eaDirect™ Installation and Configuration Guide

eaDirect is a member of the eaSuite™ product line

IBM AIX Operating Environment™ Software and the IBM WebSphere® Application Server

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eaDirect™ and eaSuite

eaDirect is the foundation of an online account management strategy for providing your customers with online, electronic access to their account information. In addition, eaDirect provides customers with highly personalized online information and self-service capabilities, improving a customer's ability to manage their accounts. eaDirect is the cornerstone of edocs' eaSuite of products.

The following eaSuite modules can be added onto eaDirect:

eaSuite Module	Description
eaMarket	edocs' personalization management solution that enables companies to increase revenue and improve customer satisfaction by weaving personalized marketing and customer service messages throughout the online account management experience.
eaPay	edocs' electronic payment and warehousing solution that provides complete payment flexibility to billers and their customers, accelerating the accounts receivable process while reducing customer care costs. eaPay increases customer satisfaction by providing your customers with greater control to manage and track payments.

eaSuite Module	Description
eaPost	edocs' distribution module, designed to deliver compelling account content to customers through established web portals and through consolidators. Offering many distribution choices increases customer adoption. Through use of edocs' 'cartridges' for each distribution channel, edocs insulates your Information Technology (IT) staff from rapidly changing distribution standards like OFX and IFX.

The eaSuite is a proven, enterprise class e-account solution that is scalable, feature rich, and easy to deploy and manage. Its open, modular architecture enables you to deploy a robust online account management solution that:

- Preserves your investment in existing billing and customer care infrastructure
- Provides payment technology and distribution channel flexibility
- Offers best-of-class online marketing and personalization capabilities
- Delivers a comprehensive B2B and B2C solution

edocs' Online Account Management and Billing solution is used by some of the world's largest corporations as the foundation of their online account management strategy.

About this Guide

This guide describes how to install eaDirect and configure third-party applications that make up the eaDirect production environment. This guide also provides instructions for migrating an eaDirect database from a previous release.

This guide is intended for system administrators and other technical personnel who are responsible for installing, configuring, and maintaining eaDirect on an IBM AIX 4.3.3 machine.

This guide contains the following chapters:

Preparing to Install eaDirect Describes pre-installation tasks such as installing the Windows-based eaDirect Composition Tools and creating user and group accounts that are needed to install eaDirect and several third-party applications that work with eaDirect.

Setting Up a Database Server for eaDirect Provides instructions for installing eaDirect on a database server in a distributed-computing environment, and configuring the third-party software that work with it.

Setting Up an Application Server for eaDirect Provides instructions for installing eaDirect on an application server in a distributed-computing environment, and configuring third-party software that work with it.

This guide does not describe third-party software concepts, procedures, and commands that do not pertain to using eaDirect. For additional information about the third-party products mentioned in the guide, refer to the appropriate user documentation.

Related Documentation

This guide is part of the eaDirect documentation set. Additional information about eaDirect can be found in the following guides:

Document	Description
eaDirect User's Guide	Describes what you need to know about eaDirect to design an application to present your account information online. Also describes how to use the Windows-based Composition Tools to design and present information for delivery through a web browser.
eaDirect Production Guide	Describes how to create applications and jobs, publish design files, and manage activity in the production environment.

Contacting edocs Technical Support

Technical support is available to customers who have valid maintenance and support contracts with edocs. Technical support engineers can help you install, configure, and maintain your edocs application.

To reach the U.S. Service Center, located in Natick, MA (Monday through Friday 8:30am to 8:00pm EST):

Telephone: 508.652.8400

Toll Free: 877.336.3362

e-support: support.edocs.com. This requires a one-time online registration.

e-mail: support@edocs.com

When you report a problem, please be prepared to provide us the following information:

- What is your name and role in your organization?
- What is your company's name?
- What is your phone number and best times to call you?
- What is your e-mail address?
- In which edocs product did a problem occur?
- What is your operating system version?
- What were you doing when the problem occurred?
- How did the system respond to the error?
- If the system generated a screen message, please send us that screen message.
- If the system wrote information to a log file, please send us that log file.
- If the system crashed or hung, please tell us.

Do you have an idea for something we could improve? Don't hesitate to send us e-mail at support@edocs.com.

Preparing to Install eaDirect 2

This chapter describes installation tasks that must be performed before you install eaDirect.

What You Need to Know When Installing eaDirect

In addition to installing the eaDirect application, you will have to install and configure several other software applications that support eaDirect. The instructions in this guide describe how to install eaDirect in a distributed computing environment that includes at least one dedicated server for application components and another dedicated server for database components.

When installing eaDirect in a distributed environment, the recommended sequence is to install and configure components on the database server first, then install and configure components on the application server. It is **required** that you install eaDirect in the same directory on the database and application servers.

Also, to ensure a reliable and stable environment for creating eaDirect applications, you must meet the software and hardware minimum requirements and confirm that eaDirect and the applications that support it are installed and configured correctly.

A successful installation of eaDirect depends on completing the following pre-installation tasks:

- Confirm that your system configuration meets the recommended hardware and software requirements for eaDirect
- Install the Windows-based eaDirect Composition Tools
- Configure the eaDirect production environment

Software and Hardware Requirements

Confirm that your system meets the recommended hardware and software requirements for installing eaDirect.

Hardware:

- 384 megabytes of RAM per CPU (512 megabytes is recommended)
- 512 megabytes of swap space per CPU (1 GB recommended)
- 60 megabytes free disk space for the eaDirect software distribution (in addition to the space required for the WebSphere distribution)

Software:

- IBM AIX 4.3.3 on the IBM RS/6000 platform with the IBM AIX Maintenance Level 10
- IBM WebSphere 4.0.2 (running in 32-bit mode)
- IBM WebSphere 4.0.2 eFixes (see the product Release Notes for the list of required eFixes)
- IBM JDK 1.3.1_04 that is provided with the WebSphere software distribution
- DB2 7.2 and the Fixpak 6 for DB2 7.2

- Netscape Navigator 6.2 or Internet Explorer 5.5 (SP2) or 6.0 (needed to run eaDirect's Composer tool)
- CD-ROM device that is supported by AIX 4.3.3

C++ Compiler

The C++ Compiler is used to compile the edocs Stored Procedures. The following C++ versions are supported by this Platform:

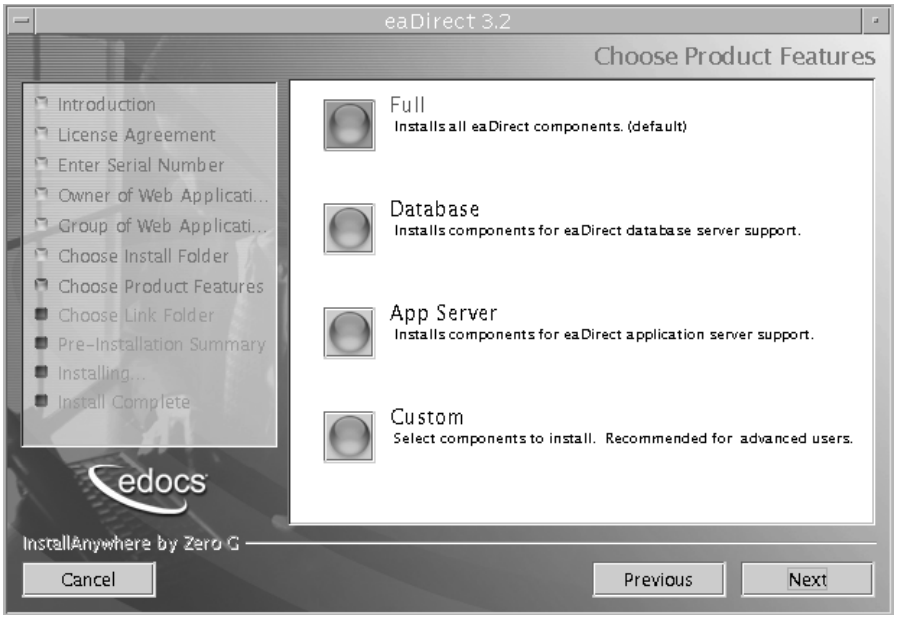
- IBM C Set++ for AIX Version 3.6.6 (Version 3.6.6.3 for 64-bit)
- IBM VisualAge C++ Version 4.0

For more information you may visit the following IBM site:

DB2 for Linux, OS/2, Windows and UNIX Technical Support

Installing eaDirect Product Components

The installation of eaDirect product components is done through the InstallAnywhere installer. The tool is provided with eaDirect on its distribution CD-ROM. Below is the InstallAnywhere screen where you select the eaDirect components to install.



Through InstallAnywhere's easy-to-follow graphical user interface, you can choose to do a full or custom install of eaDirect components on a single server or on multiple servers in a distributed environment. The following tables describes the various eaDirect installation options:

Installation Option	Installed Components
Full	Installs eaDirect application server components, eaDirect database server components, WebSphere J2EE files for eaDirect, eaDirect composition tools, and online product Help. This is the default installation option for eaDirect. **Note**: Use this installation option to install eaDirect on a single machine. See the topic *Installing eaDirect in a Non-Distributed Environment* for more information.
Database	Installs the eaDirect database server components and online product Help.
App Server	Installs eaDirect application server components, WebSphere J2EE files for eaDirect, sample applications, and online product Help.
Custom	Gives users the option to install eaDirect application server components, eaDirect database server components, eaDirect J2EE applications, eaDirect composition tools, Hierarchy samples (if licensed), and sample eaDirect applications.
SDK	Provides Javadoc, documentation and samples for the eaDirect API. This component will only appear if you have purchased a license for the SDK.

InstallAnywhere copies eaDirect files from the distribution CD-ROM to the appropriate directories, and sets up the directory hierarchy for database server and application server components. It also adds icons (including the tool to uninstall eaDirect) to the eaDirect program group that is accessible from the Windows Start menu.

For specific information about installing eaDirect components using InstallAnywhere, see the topics: *Installing the eaDirect Composition Tools*, *Installing the eaDirect Database Components* and *Installing the eaDirect Application Server Components*.

InstallAnywhere Installation Modes

You can choose one of two InstallAnywhere installation modes to install eaDirect:

- GUI Mode (default installation mode)
- Console Mode

The installation procedures in this guide show eaDirect being installed using the InstallAnywhere GUI. Console Mode is an interactive character-based installation where you are prompted to respond to several installation questions.

To install eaDirect in Console Mode:

1. From the */AIX* subdirectory on the eaDirect installation CD-ROM, run the command to install eaDirect in Console Mode:

   ```
   # ./Dirins.bin –i console
   ```

   InstallAnywhere displays the banner:

   ```
   Preparing CONSOLE Mode Installation...
   ```

2. Respond to each prompt to proceed to the next step in the installation. If you want to change something on a previous step, type **back**.

3. A successful installation displays the message:

   ```
   Congratulations! eaDirect 3.2 has been successfully
   installed to:
      /usr/EDCSbd
   ```

The preceding Console Mode installation procedures assume that you will be installing eaDirect as *nobody* for the owner of the application server files, and *nobody* as the group for the application server files (WebSphere defaults to the *root:other* owner and group permissions as the default). However, if you choose to specify an owner and group different than the default values (*nobody:nobody*), you can do so using the following command syntax:

```
# ./Dirins.bin -DOWNER_ID=<owner_id> -DGROUP_ID=<group_id> -i console
```

Installing the eaDirect Composition Tools

The installation of the eaDirect Composition Tools, which includes the DefTool and the Composer, is separate from the installation of eaDirect. The eaDirect Composition Tools are Windows based and can be installed on a Windows NT or 2000 machine. The tools can also be installed on a remote or dial-up server.

To install the eaDirect composition tools:

1. From the *\AIX* subdirectory on the eaDirect installation CD-ROM, double-click the command to invoke the InstallAnywhere GUI:

   `Dirins.exe`

   A start-up screen is displayed.

2. On the Introduction screen, read the eaDirect introductory information. Then click **`Next`**.

3. On the License Agreement screen, read and accept the terms of the agreement (use the scroll bars to move up and down on the screen) by clicking the appropriate radio button. Then click **`Next`**.

4. On the Enter Serial Number screen, enter your product serial number. It is stapled to the inside front cover of this guide (if your serial number has been misplaced, contact edocs Technical Support). Then click **`Next`**.

5. On the Choose Install Folder screen, accept the default installation folder or click **`Choose`** to specify another installation folder. Then click **`Next`**.

6. On the Choose Product Features screen, click **`Tools`**. Then click **`Next`**.

7. On the Choose Shortcut Folder screen, decide whether you want to create product icons and where. Then click **`Next`**.

8. On the Pre-Installation Summary screen, confirm that the information is accurate. Then click **`Install`**.

   At this point, the eaDirect composition tools are copied to the designated installation folder. A status bar on the bottom of the screen shows the composition tools being installed. No user intervention is required.

9. The Install Complete screen reports a successful installation and the directory that contains the composition tools.

10. Click **Done** to exit the installer.

Installing eaDirect in a Non-Distributed Environment

This guide is organized to show how to install eaDirect in a distributed environment that has at least one dedicated database server and application server. However, using the InstallAnywhere 'Full' installation option, you can choose to install all the eaDirect product components on a single machine. The following procedure describes how to do this.

To install eaDirect using the InstallAnywhere 'Full' installation option:

1. From the */solaris* subdirectory on the installation CD-ROM, run the command to invoke the InstallAnywhere GUI:

   ```
   # ./Dirins.bin
   ```

   A start-up screen is displayed.

2. On the Introduction screen, read the eaDirect introductory information. Then click **Next**.

3. On the License Agreement screen, carefully read the terms of the agreement (use the scroll bars to move up and down on the screen) and accept the terms of the license agreement by clicking the appropriate radio button. Then click **Next**.

4. On the Enter Serial Number screen, enter your product serial number. It is stapled to the inside front cover of this guide (if your serial number has been misplaced, contact edocs Technical Support). Then click **Next**.

5. On the Owner of Web Application Server screen, enter the name of the application server owner (the recommended 'owner' is *nobody*). Then click **Next**.

6. On the Group of Web Application Server screen, enter the name of the group for the application server (the recommended group is *nobody*). Then click **Next**.

7. On the Choose Install Folder screen, accept the default installation folder (*usr/EDCSbd*), or click **Choose** to specify another installation folder. Then click **Next**.

8. On the Choose Product Features screen, click **Full**. Then click **Next.**

9. On the Pre-Installation Summary screen, confirm that the information is accurate. Then click **Install**.

   At this point, the eaDirect database and application server components are copied to the designated installation folder. A status bar on the bottom of the screen shows each database server component being installed. No user intervention is required.

10. The Install Complete screen reports a successful installation and the directory that contains the eaDirect database and application server components.

11. Click **Done** to exit the installer.

Installation Third-Party Software

To ensure the proper operation of eaDirect, you must confirm that the third-party software applications that support eaDirect are installed on the appropriate server. When installing these applications it is very important that you follow the instructions in each product's installation documentation. This will help to ensure the integrity and reliability of the eaDirect application environment.

As part of setting up the eaDirect production environment, you also will be required to create UNIX user and group account for the WebSphere and DB2 distributions, and define several DB2 environment variables.

The third-party software that is required by eaDirect:

Third-Party Software	Server Installed On
IBM WebSphere 4.0.2 Advanced Edition for Multiplatforms (running in 32-bit mode)	Application Server
AIX 4.3.3 with the package **bos.rte.libc**, and the required eFixes (see product Release Notes). The packages and eFixes can be downloaded from http://www.ibm.com/). This web site also contains product information and documentation.	Application and Database Server
IBM MQSeries V5.2 with Service Pack CSD04. You will need to install and configure the following components: MA0C (MQSeries Publish/Subscribe package Version 1.0.6) MQSeries for Java V5.2 (Version 1.1.4) Please consult IBM for information about using WebSphere with MQSeries.	Application Server

Third-Party Software	Server Installed On
IBM Java Development Kit 1.3.0.	Application Server
DB2 7.2 Fixpak 6 client and server. Go to www.ibm.com for product information and documentation.	Database Server
DB2 7.2 Client software.	Application Server
Supported web browsers: Netscape Communicator 6,2 or higher, or Internet Explorer 5.5 (SP2) or 6.0..	Application Server
An XServer to support charting. XWindows Virtual Frame Buffer (Xvfb) can be used if an XServer is not available.	Application Server

The required third-party software that supports eaDirect must be obtained separately. eaDirect **does not** provide them as part of its product distribution. Consult the appropriate vendor's web site for information on how these products can be obtained.

For general installation and maintenance information regarding AIX and third-party software such DB2 database and client software, see the user documentation that is shipped with each product.

Setting Up a Database Server for eaDirect

3

Overview

This chapter provides instructions for installing eaDirect on a database server and configuring third-party software that supports it. Setting up a database server to support eaDirect involves completing the following tasks:

- Confirm that the DB2 database is installed
- Install the eaDirect database server components using the InstallAnywhere tool
- Confirm that the required DB2 environment variables are defined
- Configure the DB2 database for eaDirect
- Enable access to the DB2 database

The installation and configuration examples shown in this chapter use default eaDirect pathnames. If you choose not to accept the default pathnames, make sure your pathnames are consistent throughout the installation of eaDirect on the database and application servers.

It is recommended that you configure the database server first, then the application server.

Superuser (root) Privilege

You will need *root* privilege on each server in the eaDirect environment in order to install eaDirect components, required software packages and patches, and the third-party software applications that work with eaDirect. You will be reminded to set *root* privilege if the installation or configuration procedure requires it.

Defining DB2 Environment Variables

edocs recommends that you define several environment variables for the *db2inst1* user account, as shown in the following table:

Variable	Description
HOME	Specifies the db2inst1 home directory. For example, */export/home/db2inst1*
PATH	Required to located DB2 executables For example, *PATH=$PATH:$HOME/bin*
LIBPATH	Specifies the jdbc drivers directory For example, *LIBPATH=$LIBPATH:$HOME/sqllib/java12*

The syntax used to define environment variables depends on which UNIX shell you are using, as shown in the following examples:

Bourne or Korn shell:

PATH=*$PATH:$HOME/bin*
export PATH

C shell:

setenv *PATH=$PATH:$HOME/bin*

Installing the eaDirect Database Server Components

If you have not completed the prerequisite tasks for installing eaDirect as described in the section, *Preparing to Install eaDirect*, do so now. This will help to ensure a smooth and successful installation.

By default, eaDirect is installed into a directory hierarchy that contains a top level or "home" directory, (*/usr/EDCSbd*), below which all other eaDirect directories are created. The directories in */usr/EDCSbd* are grouped by functionality and contain the files that eaDirect uses.

When installing on a database server, eaDirect copies all the files it needs to the */db* directory:

```
<EDCSbd>
      /db
```

It is recommended that you install eaDirect in the same directory on the database and application servers. By default this is */usr/EDCSbd*.

To install the eaDirect database server components:

1. Log in as *root* user.
2. From the */aix* subdirectory on the eaDirect installation CD-ROM, run the command to invoke the InstallAnywhere GUI:

   ```
   # ./Dirins.bin
   ```

   A start-up screen is displayed.
3. On the Introduction screen, read the eaDirect introductory information. Then click **Next**.
4. On the License Agreement screen, carefully read and accept the terms of the license agreement (use the scroll bars to move up and down on the screen) by clicking the appropriate radio button. Then click **Next**.
5. On the Enter Serial Number screen, enter your product serial number. It is stapled to the inside front cover of this guide (if your serial number has been misplaced, contact edocs Technical Support). Then click **Next**.
6. On the Owner of Web Application Server screen, enter the name of the application server owner (the recommended 'owner' is *nobody*). Then click **Next**.
7. On the Group of Web Application Server screen, enter the name of the group for the application server (the recommended group is *nobody*). Then click **Next**.
8. On the Choose Install Folder screen, accept the default installation folder or click **Choose** to specify another installation folder. Then click **Next**.
9. On the Choose Product Features screen, click **Database**. Then click **Next**.
10. On the Pre-Installation Summary screen, confirm that the information is accurate. Then click **Install**.

    At this point, the eaDirect database server components are copied to the designated installation folder. A status bar on the bottom of the screen shows each database server component being installed. No user intervention is required.

11. The Install Complete screen reports a successful installation and the directory that contains the database server components.

12. Click **Done**.

Configuring the DB2 Database for eaDirect

You configure the Db2 database by running *edx_admin.sh*. After the database is set up, it will become the primary production environment for activities occurring in the eaDirect Command Center (see the *eaDirect Production Guide* for information about the Command Center). The database configuration process consists of a series of prompts, some of which require user input while others do not.

If you have to abort the database configuration procedure before it successfully completes, see the section, *Recovering from an Aborted Database Configuration Procedure*, for more information.

Before running the script, you should verify that the owner information (userid/groupid) of the *$EDX_HOME/db* directory is set to the DB2 instance owner defined during installation, such as *db2inst1*. If a different instance user will be used, you will need to change the ownership of that directory. To change the owner information use this command:

```
chown -fR db2inst1:db2iadm1 /usr/EDCSbd/db
```

Then you will need to verify the profile information of the DB2 instance owner. For example, first switch to user *db2inst1* as follows:

```
# su - db2inst1
```

Now you will need to view the *.profile* for *db2inst1* using a text editor such as vi. For example:

```
vi .profile
```

Verify that the following lines are part of *.profile* and if not then add them:

```
#Setup DB2 environment for instance (root) user.
if [-f /home/<db2_instance_owner>/sqllib/db2profile ] ; then
```

```
. /home/<db2_instance_owner>/sqllib/db2profile
fi
#Force DB2 to use JDBC 2.0.
if [-f /home/<db2_instance_owner>/sqllib/java12/usejdbc2 ] ; then
. /home/<db2_instance_owner>/sqllib/java12/usejdbc2
fi
```

Save the changes and exit your editor. You can now run the script. **Note that you will also need the above information for the *.profile* file used by the WebSphere Application Server's owner.**

To run the database setup script:

1. Switch user to *db2inst1* and change the working directory to *$EDX_HOME/db/db2*. For example:

   # **su - db2inst1**
   $ **cd /usr/EDCSbd/db/db2**

2. Enter the following command at the prompt:

   $**./edx_admin.sh**

   The eaDirect Server Administration for DB2 Main Menu is displayed. Select Option 1, **Sign in Menu**.

```
edocs eaDirect Server Administration for DB2 Main Menu
 -------------------------------------------------
      [1] Sign in Menu
      [2] Capture Database File Locations
      [3] Install edocs eaDirect
      [4] Initial Data Population
      [5] Database Version Migration

      [Q] Quit
 -------------------------------------------------
 Enter Your Selection: 1
```

A second sign-in screen is displayed. You will be prompted to enter a username, password, and DB2 Database name.

The following example shows sample values for database username, database password, and database alias. These values can be whatever you want them to be. For example:

```
        SIGN IN MENU
 ---------------------------------------------
   [1] Enter Database USERNAME ...>db2inst1
   [2] Enter Database PASSWORD ...>db2inst1
   [3] Enter DB2 DATABASE Name ...>edx0
```

Upon completion of this step, you are returned to the main administration menu.

3. Select option 2, **`Capture Database File Locations`**.

```
edocs eaDirect Server Administration for DB2 Main Menu
 ---------------------------------------------------
    [1] Sign in Menu
    [2] Capture Database File Locations
    [3] Install edocs eaDirect
    [4] Initial Data Population
    [5] Database Version Migration
    [Q] Quit
 ---------------------------------------------------
Enter Your Selection: 2
```

This option specifies the absolute pathname for the various files that will comprise the eaDirect database. The location of these files depends on the type of file structure you are using.

During this session, you will be prompted to provide absolute pathnames for where you want to store the following types of files:

- Temporary tablespace
- edocs data tablespace
- edocs index data tablespace

- PWC Application data tablespace
- PWC Application index data tablespace
- CDA Application data tablespace
- CDA Application index data tablespace
- Application data tablespace
- Application index data tablespace

Database files can reside wherever you want them to. If you plan to use only one disk location, specifying a pathname similar to the following for the database software and files is appropriate:

$DB2_HOME/edx_db2data

However, if you plan to disperse the software over several disks (to possibly improve performance) specifying pathnames such as the following might be more suitable:

Database Files	Suggested Mount Point
edocs data tablespace	*/u01/ edx_db2data*
edocs index data tablespace	*/u02/ edx_db2data*
Application data tablespace	*/u03/ edx_db2data*
Application index data tablespace	*/u04/ edx_db2data*
Detail extractor data tablespace	*/u05/ edx_db2data*
Detail extractor index data tablespace	*/u06/ edx_db2data*
FS data tablespace	*/u07/ edx_db2data*

Database Files	Suggested Mount Point
FS index data tablespace	*/u08/ edx_db2data*
Order capture data tablespace	*/u09/ edx_db2data*
Order capture index tablespace	*/u10/edx_db2data*
Temporary tablespace	*/u11/edx_db2data*

The configuration process checks the validity of the specified locations and displays the following message if no problems are encountered:

```
Press ENTER to return to menu.
```

Upon completion of this step, you are returned to the Main Administration Menu.

4. From the main menu, select Option 3, **`Install edocs eaDirect`**.

   This option begins the installation of the physical database. A new menu is displayed from which you select Option 1, **`Initialize DB2 instance parameters`**.

```
Install edocs eaDirect
-------------------------------------
[1] Initialize DB2 instance parameters
[2] Shutdown Database
[3] Startup Database
[4] Initialize edocs eaDirect database
[5] Create Application Database tables
[6] Compile Application Database procedures
[7] View Status Log Directory
-- ------------------------------------
[R] Return to previous menu

SELECT YOUR OPTION: 1
```

   The options on this menu begin the initialization of the eaDirect database.

   No user input is required for this option. During the execution of this step, you should see output similar to the following:

```
Setting DB2 registry variables…
Done
Press ENTER to return to menu
```

Upon completion of this step, you will be returned to the Install edocs eaDirect menu.

5. From the Install edocs eaDirect menu, select Option 2, **`Shutdown Database`**, followed by Option 3, **`Startup Database`**.

   These options let you perform a quick test on the database you just defined. The **`Shutdown Database`** and **`Startup Database`** options must be executed successively.

```
SQL1064N DB2STOP processing was successful
Press ENTER to return to menu
SQL1063N DB2START processing was successful
Press ENTER to return to menu
```

   Upon completion of this step, you will be returned to the Install edocs eaDirect menu.

6. From the Install edocs eaDirect menu, select Option 4, **`Initialize edocs eaDirect Database`**.

```
Install edocs eaDirect
--------------------------------------
[1] Initialize DB2 instance parameters
[2] Shutdown Database
[3] Startup Database
[4] Initialize edocs eaDirect database
[5] Create Application Database tables
[6] Compile Application Database procedures
[7] View Status Log Directory
-- ----------------------------------
[R] Return to previous menu

SELECT YOUR OPTION: 4
```

This option executes several scripts that define the data dictionary for the new database and create a stored procedure. The stored procedure is modified to contain the absolute pathnames that were defined in Option 2, Capture Database File Locations.

The newly created stored procedure creates the various database tablespaces and rollback segment data files that the eaDirect database requires.

This option will take approximately 20 minutes to complete. During this process informational messages are displayed, indicating that the utility scripts and the stored procedures are executing. A final message will indicate whether the processing was successful.

No user input is required for this option. Upon completion of this step, you are returned to the Install edocs eaDirect menu.

7. From the edocs eaDirect menu, select Option 5, **`Create Application Database tables`**.

```
Install edocs eaDirect
-------------------------------------
[1] Initialize DB2 instance parameters
[2] Shutdown Database
[3] Startup Database
[4] Initialize edocs eaDirect database
[5] Create Application Database tables
[6] Compile Application Database procedures
[7] View Status Log Directory
-- -----------------------------------
[R] Return to previous menu

SELECT YOUR OPTION: 5
```

This option creates the eaDirect database tables. No user input is required for this option.

The error messages that are displayed during this step are an expected part of the process and can be ignored. Upon completion of this step, you will be returned to the Install edocs eaDirect menu.

8. From the Install edocs eaDirect menu, select Option 6, **`Compile Application Database procedures`**.

```
Install edocs eaDirect
---------------------------------------
[1] Initialize DB2 instance parameters
[2] Shutdown Database
[3] Startup Database
[4] Initialize edocs eaDirect database
[5] Create Application Database tables
[6] Compile Application Database procedures
[7] View Status Log Directory
-- -----------------------------------
[R] Return to previous menu

SELECT YOUR OPTION: 6
```

   This option compiles the application-defined stored procedures. These stored procedures constitute the database processing for eaDirect. During the processing, informational messages are displayed indicating the successful compilation of the individual program modules.

   No user input is required for this option. Upon completion of this step, you will be returned to the Install edocs eaDirect menu.

Option 7, View Status Log Directory, allows you to view several log files that are created during the database configuration procedure. The files are copied to *$EDX_HOME/db/db2*.

This option is not necessary for the database configuration procedure to complete successfully.

9. Select **`Return to Previous Menu`**. The eaDirect Server Administration for DB2 Main Menu is displayed.

10. Select Option 4, **`Initial Data Population`**.

```
edocs eaDirect Server Administration Main Menu Version 1.0
 ---------------------------------------------------
      [1] Sign in Menu
      [2] Capture Database File Locations
      [3] Install edocs eaDirect
      [4] Initial Data Population
      [5] Database Version Migration
      [Q] Quit
 ---------------------------------------------------
 Enter Your Selection: 4
```

The Initial Data Population Menu is displayed.

11. Select Option 1, **`Import Initial Data Set`**.

```
 Initial Data Population
 ----------------------
 [1] Import initial data set
 [2] Export edocs database data
 [R] Return to previous menu

 SELECT YOUR OPTION: 1
```

This option populates the newly defined database with information from a data file that is loaded into the database. As data is imported into the tables, informational messages are displayed indicating the whether the data is being imported correctly.

No user input is required for this option. Upon completion of this step, you will be returned to the Initial Data Population menu.

Note that running Step 2, Export edocs Database Data, is not necessary at this time because the database is still empty.

12. Select **`Return to Previous Menu`**. You will be returned to the eaDirect Server Administration for DB2 Main Menu.

```
Initial Data Population
 ----------------------
 [1] Import initial data set
 [2] Export edocs database data
 [R] Return to previous menu

 SELECT YOUR OPTION: R
```

13. Select **`Quit`** to end the eaDirect database configuration session.

```
edocs eaDirect Server Administration for DB2 Main Menu
 ------------------------------------------------
      [1] Sign in Menu
      [2] Capture Database File Locations
      [3] Install edocs eaDirect
      [4] Initial Data Population
      [5] Database Version Migration
      [Q] Quit
 ------------------------------------------------
 Enter Your Selection: Q
```

Recovering from an Aborted Database Configuration Session

At some point during the database configuration procedure, you might encounter a situation that requires you to abort the procedure. Note that aborting the procedure will result in the loss of any configuration information that you had previously entered.

Before you can run the database configuration script again, you **must** first do a manual cleanup of the partially configured database. Follow these steps:

1. Shut down any database that has been created. A confirmation message is displayed if the database shutdown procedure is successful.

2. Remove any directories and files whose name matches the Database Name and Alias that were specified during the database configuration procedure.

Establishing Connectivity to the DB2 Database

The next step in setting up the database server for eaDirect is to establish connectivity to the DB2 database. This is done by cataloging a node and a database, as the database owner (for example, "db2inst1"), to include information about your eaDirect database. This needs to be performed if the database is on a **remote** machine.

If the database is not on a remote machine (that is, the database local to eaDirect) the cataloging is done by the eaDirect Database installation scripts.

To establish connectivity to the DB2 production database:

1. Switch user to DB2 in the Application Server machine, for example:

   ```
   # su - db2inst1
   ```

2. If the database is on a remote machine, catalog the node and the database on the Application server machine using the following syntax:

   ```
   $ db2 "catalog tcpip node <node_name> remote
   <server_name> server <server_listen_port>"
   ```

   ```
   $ db2 "catalog database <remote_database_name> as
   <database_alias> at node <node_name>"
   ```

For example:

```
$ db2 "catalog tcpip node edx_node remote
corolla.edocs.com server 50000"
```

```
$ db2 "catalog database edx0 as edx0 at node edx_node"
```

You do not need to stop and start the database for the procedure described above to take effect, as it is done on the client side.

3. Check to make sure that the node and database have been created correctly.

```
$db2 "list node directory"
One Node entry should be:
Node name     = EDX_NODE
Comment       =
Protocol      = TCPIP
Hostname      = corolla
Service name  = 50000

$db2 "list database directory"
One Database entry should be:
Database alias        = EDX0
Database name         = EDX0
Node name             = EDX_NODE
Database release level = 9.00
Comment               =
Directory entry type  = Remote
Catalog node number   = 0
```

4. Connect to the database with the correct database name:

```
$ db2 "connect to <database_alias> user <user_name>
using <user_password>"

For example:

$ db2 "connect to edx0 user db2inst1 using db2inst1"

Database Connection Information
Database server        = DB2/6000 7.2.4
SQL authorization ID   = DB2INST1
Local database alias   = EDX0
```

Setting Up an Application Server for eaDirect

4

Overview

This chapter provides instructions for installing eaDirect on an application server and configuring third-party software that support it. Setting up an application server to support eaDirect involves completing the following tasks:

- Confirm that WebSphere 4.0.2 is installed
- Confirm that IBM's Java Development Kit 1.3.1_04 is installed
- Confirm MQSeries is installed
- Confirm that the DB2 Client software is installed
- Install the eaDirect application components using InstallAnywhere
- Configure WebSphere's Java resources for eaDirect
- Enable connectivity to the DB2 database

The installation and configuration examples shown in this chapter use default pathnames for eaDirect, such as */usr/EDCSbd*. If you choose not to accept the default pathnames, make sure your pathnames are consistent throughout the installation of eaDirect on both servers.

If you have not already installed the database server components and configured the database server for eaDirect, do so now. When installing eaDirect, it is recommended that you install and configure the database server, than the application server. You **must** also install eaDirect in the same directory on the database and application servers.

Superuser (root) Privilege

You will need *root* privilege on each server in the eaDirect environment in order to install eaDirect components, required software packages and patches, and the third-party software applications that work with eaDirect. You will be reminded to set *root* privilege if the installation or configuration procedure requires it.

User and Group Accounts for the WebSphere Distribution

During the WebSphere installation procedure, you will be prompted to specify user and group account (ownership) for directories and files that come with the WebSphere distribution. The default WebSphere user and group account is **root:system**.

```
drwxr-xr-x   4 root system  2048 Jan 24 16:02 bin
drwxr-xr-x   2 root system  512 Dec 14 11:56 cdroot
drwxr-xr-x   2 root system  512 Dec 14 11:59 classes
drwxr-xr-x   3 root system  512 Dec 14 11:59 config
drwxr-xr-x   3 root system  512 Dec 14 11:58 deploytool
drwxr-xr-x   4 root system  512 Dec 19 14:37 eFix
drwxr-xr-x   2 root system  512 Jan 24 10:36 etc
drwxr-xr-x   3 root system  512 Dec 14 11:58 installableApps
-rw-r--r--   1 root system  77 Dec 14 11:59 installconfig.log
drwxr-xr-x   5 root system  512 Jan 24 17:59 installedApps
drwxr-xr-x   2 root system  512 Dec 14 11:59 installedConnectors
drwxr-xr-x  11 root system  512 Dec 14 11:55 java
-rwx------   1 root system  428 Dec 14 11:59 juninst
.
.
.
drwxr-xr-x   7 root system  512 Dec 14 11:58 WSsamples
```

We recommend that you the more secure user and group account **nobody:nobody** when you install WebSphere. The WebSphere examples in this guide use the user and group account *nobody:nobody*.

Understanding the Structure of the eaDirect Application Directory

The eaDirect home directory is a repository for all files that are required by the eaDirect application. It also has a pre-defined hierarchical structure.

By default, eaDirect is installed into a directory hierarchy that contains a top level or "home" directory, */usr/EDCSbd*, below which all other eaDirect directories are created. The directories in */usr/EDCSbd* are grouped by functionality and contain the libraries, executables, log files, and sample training files that eaDirect uses. For example:

```
<EDCSbd>
    /AppProfiles
    /Data
    /Input
    /J2EEApps
    /Output
    /Uninstall
    /bin
    /config
    /documentation
    /jre
    /lib
...../logs
    /samples
```

Files are organized within functional groups according to a Data Definition Name (DDN), which is also synonymous with the name of an eaDirect application. It is recommended that you install eaDirect in the same directory on the database and application servers. By default, eaDirect is installed in */usr/EDCSbd*.

The contents of */EDCSbd* on the application server are described in the following table:

Directory	Contents
`AppProfiles`	Contains the Versioned Sets (configuration and HTML template files created in the design environment) that are published to the production environment.
`bin`	Contains scripts that define the eaDirect environment (for example, *edx_config*) and scripts that start eaDirect processes (for example, *ws_scheduler*).
`config`	Contains configuration files that define the eaDirect production environment.

Directory	Contents
`Data`	Contains the input data files that are copied to this directory after the Scanner finds them in the Input directory for an application. The other production tasks use these files to process the input data from a service provider.
`Input`	Contains the input data files (for example, *GlobalGas.afp*) from a service provider that are needed by the Scanner production task.
`J2EEApps`	Contains the eaDirect J2EE EAR file *ear-eadirect.ear*. This file also contains the WAR files for the eaPay, eaPost, and eaXchange add-on modules.
`lib`	Contains several java archive (*.jar*) files and AIX directories.
`logs`	Contains application log files generated in the eaDirect production environment.
`Output`	Contains output files from Batch XML and HTML jobs running in the eaDirect Command Center.
`samples`	Contains data files for two sample applications, *NatlWireless* and *Training*, that can be used for setup and testing. This directory is created only if the samples package (*EDCSbdsmp*) is installed. Also includes *hierarchySample* (if licensed) and *umfSample* (if licensed). See the topic, *Installing the eaDirect Samples Package*, for installation instructions.

Directory	Contents
`Uninstall`	Contains the eaDirect uninstall script and other files pertaining to uninstalling eaDirect.
`documentation`	Documentation for the eaSuite products that are installed.
`jre`	Java runtime used by eaDirect.

Installing the eaDirect Application Server Components

If you have not completed the prerequisite tasks for installing eaDirect as described in the section, *Preparing to Install eaDirect*, do so now. This will help to ensure a smooth and successful installation.

To install the application server components:

1. Log in as *root* user.
2. Set the *WAS_HOME* environment variable to the Websphere home directory. For example:

   ```
   export WAS_HOME=/usr/WebSphere/AppServer
   ```

3. From the */aix* subdirectory on the installation CD-ROM, run the command to invoke the InstallAnywhere GUI:

   ```
   # ./Dirins.bin
   ```

4. On the Introduction screen, read the eaDirect introductory information. Then click **`Next`**.
5. On the License Agreement screen, carefully read the terms of the agreement (use the scroll bars to move up and down on the screen) and accept the terms of the license agreement by clicking the appropriate radio button. Then click **`Next`**.

6. On the Enter Serial Number screen, enter your product serial number. It is stapled to the inside front cover of this guide (if your serial number has been misplaced, contact edocs Technical Support). Then click **Next**.

7. On the Owner of Web Application Server screen, enter the name of the application server owner (the recommended 'owner' is *nobody*). Then click **Next**.

8. On the Group of Web Application Server screen, enter the name of the group for the application server (the recommended group is *nobody*). Then click **Next**.

9. On the Choose Install Folder screen, accept the default installation folder (*/usr/EDCSbd*), or click **Choose** to specify another installation folder. Then click **Next**.

10. On the Choose Product Features screen, click **App Server.** Then click **Next**.

11. On the Pre-Installation Summary screen, confirm that the information is accurate. Then click **Install**.

12. At this point, the eaDirect application server components are copied to the designated installation folder. A status bar on the bottom of the screen shows each component being installed. No user intervention is required.

13. The Install Complete screen reports a successful installation and the directory that contains the application server components.

14. Click **Done**.

Defining the eaDirect Environment for WebSphere Server

eaDirect provides several configuration files that you use to define your environment. The files, *edx_config* and *edx.config*, are included among the application components that you installed earlier, and are copied to $*EDX_HOME/bin and $EDX_HOME/config* respectively.

Defining the eaDirect environment for WebSphere involves performing the following tasks:

- Run *edx_config* to capture information about your eaDirect environment
- Pass your eaDirect environment to WebSphere at server startup

The following topics describe how to define your eaDirect environment and pass it to WebSphere.

Capturing Information about the eaDirect Environment

When you run *edx_config*, it prompts you to enter values pertaining to the Java and DB2 installation. These values take the form of absolute directory pathnames or user identification information. You should run this script anytime you need to modify your eaDirect environment.

This procedure is only required on the application server.

Make sure that the database values entered below are the same as the database values you specified when you set up the eaDirect database, as described in the topic *Configuring the DB2 Database for eaDirect*.

Before you run the script, you should verify that the ownership of the *$EDX_HOME* directory is set to the *<userid>:<groupid>* of the WebSphere Application Server. If not you can change it as follows:

```
chown -fR nobody:nobody /usr/EDCSbd
```

To capture information about your eaDirect environment:

1. Switch user to the WebSphere owner (*nobody*, in our examples), and navigate to *$EDX_HOME/bin*. For example:

   ```
   # su - nobody
   $ cd /usr/EDCSbd/bin
   ```

2. Run *edx_config*.

   ```
   $ ./edx_config
   ```

3. Provide values for the following parameters. You can accept the default values, if appropriate.

```
Enter DB2 Instance Name : [db2inst1] [q] db2inst1
Enter DB2 Instance Home : [/export/home/db2inst1] [q]
/export/home/db2inst1
Enter DB2 username : [db2inst1] [q] db2inst1
Enter DB2 Password : [db2inst1] [q] db2inst1
Enter DB2 Database : [edx0] [q] edx0
Enter WebSphere Application Server root directory :
[/usr/WebSphere/AppServer] [q] /usr/WebSphere/AppServer
Enter MQSeries java client directory : [/usr/mqm/java] [q]
/usr/mqm/java
Enter Java root directory : [/usr/WebSphere/AppServer/java] [q]
/usr/WebSphere/AppServer/java
```

As part of capturing information about your eaDirect environment, you should manually edit *edx_env* to include the time zone (TZ) environment variable, reflecting the correct time zone. Failure to do this could result in scheduled jobs failing because the Java system time might not be the same as the actual system time.

Passing the eaDirect Environment to WebSphere at Server Startup

You pass your eaDirect environment to WebSphere by 'sourcing' (that is, having WebSphere call and dynamically process a file) the configuration file, *edx.config*, in the WebSphere Administration Server start up script, *startupServer.sh*.

To pass your eaDirect environment to WebSphere:

1. Switch user to the WebSphere owner (*nobody*, in our examples), if necessary.
2. Change directory to *$WAS_HOME/bin* (for example, */usr/WebSphere/AppServer/bin*) and stop the administration server, *startupServer.sh*. You can use the **kill** command or type **`Ctrl+C`** to stop the administration server.
3. Open *startupServer.sh* and declare and initialize the variable *$EDX_HOME* near the beginning of the file with other variable declarations. For example:

```
WAS_HOME=/usr/WebSphere/AppServer/
export WAS_HOME

EDX_HOME=/usr/EDCSbd/
export EDX_HOME
```

4. In the same file, add the line shown in bold to source *edx.config* just before the command to start the JVM:

```
   export LD_LIBRARY_PATH LIBPATH EXTSHM
. $EDX_HOME/config/edx.config
  ${JAVA_EXE?} \
  -classpath $WAS_HOME/lib/bootstrap.jar:$CLASSPATH \
  -Dws.ext.dirs=$WAS_EXT_DIRS \
  -Djavax.rmi.CORBA.UtilClass=com.ibm.CORBA.iiop.Util \
  -Dcom.ibm.CORBA.iiop.noLocalCopies=true \
  -DDER_DRIVER_PATH=$DER_DRIVER_PATH \
  com.ibm.ws.bootstrap.WSLauncher \
  com.ibm.ejs.sm.util.process.Nanny
$WAS_HOME/bin/admin.config
The dot and space preceding the pathname are a required
part of the syntax.
```

5. Save and close the file.

6. Change directory to *$WAS_HOME/bin* and open *launchClient.sh*.

7. Add the environmental variable "$EDX_OPTS " just below the line '$JAVA_HOME/bin/java'. For example:

```
…
$JAVA_HOME/bin/java \
  $WAS_JAVAOPTS \
  $CLIENTSAS \
  $EDX_OPTS \
  -Dserver.root=$WAS_HOME \
  -Dws.ext.dirs=$WAS_EXT_DIRS \
  -Dcom.ibm.CORBA.BootstrapHost=$COMPUTERNAME \
  -Djava.naming.factory.initial=$NAMING_FACTORY \
  -classpath $WAS_CLASSPATHcom.ibm.ws.bootstrap.WSLauncher \
  com.ibm.websphere.client.applicationclient.launchClient "$@"
```

8. Save and close the file.

9. Open the *admin.config* file.

10. Add the following line:

    ```
    com.ibm.ejs.sm.adminServer.bootstrapPort=<port>
    ```

    The <port> value is usually 1025 or higher.

11. Save and close the file.

Starting WebSphere in an Active Production Environment

WebSphere provides the *startupServer.sh* command for starting the administration server from a command line window. This command is located in *$WAS_HOME/bin*.

The *startupServer.sh* command works fine for starting the administration server in a non-production environment where there are no running jobs. However, the disadvantage to using this command is that it will cause WebSphere to stop immediately if a **Ctrl+C** (which is often used to force a hard shutdown of the server) is entered in the directory where the administration server was started, or if the command line window is closed.

Therefore, it is recommended that you use command syntax similar to the following when starting the administration server in an active eaDirect production environment:

```
# nohup ./startupServer.sh &
```

This command will not stop WebSphere if **Ctrl+C** is entered, or if you close the command line window in which you started the administration server. Using the recommended command syntax to start up the administration server helps to ensure a more stable and trouble-free production environment.

An alternative to using a single startup command is to create a script that includes the recommended command to start WebSphere in an active production environment, and the commands used to start the Scheduler process (see the topic, *Starting and Stopping the Scheduler process)*.

Configuring Java Resources for eaDirect on WebSphere

After you have successfully configured the DB2 database for eaDirect, you must now create and configure JDBC on WebSphere. These resources enable the manipulation of existing data from relational databases and other data sources, and enables application components to asynchronously send and receive messages.

Specifically, you will be doing the following:

- Create a new application server for eaDirect
- Configure the JDBC connection pools and a JDBC driver
- Configure data sources for the JDBC connection pools
- Configure Java Virtual Machine (JVM) settings for a new application server
- Configure Java Messaging Services (JMS) using IBM MQSeries

You access and configure Java resources through the WebSphere Administrative Console, as follows:

To invoke the WebSphere Administrative Console:

1. Change directory to *$WAS_HOME/bin*, change the user to the WebSphere owner, and run the administration server start-up script, *startupServer.sh*, providing the host and port. For example:

   ```
   # su - nobody
   # cd /usr/WebSphere/AppServer/bin
   # ./startupServer.sh montero 1025 &
   ```

2. To ensure that that administration server has started correctly, change directory to *$WAS_HOME/logs* and use the UNIX **tail** command to view the contents of the *tracefile* file. For example:

   ```
   # cd /usr/WebSphere/AppServer/logs
   # tail –f tracefile
   ```

   A successful startup of the administration server will report in the tracefile: "`adminServer open for e-business`". For example:

```
# tail -f tracefile
[02.01.09 12:07:46:408 EST] 69c82e AdminServer I ADMS0008I: Initializing WebSphere Administration server

[02.01.09 12:07:52:754 EST] 69c82e ResourceBinde I SVR0049I: Binding SM_DATASOURCE as
jdbc/SM_Datasource

[02.01.09 12:07:56:213 EST] 69c82e EJBEngine I WSVR0037I: Starting EJB jar : Name Service

[02.01.09 12:07:59:884 EST] 69c82e EJBEngine I WSVR0037I: Starting EJB jar : Repository

[02.01.09 12:08:19:160 EST] 69c82e EJBEngine I WSVR0037I: Starting EJB jar : Tasks

[02.01.09 12:08:24:048 EST] 69c82e Server A WSVR0023I: Server __adminServer open for e-business
```

3. Change directory to *$WAS_HOME/bin*, and invoke the WebSphere Administrative Console by running the script *adminclient.sh*. For example:

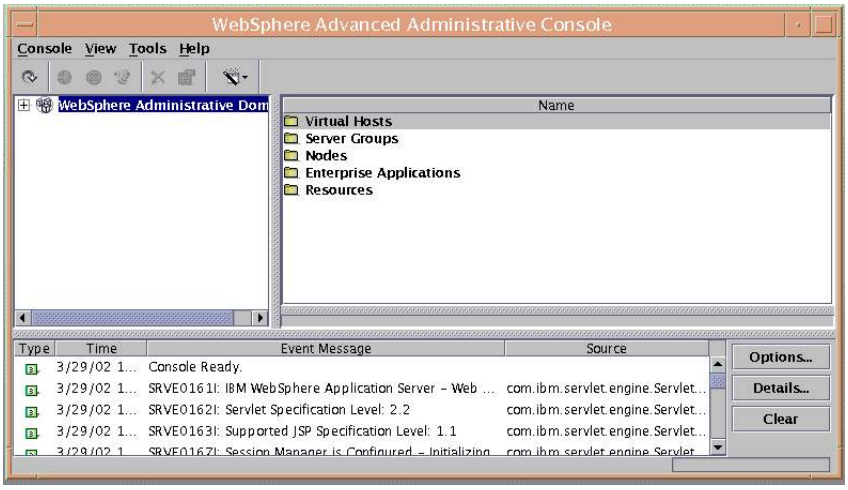
```
# cd /usr/WebSphere/AppServer/bin
# ./adminclient.sh machinename 1025 &
```

where **machinename** is the app server name. This starts the adminclient on port 1025.

The Administrative Console is displayed in an X-window, so you will have to have X-window software installed and you might have to set your display (in your *.profile* file) to the local machine if you are trying to invoke the Application Assembly tool remotely. For example:

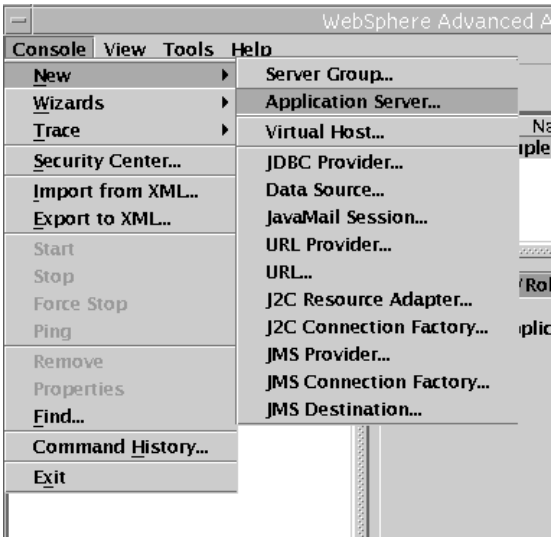
set DISPLAY=montero:0.0
export DISPLAY

4. The WebSphere Administrative Console is displayed.



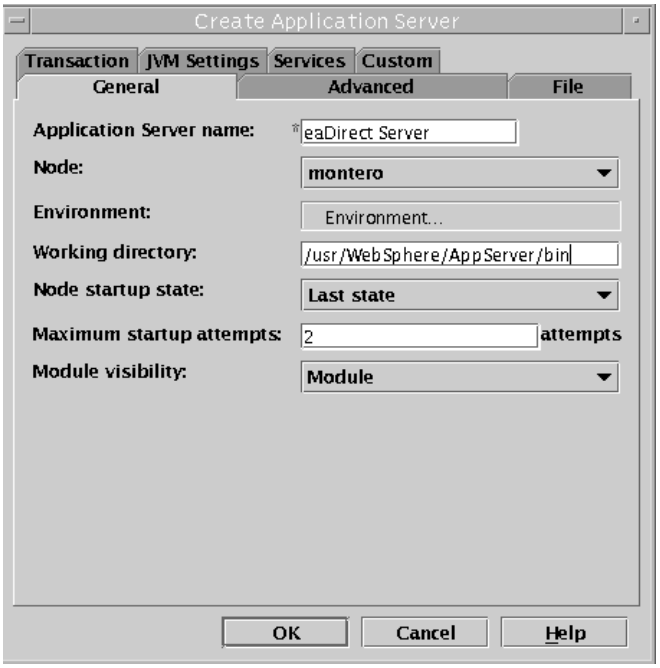
Creating a New Application Server

1. Expand the WebSphere Administrative Domain view.
2. On the toolbar, select **`Console`**, then **`New`**, then **`Application Server`**.

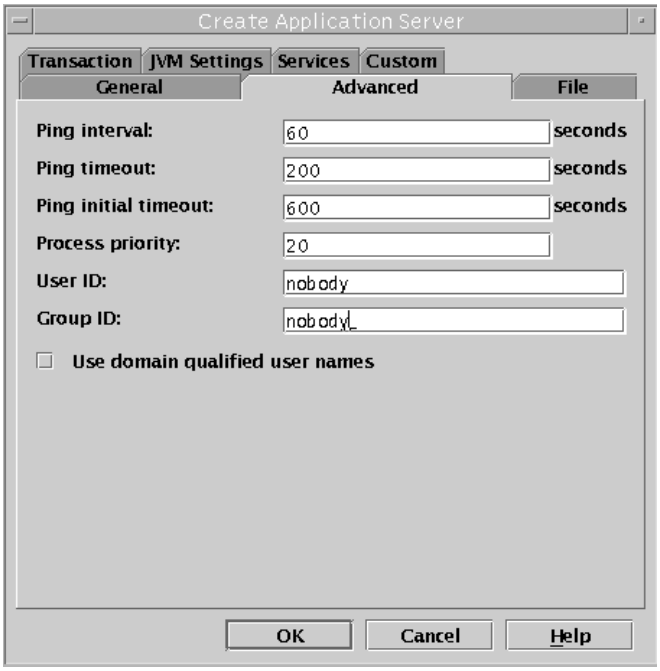


3. On the General tab, enter a name for the new application server instance. For example, eaDirect Server.

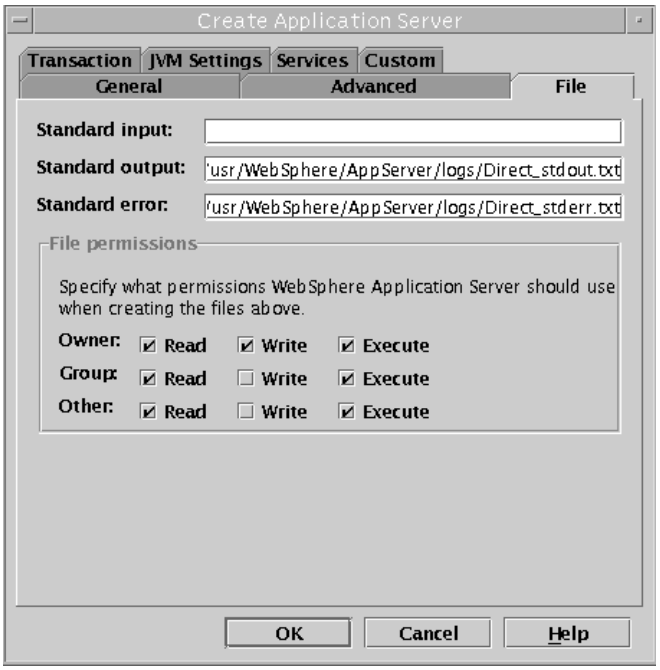
4. Enter a working directory for the application server instance. For example, *$WAS_HOME/bin*.



5. On the **`Advanced`** tab, in the application server setup, enter the WebSphere Application Server userid and group values.



6. Click the **`File`** tab and enter filenames for standard output and standard error logs.



7. Click **OK** to close the Create Application Server dialog.

8. Click **OK** to close the Information dialog reporting that the action completed successfully.

Configuring JDBC Connection Pools

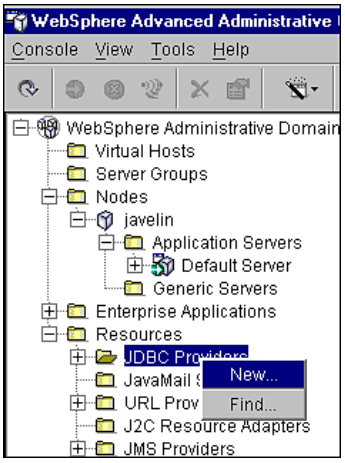
A connection pool contains named groups of JDBC connections that are created when the connection pool is registered, usually when starting up the WebSphere Server. The WebSphere Server opens JDBC connections to the database during the startup process and adds the connections to the pool.

Your application borrows a connection from the pool, uses it, and then returns it to the pool by closing it.

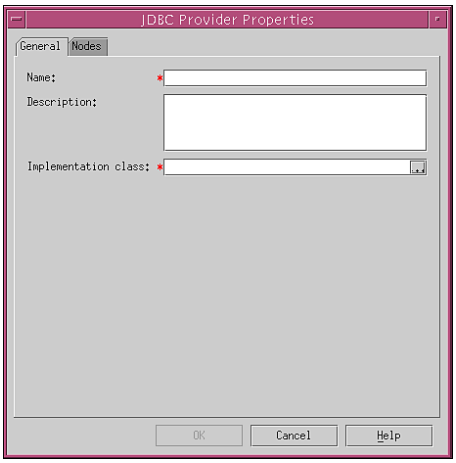
You will create three JDBC Connection Pools. The next section describes how to create the first JDBC Connection Pool. After that procedure, the values for the remaining two connection pools are listed. Create those connection pools following the procedure shown for the first connection pool.

To configure the first JDBC connection pool and JDBC driver:

1. Expand the Resources folder in your domain, right-click on **`JDBC Providers`**, and then select **`New`** from the menu.



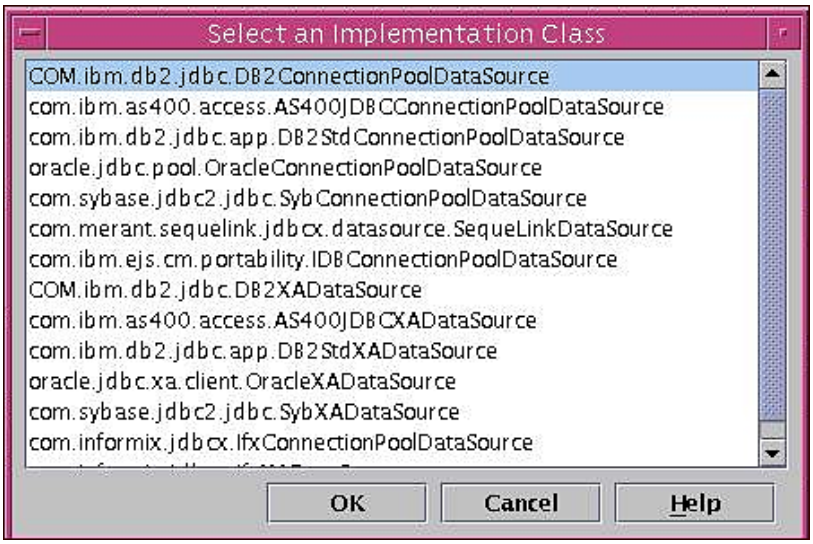
The JDBC Provider Properties dialog is displayed.



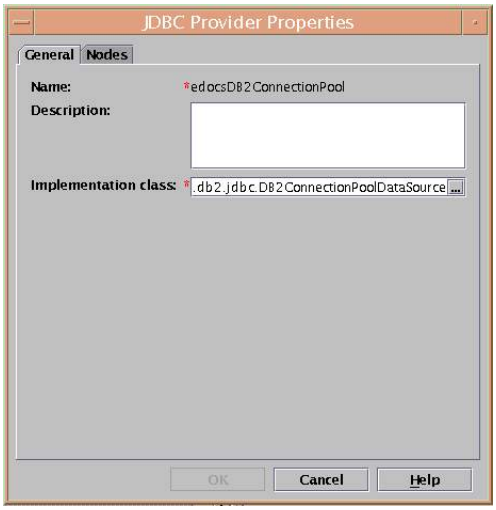
2. On the General tab, enter **`edxUserConnectionPool`** in the Name field.

3. Click the (...) button next to the Implementation Class field. The Select an Implementation Class dialog is displayed.

4. From the list of implementation classes, select **`COM.ibm.db2.jdbc.DB2ConnectionPoolDataSource`**.

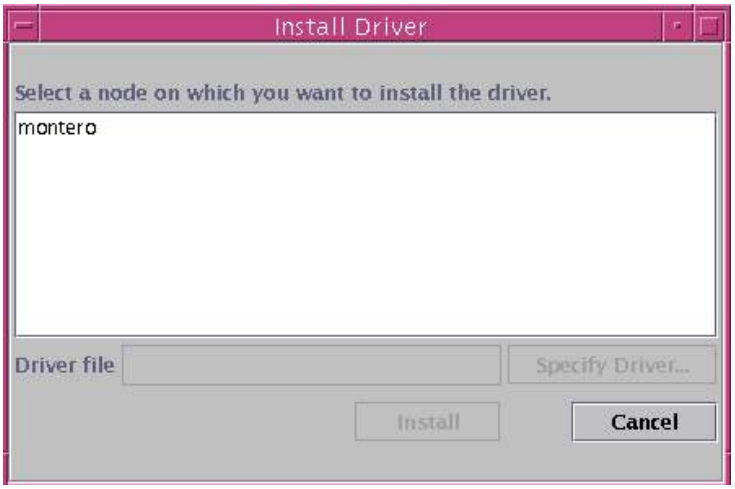


5. Click **OK** to the success message. The name of the implementation class is added to the Implementation class field in the JDBC Provider Properties dialog.

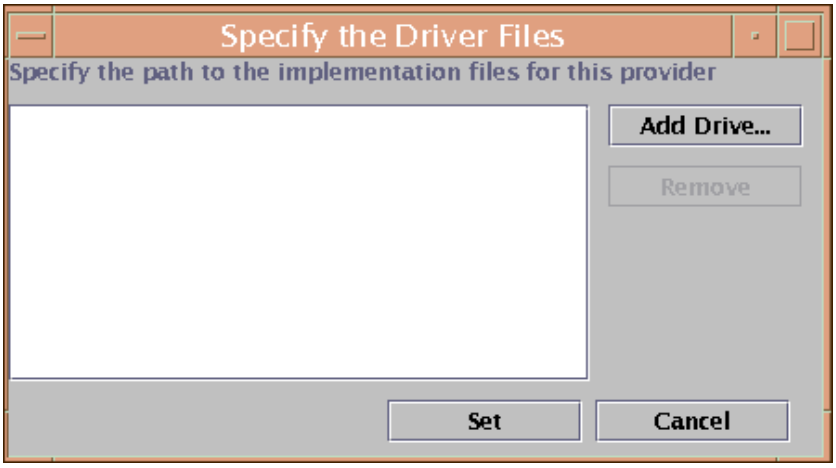


8. Click the Nodes tab, and click **Install New**. The Install Driver dialog is displayed.

9. Select the node on which you want to install the JDBC driver. The node is the name of the machine that your application server is on. In this example, montero:

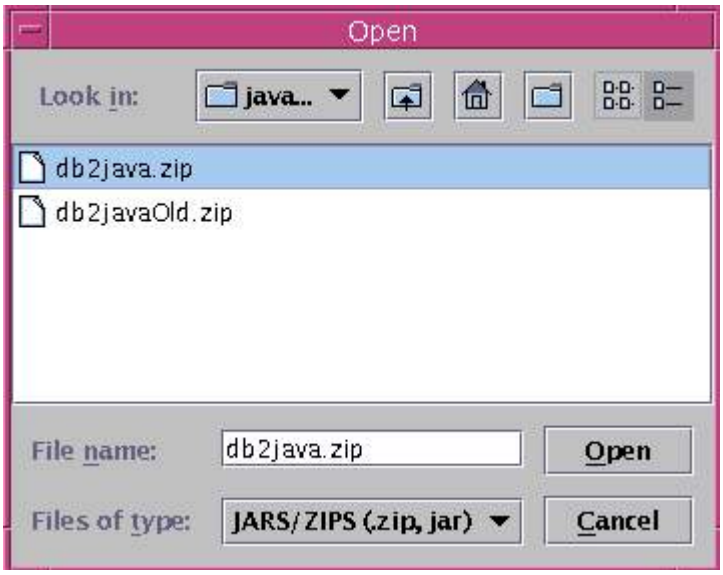


10. Click **`Specify Driver`**. The Specify the Driver Files dialog is displayed.



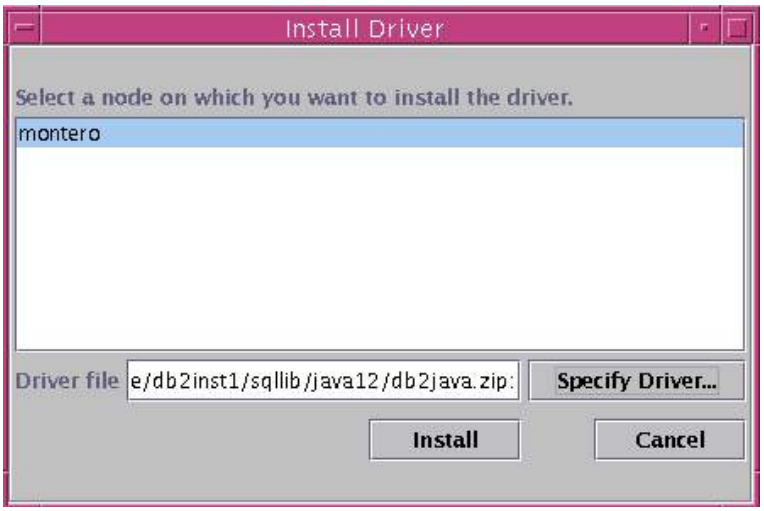
11. Click **`Add Driver`** and in the Open dialog**,** navigate to *$DB2_HOME/sqllib/java12* (where *$DB2_HOME* is the home directory of db2inst1. For example, */export/home/db2inst1)*.

12. Select **`db2java.zip`**. The file is added to the File name field.

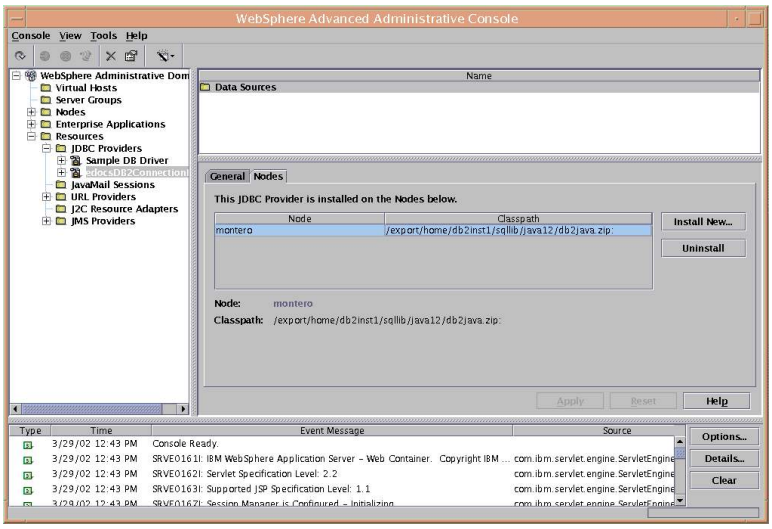


13. Click **Open**. The Specify the Driver Files dialog is displayed, showing the absolute pathname to the JDBC driver you just selected.

14. Click **Set**. The Install Driver dialog is displayed, showing the pathname to the selected JDBC driver in the Driver file field.



15. Click **`Install`**. The node and Classpath of the JDBC driver is added to the JDBC Provider folder for edocsDB2ConnectionPool.



16. Click **`OK`** to close the JDBC Driver dialog. If Apply is available, it will gray out after a few seconds.

edxLoggerConnectionPool Configuration

Using the procedures shown for edxUserConnectionPool, add the following connection pool:

Attribute Name	Attribute Values
Name	`edxLoggerConnectionPool`
Implementation Class	`COM.ibm.db2.jdbc.DB2ConnectionPoolDataSource`
Node	your application server name
Driver	`db2java.zip`

edxAdminConnectionPool Configuration

Using the procedures shown for edxUserConnectionPool, add the following connection pool:

Attribute Name	Attribute Values
Name	`edxAdminConnectionPool`
Implementation Class	`COM.ibm.db2.jdbc.DB2ConnectionPoolDataSource`
Node	your application server name
Driver	`db2java.zip`

Configuring Data Sources

To configure a data source for the JDBC connection pool:

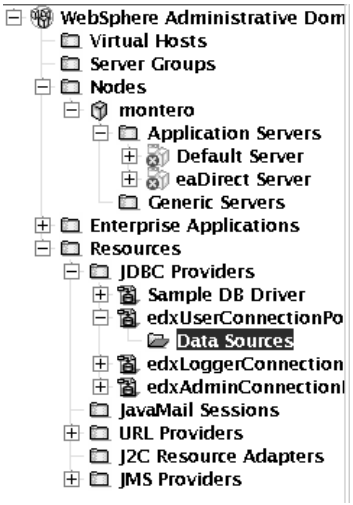
A transaction data source enables JDBC clients to obtain a connection to a Database management System (DBMS). Each data source points to the value specified for the Name attribute when a JDBC connection pool was configured.

You will configure three transaction data sources. After that procedure, the values for the remaining two transaction data sources are listed. Create those data sources following the procedure shown for the first data sources.

To configure a data source for edxUserConnectionPool

1. Expand the Resources folder in your domain to show the JDBC Providers folder.

2. Expand the JDBC Providers folder and expand **`edxUserConnectionPool`**.



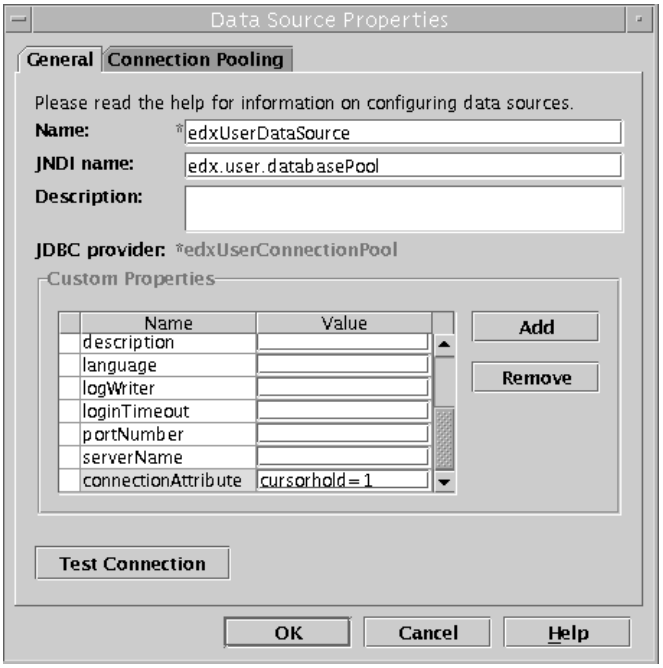
3. Right-click on **`Data Sources`**, and then select **`New`** from the menu.

   The Data Source Properties dialog is displayed.

4. Click the **`General`** tab and enter the following values (observing case sensitivity for the Name and JNDI Name values):

Field	Value
Name	**`edxUserDataSource`**
JNDI Name	**`edx.user.databasePool`**

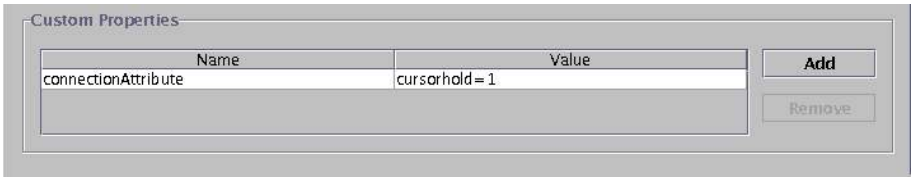
Field	Value
Database Name	**`edx0`** (or the name of the DB2 database you specified during the database configuration procedure)
User ID	**`db2inst1`** **(**or the name of the DB2 database user you specified during the database configuration procedure)
Password	**`db2inst1`** (or the name of the DB2 database password you specified during the database configuration procedure)



You can click **`Test Connection`** to verify you entered the user and password correctly.

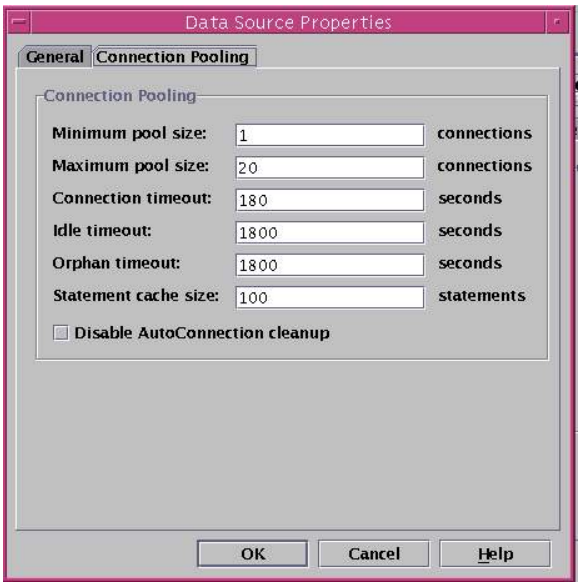
5. Click **`Add`** under Custom Properties and enter the following values:

Field	Value
Name	**`connectionAttribute`**
Value	**`cursorhold=1`**



6. Click the **`Connection Pooling`** tab. The Data Source Properties dialog is displayed.

7. In the Maximum pool size field, change the maximum pool size from 10 to **`20`**.



8. Click **`OK`** to close the Data Source Properties dialog.

9. Click **OK** to close the Information dialog reporting that the action completed successfully.

10. Configure edxLoggerDataSource using the procedures shown for edxUserDataSource, and the following values:

Attribute Name	Attribute Value
Name	**edxLoggerDataSource**
JNDI Name	**edx.logger.databasePool**
Pool Name	**edxLoggerConnectionPool**

11. Configure edxAdminDataSource using the procedures shown for edxUserDataSource, and the following values:

Attribute Name	Attribute Value
Name	**edxAdminDataSource**
JNDI Name	**edx.databasePool**
Pool Name	**edxAdminConnectionPool**

12. Exit the administrative client.

Configuring JVM Settings

To configure JVM settings for your application server:

1. Open a terminal window.

2. Change user to the WebSphere owner (*nobody*, in our examples), and navigate to *$WAS_HOME/bin*.

3. Run the configuration script *XMLConfig.sh* using the following syntax:

```
# ./XMLConfig.sh -import $EDX_HOME/config/ws_config.xml -adminNodeName
your_machine_name -substitute "NodeName=your_machine_name;ServerName=eaDirect
Server;EDX_HOME=absolute_path_to_eaDirect_home;JMS_HOME=absoulte_path_to_JMS_ho
me"
```

For example:

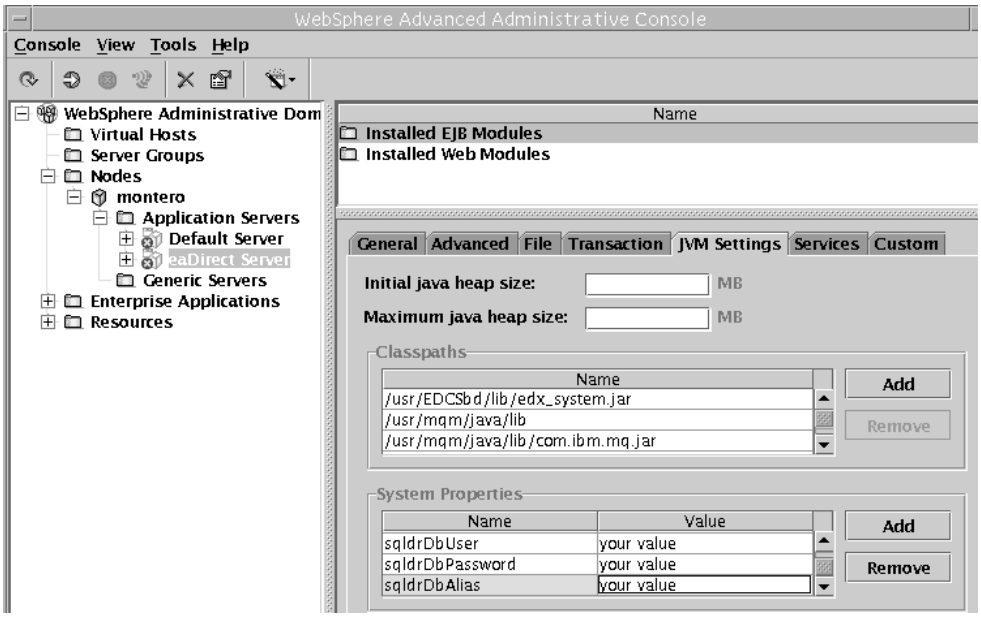
```
# ./XMLConfig.sh -import /usr/EDCSbd/config/ws_config.xml -adminNodeName
montero -nameServiceHost montero -nameServicePort 1025 -substitute
"NodeName=montero;ServerName=eaDirect
Server;EDX_HOME=/usr/EDCSbd;JMS_HOME=/usr/mqm/java"
```

Tip If you are using environment variables, make sure *$EDX_HOME* is pointing to the correct installation directory.

4. Press **Return**. The configuration script runs automatically. No user input is required.

5. Upon completion, you are returned to the command prompt.

6. If you are using SQL Loader system properties other than those defined in the file *$EDX_HOME/config/edx_sqlldr.config*, you will have to manually specify the parameters for the JVM of the application server on which eaDirect is installed using the WebSphere Administrative Console (System Properties table). For example:



7. Click **Apply** for the changes take effect.

Configuring MQSeries Support for Java Messaging Service

This topic describes how to configure MQSeries Support for Java Messaging Service for eaDirect. Before running the procedures in this topic, you should have already installed the following MQSeries components on a machine where the WebSphere application server is running:

- MQSeries 5.2 with CSD_4. For information about installing MQSeries 5.2, see *book/pdf/en_US/amqdac03* on the MQSeries 5.2 installation CD-ROM.
- MA0C (MQSeries Publish and Subscribe package version 1.0.6). For more information, see http://www-3.ibm.com/software/ts/mqseries/txppacs/ma0c.html.
- MQSeries for Java 5.2 (MA88 1.1.4). For more information, http://www-3.ibm.com/software/ts/mqseries/txppacs/ma0c.html.

JMS configuration for eaDirect is done using a configuration script and not through the WebSphere Administrative Console. This is because JMS resources are external to the WebSphere application server (see the WebSphere Info Center for more information).

For more information about MQSeries 5.2, see the IBM MQSeries documentation that is provided on the distribution CD-ROM with the software, or go to http://www-3.ibm/software/ts/mqseries.

After installing MQSeries, you will have to:

1. Configure *JMSAdmin.config*, which is the default configuration file for the MQSeries Classes for Java Message Service Administration Tool. The JMSAdmin tool is used to administer JMS objects such as connection factories, queues, and topics, and binds them to a JNDI name space
2. Configure *JMSAdmin*, which passes Java parameters to MQSeries
3. Create a queue manager for eaDirect
4. Verify that the MQSeries Publish/Subscribe broker is installed and running properly
5. Configure the JMS connection factory and destinations for eaDirect

These procedures are described in the following subtopics.

To configure *JMSAdmin.config*:

1. Change Directory to *$JMS_HOME/java/bin* and open *JMSAdmin*. For example:

   ```
   cd /usr/mqm/java/bin
   vi -R JMSAdmin
   ```

2. From the list of JNDI service providers, uncomment the following setting, and comment out any existing entry:

```
INITIAL_CONTEXT_FACTORY=com.ibm.websphere.naming.WsnInitialContextFactory
```

3. From the list of URLs for JNDI service providers, uncomment the following line, and comment out any existing entry:

   ```
   PROVIDER_URL=iiop://localhost:900
   ```

   Change "localhost" to your system name. The default port is 900, but if you are using *nobody:nobody* as the user and group for WebSphere, then also change the port to 1025. For example:

   ```
   PROVIDER_URL=iiop://montero:1025
   ```

4. Save and close the file.

To configure JMSAdmin:

1. Change Directory to *$JMS_HOME/java/bin* and open *JMSAdmin.config*. For example:

   ```
   cd /usr/mqm/java/bin
   vi -R JMSAdmin.config
   ```

2. Add the following lines to the end of the file:

```
WAS_HOME=/usr/WebSphere/AppServer
MQ_JAVA_INSTALL_PATH=/usr/mqm/java
PATH=$PATH:/usr/WebSphere/AppServer/java/jre/lib/ext
export MQ_JAVA_INSTALL_PATH PATH WAS_HOME
java -DMQJMS_LOG_DIR=$MQ_JAVA_INSTALL_PATH/log -
DMQJMS_TRACE_DIR=$MQ_JAVA_INSTALL_PATH/trace -
DMQJMS_INSTALL_PATH=$MQ_JAVA_INSTALL_PATH -
Djava.ext.dirs=$MQ_JAVA_INSTALL_PATH/lib:$WAS_HOME/java/
jre/lib/ext:$WAS_HOME/lib com.ibm.mq.jms.admin.JMSAdmin
$*
```

   If the paths to WAS_HOME and MQ_JAVA are not correct for your installation, then update them.

To create a MQSeries Queue Manager:

1. As the MQSeries owner (in our examples, *nobody*), navigate to *$JMS_HOME/java/bin* (where *$JMS_HOME* is the directory in which you installed MQSeries. By default, MQSeries is installed in */usr/mqm*.

2. Create a queue manager called edxQueueManager by running the following command:

   # **crtmqm -u SYSTEM.DEAD.LETTER.QUEUE edxQueueManager**

3. Start the queue manager using the following command:

   # **strmqm edxQueueManager**

   You can verify that edxQueueManager is running by using the following command:

   # **dspmq**

If edxQueueManager is listed with a status of 'Ended', start it using the **strmqm** command. You can stop edxQueueManager using the **endmqm** command.

To verify that the MQSeries Publish/Subscribe broker is installed and running

Make sure that you have the pathname *$JMS_HOME/bin* in your PATH before running the commands in this procedure**:**

1. As the MQSeries owner (in our examples, *nobody*), run the following command:

   ```
   # dspmqbrk -m edxQueueManager
   ```

2. If you receive an error message that the operating system cannot run the *dspmqbrk* command, confirm that the MQSeries Publish/Subscribe broker is installed properly, and that *$JMS_HOME/bin* in included in the system's PATH setting.

3. If the operating system reports that the broker is unavailable (or inactive), start it using the following command:

   ```
   # strmqbrk -m edxQueueManager
   ```

4. Run the following command to verify that the broker has been installed and is running:

   ```
   # dspmqbrk -m edxQueueManager
   ```

5. If the broker is running, you should see a message similar to the following:

   ```
   MQSeries message broker for queue manager
   edxQueueManager running
   ```

6. Change directory to *$JMS_HOME/java/bin*, and create the MQ JMS System queues by running the following command:

   ```
   # runmqsc edxQueueManager < MQJMS_PSQ.mqsc
   ```

   This command creates objects and returns:

   ```
   No commands have a syntax error.
   All valid MQSC commands were processed.
   ```

To configure a topic connection factory and topic objects for eaDirect:

1. Confirm that the WebSphere administration server is running.
2. Change directory to *$JMS_HOME/java/bin*.
3. Supply a value for *EDX_HOME* and export it, for example:

```
EDX_HOME=/usr/EDCSbd
export EDX_HOME
```

4. Then run the following command using the **.** (dot) command:

```
. $EDX_HOME/bin/edx_mqm_config
```

If your MQSeries server is on a remote machine, see the IBM MQSeries documentation for the appropriate configuration.

Generating Deployment Code for eaDirect J2EE Applications

The next step in setting up the application server is to generate the deployment code for the eaDirect J2EE applications that you will later install (see the topic, *Installing Deployed J2EE Applications*) on WebSphere. This is done though the Application Assembly Tool.

The following instructions describe how to invoke the Application Assembly Tool from a command line window. However, you can also start the tool from the WebSphere Administrative Console.

To generate deployment code for eaDirect J2EE applications:

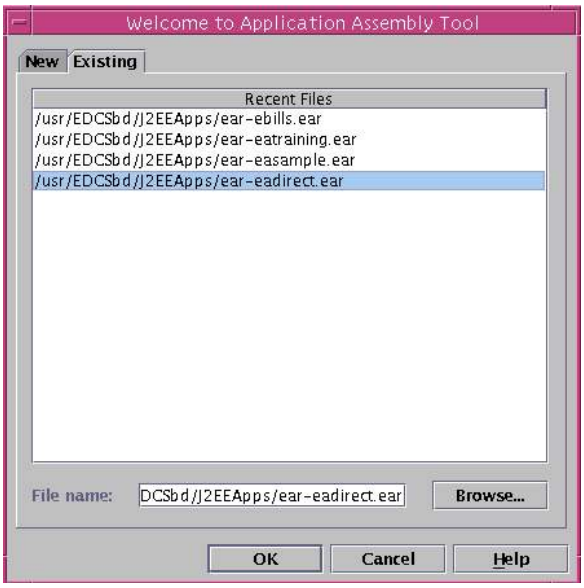
1. Change directory to *$WAS_HOME/bin*, and invoke the WebSphere Application Assembly Tool by running the script *assembly.sh*. For example:

```
# su - nobody
# cd /usr/WebSphere/AppServer/bin
# ./assembly.sh &
```

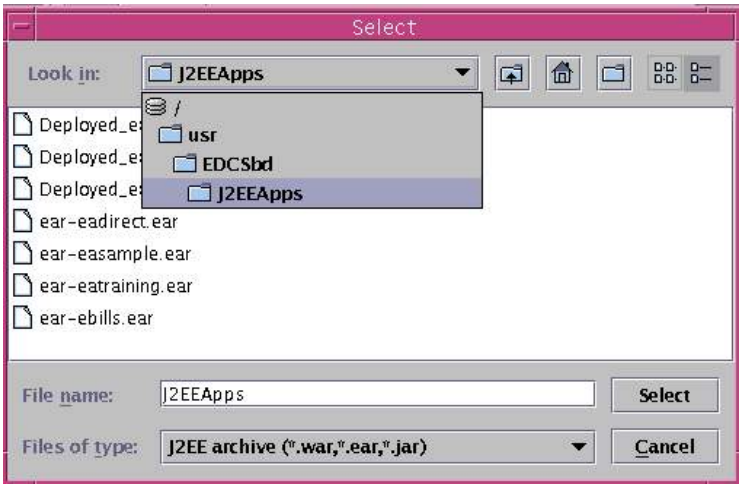
The Application Assembly Tool is displayed in an X-window, so you will have to have X-window software installed and you might have to set your display (in your *.profile* file) to the local machine if you are trying to invoke the Application Assembly tool remotely. For example:

set DISPLAY=montero:0.0
export DISPLAY

2. When the Application Assembly Tool is displayed, click the **`Existing`** tab.

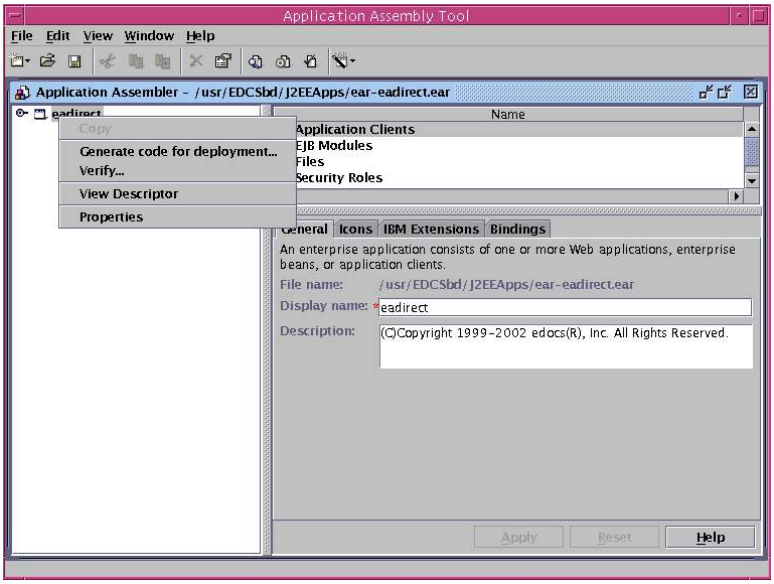


3. Click **`Browse`** at the bottom of the dialog, and navigate to the directory that contains the eaDirect J2EE applications. For example:



4. Select **`ear-eadirect.ear`** from the list of J2EE applications and click **`Select`**.

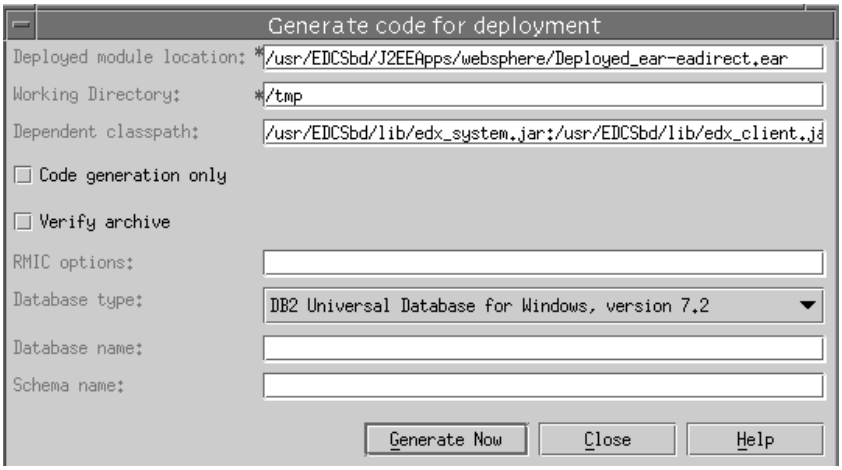
5. In the left pane, right click on **`eadirect`**, and select **`Generate code for deployment`** from the menu.



The Generate Code for deployment dialog is displayed.

6. Select **`DB2 Universal Database for Windows, Version 7.2`** from the Database type drop-down menu.

7. In the Dependent classpath field, enter the java Classpaths *$EDX_HOME/lib/edx_system.jar*, *$EDX_HOME/lib/edx_client.jar* and *$EDX_HOME/lib/edx_common.jar*:



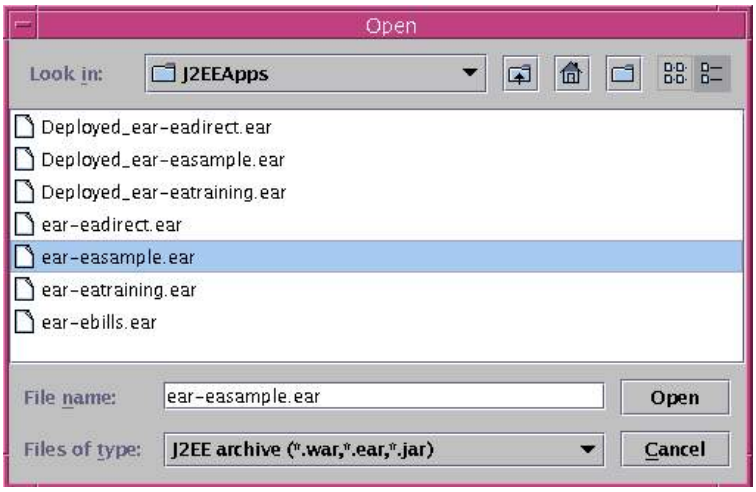
8. Click **`Generate Now`**. During generation of the deployment code, status information is shown in the window at the bottom of the dialog.

9. Wait for the progress bar at the bottom of the Application Assembly Tool to complete. Some applications might take several minutes to deploy, depending on the speed of your machine.

10. Click **`Close`** to exit from the Generate code for deployment dialog.

11. To generate deployment code for additional eaDirect J2EE applications, select **`Open`** from the File menu in the Application Assembly Tool.

12. In the Open dialog, navigate to *$EDX_HOME/J2EEApps* and select an application. The name of the application is displayed in the File name field.



13. Click **`Open`**. The application is displayed in the Application Assembly Tool.
14. For additional applications that you want to deploy, select the application in the left pane, and repeat **Steps 5 to 9**.
15. Click **`Exit`** in the File menu to close the Application Assembly Tool.

Deploying and Installing eaDirect Applications to WebSphere

In general, deploying an application involves three distinct phases:

- Component creation, typically done by application developers
- Application assembly, typically done by application developers (although they may not have participated in the 'component creation' phase)
- Application deployment, typically done by both application developers and system administrators

It's not unusual for application programmers during development and testing to deploy their own applications. However, after the application has been assembled and is ready for production, a system administrator most likely will deploy it.

You deploy eaDirect J2EE applications using the WebSphere Administrative Console. The process consists of:

- Configuring Java database connectivity for eaDirect on WebSphere
- Generating deployment code for eaDirect J2EE applications
- Installing the deployed applications on WebSphere

Three J2EE applications are provided in the eaDirect software distribution. At installation, they are located in *$EDX_HOME/J2EEApps*.

eaDirect J2EE Application	Description
ear-eadirect.ear	The complete eaDirect online account management and billing application. Required for deployment. Also contains the WAR files for the eaPay, eaPost, and eaXchange add-on modules. By default, installed to: *$EDX_HOME/J2EEApps/websphere*
ear-easample.ear	Sample online account management and billing application. Not required for deployment, but can be used as a template and for current demo pages using Common Directory Access (CDA). By default, installed to: *$EDX_HOME/samples/eaSample/J2EEApps/websphere*
ear-eatraining.ear	Sample hierarchical online account management and billing application. Not required for deployment, but can be used for testing and training purposes. By default, installed to: *$EDX_HOME/samples/eaTraining/J2EEApps/websphere*

Installing Deployed J2EE Applications

To install J2EE deployed applications:

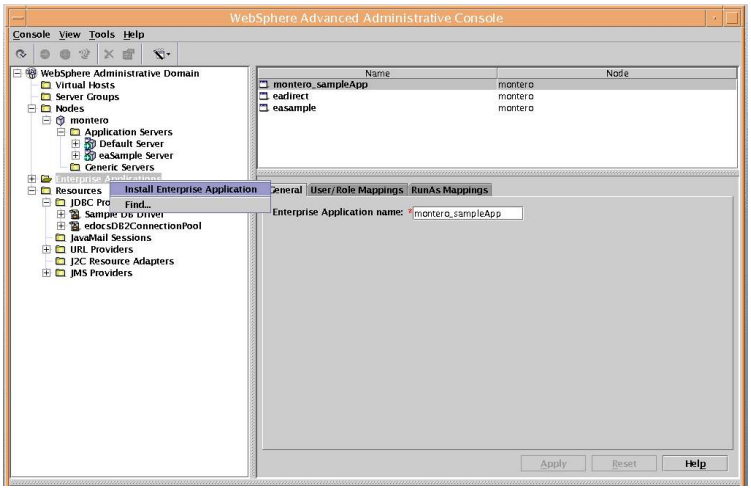
1. Change directory to *$WAS_HOME/bin*, and invoke the WebSphere Administrative Console by running the script *adminclient.sh*. For example:

```
# cd /usr/WebSphere/AppServer/bin
# ./adminclient.sh montero 1025 &
```

where montero is the application server name. This starts the administrative client on port 1025.

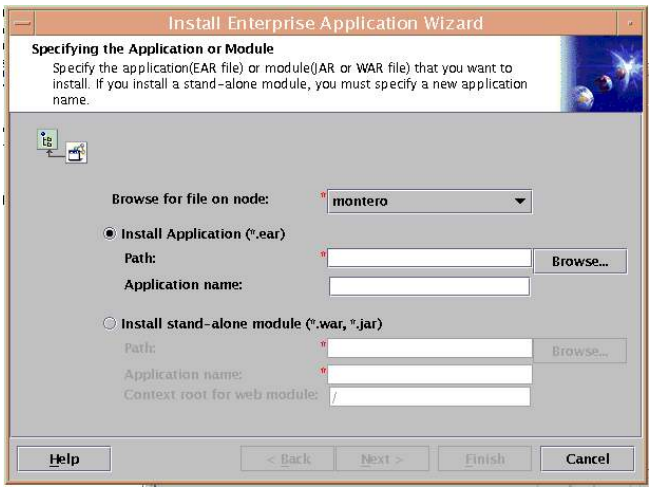
2. Expand the WebSphere Administrative Domain view.

3. Right-click the **`Enterprise Applications`** folder and select **`Install Enterprise Applications`** from the menu.

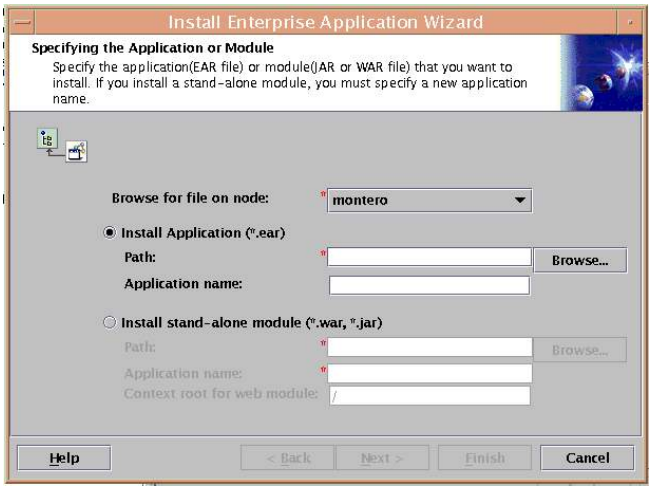


The Install Enterprise Application Wizard dialog is displayed.

4. Confirm that the correct node has been chosen in the Browse for file on node field.

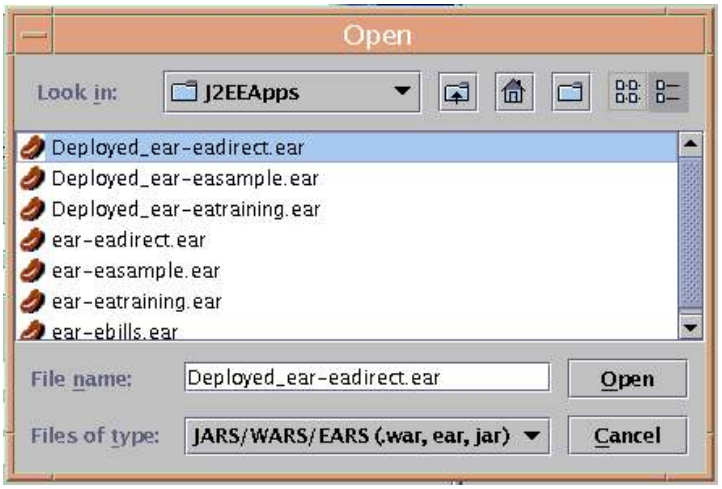


5. Click **`Install Application`**, and click **`Browse`**.



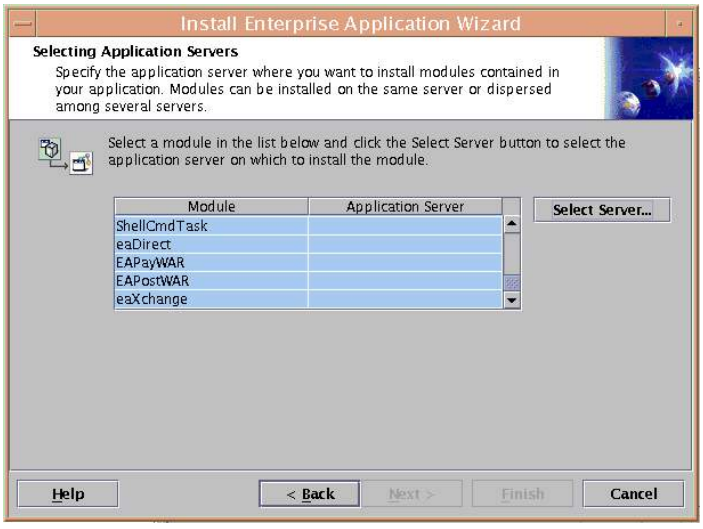
The Open dialog is displayed.

6. Deploy the EAR files one at a time that were assembled in the Application Assembly Tool by navigating to *$EDX_HOME/J2EEApps*, and selecting an assembled file. The example shows *Deployed_ear-eadirect.ear* selected for deployment.



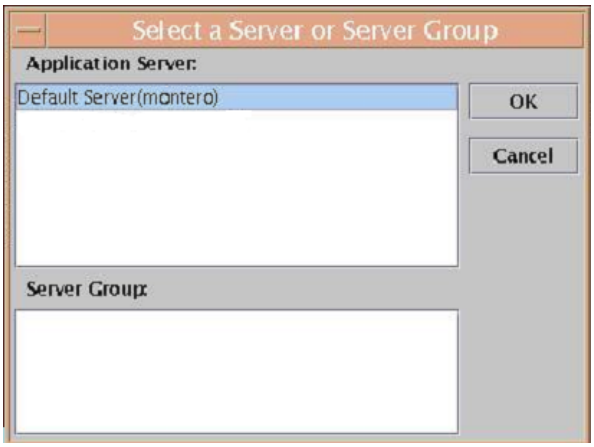
7. Click **`Open`**. The Install Enterprise Application Wizard dialog is displayed.

8. In the Install Enterprise Application Wizard dialog, click **`Next`** (about 7 to 9 times) until you come to the Selecting Application Servers screen. Highlight all the modules for selection by clicking the first and last module in the list, while holding down the Shift key.

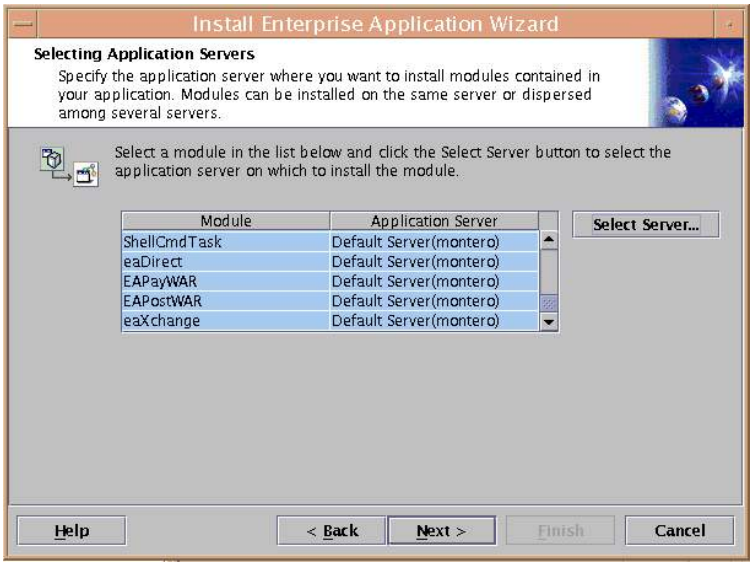


9. Click **`Select Server`**. The Select a Server or Server Group dialog is displayed.

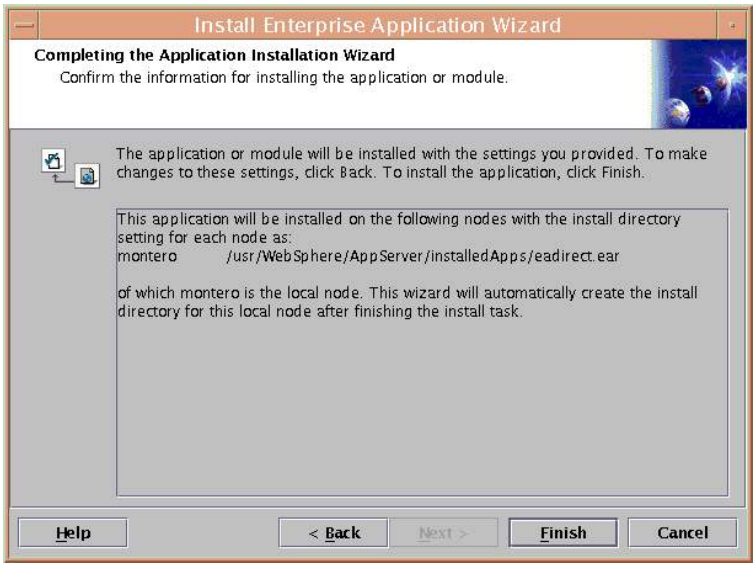
10. Select the Default Server.



11. Click **`OK`** to close the Select a Server of Server Group dialog. The Install Enterprise Application Wizard dialog lists the modules and the server on which they will be installed.



12. Click **Next**. The installation of the modules takes place on the application server.

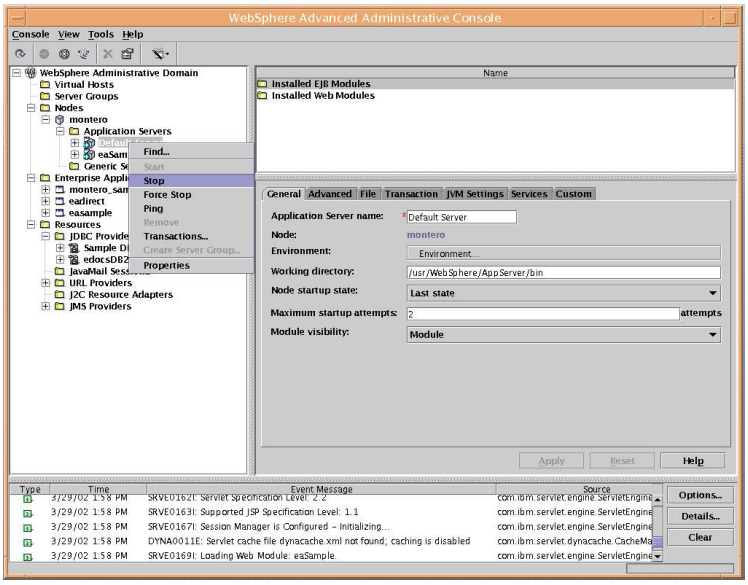


13. Click **Finish**.

14. When asked if you want to regenerate code, click **No**.

15. Click **OK** to close the Information dialog reporting that the installation was successful.

16. Stop the application server(s) that have the newly installed eaDirect J2EE applications by right-clicking the application server name in the left pane, and clicking **Stop** in the menu.

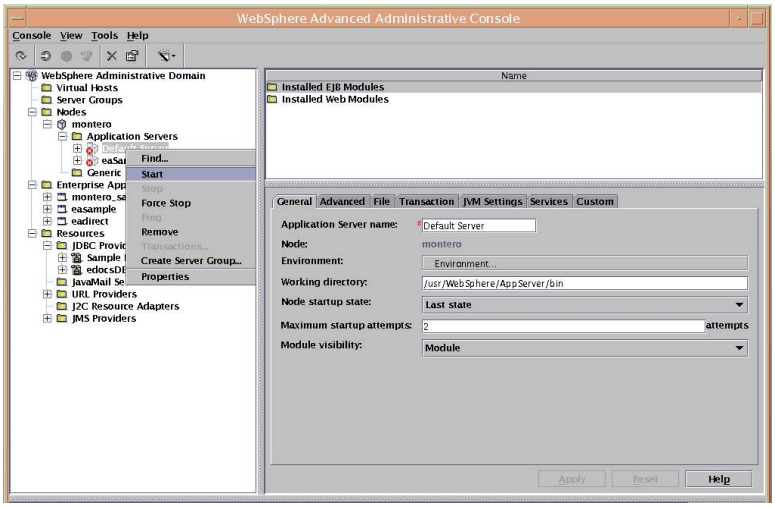


17. An Information dialog is displayed when the application server has stopped successfully.

18. Click **OK** to close the dialog.

    If the administration console was running on this node, then the console will close when the application stops. If that happens, restart the administration console to continue eaDirect installation.

19. Start the application server(s) that have the newly installed eaDirect J2EE applications by right clicking the application server name, and clicking **`Start`** in the menu.



20. An Information dialog is displayed when the application server has stopped successfully.

21. Click **`OK`** to close the dialog.

Regenerate Web Server Plug-in:

1. Expand the WebSphere Administrative Domain view.

1. Expand the Nodes folder and the application server's node name.

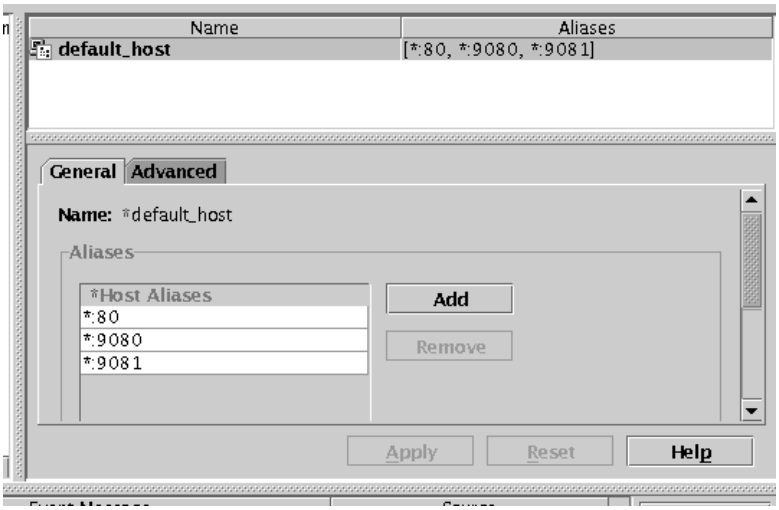
2. Right click on the node name and click **`Regen WebServer plugin`**.

   The Event Message window in the administration console will show when the Webserver plugin regeneration is complete.

Configuring a Virtual Host Alias for a New Application Server

To configure a virtual host alias for a new application server:

1. Expand the WebSphere Administrative Domain view.
2. Click the **`Virtual Hosts`** folder.
3. On the General tab, click **`Add`** to open a new line.
4. Enter the HTTP transport on which the new application server is listening.



The sample screen shows a virtual host alias being created for the HTTP transport, ***:9081**, which was specified for the new application server named eaDirect Server (note that transport port 9080 is for the default application server). Make sure you include the asterisk and colon when you enter the transport number.

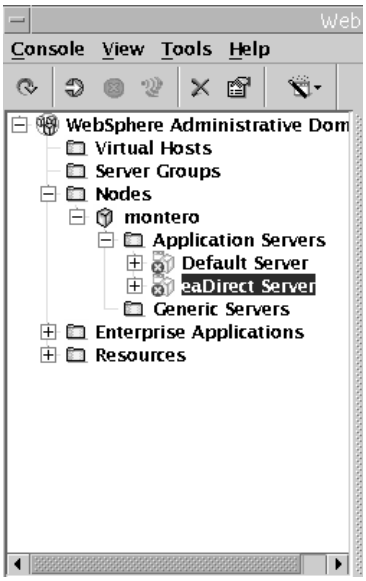
5. Click **`Apply`** for the changes to take effect.

Restart the Applications and Servers

Stop and restart the applications and application servers, so that the previous changes will take affect.

To Stop or Start the eaDirect Server:

1. Select the eaDirect Server, on the tree under Nodes, then Application Servers.



2. Click the start or stop buttons located on the administrative toolbar.

   Or right click on the Application Server, and select Stop or Start.

Logging into the Command Center

You can test the installation of eaDirect on your application server by logging in to eaDirect's web-based Command Center. The Command Center

To log in to the Command Center:

1. Confirm that the application and database servers are running.
2. Open a web browser and enter the URL to invoke the Command Center:

   http://<*server_name*>:*port*/eaDirect

   For example:

   http://montero:9081/eaDirect
3. A successful connection to the Command Center displays the Login Administrator page.

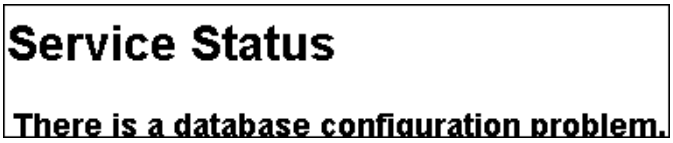
4. Log into the Command Center using the default administrator ID and password:

   ```
   Administrator ID: admin
   Password: edocs
   ```

5. A successful login displays an empty Main Console page. This page will remain empty until you have created an application and scheduled it to run.

In order to run jobs in the Command Center, the eaDirect Scheduler **must** be running; whereas, starting the eaDirect Logger is optional.

6. If you are unable to log into the Command Center, click `Service Status` on the menu to see what the problem is. For example, a database configuration problem might prevent a user from logging in to the Command Center.



7. Troubleshoot the problem by carefully reviewing what you have done up to this point. You should:
   - Make sure you have configured the database correctly, as described in the database configuration procedure in Chapter 3.
   - Review your JDBC connections, as described earlier in this chapter.
   - Confirm that the database server is running.

   Then try logging in to the Command Center again.

Starting and Stopping the eaDirect Scheduler

The eaDirect Scheduler is required to run and schedule jobs in the eaDirect Command Center.

To start the Scheduler:

1. Switch user to the WebSphere owner, for example: *nobody*.
2. Change directory to *$EDX_HOME/bin*.
3. Run the command that starts the eaDirect Scheduler process:

   ```
   ./ws_scheduler –start -url iiop://WebSphere_host:port
   ```

   For example:

   ```
   # ./ws_scheduler –start -url iiop://montero:1025
   ```

   You can stop the Scheduler by substituting the *-start* parameter with the *-stop* parameter.

Migrating eaDirect Databases 5

Migrating eaDirect Databases

As part of the eaDirect database setup process, you can choose to migrate an earlier version of an eaDirect database. This functionality is accessed through a menu option on the edocs eaDirect Server Administration Main Menu, and allows you to migrate the following databases:

- Version 2.2.2 to Version 3.2

Preparing to Migrate an eaDirect Database

Perform the following tasks before running *edx_admin.sh* (database setup script) to access the database version migration option:

- Make a full backup of your current database.
- Confirm that the Oracle instance accessing the database to be upgraded is running.
- Check the status of all user objects. If any of them indicate an INVALID status, contact the database administrator to correct this problem before continuing with the database migration process.
- Confirm that all login sessions using eaDirect Oracle user have logged out of the instance.
- Confirm that you have the password for user SYS available. You will need it during the database migration process.

Migrating a Database

When migrating your database, make sure that you have sufficient disk space available. edocs recommends that you have at least 1.5 GB of available disk space for the database migration.

1. Switch to *oracle* user, and change directory to *$EDX_HOME/db/oracle*.

   ```
   $ su - db2inst1
   $ cd /usr/EDCSbd/db/db2
   ```

2. Run *edx_admin.sh*. The edocs eaDirect Server Administration Main Menu is displayed.

3. Select option 5, **`Database Version Migration`**.

   ```
   edocs eaDirect Server Administration for DB2 Main Menu
    ---------------------------------------------------
        [1] Sign in Menu
        [2] Capture Database File Locations
        [3] Install edocs eaDirect
        [4] Initial Data Population
        [5] Database Version Migration

        [Q] Quit
    ---------------------------------------------------
   Enter Your Selection: 5
   ```

4. From the Database Version Migration menu, indicate the version of the eaDirect database you want to upgrade. The example screens that follow show an eaDirect 2.2.2 database being migrated to eaDirect 3.2

   ```
    Database Version Migration
    ------------------------------------------
   Database Version Migration
    -------------------------
    [1] Version 2.2.2 to Version 3.2
    [R] Return to previous menu
    -------------------------
    SELECT YOUR OPTION: 1
   ```

   You will be prompted to enter the Database ID for the database, and your eaDirect database username and password.

```
Please enter  Database ID -> edx0
Enter Database Username -> db2inst1
Enter Database Password -> db2inst1
```

5. Indicate whether you have already done a full backup of your database.

   ```
   We strongly advise taking full backup of your
   existing database before applying the migration
   ```

   Do you have a backup (Y/N): Y

   If you have not backed up your database, you are asked whether you want to continue the migration process.

   Still continue with the migration (Y/N): N

6. Enter your choice to abort the migration process or continue. If '**no'**, you are returned to the Database Version Migration menu where you can select the option to return to the previous menu.

   If 'yes', you are returned to the edocs eaDirect Server Administration Main Menu, where you can select 'Q' to end the database migration session.

   If you choose to continue with the database migration, the migration script *db_version_migrate.sh* is run.

   ```
   Database migration from 3.0 to 3.1
   ********************************************
   Thu Oct 10 10:05:15 EDT 2002
   ********************************************
   Migration process started
   ********************************************
   ```

   You will be prompted to enter the system where the database is installed, the database port number, and the location of Java.

   ```
   Enter Database Hostname : celica
   Enter Database Port     : 50000
   Enter Java root directory : [/] [q] /usr/jdk_base
   ```

7. If the previously entered information is correct, the database migration will start. You will see the message:

   ```
   This migration requires the creation of 6 new
   tablespaces!>
   Please enter valid paths and ensure at least 1Gig disk
   space ...>
   ```

   Database files can reside wherever you want them to. If you plan to use only one disk location, specifying a pathname similar to the following for the database software and files is appropriate:

   $DB2_HOME/edx_db2data

   However, if you plan to disperse the software over several disks (to possibly improve performance) specifying pathnames such as the following might be more suitable:

Database Files	Suggested Mount Point
Detail extractor index data tablespace	*/u06/ edx_db2data*
FS data tablespace	*/u07/ edx_db2data*
FS index data tablespace	*/u08/ edx_db2data*
Order capture data tablespace	*/u09/ edx_db2data*
Order capture index tablespace	*/u10/edx_db2data*

   The configuration process checks the validity of the specified locations and displays the following message if no problems are encountered:

A minimum of 2.2GB of disk space is required for eaDirect 3.1. Make sure you have enough space before migrating.

8. A successful database migration will display the message:

   ```
   Migration successful
   ```

9. Before ending the database migration process, you are prompted to check the session log file that is created automatically for errors.

```
*********************************************
Please check the log file for any errors...
Log filename:  /usr/EDCSbd/db/db2/migrate0411100446.log
*********************************************
Ending migration process
```

10. From the Database Version Migration menu, select **`Return to previous menu`**.

```
 Database Version Migration
 ---------------------------------------
Database Version Migration
 -------------------------
 [1] Version 2.2.2 to Version 3.2
 [R] Return to previous menu
 -------------------------
 SELECT YOUR OPTION: R
```

11. From the edocs eaDirect Server Administration Main Menu, select **`Quit`**.

```
edocs eaDirect Server Administration for DB2 Main Menu
 ---------------------------------------------------------
      [1] Sign in Menu
      [2] Capture Database File Locations
      [3] Install edocs eaDirect
      [4] Initial Data Population
      [5] Database Version Migration

      [Q] Quit
 ---------------------------------------------------------
Enter Your Selection: Q
```

Post Database Migration Tasks

Perform the following tasks after migrating a database from a previous release of eaDirect:

- Check *.log* files in the *$EDX_HOME/db/db2* directory and subdirectories for errors
- Reset permissions for edocs directories and files (if necessary)

Checking *.log* files for errors

Upon completion of the database migration process, you should check the following *.log* files for errors:

- *billdir_initial_db_data.log*
- *create_buffers.log*
- *create_tbspaces.log*
- *scan.log*
- *compile_sproc.log*
- *create_tables.log*
- *migrate<xxxxxxxxx>.log*

In the context of migrating an eaDirect database, a 'normal' error is one that does not cause the upgrade process to fail, such as trying to drop an object that does not exist. Conversely, an 'abnormal' error is one that can cause the database migration process to fail, which can have a cascading effect throughout the process. That is, a single 'abnormal' error can lead to many other 'abnormal' errors as the database migration process proceeds.

Although there isn't an easy way to differentiate between 'normal' and 'abnormal' errors, there is a way to check whether the database upgrade was successful. Typically, if the process does not flag invalid objects or there are no violations of referential constraints, then the operation was successful.

To determine the number of invalid objects:

1. Switch to the DB2 user. For example. *db2inst1*
2. Invoke SQL and run the following queries:

```
db2 "select count (*) from user_objects where status <>
'VALID'"
```

You can obtain the number of records that violated any referential constraints by running the following query:

```
SQL> select count (*) from exceptions;
```

Resetting Permissions for edocs Directories and Files

After migrating your database, confirm that all the eaDirect directories, with the exception of the */db* directory and its subdirectories, reflect the same directory and file ownership as that of the WebSphere owner. The following example shows the contents of *$EDX_HOME* on a single server, where nobody is the WebSphere owner:

```
drwxrwsr-x   3 nobody     nobody       512 Oct 17 17:36 AppProfiles
drwxrwsr-x   3 nobody     nobody       512 Oct 17 17:36 Data
drwxrwsr-x   3 nobody     nobody       512 Oct 17 17:36 Input
drwxrwsr-x   3 nobody     nobody       512 Oct 11 16:34 J2EEApps
drwxrwsr-x   3 nobody     nobody       512 Oct 17 17:36 Output
-r--r--r--   1 nobody     nobody     64815 Oct 17 16:02 ReleaseNotes.html
drwxr-sr-x   3 nobody     nobody       512 Oct 17 17:36 Store
drwxrwsr-x   2 nobody     staff        512 Oct 17 16:02 Uninstall
drwxr-sr--   2 nobody     nobody       512 Oct 18 14:27 bin
drwxrwsr-x   2 nobody     nobody       512 Oct 17 17:31 config
drwxrwsr-x   3 db2inst1 db2iadm1     512 Oct 11 16:34 db
drwxrwsr-x   2 nobody     nobody       512 Oct 17 16:02 documentation
-rw-rw-r--   1 nobody     nobody     30654 Oct 17 16:03 eaDirect_3.2_InstallLog.log
-rw-r--r--   1 nobody     nobody        14 Oct 17 19:16 foo1
drwxrwsr-x   4 nobody     nobody       512 Mar 11 2002  jre
drwxrwsr-x   4 nobody     nobody       512 Oct 11 16:34 lib
drwxrwsr-x   2 nobody     nobody       512 Oct 17 19:18 logs
drwxrwsr-x   8 nobody     nobody       512 Oct 11 16:34 samples
-r--r--r--   1 nobody     nobody       305 Oct 17 16:02 version.txt
```

For database files and directories under *$EDX_HOME*, eaDirect uses the default owner and group permissions *dbinst1:db2iadm1*.

Post-Installation Tasks 6

This chapter describes several tasks that can be performed anytime after eaDirect has been installed.

Uninstalling the eaDirect Components

When uninstalling the eaDirect application server components, it is recommended that you repeat the sequence used to install the application. That is, remove the database server components first, then the application server components.

To uninstall the eaDirect database server components:

1. Shut down any database that has been created. See the topic *Recovering from an Aborted Database Configuration Session* for instructions on how to gracefully shut down the Oracle database.
2. Switch user to *root* and navigate to *$EDX_HOME/Uninstall*.
3. Run the eaDirect uninstall command:

   ```
   # ./Uninstall_eaDirect
   ```

4. Manually remove any files that were not removed by the InstallAnywhere tool.

To uninstall the eaDirect application server components:

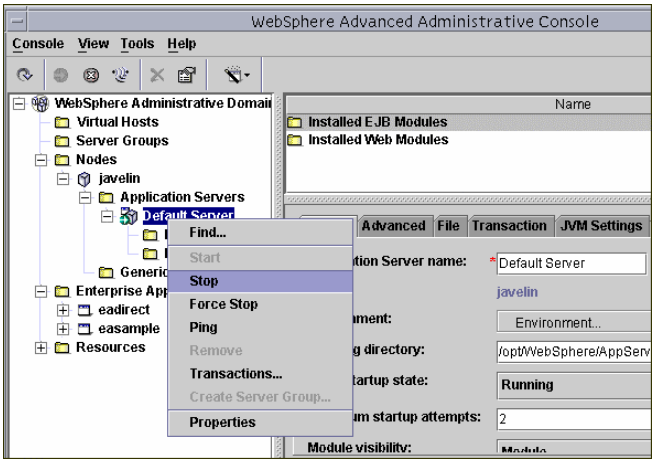
1. As WebSphere owner (*nobody*, in our examples) user, navigate to *$WAS_HOME/bin* and invoke the WebSphere Administrative Console. For example:

   ```
   # ./adminclient.sh montero 1025 &
   ```

2. When the WebSphere console is displayed, expand the Domain.

3. Expand the Enterprise Applications folder, and then right-click on the application server you want to stop.

4. Select **Stop** on the menu.



5. Click **OK** to close the Information dialog notifying you that the action completed successfully.

6. As *root* user, navigate to *$EDX_HOME/Uninstall* and run the eaDirect uninstall tool.

   ```
   # ./Uninstall_eaDirect
   ```

7. When the uninstall is done, manually remove any files that were not deleted.

Uninstalling eaDirect J2EE Applications on WebSphere

Follow the steps below to uninstall J2EE applications running on your WebSphere application server.

To uninstall eaDirect J2EE applications on WebSphere:

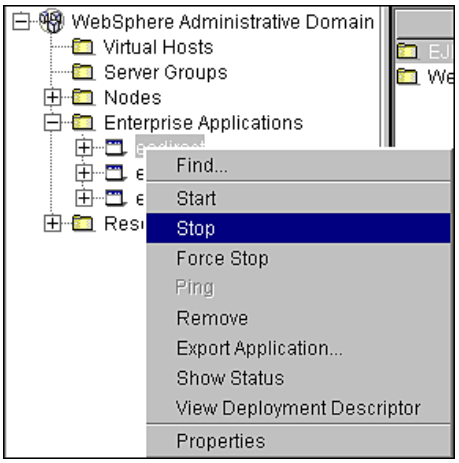
1. As the WebSphere owner (*nobody*, in our examples) user, start the WebSphere Administrative Console if it isn't running. This can be done by navigating to *$WAS_HOME/bin* and run the command:

   ```
   # ./adminclient.sh montero 1025 &
   ```

2. When the WebSphere Administrative Console is displayed, expand your Domain to show the Enterprise Applications folder.

3. Expand the Enterprise Applications folder and click on the J2EE application that you want to uninstall

4. Right-click **`stop`** from the menu.



An information dialog is displayed:

5. Open a command line window and navigate to *$WAS_HOME/installedApps*.
6. Manually remove the EAR file from the directory.
7. Navigate to *$EDX_HOME/J2EEApps/websphere*.
8. Manually remove the deployed EAR file from the directory.

Appendix A: Using eaSample A

About eaSample

eaSample is a sample J2EE application that eaDirect provides as part of its software distribution. You can use it as a framework for developing a custom EJB application; it contains all the Java Server Pages (JSPs), HTML, image files, scripts, and templates you need to get started. eaSample deploys as *ear-easample.ear*.

You can use eaSample to view the sample NatlWireless, Training, and NW_LDDetail applications provided with your system. You can use the data and design files in these sample applications to become familiar with eaDirect by creating sample billing applications and jobs, publishing data and design files in the form of *version sets*, and scheduling the jobs to run in the Command Center, the administrative 'hub' for the eaDirect production environment.

eaSample demonstrates the following types of data presentment:

- Dynamic HTML views
- Detail data extraction (DetailExtractor job)
- Annotations
- Disputes
- Order capture

Before deploying eaSample, you must first run *create_demo_oc_table.sh*, which creates the database tables needed for the Order Capture feature. Failure to do so will result in errors when you start WebSphere Server. See the topic *Setting Up Database Tables for Order Capture in eaSample* for more information.

Setting Up Database Tables for Order Capture in eaSample

In order to use the Order Capture feature in the eaSample application that is provided with the eaDirect distribution, you must manually execute a script that connects to the Oracle database and creates the appropriate database tables. This procedure must be done before you deploy the sample application to WebSphere.

To create database tables for Order Capture in eaSample:

1. Switch user to *db2inst1* and change the working directory to *$EDX_HOME/db/db2*. For example:

   ```
   # su - db2inst1
   $ cd /usr/EDCSbd/db/db2
   ```

3. Run the script *create_demo_oc_table.sh* and provide your database SID, database username, and database password when prompted. For example:

   ```
   $ ./create_demo_oc_table.sh edx0 edx_dba edx
   ```

4. The script runs automatically from this point on. No user intervention is necessary.

5. Upon completion, you are returned to the command prompt.

Viewing Sample Customer Information in NatlWireless using eaSample

The following steps describe how to use eaSample to view the sample eaDirect application called NatlWireless. NatlWireless is a set of eaDirect design and data files which eaDirect provides with its software to demonstrate the various features of an eaDirect presentment application.

You must set up NatlWireless in the eaDirect Command Center (production environment), then enroll and log into eaSample to view sample bills.

Setting up NatlWireless in the production environment includes the following general steps, described in detail below:

1. Create a new application for NatlWireless in the eaDirect Command Center.
2. Create a new Indexer job, publishing the application DDF for the job to use, configure the four tasks that run sequentially as part of the Indexer job, and run the job. Then publish the NatlWireless application (dynamic HTML view) files designed to display the statement summary.
3. Create and configure a DetailExtractor job, publishing the DDF, database table XML file, and statement XSLT style sheet view files designed for the DetailExtractor job, and run the job. Then publish the three dynamic XML Query files (views) designed to display the extracted NatlWireless data and demonstrate the disputes and annotations features.

To create a new application for NatlWireless in the eaDirect Command Center:

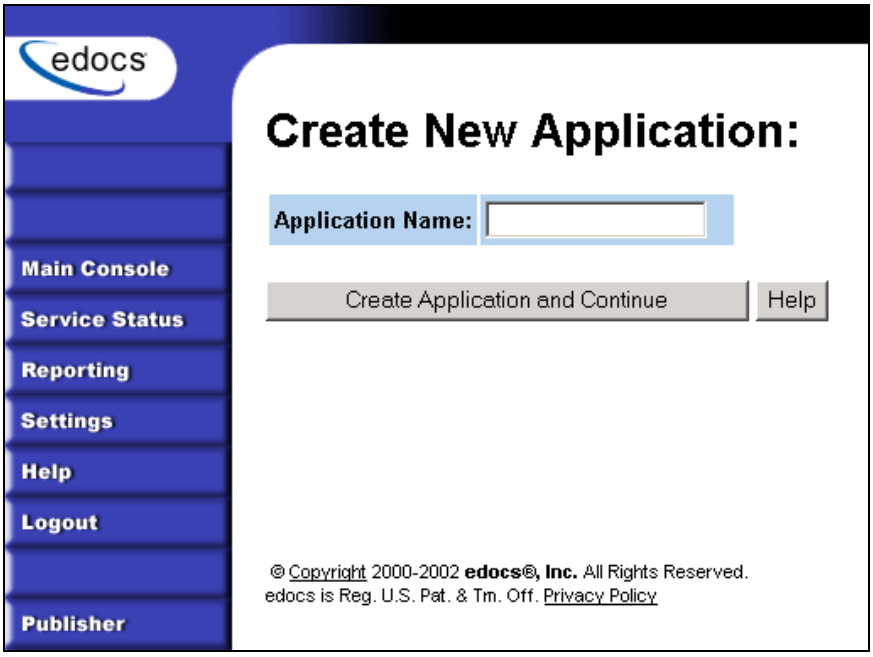
1. Start WebSphere Server and the Scheduler, if not already running.
2. Open a web browser and enter the URL to the eaDirect Command Center, using the syntax:

   http://<*server_name*>:*port*/eaDirect

   For example:

   http://montero:9080/eaDirect

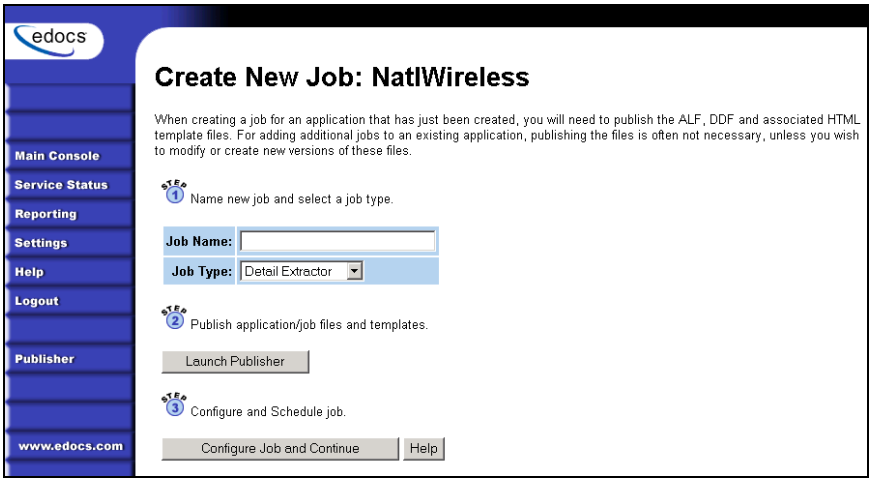
3. Create a new application for NatlWireless. Click **`Create New Application`** at the Main Console. eaDirect displays the Create New Application screen:



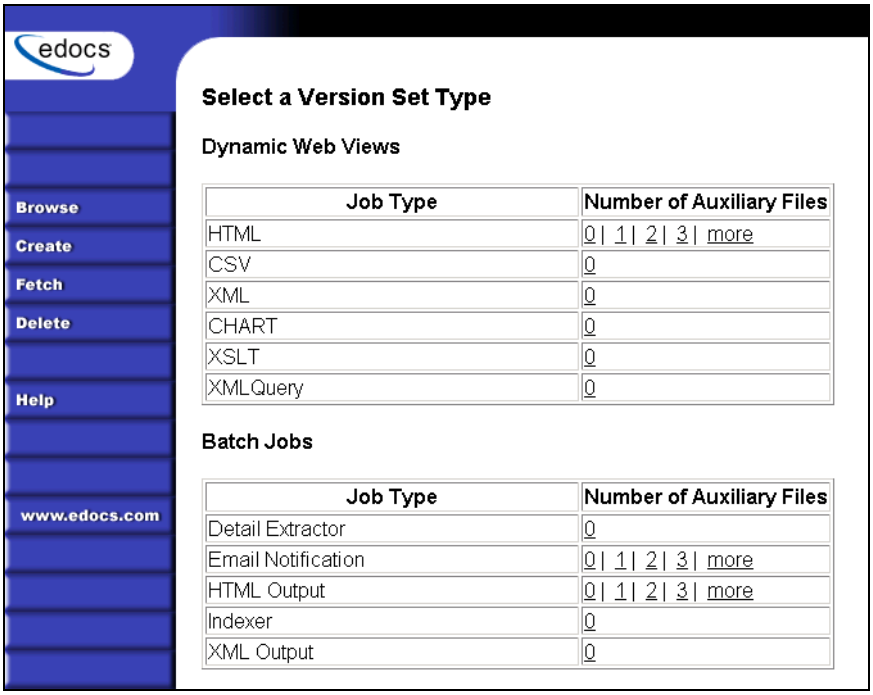
4. Enter **`NatlWireless`** as the application name. Click **`Create Application and Continue`**. eaDirect displays the Create New Job screen.

To create a new Indexer job, publish the associated NatlWireless files, and run the Indexer job:

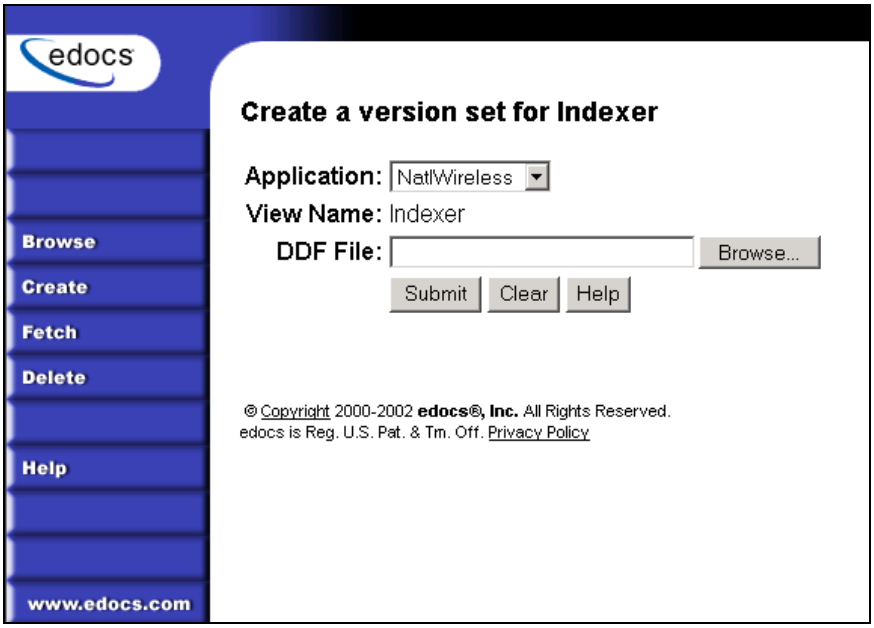
1. The Create New Job screen is displayed automatically after you create a new application:



2. Enter **`Indexer`** for the Indexer job name, select the **`Indexer`** job type from the drop-down menu. Click **`Launch Publisher`** to publish the design files for NatlWireless. Click **`Create`**. The Publisher displays the Select a Version Set Type screen:



3. Under Batch Jobs, next to Indexer, click `0` (Number of Auxiliary files). The Publisher displays the Create a Version Set For Indexer screen:

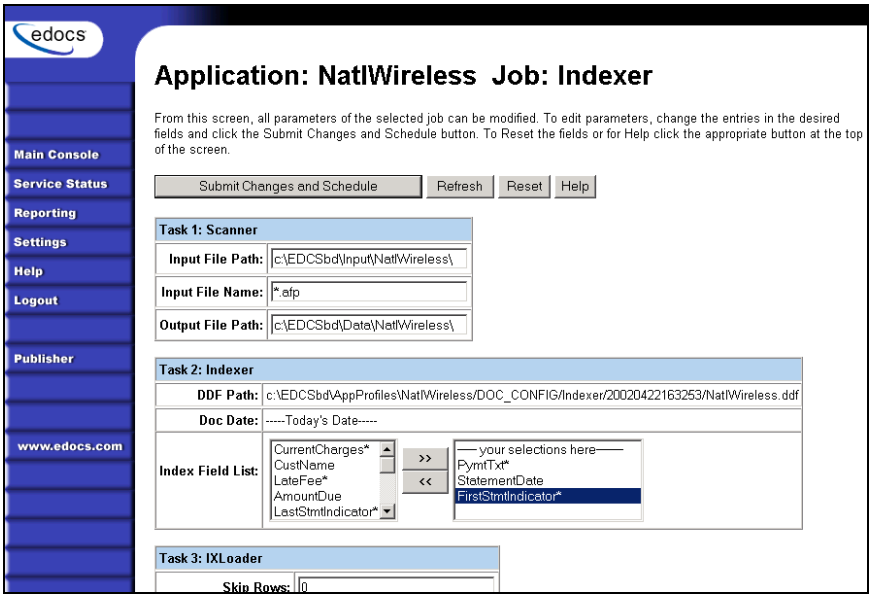


4. Select **`NatlWireless`** from the list of application names, and browse to the *$EDX_HOME/samples/NatlWireless* directory and select **`NatlWireless.DDF`** file for the Indexer job.

Tip If you are using a Windows machine for browser access, you will have to FTP the data files to the local Windows machine in order to access them.

5. Click **`Submit`**. The Publisher displays the Submission screen with details about the DDF file. Close the Publisher window.

6. At the Create New Job screen in Command Center, click **`Configure Job and Continue`**. eaDirect displays the job configuration screen. For each task, specify the configuration parameters listed below:

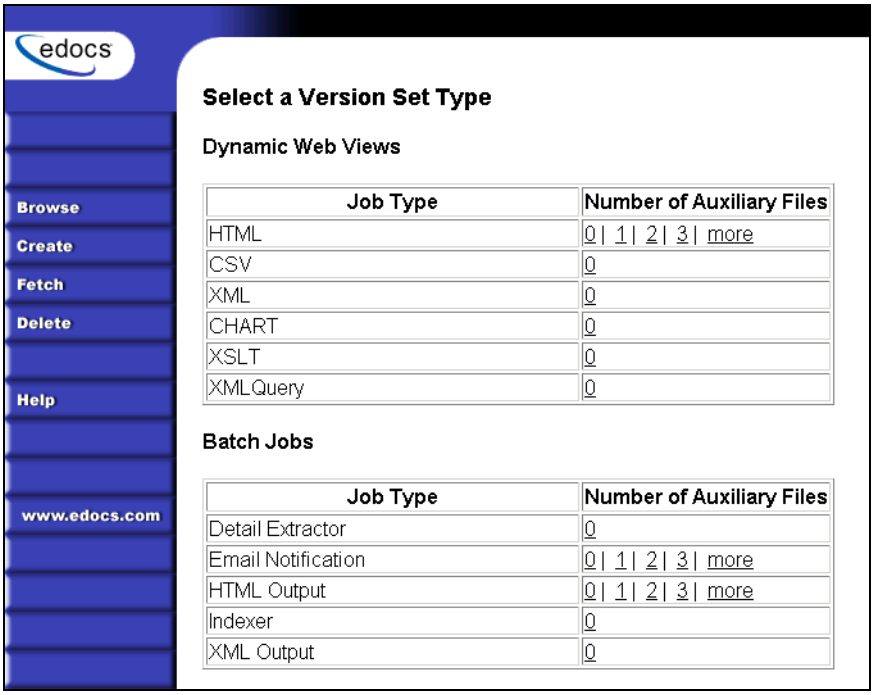


Task 1: Scanner Task Configuration	
Input File Path	Use the default (`$EDX_HOME/Input/NatlWireless`).
Input File Name	Specify `NatlWireless.txt`.
Output File Path	Use the default (`$EDX_HOME/Data/NatlWireless`).
Task 2: Indexer Task Configuration	
DDF Path	(Not editable.)
Doc Date	(Not editable.)
Index Field List	Select the `CustName` field for indexing. To select a field, highlight the field name and click the right arrow button. Use the scroll bar to view more fields. To unselect a field, highlight the field name and click the left arrow button.

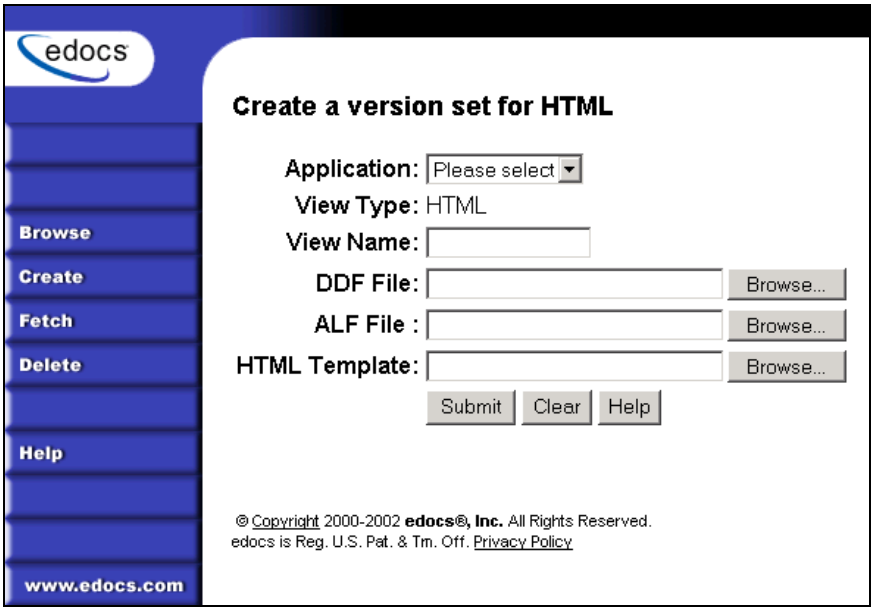
Task 3: IXLoader Task Configuration	
Skip Rows	Use the default (**0**).
Split Size	Use the default (**0**).
Optional Field Count	Use the default (**0**)
Load Method	Use the default (**Direct Load**)
Task 4: AutoIndexVolAccept Task Configuration	
Action on Index Volume	Use the default (**AutoAccept**).

7. When finished entering the configuration parameters, click **Submit Changes and Schedule**. eaDirect asks "OK to submit this configuration?" Click **OK**. eaDirect submits the job configuration parameters and displays the Schedule screen.

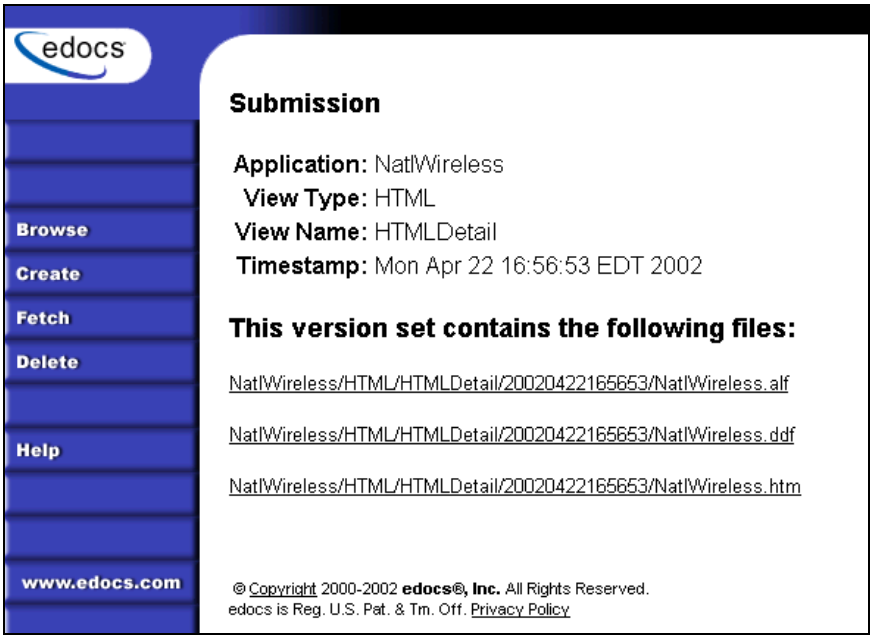
8. In the left pane, click **Main Console**. On the Main Console's left pane, click **Publisher**, and then click **Create**. The Publisher displays the Select a Version Set Type screen:



9. Next to HTML under Dynamic Web Views, click `0`. The Publisher displays the Create a Version Set for HTML screen:



10. Select **`NatlWireless`** from the drop-down list of application names. Enter **`HtmlDetail`** for the view name. Browse *$EDX_HOME/samples/NatlWireless* and select the **`NatlWireless.DDF`**, **`NatlWireless.ALF`**, and **`NatlWireless.HTM`** design files. Then click **`Submit`**. The Publisher displays the Submission screen showing the files you published:



11. Close the Publisher.

12. Move the NatlWireless data file (*NatlWireless.txt)*, which is located in *$EDX_HOME/samples/NatlWireless/datafile*, to *$EDX_HOME/Input/NatlWireless*. This is the same data file that you specified when you configured the job.

13. On the Main Console, click the **`Run Now`** button next to the NatlWireless Indexer job. Monitor the job's progress by clicking **`Refresh`** on the Main Console window. The Indexer job completes successfully when the job status on the Main Console changes to "Done."

To create a new DetailExtractor job, publish the associated NatlWireless files, and run the DetailExtractor job:

1. On the Main Console, click the application name, **`NatlWireless`**, listed under Applications in the table.

2. Click **`Add New Job`**. eaDirect displays the Create New Job screen.

3. Enter a job name (the job name can be whatever you want it to be), and then select job type **`Detail Extractor`**.

4. Click **`Launch Publisher`**. eaDirect displays the Publisher screen. Click **`Create`**. The Publisher displays the Select a Version Set Type screen.

5. Under Batch Jobs, next to Detail Extractor, click `0` (Number of Auxiliary files). The Publisher displays the Create a Version Set For Detail Extractor screen.

6. Select the **`NatlWireless`** application from the drop-down list. Enter the view name **`dtlextr`** (this name is hard coded in several JSP's for detail, disputes, and annotations).

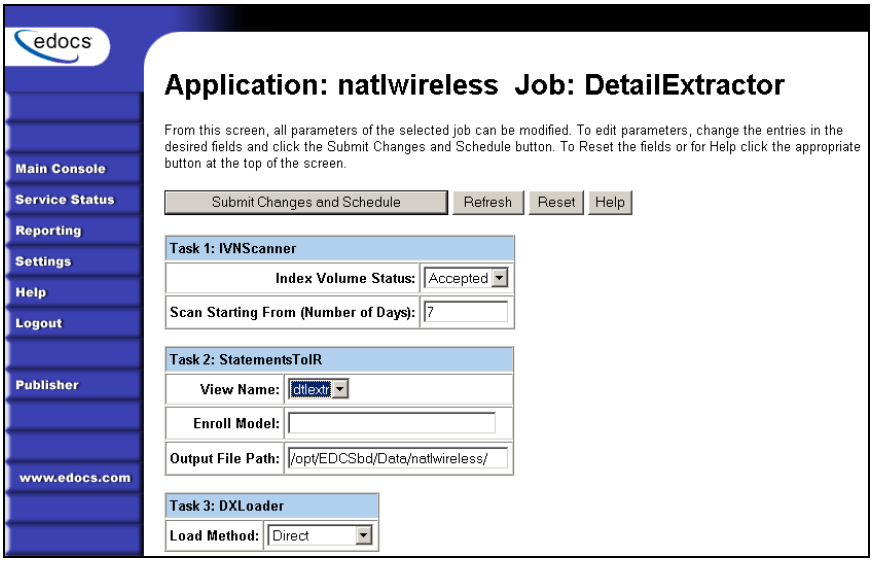
7. Browse to select **`NatlWireless.DDF`**. (The default location for this file is *$EDX_HOME*/*samples/NatlWireless/NatlWireless.DDF*.)

8. Browse to select **`summary_info.XML`**, the database table XML view file created for this job. (The default location for this file is *$EDX_HOME/samples/NatlWireless/DetailExtractor*.)

9. Browse to select **`summary_info.XSL`**, the statement XSLT style sheet. (The default location for this file is *$EDX_HOME/samples/NatlWireless/DetailExtractor*.)

10. Click **`Submit`**, and then close the Publisher.

11. At the Create New Job screen in the Command Center, click **`Configure Job and Continue`**. eaDirect displays the Detail Extractor job configuration screen.



12. Specify the configuration parameters (listed below) for each of the three tasks that run as part of the Detail Extractor job:

Task 1: IVNScanner Task Configuration	
Field	**What to enter/select**
Index Volume Status	Choose the default, **`Accepted`**.
Scan Starting From (Number of Days)	Use the default (**`7`**).
Task 2: StatementsToIR Task Configuration	
Field	**What to enter/select**
View Name	**`dtlextr`**
Enroll Model	Leave blank.
Output File Path	Use the default (your data output directory, which you specified in the Scanner task for the Indexer job).

Task 3: DXLoader Configuration	
Field	**What to enter/select**
Load Method	Use the default (**`Direct`**).

13. Click **`Submit Changes and Schedule`**. eaDirect asks "OK to submit this configuration?". Click **`OK`**. eaDirect submits the job configuration parameters and displays the Schedule screen.

14. On the Schedule screen, click **`Run Now`**.

15. On the left pane, click **`Main Console`**.

16. Publish the XMLQuery dynamic web views that use the data extracted by the DetailExtractor; click **`Publisher`**.

17. Click **`Create`**. The Publisher displays the Select a Version Set Type screen. Under Dynamic Web Views, click the **`0`** next to the XML Query job type. The Publisher displays the Create a Version Set for XML Query screen.

18. Select the **`NatlWireless`** application. Enter **`DetailQuery`** as the view name, and browse *$EDX_HOME/samples/NatlWireless/XMLQuery* to select the **`detail_sql.xml`** XML query file. (This view name is customized in your JSP HTML pages as the specific name the Web browser looks for in the code.) Click **`Submit`**. The Publisher displays the Submission screen:

19. Click **`Create`** and repeat the previous two steps twice to publish two additional XML Query views (these view names are hard coded in your JSP HTML pages as the specific names the Web browser looks for in the code):

View Name	File
DisputeQuery	*dispute_sql.xml*
AnnotationQuery	*annot_sql.xml*

20. Close the Publisher. You can proceed to use eaSample to display the data.

21. On the Main Console, click the **Run Now** button next to the NatlWireless DetailExtractor job. Monitor the job's progress by clicking **Refresh** on the Main Console window. The DetailExtractor job completes successfully when the job status on the Main Console changes to "Done."

To use eaSample to view NatlWireless statements:

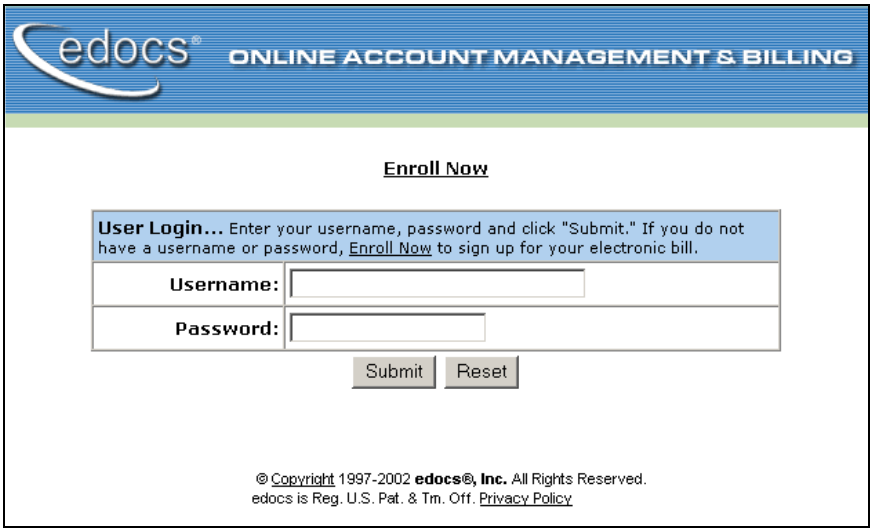
When the Indexer job completes successfully (status changes to "Done"), open a Web browser and access eaSample using the following URL syntax, substituting your own server name (host) and port number:

http://*<host>[:port]*/eaSample/User?app=UserMain&jsp=/user/jsp/HistoryList.jsp&ddn=NatlWireless

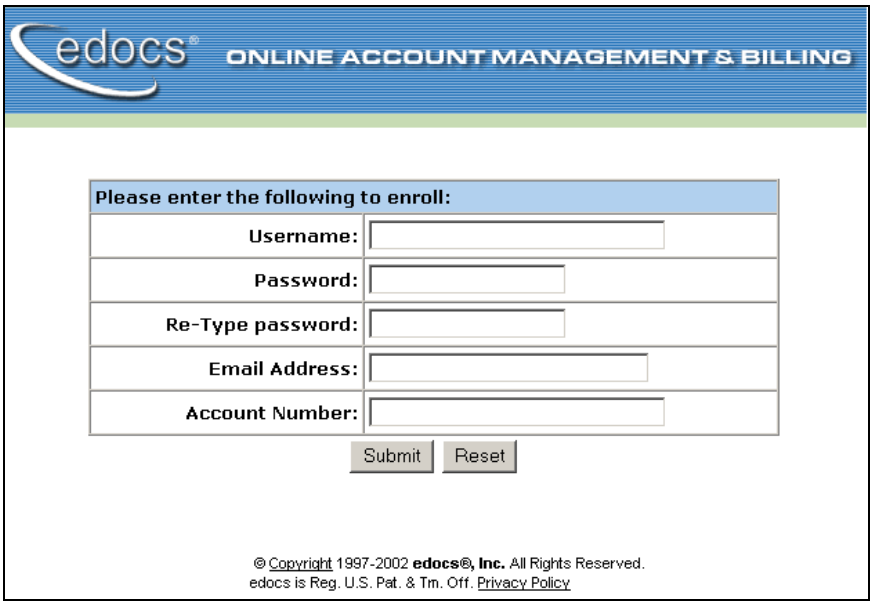
For example:

http://montero:9080/eaSample/User?app=UserMain&jsp=/user/jsp/HistoryList.jsp&ddn=NatlWireless

1. The eaSample User Login page appears.



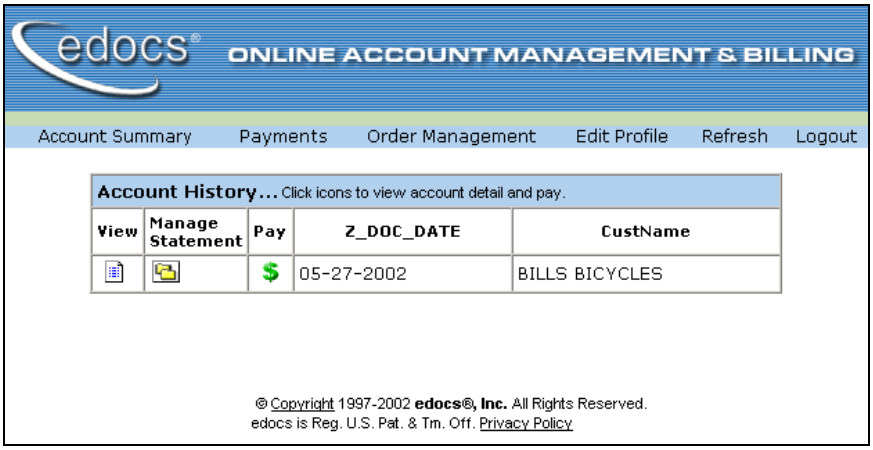
2. Click the **Enroll Now** link. eaDirect displays the sample enrollment page:



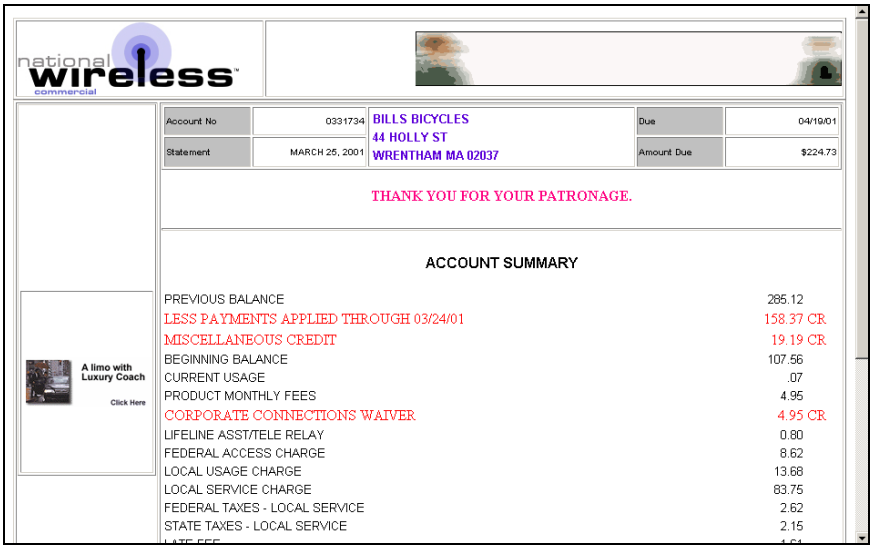
3. You can enter any user name and any password. However, you must enter a valid email address and a valid NatlWireless customer account number, such as one of the following: 0331734, 4191463, or 8611250. (Use **Reset** to clear the text fields, if necessary.) Click **Submit** to save the subscription information. eaDirect displays a message to let you know you have subscribed successfully. Click **OK** to display the User Login page.

4. Enter the username (Subscriber ID) and password (the same combination you entered during enrollment).

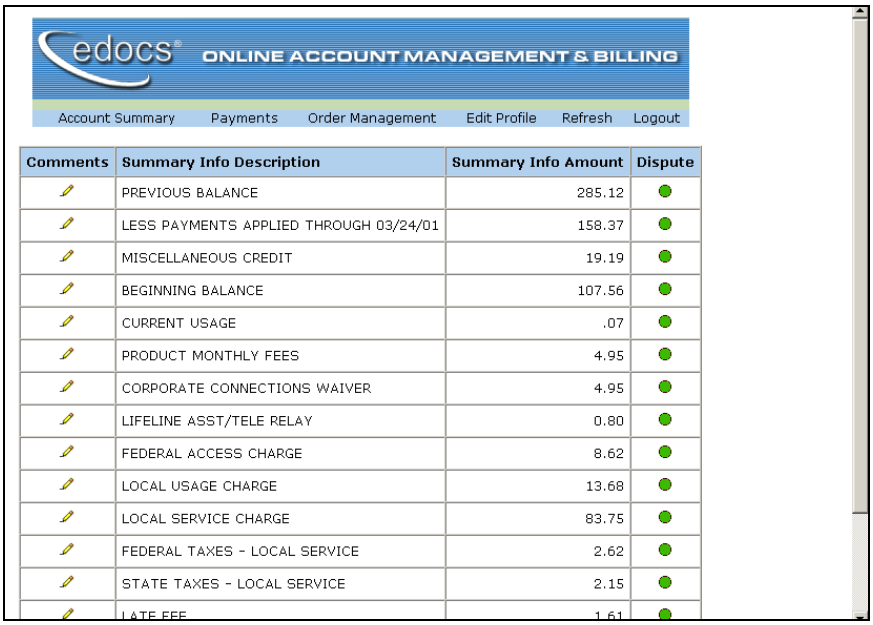
5. Click **Submit**. The sample statement summary page for the account appears. (Note that you must have eaPay, the eaDirect payment module, installed to view the payment screens and functionality.)



6. To view the statement summary, click the View icon  .

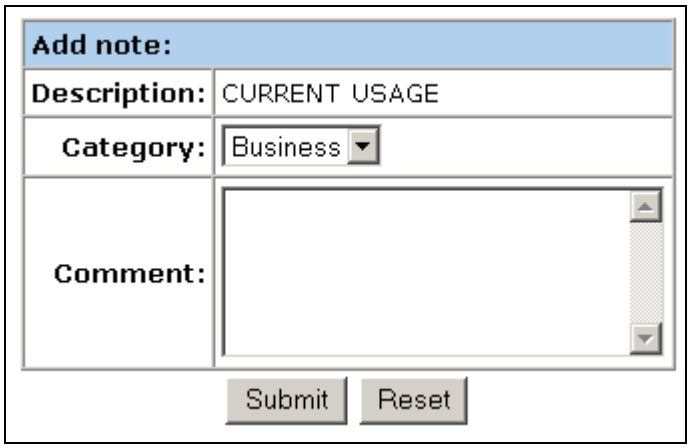


7. To view the Manage Statement page, click  from the History page.

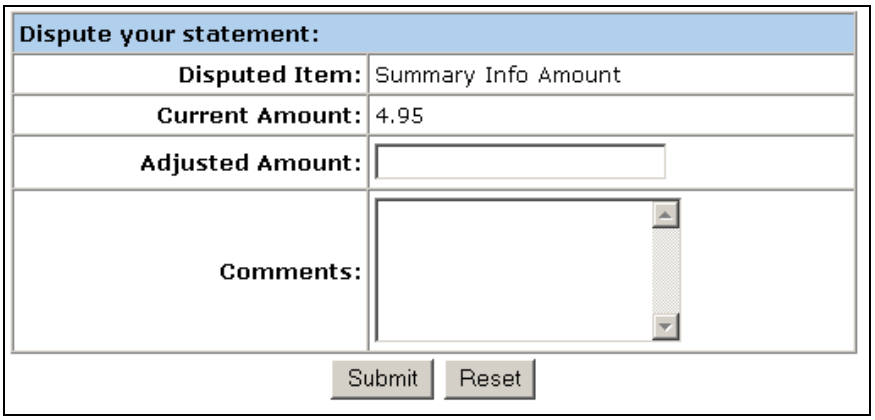


Comments	Summary Info Description	Summary Info Amount	Dispute
	PREVIOUS BALANCE	285.12	
	LESS PAYMENTS APPLIED THROUGH 03/24/01	158.37	
	MISCELLANEOUS CREDIT	19.19	
	BEGINNING BALANCE	107.56	
	CURRENT USAGE	.07	
	PRODUCT MONTHLY FEES	4.95	
	CORPORATE CONNECTIONS WAIVER	4.95	
	LIFELINE ASST/TELE RELAY	0.80	
	FEDERAL ACCESS CHARGE	8.62	
	LOCAL USAGE CHARGE	13.68	
	LOCAL SERVICE CHARGE	83.75	
	FEDERAL TAXES - LOCAL SERVICE	2.62	
	STATE TAXES - LOCAL SERVICE	2.15	
	LATE FEE	1.61	

- Click  next to an item to display the Add Note page where you can add comments (annotations) regarding that item:



- Click  to display the Dispute Your Statement page where you can dispute the item:



For more information:

The *eaDirect Production Guide* describes Command Center activities such as creating applications, configuring jobs, and publishing accompanying eaDirect application, HTML, and other design files for batch and dynamic presentation.

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