Practices for Lesson 3: Getting Started with Service Bus Applications

Chapter 3

Practices for Lesson 3: Overview

Practices Overview

Service Bus can protect consumers of the backend service from routine changes such as deployment location and implementation updates.

In these practices, you create a virtualized end-point for an existing SOAP style service. In addition, you learn how to build a team development environment by using MDS and Maven.

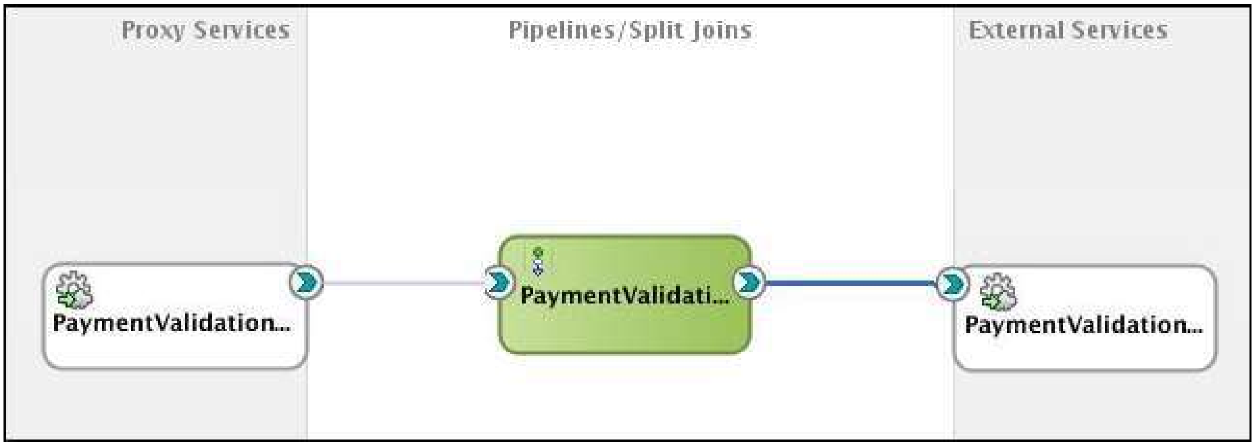
Practice 3-2: Virtualizing Service with Service Bus

Overview

In this practice, you register the `validatePayment` composite on Oracle Service Bus. Service Bus protects consumers of the `validatePayment` composite from routine changes such as changes of deployment location and implementation updates. Service Bus helps scale the service to handle higher volumes of requests and provide resiliency for the service, if it needs to be taken down for routine maintenance.

Start by creating a business service to register the composite URI. Then, add a simple pipeline and proxy. Pipelines can contain actions performed on the Service Bus; typically reporting, data transformation, and validation; before invoking the backend service. Consumers of the `validatePayment` service will invoke via a proxy rather than connect directly to the composite, allowing more agility and flexibility in managing change.

After completing this practice, the Service Bus application will look like the following screenshot:



High-Level Steps

In this lab, you accomplish the following tasks:

- Create a new Service Bus application and project.
- Define a folder structure for the Service Bus project.
- Create a business service to call the endpoint web service (SOAP-based), `ValidatePayment`, and review its properties.
- Generate a simple pass-through proxy service.
- Test and debug the end-to-end application.

Assumptions

`ValidatePayment [1.0]` has been deployed and is running on the SOA server.

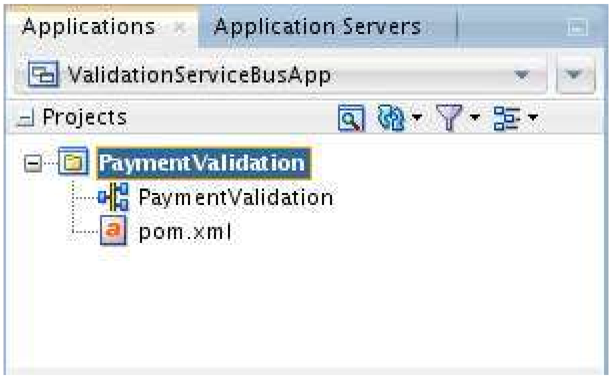
Tasks

Create a Service Bus application and project

The first steps in building a new application are to assign it a name and to specify the directory in which to save the source files. By creating an application using application templates provided by Oracle JDeveloper, you automatically get the organization of the workspace into projects, along with the project overview file.

1. Create a new Service Bus application.
   a. Open JDeveloper if it is not open.
   b. Select **File > New > From Gallery** from the menu.
      The New Gallery dialog box opens.
   c. Under Categories, select **Service Bus Tier**.
   d. Under Items, select **Service Bus Application with Service Bus Project**
   e. Click **OK**.
      The Create Service Bus Application with Service Bus Project dialog box opens.
   f. Specify the application name to `PaymentValidationServiceBusApp`.
   g. Enter `/home/oracle/labs_DI/lessons/lesson03/PaymentValidationServiceBusApp` for the directory.
   h. Click **Next**.
      You are prompted to create a new project.
   i. Set the project name to `PaymentValidation`
   j. Click **Finish**.

   Now your Project Explorer should look like the image below, showing Service Bus application and Service Bus project. The project folder contains two files: pom.xml and PaymentValidation. PaymentValidation, with the same name as your project, is called project overview file.



2. Double-click the project overview file, `PaymentValidation`.

   The Services Bus Overview Editor opens on the right.

   Note: The Overview Editor is a new view for Service Bus in 12*c*, and it is modeled on the SOA Composite Editor. This view allows construction of Service Bus projects using a top-down, drag-and-drop approach.

3. Take a few moments to browse the Applications pane on the left side of the window and the component palette on the right.
   - In the component palette, notice that the resources category contains pipeline and Split-Join icons. These are the components for a Service Bus application.

     Note: In 12*c*, the pipeline has been split from the proxy to allow it to be a re-usable component.
   - Other palette categories—Technology, Applications, and Advanced—contain adapters and transports for building business services (External References) and proxies (Exposed Services).

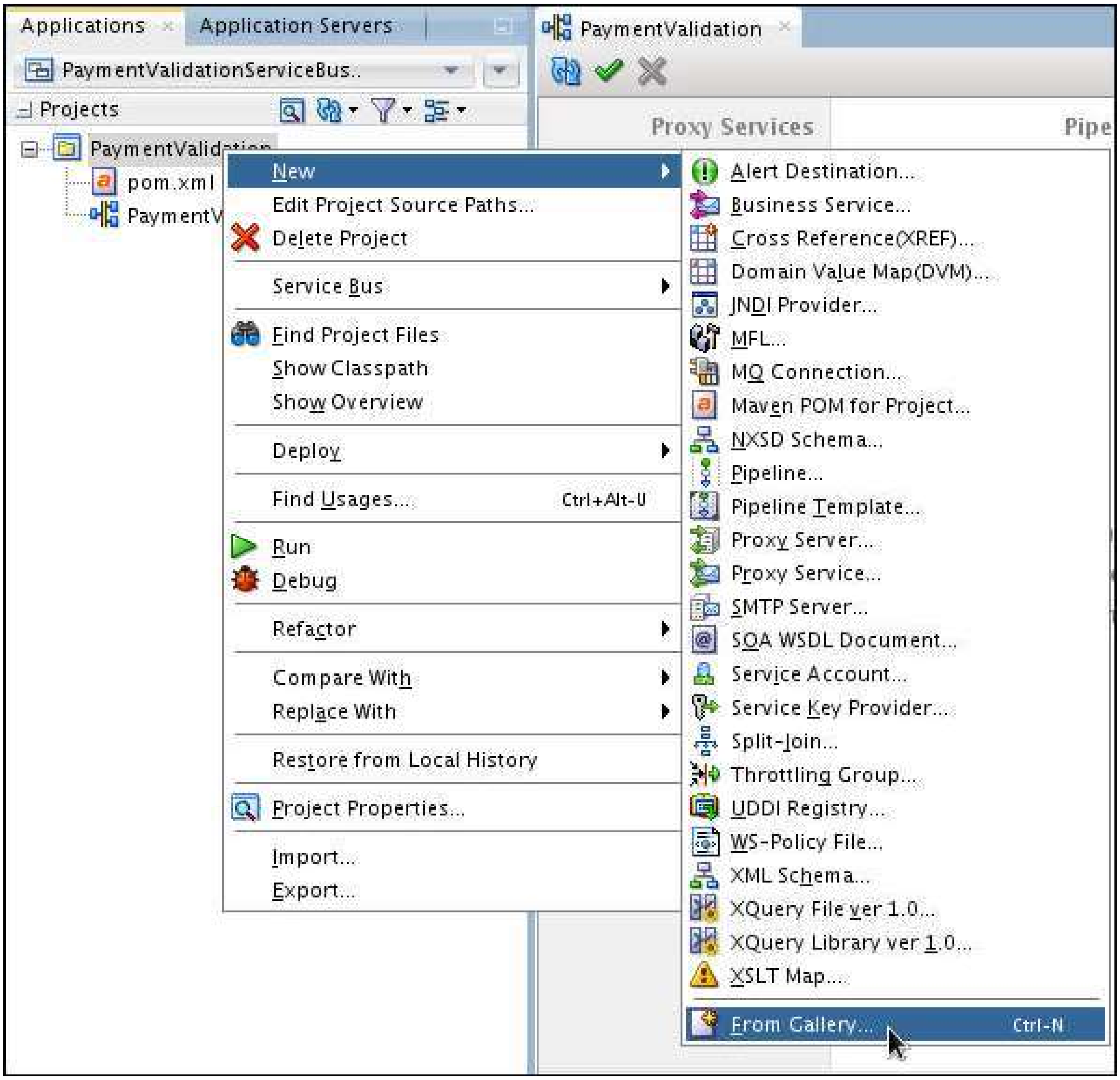
- If the Properties window is on the bottom right of the JDeveloper window, drag and position it to the bottom center. This will make editing properties of pipeline actions easier.

Define a folder structure and import artifacts

In Service Bus applications, folders are leveraged to organize artifacts within a project. For new applications, you are encouraged to create folders that align with the default folders in the composite application. Folders will not be automatically created in Service Bus applications, so that backward compatibility of Service Bus projects imported from previous releases is maintained.

For this practice, you keep the structure simple, because there are only a few artifacts to manage. As the projects grow, you can add folders for categorizing artifacts into business service, proxy, and templates.

4. Create two folders.
   a. Right-click the `PaymentValidation` project folder, and select **New > From Gallery**.



b. In the New Gallery window, select **General** (Categories) **>** **Folder** (items).

c. Click **OK**.

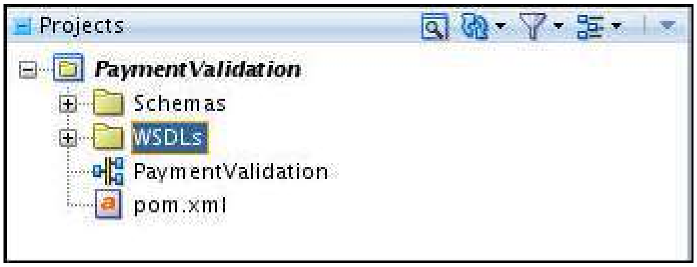
The Create Folder dialog box is displayed.

Note: This is only necessary the first time a folder is added. Thereafter, it will be listed on the menu by default.

d. Name the folder `Schemas`, and click **OK**.

e. Similarly, add another folder named `WSDLs`.

f. Verify your work.

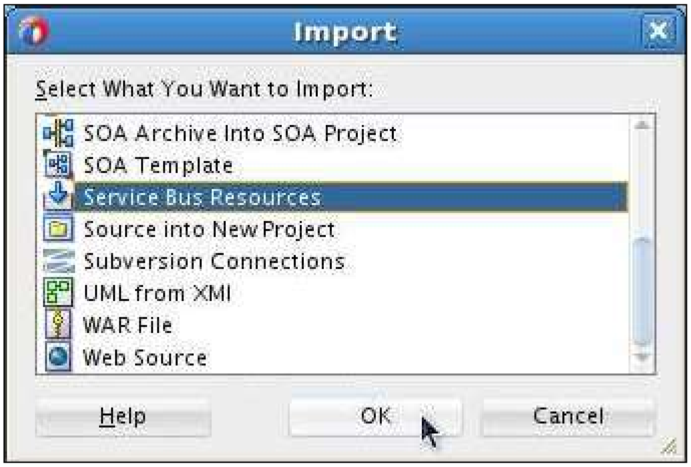


5. Import Artifacts. This step is to register the WSDL for the ValidatePayment service that you will abstract with the business service.

a. Right-click the **WSDLs** folder in the Project Explorer, and select **Import** from the context menu.

The Import dialog box is displayed.

b. Select **Service Bus Resources**.

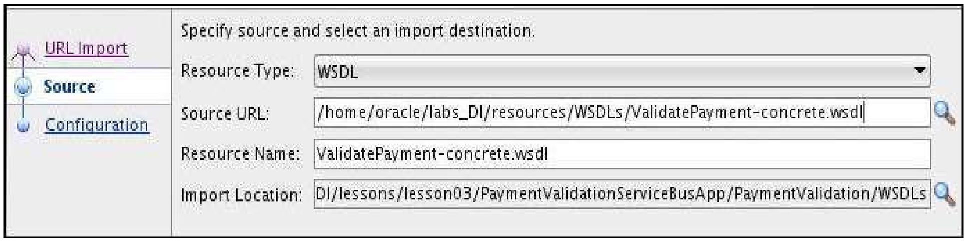


c. Click **OK**.

The Import Service Bus resources wizard is displayed. The title bar of the wizard dialog box shows the step number.

d. Complete the steps in the wizard by following the instructions in the table below:

Step	Page Description	Choices or Values
1)	Type	Select **resources from URL.** Click Next.
2)	Source	Click the Browse icon next to the Source URL field. In the Select WSDL dialog box, select File System in the top box, navigate to the `/home/oracle/labs_DI/resources/WSDLs` folder,

Step	Page Description	Choices or Values
		and select `ValidatePayment-concrete.wsdl`.  Specify source and select an import destination. Resource Type: WSDL Source URL: /home/oracle/labs_DI/resources/WSDLs/ValidatePayment-concrete.wsdl Resource Name: ValidatePayment-concrete.wsdl Import Location: DI/lessons/lesson03/PaymentValidationServiceBusApp/PaymentValidation/WSDLs Click Next.
3)	Configuration	Accept the default. Make sure that you see the Schemas folder at the same level as the WSDLs folder containing CanonicalOrder.xsd. This directory structure is required to successfully import the WSDL. Click Finish.

The Applications pane resembles the following:

Service Bus supports the ability to import and export artifacts and projects at a fine-grain level. You may import artifacts individually, such as a WSDL or schema, or whole projects. You may control whether dependencies are included.

By default, when importing individual artifacts, Service Bus will attempt to import all dependencies declared in the artifact. For example, if a WSDL includes a schema, the schema will also be imported if the paths are relative.

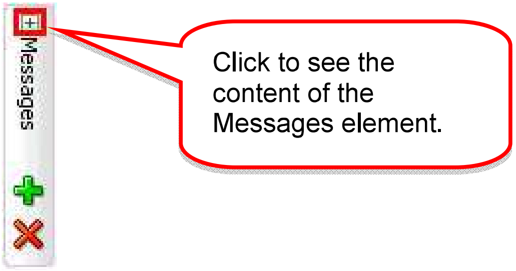
Also note that you can control whether environmental settings, security policies, and credentials are preserved on import. For example, if you are bringing artifacts from a production environment for testing and editing, you may not want all the same policies applied in the development environment.

Inspecting WSDL and Schema files

6. Double-click the `ValidatePayment-concrete.wsdl` file in the WSDLs folder. The WSDL editor opens and presents the design view of the WSDL document.

   In this graphical overview of the WSDL file, you can explore the structure and relationship of the elements.

7. You should see the contents of Port Types, Bindings / Partner Link Types and Services. The WSDL document contains the portType element, a set of operations (in this case, an operation named `validate`), and the abstract messages (input and output) involved with those operations. Click the “Show Contents” icon on the Message tag.



Click to see the content of the Messages element.

Practices for Lesson 4: SOA Reference Architecture

Chapter 4

Practices for Lesson 4

Practices Overview

In these practices, you use OER to create a simple organization model for the THFC Company. Then you store the SOA Maturity Assessment document you created in Practice 2 in the repository. You also get hands-on experience with configuring asset categorizations in OER.

Practice 4-1: Elements of a Reference Architecture

Overview

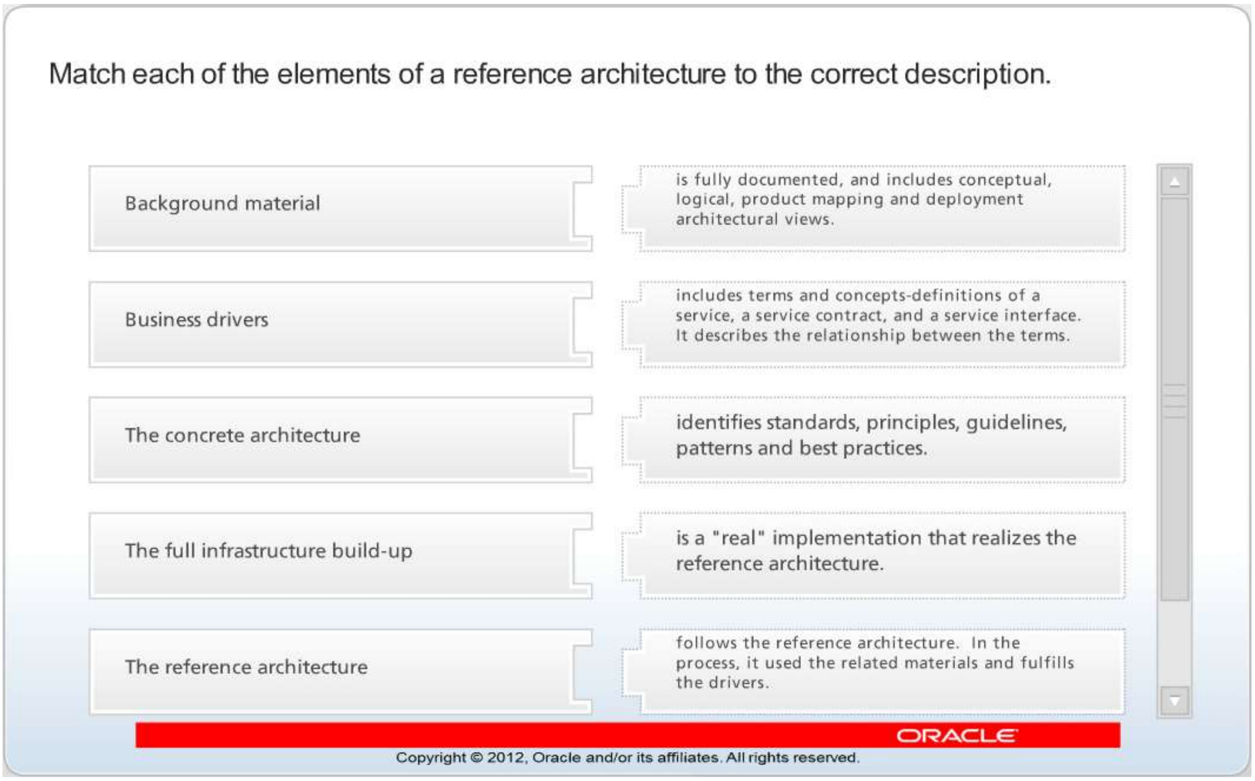
In this practice, you match the concepts, principles, guidelines, requirements, and motivational elements of a reference architecture to their descriptions.

Assumptions

This practice makes no assumptions.

Tasks

1. Use your browser to open the Articulate file `D:\labs\les_04-1\player.html`.
2. Use the interactive features of the program to match the six elements of a SOA reference architecture to their descriptions.



Match each of the elements of a reference architecture to the correct description.

Background material

Business drivers

The concrete architecture

The full infrastructure build-up

The reference architecture

is fully documented, and includes conceptual, logical, product mapping and deployment architectural views.

includes terms and concepts-definitions of a service, a service contract, and a service interface. It describes the relationship between the terms.

identifies standards, principles, guidelines, patterns and best practices.

is a "real" implementation that realizes the reference architecture.

follows the reference architecture. In the process, it used the related materials and fulfills the drivers.

Practice 4-2: Modeling Your Organization in OER

Overview

In this practice, you initialize user accounts and assign access rights to them. You also organize these users into departments in OER. By appropriately modeling your SOA organization in OER, you can later gain insight into how SOA adoption evolves over time, from both business and technical standpoints.

In this practice, you define a fictitious company named THFC that has begun implementing SOA. The initial stakeholders and departments that collaborate using OER are the following:

Department	User	Title	Roles	Functionality
CTO office	Tom Reed	Enterprise Architect	registarAdministrator, projectArchitect, projectAdministrator user	• Create and edit asset types. • Accept or reject submitted assets. • Create, edit, and view projects.
Marketing	Bill Young	Business Analyst	advancedSubmitter, businessAnalyst user	• Create asset content. • Locate, evaluate, download, and use assets. • View projects.
IT	Max Fuller	Developer	user	• Locate, download, submit, and use assets. • View projects.

Tasks

1. Start WebLogic Admin Server.
   a. Double-click the **Start WebLogic Admin Server** icon on the desktop.
   b. Wait until the output from the server indicates the following:

   ```
   <Server started in RUNNING mode>
   ```

2. Start the OER server.
   a. Double-click the **Start OER Server** icon on the desktop.
   b. Wait until the output from the server indicates the following:

   ```
   <Server started in RUNNING mode>
   ```

3. Access the OER console:
   a. Launch Firefox and direct it to http://localhost:7101/oer.

b. When prompted to log in, enter the credentials for the default Admin user, `admin/admin`. Deselect the **Enable Automatic Login** check box and click **Login**.

Note: The `admin` user is the default administrative account that is installed with OER.

c. After the first successful login to the OER web application, you are forced to change the default administrator password. On the Change Password page, perform the following steps:

1) In the Old Password field, enter **`admin`**.

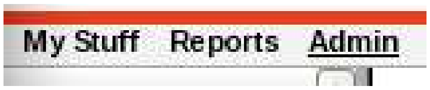
2) Enter **`welcome1`** for the new password.

3) Deselect the **Enable Automatic Login** check box and click **Change Password**.

The OER home page appears.

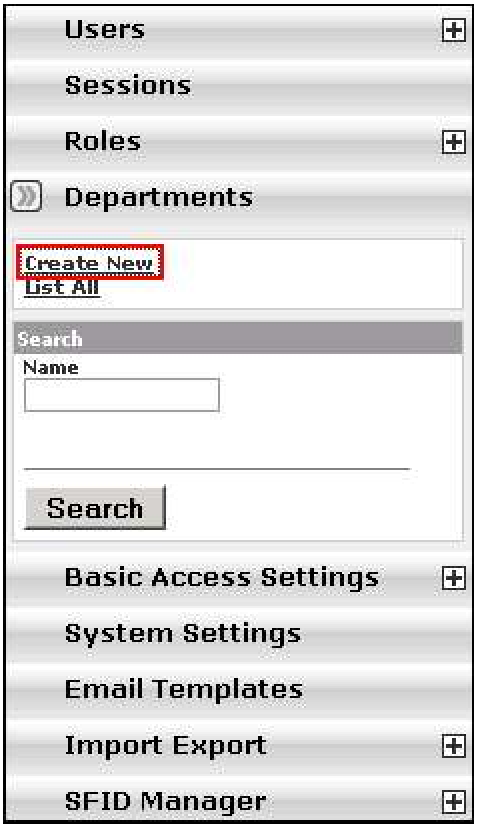
4. Create departments.

a. Click **Admin** in the top menu bar:



b. By default, the Users menu is shown in the left panel. Click the **Departments** tab.

c. In the left panel under Departments, click the **Create New** link.



d. Enter the name **`CTO Office`** and click **Save**.

e. Create the following additional departments:

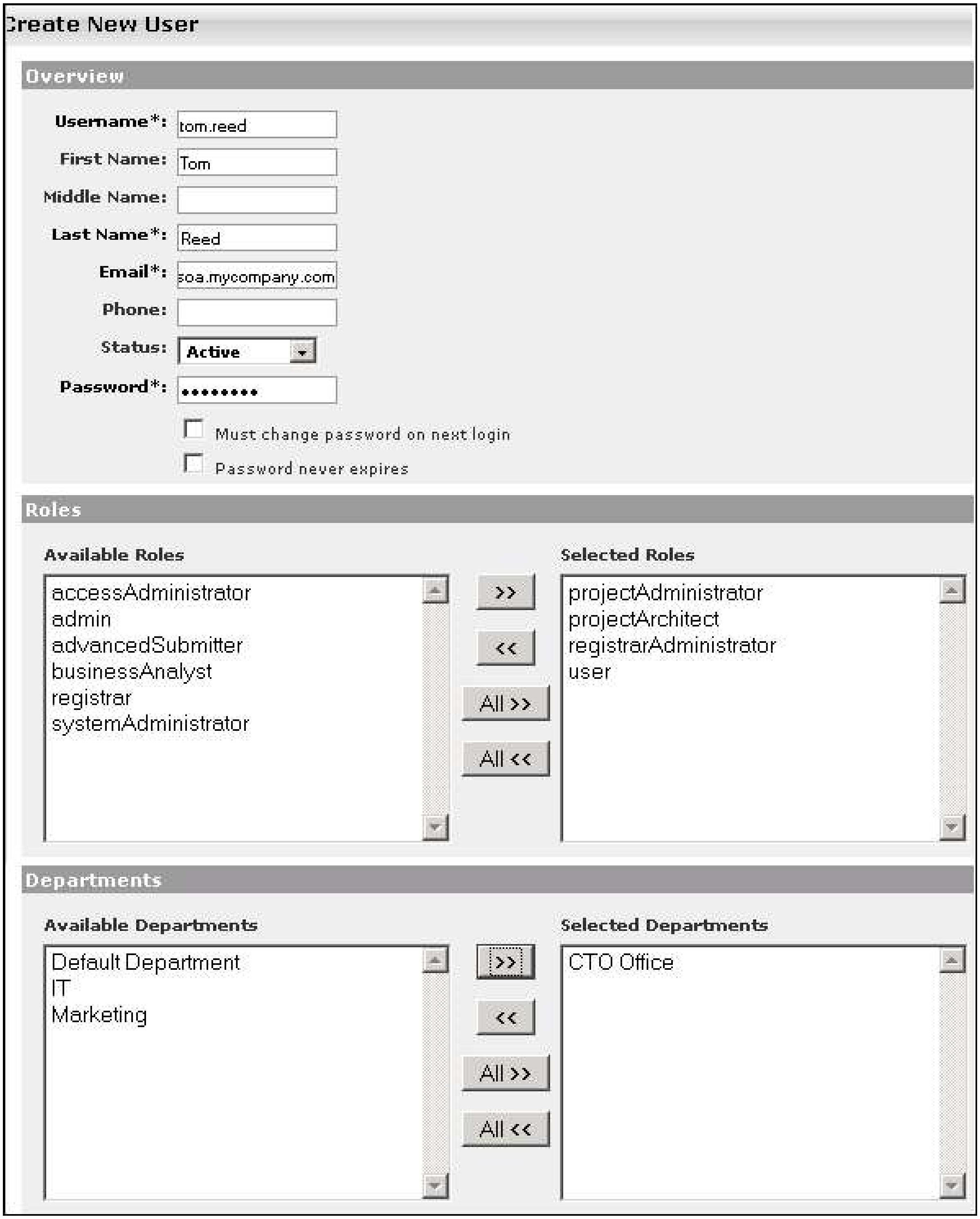
– Marketing

– IT

5. Create users.
   a. Click the **Users** tab in the left panel.
   b. Under Users, click the **Create New** link.
   c. In the Edit User dialog box, enter the following:

Field	Value
Username	tom.reed
First Name	Tom
Last Name	Reed
Email	tom.reed@soa.mycompany.com
Password	welcome1

   d. Deselect all check boxes.
   e. In the Roles field, in addition to User, add the following roles:
      - registrarAdministrator
      - projectArchitect
      - projectAdministrator
   f. In the Departments field, select **CTO Office**.



Create New User

Overview

Username*:	tom.reed
First Name:	Tom
Middle Name:	
Last Name*:	Reed
Email*:	soa.mycompany.com
Phone:	
Status:	Active
Password*:	••••••••

□ Must change password on next login

□ Password never expires

Roles

Available Roles	Selected Roles
accessAdministrator admin advancedSubmitter businessAnalyst registrar systemAdministrator	projectAdministrator projectArchitect registrarAdministrator user

Departments

Available Departments	Selected Departments
Default Department IT Marketing	CTO Office

g. Click **Save**.

h. Create another new user for Bill Young by using the same process:

Field	Value
Username	bill.young
First Name	Bill

Field	Value
Last Name	Young
Email	bill.young@soa.mycompany.com
Password	welcome1
Roles	advancedSubmitter, businessAnalyst, user
Department	Marketing

i. Create the Max Fuller user:

Field	Value
Username	max.fuller
First Name	Max
Last Name	Fuller
Email	max.fuller@soa.mycompany.com
Password	welcome1
Roles	user
Department	IT

6. Import some assets and asset types that are used in the subsequent practices into the repository instance.
   a. In the left panel, click the **Import Export** tab.
   b. Click the **Import/Export client** link.
   c. You should see a dialog box that asks if you want to launch Java Web Start. Click **OK**.
   d. In the Warning – Security dialog box, select the check box next to "Always trust content from this publisher," and then click **Run**.
   e. In the Oracle Enterprise Repository Import/Export Utility window, click the **Import** tab.
   f. Browse to the `D:\labs\` directory and select the **SOA_Assets.zip** file. Click **Next**.
   g. In the "Ready to perform import" screen, click **Next**.
   h. Wait until you see the "Finished Import successfully" message. Then click **Finish** and close the Import/Export Utility window.
7. Configure an artifact store

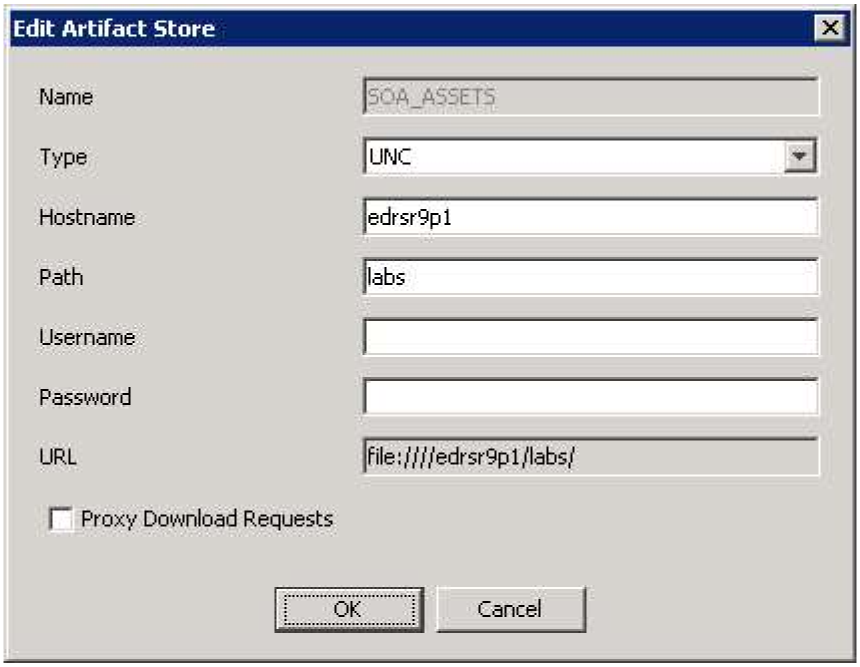
   Configure an artifact store where you store the files relevant to assets in OER.
   a. In the OER console, click **Assets** in the top menu bar.
   b. Click the **Edit / Manage Assets** link.
   c. In the "Opening registrartool.jnlp" dialog box, select **"Do this automatically for files like this from now on"** and then click **OK**. If you see a Warning – Security dialog box, click **Run**. OER launches the Asset Editor application.
   d. From the main menu, select **Actions** > **Configure Artifact Stores**.
   e. In the Configure Artifact Stores window, click **Add**.

f. In the “Create a new Artifact Store” window, edit the following fields:

Field	Value
Name	SOA_Assets
Type	UNC
hostname	*your hostname*
Path	labs

Note: To get the hostname of your machine, open a DOS terminal window and type `hostname` in the command prompt.

The URL field should be automatically populated with the hostname and path values that you entered. Use the following screenshot as a guide:



Edit Artifact Store

Name: SOA_ASSETS

Type: UNC

Hostname: edrsr9p1

Path: labs

Username:

Password:

URL: file:////edrsr9p1/labs/

□ Proxy Download Requests

g. Click **OK**.

h. In the Configure Artifact Stores window, click **OK**.

i. Close the Asset Editor window.

8. In the OER console, log out of the Admin account.

   a. Click the **Logout** button in the bottom-right corner of the window.

   b. On the Logout Successful page, if you see the “Remove this cookie” link, click it to delete the session cookie of the Admin user.

9. Examine the operations that different users can perform.

   a. Log in to the OER console as Tom Reed with user name `tom.reed` and password `welcome1`. Keep the Enable Automatic Login check box selected.

   b. By default, the Assets section is displayed in the left panel. Click the **Edit/Manage Assets** link. OER launches the Asset Editor application.

c. As an Enterprise Architect, Tom Reed (referring to the roles assigned) has privileges of creating and editing assets and asset types.

    - To create an asset, select **File** > **New** from the main menu.

      You will create an asset later in this practice. Now close the “Create a New Asset” window.

    - To edit or create an asset type, select **Actions** > **Manage Types** from the main menu.

      In the Type Manager application window, you should see a list of asset types. Most of them are populated from the product installation; a few are customized types (used in this course) and imported to the repository in Step 6. The custom types are:

        - Artifact: Service Contract
        - Business Functional Model Node
        - Service Interface
        - SOA Service
        - Policy

      Note: Type Manager is used to control the organization and display of information for each asset as it appears in the Asset Editor and in the Asset Detail in the OER console.

d. Close Type Manager and Asset Editor.

e. In the OER console, log out of the Tom Reed account.

f. Log in using the Bill Young account. As a Business Analyst, Bill is only allowed to create asset content. Can you tell the difference between the privileges granted to him and the privileges granted to Tom Reed?

g. In a similar way, you can examine the operations that Max Fuller can perform.

h. After you are done, log out of the Max Fuller account in the OER console.