Course Exercises Guide

IBM Case Foundation 5.2.1: External Communication

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Appendix A. Start and Stop System Components **A-1**

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Unit 1. Databases and components

Estimated time

00:00

Unit overview

Lessons

Lesson 1.1, "External database integration," on page 1-2

Lesson 1.2, "Component integrator architecture," on page 1-10

Lesson 1.3, "Using components," on page 1-11

Lesson 1.4, "Web services," on page 1-25

Requirements

The activities in this unit assume that you have access to the student system configured for these activities.

Before you begin

Follow the instructions in Procedures 1 and 2, in Appendix A, to start the system components."Start and Stop System Components" on page A-1

Be aware

If you work in Process Designer for a long time, without saving the workflow to the object store, the security session, between the object store and the workflow system, might time out. When this situation occurs, you get errors if you try to validate, check in, or transfer a workflow. To resolve the issue, refer to the troubleshooting appendix, Procedure , "Process Designer issues," on page B-5.

Lesson 1.1. External database integration

Overview

Why is this lesson important?

You are designing a workflow application. The workflow needs to run a stored procedure in an external database to integrate information, contained in the database, with the workflow application. You must add a DbExecute step to your workflow and test the workflow to verify the expected outcome.

Activities

- "Use information from an external database in a workflow" on page 1-3

User accounts

Type	User ID	Password
Workflow Author P8 administrator	p8admin	IBMFileNetP8

Note

Passwords are always case-sensitive.

Use information from an external database in a workflow

Introduction

In this exercise, you learn how to run an external database stored procedure, from a workflow definition, to integrate with an external database.

Procedures

Procedure 1, "Start system components," on page 1-3

Procedure 2, "Check system components," on page 1-4

Procedure 3, "Configure a database connection," on page 1-5

Procedure 4, "Define a simple workflow with a DbExecute system step," on page 1-6

Procedure 5, "Test the workflow," on page 1-8

Procedure 1: Start system components

If you already started the system components, then you can skip Procedures 1 and 2.

The folder, WebSphere Admin, which is on the desktop, contains start scripts to make starting the WebSphere Application Server profiles easier.

1. Power on the student system.
2. If you get a login prompt, log in as:
   - User account: `Administrator`
   - Password: `passw0rd`

Important

If you just started the student system, ensure that the Windows 7 Operating System completes starting all the services before you start the WebSphere Application Server profile. Start the Windows Task Manager and ensure that CPU usage is down to 0-1% CPU usage. It can take several minutes.

3. Open the WebSphere Admin folder on the desktop.
4. Double-click the **Start Server1.bat** to run the script.
5. Wait for the command window to disappear. (Can take several minutes).

Note

For your convenience, the WebSphere Admin folder also contains:

- A link to open the WebSphere administrative console for each server profile.

- A shortcut to the location of the WebSphere Application Server logs for each profile.

- If you have issues with starting the system components, refer to Appendix A, "Start and Stop System Components".
- Minimize the WebSphere Admin folder.

Information

The **Start Server1.bat**, starts the WebSphere Application Server, *server1*, which starts the following applications:

- Tivoli Directory Server Administration tool
- Content Platform Engine
- IBM Content Navigator
- Administration Console for Content Platform Engine

Procedure 2: Check system components

An IBM FileNet P8 Workflow system consists of one main engine, the Content Platform Engine, with two primary services, content and process services. In addition to the Content Platform Engine, users need a client application, and databases to store configuration information and the object stores. The client application that you use for these activities is IBM Content Navigator. You work with an IBM Content Navigator desktop that is configured for the workflow author. You need to verify that the Content Platform Engine is fully functional before you start your student exercises. Because the Content Platform Engine relies on more software, testing the Content Platform Engine also ensures that the underlying software is functioning properly.

1. Verify that the Content Platform Engine, Content Services, are functioning properly by opening the Content Engine Startup Context (Ping Page).

   a. Open a **Mozilla Firefox** browser window.
   b. Go to the URL, `http://ecmedu01:9080/FileNet/Engine`

   Tip: A bookmark is defined for your convenience, **System Health > CE ping**.

   The Content Platform Engine runs as an application inside the IBM WebSphere Application Server. Successfully viewing the Content Platform Engine Ping Page indicates that the web application server is also running on your student system.

2. Verify that the Content Platform Engine, Process Services, are functioning properly.

   a. Open a new browser tab.
   b. Go to the URL, `http://ecmedu01:9080/peengine/IOR/ping`

   Tip: A bookmark is defined for your convenience, **System Health > PE ping**.

3. Log in with an account that is a member of the workflow system configuration group.

   - User account: `p8admin`

- Password: `IBMFileNetP8`

4. If both ping pages display successfully, close the browser and all the tabs.

Procedure 3: Configure a database connection

In this procedure, you add a database connection to an external database, establishing communication with the workflow system.

1. Start the Administration Console for Content Platform Engine (ACCE).
   a. Start a **Mozilla Firefox** window.
   b. Go to the URL, `http://ecmedu01:9080/acce`

   Tip: A bookmark is defined for your convenience, **ACCE**.

   c. Log in as the Workflow Author.
      - User account: `p8admin`
      - Password: `IBMFileNetP8`
2. Open the Workflow System for the object store, **LoanProcess**.
   a. Select the object store, **LoanProcess**.
   b. On the left, click **Administrative > Workflow System**.
3. Create a DbExecute Connection.
   a. Select the **DbExecute Connections** tab.
   b. Click **New**.
   c. The database administrator provides the database connection information for the stored procedure. Use the data in the table to complete the wizard. The connection name, database name, and password must be entered exactly as shown in the table. The values are case-sensitive.

Field	Value
Connection name	`GetRateDB`
Database type	`DB2`
Database name	`LoanDB`
Database host	`ecmedu01`
Database port	`50000`
Database user name	`dsrdbm01`
Database password	`IBMFileNetP8`

Note

The connection name can be anything that you want.

d. Click **Validate**, on the lower right.

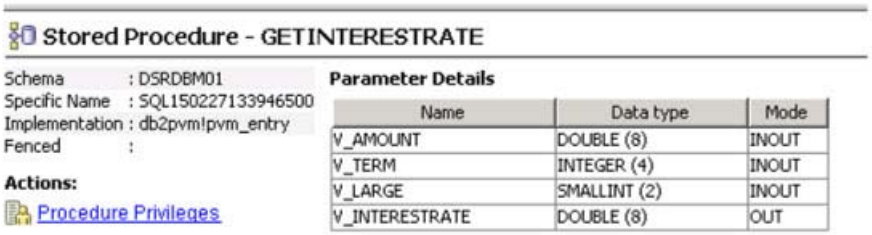
- Ensure that you get a successful validation message. Do not proceed with the exercise if you don't.
- If you get an error, verify the data that you entered, make any necessary changes and save the connection. Retry the Validate.

e. Save the DbExecute connection.

4. Log out of Administration Console for Content Platform Engine.

Procedure 4: Define a simple workflow with a DbExecute system step

In this procedure, you define a simple workflow that uses a DbExecute step to call a stored procedure in a database. The database administrator provided the following information for the stored procedure, GetInterestRate.



Stored Procedure - GETINTERESTRATE

Schema : DSRDBM01
Specific Name : SQL150227133946500
Implementation : db2pvm!pvm_entry
Fenced :

Actions:
Procedure Privileges

Parameter Details

Name	Data type	Mode
V_AMOUNT	DOUBLE (8)	INOUT
V_TERM	INTEGER (4)	INOUT
V_LARGE	SMALLINT (2)	INOUT
V_INTERESTRATE	DOUBLE (8)	OUT

1. Open **Process Designer**.
   a. From a **Mozilla Firefox** window, open the **Workflow Author desktop**.
      - URL, `http://ecmedu01:9080/navigator/?desktop=WorkflowAuthordesktop`

      Tip: A bookmark is defined for your convenience, **Workflow Author desktop**.
   b. Log in as the Workflow Author.
      - User account: `p8admin`
      - Password: `IBMFileNetP8`
   c. Right-click the **LoanProcess** node, select **Open Process Designer**.
      - Activate the Java Platform if prompted. Choose **Allow and Remember**.
      - It can take a few seconds for Process Designer to open.
2. Define the workflow properties and data fields.
   a. **Workflow Properties > General**

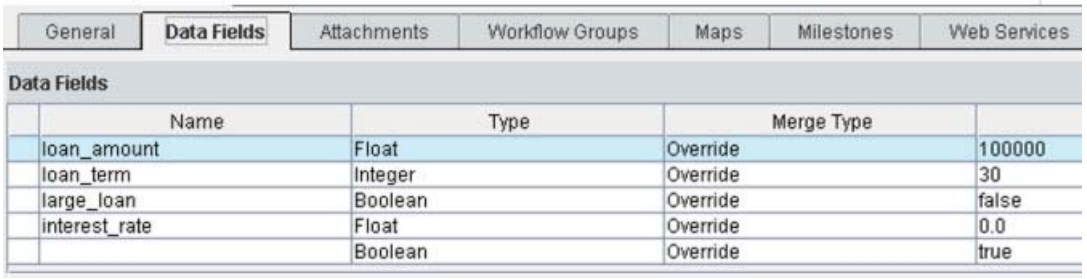
Item	Value
Workflow Name	`Database Connection Workflow`
Subject	`Database Connection Workflow`

b. **Workflow Properties > Advanced**

Item	Value
Roster	`LoanRoster`
Event Log	LoanLog

c. Define data fields.

- Select the **Data Fields** tab and define data fields as shown in the screen capture.



Tip: Make sure to click enter for each row to ensure that the values are saved.

d. Add the data fields, that you defined, as parameters to the LaunchStep.

- Select the **LaunchStep**.
- Move the data fields, that you defined, from Available Parameters to Selected Parameters.

3. Add a **DbExecute** system step to the workflow.

a. Drag a **DbExecute** step from the **General System Palette** to the map, to the right of the **LaunchStep**.

b. Use the data in the table to assign the step properties to the DbExecute step. Make sure to click enter after each row entry.

Item	Value
Step Name	`Get Rate`
Database Connection Alias	`GetRateDB`
Procedure name	`GetInterestRate`
Parameters	1. loan_amount 2. loan_term 3. large_loan 4. interest_rate

c. Draw a route from the **LaunchStep** to the **Get Rate** step.

5. Add a **Verify** step.

a. Drag an activity step to the map and place it to the right of the **Get Rate** step.

b. Use the data in the table to assign the step properties to the activity step.

Item	Value
Step Name	`Verify`
Work Queue	`LoanOfficer`
Parameters	Select all as [RW]

c. Draw a route from the **Get Rate** step to the **Verify** step.

6. Add a **TerminateBranch** step.
   a. Drag an **TerminateBranch** step from the **General System Palette** to the map and place it to the right of the **Verify** step.
   b. Draw a route from the **Verify** step to the **TerminateBranch** step.

   The final workflow looks similar to:

7. Validate the workflow.
   a. **File > Validate Workflow Collection**.
   b. Make sure that the workflow validation is successful. If any errors occur, you must fix them before you continue with the exercise.
8. Transfer the workflow.
   a. **File > Transfer Workflow Collection**.

Item	Value
Folder	LoanProcess > Workflows
Document Title	`Database Connection workflow`

9. Click **File > Close**, **Cancel the checkout** to close.
10. Exit **Process Designer**.

Procedure 5: Test the workflow

1. Launch the workflow that you transferred.
   a. In the **Workflow Author desktop**, go to the folder, **LoanProcess > Workflows**.
   b. Right-click the Database Connection workflow and select **Workflow > Launch Workflow**.
   c. In the window that opens, accept the default values for the parameters. Notice that interest_rate = 0.
   d. Click **Launch Workflow**.

2. Process the **Verify** step.
    a. Switch to the Work View and go to, **Loan Officer > Loan Officer Inbasket**.
    b. Open the work item, D**atabase Connection Test**.
    c. Notice that interest_rate = 5.25.

Information

If the Loan Officer's Inbasket has a work item, labeled D**atabase Connection Workflow**, that indicates that the step, Get Rate, connected to the database and successfully ran the stored procedure. The GetRate step calls the GetInterestRate stored procedure of the LoanDB database, and returns the interest rate. The interest rate that is returned, is based on the values for loan_amount, large_loan and loan_term.

    d. Click **Complete**.

3. Log out of the **Workflow Author desktop** and close the browser window.

Lesson 1.2. Component integrator architecture

Overview

Why is this lesson important?

You are designing a workflow application. You want to integrate CE_Operations, Java, or Java Message Service (JMS) components as steps in your workflow. To use component steps in a workflow, you must understand the fundamental concepts and architecture of the Component Integrator.

Place holder to align the lesson numbers. The lesson does not have a lab exercise.

Activities

- Complete the review questions in the Student Guide.

Lesson 1.3. Using components

Overview

Why is this lesson important?

You are designing a workflow application. The workflow needs to create a folder in the object store and run a Java operation. You want to use component steps in the workflow to accomplish these goals.

Activities

- Integrate a CE_Operations component in a workflow, on page 1-12
- Integrate a Java component in a workflow, on page 1-18

User accounts

Type	User ID	Password
Workflow Author P8 administrator	p8admin	IBMFileNetP8
Component service user	Oscar	filenet

Note

Passwords are always case-sensitive.

Integrate a CE_Operations component in a workflow

Introduction

In this exercise, you learn how to integrate a Content Extended Operations component in a workflow.

Procedures

Procedure 1, "Configure the JAAS credentials for CE_Operations," on page 1-12

Procedure 2, "Use a CE_Operations component in a workflow," on page 1-13

Procedure 3, "Test the workflow," on page 1-15

Before you begin

If you skipped the exercise for Lesson 1.1, make sure that you start the system components. Follow the instructions in Procedures 1 and 2, in the Appendix, to start the system components."Start and Stop System Components" on page A-1

Procedure 1: Configure the JAAS credentials for CE_Operations

In this procedure, you configure the JAAS credentials for the component queue, CE_Operations. Starting with IBM Case Foundation 5.2, the CE_Operations component queue is automatically created. However, the JAAS credentials might not be set correctly.

Note

This task is generally completed by the FileNet P8 administrator. However, it is not uncommon for workflow authors to complete administration tasks on development environments.

1. Open the Administration Console for Content Platform Engine.
   a. Open a **Mozilla Firefox** browser window.
      - Go to the URL: `http://ecmedu01:9080/acce`

      Tip: A bookmark is defined for your convenience, ***ACCE***.
   b. Log in with a P8 administrator account.
      - User account: `p8admin`
      - Password: `IBMFileNetP8`
2. Open the object store **LoanProcess.**
3. In the left navigation pane, go to **Administrative > Workflow System > Isolated Regions > P8Region5 > Component Queues**.

4. Edit the JAAS credentials for CE_Operations.
   a. On the right, click the component queue, **CE_Operations**, to open the properties window.
   b. Select the **Adapter** tab.
   c. Change the JAAS credentials to:
      - User account: `p8admin`
      - Password: `IBMFileNetP8`
   d. Leave the configuration context blank.
5. Click **Save**.
6. Close the **CE_Operations** tab.
7. Log out of the administration console.
8. Close the browser window.

Procedure 2: Use a CE_Operations component in a workflow

In this procedure, you create a workflow that uses a component step to call the content operation, createFolder, to create a folder in the object store, LoanProcess.

1. Open **Process Designer**.
   a. Open the **Workflow Author desktop**.
      - Open a **Mozilla Firefox** window, go to **Bookmarks > Workflow Author desktop**.
   b. Log in as a workflow author:
      - User account: `p8admin`
      - Password: `IBMFileNetP8`

Note

On the student system, the Workflow Author is a P8 administrative user. In a real development environment, you might not use an administrative account.

   c. On the left, right-click **LoanProcess** and select, **Open Process Designer**.
2. Assign workflow properties**.**
   a. Use the data in the table to update the **Workflow Properties > General tab**:

Item	Value
Workflow Name	`Create Folder workflow`
Subject	`Create Folder workflow`

b. Add two data fields.

Name	Type	Expression
`class`	String	“Folder”
`myFolder`	String	“”

c. Add an attachment to return the path to the folder that is created. For example,

- Name: `destFolder`
- Description: `Created folder` (optional)

Information

For data fields and attachments, if a description is specified, the step processor uses the description to identify the data field or attachment. If no description is specified, the step processor uses the name of the data field or attachment, for example, **destFolder**.

3. Drag a component step to the right of the **LaunchStep**.
4. Configure the component step.
   a. Set the step name to: `Create folder`
   b. In the Operation section, click **Add**  .
      - Component: Make sure **CE_Operations** is selected.
      - Operations: Select **createFolder** from the list.
      - Click **OK**.
   c. The Operations Parameters are automatically populated, except for the Expression column.
   d. Use the values in the table to complete the Expression column.

      Tip: For the propArray, use the Expression Builder to enter the expression.

Name	Expression
parentFolder	Select the option <Create parentFolder>
className	`class`
propArray	`{“FolderName”, “STRING”, myFolder}`
return_value	`destFolder`

Tip: Make sure to click enter after each row entry.

5. Add a **Verify** step to the map.
   a. Drag an activity step to the map and place it to the right of the **Create folder** step.

b. Use the data in the table to assign the step properties to the activity step.

Item	Value
Step Name	`Verify`
Work Queue	`LoanOfficer`
Parameters	Select all as [RW]

6. Drag a **Terminate Branch** step to the right of the Verify step.
7. Set parameters for the LaunchStep.
   a. Select the **LaunchStep**.
   b. In the General tab, move the following data fields from **Available Parameters** to **Selected Parameters**:
      - parentFolder
      - myFolder
8. Add routes to connect all the steps. Your final workflow definition looks similar to:

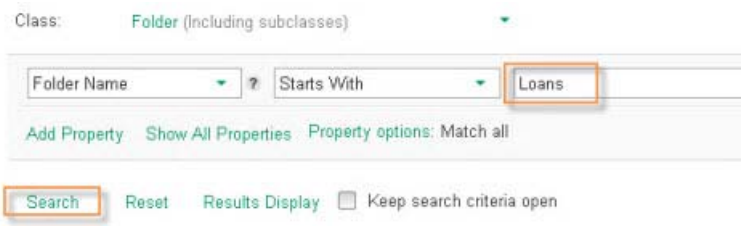
9. Validate the workflow.
   a. Make sure that the workflow validation is successful. If any errors occur, you must fix them before you continue with the exercise.
10. Transfer the workflow.
   b. Save the workflow definition to:
      - Folder: **LoanProcess > Workflows**
      - Document Title: `Create Folder workflow`
      - Click **Finish** (accept the default security access).
   c. Ensure that you get, **Transfer was successful**.
11. Close the workflow definition.
   a. Click **File > Close**.
   b. Choose the option to Cancel the checkout.
12. Exit **Process Designer**.

Procedure 3: Test the workflow

1. Launch the workflow that you transferred.
   a. In the **Workflow Author desktop**, go to the folder, **LoanProcess > Workflows**.
   b. Click Refresh to make sure that you are seeing the latest changes.
   c. Right-click **Create Folder workflow** and select **Workflow > Launch Workflow**.

- Type a folder name in the myFolder field. For example, `My_Loans`.

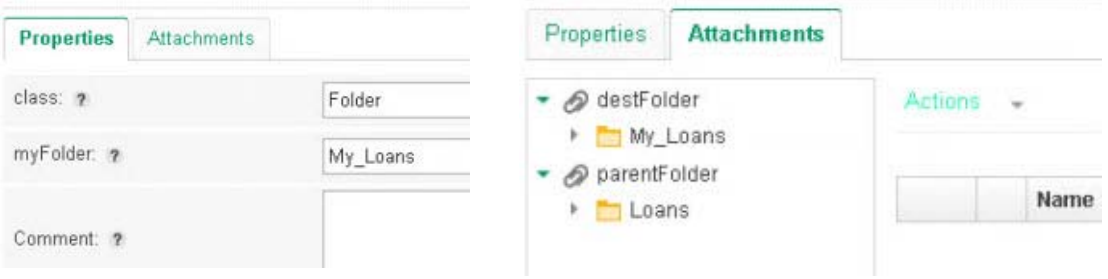
d. Select the **Attachments** tab.
e. On the left, click **parentFolder**.
f. On the right, click **Add Folder > From Repository** to select the folder path.
g. In the middle of the Search Criteria window, type the folder to use as the parent folder. For example,



h. Click **Search**.
i. Click the name, **Loans**, to select it. Do not click the folder icon that opens the folder.
j. Click **OK**.
k. Click **Launch Workflow**.

2. Process the **Verify Info** step.

a. Switch to the **Work View** and go to the **Loan Officer Inbasket**.
b. Open the work item.
c. Verify the values of the properties and the attachments. The values are similar to:



Note

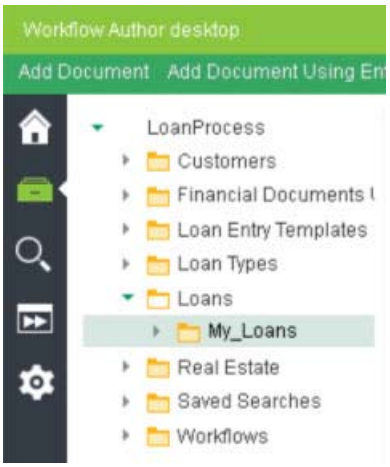
The screen capture on the right, shows the results if no description is specified for the attachment fields. The attachment names, destFolder, and parentFolder are used in the step processor. If you entered a description for the attachment fields, you see the descriptions that you entered.

d. Complete the step.

3. Verify that the folder was created.

a. Switch to the **Browse** view.
b. On the left, expand the folder, **Loans**.

c. Verify that the new folder exists.



Integrate a Java component in a workflow

Introduction

In this exercise, you learn how to integrate a Java component into a workflow definition to run a Java operation from a workflow step. You must complete the exercise in Lesson 1.1 before you can continue with this exercise.

Procedures

Procedure 1, "Create a code module for a Java object," on page 1-18

Procedure 2, "Create a Java component queue," on page 1-19

Procedure 3, "Import the component queue operations," on page 1-20

Procedure 4, "Use a Java component in a workflow," on page 1-22

Procedure 5, "Test the workflow," on page 1-23

Prerequisite

You must complete the exercise in Lesson 1.1 before you can continue with this exercise.

Procedure 1: Create a code module for a Java object

In the new Component Manager framework, you must create a code module for the Java JAR file before you can create a component queue. In this procedure, you use Administration Console for Content Platform Engine to create a code module for the Java archive, Amortization.jar, that the developer provided.

1. Start the Administration Console for Content Platform Engine (ACCE).
   a. Start a **Mozilla Firefox** window.
   b. Go to the bookmark, ***ACCE***.
   c. Log in with an account that has write privileges on the object store folder, **CodeModules**.
      - User account: `p8admin`
      - Password: `IBMFileNetP8`
2. Create a code module that is called **Amortization**, in the object store, **LoanProcess**.
   a. Open the object store, **LoanProcess**
   b. On the left, expand **Browse > Root Folder**.
   c. Select **CodeModules**.
   d. On the upper right, click **Actions** > **New Document**.

e. Use the data n the table to complete the wizard. Accept the defaults for fields that are not included in the table.

Item	Value
Document title	`Amortization`
Class	`Code Module`

f. Click **Next**.

g. Under Content Elements, click **Add**.

- Browse to:

  C:\Labs\Case Foundation 5.2.1 Workflow Design\Amortization.jar

h. Click **Add Content**.

i. Click **Next**.

j. Continue clicking **Next** until you see the Summary window.

k. Click **Finish**.

l. Close the window.

3. Refresh the **Code Modules** tab.
4. You see the **Amortization** code module listed.
5. Close the Code Modules tab.

Procedure 2: Create a Java component queue

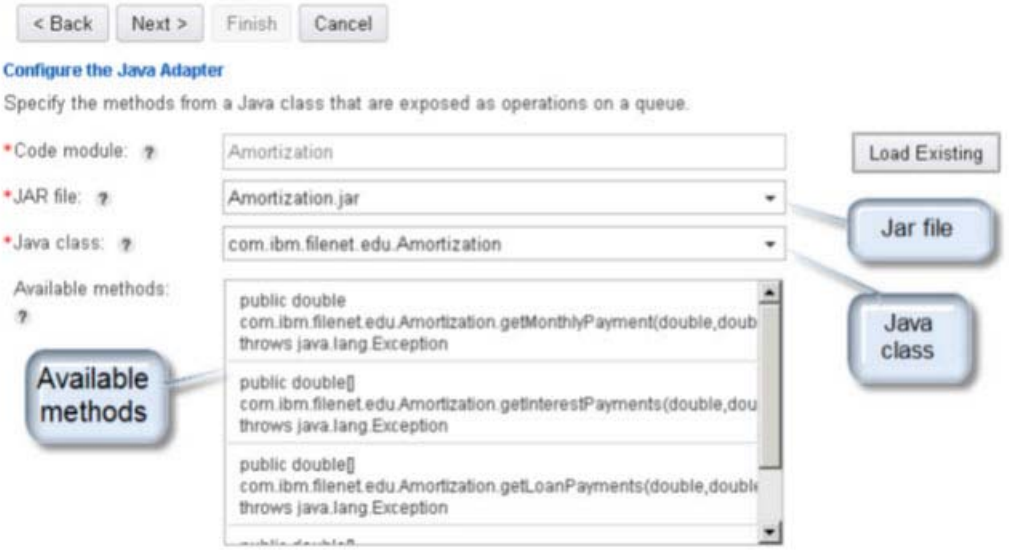
In this procedure, you create a Java component queue with the Administration Console for Content Platform Engine.

1. Open the New Component Queue wizard.
   a. In the Administration Console for Content Platform Engine, expand **LoanProcess > Administrative > Workflow System > Isolated Regions > P8Region5**.
   b. Right-click **Component Queues**, and select **New Component Queue**.

Item	Value
Name	`Loan_Operations`
Adapter	`Accept the default, Java Component`

   c. Click **Next**.
2. Configure the Java Adapter.
   a. Use the following information to complete the Configure Java Adapter wizard.
      - Code Module: Click **Load Existing**.
      - Select the code module, **Amortization**.

- Click **OK**.
- The remaining fields are automatically populated, with information from the code module.



b. Click **Next**.

c. On the **Adapter Properties** window, change the Polling interval to: `60000`.

d. Click **Next**.

e. On the **JAAS Credentials** window, use the data in the table to configure the service user account,

Item	Value
Username	`Oscar`
Password	`filenet`
Confirm password	`filenet`
Configuration context	Leave blank

f. Click **Next**.

g. Review the information in the **Summary** window.

h. When you are finished reviewing the entries, click **Finish**.

i. Wait until you see a **Success** message.

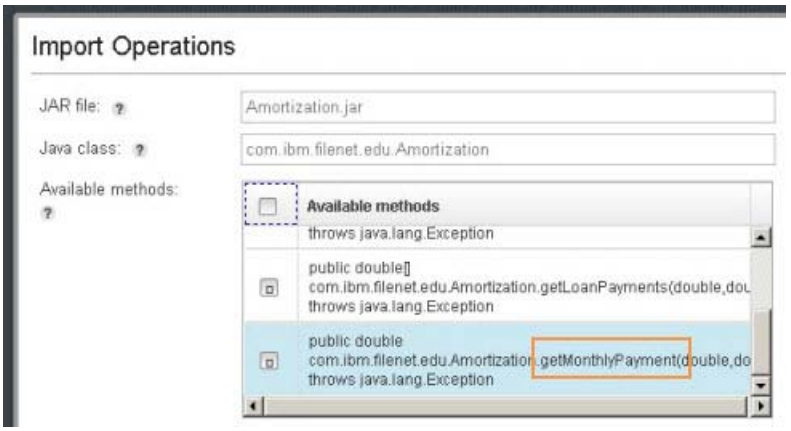
j. Close the window.

Procedure 3: Import the component queue operations

In this procedure, you import the component queue operation.

1. Open the component queue, **Loan_Operations**.

2. Select the **Operations** tab.
3. Click **Import**.
4. Select the method, **getMonthlyPayment**.



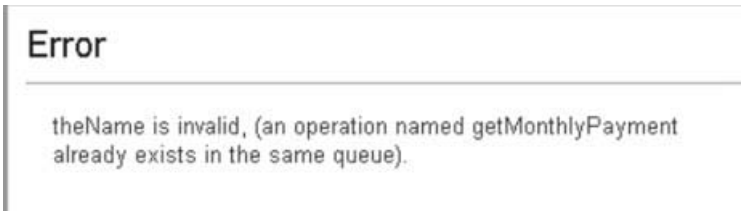
5. Click **OK**.
6. Double-click the method, **getMonthlyPayment**, to open it.
7. Click the **Parameters** tab. Use the data in the table to assign the parameters.

Original Name	New Name
param1	`LoanAmount`
param2	`InterestRate`
param3	`LoanTerm`
return_value	`MonthlyPayment`

8. Click **OK**.
9. Click **Save**.

Troubleshooting

If you get the error,



Refer to Appendix B, "Component Queue issues" on page B-8 for resolution instructions.

10. Close the **Loan_Operations** component queue.
11. Log out of the administration console.

Procedure 4: Use a Java component in a workflow

In this procedure, you learn how to call a Java component from a workflow. You modify the Database Connection workflow that you worked with in the previous activity. You add a component step that uses the Loan_Operations component queue to calculate the monthly payment.

1. Check out the **Database Connection workflow** that you created in Lesson 1.1.
   a. Open the **Workflow Author desktop**.
   b. Log in as the role, Workflow Author.
   c. Browse to, **LoanProcess > Workflows**.
   d. On the right, click the icon for the workflow definition, **Database Connection workflow**.
      - It can take several seconds for the workflow definition to open, be patient.
2. Use the data in the table to modify the **Workflow Properties**.

Item	Value
Workflow Name	`Component Workflow`
Subject	`Component Test`

3. Select the **Data Fields** tab and use the data in the table to add a data field.

Item	Value
Name	`monthly_payment`
Type	`Float`

   e. Add the data field, **monthly_payment** to the steps, **LaunchStep, and Verify**.

Hint

You can use the Field Usage icon or select each step and go to the **Parameters** tab.

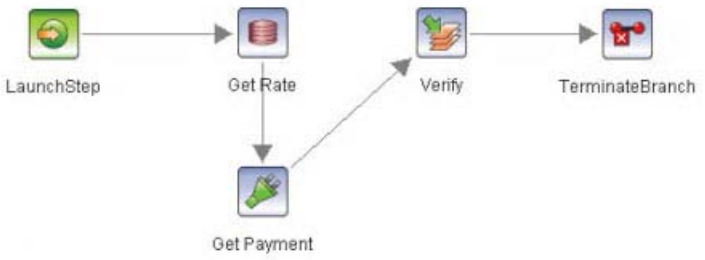
4. Drag a component step from the **General System Palette** onto the map, position it below the **Get Rate** step.
   a. Step Name: `Get Payment`
5. In the Operations section, click the **Add** icon.
   a. On the **Component** field of the **Operation Selection** window, select **Loan_Operations**.
   b. Select the operation, **getMonthlyPayment,** and click **OK**.
6. On the right, in the **Operations Parameters** section, assign the workflow data fields to the operations parameters. Use the data in the table to assign the parameters.

Item	Value
LoanAmount	`loan_amount`
InterestRate	`interest_rate`

Item	Value
LoanTerm	`loan_term`
MonthlyPayment	`monthly_payment`

- Click enter after you enter the last value to ensure that the values are saved.

7. Draw routes to connect the steps.
   a. Draw a route from the **Get Rate** step to the **Get Payment** step.
   b. Draw a route from the **Get Payment** step to the **Verify** step.
   c. Delete the route between the **Get Rate** step and the **Verify** step.
8. The final workflow looks similar to:



9. Validate the Workflow Collection. If you get any errors, review the previous steps and make the necessary corrections. Do not proceed if the Workflow Collection does not validate successfully.
10. Save the modified workflow.
    a. Click **File > FileNet > FileNet Add/New**.
    b. Choose the option, **Cancel the checkout and continue with FileNet Add New**.
       - Folder: **LoanProcess > Workflows**
       - Document Title: `Component Workflow`
       - Click **Finish**.
11. Transfer the workflow.
12. Click **File > Close**, **Cancel the checkout** to close.
13. Exit **Process Designer**.

Procedure 5: Test the workflow

1. Launch the Component Workflow.
   a. In the **Workflow Author desktop**, go to the folder, **LoanProcess > Workflows**.
   b. If you do not see the new workflow, click **Refresh**.
   c. Right-click the **Component Workflow** and select **Workflow > Launch Workflow**.
   d. In the window that opens, accept the default values for the parameters. Notice that monthly_payment = 0.
   e. Click **Launch Workflow**.

2. Verify that the component step ran successfully.
   a. Switch to the **Work View** and open the **Loan Officer Inbasket**.
   b. Open the work item, **Component Test**.
   c. Verify that **monthly_payment** has a value that is **NOT** equal to 0.

Information

The monthly_payment was calculated by the component step, Get Payment, based on the interest_rate, the loan_amount, and the loan_term.

---

   d. Click **Complete**.

3. Log out of the **Workflow Author desktop** and close the browser window.

Lesson 1.4. Web services

Overview

Why is this lesson important?

You are designing a workflow application. The workflow needs to call an external web service. To accomplish this task, you need to specify a partner link and use a Web Service Invoke step in a workflow definition.

Activities

- Complete the review questions in the Student Guide.
- Invoke a web service, on page 1-26

User accounts

Type	User ID	Password
Workflow Author P8 administrator	p8admin	IBMFileNetP8

Note

Passwords are always case-sensitive.

Invoke a web service

Introduction

In this exercise, you learn how to invoke an external web service from a workflow.

Procedures

Procedure 1, "Enable option to enter WSDL URL directly," on page 1-26

Procedure 2, "Invoke a Web Service in a workflow," on page 1-27

Procedure 3, "Test the workflow," on page 1-30

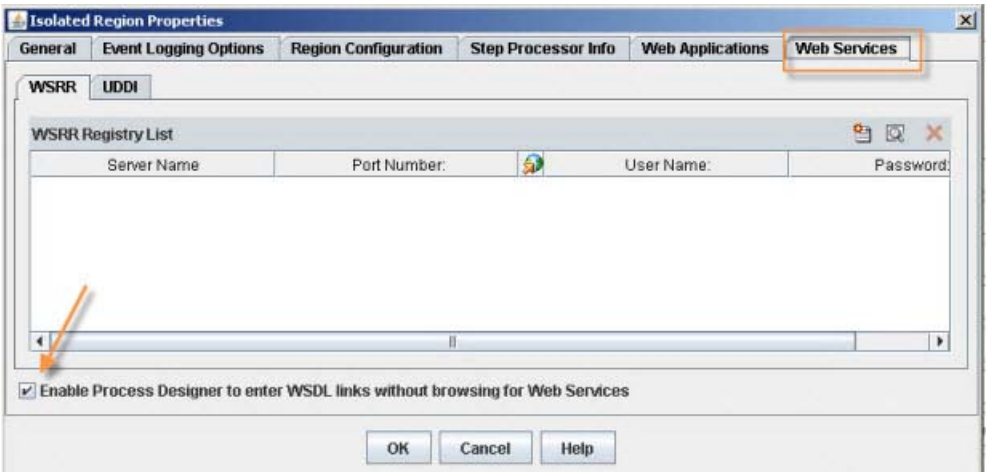
Procedure 1: Enable option to enter WSDL URL directly

In this procedure, you configure the isolated region to enable Process Designer to enter WSDL links without browsing for Web Services.

1. Open the Administration Console for Content Platform Engine.
   a. Open a **Mozilla Firefox** browser window.
      - Go to the bookmark, ***ACCE***.
   b. Log in with a P8 administrator account.
      - User account: `p8admin`
      - Password: `IBMFileNetP8`
2. Expand LoanProcess > Administrative.
3. Right-click **Workflow System** and select **Configure Workflow Settings**.

   If you see a **Java Update Needed** window, choose the option, Later, and select the option, Do not ask again until the next update is available.
4. On the left, double-click **FNOSDS-LoanProcess > P8ConnP5 [5]** to connect to the isolated region.
5. Right-click **P8Conn5 [5],** select **Properties**.
6. In the **Isolated Region Properties** window, click the **Web Services** tab.

7. Select the option, **Enable Process Designer to enter WSDL links without browsing for Web Services**.



8. Click **OK**.
9. Commit the changes.
   a. Select the **commit changes** icon.
      - In the window that opens, click **Continue**.
      - Ensure the Status shows, **Success**.
      - Close the window.
10. Close the configuration **P8ConnP5** window.
11. Log out of the administration console and close the browser window.

Procedure 2: Invoke a Web Service in a workflow

In this procedure, you create a simple workflow that invokes a Web Service.

1. Verify that the URL provided for the web service is valid.
   a. Open a **Mozilla Firefox** window.
   b. In the **WSDL URL** field, copy and paste this URL,

      `http://ecmedu01:9080/CreditRating/services/CreditRating/wsdl`

c. You see an XML file with an element name = “getCreditRatingResponse”.

2. Open **Process Designer**.
   a. Open the **Workflow Author desktop**.
      - Open a b window, go to **Bookmarks > Workflow Author desktop**.
   b. Log in as a workflow author:
      - User account: `p8admin`
      - Password: `IBMFileNetP8`
   c. On the left, right-click **LoanProcess** and select, **Open Process Designer**.
3. Assign workflow properties**.**
   a. Use the data in the table to update the Workflow Properties > General tab:

Item	Value
Workflow Name	`Web Service workflow`
Subject	`Web Service workflow`

   b. Add two data fields.

Name	Type	Description
SSN	String	Social Security Number
`rating`	Integer	Credit rating

   c. Configure the Web Service partner link.
      - Under the **Web Services** tab, select the subtab, **Partner Links**.
      - Name: **creditRating**
      - Select the option, **Invoke**.
      - In the **WSDL URL** field, copy and paste this URL,

        `http://ecmedu01:9080/CreditRating/services/CreditRating/wsdl`

- Select the **Partner Link**, **creditRating** and click enter to save the entry.

4. Add a parameter to the LaunchStep.
   a. Select the **LaunchStep**.
   b. Move SSN to **Selected Parameters**.
5. Add an Invoke step to the workflow map.
   a. From the Web Services Palette, drag an **Invoke** step and place it to the right of the **LaunchStep**.
      - Step Name: `Get Credit Rating`
      - Partner Link: `creditRating`

Troubleshooting

If you get an error, go back to step 2. Verify that your entries for the partner link were saved.

   b. Select the operation, **getCreditRating**.
      - Outgoing Parameters Expression: **SSN**
      - Incoming Parameters Expression: **rating**
6. Define a **Verify** step.
   a. Drag an activity step to the map and place it to the right of the **Get Credit Rating** step.
   b. Use the data in the table to assign the step properties to the activity step.

Item	Value
Step Name	`Verify`
Work Queue	`LoanOfficer`
Parameters	Select all as [RW]

7. Drag a **Terminate Branch** step to the right of the **Verify** step.
8. Add routes to connect all the steps. Your final workflow definition looks similar to:

9. Validate the workflow.
   a. Make sure that the workflow validation is successful. If any errors occur, you must fix them before you continue with the exercise.
10. Transfer the workflow.
    a. Save the workflow definition to:
       - Folder: **LoanProcess > Workflows**

- Document Title: `Web Service workflow`
- Click **Finish**.

b. Ensure that you get, **Transfer was successful**.

11. Close the workflow definition.
    a. Click **File > Close**.
    b. Choose the option to Cancel the checkout.
12. Exit **Process Designer**.

Procedure 3: Test the workflow

1. Launch the **Web Service Workflow**.
    a. In the **Workflow Author desktop**, go to the folder, **LoanProcess > Workflows**.
    b. Right-click the **Web Service workflow** and select **Workflow > Launch Workflow**.
    c. In the window that opens, type a value for the Social Security Number.
        - For example, 123459889
    d. Click **Launch Workflow**.
2. Verify that the component step ran successfully.
    a. Switch to the **Work View** and open the **Loan Officer Inbasket**.
    b. Open the work item.
    c. Verify that credit rating is set to something other than 0.

Information

The credit rating is calculated by the web service, CreditRating, that you invoked, by using the Partner Link that you configured.

---

    d. Click **Complete**.
3. Log out of the **Workflow Author desktop** and close the browser window.

Appendix A. Start and Stop System Components

Appendix Overview

This image contains three WebSphere Application Server profiles. For this unit, you use the profile for server1, which hosts the following applications:

- Tivoli Directory Server Administration tool
- Content Platform Engine
- IBM Content Navigator
- Administration Console for Content Platform Engine

List of procedures:

- Procedure 1, "Start system components," on page A-1
- Procedure 2, "Check system components," on page A-2
- Procedure 3, "Stop system components," on page A-3

Procedure 1: Start system components

The folder, WebSphere Admin, which is on the desktop, contains start scripts to make starting the WebSphere Application Server profiles easier.

Important

If you just started the student system, ensure that the Windows 7 Operating System completes starting all the services before you start the WebSphere Application Server profile. Start the Windows Task Manager and ensure that CPU usage is down to 0-1% CPU usage. It can take several minutes.

1. Open the WebSphere Admin folder on the desktop.
2. Double-click the *Start Server1.bat* to run the script.
3. Wait for the command window to disappear. (Can take several minutes).

Note

For your convenience, the WebSphere Admin folder also contains:

- A link to start the WebSphere administrative console for each server profile.

- A shortcut to the location of the WebSphere Application Server logs for each profile.

- Minimize the WebSphere Admin folder.

Information

The Start Server1.bat, starts the WebSphere Application Server, *server1*, which starts the following applications:

- Tivoli Directory Server Administration tool
- Content Platform Engine
- IBM Content Navigator
- Administration Console for Content Platform Engine

Procedure 2: Check system components

An IBM FileNet P8 Workflow system consists of one main engine, the Content Platform Engine, with two primary services, content and process services. In addition to the Content Platform Engine, users need a client application, and databases to store configuration information and the object stores. The client application that you use for these activities is IBM Content Navigator. You work with an IBM Content Navigator desktop that is configured for the workflow author. You need to verify that the Content Platform Engine is fully functional before you start your student exercises. Because the Content Platform Engine relies on more software, testing the Content Platform Engine also ensures that the underlying software is functioning properly.

1. Verify that the Content Platform Engine, Content Services, are functioning properly by opening the Content Engine Startup Context (Ping Page).
   a. Open a Mozilla Firefox browser window.
   b. Go to the URL: `http://ecmedu01:9080/FileNet/Engine`

Hint

A bookmark is defined for your convenience, **System Health > CE ping**.

The Content Platform Engine runs as an application inside the IBM WebSphere Application Server. Successfully viewing the Content Platform Engine Ping Page indicates that the web application server is also running on your student system.

2. Verify that the Content Platform Engine, Process Services, are functioning properly.
   a. Open a new browser tab.
   b. Go to the URL: `http://ecmedu01:9080/peengine/IOR/ping`

Hint

A bookmark is defined for your convenience, **System Health > PE ping**.

   c. Log in as the P8 administrator.
      - User account: p8admin
      - Password: IBMFileNetP8
   d. If both ping pages display successfully, close the browser and all the tabs.

Procedure 3: Stop system components

1. Open the WebSphere Admin folder on the desktop.
2. Double-click the Stop Server1.bat to run the script.
   a. Wait for the command window to disappear (Can take several minutes).

Appendix B. Troubleshooting

Appendix Overview

This appendix contains issues and resolutions.

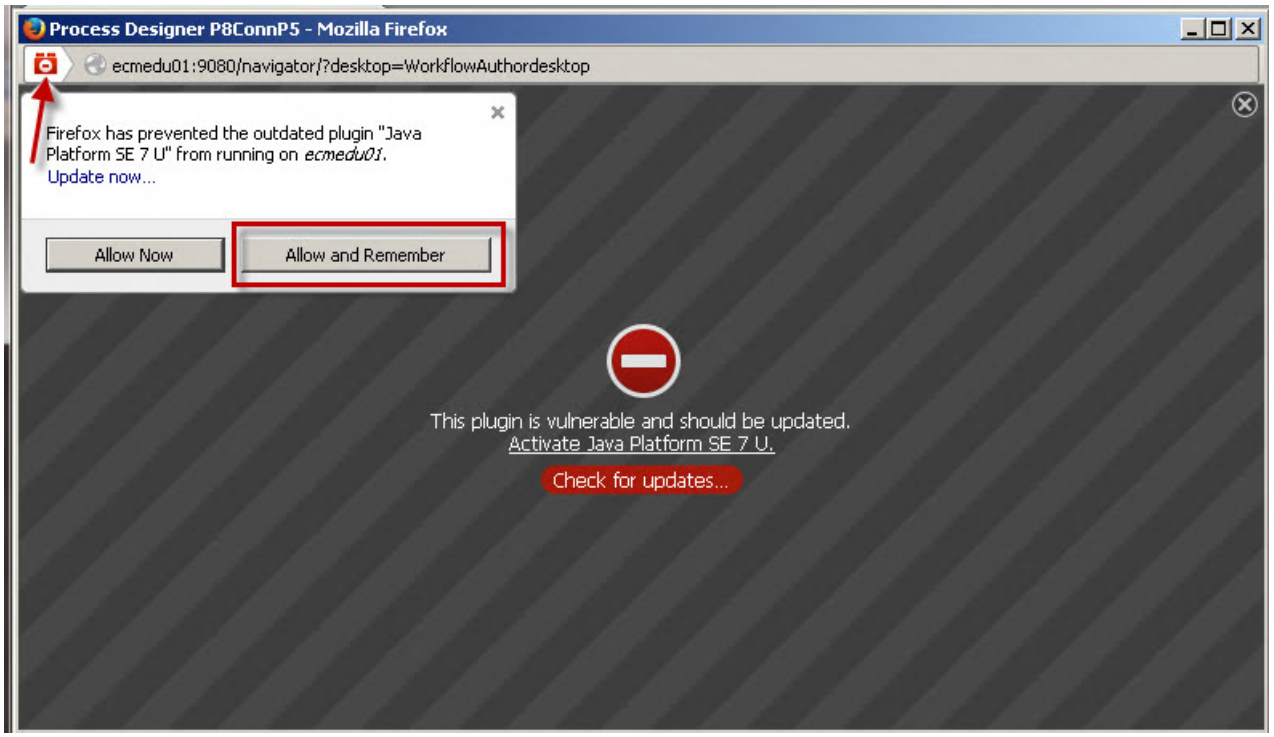
- "Java issues" on page B-1
- "WebSphere Application Server error log" on page B-2
- "IBM Content Navigator Desktop issues" on page B-3
- "Administration Console for Content Platform Engine issues" on page B-4
- "Process Designer issues" on page B-5
- "Component Queue issues" on page B-8
- "Technotes" on page B-9

Java issues

Issue: Java plug-in error

Some Content Platform Engine applications that are run as Java applets. When you start them for the first time, you might see a Java plug-in error.

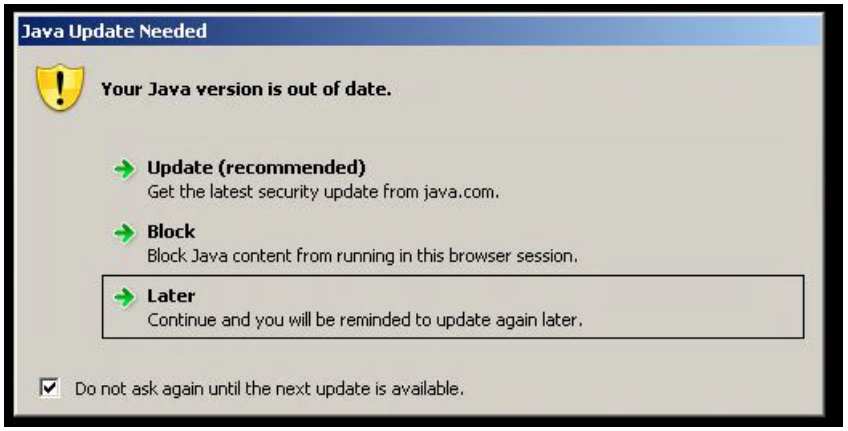
- Click the red icon in the address bar.
- Select Allow and Remember.



Note

The first time that you open Process Designer, after you start the system, can take several minutes for Process Designer to open. The window is blank and appears to be doing nothing. Be patient. The tool eventually opens. Subsequent times Process Designer opens faster.

Issue: You get a Java Update Needed window.



Check the box, **Do not ask again until the next update is available** and select **Later**.

WebSphere Application Server error log

The IBM Content Navigator and Content Platform Engine applications are web applications that run on the WebSphere Application Server. If you encounter issues that are not covered in the appendix, review the WebSphere Application Server error log.

- Open the WebSphere Admin folder on the desktop.
- Right-click **server1 WAS logs** and select, **Open in new window**.
- Right-click **SystemOut.log** and select, **Edit with Notepad++**.
- Scroll to the bottom and look for any stack traces. See whether you can figure out the cause of the issue from the exception reported.

IBM Content Navigator Desktop issues

Issue: You attempt to open a Content Navigator desktop and you get the error:

Cause

Content Navigator cannot find the desktop, which is identified by the desktop ID.

Resolution

Verify the URL that you entered to open the desktop. Ensure that the desktop ID, following the equal sign is not misspelled, for example:

```
http://ecmedu01:9080/navigator/?desktop=ProccessLoans
```

The desktop ID, has an extra “c” in the name; the correct ID is, ProcessLoans.

Issue: The Administration Console for Content Platform Engine or the Workflow author desktops appear to hang with Loading Desktop.

Cause

The first time a desktop is opened; it must load the Java applications. When the Java cache is populated, subsequent desktop launches are faster.

Resolution

Be patient. It can take a few minutes for the desktop to open and display the login prompt.

Issue: You open an IBM Content Navigator desktop and do not get a login prompt.

Cause

The cookies are stale.

Resolution

Close the browser window and open a new browser window. Open the desktop again. If the login prompt does not display, clear the browser cache and open the desktop again.

Issue: You can't log in to two Workflow Author desktops with different users.

You want to have two Workflow Author desktops open with two different users who are logged in. When you open the second desktop, you are not allowed to log in.

Cause

IBM Content Navigator (ICN) shares the logon credentials within a browser session.

Resolution

Open a different browser, for example, Internet Explorer, to open the second Workflow Author desktop.

Administration Console for Content Platform Engine issues

Issue: You must be a member of the Process Administrators group.

You are working with the Administration Console for Content Platform Engine successfully. You get a message that states that you must be a member of the Process Administrators group.

Cause

The desktop was open for a long time, which can cause a session authentication timeout.

Resolution

Log out of the Administration Console for Content Platform Engine and close the browser window. Open a new browser window and open the Administration Console for Content Platform Engine.

Issue: No log in prompt after you refresh ACCE.

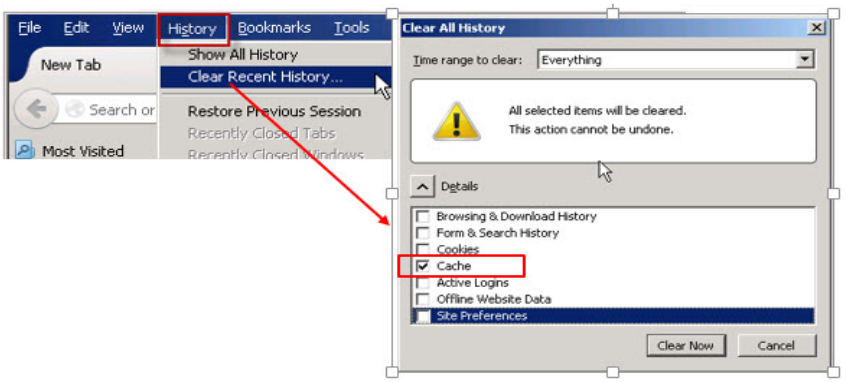
You have a browser tab open to the Administration Console for Content Platform Engine (ACCE). You refresh the tab, expecting to get a login prompt and nothing happens.

Cause

When you have ACCE and an IBM Content Navigator (ICN) desktop open in the same browser session, ICN attempts to share the logon credentials. If you use different credentials for ACCE and the ICN desktop, the system gets confused.

Resolution

Clear the browser cache.



On occasion, it might be necessary to clear the cookies.

Process Designer issues

Issue: You open the Process Designer tool for the first time and you see a blank screen. It appears to be hung.

Cause

The first time that you open the Process Designer tool, all the Java applications need to be loaded into the Java cache.

Resolution

Be patient. The tool can take a few minutes to display.

Issue: You open the Process Designer tool from the Workflow Author desktop and you get a screen that shows the plug-in is vulnerable and needs to be updated.

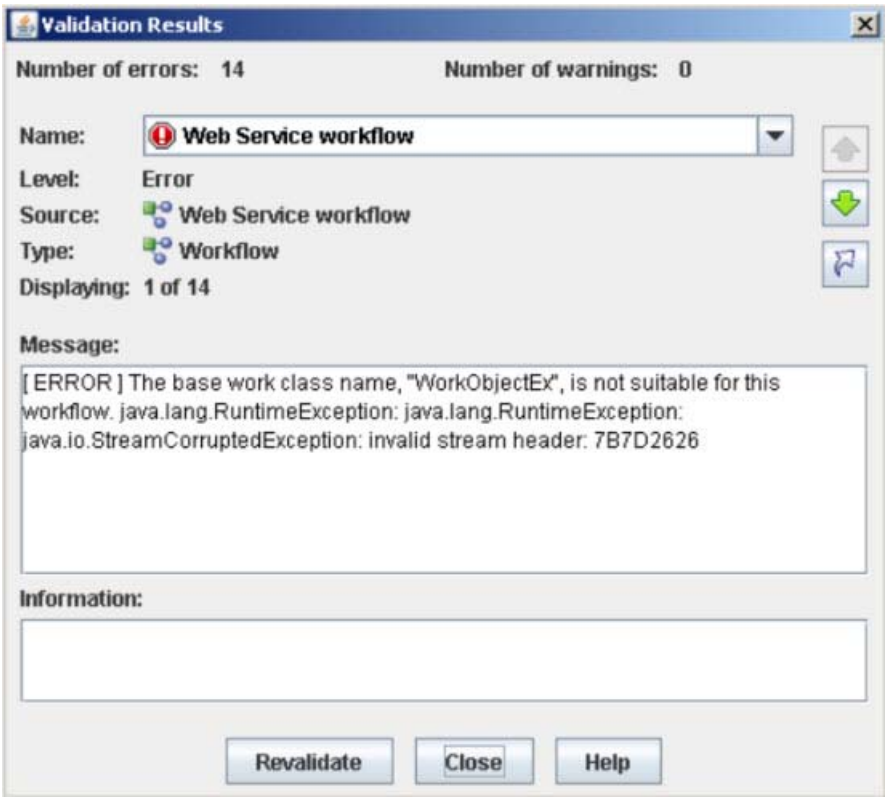
Cause

Mozilla Firefox is protecting against the Padding Oracle On Downgraded Legacy Encryption (Poodle) threat.

Resolution

Click the *Activate Java Platform SE 7 U* link, and select *Allow and Remember*.

Issue: You are working in Process Designer for an extended period. When you attempt to validate your workflow, you get Java exception errors. For example,



Cause

The security session between the Content Platform Engine and the IBM Content Navigator desktop timed out.

Resolution

- Save your workflow definition to the file system as a pep file (File > Save as).
- Close Process Designer.
- Click refresh on the browser window that is open to the Workflow Author desktop.
- Log in to the desktop.
- Open Process Designer and open the pep file that you saved (File > Open).
- Validate the workflow.

Issue: You click File > Transfer Workflow Collection and get the error.

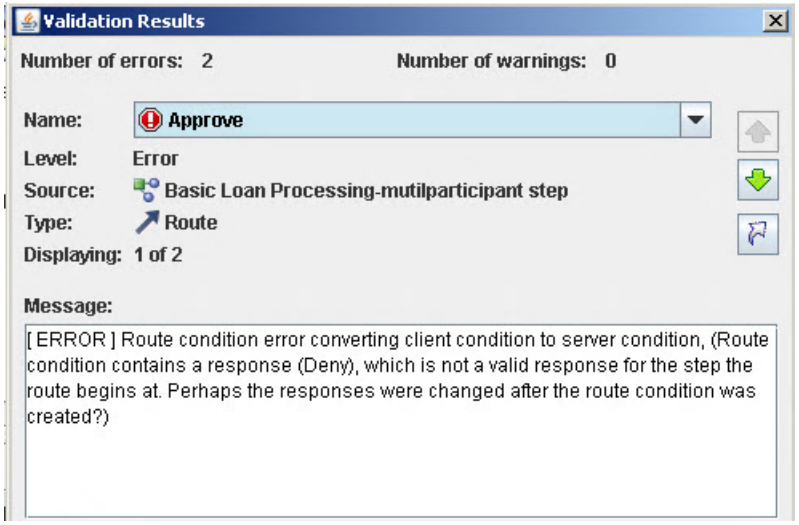
Cause

The session connection between the object store and the workflow system expired.

Resolution

- Save your workflow to the file system so you do not lose your work. File > Save as.
- Close Process Designer.
- Log out of the Workflow Author desktop.
- Clear the browser cache.
- Open the Workflow Author desktop and log in.
- Open Process Designer.
- Open the workflow definition and validation and transfer the workflow collection.

Issue: You attempt to validate a workflow, but you get an error similar to.



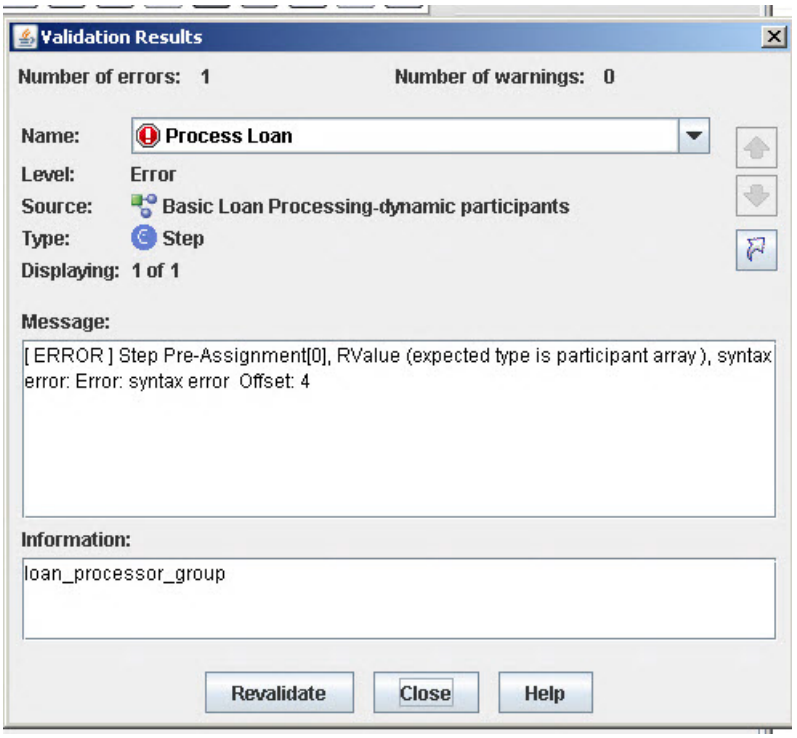
Cause

In this case, the response Deny is missing. You probably forgot to click return when you defined the response, so the system did not save it.

Resolution

- Go to the step where the response is suppose to be defined.
- If the cursor is at the response, then click return to save the response.
- If the response does not exist, then define the response and click return or the tab key.

Issue: You attempt to validate a workflow, but you get an error similar to.



Cause

A syntax error at the step, Process Loan, in the Assignments > Before Execution.

Resolution

- Go to the step identified in the error (Process Loan).
- Click the Assignment tab and select Before Execution.
- Verify the assignment expressions. Make sure to click enter at the end of each row.
- If you do not see any errors, delete the assignment expressions and redefine them.

Issue: You are working in Process Designer for an extended period. When you attempt to check in your workflow, you get the error:

Cause

The session timed out.

Resolution

- Save your workflow definition to the file system as a pep file.
- Close Process Designer.
- Log out of IBM Content Navigator.
- Clear the browser cache.
- Log in to IBM Content Navigator.
- Open Process Designer and open the pep file that you saved.
- Check in your workflow.

Component Queue issues

Issue: You update a component queue adapter property with ACCE. The component behaves as if the change was not made, even though the updated value is displayed correctly. The issue occurs with component queue security updates as well.

Cause

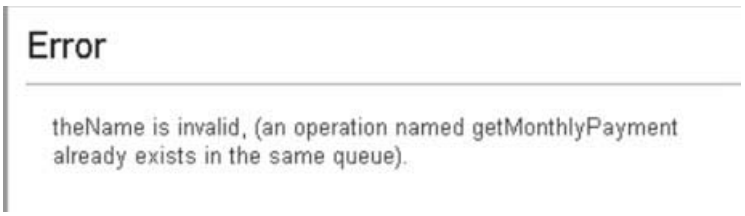
A known bug in releases before IBM Case Foundation 5.2.1.3.

Resolution

Multiple methods exist to resolve the issue. If the fix pack is not installed, you can:

- In Administration Console for Content Platform Engine, stop the component queue and save. Start the component queue and save.
- Repeat the update by using Process Configuration Console, then commit the changes.

Issue: You import operations for a component queue. When you click Save, you get the error,



The component queue has no operations defined.

Cause

Possible security session time out between the object store and the workflow system.

Resolution

- Log out of the administration console.
- Restart the Content Platform Engine.
  - Procedure 3, "Stop system components," on page A-3
  - Procedure 1, "Start system components," on page A-1
- Repeat the steps to import the component queue operations.

Technotes

http://www.ibm.com/support/docview.wss?uid=swg27043131

http://www.ibm.com/support/docview.wss?uid=swg21963021

http://www.ibm.com/support/docview.wss?uid=swg21882893

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