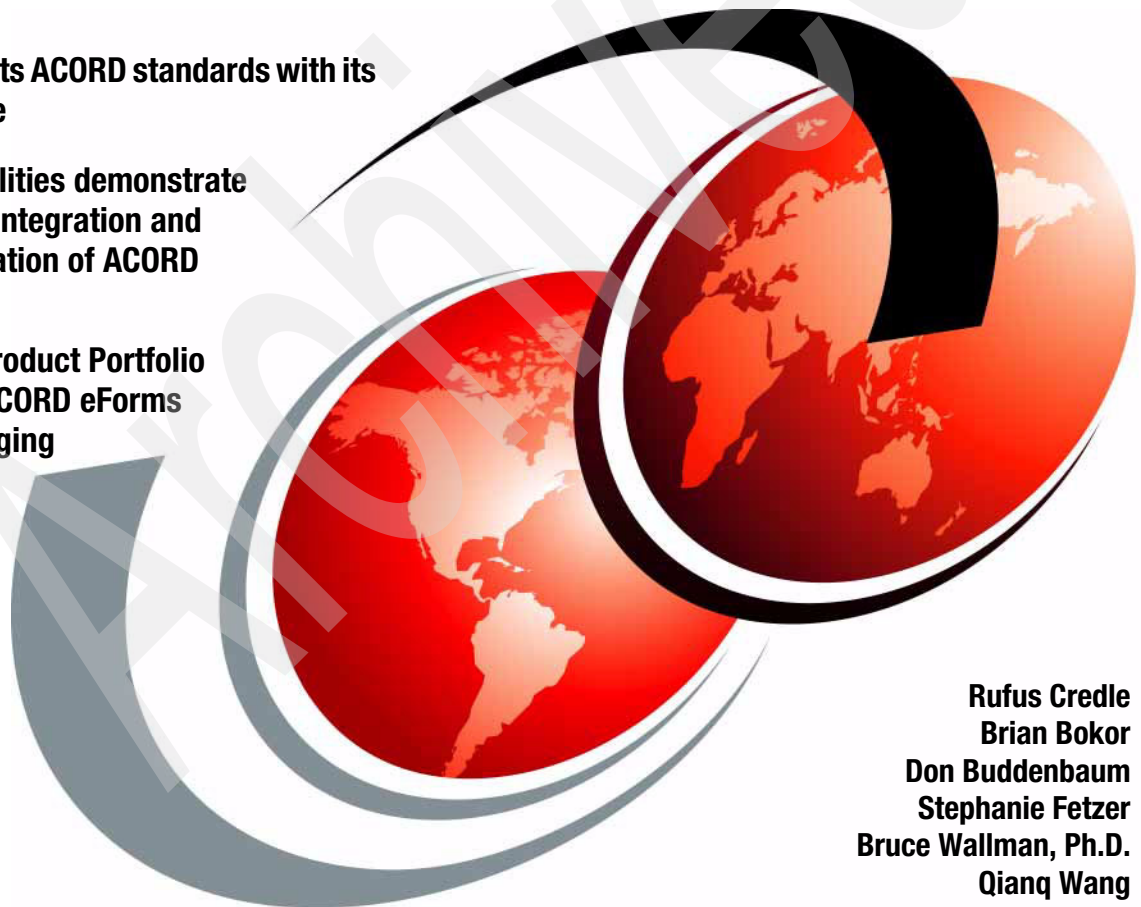


# IBM Software Supporting ACORD Insurance Standards

IBM supports ACORD standards with its  
middleware

IBM capabilities demonstrate  
enterprise integration and  
implementation of ACORD  
Standards

IBM SOA Product Portfolio  
supports ACORD eForms  
and Messaging



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International Technical Support Organization

**IBM Software Supporting ACORD  
Insurance Standards**

March 2009

Archived

**Note:** Before using this information and the product it supports, read the information in “Notices” on page vii.

**First Edition (March 2009)**

This edition applies to ACORD eForms and ACORD messaging, Lotus ACORD Forms, WebSphere Transformation Extender ACORD Pack, and DB2 pureXML.

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# Contents

<b>Notices</b> .....	vii
Trademarks .....	viii
<b>Preface</b> .....	xi
The team that wrote this book .....	xii
Become a published author .....	xiv
Comments welcome .....	xiv
<b>Chapter 1. Overview</b> .....	1
1.1 The goal .....	2
1.2 The scope .....	2
1.3 The audience .....	3
1.4 The solutions .....	3
<b>Chapter 2. The development environment solution</b> .....	7
2.1 Workstation setup .....	8
2.2 Using Lotus Forms Designer .....	10
2.3 Using WebSphere Transformation Extender ACORD Pack .....	15
2.4 Using the DB2 9 database .....	23
2.5 Summary from the Development Environment solution .....	29
<b>Chapter 3. User scenarios</b> .....	31
3.1 Scenario diagram .....	32
3.2 Exercising the ACORD forms and SOA demonstration scenarios .....	35
3.2.1 Personal Inland Marine Application through Portal Channel .....	35
3.2.2 Personal Inland Marine application through Viewer Channel .....	40
3.2.3 Business rules .....	43
3.2.4 Commercial Business Auto application through Portal Channel .....	44
3.2.5 Commercial Auto application through Viewer Channel .....	48
<b>Chapter 4. eForms + SOA Solution architectural overview</b> .....	49
4.1 Architectural design .....	50
4.1.1 Multi-channel support .....	52
4.1.2 Business rule based context evaluation .....	53
4.1.3 Template based eForm population .....	54
4.1.4 XForms Data Transformation Engine .....	55
4.1.5 Security considerations .....	57
4.2 Implementation overview .....	58
4.2.1 ACORD Gateway Service .....	58

4.2.2 Services specifications . . . . .	60
<b>Chapter 5. eForms + SOA Solution installation and configuration . . . . .</b>	<b>65</b>
5.1 Planning and scenario overview . . . . .	66
5.1.1 Scenario overview. . . . .	66
5.1.2 Hardware and software prerequisites . . . . .	68
5.1.3 Hardware used within the ITSO eForms + SOA Solution . . . . .	70
5.1.4 Software used within the ITSO eForms + SOA Solution. . . . .	71
5.1.5 Software installation paths and variables . . . . .	72
5.2 Install and configure the Data Node . . . . .	73
5.2.1 Microsoft Windows 2003 Enterprise Server configuration . . . . .	73
5.2.2 DB2 Enterprise Server Edition with pureXML configuration . . . . .	74
5.2.3 Tivoli Directory Server installation. . . . .	79
5.2.4 IBM Tivoli Directory Server configuration . . . . .	84
5.2.5 IBM WebSphere Business Service Fabric - Foundation Pack (DB only) configuration . . . . .	86
5.3 Install and configure the Web Node . . . . .	87
5.3.1 Microsoft Windows 2003 Enterprise Server configuration . . . . .	88
5.3.2 IBM WebSphere Process Server configuration. . . . .	88
5.3.3 DB2 Runtime Client configuration. . . . .	114
5.3.4 IBM WebSphere Portal Server configuration . . . . .	116
5.3.5 IBM WebSphere Business Service Fabric - Foundation Pack Configuration . . . . .	139
5.3.6 IBM WebSphere Business Service Fabric - Insurance P&C Pack Configuration . . . . .	144
5.3.7 IBM WebSphere Transformation Extender configuration . . . . .	146
5.3.8 IBM Lotus Forms Server configuration . . . . .	146
5.3.9 IBM WebSphere Portal Server: Lotus Forms enablement . . . . .	151
<b>Chapter 6. eForms + SOA Solution application installation and configuration . . . . .</b>	<b>153</b>
6.1 Database configuration . . . . .	154
6.1.1 Application database installation. . . . .	154
6.1.2 Set submitting URL for sample forms . . . . .	154
6.1.3 Import Database information. . . . .	155
6.2 Configuration in WebSphere Process Server . . . . .	157
6.2.1 Configuration data source . . . . .	157
6.2.2 Procedure . . . . .	158
6.3 Configuration in WebSphere Business Service Fabric . . . . .	160
6.3.1 Import the eForm + SOA Fabric project that utilizes the P&C Content Pack . . . . .	160
6.3.2 Further details . . . . .	163
6.4 Configuration in WebSphere Portal server . . . . .	163

6.4.1 Virtual Portal configuration .....	163
6.4.2 WebForm Server API configuration .....	163
6.5 Deploy service projects .....	164
6.5.1 Deployment steps .....	164
6.5.2 ACORD projects .....	165
6.5.3 Deploy Portal projects .....	166
<b>Appendix A. Additional material</b> .....	169
Locating the Web material .....	169
Using the Web material .....	170
How to use the Web material .....	170
<b>Related publications</b> .....	171
Online resources .....	171
How to get IBM Redbooks publications .....	172
Help from IBM .....	173
<b>Index</b> .....	175

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# Preface

This IBM® Redbooks® publication helps you design and create demonstrations or solutions that meet ACORD insurance standards with minimal application coding. If you are not interested in creating such demonstrations yourself, we show you two and provide you with contacts to show those demonstrations.

ACORD has published and maintains insurance industry standards. The two most complete and often used standards are ACORD eForms and ACORD messaging.

ACORD eForms are hundreds of electronic forms. There are two versions of ACORD forms available. One of the versions is done using IBM Lotus® Forms. The forms that are published cover general insurance processing such as new policy information and claims notice of loss. They can be used in an isolated way with the Lotus Forms Viewer, or they can be modified slightly for use with the Lotus Forms Server to support straight-through processing scenarios. Companies can create and get state approvals for their own forms. However, if many form formats are needed, the cost is much higher than starting with the ACORD formats.

ACORD messaging has hundreds of message types. These message types exist in two sets of formats. The first message format was a flat file format called AL3. ACORD transitioned the formats to XML. There are many versions of these formats. Given the number of formats and versions that exist, a small industry has grown up around supplying tools that help transition between data in different ACORD messaging formats. It is important in many insurance companies to transition ACORD messages to legacy formats, third-party message suppliers, and forms or user interface formats. Doing this work for hundreds of formats and many versions of some formats is a costly maintenance effort when handled by individual insurance companies. Using industry supplied tools that already contain the ACORD message formats saves most of these costs.

This book shows you how to use IBM tools and tool content such as Lotus ACORD Forms, WebSphere® Transformation Extender ACORD Pack, and DB2® pureXML® to minimize efforts to build and maintain ACORD solutions. The solutions used in this book are available from the authors as demonstrations. This can help IBM clients understand both the value of using ACORD standards and the value of using IBM products that already incorporate these standards.

We review both developer and run-time environments. We do this to maximize the discussion potential for both open and industry standards. The run-time environment provides a demonstration utilizing ACORD eForms (Lotus Forms) and the IBM SOA software stack to produce a seamless showcase of eForms interaction using a Workflow (BPEL) engine with Business Rules. WebSphere Business Service Fabric is also utilized to showcase how a service call can be mitigated into a business service call.

## The team that wrote this book

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# Overview

The goal of this book is to showcase IBM software supporting ACORD Insurance standards. It is depicted by two demonstrations, one being a localized development environment demonstration, and another being an eForms + SOA Enterprise Solution demonstration. Both of these scenarios are important in the implementation of a different context of the ACORD standards. It allows for the leverage of the ACORD standards, utilizing electronic forms and service-oriented architecture (SOA) best practices, in how to develop, create, implement, and realize the advantages of IBM software in a flexible, reusable way.

## 1.1 The goal

ACORD maintains the most successful insurance B2B messaging and forms standards worldwide. It is the most successful insurance standards organization in the United States and is making some inroads in Europe and Asia Pacific.

IBM has several products that contain ACORD content. These include Lotus Forms (ACORD eForms), the WebSphere Transformation Extender (WTX) ACORD Pack, DB2 9 pureXML templates, and the WebSphere Business Services Fabric (WBSF) Property & Casualty (P&C) Content Pack. The IBM Insurance Application Architecture/Insurance Information Warehouse (IAA/IIW) models are also interoperable with the ACORD messaging and form standards.

The goal of this book is to showcase the IBM products that are used directly with the ACORD standards. Our intention is to raise awareness of both the existing ACORD insurance standards, and the ability of IBM products to consume these standards.

## 1.2 The scope

The scope of this book is limited to published ACORD standards and generally available IBM products supporting those standards as of late 2008; so we do not describe standards that “might” get published or tools that “might” be able to support future standards.

The published ACORD standards considered in this document that use IBM products are:

- ▶ Life and Annuity messaging XML
- ▶ Property & Casualty/Surety messaging XML
- ▶ ACORD eForms

## 1.3 The audience

The audience for this book is people who want to understand the enterprise capabilities that IBM provides for ACORD standards. This includes insurance industry business decision-makers, architects, and developers.

The early parts of this book can be read by anyone interested in the ACORD standards and the IBM adoption of such standards. The latter parts of the book go into details about demonstrations that IBM has built in support for ACORD standards and are targeted to architects and developers.

## 1.4 The solutions

There are two IBM ACORD solutions that we describe in this book. These solutions cover a simple developer workstation and a full-fledged eForms + SOA Solution integration scenario. The focus of the developer workstation environment is purposefully narrow enough so that the environment can run on Windows® notebooks and be transported on a VMWare image. This environment is described in Chapter 2, “The development environment solution” on page 7.

The eForms + SOA solution, described in Chapter 3, “User scenarios” on page 31 through Chapter 6, “eForms + SOA Solution application installation and configuration” on page 153, is much more robust than the one in Chapter 2, “The development environment solution”. In the case of the eForms + SOA solution, our goal is to show the value of IBM SOA components beyond the narrow scope of ACORD content.

The first solution is a developer workstation showing IBM Lotus ACORD Forms supporting data input flowing into WebSphere Transformation Extender ACORD Pack. WTX provides data conversion from the form data model into an ACORD XML data structure for storage into a DB2 9 pureXML table. The left-hand side of Figure 1-1 shows a high-level view of the components in this demonstration.

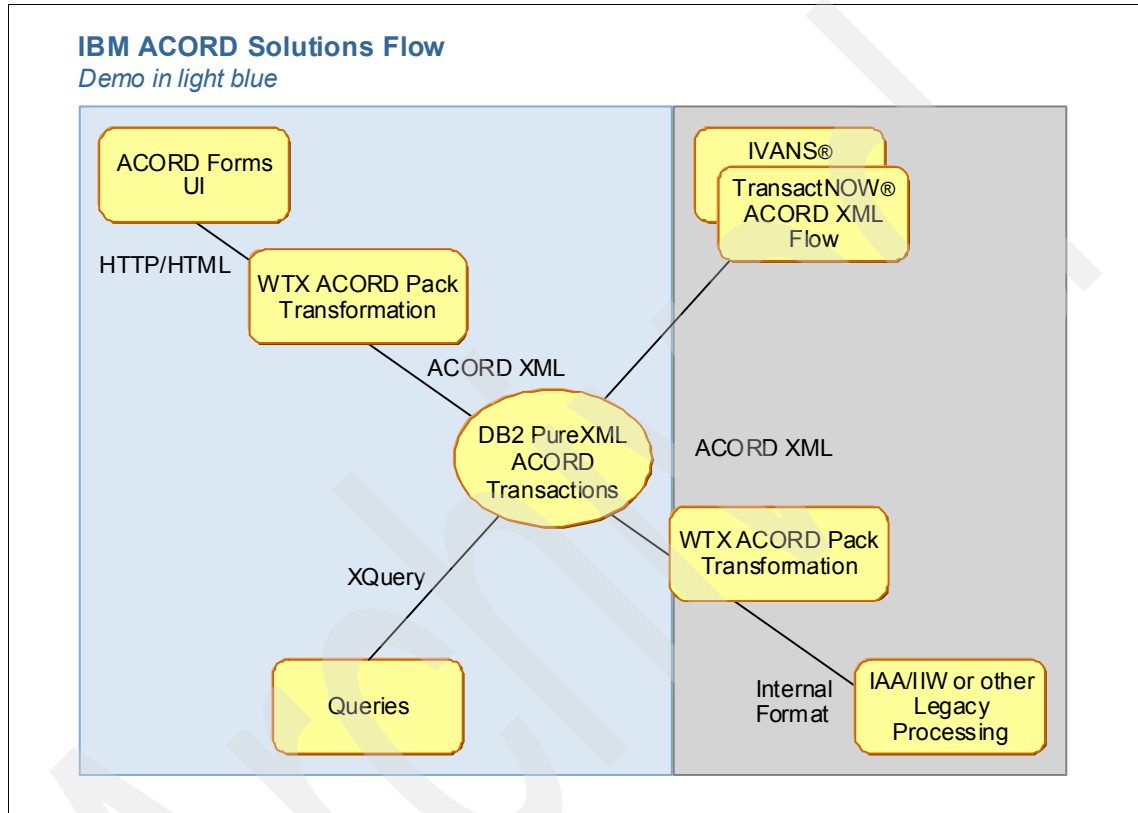


Figure 1-1 IBM ACORD Solutions Flow diagram

The second solution uses ACORD forms in the context of a service-oriented architecture built for production. The production workstation (Figure 1-2) shows IBM Lotus ACORD Forms from either the stand alone viewer or as portlets in WebSphere Portal flowing through a business process in WebSphere Process Server. WebSphere Fabric is used to dynamically invoke services depending on the form context such that a set of services and business rules are invoked against the form data. Upon successful completion of the services and rules, the WebSphere Transformation Extender ACORD Pack provides data conversion from the form data model into an ACORD XML data structure for storage into a DB2 9 pureXML table.

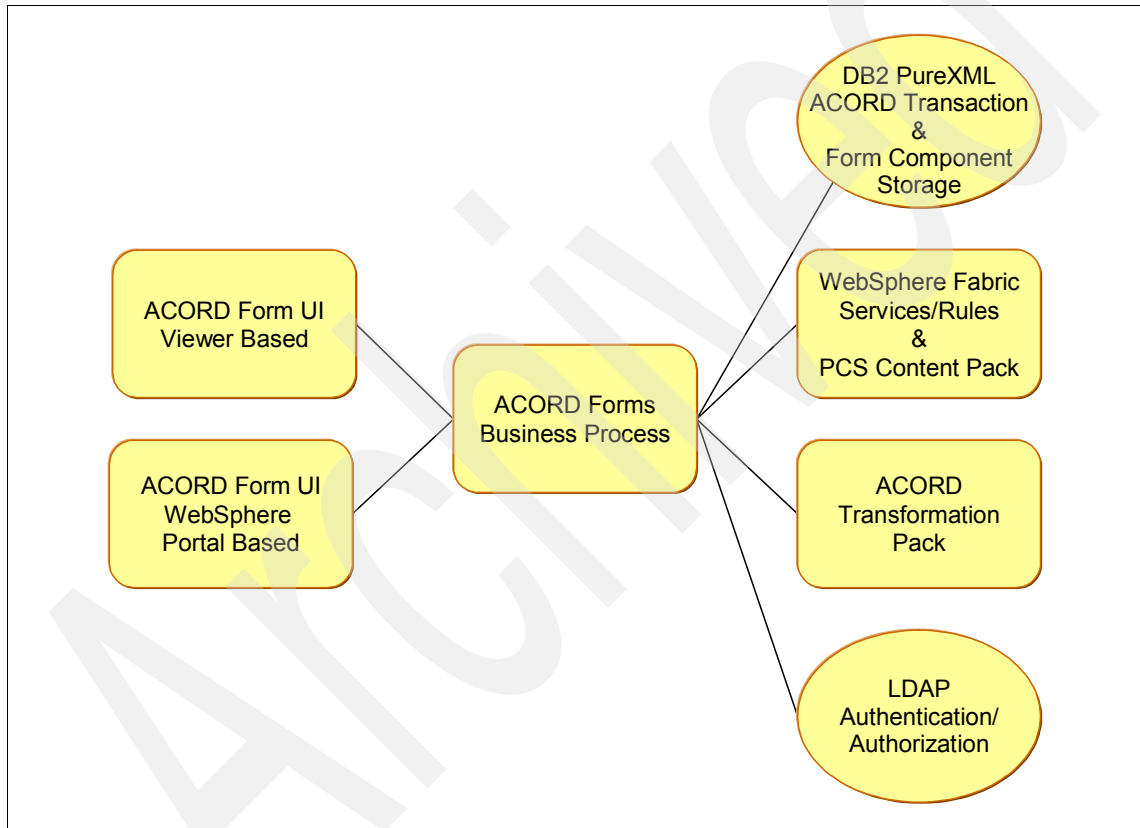


Figure 1-2 ACORD Forms run-time Business Process diagram

The eForms + SOA solution is a set of servers depicted as the Web Node and the Data Node, showing the integration and collection of IBM products to build out a Proof of Concept. The goal of the Proof of Concept is to show the integration of ACORD standards into an IBM SOA Infrastructure that can allow real business value to be obtained.

The key elements of the Forms + SOA solution are as follows:

- ▶ **Web Portal - WebSphere Portal Server:** This product was used for displaying widgets of content, more specifically the integration of ACORD eForms.
- ▶ **Automatic Service Routing, Discovery, and Mediation:** WebSphere Business Service Fabric was used to allow Web Services to be organized by Business Function or Business Services and to attach metadata to allow for the automatic nature that the WBSF product allows.
- ▶ **Workflow Management:** WebSphere Process Server was utilized to allow forms to engage a BPEL/Workflow Process from a service call embedded into the form. This allows for loose coupling of Processes from forms.
- ▶ **Rule Engine:** WebSphere Process Server comes with a minimal Business Rules engine for easy interaction. The rules engine was used to provide extra capabilities outside of the eForms data and to attach extra data, questions, and error routines, allowing for more robust form validation. This enables the flexibility of these rules to be approved by an outside body or implementer without having the rules standardized, allowing business flexibility.
- ▶ **XML Transformation:** WebSphere Transformation Extender: This product was designed to manipulate and modify ACORD XML and XML Schemas to a format required by an enterprise. The product showcases the need for integration with existing Data Structures that exist within a current infrastructure and the ease of mapping and transforming data.
- ▶ **XML Storage:** DB2 pureXML allows for storage of the XML content represented by an ACORD eForms to be directly stored with the content entered on the form straight into the database. This enables easy formatting and data retrieval without having to rely on an ever changing data model.

One of the key reasons for the eForms + SOA Solution was to prove out the integration of ACORD standards and their ability to be implemented within a Stack of core SOA business capabilities that are needed for moving forward to a *future state*. The software that was utilized for the eForms + SOA Solution had major components within the IBM SOA software stack to showcase the effective integration and adoption of open and Industry standards as well as the loose coupling of each core business function, being performed to gain maximum business value and maximum maintainability. This concept allows for the flexibility of updates and changes from ACORD or other outside standards bodies, vendors, or legal entities without having sustained impacts to the software stack.

In the eForms + SOA Solution sections, this book shows you the architecture, and how to install and configure this environment as well as the benefits that these IBM software components can provide to each part of the business. That section also showcases how to effectively take the ACORD standards and merge them into an open, discoverable, and flexible environment.

# The development environment solution

In this chapter, we show the IBM ACORD development environment solution as a developer workstation in order to provide a simple and quickly executable demonstration of straight through processing from an ACORD Form to back-end database activity.

This relatively small demonstration is transportable across notebook computers on a VMWare image. The core products are Lotus ACORD Forms, WebSphere Transformation Extender (WTX) with the WebSphere Transformation Extender ACORD Pack, and DB2 9 pureXML.

## 2.1 Workstation setup

The content of a developer workstation is shown in light blue (Figure 2-1), with related run-time servers and content that are not within this demonstration shown in grey.

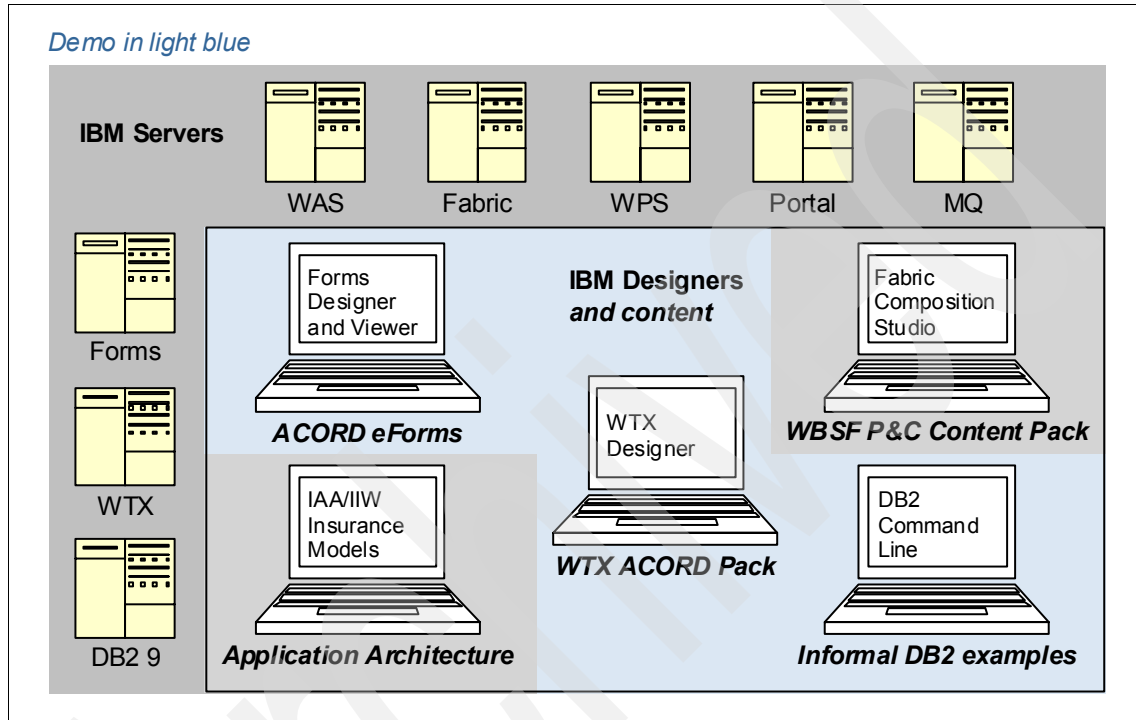


Figure 2-1 IBM ACORD Solutions as subset of potential production implementation

The developer workstation starts with Lotus Forms and an ACORD form. The demonstration uses ACORD form 2 - Automobile Loss Notice. Fields are entered into this form and saved using a Save link as a standard HTTP message.



The demonstration follows these steps:

1. Enter data into the Automobile Loss Notice, making sure to change the Agent and a Policy ID, select **Save** at the top of the form, and save the file as HTM.
2. Run the transformation from the HTTP file to ACORD XML in WTX Designer with the WTX ACORD Pack. Designer writes a record to a DB2 XML table using a macro.
3. Run an XQuery in the DB2 Command Line Editor to display the new record.

After being installed and set up, this demonstration can be shown and understood in under a minute. It is most appropriate for use in a booth environment and has been used at multiple ACORD shows.

Installation of the main three products used in the demonstration was done on a Windows VMWare image. Lotus Forms Designer 3.0, WebSphere Transformation Extender (WTX) Designer 8.2 (including the WTX ACORD Pack), and DB2 9.5 were all installed on this image using default set-ups.

Figure 2-2 shows the parameters used in the VMWare image.

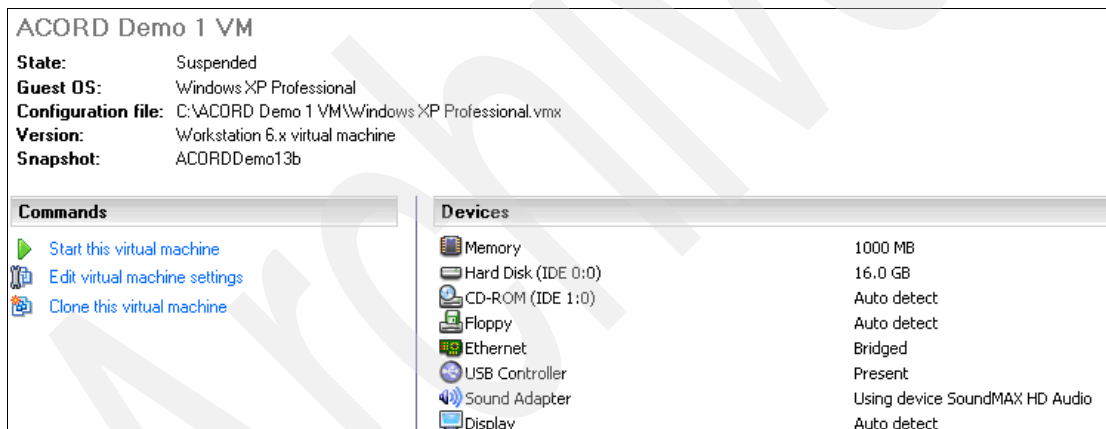


Figure 2-2 ACORD VM Demo

IBMers can get a copy of a VMWare image (for VMWare licensed IBM users) from [bruce.wallman@us.ibm.com](mailto:bruce.wallman@us.ibm.com). Most of the files used by Lotus Forms, WebSphere Transformation Extender, and DB2 in the demonstration cannot be printed, and the VMWare image is the simplest way to transport the working demonstration.

## 2.2 Using Lotus Forms Designer

Lotus Forms Designer has three modes: Designer, Source, and Viewer. The Viewer mode is used to see the form as a user would see it. It can also be used for the entry of test data. A disadvantage when entering the Viewer mode is that Forms clears the data fields. Thus it is not possible to re-enter the Viewer mode with prior data already loaded. The way to overcome this disadvantage for demonstration purposes is to run the demonstration from a Virtual Machine. A VMWare Snapshot™ is saved with data in the Viewer mode and, upon reloading this image, the Viewer shows the prior data.

The ACORD Automobile Loss Notice looks similar to Figure 2-3 in the Lotus Forms Viewer mode.

AGENCY		PHONE (A/C, No, Ext):	COMPANY	NAIC CODE: NAIC555555	MISCELLANEOUS INFO (Site & location code)	
Agency 128			Innovative Insurance		Gaithersburg and Dallas	
FAX (A/C, No):	555-555-1212		POLICY NUMBER	POLICY TYPE	REFERENCE NUMBER	CAT #
E-MAIL ADDRESS:	ll@agencytest.com		PRE123456b	personal auto	11765432	
CODE: Agency	SUB CODE:	EFFECTIVE DATE	EXPIRATION DATE	DATE OF ACCIDENT AND TIME		PREVIOUSLY REPORTED
AGENCY CUSTOMER ID: AgencyCustomerID		01/01/2008	12/31/2008	02/05/2008	12:00	<input type="checkbox"/> AM <input checked="" type="checkbox"/> PM <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO
<b>INSURED</b>			<b>CONTACT</b>			
NAME AND ADDRESS		SOC SEC # OR FEIN:	NAME AND ADDRESS		WHEN TO CONTACT	WHERE TO CONTACT
			Jan Doe			home
RESIDENCE PHONE (A/C, No):	BUSINESS PHONE (A/C, No, Ext):		RESIDENCE PHONE (A/C, No):	BUSINESS PHONE (A/C, No, Ext):		
			555-555-1212	555-555-1212		

Figure 2-3 ACORD Form. Courtesy of ACORD Corporation. Reprinted with permission.

When running a demonstration, we suggest that the Agency Name (Agency 129 in Figure 2-4) and the Policy Number (PRE123456129 in the example) are changed before each Save. This provides unique records easily searched by the DB2 XQuery.

Figure 2-4 ACORD Form development. Courtesy of ACORD Corporation. Reprinted with permission.

Example 2-1 is a small sample of the source for the ACORD Loss Notice form.

Example 2-1 ACORD Loss Notice form - sample of source

```

<?xml version="1.0" encoding="UTF-8"?>
<XFDL xmlns:custom="http://www.ibm.com/xmlns/prod/XFDL/Custom"
xmlns:designer="http://www.ibm.com/xmlns/prod/workplace/forms/designer/2.6"
xmlns:pecs="http://www.PureEdge.com/XFDL/PECustomerService"
xmlns:xfdl="http://www.ibm.com/xmlns/prod/XFDL/7.5"
xmlns="http://www.ibm.com/xmlns/prod/XFDL/7.5">
<globalpage sid="global">
<global sid="global">
<custom:publisher>PureEdge</custom:publisher>
<designer:date>4/12/2003</designer:date>
<formid>
<serialnumber>76B9AA27-47C7-48B5-B040-D177ABEE46D6</serialnumber>
<version>9.55.6</version>
<title>ACORD 2 (2005/06)</title>
</formid>
<custom:setHelp xfdl:compute="&#xA;

```

```

toggle(activated,'off','on') == '1'      ? ((viewer.getHelpMode() == 'off') &#xA;
    ? viewer.setHelpMode('on') &#xA;
    : viewer.setHelpMode('off') &#xA;
    ) &#xA;
: ""></custom:setHelp>
<custom:setHelpOnPrint xfdl:compute="&#xA;
toggle(activated,'on','off') == '1'      ? ((viewer.getHelpMode() == 'off') &#xA;
    ? viewer.setHelpMode('on') &#xA;
    : viewer.setHelpMode('off') &#xA;
    ) &#xA;
: ""></custom:setHelpOnPrint>
<custom:attachment_filename>2.XFD</custom:attachment_filename>
<custom:on_formLoad xfdl:compute="&#xA;
(toggle(activated, 'off', 'on') == '1') &#xA;
? ((viewer.getDefaultFilename() != "") &#xA;
    ? set('custom:attachment_filename', viewer.getDefaultFilename()) &#xA;
    : viewer.setDefaultFilename(custom:attachment_filename) &#xA;
    ) &#xA;
: ""></custom:on_formLoad>
<fontinfo>
<fontname>Times New Roman</fontname>
<size>10</size>
<effect>plain</effect>
</fontinfo>
<printsettings>
<border>off</border>
<dialog>
<printpages>
<active>on</active>
</printpages>
</dialog>
</printsettings>
<xmlmodel xmlns:xforms="http://www.w3.org/2003/xforms">

```

```

<instances>
  <xforms:instance xmlns="http://www.ibm.com/xmlns/prod/XFDL/Custom">
    <DEFAULT_MAP>
      <PAGE1>
        <CB1>off</CB1>
        <CB2>off</CB2>
        <CHECK3>off</CHECK3>
        <AGENCY_CUSTOMER_ID></AGENCY_CUSTOMER_ID>
        <FIELD9></FIELD9>
        <FIELD10></FIELD10>
        <SINGLE_LIMIT></SINGLE_LIMIT>
        <MEDICAL_PAYMENT></MEDICAL_PAYMENT>
        <OTC_DEDUCTIBLE></OTC_DEDUCTIBLE>
      </PAGE1>
    </xforms:instance>
  </instances>
  <ref>[custom:DEFAULT_MAP][custom:PAGE1][custom:CHECK3]</ref>
    <boundoption>PAGE1.CHECK3.value</boundoption>
  </bind>
  <bind>
  <ref>[custom:DEFAULT_MAP][custom:PAGE1][custom:HTMLoutputfields]</ref>
    <boundoption>PAGE1.HTMLoutputfields.value</boundoption>
  </bind>
</bindings>
<submissions></submissions>
</xmlmodel>
<designer:version>3.0.0.130</designer:version>
<saveformat>application/x-www-form-urlencoded</saveformat>
<ufv_settings>
  <pagedonewithformaterrors>permit</pagedonewithformaterrors>
</ufv_settings>
</global>
</globalpage>
</page>
</XFDL>

```

---

The last step in the Forms portion of the demonstration is to save the output.

A necessary change to the source file available from ACORD is to use this save format:

```
<type>saveas</type>  
<saveformat>application/x-www-form-urlencoded</saveformat>
```

This statement forces the output to be HTTP rather than the Forms XFDL default. XFDL cannot be transformed, whereas HTTP can be. This change is already in place on the VMWare image.

When the **Save** is selected, a Save dialog appears as in Figure 2-5. The file name should use an HTM extension. In this example, it was Agency123.htm. The first time, the file name must be entered and placed in a known directory. This is used when the file is read by WebSphere Transformation Extender. If a VMWare snapshot is used, the file name remains in place each time the Save is selected. When the **Save** button is selected in the Save dialog, an *Already Exists* dialog might appear. Saving over the prior name is the easiest way to run the demonstration.

The standard HTTP (.HTM) file that is saved looks like this:

```
HTMLoutputfields=Start&DATE=05%2F05%2F2008&FIELD1=NAIC555555&EF2=Agency+129&POLICY_NUMBER=PRE123456129&
```

Fields are listed by internal form name, data contained, and & delimiter.

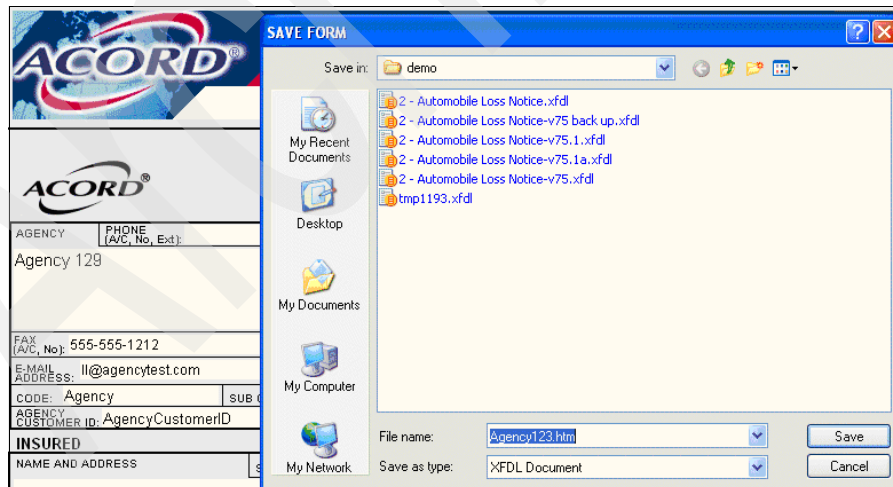


Figure 2-5 ACORD Save Form diagram. Courtesy of ACORD Corporation. Reprinted with permission.

## 2.3 Using WebSphere Transformation Extender ACORD Pack

This HTTP message from WTX Designer 8.2 must be translated into an ACORD XML standard message. In the demonstration, WTX Designer saves the transformed message directly into a DB2 9.5 XML field in a new record.

After the ACORD Lotus Form data has been saved as HTM, the WTX type trees and map are needed. The side by side type trees inside WTX Designer look similar to those in Figure 2-6.

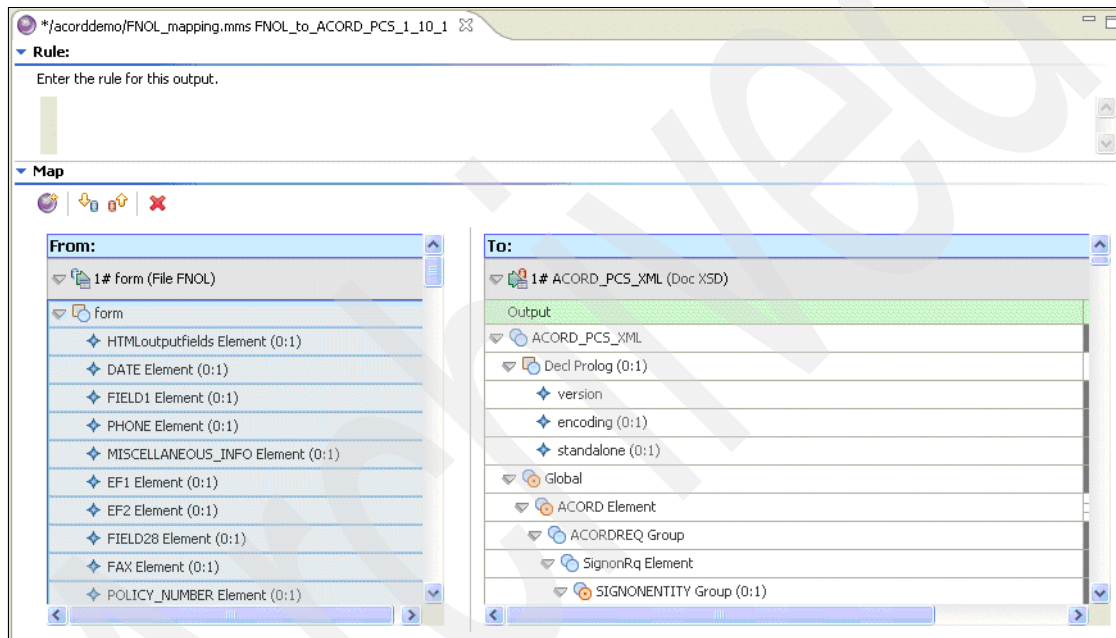


Figure 2-6 ACORD XML Mapping Development

In Figure 2-6, the type tree on the left side is the First Notice of Loss file saved from the Forms Viewer Save. The type tree on the right side describes the ACORD XML message for a loss that comes from the WTX ACORD Pack. This is a large and complex format that does not need to be coded if the WTX ACORD Pack is purchased. Again, the WTX input files are too complex to reproduce in print.

The first time that the saved file name from Lotus Forms is brought into WTX, a new map must be built. This is done with the **Build Map** button in WTX. The **Run Map** button is used to do the transformation from HTTP to ACORD XML data and to place the record into the DB2 9 database. If the same file name is reused for subsequent inputs, then running Build Map is not necessary.

The file name to be read is entered into WTX. Selecting the 1# form and right-clicking yields the following pop-up as shown in Figure 2-7.

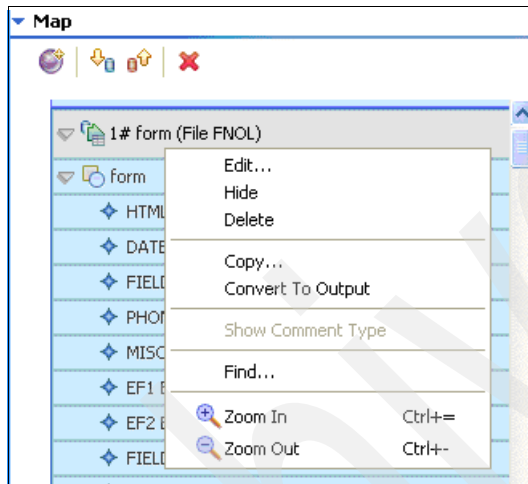


Figure 2-7 ACORD XML Mapping menu

Selecting **Edit** from this pop-up yields the dialog in Figure 2-8.



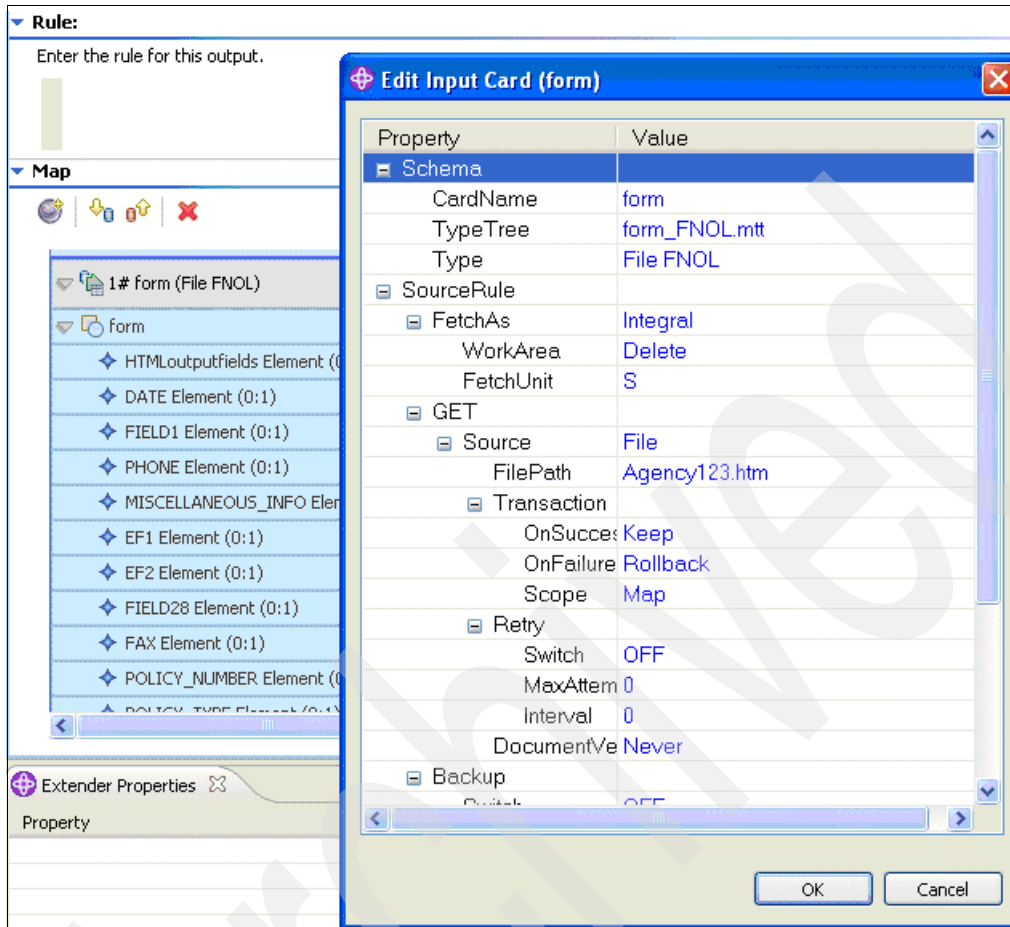


Figure 2-8 ACORD XML Edit Input Card (form)

Selecting the GET FilePath changes the FilePath to an editable field with a "..." in Figure 2-9.



Figure 2-9 Edit FilePath

Selecting the "..." creates another dialog that allows changing the path by selecting its "..." as in Figure 2-10.

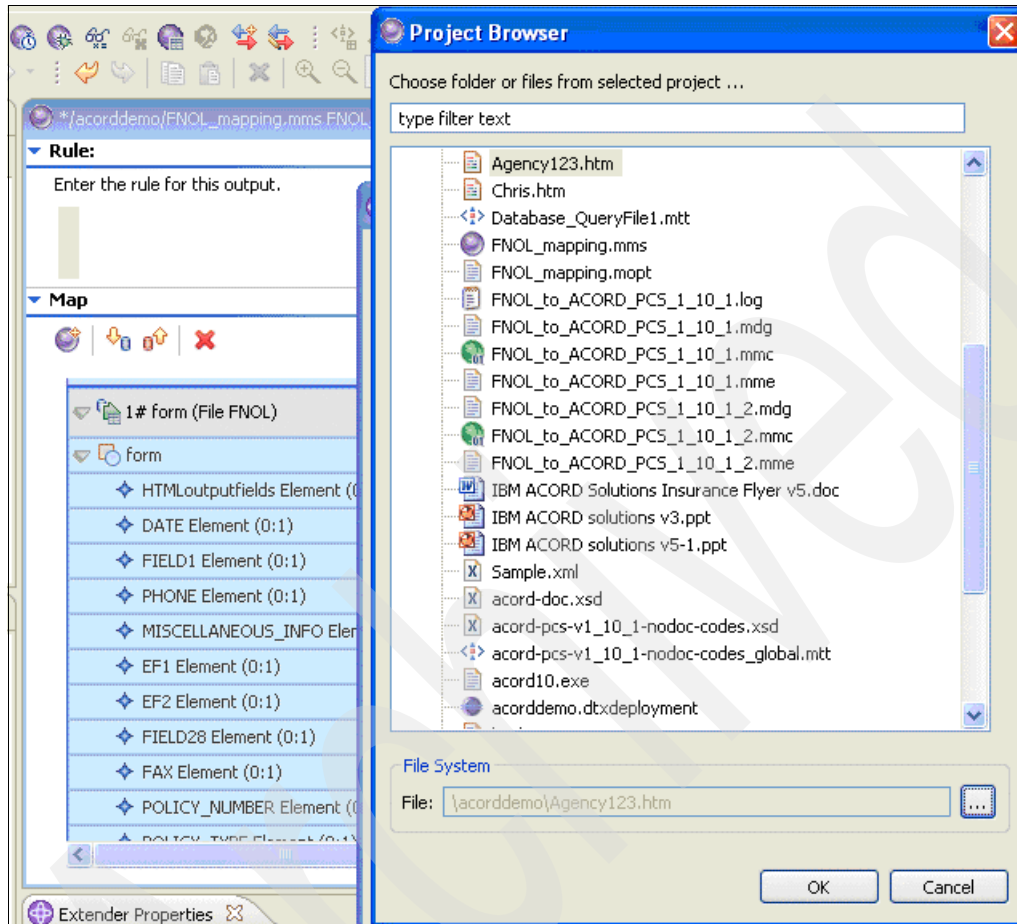


Figure 2-10 Selecting Agency123.htm file

When a new file path and name are entered, the **Build Map** button is clicked. This creates a short-lasting dialog that shows the map from FNOL to ACORD\_PCS being built. Again, if using a VMWare image, this process of creating a new map is bypassed by not reloading WTX and reusing the same file name each time a file record is Saved from Lotus Forms.

When the map is available, the **Run Map** button is clicked, yielding the Command Server dialog in Figure 2-11.

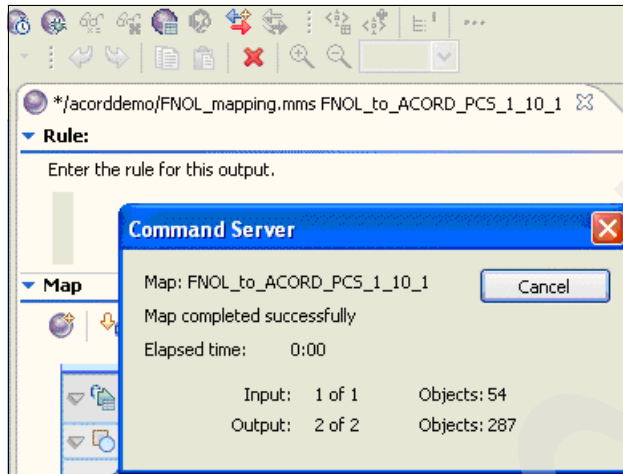


Figure 2-11 Run Map Example on the Command Server

This dialog is closed by selecting the **X** in the upper-right corner. Run Map creates a new record in the DB2 database.

The original WTX ACORD Pack demonstration map (Figure 2-12) was a transformation from the HTML format of Lotus Forms to the ACORD PCS XML structure on output card 1. It wrote the XML instance document as a file. We changed the map to instead write a row containing the XML as pureXML to a database. In WTX, there are multiple ways to do this. The DBLOOKUP (map rule) approach worked well.

A second map output card was added specifically for handling the database work. The tree that was created for this output card was step-based. It is used to orchestrate a series of commands (or calls), but not used to create actual output.

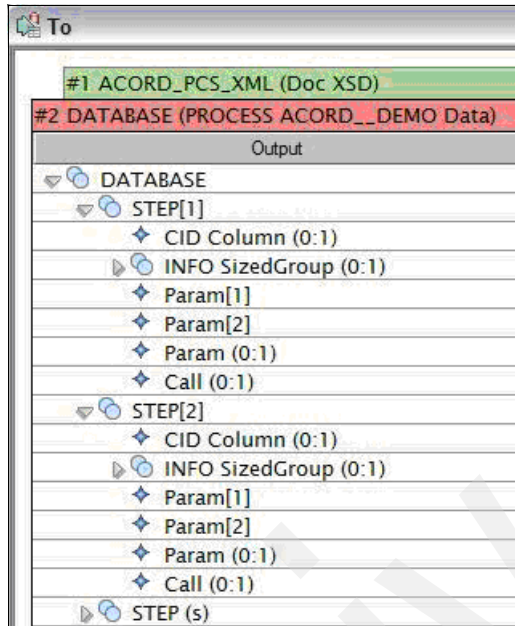


Figure 2-12 Tree view from Output Map

Each step in the tree has several optional components to make the call construction as simple as possible. In WTX, it is easier to manipulate things in small pieces and combine them, than it is to manipulate multi-part instructions. The DB2 call is the last component of each step to create the call detailed next.

There are two database *steps* for this demonstration. The first is to look up the last CID used in the table. This is `SELECT MAX(Cid) FROM ACORD__DEMO`. The Cid column was used because we needed a unique value to utilize.

In Step 1, we get the Cid and add one to it. In Step 2, we use that Cid of the new row that we add. The following map rules are used.

### For Step 1:

```
Param[1] ="SELECT MAX(Cid) FROM ACORD__DEMO"
```

- The table name is ACORD\_\_DEMO and the column we are looking for is Cid

```
Param[2]= "-DBTYPE DB2 -SOURCE SAMPLE -T trace.mtr"
```

- The database name is SAMPLE and it is a DB2 database and we have trace set

```
Call=NUMBERTOTEXT ( TEXTTONUMBER ( VALID (DBLOOKUP ( Param [1]:STEP [1]:DATABASE , Param [2]:STEP [1]:DATABASE ) , FAIL ( "ERROR: "+LASTERRORCODE ( )+"-"+LASTERRORMSG ( )) )+1)
```

- ▶ The call executes the SQL (gets highest Cid in the table) and adds one to it.
- ▶ The call also transforms Cid to a numeric so that it can perform math on it, then switches it back to text so that it can be used as text later on.

### For Step 2:

```
Param[1]= "INSERT INTO ACORD__DEMO (Cid,Info) VALUES (" +Call:STEP [1]:DATABASE+" ,<<27>>" +TEXT(ACORD_PCS_XML)+"<<27>>" "
```

- ▶ The Table name is ACORD\_\_DEMO.
- ▶ We are populating both Cid and Info.
- ▶ Call from step one is used for the Cid value.
- ▶ Info is the actual XML.
- ▶ It is set to the value in ACORD\_PCS\_XML, which is the result of the transformation map output card one.
- ▶ ACORD\_PCS\_XML is simple the name of output card one of this map.
- ▶ Single quotes replaced with <<27>> keep from confusing the map designer into thinking that we are ending the rule.

Param[2]= "-DBTYPE DB2 -SOURCE SAMPLE -T trace.mtr"

- ▶ The database name is SAMPLE, it is a DB2 database, and we are using trace.

Call=VALID (DBLOOKUP ( Param [1]:STEP [2]:DATABASE , Param [2]:STEP [2]:DATABASE ) , FAIL ( "ERROR: "+LASTERRORCODE ( )+"-"+LASTERRORMSG ( )))

- ▶ When the map is run, the first output card creates the transformed XML.
- ▶ The second output card then goes to the table and gets the next Cid.
- ▶ We then put the new Cid and the XML into the table. See Figure 2-13.

#2 DATABASE (PROCESS ACORD__DEMO Data)	
Output	Rule
DATABASE	
STEP[1]	
CID Column (0:1)	=NONE /*Step one gets the highest Cid used in the ACORD__DEMO table - so ...
INFO SizedGroup (0:1)	=NONE
Param[1]	="SELECT MAX(Cid) FROM ACORD__DEMO"
Param[2]	=" -DBTYPE DB2 -SOURCE SAMPLE -T trace.mtr"
Param (0:1)	=NONE
Call (0:1)	=NUMBERTOTEXT ( TEXTTONUMBER ( VALID (DBLOOKUP ( Param [1]:STEP [1]:DA...
STEP[2]	
CID Column (0:1)	=NONE /*Step two puts the new record into the table using the next available C...
INFO SizedGroup (0:1)	=NONE
Param[1]	="INSERT INTO ACORD__DEMO (Cid,Info) VALUES (" +Call:STEP [1]:DATABASE+" ,...
Param[2]	=" -DBTYPE DB2 -SOURCE SAMPLE -T trace.mtr"
Param (0:1)	=NONE
Call (0:1)	=VALID (DBLOOKUP ( Param [1]:STEP [2]:DATABASE , Param [2]:STEP [2]:DATABA...
STEP (s)	=NONE

Figure 2-13 Transformed XML Tree view

## 2.4 Using the DB2 9 database

The DB2 9 database requires database and table definitions before starting. For the demonstration, the DB2 9 Sample database was used to house a new table called ACORD\_\_DEMO (two underscores after ACORD). This was done by using the Create New Table wizard in the DB2 Control Center as in Figure 2-14.

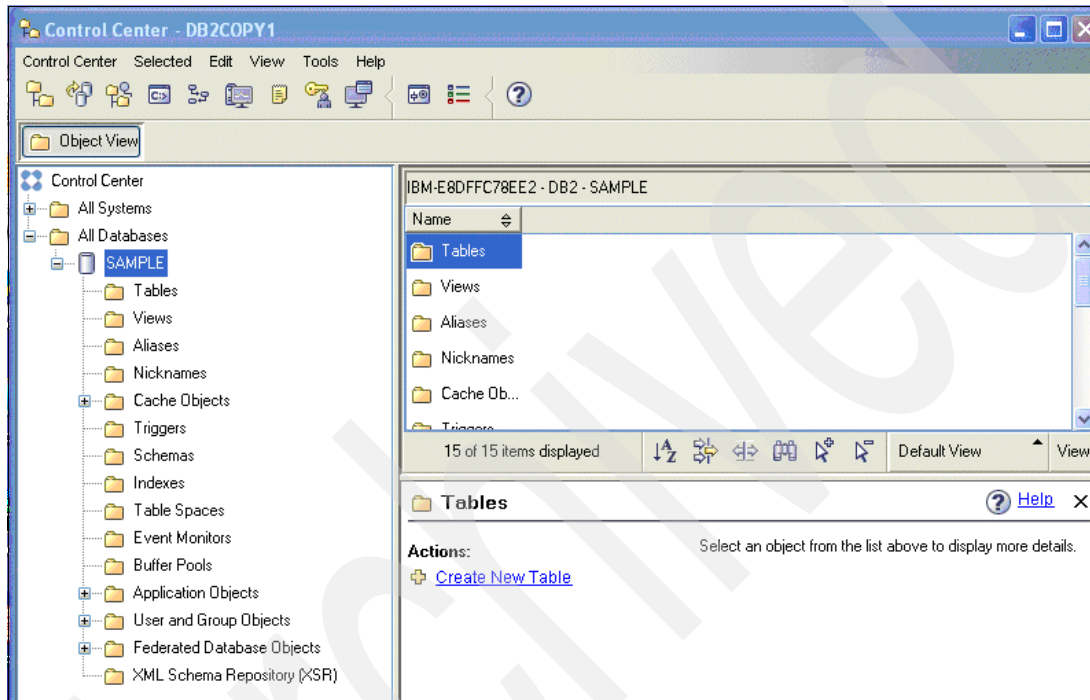


Figure 2-14 DB2 9 Control Center view

The following characteristics were used (Figure 2-15).

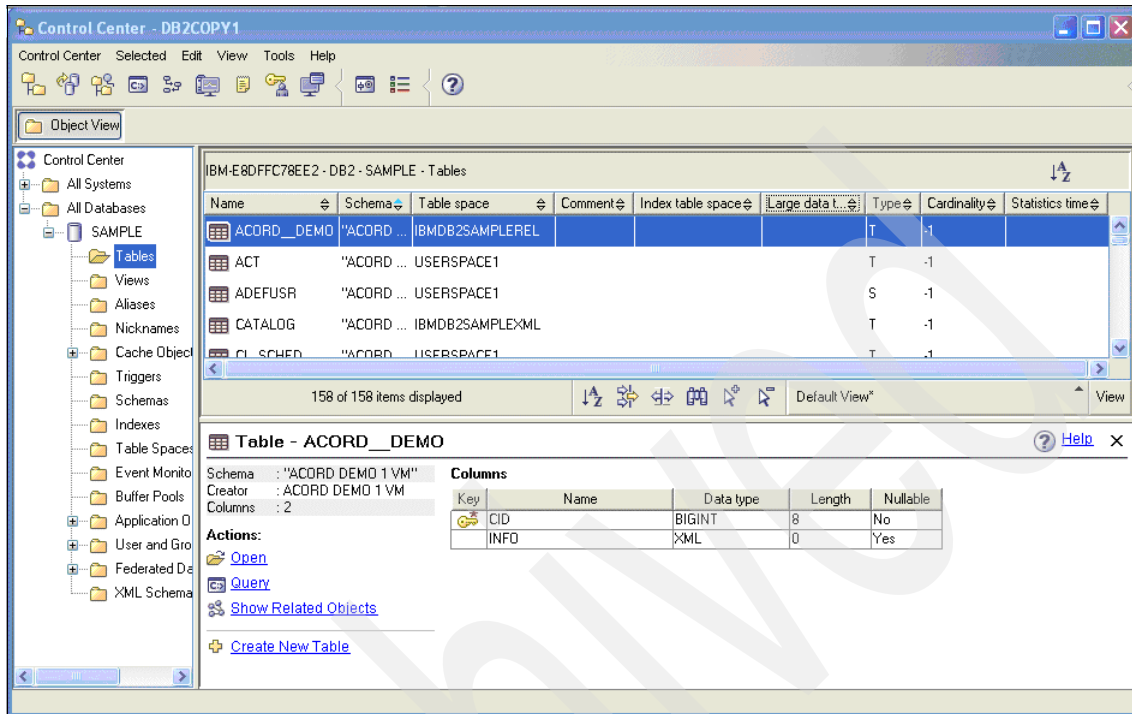


Figure 2-15 DB2 9 Control Center ACORD\_DEMO Table view

The two fields in the demonstration are *CID* as a unique key incrementing each time a record is written and *INFO* as an XML field. This XML field contains each ACORD XML schema written by WTX.



When records have been written by WTX, then opening the ACORD\_\_DEMO table provides a dialog showing its records or rows as in Figure 2-16.

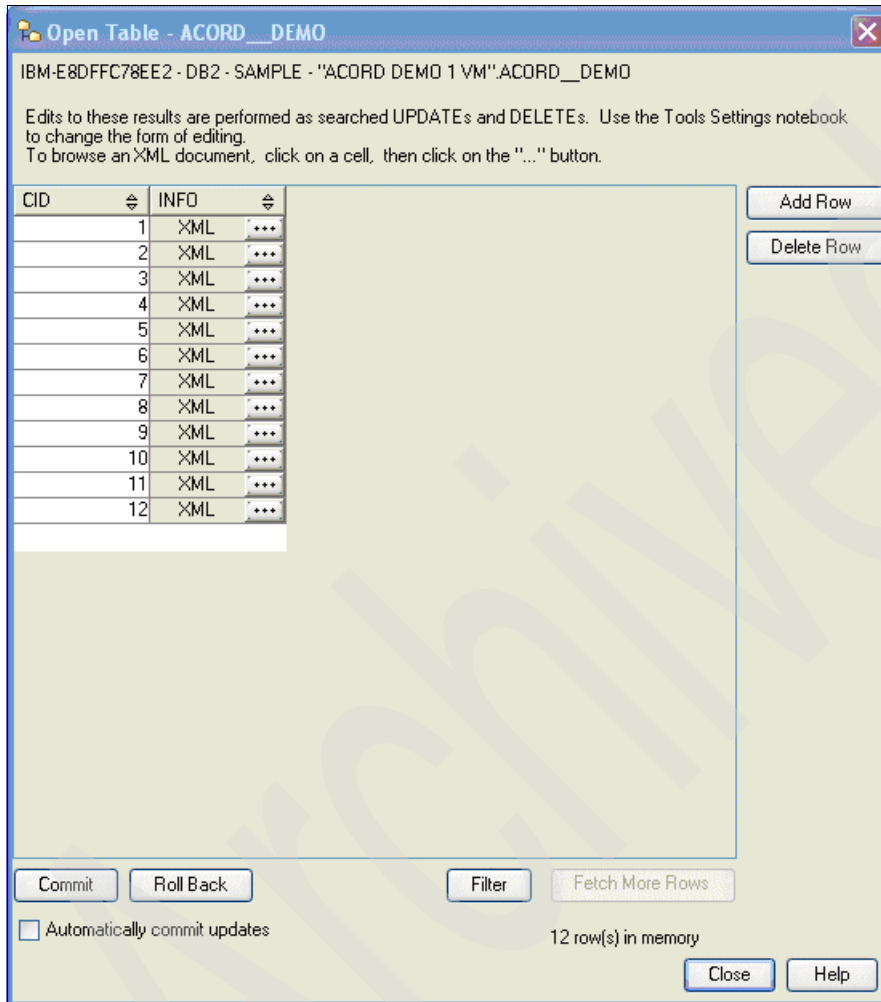


Figure 2-16 DB2 9 Table View of ACORD\_DEMO

Selecting the "..." by any row provides entry into that row and displays a window similar to Figure 2-17.

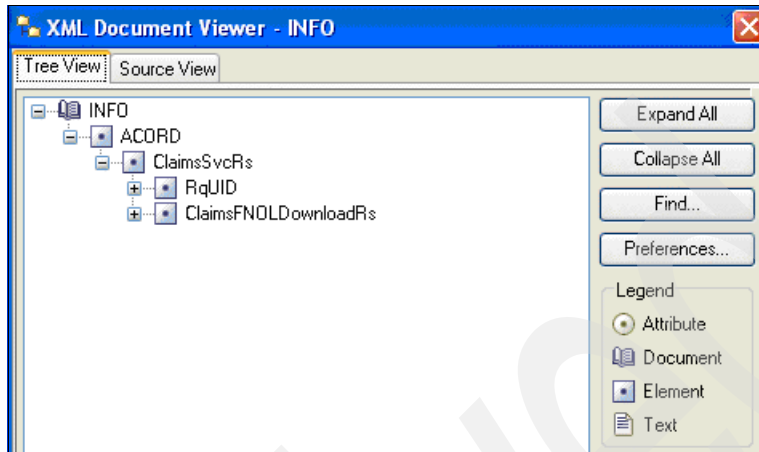


Figure 2-17 DB2 9 XML Viewer

Selecting **Expand All** and scrolling shows the main Agency (Producer - Addr1) and Policy Number fields (Figure 2-18) in the record.

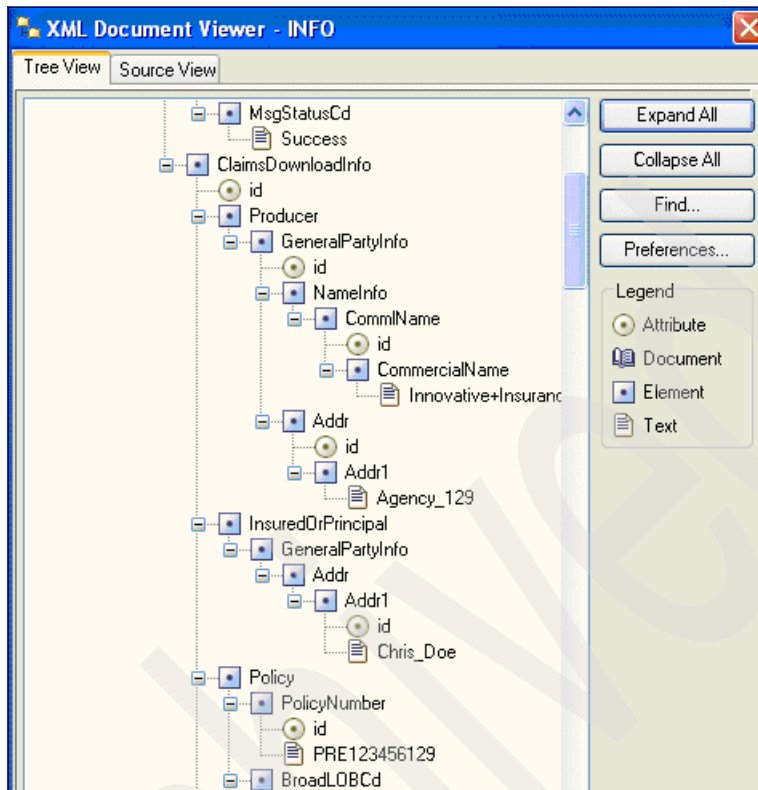


Figure 2-18 DB2 9 XML Viewer Tree View example

The DB2 Command Editor is used with a DB2 XQuery to display this or prior records added to the database.

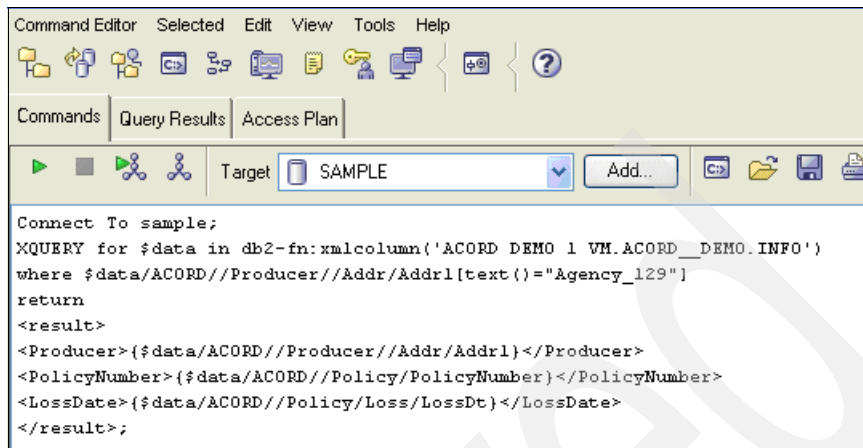
A sample XQuery used in the demonstration is:

```

Connect To sample;
XQUERY for $data in db2-fn:xmlcolumn('ACORD DEMO 1
VM.ACORD_DEMO.INFO')
where $data/ACORD//Producer//Addr/Addr1[text()='Agency_129']
return
<result>
<Producer>{$data/ACORD//Producer//Addr/Addr1}</Producer>
<PolicyNumber>{$data/ACORD//Policy/PolicyNumber}</PolicyNumber>
<LossDate>{$data/ACORD//Policy/Loss/LossDt}</LossDate>
</result>;

```

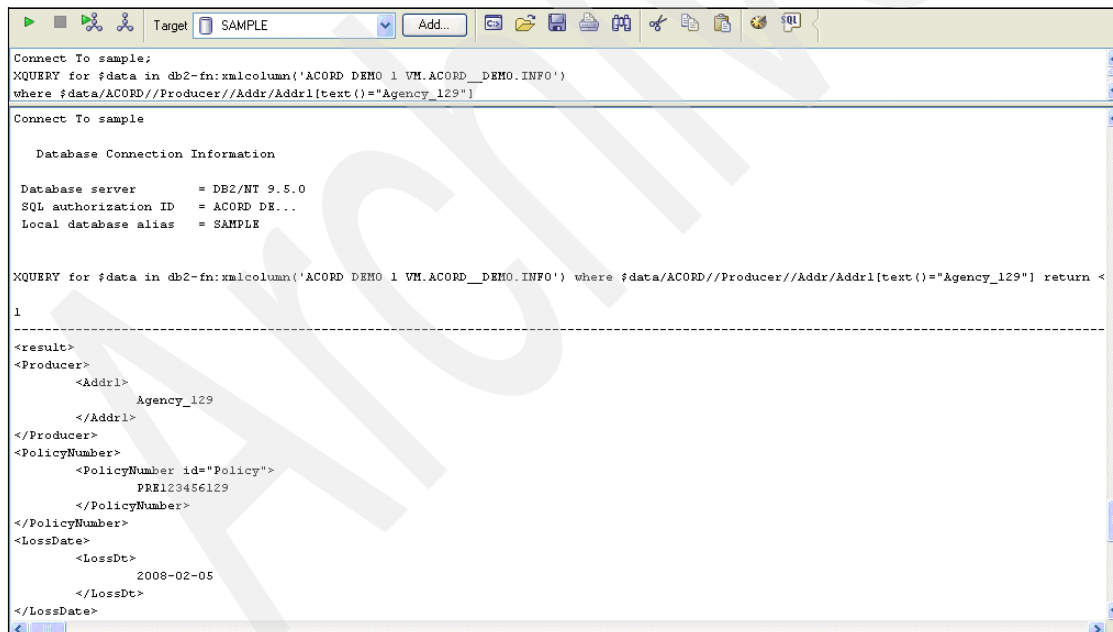
The Command pasted into the DB2 Command Editor looks like Figure 2-19.



```
Command Editor Selected Edit View Tools Help
[Icons]
Commands Query Results Access Plan
Target SAMPLE Add... [Icons]
Connect To sample;
XQUERY for $data in db2-fn:xmlcolumn('ACORD DEMO 1 VM.ACORD_DEMO.INFO')
where $data/ACORD//Producer//Addr/Addr1[text()='Agency_129']
return
<result>
<Producer>{$data/ACORD//Producer//Addr/Addr1}</Producer>
<PolicyNumber>{$data/ACORD//Policy/PolicyNumber}</PolicyNumber>
<LossDate>{$data/ACORD//Policy/Loss/LossDt}</LossDate>
</result>;
```

Figure 2-19 DB2 9 Command Window view

Clicking the **Execute** button displays the results as shown in Figure 2-20.



```
Target SAMPLE Add... [Icons]
Connect To sample;
XQUERY for $data in db2-fn:xmlcolumn('ACORD DEMO 1 VM.ACORD_DEMO.INFO')
where $data/ACORD//Producer//Addr/Addr1[text()='Agency_129'] return <
1
-----
<result>
<Producer>
  <Addr1>
    Agency_129
  </Addr1>
</Producer>
<PolicyNumber>
  <PolicyNumber id="Policy">
    PRE123456129
  </PolicyNumber>
</PolicyNumber>
<LossDate>
  <LossDt>
    2008-02-05
  </LossDt>
</LossDate>
```

Figure 2-20 DB2 9 Results view

## 2.5 Summary from the Development Environment solution

The purpose of this solution was to show a quick, straight through process of ACORD Forms data hitting a database in a format usable by back-end systems. We succeeded in reaching that goal and, as mentioned before, have shown this demonstration at multiple ACORD conference booths. A production implementation is always more complex than a demonstration. For example, we did not handle any error conditions, which would be a big part of handling key-entered data. Figure 2-21 shows the Development Environment solution demonstration surrounded by all the servers and other IBM content that might be part of a production implementation.

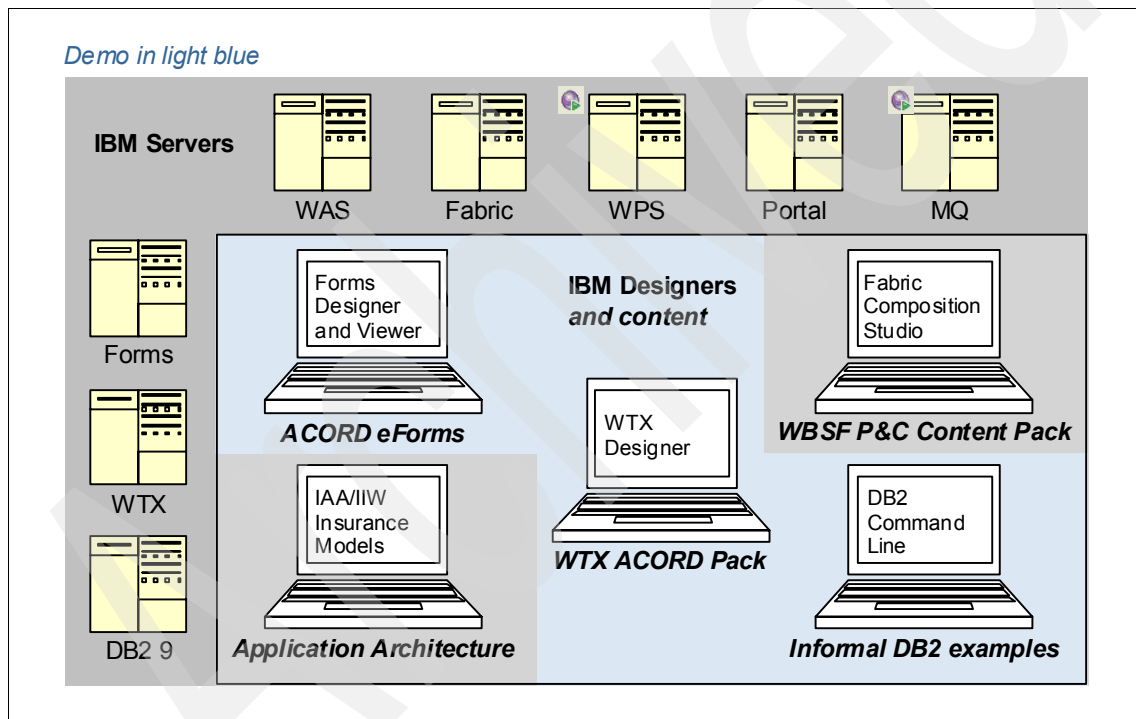


Figure 2-21 Other potential tools and content in an IBM ACORD production implementation

Archived



## User scenarios

This section describes the online scenario for the ITSO working example of IBM software supporting the ACORD Standards runtime environment, and provides information regarding signing on and navigating the available windows as a part of the demonstration scenarios.

## 3.1 Scenario diagram

Figure 3-1 illustrates several possible demonstration scenarios that can be navigated based on the ACORD Forms and SOA runtime environment.

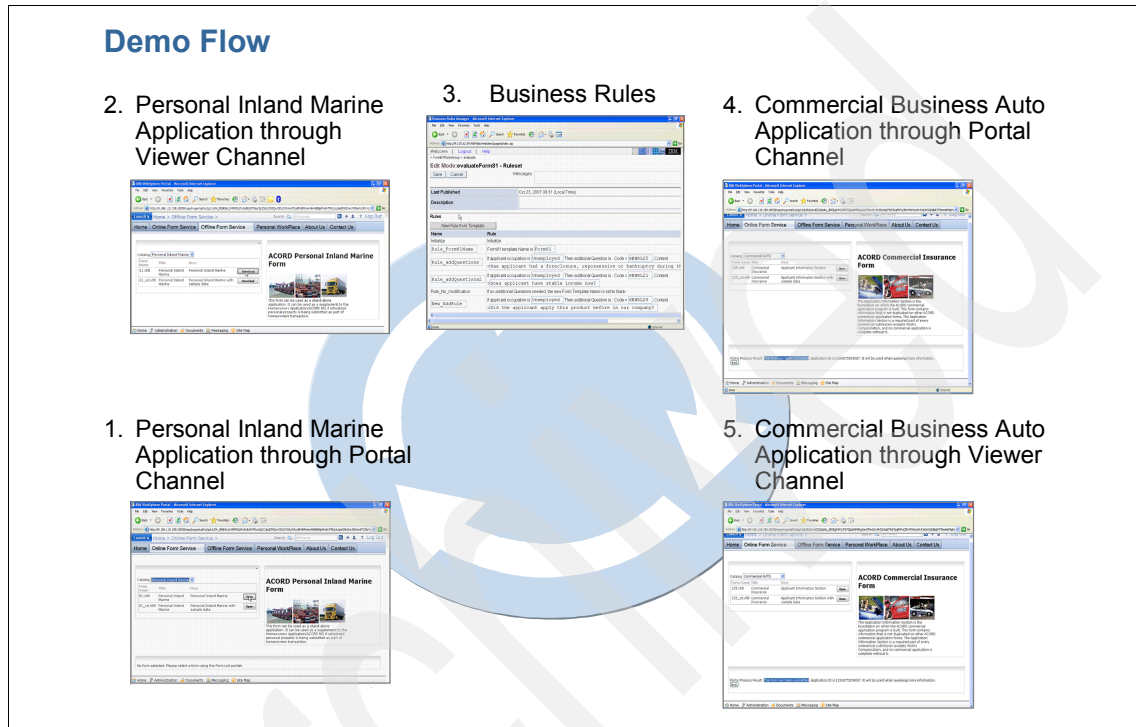


Figure 3-1 ACORD Forms and SOA Demo activities

These demonstration scenarios are:

- ▶ Personal Inland Marine Application through Portal Channel
- ▶ Personal Inland Marine Application through Viewer Channel
- ▶ Business Rules
- ▶ Commercial Business Auto Application through Portal Channel
- ▶ Commercial Business Auto Application through Viewer Channel



Regardless of the demonstration scenario to be executed, the first step is to logon to the portal. In the VM Image for the demonstration, the configured credentials are userid *John* and password *JohnJohn*; which provides customer level authorization, or userid *Jane* and password *JaneJane*; which provides agent/producer level authorization. See Figure 3-2.

Launch Site Map > Site Map > ?

Welcome, please enter your information.

**INNOVATING INSURANCE**  
thinking outside the box ©

### Innovating in Insurance thinking outside the box.

For more than 140 years, our expert underwriters have developed property and casualty insurance for [families](#) and [businesses](#) like yours.

- Individuals & Families**
  - [Products](#)
  - [Claims](#)
  - [Life Events](#)
  - [Insurance Services](#)
- For Your Business**
  - [Products](#)
  - [Claims](#)
  - [Industries](#)
  - [Insurance Services](#)
- For Agents**
  - [Advantages](#)
  - [Services](#)
  - [Resources](#)
  - [Insurance Services](#)
- About Innovating in Insurance**
  - [About Us](#)
  - [Careers](#)
  - [News](#)
  - [Employee Access](#)

Please note: After some time of inactivity, the system will log you out automatically and ask you to log in again.

Log in Cancel

Figure 3-2 ACORD Forms and SOA Demo Logon Portal window

Logging into the portal yields the portal window in Figure 3-3.



Figure 3-3 ACORD Forms and SOA Demo Welcome Portal window

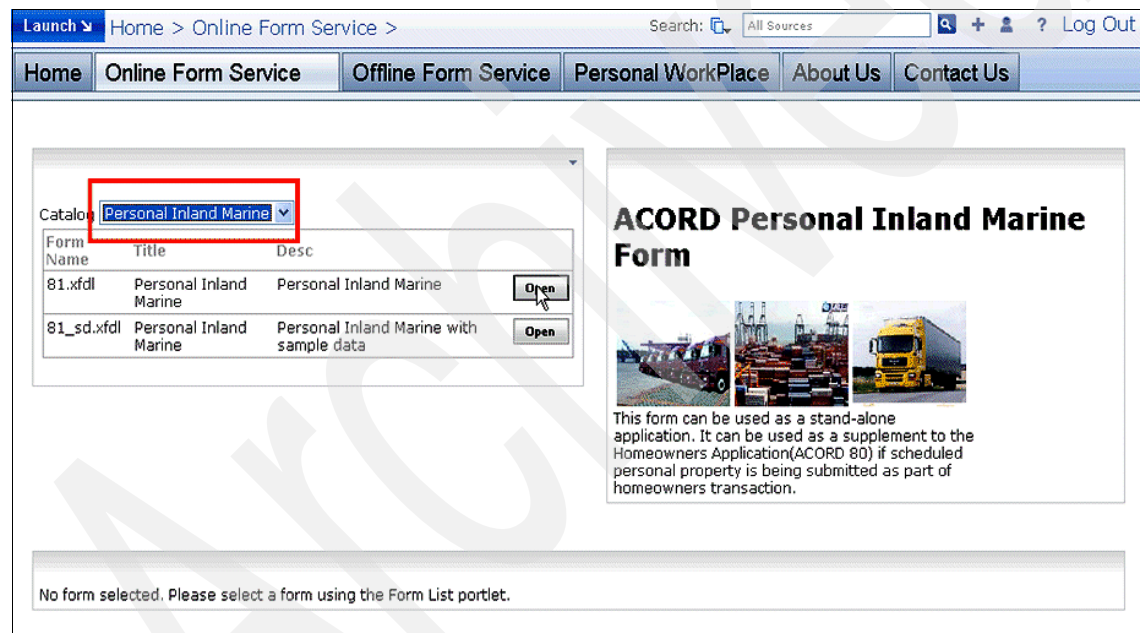
The welcome portal window is just a mock-up; a real implementation would create something relevant to the roles that would use the application. For the purposes of the ACORD Forms SOA Demo, the relevant choices of Online Form Service or Offline Form Service are used to access the documented user scenarios. Selecting the **Online Form Services** option allows us to exercise the first and fourth scenarios. Selecting the **Offline Form Service** allows us to exercise the second and third scenarios.

## 3.2 Exercising the ACORD forms and SOA demonstration scenarios

This section describes the five demonstration scenarios.

### 3.2.1 Personal Inland Marine Application through Portal Channel

Selecting Online Form service allows you to select Personal Inland Marine from the Catalog and allows access to the Personal Inland Marine Forms available in the demonstration. There are two options, an empty form that allows you to fill in the appropriate data, exercising the available edits, and a pre-filled form that contains sample data. See Figure 3-4.



Launch ▾ Home > Online Form Service > Search: All Sources

Home Online Form Service Offline Form Service Personal WorkPlace About Us Contact Us

Catalog Personal Inland Marine ▾

Form Name	Title	Desc	
81.xfdl	Personal Inland Marine	Personal Inland Marine	Open
81_sd.xfdl	Personal Inland Marine	Personal Inland Marine with sample data	Open

### ACORD Personal Inland Marine Form

This form can be used as a stand-alone application. It can be used as a supplement to the Homeowners Application(ACORD 80) if scheduled personal property is being submitted as part of homeowners transaction.

No form selected. Please select a form using the Form List portlet.

Figure 3-4 ACORD Forms SOA Data Personal Inland Marine Portal Use Case

Selecting one of the form options yields the form in Figure 3-5.

Name of the insurance company (or residual market plan) that will receive the application. Do not use group names, use the actual name of the company within the group in which you wish to have the policy issued. Also, if applicable, indicate the type of plan or policy program (example: Preferred) that you wish to use when							
		Save Print Fax Email Instructions Feedback Quick Guide Lock submit				Next >>	
<b>FOR DEMO PURPOSES ONLY</b>							
						<b>PERSONAL INLAND MARINE APPLICATION</b>	
DATE (MM/DD/YYYY) 09/22/2007							
AGENCY	PHONE TOLL No. Ext. 845-620-1221	APPLICANT'S NAME AND MAILING ADDRESS (Include county & ZIP+4)				NAIC CODE	
	FAX TOLL No. 845-620-1234	Gary Smith				23144	
Warwick Agency	21 Main Street 123 Warwick NY 10975	65 Pine Street Warwick NY 10975 Orange				TELEPHONE NUMBER	845-620-4476
CODE: 58432	SUBCODE: 3947	CO/PLAN	POL#:	ACCT#:			
AGENCY CUSTOMER ID		Standard	I				
40366749		EFFECTIVE DATE	EXPIRATION DATE	<input type="checkbox"/>	DIRECT BILL	PAYMENT PLAN	
				<input type="checkbox"/>	AGENCY BILL		
<b>APPLICANT &amp; LOCATION INFORMATION</b>							
BIRTH DATE	MARITAL STATUS	OCCUPATION	SPOUSE'S OCCUPATION	TERR CODE	PROTECT CLASS	FIRE DISTRICT/CODE NUMBER	
LOCATION OF PROPERTY (if Different From Above) <input type="checkbox"/> ADDITIONAL LOCATION			DWELLING TYPE(S)		CONSTRUCTION TYPE(S)		# FAMILIES (In Each)
OTHER							

Figure 3-5 ACORD Form SOA Data Personal Inland Marine Portal form. Courtesy of ACORD Corporation. Reprinted with permission.

Fill in the data in the form, and click the **Submit** option to process the form. The way the demonstration was originally made, entering unemployed in the OCCUPATION field of the form trips the business edit built into the form that enables the form to operate reflexively. This is simply an example of the kind of behavior that the SOA infrastructure enables for the form, above and beyond the dynamic behavior that can be built into the logic of the forms themselves.

Entering unemployed in the OCCUPATION field of the form, and then clicking **Submit**, creates the response window shown in Figure 3-6.

Launch ▾ Home > Online Form Service > Search: All Sources 🔍 + ? Log Out

Home Online Form Service Offline Form Service Personal WorkPlace About Us Contact Us

Catalog Personal Inland Marine ▾

Form Name	Title	Desc	
81.xfdl	Personal Inland Marine	Personal Inland Marine	Open
81_sd.xfdl	Personal Inland Marine	Personal Inland Marine with sample data	Open

### ACORD Personal Inland Marine Form

This form can be used as a stand-alone application. It can be used as a supplement to the Homeowners Application(ACORD 80) if scheduled personal property is being submitted as part of homeowners transaction.

Forms Process Result: [Additional Questions/Forms need to be filled](#)

Fill Again

Figure 3-6 ACORD Form SOA Data Personal Inland Marine Portal Response form

This window indicates that more questions need to be answered based on the business rules that were entered for this form and the data entered into the form.

In the Personal Inland Marine scenario, clicking the **Fill Again** button brings up a new form with additional questions, as shown in Figure 3-7. Unlike in the Commercial Auto scenario described later, this brings up a new form with additional pages.



The screenshot shows a web browser window displaying the ACORD logo and a navigation menu with options: Save, Print, Fax, Email, Instructions, Feedback, Quick Guide, Lock, Submit, and << Previous. Below the navigation menu, the form is titled "Additional Questions" and includes the instruction "Click 'YES' or 'NO'". The form contains two questions:

		YES	NO
GENRL21	Does applicant have stable income now?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
GENRL25	Has applicant had a foreclosure, repossession or bankruptcy during the past	<input checked="" type="checkbox"/>	<input type="checkbox"/>

Figure 3-7 ACORD Form SOA Data Personal Inland Marine Portal Form with additional questions. Courtesy of ACORD Corporation. Reprinted with permission.

The additional questions are found by paging through the form using the **Next/Previous** option. Answer these questions and then use the **Submit** option again to reprocess. Note that the original demonstration was not given business rules to evaluate the responses to these questions.



Clicking **Submit** on this form results in the portal displaying the response window shown in Figure 3-8.

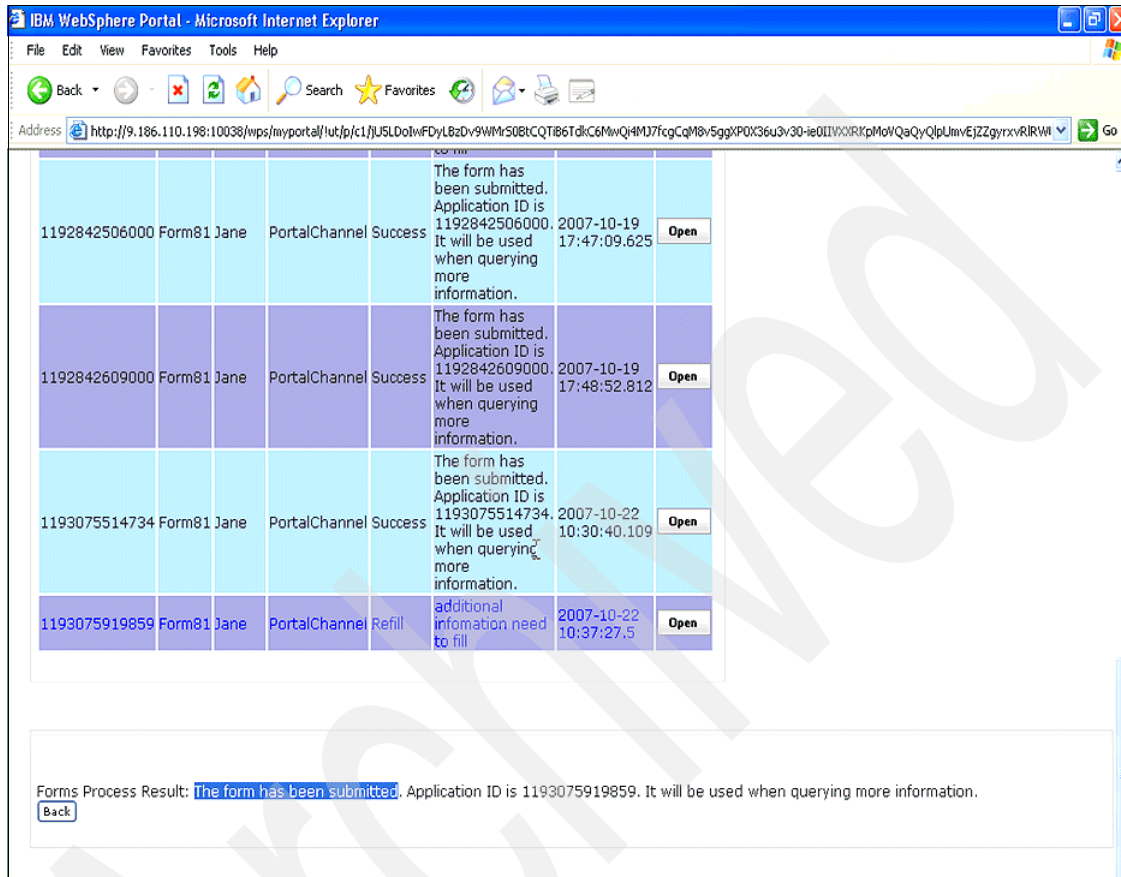


Figure 3-8 ACORD Form SOA Data Personal Inland Marine Portal finished form

The section of the window showing that the form has been submitted indicates that the form was successfully accepted by the SOA infrastructure for further processing and that user data entry is now completed. The portal view showing this section of the window was viewed from the personal workplace option that is shown in Figure 3-4 on page 35.

This view happens when the in-progress form, shown in Figure 3-6 on page 37, is instead activated by going to the Personal Workplace view shown in Figure 3-4 and selecting the form with the correct reference ID instead of opening the form directly from the button in Figure 3-6 on page 37.

Figure 3-16 on page 47 shows an example of the portal page when the Online Form Service page is used to complete processing of the form. Either route is acceptable for completing the form user entry scenario, and does not change the processing result, but does illustrate that the demonstration supports either single or multi-session data entry for a form.

### 3.2.2 Personal Inland Marine application through Viewer Channel

Selecting Offline Form service allows you to select **Selecting Personal Inland Marine** from the Catalog and allows access to the Personal Inland Marine Forms available in the demonstration. There are two options, an empty form that allows you to fill in the appropriate data, exercising the available edits, and a pre-filled form that contains sample data. See Figure 3-9.

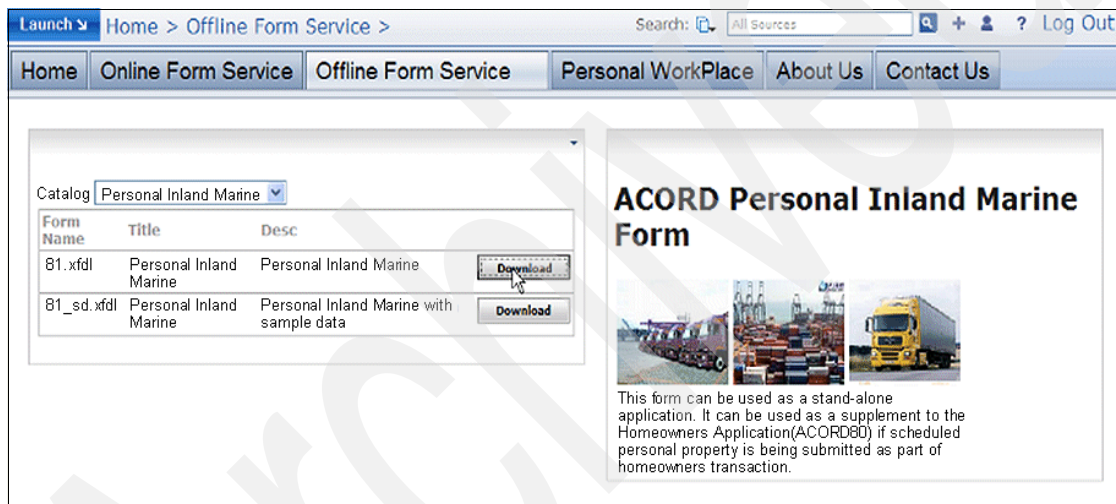


Figure 3-9 ACORD Form SOA Data Personal Inland Marine Viewer Use Case



Selecting one of the form options yields the form in Figure 3-10.

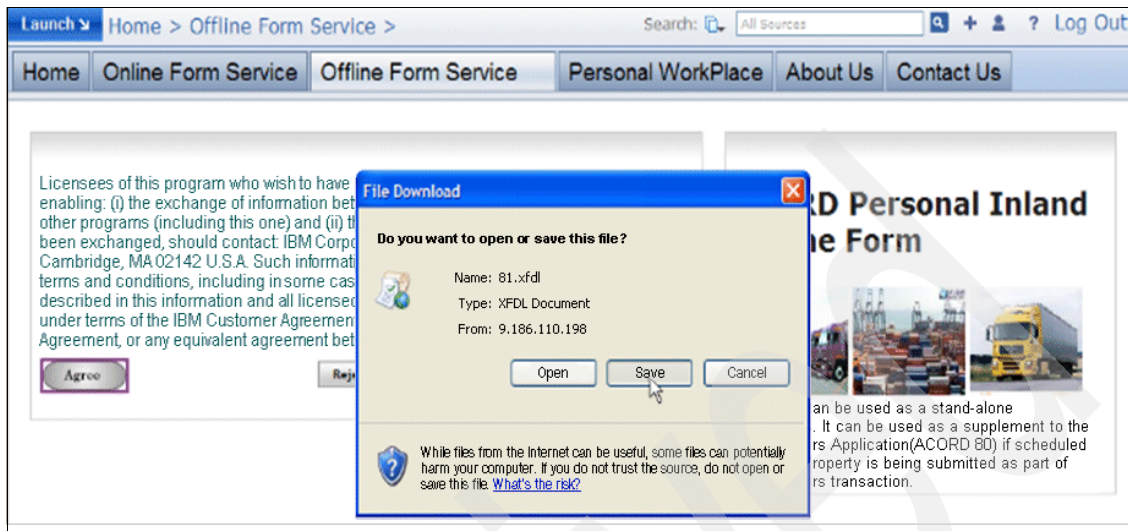


Figure 3-10 ACORD Form SOA Data Personal Inland Marine Viewer Use Case download

Clicking **Save** on the File Download dialog allows you to save a copy of the ACORD form so that it can be used offline outside of the portal via the viewer.

At this point, this use case operates the same as the portal version, so the windows are omitted. Simply open the saved file in the viewer. Enter data on the form. If the OCCUPATION is set to **Unemployed** when the form is submitted, you get a response window indicating the new URL for the updated form. This new window looks similar to Figure 3-11, except that it has a link to the new form. At this point, download the new form, answer the questions, and re-submit.

After the form is either re-submitted or if the OCCUPATION was not set to unemployed, you get the response window in Figure 3-11.

The screenshot shows the ACORD Personal Inland Marine Application form viewer. The form is titled "FOR DEMO PURPOSES ONLY PERSONAL INLAND MARINE APPLICATION" and includes fields for Agency, Applicant Name, Address, Date, and Coverage details. A confirmation dialog box is displayed over the form, asking "Data will be submitted to the Innovating Insurance Server. Do you wish to continue?" with "Yes" and "No" buttons. A blue arrow points from the "Yes" button to the success message window. The success message window, titled "Innovating in Insurance thinking outside the box.", contains the text: "The form has been submitted. Application ID is 1193093363078. It will be used when querying more information." and a "Close" button.

#	PROPERTY	AMOUNT OF INS	RATE	PREM
1	JEWELRY	\$50,000.00	1.4	\$700.00
2	FURS			
3	FINE ARTS			
4	CAMERAS	\$2,500.00	1.65	\$41.00

Figure 3-11 ACORD Form SOA Data Personal Inland Marine Viewer Use Case finished. Courtesy of ACORD Corporation. Reprinted with permission.

### 3.2.3 Business rules

Exercising this use case simply requires you to build rule scenarios based on the WPS rule manager data entry guide. As you can see from Figure 3-12, this window illustrates the rules that were configured in the demonstration to drive the other four use cases.

Welcome | [Logout](#) | [Help](#)  
 > Form81RuleGroup > evaluate

**Edit Mode: evaluateForm81 - Ruleset**

Save Cancel Messages:

---

**Last Published** Oct 23, 2007 09:31 (Local Time)

**Description**

---

**Rules**

New Rule from Template

Name	Rule
Initialize	Initialize
Rule_Form81Name	Form81 template Name is <input type="text" value="Form81"/>
Rule_addQuestions	If applicant occupation is <input type="text" value="Unemployed"/> Then additional Question is : Code = <input type="text" value="GENRL25"/> , Content =Has applicant had a foreclosure, repossession or bankruptcy during th
Rule_addQuestions2	If applicant occupation is <input type="text" value="Unemployed"/> Then additional Question is : Code = <input type="text" value="GENRL21"/> , Content =Does applicant have stable income now?
Rule_No_modification	If no additional Questions needed, the new Form Template Name is set to blank
New_AddRule	If applicant occupation is <input type="text" value="Unemployed"/> Then additional Question is : Code = <input type="text" value="GENRL29"/> , Content =Did the applicant apply this product before in our company?

Figure 3-12 ACORD Form SOA Demo Business Rules

### 3.2.4 Commercial Business Auto application through Portal Channel

Selecting **Online Form Service** allows you to select Commercial Auto from the Catalog and allows access to the Commercial Auto Forms available in the demonstration. As shown in Figure 3-4 on page 35 for the Personal Inland Marine use case, there are two options, an empty form that allows you to fill in the appropriate data, exercising the available edits, and a pre-filled form that contains sample data. Selecting one of the options yields the form shown in Figure 3-13.

ACORD 127 attached; and ACORD 137, specific to the state where the insurance will be written.

ACORD®		FOR DEMO PURPOSES ONLY		COMMERCIAL INSURANCE APPLICATION		DATE (MM/DD/YYYY)	
		APPLICANT INFORMATION SECTION				09/01/2007	
AGENCY Warwick Agency 21 Main Street 123 Warwick NY 10975		CARRIER AIG	NAIC CODE: 23144	UNDERWRITER Jane Goodwin	UNDERWRITER OFF.		
POLICIES OR PROGRAM REQUESTED Small Business				POLICY NUMBER 1212995674			
PHONE (A/C No. Ext): 845-620-1221		<input type="checkbox"/> ACCOUNTS RECEIVABLE/ VALUABLE PAPERS		<input type="checkbox"/> ELECTRONIC DATA PROC		<input type="checkbox"/> TRUCKERS/MOTOR CARRIER	
FAX (A/C No.): 845-620-1234		<input type="checkbox"/> BOILER & MACHINERY		<input type="checkbox"/> EQUIPMENT FLOATER		<input type="checkbox"/> UMBRELLA	
E-MAIL ADDRESS: service@wellcare.com		<input checked="" type="checkbox"/> BUSINESS AUTO		<input type="checkbox"/> GARAGE AND DEALERS		<input type="checkbox"/> VEHICLE SCHEDULE	
CODE: 58432 SUB CODE: 3947		<input checked="" type="checkbox"/> COMMERCIAL		<input type="checkbox"/> GLASS AND SIGN		<input type="checkbox"/> WORKERS COMPENSATION	
AGENCY CUSTOMER ID: 40366749		ACORD 127 attached; and ACORD 137, specific to the state where the insurance will be written.		<input type="checkbox"/> INSTALLATION/BUILDERS RISK		<input type="checkbox"/> YACHT	
		<input type="checkbox"/> DEALERS		<input type="checkbox"/> PROPERTY			
		<input type="checkbox"/> DRIVER INFO SCHEDULE		<input type="checkbox"/> TRANSPORTATION/ MOTOR TRUCK CAR&D			
<b>STATUS OF TRANSACTION</b>		<b>PACKAGE POLICY INFORMATION</b>					
<input type="checkbox"/> QUOTE <input type="checkbox"/> ISSUE POLICY <input type="checkbox"/> RENEW		ENTER THIS INFORMATION WHEN COMMON DATES AND TERMS APPLY TO SEVERAL LINES, OR FOR MONOLINE POLICIES.					
<input type="checkbox"/> BOUND (Give Date and/or Attach Copy):		PROPOSED EFF DATE	PROPOSED EXP DATE	BILLING PLAN	PAYMENT PLAN	AUDIT	
<input type="checkbox"/> CHANGE DATE TIME <input type="checkbox"/> AM				<input type="checkbox"/> DIRECT BILL			
<input type="checkbox"/> CANCEL <input type="checkbox"/> PM				<input type="checkbox"/> AGENCY BILL			
<b>APPLICANT INFORMATION</b>							

Figure 3-13 ACORD Form SOA Demo Commercial Auto Portal Use Case Form. Courtesy of ACORD Corporation. Reprinted with permission.

Fill in the data in the form, and click the **Submit** option to process the form. The way the demonstration was originally created, checking the BUSINESS AUTO option of the form trips the business edit built for the form that enables the form to operate reflexively. This is simply an example of the kind of behavior that the SOA infrastructure enables for the form, above and beyond the dynamic behavior that can be built into the logic of the forms themselves.

Checking the BUSINESS AUTO option the form, and then clicking **Submit**, creates the response window shown in Figure 3-14.

The screenshot shows a web portal with a navigation bar at the top containing links for Home, Online Form Service, Offline Form Service, Personal WorkPlace, About Us, and Contact Us. The main content area is divided into two sections. On the left, there is a 'Catalog' dropdown menu set to 'Commercial AUTO'. Below it is a table with two rows of form information, each with an 'Open' button.

Form Name Title	Desc	
125.xfdl Commercial Insurance	Applicant Information Section	Open
125_sd.xfdl Commercial Insurance	Applicant Information Section with sample data	Open

On the right, the section is titled 'ACORD Commercial Insurance Form'. It features three small images of cars and a paragraph of text explaining the 'Application Information Section' as the foundation for the ACORD commercial application program.

At the bottom of the page, a 'Forms Process Result' message is displayed: 'Additional Questions/Forms need to be filled.' This message is highlighted with a red rectangular box. Below the message is a 'Fill Again' button.

Figure 3-14 ACORD Form SOA Demo Commercial Auto Portal Use Case Response form

This window indicates that more questions need to be answered based on the business rules that were entered for this form and the data entered into the form. As in the Personal Inland Marine Scenario, clicking the **Fill Again** button brings up a new form, but in this case the form contains additional pages as shown in Figure 3-15.

**ACORD** Save Print Fax Email Instructions Feedback Quick Guide Lock Submit << Previous Next >>

**FOR DEMO PURPOSES ONLY**  
**BUSINESS AUTO SECTION** DATE (MM/DD/YYYY)

AGENCY PHONE (A/C, No, Ext): +1-800-5551212  
FAX (A/C, No): +1-800-5551212  
Innovating Insurance 95th, Rt. Queen 12345 Los Angeles CA 89101  
EFFECTIVE DATE: 09/15/2007 EXPIRATION DATE: 09/14/2008  DIRECT BILL AGENCY BILL PAYMENT PLAN: Semi-annual AUDIT: A  
CODE: 106 SUB CODE: 38  
AGENCY CUSTOMER ID: 18  
FOR COMPANY USE ONLY

COVERAGES/LIMITS  
USE ACORD 137 FOR YOUR STATE TO PROVIDE COVERAGES/LIMITS INFORMATION

DRIVER INFORMATION ACORD 163 attached for additional drivers  
LIST ALL DRIVERS, INCLUDING FAMILY MEMBERS THAT WILL DRIVE COMPANY VEHICLES, AND EMPLOYEES WHO DRIVE OWN VEHICLES ON COMPANY BUSINESS.

DRIVER #	NAME (Include address, if required)	SEX	MAR STAT	DATE OF BIRTH	YRS EXP	YEAR LIC	DRIVER'S LICENSE NUMBER/ SOCIAL SECURITY NUMBER	STATE LIC	DATE HIRE	BROADER NO-FAULT	DOC	USE VEH #	% USE

Figure 3-15 ACORD Form SOA Demo Commercial Auto Portal Use Case Form with additional pages. Courtesy of ACORD Corporation. Reprinted with permission.

The additional pages, including the third page containing form 137 as shown in Figure 3-15, are found by paging through the form using the **Next/Previous** option. This scenario shows an example of dynamically building a form package where there is too much variability to determine what pages are required for data entry before the user enters data on the first form.

Instead, the SOA provides a reflexive response to data entered on the initial form with a response that contains the additionally required pages. Included in this scenario is the automatic propagation of data from each page to the next based on the shared data model in the dynamically constructed pages.



After the additional pages of data are entered, use the **Submit** option again to reprocess. Clicking **Submit** on this form results in the portal displaying the response window shown in Figure 3-16.

The screenshot shows a web portal interface with a navigation bar at the top containing links for Home, Online Form Service, Offline Form Service, Personal WorkPlace, About Us, and Contact Us. The main content area is divided into two sections. On the left, there is a 'Catalog' dropdown menu set to 'Commercial AUTO'. Below it is a table with two rows of form entries, each with an 'Open' button. On the right, there is a large heading 'ACORD Commercial Insurance Form' followed by three small images of cars and a text block explaining the importance of the Application Information Section. At the bottom, a 'Forms Process Result' section displays a success message and an Application ID, with a 'Bad' button next to it.

Form Name	Title	Desc	
125.xfdl	Commercial Insurance	Applicant Information Section	<input type="button" value="Open"/>
125_sd.xfdl	Commercial Insurance	Applicant Information Section with sample data	<input type="button" value="Open"/>

## ACORD Commercial Insurance Form

The Application Information Section is the foundation on which the ACORD commercial application program is built. This form contains information that is not duplicated on other ACORD commercial application forms. The Application Information Section is a required part of every commercial submission excepts Works Compensation, and no commercial application is complete without it.

Forms Process Result: **The form has been submitted**, Application ID is 1193075859307. It will be used when querying more information.

Figure 3-16 ACORD Form SOA Demo Commercial Auto Portal Use Case Form finished

The section of the window showing that the form has been submitted indicates that the form was successfully accepted by the SOA infrastructure for further processing and that user data entry is now completed. Unlike in the Personal Inland Marine scenario, Figure 3-16 shows the portal view with this section of the window as viewed from the original Online Form Service workplace option.

Whereas, the Personal Inland Marine scenario, previously discussed, shows a view from the personal workplace view shown in Figure 3-4 on page 35 and selecting the form with the correct reference ID is used, instead of opening the form directly from the button on Figure 3-6 on page 37 or Figure 3-14 on page 45. Either route is acceptable for completing form data entry, and does not change the processing result, but does illustrate that the demonstration supports either single or multi-session data entry for a form.

### 3.2.5 Commercial Auto application through Viewer Channel

Selecting **Offline Form Service** allows you to select Commercial Auto from the Catalog and allows access to the Commercial Auto Forms available in the demonstration. As shown in Figure 3-4 on page 35 for the Personal Inland Marine use case, there are two options, an empty form that allows you to fill in the appropriate data, exercising the available edits, and a pre-filled form that contains sample data. Selecting one of the options yields the Open or Save dialog form shown in Figure 3-10 on page 41.

Clicking **Save** on the File Download dialog allows you to save a copy of the ACORD form so that it can be used offline outside of the portal via the viewer.

At this point, the use case operates the same as the portal version starting with Figure 3-13 on page 44, so the windows are omitted. Simply open the saved file in the viewer. Enter data on the form. If the BUSINESS AUTO option of the form is checked when the form is submitted, you get a response window indicating the new URL for the updated form. This new window looks similar to Figure 3-11 on page 42, except it has a link to the new form. At this point, download the new form, answer the questions, and re-submit.

After the form is either re-submitted or if the BUSINESS AUTO option of the form is not checked, you get the response window in Figure 3-11 on page 42.



## eForms + SOA Solution architectural overview

This section describes the architecture for the ITSO working example of IBM software supporting the ACORD Standards eForms + SOA Solution, and provides information regarding the software levels that we used to implement the environment.

In our solution, many IBM software products are involved. We first introduce the whole architecture design for this solution, and then dive into the detailed implementation.

The architecture is defined by the ITSO working example of IBM software supporting the ACORD Standards eForms + SOA Solution with the following high level layout of steps:

- ▶ Architecture design:
  - Multi-Channel Support:
    - Lotus Form Viewer Channel
    - Web Portal Channel
  - Business rule based context evaluation
  - Template based eForm population
  - XForm Transformation Engine
  - Security considerations

- ▶ Implementation overview:
  - Gateway Service
  - Service Specifications:
    - Authentication Service
    - Authorization Service
    - Form Processing Service
    - Insurance Business Service

## 4.1 Architectural design

To integrate eForm as an entry to an SOA solution, we need provide a generic form gateway that seamlessly merges the form based UI to an SOA architecture. The whole request from eForm with a digital signature is submitted to a Gateway Service, which is sitting in front of business services. This Gateway Service validates the signature and extracts the XForms model from the submitted eForm. Then the XForms model is sent to eForm processing services to form processing. If the form is validated, the XForms model is translated to an ACORD message and sent to Insurance Business Services to do a business process. Otherwise, a new eForm is populated and stored in an XML database and responded to the client site. (Refer Figure 4-1 for a diagram of the process.)

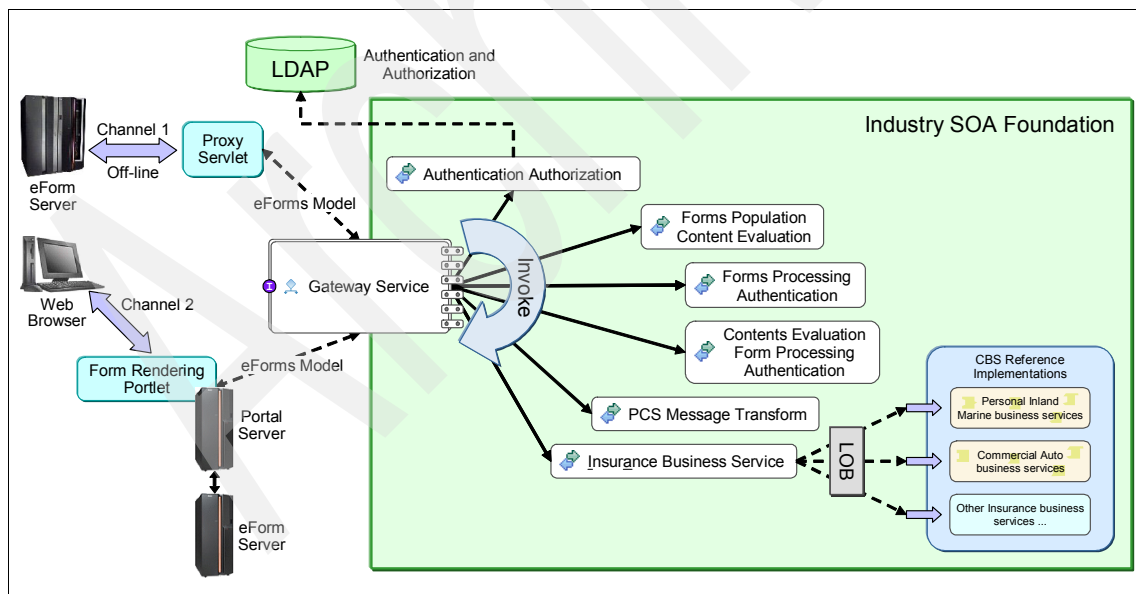


Figure 4-1 ITSO architectural overview: IBM software supporting ACORD Insurance Standards eFORMS + SOA Solution (Gateway Service introduction)

The Gateway Service, which uses the ACORD content from within the WebSphere P&C Content Pack, acts as a facade proxy service for all ACORD eForms submissions. Agency client application can interact with Gateway Service to submit ACORD eForms and get the receipt of the business process result.

ACORD Gateway Service includes a Gateway process, that coordinates the invocation of necessary services, including Authentication/Authorization service, Form Processing Service, application review human task, business rule group, and Insurance Business Service. ACORD Gateway Service performs these major tasks:

1. Accept requests from various channels:
  - Requests that are sent through Web Portal
  - Requests that are sent through eForm Viewer

**Note:** Requests could also be sent through a WebService Channel.

2. Authenticate and authorize the user.
3. Review/approve, and run operation services as business rules.
4. Invoke Form Processing Service to process the message (validate, analyze, modify/populate, and so on).
5. Invoke the appropriate Insurance business service, for example, Personal Inland Marine Application Service and Commercial Business Auto Application Service. These Insurance Services execute the real business transactions in the back-end.

The ApplicationReview service is implemented as a Human task component that offers manual business interaction capability besides the automatic process. By using an IBM integration development tool, the UI of application review is JSP™ based a Web page that is generated from ApplicationReview service interface automatically without additional development.

The appropriate Process Insurance Service is invoked based on the message content, thus the Forms data model is dispatched for process operation, and a service result is returned from a back-end business service.

The business rule component can be deployed in this solution to provide dynamic business rule adjustment capability, thus a business administrator can operate through a business rule console at runtime without having to restart the IT system.

## 4.1.1 Multi-channel support

In this solution, we support two channels to invoke the business services; from IBM Lotus Form Viewer (for example, offline channel) and from Web Portal page (for example, online channel).

### **Lotus Form Viewer Channel**

Agents operate ACORD XForms in IBM Lotus Form Viewer. First, agents need to login to the Portal Web site and download relevant form template files to local storage. Then they open the form in Lotus Form Viewer and fill it together with the customer. Finally, when the content is ready, the customer signs the form on a signature pad and submits it to the remote server.

### **Web Portal Channel**

Agents operate ACORD XForms through the Internet/intranet portal Web site, which offers online business capabilities such as insurance policies, quotes, claims, and so on. The ACCORD XForms agent needs to fill the online form and submit it in the same Web session. Temporary form local storage is not supported in this channel. Figure 4-2 represents how Lotus WebForm Server works with Portal together to do the Web Page rendering. When the user requests a form from the Application Server, Webform Server translates the form into HTML before sending it to the user.

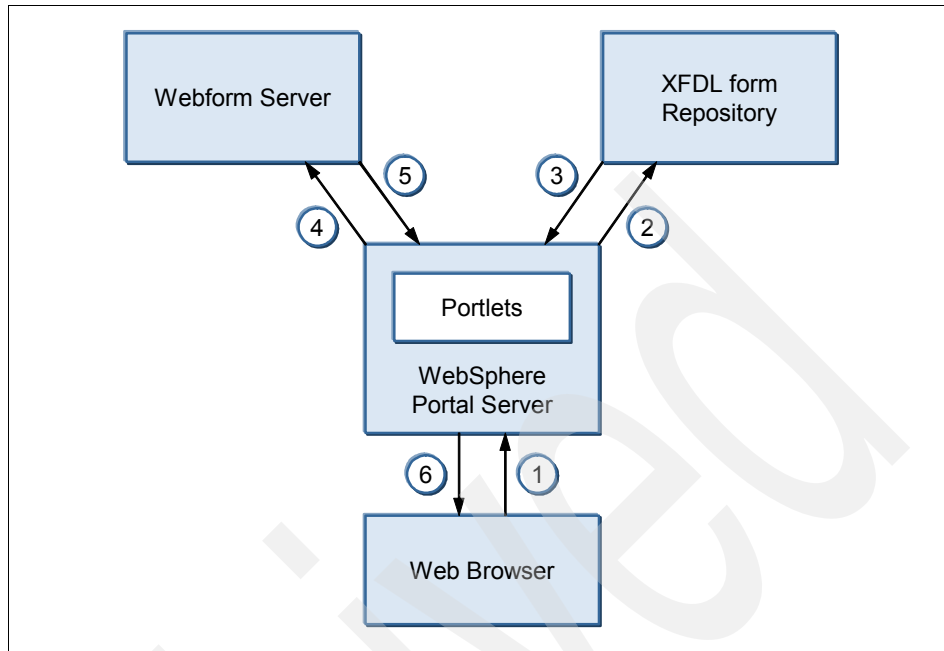


Figure 4-2 Lotus WebForm Server for Portal Web Page Rendering

Figure 4-2 on page 53 shows the following steps:

1. The user requests a form from the portlet/servlet. This request is usually triggered by clicking a link in a browser.
2. The portlet/servlet receives the request and locates the correct file in a Form Repository or triggers a Form Application which returns an XFDL form.
3. The form is passed to the portlet/servlet.
4. The servlet passes the form to the Translator.
5. The Translator converts the form to a combination of HTML and JavaScript™ and sends the converted form back to the portlet/servlet.
6. The portlet/servlet passes the converted form to the Web server, which returns it to the user.

#### 4.1.2 Business rule based context evaluation

In the real world, sometimes additional questions are required for the agent to answer during the application process. After the agent submits the form for the first time, a link to a new form with additional questions attached can be responded. We call it additional form processing. Because the logic of the

additional form processing is different in different companies and different insurance businesses, we use business rules to implement such logic.

Context evaluation service (refer to the architecture diagram) is a service that evaluates the input form according to business rules, determines whether additional questions are needed to fill or not, and what the additional questions are. The input of this service is an XForms model, and the output is a structure to describe the context evaluation result. Business rules are used in this service in order to provide the flexibility and the ability to configure.

Figure 4-3 shows the business rules definition for a Personal Inland Marine application, where ACORD Form 81 should be used. The rules say that if the applicant occupation is for an *engineer*, two additional questions are to be attached to the old form. The parts in bold font are editable. Administrators can add new rules and edit the old rule contents at runtime.

Rules	
Name	Rule
Initialize	Initialize
Rule_Form81Name	Form81 template Name is <b>Form81</b>
Rule_addQuestions	If applicant occupation is <b>engineer</b> Then additional Question is : Code = <b>GENRL15</b> , Content = <b>Are you an IBMer?</b>
Rule_addQuestion	If applicant occupation is <b>engineer</b> Then additional Question is : Code = <b>GENRL16</b> , Content = <b>Is this first time for you to apply this insurance?</b>
Rule_No_modification	If no additional Questions needed, the new Form Template Name is set to blank

Figure 4-3 Business Rules Console view

### 4.1.3 Template based eForm population

When the context evaluation returned indicates that additional form processing is required, a new form with the agent's original inputs and the additional questions is generated. eForm population service, which is used to implement this function, populates a given XForms model into the corresponding eForm template, stores it to a database, and returns the ID of the new form. For example, if there are additional questions for users to answer, it populates the questions into the XForms model and generate a corresponding eForm. Response forms are populated based on the user request forms, form templates, and context evaluation results.

The empty forms are stored in a repository. Because XForms enable the MVC structure, in order to fill the empty form with the agent's original inputs, we can just replace the empty form model with the original submitted form model filled with data. But for the additional questions, because there is no eForm controls binding with them, we have to update the user interface of the form first, add new control items to the original form, and then set additional question data to the form model.

In order to facilitate the update of the user interface (UI), we use a template for the question UI generation. We create a template with a question UI template using the eForm editor. During the population, the question template file is parsed, and question UI is generated according to the template, such as the color, the size of Lines, and so on. The generated question UI page is added into the populated eForm document, and the binding between question UI and question model is set. We can easily adjust the look and feel of question UI by modifying the question template document using eForm designer; there is no need to modify form population service code or restart form population service.

Figure 4-4 shows the user interface with the additional questions.

Additional Questions		YES	NO
Click "YES" or "NO"			
GENRL15	Are you an IBMer?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
GENRL16	Is this first time for you to apply this insurance product?	<input checked="" type="checkbox"/>	<input type="checkbox"/>

Figure 4-4 ITSO ACORD eForm Example: Additional Question driven from Business Rules. Courtesy of ACORD Corporation. Reprinted with permission.

#### 4.1.4 XForms Data Transformation Engine

In our solution, we need to transform the submitted XForms data (from ACORD eForms) to the back-end ACORD PCS message. Then we need a mature Transformation Engine to help with this. In our solution, we defined a common transform service with a standard interface to do the transformation work.

The concrete implementation of this service depends on what kind of Transformation Engine we want to leverage. For example, if we do not want to buy or leverage some commercial Transformation Engine, then we can try to implement the transformation requirements by ourselves. We can write some utilities to do this. But of course, it would be more powerful and stable if we could just leverage some existing mature Transformation Engine, such as WebSphere Transformation Extender (WTX).

WTX is a powerful, transaction-oriented, data integration solution that automates the transformation of high-volume, complex transactions without the need for hand-coding. This provides enterprises with a quick return on investment. This product supports EDI, XML, SWIFT, HIPAA, and other standards-based B2B integration, as well as the real-time integration of data from multiple applications, databases, messaging middleware, and communications technologies across the enterprise.

If we involve WTX to be the dependent Transformation Engine to help us do the XForms data transformation work, then the transform service is realized to depend on WTX to transform the submitted ACORD XForms data model to the standard data model of the ACORD PCS message. We just need use the WTX studio drag and drop to create a mapping file, and the mapping file is referenced by the WTX during runtime to do the transformation work. You can find a sample mapping file as shown in Figure 4-5.

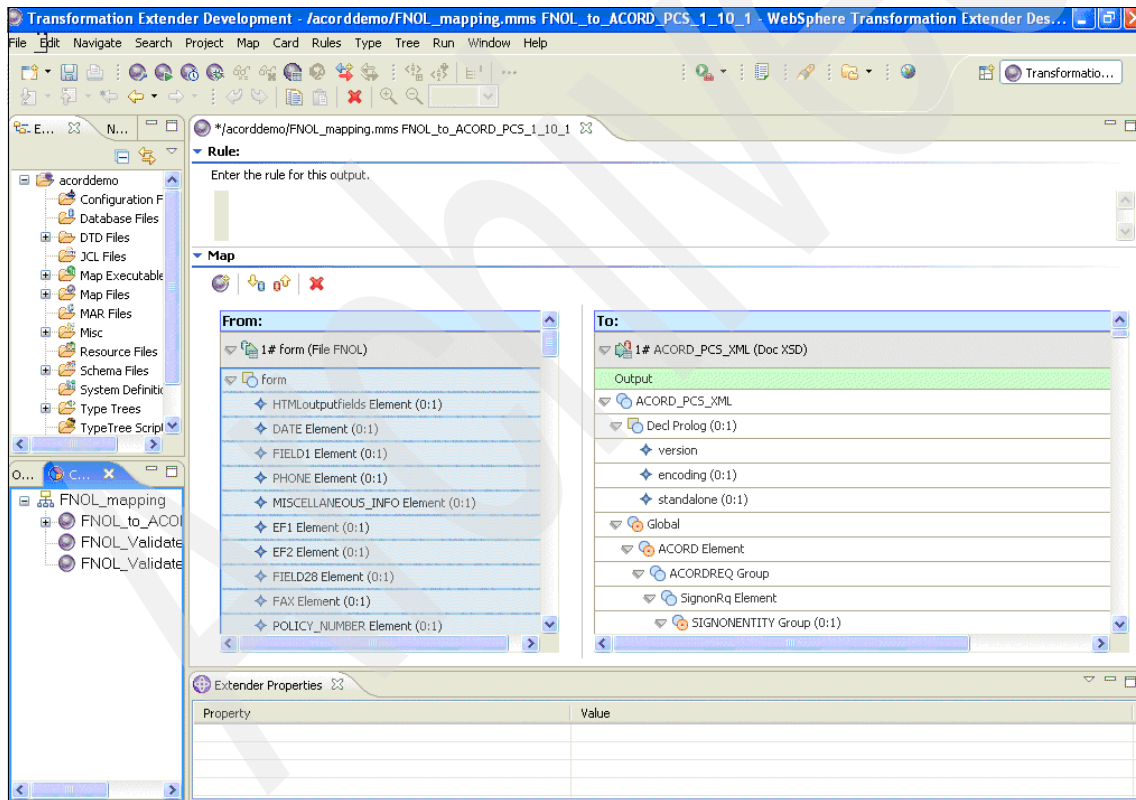


Figure 4-5 ITSO XML Mapping: Mapping tool view



If we depend on the WebSphere Transformation Extender product to help us realize the runtime data transformation, then we can easily deliver the following features to the Insurance customers:

- ▶ Connectivity to a wide range of mainframe, legacy, and enterprise applications, databases, messaging systems, and external information sources
- ▶ A comprehensive library of more than 120 pre-built functions to reduce development time and simplify specification of rules for validation, transformation, and routing
- ▶ Multiple execution options to support right-time, right-style transformation, whether it is batch, real-time, or embedded
- ▶ Enterprise-class capabilities for development, deployment, and maintenance, plus high-availability platform support.

### 4.1.5 Security considerations

In our solution, we design and implement security mechanism in two layers.

#### **Form security**

In ACCORD XFDL form, we add a Silanis signature on customer content. This kind of signature blends a digital signature and a Signature Pad signature. After a customer completes filling the form, they need to write their signature on a digital pad that captures the handwriting. Then the actual signature on customer content is created using a digital certificate. The image of the handwritten signature is stored as part of the digital signature for later reference.

Besides the Signature Pad signature for customers, we also add an Authenticated Clickwrap signature on the agent content. After a customer signs the form, an agent fills some extra information according to the customer's input, and finally, sign the form. Here the agent needs to provide their LDAP account and password as Authenticated Clickwrap ID and shared secret to sign the form.

Whenever the form is submitted to the server, the Gateway Service calls the Lotus Form API to verify these signatures:

1. Verify the data integrity and security. If the content corresponding to a certain signature is changed after it is signed, the signature breaks.
2. Verify whether the agent's signature is signed by a correct ID and secret of a certain agent.

## **Authentication and authorization**

On the server side, we offer an Authentication and Authorization service to authenticate the agent and authorize their operation. First, the Authentication service verifies the login agent's information in LDAP towards information retrieved in the agent signature and form content. The authorization service then authorizes the agent for corresponding operation privileges on the server side.

## **4.2 Implementation overview**

In this solution, a set of processes and services are designed and realized to support different functional features. We briefly describe the major processes and services in this section.

### **4.2.1 ACORD Gateway Service**

The ACORD Gateway Service (Figure 4-6) acts as a facade proxy service for all of the ACORD Forms submissions. Agency client application can interact with the ACORD Gateway Service to submit ACORD Forms and get the receipt of the business process result.

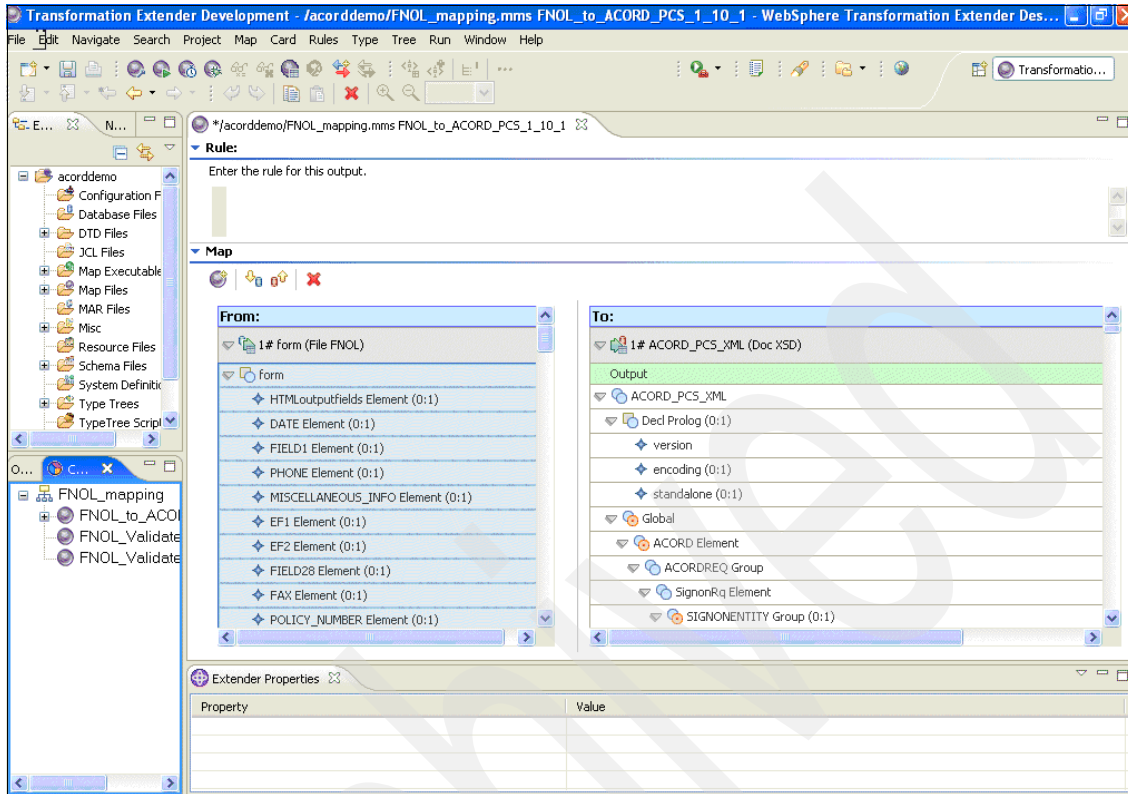


Figure 4-6 ITSO Service: ACORD Gateway Service

The ACORD Gateway Service (Figure 4-6 on page 59) includes a Gateway process, which coordinates the invocation of necessary services, including Authentication/Authorization service, Form Processing Service, and Insurance Business Service.

These are the major tasks that ACORD Gateway performs:

1. Accepts requests from various channels:
  - Requests that are sent through Portal
  - Requests that are sent through Lotus Form Viewer.
2. Authenticates and authorizes the user.
3. Invokes Form Processing Service to process the message (validate, analyze, modify/populate, and so on).
4. Invokes the appropriate Insurance business service, such as Personal Inland Marine Application Service and Commercial Business Auto Application

Service. These Insurance Services execute the real business transactions in the back-end.

The appropriate Process Insurance Service is invoked based on the message content. If the message is Personal Inland Marine Application, Personal Inland Marine Application Service is invoked. If the message is Commercial Business Auto Application, Commercial Business Auto Application Service is invoked.

## 4.2.2 Services specifications

In this section, we list detailed service specifications for your reference. For each service, you can find its specification including service description, preconditions, postconditions, success/failure conditions and interface definition.

### Authentication service

This service authenticates if the agent is an available user. For this solution, we extract user credential information from the user signed ACORD XForms model, authenticate the user to the Tivoli® LDAP User registry, and return the authentication status. Both the Viewer and Portal channel are supported.

#### Preconditions

Preconditions include a valid ACORD XForms model conforming to ACORD XForms model schema, and the agent has signed the ACORD Form before submitting it.

#### Postconditions

Postconditions include success or failure messages as described:

**Success:** A valid ACORD XForms model with ACORDXFormAuthenStatus type with attributes *StatusCd* and *StatusDesc* populated with a successful authentication message.

**Failure:** A valid ACORD XForms model with ACORDXFormAuthenStatus type with attributes *StatusCd* and *StatusDesc* populated with failure messages.

**Interface:** Figure 4-7 shows details of the interface.

Operations and their parameters		
	Name	Type
▼	authenticate	
Input(s)	ACORDForms	FormsType
Output(s)	AuthenStatus	ACORDXFormAuthenStatus

Figure 4-7 Form AuthenticationService

## Authorization service

This service authorizes if the agent is able to submit this kind of request. The user's access permission is checked according to user credential extracted from the signed ACORD XForms model. Given the user group information exists in the Tivoli LDAP User registry, this service determines user access permission, and returns the Authorization status. It supports both Viewer and Portal Channels.

### Preconditions

Preconditions include a valid ACORD XForms model conforming to ACORD XForms model schema. And the agent has signed the ACORD Form before submitting it.

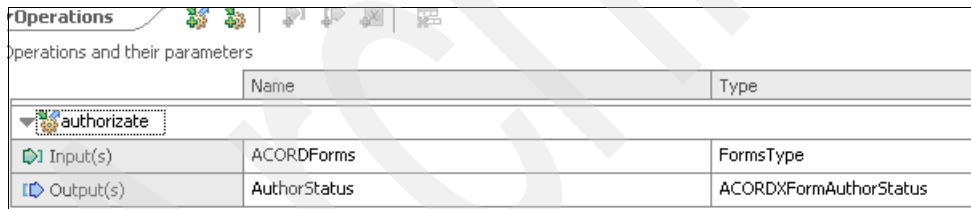
### Postconditions

Postconditions include success or failure messages as described:

**Success:** A valid ACORD XForms model with ACORDXFormAuthorStatus type with attributes *StatusCd* and *StatusDesc* populated with a successful authentication message.

**Failure:** A valid ACORD XForms model with ACORDXFormAuthorStatus type with attributes *StatusCd* and *StatusDesc* populated with failure messages.

**Interface:** Figure 4-8 shows details of the interface.



The screenshot shows a table titled 'Operations and their parameters' with columns 'Name' and 'Type'. Under the 'authorize' operation, there are two rows: 'Input(s)' with 'ACORDForms' and 'FormsType', and 'Output(s)' with 'AuthorStatus' and 'ACORDXFormAuthorStatus'.

	Name	Type
authorize		
Input(s)	ACORDForms	FormsType
Output(s)	AuthorStatus	ACORDXFormAuthorStatus

Figure 4-8 FormAuthorizationService

## Form Processing services

Form Processing service transform, validate, and modify the ACORD messages. Common services are invoked to transform and validate ACORD messages, and Form Population Service is invoked to modify ACORD messages.

The Forms data model is sent to process operation, and a service result is returned from the back-end business service.

**Interface:** Figure 4-9 shows details of the interface.

	Name	Type
▼ process		
Input(s)	processParameters	process
Output(s)	processResult	processResponse

Figure 4-9 FormProcessInterface

The transform service is invoked inside, which translates ACORD XForms data model to ACORD PCS message standard data model. This can be done easily through IBM WTX (WebSphere Transformation Extender) shown in Figure 4-10. The Developer needs to use the WTX studio drag and drop to create a mapping file, and WBSF can invoke the mapping file during run time as a Web service.

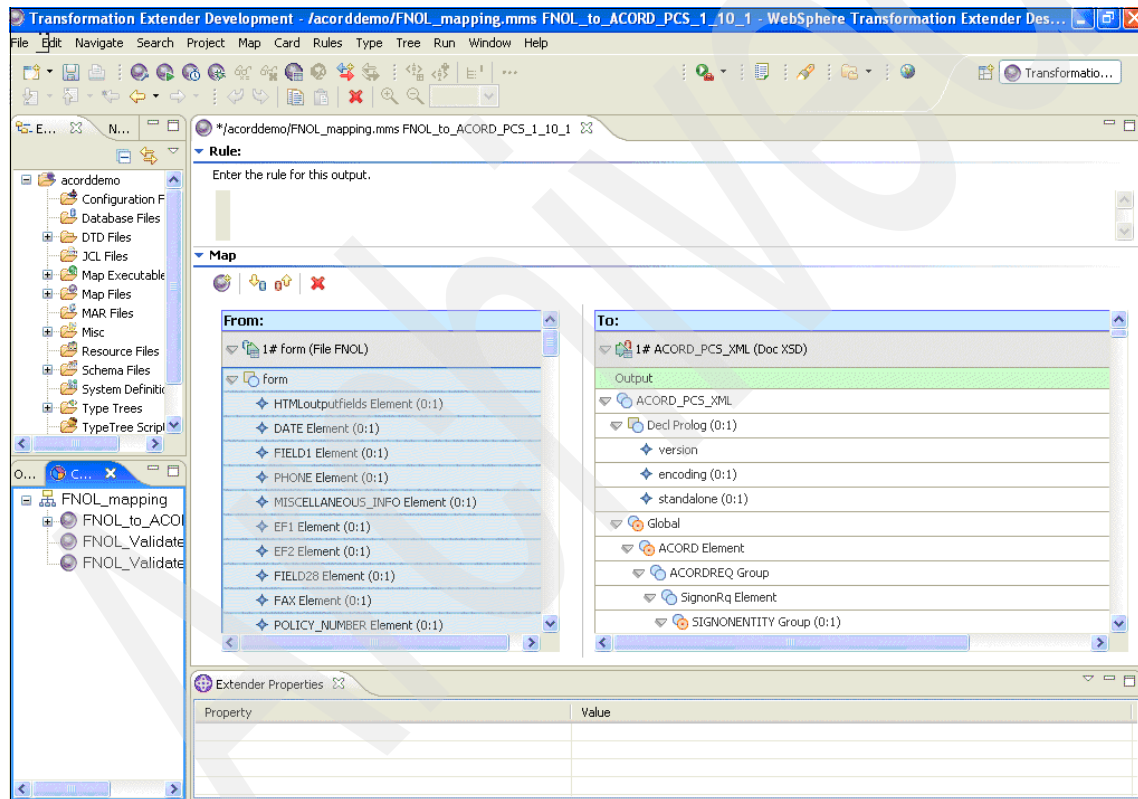


Figure 4-10 ITSO Mapping: WebSphere Transaction Extender (WTX) Mapping

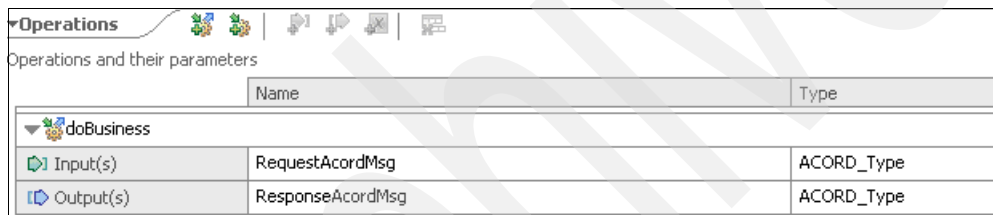
## Insurance business services

We invoke back-end business services to simulate the Personal Inland Marine Insurance service and Commercial business auto insurance service. The back-end business services invoke a service to a persistence user request message, deal the user request message, and return an ACORD message that contains a Personal Inland Marine Insurance service response.

This back-end business service implements the Record Quote business service interface of the Insurance P&C Content Pack reference business service template. The record quote processes service for a multi-channel, multi-line, pre-underwriting, quote processing capability that enables straight through quote processing.

The Record Quote business service interface is described in the *Rate Quote and Issue* application of the *New Business Application Suite* in Insurance P&C Content Pack as a Business service reference templates exposed common service interface.

**Interface:** Figure 4-11 shows details of the interface.



The screenshot shows a software interface titled "Operations" with a toolbar containing icons for search, refresh, and other actions. Below the toolbar, the text "Operations and their parameters" is displayed. A table lists the parameters for the "doBusiness" operation. The table has two columns: "Name" and "Type". The "doBusiness" operation is expanded to show two rows: "Input(s)" with the name "RequestAcordMsg" and type "ACORD\_Type", and "Output(s)" with the name "ResponseAcordMsg" and type "ACORD\_Type".

	Name	Type
▼ doBusiness		
Input(s)	RequestAcordMsg	ACORD_Type
Output(s)	ResponseAcordMsg	ACORD_Type

Figure 4-11 ProcessInsuranceServiceInterface

Archived





## **eForms + SOA Solution installation and configuration**

In this chapter we describe the installation and configuration for the ITSO working example of IBM software supporting the ACORD Standards eForms + SOA Solution. We provide information regarding how and why the solution was constructed.

In our solution, many IBM software products are involved. We showcase the detailed infrastructure utilized, and then dive into the detailed installation and configuration of the enterprise solution.

## 5.1 Planning and scenario overview

This section describes the scenario for the ITSO working example of IBM software supporting the ACORD Standards eForms + SOA Solution, and provides information regarding the software levels we used to implement the environment.

### 5.1.1 Scenario overview

The implementation procedures for the ITSO working example of IBM software supporting the ACORD Standards eForms + SOA Solution include the following software as shown in Figure 5-1:

- ▶ IBM HTTP Server
- ▶ WebSphere Portal Server
- ▶ Lotus Forms Server
- ▶ WebSphere Process Server
- ▶ WebSphere Business Service Fabric Server
- ▶ WebSphere Transformation Server®
- ▶ Tivoli Directory Server
- ▶ DB2 Client and Enterprise Server
- ▶ ACORD Application Demo

**Note:** This chapter does not include implementation procedures for network configurations or firewalls.

## Overview

Figure 5-1 shows the high-level infrastructure utilized for the solution showcase. On the left, in the outside zone, the channels that were made available to access the showcase are shown. The Web Node and Data Node provide a high level view of the server software installed and configured.

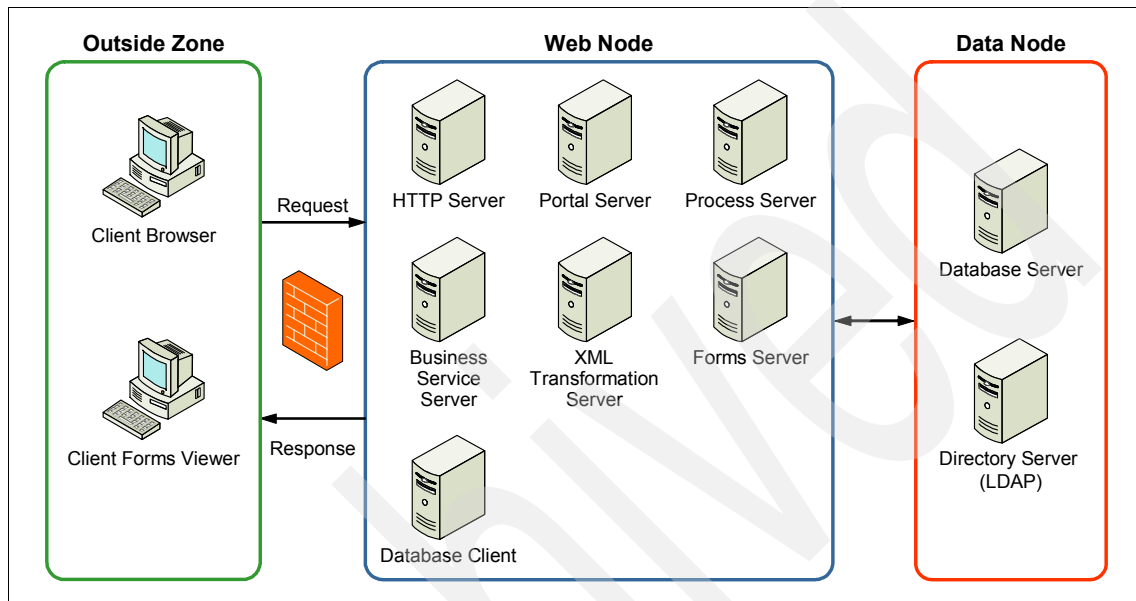


Figure 5-1 ITSO scenario overview: IBM software supporting ACORD Insurance Standards eForms + SOA Solution

## Detailed architecture

Figure 5-2 shows a low-level infrastructure view for the solution infrastructure. The Web Zone and Data Zone shows the actual IBM SOA software stack and software levels used, and the servers used in the installation configuration process. This view gives a better understanding of the implementation and integration that took place for this eForm + SOA Solution.

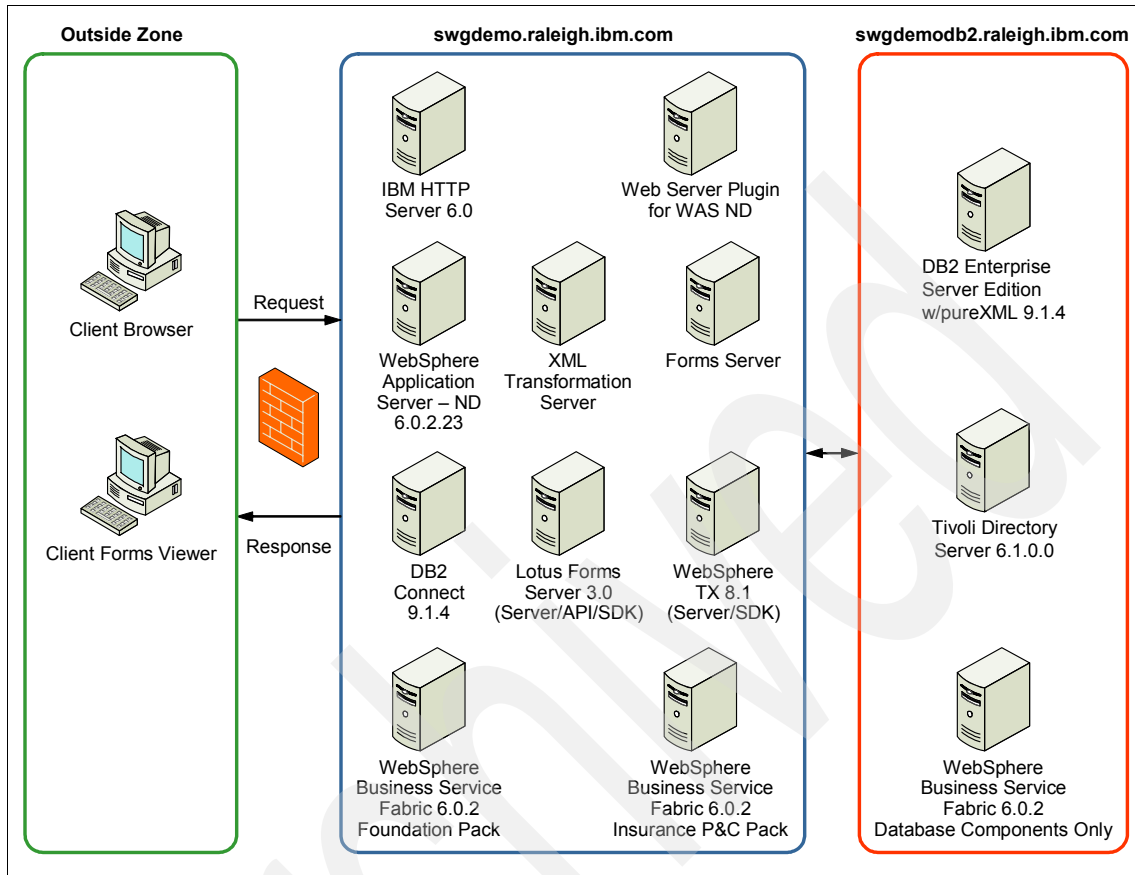


Figure 5-2 ITSO scenario detailed architecture: IBM software supporting ACORD Insurance Standards eForms + SOA Solution

## 5.1.2 Hardware and software prerequisites

For detailed information about the hardware and software prerequisites of IBM software supporting ACORD Insurance Standards eForms + SOA Solution, refer to the product Web content in the following links.

For more information on the installation and configuration of IBM Products, refer to these links for assistance with installation, configuration, and best practices.

- ▶ IBM HTTP Server - 6.0
  - [Product documentation](#)

- ▶ IBM WebSphere Portal Server - 6.0.1.1
  - [InfoCenter](#)
- ▶ IBM WebSphere Application Server - Network Deployment - 6.0.2.23
  - [InfoCenter](#)
  - [Library](#)
- ▶ IBM WebSphere Process Server - 6.0.2.3
  - [InfoCenter](#)
  - [Library](#)
- ▶ IBM WebSphere Business Service Fabric - 6.0.2 Foundation Pack
  - [InfoCenter](#)
  - [Library](#)
- ▶ IBM WebSphere Business Service Fabric - 6.0.2 Insurance P&C Pack
  - [Library](#)
  - [Whitepaper](#)
- ▶ IBM Lotus Forms Server - 3.0 API
  - [InfoCenter](#)
- ▶ IBM Lotus Forms Server - 3.0 Forms Server Platform SDK
  - [InfoCenter](#)
- ▶ IBM Lotus Forms Server - 3.0 WebForms Server
  - [InfoCenter](#)
- ▶ WebSphere Transformation Extender - 8.1
  - [InfoCenter - Note that this is for 8.2 but contains helpful information](#)
  - [Library](#)
- ▶ WebSphere Transformation Extender - 8.1 SDK
  - [InfoCenter - Note that this is for 8.2 but contains helpful information](#)
  - [Library](#)
- ▶ DB2 Runtime Client - 9.1.4
  - [InfoCenter](#)
- ▶ DB2 Enterprise Server Edition with pureXML - 9.1.4
  - [InfoCenter](#)
- ▶ Tivoli Directory Server - 6.1.0.0
  - [InfoCenter](#)

### 5.1.3 Hardware used within the ITSO eForms + SOA Solution

We used the following hardware for the ITSO working example. Refer to the product documentation or developerWorks for best practices for installation and configuration for a production environment.

The following nodes, which are depicted in Figure 5-1 on page 67 and Figure 5-2 on page 68, show how they fit into the solution infrastructure.

#### 1. Web Node

IBM eServer™ xSeries® x3400:

- ▶ 2 CPU, Intel® Xeon 2.0 GHz
- ▶ 8 GB main memory
- ▶ 500 GB DASD
- ▶ 1 IBM Gigabit Ethernet adapter
- ▶ Hostname: swgdemo.raleigh.ibm.com

#### 2. Data Node

IBM ThinkCenter M55:

- ▶ 1 CPU, Intel Core™ Duo™ 2.66GHz
- ▶ 4 GB main memory
- ▶ 160 GB DASD
- ▶ 1 IBM Gigabit Ethernet adapter
- ▶ Hostname: swgdemodb2.raleigh.ibm.com

## 5.1.4 Software used within the ITSO eForms + SOA Solution

The ITSO working example of IBM software supporting ACORD Insurance Standards eForms + SOA Solution was implemented using the software levels listed in each of following tables (Table 5-1 and Table 5-2) listed by node.

Table 5-1 Web node

Software	Version
Microsoft® Windows 2003 Enterprise Server	2003 Enterprise Server + Service Pack 2
IBM HTTP Server	6.0 <b>NOTE:</b> Comes with WAS ND 6.x
IBM WebSphere Portal Server	6.0.1.1
IBM WebSphere Application Server - Network Deployment	6.0.2.23
IBM WebSphere Process Server	6.0.2.3
IBM WebSphere Business Service Fabric -Foundation Pack	6.0.2
IBM WebSphere Business Service Fabric - Insurance P&C Pack	6.0.2
IBM Lotus Forms Server - API	3.0
IBM Lotus Forms Server - Forms Server Platform SDK	3.0
IBM Lotus Forms Server - WebForms Server	3.0
WebSphere Transformation Extender	8.1
WebSphere Transformation Extender - SDK	8.1
DB2 Runtime Client	9.1.4

Table 5-2 Data node

Software	Version
Microsoft Windows 2003 Enterprise Server	2003 Enterprise Server + Service Pack 2
DB2 Enterprise Server Edition with pureXML	9.1.4
Tivoli Directory Server	6.1.0.0
IBM WebSphere Business Service Fabric -Foundation Pack (DB Config Only Install)	6.0.2

## Software downloads from IBM

For all IBM software, follow all guidelines and best practices for downloading, unpacking, and proper installation and configuration of all IBM software. Newer versions of software should be tested and validated with usage, because this might require alternatives to other software packages and tooling.

### 5.1.5 Software installation paths and variables

Table 5-3 and Table 5-4 list the software installation paths and variables used to implement the Web Node and Data Node.

Table 5-3 Web Node - Software installation paths and variables

Software	ITSO install path	Variable
IBM HTTP Server	C:\IBM HTTP Server\	<http_home>
IBM WebSphere Portal Server	C:\WebSphere\PortalServer\	<portal_server_home>
IBM WebSphere Application Server - Network Deployment	Option of WebSphere Process Server	<was_nd_home>
IBM WebSphere Process Server	C:\WebSphere\ProcServer\	<process_server_home>
IBM WebSphere Business Service Fabric - Foundation Pack	C:\WebSphere\Fabric\FoundationPack\	<wbsf_foundation_home>
IBM WebSphere Business Service Fabric - Insurance P&C Pack	C:\WebSphere\Fabric\Insurance\P_C\	<wbsf_p&c_home>
BM Lotus Forms Server - API	C:\Lotus Forms\Server\3.0\API\	<lotus_forms_api_home>
IBM Lotus Forms Server - Forms Server Platform SDK	C:\Lotus Forms\Server\3.0\Deployment Server\	<lotus_forms_sdk_home>
IBM Lotus Forms Server - WebForms Server	C:\Lotus Forms\Server\3.0\Webform Server\	<lotus_forms_server_home>
WebSphere Transformation Extender	C:\WebSphere\Transformation Extender 8.1\	<wtx_home>
WebSphere Transformation Extender - SDK	C:\WebSphere\Transformation Extender 8.1\	<wtx_sdk_home>
DB2 Runtime Client	C:\db2_9.1\IBM\SQLLIB\	<db2_runtime_client_home>



Table 5-4 Data Node - Software installation parts and variables

Software	ITSO install path	Variable
DB2 Enterprise Server Edition with pureXML	C:\db2_9\IBM\SQLLIB\	<db2_ese_home>
Tivoli Directory Server	C:\Tivoli\DirectoryServer\LDAP\	<tds_home>
IBM WebSphere Business Service Fabric - Foundation Pack (DB Only Install)	C:\WebSphere\Fabric\FoundationPack\	<wbsf_db_home>

## 5.2 Install and configure the Data Node

The Data Node is the testing area for all server components associated with creating and loading the ACORD Web application demo's data and users and the IBM software supporting ACORD Insurance Standards eForms + SOA Solution. This node controls all database, XML, and LDAP users. We recommend that you install these components first to prepare the data environment before installing the Web node components. The implementation in this node includes the following tasks:

1. Microsoft Windows 2003 Enterprise Server installation
2. DB2 Enterprise Server Edition with pureXML
3. Tivoli Directory Server
4. IBM WebSphere Business Service Fabric - Foundation Pack (DB only)

### 5.2.1 Microsoft Windows 2003 Enterprise Server configuration

We included this section to state that Microsoft Windows 2003 Enterprise Server was utilized as the base operating system (OS). All Windows Installation Guides and Best Practices are recommended while installing and configuring the OS.

**Note:** All security and fixpacks should be installed before installing the IBM products and ACORD Web Application Demo Code.

After the OS installs and security and updates are applied to the server, two user IDs are needed:

- ▶ Administrator
- ▶ Database Administrator

**Note:** This gets created as part of the DB2 installation.

All products were installed under the Administrator ID, and all database instances and database were created by the Database Administrator ID.

## 5.2.2 DB2 Enterprise Server Edition with pureXML configuration

This section describes how to install the IBM DB2 Universal Database™ V9.1, Enterprise Server Edition, and supporting Fixpack 4. This section is organized into the following tasks:

- ▶ Install DB2 ESE V9.1
- ▶ Install DB2 ESE V9.1 Fixpack 4
- ▶ Install DB2 ESE V9.1 pureXML
- ▶ Verify DB2 ESE
- ▶ Configure DB2 ESE for Product Installations and ACORD Demo

### Install DB2 ESE V9.1

describes how to install the IBM DB2 Universal Database™ V9.1

**Note:** Depending on the DB2 ESE V9.1 CD distribution you are using, the installation panels might be slightly different than those we have described. Refer to the IBM InfoCenter for product installations beyond these steps.

To install the IBM DB2 V9.1 Enterprise Edition Server, complete these steps:

1. Insert the DB2 ESE V9.1 Enterprise Server Edition CD or use the download.
2. Navigate to the `<CD_Root>` or `<UnZipped_Download_Root>` and run Setup to start the installation.
3. When the DB2 Installer window appears, click **Install Products**.
4. When the Select the Product to Install window appears, select **DB2 Enterprise Server Edition** (default and only option) and then click **Next**.
5. When the Welcome window for the DB2 Setup Wizard appears, click **Next**.
6. When the License Agreement window appears, review the agreement and select **I accept the terms in the license agreement** and click **Next**.
7. When the Select the installation type window appears, select **Typical** and then click **Next**.
8. When you see a warning message, regarding connection to remote DB2 servers using APPC, click **OK**.

9. When the Select the Installation Action window appears, check **Install DB2 Enterprise Server Edition on this computer** and then click **Next**.

**Note:** Depending on the DB2 UDB V9.1 CD distribution that you are using, the installation panels might be slightly different than what we have described.

10. When the Select the Installation Folder window appears, we entered <db2\_ese\_home> and then clicked **Next**.

**Note:** The DB2 UDB installation, with the Typical installation type, takes approximately 376 MB of disk space.

11. When the Set User Information for DB2 Administration Server window appears, enter the following information and then click **Next**:
  - Domain: <we left this field blank>
  - User name: db2admin (default)
  - Password: <password>
  - Confirm password: <password>
  - Check **Use the same username and password for remaining DB2 services** (default)
12. When the Setup the Administration Contact List appears, we accepted the default settings (local) and then clicked **Next**.
13. When the warning message Notification SMTP server has not been specified, click **OK**.
14. When the Configure DB2 instances window appears, we accepted the default (DB2) and then clicked **Next**.
15. When the Prepare the DB2 tools catalog window appears, you can prepare or not prepare the tools, but install them into the default DB2 instance if you do then click **Next**.
16. When the Specify a contact for health monitor notification window appears, select **Defer the task after installation is complete**, and then click **Next**.
17. When the Start copying files window appears, review the selected options and then click **Install**.
18. When the Setup is Complete window appears, click **Finish**.
19. When the IBM DB2 First Steps window appears, click **Exit First Steps**.

## Install DB2 ESE V9.1 Fixpack 4

We installed IBM DB2 ESE V9.1 Fixpack 4 for 32 bit Windows. We chose to use Fixpack 4 because it was the Enterprise Server Edition that was recommended for the WebSphere Portal, WebSphere Process Server, and Tivoli Directory Server installations. Also, we wanted to use the same version of DB2 Fixpack on all of the nodes for DB2 compatibility reasons.

To download and install the IBM DB2 ESE V9.1 Fixpack 4, do the following:

1. The IBM DB2 ESE V9.1 Fixpack 4 can be downloaded at:

[ftp://ftp.software.ibm.com/ps/products/db2/fixes2/english-us/db2winI A32v9/fixpack/FP4\\_WR21396/v9fp4\\_win\\_ese.exe](ftp://ftp.software.ibm.com/ps/products/db2/fixes2/english-us/db2winI A32v9/fixpack/FP4_WR21396/v9fp4_win_ese.exe)

2. We downloaded the FP4a\_WR21338\_ESE.exe, which is the fixpack 4 for the IBM DB2 Universal Database V9.1, Enterprise Server Edition.
3. Stop all DB2 services in the Windows services.
4. Install the IBM DB2 ESE V9.1 Fixpack 4. We accepted the default installation options.
5. We recommend that you restart your system after installing the fixpack to ensure that all fixes are applied and active in memory.
6. After the system has restarted, open a DB2 command window (or Windows command window) and enter the following command:

```
db2level
```

It should return 9.1.400.359 after Fixpack 4 has been installed.

## Install DB2 ESE V9.1 pureXML

To install the DB2 ESE V9.1 pureXML functionality, the DB2 License file needs to be downloaded:


db2xmlese.lic DB2 pureXML Feature for Enterprise Server Edition

**Note:** The instructions in this section are from the IBM InfoCenter, however, key items were modified where applicable.

<http://publib.boulder.ibm.com/infocenter/db2luw/v9/index.jsp?topic=/com.ibm.db2.udb.uprun.doc/doc/t0008699.htm>

From the License Center, use the Add License window to add new licenses on Linux® or Windows operating systems. This action is also referred to as applying license entitlement certificates or registering a license key.

To complete this task, you must have the appropriate license file (\*.lic). Refer to DB2 license files. On Linux operating systems, the instance owner must have read and write privileges on the directory where the license files are located.

1. Click  in the Control Center to open the License Center. Select the system for which you want to add a new license.
2. Select an instance.
3. The Installed Products field displays the name of the products that you have installed. Select a product.
4. Select **Add** from the License menu. The Add License dialog opens.
5. Select the license key (\*.lic) that you want to add.
6. Click **OK** to add the license key.

### Verify DB2 ESE

After you install DB2 ESE V9.1 and fixpack, and have restarted your system, we recommend that you verify that DB2 ESE is working properly.

### Configure DB2 ESE for product installations and ACORD demonstration

After your install has been verified, the following steps are required for configuring DB2 to contain all of the appropriate configuration required to run the ACORD demonstration:

- ▶ Create the following instances:
  - a. Start the DB2 Command Window.
  - b. Run the command `db2icrt <INSTANCE_NAME>` in the order listed:
    - i. WPSINST
    - ii. WBSFINST
    - iii. FORMINST
    - iv. APPINST
- ▶ Create db2profile files:
  - a. Go to Directory `C:\db2_ese_home\DB2` directory.
  - b. Copy file `db2profile.bat`.
  - c. Paste into each instance directory (`C:\db2_ese_home\<INSTANCE_NAME>`), while opening the file and modifying the instance name:

```
@echo off
SET DB2INSTANCE=<INSTANCE_NAME>
```

- ▶ Update the Windows Services File:
  - a. Go to Directory C:\WINDOWS\System32\drivers\etc\.
  - b. Open the file services.
  - c. Go to the end of the file and update the ports as follows:

```
DB2_WPSINST          60004/tcp
DB2_WPSINST_1        60005/tcp
DB2_WPSINST_2        60006/tcp
DB2_WPSINST_END      60007/tcp
db2c_WPSINST         50001/tcp
```

```
DB2_WBSFINST         60008/tcp
DB2_WBSFINST_1       60009/tcp
DB2_WBSFINST_2       60010/tcp
DB2_WBSFINST_END     60011/tcp
db2c_WBSFINST        50002/tcp
```

```
DB2_FORMINST         60012/tcp
DB2_FORMINST_1       60013/tcp
DB2_FORMINST_2       60014/tcp
DB2_FORMINST_END     60015/tcp
db2c_FORMINST        50003/tcp
```

```
DB2_APPINST          60016/tcp
DB2_APPINST_1        60017/tcp
DB2_APPINST_2        60018/tcp
DB2_APPINST_END      60019/tcp
db2c_APPINST         50004/tcp
```

- ▶ Update the DB2 configuration for each instance:
  - a. Open DB2 command window.
  - b. Goto first instances directory C:\<db2\_ese\_home>\<INSTANCE\_NAME>.
  - c. Run db2profile.bat for that instance.
  - d. Run the following command:

```
db2 UPDATE DATABASE MANAGER CONFIGURATION USING SVCENAME
db2c_WPSINST
```

**Note:** Replace WPSINST with the current <INSTANCE\_NAME> that you are working with.

- e. Repeat the steps for each instance, updating the SVCENAME to the instance connection port that was added to the service file.

- ▶ Run the following DB2Set command for each instance:
  - a. Open DB2 command window.
  - b. Goto first instances directory C:\<db2\_ese\_home>\<INSTANCE\_NAME>.
  - c. Run db2profile.bat for that instance.
  - d. Run the following commands:

```
db2set DB2_INLIST_TO_NLJN=YES
db2set DB2_EVALUNCOMMITTED=YES
db2set DB2PORTRANGE=60004:60007
db2set DB2_RR_TO_RS=YES
db2set DB2COMM=TCPIP
```
  - e. Repeat the steps for each instance, updating the port range to match what was put into the services file.
- ▶ Restart Windows Server® after all steps are completed.
- ▶ Configure Windows Services to Auto Start every Instance.

**Note:** Windows Services are listed, similar to these:

DB2- DB2COPY1 - <INSTANCE\_NAME>

- a. Right-click each of the instances and click **Properties**.
- b. Select **Automatic** in the Startup type.

### 5.2.3 Tivoli Directory Server installation

**Note:** The instructions in this section are from the IBM InfoCenter, however, key items were modified where applicable:

<http://publib.boulder.ibm.com/infocenter/tivihelp/v2r1/topic/com.ibm.IBMDS.doc/install09.htm#shield>

#### Installing with the Typical installation path on Windows systems

To install IBM Tivoli Directory Server 6.1 using the Typical installation path:

1. Be sure that you are logged on as any member of the Administrators group.

2. On the computer where you are installing IBM Tivoli Directory Server, stop any programs that are running and close all windows. If you have open windows, the initial IBM Tivoli Directory Server installation window might be hidden behind other windows.
3. If you are installing from a CD:
  - a. Insert CD 1 in your CD-ROM drive.
  - b. Go to the drive for your CD-ROM, and then go to the \tds folder.

If you are installing from downloaded .zip files, go to the folder where you unzipped the downloaded .zip files, and then go to the tdsV6.1\tds folder.

4. Double-click **install\_tds.bat** icon.

If you prefer, you can use the command line to begin installation and specify a temporary directory other than the one specified by the TEMP environment variable. To use this option, go to the appropriate directory (from step 3) and type the following command at a command prompt:

```
install_tds.bat -is:tempdir directory
```

Where **directory** is the directory you want to use for temporary space. Be sure that you have at least 255 MB of free space in this directory. If you are installing any of the co-requisite products (IBM Tivoli Directory Integrator, Embedded WebSphere Application Server, or DB2) be sure that you also have 150 MB in the directory specified by the TEMP environment variable.

For example:

```
install_tds.bat -is:tempdir c:\My Documents\temp
```

The language window is displayed.

**Note:** If the installation program exits without displaying the language window, it might be because there is not enough space in the directory specified by the TEMP environment variable or the directory you specified for temporary space. Be sure that you have at least 255 MB of free space in this directory.

5. Select the language you want to use during IBM Tivoli Directory Server installation. Click **OK**.

**Note:** This is the language used in the installation program, not in IBM Tivoli Directory Server. The language used in IBM Tivoli Directory Server is determined by the language pack you install.

6. On the Welcome window, click **Next**.



7. After reading the Software license agreement, select **I accept both the IBM and the non-IBM terms**. Click **Next**.
8. If you have any components already installed, they are displayed with their corresponding version levels. Click **Next**.
9. To install in the default directory, click **Next**. You can specify a different directory by clicking **Browse** or typing the directory path to C:\<tds\_home> listed above.

**Notes:**

- ▶ If you have already installed one or more language packs, the installation location is set to the path where you installed the language packs, and you are not asked where you want to install.
- ▶ Be sure that the installation location is not the same as the path where another version of the client or the server is installed.
- ▶ Do not use special characters, such as hyphen (-) and period (.) in the name of the installation directory. For example, use *ldapdir* rather than *ldap-dir* or *ldap.dir*.

10. Click **Typical**.
11. Because DB2 is already installed, make sure that you use the DB2 Administrator ID and the IDSINST to be created.
12. The installation program now has enough information to begin installing. A summary window displays the components to be installed, the installation locations, and the amount of disk space required. The Typical installation path installs all features that are not already installed. If you want to install different features, you must click **Back** until you reach the window where you selected **Typical** installation, and select **Custom** installation instead. Then use the instructions in Installing with the Custom installation path on Windows systems. Typical installation does not allow you to select features for installation.
13. Click **Install** to begin installation.  
Progress windows are displayed as features are installed.  
If you are installing from CDs, you are prompted to insert different CDs during the installation. Be sure to follow the instructions carefully and insert the correct CDs, or installation does not proceed correctly and unpredictable results might occur.

**Notes:**

- ▶ The <tds\_home>\bin, <tds\_home>\sbin, and <tds\_home>\lib directories are not added to the Path environment variable. This allows IBM Tivoli Directory Server 6.1 to coexist with IBM Tivoli Directory Server 6.0.
- ▶ If the Web Administration Tool is installed, Directory Services Markup Language (DSML) files are also copied to your computer. See Appendix M. Installing and configuring DSML for information about installing and configuring DSML.
- ▶ If the Web Administration Tool is installed, a Web application server is required to run the tool, and Embedded WebSphere Application Server 6.1.0.7 is installed and configured for you. If version 5.0, 5.0.2, or 5.1.1 of Embedded WebSphere Application Server is already installed, the InstallShield GUI installation program automatically upgrades it to version 6.1.0.7. Any configuration files from the previous Web Administration Tool are backed up and restored. If you want to use another WebSphere Application server, you must use Custom installation to select a Web application server.

When Embedded WebSphere Application Server is installed and an application (such as the Web Administration tool or the IBM Tivoli Directory Integrator Administration and Monitoring Console) is installed into Embedded WebSphere Application Server, the Embedded WebSphere Application Server server for that application is also installed as a service.

**Attention:** After installation has begun, do not try to cancel the installation. If you inadvertently cancel the installation, see the information about recovering from a failed installation in the *IBM Tivoli Directory Server version 6.1 Problem Determination Guide* before you attempt to reinstall.

14. The Typical installation path creates the default directory server instance with the following information, which you cannot change:

- Name: IDSINST
- Instance location: c:\IDSINST
- Group name: Administrators
- Administrator DN: cn=root
- Database name: LDAPDB

In addition, the o=sample suffix is created for the default directory server instance. You can add other suffixes later with the Configuration Tool or the **idscfgsuf** command. See Managing suffixes for information.

Type the following additional information about the default directory server instance in the appropriate fields:

*User password*

Type the system password for user idsinst. If this user does not exist on the system, the user ID is created with the password you specify. If the user ID already exists, be sure to type the correct password for the user.

*Confirm password*

Type the password again for confirmation.

*Encryption seed*

Type an encryption seed string (used as a seed for generating encrypted stash files). The string can use characters a-z, A-Z, or 0-9. This string must be a minimum of 12 characters and a maximum of 1016 characters.

*Confirm seed*

Type the encryption seed string again for confirmation.

*Administrator DN password*

Type a password for the administrator DN for the directory server instance. (The Administrator DN for the default directory instance is cn=root.)

*Confirm DN password*

Type the administrator DN password again for confirmation.

Click **Next** when you have completed all the fields.

15. Click **Finish**.

**Notes:**

- ▶ If you are asked if you want to restart your computer now or later, select the option you want and click **Finish**. (You might need to restart your system to complete IBM Tivoli Directory Server installation. You are unable to use IBM Tivoli Directory Server until this is completed.)
- ▶ If your computer is restarted, log in using the same user ID that you used to install IBM Tivoli Directory Server.
- ▶ If you installed DB2, the DB2 First Steps GUI might be started. You can go through the DB2 First Steps or close this GUI.

#### Notes:

- ▶ A license subdirectory is created in the directory where IBM Tivoli Directory Server is installed. This subdirectory contains IBM Tivoli Directory Server license files in all provided languages.
- ▶ The Instance Administration Tool starts. You can use the Instance Administration Tool to add more directory server instances or edit existing directory server instances. See *Creating and administering instances* for instructions.
- ▶ To make changes to your configuration at a later time, see *Configuration* for more information about using the Configuration Tool.
- ▶ If any errors occurred during installation, instance creation, or configuration, see the information in the IBM Tivoli Directory Server version 6.1 Problem Determination Guide for information about recovering from these errors.

## 5.2.4 IBM Tivoli Directory Server configuration

To configure IBM Tivoli Directory Server 6.1, perform the following steps:

1. Start Program: **Start** → **All Programs** → **Tivoli Directory Server 6.1** → **Instance Administration Tool** or run the command `idsctgsuf` in the `C:\<tds_home>\bin` directory.
2. Select the instance that was just created and click the **Configure** button.
3. Click **Manage Administrator Password** and type in a password for the `cn=root` ID.
4. Select **Manage Suffixes** and enter in the following two suffixes:  
`dc=nava, dc=com` (then click **Add** button).  
`dc=swgdemo, dc=com` (then click **Add** button).
5. Now select **Import LDIF data**.
6. The `users.ldif` file is used for this step. Follow the instructions in Appendix A, “Additional material” on page 169 to obtain the file.

**Note:** The `users.ldif` should be used for the demonstration but not for a production system.

7. Select **Standard Import** and click the **Import** button at the bottom.
8. At this point all your users for the ACORD Demo are now in the LDAP database and ready to use.

## IBM Tivoli Web Administration configuration

To configure IBM Tivoli Web Administration, perform the following steps:

1. First verify that the following Windows Services are running (Figure 5-3).




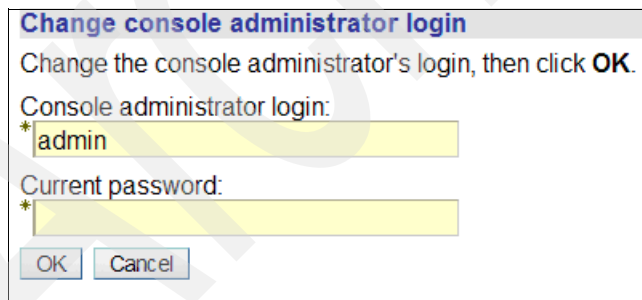
 IBM Tivoli Directory Admin Daemon V6.1 - idsinst	Started	Automatic
 IBM Tivoli Directory Server Instance V6.1 - idsinst	Started	Automatic
 IBM WebSphere Application Server V6.1 - TDSWebAdmin-V6.1	Controls th...	Started Automatic

Figure 5-3 Windows Services

2. After each of these services are started, open a browser and go to the following URL:
  - a. <http://swgdemodb2.raleigh.ibm.com:12100/IDSWebApp/IDSjsp/Login.jsp?showConsoleAdminLogin=true>

**Note:** Replace *swgdemodb2.raleigh.ibm.com* with your Data Node Host Name.

3. To log into the Web Admin function: If logging in for the first time, use the following userid and password.
  - a. UserID::
  - b. Password::
4. Update the Console Administration Login for security purposes. See Figure 5-4.



**Change console administrator login**

Change the console administrator's login, then click **OK**.

Console administrator login:  
\* admin

Current password:  
\*

OK Cancel

Figure 5-4 Change console administrator login

- Click **Manage Console Servers** and **Add** a new server, which is your Data Node server where the product is installed. See Figure 5-5.

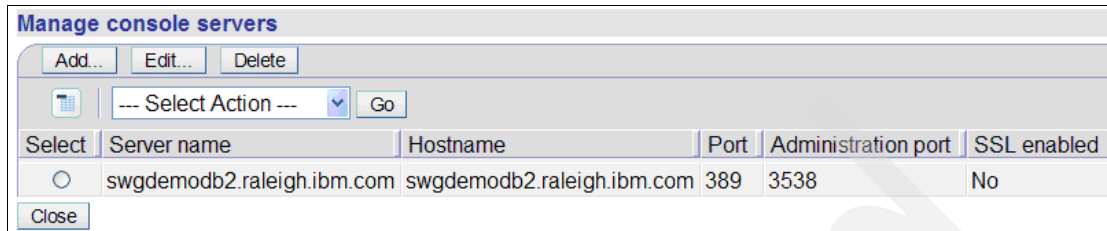


Figure 5-5 Manage console servers

- After these steps are complete, you can use the Web Administration Console to add new user IDs as well as any other administration functions you might need to utilize (Figure 5-6). To do so, the following URL is needed to access the Web administration. Click:

<http://swgdemodb2.raleigh.ibm.com:12100/IDSWebApp/IDSjsp/Login.jsp>

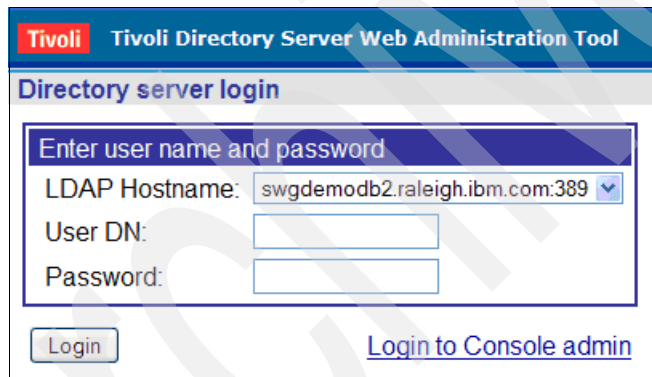


Figure 5-6 Directory server login window

- To use this URL you must login with the cn=root id that was configured in the original Tivoli Directory Server installation.
- Verify the installation and configuration.

## 5.2.5 IBM WebSphere Business Service Fabric - Foundation Pack (DB only) configuration

In this section we describe how to install the IBM WebSphere Business Service Fabric - Foundation Pack.

**Note:** Depending on the IBM WebSphere Business Service Fabric - Foundation Pack distribution that you are using, the installation might be slightly different than we have described. Refer to the IBM InfoCenter for product installations beyond these steps.

Complete the following steps:

1. Open the DB2 command window.
2. **cd** to the WBSFINST directory (C:\<db2\_ese\_home\WBSFINST).
3. Run the db2profile.bat.
4. In the same command window, **cd** to the directory where the Installation CD or Files are, and run the install\_fabric\_win.exe file.
5. Follow the default installation of the db only option.

## 5.3 Install and configure the Web Node

The Web Node is the testing area for all server components associated with creating and loading the ACORD Web application demonstration. This node controls all Web Services, XML Transforms, eForms, SCA Composites, Business Services, Processes, and Web Code. The configuration in this node includes the following tasks to be performed before deploying the ACORD Web Application Demo code:

1. Microsoft Windows 2003 Enterprise Server
2. IBM WebSphere Process Server
3. IBM WebSphere Portal Server
4. IBM WebSphere Business Service Fabric - Foundation Pack
  - a. IBM WebSphere Business Service Fabric - Insurance P&C Pack
5. IBM Lotus Forms Server
6. WebSphere Transformation Extender
7. DB2 Connect™

**Note:** The assumption is that all manuals and best practices should be followed for basic installation of all products. The configuration sections explain how to take the base installation and configure them for application demonstration deployment.

### 5.3.1 Microsoft Windows 2003 Enterprise Server configuration

We included this section to state that Microsoft Windows 2003 Enterprise Server was utilized as the base operating system (OS). All Windows Installation Guides and Best Practices are recommended while installing and configuring the OS.

**Note:** All security and fixpacks should be installed before installing the IBM products and ACORD Web Application Demo Code.

After the OS installs and security and updates are applied to the server, two user IDs are needed:

- ▶ Administrator
- ▶ Database Administrator

All products were installed under the Administrator ID, and all database instances and database were created by the Database Administrator ID.

**Note:** The instructions in this section are from the IBM InfoCenter. For more information, visit:

[http://publib.boulder.ibm.com/infocenter/dmndhelp/v6rxmx/index.jsp?topic=/com.ibm.wsps.602.ins.doc/welcome\\_wps\\_ins.html](http://publib.boulder.ibm.com/infocenter/dmndhelp/v6rxmx/index.jsp?topic=/com.ibm.wsps.602.ins.doc/welcome_wps_ins.html)

### 5.3.2 IBM WebSphere Process Server configuration

IBM WebSphere Process Server configuration consists of a default installation, based on the IBM InfoCenter into the <process\_server\_home> directory, with a connection to DB2.

#### Starting the Launchpad

1. Log on as root on a Linux or UNIX® system, or as a member of the Administrator group on a Windows system.
2. Insert the product CD labeled WebSphere Process Server CD 1 into the CD-ROM drive and mount the drive if necessary, as described in Mounting CD-ROMs on Linux and UNIX operating systems.
3. Start the Launchpad by doing the following tasks:
  - **On Linux and UNIX platforms:** Execute the command **mount\_point/launchpad.sh** where *mount\_point* represents the mount point on the Linux or UNIX system.



- **On Windows platforms:** If the Launchpad does not start automatically when you insert the product CD, from a command line, execute the command **CD-ROM\_drive:\launchpad.exe**.

The Launchpad is displayed.

4. Select your language in the Language selection field.

## Installing WebSphere Process Server or the client interactively

Use this procedure to install WebSphere Process Server or the Client using the Installation wizard graphical user interface (GUI). You can install WebSphere Application Server Network Deployment as part of your installation. You can also install WebSphere Process Server or the Client over an existing installation of WebSphere Application Server or WebSphere Application Server Network Deployment, version 6.0.x.x.

### **Before you begin**

Before installing using this procedure, ensure that:

- ▶ You have decided on the type of installation you prefer:
  - A Complete (default) installation, which installs WebSphere Process Server and WebSphere Application Server Network Deployment using default installation selections and configurations. It also creates a stand-alone process server profile named default with a server named server1.

**Important:** This selection does not create a sample Business Process Choreographer configuration for the stand-alone process server profile.

- A Custom installation, which lets you select the product features you wish to install. It can also install WebSphere Application Server Network Deployment, and allows you to run the Profile wizard at the end of the installation to create a WebSphere Process Server profile.
- A Client installation, which installs the WebSphere Process Server Client and can install WebSphere Application Server Network Deployment.
- ▶ You have decided whether to install WebSphere Application Server Network Deployment as part of your WebSphere Process Server or Client installation or to instead use an existing installation of WebSphere Application Server or WebSphere Application Server Network Deployment, version 6.0.x.x.
- ▶ You have reviewed possible installation topologies in Planning installation topologies.

- ▶ Your system meets all hardware requirements and that you have installed all required software co-requisites and prerequisites. See Hardware and software requirements for more information.
- ▶ You have prepared your operating system for installation. See Preparing the operating system for installation for instructions.
- ▶ You are installing the product as the root user on a Linux or UNIX system, or as a member of the Administrator group on a Windows system.
- ▶ You are installing from product CDs. If you plan to install from images obtained from Passport Advantage®, see Special considerations when installing from Passport Advantage for important information.

### ***Why and when to perform this task***

This procedure assumes that you want to install interactively and that you do not have WebSphere Process Server already installed. If your proposed installation does not meet these criteria, see Installing the software for descriptions of other installation procedures.

Use the following procedure to install the product.

### ***Steps for this task***

Follow these steps to install:

1. Log on as the root user on a Linux or UNIX system, or as a member of the Administrator group on a Windows system.
2. Start the WebSphere Process Server installer.  
Do these tasks:
  - a. Start the Launchpad by following the procedure in Starting the Launchpad.
  - b. From the right pane of the Launchpad, select **WebSphere Process Server installation > Launch the Installation wizard for WebSphere Process Server for Multiplatforms**.
3. From the Welcome panel of the installer, select **Next**.
4. In the License agreement panel, review the IBM and non-IBM licensing terms, select **I accept both the IBM and the non-IBM terms**, and select **Next**.

The Installation wizard checks for a supported operating system with prerequisite patches. At the end of the process, the Checking prerequisites panel indicates whether your system passed the check. This procedure assumes that your system passed.

If your system did not pass, cancel the installation, make the required changes, and restart the installation.

5. In the Checking prerequisites panel, select **Next**.

The Installation wizard checks for existing installations of WebSphere Process Server, WebSphere Process Server Client, WebSphere Enterprise Service Bus, WebSphere Application Server, and WebSphere Application Server Network Deployment. This procedure assumes that you do not have an existing WebSphere Process Server, Client, or WebSphere Enterprise Service Bus installation, but that you might have an existing WebSphere Application Server or WebSphere Application Server Network Deployment installation.

If you do *not* have an existing installation of WebSphere Application Server or WebSphere Application Server Network Deployment, the Installation location panel is displayed. Proceed to Step 7 on page 92.

If you *do* have an existing installation of one of these products, an Existing installation detected panel is displayed. Proceed to step 6.

**Note:** The installer also detects unregistered instances of WebSphere Application Server or WebSphere Application Server Network Deployment if they have entries in the .WASRegistry file. This file is located in the \$USER\_HOME directory of the installation. Using an unregistered installation of one of these products with your WebSphere Process Server installation is neither recommended nor supported.

6. In the Existing installation detected panel, do one of the following tasks:
  - If you want to install a new copy of WebSphere Application Server Network Deployment, select Install a new copy of WebSphere Application Server Network Deployment, Version 6.0 and select **Next**. A warning panel outlines considerations you must make when installing the product on a system with an existing installation. Select **Next** to close the warning panel. The Installation location panel is displayed. Proceed to step 7 on page 92.
  - If you want to install WebSphere Process Server over an existing installation of WebSphere Application Server or WebSphere Application Server Network Deployment, select **Use an existing installation of WebSphere Application Server Network Deployment, Version 6.0** or **Use an existing installation of WebSphere Application Server, Version 6.0** and select **Next**. (If you have multiple installations, be sure to select the one you want to use from the drop-down list.) A warning panel alerts you to stop servers before continuing if the application you chose has running servers. Select **Next** to close the warning panel. The Installation type panel is displayed. Proceed to step 8 on page 92.

7. In the Installation location panel, accept the default installation root directory for the products, or specify a different directory, and select Next. See Default installation paths for the default installation directories.

**Important:**

- You must provide a value for the installation root directory to continue.
- Do not use non-ASCII special characters in directory names; they are not supported.
- **On Linux and UNIX platforms:** Do not use symbolic links as the installation root directory - they are not supported. Also, do not use spaces in the directory path.
- **On Linux platforms:** The installation root directory path must be no longer than 256 characters to successfully install the products.
- **On Windows platforms:** When performing a Complete installation, the installation root directory path must be no longer than 60 characters to successfully create the default stand-alone profile.

8. In the Installation type panel, select the type of installation you want and select **Next**. The Installation Wizard provides three installation paths (not all might appear based on selections you made on previous panels):
  - The Complete path installs WebSphere Process Server and WebSphere Application Server Network Deployment, and creates a stand-alone process server profile.
  - The Custom path allows you to select those features you want to install, plus can install WebSphere Application Server Network Deployment. It does not create a profile, but allows you to run the Profile wizard at the end of the installation.
  - The Client path installs the WebSphere Process Server Client and can install WebSphere Application Server Network Deployment. It does not create a profile.

If you selected Complete or Client, proceed to step 10. If you selected Custom, proceed to step 9.

9. In the Feature selection panel, select the features you want to install and select **Next**. See Product components for descriptions of the features you can select from this panel.
10. In the Installation summary panel, review the components to be installed, the amount of space they are to consume, and where they are to be located on the system, and select **Next** to install or **Back** to change your specifications.

The Installation wizard creates the uninstaller program and shows a progress panel to indicate that components are being installed.

If you elected to use an existing version of WebSphere Application Server or WebSphere Application Server Network Deployment, the Installation wizard examines it and does one of the following:

- Does nothing if the installation is at the correct service level.
- If the installation is at an earlier service level, applies the necessary fixes to bring the installation up to the appropriate level and also applies any necessary interim fixes.
- If you selected the WebSphere Process Server Sample applications gallery feature, and you are installing over an installation of WebSphere Application Server Network Deployment that does not have its Samples gallery feature installed, the Samples gallery feature is added silently to the WebSphere Application Server Network Deployment installation.

**Restriction:** The Sample applications gallery feature can be incrementally installed only over a WebSphere Application Server Network Deployment installation. Thus, if you select the WebSphere Process Server Sample applications gallery feature, and you are installing WebSphere Process Server over an installation of WebSphere Application Server that does not have its Samples gallery feature installed, the Sample applications gallery feature is not added silently to the WebSphere Application Server installation.

At the end of the installation, the Installation complete panel is displayed.

**Attention:** If errors are detected during installation, other panels might be displayed in place of the Installation complete panel. Here are some examples:

- ▶ Installation is complete with errors panel, which indicates that the installation completed but errors were generated.
- ▶ Installation failed panel, which indicates that the installation failed completely.

Each of these panels identifies the log file to reference in order to troubleshoot the problems. See the descriptions of relevant log files listed in Log files, error messages in Error messages: installation and profile creation and augmentation, and refer to Troubleshooting installation for tips on troubleshooting your installation. If you performed a Complete installation and the default profile did not create successfully, refer to Recovering from profile creation or augmentation failure for troubleshooting tips.

11. The Installation complete panel differs depending on the type of installation you performed:
- If you performed a Complete installation, ensure the check box to launch the First Steps console is selected, and select **Finish** to close the Installation wizard and launch the First Steps console.
  - If you performed a Client installation, select **Finish** to close the Installation wizard.
  - If you performed a Custom installation, do one of the following tasks depending on whether you want to create a new profile:
    - To create a new profile, leave the check box beside Launch the Profile Wizard selected and select **Next**. The Installation wizard closes and the Profile wizard is launched. See *Creating profiles using the Profile wizard* and *Augmenting profiles using the Profile wizard* for instructions on how to use this wizard to create new process server profiles or augment existing application server profiles into process server profiles.
    - To *not* create a new profile, unselect the check box beside Launch the Profile Wizard and select
    - **Next**. In this case, a warning panel is displayed, which explains that without a profile there is no operational server. Do one of the following:
      - Select **Back** for another chance to launch the Profile wizard.
      - Select **Next**. The Installation complete panel is displayed with a check box to launch the First Steps console. Ensure that this check box is selected and select **Finish** to close the Installation wizard and launch the First Steps console.

**Note:** To have an operational environment, a WebSphere Process Server stand-alone profile or deployment manager profile with managed nodes must exist.

## Creating profiles using the Profile wizard

You can create a stand-alone server profile, a deployment manager profile, or a custom profile using the Profile wizard graphical user interface (GUI).

### ***Before you begin***

Before using this procedure, ensure that you have reviewed the list of prerequisites for creating or augmenting a profile at *Prerequisites for creating or augmenting profiles*.

**Important:** You cannot have two instances of the WebSphere Process Server Profile wizard or WebSphere Application Server or WebSphere Application Server Network Deployment Profile creation wizard running concurrently on one set of core product files. Attempts to create profiles concurrently result in a warning. If a warning panel is displayed, determine if there is another profile creation or augmentation action occurring.

- ▶ If there is, you must wait until it completes.
- ▶ If there is not, delete the file `profileRegistry.xml_LOCK` in the directory `install_root/properties` if it exists. You can then run the Profile wizard.

**Important:** The language of the Profile wizard is determined by the default language on the system. If the default language is not one of the supported languages, then English is used. You can override the system's default language by starting the Profile wizard from the command line and using the `java user.language` setting to replace the default language, as follows:

- ▶ On Linux and UNIX platforms: `install_root/java/bin/java -Duser.language=locale -cp install_root/bin/ProfileCreator_wbi/pcat.jar run`
- ▶ On Windows platforms: `install_root\java\bin\java -Duser.language=locale -cp install_root\bin\ProfileCreator_wbi\pcat.jar run`

For instance, to start the Profile wizard in the German language on a Linux system, type the following commands:

```
install_root/java/bin/java -Duser.language=de -cp install_root/ \
bin/ProfileCreator_wbi/pcat.jar run
```

### ***Why and when to perform this task***

Complete the following steps to create the following profiles for all the products and the ACORD Application Demo:

- ▶ wps
- ▶ wbsf
- ▶ forms
- ▶ apps

### ***Steps for this task***

Follow these steps to create the profiles:

1. Start the WebSphere Process Server Profile wizard. You can start the wizard in several ways:

- On all platforms, from the First Steps console. See Starting the First Steps console for how to start the First Steps console.
- **On Windows platforms:** From the Windows Start menu, or by executing the command `install_root\bin\ProfileCreator_wbi\pcatWindows.exe`.
- **On Linux and UNIX platforms:** By executing the appropriate command in the `install_root/bin/ProfileCreator_wbi` directory. The name of the command varies by platform:
  - On AIX® platforms: `./pcatAIX.bin`
  - On HP-UX platforms: `./pcatHPUX.bin`
  - On Linux x86 32-bit platforms: `./pcatLinux.bin`
  - On Linux x86 64-bit platforms: `./pcat.bin`
  - On Linux zSeries® 31-bit and 64-bit platforms: `./pcatLinux390.bin`
  - On Linux Power platforms: `./pcatLinuxPPC.bin`
  - On Solaris™ SPARC platforms: `./pcatSolaris.bin`
  - On Solaris x86 64-bit platforms: `./pcatSolarisx86_64.bin`

**Important:** Do not execute the similar `pct` command found in `install_root/bin/ProfileCreator` on Linux and UNIX platforms and `install_root\bin\ProfileCreator` on Windows platforms. This command creates WebSphere Application Server profiles -- *not* WebSphere Process Server profiles.



2. In the Welcome panel (Figure 5-7), click **Next**.

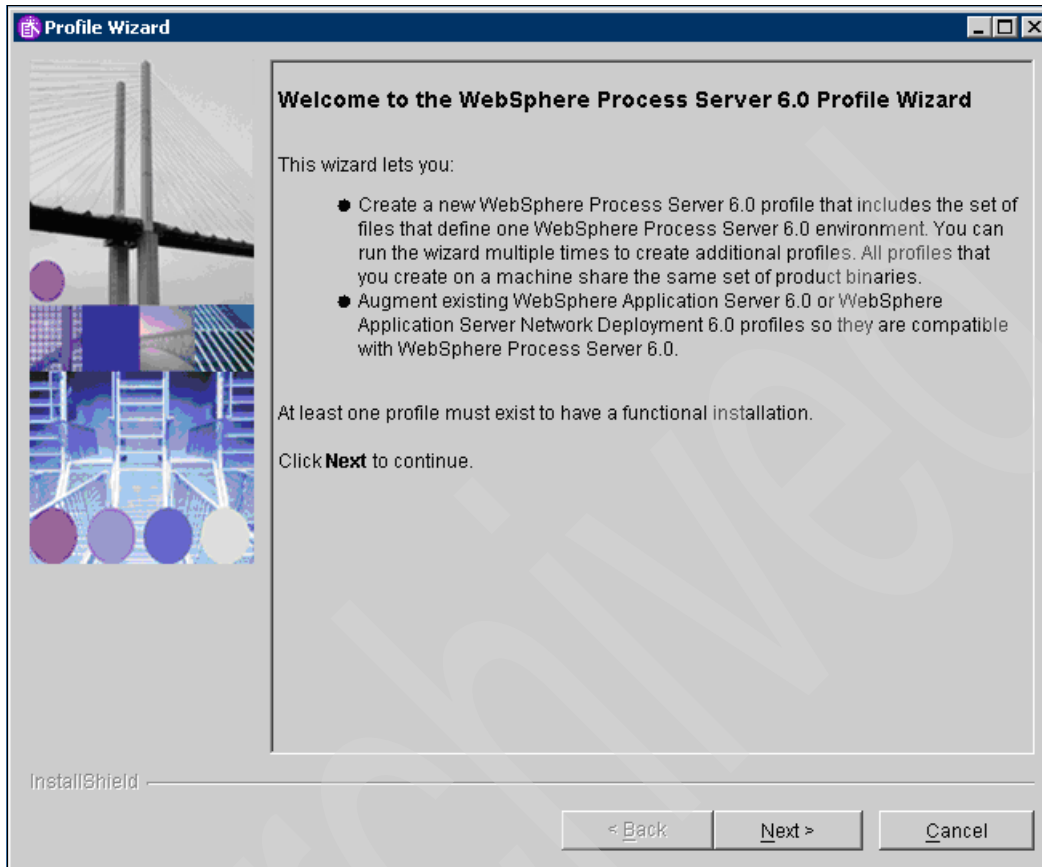


Figure 5-7 Welcome window

3. In Figure 5-8, select **Stand-alone profile** and click **Next**.

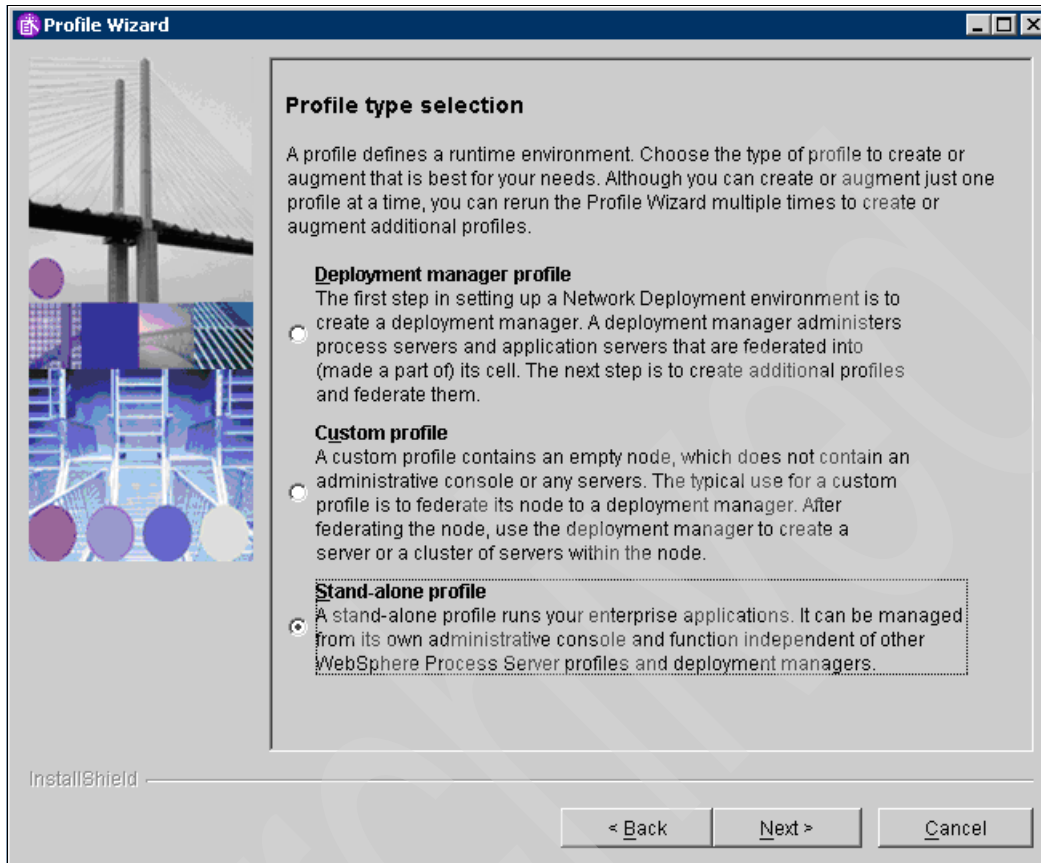


Figure 5-8 Profile type selection window

4. Replace the Variable <PROFILE\_NAME> in Figure 5-9, with one of the following profiles, because all four of these profiles have to be created.

- wps
- wbsf
- forms
- apps

Click **Next**.

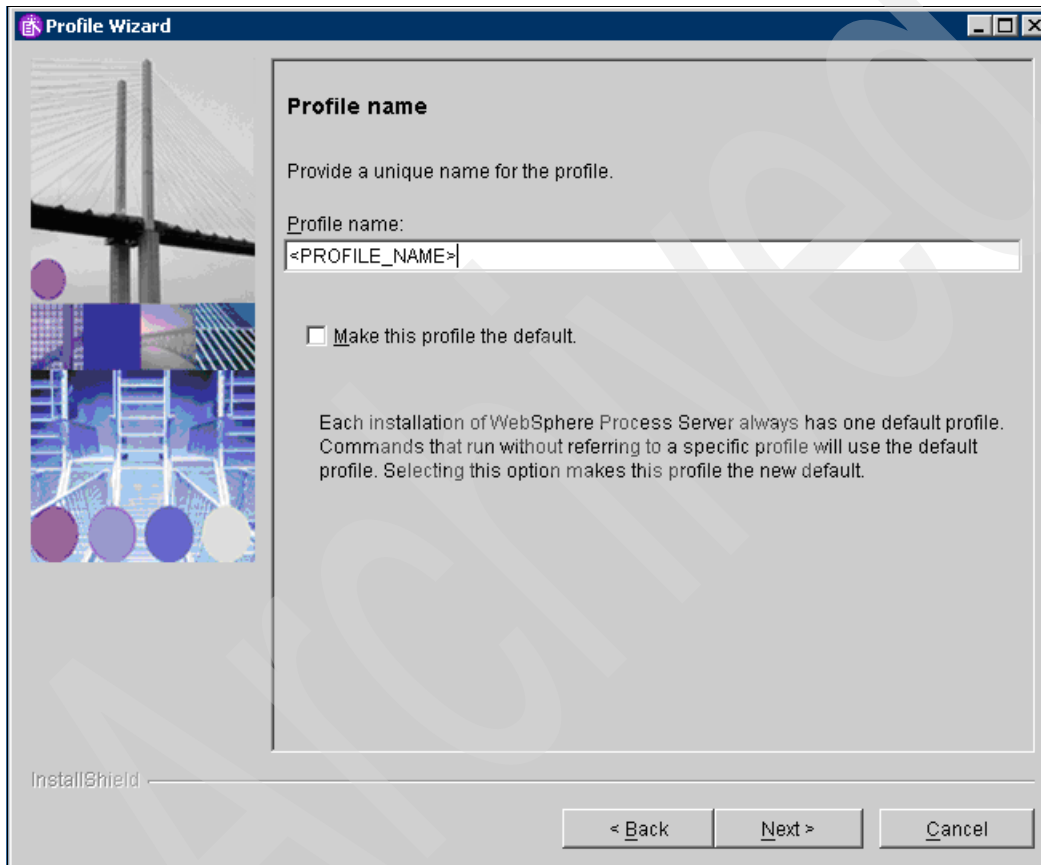


Figure 5-9 Profile name

5. Make sure that the directory you place the profiles in are no more than 250+ chars, Figure 5-10 shows the recommended directory for profile creation. Click **Next**.

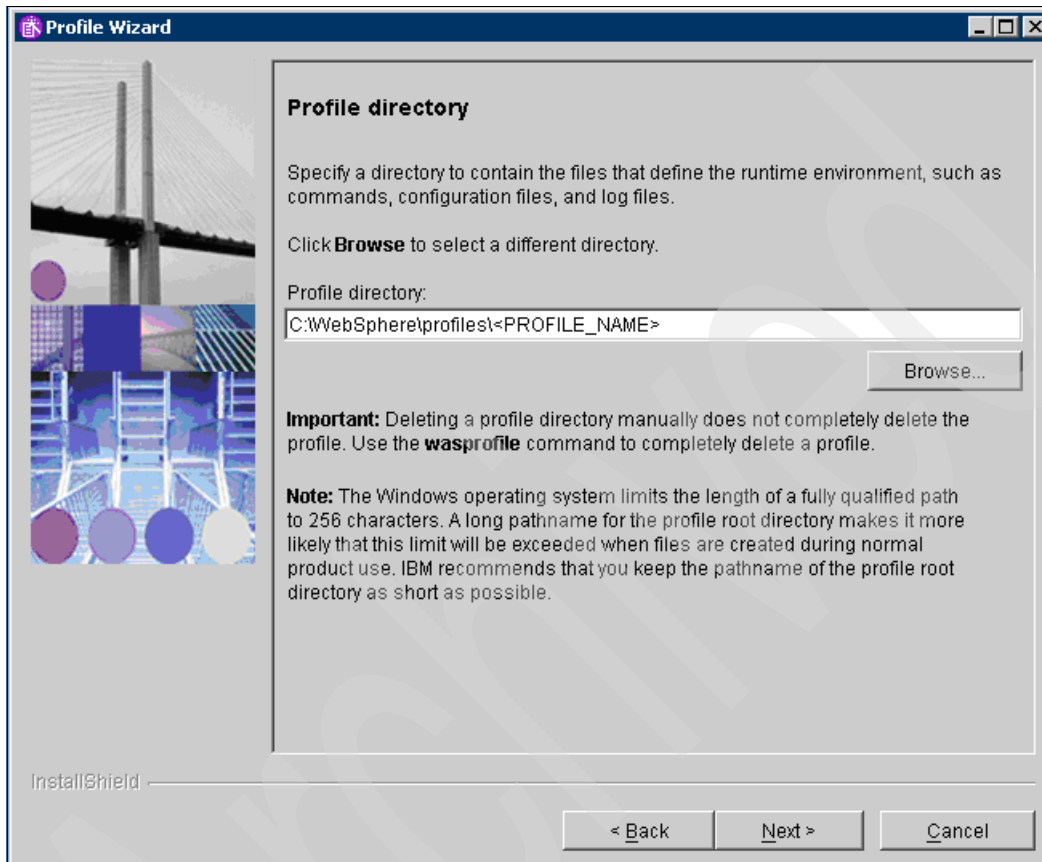


Figure 5-10 Profile directory

- The node and hostname we kept as default for this demonstration (Figure 5-11). Click **Next**.

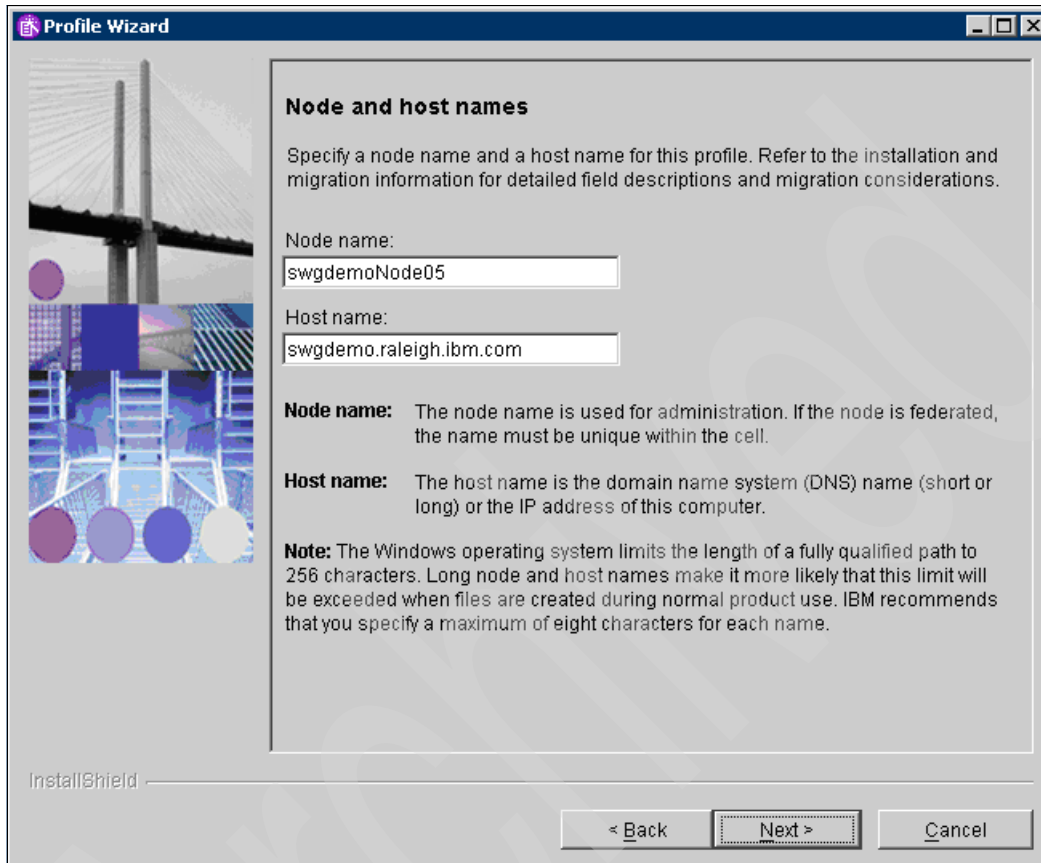


Figure 5-11 Node and host names

7. All ports were kept as default in this example (Figure 5-12). Click **Next**.

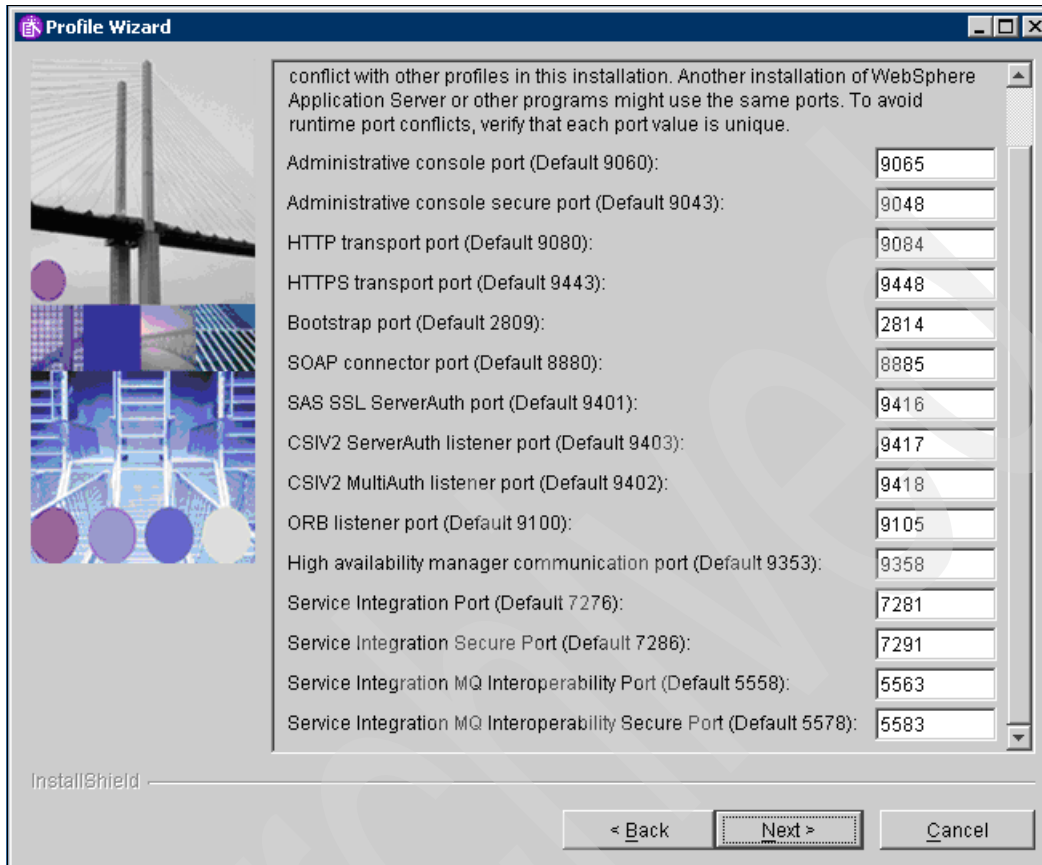


Figure 5-12 Profile Wizard window

8. Running as a Windows Service is a deployment decision (Figure 5-13). For this demonstration, we recommend making sure that you use it as a service, for ease of rebooting. Click **Next**.

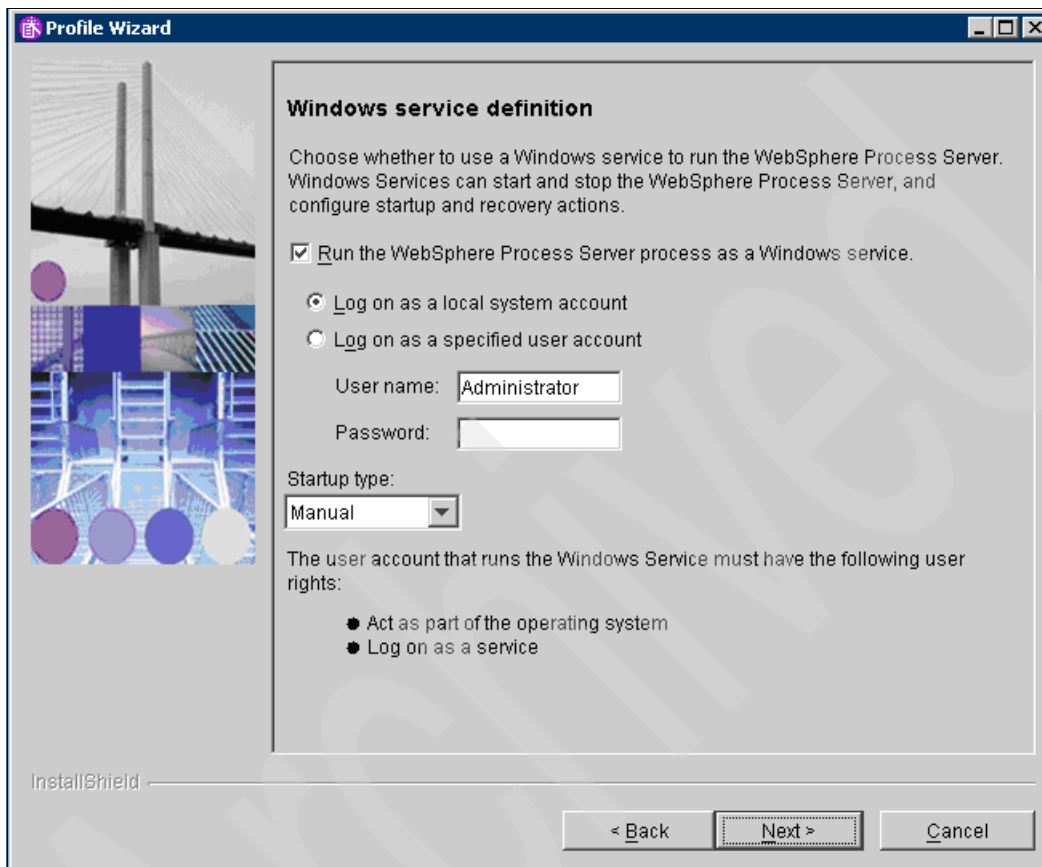


Figure 5-13 Windows service definition window

9. Service Component Architecture Configuration (Figure 5-14) is recommended to use the wasadmin ID and password that was in the Tivoli directory server installation/configuration steps, because this is useful when configuring security in WebSphere. Click **Next**.

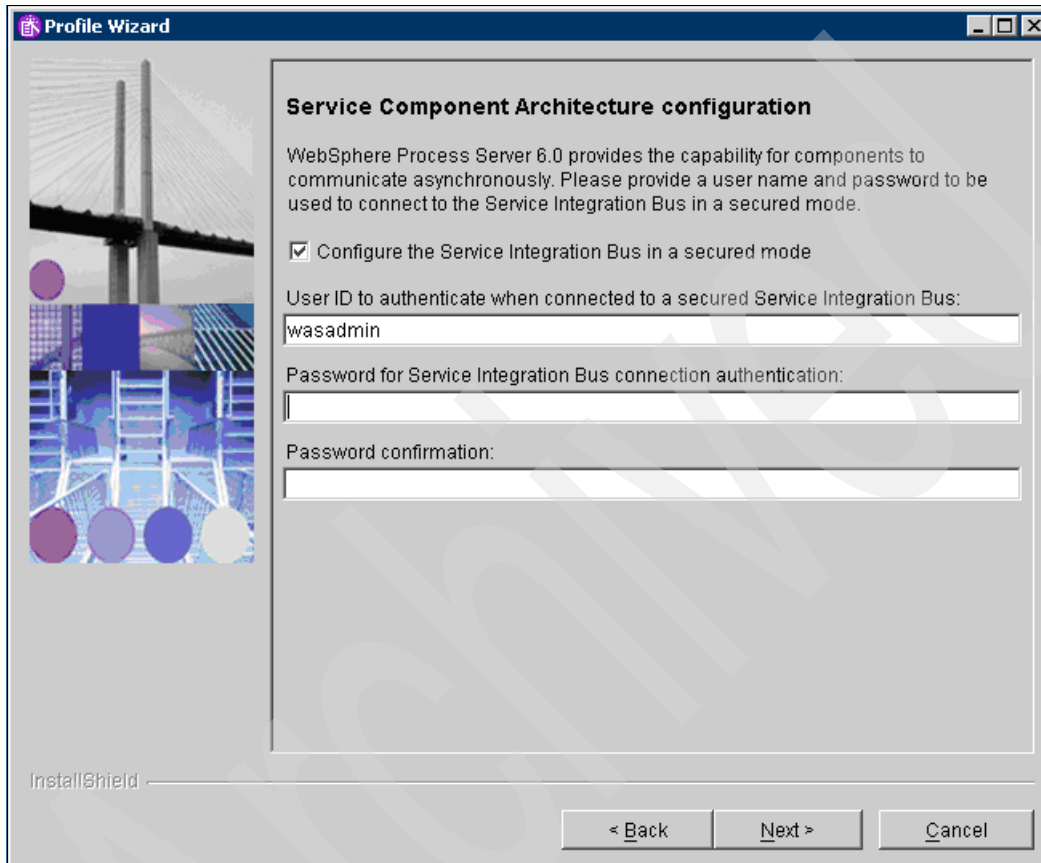


Figure 5-14 Service Component Architecture configuration



10. Common Event Infrastructure (CEI) Configuration (Figure 5-15) is recommended to also use the wasadmin ID and password from the Tivoli Directory Server installation/configuration. Follow the window displays for the other options. Click **Next**.

**Profile Wizard**

### Common Event Infrastructure Configuration

Configure the Common Event Infrastructure EJBs, Default Messaging, and database.

User ID to authenticate with WebSphere Messaging queue manager:  
wasadmin

Password (the password for WebSphere Messaging authentication):  
[Empty field]

Password confirmation:  
[Empty field]

WebSphere server name:  
server1

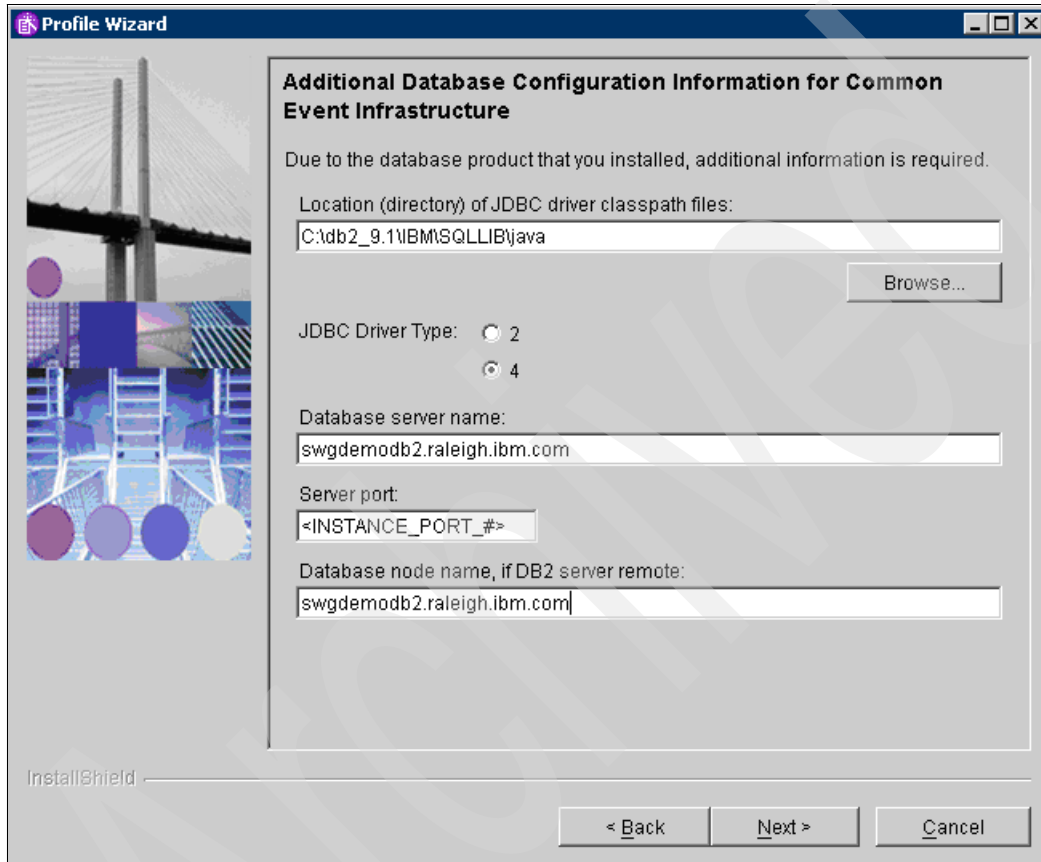
Choose a database product:  
DB2 Universal V8.2

InstallShield

< Back    Next >    Cancel

Figure 5-15 Common Event Infrastructure Configuration window

11. The Common Event Infrastructure (CEI) additional DB parameters (Figure 5-16) should utilize the database installation instance information from the Data Node DB2 installation/configuration steps. The database user ID should be the db2admin ID and password created with the Windows 2003 installation or the ID used in the db2 installation. Click **Next**.



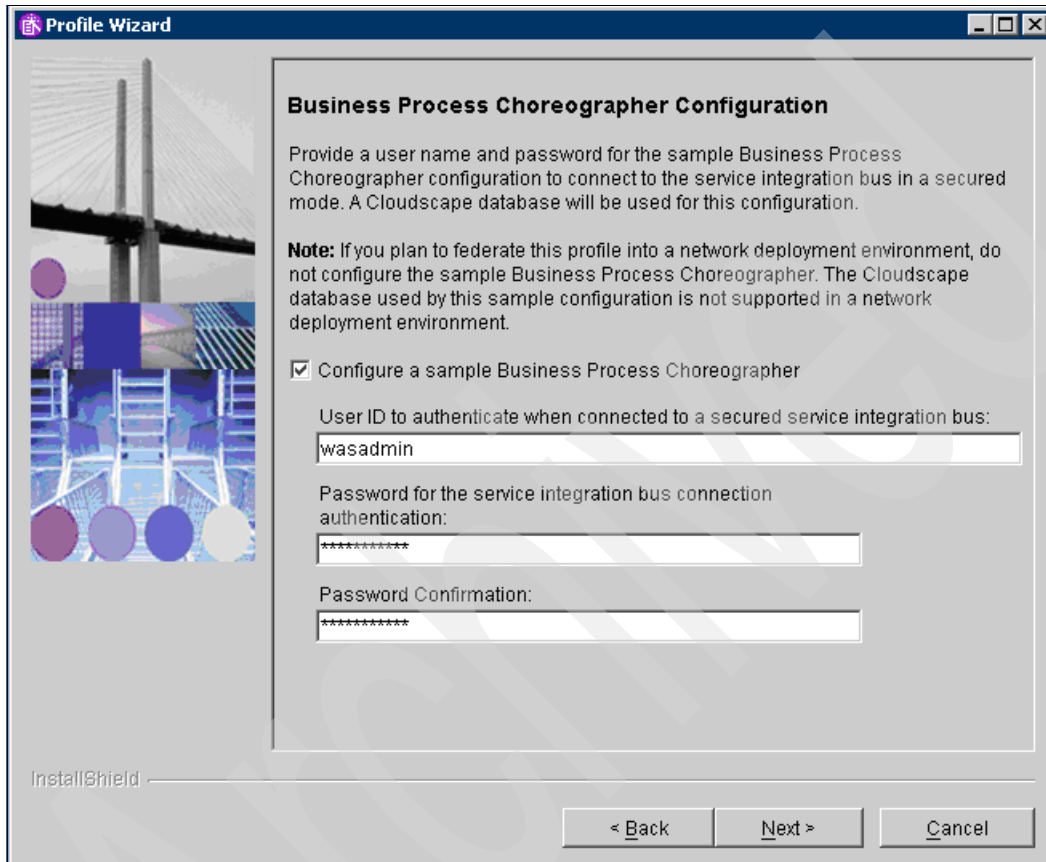
The screenshot shows a window titled "Profile Wizard" with a blue header bar. The main content area is titled "Additional Database Configuration Information for Common Event Infrastructure". Below the title, a message states: "Due to the database product that you installed, additional information is required." The form contains several fields and controls:

- Location (directory) of JDBC driver classpath files:** A text box containing "C:\db2\_9.1\IBMSQLLIB\java" and a "Browse..." button to its right.
- JDBC Driver Type:** Two radio buttons labeled "2" and "4". The "4" option is selected.
- Database server name:** A text box containing "swgdemodb2.raleigh.ibm.com".
- Server port:** A text box containing "<INSTANCE\_PORT\_#>".
- Database node name, if DB2 server remote:** A text box containing "swgdemodb2.raleigh.ibm.com".

At the bottom of the window, there are three buttons: "< Back", "Next >", and "Cancel". The "InstallShield" logo is visible in the bottom left corner of the window.

Figure 5-16 Additional DB parameters

12. Business Process Choreographer Configuration (Figure 5-17) is recommended to also use the wasadmin ID and password from the Tivoli Directory Server installation/configuration. Follow the window displays for the other options. Click **Next**.



The screenshot shows a window titled "Profile Wizard" with a sidebar on the left containing several icons. The main content area is titled "Business Process Choreographer Configuration". It contains the following text:

**Business Process Choreographer Configuration**

Provide a user name and password for the sample Business Process Choreographer configuration to connect to the service integration bus in a secured mode. A Cloudscape database will be used for this configuration.

**Note:** If you plan to federate this profile into a network deployment environment, do not configure the sample Business Process Choreographer. The Cloudscape database used by this sample configuration is not supported in a network deployment environment.

Configure a sample Business Process Choreographer

User ID to authenticate when connected to a secured service integration bus:  
wasadmin

Password for the service integration bus connection authentication:  
\*\*\*\*\*

Password Confirmation:  
\*\*\*\*\*

At the bottom of the window, there are three buttons: "< Back", "Next >", and "Cancel". The "InstallShield" logo is visible in the bottom left corner.

Figure 5-17 Business Process Choreographer Configuration

13. Application Scheduler Configuration (Figure 5-18) used the standard parameter of server1. Click **Next**.

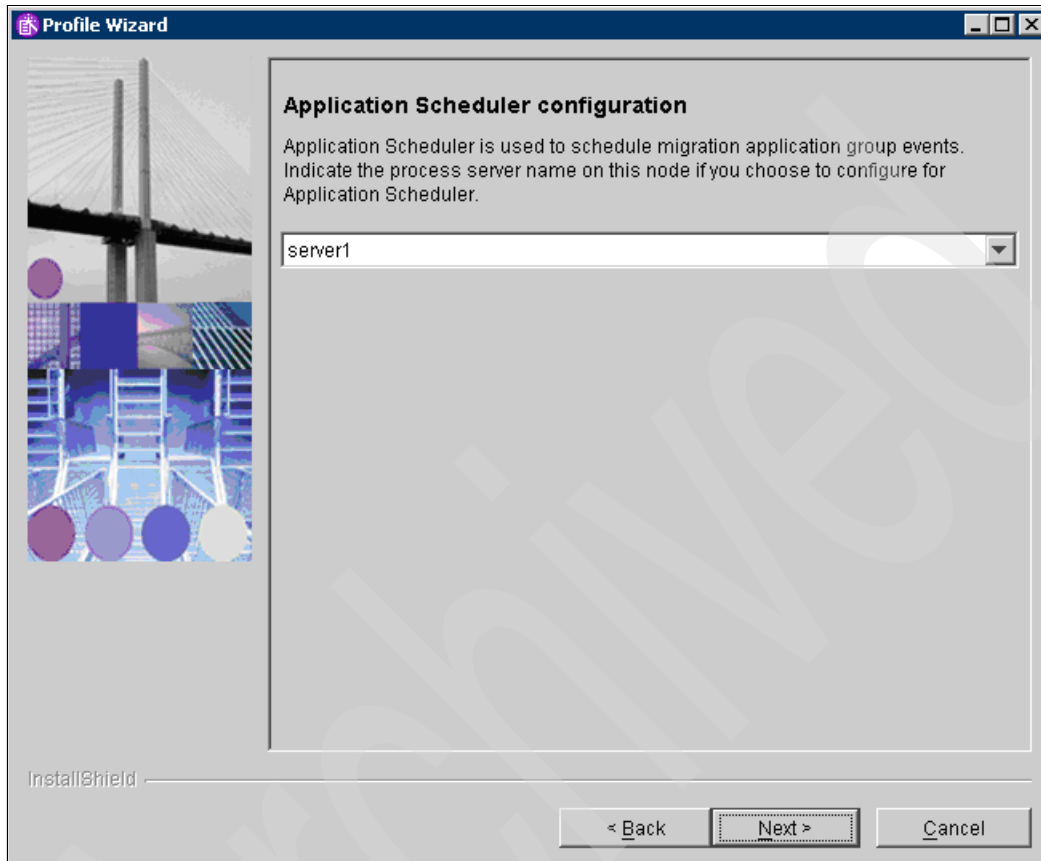


Figure 5-18 Application Scheduler configuration

14. Database Configuration (Figure 5-19 and Figure 5-20) is recommended to set up a new or existing database separately. This generates scripts for deployment on the Data Node in the current instance you are working. Use all Data Node DB2 Instance Ports, Parameters, and the default db2admin id/pwd for this section. Click **Next**.

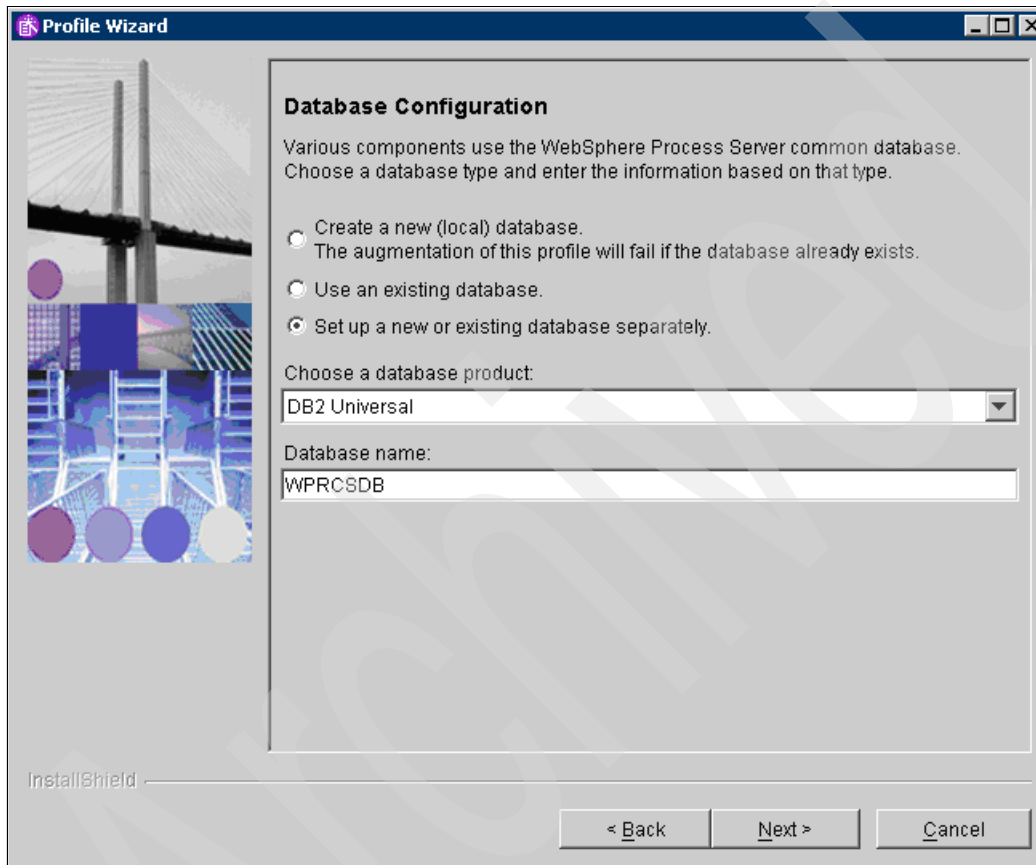


Figure 5-19 Database Configuration window

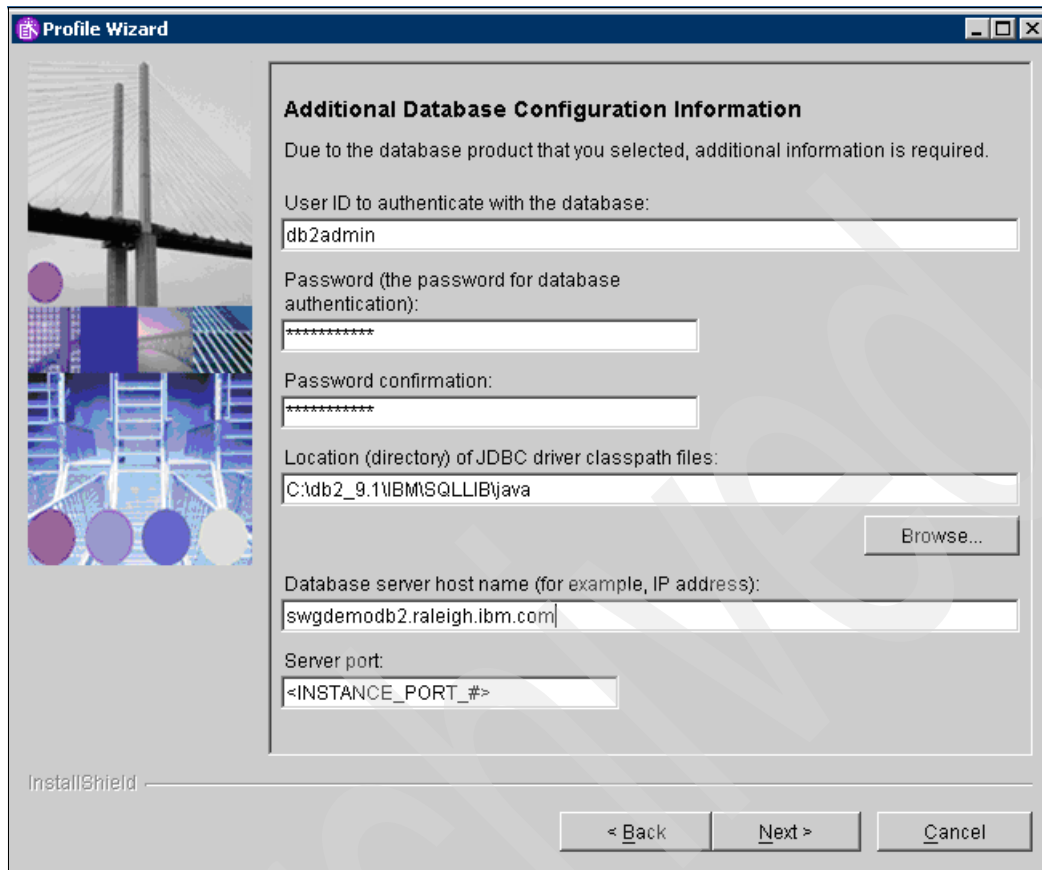


Figure 5-20 Additional Database Configuration Information

15. For the Profile Summary (Figure 5-21) , click **Next** to start the creation of the profile.

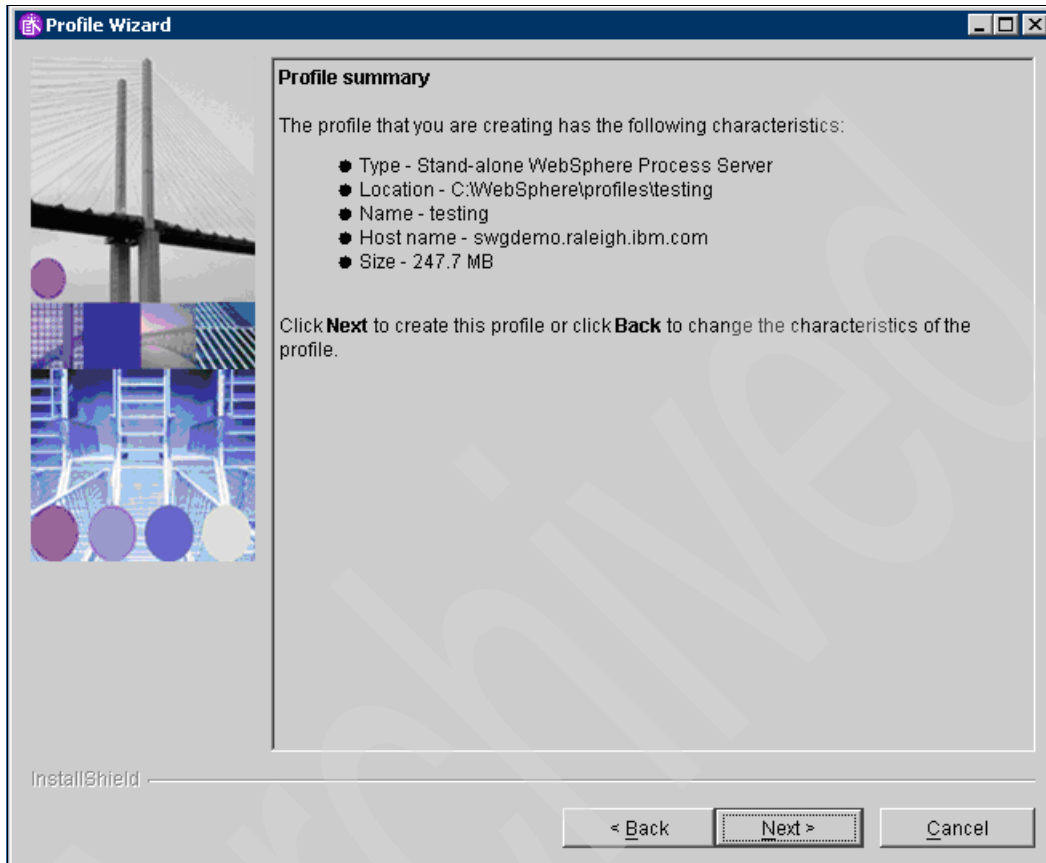


Figure 5-21 Profile Summary

16. Profile Creation is complete (Figure 5-22). If you keep the Launch First Steps Console, it gives you the options that you can perform for the newly created profile. Click **Finish**.

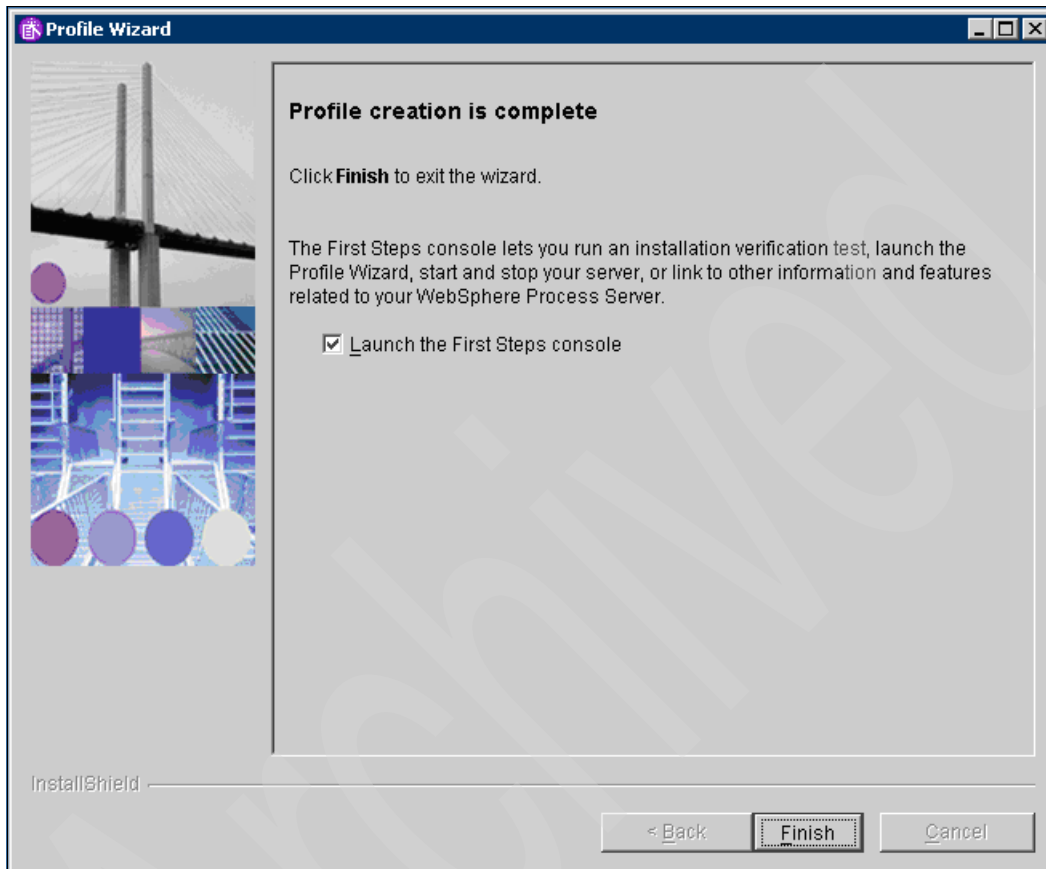


Figure 5-22 Profile creation is complete



17. The next step is to install the databases on the Data Node that was selected to be created later:
  - Common DB
  - Event (CEI)
18. **cd** to directory <profile\_home\_dir>\dbscripts\CommonDB\DB2\WPRCSDB:
  - example <profile\_home\_dir> = C:\WebSphere\profiles\<PROFILE\_NAME>\
19. Copy or FTP files to the Data Node directory temp folder, C:\temp\CommonDB
20. **cd** to directory <profile\_home\_dir>\event\dbscripts\db2\
  - example <profile\_home\_dir> = C:\WebSphere\profiles\<PROFILE\_NAME>\
21. Copy or FTP all Files to the Data Node Directory temp folder, C:\temp\Event.
22. After all the files are copied to the Data Node Server, start the db2 command window.
23. **cd** to the <db2\_ese\_home>\INSTANCENAME\ directory of the corresponding instance:
  - wps profile → wpsinst instance
  - wbsf profile → wbsfinst instance
  - forms profile → forminst instance
  - apps profile → appinst instance
24. Run the bat file db2profile.bat.
25. **cd** to the C:\temp\CommonDB directory.
26. Run the following script:
  - configCommonDB.bat createDB
27. Verify success with the following command:
  - db2 list database directory
28. **cd** to the C:\temp\event directory.
29. Run the following script:
  - cr\_event\_db2.bat server db2admin
30. Verify success with the following command:
  - db2 list database directory
31. Go back to the Web node **cd** to <profile\_home\_dir>\event\dsscripts\db2.
32. Run the following script:
  - cr\_db2\_jdbc\_provider.bat cell

### 33. Verify that JDBC™ provider was created (Figure 5-23).

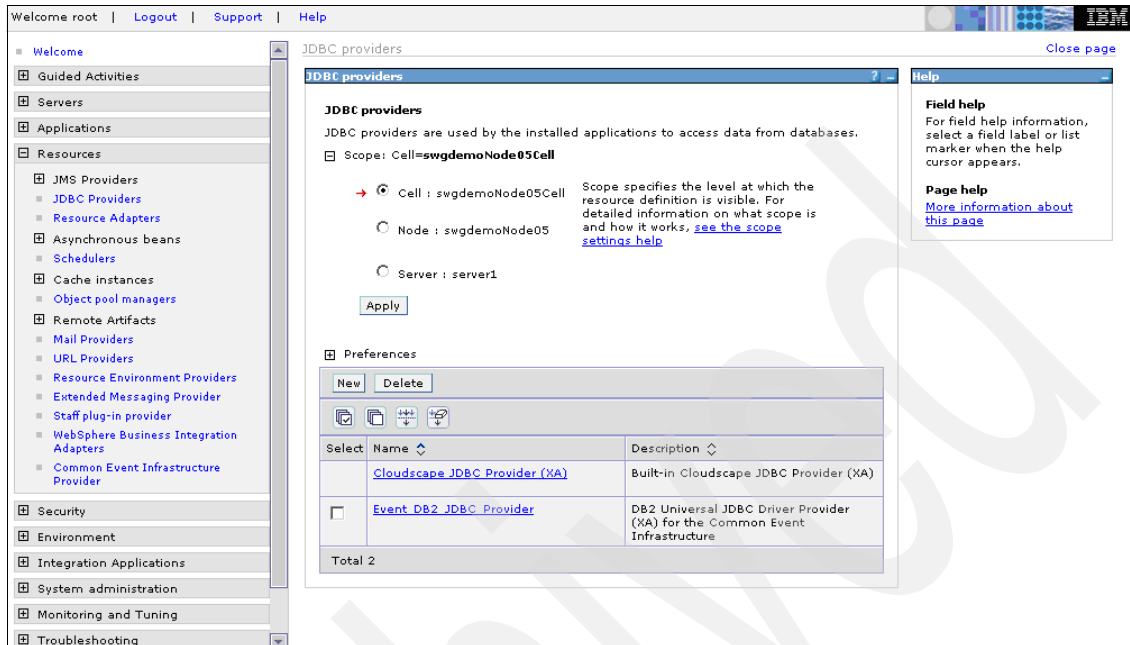


Figure 5-23 JDBC providers

**Attention:** Repeat All Creating Profiles steps for each profile required for this demonstration.

**Note:** The instructions in this section are from the IBM InfoCenter, however, key items were modified where applicable:

<http://publib.boulder.ibm.com/infocenter/db21uw/v9/index.jsp?topic=/com.ibm.db2.udb.uprun.doc/doc/t0007315.htm>

### 5.3.3 DB2 Runtime Client configuration

This task describes how to install a DB2 Runtime client on the Windows operating system. The instructions apply to any DB2 client type, namely the DB2 Client and the DB2 Runtime Client. In this installation, the demonstration utilizes the DB2 Runtime Client.

## Prerequisites

Ensure that the following prerequisites are met:

- ▶ Locate the CD or other install image that you need. Ensure you have the appropriate 32-bit or 64-bit version, depending on your machine.
- ▶ Ensure that your system meets memory, disk space, and installation requirements. The installation program checks these and notifies you if there is a problem.
- ▶ You need to have a Windows user account that is part of either the Administrators or Power Users group. Alternatively, you need a non-Administrator user account that has been properly configured.

**Restriction:** If you install a DB2 Runtime Client on a Windows operating system, no other DB2 database products can be installed in the same path as the client. Though the installation program does not prevent you from installing DB2 database products in the same location as DB2 Runtime Clients, this situation causes subsequent maintenance activities (such as applying fix packs) to fail.

If the machine already has a prior version of a DB2, follow the info center for suggestions on how to process. The demonstration suggestions and recommends that the installation is performed on machines that are newly configured.

This procedure covers the simple case. To install the DB2 Runtime Client on Windows:

1. Log on to the system with the Administrator User Account.
2. Optional: Shut down any other programs.
3. Insert the CD into the drive. The auto-run feature starts the DB2 Setup wizard which determines the system language and starts the setup program for that language.
4. Follow the DB2 Setup wizard's prompts. Help is available in the wizard to guide you through the remaining steps.

**Note:** The ACORD Demo utilized a default installation for the DB2 Runtime Client, except for the installation directory. As defined previously, use the <db2\_runtime\_client\_home> as the installation directory to keep with the documentation requirements.

After completing this procedure, the product is now installed at the location you specified during the installation. The default installation path for the first copy of a DB2 client is <db2\_runtime\_client\_home>.

This installation does not include product documentation. See the related links for options for installing or accessing the *DB2 Information Center*.

After installing the DB2 Runtime Client, the next step is to configure it to access remote DB2 servers, as covered in the next section about WebSphere Portal Server Configuration, when the installation requires configuring the Runtime Client to access remote databases.

### 5.3.4 IBM WebSphere Portal Server configuration

Installing and Configuring WebSphere Portal Server utilizes some of the previous steps that have already been accomplished at this point. Because WebSphere Process Server has been installed and configured, the WebSphere Portal Server Installation utilizes the `wps` profile of the previous configuration of WebSphere Process Server.

**Note:** The instructions in this section are from the IBM InfoCenter, however, key items were modified where applicable:

[http://publib.boulder.ibm.com/infocenter/wpdoc/v6r0/index.jsp?topic=/com.ibm.wp.ent.doc/wpf/inst\\_wp\\_exwas.html](http://publib.boulder.ibm.com/infocenter/wpdoc/v6r0/index.jsp?topic=/com.ibm.wp.ent.doc/wpf/inst_wp_exwas.html)

#### Installing with an existing instance of WebSphere Application Server

This section provides information on installing IBM WebSphere Portal on an existing instance of IBM WebSphere Application Server, ultimately the WebSphere Application Server instance that is installed with WebSphere Process Server.

Before you begin, you should review Planning for deployment, Supported hardware and software for WebSphere Portal Version 6.0, Preparing your operating system, and Choosing an installation source.

To install a new version of WebSphere Portal on an existing instance of WebSphere Process Server, follow these instructions.

**Important:** If you attempt to install WebSphere Portal to an existing WebSphere Process Server and have not used the WebSphere Portal media to install WebSphere Process Server, the installation fails. For a successful installation, follow the special instructions in the technote: Custom portal install fails for a full WebSphere Process Server (WPS) Version 6.0.1.1 installation (not installed via Portal CDs) .

**Attention:** Resource paths in WebSphere Application Server configuration can exceed the 256 character path length limitation of the Windows JDK™, causing portlet installation or portal upgrades to fail. Therefore, we strongly recommend that you keep your Application Server installation path short, for example, use <process\_server\_home>. In particular, you should not install portal into a profile inside the application server installation directory if the default installation path C:\Program Files\IBM\WebSphere\AppServer has been chosen. Use a shorter installation path or create a new profile outside the main application server installation path, for example, in C:\WebSphere\profiles\wps for portal installation.

**Note:** When installing on Linux, if you install WebSphere Portal into a directory that does not have write permissions, the installation is not affected and proceeds normally. This is because the installation is performed with the Administrator user, which always has full permissions over files.

Follow these steps:

1. Ensure that the installed WebSphere Process Server is at the supported level before continuing. Refer to Supported hardware and software for more information:  
<http://www-01.ibm.com/support/docview.wss?rs=2307&uid=swg27006205>
2. Ensure that the installed WebSphere Process Server has the following required features installed. See Table 5-5.

Table 5-5 WebSphere Process Server required installed features

Product	Features
IBM WebSphere Application Server Network Deployment	<ul style="list-style-type: none"> <li>▶ Application Server</li> <li>▶ Administration                             <ul style="list-style-type: none"> <li>– Scripted Administration</li> <li>– Administrative Console</li> </ul> </li> <li>▶ Ant and Deployment Tools                             <ul style="list-style-type: none"> <li>– Deploy Tool</li> <li>– Ant Utilities</li> </ul> </li> </ul>

The components in Table 5-6 can be optionally installed on WebSphere Application Server.

Table 5-6 WebSphere Application Server optional components

Product	Features
WebSphere Process Server	<ul style="list-style-type: none"> <li>▶ Process Choreographer                             <ul style="list-style-type: none"> <li>– Configure a Sample Business Process Container</li> </ul> </li> </ul>

3. If you are installing on a machine with a firewall enabled, disable the firewall before beginning the installation. If you do not disable the firewall and the installation program detects it, a warning message displays during the installation.
4. Choose one of the following options to start the installation program:
  - Use the Setup disc:
 

If you have the Setup disc, perform the steps that are appropriate for your operating system:

    - **Windows:** Insert the Setup disc into the CD-ROM drive. The installation program automatically starts when you insert the Setup disc. If the autostart function is disabled, run the following command from the root directory of the CD:
   
**install.bat**
  - Access the downloaded product code:
 

If you downloaded the product code, perform the steps that are appropriate for your operating system:

    - **Windows:** Run the install.bat command from the install\_root directory.

5. Select the language for the installation and click **OK**. The welcome panel displays.
6. If you want to view the WebSphere Portal information center, you can click Launch Information Center, and the information center is opened in a browser. Otherwise, click **Next** to continue.
7. Select I accept the terms in the license agreement. Click **Next**. The installation program checks the machine for operating system and software prerequisites.
8. Select **Custom**, and click **Next**.
9. Select the *wps profile* already existing WebSphere Process Server/WebSphere Application Server ND. If the installation program does not detect a WebSphere Application Server instance, but you know that it is present on the machine, exit the install and pass the location using the command line; for example: `./install.sh -W was.undetectedWas="C:\WebSphere\profiles\wps\"`.

If you are installing to a node that is already under deployment manager control, ensure that Install on a managed node is checked.

Click **Next** and the custom location is validated.

10. Enter the user ID and password for the WebSphere Application Server administrator. These credentials are used to access WebSphere Application Server with administrator authority after installation. These credentials are only used to log in to WebSphere Application Server and are not related to any other system access IDs. We recommend to stick with the wasadmin ID and wasadmin password because this is configured later to use security using Tivoli Directory Server as LDAP. Click **Next**.
11. Managed Node only: If you choose to install on a managed node, you must have a profile created.
12. Specify the directory where you want to install WebSphere Portal, as the directory recommended in Table 5-3 on page 72 <portal\_server\_home>. The directory that you specify must NOT exist; it is created during the installation. If you are installing on Windows, do not include periods (.) or special characters in the installation path, and avoid using a long path name. Click **Next**.
13. Enter the user ID and password for the WebSphere Portal administrator (we recommend that you use *wpsadmin ID* and *wpsadmin password*. This is changed later for using security with the Tivoli Directory Server Configuration as LDAP is configured later in the process) and then click **Next**. This user ID is used to access WebSphere Portal with administrator authority after installation.

**Note:** This user ID is only used to log in to WebSphere Portal and is not related to any user IDs that are used to access the operating system.

14. Verify the components to be installed and click **Next**.

The installation program begins installing the selected components. Throughout the installation and configuration process, the installation program displays progress indicators for the different components.

15. When the installation is finished, the installation program displays a confirmation panel listing the components that have been installed. Write down the following information before clicking **Finish**:

- The port number that is used to access WebSphere Portal is displayed on the confirmation panel. Write down the port number for use in verifying the WebSphere Portal URL. This value is also stored in the WpsHostPort property in the <portal\_server\_home>/config/wpconfig.properties file.
- **Windows and Linux only:** If you want to use the WebSphere Portal First Steps, ensure that Launch First Steps is selected. From First Steps you can access WebSphere Portal or read the documentation. If you are installing on a UNIX system, the Launch First Steps check box is not displayed.

16. Click **Finish**.

17. To verify that WebSphere Portal is running, open the following URL in a browser: `http://example.com:port_number/wps/portal`, where `example.com` is the fully qualified host name of the machine that is running WebSphere Portal and `port_number` is the port number that is displayed on the confirmation panel. For example, `http://www.ibm.com:10038/wps/portal`.

**Important:** At this point, you are running with security enabled.

**Note:** The Security is only WebSphere security and not Tivoli Directory Server LDAP enablement yet

18. If the WebSphere Application Server where you installed WebSphere Portal is part of a cell managed by WebSphere Application Server Network Deployment, you can create a cluster of WebSphere Portal application servers. Refer to Clustering and WebSphere Portal for more information.

**Note:** ACORD Demo did NOT utilize a cluster for testing purposes.



19. By default WebSphere Portal uses the internal HTTP transport within WebSphere Application Server to handle requests, but if you have an external Web server, such as IBM HTTP Server, you can configure WebSphere Portal to use the Web server. Refer to *Setting up a Web server with WebSphere Portal* for instructions.

**Note:** For the ACORD Demo, HTTP Server was configured and installed along with the WebSphere Plug-in during the WebSphere Process Server installation. It was configured to utilize WPS Profile as port 80. This is not required to make the demonstration functional, but it would be a recommended installation for a product system, as the InfoCenter suggests. Refer to the following document to install the IBM HTTP Server and WebSphere Webserver plug-in:

[http://publib.boulder.ibm.com/infocenter/wpdoc/v6r0/topic/com.ibm.wp.ent.doc/wpf/inst\\_ihs\\_main.html](http://publib.boulder.ibm.com/infocenter/wpdoc/v6r0/topic/com.ibm.wp.ent.doc/wpf/inst_ihs_main.html)

20. When performing certain tasks, you might need to increase your JVM™ heap size; see *Setting the JVM max heap size* for information about when and how to increase your heap size.

### Next steps

At this point, you can login and start using WebSphere Portal or you can continue to extend your WebSphere Portal environment.

- ▶ To learn how to login, refer to *Logging in to your portal and to explore WebSphere Portal*, refer to *Take a test drive of the site*.
- ▶ To transfer WebSphere Portal data to another supported database, such as DB2, refer to *Configuring databases*.
- ▶ To configure WebSphere Portal to connect to a user registry, such as LDAP or another database, refer to *Configuring security*.

**Note:** The instructions in this section are from the IBM InfoCenter, however, key items were modified where applicable.

[http://publib.boulder.ibm.com/infocenter/wpdoc/v6r0/index.jsp?topic=/com.ibm.wp.ent.doc/wpf/setup\\_db2.html](http://publib.boulder.ibm.com/infocenter/wpdoc/v6r0/index.jsp?topic=/com.ibm.wp.ent.doc/wpf/setup_db2.html)

### Configuring DB2 Enterprise Server database on Data Node

This section provides information on setting up DB2 to work with WebSphere Portal.

Because the ACORD Demo requires you install a Data Node, the installation requires using a remote DB2 server, which means you must manually create the databases that are required by WebSphere Portal before performing WebSphere Portal database transfer to work with DB2. If you use a local DB2, WebSphere Portal can create and set up the required databases for you.

### ***Creating remote databases***

A remote database resides on a different machine than WebSphere Portal. If you use a remote DB2 server, you must manually create the databases that are required by WebSphere Portal. See Planning for DB2 for more information on the database architecture recommendations. Before creating these databases, note the following information:

- ▶ **6.0.1+** If the DB2 JDBC type 4 driver is used, only the instructions on the remote server are required. You do not need to install the DB2 client software, and you do not need to complete the steps related to the DB2 client.
- ▶ The client software, DB2 Runtime Client, must be properly configured to connect to the remote DB2 server instance, *wpsinst*.
- ▶ These instructions assume that a remote DB2 server and DB2 Client are already installed and running, based on the previous DB2 Enterprise Server and DB2 Runtime Client installation/Configuration instructions.
- ▶ These instructions assume that you use the DB2 RunTime Client to connect to the remote DB2 server on the Data Node

**Note:** WebSphere Portal Version 6.0 does not support the DB2 JDBC Type 3 driver, also known as Net Driver.

1. Log in to the DB2 Enterprise Server Data Node Machine as the db2admin user with sufficient database privileges.
2. Ensure that the user you are using for the *JCR Database User* has been created, granted appropriate privileges, and has a password assigned to it. If the user has not been created, refer to the Creating users section for information on how to create users.

**Note:** The instructions recommend a separate user, but in the demonstration we used the default db2admin ID that was created and used for all database access for all instances for ease of demoing.

3. Initialize a DB2 command environment on the Data Node:
  - Windows:
    - i. Open the DB2 command window.

- ii. **cd** to the <db2\_ese\_home>\wpsinst directory and run the command *db2profile.bat* or the instance that was dedicated to the portal server databases.

**Note:** WPSINST was the one created in this demonstration.

4. Run the following command on the DB2 server machine to configure the DB2 database instance:

For DB2 Version 9:

```
db2 "UPDATE DBM CFG USING query_heap_sz 32768"
```

```
db2 "UPDATE DBM CFG USING maxagents 500"
```

```
db2 "UPDATE DBM CFG USING sheapthres 0"
```

5. Download the following bat file called *DB2\_Create\_Portal\_Databases.bat* (see Appendix A, "Additional material" on page 169 to obtain the file) and store in the C:\temp directory, on the DB2 Enterprise Server Data Node machine to create the necessary databases. In the same db2 command window, **cd** to the C:\temp directory and run the bat file just created for the WPSINST DB2 Instance.
6. Moving to the DB2 Runtime Client on the Web Node: Catalog the TCP/IP node with the IP address of the remote database server from the DB2 Command Window, as follows:

```
db2 "catalog tcpip node demodbs remote swgdemodb2.raleigh.ibm.com  
server 50001"
```

Where the following is true:

*demodbs* is the alias name of the Data Node

*swgdemodb2.raleigh.ibm.com* is the fully qualified host name of your Data Node Machine

50001 is the DB2 Connection Service Port number listed in the services file on the Data Node Machine. It is the port number listed under the follow parameter in the services file which is the port number needed for connections to the server from the Runtime Client.

```
db2c_WPSINST      50001/tcp
```

**Note:** The alias name can contain one to eight characters.

7. After running the CATALOG TCPIP NODE command, run the following command:

```
db2 "TERMINATE"
```

This clears db2 caching and the new node becomes available to use for the next step.

8. On the DB2 Runtime Client on the Web Node: The next step is to catalog the WebSphere Portal, JCR, Member Manager, Feedback and LikeMinds databases to the remote DB2 Enterprise Server Data Node as follows:

Run the following commands in the *DB2 Runtime Client DB2 Command Window*:

```
db2 "CATALOG DB WPSDB AS WPSDB AT NODE demodbs"
```

```
db2 "CATALOG DB CMDB AS CMDB AT NODE demodbs"
```

```
db2 "CATALOG DB LMDB AS LMDB AT NODE demodbs"
```

```
db2 "CATALOG DB FDBKDB AS FDBKDB AT NODE demodbs"
```

```
db2 "CATALOG DB WMMDB AS WMMDB AT NODE demodbs"
```

```
db2 "CATALOG DB JCRDB AS JCRDB AT NODE demodbs"
```

```
db2 "CATALOG DB CSTMDB AS CSTMDB AT NODE demodbs"
```

```
db2 "CATALOG DB RELEASE AS RELEASE AT NODE demodbs"
```

```
db2 "TERMINATE"
```

9. On the DB2 Runtime Client machine, test your remote connection by issuing the following command in the DB2 command window:

```
db2 "CONNECT TO WPSDB user db2admin using password"
```

where the following is true:

*db2admin* is the Database Administrator user Id that was created on the Data Node

*password* is password for the db2admin user id.

10. Restart your database server.

## Transferring databases to DB2 Enterprise Server on Data Node

This section provides information on how to transfer your data between databases using the configuration wizard. Follow these steps:

1. Start server1 and stop WebSphere Portal. See Starting and stopping WebSphere Application Server and WebSphere Portal for instructions.
2. Start the configuration wizard window located in  
`<portal_server_home>\config\wizards\configwizard.bat`

**Note:** See Configuring WebSphere Portal with the configuration wizard for more information on how to start the configuration wizard.

3. In the Select the configuration task that you want to perform dialog box, select **Transfer Data to Another Database**, and then click **Next**.
4. If the WebSphere Application Server global security is enabled... dialog box appears, type the IBM WebSphere Application Server administrative user name and password in the appropriate fields, and then click **Next**.

**Note:** Passwords should not contain spaces.

5. In the Source Database Type (Figure 5-24), select the database type as IBM Cloudscape that you want to transfer from, and then click **Next**.

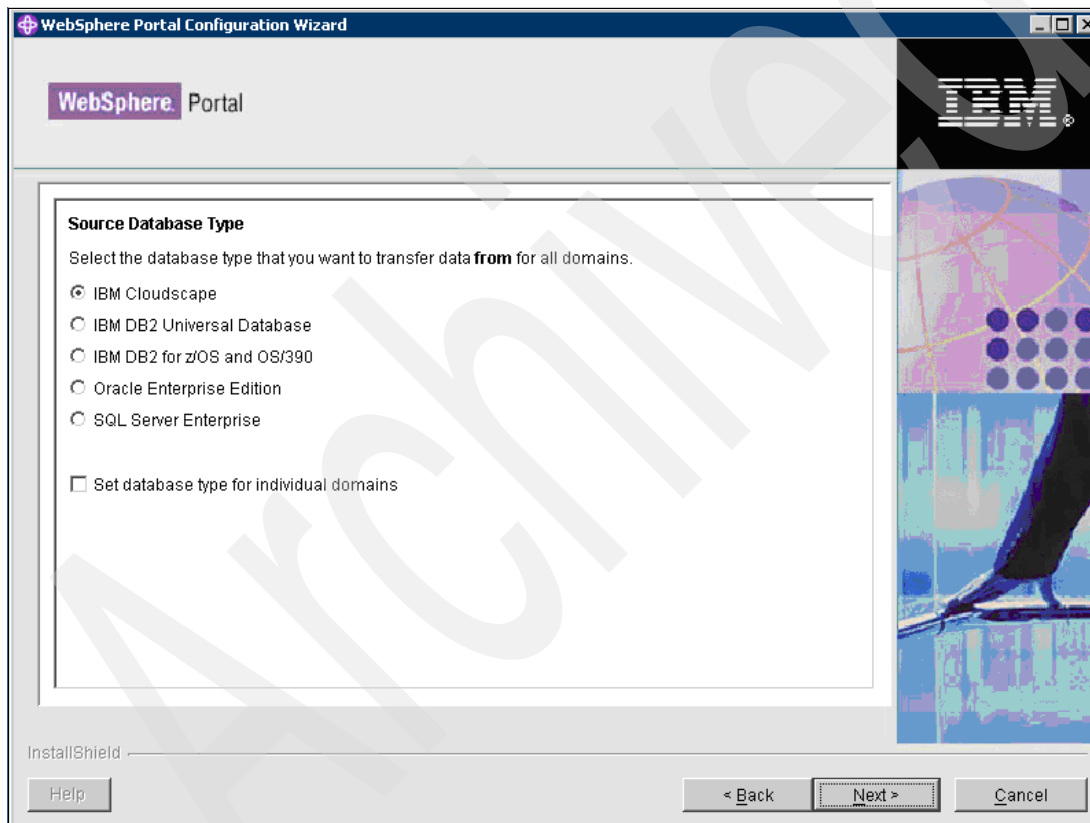


Figure 5-24 Source Database Type

6. In the Target Database Type (Figure 5-25), select the database type as IBM DB2 Universal Database that you want to transfer to, and click **Next**.

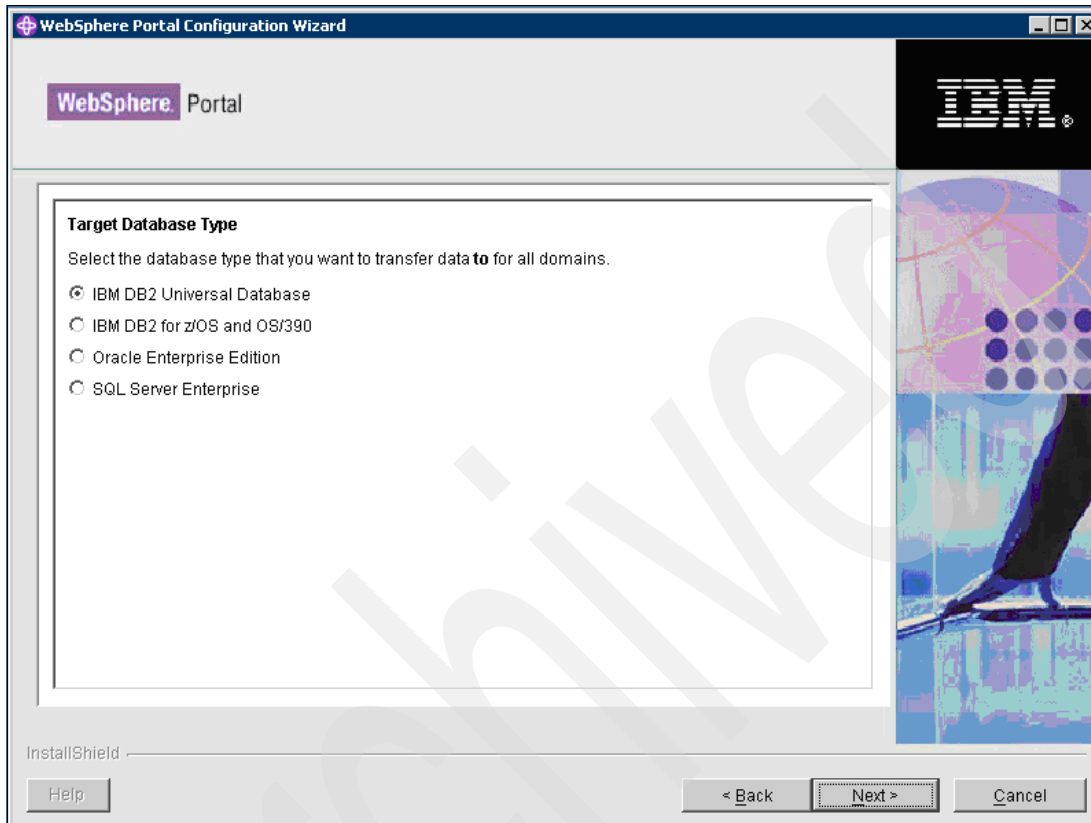


Figure 5-25 Target Database Type

7. In the Properties dialog box (Figure 5-26), review the properties in the image and values for the database(s) that you are transferring to. Modify the values for your environment and click **Next**. Repeat this step for each database you are transferring.

**Note:** The values used next align with all of the previous parameters used for this demonstration, and we recommend that you use the properties in the following diagram.

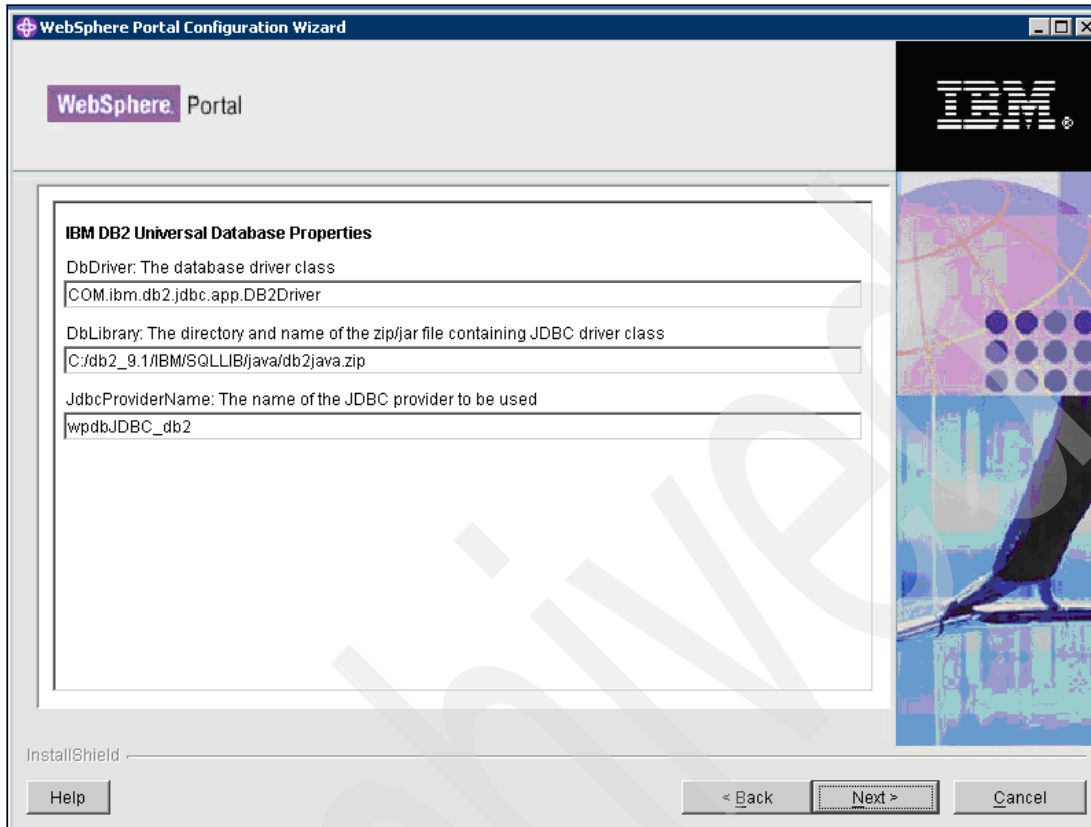
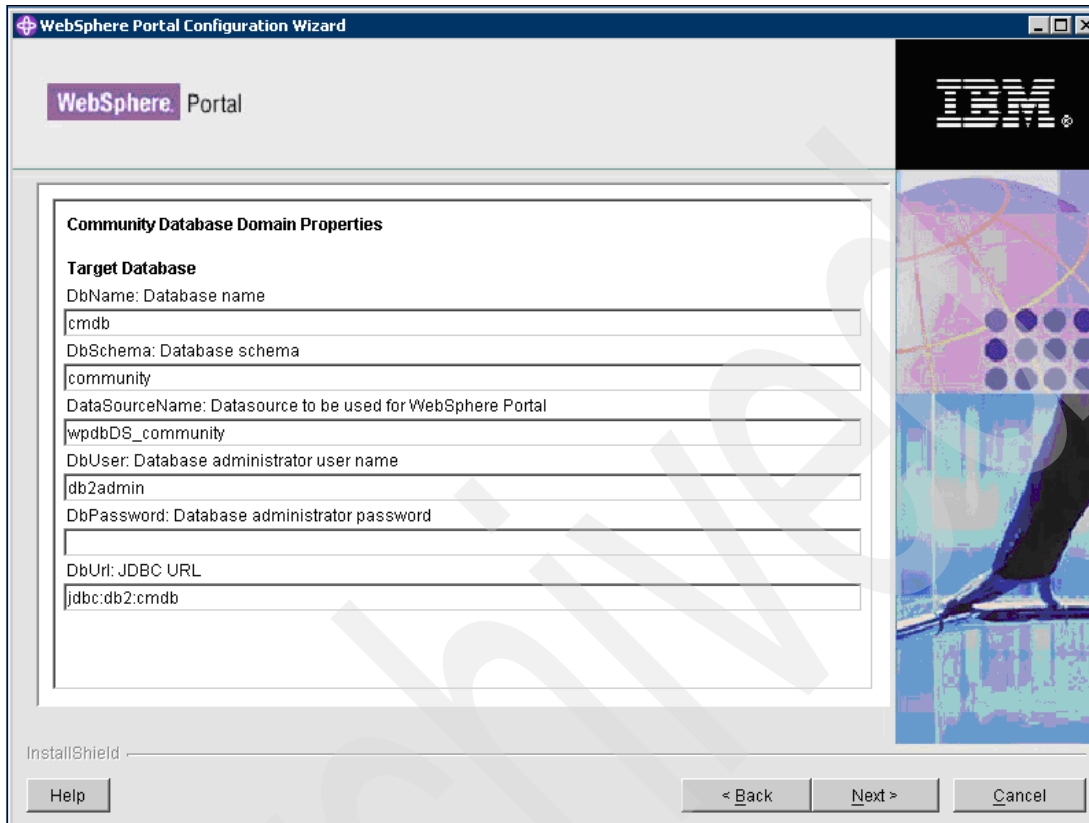


Figure 5-26 IBM DB2 Universal Database Properties

8. The next step is to identify all the database properties. Follow the diagrams and utilize the properties outline in the diagrams. Update the Database User ID and Password, but keep the other properties the same. Click **Next** after each of the properties are updated. Repeat this step for each domain that you are transferring from the diagrams.

CMDB is shown in Figure 5-27.



The screenshot shows the 'WebSphere Portal Configuration Wizard' window. The title bar reads 'WebSphere Portal Configuration Wizard'. The main window has a header with the 'WebSphere Portal' logo and the IBM logo. The central area is titled 'Community Database Domain Properties'. Below this title, there is a section for 'Target Database' with several input fields:

- DbName: Database name:
- DbSchema: Database schema:
- DataSourceName: Datasource to be used for WebSphere Portal:
- DbUser: Database administrator user name:
- DbPassword: Database administrator password:
- DbUri: JDBC URL:

At the bottom of the wizard, there is an 'InstallShield' label, a 'Help' button, and three navigation buttons: '< Back', 'Next >', and 'Cancel'.

Figure 5-27 Community Database Properties for Data Transfer



CSTMDB is shown in Figure 5-28.

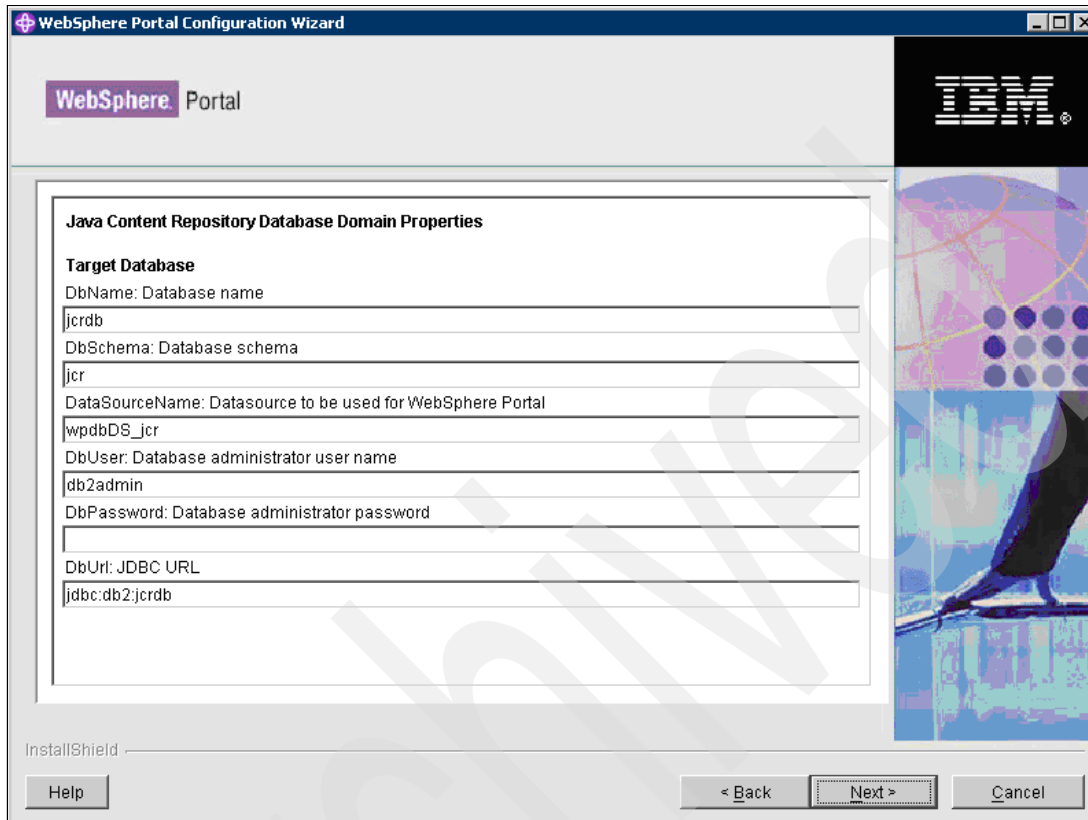
The screenshot shows the 'WebSphere Portal Configuration Wizard' window. The title bar reads 'WebSphere Portal Configuration Wizard'. The main window has a header with the 'WebSphere Portal' logo and the IBM logo. The central area is titled 'Customization Database Domain Properties'. Under the sub-heading 'Target Database', there are several text input fields:

- DbName: Database name (value: cstmdb)
- DbSchema: Database schema (value: customization)
- DataSourceName: Datasource to be used for WebSphere Portal (value: wpdbDS\_customization)
- DbUser: Database administrator user name (value: db2admin)
- DbPassword: Database administrator password (empty)
- DbUrl: JDBC URL (value: jdbc:db2:cstmdb)

At the bottom of the window, there is an 'InstallShield' label, a 'Help' button, and three navigation buttons: '< Back', 'Next >', and 'Cancel'.

Figure 5-28 Customization Database Properties for Data Transfer

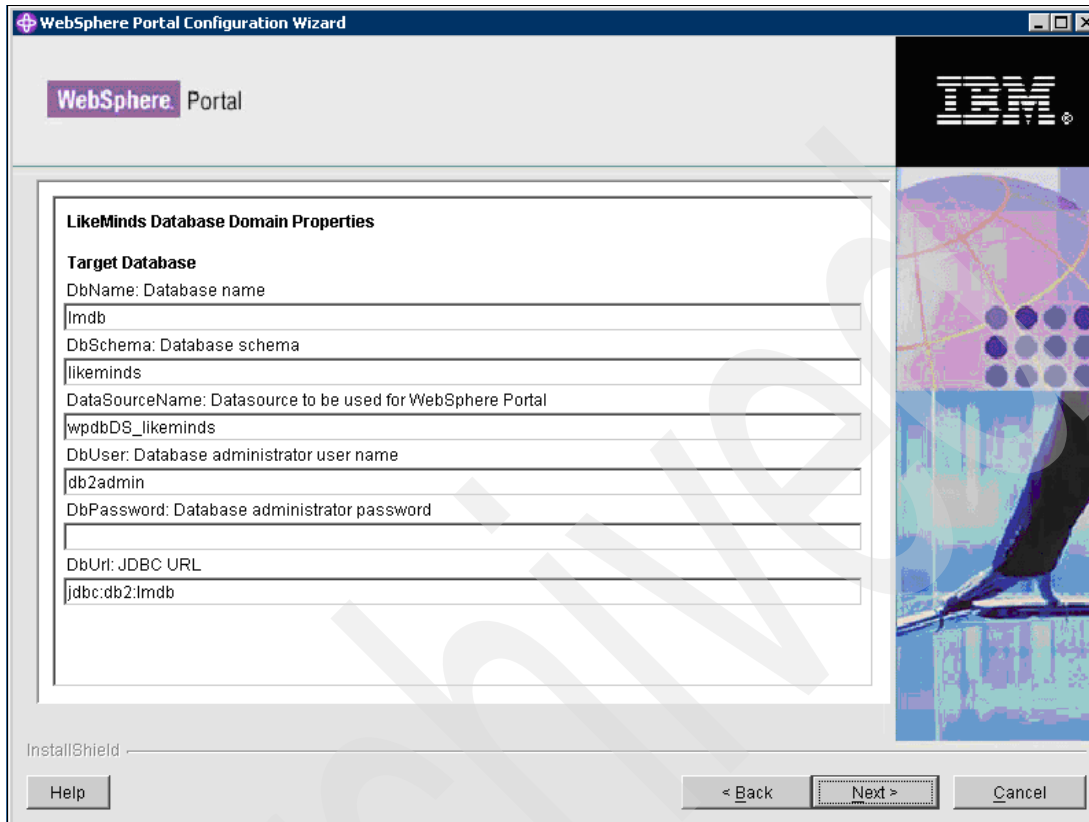
JCRDB is shown in Figure 5-29.



The screenshot shows the 'WebSphere Portal Configuration Wizard' window. The title bar reads 'WebSphere Portal Configuration Wizard'. The main window has a 'WebSphere Portal' logo on the left and an IBM logo on the right. The central area is titled 'Java Content Repository Database Domain Properties'. Under the sub-heading 'Target Database', there are several text input fields with labels: 'DbName: Database name' (value: jcrdb), 'DbSchema: Database schema' (value: jcr), 'DataSourceName: Datasource to be used for WebSphere Portal' (value: wpdbDS\_jcr), 'DbUser: Database administrator user name' (value: db2admin), 'DbPassword: Database administrator password' (empty), and 'DbUrl: JDBC URL' (value: jdbc:db2:jcrdb). At the bottom, there is an 'InstallShield' label, a 'Help' button, and three navigation buttons: '< Back', 'Next >', and 'Cancel'.

Figure 5-29 Java™ Content Repository Database Properties for Data Transfer

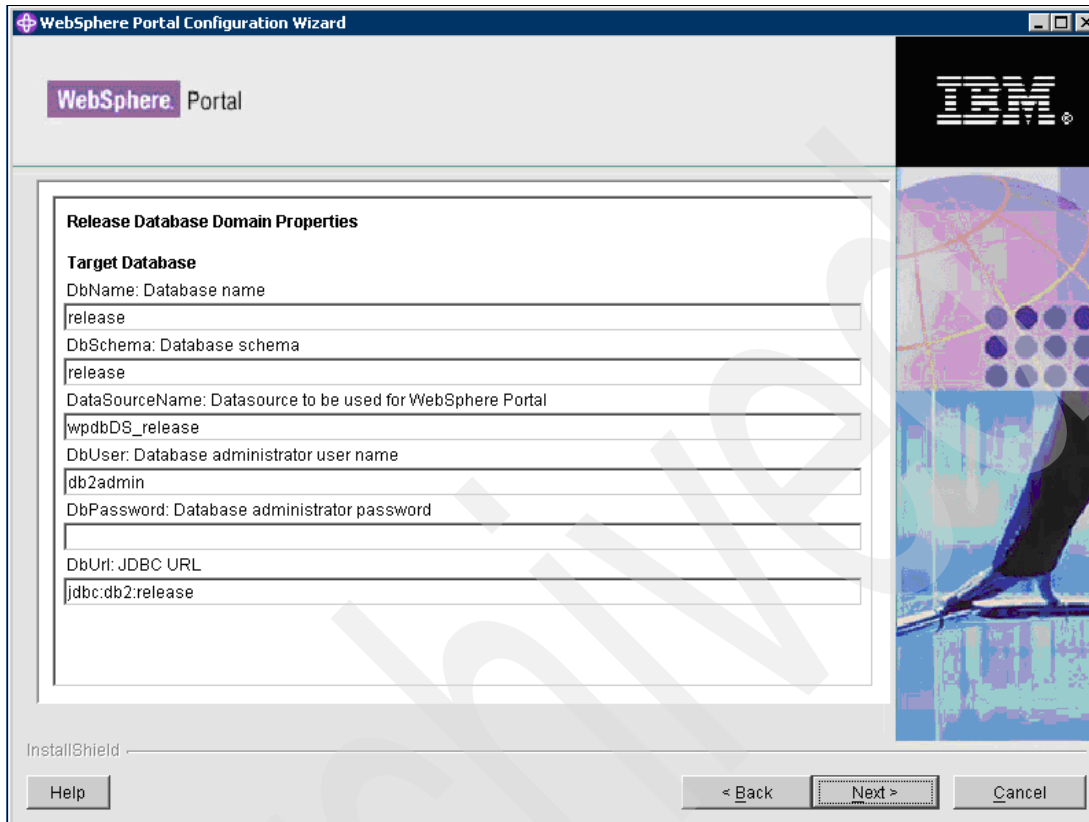
LMDB is shown in Figure 5-30.



The screenshot shows the 'WebSphere Portal Configuration Wizard' window. The title bar reads 'WebSphere Portal Configuration Wizard'. The main window has a 'WebSphere Portal' logo on the left and the IBM logo on the right. The central area is titled 'LikeMinds Database Domain Properties'. Under the sub-heading 'Target Database', there are several text input fields with labels: 'DbName: Database name' (value: lmdb), 'DbSchema: Database schema' (value: likeminds), 'DataSourceName: Datasource to be used for WebSphere Portal' (value: wpdbDS\_likeminds), 'DbUser: Database administrator user name' (value: db2admin), 'DbPassword: Database administrator password' (empty), and 'DbUrl: JDBC URL' (value: jdbc:db2:lmdb). At the bottom of the wizard, there is an 'InstallShield' label, a 'Help' button, and three navigation buttons: '< Back', 'Next >', and 'Cancel'.

Figure 5-30 LikeMinds Database Properties for Data Transfer

**RELEASE** is shown in Figure 5-31.



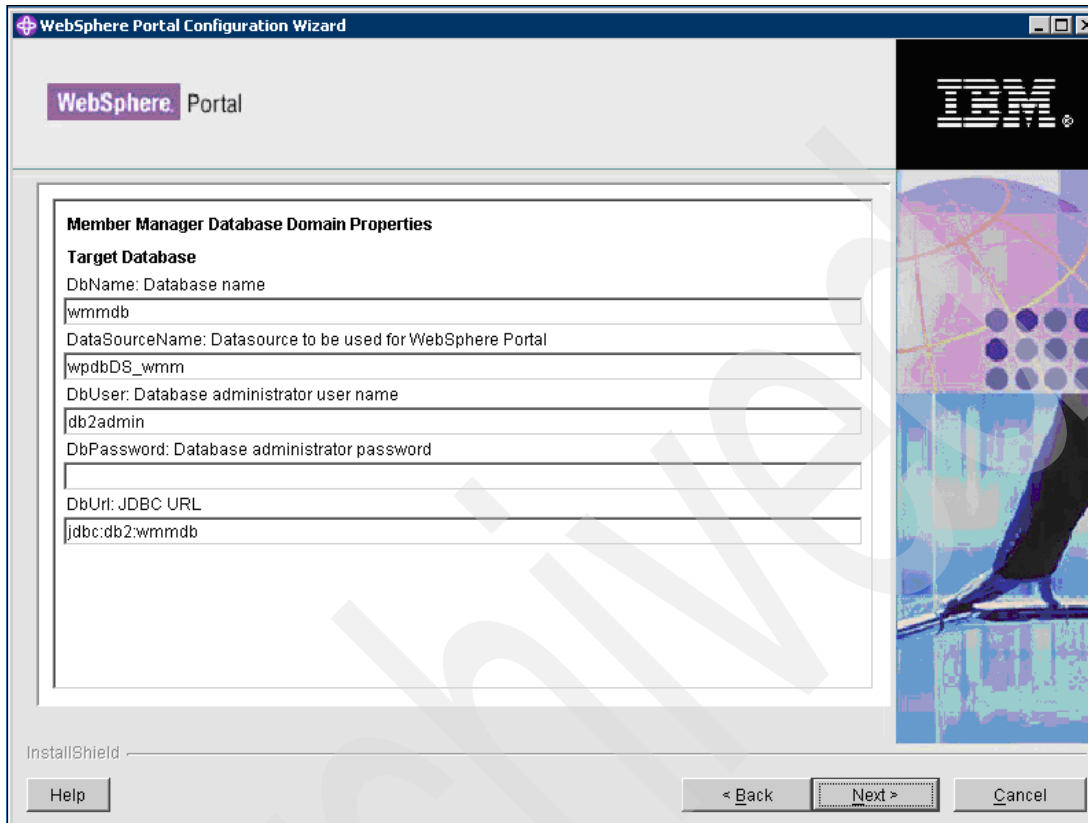
The screenshot shows the 'WebSphere Portal Configuration Wizard' window. The title bar reads 'WebSphere Portal Configuration Wizard'. The main content area is titled 'WebSphere Portal' and contains a section for 'Release Database Domain Properties'. Under the sub-heading 'Target Database', there are several input fields with the following labels and values:

- DbName: Database name: release
- DbSchema: Database schema: release
- DataSourceName: Datasource to be used for WebSphere Portal: wpdbDS\_release
- DbUser: Database administrator user name: db2admin
- DbPassword: Database administrator password: (empty)
- DbUrl: JDBC URL: jdbc:db2:release

At the bottom of the window, there is an 'InstallShield' logo, a 'Help' button, and navigation buttons for '< Back', 'Next >', and 'Cancel'.

Figure 5-31 Release Database Properties for Data Transfer

WMMDB is shown in Figure 5-32.



The screenshot shows the 'WebSphere Portal Configuration Wizard' window. The title bar reads 'WebSphere Portal Configuration Wizard'. The main window has a header with the 'WebSphere Portal' logo and the IBM logo. The central area is titled 'Member Manager Database Domain Properties' and contains a 'Target Database' section with the following fields:

- DbName: Database name (value: wmmdb)
- DataSourceName: Datasource to be used for WebSphere Portal (value: wpdbDS\_wmm)
- DbUser: Database administrator user name (value: db2admin)
- DbPassword: Database administrator password (value: [redacted])
- DbUrl: JDBC URL (value: jdbc:db2:wmmdb)

At the bottom of the window, there is an 'InstallShield' section with a 'Help' button. To the right of the 'Help' button are three navigation buttons: '< Back', 'Next >', and 'Cancel'.

Figure 5-32 Member Manager Database Properties for Data Transfer

The final step before data transfer should look like Figure 5-33.

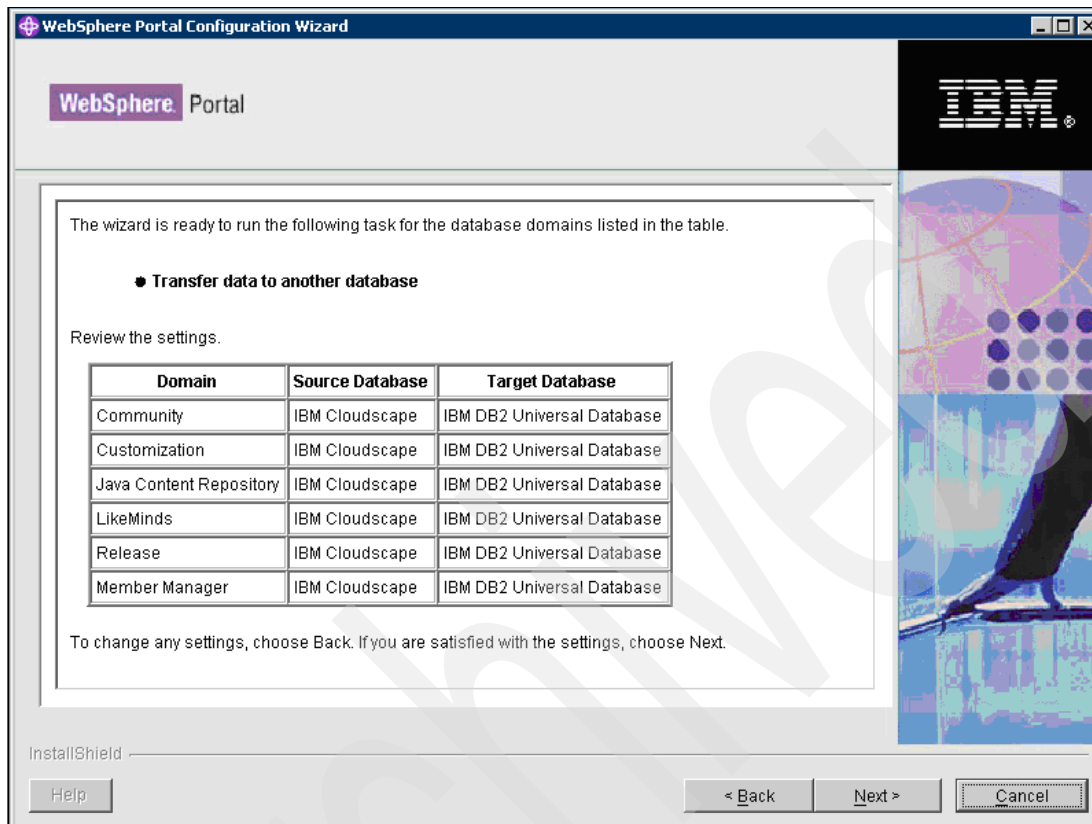


Figure 5-33 Final Step before Data Transfer

9. In the Running task dialog box, the status bar shows the progress of the transfer. To view the log file for the transfer, click **Open**. When the transfer has completed, click **Next**.
10. If the task runs successfully, the message The wizard ran the task successfully is displayed. Click **Finish** to exit the wizard.
11. If the task runs with errors, the message The wizard ran the task with errors is displayed. For more information, click **Open Message File**. To perform additional configuration, click **Run Wizard Again**. Click **Finish** to exit the wizard.

**Note:** JDBC Drivers have been created for use within WebSphere Portal Server to access the Remote Databases.

## Configuring security with Tivoli Directory Server on Data Node

This section provides information on how to configure your Tivoli Directory Server (LDAP user registry) using the configuration wizard:

1. Start server1 and stop WebSphere Portal. See Starting and stopping WebSphere Application Server and WebSphere Portal for instructions.
2. Start the configuration wizard window located in <portal\_server\_home>\config\wizards\configwizard.bat
3. Switch to the configuration wizard window.

**Note:** See Configuring WebSphere Portal with the configuration wizard for information on how to start the configuration wizard.

4. In the Select the task that you want to perform dialog box, select Enable LDAP security and then click **Next** (Figure 5-34).

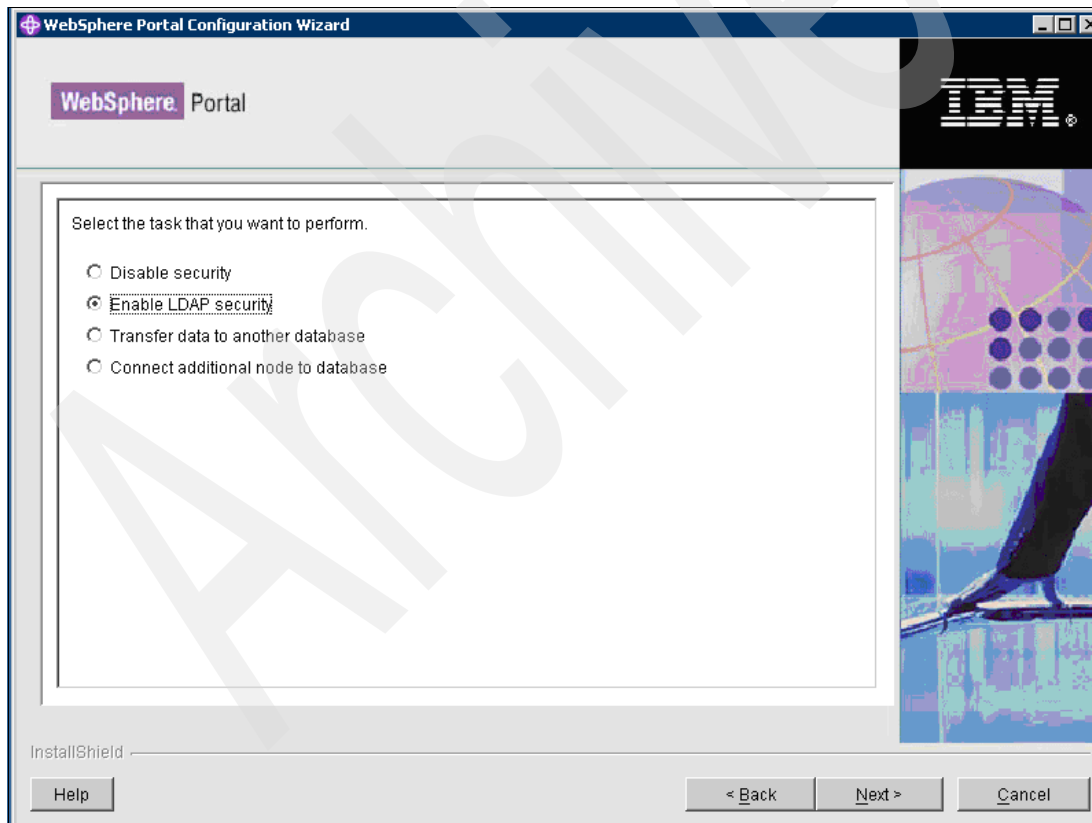


Figure 5-34 First Step before Enabling Security

5. If the WebSphere Application Server global security is enabled... dialog box appears, type the IBM WebSphere Application Server administrative user name and password in the appropriate fields, and then click **Next**.

**Note:** Passwords should not contain spaces and these are the id/pwd combinations that were used during the original installation.

6. Enter the following additional parameters if security is enabled on the Disable security settings continued... dialog box and then click **Next**:
  - WebSphere Portal administrator ID: *wpsadmin*
  - Password: *wpsadmin*
  - Confirm password: *wpsadmin*
  - WebSphere Portal administrator group: *<leave blank>*
  - Member Manager password: *<leave blank>*
7. The wizard is ready to run the following task dialog box displays; click **Next** to continue with the disabling security task.
8. Select the LDAP server that you intend to use for authentication from the list and then click **Next**.
9. Enter the following parameters to connect WebSphere Portal to the LDAP server and then click **Next**:
  - Host name: *swgdemodb2.raleigh.ibm.com*
  - Port: *389*
  - User name: *cn=root*
  - Password: *<your\_password>*
  - LDAP suffix: *dc=swgdemo, dc=com*
10. Enter the following user parameters for authenticating with the servers and then click **Next**:
  - WebSphere Portal administrator ID: *uid=wpsadmin, cn=users, dc=swgdemo, dc=com*
  - Password: *<your\_password>*
  - WebSphere Application Server administrator ID: *uid=wasadmin, cn=users, dc=swgdemo, dc=com*
  - Password: *<your\_password>*
  - Bind distinguished name: *uid=wpsbind, cn=users, dc=swgdemo, dc=com*
  - Password: *<your\_password>*



- User search filter: (&(uid=%v)(objectclass=inetOrgPerson)
11. Enter the following group parameters for authenticating with the servers and then click **Next**:
- WebSphere Portal administrator group: cn=wpsadmins, cn=groups, dc=swgdemo, dc=com
  - Web Content Management administrators group: cn=wpsadmins, cn=groups, dc=swgdemo, dc=com
  - WebSphere Portal Server content administrators group: cn=wpsadmins, cn=groups, dc=swgdemo, dc=com
  - WebSphere Portal Server document reviewer group: cn=wpsadmins, cn=groups, dc=swgdemo, dc=com
  - Group search filter: (&(cn=%v)(objectclass=groupOfUniqueNames)
12. Enter the following group short name parameters and then click **Next**:
- Web Content Management administrators group: wpsadmins
  - WebSphere Portal Server content administrators group: wpsadmins
  - WebSphere Portal Server document reviewer group: wpsadmins
13. Enter the following Member Manager parameters and then click **Next**:

**Note:** This window only displays if the database type is NOT Cloudscape.

- User name: uid=wpsadmin, cn=users, dc=swgdemo, dc=com
  - Password: <your\_password>
14. Enter the LDAP user and group prefixes and suffixes and then click **Next**.
- LDAP User Prefix: uid
  - LDAP User Suffix: cn=users
  - LDAP Group Prefix: cn
  - LDAP Group Suffix: cn=groups
15. Enter the following single sign-on parameters and then click **Next**:
- The domain name for all allowed single sign-on hosts: raleigh.ibm.com
  - Does the single sign-on require an SSL connection: yes
  - Enter a password to be used to encrypt LTPA keys: <your\_password>
  - Confirm password: <your\_password>
  - LTPA token expiration time in minutes: 120

16. Enter the following node parameters for the users and groups in this configuration and then click **Next**:
  - User object class: inetOrgPerson
  - Group object class: groupOfUniqueNames
  - Group membership attribute: <Keep\_Default>
  - User base attributes: <Keep\_Default>
  - Minimum user attributes: <Keep\_Default>
  - Minimum group attributes: <Keep\_Default>
17. Enter the following additional LDAP parameters and then click **Next**:
  - Allow only qualified user names within the security domain: Yes
  - Issue a warning if an application is installed with a permission that is disallowed by the policy files: Yes
  - Security cache timeout in seconds: 600
  - Authentication protocol for RMI/IIOP requests: BOTH
18. Enter the following additional LDAP parameters and then click **Next**:
  - Host name of the Web server handling HTTP requests: <Hostname if used>
  - Port: 80
  - LDAP server response timeout in seconds: 120
  - Reuse LDAP connections: Yes
  - Ignore case when checking user names and passwords: Yes
  - Enable Lookaside: No
19. The wizard is ready to run the following task dialog box displays with a list of the configuration settings; click **Next** to continue with the enabling security task.
20. If the task runs successfully, the message The wizard ran the task successfully displays. Click **Finish** to exit the wizard or click **Run Wizard Again** to perform additional configurations.

**Note:** If the task runs with errors, the message The wizard ran the task with errors displays. For information, click View Log File. Fix the issue that is causing the error and then rerun the task.

### ***Security is enabled***

After you have enabled security with your LDAP directory, you need to provide the user ID and password required for security authentication on WebSphere Application Server when you perform certain administrative tasks with WebSphere Application Server. For example, to stop the WebSphere Portal application server, you would issue the following command:

- ▶ **Windows:** stopServer.bat WebSphere\_Portal -user *admin\_userid* -password *admin\_password*

**Note:** The instructions in this section are from the IBM InfoCenter, however, key items were modified where applicable.

[http://publib.boulder.ibm.com/infocenter/dmndhelp/v6rxmx/topic/com.ibm.ws.fabric.install.doc/foundationpinstall/task/t\\_installing\\_fp\\_wizard.html](http://publib.boulder.ibm.com/infocenter/dmndhelp/v6rxmx/topic/com.ibm.ws.fabric.install.doc/foundationpinstall/task/t_installing_fp_wizard.html)

## **5.3.5 IBM WebSphere Business Service Fabric - Foundation Pack Configuration**

Use this procedure to install IBM Business Services Foundation Pack using the installation wizard. Installing IBM Business Services Foundation Pack using the Installation Wizard section walks you step-by-step through the installation steps. This procedure details a complete (default) installation, and it assumes that a prior installation of WebSphere Business Services Fabric does not exist.

**Note:** At any point during the installation, you can cancel the installation and restart it by running the installer.

1. Insert the product CD labeled IBM WebSphere Business Services Fabric Foundation Pack 6.0.2 into the CD-ROM drive. Select the preferred language version from the drop down list of supported languages.
2. The installation wizard files are located in the Installers directory. Run the installation wizard by double-clicking on the executable file for the platform.  
Windows platform: `install_fabric_win.exe`
3. On the Language Selection panel:
  - Select preferred language from the drop down box.
  - Click **OK**.
4. From the Welcome panel, select **Next** to continue.

5. In the Software License agreement panel, you have to review and accept the licensing terms to proceed. After reviewing the licensing terms, select the I accept the terms in the license agreement radio button, and click **Next**.
6. Now the Select Install Features panel displays. Select **Fabric Installation Files and Fabric Runtime Components**. Click **Next** button to continue.
  - The Fabric Installation Files copy the WBSF installation artifacts to the folder designated by the user.
  - The Fabric Runtime components deploy Fabric runtime components into WPS.
7. On the following Select Install Folder panel, accept the default installation root directory for WebSphere Business Services Fabric, or specify a different directory, <wbsf\_foundation\_home>, to install WBSF into the Where Would You Like to Install field. Click the **Next** button to continue.

**Note:**

- a. Deleting the default root directory and leaving the field empty prevents you from continuing.
- b. Non-ASCII special characters in directory names are not supported.
- c. On Linux and UNIX platforms: Do not use symbolic links as the destination directory. Symbolic links are not supported. Also, do not use spaces in the installation directory path.
- d. On Linux platforms: The installation directory path must be no longer than 256 characters to successfully install the product.
- e. On Windows platforms: The installation directory path must be no longer than 60 characters

8. On the WebSphere Process Server Location panel, specify the WebSphere Process Server Home Directory. You can accept the default installation path as the WebSphere Process Server Home Directory, or specify the directory in the Installation Directory field. Click **Next** to continue. The following step lists the default paths for WPS installation:

**Windows:** <process\_server\_home>

In this step, the installation wizard checks for a supported WPS version in the specified directory. After verifying the prerequisites, the wizard continues with the next step in the installation process.

If you do not have a supported WPS version or the correct prerequisite patches on your system, the wizard cannot proceed with the installation process. You must click **Cancel** to stop the installation, make the required changes, and restart the installation.

**Note:** Ensure that you have updated the WPS installation with the required fix pack.

9. Next the WebSphere Process Server Profile panel displays. The "Profile" drop-down box for the WebSphere Process Server profile name field should be empty. The drop-down box lists all WPS profiles on the system. Select the wbsf profile. Click **Next** to continue.
10. The next display is the Security Settings panel that requires you to enter your current security configuration for WPS, with the following three options LDAP, or None. Select LDAP. Click **Next** to continue.
11. The WebSphere Process Server Authentication Panel now displays.
  - Enter the correct WPS username into the Username field.
  - Enter the corresponding password into the Password field.
  - Click **Next** to continue.
12. Next the JDBC Settings panel displays. Enter the Server Name and Port. In the JDBC Driver Path field, specify the path to where your JDBC drivers are installed in order to connect to the database. Click **Next** to continue.
13. On the JDBC Authentication panel, use the database administration ID and password. Click **Next** to continue. The JDBC Username and password help connect the JDBC to the database.
14. To set up WPS to send notifications to the administrator, you have to specify the email account that should be used for this purpose. In the next Email Server panel, specify the correct Host Name and the User Name in the respective fields. Enter the corresponding password into the Password field. Click **Next** to continue.
15. In the following Pre-Installation Summary panel, review the details of the components to be installed, the amount of space they are to consume, and where they are to be located on the system. If satisfactory, click **Install** to install the product. If not, click **Previous** to change your specifications. The installation wizard displays a progress bar to indicate that components are being extracted and installed. At any point, you can cancel the installation and restart it by running the installer. However, if you cancel the installation at this point, you have to perform the uninstallation procedure to clean up any residual artifacts before restarting the installation process.
16. At the end of the installation, the installation wizard provides a successful installation panel with a summary of the components installed.

**Note:** If errors are detected during installation, other panels might be displayed in place of the successful installation panel. Examples include these possibilities:

- ▶ Installation is complete with errors panel
- ▶ Installation failed panel

Each of these panels identifies the log file to reference in order to troubleshoot the problems. See the descriptions of relevant log files and refer to the *Uninstalling IBM Business Services Foundation Pack* section of this document for tips on troubleshooting your installation.

17. Click **Done** to close the installation wizard. If a successful installation panel was displayed, the following IBM Business Services Foundation Pack server-side components are installed:
  - IBM Business Services Repository
  - IBM Business Services Dynamic Assembler
  - IBM Business Services Subscriber Manager
  - IBM Business Services Performance Manager
  - IBM Business Services Governance Manager

**Note:** To install the IBM Business Services Foundation Pack Runtime and Database components independently or on separate systems, which is what this demonstration has used, follow these steps:

1. On the **Select Install Features** panel, select either **Fabric Database** or **Fabric Runtime Components**, depending on which one is appropriate for the system on which you are installing the product.
2. Click **Next** and proceed with the rest of the installation similar to that for a single system, enumerated previously.

## Configuring Security using LDAP

LDAP is an open protocol that provides access to directories in order to locate people, organizations, and other resources. An LDAP directory holds information describing users, applications, and other resources accessible from a network. Organizations use it to store their user, password, and group membership information in a single location so that changes like updating an e-mail address, changing a password, and so on do not need to be made in different locations. WebSphere Business Services Fabric federation capabilities enable integration with an organization's LDAP database such that its LDAP users, those whose information is stored in the LDAP directory, assimilate into the WebSphere Business Services Fabric system and have the same interface to its business services.

WebSphere Business Services Fabric requires LDAP to be configured for a proper production installation. However, a demonstration security version can be installed that is useful for evaluation purposes only. WebSphere Business Services Fabric also provides a bootstrap function that must be used to integrate with an LDAP directory immediately after installing the former.

## LDAP configuration for WebSphere Business Services Fabric

After you have configured WebSphere Application Server to use LDAP, you need to follow these steps:

1. Register LDAP with WBSF. For this, go to:

<http://<host>:<port>/fabric/bootstrap.jsp>

- 1: Copy Settings - Enter WAS administrator Username and Password in order to copy those settings to the LDAP binding. THE SOAP port settings however need to be customized if it is on a non-standard port. You can determine the port the server is using by accessing the admin console and clicking on Application Server, name of the Server and then Ports. Find the SOAP\_CONNECTOR\_ADDRESS entry, find the value for the port associated with it and then enter it on the SOAP port field.
- 2: If you did not copy the settings, you need to enter the binding settings. The settings, for example, could be set as follows:
  - Hostname: Value A
  - Port: Value B
  - username: Value C
  - Password: Value D
  - Admin: Value F (note that for active directory, this is not a DN)
  - Mapping data:
    - a.BaseDN: Value E
    - b.UserID: Value G. a)
    - c.LastName: Value G b)
    - d.EmailAddress: Value G. c)
    - e.CompleteName: Value G d)

Now, test the connection and save the changes if the test was successful. WBSF indicates success when settings are correct. Follow the login link and log in as the user in Value F.

2. Set up administrative user: When you are logged into WBSF, you must select your desired services. We recommend just to select them all.

LDAP provides the following capabilities:

- a. Ability to run in Network Deployment mode so WBSF can be clustered.
- b. Comprehensive password policy and management features.

## Recommended performance settings for WebSphere Business Services Fabric in a production environment

The following settings are additionally recommended:

- ▶ Disable diagnostic trace
- ▶ Disable Performance Monitoring infrastructure
- ▶ JVM configuration (minimum heap size: 1024)
- ▶ Thread Pool Webcontainer settings
- ▶ Datasource connection pool properties
- ▶ Enable Dynamic Cache

**Note:** The instructions in this section are from the IBM InfoCenter, however, key items were modified where applicable.

[http://publib.boulder.ibm.com/infocenter/dmndhelp/v6r1mx/index.jsp?topic=/com.ibm.ws.fabric.inspk.doc/inspcins/concept/c\\_installing\\_inspc.html](http://publib.boulder.ibm.com/infocenter/dmndhelp/v6r1mx/index.jsp?topic=/com.ibm.ws.fabric.inspk.doc/inspcins/concept/c_installing_inspc.html)

### 5.3.6 IBM WebSphere Business Service Fabric - Insurance P&C Pack Configuration

The WebSphere product stack uses Launchpad to aggregate various installation related functions into a standardized main menu.

The Launchpad provides the following functionality:

1. Welcome: This consists of the information about the Content Pack you are about to install, and a link to the product Web site.
2. Release Information: This page provides the Insurance Property and Casualty Content Pack version 6.1 release information.
3. Prerequisite Information: This page provides the prerequisite information for the installation, with links to those specific details.
4. Install Insurance P&C Content Pack: This page provides links to initiate the product installations.
5. First Steps: This page provides the following details:
  - Information Center: This provides the information on installing and using the IBM WebSphere Business Service Fabric information center.
  - Notices and Trademark Information: This provides information for the IBM WebSphere Business Service Fabric information center.

The different installation options for the Insurance P&C Content Pack, and their procedures are provided in the following sections.



**Note:** The launchpad is meant only for the Distributed Platforms. For z/OS® systems you need to follow the instructions provided in the section, Installing the Insurance P&C Content Pack on z/OS.

## Installation snapshot

The flowchart (Figure 5-35) is an overview of the complete installation procedure.

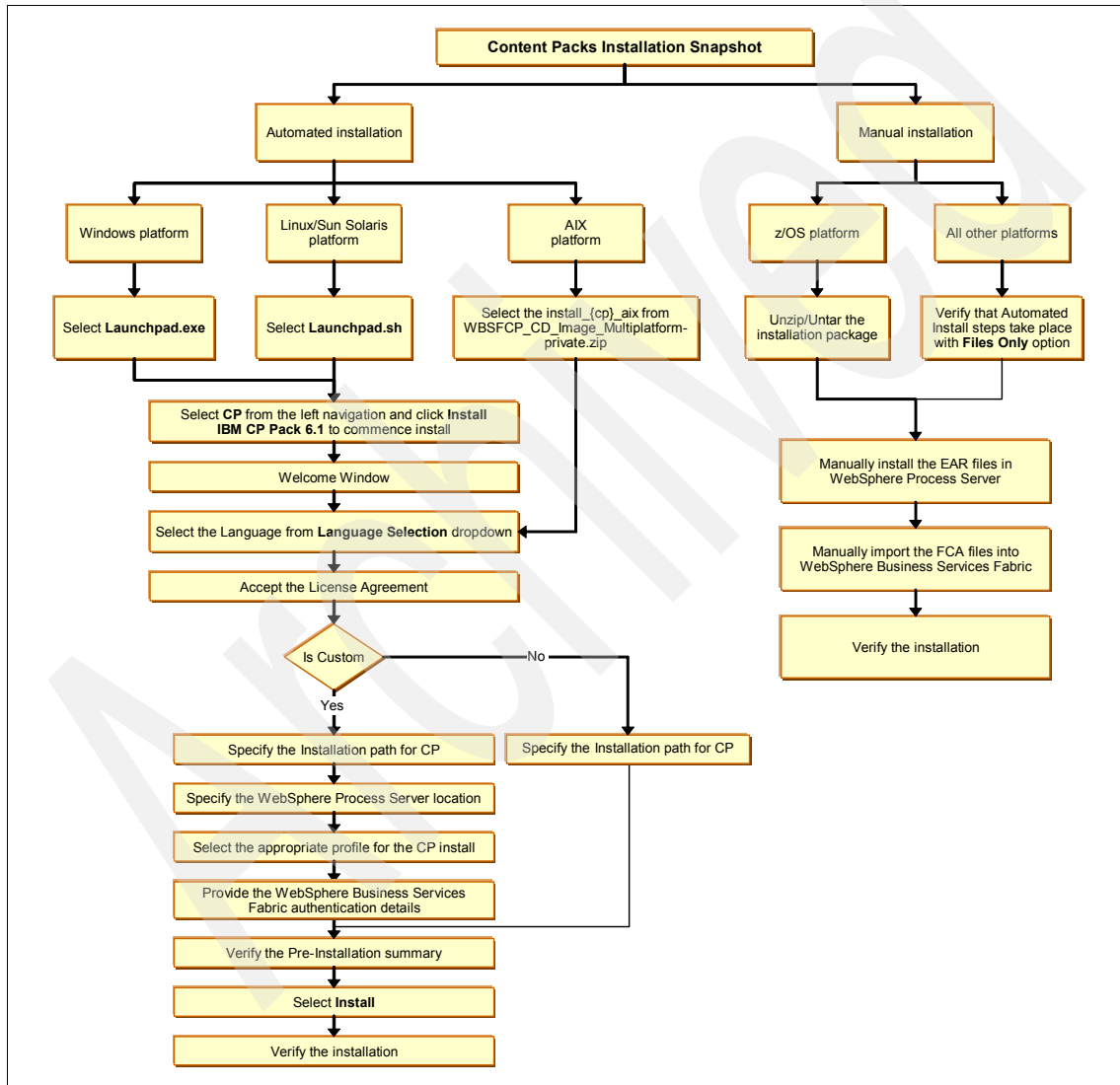


Figure 5-35 Installation Snapshot

### 5.3.7 IBM WebSphere Transformation Extender configuration

The installation and configuration of the WebSphere Transformation Extender and Transformation Extender SDK was installed by taking the default values from the installation wizard. The <wtx\_home> and <wtx\_sdk\_home> are the installation directories.

### 5.3.8 IBM Lotus Forms Server configuration

The IBM Lotus Forms Server configuration is the main component to running forms within the portal configuration or standalone. The following steps describe how to install the Lotus Forms components so that forms can be eventually utilized by the WebSphere Portal Server configuration.

**Note:** The instructions in this section are from the IBM InfoCenter, however, key items were modified where applicable.

[http://publib.boulder.ibm.com/infocenter/forms/v3r0m0/index.jsp?topic=/com.ibm.help.forms.doc/API\\_Install\\_Guide/i\\_wfsa\\_g\\_using\\_the\\_api\\_with\\_windows.html](http://publib.boulder.ibm.com/infocenter/forms/v3r0m0/index.jsp?topic=/com.ibm.help.forms.doc/API_Install_Guide/i_wfsa_g_using_the_api_with_windows.html)

#### Installing the API

The API is bundled as a self-extracting Windows executable file. To install the API:

1. Double-click **LFServer\_30\_API\_Win32.exe**. The InstallShield Wizard opens and prepares the installation.
2. Select a language and click **OK**.
3. Click **Next** and read the license agreement.
4. Click **I accept the terms in the license agreement** then click **Next**.
5. In the Directory Name field, enter the directory in which to install the API [<lotus\_forms\_api\_home>], then click **Next**.
6. Choose an installation type, then click **Next**.
7. If you chose Custom installation: Select the features that you want to install, then click **Next**.
8. If you want the Wizard to deploy the API to an existing WebSphere Application Server or WebSphere Process Server:
  - a. Select the check box, then click **Next**.
  - b. Enter the location of the server, then click **Next**.
  - c. Enter the profile, forms, then click **Next**.

**Note:** If you are unsure about this option, do not select it. You can manually deploy to a WebSphere server after installing the API. See Using the API with WebSphere Application Server.

9. Click **Install**.

The installation includes components for the C, Java, and COM development environments, as well as the Java Streaming API.

The Classic APIs are installed in: <lotus\_forms\_api\_home>. The Streaming API is installed in: <lotus\_forms\_api\_home>\redist\java.

The API installation also provides the installation files for IBM Lotus Forms Server - Deployment Server. To install and configure Deployment Server, see the *Deployment Server Administration Manual*.

**Note:** The instructions in this section are from the IBM InfoCenter, however, key items were modified where applicable.

[http://publib.boulder.ibm.com/infocenter/forms/v3r0m0/index.jsp?topic=/com.ibm.help.forms.doc/forms\\_services\\_platform/fsp\\_g\\_manual\\_introduction.html](http://publib.boulder.ibm.com/infocenter/forms/v3r0m0/index.jsp?topic=/com.ibm.help.forms.doc/forms_services_platform/fsp_g_manual_introduction.html)

## Forms Services Platform installation and configuration

The IBM Lotus Forms Server - Forms Services Platform (hereafter referred to as the Forms Services Platform) lets you extend the functionality of IBM Lotus Forms products and integrate them with back-end systems.

The Forms Services Platform is the foundation of all the Lotus Forms integration solutions. It provides an architectural style and tool kit that allows you to define modules that can be connected together to integrate applications. These modules are OSGi bundles that contain Java code (pipes) and configuration data (pipelines). Some bundles also contain dependency information such as database drivers, which can link the bundle to outside mechanisms (such as log4j).

Furthermore, the modularity of the Forms Services Platform allows you to easily extend the functionality of these applications. For example, you can use the Forms Services Platform to integrate with IBM Lotus Forms Server - Webform Server. You could also use the Forms Services Platform to connect WebSphere Transformation Extender (TX) and Lotus Forms so that data can be mapped between forms, databases, and Web services.

The Forms Services Platform also includes Designer plug-ins that let you use the IBM Lotus Forms Designer to generate TX maps from your form's instances and schemas. Thereby significantly reducing any custom coding required to integrate your forms with a third party database.

This manual contains the following major sections:

- ▶ Understanding the Forms Services Platform: Explains how the Forms Services Platform works.
- ▶ Preparing your development environment: Explains how to set up your integrated development environment (IDE) and install the Forms Services Platform.
- ▶ Extending the Forms Services Platform: Explains how to customize the Forms Services Platform by creating pipes, configuring pipelines, compiling pipes, and packaging your files. Also explains how to install the Forms Services Platform SDK.
- ▶ Using the Forms Services Platform samples: Explains how to deploy and use the News Reader and TX sample pipelines.
- ▶ Using Webform Server with the Forms Services Platform: Explains how to use the Forms Services Platform with Webform Server.
- ▶ Using the Designer in an integrated environment: Explains how to use the Designer plug-ins to manage repository servers and map form instances and schemas to TX maps.

**Note:** The instructions in this section are from the IBM InfoCenter, however, key items were modified where applicable.

[http://publib.boulder.ibm.com/infocenter/forms/v3r0m0/index.jsp?topic=/com.ibm.help.forms.doc/Webform\\_Server\\_Admin\\_Guide/i\\_wfsws\\_g\\_installing\\_webform\\_server\\_on\\_a\\_single\\_server.html](http://publib.boulder.ibm.com/infocenter/forms/v3r0m0/index.jsp?topic=/com.ibm.help.forms.doc/Webform_Server_Admin_Guide/i_wfsws_g_installing_webform_server_on_a_single_server.html)

## Installing Webform Server on a single server

To install Webform Server on a single server:

1. Restart the server immediately before installing Webform Server.
2. Ensure that you are logged in as an administrator or root user.
3. Run one of the following installation programs:
  - For Windows, LFServer\_xxx\_WebformServer\_Win32.exe
4. Select the directory in which to install Webform Server. Do one of the following choices:
  - To accept the default directory, click **Next**.

- To set a different directory, click **Browse**, locate and select the directory you want, click **OK** to confirm your selection, then click **Next** to continue.

**Note:** The default install locations are:

Windows: <lotus\_forms\_server\_home>

5. Select the Webform Server components and features that you want to install. Typically, if you are installing Webform Server on a single server, you would install every component.
6. Next, select the type of installation that suits your needs:  
Install Webform Server on a managed node (for use with WebSphere Application Network Deployment), select **Managed Nodes**.

**Note:** Pick forms *wps profile* when picking the profile to install Forms server into.

7. Indicate whether you are deploying the Translator component to WebSphere Application Server. Do one of the following:
  - To automatically deploy both the Translator component and the sample servlet to WebSphere Application Server, select **Deploy to WebSphere Application Server** and **Deploy Sample Servlet**.
  - To automatically deploy to WebSphere Application Server, select **Deploy to WebSphere Application Server**.
  - To deploy with an alternate servlet runner or to manually configure WebSphere Application Server, clear both options.

**Note:** If you choose not to automatically deploy to WebSphere Application Server, the install still includes the Translator files. However, your existing WebSphere Application Server configuration is not changed.

8. Next, select the Access Control Database type. If you select DB2, you must provide the following database information:
  - a. Database name. The default database name is `WS_ACDB`.
  - b. Host IP and port. The default values are `localhost` and `50000`.
    - i. Use the `formsinst`, `db2` instance, and the host of the data node for this param.
  - c. Username and password

- d. Browse to the location containing the db2jcc.jar DB2 driver.  
<db2\_runtime\_home>\java

**Note:** If your server has this setting defined, you can leave the DB2 driver value blank, because this is inherited from the server.

9. If you did not choose to install the Log Server component, specify the Log Server host name and then click **Next**.
10. If you are deploying the Translator to WebSphere Application Server and installing the Sample Servlet, complete steps 11 through 14 on page 151. Otherwise, go to step 14 on page 151.
11. Specify where WebSphere Application Server is installed. Make one of the following choices:
  - To accept the default folder, click **Next**.
  - To set a different folder, click **Browse**, locate and select the folder you want, click **OK** to confirm your selection.
12. Next, provide the following WebSphere Application Server information:

Under Profile, ensure that the installer has displayed the correct profile name for your WebSphere Application Server configuration. This profile is from this demonstration:

  - a. Under Cell, ensure that the installer is displaying the correct cell name for your WebSphere Application Server configuration.
  - b. Under Node, ensure that the installer has displayed the correct node name for your WebSphere Application Server configuration.
  - c. Under Server Name, type the name you want to give to the Translator server.
  - d. Under Application Name, type the name you want to give to the Translator application, then click **Next** to continue.

If you chose to deploy the Sample Servlet, complete step 13. Otherwise go to step 14 on page 151.
13. If you want to install the Sample Servlet, provide the following information:

Under Application Name, type the name of the Sample Servlet application. This can be any name, as long as it is valid under WebSphere Application Server.

**Note:** The default application name is: WebformSampleApp.

Under Application Context, type the context you want to give to the Sample Servlet application.

**Note:** The default context is: /Samples.

14. Review the summary information and then click **Install** to start the installation.

The installer installs all Webform Server components in the directory that you selected.

After you have installed Webform Server, you should test your installation.

### 5.3.9 IBM WebSphere Portal Server: Lotus Forms enablement

After the Lotus Forms components are installed, the next steps are to enable WebSphere Portal Server to be able to utilize these forms components so that forms can be used within the portal itself. Follow the steps outlined in this developerWorks article for successful integration:

<http://www.ibm.com/developerworks/lotus/library/forms-portal/>

Archived



## **eForms + SOA Solution application installation and configuration**

The ACORD XForms PoT demonstration includes the front-end user interface and back-end business services. The front-end is WebSphere Portal, which works with Lotus WebForm server to display eForms which interact with the insurance customer/agent. The back-end is a set of business services and processes.

All of the business services and processes are deployed in WebSphere Process Server (WPS); some of the services are deployed with WebSphere Business Services Fabric (WBSF) runtime so as to utilizing the WBSF dynamic service routing capability. The insurance common service uses WebSphere Transformation Extender (WTX) to do transformation of XML messages, so WTX and WPS server must be installed on the same OS. The Tivoli Directory Server is used for security control of Portal and the PoT use cases.

## 6.1 Database configuration

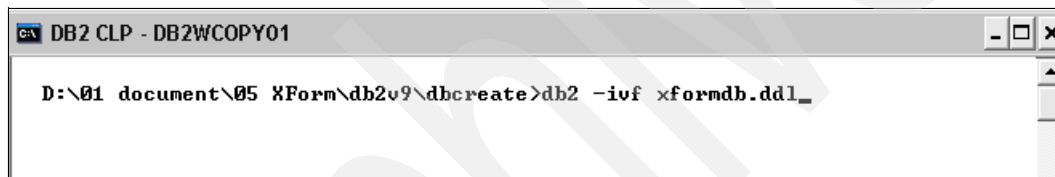
In the following sections we discuss the database configuration of the ACORD POC demonstration utilizing DB2 9 pureXML capabilities.

### 6.1.1 Application database installation

There are seven tables (AGENT, NAGENT, FORMS, NFORMS, FORMTRACE, NFORMTRACE, and FORMTRACK) in XFORM database. The tables (AGENT, FORMS, and FORMTRACE) are used for ACORD process. The tables (NAGENT, NFORMS, NFORMTRACE) are used for NAVA process. The tables (NAGENT, NFORMS, FORMTRACK) are used for NAVA process.

There is an xformdb.ddl file that includes database and tables' definition. This file is available for download via Appendix A, "Additional material" on page 169.

We can run this DDL (*db2 -ivf xformdb.ddl*) in DB2 command console to create XFORM database and tables. See Figure 6-1.



```
DB2 CLP - DB2WCOPY01
D:\> cd document\05 XForm\db2v9\dbcreate > db2 -ivf xformdb.ddl_
```

Figure 6-1 xformdb.ddl file

### 6.1.2 Set submitting URL for sample forms

There are some template forms for the demonstration environment. We need to customize some information inside those template forms. For example, if ACORD template form and NAVA template form are separately *forms.txt.001.xml* and *nforms.txt.001.xml*.

Then for ACORD form in *form.txt001.xml*, we should change the action properties of submission element of forms according the Gateway Service endpoint. For example: the red color word should be replaced in this XML section `<xforms:submission action=http://FORMS_HOSTNAME:FORMS_PORT NUMBER/ViewerChannelServlet/ViewerChannelServlet id=doGatewayExport mediatype=application/soap+xml; action=process method=post/>` with the action endpoint referring to the 3.1->PCSHistoryFormViewPortlet->GateWayService Endpoint: `http://<host>:<port>/GatewayServiceWeb/sca/GatewayServiceInterfaceExport`.

For NAVA form in nforms.txt.001.xml, we should change the online action properties of submission element with 3.1-><nava proxy servlet context>/online and change the offline action properties of submission element with 3.1-><nava proxy servlet context>/offline.

Here are the endpoint samples.

### **ACORD**

These are samples for ACORD.

#### **online**

`http://<yourgatewayserviceendpoint>/GatewayServiceWeb/sca/GatewayServiceInterfaceExport`

#### **offline**

`http:// <your servlet endpoint>/ViewerChannelServlet/ViewerChannelServlet`

### **NAVA**

These are samples for NAVA.

#### **online**

`http://<your servlet endpoint>/wps/PA_1_QBORLKG10GFIE02T2MLS5K2000/FormProcessServlet?channel=online`

#### **offline**

`http://<your servlet endpoint>/wps/PA_1_QBORLKG10GFIE02T2MLS5K2000/FormProcessServlet?channel=offline`

## **6.1.3 Import Database information**

There is some initial data that should be imported to the AGENT, NAGENT, FORMS, and NFORMS tables. We put the sample data in some txt files. The *agent.txt* is for AGENT table, *nagent.txt* is for NAGENT table.

As shown in Figure 6-2 and Figure 6-3, we can use the DB2 Control Center to easily import AGENCY data into the AGENCY table. The *agency.txt* file is available for download via Appendix A, “Additional material” on page 169.

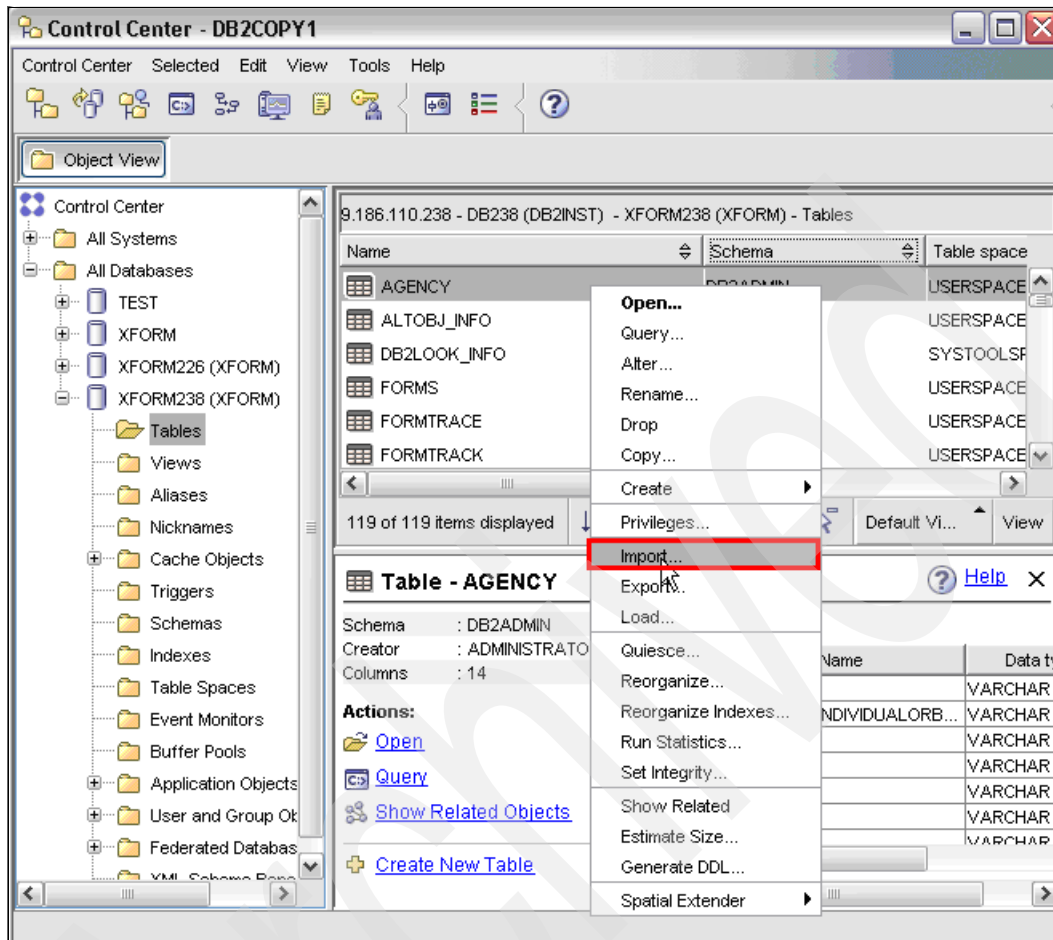


Figure 6-2 XFORM Tables

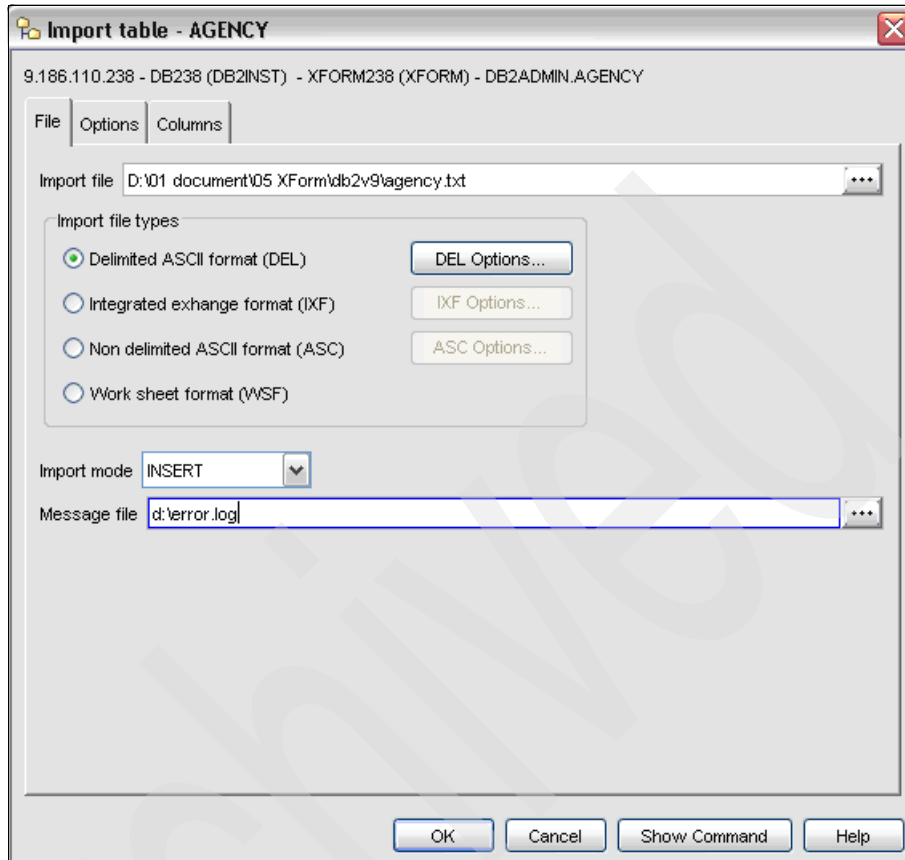


Figure 6-3 Import table window

## 6.2 Configuration in WebSphere Process Server

In the next section we discuss the approach and steps needed to configure WebSphere Process Server to utilize all the applications developed to fully implement the ACORD Demo.

### 6.2.1 Configuration data source

We need to configure WebSphere data source to get our applications be able to connect to our DB2 server.

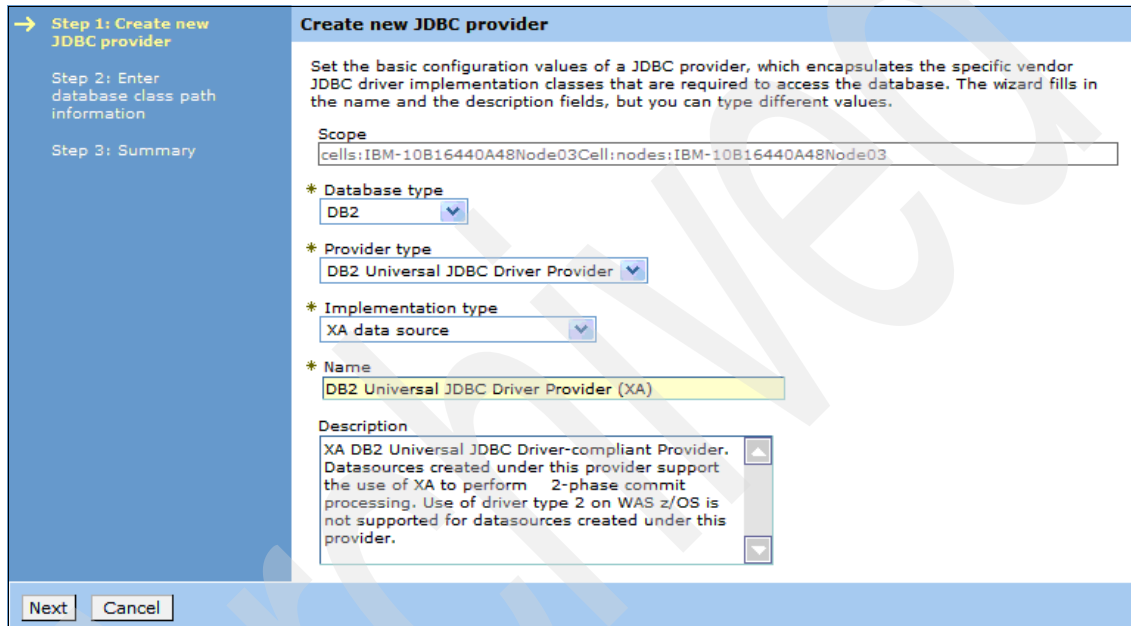
## 6.2.2 Procedure

We need to perform the following steps to get the data source ready:

1. Create DB2 JDBC Provider.

Go to **WebSphere Application Server console** → **Resource** → **JDBC Provider**.

We need to select the database type, provider type and implementation type as shown in Figure 6-4.



The screenshot displays the 'Create new JDBC provider' wizard. On the left, a navigation pane shows three steps: 'Step 1: Create new JDBC provider' (selected), 'Step 2: Enter database class path information', and 'Step 3: Summary'. The main area contains the following configuration fields:

- Scope:** cells:IBM-10B16440A48Node03Cell:nodes:IBM-10B16440A48Node03
- \* Database type:** DB2
- \* Provider type:** DB2 Universal JDBC Driver Provider
- \* Implementation type:** XA data source
- \* Name:** DB2 Universal JDBC Driver Provider (XA)
- Description:** XA DB2 Universal JDBC Driver-compliant Provider. Datasources created under this provider support the use of XA to perform 2-phase commit processing. Use of driver type 2 on WAS z/OS is not supported for datasources created under this provider.

At the bottom, there are 'Next' and 'Cancel' buttons.

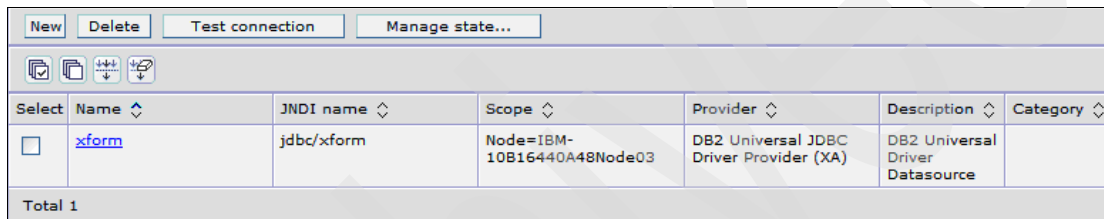
Figure 6-4 Create new JDBC provider window

2. Create DataSource.

Go to **Resource** → **JDBC Providers** → **<DB2 Provider>** → **Datasource**:

On the configuration panel (Figure 6-5), we need to set the following parameters:

- Name: xform
- JNDI Name: jdbc/xform
- Database Name: xform
- Driver Type: 4
- Server Name: <data\_node\_hostname> [Data Node URL: swgdemodb2.raleigh.ibm.com]
- Port: <instance\_port\_number> [DataNode DB instance Port Number]



Select	Name	JNDI name	Scope	Provider	Description	Category
<input type="checkbox"/>	xform	jdbc/xform	Node=IBM-10B16440A48Node03	DB2 Universal JDBC Driver Provider (XA)	DB2 Universal Driver Datasource	

Total 1

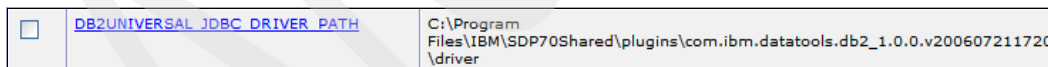
Figure 6-5 Configurations panel

3. Set JDBC lib path.

Go to **Environment** → **WebSphere Variable**:

We need to set the JDBC lib path here (Figure 6-6).

DB2UNIVERSAL.JDBC.DRIVER.PATH= <db2\_runtime\_client\_home> [From the WebNode] .



<input type="checkbox"/>	DB2UNIVERSAL.JDBC.DRIVER.PATH	C:\Program Files\IBM\SDP70Shared\plugins\com.ibm.datatools.db2_1.0.0.v200607211720\driver
--------------------------	-------------------------------	-------------------------------------------------------------------------------------------

Figure 6-6 DBUNIVERSAL.JDBC.DRIVER.PATH

## 6.3 Configuration in WebSphere Business Service Fabric

The business service metal data, such as service interface, endpoint, service policy, are modeled in Fabric Project, which can be exported/imported from/into WBSF in the form of Fabric Content Archive (FCA) file. In our PoT demonstration, we have created two Fabric Projects for ACORD and NAVA. To configure the Fabric project, we just need to import the two exported FCA into WBSF.

### 6.3.1 Import the eForm + SOA Fabric project that utilizes the P&C Content Pack

In this solution, we created Fabric projects in WBSF composite studio. We can use Fabric Web admin console to import the created Fabric projects. Here are the steps:

1. Log on to Fabric Web admin console with the URL:  
`http://fabric_host:port/fabric`
2. Go to My Service=> Governance Manager=>Configure Projects. Click **Create Project** button to create a Business Service project in WBSF whose name is AcordFormPoT. See Figure 6-7.

Configure Projects

Project AcordFormPoT [Back to Projects](#)

Project Details Project Team Namespaces

Fields marked with an asterisk (\*) are required fields.

**Project Details**

* Project Name	AcordFormPoT	Project Type	Business Service
Description	PoT project		

[Save](#) [Remove Project](#)

Figure 6-7 Configure Projects window



3. Go to Configure Projects. Click **AcordFormPoT** project. In the Namespace Tab, create a schema name space <http://www.ibm.com/acord/pot/assertions#>. See Figure 6-8.

The screenshot shows the 'Configure Namespaces' window with the following details:

- Namespace:** AcordFormPoT Schema (with a 'Back to Namespaces' button)
- Namespace Details:** Selected tab
- Project Imports:** Unselected tab
- Fields marked with an asterisk (\*) are required fields.**
- Namespace Details:**
  - \* Display Name:** AcordFormPoT Schema
  - Description:** The schema for Acord Form PoT Project
- Namespace Specification:**
  - Namespace Type:** Schema
  - Namespace Prefix:** potac
  - Namespace URI:** <http://www.ibm.com/acord/pot/assertions#>
- Namespace Ownership:**
  - Owner Project:** AcordFormPoT (selected in a dropdown menu)
- Buttons:** Save, Remove Namespace

Figure 6-8 Configure Namespaces 1 window

4. Click **Save**.
5. Create an instance name space <http://www.ibm.com/acord/pot/instances#> in WBSF. See Figure 6-9.

Figure 6-9 Configure Namespaces 2 window

- Switch to **Governance Manager=>Import/Export**. The Governance Manager is a link in the left navigation (not shown). On the Import Tab (Figure 6-10), browse the ACORD Fabric archive file and NAVA Fabric archive file to import. Make sure that the import finishes successfully.

Figure 6-10 Import/Export

### 6.3.2 Further details

For more detailed steps for creating WBSF projects and importing contents, refer to the Governance Manager Section of the WBSF InfoCenter.

[http://publib.boulder.ibm.com/infocenter/dmndhelp/v6rxmx/index.jsp?topic=/com.ibm.ws.fabric.tools.doc/governancemanager/concept/c\\_gm\\_overview.html](http://publib.boulder.ibm.com/infocenter/dmndhelp/v6rxmx/index.jsp?topic=/com.ibm.ws.fabric.tools.doc/governancemanager/concept/c_gm_overview.html)

## 6.4 Configuration in WebSphere Portal server

Portal provides the major user interface for our customers. In order to get Portal run to support the multi-tenants feature and get integrated with the Lotus WebForm Server, we need to perform several configurations.

### 6.4.1 Virtual Portal configuration

In this section, we perform the Virtual Portal configuration:

1. Create ACORD Virtual Portal:
  - a. Create a virtual Portal named pot for the ACORD case.
  - b. Deploy the ACORD case portlets on the pot portal and grant group *agents* to access them.
2. Create NAVA Virtual Portal:
  - a. Create a virtual Portal named nava for the NAVA case.
  - b. Deploy the NAVA Portlets on the nava portal and grant group *agents* and *customers* to access them.

### 6.4.2 WebForm Server API configuration

For the common WebForm server API configuration (see Figure 6-11), we can refer to Lotus form InfoCenter.

<http://publib.boulder.ibm.com/infocenter/forms/v3r0m0/index.jsp>

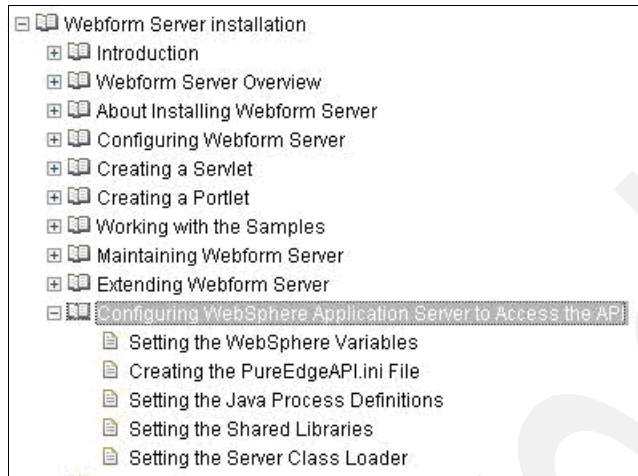


Figure 6-11 Configuring WebSphere Application Server to Access the API

## 6.5 Deploy service projects

In our PoT demonstration, there are some service projects which contain the implementation of back-end business services and processes. We need to deploy them to WBSF server or WPS server.

### 6.5.1 Deployment steps

Perform the following deployment steps:

1. Copy all jars in the lib folder to `<portal_server_home>\lib\`, and restart WPS.
2. Copy maps folder under C:\ of the system where WTX is installed.
3. Open the WBSF Web admin console, and import the necessary project FCA files. Import *AcordFormPoT-owl.zip* first, and then import *NAVAFormPoT-owl.zip*, because the NAVA FCA depends on Acord FCA.
4. Deploy all the services and processes EARs to the WPS server.
5. Deploy all the WBSF EARs to the WPS server where WBSF runtime is installed.
6. Copy *Question.xfdl* to C:\ of the system where WPS server is installed.

## 6.5.2 ACORD projects

Listed in Table 6-1 are the major projects for the ACORD demonstration.

Table 6-1 ACORD major demonstration projects

Project Name	Description	Deployment Comments
GatewayService	A facade proxy service for all ACORD Forms submissions	Deploy to WBSF server as normal
FormProcessingService	A SCA module to handle form processing flow	Deploy to a same WPS server with GatewayService
ApplicationPersistenceService	Service that persists an ACORD message into form repository	Deploy to WPS server as normal
ContextEvaluationService	This service evaluate an ACORD XForms model according to business rule, and decide if additional information is needed in the model	Deploy to WPS server as normal
FormAuthenticationService	This service performs authentication against the user contained in a XForms model	Deploy to WPS server as normal
CommercialAutoBusinessService	The fake service used to simulate Commercial Auto insurance business service	Deploy to WPS server as normal
PersonalInlandMarineBusinessService	The fake service used to simulate Personal Inland Marine insurance business service	Deploy to WPS server as normal
FormRepositoryService	The service is used to configure Form Repository information and LDAP user registry information	Deploy to WPS server as normal
FormPopulateService	This service populate an empty Form template with given XForms data model, and creates a form filled with data	Deploy to WPS server as normal
FormPrePopulateService	This service populate an empty Form template with agency information	Deploy to WPS server as normal
FormAuthorizationService	This service performs authorization against the user contained in a XForms model	Deploy to WPS server as normal

Project Name	Description	Deployment Comments
PCSServiceWar	Acord online portlets	Deploy to Portal Server
PCSHistoryWar	Acord workplace portlets	Deploy to Portal Server
PortletUtilProject	Util projects for portlet projects	
PrePopJavaClient	Prepop service Java client	
TraceJavaClient	Acord trace service Java client	
AboutUSPortlet	About us portlet project	Deploy to Portal Server
ContactUSPortlet	Contact us portlet project	Deploy to Portal Server
HomePagePortlet	Home page portlet project	Deploy to Portal Server
ViewerChannelServlet	The offline proxy servlet project	Deploy to WPS Server
FormTraceModule	This service use for store form and record form status.	Deploy to WPS server as normal

### 6.5.3 Deploy Portal projects

In this section are the major projects for the ACORD demonstration.

Create pages as in Figure 6-12, and deploy the Portlets on pages as Table 6-2.

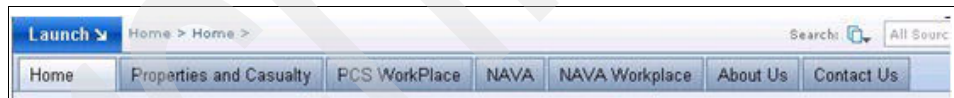


Figure 6-12 Major projects

Table 6-2 Deployment of Portlets

Page	Portlet	Permission group
Home	HomePagePortlet	Agents, customers
Properties and Casualty	PCSFormsListPortlet PCSFormViewPortlet PCSFormIntroPortlet	Agents
PCS Workplace	PCSHistoryListPortlet PCSHistoryFormViewPortlet PCSHistoryFormIntroPortlet	Agents
About Us	AboutUSPortlet	Agents, customers
Contact Us	ContactUSPortlet	Agents, customers

Modify the Portlets configuration parameters as shown in Table 6-3.

Table 6-3 Portlets configuration parameters

Portlet	Parameters' name/value
PCSFormsListPortlet	<p>PrePopulate Service EndPoint:  <code>http://&lt;web_node_url&gt;:&lt;port&gt;/PrePolulateModuleWeb/sca/PrePopulateExport</code></p> <p>Portal Server Host and Port:  <code>http://&lt;web_node_url&gt;:&lt;port&gt;</code></p>
PCSFormViewPortlet	<p>GateWay Service Endpoint:  <code>http://&lt;web_node_url&gt;:&lt;port&gt;/GatewayServiceWeb/sca/GatewayServiceInterfaceExport</code></p> <p>PrePopulate Service Endpoint:  <code>http://&lt;web_node_url&gt;:&lt;port&gt;/PrePolulateModuleWeb/sca/PrePopulateExport</code></p> <p>LDAP Server Host: &lt;ldapservice ip address&gt; [data node url: swgdemodb2.raleigh.ibm.com]</p> <p>LDAP Server Port: &lt;ldap server port&gt; [389]</p> <p>LDAP Server User: &lt;ldap instance admin user&gt; [cn=root]</p> <p>LDAP Server Password: &lt;ldap instance admin password&gt;</p>
PCSHistoryListPortlet	<p>GateWay Service Endpoint:  <code>http://&lt;web_node_url&gt;:&lt;port&gt;/GatewayServiceWeb/sca/GatewayServiceInterfaceExport</code></p> <p>Trace Service Endpoint:  <code>http://&lt;web_node_url&gt;:&lt;port&gt;/FormTraceModuleWeb/sca/FormTraceServiceExport1</code></p> <p>Portal Server Host and Port: <code>http://&lt;web_node_url&gt;:&lt;port&gt;</code></p>
PCSHistoryFormViewPortlet	<p>GateWay Service Endpoint:  <code>http://&lt;web_node_url&gt;:&lt;port&gt;/GatewayServiceWeb/sca/GatewayServiceInterfaceExport</code></p> <p>Trace Service Endpoint:  <code>http://&lt;web_node_url&gt;:&lt;port&gt;/FormTraceModuleWeb/sca/FormTraceServiceExport1</code></p>

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## Additional material

This book refers to additional material that can be downloaded from the Internet as described below.

### Locating the Web material

The Web material associated with this book is available in softcopy on the Internet from the IBM Redbooks publications Web server. Point your Web browser at:

<ftp://www.redbooks.ibm.com/redbooks/SG247649>

Alternatively, you can go to the IBM Redbooks publications Web site at:

[ibm.com/redbooks](http://ibm.com/redbooks)

Select the **Additional materials** and open the directory that corresponds with the IBM Redbooks publications form number, SG247649.

## Using the Web material

The additional Web material that accompanies this book includes the following files:

<i>File name</i>	<i>Description</i>
<b>users.ldif</b>	Demo directory file
<b>DB2_Create_Portal_Databases.bat</b>	Bat file of DB2 commands
<b>xformdb.ddl</b>	Includes database and tables' definition
<b>agency.txt</b>	Sample data in the agent.txt is for AGENT table

## How to use the Web material

Create a subdirectory (folder) on your workstation, and unzip the contents of the Web material zip file into this folder.

# Related publications

The publications listed in this section are considered particularly suitable for a more detailed discussion of the topics covered in this book.

## Online resources

These Web sites are also relevant as further information sources:

- ▶ Directory Server, Version 6.2 - Considerations before you install on AIX, Linux, Solaris, and HP-UX systems:  
<http://publib.boulder.ibm.com/infocenter/tivihelp/v2r1/topic/com.ibm.IBMDS.doc/install109.htm#shield>
- ▶ Installing and configuring WebSphere Process Server:  
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# Index

## A

- ACCORD XFDL form 57
- ACORD Application Demo 66
- ACORD Automobile Loss Notice 10
- ACORD eForms 2
- ACORD form 8
- ACORD Forms and SOA runtime environment 32
- ACORD Forms SOA Demo 34
- ACORD Forms submission 58
- ACORD Gateway Service 58
- ACORD Insurance Standards eForms 68
- ACORD Loss Notice form 11
- ACORD Lotus Form data 15
- ACORD major demo projects
  - AboutUSPortlet 166
  - ApplicationPersistenceService 165
  - CommercialAutoBusinessService 165
  - ContactUSPortlet 166
  - ContextEvaluationService 165
  - FormAuthenticationService 165
  - FormAuthorizationService 165
  - FormPopulateService 165
  - FormPrePopulateService 165
  - FormProcessingService 165
  - FormRepositoryService 165
  - FormTraceModule 166
  - GatewayService 165
  - HomePagePortlet 166
  - PCSHistoryWar 166
  - PCSServiceWar 166
  - PersonalInlandMarineBusinessService 165
  - PortletUtilProject 166
  - PrePopJavaClient 166
  - TraceJavaClient 166
  - ViewerChannelServlet 166
- ACORD PCS message 55
- ACORD PCS XML structure 19
- ACORD Web application 73
- ACORD XForms 52
- ACORD XForms model 60
- ACORD XForms model schema 60
- ACORD XForms PoT demo 153
- agency name 10

- agent 9
- agent content 57
- APPINST 77
- Application Scheduler Configuration 108
- ApplicationReview service 51
- architecture design 49
- Authenticated Clickwrap ID 57
- Authenticated Clickwrap signature 57
- Authentication and Authorization service 58
- authentication service 50
- authorization service 50
- Automatic Service Routing, Discovery, and Mediation 6
- Automobile Loss Notice 8

## B

- back-end systems 29
- BPEL 6
- Build Map button 16
- build rule scenarios 43
- Business Function 6
- Business Process Choreographer Configuration 107
- business rule based context evaluation 49
- business rule component 51
- business rules 32, 46
- Business Services 6
- Business Services Dynamic Assembler 142
- Business Services Foundation Pack Runtime 142
- Business Services Governance Manager 142
- Business Services Performance Manager 142
- Business Services Repository 142
- Business Services Subscriber Manager 142

## C

- Command Server dialog 18
- Commercial Auto scenario 38
- Commercial Business Auto Application service 60
- Commercial Business Auto Application through Portal Channel 32
- Commercial Business Auto Application through Viewer Channel 32
- Common Event Infrastructure (CEI) 106

Common Event Infrastructure (CEI) Configuration 105  
comprehensive library 57  
customer level authorization 33

## D

data integration solution 56  
Data Node 5, 67, 70, 73  
data structures 6  
Data Zone 67  
Database Configuration 109  
databases 57  
Datasource connection pool properties 144  
DB2 9 database 23  
DB2 9 pureXML 2, 7, 154  
DB2 9.5 9  
DB2 call 20  
DB2 Client and Enterprise Server 66  
DB2 Command Editor 27  
DB2 Command Line Editor 9  
DB2 Enterprise Server Edition w/ pureXML 69, 73  
DB2 pureXML 6  
DB2 Runtime Client 69, 114  
DB2 XQuery 10, 27  
db2xmlese.lic 76  
DBLOOKUP 19  
demo scenarios 32  
deployment decision 103  
deployment manager profile 94  
developer workstation 4, 8  
developerWorks 70  
developerWorks article 151  
Development Environment solution 29  
diagnostic trace 144  
Directory Services Markup Language 82  
Dynamic Cache 144

## E

EDI 56  
eForm controls binding 54  
eForm designer 55  
eForms 1, 5  
enterprise applications 57

## F

Fabric Content Archive 160  
facade proxy service 58

FCA 160  
First Notice of Loss file 15  
form 137 46  
Form Processing Service 59  
Form Processing service 61  
form processing service 50  
form.txt001.xml 154  
FORMINST 77  
Forms data model 61  
Forms Server Platform SDK 69  
Forms Services Platform 147  
Foundation Pack 69

## G

Gateway Service 50  
GET FilePath 17

## H

HIPAA 56

## I

IAA/IIW 2  
IBM Business Services Foundation Pack 139  
IBM HTTP Server 66, 68  
IBM Insurance Application Architecture/Insurance Information Warehouse 2  
IBM Lotus ACORD Forms 4–5  
IBM Lotus Form Viewer 52  
IBM Lotus Forms Server 69, 146  
IBM Redbooks publications Web site 172  
    Contact us xiv  
IBM SOA software stack 6, 67  
IBM Tivoli Directory Integrator Administration and Monitoring Console 82  
IBM WebSphere Application Server - Network Deployment 69  
IBM WebSphere Business Service Fabric 69  
IBM WebSphere Business Service Fabric - Foundation Pack 73  
IBM WebSphere Portal Server 69  
IBM WebSphere Process Server 69  
Instance Administration Tool 84  
Insurance Business Services 50  
Insurance P&C Pack 69  
Insurance Property and Casualty Content Pack 144



## J

JDBC lib path 159  
jdbc provider 114  
JVM configuration 144

## L

LDAP directory 142  
legacy 57  
legal entities 6  
license subdirectory 84  
Life and Annuity messaging XML 2  
Linux platforms 92  
Lotus ACORD Forms 7  
Lotus Form API 57  
Lotus Form Viewer 59  
Lotus Form Viewer Channel 49  
Lotus Forms 2, 8  
Lotus Forms Designer 10  
    Designer mode 10  
    Source mode 10  
    Viewer mode 10  
Lotus Forms Designer 3.0 9  
Lotus Forms Server 66, 87, 146  
Lotus Forms Viewer mode 10  
Lotus WebForm server 153  
low-level infrastructure view 67

## M

mainframe 57  
Member Manager parameters 137  
messaging systems 57  
metadata 6  
Microsoft Windows 2003 Enterprise Server 73

## O

Offline Form Service 34  
Offline Form service 40  
Online Form Service 34  
OSGi bundles 147

## P

P&C 2  
Performance Monitoring infrastructure 144  
Personal Inland Marine Application through Portal Channel 32  
Personal Inland Marine Application through Viewer Channel 32

Personal Inland Marine Forms 35  
Policy ID 9  
policy number 10  
portal window 34  
portal yields 34  
PoT use cases 153  
Pre-Installation Summary panel 141  
Process Insurance Service 51, 60  
production environment 70  
Profile Summary 111  
Profile wizard graphical user interface 94  
Proof of Concept 5  
Property & Casualty Content Pack 2  
Property & Casualty/Surety messaging XML 2

## R

Rate Quote and Issue application 63  
Record Quote business service interface 63  
Rule Engine 6  
Run Map button 16, 18

## S

second map output card 19  
security considerations 49  
Service Component Architecture Configuration 104  
service-oriented architecture 1, 5  
Signature Pad signature 57  
Silanis signature 57  
SOA Enterprise Solution 1  
SOA infrastructure 39  
SWIFT 56

## T

template based eForm population 49  
Thread Pool Webcontainer settings 144  
Tivoli Directory Server 66, 69, 73  
Tivoli LDAP User registry 60–61  
Transformation Engine 55  
Transformation Extender SDK 146

## U

UNIX platforms 92  
use case 41, 43

## V

vendors 6  
Viewer mode 10

VMWare image 3, 9  
VMWare Snapshot 10

## W

WBSF 2, 6, 62, 160  
WBSFINST 77  
Web Administration Tool 82  
Web Node 5, 67, 70  
Web Portal 6  
Web Portal Channel 49  
Web Services 6  
Web Zone 67  
WebForms Server 69  
WebSphere Application Network Deployment 149  
WebSphere Application Server global security 136  
WebSphere Application Server Network  
Deployment 89  
WebSphere Business Service Fabric 6  
WebSphere Business Service Fabric - Foundation  
Pack 87  
WebSphere Business Service Fabric information  
center 144  
WebSphere Business Service Fabric Server 66  
WebSphere Business Services Fabric 2, 139, 153  
WebSphere Business Services Fabric federation  
142  
WebSphere Fabric 5  
WebSphere Portal 5  
WebSphere Portal Server 6, 66, 87, 146  
WebSphere Process Server 5–6, 66, 87, 153  
WebSphere Process Server Client 92  
WebSphere Process Server Sample applications  
93  
WebSphere Transformation Extender 2, 4, 7, 14,  
55, 62, 69, 146, 153  
WebSphere Transformation Extender Designer 8.2  
9  
WebSphere Transformation Server 66  
welcome portal window 34  
Windows platforms 92  
Workflow Management 6  
Workflow Process 6  
WPSINST 77  
WTX 2, 9, 56  
WTX ACORD Pack 2  
WTX ACORD Pack demo map 19  
WTX Designer 9  
WTX Designer 8.2 15

## X

XForm Transformation Engine 49  
xformdb.ddl file 154  
XForms model 50, 54  
XML 56  
XML Storage 6  
XML Transformation 6  
XQuery 9









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