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## Deployment scenarios

The Lotus® Forms deployment scenarios describe two typical business solutions involving Lotus Forms, including architectural diagrams, system requirements, and installation and configuration instructions:

- “Scenario 1: Departmental timesheet system on intranet” on page 3
- “Scenario 2: Insurance forms on Internet” on page 13



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## Scenario 1: Departmental timesheet system on intranet

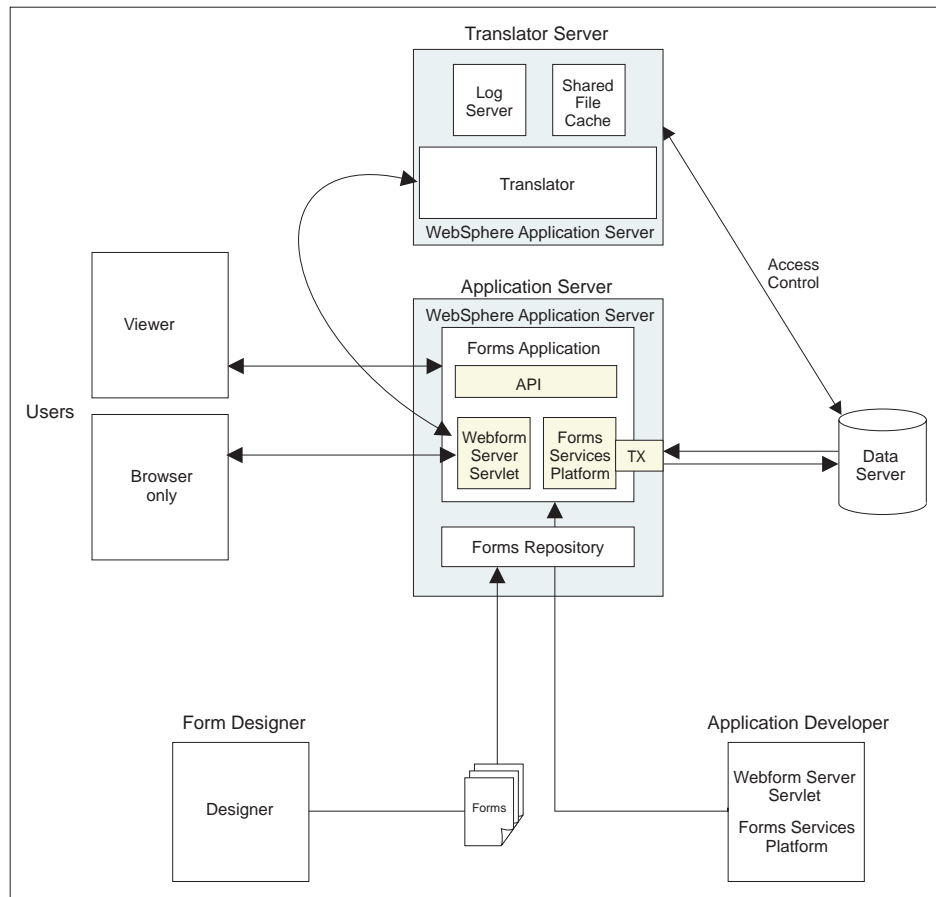
In this scenario, a business or department of approximately 50 people wants to move their timesheet system onto their local intranet. This is a very simple application. A user opens a timesheet form on their desktop or from the Web server, completes their weekly time sheet information, including comments, and submits it. The form returns to the server, is processed, and the data and form are stored in a database.

The timesheet form is a simple form, approximately 75 KB in size and approximately 8 MB when stored in memory. It contains one page and 25 items, including a timesheet table that users can add additional rows to. Users are encouraged to access it every day to input their data; however, it is most frequently accessed on Friday afternoons and Monday mornings. Some users have the Viewer installed on their system, and some users do not.

This system has no wireless access and everything is done onsite. The Designer is used to design the blank form. The form is stored on an application server, which also provides a Web page that allows users to access the form. When a user accesses the Web page, Webform Server determines whether the Viewer is installed on the user's computer. If the Viewer is installed, Webform Server provides the XFDL form. If the Viewer is not installed, Webform Server translates the form to HTML and JavaScript™. The API and Forms Services Platform process the submitted forms and transfer the data to the database using WebSphere® Transformation Extender.

**Note:** In this scenario, some users have the Viewer installed on their system and some do not. This scenario could be modified so that no users have the Viewer installed on their system or all users have the Viewer installed on their system.

## Architecture



The following computers are required to run this system:

- **Form design system** – A typical workstation computer that is used to create the blank timesheet forms.
- **Application development system** – A typical workstation computer that is used to create the forms application servlet and Forms Services Platform pipeline.
- **Application server** – The application server hosts the forms application. The forms application consists of WebSphere Application Server, the Webform Server servlet, the Forms Services Platform pipeline, and the Lotus Forms API.
- **Translator server** – The Translator server hosts the Webform Server Translator component, which converts the XFDL forms to JavaScript and HTML. Other Webform Server components (the Log Server and Shared File Cache) are also hosted on this server.
- **Data server** – A database that stores the submitted form information. It also acts as the Access Control database for Webform Server.

## Systems

### Form design system

- Lotus Forms Designer 3
- Lotus Forms Viewer 3

- OS: Windows® XP with SP 2
- Processor: 3 GHz
- RAM: 2 GB
- Disk space: 1 GB
- Display resolution: 1280 x 1024 in 32-bit color

### **Application development system**

- Lotus Forms Server 3 – Form Services Platform
- Lotus Forms Server 3 – API
- Lotus Forms Server 3 – Webform Server (Sample Servlet Application)
- Eclipse IDE for Java™ Developers
- Eclipse Web Tools Platform
- OS: Windows XP with SP 2
- Processor: 3 GHz
- RAM: 2 GB
- Disk space: 1 GB
- Display resolution: 1280 x 1024 in 32-bit color

### **Application server**

- Lotus Forms Server 3 – API
- Lotus Forms Server 3 – Form Services Platform
- WebSphere Application Server 6.1
- WebSphere Transformation Extender 8.1.0.1
- Form application:
  - Webform Server servlet
  - Forms Services Platform pipeline
- OS: Windows 2003 Server Enterprise Edition with SP 1
- Processor: 3 GHz
- RAM: 4 GB
- Disk space: 3 GB

### **Translator server**

- Lotus Forms Server 3 – Webform Server (Translator, Log Server, Shared File Cache)
- WebSphere Application Server 6.1
- OS: Windows 2003 Server Enterprise Edition with SP 1
- Processor: 3 GHz
- RAM: 4 GB
- Disk space: 3 GB

### **Data server**

- IBM® DB2® Version 9
- OS: Windows 2003 Standard Edition SP 1
- Processor: 3 GHz
- RAM: 2 GB
- Disk space: 1 GB
- Forms stored in XML

## User systems

- Lotus Forms Viewer 3
- OS: Windows XP with SP 2
- Browser: Firefox 2.0 or Internet Explorer 6 or higher
- Processor: 2.8 GHz
- RAM: 1 GB
- Disk space: 500 MB
- Display resolution: 800 x 600 in 16-bit color

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## Setting up the servers

To set up the servers:

### Set up the form design system

To set up the form design system:

#### Install the Viewer

To install the Viewer:

1. Insert the Lotus Forms Viewer CD.
2. Run the installer `LFViewer_30x_Win32.exe`.

#### Install the Designer

To install the Designer:

1. Insert the Lotus Forms Designer CD.
2. Run the installer `LFDesigner_30x_Win32.exe`.

#### Create the form

Use the Designer to create the blank timesheet form.

### Set up the application development system

To setup the application development system:

#### Install the Forms Services Platform

To install the Forms Services Platform:

1. Insert the Lotus Forms Server for Windows CD.
2. Run the installer `LFServer_30x_FormsServicesPlatform_Win32.exe`.

For more information on installing the Forms Services Platform, see [Installing the Forms Services Platform](#) in the Lotus Forms information center.

#### Install the Forms Services Platform SDK

To install the Forms Services Platform SDK:

1. Insert the Lotus Forms Server for Windows CD.
2. Run the installer `LFServer_30x_FormsServicesPlatform_SDK_Win32.exe`.



For more information on installing the Forms Services Platform SDK, see Installing the Forms Services Platform SDK and samples in the Lotus Forms information center.

## Configure the development environment

To configure the development environment:

1. Set your development environment's class path to include all JAR files contained in the `<FormsServicesPlatformInstallDirectory>\redist\development\plugins` directory. This ensures that all the necessary classes and other build files are available when compiling your pipes.
2. Browse to `<FormsServicesPlatformInstallDirectory>\samples\FileSystemRepository\deployables` and copy `fs.repo.properties` and `fsp.repository.connector.fs-3.xxx.jar` to the `<FormsServicesPlatformInstallDirectory>\extensions` directory. This deploys a sample implementation of the Repository Service. You need a Repository Service to run Forms Services Platform pipelines.

## Install Eclipse

The Eclipse IDE for Java Developers and the Eclipse Web Tools Platform are used by the application developer as a development environment for creating the Webform Server servlet application (based on the sample servlet application) and creating the Forms Services Platform pipeline.

For information on the Eclipse IDE for Java Developers and the Eclipse Web Tools Platform, see the Eclipse Web site.

## Install the Webform Server sample application servlet

To install the Webform Server sample application servlet:

1. Insert the Lotus Forms Server for Windows CD.
2. Run the installer `LFServer_30x_WebformServer_Win32.exe`.
3. Click **Next**.
4. Select **I accept the terms in the license agreement** and click **Next**.
5. Click **Next** to accept the default installation directory.
6. Select only the **Sample Servlet** and click **Next**.
7. Click **Install**.

## Install the API

To install the API:

1. Insert the Lotus Forms Server for Windows CD.
2. Run the installer `LFServer_30x_API_Win32.exe`.
3. Select a language and click **OK**.
4. Click **Next** and read the license agreement.
5. Click **I accept the terms in the license agreement** and then click **Next**.
6. In the **Directory Name** field, enter the directory to install the API to then click **Next**.
7. Select the **SDK** installation type then click **Next**.
8. Make sure **Deploy to WebSphere Application Server or to WebSphere Process Server** is not selected and then click **Next**.

9. Click **Install**.

## **Develop the Webform Server servlet**

Develop a servlet application, using the Webform Server sample servlet application as a starting point. The servlet does the following:

1. **Presents the user with a link to the form** – When the user accesses the timesheet application page, the servlet displays a link to the blank timesheet form.
2. **Presents the user with a blank form** – When the user clicks the link to the blank timesheet form, the servlet passes the form to the Translator. The Translator determines if the Viewer is installed on the user's system. If the Viewer is installed, the Translator passes the XFDL form back to the servlet. If the Viewer is not installed, the Translator converts the XFDL form to HTML and JavaScript, and passes the HTML/JavaScript form back to the servlet. The servlet then presents the user with the form.
3. **Receives submitted forms** – When the user submits a completed form, the servlet passes the form to the Translator. If the form is XFDL, the Translator passes the form back to the servlet. If the form is HTML/JavaScript, the Translator converts it to XFDL, and passes the XFDL form back to the servlet. The servlet then reads the form, extracts the data from the form, and passes the form and the extracted data to the Forms Services Platform.

For more information on creating a servlet application, see [Creating a Servlet in the Lotus Forms information center](#).

## **Develop the Forms Services Platform pipeline**

Develop a Forms Services Platform pipeline that receives submitted timesheet forms, extracts the data from the form, and transfers the data to the data server.

For more information on creating pipelines, see [Extending the Forms Services Platform in the Lotus Forms information center](#).

## **Set up the data server**

To set up the data server:

### **Install DB2**

For detailed installation instructions, see [Installing information management software in the DB2 information center](#).

### **Configure DB2**

For detailed configuration instructions, see [Configuring information management software in the DB2 information center](#).

## **Set up the application server**

To set up the application server:

### **Install WebSphere Application Server**

For detailed installation instructions, see [Installing WebSphere Application Server in the WebSphere Application Server information center](#).

## Install the API

To install the API:

1. Insert the Lotus Forms Server for Windows CD.
2. Run the installer **LFServer\_30x\_API\_Win32.exe**.
3. Select a language and click **OK**.
4. Click **Next** and read the license agreement.
5. Click **I accept the terms in the license agreement** then click **Next**.
6. In the Directory Name field, enter the directory to install the API to then click **Next**.
7. Select the **Runtime** installation type then click **Next**.
8. Select **Deploy to WebSphere Application Server or to WebSphere Process Server** then click **Next**.
9. Enter the location you installed WebSphere Application Server to, and then **Next**.
10. Click **Next** to accept the default profile, cell, node, and server information.
11. Click **Install**.

For more information on installing the API, see Installing the API in the Lotus Forms information center.

## Install the Forms Services Platform

To install the Forms Services Platform:

1. Insert the Lotus Forms Server for Windows CD.
2. Run the installer **LFServer\_30x\_FormsServicesPlatform\_Win32.exe**.

For more information on installing the Forms Services Platform, see Installing the Forms Services Platform in the Lotus Forms information center.

## Configure WebSphere Application Server for the Forms Services Platform

To configure WebSphere Application Server for the Forms Services Platform:

1. In the WebSphere Application Server Administration Console, under **Applications**, click the **Install New Application** link.
2. Browse to *<Install directory>\redist\WAS\*.
3. Select the Forms Services Platform application (*wfsp-3.xxx.ear*).
4. Accept the WebSphere Application Server application installer defaults by clicking **Next** until the Map modules to servers window is displayed.
5. In the Map modules to servers window, make sure you map the Forms Services Platform application to the server you are using.  
For example, **Server1** or **WebSphere\_Portal**.
6. In the Map security roles to users/groups window, make sure **All authenticated?** is selected.
7. Click **Next** to accept the WebSphere Application Server application installer defaults until the application is installed.
8. To test your Forms Services Platform installation, open your a browser and enter the following URL:  
`http://<your_domain_and_port>/wfsp/wfsp/registry/getVersion`

If the Forms Services Platform is correctly installed, the URL will return the version number of the Forms Services Platform application as plain text numbers. Any other result indicates a problem with your set up.

## **Install WebSphere Transformation Extender**

To install WebSphere Transformation Extender:

1. Install WebSphere Transformation Extender.
2. Add the installation directory to your path variable.

For more information on installing WebSphere Transformation Extender, see the WebSphere Transformation Extender product documentation.

## **Deploy the form application components**

To deploy the form application components:

### **Deploy the form:**

Deploy the timesheet form from the Form Design system to the Application Server.

### **Deploy the Webform Server servlet:**

Deploy the Webform Server servlet from the Application Development system to the Application Server.

### **Deploy the Forms Services Platform pipeline:**

Deploy the Forms Services Platform pipeline from the Application Development system to the Application Server.

## **Set up the Translator server**

To set up the Translator server:

### **Install WebSphere Application Server**

For detailed installation instructions, see Installing WebSphere Application Server in the WebSphere Application Server information center.

### **Install Webform Server**

To install Webform Server:

1. Reboot the server immediately before installing Webform Server.
2. Copy the db2jcc.jar DB2 driver from the data server to the Translator server.
3. Insert the Lotus Forms Server for Windows CD.
4. Run the installer **LFServer\_30x\_WebformServer\_Win32.exe**.
5. Click **Next**.
6. Click **I accept the terms in the license agreement** and click **Next**.
7. Click **Next** to accept the default installation directory.
8. Select the following Webform Server components:
  - Translator
  - Log Server
  - Shared File Cache

Then click **Next**.

9. Select **Typical** installation and click **Next**.
10. Select **Deploy to WebSphere Application Server** and click **Next**.
11. Select **DB2** and enter the database information:
  - Database name
  - Host IP and port
  - Username and password
  - Location of the db2jcc.jar DB2 driver on the Translator server

Then click **Next**.

12. Enter the install location for WebSphere Application Server on the Translator server and click **Next**.
13. Enter the Translator deployment details:
  - **Profile** – Ensure that the profile name is correct for your WebSphere Application Server configuration on the Translator server.
  - **Cell** – Ensure that the cell name is correct for your WebSphere Application Server configuration on the Translator server.
  - **Node** – Ensure that the node name is correct for your WebSphere Application Server configuration on the Translator server.
  - **Server Name** – Enter the name that you want to use for the Translator server (for example, TranslatorServer).
  - **Application Name** – Enter the name that you want to use for the Translator application (for example, TranslatorApp).

Then click **Next**.

14. Click **Install**.

For more information on installing Lotus Forms Server - Webform Server, see Installing Webform Server in the Lotus Forms information center.

## Configure the Translator

To configure the Translator:

1. Open the translator.properties file in a text editor.
2. Set the fcCacheSize to 100. This represents the maximum number of simultaneous users that the Translator can host at maximum performance. Use the default settings for all other properties.
3. Save the file.

The fcCacheSize setting was calculated as follows:

1. The Translator server has 4 GB of RAM. By default, Windows reserves 2 GB for kernel usage and 2 GB for application usage. The JVM uses approximately 0.5 GB of memory, but this may vary up to 0.75 GB, leaving 1.25 GB of memory for the Translator to cache form instances.
2. The form is 8 MB in memory:  $1.25 \text{ GB} / 8 \text{ MB} = 156$  To allow a margin of safety, set the fcCacheSize to a slightly smaller value, for example, 100. The overall system can therefore host up to 100 simultaneous users at maximum performance. This is greater than the number of people in the department (approximately 50).

For more information on configuring the Translator, see Translator Properties in the Lotus Forms information center.

## Set up user systems

To set up user systems:

### Install the Viewer

To install the Viewer:

1. Insert the Lotus Forms Viewer CD.
2. Run the installer **LFViewer\_30x\_Win32.exe**.

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## Scenario 2: Insurance forms on Internet

In this scenario, an insurance company wants to put their insurance forms online. This includes an insurance application form, an accident reporting form, and so on. End-users go to the Web site, select the form they want to complete, fill it out online, and submit it.

These forms are large, complex, and important, so the system is set up for high performance and high availability. Furthermore, it is expected that there will be multiple concurrent users. It is expected that 20% of users will have the Viewer installed on their system, while 80% of users will not.

This system hosts 5 forms with an average size of 500 KB and 5 pages. The largest form is 1 MB and uses 20 MB of RAM. This may increase to 30 MB when attachments are added to the form. This form has 10 pages and 6,000 items, including thousands of binds and multiple computes.

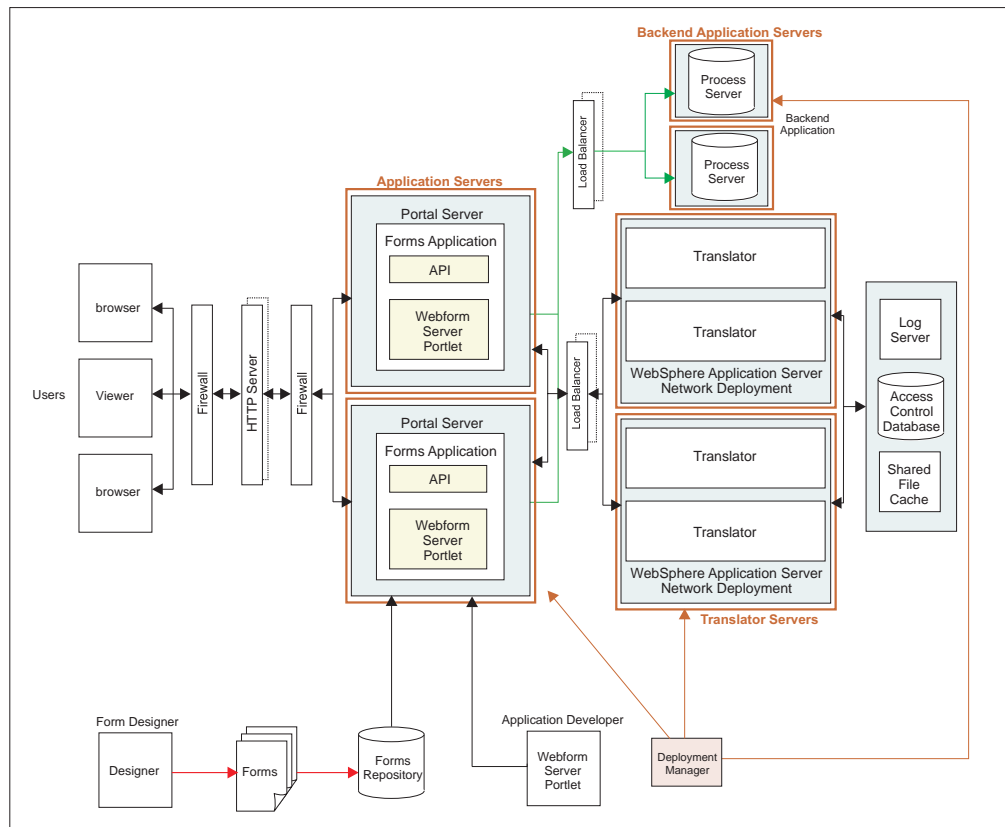
It is expected that this system will receive 500 to 1,000 submissions per hour, with 250 to 300 concurrent users at any one time. Heaviest load is expected between 8 am and 9 pm, EST. However, if demand increases, additional servers will be required. Deployment Manager is available to ease and speed deployment of additional servers.

In addition, this system will allow users to print the forms. As printing using Webform Server requires extra processing capacity, we will need a total of 8 CPUs for the application servers.

To meet high availability demands, there are multiple instances of each server. The load balancers have a hot running backup that can take over if the primary load balancer shuts down. Multiple translators and application servers also help meet high performance requirements.

**Note:** In this scenario, some users have the Viewer installed on their system and some do not. This scenario could be modified so that no users have the Viewer installed on their system or all users have the Viewer installed on their system.

# Architecture



The following computers are required to run this system:

- **Form design system** – A typical workstation computer that is used to create the blank insurance forms.
- **Application development system** – A typical workstation computer that is used to create the forms application portlet.
- **Forms repository** – A database that stores the blank forms, submitted forms, and the data extracted from the submitted forms.
- **Application servers** – Two clustered application servers host the forms application. The forms application consists of WebSphere Portal, the Webform Server portlet, and the Lotus Forms API. Using two servers (horizontal scaling) provides high performance and high availability.
- **Translator servers** – Two clustered Translator servers host the Translator component of Webform Server, which converts the XFDL forms to JavaScript and HTML for users who don't have the Viewer installed. Using two servers (horizontal scaling) provides high performance and high availability. Furthermore, each server hosts two instances of the Translator (vertical scaling).
- **Log Server, Access Control Database, Shared File Cache** – These Webform Server components are hosted on a dedicated server.
- **Backend application servers** – Two clustered servers host the backend application. The backend application consists of WebSphere Process Server.
- **Deployment Manager system** – WebSphere Deployment Manager is used to set up multiple instances of WebSphere Portal Server, the Webform Server



Translator, and WebSphere Process Server. This allows system administrators to easily add new servers if the demand for the application increases.

- **Load balancers** – The load balancers distribute work between the members of a cluster and detect if a server becomes unavailable. A single server can perform load balancing, but for high availability applications, a hot, running backup should be in operation in case the primary load balancer becomes unavailable.

**Note:** If you are using a hardware load balancer, you may also need to deploy a reverse proxy.

- **HTTP server** – The HTTP server handles user sessions and provides security to the overall solution. A single server can be used, but for high availability applications, a hot, running backup should be in operation in case the primary server becomes unavailable.
- **Firewalls** – Standard corporate firewalls provide security to the overall system.

### **Alternate architectures**

Other architectures are possible, for example:

- The forms repository could be a content management system instead of a database.
- The backend application could consist of any application that can be integrated with Lotus Forms using Lotus Forms Server – Forms Services Platform or WebSphere Integration Developer, instead of WebSphere Process Server.

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## **Systems**

### **Form design system**

- Lotus Forms Designer 3
- Lotus Forms Viewer 3
- OS: Windows XP with SP 2
- Processor: 3 GHz
- RAM: 2 GB
- Disk space: 1 GB
- Display resolution: 1280 x 1024 in 32-bit color

### **Application development system**

- Lotus Forms Server 3 – Webform Server (Sample Portlet Application)
- Lotus Forms Server 3 – API
- Rational® Application Developer for WebSphere Software Version 7.0
- OS: Windows XP with SP 2
- Processor: 3 GHz
- RAM: 2 GB
- Disk space: 1 GB
- Display resolution: 1280 x 1024 in 32-bit color

### **Forms repository**

- IBM DB2 Version 9
- OS: AIX® 5.3
- Processor: 3 GHz

- RAM: 2 GB
- Disk space: 1 GB
- Forms stored in XML

### **Application servers**

- Lotus Forms Server 3 – API
- WebSphere Portal 6.0.1
- Webform Server portlet
- OS: AIX 5.3
- Processor: POWER™ 5, 3 GHz (4 processors)
- RAM: 4 GB
- Disk space: 6 GB

### **Translator servers**

- Lotus Forms Server 3 – Webform Server (Translator)
- WebSphere Application Server Network Deployment 6.0.2 (32-bit version) with the latest fix pack
- OS: AIX 5.3
- Processor: POWER 5, 3 GHz (8 processors)
- RAM: 8.5 GB
- Disk space: 2.4 GB

### **Log Server, Access Control Database, Shared File Cache**

- Lotus Forms Server 3 – Webform Server – Log Server
- Lotus Forms Server 3 – Webform Server – Access Control Database (IBM DB2 Version 9)
- Lotus Forms Server 3 – Webform Server – Shared File Cache
- OS: AIX 5.3
- Processor: 3.4 GHz single-core
- RAM: 5 GB
- SCSI disk array (for the Shared File Cache)

### **Backend application servers**

- WebSphere Process Server 6.0.2
- WebSphere Application Server Network Deployment 6.0.2 with the latest fix pack
- IBM DB2 Enterprise Server Edition 9.1 with the latest fix pack
- OS: AIX 5.3
- Processor: 3 GHz
- RAM: 2 GB

### **Deployment Manager system**

- WebSphere Application Server Network Deployment Manager 6.0.2 with the latest fix pack
- OS: AIX 5.3
- Processor: 3 GHz
- RAM: 4 GB
- Disk space: 3 GB

### **Load balancers**

- IBM HTTP Server
- OS: AIX 5.3
- Processor: 2 GHz
- RAM: 2 GB
- Virtual memory: 2 GB
- Disk space: 2 GB

### **HTTP server**

- IBM HTTP Server
- OS: AIX 5.3
- Processor: 2 GHz
- RAM: 2 GB
- Disk space: 2 GB

### **Firewalls**

- Corporate firewall

### **User systems**

- Lotus Forms Viewer 3
- Browser: Firefox 2.0 or Internet Explorer 6 or higher

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## **Setting up the servers**

To set up the servers:

### **Set up the form design system**

To set up the form design system:

#### **Install the Viewer**

To install the Viewer:

1. Insert the Lotus Forms Viewer CD.
2. Run the installer **LFViewer\_30x\_Win32.exe**.

#### **Install the Designer**

To install the Designer:

1. Insert the Lotus Forms Designer CD.
2. Run the installer **LFDesigner\_30x\_Win32.exe**.

#### **Create the forms**

Use the Designer to create the blank insurance forms.

### **Set up the application development system**

To setup the application development system:

## Install Rational Application Developer

For detailed installation instructions, see *Installing, configuring, and migrating* in the Rational Application Developer information center.

### Install the Webform Server sample application portlet

To install the Webform Server sample application portlet:

1. Insert the Lotus Forms Server for Windows CD.
2. Run the installer **LFServer\_30x\_WebformServer\_Win32.exe**.
3. Click **Next**.
4. Select **I accept the terms in the license agreement** and click **Next**.
5. Click **Next** to accept the default installation directory.
6. Select only the **Sample Portlet** and click **Next**.
7. Click **Install**.

### Install the API

To install the API:

1. Insert the Lotus Forms Server for Windows CD.
2. Run the installer **LFServer\_30x\_API\_Win32.exe**.
3. Select a language and click **OK**.
4. Click **Next** and read the license agreement.
5. Click **I accept the terms in the license agreement** and then click **Next**.
6. In the **Directory Name** field, enter the directory to install the API to then click **Next**.
7. Select the **SDK** installation type then click **Next**.
8. Make sure **Deploy to WebSphere Application Server or to WebSphere Process Server** is not selected and then click **Next**.
9. Click **Install**.

### Develop the Webform Server portlet

Develop a portlet, using the Webform Server sample portlet as a starting point. The portlet does the following:

1. **Presents the user with a list of forms** – When the user accesses the Forms page of the insurance company's Web site, the portlet displays a list of blank forms.
2. **Presents the user with a blank form** – When the user selects a form from the list, the portlet requests the form from the forms repository and passes it to the Translator. The Translator determines if the Viewer is installed on the user's system. If the Viewer is installed, the Translator passes the XFDL form back to the portlet. If the Viewer is not installed, the Translator converts the XFDL form to HTML and JavaScript, and passes the HTML/JavaScript form to the portlet. The portlet then presents the user with the form.
3. **Receives submitted forms** – When the user submits a completed form, the portlet passes the form to the Translator. If the form is XFDL, the Translator passes the form back to the portlet. If the form is HTML/JavaScript, the Translator converts it to XFDL, and passes the XFDL form back to the portlet. The portlet then reads the form, extracts the data from the form, and passes the form and the extracted data to the backend application.

For more information on creating a portlet application, see *Creating a Portlet* in the Lotus Forms information center.

## Set up the forms repository

To set up the forms repository:

### Install DB2

For detailed installation instructions, see *Installing information management software* in the DB2 information center.

### Configure DB2

For detailed configuration instructions, see *Configuring information management software* in the DB2 information center.

### Deploy the forms

Deploy the forms from the form design system to the forms repository.

## Set up the Deployment Manager system

To set up the Deployment Manager system:

### Install WebSphere Application Server Network Deployment

To install WebSphere Application Server Network Deployment:

1. Install WebSphere Application Server Network Deployment.

For detailed installation instructions, see *Installing the product and additional software* in the WebSphere Application Server information center.

During installation, the installer will ask you which profile you want to create on this system. Select deployment manager **Cell (deployment manager and federated application server)**.

2. Install the latest WebSphere Application Server fix pack. For more information on WebSphere Application Server fix packs, see the *Fix list for WebSphere Application Server Version 6.0.2*.
3. Verify that Deployment Manager is running by issuing the following command.

```
ps -fea | grep dmgr
```

The system should respond by displaying the JVM processID that handles the Deployment Manager.

If the Deployment Manager is not running, issue the following command:

```
/usr/IBM/WebSphere/AppServer/bin/startManager.sh
```

The Deployment Manager must be running when you set up the Translator servers.

## Set up the application servers

To set up the application servers:

### Install WebSphere Portal

Install WebSphere Portal on both application servers.

For detailed installation instructions, see Installing in the WebSphere Portal information center.

## Create a managed node

Create a managed node for the application servers. Refer to the instructions for creating a managed node on the Translator server.

## Install the API

To install the API:

1. Insert the Lotus Forms Server for AIX CD.
2. Run the installer **LFServer\_30x\_API\_AIX.bin**.
3. Select a language and click **OK**.
4. Click **Next** and read the license agreement.
5. Click "I accept the terms in the license agreement" then click **Next**.
6. In the Directory Name field, enter the directory to install the API to then click **Next**.
7. Select the **Runtime** installation type then click **Next**.
8. Select **Deploy to WebSphere Application Server or to WebSphere Process Server** then click **Next**.
9. Enter the location you installed WebSphere Application Server to, and then **Next**.
10. Click **Next** to accept the default profile, cell, node, and server information.
11. Click **Install**.

For more information on installing the API, see Installing the API in the Lotus Forms information center.

## Deploy the Webform Server portlet

Deploy the Webform Server portlet from the Application Development system to the Application Server.

## Setup the application server cluster

Setup a cluster for the form application portlet. Refer to the instructions for setting up a cluster for the Translator.

## Set up the Log Server, Access Control Database, and Shared File Cache

To set up the Log Server, Access Control Database, and Shared File Cache:

### Install the Log Server

To install the Log Server:

1. Reboot the server immediately before installation.
2. Insert the Lotus Forms Server for AIX CD.
3. Run the installer **LFServer\_30x\_WebformServer\_AIX.bin**.
4. Click **Next** to accept the default installation directory.
5. Select only the **Log Server** and then click **Next**.

6. Click **Install**.

For more information on installing Lotus Forms Server - Webform Server, see Installing Webform Server in the Lotus Forms information center.

## **Install the Access Control Database**

To install the Access Control Database:

### **Install DB2:**

For detailed installation instructions, see Installing information management software in the DB2 information center.

### **Configure DB2:**

For detailed configuration instructions, see Configuring information management software in the DB2 information center.

## **Set up the Shared File Cache**

To set up the Shared File Cache:

1. Set up a directory for the Shared File Cache.
2. Share the directory so the Translator servers can access it and set appropriate permissions.

For more information on setting up the Shared File Cache, see Setting up the Shared File Cache in the Lotus Forms information center.

## **Set up the Translator server**

To set up the Translator server:

### **Configure AIX**

**Note:** Perform this procedure on both translator servers.

Regardless of how much physical memory a server has, the amount of memory that each process can address is limited by the operating system. On many operating systems, each 32-bit process can address 4 GB of memory. By default, the operating system reserves some of the 4 GB for kernel usage and some for application usage. However, you can configure some operating systems so more memory is reserved for application usage and less for kernel usage.

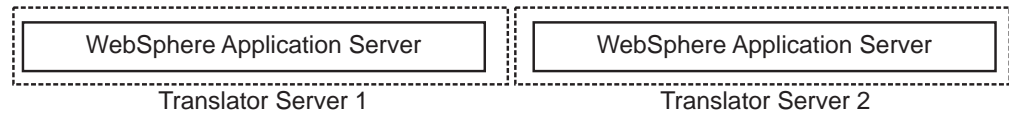
**Note:** The Translator runs as a 32-bit process, regardless of the underlying server architecture or operating system.

By default, AIX reserves 1.75 GB for kernel usage and 2.25 GB for application usage. Using the very large address-space model, AIX reserves 0.75 GB for kernel usage and 3.25 GB for application usage. This results in a very slight decrease in operating system performance, but will allow you to maximize the number of simultaneous users that the translator can host at maximum performance.

For this scenario, configure AIX to use the very large address-space model.

For more information on AIX's very large address-space model, see Large Program Support in the pSeries® and AIX information center.

## Install WebSphere Application Server Network Deployment



Install WebSphere Application Server Network Deployment on both translator servers.

For detailed installation instructions, see Installing the product and additional software in the WebSphere Application Server information center.

### Enable secure communications

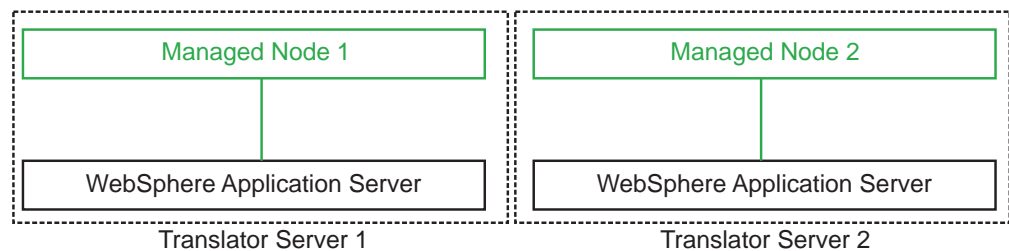
The Secure Sockets Layer (SSL) protocol provides secure communications between a client and the Translator. You can either:

- Enable SSL within WebSphere Application Server, or
- Configure WebSphere Application Server to work with an external HTTP server that uses SSL.

**Note:** Enable secure communications on both translator servers.

For detailed instructions, see Configuring Secure Sockets Layer (SSL) in the WebSphere Application Server information center.

### Create a managed node



**Note:** Perform this procedure on both translator servers.

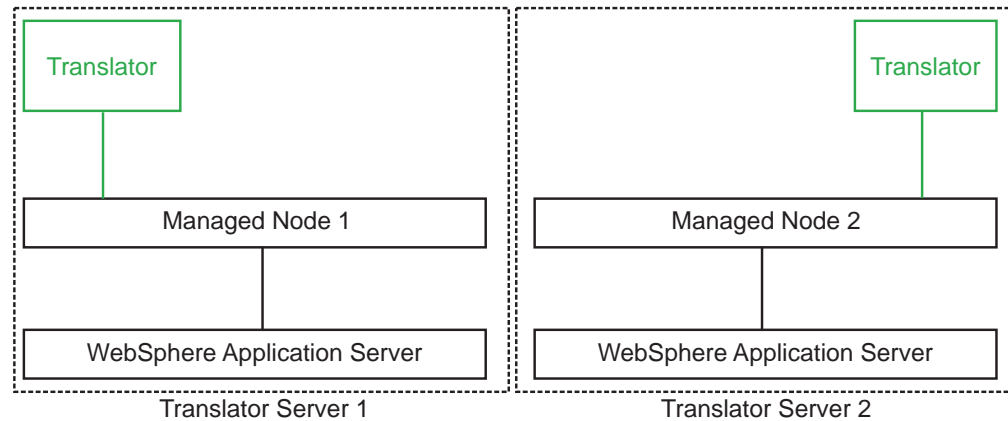
To create a managed node:

1. Create a profile for the managed node.
  - Profile Management Tool – Run `/usr/IBM/WebSphere/AppServer/bin/ProfileManagement/pmt.sh` to launch the Profile Management Tool, then create a **Custom Profile**.
  - Command line – Run `/usr/IBM/WebSphere/AppServer/bin/manageprofiles.sh -create -templatePath /usr/IBM/WebSphere/AppServer/profileTemplates/default -profileName cslpar2Node1`
2. Go to the bin of the profile you just created:  
`/usr/IBM/WebSphere/AppServer/profiles/cslpar2Node1/bin`



and federate the profile specifying the server that is running Deployment Manager. For example, if cslpar1 is running the Deployment Manager process and cslpar2 is the node that you just created, then run the following command:  
addNode.sh cslpar1

## Install the Webform Server Translator



**Note:** Perform this procedure on both translator servers.

To install the Translator:

1. Reboot the server immediately before installation.
2. Copy the db2jcc.jar DB2 driver from the Access Control Database server to the Translator server.
3. Insert the Lotus Forms Server for AIX CD.
4. Run the installer **LFServer\_30x\_WebformServer\_AIX.bin**.
5. Click **Next** to accept the default installation directory.
6. Select only **Translator** and make sure all other options are not selected.
7. Click **Next**.
8. Select **Managed Node** installation and click **Next**.
9. Select **Deploy to WebSphere Application Server** and click **Next**. Make sure **Deploy Sample Servlet** is not selected.
10. Select **DB2** and enter the database information:
  - Database name
  - Host IP and port
  - Username and password
  - Location of the db2jcc.jar DB2 driver on the Translator serverThen click **Next**.
11. Enter the location of WebSphere Application Server on the Translator server and click **Next**.
12. Enter the Translator deployment details:
  - **Profile** – Ensure that the profile name is correct for your WebSphere Application Server configuration on the Translator server.
  - **Cell** – Ensure that the cell name is correct for your WebSphere Application Server configuration on the Translator server.
  - **Node** – Ensure that the node name is correct for your WebSphere Application Server configuration on the Translator server.

- **Server Name** – Enter the name that you want to use for the Translator server (for example, Translator\_Server\_1 and Translator\_Server\_2).
- **Application Name** – Enter the name that you want to use for the Translator application.

Then click **Next**.

13. Click **Install**.

For more information on installing Lotus Forms Server - Webform Server, see Installing Webform Server in the Lotus Forms information center.

## Configure the Translator

**Note:** Perform this procedure on both translator servers.

To configure the Translator:

1. Open the translator.properties file in a text editor.
2. Set the fileCacheLocation to the path to the Shared File Cache.
3. Set the fcCacheSize to 75. This represents the maximum number of simultaneous users that each Translator instance can host at maximum performance.
4. Set logServerHostname to the host running the Log Server.
5. Use the default settings for all other properties.
6. Save the file.

The fcCacheSize setting was calculated as follows:

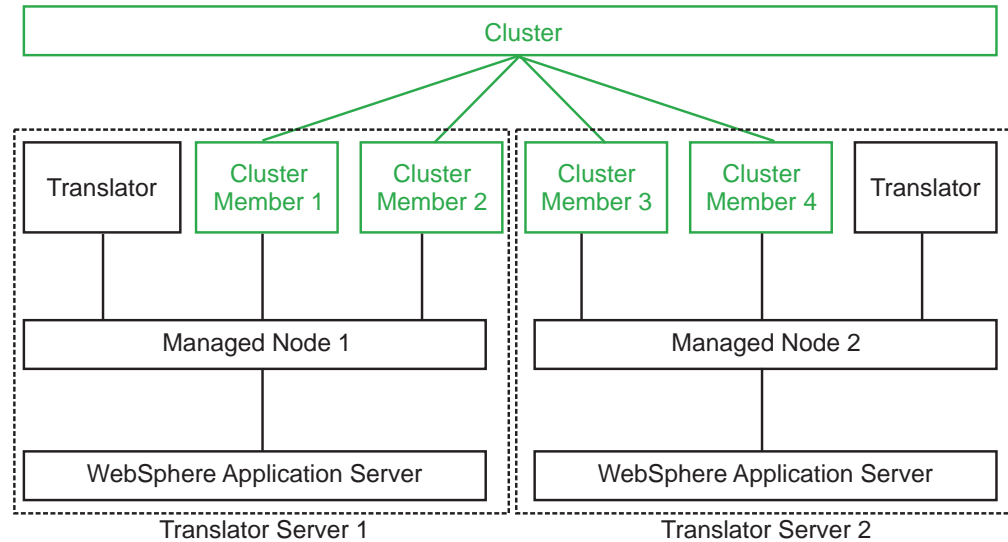
1. Each Translator server has 8.5 GB of RAM and hosts two instances of the Translator, so there is 4.25 GB available for each Translator instance. Under the very large address-space model, AIX allows 3.25 GB for application usage. The JVM uses approximately 0.5 GB of memory, but this may vary up to 0.75 GB, leaving 2.5 GB of memory for each Translator instance to cache form instances.
2. The maximum form size is 30 MB in memory (including any attachments):  $2.5 \text{ GB} / 30 \text{ MB} = 83$ . To allow a margin of safety, set the fcCacheSize to a slightly smaller value, for example, 75. This means that each Translator instance can host up to 75 simultaneous users at maximum performance. The overall system consisting of four Translator instances can host up to 300 simultaneous users at maximum performance. This is greater than or equal to the expected 250 to 300 simultaneous users.

For more information on configuring the Translator, see Translator Properties in the Lotus Forms information center.

## Setup the Translator cluster

To setup the Translator cluster:

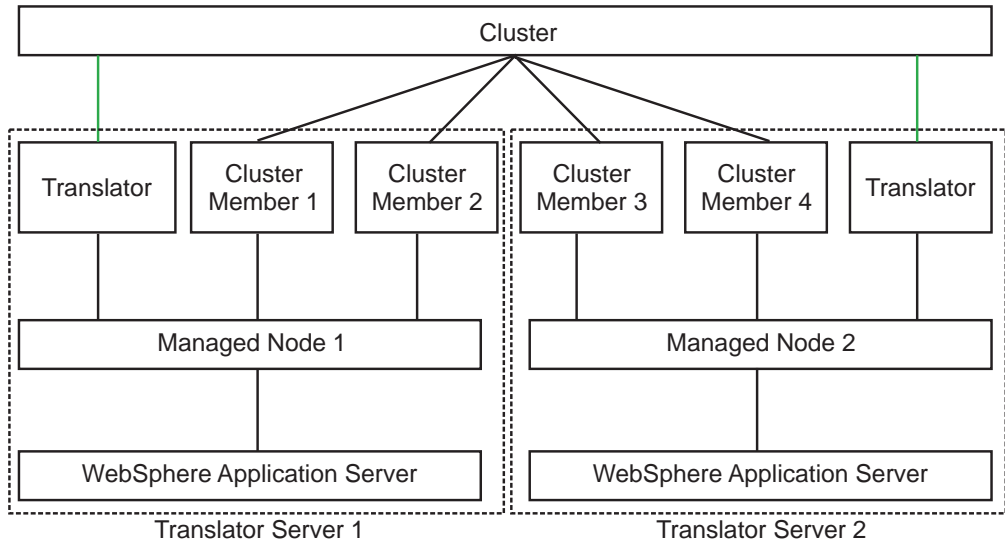
**Create the Translator cluster:**



To create the Translator cluster:

1. On the Deployment Manager system, login to the Deployment Manager console.
2. Click **System Administration** → **Nodes** and verify that the Translator nodes are visible.
3. Click **Servers** → **Clusters**.
4. Click **Add** and define the cluster name (for example, **Translator\_Cluster**).
5. Define a new cluster member for the managed node you setup on the *first* Translator server.
6. Define a second cluster member for the managed node you setup on the *first* Translator server.
7. Define a third cluster member for the managed node you setup on the *second* Translator server.
8. Define a fourth cluster member for the managed node you setup on the *second* Translator server.
9. Click **Finish** and save your changes.

**Associate the Translator to the cluster:**



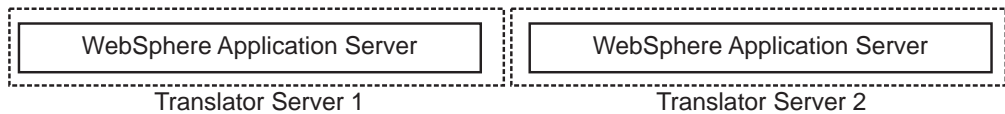
To associate the Translator to the cluster:

1. On the Deployment Manager system, within WebSphere Application Server click **Enterprise Applications** → **TranslatorApp** → **Manage Modules**.
2. Click the check box for module **IBM\_Webform\_Server\_Translator\_3.0.1.73**.
3. Select the cluster (Translator\_Cluster) and servers (Translator\_Server\_1 and Translator\_Server\_2) you want to associate with the Translator.
4. Click **OK** and save your changes.

## Set up the backend application servers

To set up the backend application servers:

### Install WebSphere Application Server Network Deployment



Install WebSphere Application Server Network Deployment on both translator servers.

For detailed installation instructions, see Installing the product and additional software in the WebSphere Application Server information center.

### Create a managed node

Create a managed node for the backend application servers. Refer to the instructions for creating a managed node on the Translator server.

### Install WebSphere Process Server

For detailed installation instructions, see Installing and configuring WebSphere Process Server in the WebSphere Process Server information center.

## Setup the backend application server cluster

Setup a cluster for the backend application. Refer to the instructions for setting up a cluster for the Translator.

## Install DB2 Enterprise Server Edition

For detailed installation instructions, see Installing information management software in the DB2 information center.

## Set up the Translator load balancer

To set up the load balancer for the Translator servers:

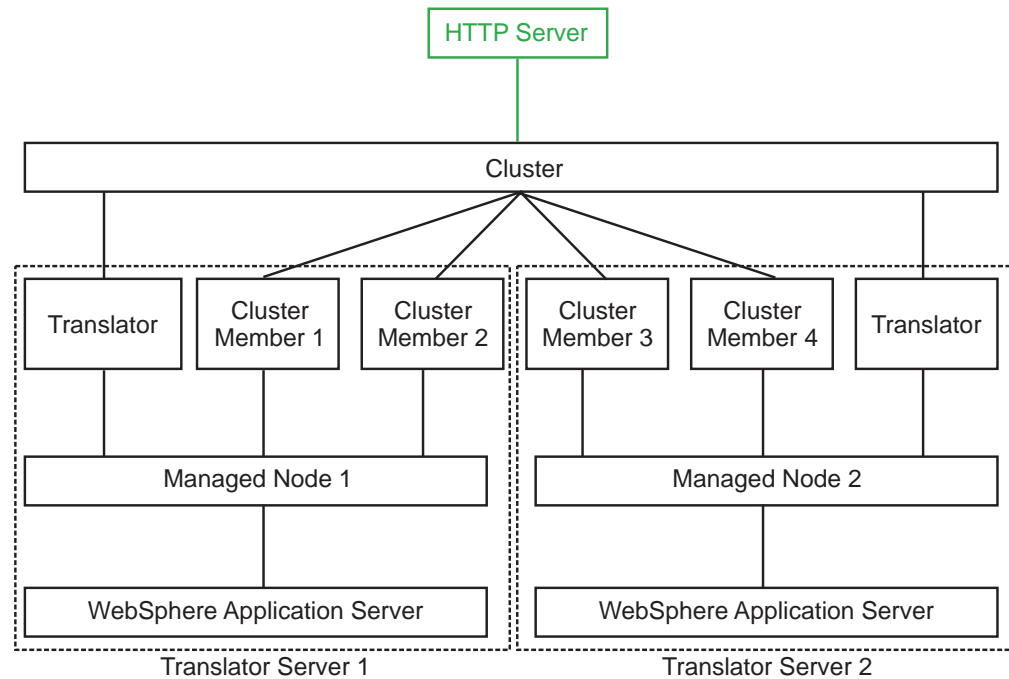
### Setup the Translator load balancer

To setup the load balancer for the Translator servers:

#### Install IBM HTTP Server:

For detailed installation instructions, see Installing IBM HTTP Server in the WebSphere Application Server information center.

#### Configure IBM HTTP Server:



To configure IBM HTTP Server:

1. On the IBM HTTP Server system, go to:  
/usr/IBM/HTTPServer/Plugins/bin  
and look for the script file:  
configName.sh  
where *Name* is the name you gave the IBM HTTP Server during installation.

2. Copy configName.sh to the following location on the Deployment Manager system:  
     /usr/IBM/WebSphere/AppServer/bin
3. On the Deployment Manager system, run the configName.sh script you just copied. The script will configure IBM HTTP Server within Deployment Manager.
4. Within Deployment Manager, click **Servers** → **Web Server**.
5. Verify that the new server is available.
6. Mark the check box beside the new server, and click **Generate Plug-in**.  
     A new plugin-cfg.xml file is generated, and its location is displayed, for example:  
     /usr/IBM/WebSphere/AppServer/profiles/Dmgr01/config/cells/cslpar1Cell01/nodes/cslpar6.victoria.ibm.com-node/servers/IHS\_WFServer/plugin-cfg.xml
7. Copy plugin-cfg.xml to the plugin directory on the HTTP server system:  
     /usr/IBM/HTTPServer/Plugins/config/webserver
8. On the HTTP server system, go to the following location:  
     /usr/IBM/HTTPServer/bin/  
     and start IBM HTTP Server by running the following script:  
     ./apachectl start
9. On the Deployment Manager system, from the Deployment Manager console click **Servers** → **Web Server** and verify that the HTTP Server is running (indicated by the color green).
10. From the Deployment Manager console, go to Enterprise Applications. Mark the check box beside the TranslatorApp and click **Enterprise Applications** → **TranslatorApp** → **Manage Modules**.

## Setup the backend application load balancer

To setup the load balancer for the backend application servers:

### Install IBM HTTP Server:

For detailed installation instructions, see Installing IBM HTTP Server in the WebSphere Application Server information center.

### Configure IBM HTTP Server:

Configure IBM HTTP Server for use as a load balancer for the backend application servers. Refer to the instructions for configuring IBM HTTP Server for the Translator server.

## Set up the HTTP server

To set up the HTTP server:

### Install IBM HTTP Server

For detailed installation instructions, see Installing IBM HTTP Server in the WebSphere Application Server information center.

## **Configure IBM HTTP Server**

Configure IBM HTTP Server for use as a load balancer for the application servers. Refer to the instructions for configuring IBM HTTP Server for the Translator server.

## **Set up user systems**

To set up user systems:

### **Install the Viewer**

To install the Viewer:

1. Insert the Lotus Forms Viewer CD.
2. Run the installer **LFViewer\_30x\_Win32.exe**.





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