



Cisco Unified Web and E-Mail Interaction Manager Administrator's Guide to Data Adapters

For Unified Contact Center Enterprise

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Cisco Unified Web and E-Mail Interaction Manager Administrator's Guide to Data Adapters: For Unified Contact Center Enterprise

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Preface

- ▶ [About This Guide](#)
- ▶ [Document Conventions](#)
- ▶ [Other Learning Resources](#)

Welcome to Cisco® Interaction Manager™, multichannel interaction software used by businesses all over the world to build and sustain customer relationships. A unified suite of the industry's best applications for web and email interaction management, it is the backbone of many innovative contact center and customer service helpdesk organizations.

Cisco Interaction Manager includes a common platform and one or both of the following applications:

- ▶ Cisco Unified Web Interaction Manager (Unified WIM)
- ▶ Cisco Unified E-Mail Interaction Manager (Unified EIM)

About This Guide

Cisco Unified Web and E-Mail Interaction Manager Administrator's Guide to Data Adapters introduces the Data Adapters and shows how to set up data links to connect to external sources.

Document Conventions

This guide uses the following typographical conventions.

Convention	Indicates
<i>Italic</i>	Emphasis. Or the title of a published document.
Bold	Labels of items on the user interface, such as buttons, boxes, and lists. Or text that must be typed by the user.
Monospace	The name of a file or folder, a database table column or value, or a command.
<i>Variable</i>	User-specific text; varies from one user or installation to another.


Document conventions

Other Learning Resources

Various learning tools are available within the product, as well as on the product CD and our website. You can also request formal end-user or technical training.

Online Help

The product includes topic-based as well as context-sensitive help.

Use	To view
 Help button	Topics in <i>Cisco Unified Web and E-Mail Interaction Manager Help</i> ; the Help button appears in the console toolbar on every screen.
F1 keypad button	Context-sensitive information about the item selected on the screen.

Online help options

Document Set

The Cisco Unified Web and E-Mail Interaction Manager documentation is available in the **Documents** folder on the product CD. The latest versions of all Cisco documentation can be found online at <http://www.cisco.com>

- ▶ All Unified EIM documentation can be found online at http://www.cisco.com/en/US/products/ps7236/tsd_products_support_series_home.html
- ▶ All Unified WIM documentation can be found online at http://www.cisco.com/en/US/products/ps7233/tsd_products_support_series_home.html
- ▶ In particular, Release Notes for these products can be found at http://www.cisco.com/en/US/products/ps7236/prod_release_notes_list.html
- ▶ For general access to Cisco Voice and Unified Communications documentation, go to http://www.cisco.com/en/US/products/sw/voicew/tsd_products_support_category_home.html

The document set contains the following guides:

- ▶ *Cisco Unified Web and E-Mail Interaction Manager System Requirements*
- ▶ *Cisco Unified Web and E-Mail Interaction Manager Installation Guide*
- ▶ *Cisco Unified Web and E-Mail Interaction Manager Browser Settings Guide*

User guides for agents and supervisors

- ▶ *Cisco Unified Web and E-Mail Interaction Manager Agent's Guide*
- ▶ *Cisco Unified Web and E-Mail Interaction Manager Supervisor's Guide*

User guides for Knowledge Base managers and authors

- ▶ *Cisco Unified Web and E-Mail Interaction Manager Knowledge Base Manager's Guide*

User guides for administrators

- ▶ *Cisco Unified Web and E-Mail Interaction Manager Administrator's Guide*
- ▶ *Cisco Unified Web and E-Mail Interaction Manager Administrator's Guide to Routing and Workflows*
- ▶ *Cisco Unified Web and E-Mail Interaction Manager Administrator's Guide to Chat and Collaboration Resources*
- ▶ *Cisco Unified Web and E-Mail Interaction Manager Administrator's Guide to Email Resources*
- ▶ *Cisco Unified Web and E-Mail Interaction Manager Administrator's Guide to Data Links*
- ▶ *Cisco Unified Web and E-Mail Interaction Manager Administrator's Guide to Reports Console*
- ▶ *Cisco Unified Web and E-Mail Interaction Manager Administrator's Guide to System Console*
- ▶ *Cisco Unified Web and E-Mail Interaction Manager Administrator's Guide to Tools Console*

1

Data Adapters Basics

- ▶ [Do You Need Data Adapters?](#)
- ▶ [How Do Data Adapters Work?](#)
- ▶ [Where and How Can You Use Data Adapters?](#)
- ▶ [Elements of the User Interface](#)

The Data Adapter module provides you with a quick and easy method to integrate with external sources of information residing within your enterprise, or on the web. It is a flexible integration tool for accessing data from external sources such as local and remote databases, HTTP or HTTPS services, XML files, etc. The data is then available through XML APIs for automated processing and display.

External information is accessed and processed through two-way connections called data links. Data links can be used to display and process external information in Unified WIM and Unified EIM, as well as to extract and present Unified WIM and Unified EIM information in external applications.

Do You Need Data Adapters?

The benefits of using the Data Adapter is manifold, but consider the following factors to evaluate the need to set up data links.

- ▶ Who owns the data?

If an external system controls the reading and writing of data or if important data is in an external database, you are likely to need data links.

- ▶ How do you access the data?

If access to external data is through defined APIs, URLs, or web services, or if the protocol for information transfer is not open, you are likely to need data links.

- ▶ What is the nature of the data required in customer interactions?

You are likely to need data links if interactions with customers require information that:

- Is very customer-specific and not “global.”
- Ages quickly, so that agents have to access data in real time.
- Is used frequently, so agents have to access the information for each customer interaction.

How Do Data Adapters Work?

Data links are of two types:

1. Access links, which connect to the external source and fetch data. Access links are discussed in detail in [“Data Access Links” on page 13](#).
2. Usage links, which use the fetched data either in displays within Unified WIM and Unified EIM, or as input criteria for making decisions about processing information within Unified WIM and Unified EIM. Usage links are explained in [“Data Usage Links” on page 27](#).

A working data-link connection typically involves:

- ▶ Creating a data access link to fetch data from the external source.
- ▶ Creating data usage links, which are made available to users to process the data extracted from the external source. Multiple usage links can be grouped to create a single display. Usage link grouping is discussed in detail in [“Data Usage Link Groups” on page 33](#).

Where and How Can You Use Data Adapters?

Once data links are created, they can be used in the following modules.

Workflows

- ▶ Data retrieved from usage links can be used in “IF” conditions to make routing decisions or to update attributes of business objects.

Knowledge Base

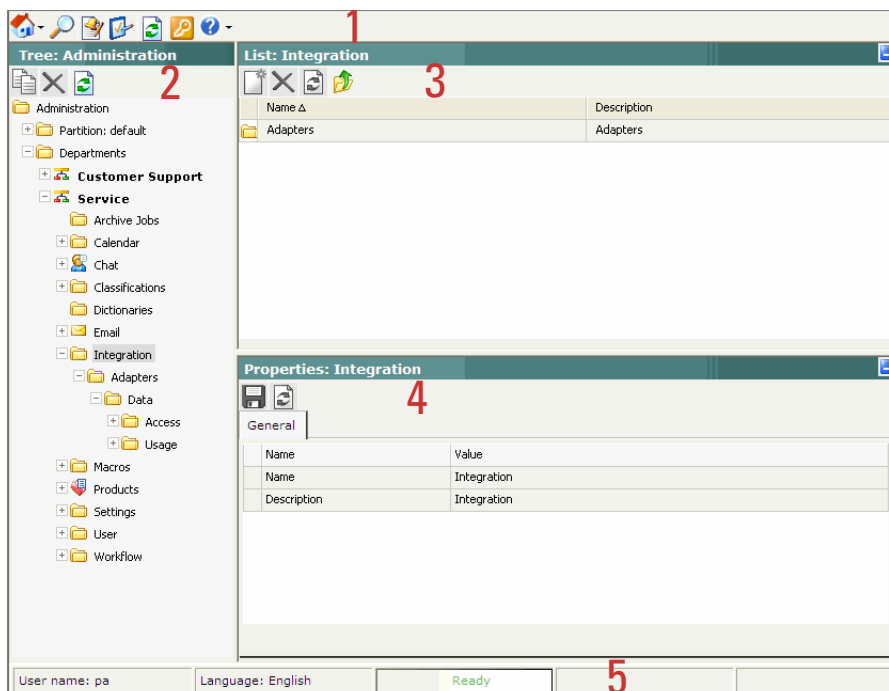
- ▶ Usage links can be embedded in Knowledge Base articles. Once a working link is embedded in an article, external information is retrieved and included in the article body when the article is used by agents, or by the workflow engine for auto-replies.

Agent Console

- ▶ Usage links that can be executed by the agent are displayed in the Links section in the Agent Console, Information pane. Agents can add the output of usage links to responses by clicking the **Add to Reply** button.

Elements of the User Interface

The Administration Console user interface can be divided into five functional areas.



Elements of the Administration Console user interface

1. **Console toolbar:** The main toolbar of the console appears at the top of the screen. Each button on this toolbar allows you to perform a specific function. Some of these are: navigate to other consoles, send and receive internal messages, log out of the system, and access the online help for the Administration Console.
2. **Tree pane:** The Tree pane lists all the business objects in the application, allowing you to select the node (folder) that you wish to work in. When you select a folder, its first-level contents are displayed in the List pane.

To expand all first and second level nodes with a single click, press SHIFT and click the plus [+] button next to the topmost node. The contents of all first and second level nodes are displayed in the Tree pane.
3. **List pane:** The List pane displays first-level contents of the folder selected in the Tree pane. You can view the name, description, date of creation, etc., of the displayed items. In this pane, you can create items or select existing ones to modify or delete them.
4. **Properties pane:** The Properties pane displays the contents of the business object selected in the List pane. In this pane, you can edit the properties of the selected item.
5. **Status bar:** The status bar is present at the bottom of every screen. It displays the following information:
 - The user name with which the user has logged in the system.
 - The language currently in use.
 - The status of the system (Loading, Ready, etcetera).



Data Access Links

- ▶ [About Data Access Links](#)
- ▶ [Creating and Testing HTML Links](#)
- ▶ [Creating and Testing XML Links](#)
- ▶ [Creating Java Links](#)
- ▶ [Creating and Testing JDBC Links](#)
- ▶ [Creating Web Service Links](#)
- ▶ [Deleting Access Links](#)

About Data Access Links

Access links connect to the external source and fetch data.



Important: Only JDBC data links are available in the Basic Edition of Unified WIM and Unified EIM.

Data access links are of five types:

1. **HTML link:** The HTML link provides the mechanism to fetch data in HTML format from a web site using HTTP or HTTPS protocol. To configure an HTML link you need to have the URL from where you want to get information, login name, password, special character sets which may exist in the URL, the Regular Expression to parse the HTML content and the request type of the URL (Post or Get). The main purpose of HTML links is to access web sites and extract data or display information that can be used as part of the agent communications and daily processes. Fetched data can be converted to structured form using regular expression matching or can be returned as it is.
2. **XML link:** The XML link provides the mechanism to fetch data in XML format from a file or web applications using the HTTP or HTTPS protocol. To configure XML link you need to have the URL from where you want to get information, login name, password, special character sets that may exist in the URL, and the request type of the URL (Post or Get).
3. **Java link:** The Java link provides a mechanism for custom data extraction and integration logic. This is a composite bridge with very broad functionality of data extraction implemented possibly via an EJB or Java object. The Java link provides the capability to execute any Java code, which can be used for fetching data or taking some action.

Using Java links, Cisco applications can integrate with any third party applications, the only condition being that the third party has to have some Java classes.

4. **JDBC link:** The JDBC link connects to databases to extract or to update data. This database can also be a third party database. To connect to a database it requires general information like DataSourceId, Max data to be extracted from this database and SQL Query to work on that data, which can be either simple extraction or can be an update of the current data.
5. **Web service link:** The web service link provides the mechanism to connect to a Web Service. To get information on connecting to the web service, a Web Service Description Language (WSDL) document is required, which acts as an interface to impart information about operations and the respective input and output parameters to execute those operations.

Working on access links involves:


- ▶ **Creating access links:** Creating access links is the first step in creating data adapters. Access links extract the data from the source.
- ▶ **Testing access links:** After creating the access links you can test them to ensure that they are working properly.

Creating and Testing HTML Links

The HTML Link provides the mechanism to fetch data in HTML format from a web site, using HTTP or HTTPS protocol. To configure an HTML link you need to have the URL from where you want to get information, login name, password, special character sets which may exist in the URL, Regular Expression to parse the HTML content, and the request type of the URL. The main purpose of HTML links is to access web sites and extract data and display information that can be used as part of the agent communications and daily processes. The fetched data can be converted to structured form using regular expression matching or can be returned as it is.

Creating HTML Links

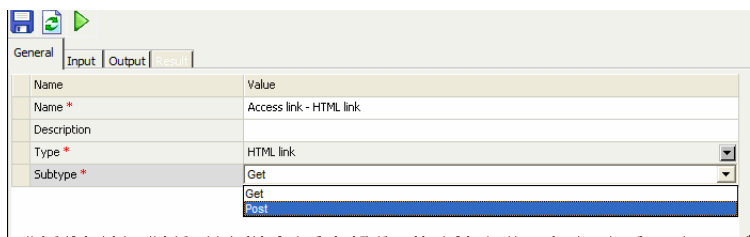
To create an HTML link:

1. In the Tree pane, browse to **Administration > Department > *Department_Name* > Integration > Adapters > Data > Access > Links**.
2. In the List pane toolbar, click the **New**  button.
3. In the Properties pane, on the General tab, provide the following details.
 - **Name:** Type the name of the HTML link.
 - **Description:** Type a brief description.
 - **Type:** From the dropdown list, select **HTML link**.



Important: Once you save the HTML link, its type cannot be changed.

- **Subtype:** Select the subtype. The options available are:
 - **Post**
 - **Get**

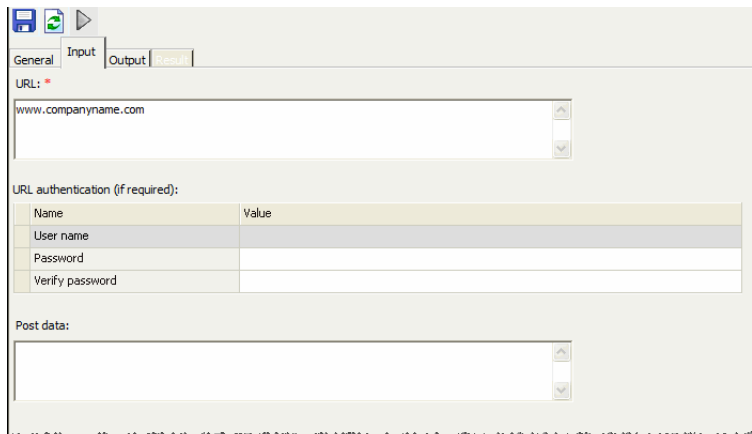


Name	Value
Name *	Access link - HTML link
Description	
Type *	HTML link
Subtype *	Get

Set the general properties of an HTML access link

4. In the Properties pane, on the Input tab, provide the following details.
 - **URL:** Type the complete URL from where you want to extract data. Include the protocol in the URL.
 - **URL authentication:** Provide the user name and password, if required.

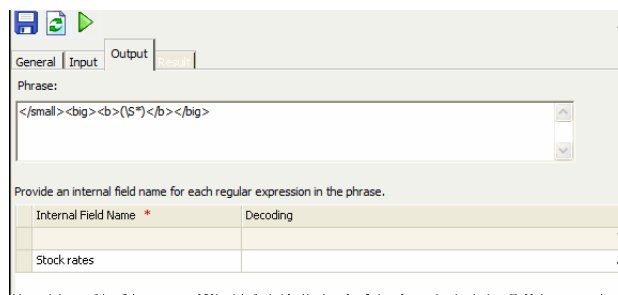
- **Post data:** Specify where you want the extracted data to be kept. This option is available only if you choose the subtype as **Post**.



Set the input properties

5. In the Properties pane, on the Output tab, provide the following details.

- **Phrase:** Type a regular expression phrase to parse and extract the data. For detailed document about regular expressions (jakarta-oro), see <http://jakarta.apache.org/oro/api/index.html>.
- **Internal Field Name:** Type the display name for the field in which the data is to be extracted.
- **Decoding:** The data extracted can be decoded to map the output values to user defined strings. For example, if the values returned are **1** and **0**, then they can be mapped to **Yes** and **No** respectively.




Set the output properties

6. Click the **Save**  button.

After creating HTML links, you can test them to see if they are created properly. It is highly recommended that you test the links after creating them.

Testing HTML Links

To test an HTML link:

1. In the Tree pane, browse to **Administration > Department > *Department_Name* > Integration > Adapters > Data > Access > Links**.
2. In the List pane, select the HTML link you want to test.
3. In the Properties pane toolbar, click the **Test data access link**  button.

4. In the Test Data Access Link window that appears, enter the values for the input parameters of the link.



Important: The Test Data Access Link window appears only if any input parameter needs to be provided.

The Result pane is enabled and here you can view the results. If the access link is not configured properly, an error message is displayed.


For some sample HTML links, see [“Sample HTML Links” on page 38](#).

Creating and Testing XML Links

An XML link is a URL that returns an XML document. The request type of the URL can be “get” or “post”, and the URL can include parameterized values. The information contained in the returned XML document is parsed using XPath expressions.

Creating XML Links

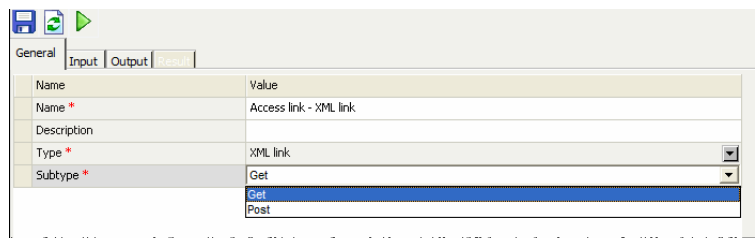
To create an XML Link:

1. In the Tree pane, browse to **Administration > Department > *Department_Name* > Integration > Adapters > Data > Access > Links**.
2. In the List pane toolbar, click the **New**  button.
3. In the Properties pane, on the General tab, and provide the following details.
 - **Name:** Type the name of the XML link.
 - **Description:** Type a brief description.
 - **Type:** From the dropdown list, select **XML link**.



Important: Once you save the XML link, its type cannot be changed.

- **Subtype:** Select the subtype. The options available are:
 - **Get**
 - **Post**

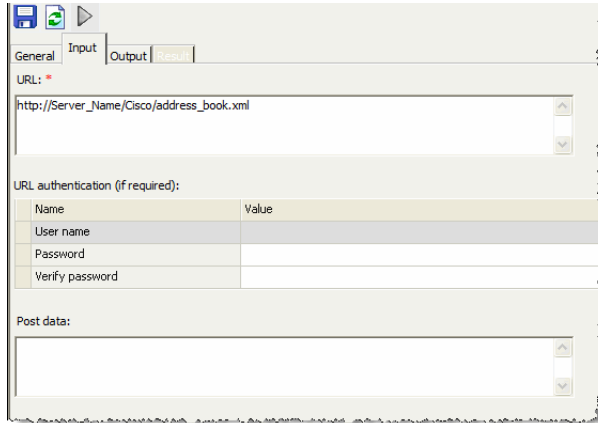


The screenshot shows the 'General' tab of the configuration window. It has a table with the following fields:

Field	Value
Name *	Access link - XML link
Description	
Type *	XML link
Subtype *	Get

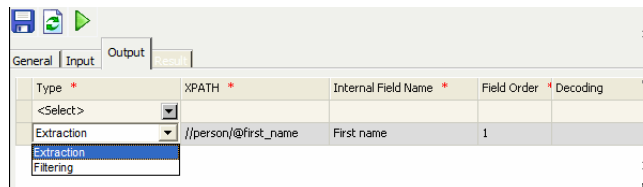
Set the general properties

4. In the Properties pane, on the Input tab, provide the following details.
 - **URL:** Type the complete URL from where you want to extract data, including the protocol.
 - **URL authentication:** Provide the user name and password, if required.
 - **Post data:** Specify where you want the extracted data to be kept. This option is available only if you choose the subtype as **Post**.



Set the input properties

5. In the Properties pane, on the Output tab, provide the following details.
 - **Type:** Select the type from the dropdown list. The options available are:
 - **Extraction:** Use this to extract specific fields from an XML document based on the XPATH definition.
 - **Filtering:** Use this to remove data from an XML document based on the XPATH definition.
 - **XPATH:** Type the XPATH for the query. For more information on XPath Expressions, please visit the website: <http://www.w3.org/TR/xpath>
 - **Internal Field Name:** Type the name of the field where the data is to be extracted. This field is disabled for type Filtering.
 - **Field Order:** Specify the order in which you want the results to appear.
 - **Decoding:** The data extracted can be decoded to map the output values to user defined strings. For example, if the values returned are **1** and **0**, then they can be mapped to **Yes** and **No** respectively.




Set the output properties

6. Click the **Save**  button.

After creating the data access links you can test them to see if they are created properly. It is highly recommended that you test your access links after creating them.

Testing XML Links

To test an XML link:

1. In the Tree pane, browse to **Administration > Department > *Department_Name* > Integration > Adapters > Data > Access > Links**.
2. In the List pane, select the XML link you want to test.
3. In the Properties pane toolbar, click the **Test data access link**  button.
4. The Test Data Access Link window appears, where you enter the values for the input parameters of the link.



Important: The Test Data Access Link window appears only if any input parameter needs to be provided.

The Result pane is enabled and here you can view the results. If the access link is not configured properly, an error message is displayed.


For some sample XML links, see [“Sample XML Link” on page 40](#).

Creating Java Links

The Java link provides a mechanism for custom data extraction and integration logic. This is a composite bridge with very broad functionality of data extraction implemented possibly via an EJB or Java object. The Java link provides the capability to execute any Java code, which can be used for fetching data or taking some action.

Using Java links, Cisco applications can integrate with any third party applications. The only condition being that the third party has to have some Java classes so as to use this link.

To create a Java link:

1. In the Tree pane, browse to **Administration > Department > *Department_Name* > Integration > Adapters > Data > Access > Links**.
2. In the List pane toolbar, click the **New**  button.
3. In the Properties pane, on the General tab, provide the following details.
 - **Name:** Type the name for the Java link.
 - **Description:** Type a brief description.
 - **Type:** From the dropdown list, select **Java link**.



Important: Once you save the Java link, its type cannot be changed.

- **Subtype:** This option is disabled.

Name	Value
Name *	Access link - Java
Description	
Type *	Java link
Subtype	

Set the general properties

4. In the Properties pane, on the Input tab, provide the following details.

- **Class name:** Type the class name.
- **Input parameter:** Specify the input parameters.

Name	Value
Class name *	EncodeURL
Input Parameter	
String	

Set the input properties

5. In the Properties pane, on the Output tab, provide the following details.

- **External Field Name:** Type the external field name.
- **Internal Field Name:** Type the display name for the field in which the data is to be extracted.
- **Decoding:** The data extracted can be decoded to map the output values to user defined strings. For example, if the values returned are **1** and **0**, then they can be mapped to **Yes** and **No** respectively.

External Field Name *	Internal Field Name *	Decoding
External name	Internal name	

Set the output properties

6. Click the **Save**  button.



Important: Java links cannot be tested.

For some sample Java links, see [“Sample Java Link”](#) on page 41.

Creating and Testing JDBC Links

This data adapter uses SQL queries or stored procedures to update or extract data from a database. Query to be executed can be generated at runtime using application specific input fields. The raw data fetched will be in a Results Set format. This data adapter can access information residing in any JDBC-compliant data store.

Creating DSN Entries for JDBC Links

This section tells you how to add a new DSN entry for use in JDBC links. The DSN cannot be created from the User Interface. You need to modify the application connection pool configuration file.

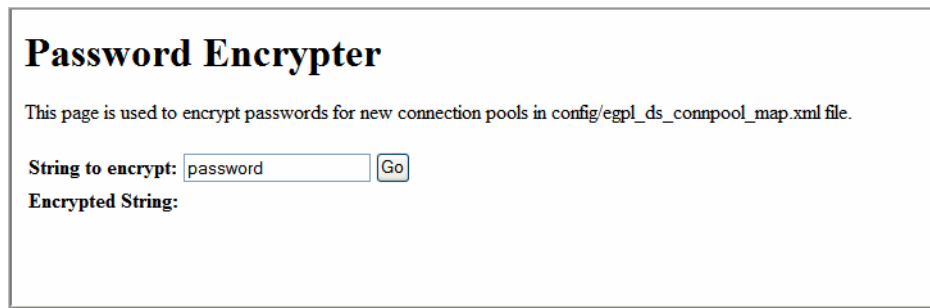
Before creating the DSN entry, you will need to encrypt the password of the database user.

Encrypting Password

Before you create a DSN entry, you need to encrypt the password of the database user.

To encrypt the password:

1. Launch the following URL: http://Web_Server_Name/system/web/view/platform/debug/encryptString.jsp
Where *Web_Server_Name* is the name of the web server. If the deployment has multiple web servers, you can use the name of any web server.
2. In the **String to encrypt** field, type the password to be encrypted and click **Go**.



Password Encrypter

This page is used to encrypt passwords for new connection pools in config/egpl_ds_connpool_map.xml file.

String to encrypt:

Encrypted String:

Provide the password to be encrypted

You will get the encrypted password that you need to add in the connection pool object.

Creating DSN Entries

To create a new DSN entry:

1. Browse to *Cisco_Home*\config\dataaccess and locate the `egpl_ds_connpool_map.xml` file.
2. Open the file in a text editor.
3. In the partitions list, locate the partition for which you want to make this DSN available. Once you find the partition, insert the following lines just above the `</partition>` line. If the custom connection pool section already exists, then just add the DSN object information to it.

```

<custom_conn_pool>
<ds name="DS_Name">
<connpool name="DB_Connection_Pool_Name"/>
</ds>
</custom_conn_pool>

```

Where:

- *DS_Name*: The data source name of the database.
- *DB_Connection_Pool_Name*: The database connection pool name of the database.

4. Next, search for `</conn_pool_list>` and insert the following connection pool definition before it.

```

<connpool name="DB_Connection_Pool_Name" active="y">
<Type>basic</Type>
<CapacityIncrement>2</CapacityIncrement>
<DriverName>Driver_Name</DriverName>
<InitialCapacity>1</InitialCapacity>
<MaxCapacity>30</MaxCapacity>
<User>User_Name</User>
<Password>Encrypted_Password</Password>
<Url>URL</Url>
<Targets></Targets>
<Vendor>Vendor_Name</Vendor>
<DriverVendor></DriverVendor>
<TableName>Table_Name</TableName>
</connpool>

```


Where:

- *DB_Connection_Pool_Name*: Name of the connection pool. It should match the connection pool name provided in [Step 3](#).
- *Driver_Name*: Java class name for the JDBC driver. For example, `com.microsoft.jdbc.sqlserver.SQLServerDriver`
- *User_Name*: User name of the user who can access the database.
- *Encrypted_Password*: Encrypted password for the user. For details, see [“Encrypting Password” on page 21](#).
- *URL*: URL to the database sever. For example, `jdbc:microsoft:sqlserver://Server:1433`
- *Vendor_Name*: The type of database. For example, Oracle or MS SQL.
- *Table_Name*: Name of the table, which exists in the database. This is used by the system to validate that it is indeed connected to a valid database, by making sure that this table exists in the database. As a best practice, this table should be a unique table in the database and should contain only one row.

5. Save the file.
6. Stop and start Cisco Unified Web and E-Mail Interaction Manager. The newly added DSN can now be used for creating the JDBC data access links.

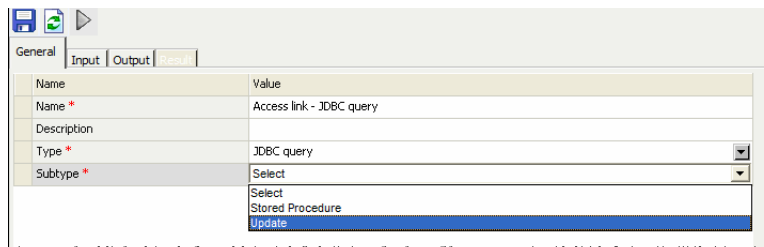
Creating JDBC Links

To create a JDBC link:

1. In the Tree pane, browse to **Administration > Department > Department_Name > Integration > Adapters > Data > Access > Links**.
2. In the List pane toolbar, click the **New**  button.
3. In the Properties pane, on the General tab, provide the following details.
 - **Name:** Type the name for the JDBC query link.
 - **Description:** Type a brief description.
 - **Type:** From the dropdown list, select **JDBC query**.
 - **Subtype:** Select the subtype. The options available are:
 - **Select**
 - **Stored procedure**
 - **Update**



Important: Once you save the JDBC link, its type and subtype cannot be changed.



Name	Value
Name *	Access link - JDBC query
Description	
Type *	JDBC query
Subtype *	Select

The screenshot shows the 'General' tab of the Properties pane. The 'Subtype' dropdown menu is open, showing three options: 'Select', 'Stored Procedure', and 'Update'. The 'Select' option is currently selected.

Set the general properties

4. In the Properties pane, on the Input tab, provide the following details.
 - **DSN:** The data source name (DSN), provides all the connection information (server name, port number, user name, password, driver) to successfully connect to the database. From the dropdown select the DSN. The options available are:
 - **customer_db**
 - **master_db**
 - **mail_db**
 - **archive_db**
 - **archive_app_db**
 - **knowledge_db**

These are the data source names that the installation program creates as part of the deployment. You can add DSN entries to this list. For details, see [“Creating DSN Entries for JDBC Links” on page 21](#).

- **Maximum number of rows:** Specify the maximum number of rows the query should extract.



Important: This option is available for Select type of JDBC query only.

- **Query:** Type the JDBC query to be used for retrieving the data. If you are accessing unicode data (for example, Japanese, Chinese, Western European etc), you must make sure that you use the N prefix in the queries. For example, `select * from Customer_Data where C_Name like N',Đ,ě,μ'`

Set the input properties

5. In the Properties pane, on the Output tab, provide the following details.



Important: The Output tab is disabled for update type of JDBC queries.

- **External Field Name:** Type the exact names of the columns in the database table.
- **Field Type:** From the dropdown list, select the field type. The options available are:
 - **String**
 - **Integer**



Important: This option is available only for the stored procedure type of JDBC query.

- **Internal Field Name:** Type the display name for the field in which the data is to be extracted.
- **Decoding:** The data extracted can be decoded to map the output values to user defined strings. For example, if the values returned are **1** and **0**, then they can be mapped to **Yes** and **No** respectively.

Set the output properties

6. Click the **Save**  button.


After creating the data access links you can test them to see if they are created properly. It is highly recommended that you test your access links after creating them.



Important: Only the select type of JDBC link can be tested. You cannot test the update and stored procedure types of JDBC links.

Testing JDBC Links

To test a JDBC link:

1. In the Tree pane, browse to **Administration > Department > *Department_Name* > Integration > Adapters > Data > Access > Links**.
2. In the List pane, select the JDBC link you want to test.
3. In the Properties pane toolbar, click the **Test data access link**  button.

The Test Data Access Link window appears, where you enter the values for the input parameters of the link.



Important: The Test Data Access Link window appears only if any input parameter needs to be provided.


The Result pane is enabled and here you can view the results. If the access link is not configured properly, an error message is displayed.

For some sample JDBC links, see [“Sample JDBC Links” on page 42](#).

Creating Web Service Links

Web Service links provide the mechanism to connect to a Web Service. To get information from the web service, a Web Service Description Language (WSDL) document is required. This document acts as an interface to impart information about operations and the respective input and output parameters to execute those operations.


To create a web service link:

1. In the Tree pane, browse to **Administration > Department > *Department_Name* > Integration > Adapters > Data > Access > Links**.
2. In the List pane toolbar, click the **New**  button.
3. In the Properties pane, on the General tab, provide the following details.
 - **Name:** Type the name for the web service link.
 - **Description:** Type a brief description.
 - **Type:** From the dropdown list, select **Web service link**.

- **Subtype:** This option is disabled.

Name	Value
Name *	Web server link
Description	
Type *	Web service link
Subtype	

Set the general properties

- In the Properties pane, on the Input tab, provide the following details.
 - **WSDL document:** Type the path for the Web Service Description Language document you want to refer to.
 - **Operation Name:** Select the operation you want to perform. The options in this field change based on the value selected in the WSDL document field.
 - Based on the operation selected, a list of input parameters and associated parameter types is displayed automatically and it cannot be changed.
- In the Properties pane, on the Output tab, a list of external field names and field types is displayed and you cannot add to or remove from the list. However, you can change the internal field names and decode the extracted data.
- Click the **Save**  button.




Important: Web service links cannot be tested.

Deleting Access Links



Important: If an access link is used in a usage link, it cannot be deleted. To be able to delete it, first remove it from the usage link.

To delete an access link:

- In the Tree pane, browse to **Administration > Department > *Department_Name* > Integration > Adapters > Data > Access > Links**.
- In the List pane, select an access link.
- In the List pane toolbar, click the **Delete**  button.
- A message appears asking to confirm the deletion. Click **Yes** to delete the usage link group.



Data Usage Links

- ▶ [About Data Usage Links](#)
- ▶ [Creating Usage Links](#)
- ▶ [Creating Macros](#)
- ▶ [Configuring Display of Results](#)
- ▶ [Assigning Permissions for Usage Links](#)
- ▶ [Testing Usage Links](#)
- ▶ [Deleting Usage Links](#)


About Data Usage Links

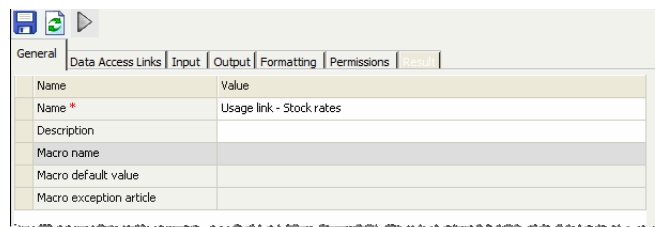
After you have created access links, you can define the display format of the data that is fetched by the access link. This is done using usage links. Different types of access links can be used in a single usage link. Similar to Knowledge Base articles, usage links support macros, making them simple to use in workflows, and by agents and KB authors.

Creating Usage Links

To be able to create usage links, you need to first create the data links. For details, see [“Data Access Links” on page 13](#).

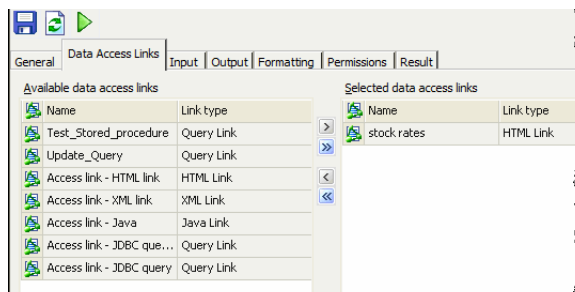
To create a usage link:

1. In the Tree pane, browse to **Administration > Department > *Department_Name* > Integration > Adapters > Data > Usage > Links**.
2. In the List pane toolbar, click the **New**  button.
3. In the Properties pane, on the General tab, provide the following details.
 - **Name:** Type the name of the usage link.
 - **Description:** Type a brief description.



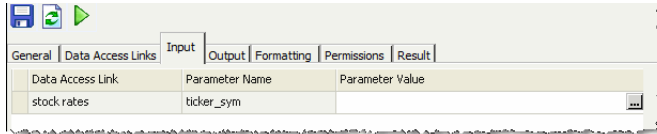
Set the general properties

4. In the Properties pane, on the Data Access Links tab, select the data access links. Different types of access links can be used in a single usage link.



Select the data access links

- In the Properties pane, the Input tab shows all the input parameters configured for the data access links selected for the usage link. Here, you can pre-determine values for some or all available parameters. If you are planning to create a macro for the usage link, make sure that you provide the parameter values.



Set the input properties

- In the Properties pane, on the Output tab, provide the following details.
 - Data Access Link:** From the dropdown list, select the data access link.
 - Field Name:** From the dropdown list, select the field name.
 - Display Name:** Type the display name for the field in which the data is to be extracted.
 - Field Width:** Specify the width of the field.
 - Hyperlink:** Set the hyperlink.



Set the output properties

- Click the **Save**  button.

After creating the usage links, create macros for the usage links ([page 29](#)), configure the display of results for the Agent Console ([page 30](#)), assign permissions to users so that they can access the usage links ([page 31](#)), and test the usage links ([page 32](#)).

Creating Macros

Usage links support macros, making them simple to use in workflows, and by agents and KB authors.




Important: Macros can be configured only for usage links that do not require any input parameters.

To create a macro:

- In the Tree pane, browse to **Administration > Department > *Department_Name* > Integration > Adapters > Data > Usage > Links**.
- In the List pane, select a usage link.
- In the Properties pane, on the General tab, provide the following details.
 - Macro name:** Type a name for the macro.



Important: A macro name cannot contain spaces, or any of the following characters: < ` , . ? : ; & " ' !

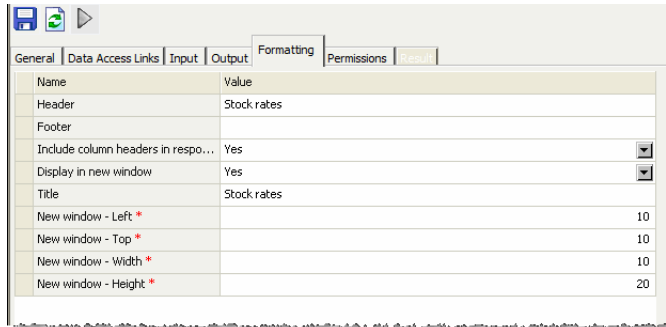
- **Macro default value:** Type the default value of the macro. When the macro is expanded, and no content is found, the default content of the macro is used. This content should be adequate enough to represent the original content.
 - **Macro exception article:** In the field, click the **Assistance** button. The Select Article window appears. In the window, select the exception article and click the **OK** button. If an error occurs while expanding the macro, the exception article is used. It ensures that if the macro does not expand, the customer is shown some alternate text, and not an error message.
4. Click the **Save**  button.

Configuring Display of Results

After you have created the usage link, you can configure how the results should appear in the Agent Console.

To configure the display of results:

1. In the Tree pane, browse to **Administration > Department > *Department_Name* > Integration > Adapters > Data > Usage > Links**.
2. In the List pane toolbar, select a usage link.
3. In the Properties pane, on the Formatting tab, provide the following details.
 - **Header:** Specify a header for the results.
 - **Footer:** Specify a footer for the results.
 - **Include column headers in response:** Use this option to add the header and footer information in the Reply pane when the agent adds the results in the reply. By default it is disabled. Select **Yes** to enable it.
 - **Display in new window:** By default the results are displayed in the Links section of the Information pane. Select **Yes** to display the results in a new window.
 - **Title:** Specify the title of the new window.
 - **New window - Left:** Specify the location of the new window from the left side of the screen. The value is measured in pixels.
 - **New window - Top:** Specify the location of the new window from the top of the screen. The value is measured in pixels.
 - **New window - Width:** Specify the width of the new window. The value is measured in pixels.
 - **New window - Height:** Specify the height of the new window. The value is measured in pixels.




Set the formatting

4. Click the **Save**  button.

Assigning Permissions for Usage Links

After creating data usage links, the next most important step is to give permissions to users to access the data usage links. All users (that includes administrators, authors, and agents) who need to use the data usage link or the macro of the link, must be given the Execute permission on the link. The user who creates the data usage link does not get the execute and delete permissions automatically.

To assign permissions:

1. In the Tree pane, browse to **Administration > Department > *Department_Name* > Integration > Adapters > Data > Usage > Links**.
2. In the List pane, select the usage link on which you want to give permissions.
3. In the Properties pane, on the Permissions tab, assign the following permissions to users and user groups:
 - Own
 - View
 - Edit
 - Delete
 - Execute: Only users with execute permission can use usage links. You must give this permission to all users who need access to the usage link.
4. Click the **Save**  button.

Testing Usage Links

After creating the usage links you can test them to see if they are created properly. It is highly recommended that you test your links after creating them.

To test the usage link:

1. In the Tree pane, browse to **Administration > Department > *Department_Name* > Integration > Adapters > Data > Usage > Links**.
2. In the List pane, select the usage link you want to test.
3. In the Properties pane toolbar, click the **Test data usage link** button.

The Test Data Usage Link window appears, where you enter the values for the input parameters of the link. The Result pane is enabled and here you can view the results.



Important: The Test Data Usage Link window appears only if any input parameter needs to be provided.


Deleting Usage Links

To be able to delete a usage link, you need to have delete permissions on it.



Important: If a usage link is used in a usage link group, it cannot be deleted. To be able to delete it, first remove it from the usage link group.

To delete a usage link:

1. In the Tree pane, browse to **Administration > Department > *Department_Name* > Integration > Adapters > Data > Usage > Links**.
2. In the List pane, select a usage link.
3. In the List pane toolbar, click the **Delete**  button.



Important: The Delete button is enabled only if you have the delete permission on the usage link.

4. A message appears asking to confirm the deletion. Click **Yes** to delete the usage link.



Data Usage Link Groups

- ▶ [Creating Usage Link Groups](#)
- ▶ [Configuring the Display of Results](#)
- ▶ [Assigning Permissions for Usage Link Groups](#)
- ▶ [Deleting Usage Link Groups](#)


This chapter describes procedures to help you configure and manage usage link groups.

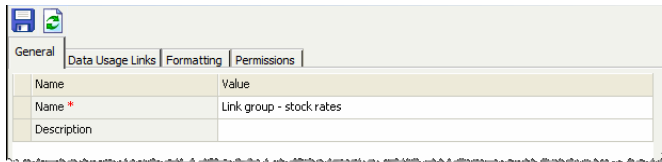
About Usage Link Groups

A data usage link group is a combination of two or more data usage links. To be able to create usage link groups, you need to first create the usage links. For details, see [“Data Usage Links” on page 27](#).

Creating Usage Link Groups

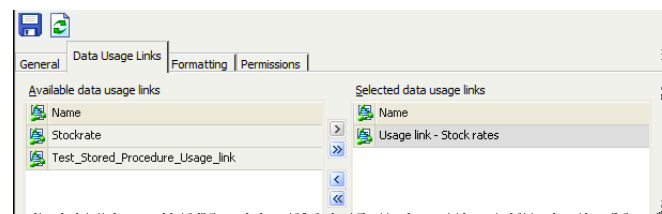
To create a link group:

1. In the Tree pane, browse to **Administration > Department > *Department_Name* > Integration > Adapters > Data > Usage > Link Groups**.
2. In the List pane toolbar, click the **New**  button.
3. In the Properties pane, on the General tab, provide the following details.
 - **Name:** Type the name of the usage link group.
 - **Description:** Type a brief description.



Set the general properties

4. In the Properties pane, on Data Usage Links tab, select the data usage links.



Select the data usage links

5. Click the **Save**  button.

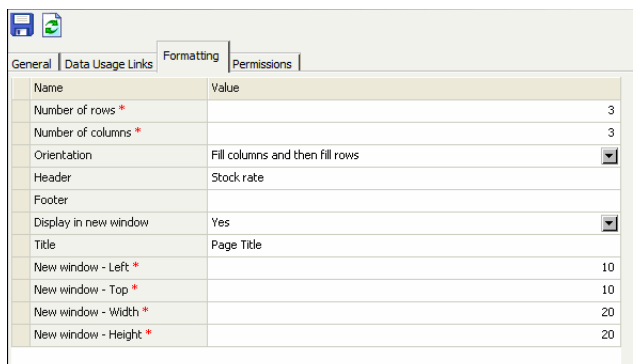
After creating the usage link groups, configure the display of results for the Agent Console ([page 35](#)) and assign permissions to users so that they can access the usage link group ([page 36](#)).

Configuring the Display of Results

After you have created the usage link group, you can configure how the results should appear in the Agent Console.

To configure the display of results:

1. In the Tree pane, browse to **Administration > Department > *Department_Name* > Integration > Adapters > Data > Usage > Link Groups**.
2. In the List pane toolbar, select a usage link group.
3. In the Properties pane, on the Formatting tab, provide the following details.
 - **Number of rows:** Specify the number of rows to be displayed in the results page.
 - **Number of columns:** Specify the number of columns to be displayed in the results page.
 - **Orientation:** From the dropdown list, select the orientation. The options available are:
 - **Fill rows and then fill columns**
 - **Fill columns and then fill rows**
 - **Header:** Specify a header for the results.
 - **Footer:** Specify a footer for the results.
 - **Display in new window:** By default the results are displayed in the Links section of the Information pane. Select **Yes** to display the results in a new window.
 - **Title:** Specify the title of the new window.
 - **New window - Left:** Specify the location of the new window from the left side of the screen. The value is measured in pixels.
 - **New window - Top:** Specify the location of the new window from the top of the screen. The value is measured in pixels.
 - **New window - Width:** Specify the width of the new window. The value is measured in pixels.
 - **New window - Height:** Specify the height of the new window. The value is measured in pixels.



Name	Value
Number of rows *	3
Number of columns *	3
Orientation	Fill columns and then fill rows
Header	Stock rate
Footer	
Display in new window	Yes
Title	Page Title
New window - Left *	10
New window - Top *	10
New window - Width *	20
New window - Height *	20


Set the formatting

4. Click the **Save**  button.

Assigning Permissions for Usage Link Groups

After creating data usage link groups, the next most important step is to give permissions to users to access the data usage link groups. All users (that includes administrators, authors, and agents) who need to use the data usage link groups must be given the Execute permission on the link. The user who creates the data usage link group does not get the execute and delete permissions automatically.


To assign permissions:

1. In the Tree pane, browse to **Administration > Department > *Department_Name* > Integration > Adapters > Data > Usage > Link Groups**.
2. In the List pane, select the usage link group on which you want to give permissions.
3. In the Properties pane, on the Permissions tab, assign the following permissions to users and user groups:
 - Own
 - View
 - Edit
 - Delete
 - Execute: Only users with execute permission can use usage link groups. You must give this permission to all users who need access to the usage link group.
4. Click the **Save**  button.

Deleting Usage Link Groups

To be able to delete a usage link group, you need to have delete permissions on it. For information on how to give permissions, see [“Assigning Permissions for Usage Link Groups” on page 36](#).

To delete a usage link group:

1. In the Tree pane, browse to **Administration > Department > *Department_Name* > Integration > Adapters > Data > Usage > Link Groups**.
2. In the List pane, select a usage link group.
3. In the List pane toolbar, click the **Delete**  button.



Important: The Delete button is enabled only if you have delete permission on the usage link group.

A message appears asking to confirm the deletion. Click **Yes** to delete the usage link group.



Sample Data Access Links



- ▶ [Sample HTML Links](#)
- ▶ [Sample XML Link](#)
- ▶ [Sample Java Link](#)
- ▶ [Sample JDBC Links](#)

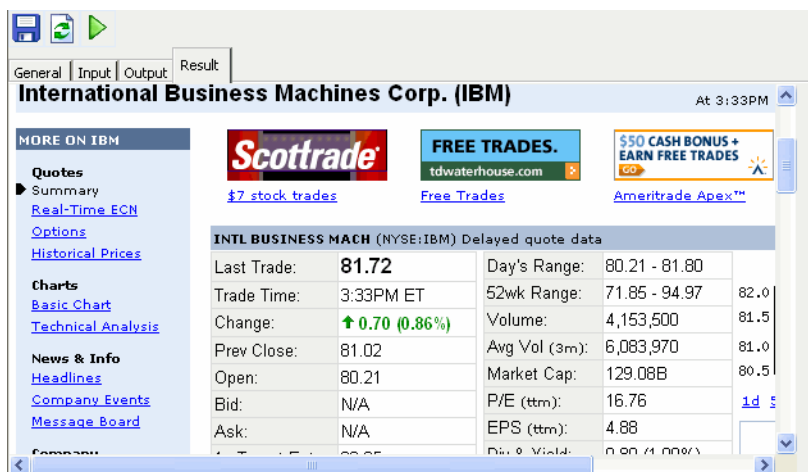
Sample HTML Links

Example one – Extract Stock Quotes Information From a Website

In this example, we describe how to create an html link to look up stock quotes from the non-authenticated web site <http://finance.yahoo.com>, using an HTML data access link. The ticker symbol for the stock is entered as the user input. The expected output is the web page with the stock quote for the entered ticker symbol.

To create a link:

1. In the Properties pane, on the General tab, provide the following details.
 - **Name:** Type the name as *Stock rates*.
 - **Type:** Select the type as **HTML link**.
 - **Subtype:** Select the subtype as **Get**.
2. In the Properties pane, go to the Input tab and provide the following details.
 - **URL:** Type the URL `http://finance.yahoo.com/q?s=<%ticker_sym%>`
The `<%ticker_sym%>` sets up the dynamic variable that needs a value every time this access link is executed.
3. Click the **Save**  button.
4. Click the **Test data access link**  button. The Test Data Access Link window appears.
5. In the Test Data Access Link window, type the ticker_sym as *IBM*.
6. In the Result tab, you will see the yahoo finance website showing the stock rate of IBM.



The screenshot shows the Yahoo Finance website for International Business Machines Corp. (IBM). The main content area displays the following data:

INTL BUSINESS MACH (NYSE:IBM) Delayed quote data			
Last Trade:	81.72	Day's Range:	80.21 - 81.80
Trade Time:	3:33PM ET	52wk Range:	71.85 - 94.97
Change:	↑ 0.70 (0.86%)	Volume:	4,153,500
Prev Close:	81.02	Avg Vol (3m):	6,083,970
Open:	80.21	Market Cap:	129.08B
Bid:	N/A	P/E (ttm):	16.76
Ask:	N/A	EPS (ttm):	4.88
		Div. Yield:	0.90 (1.00%)

View the results

Example Two – Extract and Display Stock Quote Information From a Website Using a Regular Expression



Now, we look at how to extract and parse data from the HTML of a page using regular expression phrases. In this example, we create an html link from the non-authenticated web site <http://finance.yahoo.com> and extract

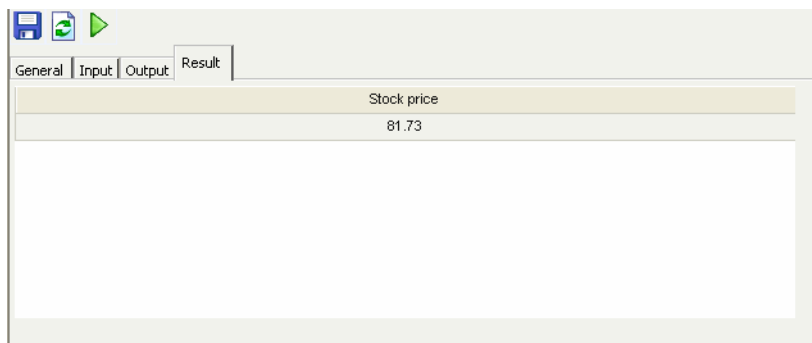
the stock quote information in a table format. The ticker symbol for the stock is entered as the user input. The expected output is the Stock Quote extracted and displayed in a table format. The expression used to extract the stock quote value from the HTML page source is: `</small><big>(\S*)</big>`



Note: Users creating this link should be familiar with regular expressions and HTML.

To create a link:

1. Select the *Stock rates* data access link that you created in example one (page 38).
2. In the Properties pane, on the Output tab, provide the following details.
 - **Phrase:** Type the phrase `</small><big>(\S*)</big>`.
 - **Internal Field Name:** Type the name as *Stock price*.
3. Click the **Save**  button.
4. Click the **Test data access link**  button. The Test Data Access Link window appears.
5. In the Test Data Access Link window, type the ticker_sym as *IBM*.
6. In the Result tab you will see the stock price extracted from the website.



View the results



Example Three – Extract and Display Stock Quote, Trade Time, and Trade Volume From a Website Using Regular Expressions

In this example, we create an html link from the non-authenticated web site <http://finance.yahoo.com> and extract the stock quote, volume, and trade time in a table format. The ticker symbol for the stock is entered as the user input. The expected output is the stock quote, trade time, and volume extracted and displayed in a table format. A more complex regular expression is used in this example.

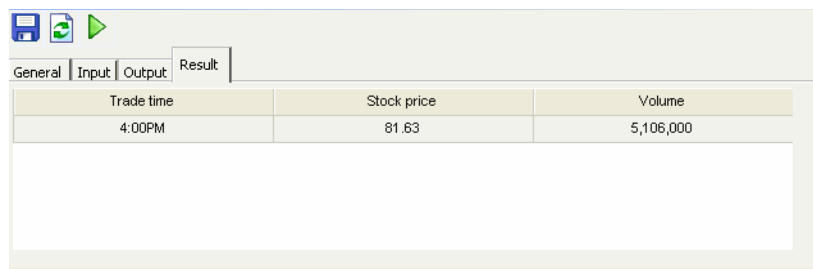
To create a link:

1. Select the *Stock rates* data access link that you created in example one (page 38).
2. In the Properties pane, on the Output tab, provide the following details.
 - **Phrase:** Type the phrase:

```
Last Trade:</td><td class="yfnc_tabledata1"><b><b>(\d*\S\d*). *Trade Time:</td><td  
class="yfnc_tabledata1">(\d*\S\d*\S*). *s. *Volume:</td><td  
class="yfnc_tabledata1">(\d*\S*\d*\S*\d).
```

- **Internal Field Name:** Type the names in the following order:
 - Stock price
 - Trade time
 - Volume
3. Click the **Save**  button.
 4. Click the **Test data access link**  button. The Test Data Access Link window appears.
 5. In the Test Data Access Link window, type the ticker_sym as *IBM*.

In the Result tab, you will see the stock price, trade time, and volume extracted from the website.



Trade time	Stock price	Volume
4:00PM	81.63	5,106,000

View the results

Sample XML Link



In this example, the contact information of employees is stored in an XML file located on a server. The user needs to extract the first name, last name, and nationality of the employees from the XML file using XPATH. It is done by creating an XML data access link.

The assumption in this example is that an XML file with the following content is located on a server:

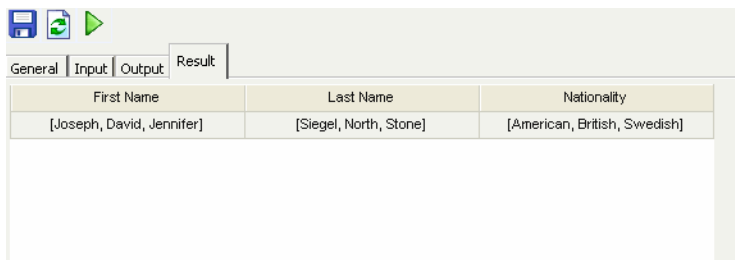
```
<address_book>
  <person first_name="Joseph" last_name="Siegel" nationality="American">
    <contact_details email="jsiegel@siegel.xyz" phone="(123)456-7890">
    </contact_details>
  </person>
  <person first_name="David" last_name="North" nationality="British">
    <contact_details email="dnorth@north.xyz" phone="(234)567-8901">
    </contact_details>
  </person>
  <person first_name="Jennifer" last_name="Stone" nationality="Swedish">
    <contact_details email="jstone@stone.xyz" phone="(345)678-9012">
    </contact_details>
  </person>
</address_book>
```

The XML file is named `address_book.xml` and is accessible from the URL `http://Server_Name/address_book.xml`

To create a link:

1. In the Properties pane, on the General tab, provide the following details.
 - **Name:** Type the name as *XML example*.
 - **Type:** Select the type as **XML link**.
 - **Subtype:** Select the subtype as **Get**.
2. In the Properties pane, on the Input tab, provide the following details.
 - **URL:** Type the URL `http://Server_Name/Cisco/address_book.xml`
3. In the Properties pane, on the Output tab, provide the following details.
 - Select the type as Extraction. Type the XPATH as `//person/@first_name`, Internal Field Name as First name, and specify the order in which it should appear.
 - Select the type as Extraction. Type the XPATH as `//person/@last_name`, Internal Field Name as Last name, and specify the order in which it should appear.
 - Select the type as Extraction. Type the XPATH as `//person/@nationality`, Internal Field Name as Nationality, and specify the order in which it should appear.
4. Click the **Save**  button.
5. Click the **Test data access link**  button.

In the Result tab you will see the result extracted for the XML file.




First Name	Last Name	Nationality
[Joseph, David, Jennifer]	[Siegel, North, Stone]	[American, British, Swedish]

View the results

Sample Java Link

To create a link:

1. In the Properties pane, on the General tab, provide the following details.
 - **Name:** Type the name as *Java link example*.
 - **Type:** Select the type as **Java link**.
2. In the Properties pane, on the Input tab, provide the following details.
 - **Class name:** Type the class name as *EncodeURL*.
 - **Input parameter:** Specify the input parameters as *String*.

3. In the Properties pane, on the Output tab, provide the following details.
 - **External Field Name:** Type the external field name.
 - **Internal Field Name:** Type the name of the field in which the data is to be extracted.
4. Click the **Save**  button.

Sample JDBC Links

Example One – Extract User Details From a Database Table



In the application, user information is stored in a database table. In this example, a JDBC link is configured to extract the user details from the table. The user name is provided as the input. The output is expected to be the details of the user: first name, last name, email address, etc.

The table used in this example is the `egpl_user` table with DSN being `customer_db`.

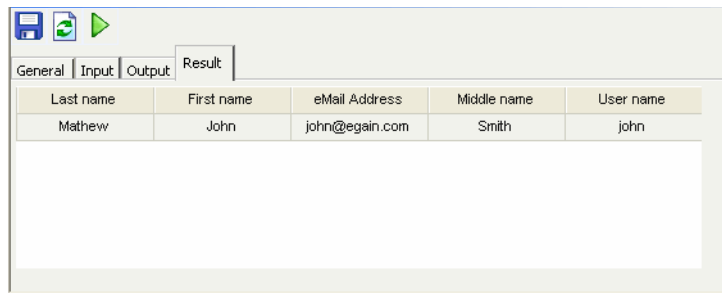
To create a link:

1. In the Properties pane, on to the General tab, provide the following details.
 - **Name:** Type the name for the JDBC link.
 - **Type:** Select the type as JDBC query.
 - **Subtype:** Select the subtype as Select.
2. In the Properties pane, on the Input tab, provide the following details.
 - **DSN:** From the dropdown select **customer_db**.
 - **Maximum number of rows:** Specify the maximum number of rows the query should extract.
 - **Query:** Specify the SQL query to retrieve the data.

```
select user_name, first_name, middle_name, last_name, email_address_primary from egpl_user where user_name = '<%username%>'
```

This query retrieves all columns for a specified user from the user table.
3. In the Properties pane, on the Output tab, provide the following external field names and internal field names.
 - `user_name`, User Name
 - `first_name`, First Name
 - `middle_name`, Middle Name
 - `last_name`, Last Name
 - `email_address_primary`, Email Address
4. Click the **Save**  button.
5. Click the **Test data access link**  button. The Test Data Access Link window appears.

- In the Test Data Access Link window, type your user name. In the Result tab, you will see the detailed user information.



Last name	First name	eMail Address	Middle name	User name
Mathew	John	john@egain.com	Smith	john

View the results



Example Two – Count Open Activities In the Exception Queue

The number of open activities in the `Exception_queue` is stored in the database. This link is configured to extract this number. The table used in this example is the `EGPL_CASEMGMT_ACTIVITY` with DSN `customer_db`.

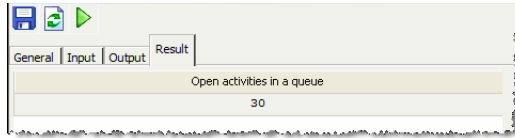
To create the link:

- In the Properties pane, on the General tab, provide the following details.
 - Name:** Type the name for the JDBC link.
 - Type:** Select the type as JDBC query.
 - Subtype:** Select the subtype as Select.
- In the Properties pane, on the Input tab, provide the following details.
 - DSN:** From the dropdown select **customer_db**.
 - Maximum number of rows:** Specify the maximum number of rows the query should extract.
 - Query:** Specify the SQL query to retrieve the data.

```
SELECT COUNT(*) AS 'ActiveInQueue' FROM
EGPL_CASEMGMT_ACTIVITY a
INNER JOIN EGPL_ROUTING_QUEUE q
ON a.queue_id = q.queue_id
where q.queue_name LIKE 'Exception_Queue_service' and a.activity_status <>
9000
```

This query lists the number of open activities in a queue.
- In the Properties pane, on the Output tab, provide the following external field names and internal field names.
 - ActiveInQueue, Open activities in a queue
- Click the **Save**  button.
- Click the **Test data access link**  button.

In the Result tab, you can view the number of open activities in the queue.



View the results

Example Three – Get Due Date of Activities



In this example, we get the due date of an activity in the system. A JDBC link is configured to extract the due date from the database table. The activity id is provided as the input and the output is the due date of the activity.

The table used in this example is the `EGPL_CASEMGMT_ACTIVITY` with DSN `customer_db`.

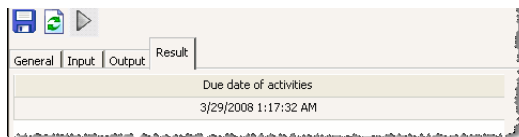
To create the link:

1. In the Properties pane, on the General tab, provide the following details.
 - **Name:** Type the name for the JDBC link.
 - **Type:** Select the type as JDBC query.
 - **Subtype:** Select the subtype as Select.
2. In the Properties pane, on the Input tab, provide the following details.
 - **DSN:** From the dropdown select **customer_db**.
 - **Maximum number of rows:** Specify the maximum number of rows the query should extract.
 - **Query:** Specify the SQL query to retrieve the data.

```
select due_date from EGPL_CASEMGMT_ACTIVITY where activity_id = <%activity%>
```

This query fetches the due date of an activity.
3. In the Properties pane, on the Output tab, provide the following external and internal field names.
 - due_date, Due date of activities
4. Click the **Save**  button.
5. Click the **Test data access link**  button. The Test Data Access Link window appears.
6. In the Test Data Access Link window, type the activity ID.

In the Result tab, you can see the due date of the activity.



View the results

Example Four – Get the Name of the Queue to Which an Activity Belongs

In this example, we get the name of the queue to which an activity belongs. The `activity Id` is provided as the input and the output is the name of the queue.

The database tables used in this example are – `egpl_routing_queue` and `egpl_casemgmt_activity` with DSN `customer_db`.

To create the link:

1. In the Properties pane, on the General tab, provide the following details.

- **Name:** Type the name for the JDBC link.
- **Type:** Select the type as JDBC query.
- **Subtype:** Select the subtype as Select.

2. In the Properties pane, on the Input tab, provide the following details.

- **DSN:** From the dropdown select **customer_db**.
- **Maximum number of rows:** Specify the maximum number of rows the query should extract.
- **Query:** Specify the SQL query to retrieve the data.


```
select queue_name from egpl_routing_queue q, egpl_casemgmt_activity a where  
a.queue_id = q.queue_id and activity_id = <%activity%>
```

This query fetches the name of the queue to which an activity belongs.

3. In the Properties pane, on the Output tab, provide the following external and internal field names.

- `queue_name`, Name of the queue

4. Click the **Save**  button.

5. Click the **Test data access link**  button. The Test Data Access Link window appears.

6. In the Test Data Access Link window, type the activity ID.

In the Result tab, you can see the name of the queue to which the activity belongs.



View the results

Example Five – Get the List of Overdue Activities

In this example, we get the list of open activities in the system that are over due by one hour or more. The output is the activity ID, due date, subject, and current date.

The database table used in this example is the `EGPL_CASEMGMT_ACTIVITY` with DSN `customer_db`

To create a link:



1. In the Properties pane, on the General tab, provide the following details.

- **Name:** Type the name for the JDBC link.

- **Type:** Select the type as JDBC query.
 - **Subtype:** Select the subtype as Select.
2. In the Properties pane, on the Input tab, provide the following details.
 - **DSN:** From the dropdown select **customer_db**.
 - **Maximum number of rows:** Specify the maximum number of rows the query should extract.
 - **Query:** Specify the SQL query to retrieve the data.

```
select activity_id, Subject, due_date, GETDATE() 'Today' from
EGPL_CASEMGMT_ACTIVITY where due_date <> '' AND DATEDIFF(HH, getdate(),
due_date) <= -1 AND activity_status <> 9000
```

This query fetches the list of activities overdue by one hour or more than one hour.

3. In the Properties pane, on the Output tab, provide the following external and internal field names.
 - activity_id, Activity ID
 - due_date, Due date
 - Subject, Subject
 - Today, Today's date
4. Click the **Save**  button.
5. Click the **Test data access link**  button.

In the Result tab, you can see the list of activities overdue by one hour or more than one hour.



Today	Subject	due_date	activity_id
3/28/2008 11:44:22 AM	reservation complaint	3/28/2008 10:44:22 AM	2144
3/28/2008 11:44:22 AM	bad stay	3/28/2008 10:40:00 AM	2177
3/28/2008 11:44:22 AM	web access problem	3/28/2008 10:40:00 AM	2178
3/28/2008 11:44:22 AM	reservation problem	3/28/2008 09:45:00 AM	2179
3/28/2008 11:44:22 AM	stay problem	3/28/2008 08:45:00 AM	2180
3/28/2008 11:44:22 AM	reservation complaint	3/28/2008 08:45:00 AM	2201
3/28/2008 11:44:22 AM	web access problem	3/28/2008 07:45:00 AM	2206

View the results