known as the activity log. ⓘ

**Configuration**

General Properties		
Enable service log	<input checked="" type="checkbox"/> Enable service log	ⓘ Check this box to enable the creation of a service log file to store data created by the IBM Service logs.
File Name:	<input type="text" value="\${LOG_ROOT}/activity.log"/>	ⓘ Specify the name of the service log (activity log) for the application server
Maximum File Size	<input type="text" value="2"/>	ⓘ Specifies the maximum size in megabytes of the service log file. The default value is 2 megabytes.
Message Filtering	<input type="text" value="Log all messages"/>	ⓘ Specifies what classes of messages will be stored in the service log.
Enable Correlation ID	<input checked="" type="checkbox"/> Enable Correlation ID	ⓘ Check this box to generate a correlation ID.

Apply OK Reset Cancel

Figure 10-13 IBM service log

To see the contents of the activity log file, you must use the Log Analyzer tool (waslogbr.sh or waslogbr.bat for Windows). This tool cannot view remote files, so you must copy the activity log file to the system where the Log Analyzer will be run. Another way to view the activity log file is with the **showlog** command. You can use this command to convert the content of the activity log to a text file or to display it in a Qshell session.

To send the contents of the activity.log file to the display, type the following command in a Qshell session (STRQSH). The **showlog** command is located in the /QIBM/ProdData/WebAS5/PME/bin/ directory. Change to this directory and run the following command from there:

```
showlog /QIBM/UserData/WebAS5/Base/InstanceName/logs/activity.log
```

See Figure 10-14.

```
QSH Command Entry

$
> cd /qibm/proddata/webas5/pme/bin
$
> showlog /qibm/userdata/webas5/base/itsowcs06/logs/activity.log
$LANG = en_US
$CODESET = ISO8859_1
-----
ComponentId:    IBM Workplace
ProcessId:     175704/QEJBSVR/MAIL_SERVE
ThreadId:      d878f831
SourceId:      com.ibm.workplace.mailbox.compact
ClassName:
MethodName:
Manufacturer:  IBM

===>
F3=Exit  F6=Print F9=Retrieve F12=Disconnect
F13=Clear F17=Top F18=Bottom F21=CL command entry
```

Figure 10-14 Activity.log display

## 10.3 Traces

Traces have more detailed information than logs and are intended for be analyzed by IBM support personnel and developers. The use of the diagnostic trace is explained in detail in this section.

### 10.3.1 Diagnostic trace

The diagnostic trace helps to determine difficult problems regarding the execution, interaction, and control of the components in the server and client environment. With this option, you receive trace files with information about the time and sequence of events and methods executed from the base classes of WebSphere Application Server. You can configure a dynamic or a static trace.

Use a dynamic trace when the problem that you have occurs after the server starts successfully. These changes remain while the server is running; they are not saved. Use a static trace when the problem occurs during server startup. These changes are saved and used every time the server is started.

To enable the diagnostic trace:

1. Open the WebSphere Application Server Administrative Console and log in as the administrator.
2. In the left navigation pane, select **Troubleshooting** → **Logs and Trace**.
3. In the panel on the right, click the instance application server that you want to monitor. In this example, we click **Mail\_Server\_1**. See Figure 10-6 on page 465.
4. In the server panel, Mail\_Server\_1 in this example, click **Diagnostic trace**. See Figure 10-7 on page 465.

5. In the Diagnostic Trace panel, you can perform the following actions:
  - a. On the **Configuration** tab, you can enable the static diagnostic trace and configure it. In the Trace specification field, specify what you want to trace. See Figure 10-15 for example. You can type in the specification or use the Modify button to build one.

**Tip:** Use the Help button to the right of each parameter for more details.

Some other examples that you can use for trace specifications are:

- For debugging WebSphere Member Manager:  
`com.ibm.websphere.wmm.*=all=enabled:com.ibm.ws.wmm.*=all=enabled:WSMM=all=enabled`
- For debugging database related problems:  
`com.ibm.workplace.db.persist=all=enabled`  
`com.ibm.ws.rsadapter.*=all=enabled`  
`com.ibm.websphere.rsadapter.*=all=enabled`
- For Workplace Collaborative Learning problems:  
`com.ibm.workplace.elearn.*=all=enabled`
- For messaging problems:  
`com.ibm.workplace.msg.*=all=enabled`
- To trace messaging/address book/calendar database calls:  
`com.ibm.workplace.calendar.*=all=enabled:com.ibm.workplace.calendar.service=all=enabled:com.ibm.workplace.util.lightpersist=all=enabled:com.ibm.workplace.*=all=enabled:RRA=all=enabled`

Configuration <span>Runtime</span>	
<b>General Properties</b>	
Enable Trace	<input checked="" type="checkbox"/> Enable trace with the following specification
Trace Specification	com.ibm.workplace.mailbox.mta=all=enabled:com.ibm.workplace.mailbox.queue=all=enabled:com.ibm.workplace.mailbox.enabled  <input type="button" value="Modify..."/>
Trace Output	<input type="radio"/> Memory Buffer Maximum Buffer Size * 8 thousand entries

Figure 10-15 Configuring a diagnostic trace



- b. Click the **Runtime** tab to configure the dynamic trace. See Figure 10-16.

**Note:** You can find the trace.log file in the /QIBM/UserData/WebAS5/Base/*InstanceName*/logs/*servername* integrated file system directory. In this path, *servername* is the name of the server, which in this example is Mail\_Server\_1. Disable the trace feature when it is not required since it can degrade performance.

Figure 10-16 Runtime tab for diagnostic trace

The trace.log looks similar to the one shown in Figure 10-17.

Figure 10-17 Trace log

## 10.4 Collecting Workplace Collaboration Services diagnostics

Workplace Collaboration Services includes a collector utility used to collect diagnostic information from the server in the event of a problem. This collector utility is located in the `/QIBM/UserData/WebAS5/Base/InstanceName/WorkplaceServer/tools/collector` integrated file system directory.

You must run the collector utility manually. The collector script (`runCollector.sh`) is located in `/QIBM/UserData/WebAS5/Base/InstanceName/WorkplaceServer/tools/collector/scripts/os400/runCollector.sh`.

When you run this script, a single compressed Java archive (JAR) file is created and stored in the `/QIBM/UserData/WebAS5/Base/InstanceName/WorkplaceServer/tools/collector/out` directory. The JAR file is called `collector_YYYYMMDD_HHMMSS.jar`, for example, `collector_20050125_160845`, which indicates the date and time that the collection utility was run.

The JAR file includes logs and configuration and installation information for the application stack running on the system, including WebSphere Application Server, WebSphere Portal Server, and Workplace Collaboration Services. It also includes operating system and environmental information (network, memory, disk, and file systems). The configuration of the utility and the information that it collects is contained in several files:

- ▶ `runCollector.sh`

You can find this script in the `/QIBM/UserData/WebAS5/Base/InstanceName/WorkplaceServer/tools/collector/scripts/os400` directory. It is the simple, front-end, script-defining parameters for install directories and collector configuration files.

- ▶ `collector.property`

You can find this script in the `/QIBM/UserData/WebAS5/Base/InstanceName/WorkplaceServer/tools/collector/scripts/os400` directory. It has the environmental parameters used by collection utility itself, including install paths and the relational database type. These parameters are set by the install program, are but commented in case they need to be modified.

- ▶ `workplace.inventory`

You can find this file in the `/QIBM/UserData/WebAS5/Base/InstanceName/WorkplaceServer/tools/collector/scripts` directory. It is the default inventory file that defines the diagnostic data to be collected, which can be easily modified to alter collection. Alternatively, you can run the collector using a different inventory file, by changing the appropriate parameter in the `runCollector` script.

**Note:** Component-specific collectors are also included in the installation for the Learning and Messaging components.

To run the `runCollector.sh` command from Qshell environment:

1. At a Qshell (STRQSH) command prompt, enter the following command:

```
cd /qibm/userdata/webas5/base/InstanceName/WorkplaceServer/tools/collector/scripts/os400
```

Here *InstanceName* represents the name of your Workplace Collaboration Services server.

2. Type the following command to run the collector tool as shown in Figure 10-18:

```
QSH Command Entry
$
> cd
/qibm/userdata/webas5/base/itsowcs06/WorkplaceServer/tools/collector/scripts/os400
$
> runCollector.sh
Lotus Workplace Data Collection
  Creating property file ...
  ...
/qibm/userdata/webas5/base/itsowcs06/WorkplaceServer/tools/collector/scripts/os400/collector.property ...
  ... Created property file
CPC7301: File WPSNAPSHOT created in library QLWP25.
CPCA081: Stream file copied to object.
CPC3703: 1 objects restored from QWPSDIAG to QLWP25.
```

- The output goes to a JAR file in the `/QIBM/UserData/WebAS5/Base/InstanceName/WorkplaceServer/tools/collector/out` directory. To verify that the JAR file was created, review the out directory by typing the following command on an i5/OS command line:  

```
WRKLNK '/QIBM/UserData/WebAS5/Base/InstanceName/WorkplaceServer/tools/collector/out/'
```

Here *InstanceName* represents the name of your Workplace Collaboration Services server. See Figure 10-19.

```
Work with Object Links
```

Directory . . . . : /QIBM/UserData/WebAS5/Base/ITSOWCS06/WorkplaceServer >

```
.....
:                               Object link                               :
:   /QIBM/UserData/WebAS5/Base/ITSOWCS06/WorkplaceServer/tools/collector :
:   /out/collector_20050428_170804.jar                                   :
:                                                                       :
:                                                                       :
:                                                                       :
:                                                                       :
:                                                                       :
:                                                                       :
:                                                                       :
:                                                                       :
:                                                                       :
:                                                                       :
:                               Bottom                                  :
:   F12=Cancel                                                         :
:                                                                       :
:                                                                       :
:.....
```

Bottom

Parameters or command  
===>

F3=Exit    F4=Prompt    F5=Refresh    F9=Retrieve    F12=Cancel    F17=Position to  
F22=Display entire field    F23=More options

- You can drag the JAR file to a workstation using iSeries Navigator. You can then either convert it to a .zip file for inspection, as shown in Figure 10-20, or send it to IBM Support for analysis.

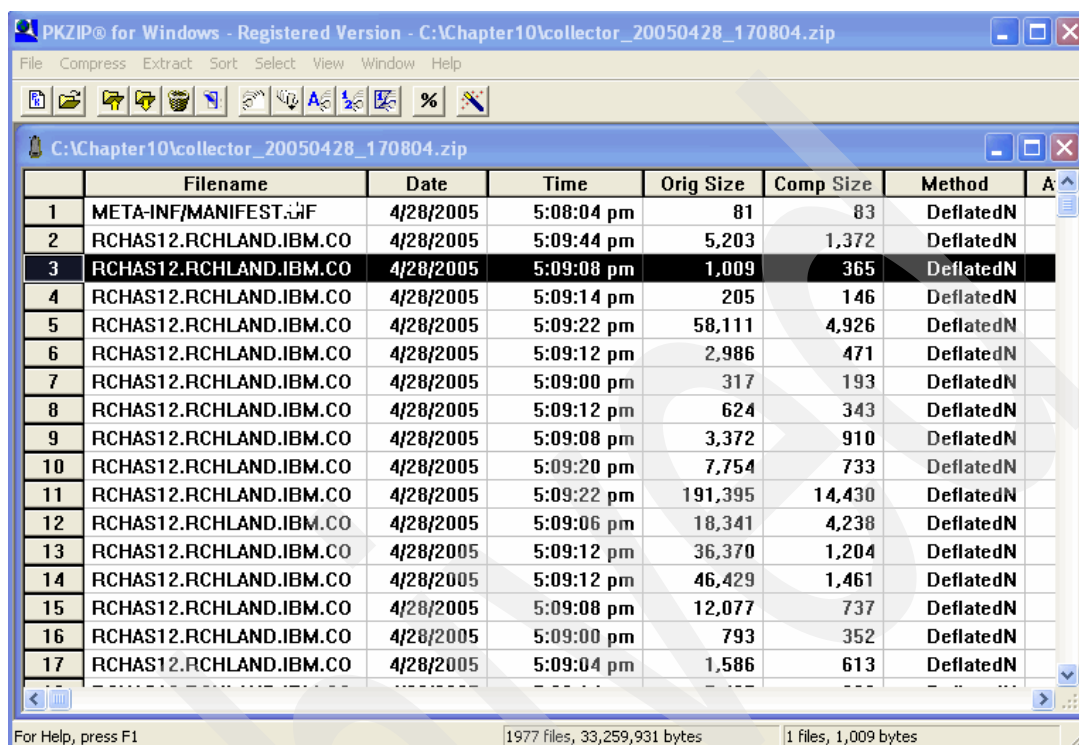


Figure 10-20 The .zip file after being renamed from the JAR file as displayed on a workstation

You can also view the file as shown in Figure 10-21.



Figure 10-21 A log file as displayed from the newly renamed .zip file

## 10.5 Troubleshooting networking issues

When troubleshooting general networking issues, you must consider the best tools to assist with this process. Where relevant, we have documented these considerations concerning the tools that are readily available on i5/OS and require installation on your PC.

There are a number of common problems areas associated with troubleshooting networking issue. The most significant are:

- ▶ TCP/IP settings
- ▶ Ports being used
- ▶ User connections
- ▶ Firewalls
- ▶ Starting and running HTTP Administration
- ▶ Using the LDAP directory
- ▶ Using the DB2 database
- ▶ Starting and running the host servers
- ▶ Starting and running the remote command server

**Tip:** To check the status of the HTTP Administration or the Remote Command Server, for example, you can open iSeries Navigator and click **Network** → **Servers** → **TCP/IP** for the HTTP Administration or click **Network** → **Servers** → **iSeries Access** for the Remote Command. To start the host servers, you can use the **strhostsvr** i5/OS CL command.

### 10.5.1 Diagnosing general TCP/IP issues

It is essential to be certain of the TCP/IP configuration that is used by your infrastructure. When using Workplace Collaboration Services, always use the fully qualified host name for network addressing.

Ideally the networking components should be documented as part of the planning phase before you install and configure your system. If in doubt, verify the configurations and document them in a simple table as shown in Table 10-1.

Table 10-1 Example network configuration checklist

Server	IP address	Host name
ITSOWCS02	10.1.1.63	ITSOWCS02.RCHLAND.IBM.COM
ITSOWCS09	10.1.1.64	ITSOWCS09.RCHLAND.IBM.COM

#### Troubleshooting TCP/IP address issues

There are two ways to verify the TCP/IP addresses being used:

- ▶ From an i5/OS command line, type the CFGTCP command and press Enter. On the Configure TCP/IP display, type option 1 (Work with TCP/IP interfaces) and press Enter.
- ▶ From iSeries Navigator, click **Network** → **TCP/IP Configuration** → **IPv4** → **Interfaces**.

## Troubleshooting host name issues

To verify that the correct TCP/IP addresses and host names are being used:

1. At an i5/OS command line, type the CFGTCP command and press Enter.
2. On the Configure TCP/IP display, type option 10 (Work with TCP/IP host table entries) and press Enter.
3. In the Work with TCP/IP Host Table Entries display (Figure 10-22), always place the fully qualified host name as the first entry in the Host Names list. To add a new Host Name correctly for a TCP/IP address, type 1 in the Opt field and the relevant TCP/IP address in the Internet Address field. Then press Enter.

```

                                Work with TCP/IP Host Table Entries
                                System:  RCHAS12

Type options, press Enter.
  1=Add  2=Change  4=Remove  5=Display  7=Rename

  Internet      Host
  Opt  Address   Name
-----
      10.1.1.42  ITSOWCS04.RCHLAND.IBM.COM
                        ITSOWCS04
      10.1.1.64  ITSOWCS09.RCHLAND.IBM.COM
                        ITSOWCS09

                                More...

F3=Exit  F5=Refresh  F6=Print list  F12=Cancel  F17=Position to
```

Figure 10-22 iSeries server, host table entries

4. On the Add TCP/IP Host Table Entry (ADDTCPHTE) display (Figure 10-23), complete the fields as appropriate.

```

                                Add TCP/IP Host Table Entry (ADDTCPHTE)

Type choices, press Enter.

Internet address . . . . . > '9.5.92.94'
Host names:
  Name . . . . . ITSOWCS06.RCHLAND.IBM.COM

                                + for more values
Text 'description' . . . . . ITSOWCS06

                                Bottom

F3=Exit  F4=Prompt  F5=Refresh  F12=Cancel  F13=How to use this display
F24=More keys
```

Figure 10-23 Adding an entry to the iSeries host table

5. If it is necessary to correct an existing host table entry, in the Work with TCP/IP Host Table Entries display (Figure 10-22), type 2 in the Opt field and the relevant TCP/IP address in the Internet Address field and press Enter. Re-enter any host names that are not correct.

**Note:** Before you configure a Workplace Collaboration Services server using the iSeries Create IBM Workplace wizard, you must be sure that the fully qualified name of the host is listed first in the host table, for example ITSOWCS06.RCHLAND.IBM.COM, before ITSOWCS06. If it is not listed this way, the wizard will not allow you to select the fully qualified host name for the new Workplace Collaboration Services server.

## 10.5.2 Troubleshooting port issues

Workplace Collaboration Services makes heavy usage of a wide range of different ports numbers to support a lot of the functionality, from intra-server calls such as SOAP, to server and client applications such as server to managed client synchronization. Having the skill to analyze port usage is an invaluable troubleshooting technique.

In this section, we discuss several techniques to assist with analyzing the ports that are being used and by which process.

### Viewing the ports that are in use

To verify the ports that are in use:

1. From iSeries Navigator, click **Network** → **TCP/IP Configuration** → **IPv4** → **Connections** to view the ports that are currently being used. See Figure 10-24.
2. Click the **Local Port** column to sort the list in descending order by local port number.

**Note:** We used this technique to position to higher port numbers that were of more interest to us when troubleshooting port issues. Also note that using the refresh option resequences the list and requires you to click the Local Port column again to reposition to the ports of interest.

Remote ...	Remote P...	Local Add...	Local Port	State	Idle Time	Bytes Re...	Byt
127.0.0.1	30249	127.0.0.1	32036	Established	00:00:06	19887	824
127.0.0.1	30249	127.0.0.1	32035	Established	00:00:30	23693	148
127.0.0.1	30249	127.0.0.1	32034	Established	00:00:03	21423	314
127.0.0.1	30249	127.0.0.1	32033	Established	00:00:30	1913636	339
127.0.0.1	30249	127.0.0.1	32032	Established	00:09:24	27225	108
*	*	*	32030	Listen	00:17:26	0	0
*	*	*	32029	Listen	00:17:28	0	0
127.0.0.1	8473	127.0.0.1	31706	Established	00:33:20	1217	701
127.0.0.1	8473	127.0.0.1	31705	Established	00:33:44	896	493
127.0.0.1	8473	127.0.0.1	31704	Established	00:33:44	896	493
127.0.0.1	8473	127.0.0.1	31703	Established	00:33:44	45142	721
127.0.0.1	8473	127.0.0.1	31702	Established	00:33:54	41667	283
127.0.0.1	8473	127.0.0.1	31701	Established	00:33:55	41667	283
127.0.0.1	8473	127.0.0.1	31700	Established	00:33:57	41667	283
127.0.0.1	8473	127.0.0.1	31699	Established	00:21:47	662013	463
*	*	*	30250	Listen	00:03:53	0	0
127.0.0.1	32036	127.0.0.1	30249	Established	00:00:06	8240	196
127.0.0.1	32035	127.0.0.1	30249	Established	00:00:30	14849	236
127.0.0.1	32034	127.0.0.1	30249	Established	00:00:03	3146	214
127.0.0.1	32032	127.0.0.1	30249	Established	00:09:24	10882	272
*	*	127.0.0.1	30249	Listen	00:00:06	0	0
127.0.0.1	32033	127.0.0.1	30249	Established	00:00:30	339725	191
*	*	*	30249	Listen	00:00:06	0	0

Figure 10-24 Example of using iSeries Navigator to display active ports

3. If necessary, select the port of interest and double-click it to view more details.

Alternatively, you can view the ports from the i5/OS command line:

1. From an i5/OS command line, type the NETSTAT CL command and press Enter.
2. On the Work with TCP/IP Network Status display, type option 3 (Work with TCP/IP connection status) and press Enter.
3. In the Work with TCP/IP Connection Status display, press F13 to Sort by column.
4. On the Select Column to Sort display, type 1 to select Local Port to view the ports by local port sequence and press Enter.
5. Page up and down to view the information required and type option 5 (Display details) to view more information. You can press F5 to refresh this information.

## 10.6 Troubleshooting IBM HTTP Server

Several options are available to you when troubleshooting the IBM HTTP Server. In this section, we discuss the ones that we found to be most helpful when writing this redbook.

### 10.6.1 HTTP traces

You can run a trace to dump trace information for a specific IBM HTTP Server (powered by Apache) instance. These files are created automatically if the HTTP server ends with an error during startup. Otherwise, a user can manually gather the trace by running the i5/OS Trace TCP/IP Application (TRCTCPAPP) CL command.

To view the generated file from a startup failure:

1. From a 5250 emulation session, command line, enter the following i5/OS Work with Spool File (WRKSPLF) CL command:  

```
WRKSPLF QTMHHTTP
```
2. The most current files are at the bottom of the list. Press F18 (SHIFT + F6) to see the bottom.
3. Look for an entry with a file name of QZSRHTTPTR as shown in Figure 10-25. In the User Data column, note that 326542 of QSRV326542 corresponds to the job number.



Work with All Spooled Files								
Type options, press Enter.								
1=Send    2=Change    3=Hold    4=Delete    5=Display    6=Release    7=Messages								
8=Attributes            9=Work with printing status								
Opt	File	User	Device or Queue	User Data	Sts	Total Pages	Cur Page	Copy
	QZSRHTTPTR	QTMHHTTP	QPRINT	QSRV323017	HLD	1		1
	QZSRHTTPTR	QTMHHTTP	QPRINT	QSRV324511	HLD	1		1
	QZSRHTTPTR	QTMHHTTP	QPRINT	QSRV324511	HLD	1		1
	QZSRHTTPTR	QTMHHTTP	QPRINT	QSRV326537	HLD	16		1
	QZSRHTTPTR	QTMHHTTP	QPRINT	QSRV326538	HLD	1		1
	QZSRHTTPTR	QTMHHTTP	QPRINT	QSRV326539	HLD	1		1
	QZSRHTTPTR	QTMHHTTP	QPRINT	QSRV326537	HLD	1		1
	QZSRHTTPTR	QTMHHTTP	QPRINT	QSRV326537	HLD	1		1
	<b>QZSRHTTPTR</b>	<b>QTMHHTTP</b>	<b>QPRINT</b>	<b>QSRV326542</b>	<b>HLD</b>	<b>1</b>		<b>1</b>
							Bottom	
Parameters for options 1, 2, 3 or command								
===>								
F3=Exit    F10=View 4    F11=View 2    F12=Cancel    F22=Printers    F24=More keys								

Figure 10-25 Viewing spooled files for user QTMHHTTP

4. Type 5 (Display) next to the spool file to display the file.

For information about tracing the HTTP server after the server has started or to trace a specific request, refer to "Set up logs" in the iSeries Information Center on the Web at:

<http://publib.boulder.ibm.com/infocenter/iseries/v5r3/index.jsp?topic=/rzaie/rzaieconfiglogs.htm>

## 10.6.2 Enabling plug-in logging

To turn on logging for the WebSphere Application Server plug-in, you must edit the plugin-cfg.xml file and change the following line:

LogLevel="Error" to LogLevel="Trace"

Perform the following steps to modify the plugin-cfg.xml file:

1. Map a network drive to the root directory of the integrated file system of the iSeries server.
2. Open the /QIBM/UserData/WebAS5/Base/InstanceName/config/cells/plugin-cfg.xml file with WordPad or the text editor of your choice. Here *InstanceName* represents the name of your Workplace Collaboration Services server.

3. Modify the LogLevel entry so that you see the following line as shown in Figure 10-26:

LogLevel="Trace"

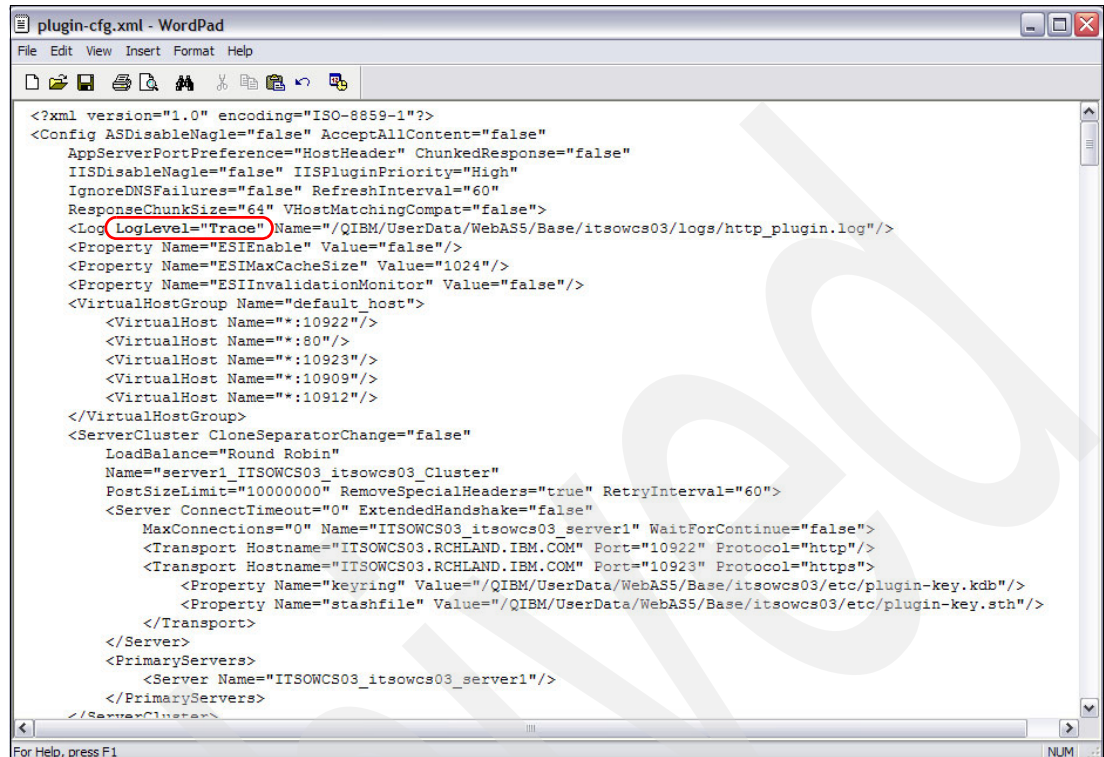


Figure 10-26 Modifying the plugin-cfg.xml file

4. Save and close the plugin-cfg.xml file.
5. Restart the HTTP server instance using the following i5/OS commands:  
ENDTCPSVR SERVER(\*HTTP) HTTPSVR(*InstanceName*)  
STRTCPSPVR SERVER(\*HTTP) HTTPSVR(*InstanceName*)
6. Run the request that you need to trace.
7. When finished, you can review the log file. By default, the log file is /QIBM/UserData/WebAS5/Base/*InstanceName*/logs/http\_plugin.log. You may also see additional log files that contain the job number of the HTTP server. See Figure 10-27.

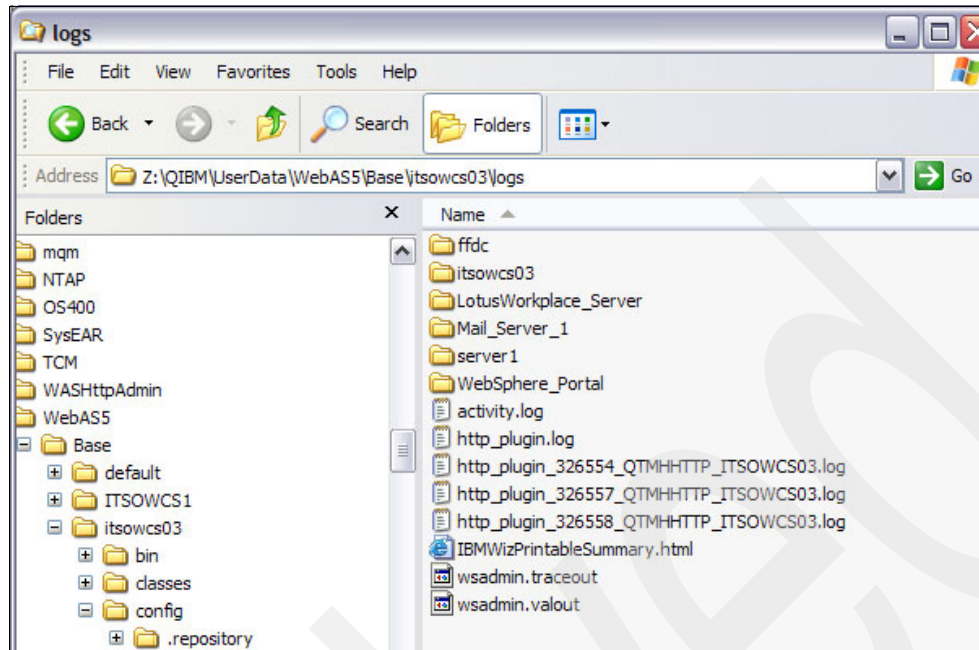


Figure 10-27 Log files for plugin-cfg.xml trace

8. When you are finished gathering data, change the plugin-cfg.xml file to refer back to a LogLevel of error and restart your HTTP server. For assistance, refer to steps 3 through 5 on page 482.

### 10.6.3 Workplace Collaboration Services Welcome page not displayed

By default, the HTTP server is not configured to display the Workplace Collaboration Services welcome page. For example, if you enter only the fully qualified host name in the Web browser for your Workplace Collaboration Services server, you will most likely see a page like the example shown in Figure 10-28.

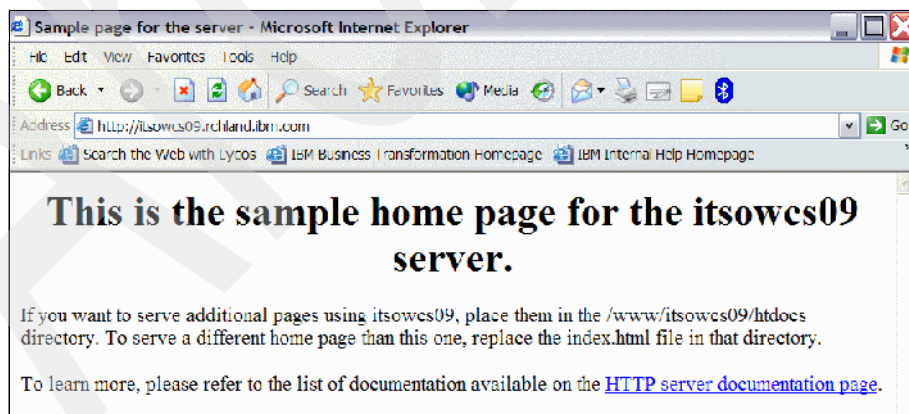


Figure 10-28 Sample home page

To display the IBM Workplace Collaboration Services Welcome page, you must type a URL similar to the following example:

`http://itsowcs09.rchland.ibm.com/lwp/workplace`

To avoid this and get the IBM Workplace Collaboration Services Welcome page without typing the complete URL, you must replace the index.html file located in the `/www/InstanceName/htdocs` directory:

1. On your workstation create a text file called index.html.
2. Type the following line in the file, where *fullyqualifiedhostname* is your Workplace Collaboration Services server's fully qualified host name:  

```
<meta HTTP-EQUIV="REFRESH" content="0; url=http://fullyqualifiedhostname/lwp/workplace">
```
3. Save and close the file.
4. Map a drive to the iSeries server and go to the `/www/InstanceName/htdocs` directory. Replace the index.html file with your new one.
5. Open a Web browser using the URL of only the fully qualified name of your Workplace Collaboration Services server, for example:  
`http://itsowcs09.rchland.ibm.com`  
You should now be redirected to the IBM Workplace Collaboration Services server welcome page.

#### 10.6.4 Internal server error displayed connecting to a server

If you see an error similar to the one in shown in Figure 10-29, verify whether all the servers in the Workplace Collaboration Services instance are up and running properly.

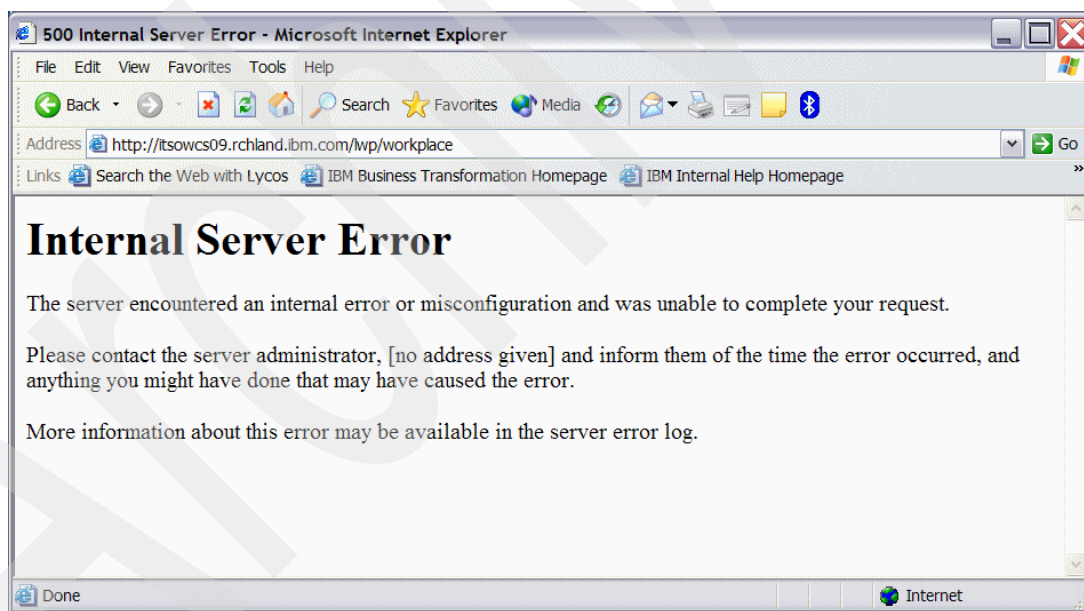


Figure 10-29 Internal Server Error

For more information, refer to the “Troubleshoot” section in the iSeries Information Center on the Web at the following address:

<http://publib.boulder.ibm.com/infocenter/iserics/v5r3/index.jsp?topic=/rzaie/rzaietrouble.htm>

## 10.7 Troubleshooting LDAP

When troubleshooting LDAP issues, consider which LDAP server is running and where it is located in your networking topology.

**Important:** Before you start your Workplace Collaboration Services server, you must be sure that the LDAP directory is up and running, if security is enabled. Otherwise, your Workplace Collaboration Services server will not start properly. Similarly, you may also experience problems when ending your Workplace Collaboration Services server if the LDAP server is ended.

Several common problem areas are associated with using LDAP of which the most significant problems are:

- ▶ Fundamental networking connectivity
- ▶ Incorrect LDAP schema information being used
- ▶ Incorrect LDAP filters being used
- ▶ Incorrect bind credentials for system level bindings
- ▶ Incorrect bind credentials for end user authentication
- ▶ The LDAP server defined in the WebSphere Application Server Administrative Console

Some other issues to be aware of include:

- ▶ LDAP server is not up and running.
- ▶ Anonymous access is not granted to the LDAP server.
- ▶ The LDAP port is configured incorrectly or is in use by another process.
- ▶ Firewall issues exist.
- ▶ The required LDAP attributes required are missing. For more information, refer to Chapter 3, “Preparing your directory server” on page 41.
- ▶ If using the Domino LDAP server, be careful when the directory is upgraded to another version so you do not lose the required fields, attributes, and schema. For additional information, refer to 3.4, “Preparing the Domino server for LDAP” on page 57.
- ▶ If SSO is used, it is configured incorrectly. Be sure you use the fully qualified host name when accessing your servers.
- ▶ The administration user is not created correctly.
- ▶ Authorities for existing containers are not set up correctly.
- ▶ If using the Microsoft Active Directory, the administrative user (for example, wpsadmin) must exist.
- ▶ The LDAP configuration properties are incorrect.

### 10.7.1 Verifying fundamental networking connectivity

The simplest test is to use the Telnet command with the relevant port number to verify that you can connect to your LDAP server. This is a useful diagnostic technique to ensure basic networking connectivity.

**Remember:** Perform these steps using a 5250 session on the iSeries server that needs to make the connection to the LDAP server. For example, enter the commands from an i5/OS command line on the system running your Workplace Collaboration Services server. This ensures that you are checking connectivity from your iSeries server and not from your local PC workstation, which may give different results.

Also be aware that the responses you receive when doing this may be different from those that you might expect based on the experience of using other systems. For example, using Telnet to troubleshoot an LDAP issue returns different results than using the same technique on Linux or Microsoft Windows platforms. Where this occurs, we have made note within the text.

For example, use the following Telnet command and replace `ids51ldap.rchland.ibm.com` with the name of your LDAP server:

```
TELNET RMTSYS('ids51ldap.rchland.ibm.com') PORT(389)
```

This returns the following response if *successful*:

```
TELNET session ended. Connection closed.
```

If the system does not respond within a minute, then the test has failed and you must use System Request option 2 (\*SYSTEM/ENDRQS) to end the request as shown in Figure 10-30.

```
Command Entry                                RCHAS12
                                           Request level:  2

Previous commands and messages:
> TELNET RMTSYS('ids51ldap.notesdev.ibm.com') PORT(389)
TELNET session ended. Connection closed.
> TELNET RMTSYS('itsolwp1.rchland.ibm.com') PORT(389)
Last request at level 2 ended.

Bottom

Type command, press Enter.
==> TELNET RMTSYS('itsolwp1.rchland.ibm.com') PORT(389)

F3=Exit   F4=Prompt   F9=Retrieve   F10=Include detailed messages
F11=Display full   F12=Cancel   F13=Information Assistant   F24=More keys
```

Figure 10-30 Example of an unsuccessful Telnet connection to an LDAP server

## 10.7.2 Verifying LDAP information

Occasionally it is necessary to verify that the information you want to use is what is actually being returned by the LDAP server. For example, you might need to confirm that the `wpsadmin` account is in the correct Organization (O) or Domain Components (DC). You can check this in a number of ways using a standard Web browser, using a command line tool, using the Lotus Notes client, or using an LDAP viewer.

For information about testing the IBM Directory server, refer to 3.3.5, “Testing the IBM Directory Server” on page 56. For information about testing a Lotus Domino server, refer to 3.4.5, “Testing the Domino LDAP server configuration” on page 74.

For other LDAP servers, you can use the **ldapsearch** command to search for entries in the LDAP. For examples on the usage of the **ldapsearch** command, see the Using ldapsearch Web site at the following address:

<http://www.ibm.com/support/docview.wss?rs=899&uid=swg27002627>

### 10.7.3 Checking incorrect bind credentials using the IBM Directory Server

For additional information and a useful troubleshooting chapter, refer to the *iSeries IBM Directory Server (LDAP)* guide at the following address:

<http://publib.boulder.ibm.com/infocenter/iseries/v5r3/topic/rzahy/rzahy.pdf>

There are two approaches for checking for issues with the IBM Directory Server: using the i5/OS command line and using iSeries Navigator.

#### Using the i5/OS command line

To check for issues with the IBM Directory Server using the i5/OS command line:

1. From an i5/OS command line, enter the Work with Active Jobs (WRKACTJOB) CL command and press Enter.
2. On the Work with Active Jobs display (Figure 10-31), page down to the appropriate subsystem, the default being QSYSWRK. Type option 5 (Work with) next to job QDIRSRV job and press Enter.

```

                                Work with Active Jobs
                                RCHAS12
                                11/17/04 17:16:33
CPU %:      1.8      Elapsed time:  00:29:59      Active jobs:  300

Type options, press Enter.
  2=Change  3=Hold  4=End  5=Work with  6=Release  7=Display message
  8=Work with spooled files 13=Disconnect ...

Opt Subsystem/Job  User      Type  CPU %  Function      Status
5   QDIRSRV       QDIRSRV  BCH    .0    PGM-QGLDSVR   SIGW
   QGLDPUBA       QDIRSRV  ASJ    .0    PGM-QGLDPUBA  SIGW
   QGLDPUBE       QDIRSRV  ASJ    .0    PGM-QGLDPUBE  SIGW
   QJVACMSRV      BYRD     BCI    .0    JVM-org.eclipse JVAW
   QMSF           QMSF     BCH    .0                      DEQW
   QNEOSOEM       QUSER    ASJ    .0    PGM-QNEOSOEM  TIMW
   QNEOSOEM       QUSER    BCH    .0    PGM-QNEOSOEM  TIMW
   QNEOSOEM       QUSER    BCH    .0    PGM-QNEOSOEM  TIMW
   QNPSERVD       QUSER    BCH    .0                      SELW

                                More...

Parameters or command
===>
F3=Exit   F5=Refresh   F7=Find   F10=Restart statistics
F11=Display elapsed data  F12=Cancel  F23=More options  F24=More keys

```

Figure 10-31 Sample Work with Active Jobs panel

3. On the Work with Job display, type option 10 (Display job log) and press Enter.
4. On the Display Job Log display, press F10 (Display detailed messages).
5. If necessary, page down until you see the message "Bind error with IBM Directory Server". Position the cursor over this message and press F1 to see more information.
6. Review the information.



## Using iSeries Navigator

Perform the following steps to check for issues with the IBM Directory Server using iSeries Navigator:

1. In iSeries Navigator, expand **Network** → **Servers**.
2. Right-click **Directory** and select **Server Jobs**.
3. In the Server jobs for IBM Directory Server window, right-click **Qdirsrv** and click **Job Log** as shown in Figure 10-32.

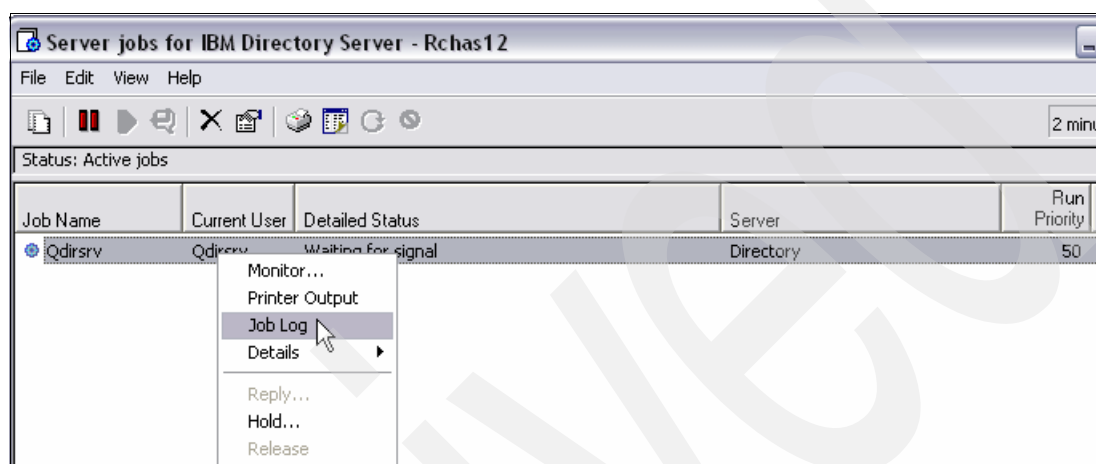


Figure 10-32 Selecting the job log of an active IBM Directory Server

4. Select any relevant **Bind error with IBM Directory Server** errors and double-click to open them as shown in Figure 10-33.

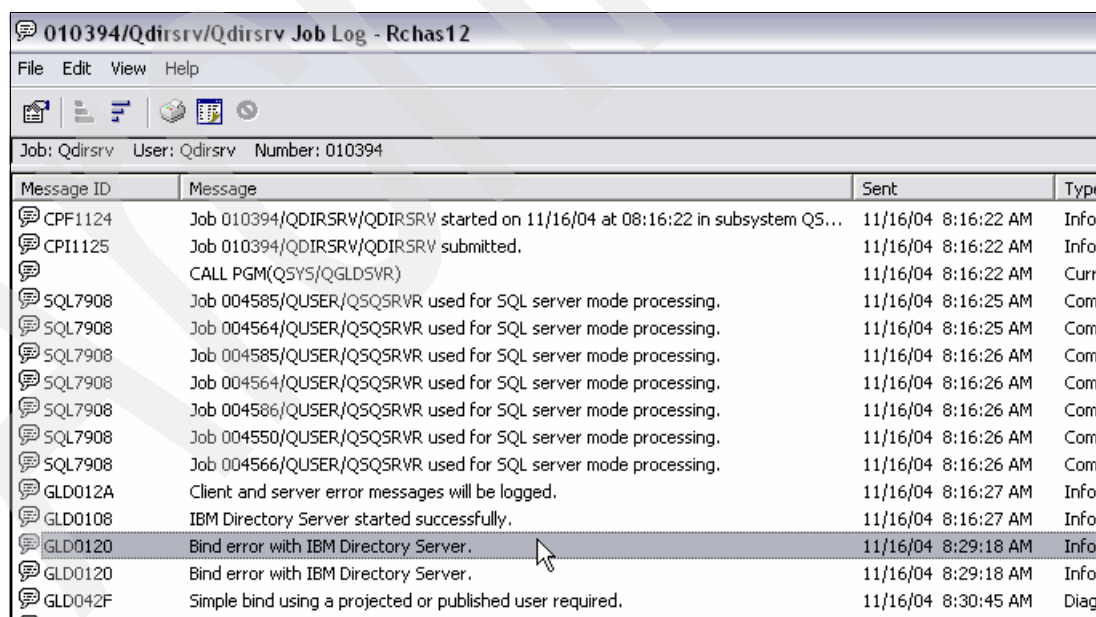


Figure 10-33 Selecting a bind error message

5. Review the information. If necessary, refer to “Troubleshoot Directory Server” in the iSeries Information Center at the following Web address:

<http://publib.boulder.ibm.com/infocenter/iseres/v5r3/index.jsp?topic=/rzahy/rzahytsh-po.htm>



## Verifying the LDAP server that is being used

It is important to verify that the Workplace Collaboration Services server has the correct LDAP server specified as explained in the following steps:

1. Go to the WebSphere Application Server Administrative Console and log in with an administrator ID.
2. In the left navigation pane, click **Security** → **User Registries** → **LDAP**.
3. In the right panel, you can view the current LDAP settings and verify they are correct. See Figure 10-34.

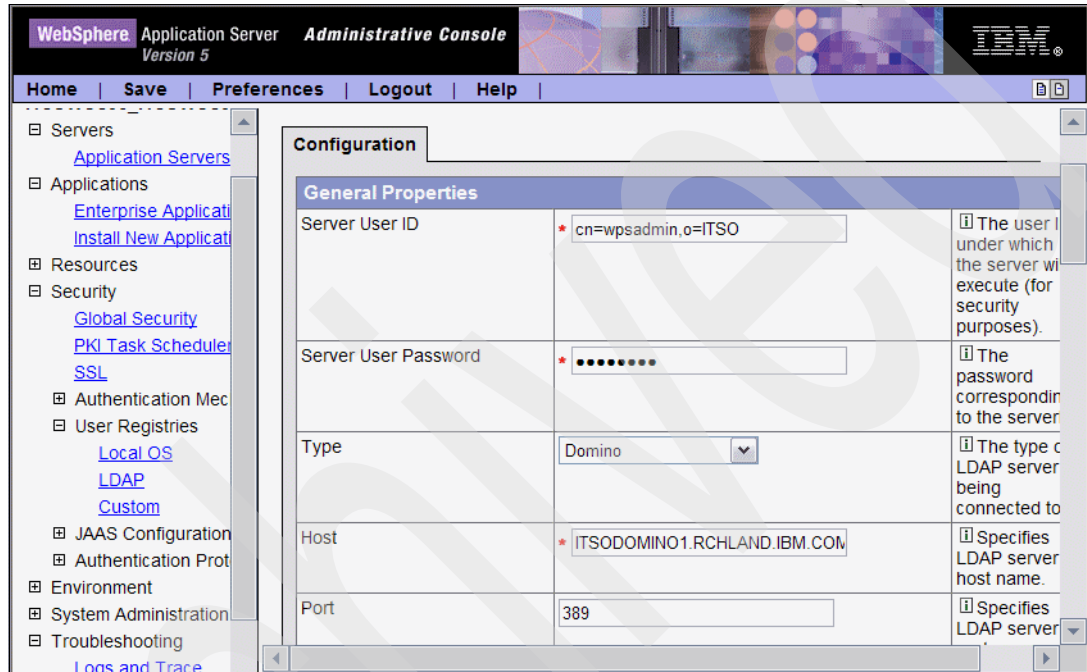


Figure 10-34 LDAP settings as shown in the WebSphere Application Server Administrative Console

## 10.8 Troubleshooting Workplace Collaboration Services

In this section, we recommend steps for troubleshooting problems that might occur with Workplace Collaboration Services server itself. See 10.2.1, “Installation logs” on page 461, for other starting points in the troubleshooting process.

Several common problem areas are associated with Workplace Collaboration Services server. Some of the most significant areas are:

- ▶ Users unable to login
- ▶ Pages not displaying newly added content
- ▶ Workplace Messaging not working
- ▶ Knowing whether a Workplace Collaboration Services server is active
- ▶ Determining the port range used by a Workplace Collaboration Services server
- ▶ Determining the port used by a WebSphere Application Server Administrative Console

### 10.8.1 Diagnosing why users cannot login

Users cannot log in if there is a problem with the LDAP server. We recommend that you start troubleshooting by testing the LDAP server:

1. Verify that you can log in with your own account and another account to verify that the authentication mechanism is operative.
2. Verify that the LDAP schema has the correct attributes for your users. Ensure that the users have this attribute populated. Verify that your LDAP server is prepared to be used with Workplace.

For additional information, refer to 3.3, “Preparing the IBM Directory Server” on page 45, or 3.4, “Preparing the Domino server for LDAP” on page 57.

If your troubleshooting indicates that there is a problem with the LDAP server, refer to 10.7, “Troubleshooting LDAP” on page 485.

### 10.8.2 Pages not displaying newly added content

If a user is currently logged into a Workplace Collaboration Services page and a second user adds new elements to that page, for example a new portlet or Link page, the first user may have to log out and log back in to see that new content. This is because the underlying WebSphere Portal Server has cached the original page for the first user. The quickest way to force the page to be reloaded is log out and then log in again.

### 10.8.3 Workplace Messaging not working

In the following steps, we point you to some of the places to look to solve messaging problems:

1. Open the WebSphere Application Server Administration Console.
2. Review the SystemOut.log and SystemErr.log logs for Mail\_Server\_1. See 10.2.3, “JVM logs” on page 465, for details. In the SystemOut.log file, check the following items:

- Verify that you see the following line:

```
MailService started.
```

- Check the following lines to see if the values are started or true. This is so the mail service can route e-mail:

```
mta.receiver.initialstate=started
mta.receiver.enabled=true
mta.handler.initialstate=started
mta.handler.enabled=true
mta.deliverer.initialstate=started
mta.deliverer.enabled=true
```

- Verify the queue directories:

```
filestore.local.root=
filestore.net.root=/QIBM/UserData/WebAS5/Base/ITSOWCS06/WorkplaceServer/qfilestore
```

It is better if the filestore.local.root is equal to blank when talking about single server configurations and to have the filestore.net.root pointing to a local drive.

3. Verify the domains that are considered local for Workplace Collaboration Services by using one of the following options:
  - Open the WebSphere Application Server Administrative Console and click **Lotus Workplace** → **Mail Cell-Wide Settings**. Review the Domains that are considered local setting.
  - Review the value for the local.domain.list setting in the SystemOut.log file of the Mail\_Server\_1.
4. Verify that every user has a valid e-mail address in the LDAP directory. You can use a Web browser or an LDAP viewer tool to see them. Alternatively, you can verify the e-mail address from the IBM Workplace Collaboration Services page by clicking the **Edit my profile** link.
5. Verify that port 25 for Simple Mail Transfer Protocol (SMTP) is being used by Workplace Collaboration Services. You can test this by using the Telnet command either from an i5/OS command line (TELNET *InstanceName* PORT(25)) or from your PC workstation by verifying the name and type of system that responds. For example, you may see a response stating “220 RCHAS12.RCHLAND.IBM.COM Lotus Workplace Messaging Ready”.
6. If you are configuring new mail cells to route mail to some other mail systems in the same domain, verify the mta.cell.map field in the SystemOut.log for the Mail\_Server\_1 server.  
 You may have to manually add the local cell name to this field by modifying the messaging.xml file. Open this file found in the /QIBM/UserData/WebAS5/Base/*InstanceName*/config/cells/*local cell name*/ integrated file system directory.  
 Edit the second line, the one that starts with <nagano:LotusMail xmi:version="2.0" xmlns:xmi=. Change the end of the line from deletionStubRetention="90"> to deletionStubRetention="90" cellName="*YourCellName*">, where *YourCellName* represents the name of your local mail cell definition.
7. In the SystemErr.log, look in these sections for exceptions:
  - com.ibm.workplace.msg.mta
  - com.ibm.workplace.msg.queue
  - com.ibm.workplace.msg.qbase
  - com.ibm.workplace.net.smtp

#### 10.8.4 Knowing if a Workplace Collaboration Services server is active

In some situations, it might be necessary to check whether a Workplace Collaboration Services server is active. For information about finding the individual jobs, refer to 5.3, “Verifying that a Workplace Collaboration Services server is active” on page 214. To verify the status, you can use IBM Web Administration for iSeries or the Qshell environment.

##### Using IBM Web Administration for iSeries

You can verify a Workplace Collaboration Services server is started in IBM Web Administration for iSeries by looking at the list of servers and their status as explained in the following steps. They are either stopped or started.

1. To access IBM Web Administration for iSeries, point your Web browser to your fully qualified iSeries host name on port 2001:  
`http://iSeriesHostName.domain:2001/HTTPAdmin`  
 In this example, we type:  
`http://rchas12.rchland.ibm.com:2001/HTTPAdmin`
2. When prompted, enter your i5/OS user profile and password to log on to the IBM Web Administration for iSeries. Click **OK**.

3. Click the **Manage** tab, then the **All Servers** tab, and then the **All Application Servers** tab.
4. In the right panel (Figure 10-35), review the Status column in the list of servers to see the status.

Cannot find server - Microsoft Internet Explorer

File Edit View Favorites Tools Help

Address <http://rchas12.rchland.ibm.com:2001/HTTPAdmin>

Links Search the Web with Lycos IBM Business Transformation Homepage IBM Internal Help Homepage IBM Standard Software Installer

IBM Web Administration for iSeries

Setup **Manage** Advanced Related Links

**All Servers** HTTP Servers | Application Servers | ASF Tomcat Servers

Common Tasks and Wizards

- Create HTTP Server
- Create Application Server
- Migrate Original to Apache
- Create WebSphere Portal
- Create IBM Workplace

Server	Version	Status	Address
<a href="#">default/server1</a>	5.0 Base	Running	*:2809,8880,9043,9080,9090
<a href="#">IBS/IBS</a>	5.0 Express	Stopped	*:2030,2035,2039,2040,2041
<a href="#">ITSOWCS01/Mail_Server_1</a>	2.5 (workplace)	Stopped	*:30110,30111,30124,30125,30128,30129,30
<a href="#">ITSOWCS01/server1</a>	2.5 (workplace)	Stopped	*:30110,30111,30113,30114,30122,30123,30
<a href="#">ITSOWCS01/WebSphere_Portal</a>	2.5 (workplace)	Stopped	*:30100,30101,30109,30110,30111,30112,30
<a href="#">ITSOWCS02/Mail_Server_1</a>	2.5 (workplace)	Stopped	*:40210,40211,40224,40225,40228,40229,40
<a href="#">ITSOWCS02/server1</a>	2.5 (workplace)	Stopped	*:40210,40211,40213,40214,40222,40223,40
<a href="#">ITSOWCS02/WebSphere_Portal</a>	2.5 (workplace)	Stopped	*:40200,40201,40209,40210,40211,40212,40
<a href="#">ITSOWCS03/Mail_Server_1</a>	2.5 (workplace)	Stopped	*:30310,30311,30324,30325,30328,30329,30
<a href="#">ITSOWCS03/server1</a>	2.5 (workplace)	Stopped	*:30310,30311,30313,30314,30322,30323,30
<a href="#">ITSOWCS03/WebSphere_Portal</a>	2.5 (workplace)	Stopped	*:30300,30301,30309,30310,30311,30312,30
<a href="#">ITSOWCS04/Mail_Server_1</a>	2.5 (workplace)	Stopped	*:30410,30411,30424,30425,30428,30429,30
<a href="#">ITSOWCS04/server1</a>	2.5 (workplace)	Stopped	*:30410,30411,30413,30414,30422,30423,30
<a href="#">ITSOWCS04/WebSphere_Portal</a>	2.5 (workplace)	Stopped	*:30400,30401,30409,30410,30411,30412,30
<a href="#">ITSOWCS05/Mail_Server_1</a>	2.5 (workplace)	Stopped	*:40510,40511,40524,40525,40528,40529,40
<a href="#">ITSOWCS05/server1</a>	2.5 (workplace)	Stopped	*:40510,40511,40513,40514,40522,40523,40
<a href="#">ITSOWCS05/WebSphere_Portal</a>	2.5 (workplace)	Stopped	*:40500,40501,40509,40510,40511,40512,40
<a href="#">ITSOWCS06/Mail_Server_1</a>	2.5 (workplace)	Stopped	*:30610,30611,30624,30625,30628,30629,30
<a href="#">ITSOWCS06/server1</a>	2.5 (workplace)	Stopped	*:30610,30611,30613,30614,30622,30623,30
<a href="#">ITSOWCS06/WebSphere_Portal</a>	2.5 (workplace)	Starting	*:30600,30601,30609,30610,30611,30612,30

Refresh Start Stop Restart

Manage Details Delete Rename

Figure 10-35 Reviewing server status with IBM Web Administration for iSeries

## Using Qshell

You can verify the status of the Workplace Collaboration Services servers in an instance by using the **serverstatus** Qshell command as explained in the following steps:

1. From an i5/OS command line, type the STRQSH command and press Enter to open Qshell.
2. Enter the **serverstatus** command as shown in Figure 10-36. You can replace the name of the application server that you want to verify; it can be Mail\_Server\_1 or WebSphere\_Portal for example, instead of server1. Note that the status is STARTED in this case.

```
QSH Command Entry

$
> /qibm/proddata/webas5/pme/bin/serverstatus server1 -instance itsowcs06 -username
wpsadmin -password wpsadmin
ADMU0116I: Tool information is being logged in file
          /QIBM/UserData/WebAS5/Base/ITSOWCS06/logs/server1/serverStatus.log
ADMU0500I: Retrieving server status for server1
ADMU0508I: The Application Server "server1" is STARTED
$
```

Figure 10-36 The serverStatus command as entered in Qshell

3. Open the log displayed in the ADMU0116I message, if required as shown in Figure 10-37.

```
***** Start Display Current Environment *****
Host Operating System is OS/400, version V5R3M0
Java version = 1.3.1, Java Compiler = jitc_de, Java VM name = Classic VM
was.install.root = /QIBM/ProdData/WebAS5/PME
user.install.root = /QIBM/UserData/WebAS5/Base/ITSOWCS06
Java Home = /QIBM/ProdData/Java400/jdk13
ws.ext.dirs =
/QIBM/ProdData/WebAS5/PME/java/tools:/QIBM/UserData/WebAS5/Base/ITSOWCS06/classes:/QIBM/
ProdData/WebAS5/PME/classes:/QIBM/ProdData/WebAS5/PME/lib/server:/QIBM/ProdData/WebAS5/P
ME/lib:/QIBM/UserData/WebAS5/Base/ITSOWCS06/lib/ext:/QIBM/ProdData/WebAS5/PME/lib/ext:/Q
IBM/ProdData/WebAS5/PME/deploytool/itp/plugins/com.ibm.etools.ejbdeploy/runtime:/QIBM/Pr
odData/HTTP/Public/jt400/lib:/QIBM/ProdData/mqm/java/lib
Classpath =
/QIBM/UserData/WebAS5/Base/ITSOWCS06/properties:/QIBM/ProdData/WebAS5/PME/properties:/QI
BM/ProdData/WebAS5/PME/lib/command400.jar:/QIBM/ProdData/WebAS5/PME/lib/xerces.jar:/QIBM
/ProdData/WebAS5/PME/lib/bootstrap.jar:/QIBM/ProdData/WebAS5/PME/lib/j2ee.jar:/QIBM/Pro
dData/WebAS5/PME/lib/lmproxy.jar:/QIBM/ProdData/WebAS5/PME/lib/urlprotocols.jar:/QIBM/Pro
dData/OS400/jt400/lib/jt400Native.jar
Java Library path = /QSYS.LIB/QSHELL.LIB:/QSYS.LIB/QGPL.LIB:/QSYS.LIB/QTEMP.LIB
Current trace specification = *=all=disabled
***** End Display Current Environment *****
[5/3/05 16:20:28:758 CDT] 2850b4b8 ManagerAdmin I TRAS0017I: The startup trace state is
*=all=disabled.
[5/3/05 16:20:28:772 CDT] 2850b4b8 AdminTool A ADMU0500I: Retrieving server status
for server1
[5/3/05 16:21:27:312 CDT] 2850b4b8 AdminTool A ADMU0508I: The Application Server
"server1" is STARTED
```

Figure 10-37 Serverstatus.log

## 10.8.5 Determining the port range used

Occasionally it might be necessary to determine the port range that is being used by a Workplace Collaboration Services server without having accessing the WebSphere Application Server Administrative Console. Two methods are available for determining the port range:

- ▶ Using IBM Web Administration for iSeries
- ▶ Viewing the Server.xml file

### Using IBM Web Administration for iSeries

To determine the port range that is being used by a Workplace Collaboration Services server using IBM Web Administration for iSeries:

1. To access IBM Web Administration for iSeries, point your Web browser to your fully qualified iSeries host name on port 2001:  
`http://iSeriesHostName.domain:2001/HTTPAdmin`  
In this example, we enter:  
`http://rchas12.rchland.ibm.com:2001/HTTPAdmin`
2. When prompted, enter your i5/OS user profile and password to log on to the IBM Web Administration for iSeries. Click **OK**.
3. Click the **Manage** tab, then click the **All Servers** tab, and then click the **All Application Servers** tab.
4. In the right panel, in the list of servers, you can see the range of ports used by that a particular Workplace Collaboration Services server. See Figure 10-35 on page 492.
5. You can also use the printable summary created when you configured a Workplace Collaboration Services server using the iSeries Create IBM Workplace wizard as explained in the following steps:
  - a. Click the **Manage** tab and then the **Application Servers** tab and select your Workplace Collaboration Services server.
  - b. In the left frame, click **View Create Summary**. You see the summary as shown in the example in Figure 10-38. For an example of a complete report, see Appendix C, “Workplace Collaboration Services configuration summary” on page 519.

**Note:** These ports are the ones used when the Workplace Collaboration Services server was created. If these ports are modified afterwards, the creation summary does not show those changes.

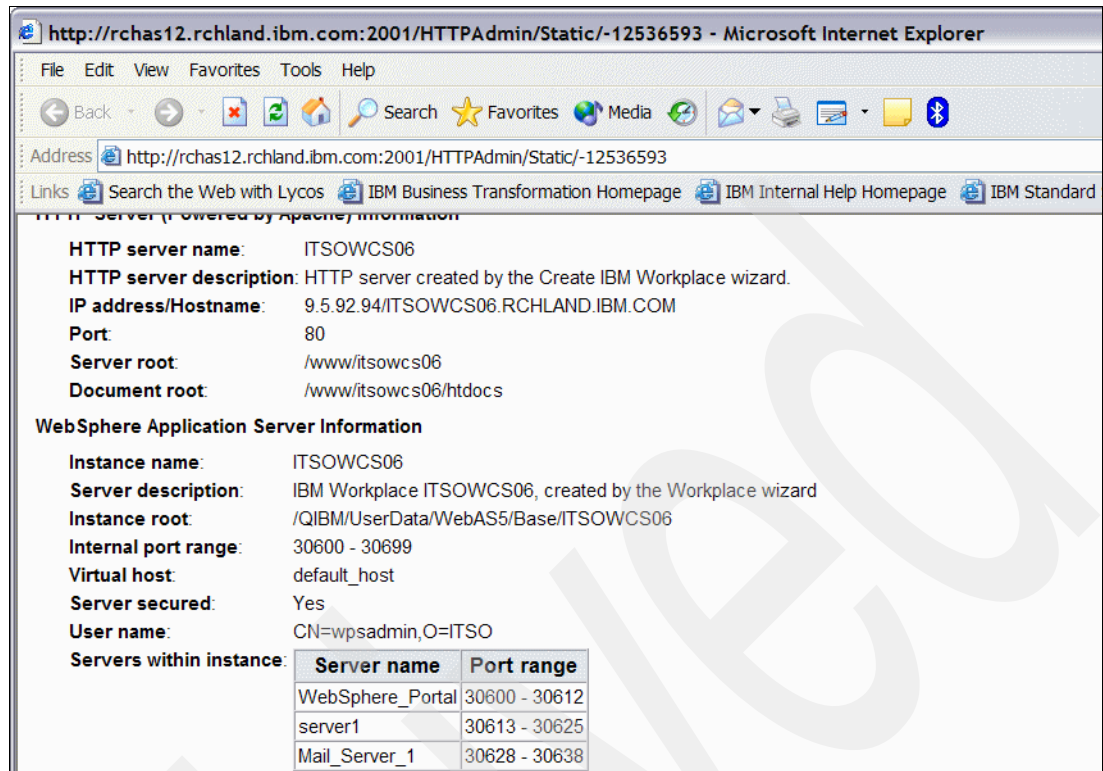


Figure 10-38 Workplace Collaboration Services server creation summary

## Viewing the server.xml file

To determine the port range that is being used by a Workplace Collaboration Services server using the server.xml file:

1. Locate the server.xml file, which is located in the following integrated file system directory on the iSeries server:

```
/QIBM/UserData/WebAS5/Base/InstanceName/config/cells/LocalMailCellName/nodes
/LocalMailCellName/servers/ApplicationServerName
```

Here *InstanceName* represents the name of your Workplace Collaboration Services server name, *LocalMailCellName* represents the name of your local mail cell, and *ApplicationServerName* is the name of the application server, for example, Mail\_Server\_1. In this example, we enter:

```
/QIBM/UserData/WebAS5/Base/itsowcs09/config/cells/itsowcs09_itsowcs09/nodes/itsowcs09_itsowcs09/servers/Mail_Server_1
```



2. Search for the text `transports xmi:type="applicationserver.webcontainer:HTTPTransport"`. The value should look something similar to the example shown in Figure 10-39.

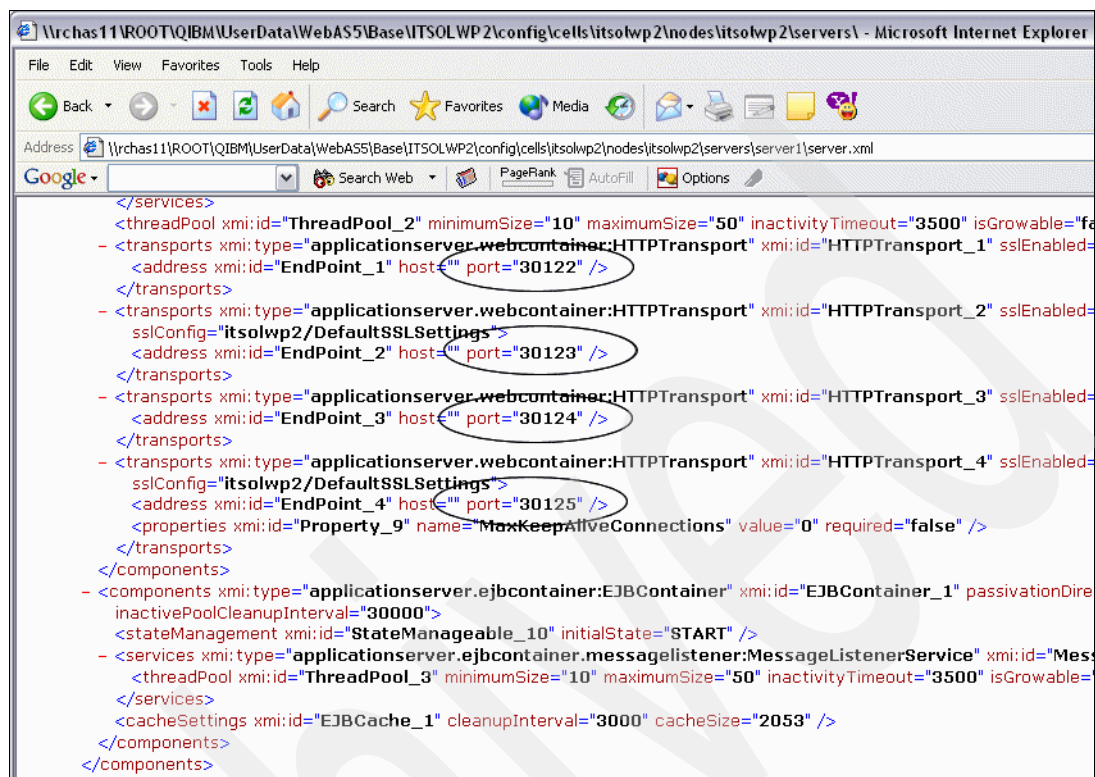


Figure 10-39 Viewing the server.xml file to determine the port range

## 10.8.6 Determining the port used by the WebSphere Administrative Console

If you want to see the port used by the WebSphere Application Server Administrative Console for your Workplace Collaboration Services server, you can use the `dspwasinst` Qshell command as explained in the following steps:

1. Open a Qshell command prompt (STRQSH) and enter the following command:  

```
cd /QIBM/ProdData/WebAS5/PME/bin
```
2. At the Qshell command prompt, enter the following command. See Figure 10-40.  

```
dspwasinst
```



```
QSH Command Entry

> dspwasinst
Display WebSphere Application Server instance:
  Instance name: default
  Instance type: PME Application Server
  Cell: RCHAS12
  Node: RCHAS12

Virtual hosts:
  default_host
    *:9080
    *:80
  admin_host
    *:9090
    *:9043

===>

F3=Exit  F6=Print F9=Retrieve F12=Disconnect
F13=Clear F17=Top F18=Bottom F21=CL command entry
```

Figure 10-40 The `dspwasinst` command

## 10.9 Troubleshooting IBM Workplace Managed Client issues

We recommend the following tips for troubleshooting issues that you encounter with the IBM Workplace Managed Client:

- ▶ Verify the policies. The IBM Workplace Managed Client features are set in policy documents in the WebSphere Application Server Administrative Console. Verify that the correct options are selected, such as the allowance of the rich client in the Allowed client section.
- ▶ Verify that the code is properly installed in the provisioning server. For details, refer to 6.3, “Deploying the IBM Workplace Managed Client” on page 266.
- ▶ Regenerate the configuration plug-in in the WebSphere Application Server Administrative Console in the Environment section if you have problems with the values when you install the provisioning server.

For help, refer to “Regenerate the Web server plug-in configuration with the console and wsadmin” in the iSeries Information Center at the following address:

<http://publib.boulder.ibm.com/infocenter/iseries/v5r3/index.jsp?topic=/rzatz/51/admin/plgncfgregen.htm>

- ▶ Uninstall and reinstall the IBM Workplace Managed Client. For help uninstalling the client, refer to 6.5, “Uninstalling the IBM Workplace Managed Client” on page 303.
- ▶ If the pages cannot be displayed in the IBM Workplace Managed Client, try uninstalling and reinstalling the client. Regenerate the plug-in from the WebSphere Application Server Administrative Console.

For help, refer to “Regenerate the Web server plug-in configuration with the console and wsadmin” in the iSeries Information Center at the following Web address:

<http://publib.boulder.ibm.com/infocenter/iseries/v5r3/index.jsp?topic=/rzatz/51/admin/plgncfgregen.htm>

- ▶ Review the log files for errors. The IBM Workplace Managed Client log files are located in the i5/OS /QIBM/UserData/WebAS5/Base/*InstanceName*/WCT25/logs/ integrated file system directory.
- ▶ Verify the version of the IBM Workplace Managed Client code in the versioninfo.properties file, which is located in the i5/OS /QIBM/UserData/WebAS5/Base/*InstanceName*/WCT25/versioninfo/ integrated file system directory.



## Setting up the IBM Directory Server on i5/OS

In this appendix, we explain how to configure and administer the IBM Directory Server on i5/OS V5R3. We discuss how to manage and test the IBM Directory Server on i5/OS. And we explain how to configure and use the Tivoli Directory Server Web Administration Tool.

# Managing the IBM Directory Server on i5/OS

To access the IBM Directory Server on i5/OS properties:

1. Before you view the IBM Directory Server on i5/OS properties, make sure that the appropriate default suffix exists by performing the following steps:

**Note:** By default, the suffix is the same as the iSeries server's fully qualified host name.

- Open a 5250 session on your iSeries server.
- On an i5/OS command line, type the Configure TCP/IP (CFGTCPIP) CL command and press Enter.
- From the Configure TCP/IP menu, type option 12 (Change TCP/IP domain information) and press Enter.
- In the Change TCP/IP Domain (CHGTCPDMN) display, make sure the Host name and Domain name fields contain values. If they do not contain values, contact your iSeries administrator for assistance with configuring TCP/IP on your iSeries server.

When constructing the suffix, we replace the periods in the fully qualified host name with dc=. For our example shown in Figure A-1, the suffix for our Lightweight Directory Access Protocol (LDAP) server will be dc=RCHAS55, dc=rchland, dc=ibm, dc=com as explained in step 4 on page 503.

```

Change TCP/IP Domain (CHGTCPDMN)

Type choices, press Enter.

Host name . . . . . 'RCHAS55'

Domain name . . . . . 'rchland.ibm.com'

Domain search list . . . . . *DFT

Host name search priority . . . *LOCAL      *REMOTE, *LOCAL, *SAME
Domain name server:
  Internet address . . . . . '9.10.244.200'
                          '9.10.244.100'

Bottom

F3=Exit   F4=Prompt   F5=Refresh   F10=Additional parameters   F12=Cancel
F13=How to use this display   F24=More keys

```

Figure A-1 Change TCP/IP Domain (CHGTCPDMN) display

2. In iSeries Navigator, click **My Connections** → **Network** → **Servers** → **TCP/IP**. In the right panel, right-click **IBM Directory Server** and then select **Properties** as shown in Figure A-2.

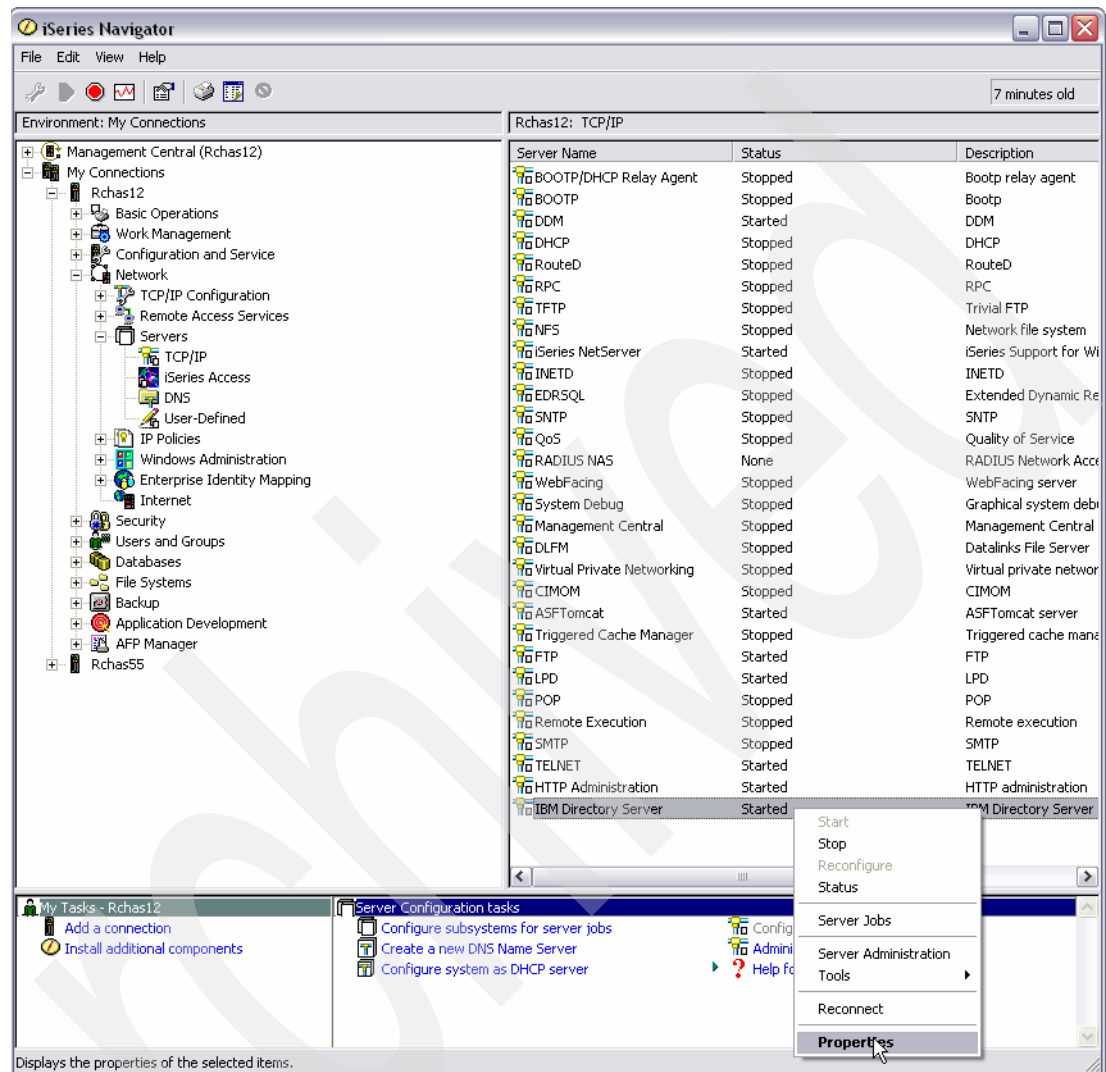


Figure A-2 Selecting the Properties option for IBM Directory Server on i5/OS

3. You can manage the IBM Directory Server administrator's user name and password from the IBM Directory Server Properties window as shown in Figure A-3. At the time when i5/OS is installed, a default password is created for internal usage.

On the **General** tab, click the **Password** button and enter a password for the IBM Directory Server administrator.

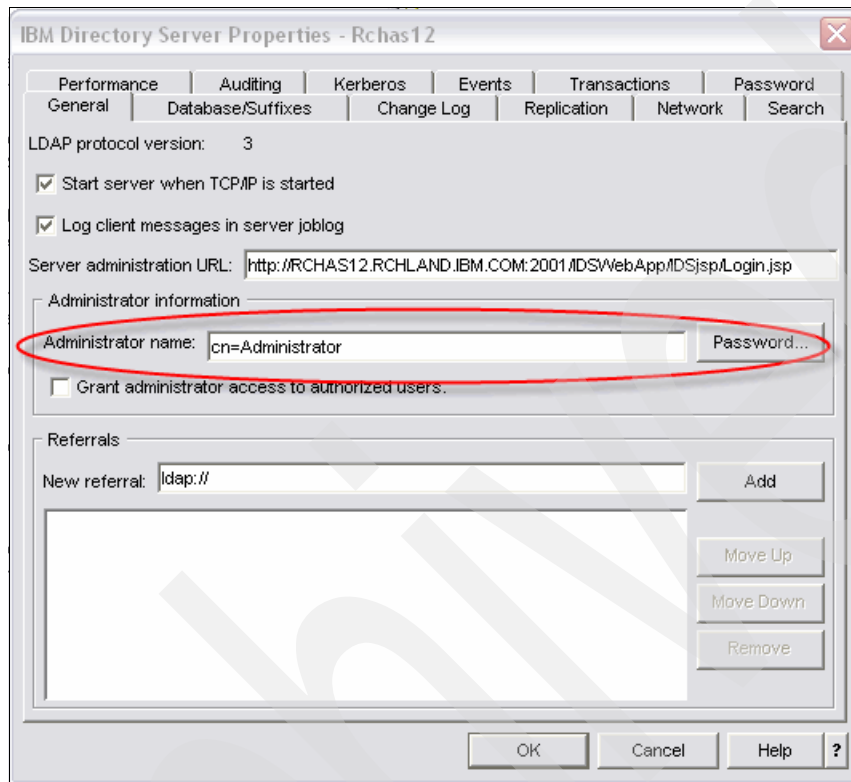


Figure A-3 Administering the IBM Directory Server Administrator user name and password

**Tip:** Depending on your network requirements, you might want to click the IP Addresses button on the Network tab, and confirm whether your LDAP server should be bound to all IP addresses.

4. Confirm the default suffix entry in the IBM Directory Server. In most cases, the default suffix is created for you when i5/OS is installed and is based on the iSeries server name. The system objects suffix is also created at the same time. To verify the entry:
  - a. In the IBM Directory Server Properties window, click the **Database/Suffixes** tab.
  - b. Make sure the appropriate default suffix and system objects suffix exist, as shown in Figure A-4.

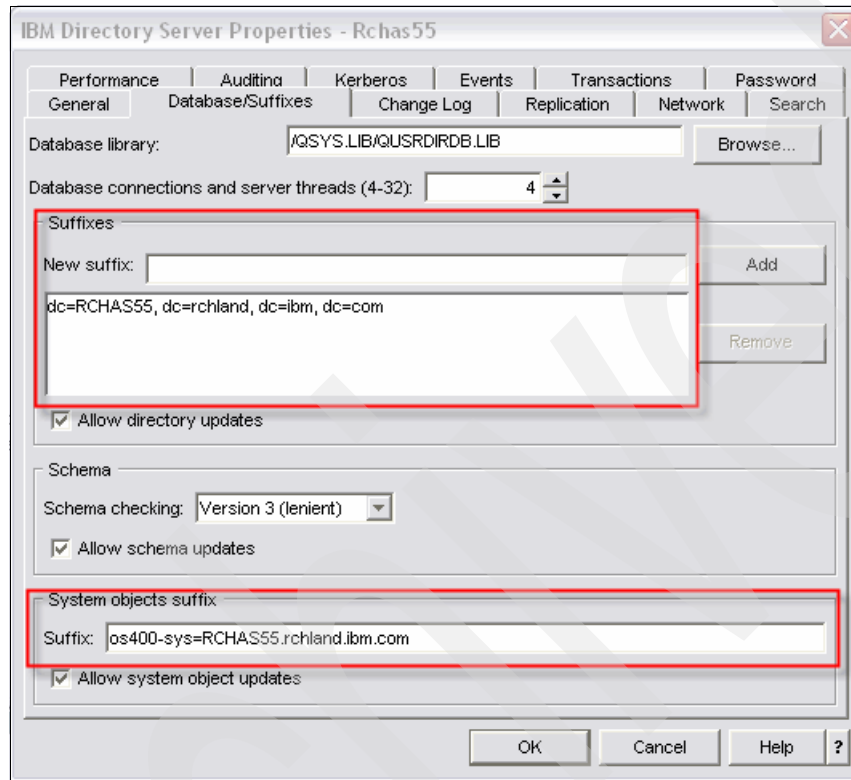


Figure A-4 IBM Directory Server default suffix and system objects suffix

5. Click **OK** to close the IBM Directory Server Properties window.

## Testing the IBM Directory Server on i5/OS

Test your IBM Directory Server:

1. Verify anonymous access by searching your directory tree using the **ldapsearch** command. For example, the following steps search our host `rchas55.rchland.ibm.com` on port 389, basing the search from the root, for any object classes:
  - a. Open a 5250 session on your iSeries server.
  - b. On the i5/OS command line, type `STRQSH` and press Enter to start the Qshell environment.
  - c. Type an LDAP search command similar to the following example:

```
ldapsearch -h rchas55.rchland.ibm.com -p 389 -s base -b "" objectclass=*
```

Example A-1 shows how the output should look. If you do not see the `ibmdirectoryversion=` line, you must enable anonymous access in order for the iSeries Create Workplace wizard to run successfully.

**Tip:** By default, anonymous access is enabled on the IBM Directory Server. If the default configuration was modified, contact your LDAP administrator or see the iSeries Information Center V5R3 for information about modifying the configuration to enable anonymous access:

<http://publib.boulder.ibm.com/infocenter/iseres/v5r3/index.jsp>

---

*Example: A-1 Verification of LDAP anonymous access*

---

```
port=389
supportedsaslmmechanisms=0S400-PRFTKN
supportedldapversion=2
supportedldapversion=3
ibmdirectoryversion=5.1
ibm-serverId=7b427001-36af-188c-8cb1-0004ac087ce7
ibm-supportedacimechanisms=1.3.18.0.2.26.3
ibm-supportedacimechanisms=1.3.18.0.2.26.2
vendorname=International Business Machines (IBM)
vendorversion=5.1
ibm-slapisconfigurationmode=FALSE
ibm-osregistrycontext=0S400-SYS=RCHAS55.RCHLAND.IBM.COM
ibm-osregistrytype=1.3.18.0.2.33.2-caseIgnore
```

---

Instead of using the **ldapsearch** command to verify your LDAP entries, from iSeries Navigator, you can click **Network** → **Servers** → **TCP/IP**. Then right-click **IBM Directory Server**, and select **Tools** → **Export file**. This exports an LDIF text file of all your entries.

2. Verify LDAP administrator access:

- a. Perform an **ldapsearch** command similar to one from the previous step. This time, specify the distinguished name of the IBM Directory Server administrator, such as `cn=administrator`, and a password, basing the search from the default suffix, for example:

```
ldapsearch -h rchas55.rchland.ibm.com -p 389 -D 'cn=administrator' -w password
-s base -b 'dc=rchas55,dc=rchland,dc=ibm,dc=com' objectclass=*
```

- b. Verify that your output resembles the output shown in Example A-2.

---

*Example: A-2 Verification of LDAP administrator access*

---

```
dc=rchas55,dc=rchland,dc=ibm,dc=com
dc=RCHAS55
objectclass=domain
objectclass=top
```

---

3. Verify the unique identifier ID attribute:

- a. Enter an **ldapsearch** command similar to the following example:

```
ldapsearch -h rchas55.rchland.ibm.com -p 389 -D 'cn=administrator' -w password
-b 'dc=rchas55,dc=rchland,dc=ibm,dc=com' '(objectclass=domain)' ibm-entryUuid
```

- b. Verify that the unique attribute and paired value exists as shown in Example A-3.

---

*Example: A-3 Verification of unique identifier ID attribute*

---

```
dc=rchas55,dc=rchland,dc=ibm,dc=com
ibm-entryUuid=5c656804-f40e-1898-8cb9-0004ac087ce7
```

---



# Enabling the Tivoli Directory Server Web Administration Tool

Prior to i5/OS V5R3, the directory management tool supplied with the iSeries server was the client-server based iSeries Navigator and IBM Directory Management Tool. With i5/OS V5R3, this tool has been replaced with the Web browser-based Tivoli Directory Server Web Administration Tool. Since this tool is browser-based, WebSphere Application Server V5.0 Express or Base must be running in order to use this tool.

**Important:** IBM WebSphere Application Server, V5.0 Express (5722-IWE Base and Option 2) and associated prerequisite software must be running in order to proceed.

## Configuring the HTTP Administration Server

Perform the following steps to configure the HTTP Administration Server to use the Tivoli Directory Server Web Administration Tool:

1. Ensure that the HTTP Administration Server is started. If it is not already started, use either of the following options to start it:
  - From iSeries Navigator, click **Network** → **Servers** → **TCP/IP**. Right-click **HTTP Administration** and then click **Start**.
  - From an i5/OS command line, type the Start TCP/IP Server (STRTCPSVR) command:

```
STRTCPSVR SERVER(*HTTP) HTTPSVR(*ADMIN)
```

2. To access the iSeries Tasks Web page, point your Web browser to your fully qualified iSeries host name on port 2001:

`http://iSeriesHostName.domain:2001`

In our example, we enter:

`http://rchas55.rchland.ibm.com:2001`

3. When prompted, enter your i5/OS user profile and password to log on to the IBM Web Administration for iSeries. Click **OK**.
4. Click the **IBM Web Administration for iSeries** link as shown in Figure A-5.

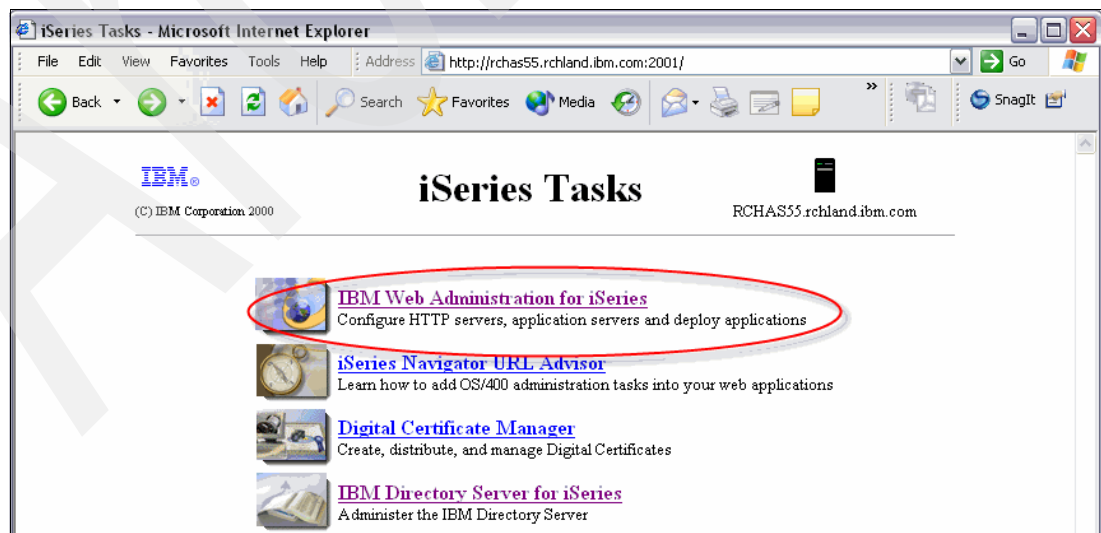


Figure A-5 iSeries Tasks page

5. From the IBM Web Administration for iSeries page, perform the following steps:
  - a. Click the **Manage** tab and click the **HTTP Servers** tab beneath it.
  - b. In the Server list, select **ADMIN - Apache**.
  - c. In the left panel, expand **Server properties** and select **General Server Configuration**.
  - d. From the Server area list, select **Include QIBM/UserData/HTTPAdmin/config/admin-cust.conf** as shown in Figure A-6.

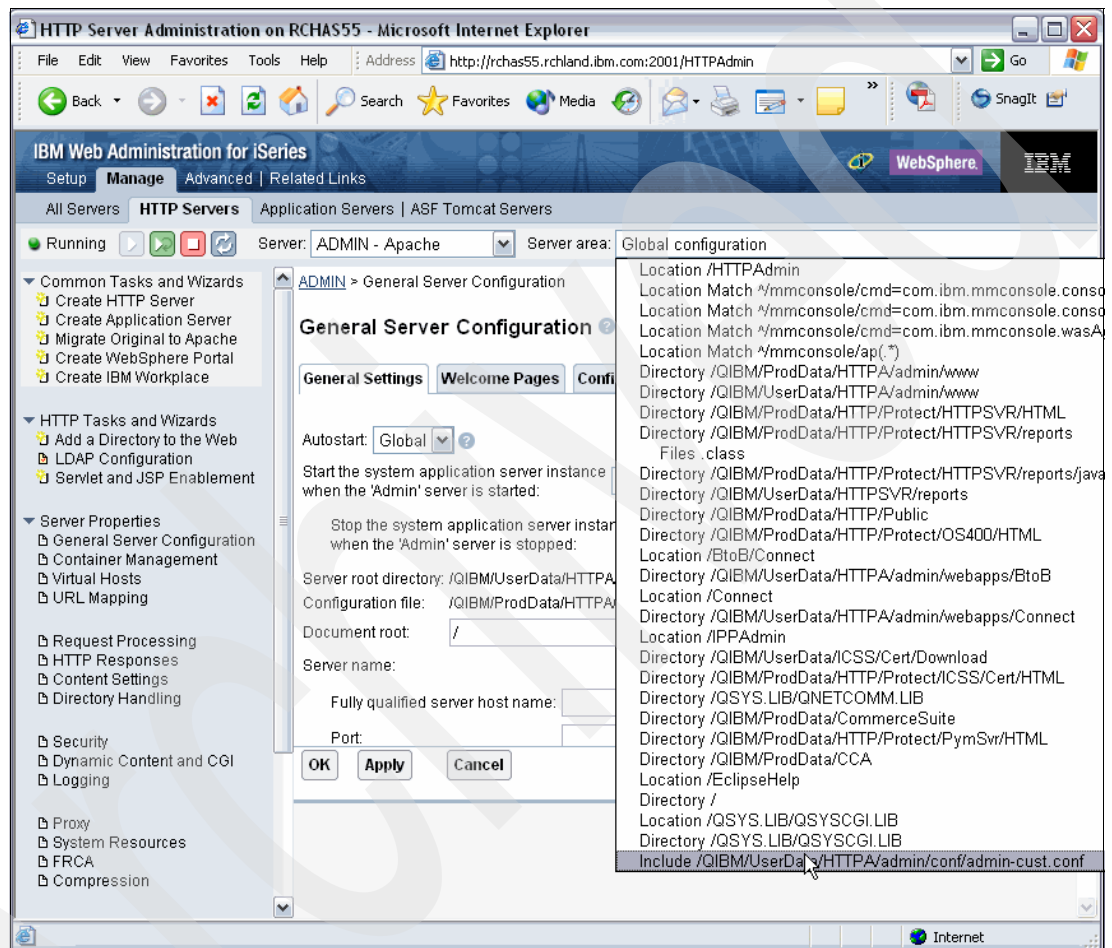


Figure A-6 Selecting the server area Include /QIBM/UserData/HTTPAdmin/config/admin-cust.conf

6. In the Global Server Configuration panel (Figure A-7), complete these steps:
  - a. Set Start the system application server instance when the 'Admin' server is started to **Yes**.
  - b. Set the Stop the system application server instance when the 'Admin' server is stopped to **Yes**.
  - c. Click **OK**.

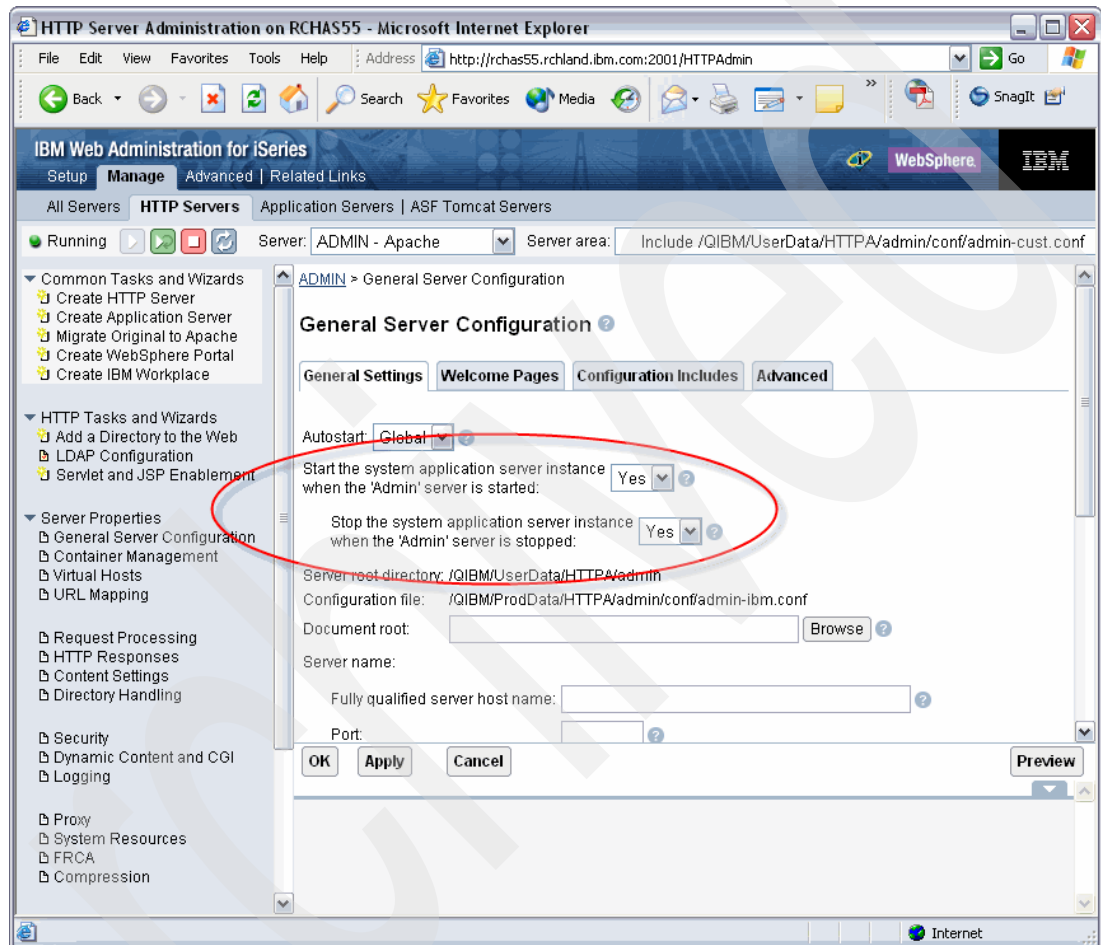


Figure A-7 General Server Configuration panel

7. Set the WebSphere Application Server to use the SYSINST instance.

**Important:** Depending on your level of the IBM HTTP Server for iSeries group PTF (for i5/OS, this is SF99099), you might no longer be required to do this step. You can verify that the WebSphere Application Server, SYSINST, is associated with the HTTP Administration Server by clicking the *Display Configuration File* link located in the left navigation panel.

- a. From the left navigation panel, click **WebSphere Application Server**.
- b. On the WebSphere Application Server panel, select **WebSphere Application Server - Express 5.0**.
- c. From the WebSphere Instance list, select **SYSINST**.

**Note:** If SYSINST is not present in the list, stop and start the HTTP Administration Server.

- d. From the Start all WebSphere application server(s)... list, select **Yes**.
- e. From the Stop all WebSphere application server(s)... list, select **Yes**. Your window should resemble the view shown in Figure A-8.
- f. Click **OK**.

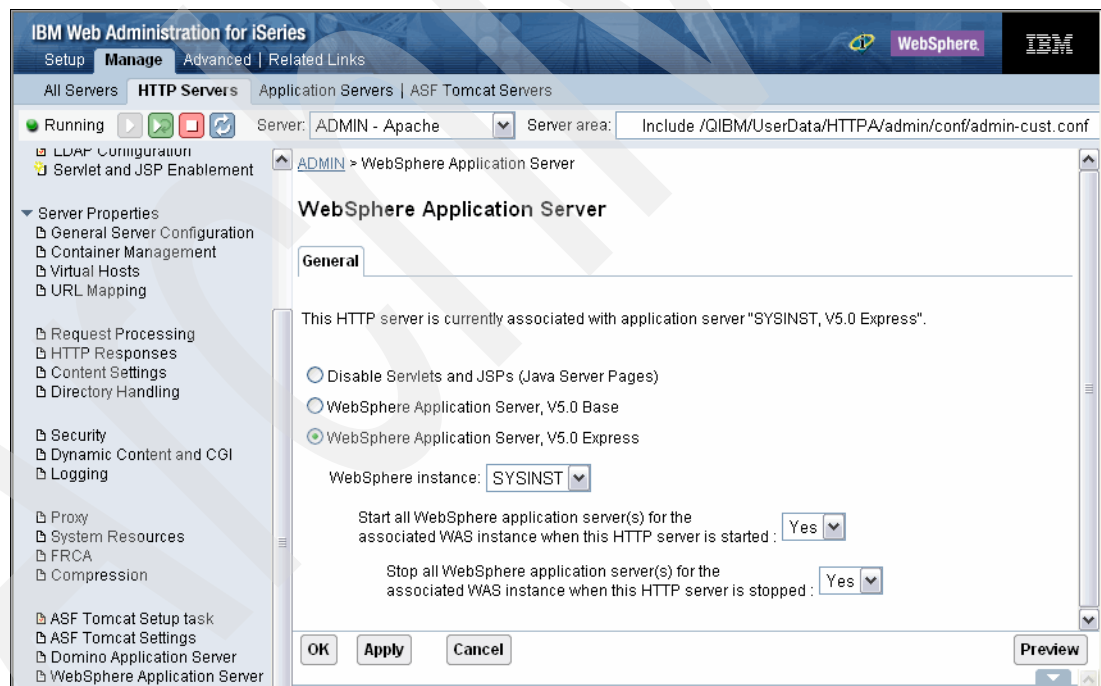


Figure A-8 Setting the HTTP Administration Server, WebSphere Application Server to SYSINST

8. Click the **restart** button (see Figure A-9) to restart the HTTP Administration Server.

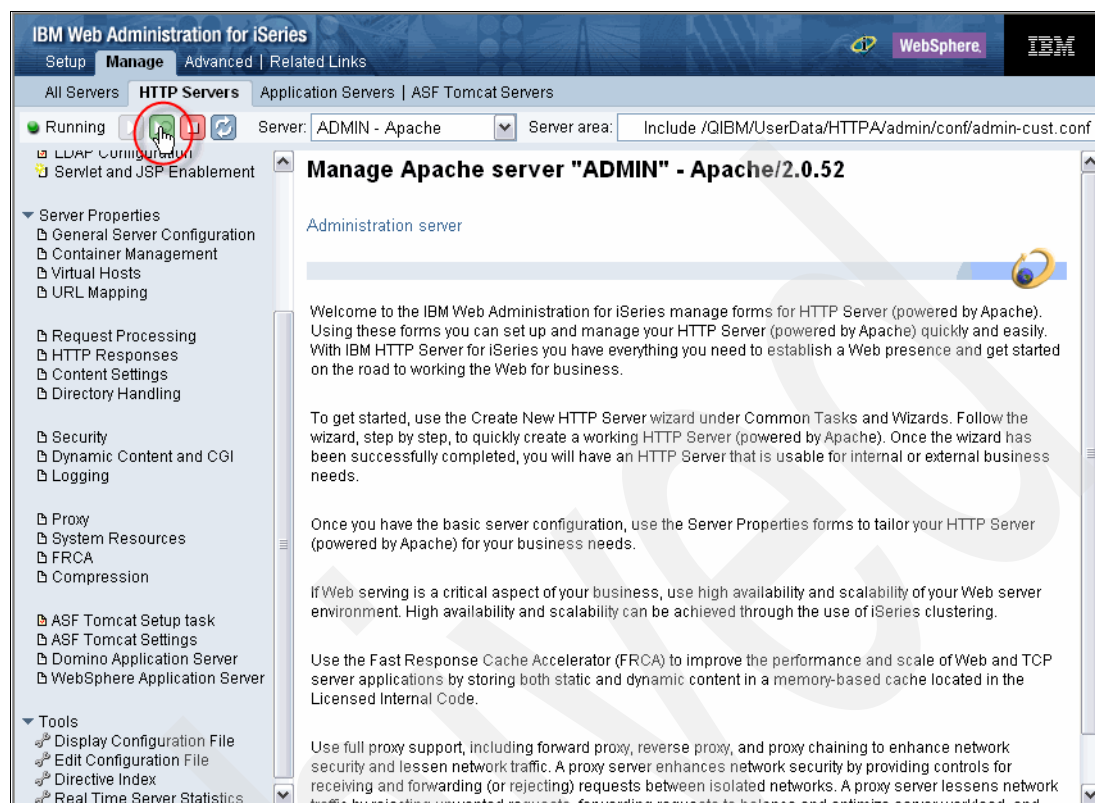


Figure A-9 Restarting the HTTP Administration Server

You can also stop and start the HTTP Administration Server using iSeries Navigator or an i5/OS command line.

To *stop* the HTTP Administration Server:

- From iSeries Navigator, click **Network** → **Servers** → **TCP/IP**. Right-click **HTTP Administration** and then click **Stop**.
- From an i5/OS command line, type the End TCP/IP Server (ENDTCPSVR) CL command:

```
ENDTCPSVR SERVER(*HTTP) HTTPSVR(*ADMIN)
```

To *start* the HTTP Administration Server:

- From iSeries Navigator click **Network** → **Servers** → **TCP/IP**. Right-click **HTTP Administration**, and then click **Start**.
- From an i5/OS command line, type the Start TCP/IP Server (STRTCPSVR) CL command:

```
STRTCPSVR SERVER(*HTTP) HTTPSVR(*ADMIN)
```

## Configuring the Tivoli Directory Server Web Administration Tool

To configure the IBM Tivoli Directory Server Web Administration Tool:

1. Access the Tivoli Directory Server Web Administration Tool using one of the following options:
  - From iSeries Navigator, select your iSeries server and click **Network** → **Servers** → **TCP/IP**, right-click **IBM Directory Server**, and click **Server Administration**.
  - From the iSeries Tasks page (Figure A-10), click **IBM Directory Server for iSeries**.

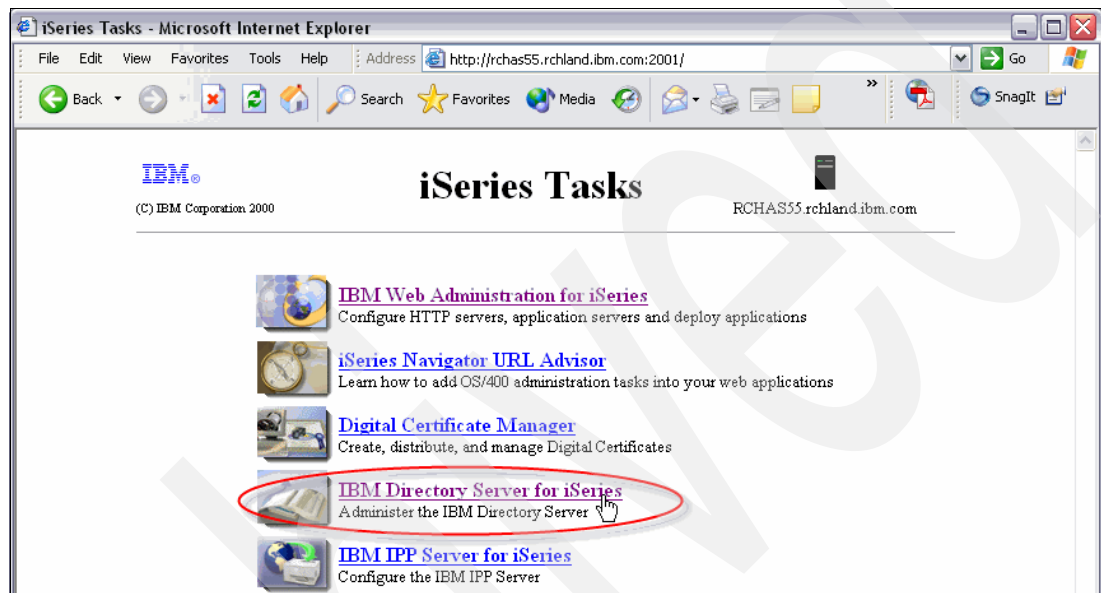


Figure A-10 Accessing IBM Directory Server for iSeries from the iSeries Task Web page

2. In the Tivoli Directory Server Web Administration Tool Login page (Figure A-11), enter the following values:
  - In the LDAP Hostname field, select **Console Admin**.
  - In the Username field, type **superadmin**.
  - In the Password field, type **secret**.

**Tip:** Superadmin and secret are the default values. Change them to prevent unauthorized access to the LDAP Console Admin.

Click **Login**.

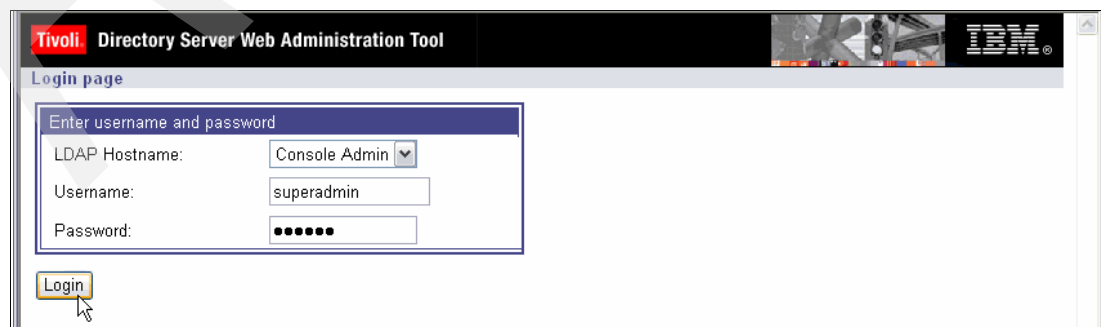


Figure A-11 Tivoli Directory Server Web Administration Tool Login page

3. Change the console administration login (optional):
  - a. In the left navigation panel, click **Console administration** and then click **Change console administrator login**.
  - b. In the Console administrator login field, type a new console administration login name.
  - c. In the Current password field, type the current password (secret).
  - d. Click **OK**.
4. Change the console administration password (optional):
  - a. In the left navigation panel, click **Change console administrator password**.
  - b. In the Current password field, type the current password (secret).
  - c. In the New password and Confirm new password fields, enter values for the new password.
  - d. Click **OK**.
5. Configure the IBM Directory servers that you want to manage:
  - a. In the left navigation panel, click **Manage console servers**.
  - b. In the Manage console servers panel (Figure A-12), click the **Add** button.

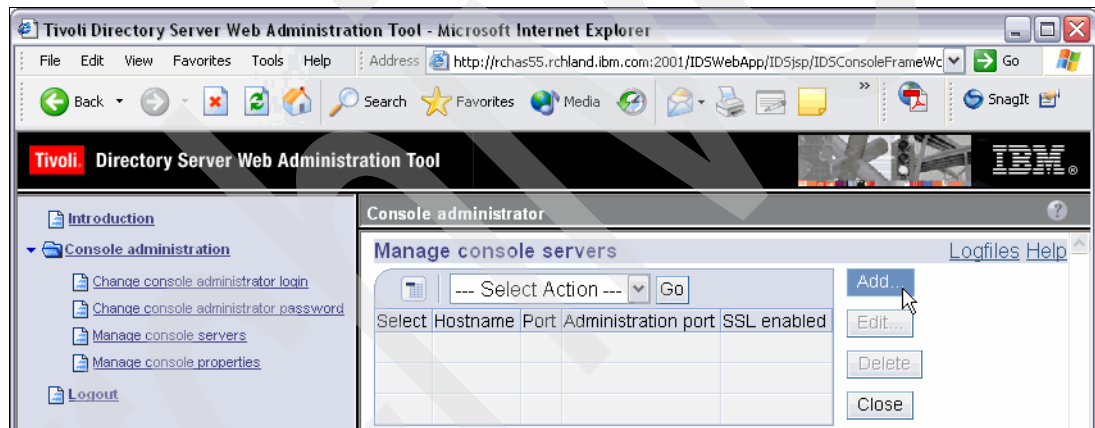


Figure A-12 Managing console servers



- c. In the Add server panel (Figure A-13), enter the LDAP server that you want to administer and click **OK**.

**Note:** When adding an i5/OS Directory Server, the Administration port is not used and is ignored.

Figure A-13 Adding an LDAP server to manage

The Manager console servers panel should look like the example in Figure A-14.

6. In the left navigation pane, click **Logout**.

Select	Hostname	Port	Administration port	SSL enabled
<input checked="" type="radio"/>	rchas55.rchland.ibm.com	389	3538	No

Figure A-14 IBM Tivoli Directory Server Web Administration with the newly added LDAP server

## Using the Tivoli Directory Server Web Administration Tool

To use the IBM Tivoli Directory Server Web Administration Tool:

1. Make sure that you know the LDAP administrator name and password as explained in "Managing the IBM Directory Server on i5/OS" on page 500.
2. Make sure that your HTTP Administration Server is started.
3. In iSeries Navigator, select **Network** → **Servers** → **TCP/IP** to verify that the IBM Directory Server is running. If the IBM Directory Server status is *Stopped*, then right-click the server and select **Start**.
4. Launch the iSeries Tasks page:  
`http://iSeries.domain:2001`
5. Enter your i5/OS user profile and password and click **OK**.
6. Click the **IBM Directory Server for iSeries** link as shown in Figure A-10 on page 510.



7. Log in to your IBM Directory Server:
  - a. From the LDAP Hostname list, select your iSeries server name.
  - b. Enter the IBM Directory Server administrator's distinguished name (DN), for example `cn=Administrator`, that you use to log in or bind to the directory server. This is the administrator that you configured in step 3 on page 502 as shown in Figure A-3 on page 502.
  - c. Enter the IBM Directory Server administrator's password. See Figure A-15.
  - d. Click **Login**.

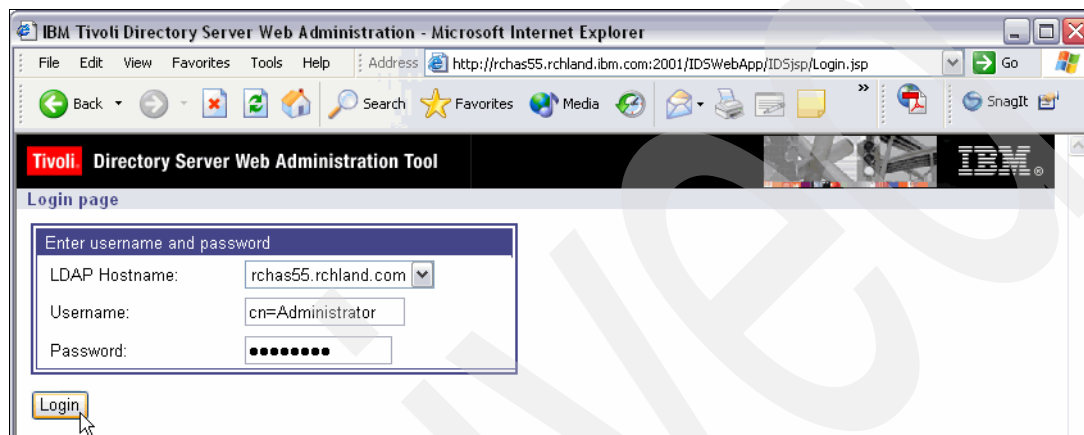


Figure A-15 Logging into the LDAP server with IBM Tivoli Directory Server Web Administration

8. In the left navigation panel, click **Directory management** → **Manage entries**. Your window should resemble the example in Figure A-16.

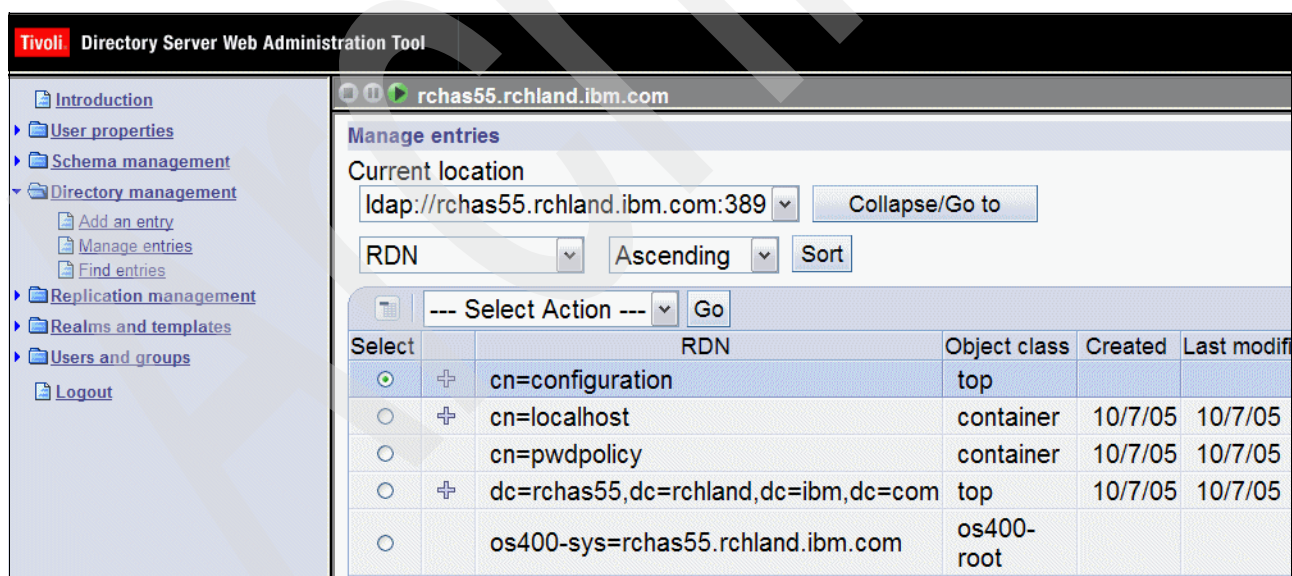


Figure A-16 Managing LDAP entries from the Tivoli Directory Server Web Administration Tool

Now that you have configured your LDAP server, refer to 3.3, “Preparing the IBM Directory Server” on page 45, to determine if any additional modifications are required before you configure a Workplace Services Express server.

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# IBM Workplace Collaboration Services ports

Table B-1 shows the WebSphere Application Server and Workplace Collaboration Services internal port assignments as an offset to the specified port block used (port block base + offset). Since WebSphere Application Server does not provide a way to bind these ports to a specific TCP/IP address, all of these ports are bound nonspecific.

*Table B-1 WebSphere Application Server and Workplace Collaboration Services internal ports*

Port number offset	Application server	Description
0	WebSphere_Portal	Name service port
1	WebSphere_Portal	SOAP service port
2	WebSphere_Portal	Data replication service client port
3	WebSphere_Portal	Internal Java Message Service server port
4	WebSphere_Portal	Queued Java Message Service server port
5	WebSphere_Portal	Direct Java Message Service server port
6	WebSphere_Portal	SAS SSL server authentication listener port
7	WebSphere_Portal	CSIV2 server authentication listener port
8	WebSphere_Portal	CSIV2 mutual authentication listener port
9	WebSphere_Portal	Internal HTTP port
10	WebSphere_Portal	Administrative Console port
11	WebSphere_Portal	Administrative Console SSL-enabled port
12	WebSphere_Portal	Internal HTTP SSL-enabled port
13	Server1	Name service port
14	Server1	SOAP port

Port number offset	Application server	Description
15	Server1	Data replication service client port
16	Server1	Internal Java Message Service server port
17	Server1	Queued Java Message Service server port
18	Server1	Direct Java Message Service server port
19	Server1	SAS SSL server authentication listener port
20	Server1	CSIV2 server authentication listener port
21	Server1	CSIV2 mutual authentication listener port
22	Server1	Internal HTTP port
23	Server1	Internal HTTP SSL-enabled port
24	Server1	Administrative Console port
25	Server1	Administrative Console SSL-enabled port
26	SIP	SIP container TCP port
27	SIP	SIP container TLS port
28	MTA	Name service port
29	MTA	SOAP port
30	MTA	Data replication service client port
31	MTA	CSIV2 mutual authentication listener port
33	MTA	Internal HTTP port
34	MTA	Internal HTTP SSL-enabled port
35	MTA	Administrative Console port
36	MTA	Administrative Console SSL-enabled port
37	MTA	Spam filter classification port
38	MTA	Spam filter learning port
39	SIP	Name service port
40	SIP	SOAP port
41	SIP	Data replication service client port
42	SIP	SAS SSL server authentication listener port
43	SIP	CSIV2 server authentication listener port
44	SIP	CSIV2 mutual authentication listener port
45	SIP	Internal HTTP port
46	SIP	Internal HTTP SSL-enabled port
47	SIP	Administrative Console port
48	SIP	Administrative Console SSL-enabled port
49	Cloudscape	Cloudscape network server

Port number offset	Application server	Description
50	SIP	IMA proxy port
51	MTA	Spam filter classification port
52	MTA	Spam filter learning port
53	WebSphere_Portal	DMAP unicast port

Archived

# Workplace Collaboration Services configuration summary

In this appendix, you see the configuration summary that is available from the iSeries Create IBM Workplace wizard.

As you administer a Workplace Collaboration Services server, you might encounter times when it can be helpful to review the options taken during the iSeries Create IBM Workplace wizard. One common reason to review this information is to determine the database schema names being used by your Workplace Collaboration Services server. For example, it is important to know the database names before you begin disaster recovery planning for your server. To find the configuration summary, you can display the printable summary page generated by the iSeries Create IBM Workplace wizard.

There are two ways to access the printable summary:

- ▶ You can locate the file in the integrated file system on the iSeries server. The file name and path of the printable summary file is `/QIBM/UserData/WebAS5/Base/WCSServerName/logs/IBMWizPrintableSummary.html`. Here *WCSServerName* represents your Workplace Collaboration Services server name.
- ▶ You can also use IBM Web Administration for iSeries to view the printable summary.

Perform the following steps to locate the printable summary using IBM Web Administration for iSeries:

1. To access IBM Web Administration for iSeries, point your Web browser to your fully qualified iSeries host name on port 2001:

`http://iSeriesHostName.domain:2001`

In this example, we enter:

`http://rchas12.rchland.ibm.com:2001`

2. When prompted, enter your i5/OS user profile and password to log on to the IBM Web Administration for iSeries. Click **OK**.
3. On the iSeries Tasks menu, click **IBM Web Administration for iSeries**. You return to the last server that you administered.

4. To manage your Workplace Collaboration Services server, select your server by performing the following steps:
  - a. Click the **Manage** tab.
  - b. Click the **Application Servers** tab.
  - c. Select your Workplace Collaboration Services server name in the Server list.
5. In the left navigation pane, click **View Create Summary** as shown in Figure C-1.

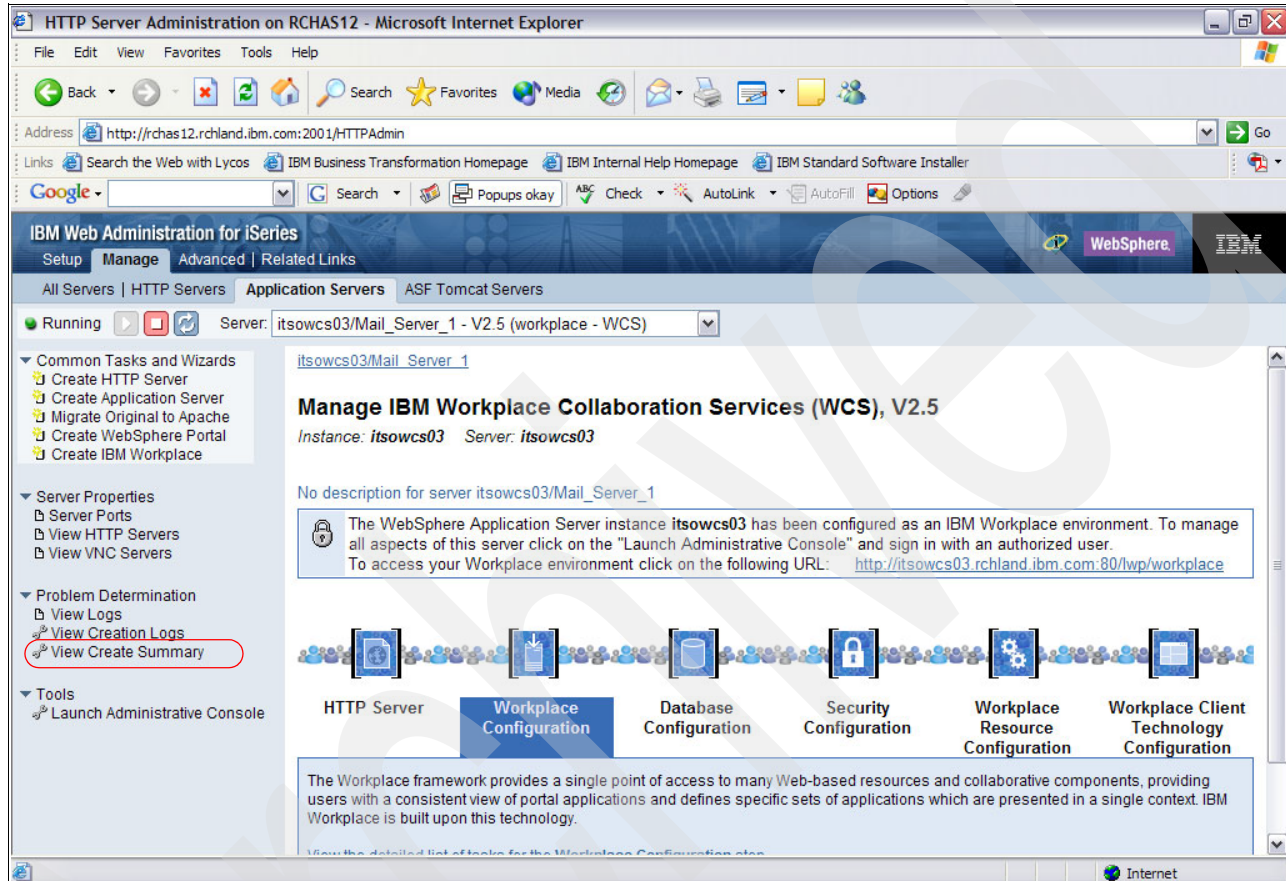


Figure C-1 Viewing the creation summary from IBM Web Administration for iSeries

6. Using either method mentioned earlier in this section, a printable summary page opens in your Web browser. You might want to review the following items in the summary:
  - The database user profile name
  - The portal database (also known as the *portal schema*)
  - The name of the IBM HTTP for iSeries server
  - DB2 Universal Database database file names
  - Document rendering server host name and display number

Example C-1 shows a complete iSeries Web Administration creation summary report.



*Example: C-1 iSeries Create IBM Workplace wizard printable summary*

---

Create IBM Workplace

Summary - Step 17 of 17

When you click Finish, everything necessary to run your IBM Workplace will be created. Please note that you will need to be patient during this process as the creation and configuration may take sometime to complete. You can monitor the progress from the Workplace intro page that will display after the finish button has been clicked.

-----  
Servers

HTTP Server (Powered by Apache) Information

HTTP server name: ITSOLWP2

HTTP server description: HTTP server created by the Create IBM Workplace wizard.

Port: 80

Document root: /www/itsolwp2/htdocs

Server root: /www/itsolwp2

HTTP Server (Powered by Apache) Information

Server name: ITSOLWP2

Server description: IBM Workplace server ITSOLWP2, created by the Workplace wizard

Instance root: /QIBM/UserData/WebAS5/Base/ITSOLWP2/ITSOLWP2

Internal port range: 30300 - 30349

Virtual host: default\_host

Server secured: Yes

User name: wpsadmin

Your new IBM Workplace environment will be created when you click the Finish button. When it is finished the URL will be "http://itsolwp2.rchland.ibm.com/lwp/workplace".

-----  
Portal

Database

Collection, Schema, or Library name: PortalDB

System: Local

User name: wpsdbuser

Portal URI

Default URL path: lwp

Workplace default home path: workplace

Personalized path: myworkplace

Portal Administration

User name: wpsadmin

Your new IBM Workplace environment will be created when you click the Finish button. When it is finished the URL will be "http://itsolwp2.rchland.ibm.com/lwp/workplace".

-----  
Portal Security

LDAP Server

Server type: IBM Directory Server

LDAP server host name: IDS51LDAP.NOTESDEV.IBM.COM

LDAP port: 389

Information describing user entries

Parent DN: cn=users,0=ITS0

Naming attribute: uid

Object class: inetOrgPerson

Information describing the administrative group entry

Parent DN: cn=groups,0=ITS0

Naming attribute: cn

Object class: groupOfUniqueNames

Member attribute: uniqueMember

Portal administrative group and administrator information

User name: wpsadmin

Group name: wpsadmins

Look-aside database

Create: Yes

Single Signon information

Web server SSO domain limited to this Web server host: No

SSO domain name: RCHLAND.IBM.COM

Your new IBM Workplace environment will be created when you click the Finish button. When it is finished the URL will be "http://itsolwp2.rchland.ibm.com/lwp/workplace".

-----  
Workplace Components

IBM Workplace components to be deployed

Lotus Workplace Team Collaboration: Deploy

Lotus Workplace Collaborative Learning: Deploy

Lotus Workplace Messaging: Deploy

Lotus Workplace Documents: Deploy

Workplace Web Content Management: Do not deploy

Workplace Managed Client: Deploy

Your new IBM Workplace environment will be created when you click the Finish button. When it is finished the URL will be "http://itsolwp2.rchland.ibm.com/lwp/workplace".

-----  
VNC Server

The VNC (Virtual Network Computing) server will be created by the wizard and then used by the Workplace environment to support displaying documents in a standard format like PDF. This server will be running in the PASE (Portable Application Solutions Environment) environment.

Hostname:displayName: hostname:1

Your new IBM Workplace environment will be created when you click the Finish button. When it is finished the URL will be "http://itsolwp2.rchland.ibm.com/lwp/workplace".

-----  
Database Information

System for all databases

System for all databases: Local

Portal database

Collection, Schema, or Library name: PortalDB

User name: wpsdbuser

Workplace common database

Collection, Schema, or Library name: LWPCComm

User name: wpsdbuser

Workplace learning server database

Collection, Schema, or Library name: LWPLMS

User name: wpsdbuser

Workplace delivery server database

Collection, Schema, or Library name: LWPLDS

User name: wpsdbuser

Workplace messaging database

Collection, Schema, or Library name: LWPMMSG

User name: wpsdbuser

Workplace message archive database

Collection, Schema, or Library name: LWPARC

User name: wpsdbuser

Your new IBM Workplace environment will be created when you click the Finish button. When it is finished the URL will be "http://itsolwp2.rchland.ibm.com/lwp/workplace".

---

#### Workplace Messaging

General Workplace Messaging values

Your company's e-mail domain name: ITSOLWP2.RCHLAND.IBM.COM

Fully qualified mail server host name: ITSOLWP2.RCHLAND.IBM.COM

Local Domain Name: Local domain values

E-mail Address for Postmaster: Postmaster@ITSOLWP2.RCHLAND.IBM.COM

Dead letter e-mail address: Postmaster@ITSOLWP2.RCHLAND.IBM.COM

IMAP: On

POP3: On

Enable incoming SMTP messages: Yes

Port for SMTP mail: On

Workplace Messaging database values

Messaging database: LWPMMSG

Messaging database user: wpsdbuser

Message archive database: LWPARC

Message archive database user: wpsdbuser

Mail box values

Automatically create mailboxes: Yes

Mail account size: 5 Megabytes

Empty mail in trash every: 30 Days

Your new IBM Workplace environment will be created when you click the Finish button. When it is finished the URL will be "http://itsolwp2.rchland.ibm.com/lwp/workplace".

---

#### Workplace Learning

General Learning Settings

Learning Center URL: http://itsolwp2.rchland.ibm.com/content

Learning e-mail address: Postmaster@ITSOLWP2.RCHLAND.IBM.COM

Learning Server

Learning server database: LWPLMS

Learning server database user: wpsdbuser

Learning server URL: http://itsolwp2.rchland.ibm.com/lms

Path for course packages: /QIBM/UserData/WebAS5/Base/ITSOLWP2/ITSOLWP2/workplaceserver/lms\_path

Language for document indexing (Juru): English

Delivery Server

Delivery server database: LWPLDS

Delivery server database user: wpsdbuser

Delivery server URL: http://itsolwp2.rchland.ibm.com/lds

Content Server

Server name and type: ITSOLWP2 - Apache, 2.0

Content server URL: http://itsolwp2.rchland.ibm.com/content

Learning help text URL: http://itsolwp2.rchland.ibm.com/help

Your new IBM Workplace environment will be created when you click the Finish button. When it is finished the URL will be "http://itsolwp2.rchland.ibm.com/lwp/workplace".

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## Extending Workplace Collaboration Services

In this appendix, we describe the customization of Workplace Collaboration Services and the options available to the administrator, developer, and user. Specifically, this appendix includes:

- ▶ Portal look and feel
- ▶ Workplace Builder
- ▶ Workplace Collaboration Services Designer
- ▶ Workplace Collaboration Services application programming interfaces (APIs)
- ▶ Customizing Workplace Collaboration Services features and capabilities

## Portal look and feel

Workplace Collaboration Services relies heavily on WebSphere Portal for its Web user interface. This includes the management and deployment of the look and feel components. The Information Center for IBM WebSphere Portal - Express for Multiplatforms Version 5.0.2 (iSeries) provides a great resource. You can find it at the following Web address:

<http://publib.boulder.ibm.com/pvc/wp/502/smbi/en/InfoCenter/index.html>

## Themes and skins

Themes and skins provide Workplace Collaboration Services with the look and feel of its portal pages. These are implemented through Java 2 Platform, Enterprise Edition (J2EE) elements, including JavaServer Pages (JSPs), cascading style sheets (CSS), Hypertext Markup Language (HTML), and so on. WebSphere Portal provides the means to deliver the themes and skins to Workplace Collaboration Services. Themes and skins are managed through the WebSphere Portal Administration page as shown in Figure D-1.

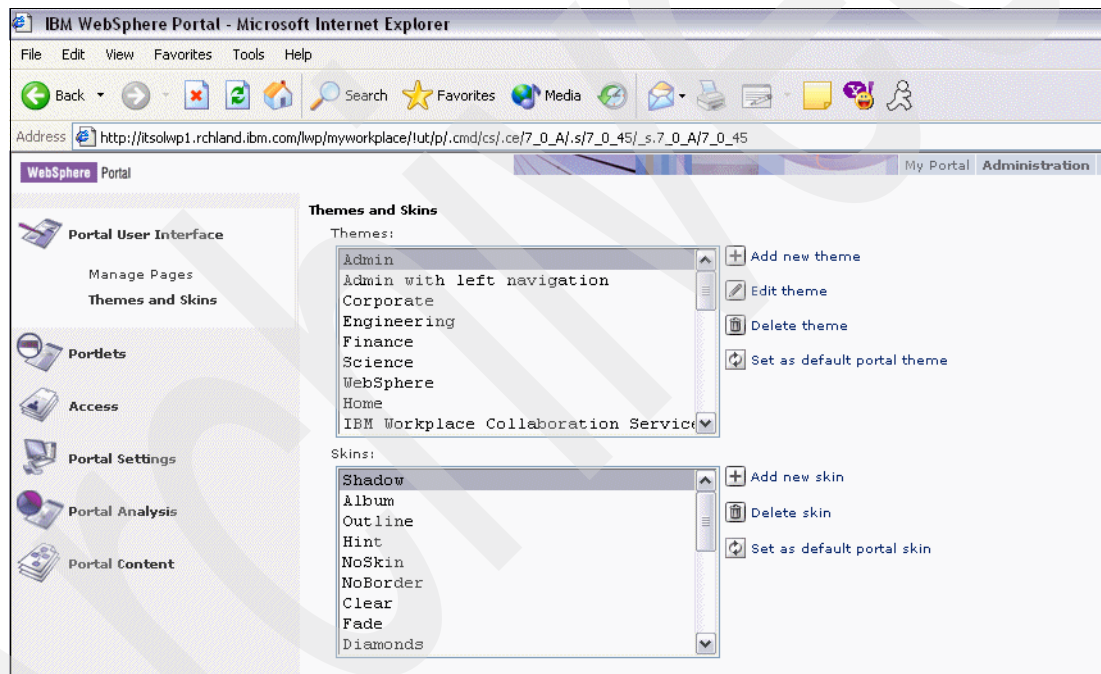


Figure D-1 Themes and skins administration

Workplace Collaboration Services ships with 20 new themes that you can select or modify to fit your organization's look and feel.

## Themes

A *theme* represents the look and feel of the overall portal. You can add your own elements to the HTML portal page and rearrange the layout by creating your own theme and changing the layout in the Default.jsp file and the other JSPs that are included.

Workplace Collaboration Services extends WebSphere Portal's JSP model for positioning of portal elements, but provides additional JSPs to accommodate one-theme branding. Figure D-2 shows the typical anatomy of the portal as dictated by Default.jsp.

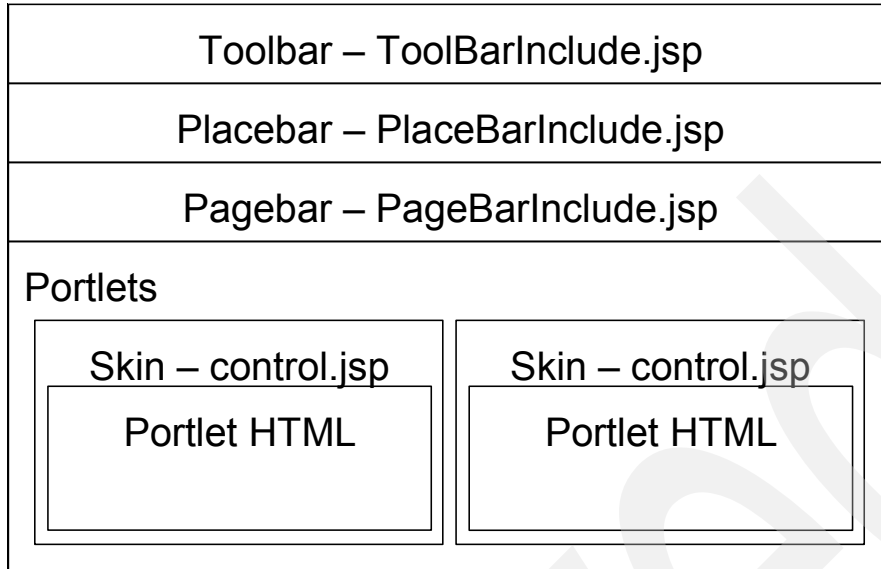


Figure D-2 Default.jsp layout

## Skins

Skins represent the border rendering around components, such as row containers, column containers, or portlets. The skin is loaded in the portal page by the `<wps:compositionRender/>` tag. Skins can use the theme name to select the graphics that match the theme colors. Skins are installed independently from themes. However, a skin can be associated with a theme.

Skins define more than the look and feel of portlets; they define the look and feel of components. These components include the navigation, containers, and controls. This hierarchical structure is illustrated in Figure D-3.

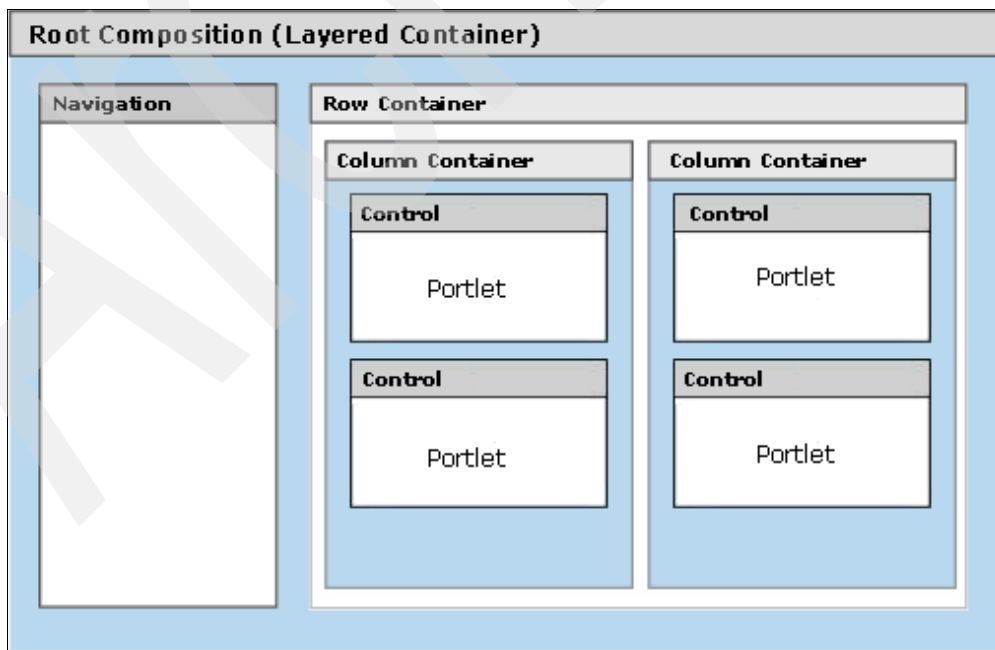


Figure D-3 Skin components

WebSphere Portal Version 5.0.2 introduced support for high performance skins. When you enable high performance skins, the Default and NoSkin skins are rendered in a way that provides faster aggregation. High performance skins cannot be as extensively customized as standard skins; however, you can still modify the images and colors.

For more information, see “Improving Performance” in the WebSphere Portal Information Center at the following Web address:

<http://publib.boulder.ibm.com/pvc/wp/502/smbi/en/InfoCenter/wpf/performance.html>

## Creating and modifying themes and skins

The simplest way to start creating a new theme or skins to start with one of the included theme and skins from the Workplace Collaboration Services installation. The themes and skins are all on the iSeries server, in the root integrated file system directory WebAS5/Base/INSTANCE/installedApps/SERVERName/wps.ear/wps.war.

The themes and skins are located in the following subdirectories:

- *Themes*: ../themes/html/workplace/Default.jsp
- *Skins*: ../skins/html/Mist/Control.jsp

## Deploying themes and skins

The WebSphere Portal Information Center provides information about deploying themes and skins. For more information, refer to the following Web address:

<http://publib.boulder.ibm.com/pvc/wp/502/smbi/en/InfoCenter/wps/addepthem.html>

# Workplace Builder

Workplace Team Collaboration includes Workplace Builder, an application assembly tool for business analysts and application managers and designers. Workplace Builder is intended for personnel in a business unit of the enterprise who understand the business model and business processes. Workplace Builder promotes the rapid assembly of collaborative components and forms for the Workplace platform where people, documents, discussions, chat rooms, meetings, team tasks, team calendars, and other resources come together in team spaces.

Using Workplace Builder, business analysts can create and manage templates for Workplace applications and forms. Application managers can create applications from templates and, when appropriate, save new applications as templates for reuse by other users. Application managers can also deploy form viewers on the pages of a Workplace application to display various forms for application users to edit and submit. Workplace Builder provides the following components for working with templates, applications, and forms:

- Workplace Template library

The Workplace Template library shows the list of templates that template editors, including template owners, can view and work with. Tasks performed from the Workplace Template library include creating new templates, importing and exporting template XML, assigning roles for template access (template editor or template user), deleting templates, and opening the template editor.

From the Workplace Collaboration Services toolbar, click **Workplace Builder** to view the Workplace Template library.



- ▶ **Template editor**

The template editor shows a set of portlets for maintaining templates for Workplace applications including properties, parameters, pages and layout, and roles.

From the Workplace Template library, click the name of the template to open the template editor.

- ▶ **Application editor**

The application editor shows a set of portlets for maintaining a particular Workplace application, including properties, pages and layout, and roles.

From within a Workplace application, click **Edit** from the Workplace administration bar to open the application editor.

- ▶ **Form Template library**

The Form Template library shows the list of templates for forms that Workplace managers can view and work with. The tasks performed from the Form Template library include creating, editing, and managing form templates.

From the Workplace Collaboration Services toolbar, click **Workplace Builder** to view the Workplace Builder place. From the Workplace Builder place, click Form Template **Library** to see the list of form templates.

## Workplace Collaboration Services Designer

Workplace Collaboration Services Designer is a new tool aimed at the Domino Designer skilled developer who wants to build J2EE-based applications and components for the Workplace Collaboration Services platform. It builds on a familiar form and scripting model, and extends it with full integration into Workplace Collaboration Services.

For more information about Workplace Designer, refer to the IBM Workplace Designer Version 2.5 Release Notes at the following Web address:

[http://www-12.lotus.com/ldd/doc/uafiles.nsf/docs/iwd25/\\$File/releasenotes.pdf](http://www-12.lotus.com/ldd/doc/uafiles.nsf/docs/iwd25/$File/releasenotes.pdf)

## Workplace Collaboration Services APIs

The IBM Workplace Products API Toolkit allows developers to extend Workplace Collaboration Services with new business components, portlets, and other components using the J2EE programming model. The toolkit provides public APIs and Service Provider Interfaces (SPIs) that customer applications can use. The Workplace public APIs also supplement the public APIs provided by the underlying WebSphere and Portal platforms that are not included in this toolkit.

Release 2.5.1 of the IBM Workplace Collaboration Services API Toolkit supports:

- ▶ IBM Workplace Collaboration Services 2.5 and 2.5.1
- ▶ IBM Workplace Managed Client 2.5 and 2.5.1
- ▶ IBM Workplace Services Express 2.5

For more information about the IBM Workplace Collaboration Services API Toolkit, refer to the IBM Workplace Software Development Kit Web site at the following address:

<http://www-142.ibm.com/software/workplace/products/product5.nsf/wdocs/2c8a33e47eef8d0585256ee60054ddf2>

# Customizing Workplace Collaboration Services features and capabilities

At this time, Workplace Collaboration Services cannot be administrated 100% through an administrative graphical user interface (GUI). Within your organization, there maybe a need to hide or disable some features of Workplace Collaboration Services. You must make these updates with great care to the portal JSPs and are not supported by IBM. However, these are sometimes needed to ensure the usability of your deployment.

## Updating the server home page

Point the user to the login, default, or company page if they browse to the server's root. For information about redirecting the IBM HTTP Server (powered by Apache), refer to 10.6.3, "Workplace Collaboration Services Welcome page not displayed" on page 483.

## Forgotten password button and page

Currently there is no formal password recovery in Workplace Collaboration Services. Administrators may want to remove the link or update the page for their users. Figure D-4 shows the default page received by users who have forgotten their passwords.

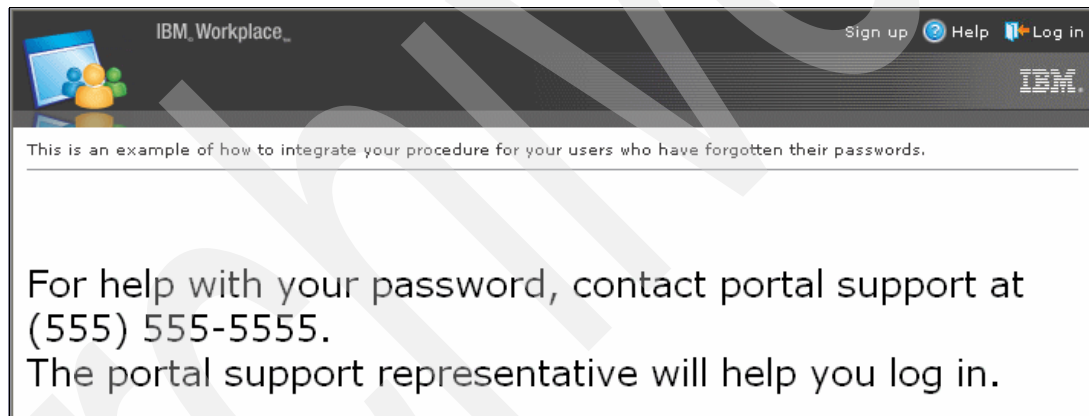


Figure D-4 Password help

## Removing the Sign up link

As general rule, most companies do not want anyone to be able sign up and use their Workplace Collaboration Services server. To prevent this, you must remove the Sign up link located on initial entry page as shown in Figure D-5.

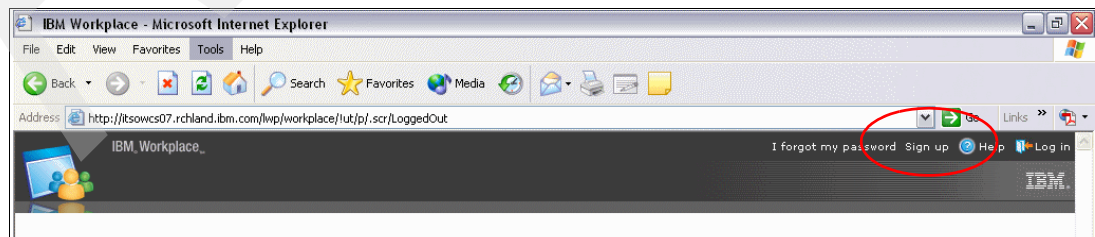


Figure D-5 Workplace initial entry page

There are a couple of ways to remove the sign up link, by either editing the JSP file or using a command in Qshell. The following steps guide you through using Qshell to remove the sign up link:

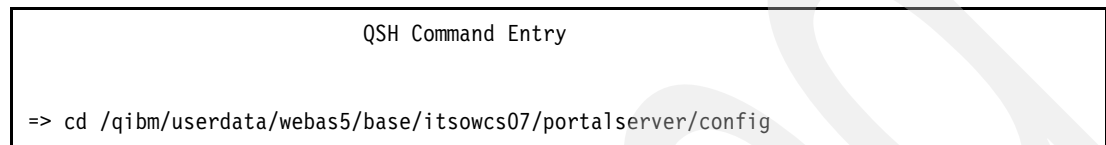
1. Open Qshell from an i5/OS command line by entering the following CL command:

```
STRQSH
```

2. Navigate to the config directory by using the following command (see Figure D-6):

```
cd /qibm/userdata/webas5/base/InstanceName/portalserver/config
```

Here *InstanceName* represents the name of your Workplace Collaboration Services server.



*Figure D-6 Navigating to the config directory*

3. When you are in the config directory, enter the following command at the Qshell command prompt:

```
WPSconfig.sh action-fixup-signup-link
```

4. After the command has finished running, which takes 40-60 seconds, a build successful message is displayed.
5. Restart your Workplace Collaboration Services server. For help, refer to 5.2, "Starting and stopping Workplace Collaboration Services" on page 203.

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## Additional material

This redbook refers to additional material that can be downloaded from the Internet as described below.

### Locating the Web material

The Web material associated with this redbook is available in softcopy on the Internet from the IBM Redbooks Web server. Point your Web browser to:

<ftp://www.redbooks.ibm.com/redbooks/SG246640>

Alternatively, you can go to the IBM Redbooks Web site at:

[ibm.com/redbooks](http://ibm.com/redbooks)

Select the **Additional materials** and open the directory that corresponds with the redbook form number, SG246640.

### Using the Web material

The additional Web material that accompanies this redbook includes the following file:

<i>File name</i>	<i>Description</i>
<b>rchas55.ldif</b>	Sample .ldif file
<b>ExtIdUpdate.java</b>	Sample Java agent to populate the DominoUNID field into existing person, group, or certifier documents in the Domino Directory database
<b>lwptools.savf</b>	A sample utility that allows Workplace Collaboration Services servers to be moved to a run in a different subsystem. This utility is a set of CL programs that are packaged in an i5/OS save file.

Archived

# 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 about ordering these publications, see “How to get IBM Redbooks” on page 537. Note that some of the documents referenced here may be available in softcopy only.

- ▶ *Develop and Deploy a Secure Portal Solution Using WebSphere Portal V5 and Tivoli Access Manager V5.1*, SG24-6325
- ▶ *IBM HTTP Server (powered by Apache): An Integrated Solution for IBM eServer iSeries Servers*, SG24-6716
- ▶ *IBM Software Express Buying and Selling Guide*, REDP-3975
- ▶ *IBM Workplace Client Technology (Rich Client Edition) Technology Overview*, REDP-3884
- ▶ *IBM Workplace Client Technology (Rich Client Edition) ISV Integration Guide*, REDP-3883
- ▶ *Preparing for and Tuning the V5R2 SQL Query Engine on DB2 Universal Database for iSeries*, SG24-6598

## Other publications

These publications are also relevant as further information sources:

- ▶ *Basic Java Performance for iSeries*  
<http://www.ibm.com/servers/eserver/iseries/perfmgmt/pdf/BasicJavaPerf.pdf>
- ▶ *IBM Lotus Instant Messaging Gateway*, G210-1822  
[http://www.lotus.com/1dd/doc/uafiles.nsf/docs/imwc651\\_cont/\\$File/IBM%20Lotus%20Instant%20Messaging%20Gateway.pdf](http://www.lotus.com/1dd/doc/uafiles.nsf/docs/imwc651_cont/$File/IBM%20Lotus%20Instant%20Messaging%20Gateway.pdf)
- ▶ *IBM Workplace extends more transformational power to more businesses*  
<Http://www-306.ibm.com/software/swnews/swnews.nsf/n/jmae664pzt?opendocument&site=software>
- ▶ *iSeries IBM Directory Server (LDAP)*  
<http://publib.boulder.ibm.com/infocenter/iseries/v5r3/topic/rzahy/rzahy.pdf>
- ▶ *Optimizing Static-File Serving in a WebSphere Application*  
<http://www.eservercomputing.com/ME2/Audiences/dirmod.asp?sid=&nm=&type=Publishing&mod=Publications%3A%3AArticle&mid=8F3A7027421841978F18BE895F87F791&AudID=1E8FEE745A284521B6CFB3FD70B49099&tier=4&id=54E37DA2F24341BC84C0F25B5A41218D>
- ▶ *Tuning Garbage Collection for Java and WebSphere on iSeries*  
<http://www.ibm.com/servers/eserver/iseries/perfmgmt/pdf/tuninggc.pdf>
- ▶ *Tuning the WebSphere Prepared Statement Cache*  
<http://www.ibm.com/servers/eserver/iseries/perfmgmt/pdf/stmntcache.pdf>

## Online resources

These Web sites are also relevant as further information sources:

- ▶ Disaster Recovery Plan  
<http://publib.boulder.ibm.com/infocenter/iseriess/v5r3/index.jsp?topic=/rzaj1/rzaj1disastr.htm>
- ▶ Eclipse framework  
<http://www.eclipse.org>
- ▶ IBM eServer iSeries Information Center for Version 5 Release 3 (V5R3)  
<http://publib.boulder.ibm.com/iseriess/v5r3/ic2924/index.htm>
- ▶ IBM Software  
<http://www.software.ibm.com>
- ▶ IBM Systems Workload Estimator  
<http://www.ibm.com/supporthome.nsf/document/16533356>
- ▶ IBM Workplace  
<http://www.ibm.com/software/info/workplace/index.jsp>
- ▶ IBM Workplace Designer Version 2.5 Release Notes  
[http://www-12.lotus.com/ldd/doc/uafiles.nsf/docs/iwd25/\\$File/releasenotes.pdf](http://www-12.lotus.com/ldd/doc/uafiles.nsf/docs/iwd25/$File/releasenotes.pdf)
- ▶ IBM Workplace Services Express  
<http://www.lotus.com/products/product5.nsf/wdocs/workplaceservicesexpresshome/>
- ▶ IBM Workplace Solutions  
<http://www-306.ibm.com/software/info/workplace/solutions.jsp>
- ▶ IBM Workplace Software Development Kit  
<http://www-142.ibm.com/software/workplace/products/product5.nsf/wdocs/2c8a33e47eef8d0585256ee60054ddf2>
- ▶ Use **1dapsearch**  
<http://www.ibm.com/support/docview.wss?rs=899&uid=swg27002627>
- ▶ Lotus Documentation  
<http://www.lotus.com/ldd/notesua.nsf>
- ▶ SyncML  
<http://www.openmobilealliance.org/tech/affiliates/syncml/syncmlindex.html>
- ▶ WebSphere Portal 5.0.2 for iSeries Information Center  
<http://publib.boulder.ibm.com/pvc/wp/502/smbi/en/InfoCenter/index.html>
- ▶ WebSphere Portal Information Center  
<http://publib.boulder.ibm.com/infocenter/wp51help/index.jsp?topic=/com.ibm.wp.ent.doc/welcome.html>
- ▶ Workplace Collaboration Services Information Center  
<http://publib.boulder.ibm.com/infocenter/lwpphelp/index.jsp>
- ▶ Workplace Collaboration Services documentation  
<http://www.ibm.com/developerworks/workplace/documentation/collaborationservices/>



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