IBM Case Manager:
External Data Integration Lab

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1.0 External Data Integration Lab Overview

1.1 Lab Objective

- To familiarize participants with the External Data Integration Framework.
- To give participants an understanding of how data from external sources can be integrated into a case management solution using an External Data Service.

1.2 Lab Description

In this lab, you will integrate a sample auto warranty claims case management solution with an external data service. A sample external data service will be used to populate case data fields such as Customer Information, Vehicle Information and Parts description for a warranty replacement part.

1.3 Lab Scenario – Auto Warranty Claims Management Solution

You are the business analyst for Automotive Warranty Corp. You are responsible for building a solution to manage warranty claims submitted by customers. A claim is initiated when a dealer submits the claim information. The solution must integrate with the Customer Relationship Management (CRM) system where the customer data is stored, as well as the Vehicle Information Database and the Parts Database. You are asked to enhance the solution, to pull data from these external data sources into the case management solution.

To facilitate these integration scenarios with external data sources, Case Manager provides an external data service (EDS) REST protocol. The EDS service implemented on the REST protocol acts as the communication bridge between Case Manager and the external data source. To populate the case properties with this external data, you must implement an external data service that adheres to this REST protocol.

1.3.1 Document Types

A document type WarrantyClaim has been created which initiates the case creation. The case type has been configured to use this document as the initiating document for the case. By selecting the Map Properties option, we can map the document properties to the case properties. The CustomerID, Vehicle Identification Number (VIN) and PartsID are mapped from the document type to the case type, when a new case is created.

1.3.2 Case Types

AutoWarrantyClaim: This is the case type used to manage the auto warranty claims process. In this lab, when creating a new case, we will enter the CustomerID, VIN and PartsID and the registered external data service will be queried to pull in the customer information, vehicle information and the parts information.

2.0 Developing the External Data Service

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Use the external data service only for retrieving data from an external source. For example, when a case worker creates or modifies a case, Case Manager Client saves the data that was received from the external data source in Content Engine. If the case worker modifies this data, Case Manager Client does not update the corresponding data in the external data source.

The procedure to implement the external data service is as follows:

- Implement the HTTP POST method for the case type. This method returns the case properties that are to be populated in the case from the external data source.
- If the external data service needs to retrieve property attributes for case properties that it manages, then the service can use the Content Engine Java API or CMIS REST API to get those property attributes.
- If the external data service needs to authenticate users, it must participate in the single sign-on authentication configuration as do other Case Manager components.

In this lab example, the sample EDS service implements the HTTP POST method for the AutoClaimWarranty case type. When a case worker creates a new case or opens an existing case from the Case Manager Client, the Case Manager REST API automatically makes an HTTP POST call to the AutoClaimWarranty case type resource in the EDS. The POST method passes the request payload, which contains the current value for each case property. The current value can be one of the following:

- The default value that is specified in Case Builder for that case property
- The value persisted in Content Engine for the case property
- The working value entered by the case worker for that property

JSON Payload

The following is the generic payload structure that can be used with an external data service. In this lab you will use a supplied payload for the HTTP POST method.

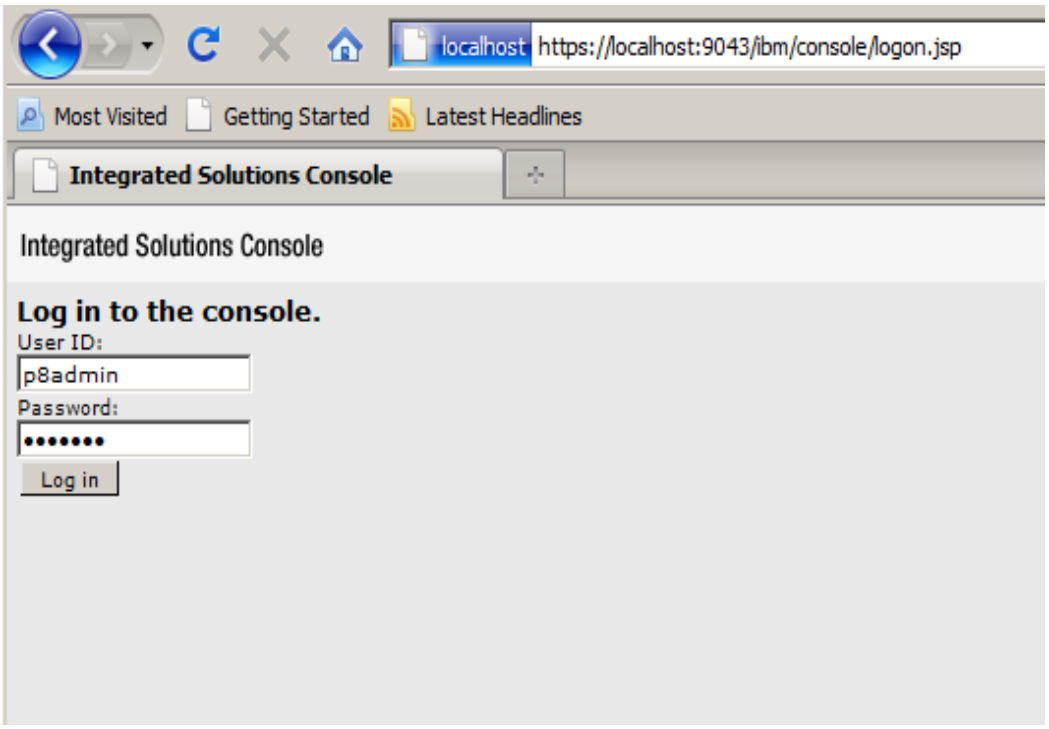
Payload parameters

The following code shows the structure of the full payload. However, not all methods use all parameters. See the specific method for the parameters that it uses in the payload.

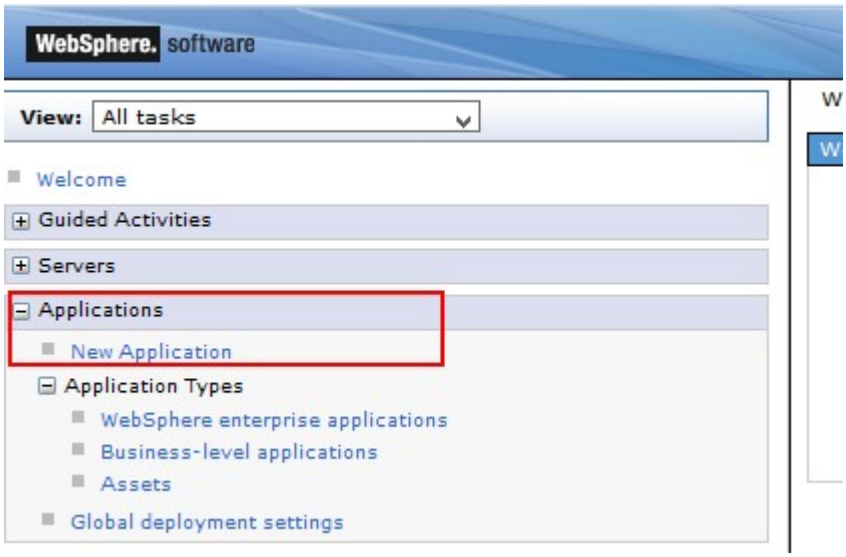
```
{
"TargetObjectStore" : "<target object store name>",
"CaseType" : "<case type symbolic name>",
"CaseFolderId" : "<GUID of case folder>",
"DisplayName" : "<name displayed for  case type>",
"Description" : "<description of case type",
"CaseTitleProperty": "<property used as case title>",
"CaseIdentifier": "<case identifier>",
"ExternalDataIdentifier" : "<opaque data>",
"Properties":
[
{
   "SymbolicName"           : "<symbolic name>",
   "DisplayName"            : "<display name>",
   "Value"                  : <current property value>,
   "OriginalValue"          : <original property value>,
   "DisplayMode"            : "<readonly/readwrite>",
   "CustomValidationError"  : "<text of error>",
   "CustomInvalidItems"     : [<array of indexes>],
   "Description"            : "<property description>",
   "PropertyType"           : "<property type>",
   "Cardinality"            : "<single or multiple>",
   "Updatability"           : "<settability as defined in CE>",
   "Required"               : <required flag>,
   "Queryable"              : <true or false>,
   "Orderable"              : <true or false>,
   "Hidden"                 : <hidden flag>,
   "Inherited"              : <true or false>,
   "DefaultValue"           : <default property value>,
   "MaxValue"               : <maximum property value>,
   "MinValue"               : <minimum property value>,
   "MaxLength"              : <integer maximum length>,
   "HasDependentProperties" : <true or false>,
   "ChoiceList"             :
      {
      "DisplayName"         : "<display name for choic list>",
      "Choices"             :
            [
         {
            "ChoiceName"    : "<display name for choice>"
            "Value"         : <integer or string>
         },
      ]
   }
}

// ... additional properties

]
"ClientContext":
{
    "<key>":<value">,
    \\ additional key value pairs
}
}
```

3.0 Deploy the EDS to WebSphere

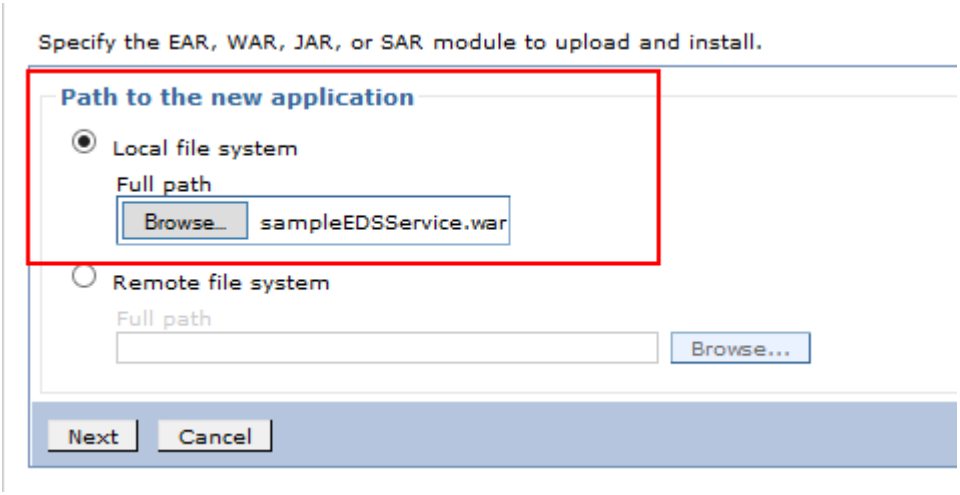
Login to the WebSphere console: http://localhost:9060/ibm/console
Username: p8admin
password: filenet



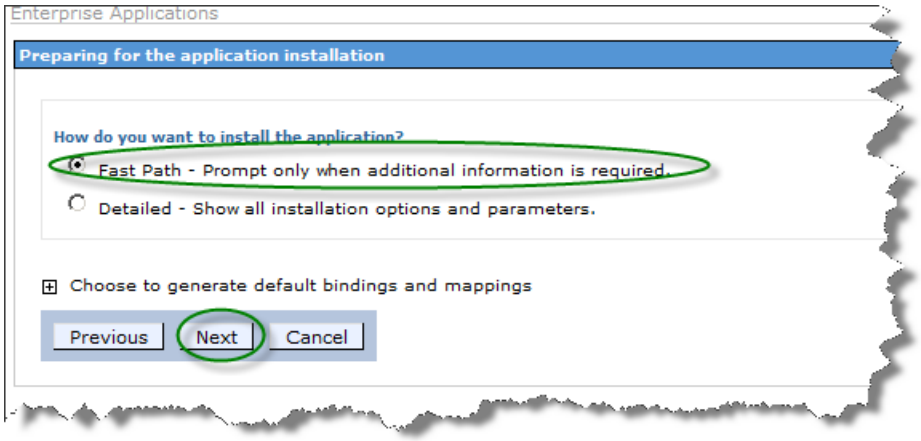
Install a new WebSphere enterprise application:



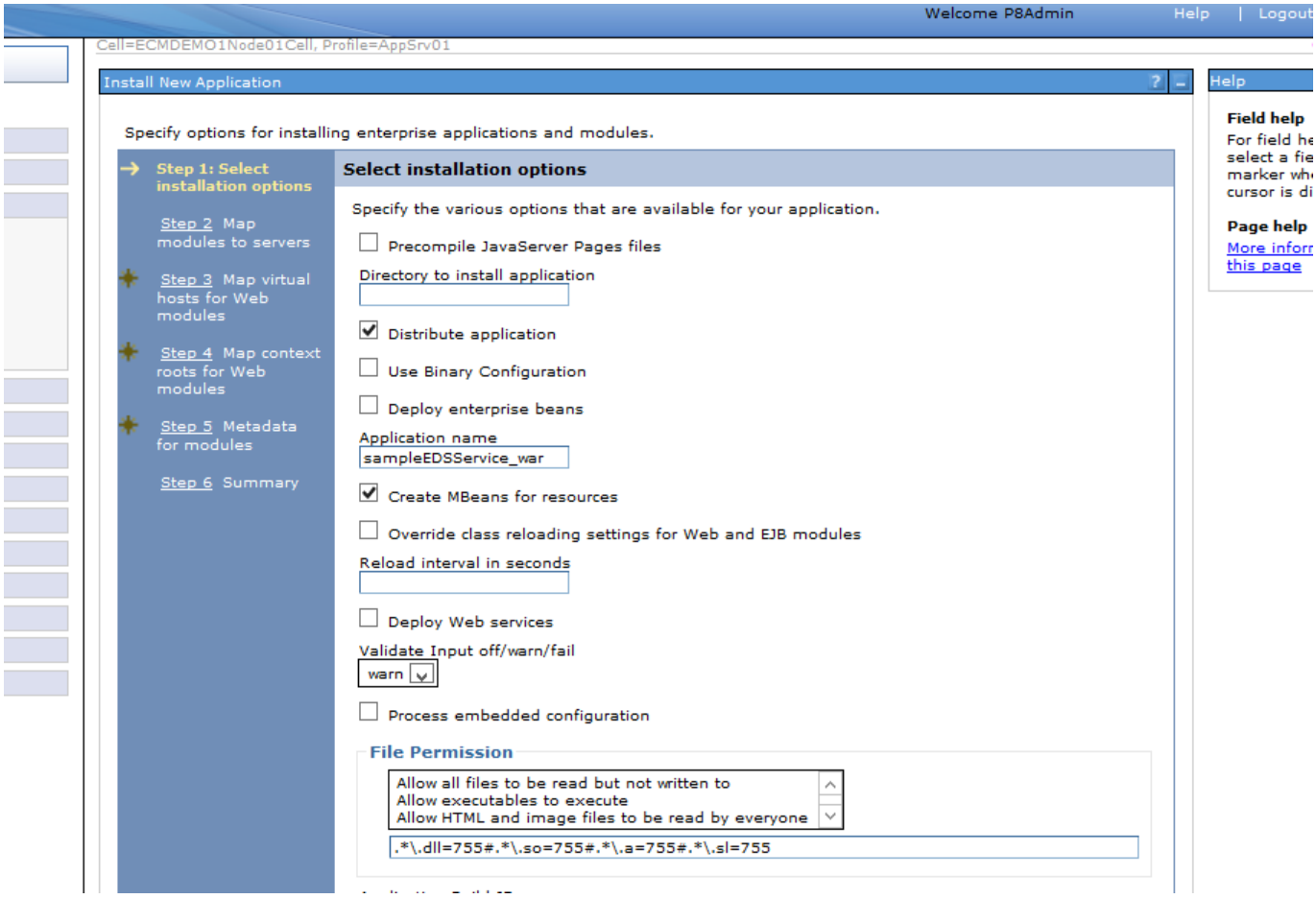
Browse to the C:\External Data Integration folder and select the sampleEDSService.war file and click Next



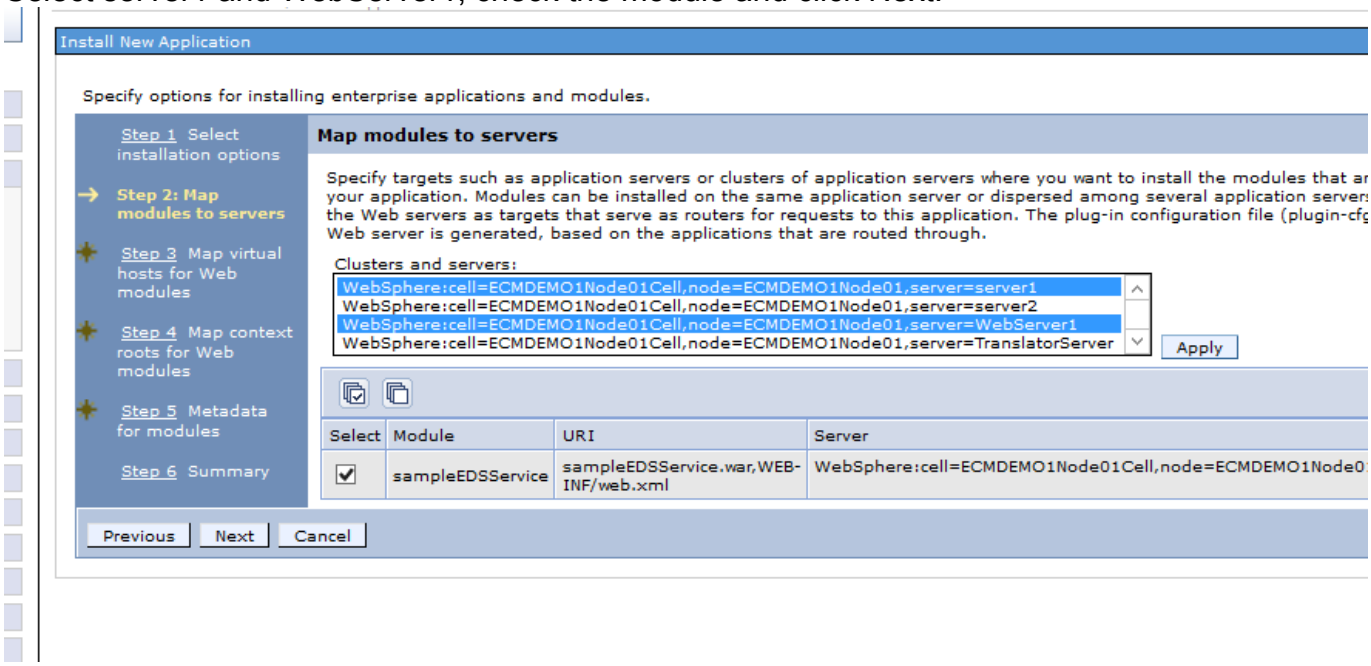
Keep the Fast Path default and click Next:



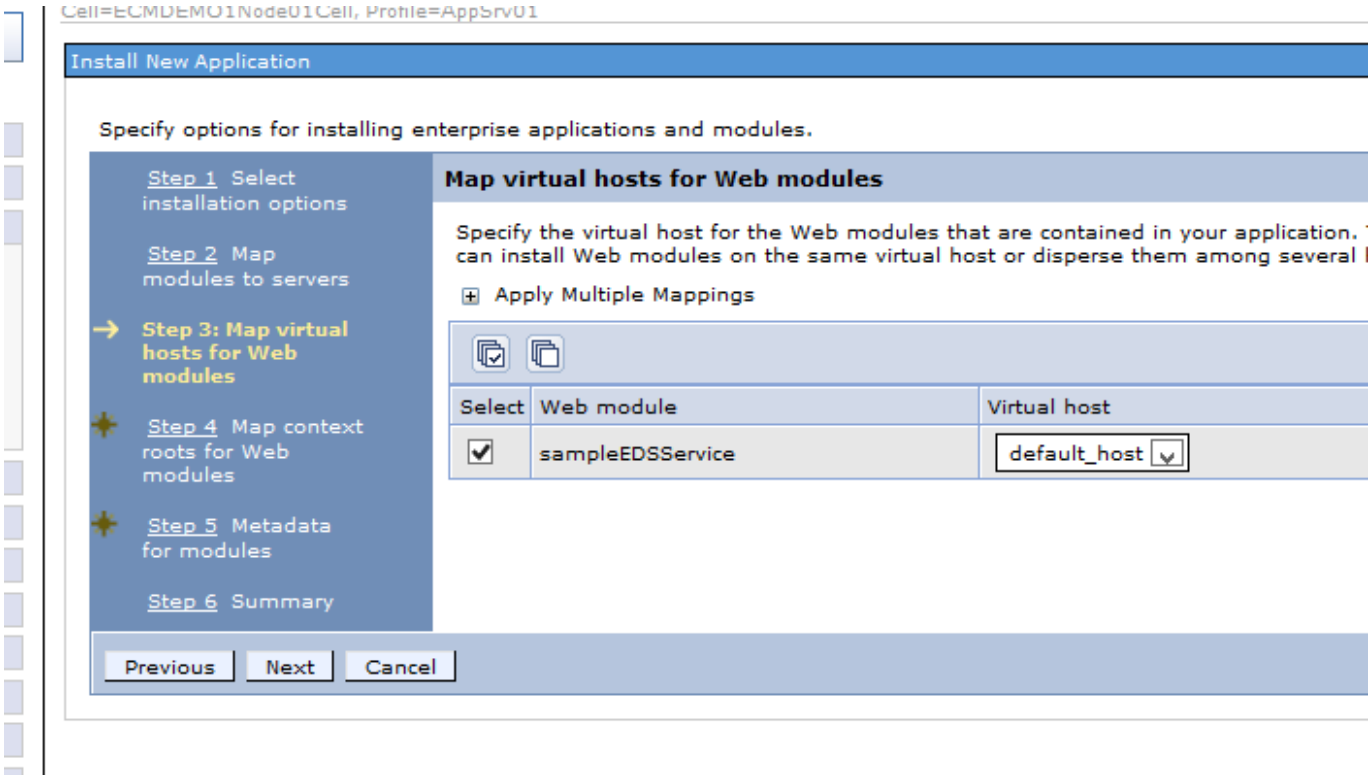
Keep defaults on **Step 1: Select installation options** and click Next:


Welcome P8Admin
Help | Logout
Cell=ECMDEMO1Node01Cell, Profile=AppSrv01
Install New Application
Specify options for installing enterprise applications and modules.
Step 1: Select installation options
Step 2 Map modules to servers
Step 3 Map virtual hosts for Web modules
Step 4 Map context roots for Web modules
Step 5 Metadata for modules
Step 6 Summary
Select installation options
Specify the various options that are available for your application.
Precompile JavaServer Pages files
Directory to install application
Distribute application
Use Binary Configuration
Deploy enterprise beans
Application name
sampleEDSService_war
Create MBeans for resources
Override class reloading settings for Web and EJB modules
Reload interval in seconds
Deploy Web services
Validate Input off/warn/fail
warn
Process embedded configuration
File Permission
Allow all files to be read but not written to
Allow executables to execute
Allow HTML and image files to be read by everyone
.*\.dll=755#.*\.so=755#.*\.a=755#.*\.sl=755
Help
Field help
Page help
More inform
this page

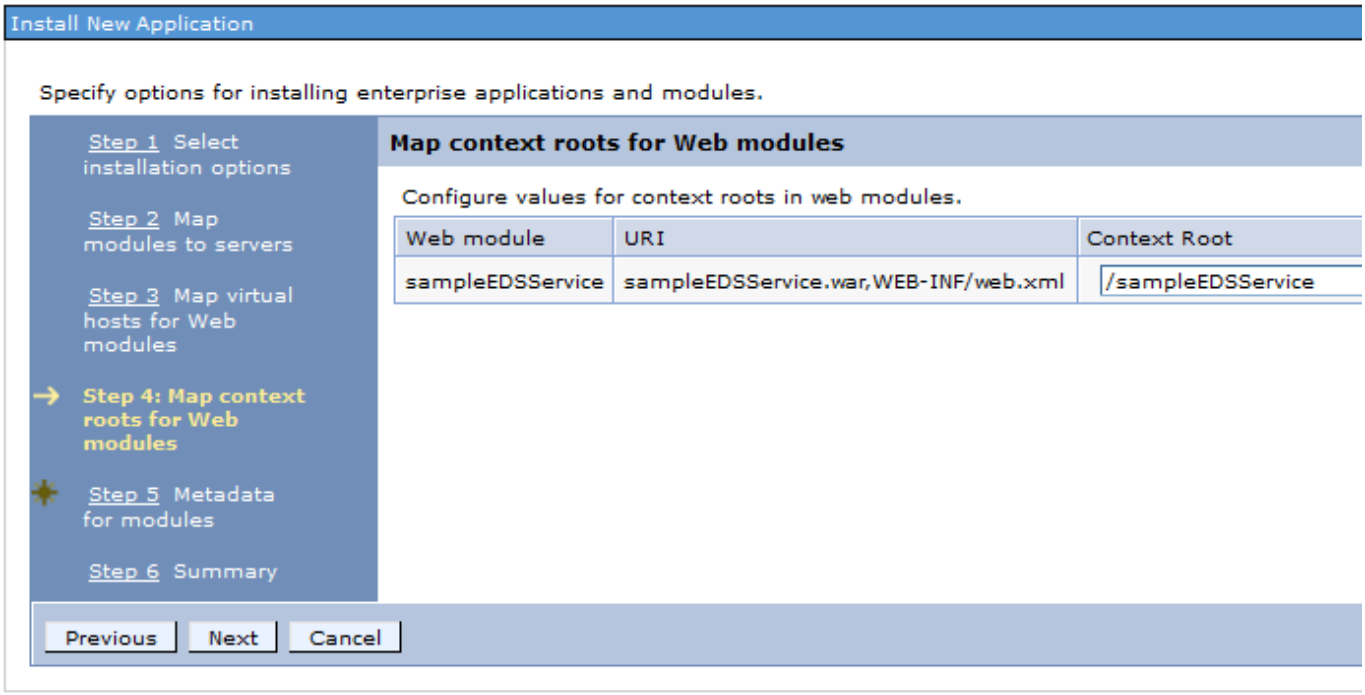
Select server1 and WebServer1, check the module and click Next:



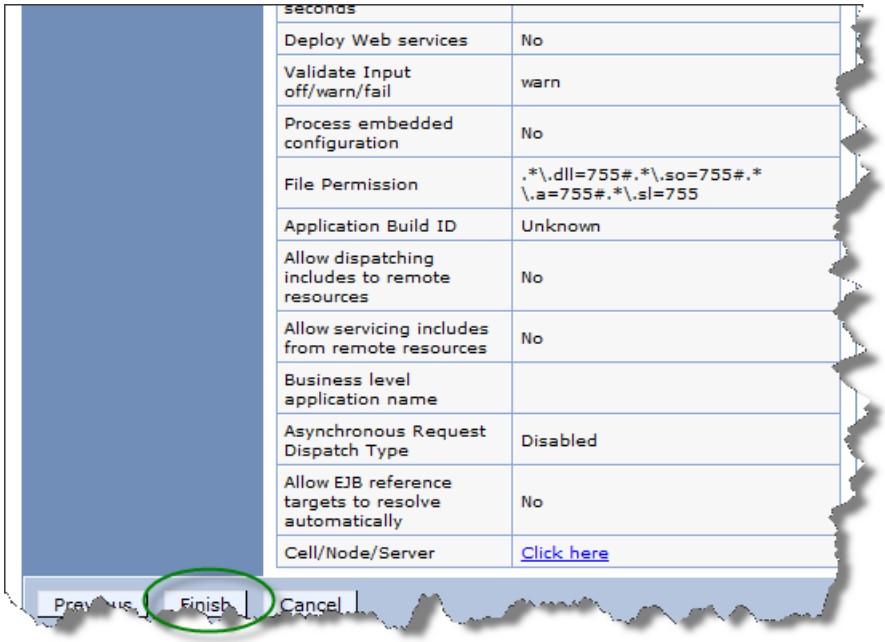
Select the web module and click Next:


Cell=ECMDEMO1Node01Cell, Profile=AppSrv01
Install New Application
Specify options for installing enterprise applications and modules.
Step 1 Select installation options
Step 2 Map modules to servers
Step 3: Map virtual hosts for Web modules
Step 4 Map context roots for Web modules
Step 5 Metadata for modules
Step 6 Summary
Map virtual hosts for Web modules
Specify the virtual host for the Web modules that are contained in your application.
can install Web modules on the same virtual host or disperse them among several
Apply Multiple Mappings
Select
Web module
Virtual host
sampleEDSService
default_host
Previous
Next
Cancel

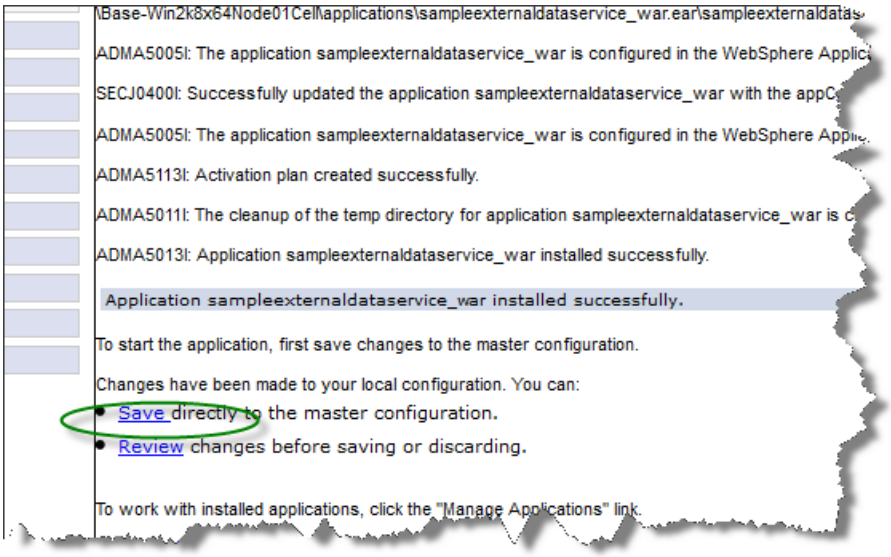
Set the Context root to /sampleEDSService and click Next:



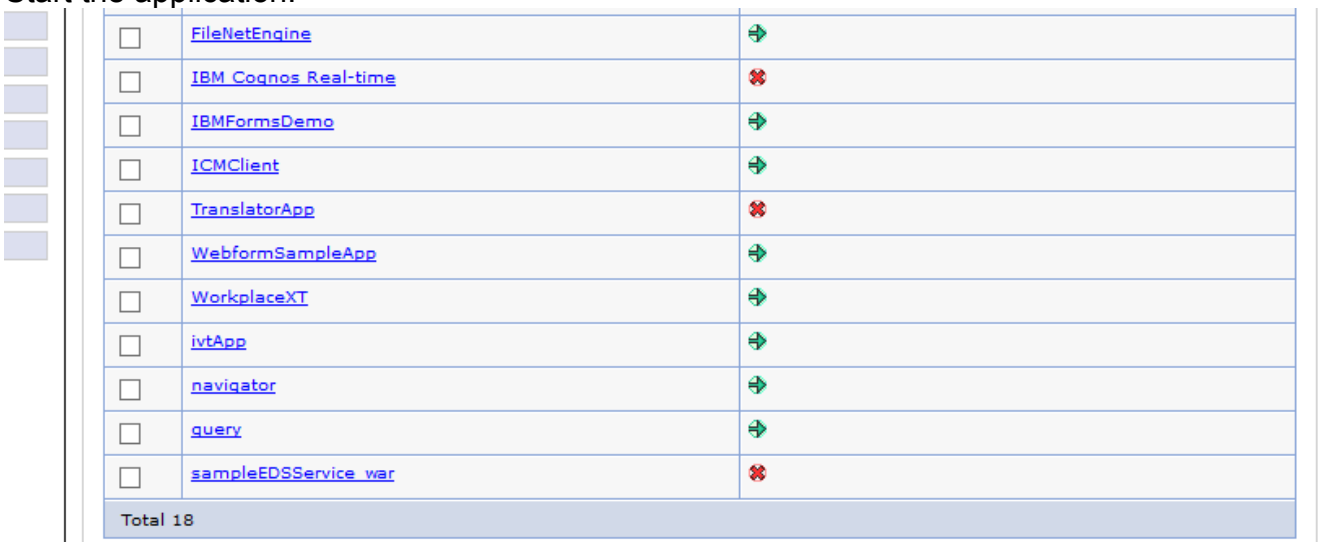
Click Next (on the page that follows) to choose the defaults and then Click Finish on the Summary Page:


seconds
Deploy Web services
No
Validate Input off/warn/fail
warn
Process embedded configuration
No
File Permission
.*\.dll=755#.*\.so=755#.*\.a=755#.*\.sl=755
Application Build ID
Unknown
Allow dispatching includes to remote resources
No
Allow servicing includes from remote resources
No
Business level application name
Asynchronous Request Dispatch Type
Disabled
Allow EJB reference targets to resolve automatically
No
Cell/Node/Server
Click here
Finish
Cancel

After successful deployment, Save your changes to the Master Configuration:



Start the application:

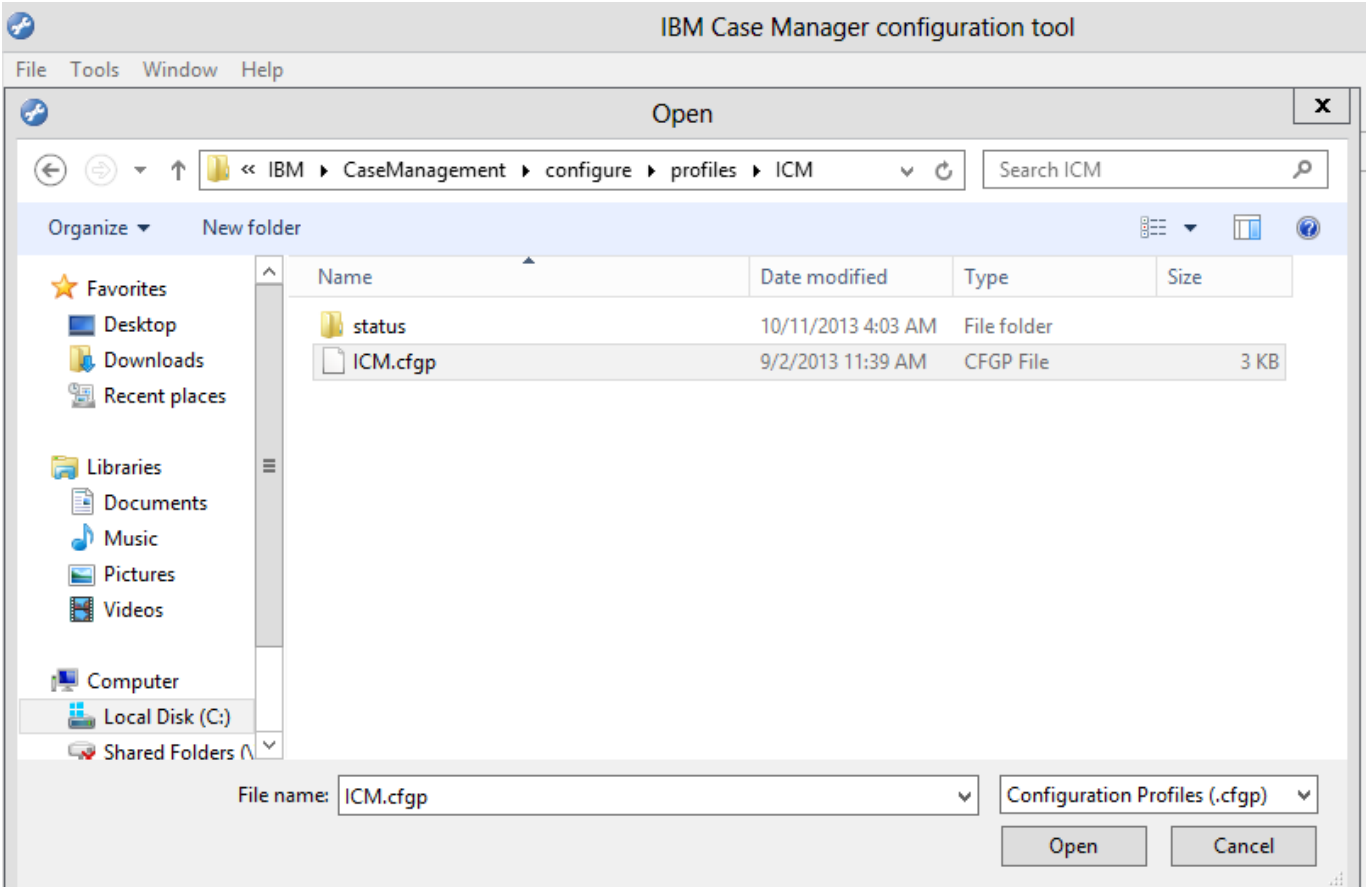


The application should now be started:

4.0 Register the EDS using CMAC

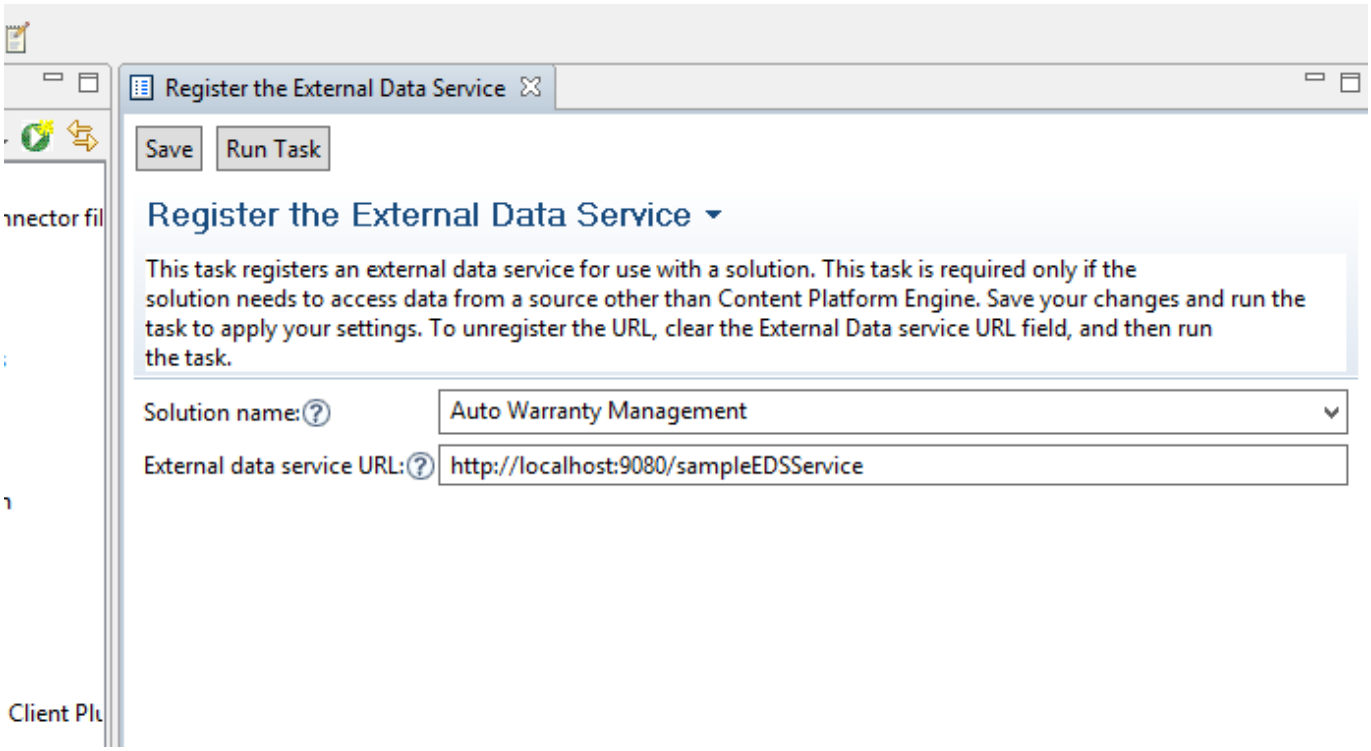
Launch Case Manager Configuration Tool from Start → All Programs → IBM Case Manager → Case Manager Configuration Tool

From File → Open Profile, open the profile ICM.cfgp in C:\IBM\CaseManagement\configure\profiles\ICM

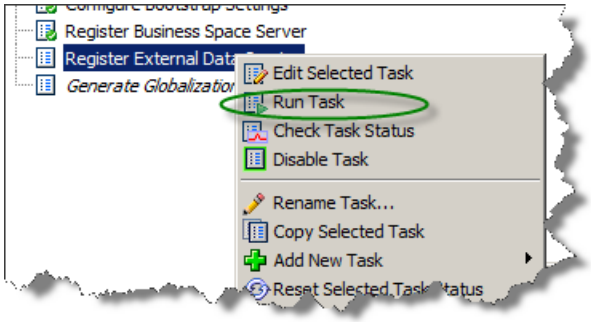


Expand the ICM profile and open the “Register External Data Service” task by right clicking on it and selecting Edit Selected Task:

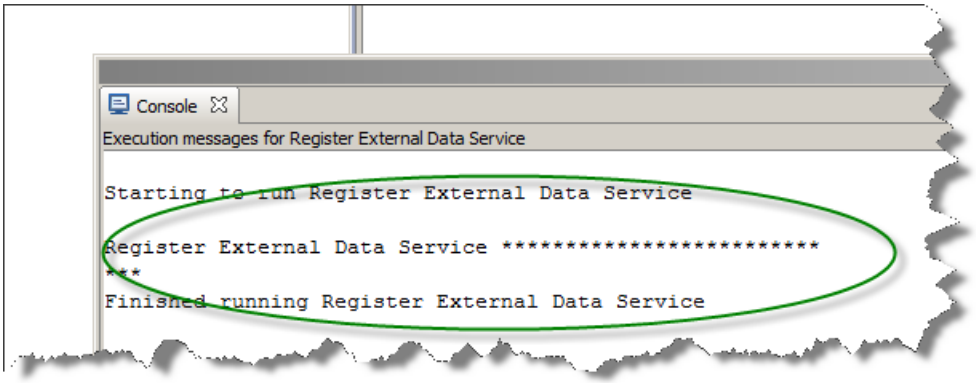
Select the Auto Warranty Management solution and enter the following URL in the External data service URL field:
http://localhost:9080/sampleEDSService



Save the task and then Run it:

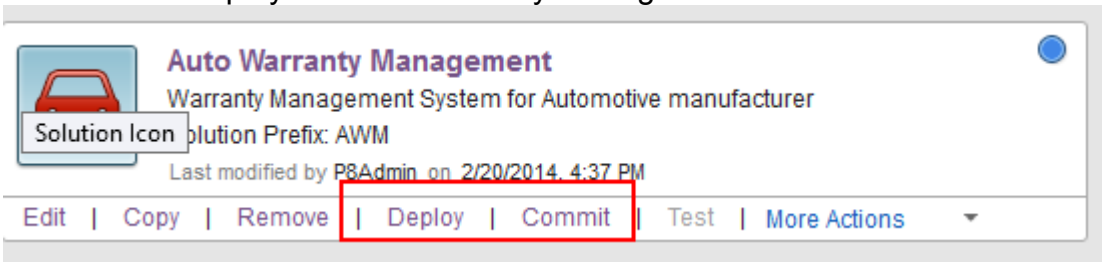


After successful registration of the EDS, you can use it in the case management solution:



Exit Case Manager Configuration Tool and Restart the WebSphere Application Server (This is required only the first time the EDS application is deployed. Any further changes will require restarting the EDS application and the Navigator application in the WebSphere console)

Commit and Deploy the Auto Warranty Management solution from the Case Builder:

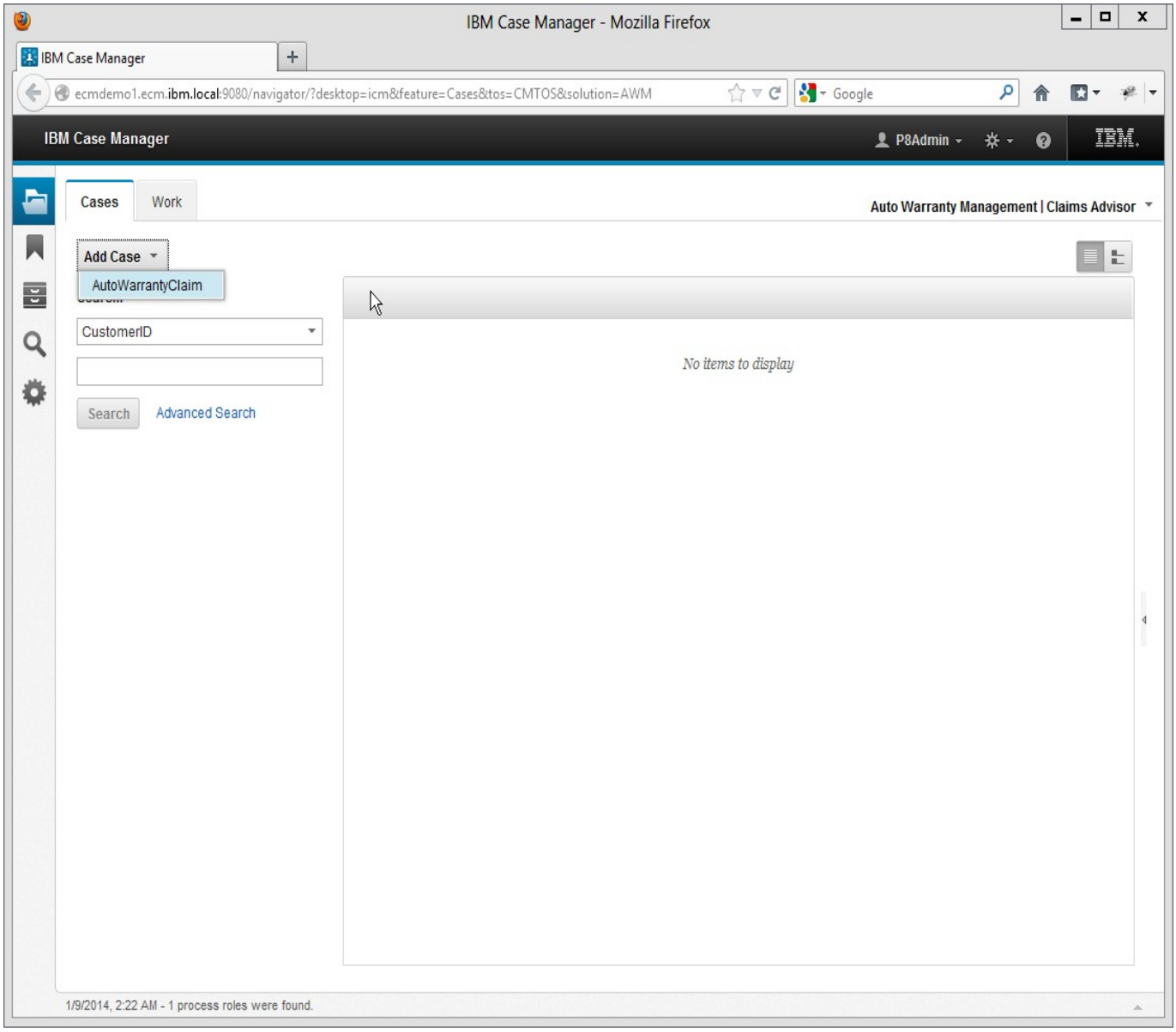


5.0 Testing the External Data Service

5.1 Create a new case

Click on the Test link from the Case Builder for the Auto Warranty Management solution to launch the Case Client

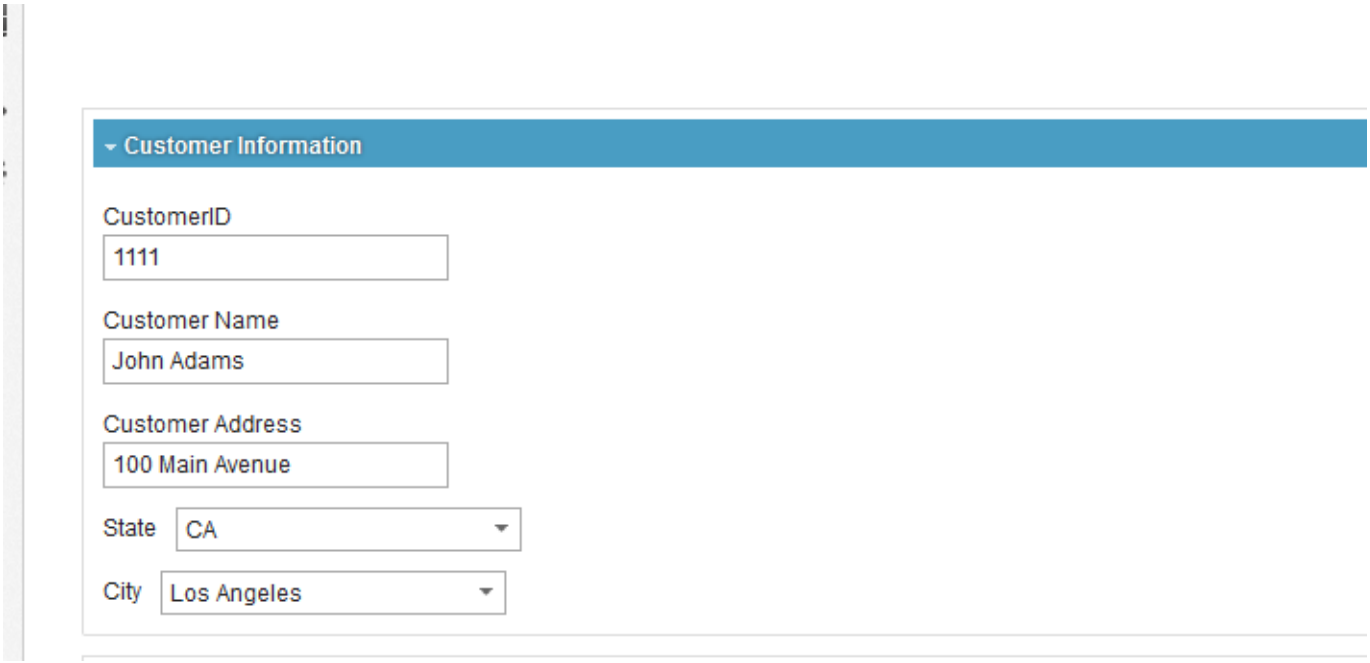
Add a new case instance with a case type of AutoWarrantyClaim:

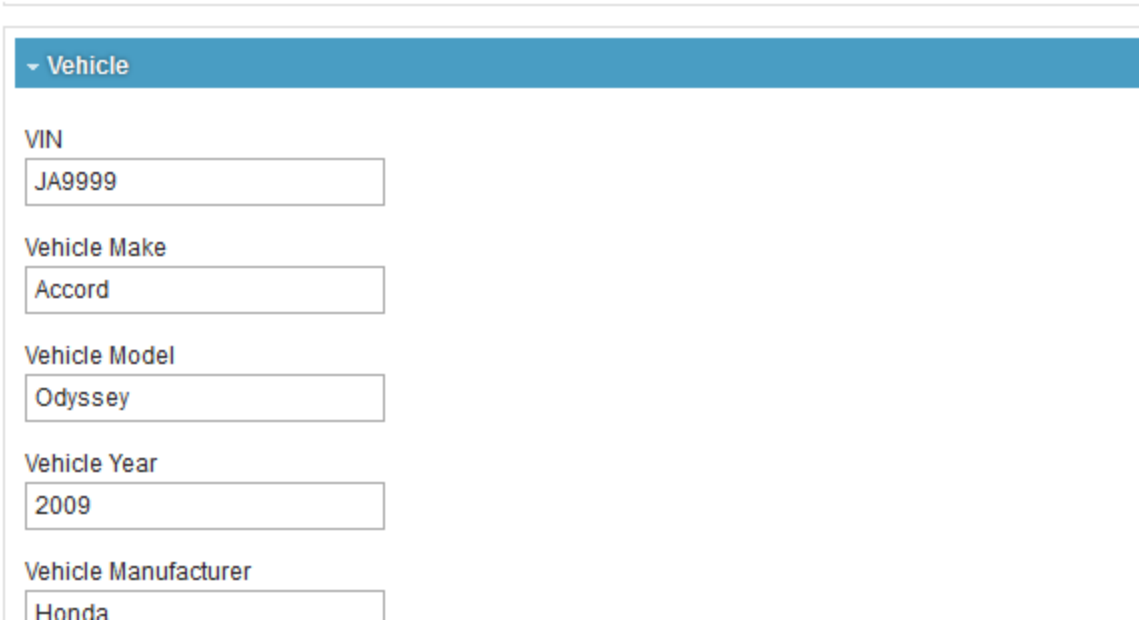


Expand the Customer Information section and fill in the CustomerID value as 1111. Tab out of the CustomerID text box, and notice that the Customer Name and Customer Address fields are filled in as follows:

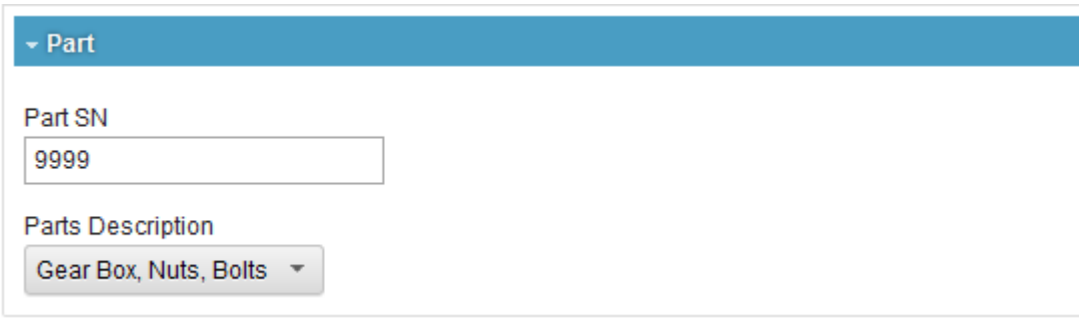
The Case Data widget publishes the update of the CustomerID field to the CASE REST API, which in turn makes the call to the EDS to retrieve the dependent case properties such as Customer Name, Customer Address and the State choice list. Select a state from the State Choice list and notice that the widget publishes another event, which makes a call to the EDS through the CASE REST API and retrieves the dependent City choice list:

Expand the Vehicle section of Case Data and enter the value JA9999 in the VIN field. Tab out of the VIN field and the vehicle details will be filled out from values retrieved from the EDS. Notice that the EDS can designate case fields as required or optional, read-only or read-write, etc. For a list of properties returned by the EDS, review the JSON payload.

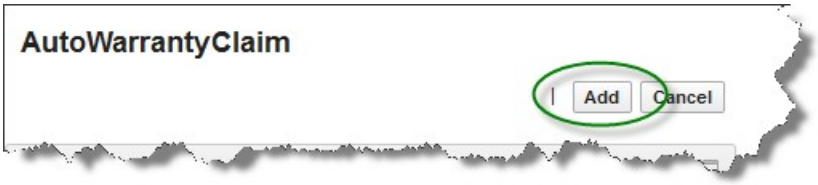




Expand the Part section of Case Data and enter the value 9999 in the Part SN field, and hit the enter key. The Parts Description is a Multi-Value string field. The EDS returns a list of values for the Parts Description. Select the parts description, clicking on the Parts Description link as show below:


Part
Part SN
9999
Parts Description
Gear Box, Nuts, Bolts

Click OK and Add the case



Now, let's take a look at the REST POST HTTP requests made by the Case Manager REST API to the EDS and the corresponding JSON responses from the EDS merged by the Case Manager. Open the SystemOut.log file from C:\IBM\WebSphere\AppServer\profiles\AppSrv01\logs\server1

The first request sent to the EDS is with requestMode=initialNewObject as shown in the JSONpayload below.

This is the request payload sent to the EDS from Case Manager. It includes all the case properties (including system properties), that the EDS can populate in the response.

sampleEDService.UpdateObjectTypeServlet: objectType=AWM_AutoWarrantyClaim requestMode=initialNewObject userid=null desktop=null locale=null

[1/9/14 2:55:37:205 PST] 000000e7 SystemOut O
{"requestMode":"initialNewObject","properties":[{"value":null,"symbolicName":"Creator"},
{"value":null,"symbolicName":"DateCreated"},{"value":null,"symbolicName":"LastModifier"},
{"value":null,"symbolicName":"DateLastModified"},{"value":null,"symbolicName":"Id"},
{"value":null,"symbolicName":"Name"},{"value":null,"symbolicName":"Owner"},
{"value":null,"symbolicName":"LockToken"},{"value":null,"symbolicName":"LockTimeout"},
{"value":null,"symbolicName":"LockOwner"},{"value":null,"symbolicName":"FolderName"},
{"value":null,"symbolicName":"PathName"},
{"value":true,"symbolicName":"InheritParentPermissions"},
{"value":null,"symbolicName":"IndexationId"},
{"value":null,"symbolicName":"CmIndexingFailureCode"},
{"value":null,"symbolicName":"CmRetentionDate"},
{"value":false,"symbolicName":"CmIsMarkedForDeletion"},
{"value":false,"symbolicName":"IsHiddenContainer"},
{"value":null,"symbolicName":"ContainerType"},
{"value":null,"symbolicName":"ClbCreatorIndex"},
{"value":null,"symbolicName":"ClbLastModifierIndex"},
{"value":null,"symbolicName":"CmAcmCaseIdentifier"},
{"value":0,"symbolicName":"CmAcmCaseState"},
{"value":"http:\/\/localhost:9080\/sampleEDSService","symbolicName":"CmAcmExternalDataURI
"},{"value":[],"symbolicName":"CmAcmDocumentFilingInstruction"},
{"value":null,"symbolicName":"AWM_CustomerID"},
{"value":null,"symbolicName":"AWM_VehicleYear"},{"value":
[],"symbolicName":"AWM_PartsDescription"},
{"value":null,"symbolicName":"AWM_VehicleModel"},
{"value":null,"symbolicName":"AWM_State"},

{"value":null,"symbolicName":"AWM_ProductionPlant"},
{"value":null,"symbolicName":"AWM_CustomerAddress"},
{"value":null,"symbolicName":"AWM_CustomerName"},
{"value":null,"symbolicName":"AWM_VehicleMake"},{"value":null,"symbolicName":"AWM_VIN"},
{"value":null,"symbolicName":"AWM_City"},
{"value":null,"symbolicName":"AWM_VehicleManufacturer"},
{"value":null,"symbolicName":"AWM_PartSN"},
{"value":null,"symbolicName":"AWM_CountryManufacturer"}],"clientContext":
{"currentSolution":"Auto Warranty Management","role":"Claims
Advisor"},"repositoryId":"CMTOS"}{"properties":
[{"value":null,"hasDependentProperties":true,"symbolicName":"AWM_VIN"},
{"value":null,"hasDependentProperties":true,"symbolicName":"AWM_CustomerID"},
{"value":null,"hasDependentProperties":true,"symbolicName":"AWM_PartSN"}],"externalDataIde
ntifier":"2900998"}AWM_AutoWarrantyClaim

In the AWM_AutoWarrantyClaim_PropertyData.json file, we have set up the JSON values for AWM_CustomerID to be a dependant property, so when the user enters a value (1111), the corresponding dependant values such as CustomerName will be populated.

When the user enters the value for CustomerID, the Case Client sends another POST request to the EDS, with the following payload with requestMode=inProgressChanges. The response will include all the dependant values for CustomerName, CustomerAddress etc.

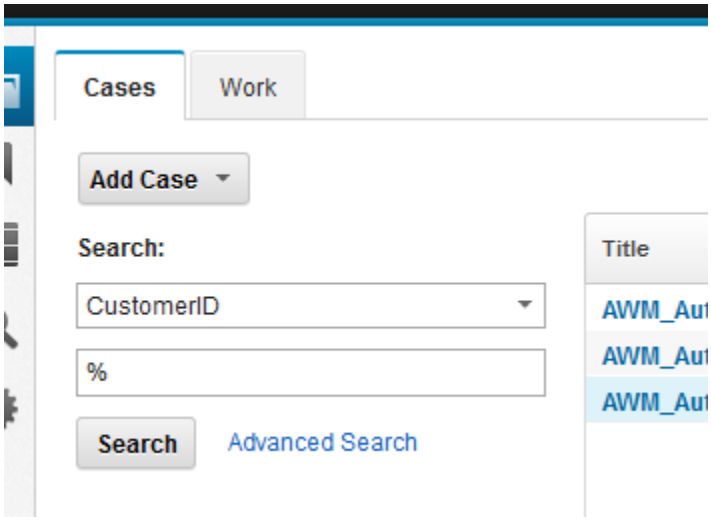
{"requestMode":"inProgressChanges","properties":[{"value":null,"symbolicName":"Creator"},
{"value":null,"symbolicName":"DateCreated"},{"value":null,"symbolicName":"LastModifier"},
{"value":null,"symbolicName":"DateLastModified"},{"value":null,"symbolicName":"Id"},
{"value":null,"symbolicName":"Name"},{"value":null,"symbolicName":"Owner"},
{"value":null,"symbolicName":"LockToken"},{"value":null,"symbolicName":"LockTimeout"},
{"value":null,"symbolicName":"LockOwner"},{"value":null,"symbolicName":"FolderName"},
{"value":null,"symbolicName":"PathName"},
{"value":true,"symbolicName":"InheritParentPermissions"},
{"value":null,"symbolicName":"IndexationId"},
{"value":null,"symbolicName":"CmIndexingFailureCode"},
{"value":null,"symbolicName":"CmRetentionDate"},
{"value":false,"symbolicName":"CmIsMarkedForDeletion"},
{"value":false,"symbolicName":"IsHiddenContainer"},
{"value":null,"symbolicName":"ContainerType"},
{"value":null,"symbolicName":"ClbCreatorIndex"},
{"value":null,"symbolicName":"ClbLastModifierIndex"},
{"value":null,"symbolicName":"CmAcmCaseIdentifier"},
{"value":0,"symbolicName":"CmAcmCaseState"},
{"value":"http:\/\/localhost:9080\/sampleEDSService","symbolicName":"CmAcmExternalDataURI
"},{"value":[],"symbolicName":"CmAcmDocumentFilingInstruction"},
{"value":"1111","symbolicName":"AWM_CustomerID"},
{"value":null,"symbolicName":"AWM_VehicleYear"},{"value":
[],"symbolicName":"AWM_PartsDescription"},
{"value":null,"symbolicName":"AWM_VehicleModel"},

{"value":null,"symbolicName":"AWM_State"},
{"value":null,"symbolicName":"AWM_ProductionPlant"},
{"value":null,"symbolicName":"AWM_CustomerAddress"},
{"value":null,"symbolicName":"AWM_CustomerName"},
{"value":null,"symbolicName":"AWM_VehicleMake"},{"value":null,"symbolicName":"AWM_VIN"},
{"value":null,"symbolicName":"AWM_City"},
{"value":null,"symbolicName":"AWM_VehicleManufacturer"},
{"value":null,"symbolicName":"AWM_PartSN"},
{"value":null,"symbolicName":"AWM_CountryManufacturer"}],"clientContext":
{"currentSolution":"Auto Warranty Management","role":"Claims
Advisor"},"repositoryId":"CMTOS","externalDataIdentifier":"2900998"}{"properties":
[{"value":null,"hasDependentProperties":true,"symbolicName":"AWM_VIN"},
{"value":"1111","hasDependentProperties":true,"symbolicName":"AWM_CustomerID"},
{"value":"John
Adams","dependentValue":"1111","symbolicName":"AWM_CustomerName","dependentOn":"AW
M_CustomerID"},{"value":"100 Main
Avenue","dependentValue":"1111","symbolicName":"AWM_CustomerAddress","dependentOn":"
AWM_CustomerID"},
{"dependentValue":"1111","hasDependentProperties":true,"symbolicName":"AWM_State","depen
dentOn":"AWM_CustomerID","choiceList":{"choices":[{"value":"CA","displayName":"CA"},
{"value":"NY","displayName":"NY"},{"value":"NV","displayName":"NV"},
{"value":"MS","displayName":"MS"}],"displayName":"States"}},
{"value":null,"hasDependentProperties":true,"symbolicName":"AWM_PartSN"}],"externalDataIde
ntifier":"2900998"}AWM_AutoWarrantyClaim

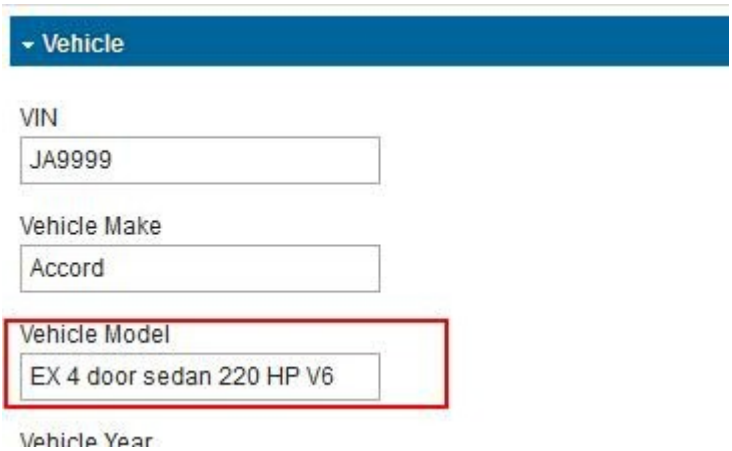
5.2 Modify a case

Now let's suppose that the Vehicle Information database was recently updated, which impacted the Vehicle Model case data field for the VIN 9999. We will first update the sample external data source with the new value for the Vehicle Model case data field, and when the case is opened, the updated value will be displayed in the Vehicle Model field.

Before making your changes, search for the previously created case by doing a case search on the Cases page. You can use % as a wildcard for the CustomerID.



In the resulting Case List, click on the case link, and the Case Details page will be displayed. On that page the current Vehicle Model value EX 4 door sedan 220 HP V6 is shown in the Case Data widget:



To modify the value in the EDS, browse to this folder:
C:\IBM\WebSphere\AppServer\profiles\AppSrv01\installedApps\ECMDEMO1Node01Cell\sampleEDSService_war.ear\sampleEDSService.war\WEB-INF\classes

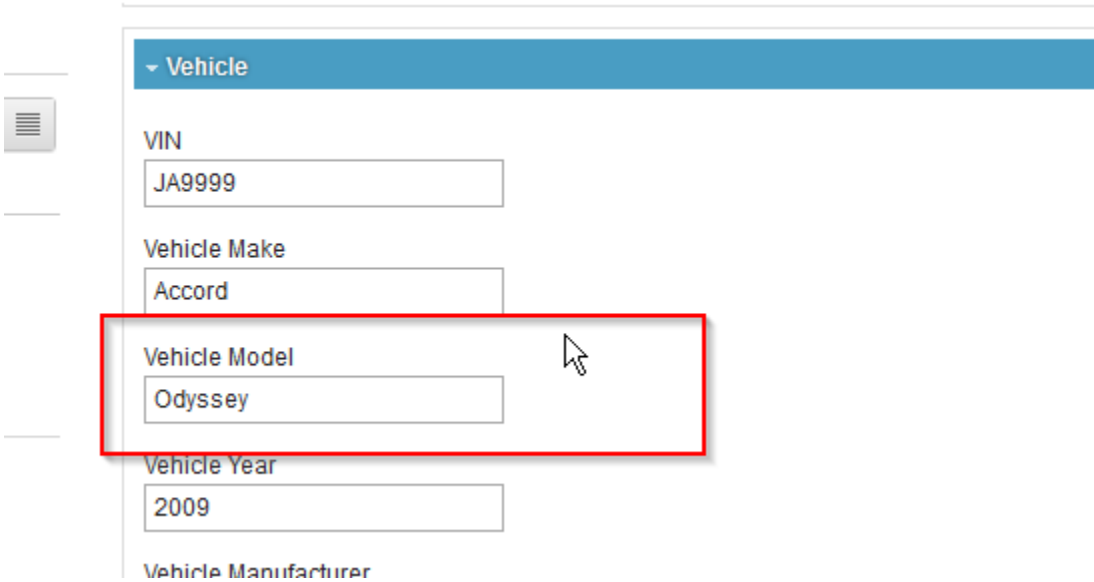
Rename the AWM_AutoWarrantyClaim_PropertyData.json file to AWM_AutoWarrantyClaim_PropertyData.orig

Copy the AWM_AutoWarrantyClaim_PropertyData.json from C:\External Data Integration folder to
C:\IBM\WebSphere\AppServer\profiles\AppSrv01\installedApps\ECMDEMO1Node01Cell\sampleEDSService_war.ear\sampleEDSService.war\WEB-INF\classes

Login to the WebSphere console and stop and start the EDS and navigator applications as follows:
http://ecmdemo1:9060/ibm/console
p8admin/filenet

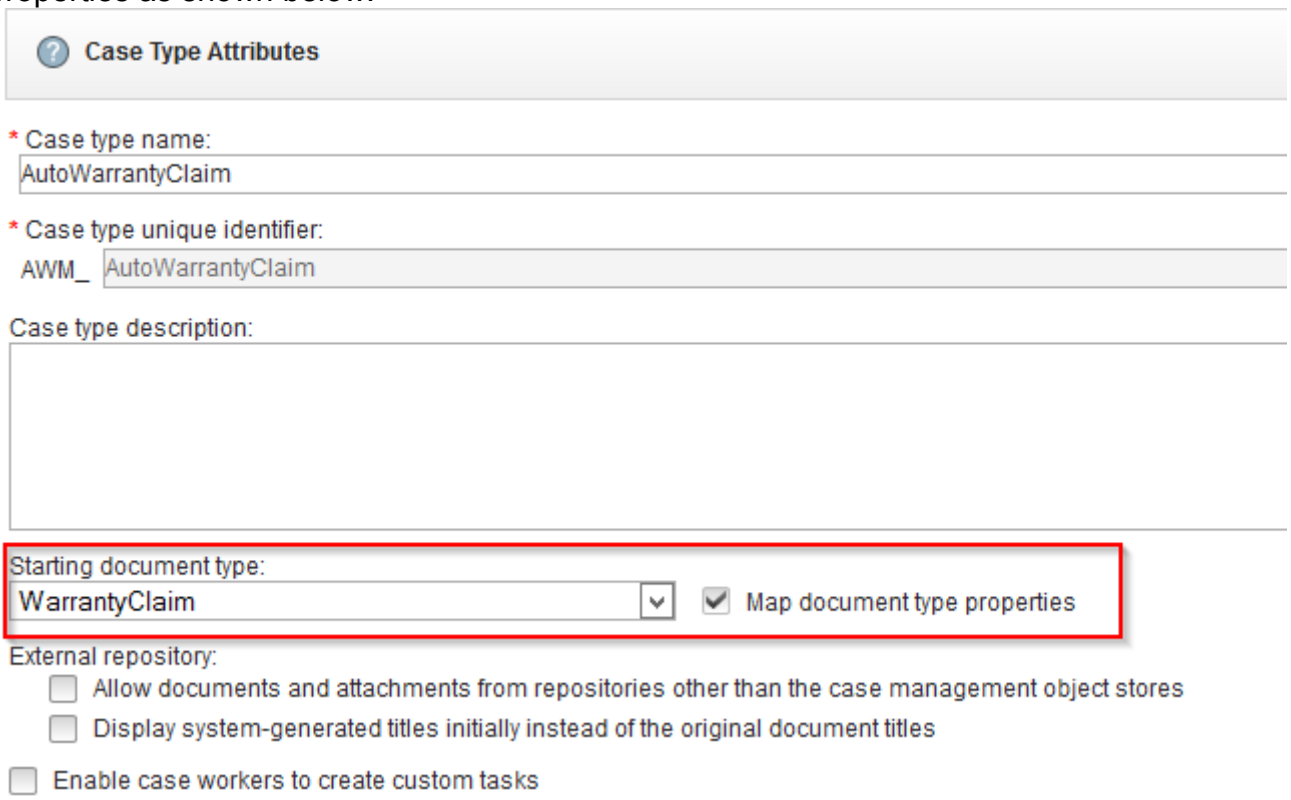
Select the application, stop and start it. Close the browser and launch the Case Client again (login to Case Builder and select Test link from the Auto Warranty Management solution)

Search for the case again, and open it in the Case Details page. The value in the Vehicle Model case data field has changed. If you don't see the change, log out of Case Client and log back in, then search again.



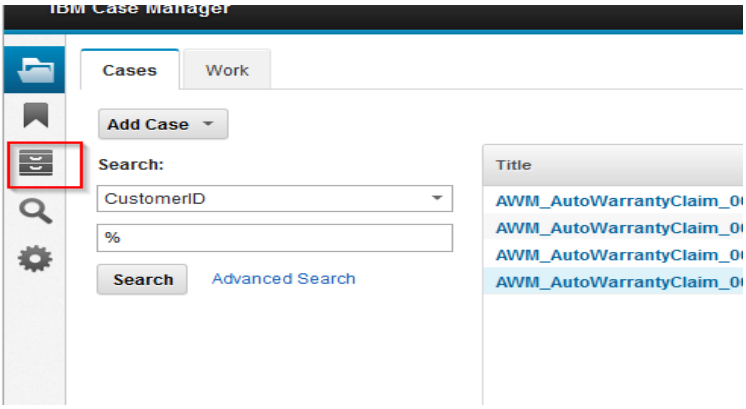
5.3 Mapping Document Properties to Case Properties

The Auto Warranty Management solution has been configured to create a case whenever a document of type WarrantyClaim is created. You can map the document properties to the case properties as shown below:

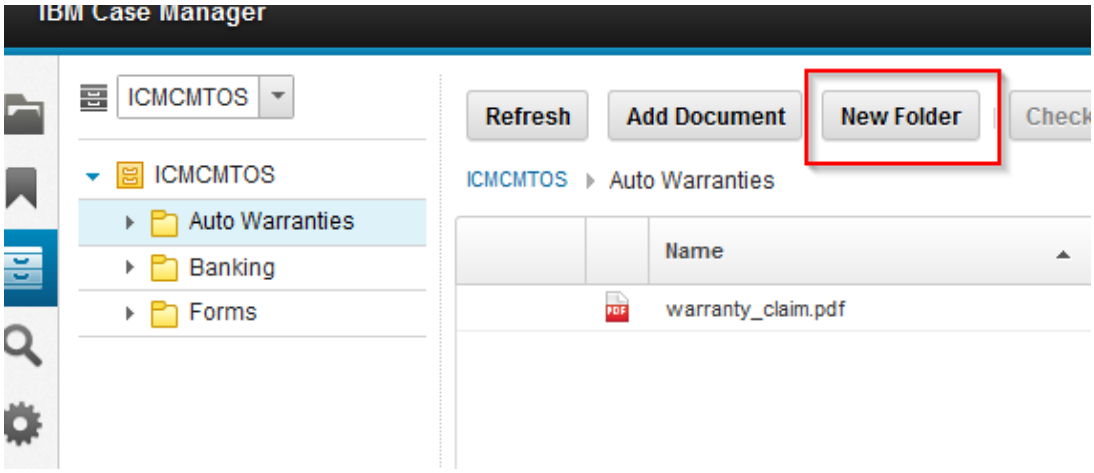


When you create a document of type WarrantyClaim and fill in the CustomerID, Part SN and VIN, a case will be created and the document will be moved into the case. When you open the case data, the external data will be populated using the CustomerID, Part SN and VIN.

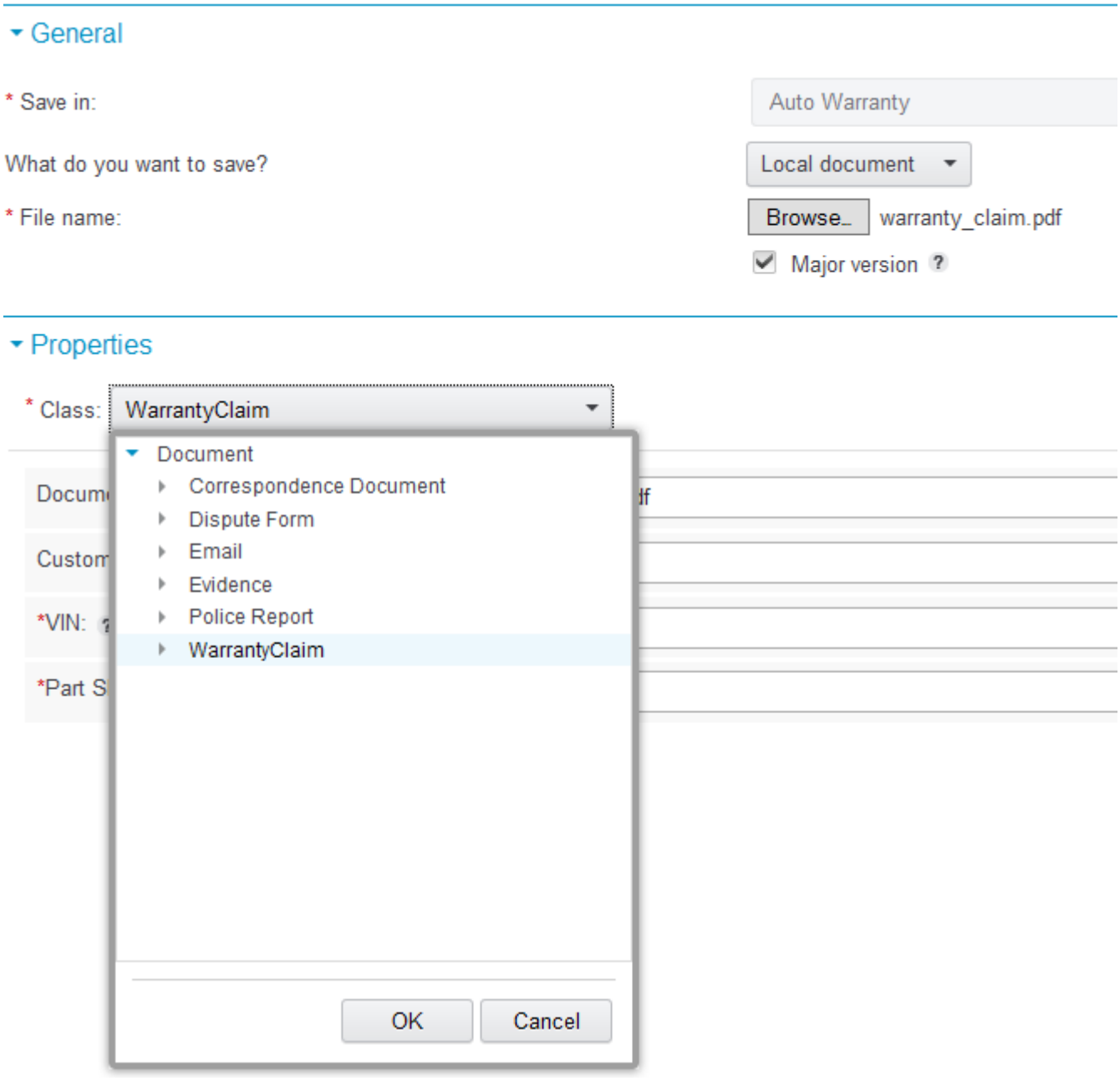
Let's go through these steps now.
In the Case Client click on the Browse feature as shown below:



Create a folder named Auto Warranties



Browse to the new folder and drag and drop the warranty_claim.pdf document from C:\External Data Integration folder into the Auto Warranties folder in the Case Client. This will launch the Add Document dialog as shown below. Select the Warranty Claim as the document type:

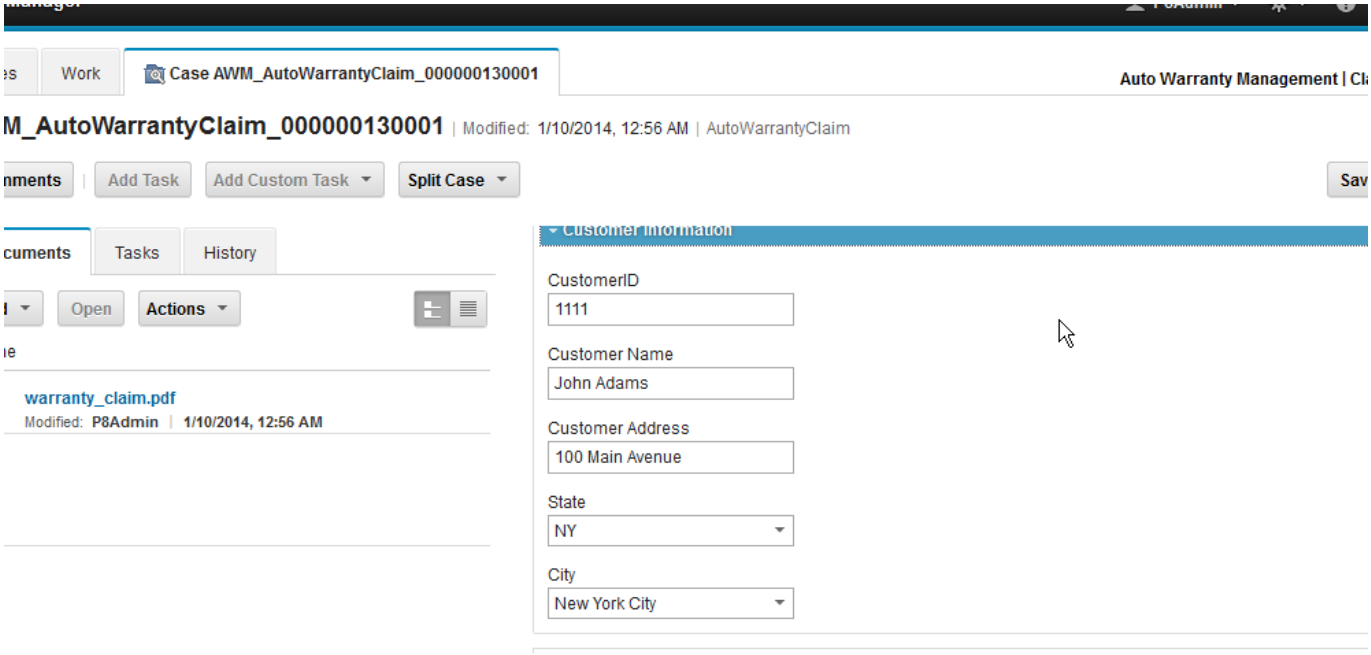

General
* Save in:
Auto Warranty
What do you want to save?
Local document
* File name:
Browse...
warranty_claim.pdf
Major version
Properties
* Class:
WarrantyClaim
Document
Correspondence Document
Dispute Form
Email
Evidence
Police Report
WarrantyClaim
OK
Cancel

Enter the document properties as follows:
Customer ID : 1111, tab out and you will see the Customer Name populated
VIN: JA9999, tab out and you will see the Vehicle make populated
Part SN: 9999, tab out and you will see the Parts Description populated

Click Add to create the document and therefore a new case.

Login to Case Client using p8admin/filenet credentials and search for the case on the Cases page. (Search based on the Date Added attribute and pick today's date).

Click on the case link to open the case in Case Details, and the case data will be retrieved from the external data service and populated. Select the State and City values in the Customer tab and save.



Close the case data. If errors occur you can either add the missing required values or discard the changes.

You have completed the lab on External Data Integration Framework.