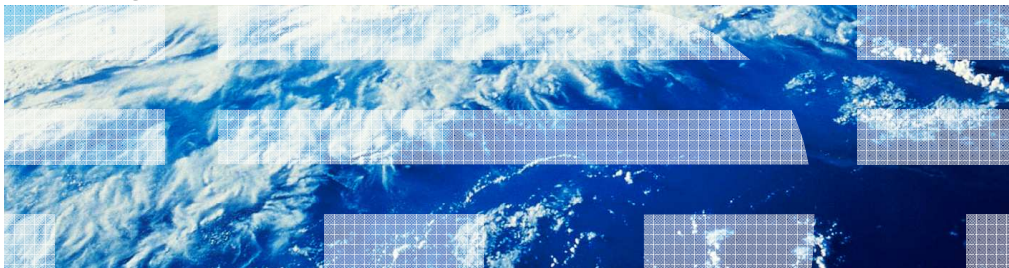




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# IBM WebSphere Business Process Management V7.0

## IBM WebSphere adapter for Enterprise Content Management V7.0 Feature Pack 2



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This presentation provides a general overview of the new IBM WebSphere adapter for Enterprise Content Management V7.0 Feature Pack 2.

## Agenda

- Technology adapters
  - Overview
  - Outbound processing
  - Inbound processing
- Summary

This presentation covers details of the new IBM WebSphere Adapter for Enterprise Content Management. It starts with overview then goes into more details on outbound and inbound processing. Separate demonstrations are provided to demonstrate the outbound and inbound scenarios.

## ***Overview***

This section provides an overview of the new enhancements in WebSphere adapter for Enterprise Content Management V7.0 Feature Pack 2.

## Enterprise Content Management (ECM) adapter

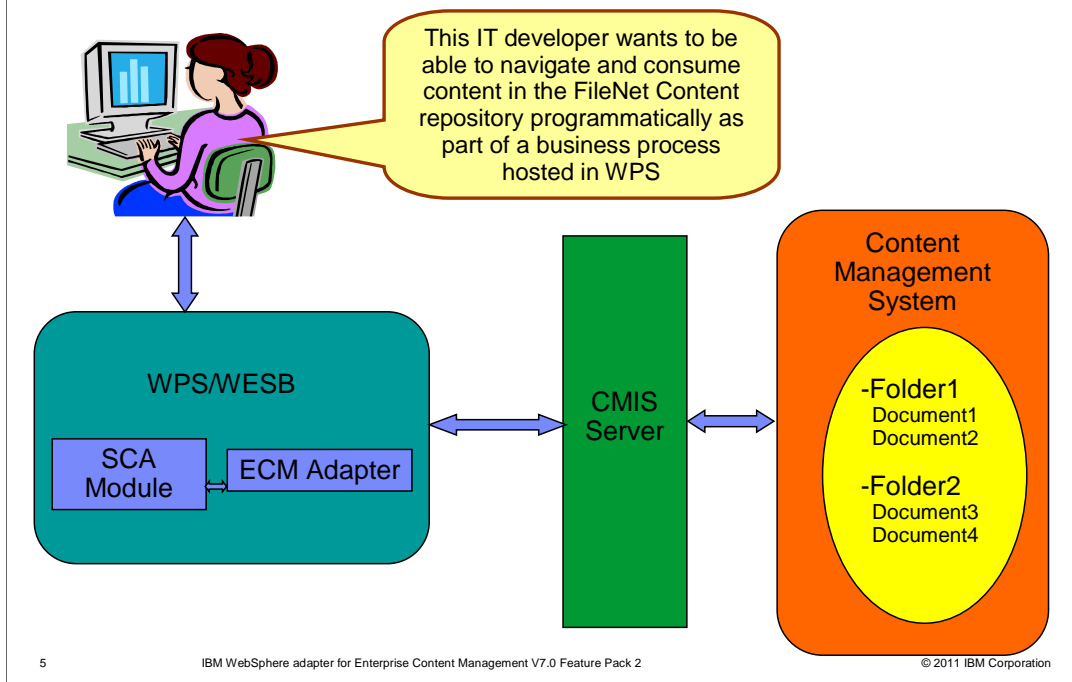
- WebSphere adapter for Enterprise Content Management (ECM) provides bidirectional exchange of information between SCA applications and enterprise content management systems
  - Use WebService Java Clients of CMIS (Content Management Interoperability Services) WebService definition for interaction with target content management systems
  - WebSphere Adapter for Enterprise Content Management complies with the Java 2 Platform, Enterprise Edition (Java EE) Connector Architecture (JCA) version 1.5
- With Feature Pack 2,
  - Support discovery, outbound, and inbound functionality
  - Supports only FileNet ECM
- Future
  - Extensible to other content management systems

WebSphere Adapter for Enterprise Content Management (ECM) supports bidirectional exchange of business data between business applications and Content Management Repository systems, which implement the Content Management Interoperability Services (CMIS) v1.0 specification. The adapter provides outbound and inbound processing under the Java 2 Platform, Enterprise Edition (Java EE) Connector Architecture (JCA) and integrates with Service Component Architecture (SCA) components.

With Feature Pack 2, the WebSphere Adapter for ECM supports both outbound request processing and inbound processing of events. For outbound processing, when the adapter receives a request, which is sent in the form of a business object from the module, it processes the request and returns the result as a business object. For inbound processing, the adapter polls the event database in the CMIS server for events at specified intervals. Each time a subscription is created or updated, the adapter tracks the process as an event. When the adapter detects an event, it requests a copy of the subscription, converts the data into a business object, and sends it to the consuming service.

The WebSphere Adapter for Enterprise Content Management is designed to connect to all Content Management Repositories which implement the CMIS interface. However, with Feature Pack 2 release, the adapter only connects to the FileNet Content Engine with possibility of extensible to other content management systems in future release.

## ECM adapter – big picture



In this example, a company uses the FileNet Content Engine as its Content Management (CM) tool for most of its business operations. Employee data of the company is stored securely in the Content Engine. The Employee data can be modified, retrieved or created afresh. For example, information about new hires in the company can be stored in the Content Engine without specific coding.

With the WebSphere Adapter for ECM, you can automatically generate an interface to the data interface of the FileNet Content Engine to hide the lower-level details of the function. Depending on how you want to use the adapter, you can embed it with the deployed module, or install the adapter as a stand-alone component, to be used by more than one application. The adapter is deployed to WebSphere Process Server or WebSphere Enterprise Service Bus. The application component interacts with the adapter instead of with the Content Engine directly.

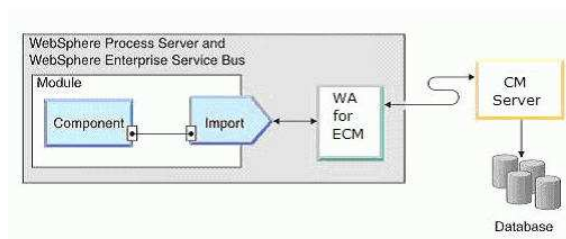
The adapter module, which you generate with the external service wizard of WebSphere Integration Developer, uses a standard interface and standard business objects. The adapter takes the standard business object sent by the application component and invokes the appropriate function on the Content Engine. The adapter then returns a standard business object to the application component. The application component does not have to interact directly with the CMIS services; it is the adapter for ECM that calls the service and returns the results.

## ***Outbound Processing***

This section provides details on outbound processing for WebSphere adapter of Enterprise Content Management V7.0 Feature Pack 2.

## ECM adapter – outbound processing

- Configuring the external service wizard for outbound processing
  - Adapter connects to the CMIS Server with the specified repositoryURL, username and password
  - User selects the repository to work with from the metadata tree
  - User selects the document type
  - User gets to choose the properties from the optional list required and additional properties
  - User selects the required operations and completes the wizard



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The WebSphere Adapter for Enterprise Content Management supports outbound request processing. This figure here shows how the adapter and module function together as part of an outbound service. A module created for outbound processing receives the request. The adapter determines the operation to be performed based on the information received in the metadata from the interaction specification properties. It then performs the operation on the Content Management Repository.

The adapter connects to the CMIS server with the repository URL, user name and password information. After connecting to the Content Management Repository server, the adapter lists all available CMIS Repositories. In each repository, there can be several types of Document types. Instances of these Document types are stored and managed by the Content Management Repository. The adapter lists all Document types in a repository and allows you to select the Document types as business object types. For each selected business object type, method binding artifacts are generated to support outbound operations.

## ECM adapter – outbound operations

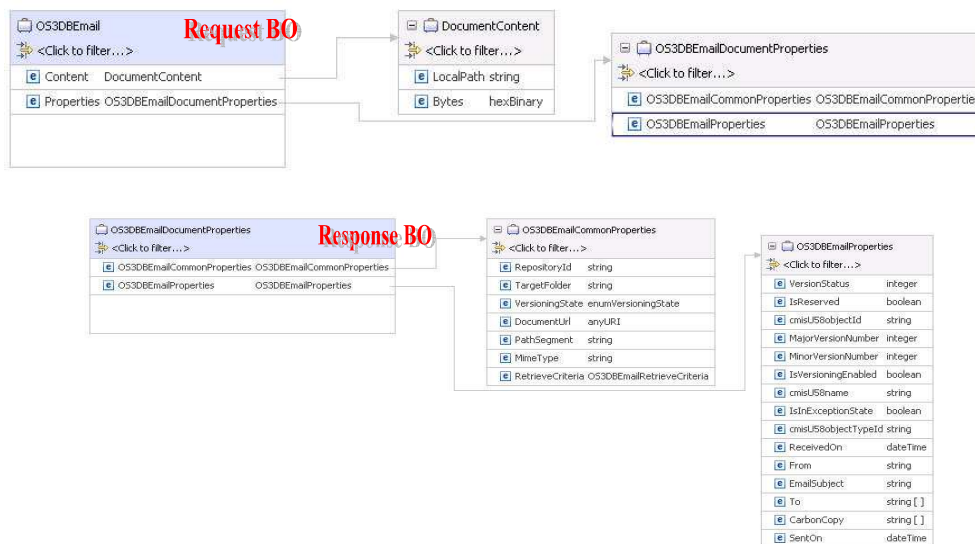
Outbound Operation	Description
<b>Create</b>	Allows user to create a document on the content management system with the properties chosen during discovery
<b>Update</b>	Allows user to update a document's content and properties on the content management system
<b>UpdateProperties</b>	Allows user to update the properties of a document in the ECM system
<b>Delete</b>	Allows user to delete a document on the content management system by specifying the object ID or by object path
<b>Retrieve</b>	Allows user to retrieve the properties and content in the form of stream for a specified document
<b>RetrieveProperties</b>	Allows user to retrieve the properties of a document by specifying the object ID or by specifying its path
<b>RetrieveAll</b>	Allow user to retrieve the properties of all documents and Document URLs to the content of the documents which match a search criteria specified

The adapter uses operations to perform actions such as creating instances of Document types on the Content Management Repository. The name of the operation typically indicates the type of action that the adapter takes, such as Create, Update, Delete, Retrieve, or RetrieveAll. With updateProperties and retrieveProperties operations, they just allow users to update and retrieve properties in a document in the repository.



## ECM adapter – outbound business objects

- Example of request and response business object of **Email** document using Create operation



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An example of request and response business objects structures using Create operation is shown here. The adapter receives a request in the form of a business object to a create instance of a Document type in the CMIS Repository. The adapter processes the request and a document with a unique immutable Object Identity (ID) is created in the Content Management Repository. The content of the document is obtained from the attribute values of the requested business object.

With request business objects, every Document Type has a set of named, but not explicitly ordered, Properties that are added in a separate Business Object. The name of this Business Object is the Document Type followed by the word Properties. The content of the Document is handled in a separate Business Object titled DocumentContent. After the document is created, the Properties Business Object is sent back to the calling component as a response to indicate that the document was created successfully.

With response business objects, after a successful create operation, the containment name of the document is populated in the pathSegment property. To perform other operations using the file name, reference the value of the pathSegment property in the cmisU58name property.

## ECM adapter – outbound fault bindings

- Support fault business objects
  - InvalidRequestFault
    - If the specified target folder does not exist in the repository or the repository name provided is not valid, the adapter generates this fault. Also, if the content is null, the fault can occur during the Update operation. This fault can occur for the Create, Update, Delete, Retrieve, UpdateProperties, and RetrieveProperties operations.
  - MissingDataFault
    - If the business object that is passed to the outbound operation does not have all the required attributes, the adapter generates this fault. This fault can occur for the Create, Delete, Update, Retrieve, UpdateProperties, and RetrieveProperties operations.
  - DocumentNonUpdatabilityFault
    - If the application specification information property CapabilityContentStreamUpdatability, of the business object, has a value set to none, the adapter generates this fault.
  - MatchesExceedLimitFault
    - When processing a RetrieveAll operation, the adapter generates this fault if the number of records returned from the database query exceeds the value for the MaxRecords property in the interaction specification.

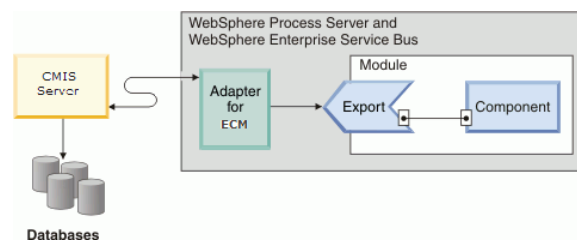
Similar to other adapters, adapter for ECM also supports business faults, which are exceptions that are anticipated and declared in the outbound service description, or import. Business faults occur at predictable points in a business process, and are caused by a business rule violation or a constraint violation. The external services wizard creates InvalidRequestFault, MissingDataFault, DocumentNonUpdatabilityFault, and MatchesExceedLimitFault fault business objects for ECM adapter. To understand more about these fault definitions, the description of each fault is listed here.

## ***Inbound Processing***

This section provides details on inbound processing for WebSphere adapter of Enterprise Content Management V7.0 Feature Pack 2.

## ECM adapter – inbound processing (1 of 4)

- Allows business processes running in WebSphere Process Server to be notified of any changes to the documents that might be happening at the FileNet.
- Supports AssuredOnceDelivery and recovery management (in case of connection failure)
- Configure to process the inbound events
  - Configuring the FileNet Content Engine
  - Configuring the external service wizard



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This illustration shows the inbound processing flow for ECM adapter. When you create, update, or delete a document, the adapter inserts an event record into the event table to record that event. When the adapter is polling events, it reads the information from this event record and retrieves the relative document. The adapter then returns the document as a business object. For an event type of either create or update, the adapter returns the document as a business object on the adapter workstation. For a delete event, the returned business object contains only the Object ID of the deleted document.

The adapter then forwards the business object to the endpoint, which is an exposed interface from an SCA module that offers a business service to the outside world. Business objects contain the information that the adapter obtains from a document as a form.

To configure a module to use the adapter for inbound processing, first create a subscription on the FileNet Content Engine. Then use the external service wizard in WebSphere Integration Developer to find and select business objects and services from the CMIS server, and to generate business object definitions and related artifacts.

## ECM adapter – inbound processing (2 of 4)

- Configuring the FileNet Content Engine for inbound processing
  - 1. Use the subscription Wizard to create subscriptions for the object class you select
  - 2. Using the information from creating a subscription, create an Event Action using the Content Engine Create an Event Action Wizard
    - Ensure the complete name of EventHandler class is  
*com.ibm.j2ca.ecm.inbound.external.event.ECMEventHandler*
  - 3. Configure the Code Module by selecting the appropriate dependent Java/Zip files
  - 4. Complete creating the subscription using the configured Event Action in the Content Engine Create an Event Action Wizard
  - 5. Gather the subscription details required to complete the external service wizard discovery

**Important:** Create a folder called **ECMAdapterEvents** at the root level. All events get generated inside the **/ECMAdapterEvents/** folder. Also, create a folder for **failed events**. These folders are required when you deploy the adapter on the target server runtime.

Containment/Folder Name	Created	Creator	Class	Major Version	Minor Version	Status	LastModifier
{8A5F7C36-E783-4472-A634-C680E010CACA}_DeletionEvent_Email	10/14/2010 5:40...	Admi...	Document	1	0	1 (Releas...	Administr...
{8ED733B4-298A-4AFC-8DDB-6B27186C5718}_CreationEvent_Email	10/14/2010 5:38...	Admi...	Document	1	0	1 (Releas...	Administr...
{8ED733B4-298A-4AFC-8DDB-6B27186C5718}_UpdateEvent_Email	10/14/2010 5:43...	Admi...	Document	1	0	1 (Releas...	Administr...

To configure a module to use the adapter for inbound processing, the first step is to set up subscriptions and deploy the EventHandler file, which is shipped with the adapter, on the FileNet Content Engine. The subscriptions are created by using the Content Engine Subscription Wizard to create subscriptions on the FileNet Content Engine, for the object class you select. Then using the information from creating a subscription, create a corresponding Event Action using the Content Engine Create an Event Action Wizard. The Event Action is set up using a Code Module, where you deploy the ECMEventHandler.jar into the FileNet Content Engine system. Complete the subscription creation and gather the subscription details required to complete the external service wizard discovery.

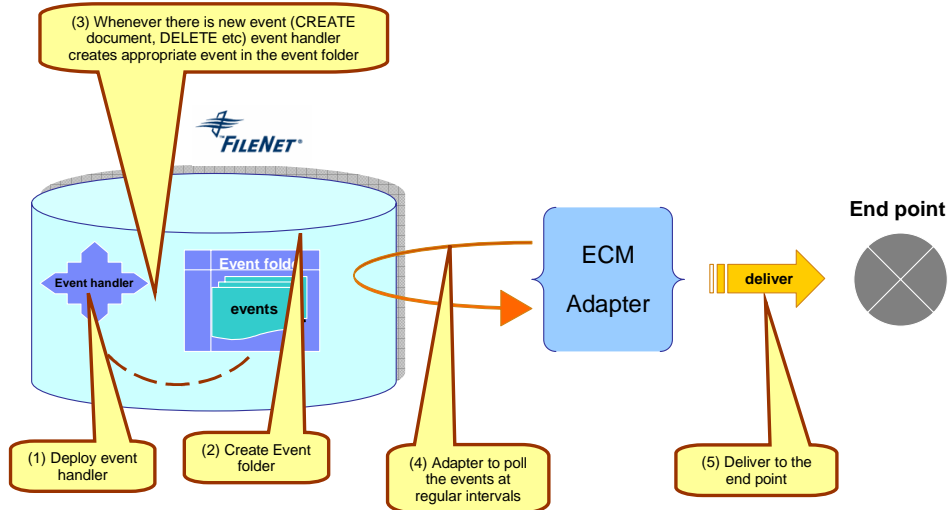
Last but not least, you also need to create a folder called ECMAdapterEvents at the root level. All events get generated inside /ECMAdapterEvents/ folder. Another folder for failed events is also needed. These folders are required when you deploy the adapter on the target server runtime.

## ECM adapter – inbound processing (3 of 4)

- Configuring the external service wizard for inbound processing
  - 1. User to key in host information (endpoint addresses, username, password) at the first screen of external service wizard
  - 2. User selects the repository/object store he/she wants work with (from the metadata tree screen page)
  - 3. User to select the target Document Type
  - 4. User to configure the needed properties (required and additional are must, and any/all from optional list)
  - 5. User to key in the subscription details in below format for each of the selected DocumentType (through the pop-up window)
    - a. `/Events/{214A3EFC-1B3D-407C-8A91-C018620DE2B7}`
    - b. Note: The subscription ID should match the subscription ID created on the FileNet system for the corresponding DocumentType class.
  - 6. User to key in other properties like failedEventsFolder and completes the wizard
  - 7. The external service sgenerates an Interface (.export) file with properties captured

The next step is to configure the external service wizard in WebSphere Integration Developer to find and select business objects and services from the CMIS server, and to generate business object definitions and related artifacts. First, you key in host information including FileNet server URL with username and password. After connecting to the CMIS server, you can browse the tree of discovered objects to select an object, such as Workflow Definition, CodeModule, Email, and so on. You can use the filtering mechanism to limit the number of objects to be displayed. Once you selected the objects, you need to configure required properties for those particular objects. You need to key in the subscription details in the format as shown for each of the selected DocumentType. The subscription ID should match the subscription ID created on the FileNet system for the corresponding DocumentType class. Complete the wizard by providing other deployment properties including failedEventsFolder. The external service generates an interface with the properties captured.

## ECM adapter – inbound processing (4 of 4)



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This illustration captures what have discussed in previous slides. To summarize, the inbound processing required first to deploy event handler to FileNet Content Engine. This event handler class is needed to create event folder and subscriptions. Whenever there is new event document, the event handler create appropriate events and store in the event folder. Then the adapter polls those events and deliver to the end point.

Section

## ***Summary***

The next section will provide the Summary and References.



## Summary and References

- Summary
  - Introduced new technology adapter – Enterprise Content Management
    - Learned about outbound including business faults
    - Learned about inbound with AssuredOnceDelivery option
- References
  - WebSphere adapter for ECM user guide
  - WebSphere Adapter V7.0 Feature Pack 2 information center
    - <http://www-01.ibm.com/software/integration/wbiadapters/library/infocenter/#wsa70pack2>

This presentation introduced new WebSphere adapter for ECM V7.0 Feature Pack 2. In this presentation, you have learned how outbound and inbound are processing in the adapter offers. For outbound processing, you have learned about different business faults that adapter offers. And for inbound processing, you have learned on how to configure FileNet content engine and then use those details to complete the external service wizard in WebSphere Integration Developer.



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