IBM Workplace Services Express 2.5.1 on iSeries lab:
Installation and configuration
version 1

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Abstract

This lab will guide you step-by-step through the installation and configuration process of IBM Workplace Services Express 2.5.1 on the IBM iSeries system. You will learn how to prepare an iSeries system in order to install Workplace Services Express, download the product images, and install the product. You will also see how to configure a Workplace Services Express instance secured with IBM LDAP (Lightweight Directory Access Protocol) and install Workplace Services Express Fix Pack 1.

Introduction

IBM® Workplace™ Services Express is a set of collaborative software that facilitates communication among team members. It allows them to work together more efficiently. Through the same collaborative portal interface users can access their applications and shared online work areas. Users can also create, edit, and share documents from any computer with a Web browser. Workplace Services Express includes ready-to-use team tools (portlets) and templates, so people and teams can get results and make decisions, quickly. Portlets created with IBM iSeries Access for Web, IBM WebFacing Tool (included with IBM WebSphere® Development Studio Client for iSeries), and WebSphere Host Access Transformation Services (HATS) can be deployed in the Workplace Services Express portal to enable access to iSeries resources and applications from the portal interface.

Workplace Services Express provides a collaboration environment based on open standards out of the box. Workplace Services Express includes:
* Easy-to-use, customizable team spaces where teams can collaborate
* Document management support to create, edit, and share documents (integrates with Microsoft® Office and Open Office)
* Instant Messaging (IM) and awareness
* Access to Microsoft Exchange or IBM Lotus® Domino® mail servers
* Integrated portal

On IBM System i5 and iSeries systems, all components of a Workplace Services Express solution can run on a single server. The typical components of a Workplace Services Express solution include a Web server, an application server, a database, an LDAP directory, and optionally, a Lotus Domino server for mail and traditional iSeries 5250 applications.

Prerequisites

You must download the installation media as described in the section, **Downloading the Workplace Services Express 2.5.1 images (production version)**. Alternatively, you can order the physical media (DVDs).

Reference documentation

Web sites listed in the **Resources** section of this lab include useful references to supplement the information contained in this document.

Sizing the iSeries system

You must size your system using the IBM eServer™ Workload Estimator or IBM Techline sizing support. Refer to the **Resources** section of this lab for information on how to access sizing resources.

Ensuring the minimum required hardware

The Workplace Services Express Information Center Web site documents the minimum hardware requirements for Workplace Services Express on the iSeries system. The **Resources** section provides a listing for this Web site.

Based on practical experience, your system will need the following minimum hardware:

- **Demo or proof of concept (PoC) system:**
  - An IBM iSeries 810 (2-way, 750 MHz) or an IBM POWER4™ 1.1 GHz processor or higher

  Note: On an IBM System i5 520, do not use processor features #8950, #8951, and #8952 (1000 CPW and below) for demonstrations and proofs of concept.

  - 6 gigabytes of RAM
  - 6 disk arms

- **Production system:**
  - i5 520 with processor feature #8953 or an IBM POWER5™ 1.5 GHz, 2400 CPW
  - 6 gigabytes of RAM
  - 10 x disk arms
  - 3 gigabytes of disk space for installation
  - 4 gigabytes of disk space for each instance
  - Additional disk space must be sized based on the Workplace Services Express application (for example, the document library data store).

Downloading Workplace Services Express 2.5.1 images

You can download the Workplace Services Express 2.5.1 package from the Web sites listed in the **Resources** section.

Note: Before starting this download, the IBM Business Partner company must be registered with IBM PartnerWorld®, and the person performing this task must be listed as a contact. If you are not registered, then locate the primary contact in your company for the PartnerWorld membership information before continuing with this paper.

Note: If your company has purchased Workplace Services Express licenses, you can download a production version of this software after logging in by using your Passport Advantage user ID and password.

Workplace Services Express 2.5.1 comes with a special license that allows you to install and deploy the product for evaluation for 120 days at no charge. You can download the Workplace Services Express evaluation version from the IBM Passport Advantage® Web site listed in the Resources section.

To download this version, complete the following steps:

1. Click **Trials and Betas** (Figure 1).

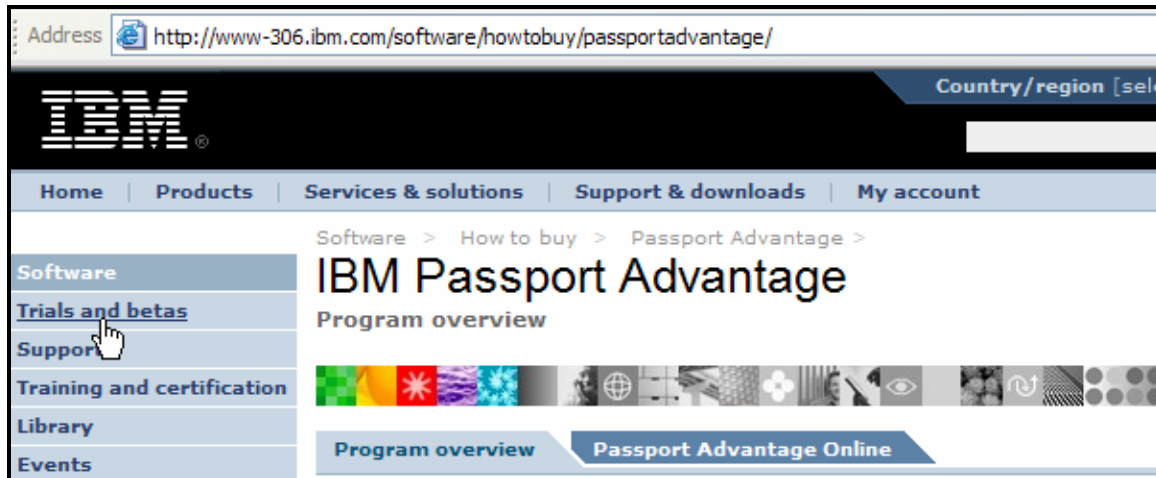*Figure 1: IBM Passport Advantage*

2. In the **Overview** tab, find the **Search for** box:
   a. Type **workplace services express** (Figure 2).
   b. To initiate your search, select the **Search** button.
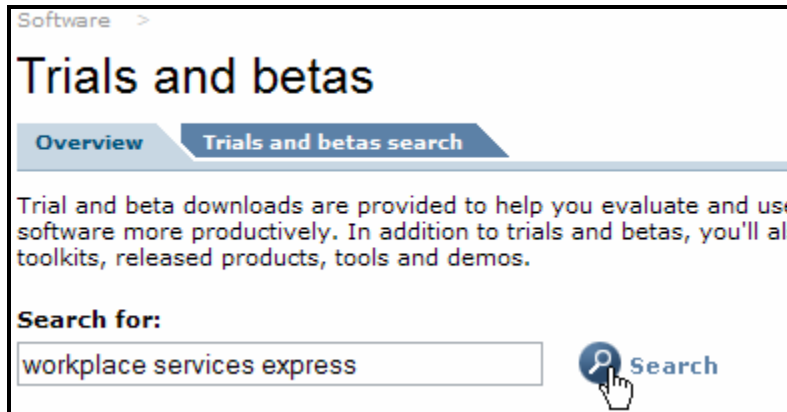
Figure 2: Trials and betas (Search for workplace services express)

3. Download the product, **Trial: IBM Workplace Services Express V2.5.1 Evaluation for iSeries Multilingual eAssembly** (Figure 3).
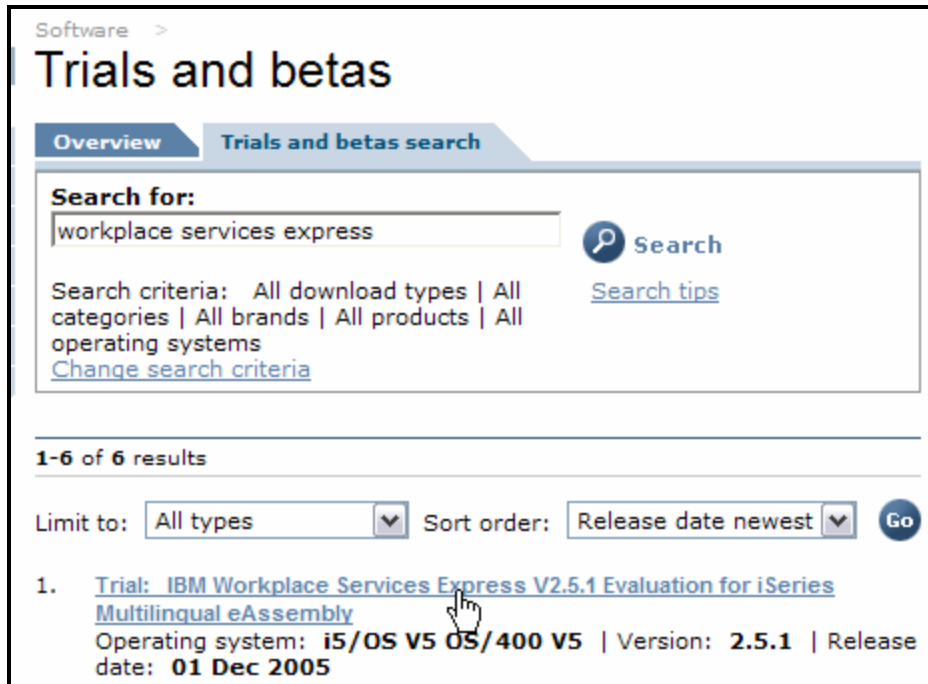
Figure 3: Trials and betas (download trial)

After you download the trial version, a simple utility allows you to convert the evaluation license to a full production license. For more information, refer to **Evaluating IBM Workplace Services Express** at the link provided in the **Resources** section.

Downloading the Workplace Services Express 2.5.1 images (production version)

Perform the following steps to download the electronic images of Workplace Services Express 2.5.1:

1. Create a directory on your local PC where you will store the downloaded images, for example: `c:\wse251_images`

2. Access the software downloads Web site listed in the **Downloading Workplace Services Express 2.5.1 images** section.

Figure 4 shows the IBM intranet software downloads Web site.
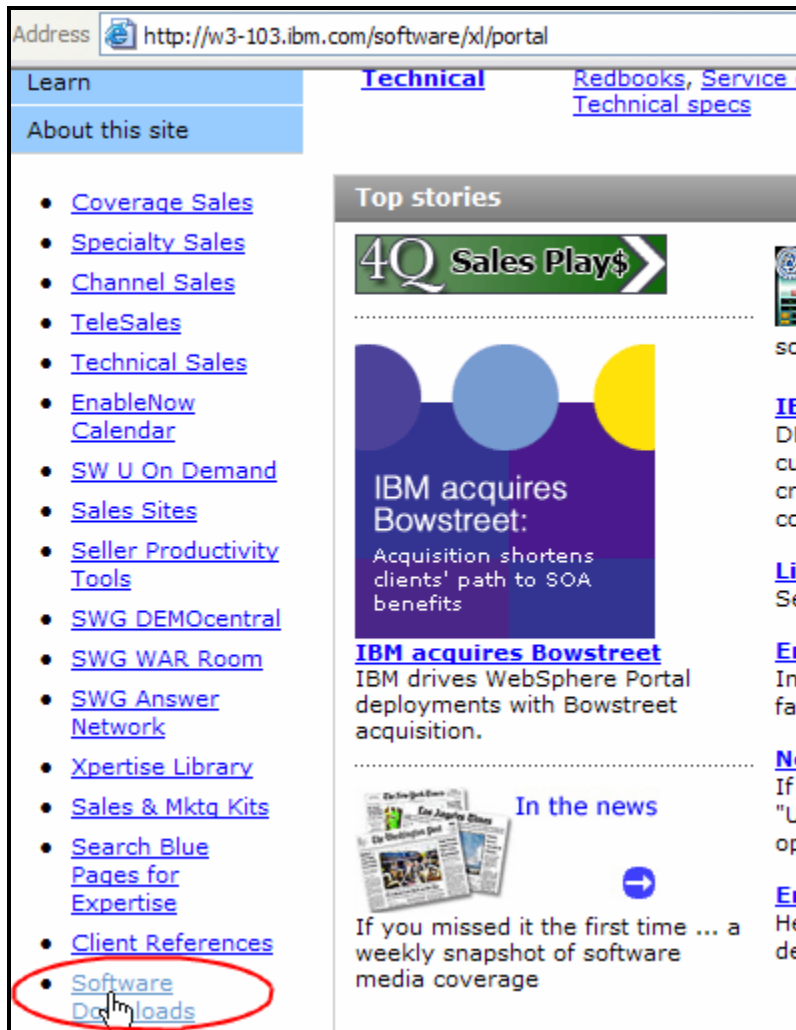
Figure 4: IBM intranet software downloads

4. Log on with the corresponding user ID and password. For example:
    *   If you are an IBM employee, you will use your IBM intranet user ID and password.
    *   If you are an IBM Business Partner or customer, you will use your Passport Advantage user ID and password.

5. On the **Find by search text** screen, enter the search text **workplace services express iSeries** (Figure 5) and select the **Search** button to find the software.

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Xtreme Leverage > Software Downloads

Find by search text

Select download method

◉ **Download Director**   ○ **Http transfer**

Find by search text

Enter search text and select the "Search" button to initiate your search.

workplace services express iseries   ○ Exact ◉ All

Exact will search descriptions for the exact text entered.

All will search descriptions for all of the text entered (in any order).

Search

Figure 5: Find by search text

6. Download the following images (Figure 6):

Lotus Software	1 eAssembly : 9 Products			
⊟ IBM Workplace Services Express V2.5.1 for iSeries Mulilingual eAssembly (CR2SVML)	24-Jun-2005			
☐ Select All				
☑ IBM Workplace Services Express V2.5.1 Read Me First for Windows,Linux and iSeries International English (C879ZIE)	15-Nov-2005	⊘	0.5	⊡
☑ IBM Workplace Services Express V2.5.1 Server Install for Linux and iSeries Multilingual (C87A0ML)	15-Nov-2005	⊘	398.0	⊡
☑ IBM Workplace Services Express V2.5.1 Server Install Archive 1 of 3 for Linux and iSeries Multilingual (C87A1ML)	15-Nov-2005	⊘	641.0	⊡
☑ IBM Workplace Services Express V2.5.1 Server Install Archive 2 of 3 for Linux and iSeries Multilingual (C87A2ML)	15-Nov-2005	⊘	445.0	⊡
☑ IBM Workplace Services Express V2.5.1 Server Install Archive 3 of 3 for Linux and iSeries Multilingual (C87A3ML)	15-Nov-2005	⊘	575.0	⊡
☑ IBM Workplace Services Express V2.5.1 Server Install Archive for iSeries Multilingual (C87AUML)	15-Nov-2005	⊘	80.0	⊡
☑ IBM Workplace Services Express V2.5.1 Server Install Upgrade Archive for Linux and iSeries Multilingual (C87CQML)	15-Nov-2005	⊘	120.0	⊡

Figure 6: Downloading Workplace Services Express

You can also download WebSphere Application Server for iSeries V5.0 and WebSphere Application Server Enterprise Enablement by selecting the images shown in Figure 7. (**Note:** The installation of these prerequisite products is beyond the scope of this document.)

☑ IBM Workplace Services Express 2.5.1 WebSphere Application Server for iSeries v5.0 (C88ECML)	18-Nov-2005	⊘	444.0	⊡
☑ IBM Workplace Services Express 2.5.1 WebSphere Application Server Ent. Enablement for iSeries (C88J1ML)	01-Dec-2005	⊘	638.0	⊡

Figure 7: Downloading the prerequisite WebSphere Application Server products

7. The files shown in Figure 8 will appear in your **c:\WSE251_jmages** directory.
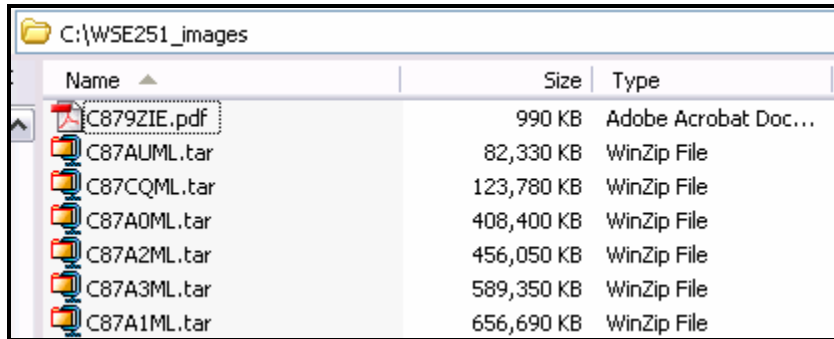
Figure 8: Files in c:\WSE251_Images directory

Assembling the downloaded images

These instructions assume that you have downloaded the Workplace Services Express 2.5.1 production installation media to your local PC hard drive directory **c:\WSE251_images** as described in the **Downloading the Workplace Services Express 2.5.1 images** *(production version)* section.

Follow the steps below:

1. Extract each **.tar** file using WINZIP or equivalent software (Figure 9).
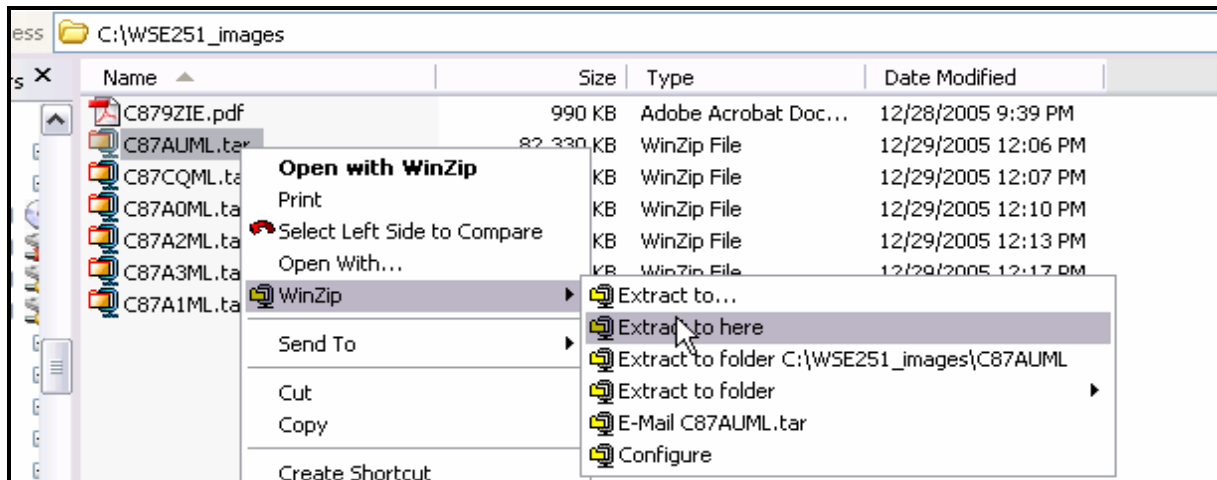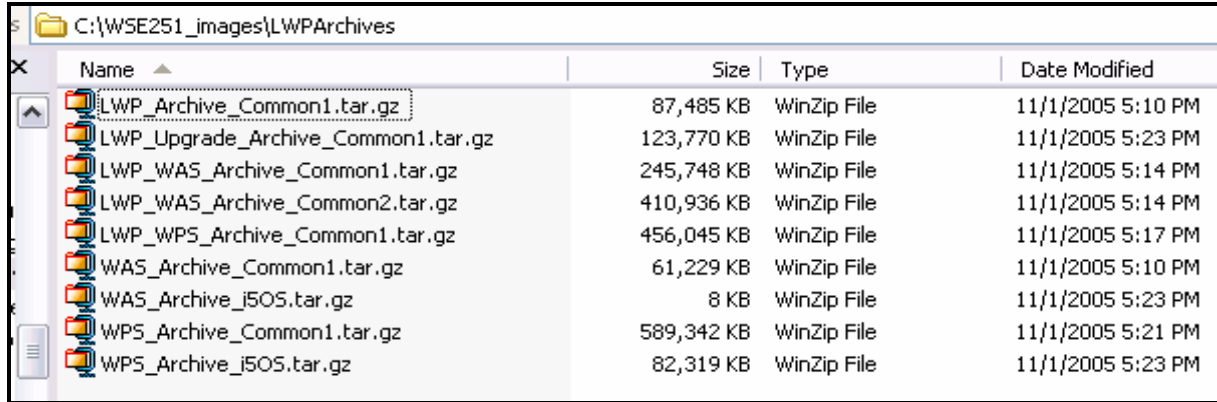
Figure 9: Extracting .tar files using WinZip software

2. The directories **LWPArchives** and **WSEserver** will be created.
3. **Figure** 10: LWPArchives directory
4. shows the **LWPArchives** directory after extracting the Workplace Services Express installation images.

Figure 10: LWPArchives directory

Figure 11 shows the **WSEServer** directory after extracting the Workplace Services Express installation images.
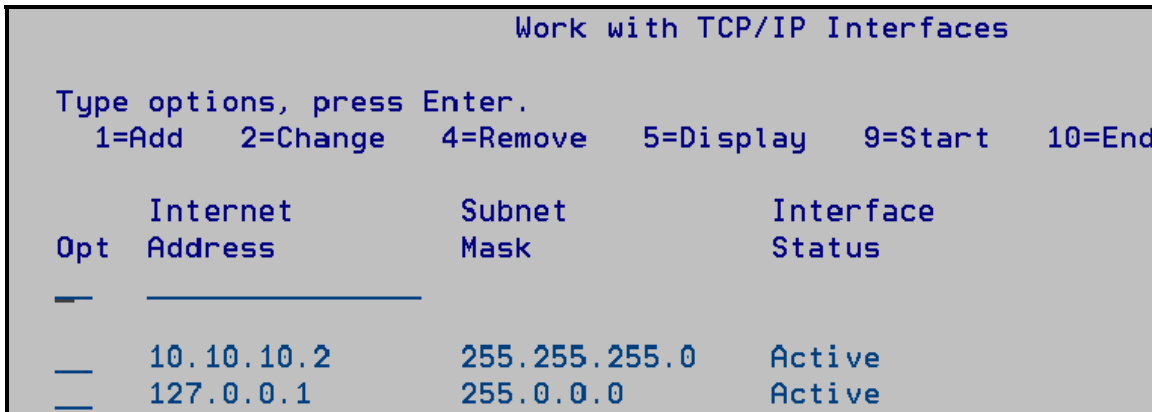
Figure 11: WSEServer directory

Configuring TCP/IP

This section describes the basic TCP/IP configuration required before you install and configure Workplace Services Express on your iSeries system. Implement the following steps:

1. Assign a dedicated IP address to your Workplace Services Express instance.
2. Activate the new IP address on your iSeries system by adding a new TCP/IP interface (Figure 12):
   a. From an IBM i5/OS® command line, enter the CFGTCP command and select option 1.
   b. Specify **1** to add, fill in the IP address, and press **Enter**.
   c. Fill in the line description name and press **Enter**.
   d. Type **9** by the new entry to activate the new IP address.

```
                          Work with TCP/IP Interfaces

 Type options, press Enter.
    1=Add    2=Change    4=Remove    5=Display    9=Start    10=End

         Internet           Subnet              Interface
 Opt   Address            Mask                 Status
 __    _____
 __    10.10.10.2         255.255.255.0        Active
 __    127.0.0.1          255.0.0.0            Active
```

Figure 12: TCP/IP Interfaces
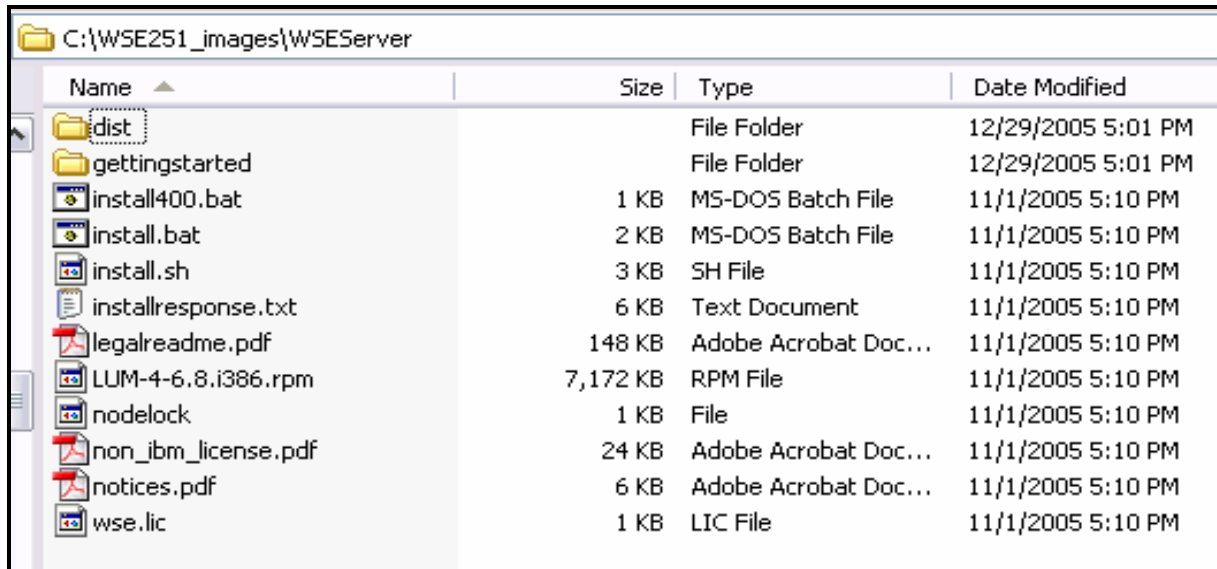
3. Configure the IP address (step 2 above) as a static IP address with an entry in DNS and an entry in the iSeries host table.

If you do not have a Domain Name Server (DNS), add this entry to your PC host table. The host name assigned to this IP address will be the host name of your Workplace Services Express instance, and it is referred to as **<wsehost>** in this document.

Note: Specify the fully qualified host name for your **<wsehost>** before the non-fully qualified name, as shown in Figure 13. The host and domain names in both the iSeries host table and the DNS server are case-sensitive.

```
                    Work with TCP/IP Host Table Entries


  Type options, press Enter.
    1=Add    2=Change    4=Remove    5=Display    7=Rename


        Internet            Host
  Opt   Address             Name

    _   _____
    _   10.10.10.2          WCS01.RCHLAND.IBM.COM
                            WCS01
    _   127.0.0.1           LOOPBACK
                            LOCALHOST
```

Figure 13: TCP/IP Host Table Entries

4. Verify your system's local host name and domain name configuration (**CFGTCP** option 12) (Figure 14).

```
                  Change TCP/IP Domain (CHGTCPDMN)

  Type choices, press Enter.

  Host name  . . . . . . . . . . .    'ITCEBIZ1'
  _____
  Domain name  . . . . . . . . . .    'RCHLAND.IBM.COM'



  _____
  Domain search list . . . . . . .    *DFT



  _____
  Host name search priority  . . .    *remote       *REMOTE, *LOCAL, *SAME
  Domain name server:
    Internet address . . . . . . .    10.10.10.5_
                                      _____
```

Figure 14: Change TCP/IP Domain (CHGTCPDMN)

Note: Specify **Host name search priority** *LOCAL if you do not have a DNS server.

5. Verify that you can ping the **<wsehost>** by fully qualified and non-fully qualified names from both your iSeries system and your PC. (This is the PC client that you will use to install the Workplace Services Express software.) For verification, type the following commands:
   ping <wsehost>.<domain> (Example: **ping wcs01.rchland.ibm.com**)
   ping <wsehost> (Example: **ping wse01**)
6. Verify that you can ping your iSeries host name from the PC client that you will use to perform the installation and from the local iSeries system.

7. Verify your local database **WRKRDBDIRE** configuration (Figure 15).

```
                    Work with Relational Database Directory Entries

 Position to  . . . . . .  _____


 Type options, press Enter.
   1=Add    2=Change    4=Remove    5=Display details    6=Print details


                              Remote
 Option  Entry                Location                  Text

   _     _____
   _     ITCEBIZ1             *LOCAL                    Entry added by system
```

*Figure 15: Work with Relational Database Directory Entries, **WRKRDBDIRE***

8. End the IBM i5/OS SMTP server, if it is active, by entering the **ENDTCPSVR *SMTP** command.

9. Make sure SMTP does not start (by default) during an i5/OS IPL by entering the **CHGSMTPA AUTOSTART(*NO)** command.

Note: If the i5/OS SMTP server must be active for existing applications, it needs to bind to a specific IP address.

Setting the time on the i5/OS operating environment

Before installing the IBM Workplace Services Express software, ensure that the Universal Time Coordinated (UTC) offset system value is set correctly by running the following command from an i5/OS command line (example below is for Central Standard Time):

CHGSYSVAL SYSVAL(QTIMZON) VALUE(QN0600CST)

For a complete list of time zone values, refer to the iSeries Information Center, Time zone Web site listed in the **Resources** section.

Obtaining group PTFs and single PTFs

To order or download iSeries platform program temporary fixes (PTFs), refer to the Web sites listed in the **Resources** section.

Installing software prerequisites and PTF groups

You must ensure the installation of all products and PTF prerequisites before installing the Workplace Services Express software.

1. Install or verify the following Licensed Program Products (LPPs), by issuing the **GO LICPGM** command and selecting option **10**:
   - 5722SS1 OS/400® V5R3
   - 5722JV1 (Option *BASE) IBM Developer Kit for Java™
   - 5722JV1 (Option 5) Java Developer Kit (Version 1.3)
   - 5722JV1 (Option 6) Java Developer Kit (Version 1.4)
   - 5722SS1 (Option 12) Host Servers
   - 5722SS1 (Option 30) QShell Interpreter
   - 5722SS1 (Option 33) OS/400 Portable Application Solution Environment (PASE)
   - 5722SS1 (Option 43) Additional Fonts
   - 5722DG1 IBM HTTP Server for iSeries
   - 5722TC1 TCP/IP Utilities
   - 5733WS5 (Option *BASE) WebSphere Application Server V5.0
   - 5733WS5 (Option 1) WebSphere Application Server V5.0 Client development and runtime (**Note:** This LPP must be installed before installing WebSphere Application Server Enterprise Enablement.)
   - 5733WS5 (Option 2) WebSphere Application Server V5.0 Application server runtime (**Note:** This LPP must be installed before installing WebSphere Application Server Enterprise Enablement.)
   - 5722AC3 Cryptographic Access Provider 128-bit
   - 5722JC1 Toolbox for Java

Note: For instructions on installing WebSphere Application Server V5.0 on your iSeries system refer to the WebSphere Application Server installation and configuration Web site listed in the **Resources** section.

Installation note: If you install WebSphere Application Server remotely using a graphical interface, ensure that you also install the following products that are included on the WebSphere Application Server media:
   - WebSphere MQ V5.3 for iSeries
   - WebSphere MQ classes for Java and Java Message Service (JMS) V5.3 for iSeries

It is important that you do not install the WebSphere Application Server V5.0 Enterprise Enablement, 5733WS5 (option 10) LPP at this time. You must load and apply the PTF groups (Table 1) first.

Install or verify the following PTF groups (Table 1). Use the Work with PTF Group **WRKPTFGRP** command to verify the PTF groups already installed on your system.

Note: For the latest PTF information refer to
http://www-03.ibm.com/servers/eserver/iseries/software/workplace/support.html.

Group number	Description	Minimum group PTF level	Required
SF99530	Cumulative PTF package	5032	Yes
SF99287	WebSphere Application Server V5.0 (Base Edition)	15	Yes
SF99503	IBM DB2 Universal Database ™ (DB2 UDB®) for iSeries	8	Yes
SF99269	Java	9	Yes
SF99099	IBM HTTP Server for iSeries	7	Yes

Table 1: PTF groups

2. Install 5733WS5 (**Option 10**) Workplace Services Express V5.0 Enterprise Enablement. (For installation instructions, refer to the Workplace Services Express 2.5.x Information Center Web site provided in the **Resources** section.)
3. Install PTF group SF99282 WebSphere Portal Express/Express Plus Service Pack level 3 after installing 5733-WS5 (option 10) Workplace Services Express V5.0 Enterprise Enablement (Table 2).

PTF group number	Description	Minimum PTF group level
SF99282	WebSphere Portal Express/Express Plus Service Pack	3

Table 2: PTF group number SF99282

Installing required individual PTFs

In addition to the PTF groups listed in the previous session, you must install the following PTFs:

PTF ID: SI17024 Product ID: 5733WS5

PTF ID: MF37582 Product ID: 5722999

PTF ID: MF38004 Product ID: 5722999

PTF ID: SI21488 Product ID: 5722SS1

PTF ID: SI19860 Product ID: 5722SS1

Preparing the LDAP directory

Note: This step is not required if you use the LDAP default suffix on the LDAP server running on the iSeries system. Sometimes, there might be a need to separate LDAP environments (for example, during production and development or testing). Creating a separate LDAP suffix allows you to separate the environments. Multiple Workplace Services Express instances can run on the same iSeries system, sharing the same LDAP suffix or using their own suffix.

Perform the following steps:
1. Add a new suffix to the LDAP directory:
    a. Start the iSeries Navigator management tool for the i5/OS operating environment.
    a. Expand the node by selecting **iSeries** > **Network** > **Servers** > **TCP/IP**.
    b. Right-click **IBM Directory Server** and select **Properties** from the context menu.
    c. Select the **Database/Suffixes** tab (Figure 16).
    d. In the **New suffix** field, enter **dc=<wsehost>, dc=<dom1>, dc=<dom2>, … dc=<domx>, dc=com** (where **<wsehost>** is the name of the host associated with the IP address you are using to configure Workplace). Qualifiers for your domain are: **<dom1>, <dom2>, …. <domx>**.
        Note: Make sure to enter a space after each comma. For example, if the fully qualified host name is **itcebiz4a.rchland.ibm.com**, you need to enter **dc=itcebiz4a, dc=rchland, dc=ibm, dc=com** in the New suffix field (as shown in **Figure 16**).
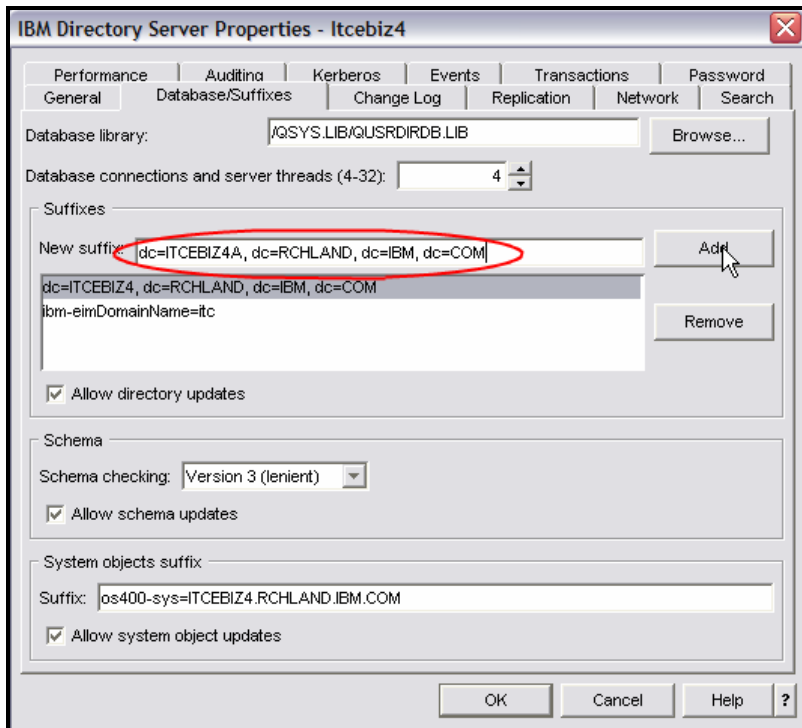   e. Click **Add** > **OK**.

Figure 16: IBM Directory Server Properties

2. Copy the following text to a PC text file and name it **PortalUsers_<your_wsehost>.ldif (for example, PortalUsers_ITCEBIZ4.ldif)**.

```
Version: 1
# NOTE: you must edit this file before importing it and replace all # occurrences of
the default suffix dc=yourco,dc=com with the suffix # that your LDAP server is
configured for.
dn:dc=itcebiz4a,dc=rchland,dc=ibm,dc=com
objectclass: domain
objectclass: top
# Add lines according to this scheme that correspond to your suffix
dc: dc=itcebiz4a,dc=rchland,dc=ibm,dc=com
dc: itcebiz4a

dn: cn=users,dc=itcebiz4a,dc=rchland,dc=ibm,dc=com
objectclass: container
objectclass: top
cn: users

dn: cn=groups,dc=itcebiz4a,dc=rchland,dc=ibm,dc=com
objectclass: top
objectclass: container
cn: groups

dn: uid=wpsadmin,cn=users,dc=itcebiz4a,dc=rchland,dc=ibm,dc=com
objectclass: organizationalPerson
objectclass: person
objectclass: top
objectclass: inetOrgPerson
uid: wpsadmin
userpassword: wpsadmin
sn: admin
givenName: wps
cn: wps admin
mail: wpsadmin@itcebiz4a.rchland.ibm.com

dn: cn=wpsadmins,cn=groups,dc=itcebiz4a,dc=rchland,dc=ibm,dc=com
objectclass: groupOfUniqueNames
objectclass: top
uniquemember:uid=wpsadmin,cn=users,dc=itcebiz4a,dc=rchland,dc=ibm,dc=com
cn: wpsadmins
```

3. Modify the LDAP Data Interchange Format (LDIF) file to configure your LDAP suffix:
   f. Copy the file **PortalUsers_<your_wsehost>.ldif** to an Information File System (IFS) directory on your iSeries system (referred to as <your_directory> in the following steps).
   g. Using a text editor (for example, Notepad), modify the **PortalUsers_<your_wsehost>.ldif** file as follows:
      i. Find and replace all occurrences of **dc=itcebiz4a,dc=rchland,dc=ibm,dc=com** with the new suffix you created above.
      ii. Find and replace all occurrences of **itcebiz4a** with the **<wsehost>** host name.
      iii. Repeat until you cannot find any more occurrences of **itcebiz4a**.
      iv. Change the user password for **wpsadmin** to any password of your choice.
      v. Be sure not to change any other lines in this file.
      vi. **Save** the file with the same name.
      vii. **Close** the text editor.

   Note: Verify that your text editor has not added an extra extension to the file (for example, .txt). The file must have the **.ldif** extension.

4. Stop the **IBM Directory Server**:
   a. From iSeries Navigator, click **Network** > **Servers** > **TCP/IP**.
   b. Right-click **IBM Directory Server** > **Stop**.
5. Import the **PortalUsers_<your_wsehost>.ldif** file:
   a. From iSeries Navigator, right-click **IBM Directory Server** > **Tools** > **Import File**.
   b. Click **Browse** and select: **/<your_directory>/PortalUsers_<your_wsehost>.ldif**.
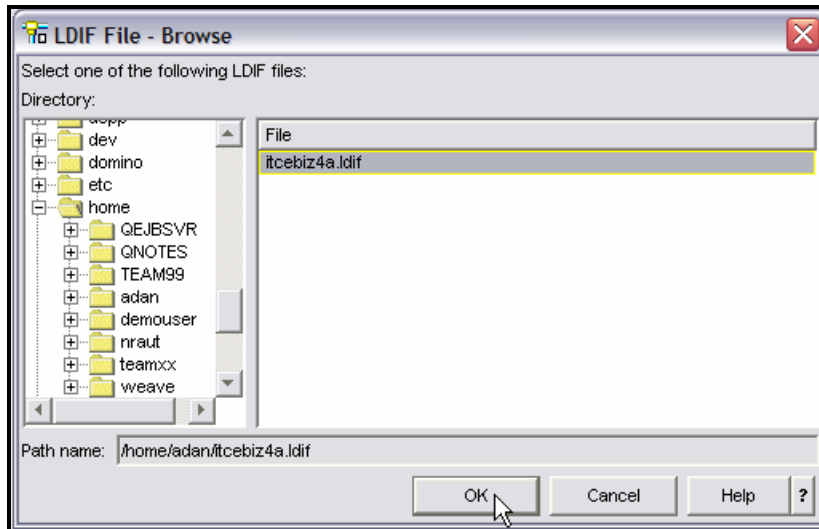   c. Click **OK** twice (Figure 17).

Figure 17: Import PortalUsers_<your_wsehost>.ldif

    d.   When the import operation completes, click **Done** (Figure 18).
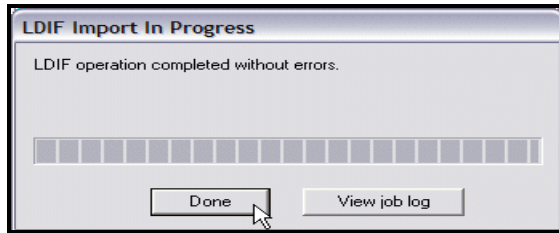

Figure 18: LDIF Import in Progress

6. Start the **IBM Directory Server**:
   a. From iSeries Navigator, click **Network** > **Servers** > **TCP/IP**.
   b. Right-click **IBM Directory Server** > **Start**.

Installing Workplace Services Express 2.5.1 production version (remote install)

The instructions, in this section, assume that you are remotely installing Workplace Services Express from a Windows-based workstation connected to your iSeries system via a local area network (LAN). When you run the installation program from the command prompt of your Windows machine, you will be prompted to sign on to your i5/OS operating environment.

Installing from a Windows workstation using e-images

After assembling the e-images, you can proceed to install Workplace Services Express 2.5.1 on your iSeries system. You need a user profile with ***IOSYSCFG**, ***ALLOBJ**, and ***JOBCTL special authorities**.

1. Start the following subsystems by issuing the i5/OS Start Subsystems (STRSBS) commands:
   a. **STRSBS SBSD(QSYSWRK)**
   b. **STRSBS SBSD(QUSRWRK)**
   c. **STRSBS SBSD(QSERVER)**

2. Start the host server by issuing the **STRHOSTSVR SERVER(*ALL)** command.
3. Make sure, you can successfully PING the host name of your iSeries system from the PC you are using to install the Workplace Services Express software.
4. From a DOS session, change the current directory by entering the command **cd c:\WSE251_images\WSEServer** .
5. Run **install400.bat**.

6. Enter the following information:
    System: Your iSeries host name
    Username: The iSeries user profile with ***IOSYSCONFIG, *JOBCTL**, and ***ALLOBJ**
                         authorities
    Password: Your password (Figure 19)
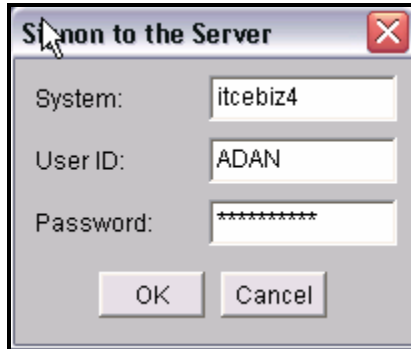
Figure 19: Signon to the Server

7. Select the InstallShield for Multi Platforms (ISMP) **Language** and click **OK** (Figure 20).
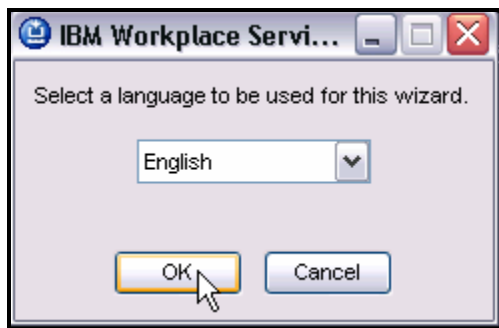
Figure 20: Selecting a language for ISMP

8. To continue the installation, click **Next** (Figure 21). The ISMP wizard will perform prerequisite checking before the install.
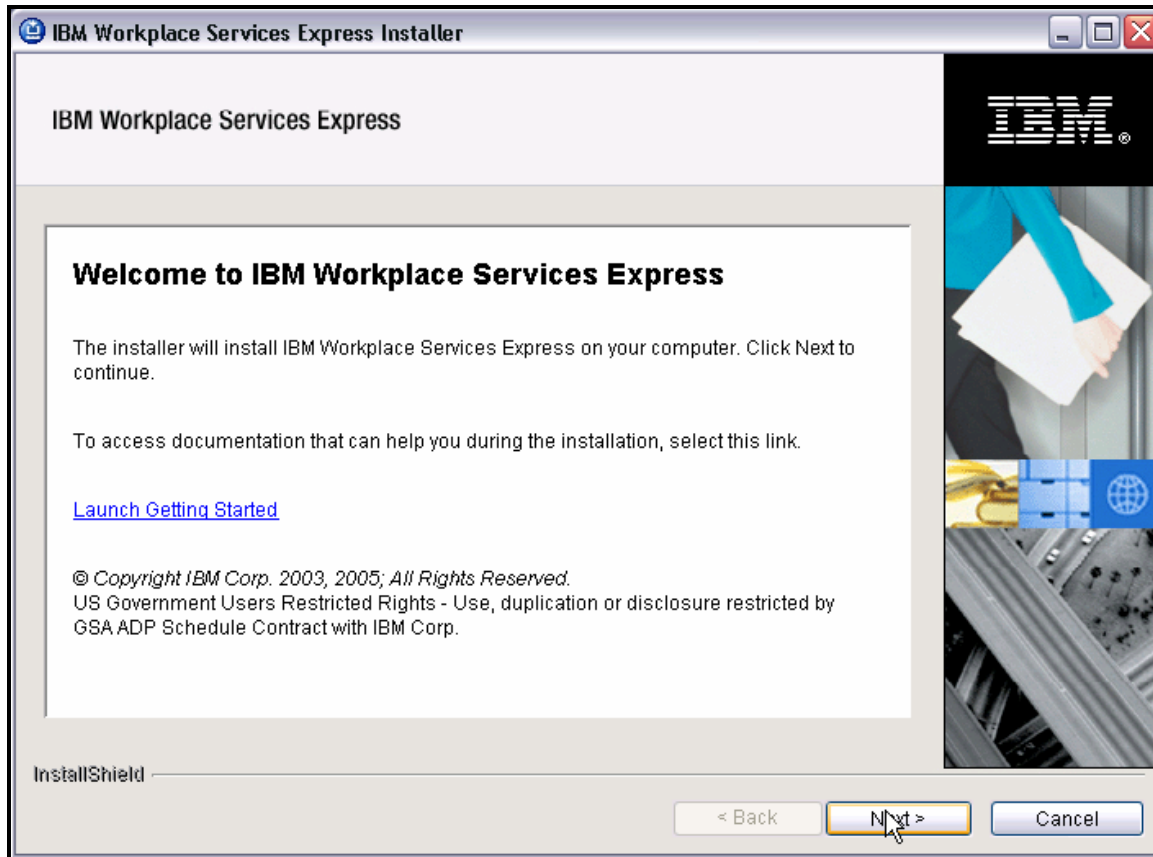
Figure 21: Workplace Services Express Installer

9. Accept the license terms and click **Next** (Figure 22).
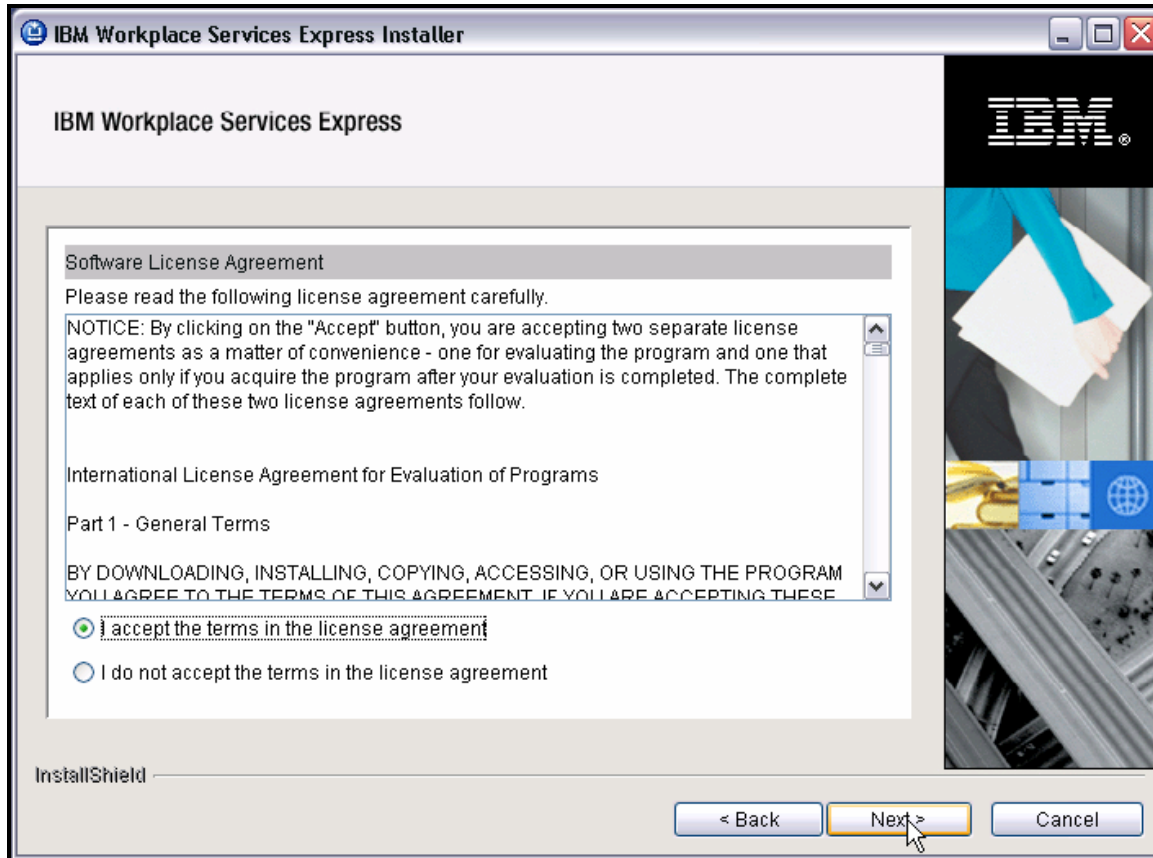
Figure 22: Workplace Services Express Software License Agreement

10. Click **Next** on the **Summary** page. Notice the install location of the Workplace Services Express 2.5.1 code (Figure 23).
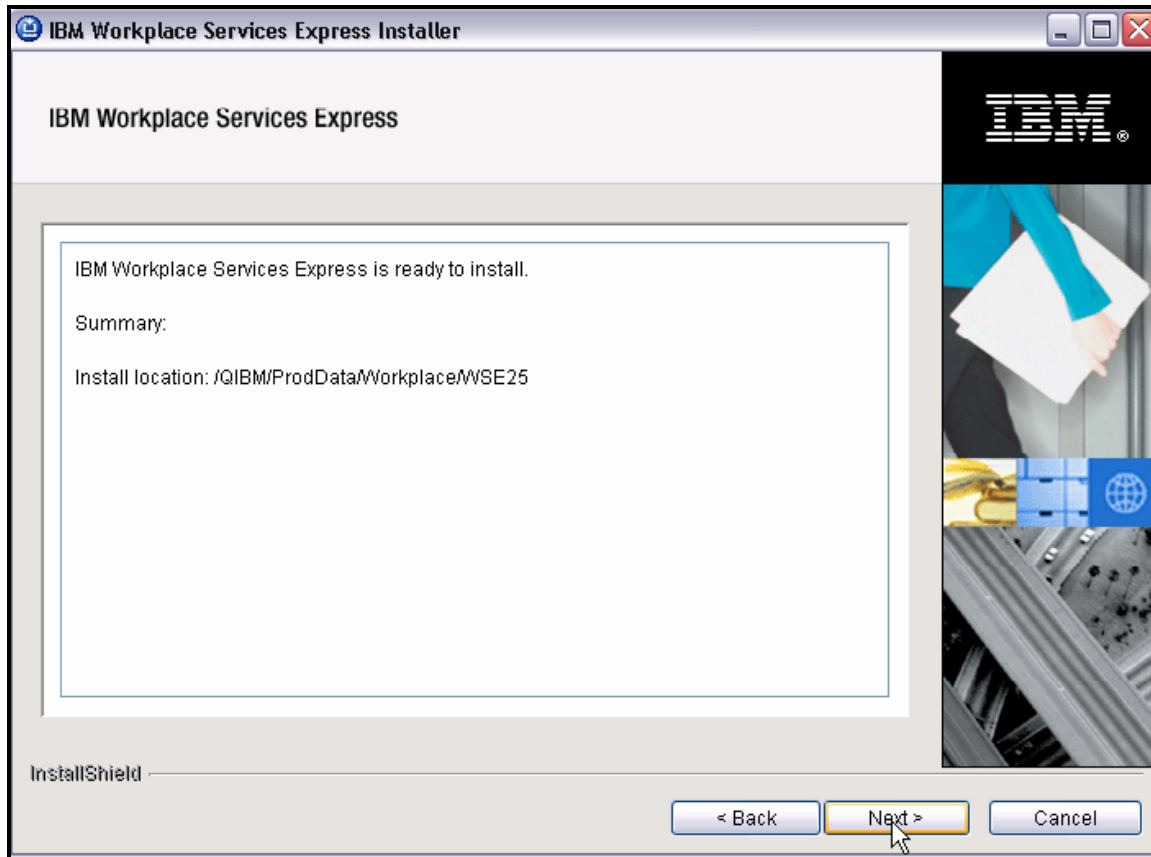
Figure 23: Workplace Services Express Install location

Note: The remote installation of the product files can take approximately 10 to 20 minutes. At this point, a file called **lwpinstall.lockfile** is created in the IFS directory, **/tmp/InstallShield/LWAI** and is removed after the install completes. If a previous attempt to install the product has not finished successfully, you might see an error message now and will need to delete **lwpinstall.lockfile** before you can continue. You can check the **lwpinstalllog.txt** file for any errors in the same directory.

11. The installation progress bar appears. During installation, the progress bar stays at 1% and does not increase as the installation progresses (Figure 24). Future versions of the Workplace Services Express software will correct this problem.
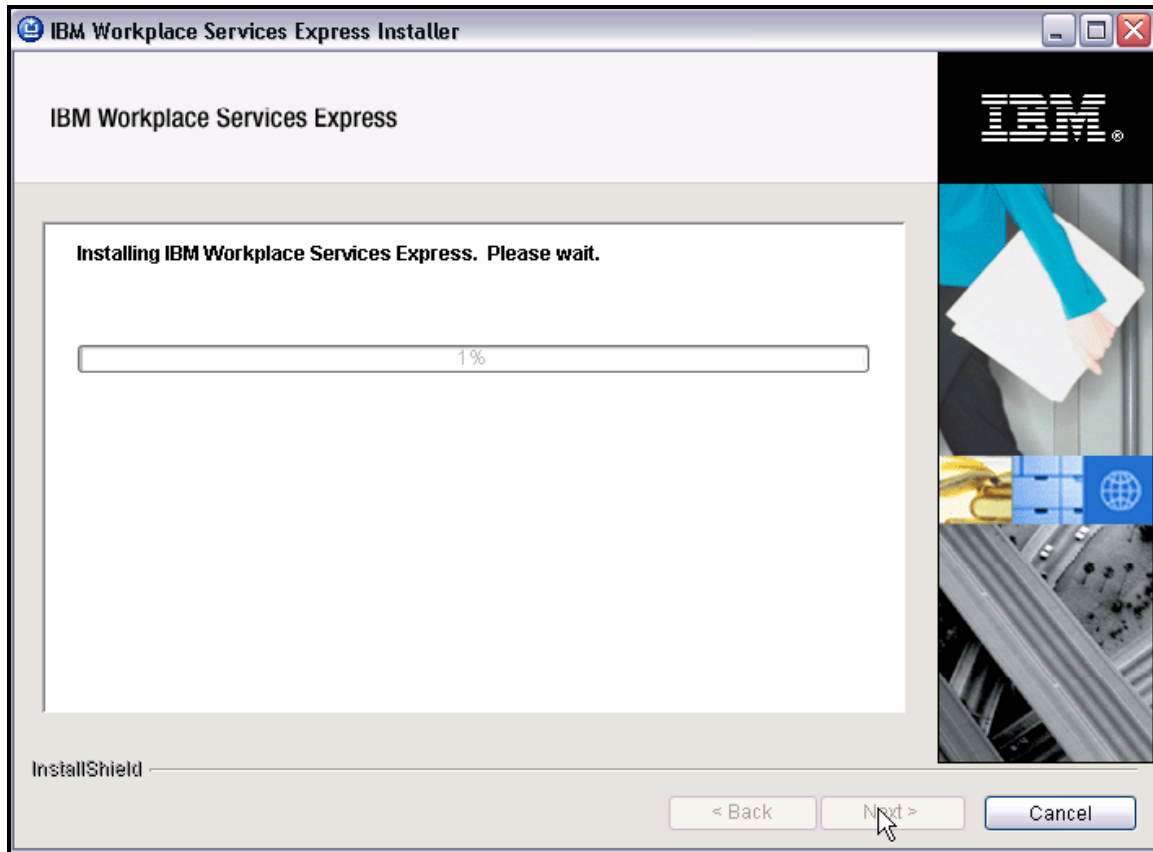
Figure 24: Workplace Services Express installation progress bar

12. At the successful installation message, click **Next** (Figure 25).
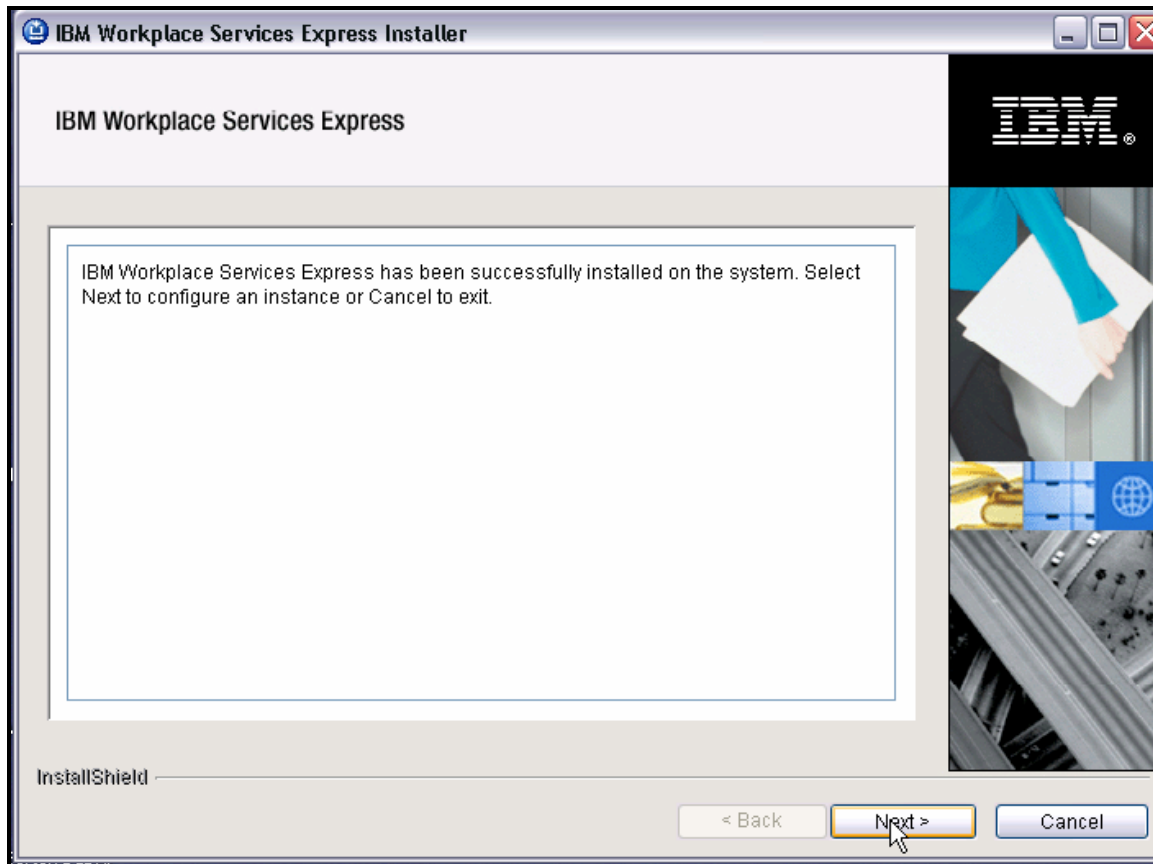
Figure 25: Workplace Services Express has successfully installed.

13. Select **IBM Workplace Services Express setup wizard for i5/OS** and click **Next** (Figure 26).
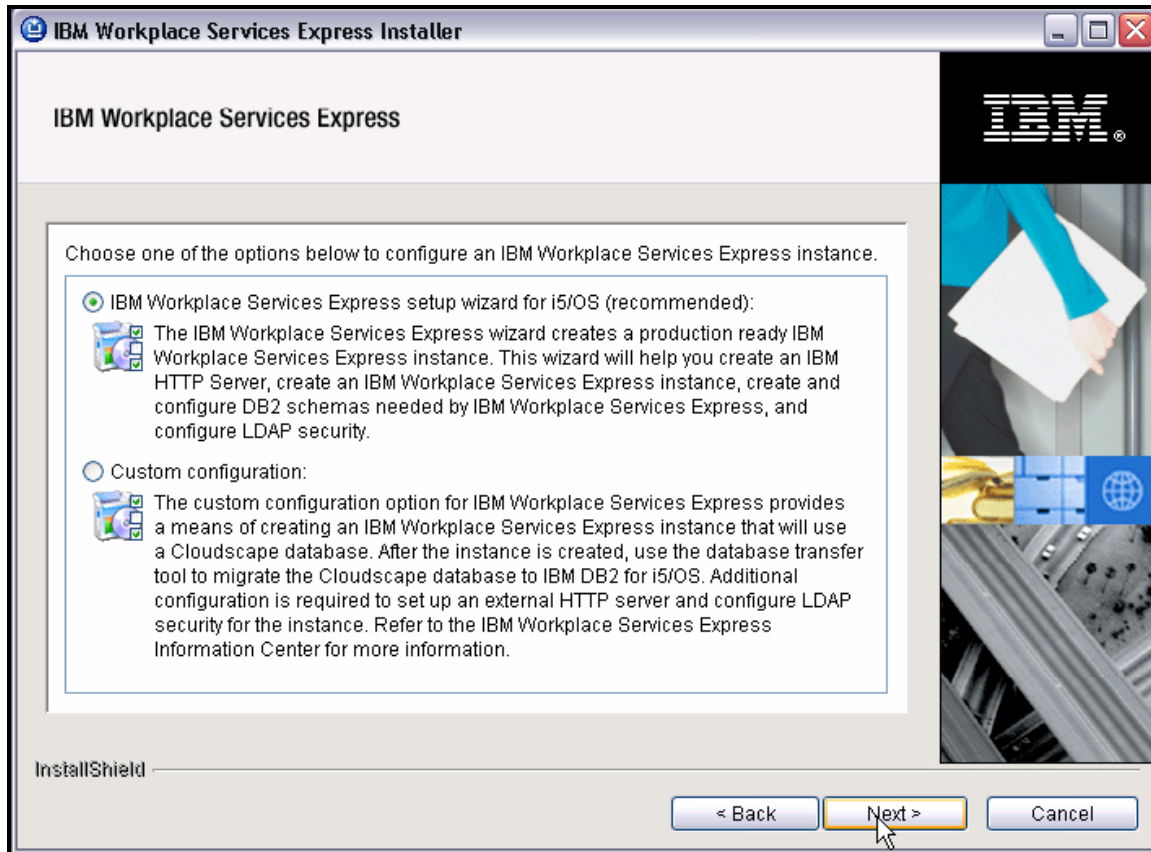
Figure 26: Options for configuring a Workplace Services Express instance

14. If the **HTTP *ADMIN** server is not started, click **Next** (Figure 27).
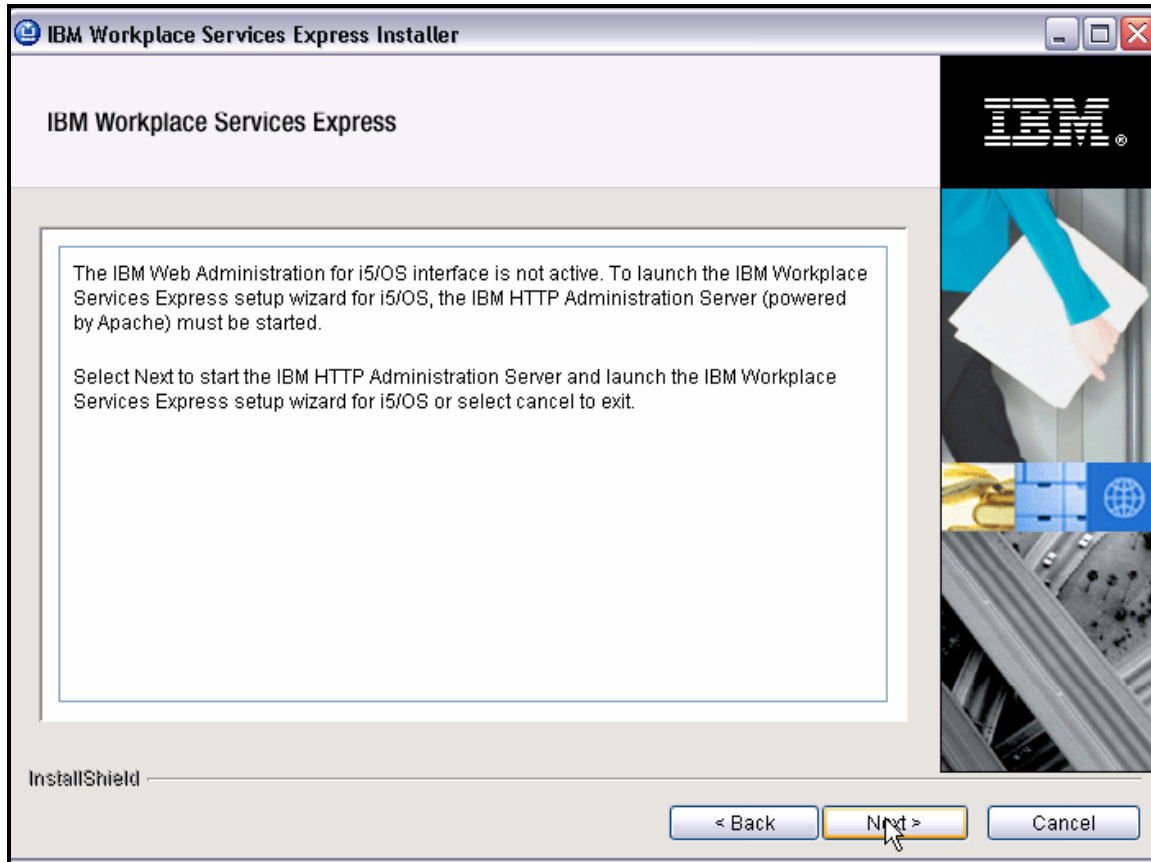
Figure 27: Starting the IBM HTTP Administration Server

15. The HTTP server will then start (Figure 28).
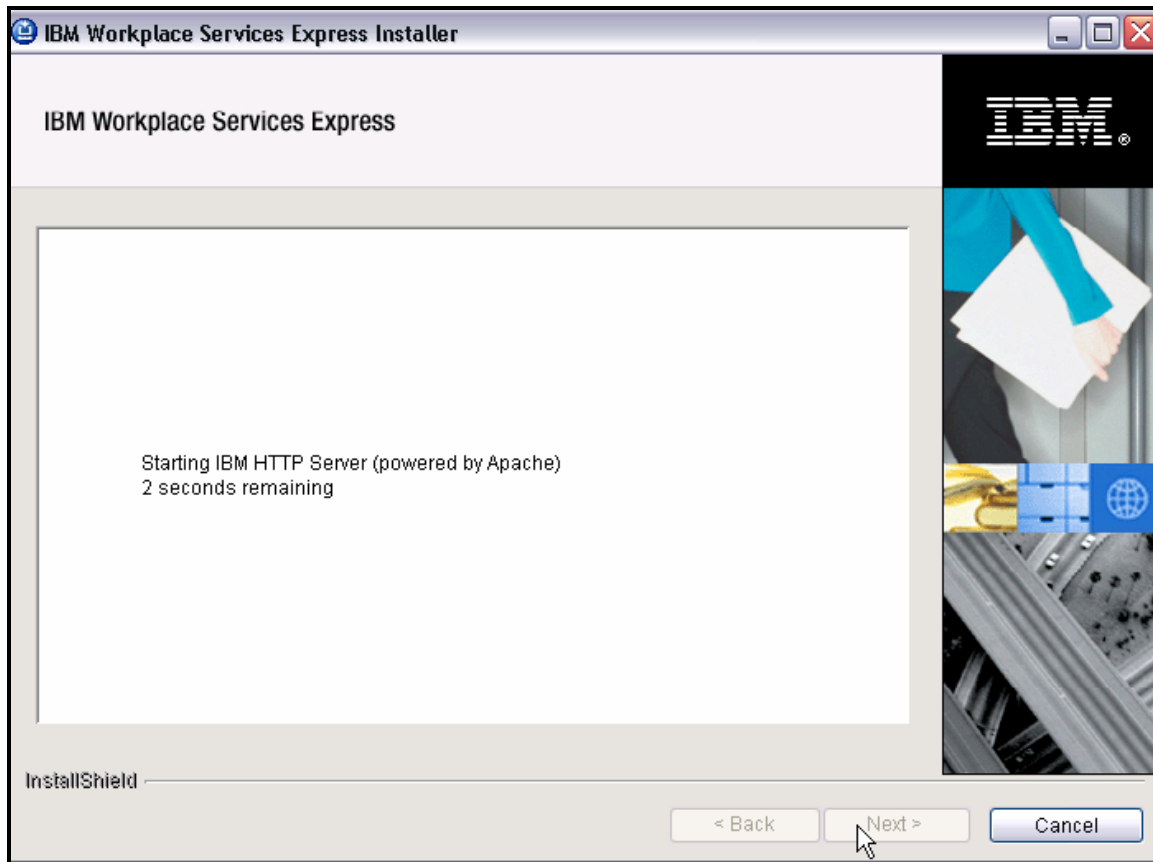
Figure 28: Starting the IBM HTTP Server

16. Click on the link, **Launch the IBM Workplace Services Express setup Wizard for i5/OS**
(Figure 29). This will launch a browser into the **Create IBM Workplace Wizard** from IBM Web
Administration for iSeries.
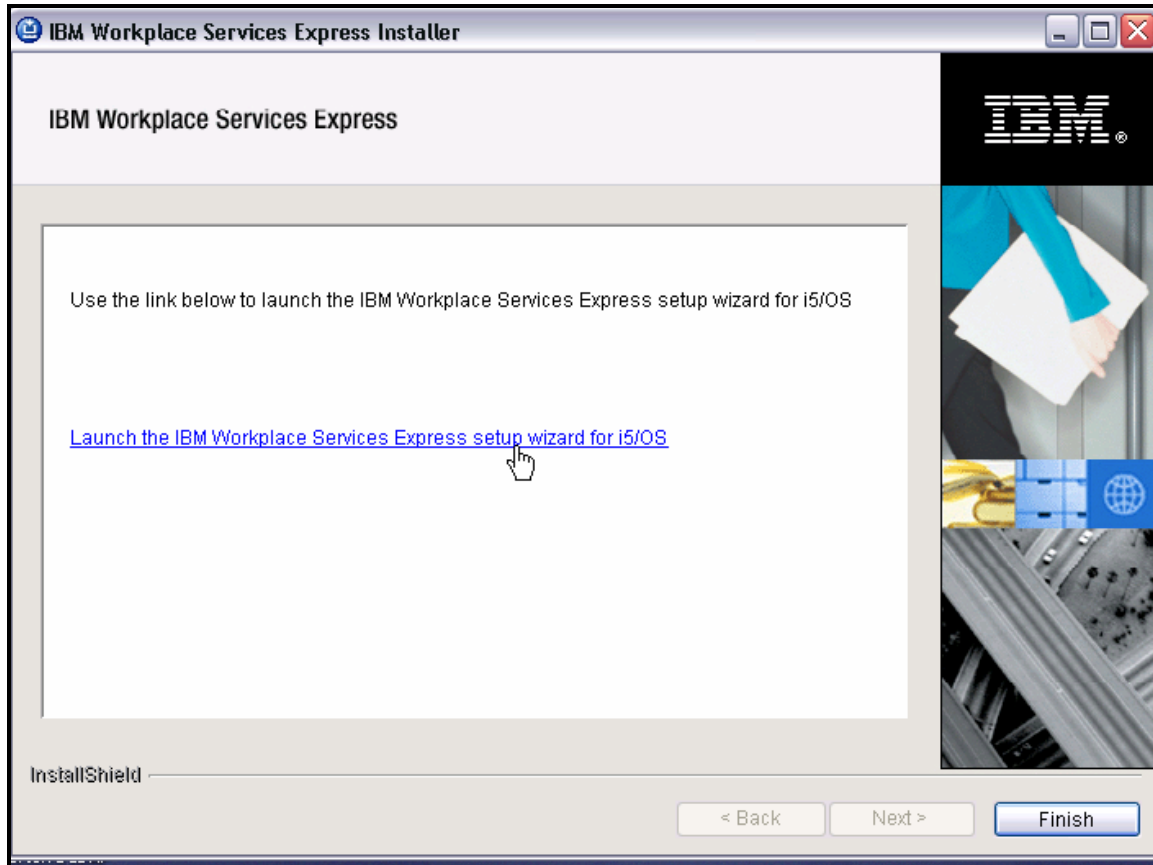
Figure 29: Launching the Workplace Services Express setup wizard for the i5/OS operating system

17. Before you continue configuring Workplace Services Express in the browser session, as
described in the

Configuring a Workplace Services Express instance with IBM Workplace Configuration Wizard for the i5/OS section, close the ISMP wizard now by clicking **Finish**.

18. Check the logs in **/tmp/InstallShield/lwai**; look for any error message.
19. Start the **QEJBAS5** subsystem by issuing the i5/OS **Start Subsystems** command:
STRSBS SBSD(QEJBAS5/QEJBAS5)

Installing Workplace Services Express 2.5.1 production version (local install)

This section describes the local installation on Workplace Services Express using electronic images. To install Workplace Services Express locally on your iSeries system, follow the instructions below:

1. Create a directory on the iSeries IFS (for example: **mkdir Workplace_Installs**).
2. Copy the directories **c:\WSE251_Images\WSEServer** and **c:\WSE251_Image\LWPArchives** to the iSeries IFS directory, **\Workplace_Installs** (Figure 30).
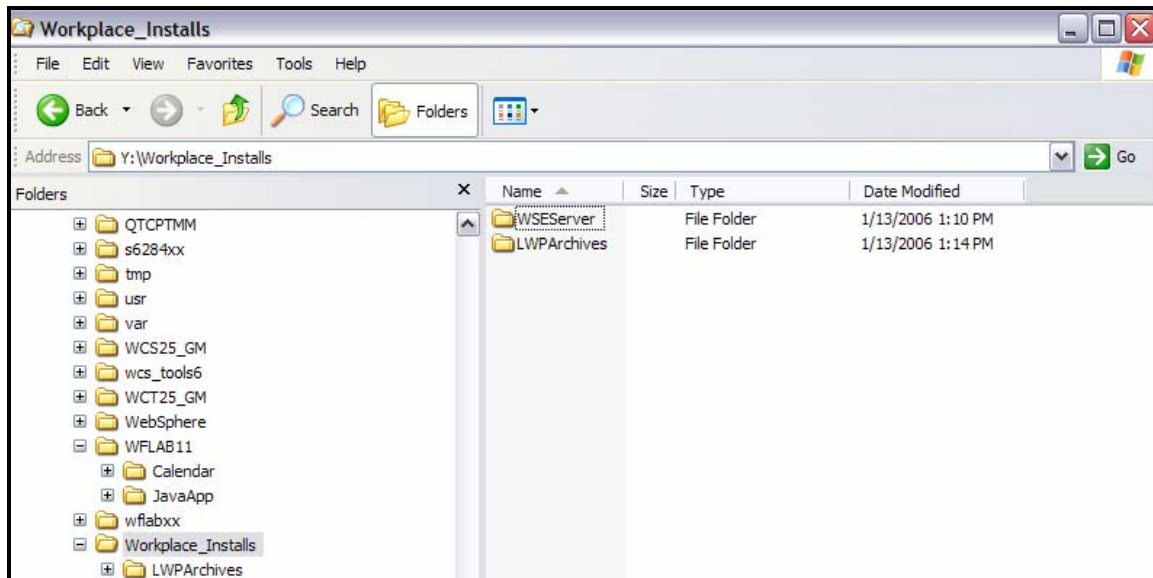
Figure 30: The iSeries IFS directory, \Workplace_Installs

3. From an i5/OS command line, start a Qshell session by entering:
   STRQSH

4. Change to the IFS directory you created above: **cd /Workplace_Installs/WSEServer** (Figure 31).
5. Select **install.sh** and press **Enter** (Figure 31).

```
                                          QSH Command Entry
  $
> cd /Workplace_Installs/WSEServer
  $

















===> install.sh
```

Figure 31: Start QShell and change IFS directory.

6. Select a language for the install and press **Enter** (Figure 32).

```
                                          QSH Command Entry
  [ ] 5  - Greek
  [ ] 6  - Hungarian
  [ ] 7  - Italian
  [ ] 8  - Japanese
  [ ] 9  - Korean
  [ ] 10 - Polish
  [ ] 11 - Portuguese
  [ ] 12 - Portuguese (Brazil)
  [ ] 13 - Russian
  [ ] 14 - Simplified Chinese
  [ ] 15 - Spanish
  [ ] 16 - Traditional Chinese
  [ ] 17 - Turkish

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


===> 0
```

Figure 32: Install language selection

7. At the **Welcome to IBM Workplace Services Express** page, select **1** for **Next**, and press **Enter** (Figure 33).

```
                                        QSH Command Entry

 [ ] 17 - Turkish

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


 ------------------------------------------------------------------------------
 Welcome to IBM Workplace Services Express

 The installer will install IBM Workplace Services Express 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
```

Figure 33: Welcome to IBM Workplace Services Express install

The prerequisite checker verifies prerequisites.

8. To display the license agreement, press **Enter** (Figure 34).

```
                                        QSH Command Entry

 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.

 ------------------------------------------------------------------------------
 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.


===>
```

Figure 34: Software Licensing Agreement

9. Enter **1** to accept the agreement and press **Enter** (Figure 35).

```
                                              QSH Command Entry

 - PROMPTLY RETURN THE PROGRAM TO THE PARTY FROM WHOM YOU
       ACQUIRED IT. IF YOU DOWNLOADED THE PROGRAM, CONTACT THE
       PARTY FROM WHOM YOU ACQUIRED IT.



 "IBM" is International Business Machines Corporation or one
       of its subsidiaries.



 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
```

Figure 35: Accept license agreement.

10. Select **1** for **Next** and press **Enter** (Figure 36).

```
                                              QSH Command Entry
  IBM Workplace Services Express is ready to install.


  Summary:


  Install location: /QIBM/ProdData/Workplace/WSE25


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

Figure 36: IBM Workplace Services Express is ready to install.

11. The screen displays the installation progress bar (Figure 37).

```
                                              QSH Command Entry


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

  Installing IBM Workplace Services Express.  Please wait.


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

  Installing IBM Workplace Services Express.  Please wait.


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

Figure 37: Installation progress bar display

12. At the end of the install, select **1** to configure a Workplace Services Express instance now, or
    select **3** to **Cancel** (finish the install) and configure the instance later using the IBM Workplace
    Configuration Wizard for i5/OS. The example in Figure 38 shows selecting **1** to configure the
    instance now.

```
                                              QSH Command Entry


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

  Installing IBM Workplace Services Express.  Please wait.


  |-----------|-----------|-----------|-----------|
  0%          25%         50%         75%         100%
  |||||||||||||||||
  ------------------------------------------------------------------------
  IBM Workplace Services Express has been successfully installed on the system.
  Select Next to configure an instance or Cancel to exit.


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

Figure 38: Ready to configure a Workplace Services Express instance

13. To launch the IBM Workplace Configuration wizard, select option **1** - **IBM Workplace Services Express setup wizard for i5/OS (recommended)** (Figure 39)**.**


```
                              QSH Command Entry
   [X] 1 - IBM Workplace Services Express setup wizard for i5/OS (recommended):
           The IBM Workplace Services Express wizard creates a production ready IBM
           Workplace Services Express instance. This wizard will help you create an
           IBM HTTP Server, create an IBM Workplace Services Express instance,
           create and configure DB2 schemas needed by IBM Workplace Services
           Express, and configure LDAP security.

   [ ] 2 - Custom configuration:
           The custom configuration option for IBM Workplace Services Express
           provides a means of creating an IBM Workplace Services Express instance
           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 instance. Refer to the
           IBM Workplace Services Express Information Center for more information.

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

Figure 39: Launching the IBM Workplace Configuration wizard

14. The screen displays the link to the IBM Workplace configuration wizard on your system. Replace **localhost** by the host name of your iSeries system. Press **3** to finish the installation (Figure 40).


```
                              QSH Command Entry
         HTTP server and configure LDAP security for the instance. Refer to the
         IBM Workplace Services Express Information Center for more information.

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

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

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

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

   Press 3 to Finish or 4 to Redisplay [3]

   ===> 3
```

Figure 40: Finishing installation

Configuring a Workplace Services Express instance with IBM Workplace Configuration Wizard for the i5/OS operating system

If you clicked on the **Launch IBM Workplace Services Express setup wizard for i5/OS** at the end of the Workplace Services Express remote installation, or if you selected **IBM Workplace Services Express setup wizard for i5/OS (recommended)** at the end of a local installation, the Web Administration for iSeries wizard will be launched. Otherwise, you can launch it by pointing your browser to http://<iseries_system>:2001/HTTPAdmin.

1. Click **IBM Web Administration for iSeries**.
2. Click **Create IBM Workplace** (Figure 41).

Figure 41: Select Create IBM Workplace.
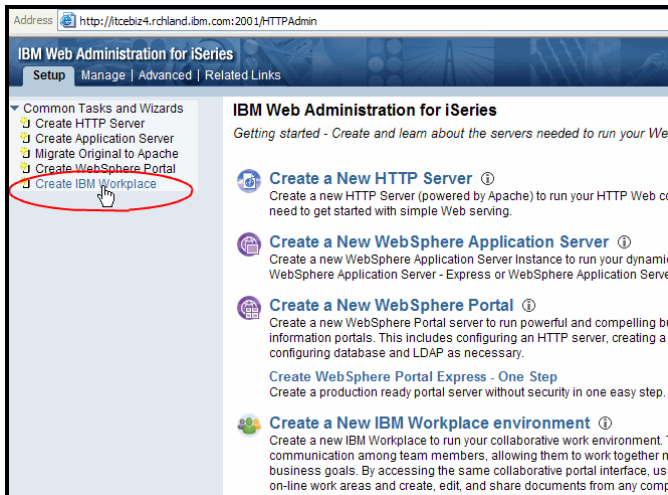
3. Click **Next** (Figure 42).
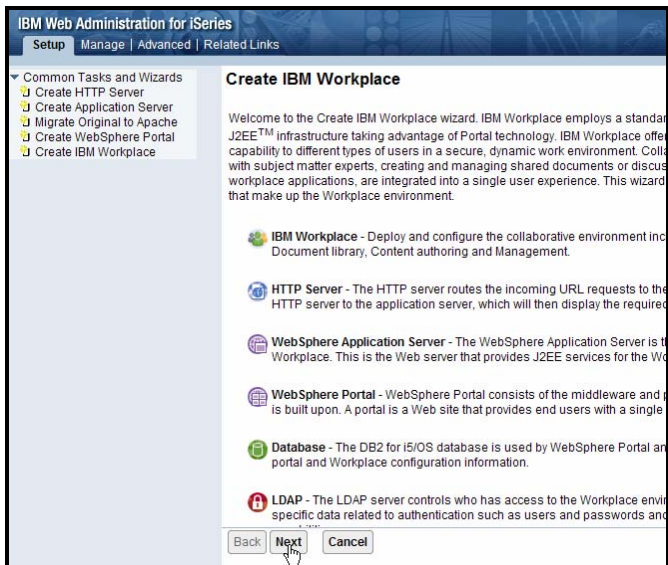
Figure 42: Continue Create IBM Workplace setup.

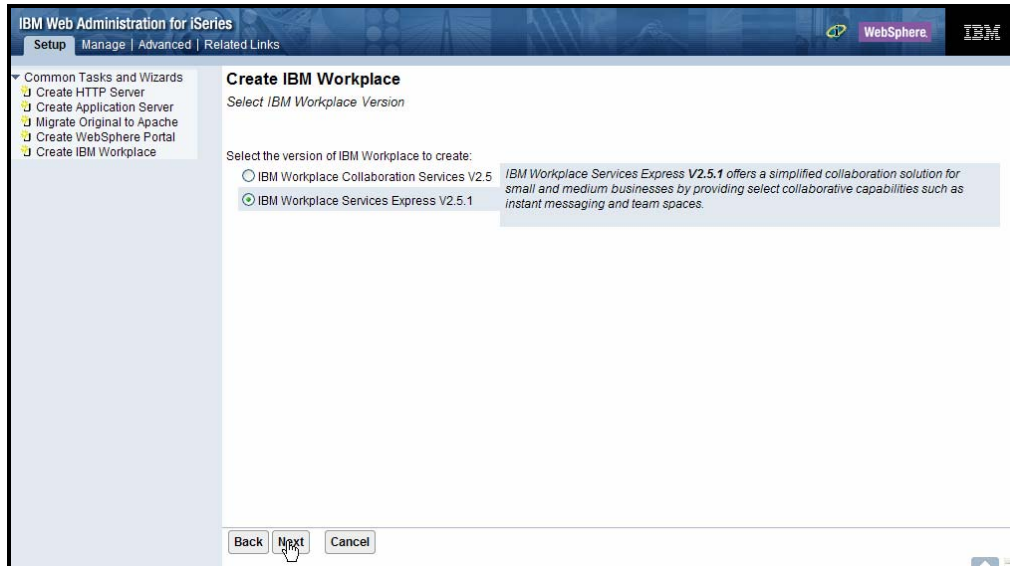4. Select **IBM Workplace Services Express V2.5.1** and click **Next** (Figure 43).

Figure 43: Select IBM Workplace Services Express V2.5.1.

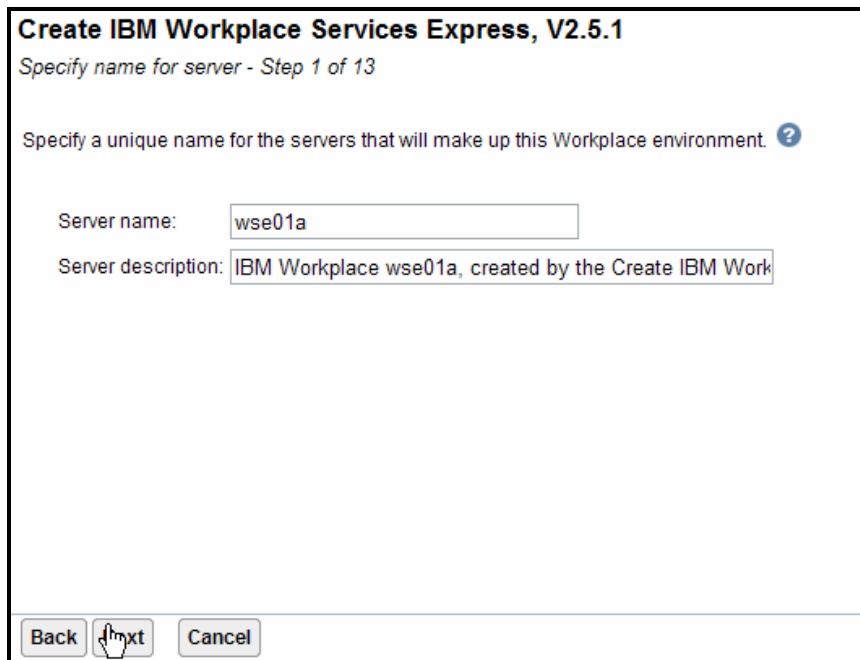5. Enter the Workplace Services Express server name and click **Next** (Figure 44).

Figure 44: Enter the Workplace Services Express Server name.

6. The wizard will install all of the Workplace Services Express components. The IBM Workplace configuration wizard has detected that iSeries Access for Web is installed on the system and provides the option to deploy the iSeries Access for Web portlets. To deploy the portlets, select **iSeries Access for Web portlets** and click **Next** (Figure 45).
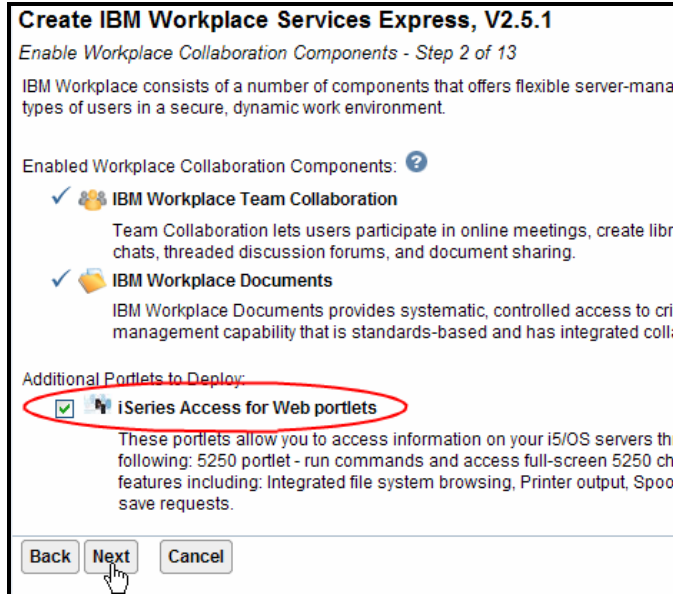
Create IBM Workplace Services Express, V2.5.1

Enable Workplace Collaboration Components - Step 2 of 13

IBM Workplace consists of a number of components that offers flexible server-manag
types of users in a secure, dynamic work environment.

Enabled Workplace Collaboration Components:

✓ **IBM Workplace Team Collaboration**

Team Collaboration lets users participate in online meetings, create libra
chats, threaded discussion forums, and document sharing.

✓ **IBM Workplace Documents**

IBM Workplace Documents provides systematic, controlled access to crit
management capability that is standards-based and has integrated colla

Additional Portlets to Deploy:

☑ **iSeries Access for Web portlets**

These portlets allow you to access information on your i5/OS servers thr
following: 5250 portlet - run commands and access full-screen 5250 cha
features including: Integrated file system browsing, Printer output, Spool
save requests.

[Back] [Next] [Cancel]

Figure 45: Deploying iSeries Access for Web portlets

7. Select any fully qualified host name on your iSeries system that is not currently in use by another server (Figure 46).
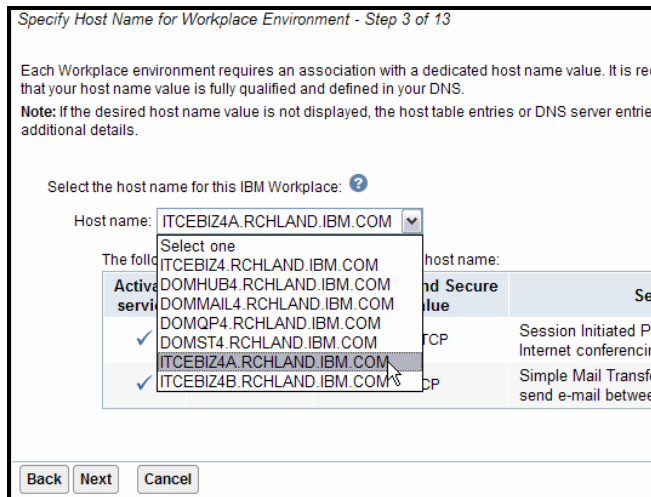
Specify Host Name for Workplace Environment - Step 3 of 13

Each Workplace environment requires an association with a dedicated host name value. It is req
that your host name value is fully qualified and defined in your DNS.
Note: If the desired host name value is not displayed, the host table entries or DNS server entries
additional details.

Select the host name for this IBM Workplace:

Host name: ITCEBIZ4A.RCHLAND.IBM.COM ▼

	Select one		
The foll	ITCEBIZ4.RCHLAND.IBM.COM	host name:	
	DOMHUB4.RCHLAND.IBM.COM		
Activa	DOMMAIL4.RCHLAND.IBM.COM	**nd Secure**	**Se**
servi	DOMQP4.RCHLAND.IBM.COM	**lue**	
✓	DOMST4.RCHLAND.IBM.COM	TCP	Session Initiated Pr
	ITCEBIZ4A.RCHLAND.IBM.COM		Internet conferencin
✓	ITCEBIZ4B.RCHLAND.IBM.COM	CP	Simple Mail Transfe
			send e-mail betwee

[Back] [Next] [Cancel]

Figure 46: Select the host name for this Workplace Services Express instance.

8. Click **Next** (Figure 47).

Figure 47: Continue setup after selecting a Host name.

9. Specify any free port range; the wizard will propose a free port range and will validate that the port range you specify is not in use. Click **Next** (Figure 48).

Figure 48: Specify a free port range.

10. At the **Create a new HTTP server** step, accept the defaults and click **Next** (Figure 49).

Figure 49: Create HTTP server.

11. Enter the database user ID and password and click **Next** (Figure 50).

*Figure 50: Enter database **User ID** and **Password**.*

12. Select **Configure security using LDAP now** and click **Next** (Figure 51).

*Figure 51: Select **Configure security using LDAP now**.*

13. Enter the LDAP administrator name and password and click **Next** (Figure 52).

Figure 52: Enter the LDAP administrator name and password.

14. If you use the default LDAP suffix, click **Next** (Figure 53).

Create IBM Workplace Services Express, V2.5.1
LDAP Configuration Parameters - Step 9 of 13

IBM Workplace utilizes LDAP to store user information for authentication purposes. Below is where the users and groups for the Workpla
environment will reside in your LDAP directory.

Information describing user entries

   Parent DN: cn=users,DC=ITCEBIZ4,DC=RCHLAND,DC=IBM,DC=COM   Browse

   Object class: inetOrgPerson

   Naming attribute: uid

Information describing the administrative group entry

   Parent DN: cn=groups,DC=ITCEBIZ4,DC=RCHLAND,DC=IBM,DC=COM   Browse

   Object class: groupOfUniqueNames

   Naming attribute: cn

   Member attribute: uniqueMember

Back Next   Cancel

*Figure 53: Click **Next** if using the default LDAP suffix.*

15. If you are using an LDAP suffix other than the default suffix, click **Browse** in the **Information describing user entries** section of this setup (Figure 54).

Information describing user entries

   Parent DN: cn=users,DC=ITCEBIZ4,DC=RCHLAND,DC=IBM,DC=COM   Browse

*Figure 54: Browse **Information describing user entries** section for a different LDAP suffix other than the default.*

16. Select the suffix for **cn=users** that you created earlier and select **cn=users**. Verify that **cn=users, dc=….** appears at the bottom, as shown in Figure 55, and click **OK**.
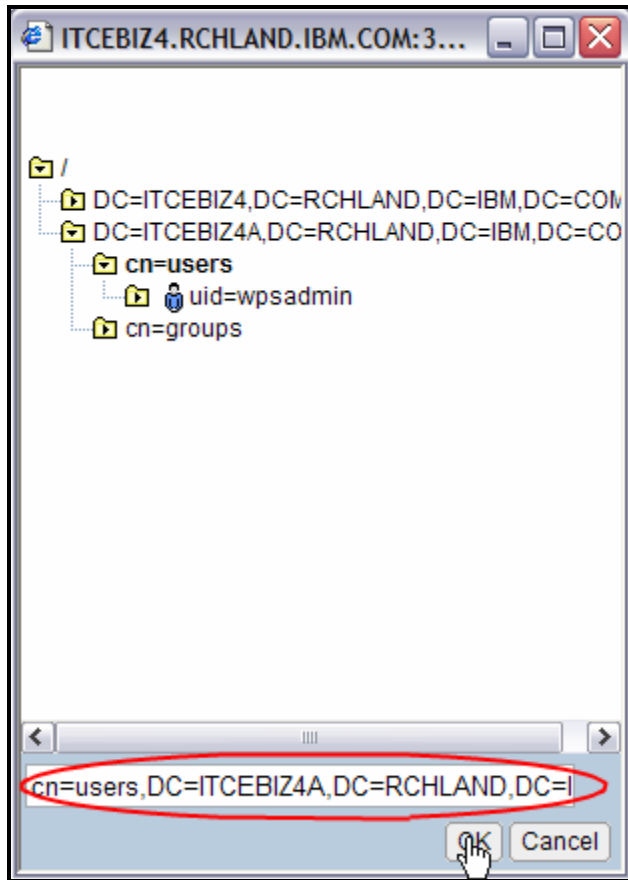
Figure 55: Select the suffix for cn=users.

17. If you are using an LDAP suffix other than the default suffix, click **Browse** in the **Information describing the administrative group entry** section (Figure 56).
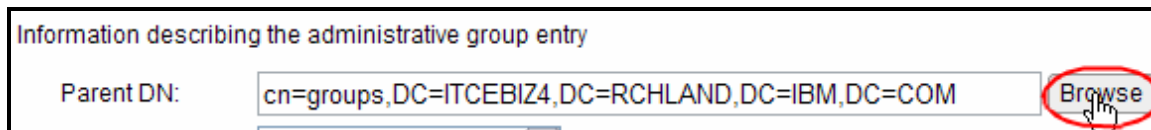
*Figure 56: Browse **Information describing user entries** section to select a non-default suffix for cn=groups.*

18. Select the suffix for **cn=groups** that you created earlier. Make sure that **cn=groups,dc=…**
appears at the bottom, as shown in Figure 57, and click **OK**.
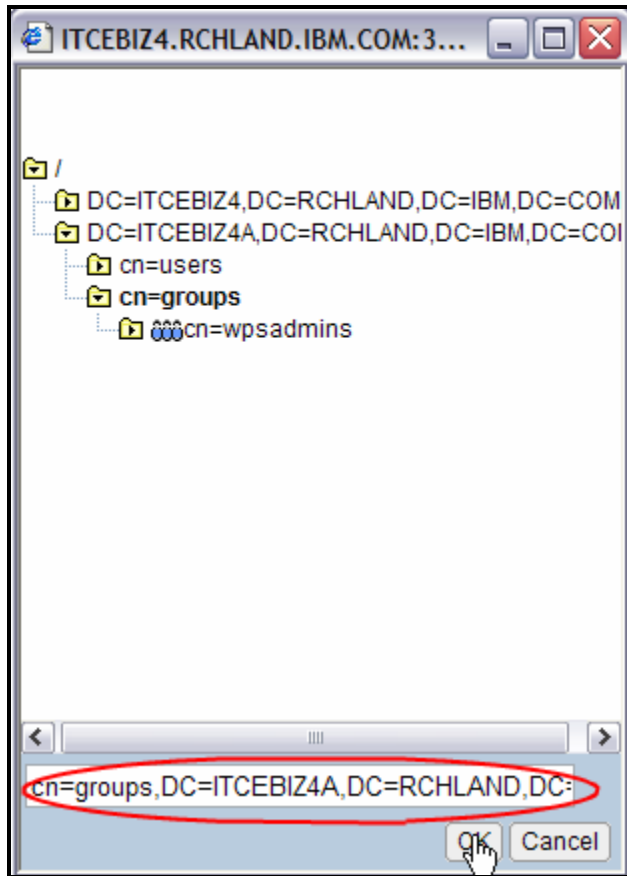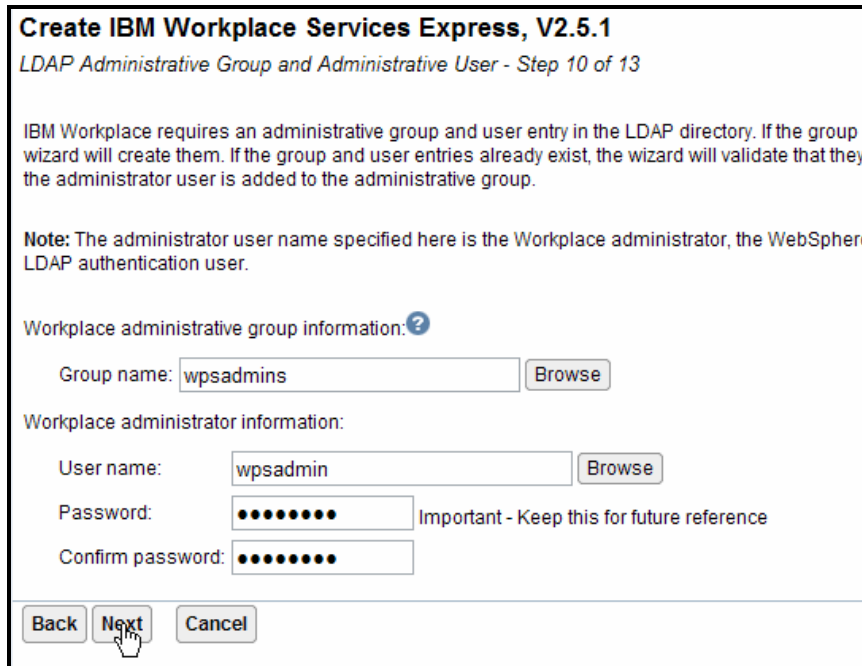
Figure 57: Select suffix for cn=groups.

19. Enter the **wpsadmin** password and click **Next** (Figure 58).

Figure 58: Workplace administrative user and group

20. If you are not planning to configure Single Signon (SSO) with multiple Web servers, accept the defaults and click **Next** (Figure 59).

Figure 59: Single Sign On configuration

21. Select **Do not configure Identity Tokens** and click **Next** (Figure 60).

Create IBM Workplace Services Express, V2.5.1

Configure Identity Token SSO for Web to i5/OS Access - Step 12 of 13

Identity Token SSO is a mechanism where a single user signon action permits access to multi interfaces to access i5/OS back-end applications without having to prompt for additional auther using Enterprise Identity Mapping (EIM). EIM maintains the relationships between Web users a creates a token for the servers configured to support Identity Tokens in this EIM Domain.

Note: EIM is hosted on an LDAP server that must be configured and running before continuing.

Configure Identity Tokens:
- ◉ Do not configure Identity Tokens
- ○ Configure Identity Tokens

[Back] [Next] [Cancel]

*Figure 60: Select **Do not configure Identity Tokens**.*

22. Review the configuration. To verify your input, click **Finish**. The following screens (Figures 61 through 67) show the Workplace Services Express configuration summary as an example.

Database Information	Ports

Servers	Portal	Security	Workplace Components	Document Renderer

Portal database information

    Owner of the Portal database: wse01auser
    Portal database: WSE01A

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. Upon successful completion the URL will be

Figure 61: Portal configuration information

Figure 62: General security information

Create IBM Workplace Services Express, V2.5.1

Summary - Step 13 of 13

When you click Finish, everything necessary to run an IBM Workplace environment will be created. Please during this process as the creation and configuration may take sometime to complete. You can monitor t Workplace introduction page that will display after the Finish button has been clicked.

Database Information	Ports			
Servers	Portal	Security	**Workplace Components**	Document Renderer

IBM Workplace components to be enabled

    IBM Workplace Team Collaboration: Enabled
    IBM Workplace Documents: Enabled

Additional Portlets to Deploy

    iSeries Access for Web portlets: Enabled

General Workplace attributes

    Host name: ITCEBIZ4A.RCHLAND.IBM.COM
    Common database: WSE01A1

Figure 63: Workplace Components

Database Information	Ports			
Servers	Portal	Security	Workplace Components	**Document Renderer**

The XVFB (X Virtual Frame Buffer) server will be created by the wizard and will be used to support displaying documents in a standard format like PDF. This server will be running in the PASE (Portable Application Solutions Environment) environment.

    Hostname:displayNumber: ITCEBIZ4.RCHLAND.IBM.COM:1

Your new IBM Workplace environment will be created when you click the Finish button. Upon successful completion the URL will be **"http://itcebiz4a.rchland.ibm.com/lwp/workplace"**.

Figure 64: Document Renderer

Servers	Portal	Security	Workplace Components	Document Renderer

Database Information	Ports

System for all databases

    System: Local

Portal database information

    Owner of the Portal database: wse01auser
    Portal database: WSE01A

Workplace database information

    Owner of the Workplace databases: wse01auser
    Workplace databases:

        Common database: WSE01A1
        Learning server database: WSE01A2
        Delivery server database: WSE01A3
        Messaging database: WSE01A4
        Message archive database: WSE01A5

Your new IBM Workplace environment will be created when you click the Finish button. Upon successful completion the URL will be "http://itcebiz4a.rchland.ibm.com/lwp/workplace".

Figure 65: Workplace database information

Servers	Portal	Security	Workplace Components	Document Renderer

Database Information	Ports

The Workplace environment consists of a number of servers that communicate by sending and recieving requests on a port. The following ports are the actual values and the servers that will make use of the ports within this Workplace environment.

The following ports will be bound to the host: **ITCEBIZ4A.RCHLAND.IBM.COM**:

Port	Server	Service Description
25	WebSphere_Portal	SMTP
5060	WebSphere_Portal	SIP TCP
5061	WebSphere_Portal	SIP TLS
8080	WebSphere_Portal	HTTP Tunnel
8081	WebSphere_Portal	HTTP Tunnel SSL

Figure 66: Utilized ports by the server

The following ports will be bound across all IP addresses:

Port	Server	Service Description
10100	WebSphere_Portal	Name service
10101	WebSphere_Portal	SOAP
10109	WebSphere_Portal	Internal HTTP
10110	WebSphere_Portal	Administrative console
10111	WebSphere_Portal	Administrative console SSL-enabled
10112	WebSphere_Portal	Internal HTTP SSL-enabled
10113	server1	Name service
10114	server1	SOAP
10122	server1	Internal HTTP
10123	server1	Internal HTTP SSL-enabled
10124	server1	Administrative console
10125	server1	Administrative console SSL-enabled
10126	WebSphere_Portal	SIP TCP
10127	WebSphere_Portal	SIP TLS
10149	Cloudscape	Cloudscape network server
10150	WebSphere_Portal	Lotus Instant Messaging (LIM) Gateway

Your new IBM Workplace environment will be created when you click the Finish button. Upon successful completion the URL will be
"http://itcebiz4a.rchland.ibm.com/lwp/workplace".

Figure 67: List of ports bound across all IP addresses

23. Print the configuration summary for your records by selecting **Printable Summary** (Figure 68).

Figure 68: Printing the configuration summary

24. Click **Finish** (Figure 69).
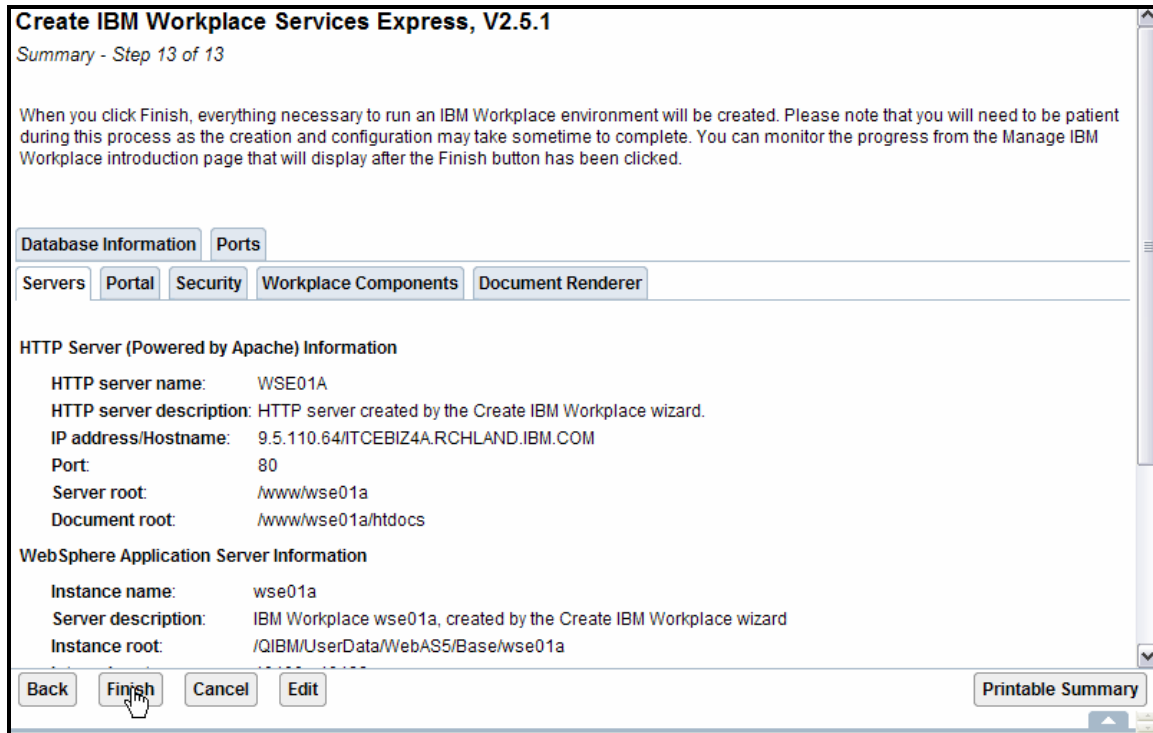
Figure 69: Completing the Workplace Services Express configuration

25. The process to complete the configuration will now run for several hours (four to six hours depending on the size of your system). You can close the browser now (Figure 70); the configuration will continue on the iSeries system.
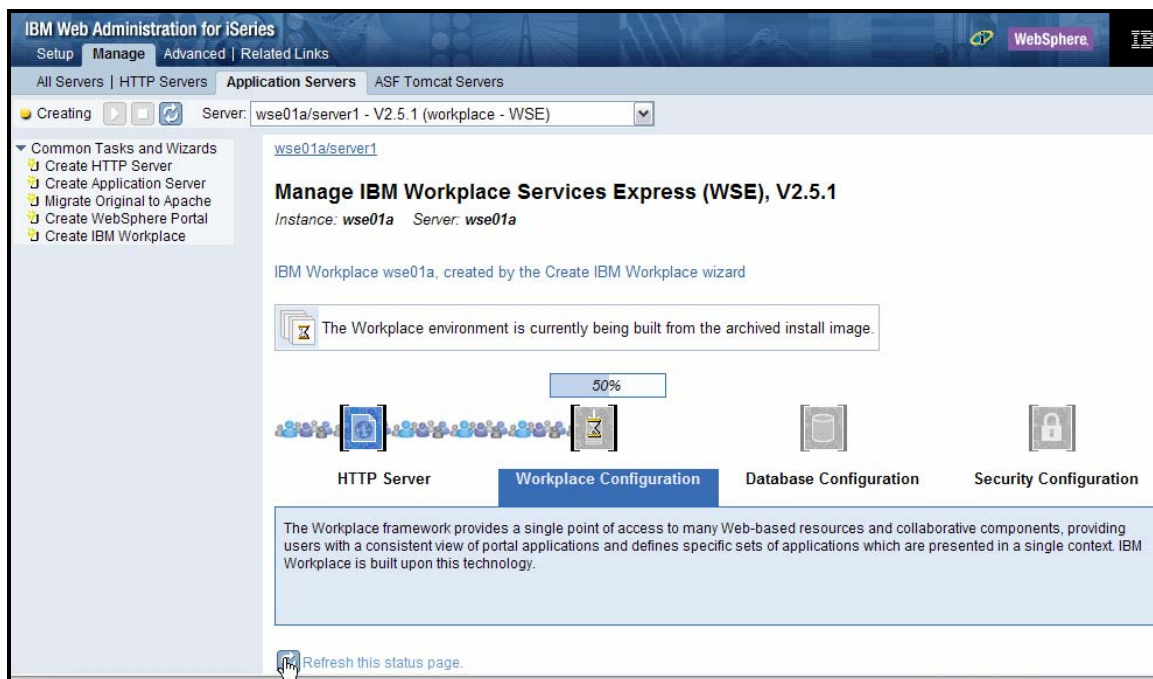
Figure 70: Close the browser; Workplace Services Express configuration completion in progress

Note: If you did not print the configuration summary when you configured the instance, you can retrieve it at any time by clicking the **View Create Summary** link (Figure 71).
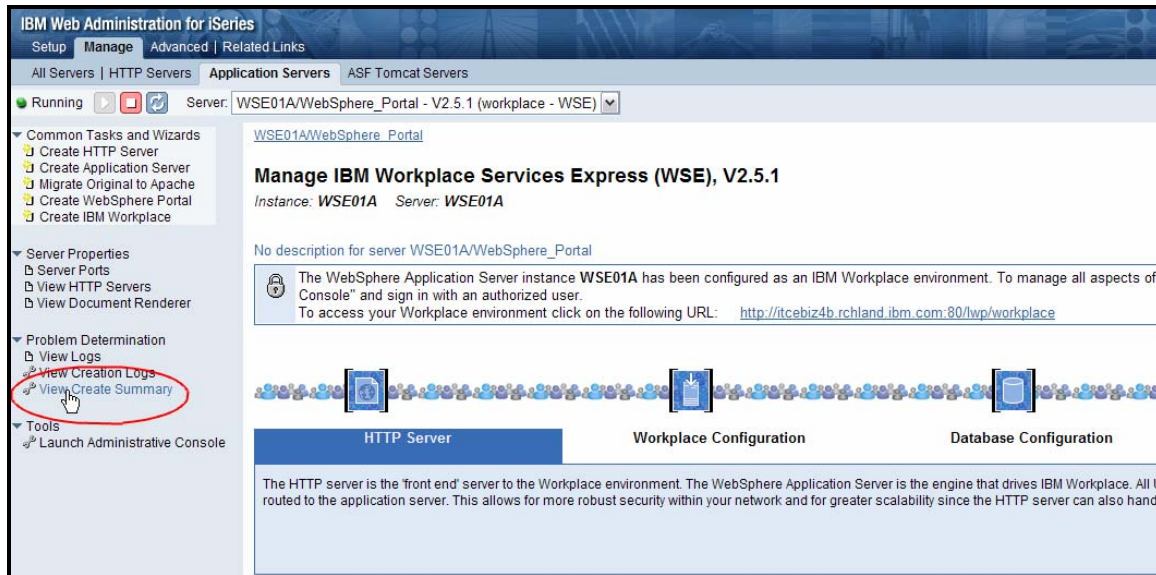
*Figure 71: Print the configuration summary by selecting **View Create Summary** link.*

Understanding Workplace Services Express work management

This section provides an overview of the main directories, jobs, and user profiles associated with the run time environment of a Workplace Services Express instance on the iSeries system:
- Figure 72 shows the product directory:
  - /QIBM/ProdData/Workplace/WSE25
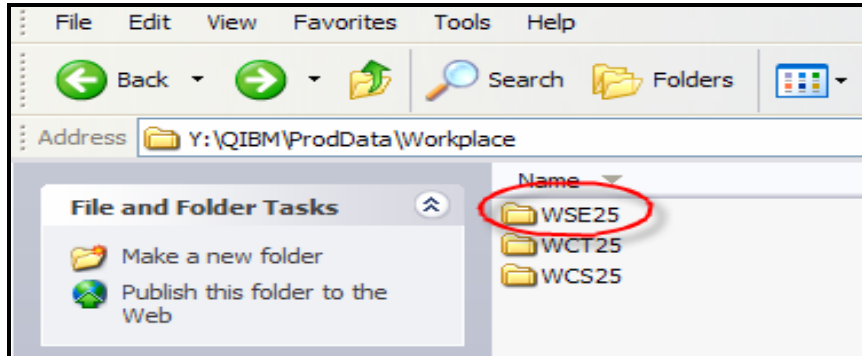
Figure 72: Product directory

- Figure 73 shows the Workplace Services Express instance directory:
  - /QIBM/UserData/WebAS5/Base/<instance>
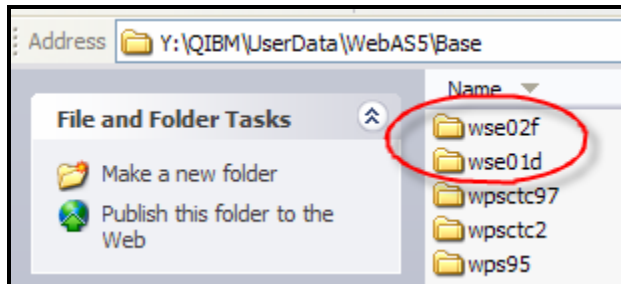
Figure 73: Workplace Services Express instance directory

The main components of a Workplace Services Express run time environment are:
- Subsystem: QEJBAS5
- User: QEJBSVR
- **QEJBAS5** subsystem jobs:
  - Server1
  - **Note:** Server1 does not need to remain active during normal operations. You can stop this application server to reduce the demands on main memory.
  - WebSphere_Portal
- HTTP Server:
  - QHTTPSVR subsystem
  - HTTP server name: <wseinstance>

Identifying application servers associated with the Workplace Services Express instance

Follow the steps provided in this section to select jobs and match them with Workplace Services Express instances:

1. Start all Workplace Services Express application servers.
2. From the command line, issue a **WRKACTJOB SBS(QEJBAS5)** command. You will see the following jobs (Figure 74):

   - **QJVAEXEC:** This channel framework server starts along with the WebSphere_Portal application server. It is required for people awareness and chat.
   - **SERVER1:** This server1 application environment does not require starting during normal operations.
   - **WEBSPHERE_:** This is the **WebSphere_Portal** application server.

*Figure 74: Job types: a) QJAEXEC, b) SERVER1, and c) WEBSPHERE_*

3. If you have multiple Workplace Services Express instances in your iSeries system, you can determine which job goes with which instance by performing the following steps:
   a. Look at the job log (Figure 74).
   b. To access **Work with Job** details, select option **5**.
   c. To access **Display Job Log** details, select option **10** (Figures 75 and 76).

Figure 75: Option 10, Display Job Log, for SERVER1

*Figure 76: Option 10, Display Job Log, for WEBSPHERE_*

4. To identify the channel framework server associated with the Workplace Services Express instance, match the start time with the **WebSphere_Portal** start time (Figure 77).

```
                          Display Job Log
                                            System:    ITCEBIZ3
 Job . . :   QJVAEXEC      User . . :   QEJBSVR    Number . . . :   510308

_    Job 510308/QEJBSVR/QJVAEXEC started on 06/29/05 at 22:06:24 in subsystem
         QEJBAS5 in QEJBAS5. Job entered system on 06/29/05 at 22:06:24.
```

*Figure 77: Match start time with **WebSphere_Portal** start time for channel framework server*

Starting and stopping Workplace Services Express application servers from IBM Web Administration for iSeries

If you created the Workplace instance using the **Create IBM Workplace Collaboration Services** wizard, the easiest way to start and stop servers is using the Web Administration for iSeries interface:
1. Access **Web Administration for iSeries** by going to the following Web site:
   http://<iseries_system>:2001/HTTPAdmin
2. Click iSeries Web Administration.
3. Select the **WebSphere_Portal** application server for your instance (Figure 78).

Figure 78: Selecting the WebSphere_Portal application server for your instance

4. Select the Workplace components that you want to stop and click **Stop** (Figure 79).
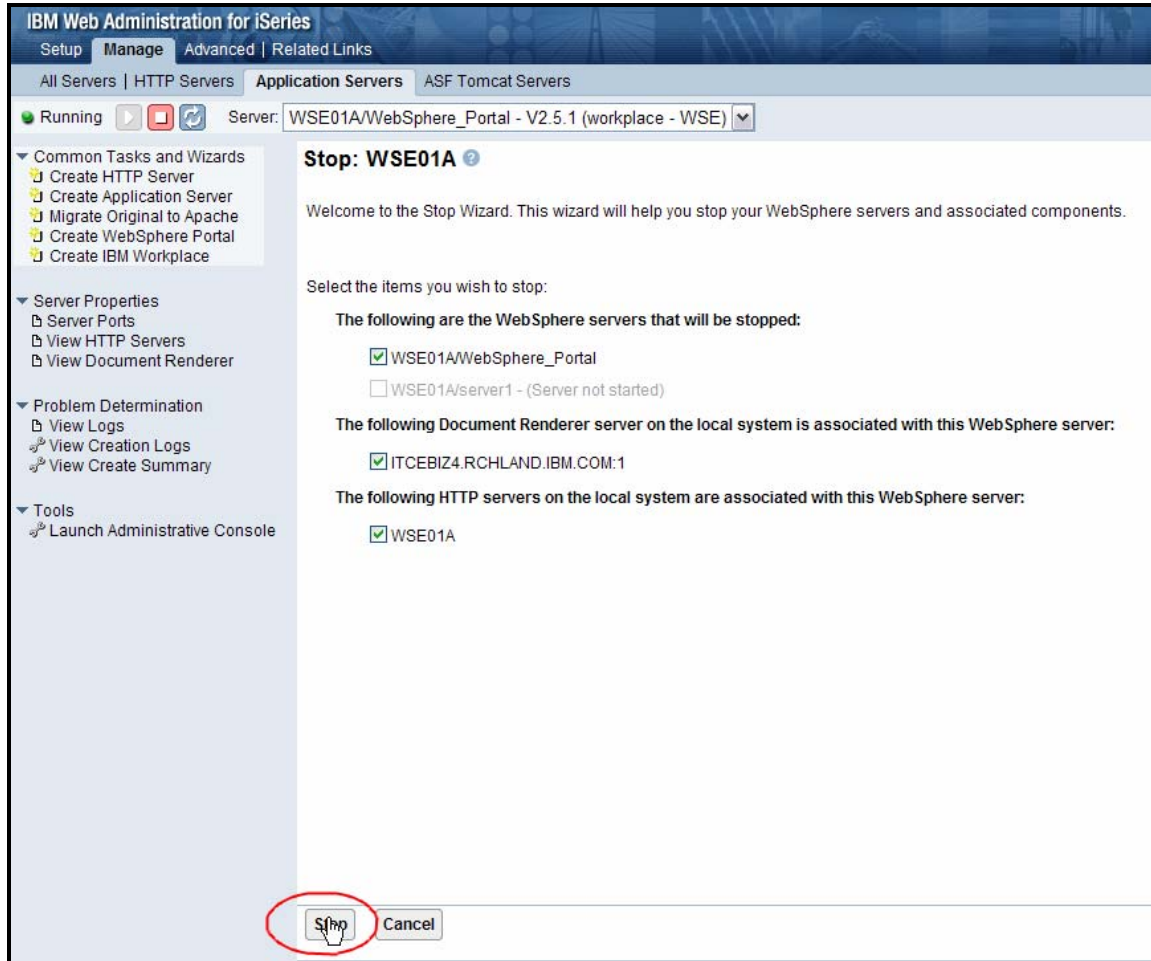
Figure 79: Stopping a Workplace Services Express components

5. To start the Workplace Services Express components, select the Workplace servers that you want to start, and click **Start** (Figure 80).

Figure 80: Starting the selected Workplace server

Note: Do not start server1. Select to start the server using XVFB, instead of VNC, if both are available (Figure 81).
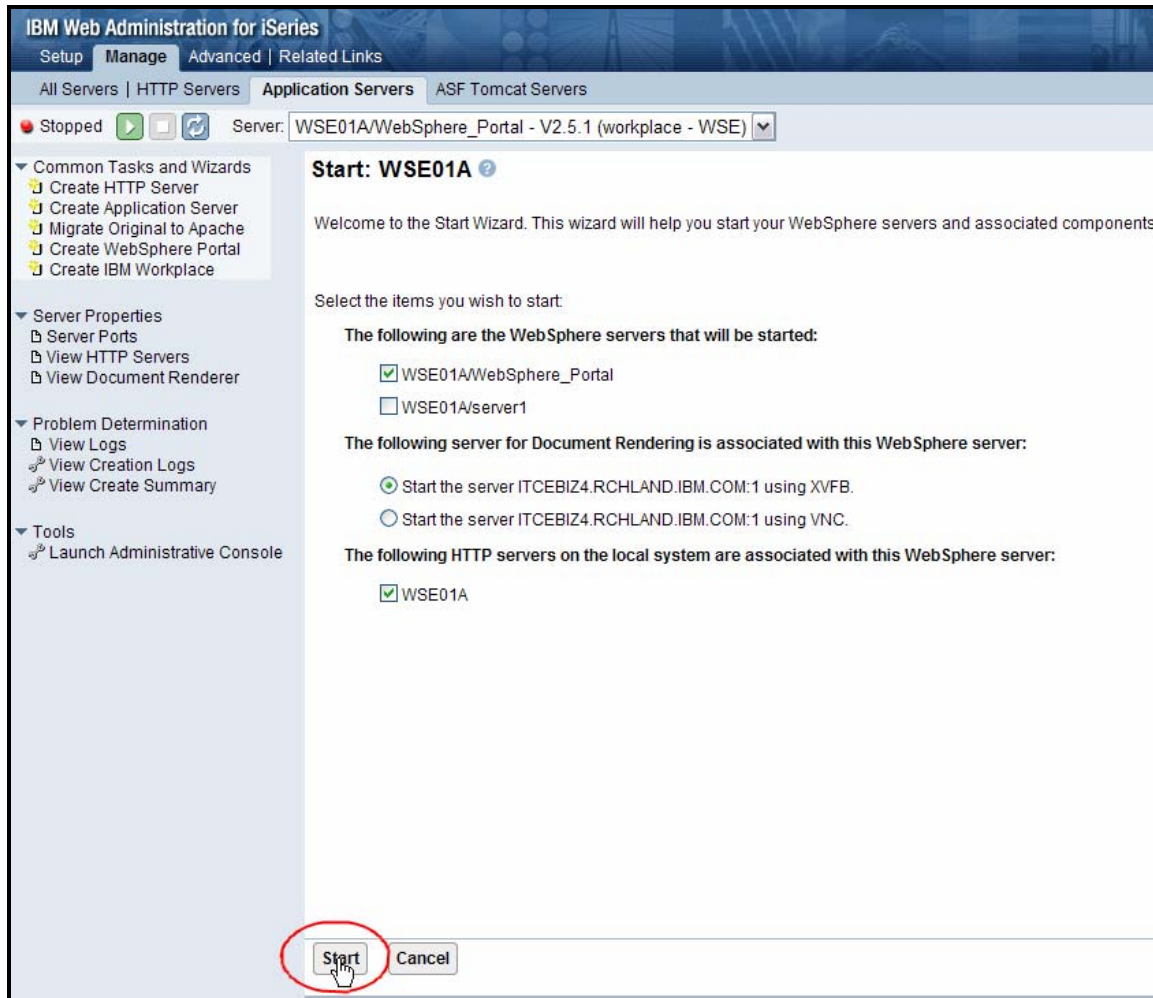
Figure 81: Starting the WebSphere server and associated components

Starting and stopping Workplace Services Express application servers

There are two ways to start and stop the Workplace Services Express application servers using QShell scripts. You can use the root scripts or the standard WebSphere Application server scripts.

Using root scripts

You can use the Workplace scripts to start and stop Workplace Services Express servers from the **QShell** command environment.
1. Start the **QEJBAS5** subsystem by issuing the i5/OS **Start Subsytems** command:
   STRSBS SBSD(QEJBAS5/QEJBAS5)
2. Start a QShell session by selecting the **STRQSH** command.
3. Enter the **cd /QIBM/Userdata/WebAS5/Base/<instance_name>/PortalServer/rootscripts** command.
4. Issue one of the following commands depending upon your action:
   - startWorkplaceServices.sh
   - stopWorkplaceServices.sh

Using standard WebSphere Application Server scripts

You can use standard WebSphere Application Server scripts to start and stop Workplace Services Express servers from the **QShell** environment.
1. Start the **QEJBAS5** subsystem by issuing the i5/OS **Start Subsystems** command:
   STRSBS SBSD(QEJBAS5/QEJBAS5)
2. Start the QShell session by entering the **STRQSH** command.
3. Enter the **cd /QIBM/Proddata/Webas5/pme/bin** command.
4. Issue the following commands to start your application servers for the Workplace Services Express instance:
   a. **startServer WebSphere_Portal –instance <instance_name>**
   b. **startServer server1 –instance <instance_name> -username**
5. Issue the following commands to end your application servers for the Workplace Services Express instance:
   a. **stopServer WebSphere_Portal -instance <instance_name> -username <username> - password <password>**
   b. **stopServer server1 -instance <instance_name> -username <username> -password <password>**

Setting up browser clients

The following is a list of supported browsers:
- Microsoft Internet Explorer 6.0 with Service Pack 1 on Windows® 2000 and Windows XP with the Sun™ Java Runtime Environment (JRE) 1.4.2 or with Microsoft Java Virtual Machine (JVM) 1.1
- Mozilla™ 1.4 on Linux with Sun JRE 1.4.2
- Mozilla 1.4 on Windows with Sun JRE 1.4.2
- Mozilla Firefox™ 1.0 on Windows with Sun JRE 1.4.2
- Mozilla Firefox 1.0 on Linux with Sun JRE 1.4.2
- Netscape® 6.2 (collaborative learning only)

Installing Sun Java Runtime Environment (JRE) 1.4.2

This section provides you with a step-by-step process for installing JRE 1.4.2:

1. Verify that the client browser is one of the supported browsers listed in the **Setting up browser clients** section. Click **OK** (Figure 82).

Figure 82: Microsoft Internet Explorer V6.0 (a supported browser)

2. Download and install the JRE from the Sun Web site listed in the **Resources** section (Figure 83).

Figure 83: Download J2SE JRE

3. Verify that the Java Sun JRE 1.2.4 is configured in your browser. For Microsoft Internet Explorer 6.0, click **Tools** > **Internet Options** > **Advanced** and choose the Java setting (Figure 84)**.**
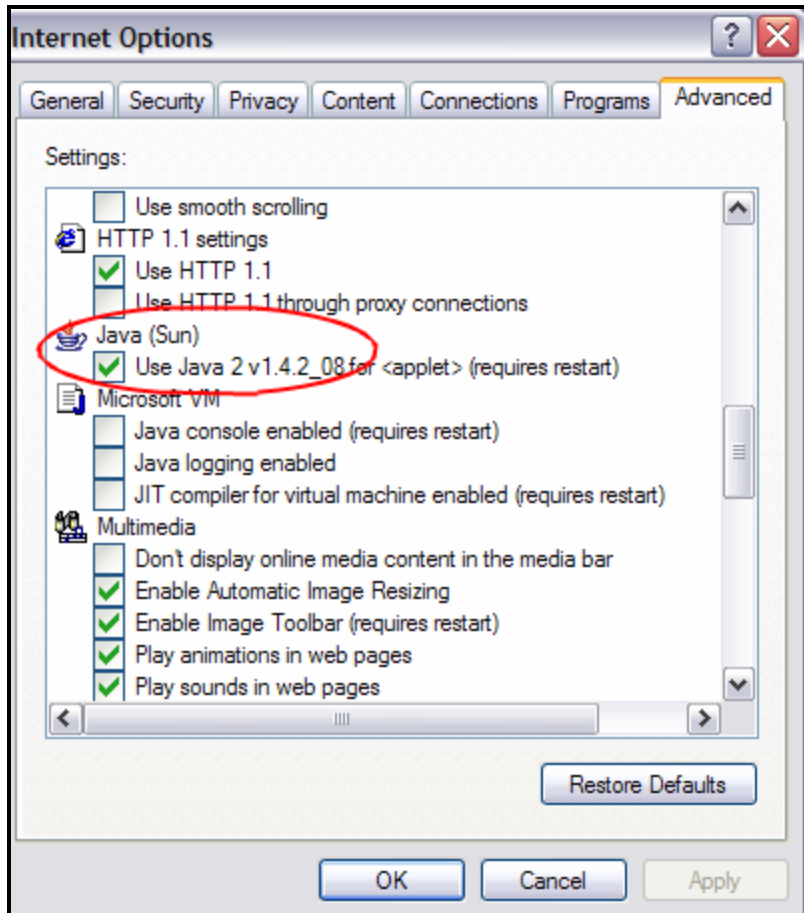
Figure 84: Verify browser configuration of Java Sun JRE 1.4.2

Appendix A: Fix Pack 1 for Workplace Services Express 2.5.0 and 2.5.1

Workplace Services Express Fix Pack 1 can be applied to instances created using either Workplace Services Express 2.5.0 or 2.5.1 installable media. You can obtain the fix pack and install instructions at:
ibm.com/support/docview.wss?rs=2175&context=SSMHXX&dc=D400&uid=swg24010963&loc=en_US&cs=UTF-8&lang=en

Warning: Please read this first before you proceed.

The configuration you are about to run will replace templates and forms that ship with Workplace Services Express. Any modification made to these templates or forms will be lost. If you created or customized any templates, be sure to back them up before you apply the fix pack. If you want to retain your changes, you will need to back up the modified templates and forms and then reinstall them afterward.

It is a good practice to perform a full back up of the Workplace Services Express environment before applying the fix pack.

Note: Some of the fixes provided here address translation issues. Your old templates or forms might contain incorrect translations. If you need help on how to install templates and forms, contact IBM support. Follow the steps below:

1. Stop the Workplace Services Express instance servers using the Web Administration for iSeries interface.
2. Back up all modified themes, skins, and portal properties files.
3. Download the WebSphere Portal for Multiplatforms update installer Portal Update Installer (PUI) 50X (Figure 85) from:
   ibm.com/support/docview.wss?rs=688&context=SSHRKX&q1=portal+update+installer&uid=swg24006942&loc=en_US&cs=utf-8&lang=en
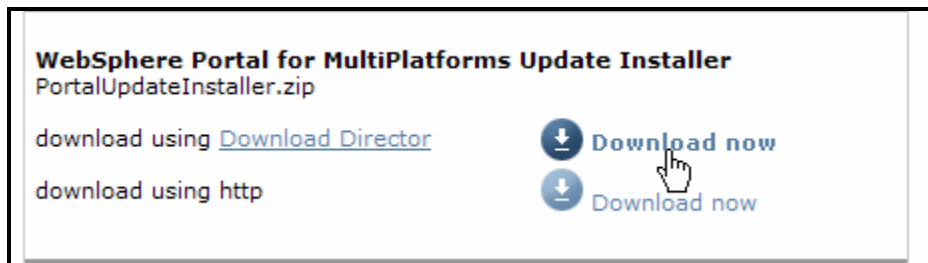
Figure 85: WebSphere Portal for MultiPlatforms Update Installer

4. Download Workplace Services Express Fix Pack 1 from:
   ibm.com/support/docview.wss?rs=2175&context=SSMHXX&dc=D400&uid=swg24010963&loc=en_US&cs=UTF-8&lang=en
5. Create the subdirectory **update** under the Workplace Services Express product data directory as follows: /QIBM/ProdData/Workplace/WSE25/**update**
6. Copy the PUI zip file (**PortalUpdateInstaller.zip**) to the **update** subdirectory and unzip its content there.
7. Create the directory **fixpacks** under the **WSE25** product data directory as follows: /QIBM/ProdData/Workplace/WSE25/**fixpacks**

8. Copy the Fix Pack 1 zip file (**wsefixpack1.zip**) to the *fixpacks* subdirectory and unzip its content there.
9. Verify that the **QEJBSVR** user profile has *Read* and *Execute* (***RX**) authorities to the *update* and *fixpacks* subdirectories (Figure 86).


```
                              Work with Authority

Object . . . . . . . . . . . . :    /QIBM/ProdData/Workplace/WSE25/update
Owner   . . . . . . . . . . . . :    ADAN
Primary group . . . . . . . . . :    *NONE
Authorization list . . . . . . :    *NONE


Type options, press Enter.
  1=Add user    2=Change user authority    4=Remove user


                     Data      --Object Authorities--
Opt  User           Authority  Exist  Mgt   Alter   Ref

  _
  _    *PUBLIC        *EXCLUDE
  _    ADAN           *RWX         X     X       X      X
  _    QDIRSRV        *X
  _    QEJBSVR        *RX
                                                              Bot
```

Figure 86: Verify that the QEJBSVR user profile has *RX authorities.

10. Copy **installwsefp1.sh** from the *batch_templates* folder in the *fixpacks* directory to the PUI update directory (**Error! Reference source not found.**).
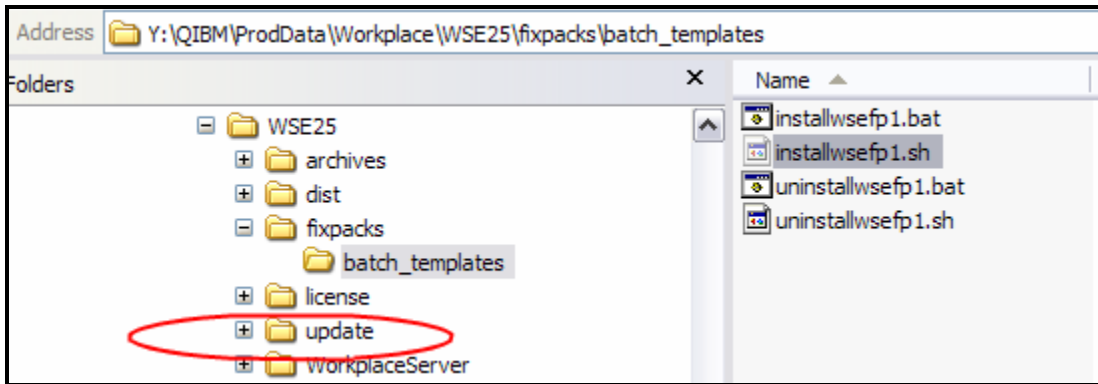
Figure 87: Copy installwsefp1.sh from the batch_templates folder to the PUI update directory

Note: Steps 1-10 need to be performed only once on your iSeries system. The following steps need to be performed for each Workplace Services Express instance in which the fix pack is installed.

11. Update the *installwsefp1.sh* script in the **update** subdirectory by replacing <fixdir> and <installdir> with the corresponding directory as shown in the example given in Figure 88.

```
#!/bin/sh
#
# Set the <fixdir> to the directory where the wsefixpack1.jar is located
# e.g. -fixdir /opt/tmp/fix
#
# Set the [installdir] to the root directory of the Workplace Services Express
# e.g. -installdir /opt/IBM/WorkplaceServicesExpress
#
# ./updatePortal.sh -install -fixDir <fixdir> -installdir <installdir> -fix -fixes wsefp1pre LO09570 LO09553 LO09565 LO09814

./updatePortal.sh -install -fixDir /QIBM/ProdData/Workplace/WSE25/fixpacks -installdir /QIBM/UserData/WebAS5/Base/wse02f -fi
```
Figure 88: Update the installwsefp1.sh script.

12. Set the environment variable **WAS_PROD_HOME**:
    a. Start the QShell session: **STRQSH**
    b. Export: WAS_PROD_HOME=/QIBM/ProdData/WebAS5/Base
    c. Verify that WAS_PROD_HOME has been set:
         echo $WAS_PROD_HOME

         The correct response will be: /QIBM/ProdData/WebAS5/Base

13. Run the **installwsefp1.sh** script:
    a. Enter the **cd /QIBM/ProdData/Workplace/WSE25/update/** command.
    b. Enter the **installwsefp1.sh** script.
    c. Look for the completion message (Figure 89).

```
                          QSH Command Entry

   Task 29 out of 30; Begin (10 of 10) Installing fix LO09814; installing compon
   ent 1 of 1
   Quiet Mode: Logging to /QIBM/UserData/WebAS5/Base/wse02f/version/log/20051228
   _035144_LO09814_WSE_core_install.log
   Task 29 out of 30; End (10 of 10) Installing fix LO09814; installing componen
   t 1 of 1
   Task 30 out of 30; Begin (10 of 10) Installing fix LO09814; completing instal
   lation
   Task 30 out of 30; End (10 of 10) Installing fix LO09814; completing installa
   tion
   Fix installation completed successfully.
   End of [ ./updatePortal.sh ]

   $

===>
```
Figure 89: Fix installation completed successfully.

14. Start the **Workplace Services Express** instance (wse02f), click **Start** (Figure 90).
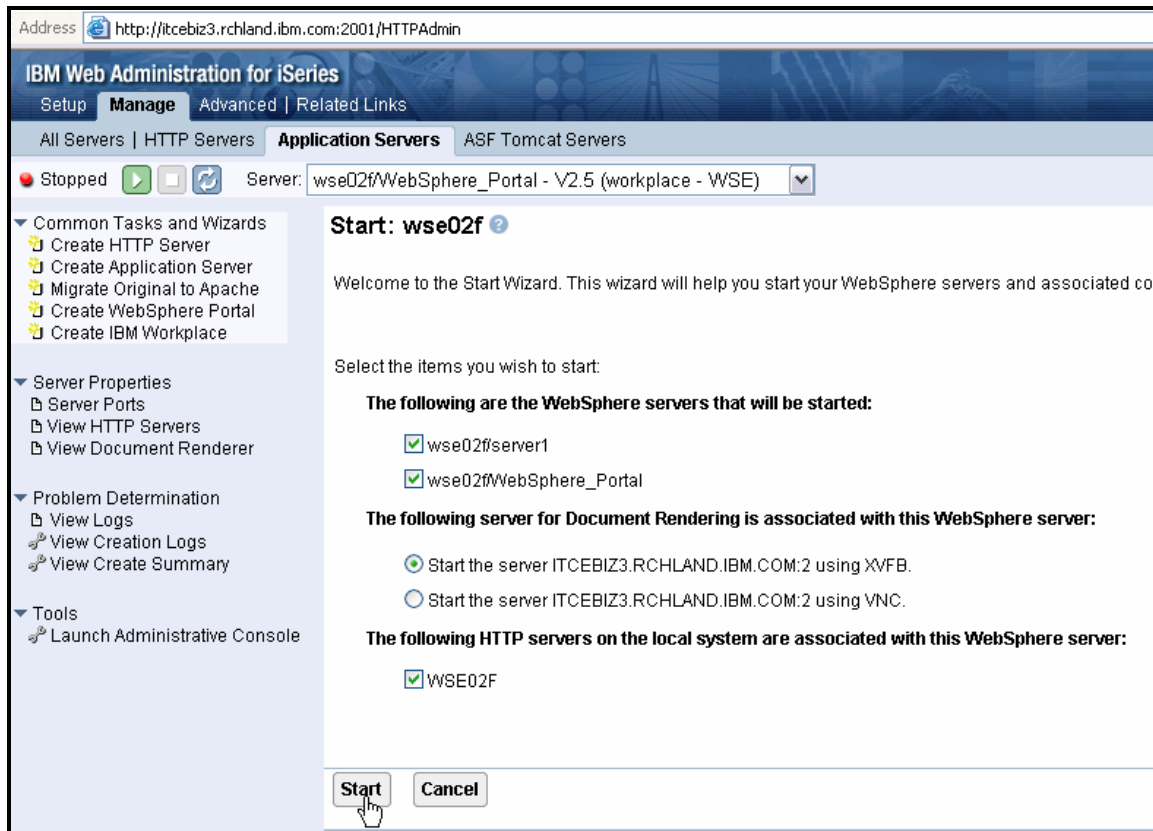
Figure 90: Start the wse02f Workplace Services Express instance.

15. Edit **/QIBM/UserData/WebAS5/Base/<wse_instance>/WorkplaceServer/bin/removeTAI.sh**
    (Figure 91) by following these steps:
    a. Copy and paste the file *removeTAI.sh* and rename it **removeTAI**.
    b. Remove the line with: WAS_HOME=@WasHome@
    c. In the next line, replace %WAS_HOME% with a full path to the wsadmin file at:
        /QIBM/ProdData/WebAS5/Base/bin
    d. Replace SOAP -port 8881 with your instance's SOAP port.
    e. Using IBM Web Administration for iSeries, select the WebSphere_Portal application server
        for your Workplace Services Express instance. (Click **Server Properties > Server ports**
        Figure 91.) Notice the SOAP port number.
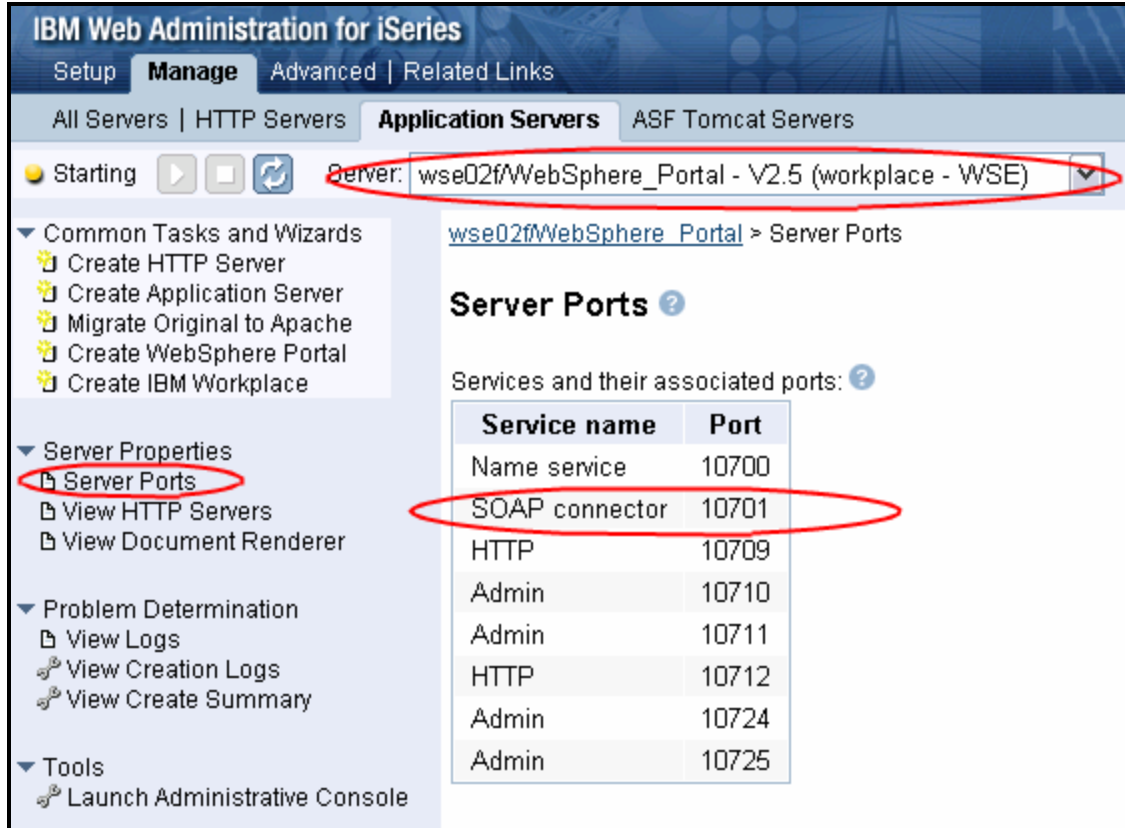
Figure 91: Server ports for your Workplace Services Express instance

    f. Remove the extension **.sh** from **wsadmin**.
    g. Add **–user <wasadmin_user> -password <wasadminpassword>**.
    h. The new **removeTAI** will look as shown below:

```
/QIBM/ProdData/WebAS5/Base/bin/wsadmin -conntype SOAP -host <wse_host> -
port <SOAP_port> -user <wasadmin> -password <wasadminpassword> -f
removeTAI.jacl $*
```

Here is a **removeTAI** example:

```
#!/bin/sh
/QIBM/ProdData/WebAS5/Base/bin/wsadmin –conntype SOAP –host ITCEBIZ3F
–port 10701 –user wpsadmin –password wpsadmin –f removeTAI.jacl $*
```

16. Edit **/QIBM/UserData/WebAS5/Base/<wse_instance>/WorkplaceServer/bin/installTAI.sh** by
    following these steps:
    a. Copy and paste the file *installTAI.sh* and rename it **installTAI**.
    b. Remove the line with: **WAS_HOME=@WasHome@**
    c. In the next line, replace **%WAS_HOME%** with a full path to the **wsadmin** file at:
       /QIBM/ProdData/WebAS5/Base/bin
    d. Replace **SOAP -port 8881** with your instance's SOAP port.
    e. Using IBM Web Administration for iSeries, select the **WebSphere_Portal** application server
       for your WSE instance. (Click **Server Properties** > **Server ports**.) Notice the SOAP port
       number.
    f. Remove the extension **.sh** from **wsadmin**.
    g. Add –user <wasadmin_user> -password <wasadminpassword>.
    h. The new **installTAI** will appear as shown below:

    ```
    /QIBM/ProdData/WebAS5/Base/bin/wsadmin -conntype SOAP -host <wse_host> -
    port <SOAP_port> -user <wasadmin> -password <wasadminpassword> -f
    installTAI.jacl $*
    ```

    Here is an **installTAI** example:

    ```
    #!/bin/sh
    /QIBM/ProdData/WebAS5/Base/bin/wsadmin -conntype SOAP -host ITCEBIZ3F
        -port 10701 -user wpsadmin -password wpsadmin -f installTAI.jacl $*
    ```

    Update the *wsefp1pre.xml* file in directory:
    /QIBM/UserData/WebAS5/Base/<wse_instance>/PortalServer/config/includes

    Note: Before updating this file, make a backup of **wsefp1pre.xml** but do NOT place it in the
    includes directory. Notice the comments **<!-- ADDED THIS -->** in the file below highlighting the
    changes.

    Instead of updating the original *wsefp1pre.xml* file, you can copy the lines below and paste them
    in a **txt** file to create a new working version of **wsefp1pre.xml**. Name this file **wsefp1pre.xml**
    and install it in:
    /QIBM/UserData/WebAS5/Base/<wse_instance>/PortalServer/config/includes (replacing
    the original one). If you copy the lines below to create a new file, be sure to remove the
    document header and page number that you will be copying along with the XML directives.

```
<?xml version="1.0" encoding="UTF-8"?>

    <property name="wsebin" value="${LwpInstallLocation}/bin"/>
  <property name="LWP_BASE_DIR" value="${LwpInstallLocation}/fixes" />
    <property name="include.dir" value="${config.dir}/includes"/>
    <property name="extract.dir" value="${work.dir}/extract"/>

  <!-- ##################################################### -->
  <!-- update the componments (install)                        -->
  <!-- ##################################################### -->
  <target name="wsefp1-config" depends="init">
        <antcall target="LO09041-install"/>

        <antcall target="start-portal-server"/>

        <antcall target="action-call-LO09561"/>                 <!-- uninstallable
-->
```

```xml
<!--          <antcall target="LO09566-install"/>                    PDM -->
             <antcall target="wsefp1-remove-Both"/>
         <antcall target="wsefp1-install-Both"/>

         <antcall target="stop-portal-server"/>

             <echo message="Done WSE fixpack one configuration"/>
      </target>

    <!-- #################################################### -->
    <!-- update the componments (uninstall)                                 -->
    <!-- #################################################### -->
    <target name="wsefp1-unconfig" depends="init">
          <antcall target="LO09041-uninstall"/>

            <antcall target="start-portal-server"/>

        <!--  <antcall target="action-call-LO09561"/>  uninstallable -->
        <!--  <antcall target="LO09566-uninstall"/ -->
          <antcall target="wsefp1-remove-Both"/>
          <antcall target="wsefp1-install-Both"/>

            <antcall target="stop-portal-server"/>

            <delete dir="${LWP_BASE_DIR}/wsefp1pre"/>
            <delete file="${include.dir}/wsefp1pre.xml"/>
            <delete file="${include.dir}/LO09041_cfg.xml"/>

            <echo message="Done WSE fixpack one configuration"/>
      </target>

    <!-- ############################################################### -
->
    <!-- Update the templates and forms
                  -->
    <!-- ############################################################### -
->

    <target name="wsefp1-remove-Both" depends="wsefp1-remove-Both-iSeries"
unless="isIseries">
        <exec dir="${wsebin}"
executable="${wsebin}/removeTAI.${platform.script.ext}" failonerror="yes">
           <arg line="Both"/>
        </exec>
    </target>
    <target name="wsefp1-install-Both" depends="wsefp1-install-Both-iSeries"
unless="isIseries">
        <exec dir="${wsebin}"
executable="${wsebin}/installTAI.${platform.script.ext}" failonerror="yes">
           <arg line="Both"/>
        </exec>
    </target>

    <target name="wsefp1-remove-TaiRepository" unless="isIseries">
        <exec dir="${wsebin}"
executable="${wsebin}/removeTAI.${platform.script.ext}" failonerror="yes">
           <arg line="TaiRepository"/>
        </exec>
    </target>
    <target name="wsefp1-install-TaiRepository" unless="isIseries">
        <exec dir="${wsebin}"
executable="${wsebin}/installTAI.${platform.script.ext}" failonerror="yes">
           <arg line="TaiRepository"/>
        </exec>
```

```
        </target>
    <target name="wsefp1-remove-FormsRepository" unless="isIseries">
        <exec dir="${wsebin}"
executable="${wsebin}/removeTAI.${platform.script.ext}" failonerror="yes">
            <arg line="FormsRepository"/>
        </exec>
    </target>
    <target name="wsefp1-install-FormsRepository" unless="isIseries">
        <exec dir="${wsebin}"
executable="${wsebin}/installTAI.${platform.script.ext}" failonerror="yes">
            <arg line="FormsRepository"/>
        </exec>
    </target>


    <!-- iSeries only -->

    <target name="wsefp1-remove-Both-iSeries" if="isIseries">
<!-- ADDED THIS -->
        <antcall target="iseries-switch-back"/>
        <exec dir="${wsebin}" executable="${wsebin}/removeTAI" failonerror="yes">
            <arg line="Both"/>
        </exec>
<!-- ADDED THIS -->
        <antcall target="iseries-switch-to-was-user"/>
    </target>

    <target name="wsefp1-install-Both-iSeries" if="isIseries">
<!-- ADDED THIS -->
        <antcall target="iseries-switch-back"/>
        <exec dir="${wsebin}" executable="${wsebin}/installTAI" failonerror="yes">
            <arg line="Both"/>
        </exec>
<!-- ADDED THIS -->
        <antcall target="iseries-switch-to-was-user"/>
    </target>

    <target name="wsefp1-remove-TaiRepository-iSeries" if="isIseries">
<!-- ADDED THIS -->
        <antcall target="iseries-switch-back"/>
        <exec dir="${wsebin}" executable="${wsebin}/removeTAI" failonerror="yes">
            <arg line="TaiRepository"/>
        </exec>
<!-- ADDED THIS -->
        <antcall target="iseries-switch-to-was-user"/>
    </target>

    <target name="wsefp1-install-TaiRepository-iSeries" if="isIseries">
<!-- ADDED THIS -->
        <antcall target="iseries-switch-back"/>
        <exec dir="${wsebin}" executable="${wsebin}/installTAI" failonerror="yes">
            <arg line="TaiRepository"/>
        </exec>
<!-- ADDED THIS -->
        <antcall target="iseries-switch-to-was-user"/>
    </target>

    <target name="wsefp1-remove-FormsRepository-iSeries" if="isIseries">
<!-- ADDED THIS -->
        <antcall target="iseries-switch-back"/>
        <exec dir="${wsebin}" executable="${wsebin}/removeTAI" failonerror="yes">
            <arg line="FormsRepository"/>
        </exec>
<!-- ADDED THIS -->
```

```
        <antcall target="iseries-switch-to-was-user"/>
    </target>

    <target name="wsefp1-install-FormsRepository-iSeries" if="isIseries">
<!-- ADDED THIS -->
        <antcall target="iseries-switch-back"/>
        <exec dir="${wsebin}" executable="${wsebin}/installTAI" failonerror="yes">
            <arg line="FormsRepository"/>
        </exec>
<!-- ADDED THIS -->
        <antcall target="iseries-switch-to-was-user"/>
    </target>
```

17. Run **WPSconfig.sh wsefp1-config** to complete the fix pack install:
    a. Go back to the QShell session: **QSH**
    b. Enter the **cd /QIBM/UserData/WebAs5/Base/<wse_instance>/PortalServer/Config**
        command.
    c. Enter the **WPSconfig.sh wsefp1-config -DPortalAdminId=[portal admin userid] -
        DPortalAdminPwd=[portal admin password]** command.
        For example:
        **WPSconfig.sh wsefp1-config -DPortalAdminId=wpsadmin
        -DPortalAdminPwd=wpsadmin**

d. At the end, you will receive the **Build Successful** message as shown in Figure 92.

```
                        QSH Command Entry

iseries-switch-to-was-user:
[switchprofile] Unable to extract user profile from WAS server.xml file
[switchprofile] WAS server.xml file is /QIBM/UserData/WebAS5/Base/wse02f/conf
ig/cells/ITCEBIZ3F_wse02f/nodes/ITCEBIZ3F_wse02f/servers/wse02f/server.xml
[switchprofile] Processing will proceed with default user profile (QEJBSVR)

action-stop-portal-server-insecure:

stop-portal-server:
     [echo] Done WSE fixpack one configuration

BUILD SUCCESSFUL
Total time: 9 minutes 41 seconds
$
```

*Figure 92: **Build Successful** message received at QSH session*

18. Verify the fix pack information in the **version** directory:
    a.   Display the content of the directory (Figure 93):

                `/QIBM/UserData/WebAS5/Base/<wse_instance>/version`
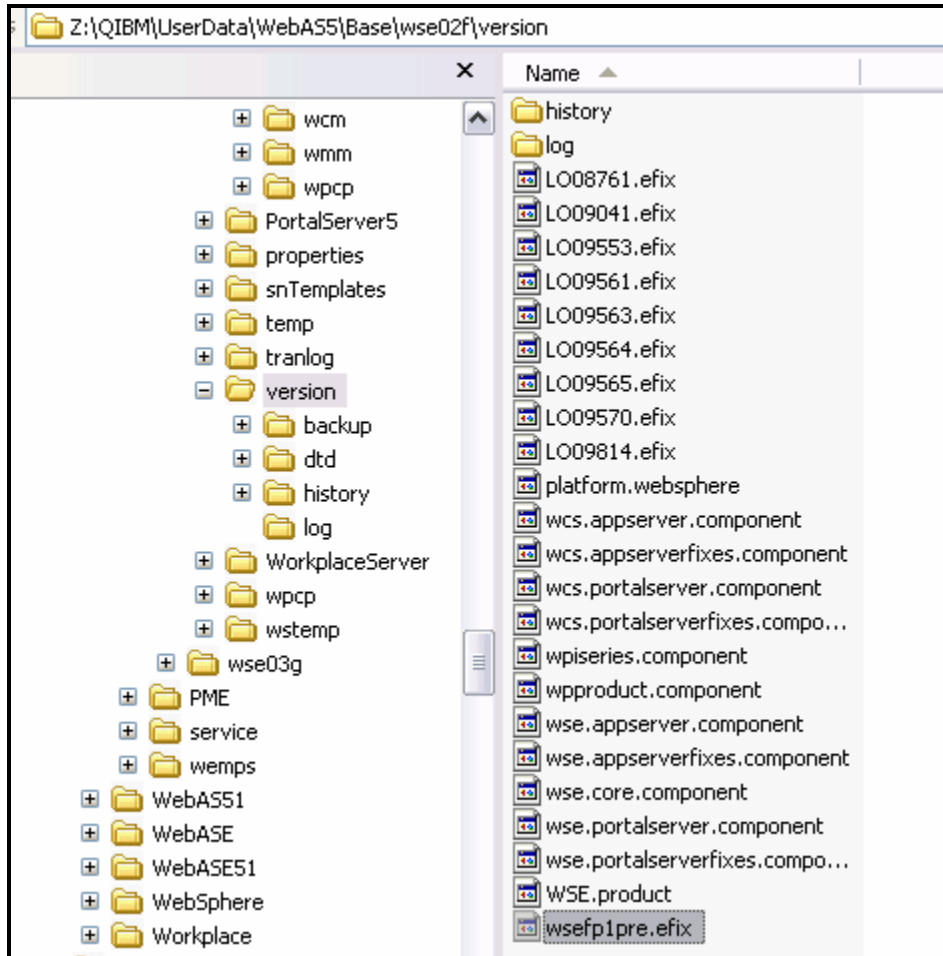
Figure 93: Displaying the content of the directory

Appendix B: Cleaning up a Workplace Services Express installation

Here are the steps for cleaning up the system after a Workplace Services Express installation effort.

Removing a Workplace Services Express instance (IBM Web Administration for iSeries)

Follow these steps to remove a Workplace Services Express instance:

1. Access Web Administration for iSeries: **http://<iseries_system>:2001/HTTPAdmin**
2. Click the **iSeries Web Administration** option.
3. Select **All application servers** to display all servers.

*Select your **WebSphere_Portal** server for your Workplace Services Express instance and select **Delete** (*

4. Figure 94).
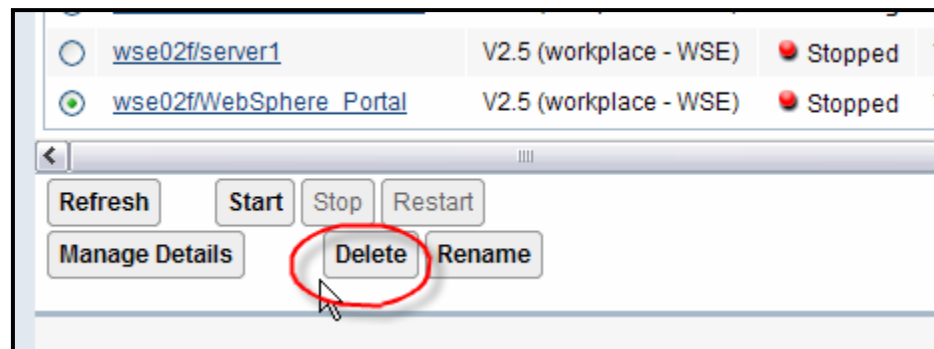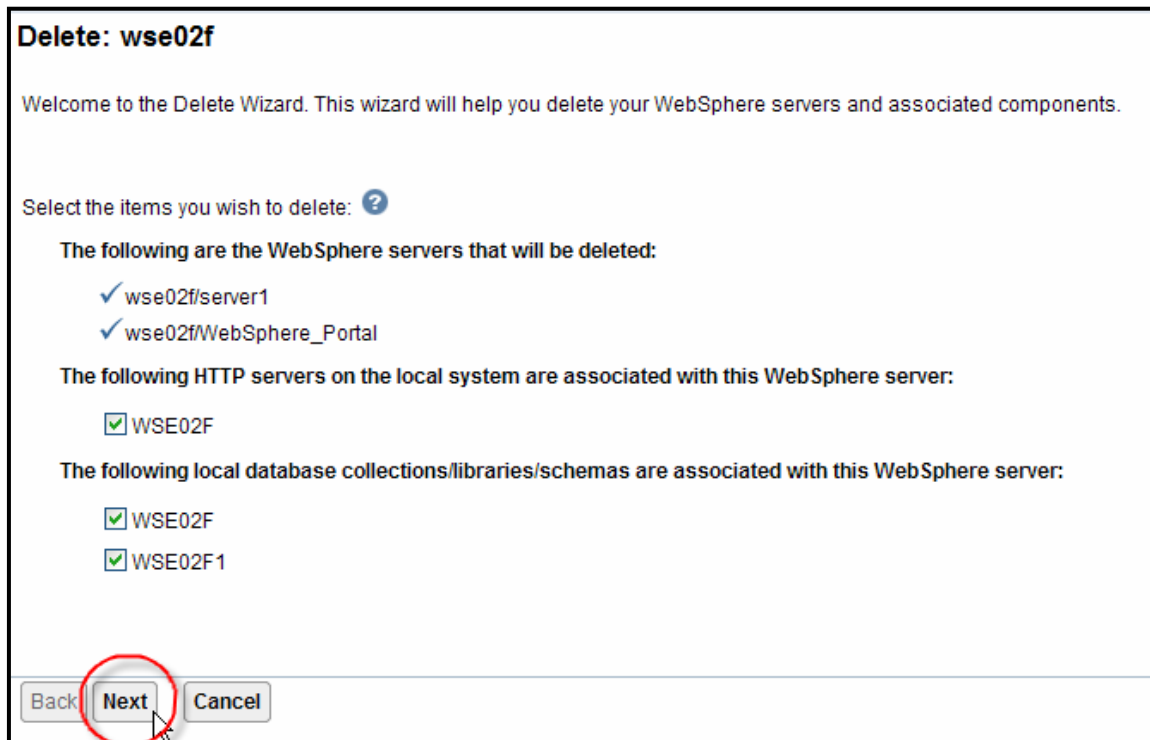
Figure 94: Removing the Workplace Services Express instance

5. Select the HTTP server and the local databases to delete with the application servers.
*Click **Next** (*

6. Figure 95).

Figure 95: Deleting WebSphere servers and associated components

7. On the summary, click **Delete** (Figure 96).
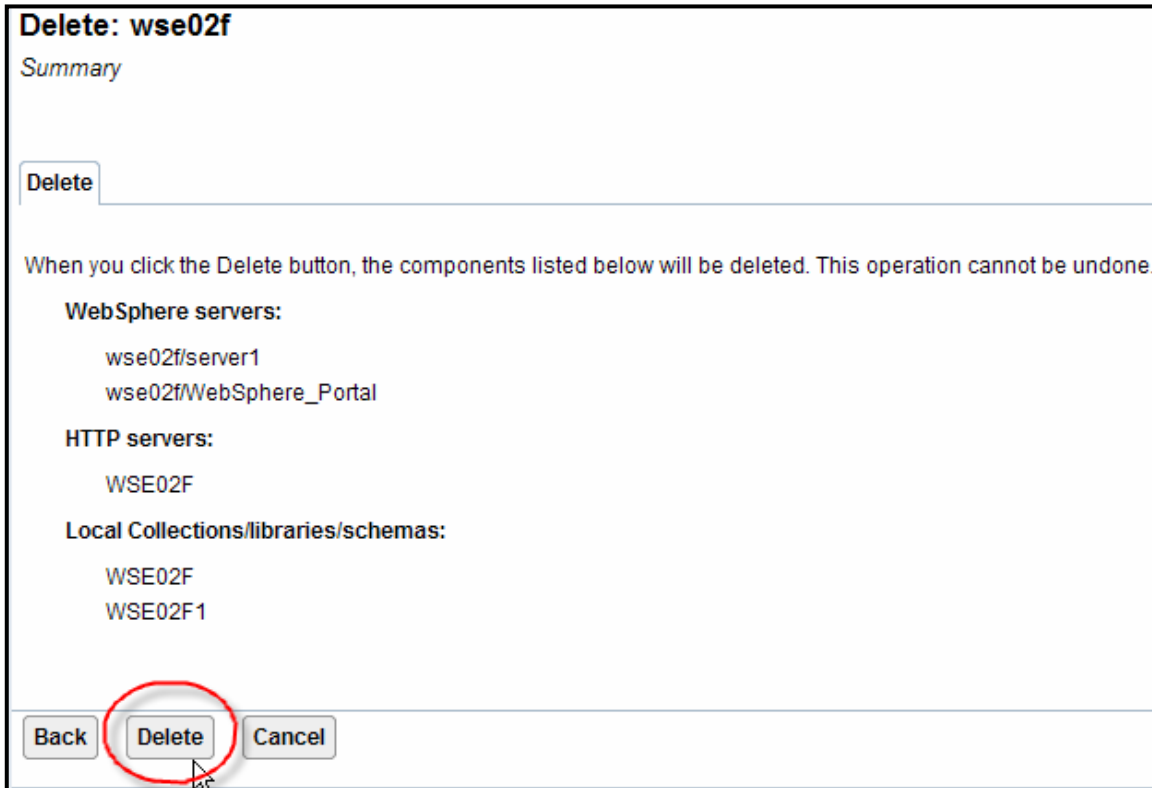
Figure 96: Summary for deleting wse02f instance

8. Notice the Workplace Services Express instance is in the **deleting** status and will be removed (Figure 97).
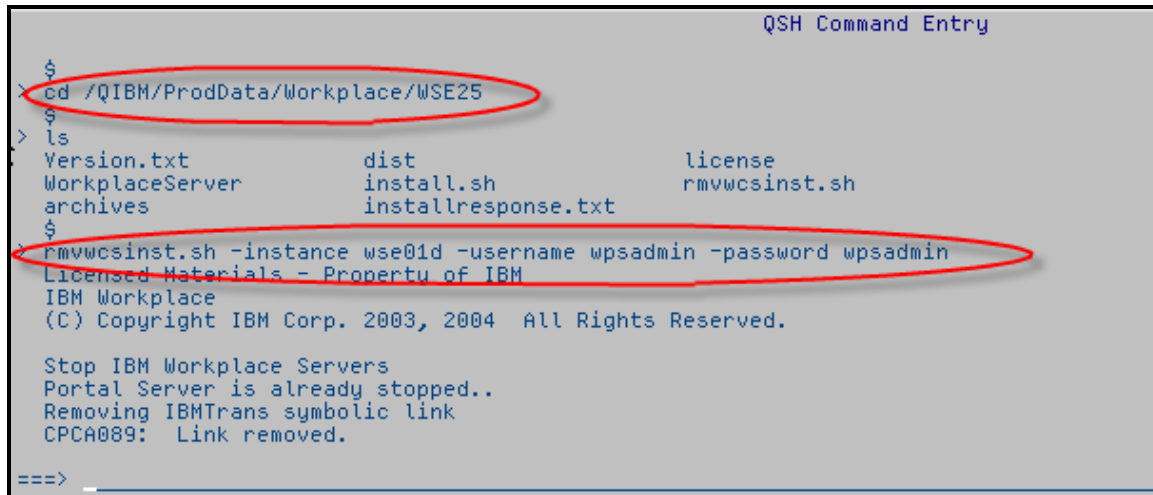
*Figure 97: The Workplace Services Express instance is in **deleting** status, being removed*

Removing the Workplace Services Express instance (manually)

Perform the following steps to remove the Workplace Services Express instance manually. However, make sure you do not remove the Workplace Services Express product before first completing the steps below.

1. Start a QShell session (Figure 98):**QSH**
   a. Type: **cd /QIBM/ProdData/Workplace/WSE25**.
   b. Type: **rmvwcsinst.sh -instance <instance_name> -username <wasAdminUserId> - password <wasAdminPassword>**.

Figure 98: Removing the Workplace Services Express instance manually

Removing the HTTP server

To remove the HTTP server follow these steps:

1. Log on to IBM Web Administrator for iSeries: **http://<iSeries_lab>.<lab_domain>:2001**.
2. Click **IBM HTTP Server for iSeries**.
3. Select **Manage** > **All Servers** > **All HTTP Servers**.
4. Stop your HTTP server.
5. Select your HTTP server **<wse_instance>** and click **Delete**.
6. Remove the HTTP instance entry from www.
7. From an iSeries command entry screen:
   9. Enter the **edtf 'www'** command.
   10. Enter **9**, **Delete** at the left of the HTTP instance name for recursive delete.

Deleting the Workplace Services Express libraries

To delete the Workplace Services Express libraries follow these steps:

1. From an OS/400 command entry session, display all the libraries associated with the Workplace Services Express instance: **wrklib wse*** <<<<< Depends on naming convention used when the instance was created. Refer to the summary printout to find the names
2. Select **option 4** to delete.

If any of the above libraries cannot be deleted, you might need to IPL the system and try again.

Deleting the Workplace Services Express database user's user profile

Use the **Delete User Profile** command to delete the database user's user profile:
DLTUSRPRF USRPRF(<your_wse_instance_DBUSR>) OWNOBJOPT(*DLT)

Removing the Workplace Services Express product code

Perform the following steps to uninstall Workplace Services Express:
1. Start a QShell session: **QSH**
2. Run the uninstall script:
   /qibm/proddata/workplace/wse25/workplaceserver/uninstall/uninstall.sh –silent
3. Delete the product's library: **DLTLIB QWSE25**

Appendix C: Basic tuning

This section provides a list of the settings that can be configured for base tuning of a Workplace environment on an iSeries system. Use this list only for an initial tuning. Monitor the runtime environment and adjust the settings appropriately based on specific customer environments.

Important note: *Memory constraint system* is referred to several times in the tables below (Tables 3 through 11). In the context of performance tuning recommendations for Workplace, a *Memory constraint system* is a system with less than 6 gigabytes of total memory or less than 4.5 gigabytes of memory dedicated to the Workplace Collaboration Services/Workplace Services Express instance.

System view		
System value	**Recommended value**	**Description**
QPRCMLTTSK	*1 or 2*	Controls whether to enable the individual symmetric multiprocessor 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 will likely increase the performance capacity of a system or improve the responsiveness of a multithreaded 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. How to set parameter: **OS/400 Command Entry** > **CHGSYSVAL SYSVAL(QPRCMLTTSK) VALUE('1')** **Note:** See APAR II13981: *The default setting of the i5/OS system value* **QPRCMLTTSK** *may be incorrect for some V5R3M0 installations* at: http://www-912.ibm.com/n_dir/nas4apar.nsf/0/a4eaa9d8cb2ab5dd86256f690056c078?OpenDocument
QMAXACTLVL	**NOMAX*	Specify 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. How to set parameter: **OS/400 Command Entry** > **CHGSYSVAL SYSVAL(QMAXACTLVL) VALUE('0')** In iSeries Navigator, select your system, > Configuration and Service > System Values > Performance > Memory Pools

QPFRADJ	*At deployment set to: 3=automatic adjustment* *At runtime set to: 0=no adjustment*	Specify when to automatically adjust memory pools and activity levels. Initially set **QPFRADJ** to 3 to determine the initial pool size. Change **QPFRADJ** to 0 after the Workplace instance is deployed. This will prevent other pools from stealing memory from the pool where Workplace is running in (typically *BASE). Periodically monitor the faulting rates and make manual adjustments to the memory pool. How to set parameter: **OS/400 Command Entry** > **CHGSYSVAL SYSVAL(QPRADJ) VALUE('0')** In iSeries Navigator, select your system, > Configuration and Service > System Values > Performance > Memory Pools
QMCHPOOL	*Set the machine pool size so that the faulting rate is < 10 faults per second and > 0.4*	Specify the size of the machine memory pool (System pool 1). A good guideline is for this value to be two times the machine pool "reserved size." If the faulting rate exceeds 10 faults per second, move more memory into the pool. How to set parameter: **OS/400 Command Entry** > **WRKSYSSTS** > **"Pool size" for System Pool 1** In iSeries Navigator, select your system, > Configuration and Service > System Values > Performance > Memory Pools
QBASPOOL	*> 4.5 GB*	Use this system value to specify the minimum size for the base memory pool. By default Workplace instance's server jobs run in the *BASE pool. How to set parameter: **OS/400 Command Entry** > **CHGSYSVAL SYSVAL(QBASPOOL) VALUE('450000')** In iSeries Navigator, select your system, > Configuration and Service > System Values > Performance > Memory Pools **Note:** systems with less than 4.5 gigabytes in the *BASE pool are considered memory constraint.
*Base pool size	*Set the *BASE pool size so that the faulting rate is < 30 faults per second* *Minimum recommended value 4.5 GB for Workplace Services Express and 6 GB for Workplace Collaboration Services*	By default Workplace jobs run in the *BASE storage pool. **Note:** If you are running Workplace on a separate pool other than *BASE, apply these guidelines to the memory pool assigned to the subsystem where Workplace is running How to set parameter: **OS/400 Command Entry** > **WRKSHRPOOL** In iSeries Navigator, select your system, > Configuration and Service > System Values > Performance > Memory Pools **Note:** As you tune this parameter, verify that the disk utilization is less than 30 to 40% and that the memory-fault rate is under 100 pages per second.

QBASACTLVL	> 570 *Increase the activity level if the rate of transitions from wait-to-ineligible is approaching the rate of active-to-wait*	The maximum number of eligible threads that can compete at the same time for storage in the base storage pool. If the activity level is too low, the threads may transition to the ineligible condition. If the activity level is too high, excessive page faulting may occur. 1. Enter **WRKACTJOB**. 2. Press **PF11** twice to display thread data for all jobs running in the *BASE pool. 3. Add the number of all the threads plus 15%. 4. Set the value calculated in three as the activity level for the pool (you can also see the activity level **WRKSYSSTS** or **WRKSHRPOOL**). **Note:** If you are running Workplace on a separate pool other than *BASE, apply these guidelines to the memory pool assigned to the subsystem where Workplace is running. How to set parameter: **OS/400 Command Entry** > **CHGSYSVAL SYSVAL(QBASACTLVL) VALUE(1920)** In iSeries Navigator, select your system, > Configuration and Service > System Values > Performance > Memory Pools
Expert cache	*Enabled*	Expert cache is an operating system function. Using it may improve performance if your application access data sequencially. How to set parameter: **OS/400 Command Entry** > **WRKSYSSTS** > **F11 for paging data** > replace ***FIXED** with ***CALC**

Table 3: System view: System value

Memory tuning	Recommended value	Description
Pool size monitoring	*> 6 GB RAM*	Workplace runs by default in the *BASE pool (**System Pool 2** in **WRKSYSSTS**). By default, there are two other memory pools: **Pool 3** (5% of memory allocation) for interactive workloads and **Pool 4** (1% of memory allocation) for spool. If you do not need the interactive or spool pools, change the default minimum memory settings. 1. Select **WRKSHRPOOL** > **F11**. 2. Change **Minimum** and **Maximum** for ***INTERACT** and ***SPOOL** to a lower value. 3. Press **Enter**. **Note:** If you are not utilizing interactive or spool services, you can lower these values to smaller amounts such as 0.5 and 0.05, respectively.

Table 4: Memory tuning

Disk tuning	Recommended value	Description
Disk utilization	*< 30 to 40%*	To determine if disk is a bottleneck on your iSeries system, look at the disk utilization of each individual disk unit. It is important that no one disk arm exceeds the 30% busy. 2757 and 2780 I/O adapters can go up to 40% busy even when lower utilization is recommended. 1. Select **WRKDSKSTS**. 2. Look at the **% Busy** column. 3. Verify % busy is less than 30 to 40%.

Table 5: Disk tuning

Machine setup	Recommended value	Description
Processors active	*Minimum 1 processor and L3 cache*	Number of processors dedicated to a Workplace instance. **Note: Minimum** is suggested for an iSeries 520 system. Server feature code 0904. LPAR configurations: Avoid partial processors at all cost and have an even number of processors, if possible.
DASD condition	*No degradation*	Look for any degraded DASD on the system as follows **WRKDSKSTS** > **F11** > Status should not be DEGRADED
Number of DASD arms	*> 8*	The number of DASD arms on the machine should yield the recommended disk utilizationb (less than 30 to 40% busy).
PTF group levels must be current	*SF99530 SF99287 SF99503 SF99269 SF99282 SF99099*	Cumulative PTF package: ▪ WebSphere Application Server V5.0 (Base Edition) ▪ DB2 UDB for iSeries ▪ Java ▪ WebSphere Portal Express/Express Plus ▪ IBM HTTP Server for iSeries For latest group PTF levels available, refer to: www-912.ibm.com/s_dir/sline003.NSF/ GroupPTFs?OpenView&Start=1&Count=30&Expand=1#1

Table 6: Machine setup

TCP/IP configuration		
Setting	**Recommended value**	**Description**
Line speed	• *LINESPEED(*AUTO)* • *DUPLEX(*AUTO)*	Line speed and duplex support How to set parameter: **CHGLINETH LIND(\<line_name\>) LINESPEED(*AUTO) DUPLEX(*AUTO)**
MAXFRAME	• *1496 for < 1Gbit* • *8996 for 1 Gigabit Ethernet*	Specifies the maximum frame size that can be transmitted and received on this line description. How to set parameter: **CHGLINETH LIND(\<line_name\>) MAXFRAME (8996)**
MAX MTU size	**LIND*	The maximum transmission unit (MTU) is the maximum number of bytes allowed in any datagram. How to set parameter: **CFGTCP option 1 (Interfaces) > MTU = *LIND** **CFGTCP option 2 (Routes) > MTU = (*IFC)**
TCPRCVBUF and TCPSNDBUF	*65536 (64K)*	Specifies what to allocate for the default receive and send buffer size. How to set a parameter: **CHGTCPA TCPRCVBUF(65536) TCPSNDBUF(65536**) **Note:** You must restart TCP for this change to take effect.

Table 7: TCP/IP configuration

Administrators can use the modified IBM Tivoli® Performance Viewer to monitor the performance of the server in real time. (The lwpperfviewer.bat file is located in the **\qibm\userdata\webas5\base\<instance>\WorkplaceServer\bin** directory.) Running Tivoli Performance Viewer in real-time can introduce additional server overhead if high or maximum counter tracking options are selected.

Based on this monitoring feedback, expand the heavily utilized resources and consider reducing under-utilized resources. For more details about using the modified Tivoli Performance Viewer, refer to the Workplace Collaboration Services 2.5 information center located at http://publib.boulder.ibm.com/infocenter/iwphelp/v2r5m1/topic/com.ibm.wcs.ic.doc_2.5.1/infocenter/i_perf_c_tpv_overv.html.

Web server tuning		
Setting	**Recommended value**	**Description**
GZIP compression	*ON* *Use with caution*	Typically, you set up your HTTP server to compress only outbound traffic, because the amount of data sent to a browser is much higher than the request data received from a browser. Unless your system is already CPU-bound, the benefit of reducing the size of data sent from the server to the browser outweighs the overhead that compression introduces for the CPU. Set this parameter to **ON** only if large amount of data is sent to the browser and if your system is not CPU-bound (your CPU utilization is less than 60%). How to set a parameter: Paste the following directives to the end of your HTTP server's configuration file and then restart the HTTP server. Normally this file is located at **/www/<http instance name/config/httpd.conf**. LoadModule deflate_module /QSYS.LIB/QHTTPSVR.LIB/QZSRCORE.SRVPGM AddType application/zip .jar SetOutputFilter DEFLATE SetEnvIf "User-Agent" "^." no-gzip SetEnvIf "User-Agent" "MSI[E].(5\.5|6\.0);" !no-gzip SetEnvIf "User-Agent" "^Mozilla/5.0" !no-gzip SetEnv gzip-only-text/html 1 SetEnvIfNoCase Request_URI "\.(js|css)$" gzip-only-text/html=0 # Uncomment out the following lines to log compression statistics to the deflate_log file #LogFormat "\"%r\" %{outstream}n/%{instream}n (%{ratio}n%%)" deflate #CustomLog logs/deflate_log deflate #LogMaint logs/deflate_log 7 0 #DeflateFilterNote Input instream #DeflateFilterNote Output outstream #DeflateFilterNote Ratio ratio

KeepAliveTimeout	*> 5 minutes (300 seconds)*	It can be helpful to increase the KeepAlive Timeout. Keep in mind that a higher KeepAlive Timeout may increase contention for HTTP server processes. If you are running out of HTTP processes, decrease this value. How to set parameter: **ServerProperties** > **System Resources** > **HTTP Connections(tab)** > **Time to wait between requests**
KeepAlive	*Enabled*	Enables a single TCP 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 that client. How to set parameter: **Server Properties** > **System Resources** > **HTTP Connections** (tab)> **Allow persistent connections**
MaxKeepAliveRequests	*0*	This will allow an unlimited number of requests on a single TCP connection. How to set parameter: **Server Properties** > **System Resources** > **HTTP Connections** > **Maximum requests per connection**
ThreadsPerChild	*> 300*	Specifies the maximum number of threads to process a request. Set the number of threads on the HTTP server to handle the maximum number of parallel clients that can connect simultaneously to the HTTP server. How to set parameter: **Server Properties** > **General Server Configuration** > **Number of threads to process requests**
Error logging	*Lowest level possible*	How to set parameter: **Server Properties** > **Logging** > **Error Logs** > **Logging Level**
Access logging	*Disabled (if possible)*	How to set parameter: **Server Properties** > **Logging** > **Custom Logs** > select **logs/access_log** > click **Remove** OR Comment out the following configuration line in **/www/<Workplace_instance>httpd.conf** **CustomLog logs/access_log combined**
Name Server Access	*OFF*	For each Internet transaction, the server accesses the name server for information (IP address and name translations). These accesses cause significant overhead (CPU time, comm I/O) and greatly reduce system capacity. How to set parameter: **Server Properties** > **General Server Configuration** > **DNS hostname lookups for logging, CGI, and SSI** > **Do not perform DNS lookups**

Table 8: Web server tuning

Web application server tunning		
Settings	Recommended value	Description
server1	*Not started*	This is the default application server for the Workplace instance. It is used only during the deployment of the instance. Once the deployment is complete you may end it. /qibm/proddata/webas5/pme/bin/stopserver server1 –instance <workplace_instance> -username <was_admin_id> -password <was_admin_password>

Cache loader	*Active*	Using the OS/400 Java virtual machine (JVM) cache for user class loaders improves startup performance for classes that you load from a user class loader. The cache stores the optimized Java program objects, which enables the JVM to reuse them. Reusing stored Java programs improves performance by avoiding both recreating the cached Java program objects and verifying the bytecode.
		
		How to set parameter:
		1. Start QShell: **STRQSH**
		2. Make directory: **mkdir /cache**.
		3. Create a temporary file: **- touch /tmp/temp**.
		4. Create the cache loader jar file: **jar -cf /cache/classloadercache.jar /tmp/temp**.
		5. Remove the temporary file: **- rm /tmp/temp**.
		Log on to the WebSphere Application Server administrative console of your **WebSphere _Portal** server: **http://<** workplace_host**>.<domain>:<port>/admin**
		
		Servers > **Application Servers** > **WebSphere_Portal** > **Process Definition** > **Java Virtual Machine** > **Additional Properties** > **Custom Properties** > **New** >
		
		1. **Name:** os400.define.class.cache.file
		   Value: /cache/classloadercache.jar
		2. **Name:** os400.define.class.cache.hours
		   Value: 9999
		3. **Name:** os400.define.class.cache.maxpgms
		   Value: 40000
		Restart the **WebSphere_Portal** server and verify the cache is active: dspjvapgm '/cache/classloadercache.jar'
		The **Java programs** value should be non-zero.

Java virtual machine heap size	*Start with:* *WebSphere_Portal Initial/max heap size = 768/0* *Adjust from there; for larger systems you may need more.*	The Initial Heap Size should be tuned so that the garbage collector runs at a suitable interval; infrequently enough that it does not cause unnecessary overhead, yet often enough that the heap does not grow too large. The initial heap size recommended value for each server in the Wokplace instance is : • WebSphere_Portal – Initial/max heap size = 768/0 Adjust the value as necessary to improve performance. How to set parameter: Log on to WebSphere Administrative Console: **Servers** > **Application Servers** > **WebSphere_Portal** > **Process Definition** > **Java Virtual Machine** > **Initial/Max Heap Size=768/0** **Note:** For more details on tuning heap size for i5/OS refer to *Tuning Garbage Collection for Java and WebSphere on iSeries at* http://www-03.ibm.com/servers/eserver/iseries/perfmgmt/pdf/tuninggc.pdf **Note***:* If your machine is memory constraint, set the initial heap size to 256 and watch the effect of this setting. Observe response time using an application monitoring tool such as Application Response Metrics (ARM). Observe throuput results with iSeries Performance Collection Services. Increase the heap size to 384, 512, and 768 and compare response time and throughput for each setting. Choose the heap size that renders optimal response time and throughput.
Session timeout	*The minimum value acceptable by users*	The default value of **Session Timeout** is 30 minutes. Reducing this value to a lower number can help reduce memory consumption requirements, allowing a higher user load to be sustained for longer periods of time. Reducing the value can interfere with the user experience by forcing the user to be logged out more frequently. How to set parameter: Log on to WebSphere Administrative Console: **Servers** > **Application Servers** > **WebSphere Portal** > **Web Container** > **Session Management** > **Session Timeout** **- Set Timeout**

Class garbage collection	*-Xnoclassgc*	Using the **-Xnoclassgc** parameter will allow for more class reuse, thus causing less garbage collections to occur.
		How to set parameter: **Servers** > **Application Servers** > **WebSphere_Portal** > **Process Definition** > **Java Virtual Machine** > **Generic JVM arguments** **- {add} -Xnoclassgc**
		Note: For memory constraint machines, set the **–Xnoclassgc** parameter as recommended here. Observe the response time and throuput results. Turn off this parameter (remove **–Xnoclassgc**) and observe the response time and throuput results again. Choose the option that renders optimal response time and throuput.
		IMPORTANT NOTE: Make sure you type this parameter exactly as shown. If you make a mistake your server will not start.
Servlet engine thread pool size	*70*	In testing, 70 was used for both the minimum and maximum settings. Set this value and monitor the results using the modified (Workplace) version of the Tivoli Performance Viewer. Increase this value if all the servlet threads are busy most of the time. Decrease this value if most of the servlet threads are idle most of the time.
		How to set parameter: Log on to WebSphere Administrative Console: **Servers** > **Application Servers** > **WebSphere Portal** > **Web Container** > **Thread Pool** **- Minimum size threads** **- Maximum size threads**

Data source connection pool size	lwp25JDBC wpcp50JDBC wps50JDBC *See "Description" column for recommended values*	Set **Minimum Connections** equal to **Maximum Connections** for all connection pools. Do not leave **Minimum Connections** at **1** for any connection pools on the iSeries system. How to set parameter: Log on to WebSphere Administrative Console: **Resources** >**JDBC Providers** > **lwp25JDBC** > **Data Sources** > **lwpApp** > **Connection Pool** > **Min/Max =50/50** **Resources** > **JDBC Providers** > **wpcp50JDBC** > **Data Sources** > **feedback5** > **Connection Pool** > **Min/Max =30/30** > **wpcpdfds** > **Connection Pool** > **Min/Max =30/30** **Resources** > **JDBC Providers** > **wpcp50JDBC** > **Data Sources (Version 4)** **feedbackDS** > **Connection Pool** > **Min/Max =30/30** **persDS** > **Connection Pool** > **Min/Max =30/30** **wcmDS** > **Connection Pool** > **Min/Max =64/64** **Resources** > **JDBC Providers** > **wps50JDBC** > **Data Sources** > **wmmDS** > **Connection Pool** > **Min/Max =30/30** > **wps50DS** > **Connection Pool** > **Min/Max =50/50** **Note for memory constraint systems:** 1. Change all minimum values above to **10**. 2. Run the workload test or observe the application in production, use TPV to monitor JDBC connection pool usage. 3. Set the minimum to the average number of JDBC connections in use at the appropriate load. 4. If the average waiting thread count is **> 0**, increase the maximum connection pool size by the waiting thread count maximum value and observe the results.
Statement cache size	lwpApp=100 wps50DS=500 wmmDS=500	The **Statement Cache** must be increased when the connection pool size is increased. The statement cache can be monitored using the Tivoli Performance Viewer to check if it is large enough. For **Statement Cache** tuning information see ibm.com/servers/eserver/iseries/perfmgmt/pdf/stmntcache.pdf How to set parameter: Log on to WebSphere Administrative Console: **Resources** > **JDBC Providers** > **lwp25JDBC** > **Data Sources** > **lwpApp** > **Prepare Statement Cache =100** **Resources** > **JDBC Providers** > **wps50JDBC** > **Data Sources** > **wmmDS** > **Statement Cache Size = 500** > **wps50DS** > **Statement Cache Size = 500**

Application server logging level	Log error	How to set parameter: Log on to WebSphere Administrative Console: **Servers** > **Application Servers** > **Logging and Tracing** > **WebSphere_Portal** > **IBM Service Logs** > **Message Filtering=Log error** **Servers** > **Application Servers** > **Logging and Tracing**
Edge Side Include (ESI) caching	Enabled	The Web server plug-in contains a built-in 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. How to set parameter: 1. End the **WebSphere_Portal** server. 2. In: /QIBM/UserData/WebAS5/base/<wcs_instance>/config/cells/plugin-cfg.xml update the following property: <Property Name="esiEnable" Value="**true**"/> **Note:** ESI can not be enabled if SSL is enabled.
LDAP group and member ID map	ibm-allGroups:member;ibm-allGroups:uniqueMember	How to set parameter: Log on to WebSphere Administrative Console: **Security** > **User Registries** > **LDAP** > **Advanced LDAP Settings** > **Group Member ID Map**

Table 9: Web Application Server tuning

Database tunning		

Database indexes	**Create Workplace database indexes**	Index usage can dramatically improve the performance of DB2 UDB SQL queries.
		
		How to set parameter:
		Determine the name of the Portal schema specified in the **WpsDbSchema** property in the file **/QIBM/UserData/WebAS5/Base/wcs01a/PortalServer/config/wpconfig.properties WpsDbSchema=<WPS_schema>**
		
		From a 5250 session (requires 5722-ST1 DB2 Query Manager and SQL Development Kit installed on your system):
		  1. Sign on to your iSeries system as the Portal database owner (or change the index ownership later).
		  2. Start SQL: STRSQL.
		  3. Set schema =<WPS_schema>.
		  4. Create the following indexes:
		    create index IX2110D on prot_res (parent_oid, oid)
		    create index IX2140B on lnk_user_role (role_inst_oid)
		    create index lambr_idxfix1 on wmmlambr (WMMLAMBR_ID, MEMBER_TYPE)
		    create index laasval_idxfix3 on wmmlaasval (WMMLAMBR_ID, WMMLAATR_ID)
		    create index laasval_idxfix2 on wmmlaasval (WMMLAMBR_ID, HAS_CONTEXT)
		    create index disresidx2 on DISCUSSIONRESOURCE (uri, parenturi,path)
		    create index disresidx3 on DISCUSSIONRESOURCE (uri, rooturi, projectid,workspace)
		    create index disres_midx2 on DISCUSSIONRES_M (uri, wpcpguid)
		    create index metaidx4 on wpcpmetadata (wpcpguid, wpcpdeleted)
		
		From iSeries Navigator:
		  1. Start iSeries Navigator.
		  2. Expand your **iSeries system's connection** > **Databases** > **<iSeries host>**
		  3. Right-click **<iSeries host>** under **Databases** > **Run SQL Scripts**
		  4. Enter the following SQL statements:
		(Note: Each statement below must end in a semicolon.)
		set schema =<WPS_schema>;
		create index IX2110D on prot_res (parent_oid, oid);
		create index IX2140B on lnk_user_role (role_inst_oid);
		create index lambr_idxfix1 on wmmlambr (WMMLAMBR_ID, MEMBER_TYPE);
		create index laasval_idxfix3 on wmmlaasval (WMMLAMBR_ID, WMMLAATR_ID);
		create index laasval_idxfix2 on wmmlaasval (WMMLAMBR_ID, HAS_CONTEXT);
		create index disresidx2 on DISCUSSIONRESOURCE (uri, parenturi,path);
		create index disresidx3 on DISCUSSIONRESOURCE (uri, rooturi, projectid,workspace);
		create index disres_midx2 on DISCUSSIONRES_M (uri, wpcpguid);
		create index metaidx4 on wpcpmetadata (wpcpguid, wpcpdeleted)

		Untitled - Run SQL Scripts - Itcebiz3(Itcebiz3) * File Edit View Run VisualExplain Monitor Options Connection Help Examples set schema =wcs01a; create index IX2110D on prot_res (parent_oid, oid); create index IX2140B on lnk_user_role (role_inst_oid); create index lambr_idxfix1 on wmmlambr (WMMLAMBR_ID, MEMBER_TYPE); create index laasval_idxfix3 on wmmlaasval (WMMLAMBR_ID, WMMLAATR_ID); create index laasval_idxfix2 on wmmlaasval (WMMLAMBR_ID, HAS_CONTEXT); create index disresidx2 on DISCUSSIONRESOURCE (uri, parenturi, path); create index disresidx3 on DISCUSSIONRESOURCE (uri, rooturi, projectid, workspace); create index disres_midx2 on DISCUSSIONRES_M (uri, wpcpguid); create index metaidx4 on wpcpmetadata (wpcpguid, wpcpdeleted); Click **Run** > **All** File Edit View Run VisualExplain Monitor Option All Ctrl+R From Selected Ctrl+T Example Run all of the statements in the active script **Note:** When the indexes are created, change ownership to the Portal database user. **CHGOBJOWN OBJ(PORTALDB/IX2110D) OBJTYPE(*FILE) NEWOWN(WSEDBUSER)** **where <wsedbuser> is your WSE database user profile**

Table 10: Database tuning

W E B S P H E R E   P O R T A L   S E R V I C E   P R O P E R T I E S

Parameter	Value used	Definition	Property file name
public.expires	**3600 (seconds)**	Determines cache expiration time for the unauthenticated portal page	NavigatorService.properties
Persistent.session.option	**0**	Determines whether the user gets the option to resume their previous session: This function hurts performance as WebSphere Portal Server must write the user's state to its database when the user logs out or the user's session timesout.	ConfigService.properties

default.interval bucket.*.interval	Default values used	Determines the interval (in seconds) to refresh one of the listed resource types from the database. If a bucket does not have an associated interval, the default will be used. If there are certain resource types that are not changed often, you might want to increase the interval for that resource type to reduce the amount of database reads.	RegistryService.properties
uri.requestid	False	Determines the support of URL addressability. To set URL addressability on, set this property to false, which means IDs are not requested	ConfigService.properties
Access control cache lifetimes	**3600 (seconds)**	This applies to all of the access control caches in the **CacheManagerService.properties** file.	CacheManagerService. properties

Table 11: WebSphere portal service properties

END OF LAB

Resources

These Web sites provide reference materials to supplement the information contained within this lab:

- IBM Publications Center
  www.elink.ibmlink.ibm.com/public/applications/publications/cgibin/pbi.cgi?CTY=US

- IBM Redbooks™ (**ibm**.com/redbooks)

- IBM Workplace Services Express product documentation
  ibm.com/software/workplace/products/product5.nsf/wdocs/productdoc

- IBM Workplace for iSeries Web site
  http://www-03.ibm.com/servers/eserver/iseries/software/workplace/index.html

- IBM Workplace Services Express Information Center
  http://publib.boulder.ibm.com/infocenter/wseic/v2r5/index.jsp

- IBM Workplace Services Express Version 2.5.x Release Notes®
  http://publib.boulder.ibm.com/pvc/wse/250/en/release_notes.html

- Deploying IBM Workplace Services Express on the IBM iSeries Server, SG24-6664
  http://www.redbooks.ibm.com/redpieces/abstracts/sg246664.html?Open

- IBM WebSphere Application Server home
  ibm.com/servers/eserver/iseries/software/websphere/wsappserver

- IBM WebSphere Application Server V5.0 for iSeries
  ibm.com/servers/eserver/iseries/software/websphere/wsappserver/indexb50.html

Sizing the iSeries system
- IBM eServer Workload Estimator
  http://www-912.ibm.com/wle/EstimatorServlet

- IBM Techline (IBM intranet):

  - EMEA Techline
    http://w3-5.ibm.com/support/emea/techline/index.shtml
    Sizing: http://w3-5.ibm.com/support/emea/techline/sizing.html

  - Americas Techline
    http://w3-03.ibm.com/support/americas/techline
    Sizing: http://w3-03.ibm.com/support/americas/techline/sizewise.html

- Techline Access for Business Partners
  ibm.com/partnerworld/techline

Ensuring the minimum required hardware

- Workplace Services Express information center
  http://publib.boulder.ibm.com/infocenter/wseic/v2r5/topic/com.ibm.wse.doc/install/i_inst_c_requirements_i5os.htm

Downloading Workplace Services Express 2.5.1 images
- Download for IBM internal use only:
  - Xtreme Leverage Portal
    http://w3-103.ibm.com/software/xl/portal
- Download for IBM Business Partners:
  - IBM Software Access Catalog
    www.developer.ibm.com/isv/welcome/softmall.html
- Download for IBM customers:
  - IBM Passport Advantage
    http://www-306.ibm.com/software/howtobuy/passportadvantage
- Workplace Services Express evaluation version
  IBM Passport Advantage Web site:
  http://www-306.ibm.com/software/howtobuy/passportadvantage
- Evaluating Workplace Services Express
  http://publib.boulder.ibm.com/infocenter/wseic/v2r5/topic/com.ibm.wse.doc/wpf/inst_eval_ovr.html

Setting the time on the i5/OS operating environment
- iSeries Infromation Center Time zone site
  http://publib.boulder.ibm.com/infocenter/iseries/v5r3/topic/rzati/rzatitimezone.htm

Obtaining group PTFs and single PTFs
- Fix Central
  http://www-912.ibm.com/eserver/support/fixes/fcgui.jsp
- iSeries Group PTFs
  http://www-912.ibm.com/s_dir/sline003.NSF/GroupPTFs?OpenView&view=GroupPTFs
- iSeries Support
  http://www-912.ibm.com

Installing WebSphere Application Server V5.0 on an iSeries system
- WebSphere Application Server installation and configuration Web site
  http://www-1.ibm.com/servers/eserver/iseries/software/websphere/wsappserver/docs/docws50.html#Install

Installing Workplace Services Express V5.0 Enterprise Enablement (i5/OS only)
- Workplace Services Express 2.5.x Information Center
  http://publib.boulder.ibm.com/infocenter/wseic/v2r5/topic/com.ibm.wse.doc/install/i_inst_t_pme_i5os.html

Installing Sun Java Runtime Environment (JRE) 1.4.2
- Download and install the JRE from the Sun Web site
  http://java.sun.com/j2se/1.4.2/download.html

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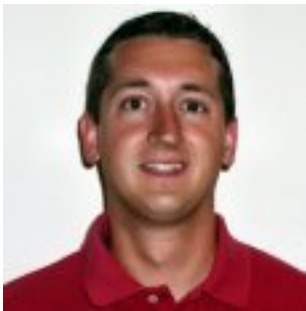
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Michael Gordon is a Senior IT Specialist with a primary focus on IBM Workplace, Portal and Collaboration software on the IBM system i5 within IBM Systems and Technology Group. He is a worldwide technical leader for pre and post sales consulting of Domino and Workplace products on the System i5. His primary focus has been early enablement education, development and delivery, and System i5 management. He continues to be a technical advocate for many of the largest IBM accounts for their worldwide Collaboration needs. You can reach him at mgordo@us.ibm.com.

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eServer	POWER4	Domino	DB2 Universal Database
Redbooks	POWER5	DB2	Passport Advantage
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