IBM

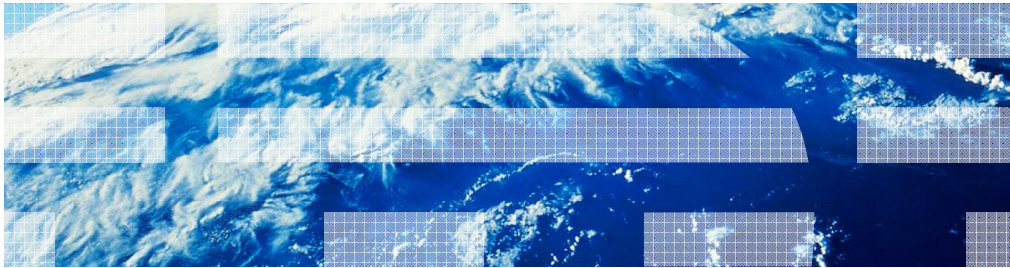# WebSphere©
Business Process Management V7.0

WebSphere adapter for Lotus Domino V7.0

Agenda

- Overview
- Business object structure
- Outbound
- Inbound
- Summary

WebSphere adapter for Lotus Domino V7.0

This presentation covers details of the new IBM WebSphere Adapter for Lotus Domino. It starts with overview then goes into more details on different types of business object structure. Then the outbound and inbound processing of the Domino adapter is discussed. A separate demonstration is provided to demonstrate the outbound and inbound scenarios.

Section

Overview

WebSphere adapter for Lotus Domino V7.0

This section provides an overview of the new enhancements in deployment of the WebSphere Adapter for Lotus Domino V7.0

Lotus Domino adapter
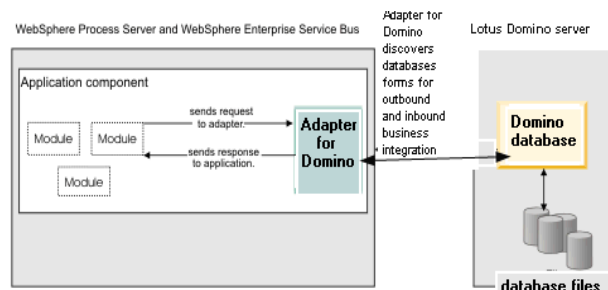
- WebSphere Adapter for Lotus Domino provides bidirectional exchange of business data between SCA applications and Domino server

- Business data contains domino documents
  – Calendar entry, to-do item, or a note

- Supports
  – External service wizard, complex and rich text fields, and attachment

With WebSphere Adapter for Lotus Domino, it supports bidirectional exchange of business data between business applications and the Domino server. The adapter provides outbound and inbound processing under the Java 2 Platform, Enterprise Edition (J2EE) Connector Architecture (JCA) and integrates with Service Component Architecture (SCA) components. The business data can be Domino documents such as a calendar entry, to-do item, or a note.

The adapter enables two-way communication between an application running on WebSphere Process Server or WebSphere Enterprise Service Bus and a database. Using the adapter, an application can send requests to create, update, delete, or retrieve the documents in a database. The adapter has a built-in mechanism to support external service wizard, complex and rich text fields, and attachments in a document.

The figure show an application component calls the Lotus Domino adapter, and the adapter interacts with the Domino server to obtain the data. The adapter, which you generate with the external service wizard of WebSphere Integration Developer, uses a standard interface and standard data objects. The adapter takes the standard data object sent by the application component and calls the Domino server. The adapter then returns a standard data object to the application component. The application component does not have to deal directly with the Domino server. It is the Adapter for Lotus Domino that calls the function and returns the results.

Lotus Domino adapter

- Lotus Domino Suite of products
  - Lotus Domino server
    - 8.5, 8.0.2, 8.0.1, 8.0, 7.0.4, 7.0.3, 7.0.2, 7.x, 6.x
  - Lotus Domino Administrator Client
  - Lotus Domino Designer Client
- Platforms supported by Domino server
  - http://www-01.ibm.com/support/docview.wss?rs=463&uid=swg27007909

WebSphere adapter for Lotus Domino V7.0   © 2010 IBM Corporation

For the overview of the Domino products, some of its suite of products are the Lotus Domino server which is used to communicate with Domino adapter. The server provides a document database, a collaboration application server, and an e-mail server. The administrator client is the administration tool of the Domino server, and the designer client is used for designing Lotus Domino application. Refer to IBM Web site for more information on different platforms supported by Domino server.

Lotus Domino data types

Domino Type	SDO Type
tem.DATETIMES	Date
tem.TEXT	String
tem.NUMBERS	Double/integer
tem.ACTIONCD	String
tem.SIGNATURE	String
tem.RICHTEXT	Complex Type
tem.HTML tem.COLLATION tem.UNAVAILABLE tem.UNKNOWN tem.ERRORITEM	String
tem.ACTIONCD tem.ASSISTANTINFO tem.USERDATA tem.USERID tem.AUTHORS tem.NAMES tem.READERS tem.FORMULA tem QUERYCD	String

6   i   orporation

This table lists the mapping between the business object attributes and the Domino form and field types for this release

Lotus Domino data types

- Supports in future release

Domino Type
Item.ICON
Item.LSOBJECT
Item.MIME_PART
Item.NOTELINKS
Item.NOTEREFS
Item.OTHEROBJECT
Item.VIEWMAPDATA
Item.VIEWMAPLAYOUT

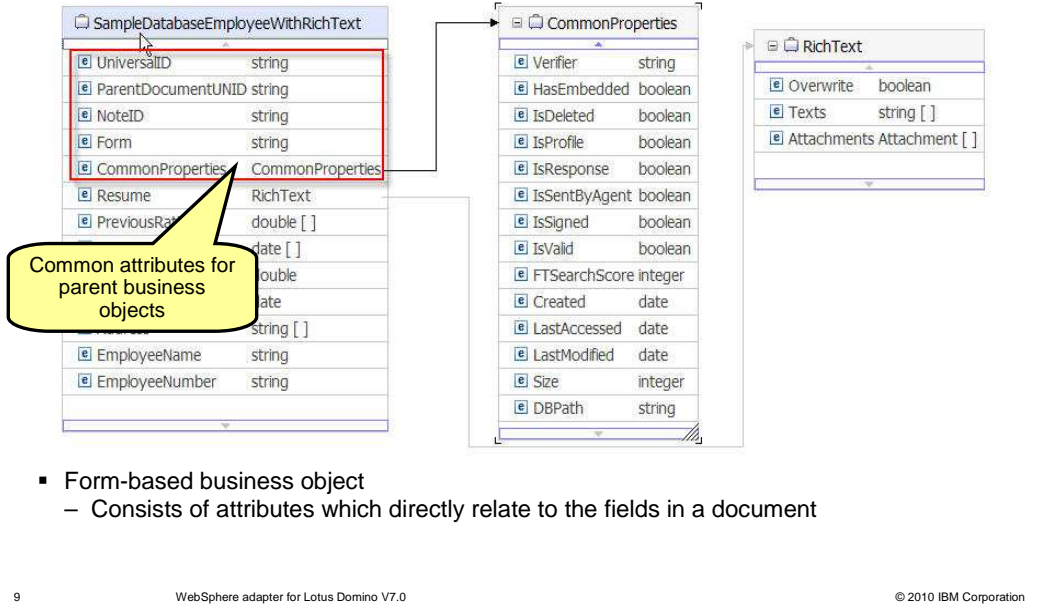WebSphere adapter for Lotus Domino V7.0 © 2010 IBM Corporation

This table lists additional business object attributes and the Domino form and field types to be support in future release

Section

Business object structure

WebSphere adapter for Lotus Domino V7.0

This section provides an overview of the business object structure.

Business object structure

SampleDatabaseEmployeeWithRichText

UniversalID	string
ParentDocumentUNID	string
NoteID	string
Form	string
CommonProperties	CommonProperties
Resume	RichText
PreviousRat...	double [ ]
	...date [ ]
	...ouble
	...ate
	string [ ]
EmployeeName	string
EmployeeNumber	string

Common attributes for parent business objects

CommonProperties

Verifier	string
HasEmbedded	boolean
IsDeleted	boolean
IsProfile	boolean
IsResponse	boolean
IsSentByAgent	boolean
IsSigned	boolean
IsValid	boolean
FTSearchScore	integer
Created	date
LastAccessed	date
LastModified	date
Size	integer
DBPath	string

RichText

Overwrite	boolean
Texts	string [ ]
Attachments	Attachment [ ]

- Form-based business object
 - Consists of attributes which directly relate to the fields in a document

A business object is a structure that consists of data and additional instructions, if any, for processing the data. The adapter supports the form-based business object structure. A form-based type is a content-specific business object that supports specific business object structures (such as create and retrieve business objects).

Depending on the custom form types and operations when you create external services, the adapter generates the corresponding business object definition. In this slide, the form-based business object structure consists of attributes that directly relate to the fields in a document. By selecting the form document in the external service wizard, you can use the WebSphere Integration Developer to generate form-based business object structure at run time. If you choose, it can also contain child business objects for a container business object and attachments. The illustration in this slide shows an example of a form-based business object generated from the form document in the sample Domino database.

Notice the common attributes for all parent business objects including UniversalID, ParentDocumentUNID, Note ID, and CommonProperties.   CommonProperties and RichText are the two child business objects. The CommonProperties business object stores the metadata information for the parent business object. The RichText business object contains information for managing attachments.
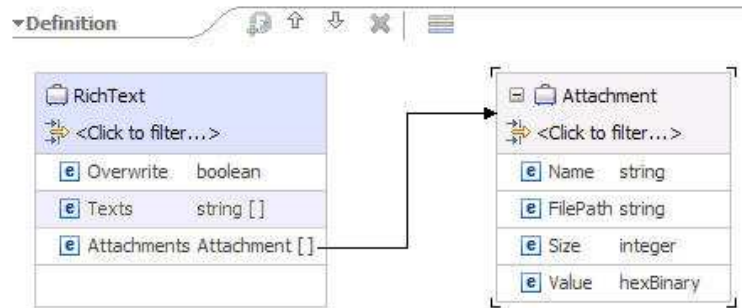
The adapter generates RichText business objects for both the Domino Rich Text or Rich Text Lite item types. The RichText business object contains information for managing attachments. It allows user to transmit or get attachment files from Domino server and vice versa. The attachment data is stored in an Attachment business object.

Business object structure

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The Domino adapter supports complex items for Domino Items to store Items information. It allows user to select required fields, read or write detailed values of a specified field/item. They are generated as a child business object of the RichText or RichText Lite business objects. Some of attributes for complex items are listed here with additional attributes for text items. From the external service wizard, select to set additional configurations to include complex items in the generated business object. If you do not select that option, all the fields with only the field values are included.
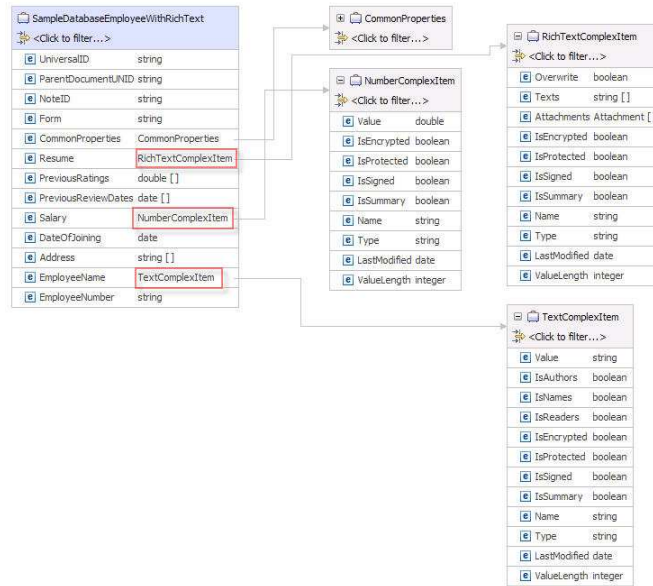
This illustration shows the structure of ComplexItem business object for RichText, Number, and Text complex item.

Section

Outbound

This section provides different outbound operations for WebSphere adapter of Domino V7.0

Outbound

- Supported operations
  - Create
  - Update
  - Delete
  - Retrieve
  - RetrieveAll
  - Exists
- Response business objects
  - Operation status
  - Boolean value
  - DocumentDeleted attribute
  - DocumentExists attribute

DeleteResponse
<Click to filter...>

e	UniversalID	string
e	NoteID	string
e	URL	string
e	DocumentDeleted	boolean
e	Information	string

ExistsResponse
<Click to filter...>

e	UniversalID	string
e	NoteID	string
e	URL	string
e	DocumentExists	boolean
e	Information	string

The Adapter for Lotus Domino supports outbound request 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. The adapter provides a standard set of outbound operations including create, update, delete, retrieve, retrieveAll, exists.

For delete and exists operations, the adapter also generated response business objects. During the Delete operation, the status of the operation is checked using the DocumentDeleted attribute in the DeleteResponse business object. This illustration shows the structure of the DeleteResponse business object. The adapter receives the delete request along with the Universal ID of the document. The adapter processes the request and removes the document from the Domino database. During the Exists operation, the status of the operation is checked using the DocumentExists attribute in the ExistsResponse business object. This illustration also shows the structure of the ExistsResponse business object. The adapter receives the request to check if a document is available in the database along with the Universal ID of the document. The adapter processes the request and checks if the document is present in the Domino server.

Outbound faults binding

- Supports faults business objects
  - InvalidRequestFault
  - DocumentNotFound
  - InvalidParentDocumentFault
  - MatchesExceededLimitFault
  - NotesErrorFault
- All faults are supported by default except NotesErrorFault
  - Can be enabled and configured using the 'Set business faults behavior during run time' property in managed connection factory properties.
    - Default is 1
    - Set to 0 disables fault support in runtime

The Domino adapter 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. Faults are generated for errors that are actionable, that is, errors that can have a recovery action that does not require the termination of the application. The external service wizard creates a business object for each fault that the adapter can generate. In addition, the wizard creates a WBIFault superset business object, which has information common to all faults, such as the message, errorCode, and primaryKeySet attributes.

All business faults are supported by default. However, the NotesErrorFault is not enabled by default but can be configured using the 'Set business faults behavior during run time' property in managed connection factory properties. The adapter generates this fault during an operation to capture any Domino API-related errors in the fault business object. It also provides information about the reason for the error using the NotesErrorID, NotesErrorText, and NotesErrorInternal attributes. This fault can occur for all the operations.

Section

Inbound

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This section provides different inbound operations for WebSphere adapter of Domino V7.0

Inbound

The Adapter for Lotus Domino supports inbound processing of events. The adapter polls the event database in the Domino server at regular intervals for new events. When a document in a database in the Domino server is created, updated or deleted, the event monitoring agent of the Domino adapter monitors the event and adds that event in the event database. The events related to a document in the database are captured in the same form that also contains the document. The form contains the business object based on the type of an event. The adapter provides a standard set of inbound operations including create, update, and delete. It supports event delivery configuration including delivery sequence, event filtering, and assured-once event delivery.

The Domino adapter provides an extension manager to monitor the create, update, or delete events of a document in the database in the Domino server. During inbound processing, the WebSphere Adapter for Lotus Domino (WALD) inbound extension manager monitors the operations on the Domino server. Whenever you create, update, or delete a document from the Domino database, the inbound extension manager generates corresponding events containing the operation information.

The WALD inbound extension manager is a dynamic linked library that monitors the create, update, and delete events on the Domino server. The extension manager is deployed on the Domino server. You configure the extension manager according to the operating system on which the Domino server is run. You require the waldinbound.nsf (event table and configuration table database) and the operating system-specific library files in the Domino database to configure the extension manager. The dynamic linked library file monitors the create, update, and delete events in the event directory.

WBPMv70_IEA_Adapters_Domino.ppt

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Inbound extension manager

- Deploying the WALD inbound extension manager
  - Copy the *waldinbound.dll* into Domino server installation directory
  - Edit the *notes.ini* to add the *EXTMGR_ADDINS=waldinbound* line
  - Copy the waldinbound.nsf into Domino data directory
  - Restart the Domino server
  - Open *ConfigurationView* to view monitored database and *EventView* to view generated events

- Configuring the inbound extension manager
  - Open the *waldinbound.nsf* database in Domino server through Lotus Notes
  - Open *ConfigurationView* and select *EditDocument* to edit existing configurations
  - Configuration parameters for WALD inbound extension manager
    - ConnectorID
    - Database Paths – compatible with both "\" and "/" DB path separator
    - Event type – create, update, and delete
    - Log level – none, error, info, debug

You can deploy the inbound extension manager on different operating systems. After you deploy the required files, you can monitor the events in the specified databases in the Domino server. First, copy the required library file into the Domino server installation directory. Depending on operating systems, select the system-specific library files. Second, edit the notes.ini file in your Domino directory and add the required extension manager line per the operating system. Third, copy the waldinbound.nsf file into your Domino data directory. Last, restart the Domino server. The server requires to be restarted each time you update the required library files. You also can open ConfigurationView to view the monitored database and Eventview to view the generated events.

Once you deploy the WALD, you can configure the inbound extension manger by setting up different configuration parameters. First, open the waldinbound.nsf database in Domino server through Lotus Notes. Second, open ConfigurationView and select EditDocument to edit existing configurations. The parameters available for configuration include connectorID used as the value of the Connector ID field of the generated field. The database path is monitored by the WALD inbound extension manager. The event type, and the type of information that is logged during WALD inbound processing.

Inbound extension manager

- Viewing
  - Open the *waldinbound.nsf* in Domino server through Lotus Notes
  - Select *EventView* to view list of generated events

- Verifying the deployment of WALD inbound extension manager
  - Open the *waldinbound.nsf* in Domino server through Lotus Notes
  - Select *ConfigurationView* and use *EditDocument option*
  - Check the log messages from *Configuration Profiles* on Domino server console

After you have deployed the inbound extension manager, you can view and verify its deployment to check if the extension manager is correctly configured to monitor the events in the Domino server. To view the events, open the waldinbound.nsf in Domino server through Lotus Notes then select EventView to view the list of generated events. You can verify the deployment of the extension manager after deploying the required library files and waldinbound.nsf files on the Domino server. To verify the deployment, open waldinbound.nsf through Lotus Notes and select ConfigurationView with EditDocument option. You can change log messages or check the log messages by reading the Configuration Profile printed on the Domino server console.

Event store

- Event store structure for Domino event business objects and business components

Name	Description	Example
Description	Comment associated with the event	Account Create event
Event ID	The ID of the event row	Unique ID
Event type	The type of event	Create, Update, or Delete
Database Path	The database path of the document	Test/doc.nsf
Form	An instance of the document on which the event occurs	Response
UNID	Universal ID of the document	
Status	The event status that is initially set to the value for a new event and updated by the adapter as it processes the event.	
Event timestamp	The time stamp of the event	9/15/2009 12:00:00
Connector ID	The ID set for Domino adapter to filter event	Domino001
XID	The transaction ID to ensure the 'assure once delivery' of the events	

WebSphere adapter for Lotus Domino V7.0

The event business component stores information about the event. The information stored is used by the resource adapter during event subscription to build the corresponding business object and send it to the registered end points. The information that is stored, and the structure of the event store used by the adapter, are shown in the table.

Section

Summary and reference

WebSphere adapter for Lotus Domino V7.0

The next section will provide the Summary and References.

Summary

- This presentation introduced new WebSphere adapter for Lotus Domino
  - Understand different type of business object structures
  - Learn about outbound processing
  - Learn about inbound processing
    - WALD inbound extension manager
    - Event table

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This presentation introduced the new WebSphere adapter for Lotus Domino V7.0. In this presentation, you learned about different types of business object structures that the adapter offers. You also learned about outbound processing and inbound processing. For inbound processing, details on WALD inbound extension manager to monitor events in a database in Domino server were provided. Last but not least, the event store structure for Domino event business objects and business components was shown.

Reference information

- WebSphere adapter for Lotus Domino user guide
- Java Connector Architecture
  - http://java.sun.com/j2ee/connector/index.jsp
- WebSphere Adapter information center
  - http://www.ibm.com/software/integration/wbiadapters/library/infocenter/
- WebSphere Process Integration information center
  - http://publib.boulder.ibm.com/infocenter/dmndhelp/v7r0mx/index.jsp?topic=/com.ibm.websphere.wps.doc/welcome_wps.html

Additional reference information can be found at these URLs.

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