## Novell exteNd

5.0

GUIDED TOUR





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## Contents

Abo	It This Guide
1	Getting Started       11         About Novell exteNd 5.       11         About the Guided Tour       12         Overview of the application.       12         Objective.       12         How you will proceed       13         About this lesson.       13         Objective.       13         What you will do       13         EXERCISE 1-1:       Create a project area folder.         14       EXERCISE 1-2:       Create the MySQL database         14       EXERCISE 1-3:       Start the exteNd Application Server.         16       EXERCISE 1-4:       Create a JDBC connection pool         EXERCISE 1-5:       Start the exteNd LDAP directory server.       19
2	Completing the exteNd Composer Project       21         About this lesson       21         What is exteNd Composer?       21         Objective       21         What you will do       22         EXERCISE 2-1:       Start exteNd Composer and open the project       22         EXERCISE 2-2:       Review the LDAP component       23         EXERCISE 2-3:       Sidebar: the exteNd Composer Component Editor Layout       24         EXERCISE 2-4:       View the input and output documents for the LDAP component       27         EXERCISE 2-5:       View the LDAP connection resource       28         EXERCISE 2-6:       Review the Action Model       29         EXERCISE 2-7:       Test the component       34         EXERCISE 2-8:       Complete the Action Model for the service       35         EXERCISE 2-9:       Create the Web Services Definition Language (WSDL)       41
3	Deploying and Testing the Web Service       45         About this lesson       45         Objective       45         What you will do       45         EXERCISE 3-1:       Start exteNd Director and open the project       46         EXERCISE 3-2:       Create a SOAP-based service trigger       48         EXERCISE 3-3:       Sidebar: the exteNd Director development environment       51         EXERCISE 3-4:       Deploy the application       53         EXERCISE 3-5:       Test the Web Service using exteNd Composer       54

4	Completing the exteNd Director Project
	About this lesson
	What is exteNd Director?
	Objective
	What you will do
	EXERCISE 4-1: Create a Web Service pageflow using a wizard
	EXERCISE 4-2: Sidebar: the resource set in an exteNd Director application 64
	EXERCISE 4-3: Test the default pageflow you created
	EXERCISE 4-4: Edit additional XForms
	EXERCISE 4-5: Add a new form to the pageflow
	EXERCISE 4-6: Change links to include the new form in the pageflow
	EXERCISE 4-7: Test the revised pageflow
	Summary

## About the Guided Tour

#### Purpose

This *Guided Tour* introduces you to Novell<sup>®</sup> exteNd<sup>TM</sup> and shows you how to develop a Web Service and build it into a Web application.

#### Audience

This *Guided Tour* is for application developers familiar with building applications that provide a graphical user interface.

#### Prerequisites

**Experience** This *Guided Tour* assumes you are familiar with visual development tools and comfortable with building forms that bind to data sources such as relational databases.

**Required software** If you installed the Novell exteNd Professional Suite 5.0 or Enterprise Suite 5.0, everything you need is on your computer.

This includes:

- Novell exteNd Application Server 5.1
- ◆ Novell exteNd Composer<sup>™</sup> 5.0
- Novell exteNd Director<sup>TM</sup> 5.0

Plus:

- MySQL as the database
- exteNd LDAP as the LDAP directory
- The exteNd Director template project, which includes an exteNd Composer project (these projects are included in the GuidedTour.zip file in Docs/GuidedTour in your exteNd installation directory)

If you don't have the required software, you can download the trial version of Novell exteNd 5 from the download Web site.

#### Organization

Here's a summary of the lessons you'll find in the Guided Tour:

Lesson		Description	
1	Getting Started	Provides an overview of the <i>Guided Tour</i> application and shows you how to set up the <i>Guided Tour</i> project and database	
2	Completing the exteNd Composer Project	Shows you how to complete an exteNd Composer application that extracts information from an LDAP directory	
3	Deploying and Testing the Web Service	Shows you how to deploy and test the exteNd Composer Web Service component you have created	
4	Completing the exteNd Director Project	Shows you how to complete an exteNd Director portlet application that invokes the deployed Web Service	

#### Latest updates

For the latest updates to this *Guided Tour* and the source files used, go to the documentation Web site.

# Getting Started

### About Novell exteNd 5

Novell exteNd 5 is a comprehensive suite of development tools that gives you the ability to create end-to-end Web Services that are secure with little to no coding.

- With exteNd Composer you can produce Web Services that use non-XML data sources such as directories and relational databases.
- With exteNd Director you can write applications that allow end users to consume Web Services. You do this by building portlets that can then be deployed as part of portal Web applications.
- By also using exteNd Director to create forms that are bound to the data in Web Services you can craft truly complete business solutions with minimal coding.
- Finally, by deploying your application to the exteNd Application Server you are deploying to a standards-based server that provides a robust environment to support your applications.

Novell exteNd 5 provides a service-oriented architecture (SOA) that is standards based. exteNd 5 gives you all the tools you need to develop Web Services and Web applications to meet the ever-changing needs of your business—while using current and evolving standards that do not lock you into a specific platform.

#### For more information

For	See
More information about Novell exteNd	The Web sites listed in the exteNd Help Library menu at the top of this page
More information about the technologies discussed in this <i>Guided Tour</i>	The Learning Resources page in Welcome to Novell exteNd in this help system
Latest updates to this Guided Tour	Check the exteNd documentation Web site frequently for updates to this <i>Guided</i> <i>Tour</i>

## About the Guided Tour

#### **Overview of the application**

The application (it is more like a part of a larger application) you will build in this *Guided Tour* will retrieve basic contact information from an LDAP directory (such as Novell eDirectory<sup>TM</sup>). You will retrieve basic information such as full name, title, phone, and e-mail address. Then the information will be displayed in a portlet that is part of a Web application. While this is a simple read application, it is the start of a more complete solution—where users can maintain contact information about themselves or other directory users.

The Web Service you will create could also be used by other portlets to tailor their functionality to give a customer or other user of your application a personalized look. In developing the Web applications of tomorrow, developers need to provide users the information they need. The simple example you will build leads you in that direction by showing how to retrieve information specific to a user based on a centralized directory repository.

#### Objective

This *Guided Tour* is not intended to be a complete coding exercise—but rather an introduction to exteNd and how you can use it to create Web Services and use them in a Web application. Your starting point will be a partially completed project. You will write some code to complete the application, deploy the application to the exteNd Application Server, and test the code you have completed by running the application in your favorite Web browser.

The code provided for you is well commented, and it would be instructive to review it as you work through the *Guided Tour*. You will become familiar with some of the key artifacts. You will also learn how exteNd Composer and exteNd Director help you build applications that solve business problems while minimizing the code you need to write.

#### How you will proceed

You will begin by performing the setup of the template project and database required by the application.

Then you will complete an exteNd Composer service that will extract the user information from the LDAP directory, ultimately deploying this as a Web Service.

After completing the exteNd Composer part you will go into exteNd Director to complete the user interface. The Web application will request a User ID and invoke the Web Service, returning either the information about the user or an error message. The returned information will then be displayed.

Now you are ready to start the first lesson.

## About this lesson

#### Objective

In this lesson you will extract the template project to create your project work area and create a database required for the exteNd Director application. You will set up a connection pool in the exteNd Application Server for the exteNd Director database. You will also start the exteNd Application Server and the exteNd LDAP server that you will use for deployment and testing.

#### What you will do

- **1** Create a project area folder
- 2 Create the MySQL database
- 3 Start the exteNd Application Server
- 4 Create a JDBC connection pool
- 5 Start the exteNd LDAP directory server

#### EXERCISE 1-1: Create a project area folder

The template project is located in the \Docs\GuidedTour directory under your exteNd 5 installation root directory. (The default installation root directory is C:\Program Files\Novell\exteNd5. This is the path name that will be used in the examples in this *Guided Tour*.) The project is in a zip file called **GuidedTour.zip**.

• Extract the file **template.zip** from GuidedTour.zip, and unzip template.zip into a working directory on your computer, such as D:\GuidedTour. When extracting the file, make sure you use an option such as Use Folder Names, which will keep the folder structure of the files in the template.zip during the extract. This will be your working copy of the *Guided Tour* project.

The folder template with the folder **RequestUserInfoProject** is created in your working directory. RequestUserInfoProject is the exteNd Director project folder.

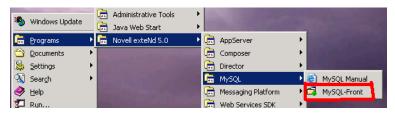
**TIP:** All references to these projects throughout the *Guided Tour* use the base location of D:\GuidedTour\template.

#### EXERCISE 1-2: Create the MySQL database

An exteNd Director application requires a database to store the data specific to exteNd Director. For the application you are building you will need to create a database and set up a connection pool in the exteNd Application Server. Now you will create a MySQL database.

**TIP:** You can actually use any database supported by exteNd Director. For information on the supported databases, see the Release Notes for exteNd 5.

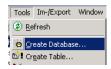
 Start MySQL-Front by going to the Start>Programs>Novell exteNd 5.0>MySQL menu and clicking MySQL-Front.



2 Using your MySQL root user, connect to the MySQL server. In the Password text box, type the password you provided for MySQL during the exteNd 5 installation process. Verify that the port for the connection is 63306. You must use the version of MySQL that was installed with exteNd.

Connection to MySQL-Host.			×
	웥 New	Save X Delete	
	Description:	exteNd	
	<u>H</u> ostname / IP:	localhost	
	<u>U</u> ser:	root	
	Password:	****	
store south the second	P <u>o</u> rt:	63306 <u>T</u> imeout: 30 seconds	
		Use compressed client/server protocol	
	Data <u>b</u> ase(s):		
		separated by semicolon (;)	
		Connect! Cancel	

- **3** Click the **Connect** button.
- 4 Select Tools>Create Database from the menu.



**5** Type userinforequestappdb in the Database Name text box.



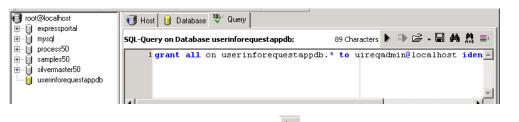
6 Click OK.

It is good practice to assign an administrative ID other than root to a database. This ensures that users of your applications are only running with the restricted privileges (instead of the unrestricted access allowed to the root user).

7 Make sure the database you just created is selected. Then click the SQL Query tab.

**8** Type the following SQL statement into the Query tab:

grant all on userinforequestappdb.\* to uireqadmin@localhost identified by 'uireqadmin';



- 9 Click the Execute SQL icon or press F9.
- **10** Close the MySQL-Front application by selecting **File>Exit**.

#### EXERCISE 1-3: Start the exteNd Application Server

 To start the Application Server, go to the Start>Programs>Novell exteNd 5.0>AppServer menu and select Application Server. (Do not select the debug option.)

3 <b>6.</b>	In the second	🔚 AppServer 🔹 🖡	Application Server (debug)
🌯 Windows Update		🛱 Composer 🔹 🕨	Application Server
👼 Programs 🔹 🕨	📩 Accessories 🔹 🕨	🛱 Director	Cache Manager
🖄 Documents 🔹 🕨	🕨 🔚 Startup 🔹 🕨	👼 MySQL 🔹 🕅 🔀	Dispatcher
😫 Settings 🕨	🕨 🥭 🛛 Internet Explorer	💼 Messaging Platform 🔹 🕨 🖽 L	.oad Manager
🔏 Sear <u>c</u> h 🔹	🕨 🕞 WinZip 🔹 🕨	💼 Web Services SDK 🔹 🕨 🛃 S	Server Management Console

The application server has completed its startup initialization when you see the following text on the server console (the build number and server/port will be specific to your install):

```
exteNd application server [Build Number:Release5.1.0 (031203_1)] serving at:
http://jgdext5testvm:80 (runtime, admin)
```

#### EXERCISE 1-4: Create a JDBC connection pool

The database you created will be accessed as a connection pool in the Application Server. This improves the performance of the application and provides flexibility in deployment by leaving the specification of which database to use until deployment time. Now you will define a pool in the exteNd Application Server. 1 When the Application Server is ready, start the Server Management Console (SMC) by going to the Start>Programs>Novell exteNd 5.0>AppServer menu and selecting Server Management Console.

and the second second			_
S. under	the data	🛱 AppServer	🕨 🚺 Application Server (debug)
🌯 Window:	; update	📻 Composer	Application Server
👼 <u>P</u> rogram	s 🔹 🕨 🔚 Accessories	🕨 📻 Director	🕨 🗐 🛛 Cache Manager
Documer	nts 🔹 🕨 📻 Startup	🕨 👼 MySQL	Dispatcher
눯 Settings	🕨 🎯 Internet Exp	lorer 🛛 👼 Messaging Platform	n 🕨 🖅 Load Manager
Search	🕨 💼 🛛 WinZip	🕨 💼 Web Services SDK	Server Management Console

2 Select the **Pools** tab in the **Configuration** section of the SMC.

🗐 N	🔋 Novell exteNd Application Server Management Console - USER: Anonymous				
File	⊻iew <u>H</u> elp				
9	§	🎽 🔶 🚥	掛 暢		Novell
	localhost:80	General Advanced Poo	ols Databases	Connections	
	exteNd application server [Build Number:Release5.1.0 (031023_1)]				
		HTTP Ports:			

**3** Select **JDBC** as the Pools Type.

Sovell extend Application Server	r Management Console - USER: Anonymous	
9 & 8 9	身 🌢 👄   非 🖷	Novell
localhost:80	General     Advanced     Pools     Databases     Connections       Select pool type from list prior to adding a new pool.     Image: Connector	

- 4 Click Add.
- **5** Select MySQL as the Database Platform from the dropdown list.

6 If not already selected, select the MySQL JDBC driver from the Driver Set dropdown list.

Add JDBC Connection Pool			×
Select method for specifying	connection se	ettings:	
Pre-configured extend Setting	gs	C User-specified Set	ings
Choose pre-configured exteNo	l settings:		
Database Platform:			
MySQL		-	
Driver set:			
MySQL JDBC driver		-	
LDS Key:			
MYSQLV2			
Version:			
1.0			
	< Back	Next>	Cancel

- 7 Click Next.
- 8 Type UserInfoRequest in the Pool Name text box. The complete pool name for a JNDI lookup will be JDBC/UserInfoRequest.
- 9 Type uireqadmin in both the User Name and Password text boxes.

Pool Name:		Enter the pool name, user
JserInfoRequest		id and password to be
Jser Name:	Password:	used.
uireqadmin	****	
		Also specify if the connection pool will participate in global transactions (default is true). If true, specify if pool optimization is to be used.
🗖 Global Transact	ion (XA) 🔲 Optimize Connect	tion Pooling

#### 10 Click Next.

The JDBC URL template is:

jdbc:mysql://%HOST%:%PORT%/%DBNAME%?profileSql=false&maxRows=0

- **11** Change the variables in the template as follows:
  - Change %HOST% to localhost.
  - Change %PORT% to 63306.
  - Change %DBNAME% to userinforequestappdb.

#### The URL should read:

jdbc:mysql://localhost:63306/userinforequestappdb?profileSql=false&maxRows=0

Add JDBC Connection Pool		×
JDBC Driver: com.mysql.jdbc.Driver JDBC URL: dbc:mysql://localhost:63306/userinforequestappdb?pri	Enter the JDBC driver settings. See your JDBC driver manual for more information. For the JDB	с
, JDBC URL attributes:	parts with the appropriat	
< Back	Next > Cancel	

- 12 Click Next.
- 13 Click Next on the Optional Connection Pool Properties dialog.
- 14 Accept the default connection pool manager properties by clicking Finish.
- **15** Close the SMC application by selecting **File>Exit**.

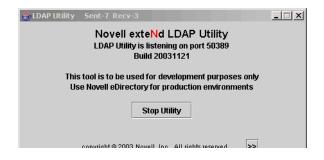
#### EXERCISE 1-5: Start the exteNd LDAP directory server

The Novell exteNd LDAP directory server is the data source that will be used by the exteNd Composer Web Service you will complete in the next lesson. exteNd LDAP is a simple LDAP directory implementation that provides an LDAP server to be used by developers for development and testing.

1 Start the LDAP server by going to the Start>Programs>Novell exteNd 5.0>Tools and clicking LDAP Utility.



2 Minimize the Novell exteNd LDAP Utility window by clicking the Minimize icon.



**Next lesson** In the next lesson you will complete an exteNd Composer service that you will later deploy as a Web Service.

## 2 Completing the exteNd Composer Project

### About this lesson

#### What is exteNd Composer?

Novell exteNd Composer is a development (and runtime) environment for the rapid design and deployment of Web Services and XML integration to applications— applications that can connect to diverse back-end (legacy) systems and data sources. exteNd Composer offers a flexible, intuitive, point-and-click GUI (graphical user interface), giving the business analyst or application developer a powerful tool for creating robust XML integration solutions in minimum time.

#### Objective

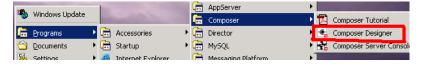
This project provides an exteNd Composer component that extracts information from an LDAP directory. The component (using the LDAP Connect) provides basic user information such as name, phone, and title. In this lesson you will complete the application by completing an exteNd Composer service for later deployment as a Web Service. The Web Service will receive a request with a user ID and provide the information supplied by the component.

#### What you will do

- **1** Start exteNd Composer and open the project
- **2** Review the LDAP component
- 3 Sidebar: the exteNd Composer Component Editor Layout
- 4 View the input and output documents for the LDAP component
- 5 View the LDAP connection resource
- 6 Review the Action Model
- 7 Test the component
- 8 Complete the Action Model for the service
- **9** Create the Web Services Definition Language (WSDL)

#### EXERCISE 2-1: Start exteNd Composer and open the project

1 Start exteNd Composer by going to the Start>Programs>Novell exteNd 5.0>Composer menu and selecting Composer Designer.

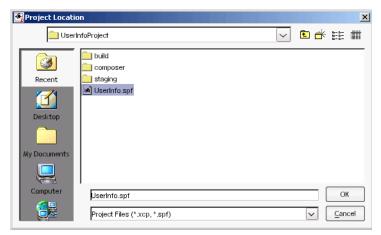


In the interest of time, you will use a template project that has some of the artifacts you need already coded. You will review some of the artifacts and complete the steps required to finish this part of the application.

2 Open the project by selecting menu File>Open Project.

Open Project	×
Project File:	Browse
Help (?)	OK Cancel

**3** Navigate to the project folder by clicking the **Browse** button. The project folder is: D:\GuidedTour\template\RequestUserInfoProject\UserInfoProject.



- 4 Select the project file UserInfo.spf and click OK.
- 5 Click OK.

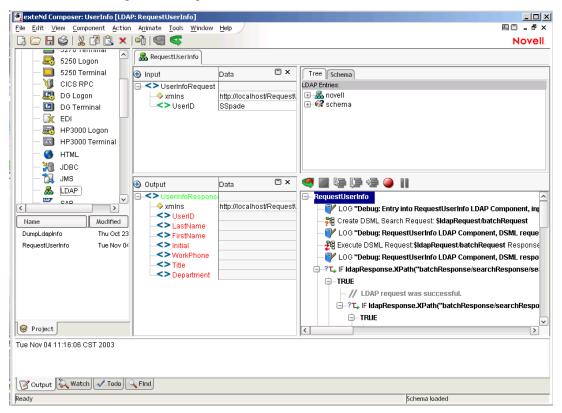
#### EXERCISE 2-2: Review the LDAP component

In this exercise you will review the component that retrieves the information from the exteNd LDAP server. This component was created using exteNd Composer LDAP Connect.

1 In the Category Pane of the Navigation Pane, select Component and then LDAP.



2 In the Detail Pane of the Navigation Pane, double-click **RequestUserInfo**. This opens the component in the Editor Pane.



#### EXERCISE 2-3: Sidebar: the exteNd Composer Component Editor Layout

Now you will take a look at the exteNd Composer functionality that allows you to quickly build and test solutions that access legacy data sources.

Step 2 of the previous exercise shows the exteNd Composer Designer with an LDAP Component open in the Editor panel. The Editor Pane is divided into three subpanes:

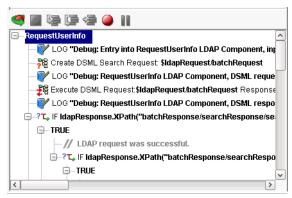
• In the **XML Documents or DOM** Pane (DOM stands for Document Object Model), you can view and edit the XML documents being manipulated by the component. To make it easier to work with the exteNd Composer Designer, you can control which of these DOMs are visible at any time.

🕀 Input	Data	٥	×
UserInfoRequest \$\$\serInfoRequest\$	http://localhost/R SSpade	equ	estl
⊖ IdapRequest	Data	٥	×
∋ IdapResponse	Data	۵	×
_			
🕀 Output			
UserInfoRespons	Data	٥	×

• The Native Environment Pane is used by the Novell exteNd Connect products to provide a native view into the data source for which the exteNd Connect product provides the integration interface. So in exteNd LDAP Connect you see a graphical view of the Directory tree.



• In the Action Model pane, you work with the exteNd Composer actions associated with the current component.



An exteNd Composer action is similar to a programming statement. It takes input in the form of parameters and performs specific tasks.

An exteNd Composer component consists of a set of instructions for processing XML documents or communicating with non-XML data sources. This set of instructions is called an Action Model. In exteNd Composer components and services, the Action Model performs all data mapping, data transformation, and data transfer tasks.

Action Model toolbar The toolbar above the Action Model gives you access to exteNd Composer's animation tools. These tools allow you to test and troubleshoot the actions associated with your services and components. You can step through a service or component Action Model one step at a time and see the result of each action. By doing this, you will become aware of any action failures as well as be able to verify that the output of the component is what you expected.

The animation tools allow you to set breakpoints so you can test individual sections of an Action Model. Using breakpoints, you can easily troubleshoot an Action Model by stopping execution just before any action that is causing trouble, and stepping through that and subsequent actions one at a time.

Button	ΤοοΙ	What it does
۲	Start Animation	Starts the animation process.
	End Animation	Stops the animation process.

Button	ΤοοΙ	What it does
	Step Into	Executes the currently selected action and highlights the next sequential action. If the currently selected action is a Component, Repeat, Decision, or Try/On Error action, the next highlighted action becomes the details of those actions.
	Step Over	Executes the currently selected action and highlights the next sequential action. Unlike the Step Into button, clicking this button does not highlight and execute the details of Component, Repeat, Decision, or Try/On Fault actions.
	Toggle Breakpoint	Sets the highlighted action in the Action Model as a breakpoint. You may set more than one breakpoint.
<b>*</b> ]	Run To Breakpoint/End	Runs the animation to the next breakpoint or to the end of the Action Model.
	Pause Animation	Pauses the animation.

#### EXERCISE 2-4: View the input and output documents for the LDAP component

The Input XML document is an XML template containing a sample of the data required to make a request for user information. You use this template as a guide for writing the Action Model and testing the execution of the model.

🕀 Input	Data	Ξ×
SerinfoRequest		
	http://localhost/R	equestl
<> UserID	SSpade	
ļ		

The Output XML document is also an XML template. It contains a sample of the data that will be provided to fulfill the request.

🔁 Output	Data	Ξ×
UserInfoRespons		
—♦ xmins	http://localh	iost/Request(
<> UserID		
LastName		
— FirstName		
Initial		
WorkPhone		
<>> Title		
<b></b> Department		

The sample of the Output XML is what is sent if the component is successful in connecting to the directory and finding the requested user information. If the user does not exist, an error message is sent. You will now view the sample data and the XML structure in the Output XML document.

1 In the Output XML document in the Component Editor, right-click to open the context menu.

Add to Display	Þ
View	۲
Launch Editor	
Load XML Sample	
Save XML As	
Find	
Find Next	
Validate	

- 2 Select Load XML Sample.
- 3 Click the Sample dropdown list then select UserInfoResponse\_message.xml.

Load XML Sample			×
Part:			
Output	~		
⊖ File Name			
		Br	owse,,,
<ul> <li>Sample</li> </ul>			
UserInfoResponse_emtpy.xml	$\sim$		)efault
UserInfoResponse_data.xml			
UserInfoResponse_emtpy.xml			
HUserInfoResponse_message.xml		OK	Cancel

4 Click OK.



#### EXERCISE 2-5: View the LDAP connection resource

The LDAP component requires a connection resource to connect to an LDAP server. The connection resource provides the specific information required to establish a connection to the exteNd LDAP directory server you are using. Now you will view the resource used by this component.

- **1** From the menu bar select **File>Properties**.
- 2 Select the Connection Info tab.

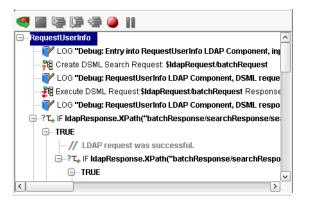
	ection Info				
Connection	UserInfoLdapServer	~		Test	
Host or IP Address	ath("USERCONFIG/LdapServe	er").toString()	E		
Port Number	USERCONFIG/LdapServerPo	rť").toString()	E		
Base DN					
User DN	th("USERCONFIG/LdapUserII	D").toString()	E/		
Password	*****	******	E/		
Version	3				
Use TLS					
Time Limit					
Size Limit	1000				

The Connection Info tab provides the information for the connection resource being used in a read-only mode. By clicking the Test button you can verify that a connection to the exteNd LDAP server can be established. Note the icon next to some of the field values: this indicates that an ECMAScript expression is used to create the required value. The actual values are stored as project variables in your project, where you can easily change them in one place or even dynamically before the component is executed.

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

#### EXERCISE 2-6: Review the Action Model

The Action Model is the collection of instructions that are executed in sequence to process the input to produce the output. In this exercise you will review some of the key actions in the LDAP component that will be executed by the Web Service you are going to complete.



#### Log actions

The first, third, and fifth actions are **Log** actions used to report debug-level information. This logging can be turned on by setting exteNd Composer's Designer or Server Log threshold. After deployment to an application server, these Log actions may be helpful in tracking down problems with a deployed application. It is good development practice to be proactive about adding them to your code. If you want to see the results of the debug Log actions in this project, you must set the Log Threshold in the Preferences to 4 or lower.

🚏 LOG "Debug: Entry into RequestUserInfo LDAP Component, input is:\n" + Input TO System Output using Log Level 4

#### **Create DSML Search Request action**

The second action is a **Create DSML Search Request** action, used to create an LDAP request as a DSML XML document. This action creates the actual query details (the where clause) and identifies the attributes that are to be returned.

When you select this action, the Native Environment Pane allows you to review and edit the details of the search request. The UserID in the Input XML Document is used to query the uid attribute in the directory.



The result of executing this action is an XML document that is placed in a temporary XML DOM.

Now you will view this document in the XML Documents panel.

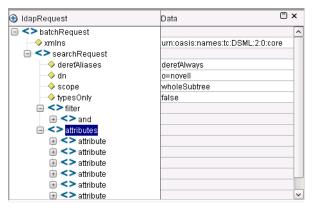
1 Right-click in the XML Document panel, select the Add to Display submenu, and select ldapRequest. This is the temporary XML DOM used to hold the XML created by the Create DSML Action.

∋ IdapRequest	Data	🗆 ×
_	l	

2 In the Action Model, select the Create DSML Search action.

📲 Create DSML Search Request: \$IdapRe

3 Click the Execute Current Action icon <a>[subsequence]</a> on the toolbar. This executes the action and displays the XML created for the request in the XML Document panel.



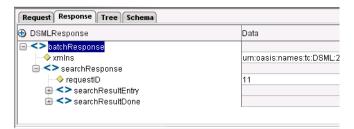
- 4 Now click the **Execute** All icon so on the toolbar. This causes the entire component to be executed, providing you the results of a successful query.
- **5** Click **OK** at the Execution Completed message dialog.

#### **Execute DSML Request action**

The fourth action is an **Execute DSML Request** action. This action takes the request created by the Create DSML Search Request action and connects to the server to execute the request. The result is placed into another temporary XML document called **ldapResponse**.

-- 🖧 Execute DSML Request:\$IdapRequest/batchRequest Response: \$IdapResponse/batchResponse

Here is what the Native Environment Pane looks like when the action is selected, after execution:



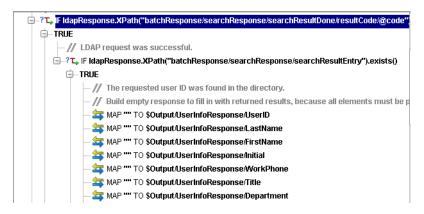
Here is the ldapResponse XML document.

🕣 IdapResponse	Data	Ξ×
> batchResponse		^
→ xmins	um:oasis:names:tc:DSML:2:0:0	core
😑 <> searchResponse		
	11	
😑 <> searchResultEntry		
	cn=SSpade,ou=HR,o=novell	
→ requestID	11	
😥 <> attr		
😥 <> attr		
😥 < > attr		
🕀 <> attr		
😥 <> attr		
searchResultDone		
🔶 matchedDN	o=novell	
→ requestID	11	
eho∩tluser <> ⊫		~

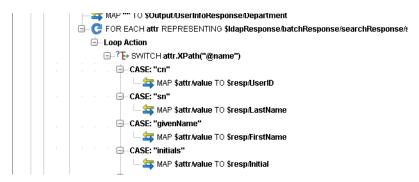
Use the steps you learned above to make the ldapResponse XML document visible.

#### **Decision action**

The sixth action is a **Decision** (IF) action. This action checks for a successful request. If the request is successful, the TRUE block of actions will be executed. This sequence of actions is used to produce the required output you saw in the Output XML Document earlier. First the XML document is created with no data to ensure that the structure of the XML document conforms to the schema. exteNd Composer will always create well-formed XML, but it is your responsibility to ensure that the XML is valid when an XML Schema or DTD is specified.



The next step is to handle each of the attributes returned in the result and place the data in the XML document. The DSML response will contain a repeating element for each of the attributes that was requested and is available for that specific entry in the directory. The Action Model must loop through each of these repeating elements and check the attribute name, placing the value into the correct element in the output XML document.

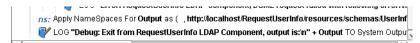


The FALSE blocks of the Decision actions contain **Map** actions that create message structures used in the event of failure, and a **Log** action used to log the failure of an LDAP request.



#### **Apply Namespace action**

The final action is an **Apply Namespace** action that adds a reference to the XML Schema namespace that can be used to validate this document.



#### EXERCISE 2-7: Test the component

With the exteNd Composer Designer, you can test the execution of the component without having to deploy to a J2EE application server. You will now test the component—first with a **valid** user ID and then with an **invalid** ID.

1 The valid user ID is already provided for in the default XML Input sample. Click

the **Execute All** icon **Solution** on the toolbar.

- 2 Click **OK** for the Execution Completed message dialog.
- **3** Review the Output XML Document.

🕀 Output	Data 🗆 🗙
UserInfoRespons	
	http://localhost/Request\
-<> UserID	SSpade
LastName	Spade
FirstName	Sam
—<> Initial	
WorkPhone	555-667-7598
	Security Manager
Department	

**4** To enter an invalid User ID you need to change the Input sample. Double-click the value **SSpade**.



- **5** Type **xxx** replacing SSpade.
- 6 Click OK.
- 7 Click the Execute All icon so the toolbar.
- 8 Click **OK** for the Execution Completed message dialog.
- **9** Review the Output XML Document.

🔁 Output	Data	Ξ×	
UserInfoRespor	151		
	http://local	http://localhost/Request\	
lessage	Requeste	Requested userID: xxx n	

You have now finished reviewing the LDAP component. To close the LDAP component:

**10** Click on the Close icon in the editor to close the component.



**11** If prompted to save changes, Click **No**.

#### EXERCISE 2-8: Complete the Action Model for the service

With exteNd Composer, a service is required to act as the interface to the outside world. An application that uses the LDAP component you reviewed must invoke a service through a Service Trigger (more on this later) that will execute the component or even possibly other components. A service has its own Action Model. In this exercise you will complete the service that accepts the requested user ID and returns the information supplied by the RequestUserInfo component.

1 In the Category Pane of the Navigation Pane, select Service and then Web Service.



Although the service you selected is classified as a Web Service, it does not necessarily mean that it has a WSDL and SOAP binding. It is a **Web Service** only in the sense that it will normally be invoked as part of a Web application and that it responds to the request/response model used with HTTP.

The service trigger (or triggers) for invoking the service are created when it is deployed to a J2EE application server (like the Novell exteNd Application Server). One of the deployment options available to you is to use a Web Service with a WSDL and SOAP binding.

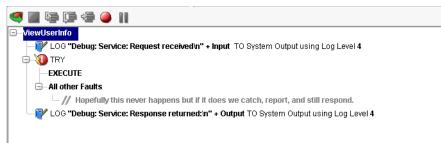
2 In the Detail Pane of the Navigation Pane, double-click **ViewUserInfo**. This opens the service in the Editor Pane.

🚫 ViewUserInfo				
🕀 Input	Data 🗆 🗙	🕀 Output	Data	Ξ×
C→> UserInfoRequest	http://localhost/Requestl SSpade	□ -<> UserInfoResponse → xmins <> Message	http://iocalhost/Requ test	uestUserInfo/reso
🧠 🔳 🕼 🕼 🧶	il 🌔	J		
- ViewUserInfo - Vie	Service: Request receive	d <b>'n" + Input</b> TO System Output using Lo	og Level 4	
All other Faults	;			
	-	t if it does we catch, report, and still re		
└─ <b>₽</b> ₽ LOG <b>"Debug: \$</b>	Service: Response return	ed:'n" + Output TO System Output usin	g Log Level <b>4</b>	

Note that the XML Output sample used for the service is the message response. This was set as the default because the service will normally take the output produced by the LDAP component as its output. But in the event that the component fails to execute for any reason, the service will respond with a message.

🕀 Output	Data	Ξ×
<ul> <li>VserinfoResponse</li> <li>xmins</li> <li>Message</li> </ul>	http://localhost/R test	equestUserInfo/resol

The Action Model for the service has been partially completed for you. The **Try On Fault** action is a wrapper for the execution of the component; if it fails, the Fault section will be executed and a Log action will send a log message to the System Output. You will add the action to execute the RequestUserInfo component and a Map action to create the XML output in the event of a fault.



- **3** Select the **EXECUTE** in the TRY action.
- 4 Right-click to display the context menu. Then select New Action>Component.
- **5** In the Component dialog, enter the following:
  - Component Type: LDAP
  - Component Name: RequestUserInfo
  - Passed Part: Input
  - Returned Part: Output

				X
Predefined		🔿 Dynamic		
Component Type		Component Name		
LDAP	~	RequestUserInfo		~
Passed Part(s)	To Part	Template Category	Template Name	
Input	Input	UserData	Request	
Returned Part(s)	From Part	Template Category	Template Name	
Returned Part(s) Output	From Part	Template Category	Template Name	
				Cancel

6 Click OK.



- 7 Select All other Faults of the Try/On Fault action.
- 8 Right-click to display the context menu. Then select New Action>Map (or use the keyboard shortcut Ctrl+M).

Мар				×
Source				
XPath: Input	~	O Expressi	on:	
1				<u>~</u>
Options				
Content Editor	Code Tal	ble Map.,,	Advi	anced,,,
	Code Ta	ле мар	Adva	anced,.,
Target				
	~	<ul> <li>Expression</li> </ul>	on:	
				2
1				_
Help 🕐		Apply	ОК	Cancel

9 In the Source area click the Expression radio button, then click the ECMA

Expression icon  $\blacksquare$  to open the expression editor.

Source Expression			×
Variables:	Functions/Methods:	Operators:	
⊕-<> Input	Custom Scripts	⊕–Math	
⊕ <> Output	Document	Relational	
	ECMAScript	+ Logical	
PROJECT	Extended ECMAScript		
Repeat Aliases     Node Aliases			
Noue Allases			
	ſ	V-Hd-ta	
Help ?		Validate OK	Cancel

**10** Type the following (include the quotes):

```
"Error in component " +
_SystemFault.XPath("FaultInfo/ComponentName") + " at " +
_SystemFault.XPath("FaultInfo/DateTime") + " with MainCode " +
_SystemFault.XPath("FaultInfo/MainCode") + ", SubCode " +
_SystemFault.XPath("FaultInfo/SubCode") + ", and with a message
of " + _SystemFault.XPath("FaultInfo/Message") + "."
```

\_SystemFault is a Composer DOM variable that holds an XML document in the event that a system fault occurs. If you had forced a fault during the execution of the service (by stopping your exteNd LDAP server, for example), you could view the structure of this document in the expression editor. You would do this by clicking the icon next to \_SystemFault.

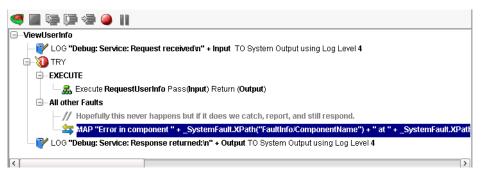
When you double-click an XML element in a DOM variable such as \_SystemFault, the expression editor writes the appropriate ECMAScript expression—for example: \_SystemFault.XPath("FaultInfo/DateTime").

11 Click OK.

**12** In the Target text box, type UserInfoResponse/Message (or use the expression editor by clicking the icon.

O XPath: Input	Expression:
+ ", and with a message of "	' + _SystemFault.XPath("FaultInfo/Message") + "." 📝
Options	
Content Editor	Code Table Map.,, Advanced,,,
larget	
	Expression:
	C Expression:

- 13 Click OK.
- 14 To place the Map action after the Comment action, you can drag and drop. Leftclick the Map Action, hold it and drag it down to the Comment Action. Then release the left mouse button.



- **15** Click the **Execute** All icon **Solution** on the toolbar.
- 16 Click OK for the Execution Completed message dialog.
- 17 Review the Output XML Document.

🕀 Output	Data 🗆 🗙
UserInfoRespons	
——————————————————————————————————————	http://localhost/Request
UserID	SSpade
LastName	Spade
FirstName	Sam
Initial	
WorkPhone	555-667-7598
Title	Security Manager
Department	

**18** Click the **Close** icon in the editor to close the service.



19 If prompted to save changes, click Yes.

# EXERCISE 2-9: Create the Web Services Definition Language (WSDL)

Now that the service is completed and tested, your next task is to create a WSDL for the service. You need to do this because you will be deploying this service as a Web Service, and the WSDL is required for the service trigger that will be generated. The WSDL will also be used to help build the user interface for the application in Lesson 4.

1 In the Category Pane of the Navigation Pane, select **Resource** and then **WSDL**.



2 Right-click to display the context menu, then select New.

Create a New WSDL Resource		×
	rstem to be Composer WSDL resources, use Browse or n (;). Then use the WSDL to automatically drive WS	
Create from existing external file(s)	○ Create using the Composer Editor	
File/URL to Import:		
http:// <host>:<port>/<path></path></port></host>	Browse	
Help ⑦	Sack Finish Cancel	

- **3** Select the Create using Composer Editor radio button.
- 4 Type ViewUserInfo in the Name text box.

**5** Type Describes the Web Services descriptor for the LDAP user information request service in the Description text box.

ate a New WSDL Resource	
WSDL descriptions can be automatically generated fo Registries. WSDL is also used to automatically config Enter a name and description for this WSDL resource characters: f:? " < >.   Names are case insensitive	ure Web Service Interchange actions in a component. The name is required and may not contain the
○ Create from existing external file(s) (	Create using the Composer Editor
Name:	
ViewUserInfo	
Description:	
Describes the Web Services descriptor for the LDAP u	ser information request service
]	
Help 🕐	< Back Next > Cancel

6 Click Next.

	1
Create a New WSDL Resource	×
Check 'Associate Web Service' to automatically create WSDL for a Service in this project, or uncheck it to manually create your own. (Note: If no Web Services exist, this checkbox is disabled) Use 'Document' style when passing XML business documents between Web Services and 'RPC' for passing flat parameter lists as XML to a program deployed as a Web Service.	
Service TestViewUserInfo	
Binding Style:      O Document      O RPC	
Generate SOAP Service	
URL http://iocalhost:80/com.test	
Help 🕐 Sack Finish Canc	

- 7 Select ViewUserInfo from the Service dropdown list.
- 8 Select the Generate SOAP Binding check box.

Create a New WSDL Resource	×
Lreate a new work resource	
Check 'Associate Web Service' to automatically create WSDL for a Service in this project, or uncheck it to manually create your own. (Note: If no Web Services exist, this checkbox is disabled) Use 'Document' style when passing XML business documents between Web Services and 'RPC' for passing flat parameter lists as XML to a program deployed as a Web Service.	
Service ViewUserInfo	
Binding Style:      O Document      O RPC	
Generate SOAP Service	
URL http://localhost:80/RequestUserInfo/viewOnly	
	_
Help ⑦ < Back Finish Canc	el

9 Type http://localhost:80/RequestUserInfo/viewOnly in the URL text box.

- 10 Click Finish.
- **11** If prompted with a message, click **OK**.
- **12** Click the Close document frame icon in the editor to close the WSDL.



You have now finished creating the exteNd Composer Web Service.

**Next lesson** In the next lesson you will create a service trigger for the service, then deploy and test the service.

# **3** Deploying and Testing the Web Service

# About this lesson

# Objective

The exteNd Composer project you just worked in Lesson 2 is part of an exteNd Director project. exteNd Composer is being used as the data layer of the application, and exteNd Director will be used for the presentation layer. Through cleanly separating the two layers, changes may be made to one without necessarily requiring changes in the other.

In this lesson you are going to create a service trigger for the exteNd Composer service you completed, deploy the application, then use exteNd Composer to test the SOAP interface to the service.

# What you will do

- **1** Start exteNd Director and open the project
- 2 Create a SOAP-based service trigger
- 3 Sidebar: the exteNd Director development environment
- 4 Deploy the application
- 5 Test the Web Service using exteNd Composer

# EXERCISE 3-1: Start exteNd Director and open the project

In the interest of time, you will use a template project that has some of the artifacts you need already completed, including the addition of the exteNd Composer project. In Lesson 4, "Completing the exteNd Director Project", on page 59, you will be reviewing some of these artifacts. When you have completed the required artifacts, you will test the completed application.

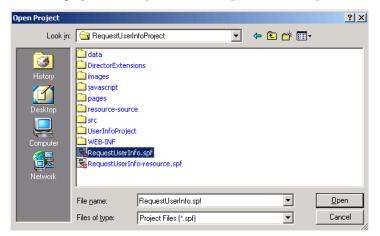
1 Start exteNd Director by going to the Start>Programs>Novell exteNd 5.0>Director menu and selecting Director Designer:

🍓 Windows Updat	e 🛱 Java Web Start		
👼 Programs	🕨 👼 Novell exteNd 5.0	🕨 🕞 AppServer	•
Documents	•	Composer	
🔛 Settings	•	👼 Director	🕨 🔜 Director Designer
🕄 Sear <u>c</u> h		👼 MySQL	SilverCacheCoordinator
🔌 Help	State of State of State of State	C Messaging Platform	

- 2 Open the project by selecting File>Open Project.
- 3 Navigate to the project folder by clicking on the Look in dropdown list. The project folder is D:\GuidedTour\template\RequestUserInfoProject:

Look jn:	🔁 RequestUserInfoProject	-	<b>4</b>	

4 Select the project file RequestUserInfo.spf, then click Open:



**5** Change the view

View using: Archive layout

in the Navigation Pane to the

archive layout view.

What you see in archive layout view This view is a structural view of the archive that will be deployed to the server. It shows you where the various artifacts in your project will be placed in the archive. The default view is **source layout**, which shows you where the artifacts are actually stored in the development file system. In J2EE, where things are placed in the archive is important.

~

All the artifacts of the exteNd Composer and exteNd Director projects are stored as files in folders located relative to the project file you opened.

**The resource set** One of the features of exteNd Director that helps cut down on the amount of developer time required in testing—by reducing the number of deployments required—is the resource set. (For more details on the resource set, see the chapter on using the resource set in an exteNd Director application in *Developing exteNd Director Applications.*)

An exteNd Director project has a configuration file called **resourceset.xml**, and for the resource set to be used properly in exteNd Director and the exteNd Application Server (or any other application server), a variable in the file must point to the project's physical location on your drive.

Now you will adjust this variable, because the current location of your project is most likely different from the location used to create the project initially.

- 6 In the Folder Pane of the Navigation Pane, click the 🖲 icon next to the WEB-INF folder.
- 7 Select the **conf** folder.
- **8** Double-click the **resourceset.xml** file in the Detail Pane of the Navigation Pane to open the file in the Editor Pane:

View using: Archive layout	resourceset.xml	
⊒- A RequestUserInfo.spf	General Variables Resour	ce Path Lib Path Directories
🗄 🧰 images	l	
🐮 🧰 javascript	Name:	RequestUserInfo-ResourceSi
pages	Dynamic Class Loading:	true 🗸
WEB-INF     Elasses	Validate:	false
the hit	Verbose:	faise
tag	Vultures:	true
<u>_</u>	Resource Set Utilities:	
config.xml		
resourceset.xml		
services.xml		
BDirectory SProject		
Registries Acsources	Graphical View	iource View

- 9 In the Editor Pane, click the Variables tab.
- 10 Locate the WARLOCATION key and change its Value to point to the physical location where you placed the template project—for example: D:\GuidedTour\template\RequestUserInfoProject.



- **11** Press **Enter** to save the change:
- **12** Click the 🖩 toolbar icon to save your changes.
- **13** In the Editor pane, click the General tab.
- 14 Scroll down until you see the Restart button. Click the Restart button.



**15** Close the open editor by clicking in the editor title tab

### EXERCISE 3-2: Create a SOAP-based service trigger

An exteNd Composer service requires a Java service trigger that will interact with the exteNd Composer runtime on behalf of the users of the service. The exteNd Composer service you completed will be invoked as a Web Service using SOAP.

For working with Web Services, you need to have a Java servlet that is listening at the URL specified when you created the WSDL (you did this in EXERCISE 2-9: "Create the Web Services Definition Language (WSDL)").

In this exercise, you are going to configure a generic servlet, provided by exteNd Composer, to listen at your specified URL.

- 1 Click the New File icon 🚨.
- 2 Select the Web Services tab.

**3** Select the Composer Web Service Wizard:

Rew File
🚺 Choose a file type.
Creates a trigger to execute an existing Composer Web Service. The wizard prompts you for trigger type, target project, and selection of a Composer Service.
General Portal Portlet Rules Web Services Workflow XML
Composer Web Service Create a trigger for a Composer web service Use an existing Web Service
New Web Service         WSDL           Create a new Web Service         Create a new WSDL file
Use wizard
Help ⑦ OK Cancel

- 4 Click OK.
- **5** Select **Web Service** as the Service Trigger Types.
- **6** Verify that **RequestUserInfo** is the target project:

🐕 Composer Service Wizard	×
⊂Service Trigger Types	
Web Service	
Target Project	1
RequestUserInfo	
If this control is disabled, then there are no projects that	
support the selected trigger type. Create WAR project	
create wat project	
	٦
Help ? < Back Next > Cancel	

- 7 Click Next.
- 8 Verify that **UserInfo** is the project selected.

**9** Select **ViewUserInfo** as the service:

🔀 Compose	r Service Wizard	x
Composer		1
Project	Userinfo 🗸	
Service:	ViewUserInfo 🔽	
-Web Servi	ce Details	1
WSDL:	ViewUserInfo 🔽	
Method:	SOAP	
URL:	viewOnly	
		1
Help 🕐	<pre> &lt; Back Next &gt; Cance</pre>	L

- **10** Verify that **ViewUserInfo** is selected as the WSDL in the Web Service Details block. Click **Next**.
- **11** Accept the defaults:

Romposer Service Wizard	
-Web Service Options	
Body Namespace: urn: ViewUserInt	fo
URL Path: viewOnly	
Service Name: ViewUserInfoSe	ervice 🔽
Port: ViewUserInfoPc	ort 🔽
Operation: ViewUserInfoO	peration 🔽
Certificate Resource: <a href="https://www.ceitance.com"></a>	~
🗌 Validate Rec	quest XML Signature
Help ⑦ Sack	Finish Cancel

12 Click Finish.

**13** Click **OK** for the Composer Deployment Wizard confirmation dialog.

Composer Deployment Wizard	×
The wizard has completed successfully.	
The following actions were taken:	
1. The web.xml for project "RequestUserInfo" has been modified.	
Ok	

### EXERCISE 3-3: Sidebar: the exteNd Director development environment

The exteNd Director development environment, along with providing you with the ability to visually create exteNd Director artifacts such as portlets and XForms, is also used to keep track of the J2EE-specific artifacts and to build and deploy the J2EE archives that make up your project. In this exercise you will take a slight detour to look at some of the features of exteNd Director that are useful in managing the development of a Web-based solution.

In the last exercise, when you created an exteNd Composer service trigger, you may have noticed that no source file was opened. So you may wonder whether you actually have a service trigger or not.

The answer is yes—the exteNd Composer runtime provides a servlet implementation that accepts the SOAP request, invokes the exteNd Composer service, and formats a SOAP response. This servlet is configured to invoke the correct exteNd Composer service by setting initialization parameters in the **web.xml** (J2EE Web application descriptor) file of the Web archive. Now you will view these entries.

1 Scroll up the Folder Pane of the Navigation Pane until you see the RequestUserInfo.spf entry for the project, then select it.

View using: Archive layout	~
🖃 🚔 RequestUserInfo.spf	^
🕀 🛅 data	
🕀 🛅 images	
🗄 🛅 javascript	
🔲 🖨 pagar	

2 Right-click to open the Context menu, then select **Open Deployment Descriptor**.

- 3 If you get the Select Build Option dialog and do not want to see this dialog again, select No, don't build now, Never automatically build my project—then click OK:
  - It is usually better to explicitly build your project rather than having it done automatically, especially when all you want to do at this moment is simply view the descriptor file. When you deploy your project in a later exercise, the exteNd Director development environment will check whether a build is required at that point.
  - You could also have opened this file by navigating to the WEB-INF folder and selecting it in the details. The descriptor file is always called **web.xml** and will always be located in the **WEB-INF** folder of the archive.
- 4 In the Editor Pane, scroll down until you see an entry called **com.novell.composer.userinfo.ViewUserInfoSoapService**. This is the servlet configuration.



- The web.xml file is XML, and the exteNd Director development environment gives you access to the actual XML. But in most situations you will use the Visual Editor to edit the contents of this file, providing a more intuitive way to maintain the file. You may view or change elements in the file by using the right-mouse button to bring up a Property Inspector. The Property Inspector will show you the valid values for the element you are working on or allow you to select its values from other entries in the file when you are entering a cross-reference.
- If you scroll further down you also find a Servlet Mapping entry for this servlet that configures the proper URL pattern that this instance will use.
- **5** Close the open editor by clicking on the editor title tab.

For each type of application server, the exteNd Director development environment uses a separate server profile, which defines the details required for deploying to that type of application server. In this *Guided Tour* you are using the default profile, which will deploy to an exteNd Application Server running locally on your computer. If you want to review this profile or create a new one, use the profile editor available from **Tools>Profiles**:

🙀 Profiles		×
Servers Databases	😫 Registries	
Server Profiles are used at dep server.	loyment. They specify the information necessar	y to deploy to a given
Note: a server type is valid for t version is available.	he server version specified or greater, unless a	a higher numbered
Profile name: Novell exteNd 5	X	<u>∽</u> <u>N</u> ew
Server type:	Novell exteNd 5.X	<u>E</u> dit
Server version:	5.1	
Deployment tools directory:	C:\Programs\Novell\exteNd5\AppServer\bin	Delete
Rapid Deployment directory:	C:\Programs\Novell\exteNd5\AppServer\weba	apps
Server specific information:		
Server name: localhost:8	0	
Database name: SilverMaste	ar 50	
Help 🕐	(	OK Cancel

### EXERCISE 3-4: Deploy the application

Now you are ready to deploy the application to the exteNd Application Server so that you can test the exteNd Composer service as a Web Service.

1 Scroll up the Folder Pane of the Navigation Pane until you see the RequestUserInfo.spf entry for the project, then select it:

View using: Archive layout	~
🖃 🚔 RequestUserInfo.spf	^
🕀 🛅 images	
🗄 🛅 javascript	
🛱 🥽 aboor	

2 Right-click to open the context menu, then select **Open Deployment Plan**.

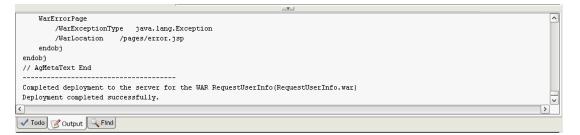
The deployment plan defines the server-specific details necessary for successfully deploying the application to the exteNd Application Server. It is created and maintained based on the information in the web.xml descriptor file. You should always review and save the deployment plan before doing a deployment.

**TIP:** If you are deploying to a different server, you will need to change the server profile used by this plan.

- **3** Click the 🖩 toolbar icon to save your changes.
- 4 Close the open editor by clicking the  $\square$  on the editor title tab.
- 5 Click the **Deploy** toolbar icon <sup>1</sup>

When you see **Deployment completed successfully** in the Output Pane of the exteNd Director development environment, your deployment has completed.

This first deployment took a little bit longer than is usual, because not only was your application deployed to the server and then started by the server—but the database was also initialized. This was the database you created and defined a connection pool for in EXERCISE 1-4: "Create a JDBC connection pool".



# EXERCISE 3-5: Test the Web Service using exteNd Composer

In the exteNd Composer project there is a service (TestViewUserInfo) that was created to test the deployed ViewUserInfo as a SOAP service. This service has one action (the WS Interchange) that is used by exteNd Composer to consume a Web Service that uses SOAP binding. In this exercise you will use this service to test the application you just deployed.

### Set the log threshold

As part of your testing you want to see the output from the Log actions in the Composer Component and Service to appear on the server console. For this to happen you need to set the log threshold on the server using the Composer Administrator Console.

- **1** Open your favorite browser.
- 2 In the address bar, type http://localhost/exteNdComposer/ and press Enter.

**3** Type the exteNd Application Server administrator user ID and password you supplied when you installed the exteNd 5 Suite, then click OK:

🕘 exteNd Composer Server (	Console - Microsoft Internet Explorer	
<u>File E</u> dit <u>V</u> iew F <u>a</u> vorites	<u>I</u> ools <u>H</u> elp	
💠 Back 🔹 🤿 🗸 🙆	🖞 🔯 Search 👔 Favorites 🎯 Media 🍏 🛃 🛛 🎝	
Address 🕘 http://localhost/ext	teNdComposer/Console	
exteNd Compose	r	
Server Console		
General Properties	General Properties and Settings	
About Products:	VM Free Memory: 51 Mb	
<u>3270</u>	Log Level: 5	
<u>5250</u>	Apply Log Level	

- 4 Change the Log Level to 4, then click **Apply Log Level**.
- **5** Close the browser application by using **File**>Close.

# **Test the Web Service**

- **1** Open the exteNd Composer Designer. (It should still be open, and using Alt+Tab should get you to it.)
- 2 In the Category Pane of the Navigation Pane, select **Web Service** under the Service category.

💽 exteNd Composer: UserInfo [Web Service: TestViewUserInfo]	- <b>-</b> ×
Eile Edit View Component Action Animate Tools Window Help	80 - 8 ×
C. 🗀 🖬 🥪 I 🐰 🗇 🖎 🗙 I 🖏 I 🥰	Novell
🕞 🜔 Service 🔼 🚫 TestViewUserInfo	
JMS Service Data X O Output Data	
SAP Service	
Web Service Armins http://iocalhost/Request	
Component SSpade	
2270 Logon	
3270 Terminal	
Name Modified	
TestViewUserInfo Sun Oct 2E	
ViewUserInfo Tue Nov 04	
💜 📓 🖙 😂 🥚 🔢	
-TestViewUserInfo	
WS Interchange: ViewUserInfo via Service ViewUserInfoService at Endpoint Location: "http://localhu	ost/RequestUserir
	-
Project 4	
	>
Wed Nov 05 06:10:42 CST 2003	
Output 💫 Watch 🖌 Todo 🔍 Find	
Ready	

**3** Double-click **TestViewUserInfo** to open the service in the Editor Pane.

4 Click the Execute All icon <a> on the toolbar.</a>

**5** Click **OK** on the Execution Completed dialog. You should see results returned by the SOAP service in the Output DOM of the editor.

🕑 Input	Data	Ξ×	⊖ Output	Data	🗆 ×
∃ <> UserInfoRequest					
	http://localhost/	/Requestl	xmins	http://localhost/Reque	stUserInfo/res
<> UserID	SSpade			SSpade	
			LastName	Spade	
				Sam	
			Initial		
				555-667-7598	
			Title	Security Manager	
			<>> Department		
Image: A state of the state		ō via Serv	ice <b>ViewUserInfoService</b> at Endpo	int Location: "http://localhos	t/RequestUse
- TestViewUserInfo		o via Serv	ice <b>ViewUserInfoService</b> at Endpo	int Location: "http://localhos	t/RequestUse
- TestViewUserInfo		o via Serv	ice <b>ViewUserInfoService</b> at Endpo	int Location: "http://localhos	t/RequestUse
- TestViewUserInfo		o via Serv	ice <b>ViewUserInfoService</b> at Endpo	int Location: "http://localhos	t/RequestUse
TestViewUserInfo		io via Serv	ice <b>ViewUserInfoService</b> at Endpo	int Location: "http://localhos	t/RequestUse
TestViewUserInfo		io via Serv	ice <b>ViewUserInfoService</b> at Endpo	int Location: <b>"http://localhos</b>	t/RequestUse
-TestViewUserInfo		io via Serv	ice <b>ViewUserInfoService</b> at Endpo	int Location: <b>"http://localhos</b>	t/RequestUse
- TestViewUserInfo		io via Serv	ice <b>ViewUserInfoService</b> at Endpo	int Location: <b>"http://localhos</b>	t/RequestUse
- TestViewUserInfo		io via Serv	ice <b>ViewUserInfoService</b> at Endpo	int Location: <b>"http://localhos</b>	t/RequestUse

When you look at the server console, you will see the log results from the exteNd Composer runtime:

Application Server
<pre></pre>
++++++ Fri Jan 09 07:28:35 CST 2004 USER LOG FROM RequestUserInfo Debug: Exit from RequestUserInfo LDAP Component, output is:
xml version="1.0" encoding="UTF-8"?
<pre>{UserInfoResponse xmlns="http://localhost/RequestUserInfo/resources/schemas/User Localparameters.urg/User</pre>
InfoResponse.xsd"> <userid>SSpade</userid>
<lastname>Špade</lastname>
<firstname>Sam</firstname> <initial></initial>
WorkPhone>555-667-7598
<title>Chief of Pediatric Surgery</title> <department></department>
+++++ Fri Jan 09 07:28:35 CST 2004 USER LOG FROM ViewUserInfo
Debug: Service: Response returned: xml version="1.0" encoding="UTF-8"?
<pre>KUserInfoResponse xmlns="http://localhost/RequestUserInfo/resources/schemas/User</pre>
InfoResponse.xsd"> <userid>SSpade</userid>
(JastName)Spade(/LastName)

Congratulations. You have successfully completed an exteNd Composer service and deployed it with a SOAP service trigger.

- 6 Close the exteNd Composer Designer application by using **File>Exit**. You will not need exteNd Composer for the remainder of this *Guided Tour*.
- 7 When prompted to confirm closing exteNd Composer, click Yes.

**Next lesson** In the next lesson you will complete an exteNd Director portal application that allows end users to consume the service.

# 4 Completing the exteNd Director Project

# About this lesson

# What is exteNd Director?

exteNd Director is an interaction portal server that enables IT organizations to rapidly deliver and easily maintain rich, personalized Web applications. exteNd Director provides a comprehensive development environment to help you create state-of-the-art interactive applications that users access through a portal:

- Powerful J2EE capabilities for the rapid implementation of sophisticated, services-oriented business Web sites
- Dynamic content, data, and Web Services
- Build interactive form-based applications that consume Web Services
- Model business processes using workflow, rules, and content management
- User personalization and profiling
- Deliver to any front end (browser, PDA, phone, kiosk)
- Multiplatform, multivendor combinations of application servers, databases, and operating systems

# Objective

In this lesson you will build a simple application that will present an initial form to the user requesting a user ID and then will invoke the Web Service (Composer ViewUserInfo) you deployed. The application will then display the results returned using one of two forms depending on whether user data or a message was returned. This application will run as a portlet in a personal page of a portal application. As you complete the application you will also have the opportunity to test your application.

# What you will do

- 1 Create a Web Service pageflow using a wizard
- 2 Sidebar: the resource set in an exteNd Director application
- **3** Test the default pageflow you created
- 4 Edit additional XForms
- **5** Add a new form to the pageflow
- 6 Change links to include the new form in the pageflow
- 7 Test the revised pageflow

# EXERCISE 4-1: Create a Web Service pageflow using a wizard

In this exercise you will use an exteNd Director wizard to create a pageflow—an exteNd Director artifact that links together XForms (presentation and data binding) to the invocation of a Web Service. The wizard builds XForms based on the schema in the Web Service and ties it all together to invoke the Web Service—and includes default exception handling. All this without you writing any code.

- 1 Click the New File icon 🚨.
- 2 In the New file dialog, select the **Portlet** tab.
- 3 Select the Web Service Pageflow Wizard.

👷 New File	X
🚺 Choose a file type.	
Creates a Pageflow populated by Forms and Activities to acce	ss a WebService.
General Portal Portlet Rules Web Services Workf	ow XML
Composer Pageflow Create a new Composer Pageflow	<u>CSS file</u> Create a new CSS file
Database Pageflow Create a new Database Pageflow	Form Create a new Form
Java Activity for Pageflow Create a new Java Activity for Pageflow	Pageflow Create a new Pageflow process definition
Portlet using a Web Service Create a Portlet from an Existing Web Service.	Portlet Create a new Portal Portlet.
Web Service Pageflow Create a new Web Service Pageflow	
Use wizard	
Help 🕐	OK Cancel

- 4 Click OK. The Web Service Pageflow Wizard displays.
- **5** Type **UserInformation** for the Base Name.

- 6 You must select the WSDL document for which you are building a user interface. There are two ways you can do this:
  - The **Browse** button allows you to select a WSDL that is not currently part of your project.
  - The **Resource Set** button lets you select a WSDL that is stored in your project, for example, the WSDL for the exteNd Composer service you will be using.

Use the **Resource Set** button to navigate to the location of the WSDL in the exteNd Composer project. In the **Choose file** dialog expand the folders until you see the **ViewUserInfo.wsdl** file. Select the **ViewUserInfo.wsdl** file. Click **OK**.

7 Accept the default checks on Use CSS Layout and Use the default WSRP CSS classes:

🐕 Web Service Pageflow Wizard
Specify the details of this Web Service Pageflow
Base <u>name</u> : <u>UserInformation</u> <u>W</u> SDL file: <u>InfoProject'composer'wsdl'ViewUserInfo.wsdl</u> <u>Browse</u> <u>Resource Set</u> Note: Only document-style WSDL files that contain a schema can be used in this wizard. <u>Vise CSS Layout</u> <u>Clues doct MUCPD CCC shows</u>
Use the default WSRP CSS classes
Help ⑦          Cancel

8 Click Next.

**9** The WSDL has only one operation, so take the defaults for the Select the Web Service Method dialog by clicking **Next**:

Specify the WebService method to use	X
Choose a web service and an o	peration for this WSDL file.
You have chosen the WSDL file D:\GuidedTour\tem	plate\RequestUserInfoProject\UserInfoPr
Choose a web service from this WSDL file:	ViewUserInfoService
Choose a port for this web service:	ViewUserInfoPort
Choose an operation for this web service:	ViewUserInfoOperation
Help ⑦	< Back Next > Cancel

**10** The exteNd Director project only has one resource set, so click **Next** in the Resource Set dialog:

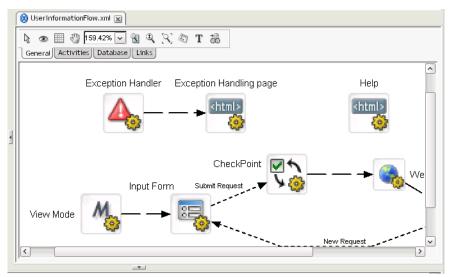
🙀 Resource Set		X
Select Resource Set		
		_
Select a resource set	RequestUserInfo-ResourceSet	~
If there are no resource sets available,	the portlet descriptor will not be generated.	
		_
Help 🕐	< Back Next > Canc	el

**11** On the Formatting Controls tab, select 2 for number of columns.

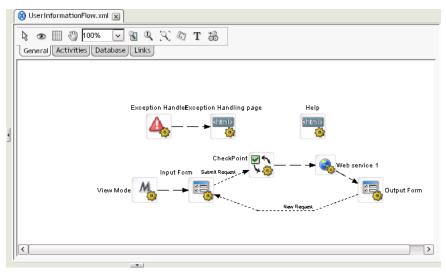
**12** Select **above** for the label alignment.

		N N
🐕 Specify Formatting		×
Specify the formatting for the controls	s on this form	
Specify the number of columns for this page:	2	$\sim$
Specify how to align the labels relative to the controls:	above	$\mathbf{v}$
Specify the width for each column:	150 pixels	~
Specify the font size that will be used in the browser:	12 points	$\sim$
Specify the gap between rows:	5	
Specify the vertical gap between the label and its control:	5	
Help ?	Back Finish Ca	ncel

- 13 Click Finish.
- **14** Click OK on the Done creating forms and pageflow message:



**15** Use the percentage dropdown list <sup>159.42%</sup> to adjust the size of the pageflow diagram in the editor. 100% is a good compromise between size and readability.

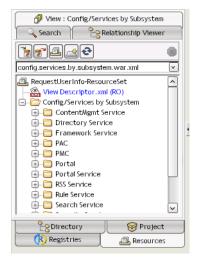


# EXERCISE 4-2: Sidebar: the resource set in an exteNd Director application

An exteNd Director resource set organizes descriptors and other files used by exteNd Director subsystems and provides for dynamic loading during development, avoiding frequent redeployments and speeding up your testing. Each custom Web application can include a resource set.

A resource set holds application-defined resources and classes. Some of these resources are templates or definitions for using a subsystem's features—such as a rule, XForms, pageflows, or a portlet descriptor. Others specify how subsystems work together—such as bindings between rules and users. Resources are usually XML files; some are accompanied by Java classes.

A resource set organizes your application's resources in a known directory structure and within exteNd Director you may use the Resources tab in the Navigation Pane to find the various artifacts in your project. For example, if you wanted to find all the files created in the previous exercise you would do the following: **1** Select the **Resources** tab in the Navigation Pane.



- 2 Select the Search tab.
- 3 In the File Name text box, type UserInfo.
- 4 Click the **Search** button:

- 5 You can save this search as a view to reuse the search criteria at a later time. Click the **Save** button.
- 6 Name the file UserInfoStuff.xml and click Save.

The view is an XML file that describes the search criteria and display structure, and you may edit it to server your specific needs.

- 7 Close the open editor by clicking on the editor title tab to close the UserInfoStuff.xml file.
- 8 Select the View tab.
- 9 In the dropdown list find UserInfoStuff, then select it:

View : UserInfo	
UserinfoStuff.xml       UserinfoStuff.xml       Wew Descriptor.xml       Userinfo       UserinformationInput.xhtn       UserinformationResponse       UserinformationResponse       Wex	🕼 View : UserInfo
UserInfo UserInfo UserInfo UserInfo UserInfo Composer Composer UserInfo UserInfo UserInfo UserInformationInput.xht UserInformationOutput.xht UserInformationResponse UserInformationResponse UserInformationResponse View Decription UserInformationResponse View Decription View Decription View Decription UserInformationResponse View Decription View Decription	Search
RequestUserInfo-ResourceSet View Descriptor.xml UserInfo Composer	<b>7</b>
View Descriptor.xml UserInfo UserInfo Composer C	UserInfoStuff.xml
UserInfo	
composer     document-template     form     UserInformationInput.xhtn     UserInformationResponse_     UserInformationResponse_     my-views     v	
document-template     form     UserInformationInput.xht     UserInformationResponse     UserInformationResponse     my-views	
form     UserInformationInput.xhtn     UserInformationOutput.xh     UserInformationResponse     UserInformationResponse     wy-views	+ Composer
UserInformationInput.xhtn UserInformationOutput.xht UserInformationResponse UserInformationResponse my-views	🕀 📋 document-template
UserInformationOutput.xh UserInformationResponse_ UserInformationResponse_ to my-views	🗐 🗁 form
UserInformationResponse_ UserInformationResponse_ UserInformationResponse_ my-views	
UserInformationResponse_ my-views	
my-views v	UserInformationResponse
my-views v	UserInformationResponse
Directory 🔗 Droject	
	Directory 🛛 😽 Project
Registries Resources	

You may expand the folders to see the various artifacts you created—and by double-clicking a particular entry the appropriate editor for working with that artifact will be opened.

For details, see the chapter on using the resource set in an exteNd Director application in *Developing exteNd Director Applications*.

# EXERCISE 4-3: Test the default pageflow you created

Because pageflows and XForms created by the Web Service Pageflow Wizard are stored in the resource set and you already deployed the application, you may immediately test the default portlet that was created. This is because by default during development, your exteNd Director project was configured to dynamically load the resource set artifacts.

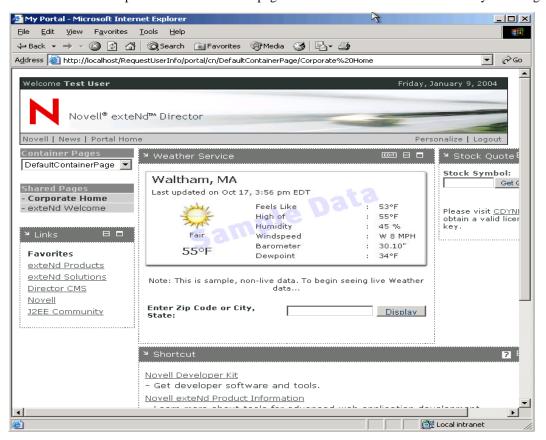
- **1** Open a browser window.
- 2 Type the URL http://localhost/RequestUserInfo/portal/portlet/LoginPortlet in the address bar.

**3** At the portal login page, click the New User? link:

Novell® e Director	exteNd™
≥ login	
Username: 	Password:
N	→login)

- 4 Enter the information to create a new user—for example:
  - User ID: user1
  - Password: password
  - Confirm Password: password
  - First Name: Test
  - Last Name: User
  - Email: user1@somewhere.com
- 5 Click Create.
- 6 Click Continue to return to the login page.

7 Log in using the account you just created. Click Login or press Enter. You will see the default portal shared page with some sample portlets. You will create a personal page where the portlet for the pageflow you created will be placed. You will use this page later in this lesson to test and review your changes.



# 8 Click the **Personalize** link:

PORTAL PERSONALI	ZER			Novell⊗ exteNd™ Director
Personal Pages You can create multiple personaliz	d	ined to a specific poord		different content
and will allow you to easily switch		lized to a specific field.	cach page can contain	unierent content
Personal Pages:	Page Name:		_	
	Description:		<u> </u>	
			<b>V</b>	
		🕩 <u>Update</u>		
🖪 <u>New</u> 🗙 <u>Remove</u>				
20	F	<b>F</b>		
Choose Cont	ent Arrange Content	Choose Laγout	Portal	
Default Page:				
You may change your default Pag	by selecting a different Persi	onal page or Shared pag	e from the list below.	
Default Page: None		et as current		
Derault Page: INone				
Container Page				
A Container Page is a portal page content when visiting their individu pages by selecting a different Con	al portal pages. You may cha	nge which default Contai		
9 Click New	under the Personal F	ages list to creat	e a new persona	ıl page.

**10** Change the name of the page to User Info Test, then click Update:

You can create multiple personalized pages which can be customized to a specific need. Each page can contain different content and will allow you to easily switch between certain tasks.

Personal Page		Page Name: User Info T Description: Enter Desc			
New	× Remove	1	🗲 <u>Update</u>		
	Choose Conten	t Arrange Content	Choose Layout	E P	ortal

**11** In the Default Page text box, select the page you just created.

Personal Pages

# **12** Click the **Set as current** link. This allows you to quickly get to this page in the portal page.

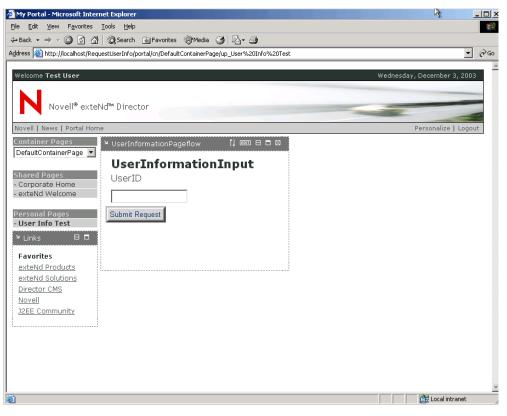
Default Page:
You may change your default Page by selecting a different Personal page or Shared page from the list below.
Default Page: User Info Test 💽 🖉 Set as current

- **13** Click the Choose Content link.
- **14** Scroll the Available Portlets list until you find UserInformationPageflow, then select it and click Add.

O CONTENT SELECTOR			Novell⊗ <b>exteNc</b> Director
Select content for this Portal Page (Us	er Info Test)		
Filter:	-	Selected Content:	
All Categories	·	UserInformationPageflow	
Available Content:	_		
Applet Launcher Applet Launcher	· >		
Change Password	Add		
Citrix Create Director Database Tables			
Director Administration	1		
EGuide Search	Remove		
Exchange			
		Content Preferences	
Name: UserInformationPageflow		Name: UserInformationPageflow	<u>Jpdate</u>
Description:		Description:	
UserInformationPageflow		UserInformationPageflow	
No Preview Image Available		No Preview Image Available	
	Close		

- 15 Click Close.
- **16** Click the **Portal** link.
- **17** At the top of the page, click **Portal Home**—or under Personal Pages click **User Info Test** (the page you just created)—to view your pageflow portlet.

18 If you see the message Portlet did not respond in time, click the <sup>11</sup> link or reload the page (by clicking on Portal Home or under Personal Pages clicking User Info Test).



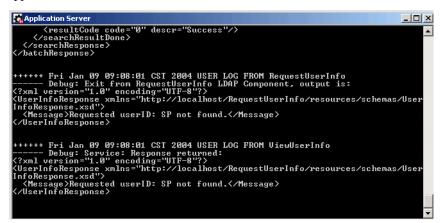
Type **SSpade** in the UserID text box of the UserInformationInput Portlet page, then click the **Submit Request** button.

ovell   News   Portal Hor	пе		
ontainer Pages DefaultContainerPage 🔻	৺ UserInformationPag	eflow țļ⊡⊡⊟⊟⊠	
	UserInform	ationOutput	
hared Pages Corporate Home	UserID	LastName	
exteNd Welcome	SSpade	Spade	
ersonal Pages	FirstName	Initial	
User Info Test	Sam		
Links 🛛 🗖	WorkPhone	Title	
Favorites	555-667-7598	Chief of	
<u>exteNd Products</u> exteNd Solutions	Department	Pediatric Surgery	
Director CMS			
<u>Novell</u> J2EE Community	Neu Deguest		
	New Request		

- Click the New Request button to return to the first form.
- Type **SP** in the UserID text box, then click the **Submit Request** button. You will not see any message.

22 Click the New Request button to return to the first form.

If you take a peek at the exteNd Application Server console, you will see the Log output from the exteNd Composer service that shows the data returned to the application.



The forms and pageflow created by the wizard did not take this form into consideration, so you need to change the pageflow. You will add a conditional decision to the pageflow that will decide which form is displayed; the decision will be based on the data returned from the invoked Web Service. This is your task for the rest of this lesson.

#### EXERCISE 4-4: Edit additional XForms

A form was already created that displays the message returned by the Web Service when an invalid request is made. You will review this form and make some slight modifications. In the next exercise you will insert this form into the pageflow you created earlier with the Web Service Pageflow Wizard.

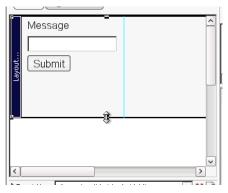
- 1 In exteNd Director, select the **Resources** tab of the Navigation Pane.
- 2 Select the View tab in the Resources Navigation Pane view, then use the dropdown list to select UserInfoStuff (the view you created earlier).
- **3** Expand the listed folders by clicking the B icon until you find the form folder.

**4** Double-click UserInformationResponse\_Message.xhtml, which will open the form in the XForms Editor.

🗇 View : UserInfo	🕒 User InformationPageflow.xml 🕱 🏔 User InformationResponse_Message.xhtml 💌
Search Relationship Viewer	k □ @ {
<b>7</b>	XForms     Align/Distribute
UserInfoStuff.xml	Message
🔄 🗁 UserInfo	
🕀 🛅 composer	Service And
🕀 🛅 document-template	Submit
🕞 🛅 form	
UserInformationInput.xhtn	
- UserInformationOutput.xh	
UserInformationResponse_	
UserInformationResponse_	
my-views	
pageflow-process	
⊕	
Project	Event Handlers
Registries Resources	Form

You are going to change the look and feel of this form by replacing the input message text box with an output (display only) text box.

**5** Select the **Layout Region** and, holding the left mouse button, increase its size by scrolling downward with the mouse.



- 6 Click the Submit button on the form and press the Delete key to delete it.
- 7 Click the Insert XForms output 🗟 button.

8 Click below the Message text box to add the Output control.

k C		lr E
Message		G
Event Handlers ✓ × ■	~	
k □ ♀ ₽ □ ☆ □ ☆ □ ☆ □ ☆ □ ₩ \$1 \$5		
Message		

- 9 Select the Input message text box, then press the Delete key.
- **10** Select the **Output** text box and drag it below the **New output** label.
- **11** Select the label and text box while holding the **Ctrl** key, then drag both toward the top of the layout area.

Use the Align/Distribute tab to properly align the controls on the layout.

토 ㅎ ㅋ ┍ ゕ <u>ゖ</u> ☴ ╖   H Ι			
XForms Align/Distribute			
🔞 UserInformationFlow.xml 🔳 🎆 UserInformationResponse_Message.xhtml* (	×		
F ≠ = II ++ II = III    -  I XForms Align/Distribute	]		
New output			
Event Handlers			
Form Andel Source XForms Preview			

- Click the Save icon **I** to save your changes
- Enlarge the Output text box by clicking it and then dragging the corner down and to the right.
- In the Instance Data Pane click the *i* icon until you see the Message element (you may need to scroll).
- **16** Click the Message element, the hold the left mouse button and drag the element on the Output text box in the Form Pane.

Instance Data:     XForms:   Align/Distribute   Instance Data:     Instance Data:   Instance Data:   Instance Data:     Instance Data: <th>UserInformationPageflow.xml 🗷 🏦 UserInformation</th> <th>Response_Message.xhtml* 💌</th>	UserInformationPageflow.xml 🗷 🏦 UserInformation	Response_Message.xhtml* 💌
New output     Image: Selection     Selection     Image: Selection	,	🖃 🛧 XPath: 🖣 ata:Message
V         V	New output	"default" http://localhost/Request     "
Source Source Source		

- **17** Click the Save icon **I** to save your changes.
- **18** Select the Output (label) tab in the Property Inspector, scroll to the top, and change the Label to read **Message:**.

UserInformationPageflow.xml	age.xhtml 🕱
Image: State State State     Image: State State       XForms     Align/Distribute	Instance Data: Bata: Message
	Results: element(data:
[data:Message]	Output(label) Output Hints
	Label:
▼ [<]	Hidden
Event Handlers f xforms-invalid at body id='div_wsrp      X	
Form . Model Source AForms Preview	

**19** Click the **Save** icon **I** to save your changes.

**20** Click the divider between the Form Layout section and the Instance Property section of the XForms Editor to expand the Form Layout, showing you all the items in the tools tab in the Form Layout section.

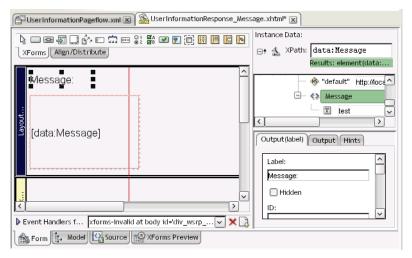
**TIP:** If this does not work, hold the left mouse button and drag the divider to the right until you see all the XForms tools on the tab.



- **21** Click the Insert Pageflow link region <sup>1</sup> button.
- 22 Click in the Form Layout to add the control to the form:



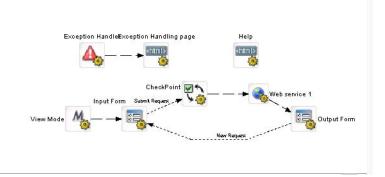
This region will be used by the Pageflow button link when you add this page to the existing pageflow.



**23** Click the **Save** icon **I** to save your changes.

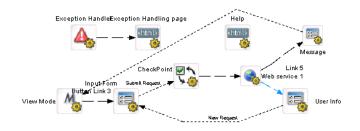
## EXERCISE 4-5: Add a new form to the pageflow

In this exercise you are going to add the Message Display page to the existing pageflow and then change the links on this page to include this page as part of the application flow. One of the links will have a condition that will check what result was received from the Web Service to determine which page should be displayed—the User Information page or the Message page. Your objective is to go from the flow pictured just below to the one pictured under it.

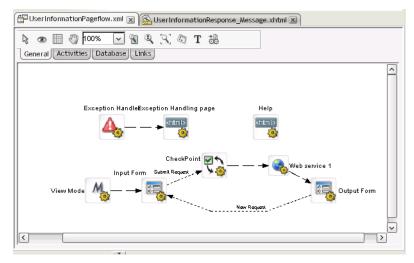


**Original pageflow** 

#### **Target pageflow**



**1** Select the UserInformationPageflow.xml file in the exteNd Director Edit Pane. UserInformationPageflow.xml opens in the Pageflow Modeler.



2 Select the Activities tab in the Pageflow Modeler.



- **3** Click the Form activity 💐 toolbar button.
- **4** Add the form to the right of the Help HTML activity in the pageflow diagram by moving the mouse pointer to the location and clicking the left mouse button:



**5** Click the label added under the Form activity you just placed on the diagram and edit it to read **Message**.

**6** Double-click the **Form activity** you just placed on the diagram to open the Property Inspector for the activity:

ance Data Copy Scoped XPaths Design U

You may drag this window to a more convenient location on you desktop so that it does not cover the diagram or other parts of the editor that you need to view.

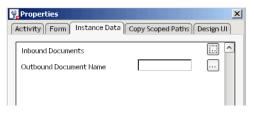
- 7 Type Message in the Name text box.
- 8 Click the Form tab.
- 9 Click the <sup>1</sup>/<sub>2</sub> button next to the **XHTML** text box on the Form tab.
- **10** In the Choose The Scoped XPath dialog, select **ResourceSet** from the dropdown list and then click the **Browse** button.

**11** In the XPath Navigator, use the 🖶 button to open the ResourceSet and form lists and then select the UserInformationResponse\_Message.xhtml file:

Scop	👷 Scoped Path Navigator				
Enter an	XPath expression and press Evaluate to see the res	ults			
XPath:	Path: /ResourceSet/form/UserInformationResponse_Message.xhtml Evaluate				
- 🛅 Do	cument				
⋳– «»	ResourceSet				
<u> </u>	<≱ form				
	UserInformationInput.xhtml				
	UserInformationOutput.xhtml				
	UserInformationResponse_Data.xhtml				
	UserInformationResponse_Message.xhtml				

### 12 Click OK.

- **13** Click the **Save** icon **I** to save your changes.
- **14** Click the **Instance Data** tab.



**15** Click the <sup>III</sup> button next to **Inbound Documents**.

🙀 Inbound Docum	ents		×
Primary Data:			
		ОК	Cancel

**16** Click the **\_\_\_\_** button next to the **Primary Data** text box.

🙀 Choose The	Scope	X
Scoped Paths:	ResourceSet  Show XML File Content	Browse
		OK Cancel

- 17 Click the Scoped XPaths dropdown list to select /Flow/document/RESPONSE.
- 18 Click OK.
- **19** Click the Save icon **II** to save your changes.

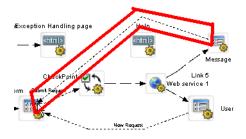
#### EXERCISE 4-6: Change links to include the new form in the pageflow

Now you will create links for the new form to include it as part of the normal flow of the application. The Web Service will go to both forms with a condition added to one of the links to determine which one. The new Message form will link to the Input form completing the loop in the application.

1 Select the Links toolbar in the Pageflow Modeler:

<b>∂</b>	
General Activities Database Links	

- **2** Click the **Button Link** button  $\blacksquare$ .
- **3** Click the **Message Form** activity, drag to the **Input Form** activity, then left-click to create a link between the two activities:



- 4 Click the link you just added to select it.
- 5 In the Property Inspector in the Button Link tab, change the Description to New Request.

This is the value that will appear on the button when the page is rendered in the browser.

6 Click the Link button  $\mathbb{Z}$ .

7 Click the Web Service activity, drag to the Message Form activity, then left-click to create a link between the two activities:



- 8 Change the label next to the Output Form to read User Info.
- **9** Click the **Save** icon **I** to save your changes.
- **10** Click on the link between the Web Service activity and the Message Form activity.
- **11** In the Property Inspector, click on the **Edit Expression** link **Edit Expression**... in the Link tab.
- **12** In the Scoped Path text box of the Expression dialog, type the following expression (be careful with the punctuation and case):

```
/Flow/document/RESPONSE/*[local-
name() = 'UserInfoResponse'] /* [local-name() = 'Message']
```

**13** In the operator dropdown list, select **is null**, check the **Not** check box, then click the **Add** button:

<b>Expression</b>					X
Scoped Path:	-name()='UserInfoRes	ponse']/*[local-nar	ne()='Mes	sage']	Add
	🖌 Not 🛛 🗹	is null	~	string 🔽	Update
Value:					
/Flow/docu	iment/RESPONSE/*[loc	al-name()='Userin:	foRespon	se']/*[local-name()	='Message'] (r
<					>
		Delete			
				ОК	Cancel

- 14 Click OK.
- **15** In the Link tab of the Property Inspector, make sure that the Precedence text box has a value of 1.
- **16** Click on the link between the Web Service activity and the User Info Form activity.
- **17** In the Link tab of the Property Inspector, make sure that the Precedence text box has a value of 2.
- **18** Click the Save icon **I** to save your changes.

## EXERCISE 4-7: Test the revised pageflow

Now that you have completed the changes to the pageflow to incorporate the new page, the last step is to test your changes in the application server. Because of the dynamic loading feature of exteNd Director, your changed forms and pageflow have been automatically loaded into the application server—and all that is needed to test the changes is to open a browser window and log in to the Portal application.

- **1** Open a browser window.
- 2 Type http://localhost/RequestUserInfo/portal/portlet/LoginPortlet in the address bar, then press Enter.
- **3** Log in as:
  - User: user1
  - Password: password
- 4 Under the Personal Pages list, click the User Info Test link.
- **5** In the UserID text box of the UserInformationInput page, type **SSpade** and then click **Submit Request** button.

⊔ UserInformationFlow	▮⊟□⊠
UserInforma	ationOutput
UserID	LastName
SSpade	Spade
FirstName	Initial
Sam	
WorkPhone	Title
555-667-7598	Security Manager
Department	
New Request	

6 Click the New Request button.

7 Type sp in UserID text box, then click the Submit Request button.

⊻ UserInformationFlow	†‡	Β	⊠
Message:			
Requested userID: sp not found.			
New Request			

8 Click the New Request button.



9 Close exteNd Director by using File>Exit.

Congratulations. You have successfully completed the Guided Tour.

# Summary

In this *Guided Tour* through the development features of the exteNd 5 Suite, you have:

Used exteNd Composer to create a service that extracts information from an LDAP directory.
 This shows have been as a set Nd Composer to XML each lager have been as a set of the compo

This showed you how you can use exteNd Composer to XML-enable your legacy systems and use the information in them to provide new services.

- Deployed the service as a SOAP service. This made it possible to take a standards-based approach to accessing this information.
- Used exteNd Director to build a browser-based interface that can use this service by accepting input from the user and then displaying information to the user.

In short, you have gone from producing a Web Service to consuming a Web Service, all with one integrated set of tools. The entire application was provided by a robust J2EE application server. *And all this without writing one line of Java code*.

If you were to continue development of your Web Service application, the next step would be to go from a query-only application to a maintenance-and-query application. But that is a challenge for another time.

**Learning more** To learn more about Novell exteNd, see the Learning Resources page in *Welcome to Novell exteNd* in this help system.