PROFESSIONAL SERVICES

User Guide

OnCommand Workflow Automation (WFA)

Excel Data Management Pack (EDM-Pack)

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Abstract

The EDM-Pack includes a general-purpose Data Source that can read from a Microsoft Excel spreadsheet directly into a WFA custom scheme and dictionaries. Those dictionary tables are then available to workflows for search and selection in user interface Queries, Filters, Finders, and Commands. This allows workflows to align with customer business rules, organization and environmental information. In addition, a workflow is included which will export an existing WFA scheme to an Excel spreadsheet allowing viewing and reporting of data within the WFA Cache Database.

TABLE OF CONTENTS

1 Introduction

The Excel Data Management Pack (i.e.; EDM-Pack) simplifies integrating customer business rules, organization, and environmental information into the WFA environment so they are available within custom WFA workflows. Examples might include product codes, cost centers, application provisioning rules, or data center locations, all of which can improve the effectiveness and useablility of customer specific WFA workflows.

WFA natively supports acquiring external data via custom WFA *Data Sources Types* (Designer tab -> Data Source Types). Two methods are available: SQL and Script based. A SQL Data Source Type acquires information from external SQL databases and imports it into custom WFA scheme tables.

A Script *Data Source Type* is a custom written script that gathers, formats and imports data into custom WFA scheme tables.

EDM includes a custom Script based *Data Source Type* (the EDM Data Source) that:

- Imports directly from specially formatted Excel spreadsheets into WFA Cache DB tables
- Is general purpose and re-useable. All that is required to re-use the EDM *Data Source Type* for a customer specific use-case is to clone it into a new WFA Scheme.

To illustrate the concept, the EDM-Pack includes a sample WFA scheme (edm), dictionaries (site and storage) and a cooresponding spreadsheet (edm.xlsx) with sample data. After importing the EDM dar file into WFA a quick test can be performed by creating an execution Data Source (**Execution** tab -> **Data Sources** -> **New**) and import data from edm.xlsx into the WFA edm scheme and tables (site, storage).

NOTE: the 'edm' scheme is just an example and a holder for the EDM Data Source Type. The intention is a customer would create a new custom scheme and dictionaries and then clone the EDM Data Source Type setting it to be associated with the new custom scheme.

The contents of the EDM-Pack are listed below.

Table 1) EDM-Pack components include:

File	Purpose
EDM-Pack_Pv_1_0_0.dar	EDM workflows, scheme, data source, dictionaries, samples
EDM-UserGuide_Dv_1_0_0.pdf	The EDM User Guide in PDF format (this document)

2 Prerequisites and Installation

The EDM-Pack has the following prerequisites:

- Windows Server 2008R2 or 2012R2 for WFA Server
- OnCommand Workflow Automation - WFA Version 3.1P1 or later
- It is assumed WFA is already installed and setup
- The Linux flavor of WFA is not supported

2.1 Installation Steps

In summary, the installation process is importing the EDM-Pack dar file and executing an initialization workflow. In more detail:

- The EDM-Pack code is distributed as a WFA dar file. Download and have the EDM-Pack dar file accessible to your browser.
    - Access the WFA system (http://<wfaSvr>/wfa) and login in as a WFA admin user.
    - Use the ***Administration -> Import*** menu selection to browse to the location where you have downloaded and saved the EDM-Pack dar file.
    - Once you choose or select the dar file you will be presented with the list of components within the dar container file to verify it's contents.
    - Click **[Import]** to continue.
    - After a few seconds you get a **Import Success** window. Click **[OK]** and the browser window will refresh and return to the WFA Portal tab page.
- The left panel on the Portal page will now include the **Excel Data Management** category. Click on that category to select it and view the workflows within.
    - Click the **EDM000 Pack Initialization** workflow to execute it. Choose the default **Install** action and the workflow loads prerequisite modules and files.
- At this point the EDM-Pack is fully installed. Continue to the next sections of this document to:
    - Create your own new scheme, dictionaries and spreadsheet, or
    - Test EDM with the included sample **edm.xlsx** spreadsheet data.

3 Importing from Microsoft Excel into a Custom Scheme

The EDM Data Source Type supports a combination of:

- single or multiple independent table(s)
- multiple tables with relationships between them

The following sections step through:

- Mapping Rules: Excel Table-Column to WFA Table-Column,
- Single Spreadsheet Table into a Single WFA Table,
- Multiple Tables with Relations Between (the EDM sample)

3.1 Mapping Rules: Excel Table-Column to WFA Table-Column

The overall concepts and mapping rules of the EDM Data Source are:

- This data source reads an existing Excel .xlsx file specified in the execution Data Source's 'Host name:' field, for example: C:\WFA-Data\acme.xlsx
- The name of the excel file must match the WFA scheme name.
- The names of each worksheet/tab in the .xlsx file should match the names of a WFA Dictionary entity that you create with a matching name
- The names of columns should be placed in row 1 of each worksheet/tab and those names should match up with WFA Dictionary field names
- Specific dictionary entries can be created under any new scheme you'd like. Just clone the 'EDM Data Source Type' and place it into your new scheme as you clone it.
- Don't forget to generate your tables using reset scheme, before first use.
- To use relationships between tables, follow these additional rules:
    - Your primary key should be the first column and called "id"
    - Your primary key should be unique, and can be text
    - Your foreign key columns should end with "_id" and match its parents id. It can be text.
    - If you don't have a primary key column, the id column will be added automatically with NULL values.
    - *NOTE: All WFA tables have an id column internally which is not visible in the WFA Dictionary for the table. WFA automatically creates the id field with an incrementing value when the data is acquired. For example, you see it as a column of the cluster table of the cm_storage scheme/database as cm_storage.cluster.id*

Next Steps:

- The next section illustrates a simple table example with instructions for a mythical company named **Acme**. The section is: **Single Spreadsheet Table into a Single WFA Table.**
- The section after illustrates EDM-Pack relationships using the example spreadsheet (edm.xlsx) that is included with the EDM-Pack. Jump forward to that section: ***Multiple Tables with Relations (the EDM sample)*** which allows you to quickly import and test the **edm** sample tables.

3.2 Single Spreadsheet Table into a Single WFA Dictionary Table

The first example is for a mythical company named Acme. We want to create a table of the various departments in Acme along with the names of the storage systems used by each department.

- A WFA Scheme named **acme** and a Dictionary named **department** will be created
- The WFA Dictionary columns will be: **code**, **name**, **cluster**
- The Excel spreadsheet column headings will be: **code**, **name**, **cluster**

The steps to set this all up would be:

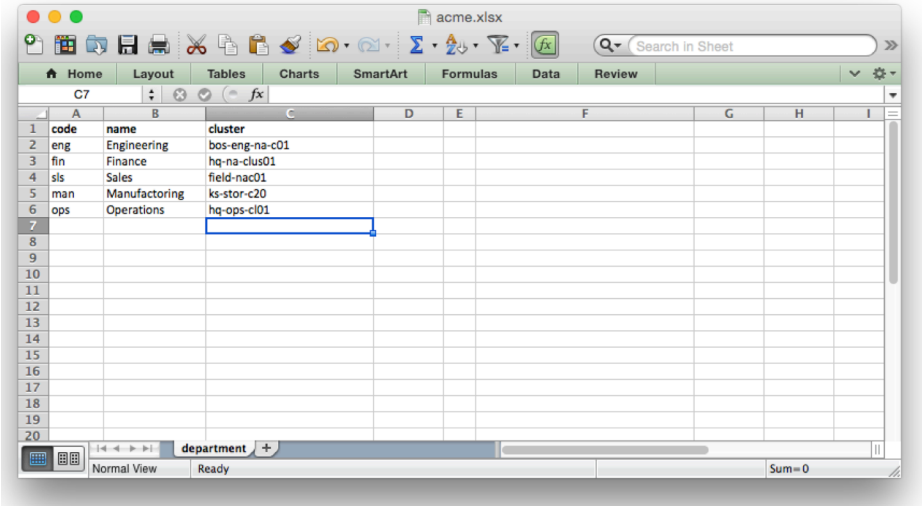
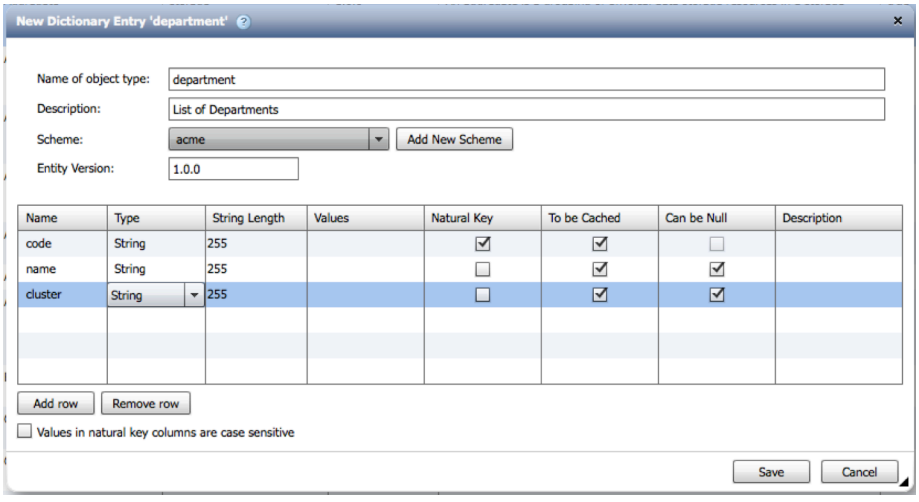
- Create an Excel spreadsheet named **acme.xlsx**. Rename the first worksheet tab to **department**. Fill out the row-1 headings (A1=**code**, B1=**name**, C1=**cluster**) and populate some or all of the data rows. See the example acme.xlsx spreadsheet on the following page.
- *NOTE: Determine where you will place the acme.xlsx file and later you will tell the EDM Execution Data Source where it is located. Normal practice has been to place the file somewhere on the WFA server itself. Having that directory on the WFA server shared out lets users access and update the spreadsheet from their desktop or laptop instance of Microsoft Excel.*
- Create the WFA Dictionary named **department**. This is done by:
  - **Designer** tab -> **Dictionary ->** click **New** icon button (page+)
  - As you create this Dictionary, use the **[Add New Scheme]** button to create the new scheme named **acme** which this dictionary will be within.
  - Add the Dictionary columns (**code**, **name**, **cluster**). Set the **type** of each column to String. Check the box [x] to make the **code** column a natural key, leave other fields as default. See the example acme department Dictionary on the following page.
  - Click **[Save]** to create the WFA Dictionary **department** within the new scheme named **acme.**
- Next you will clone the EDM *Data Source Type* and set it to be associated with the new **acme** scheme. This is done by:
  - **Designer** tab -> **Data Source Types**
  - Select and highlight the data source named: **EDM Data Source**
  - Click the **Clone** icon button or right-click and select **Clone**
  - Fill out the **New Data Source Type** window as follows:
    - Change the **Data source type:** name to **Acme EDM Data Source**
    - Leave Entity Version: and Data source version: as they are
    - For **Scheme:** select the scheme name created above: **acme**
    - Leave Default Port, Method and the Script itself alone and click **[Save]**
- Next create an Exection Data Source that will read the spreadsheet on a recurring schedule. This is done by:
  - **Execution** tab -> **Data Sources** -> click **New** icon button
  - On the New Data Source window:
    - Name: **Acme EDM Tables** (for example)
    - Data source type: **EDM Data Source – 1.x.x**
    - Host name: **C:\WFA-Data\acme.xlsx** (or whereever you place the file)

- Leave Port, User Name, Password and other fields as is
- Under the lower Scheduler Configuration section, click on the Scheme name **acme** and enter an interval such as **30** or **60** minutes or maybe **1440** minutes (daily) and click **[Save]**

- When saving this Execution Data Source it should automatically do it's first acquire. It may be nessecary to right-click **Reset Scheme** before the first acquire. To quickly acquire again after changes have been made to the spreadsheet right-click **Acquire Now**.

For this Acme example, the following table shows what the corresponding WFA Dictionary, Scheme, and Excel Spreadsheet would look like.

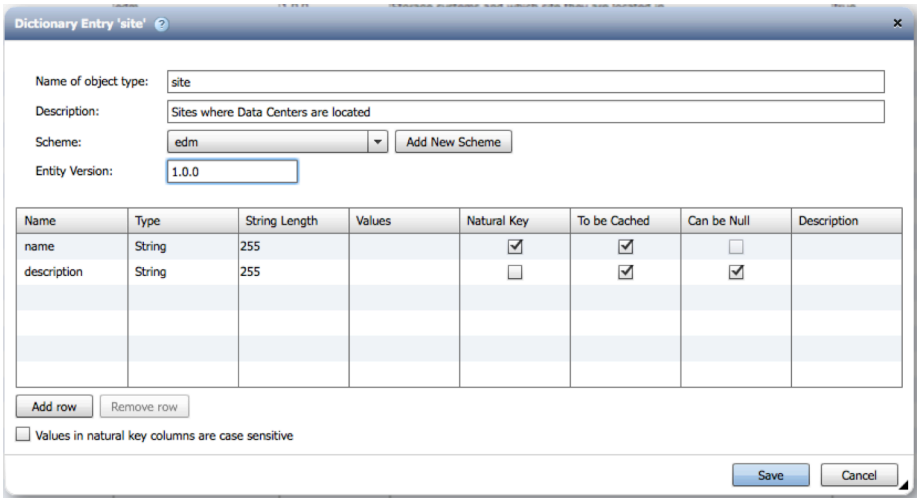
Table 2) Simple Acme Single Table Example

Excel Spreadsheet: acme.xlsx, WFA Scheme: acme, Dictionary: department	Notes
	1) Create the spreadsheet file as **acme.xlsx** 2) Rename the first tab to **department** and remove any other tabs 3) Ensure the row-1 values match the above dictionary columns names 4) As a natural key, the **code** column values in each row must be unique
	1) Use the **Add New Scheme** button to create and select the acme scheme 2) Set each column **type** to string 3) Make code a **Natural Key**

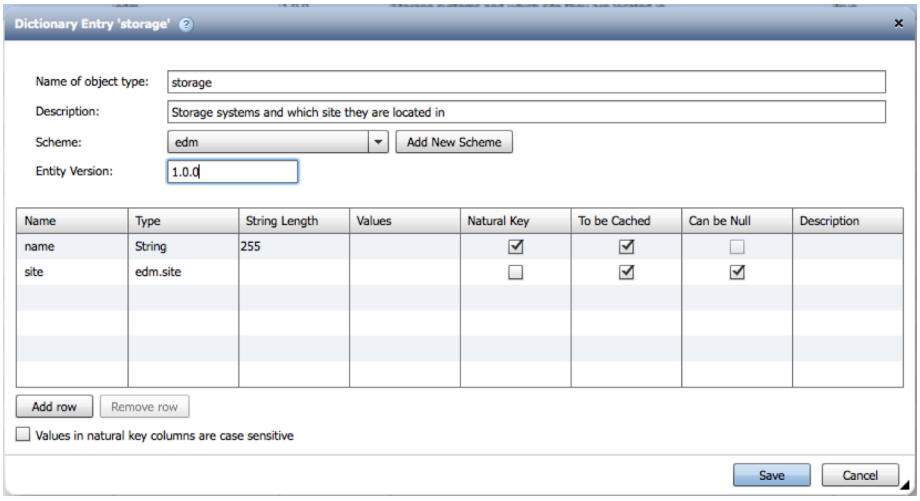
3.3 Multiple Tables with Relations Between (the EDM sample)

For this example we will look at the sample included with the EDM-Pack. The sample includes a WFA scheme named **edm** with two WFA Dictionaries: **site** and **storage** within that scheme. These dictionaries map to the columns of the Excel sample spreadsheet **edm.xlxs** (located in C:\Temp on the WFA server).

The **site** table defines data center locations. The **storage** table is a list of storage system names (*a cluster_mgmt LIF DNS name*) along with a reference to which site that system is located in. The notes below show the edm sample WFA scheme, dictionaries, and Excel spreadsheet and demonstrate how a simple relationship is setup.

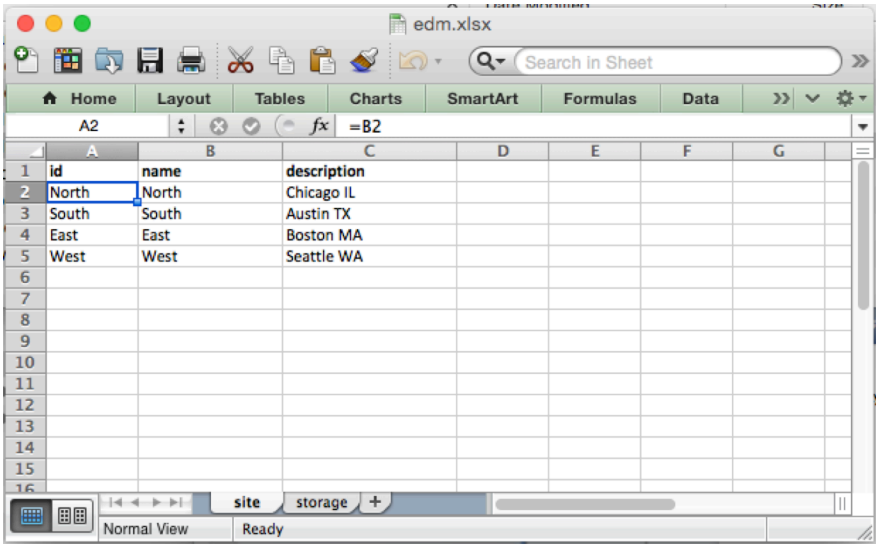
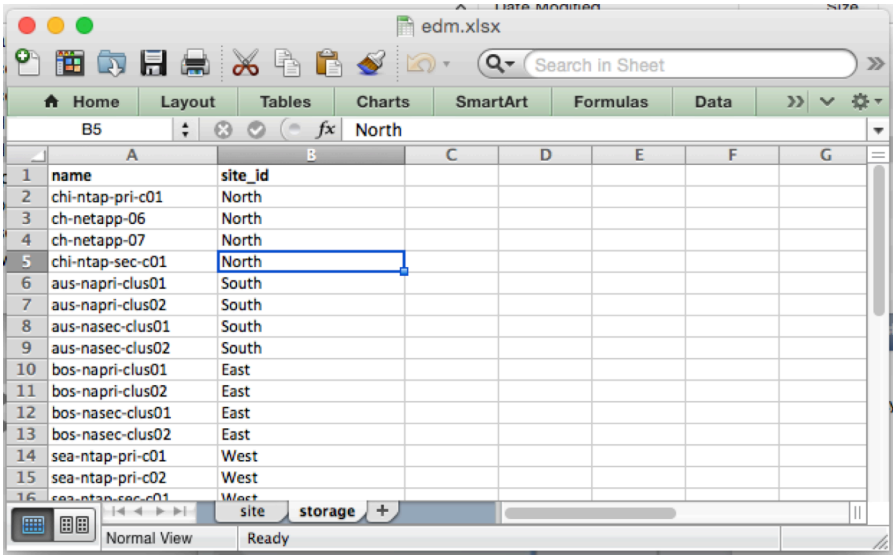
<table>
<tr><th>WFA Scheme: edm, Dictionaries: site,storage - Excel Spreadsheet: edm.xlsx</th><th>Notes</th></tr>
<tr><td> 
</td><td>1) The site table as defined by the dictionary has name and description columns

2) The name column is marked as natural key and it’s value must be unique.

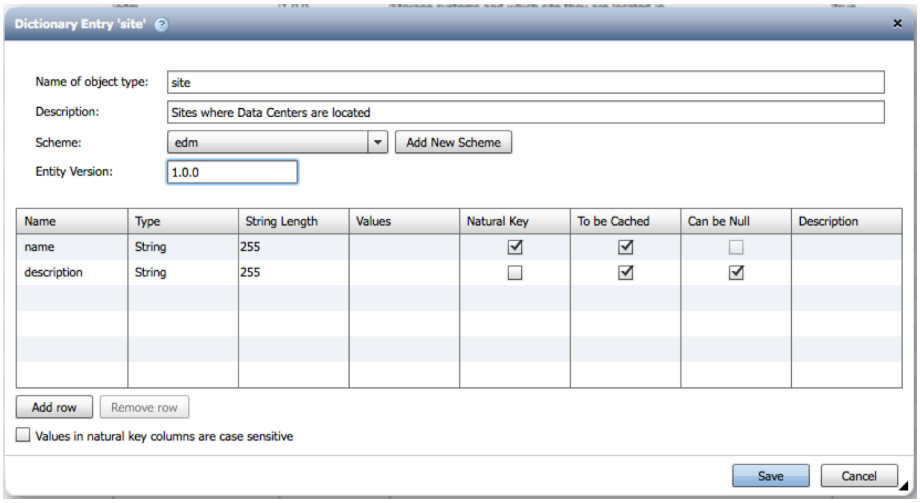
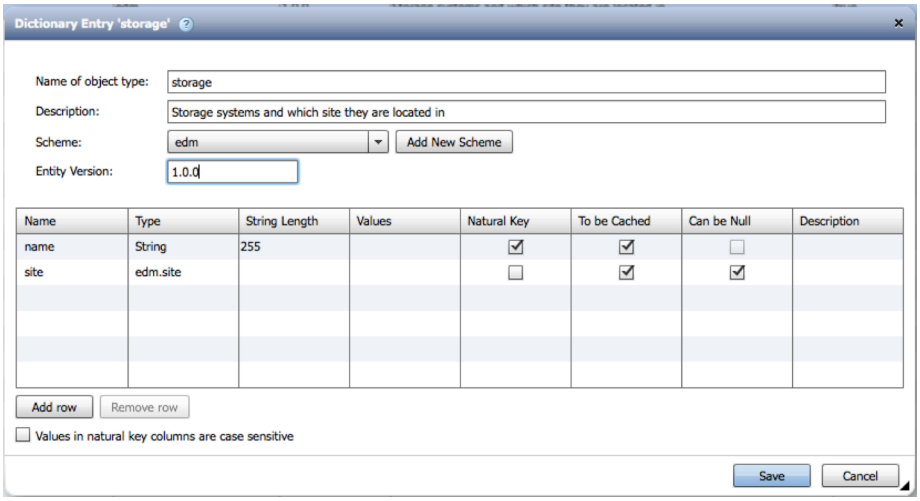
NOTE: Internally the MySQL site table also has an id column (site.id) which is the primary key and is normally populated with incrementing numeric values.</td></tr>
<tr><td> 
</td><td>1) The storage table as defined by the dictionary has name and site columns

2) Following EDM mapping rules, site is set as a foreign key into the edm.site table. Select edm.site as the Type.

3) The storage table name field is a natural key and hence name values must be unique</td></tr>
</table>

WFA Scheme: edm, Dictionaries: site,storage - Excel Spreadsheet: edm.xlsx	Notes
	1) The **edm.xlsx** file contains two tabs: site and storage which must match the dictionary names. Shown at left is the **site** tab 2) The first column is **id** which based on EDM mapping rules means values must be unique and can be used in other Excel tabs to reference into rows of this table. 3) The **name** column holds the customer's desired *site-name* and it is unique so in Excel we've used the **name** column to create unique values for the **id** column, thus creating unique **id** values (Note: cell A1=B2 which is carried down through each row)
	1) The edm.xlsx file contains two tabs: Shown at left is the **storage** tab 2) The columns include name and site_id. The **name** column holds the storage system names. The **site_id** column, based on EDM mapping rules, is treated as a foreign key into the 'site' table. So it's values must match an **id** value in the site table. Such as '**North**' which matches one of the **id** rows in the site table above. *NOTE: once loaded into WFA tables, id and site_id are replaced with unqiue numeric incrementing values which reflect the relationship(s).*

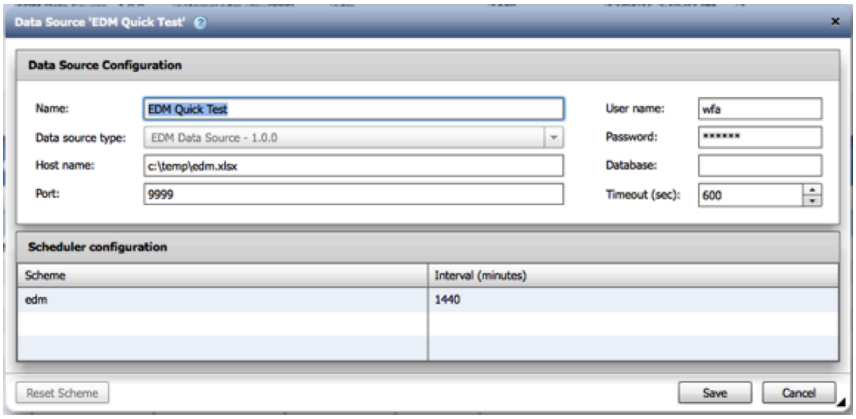
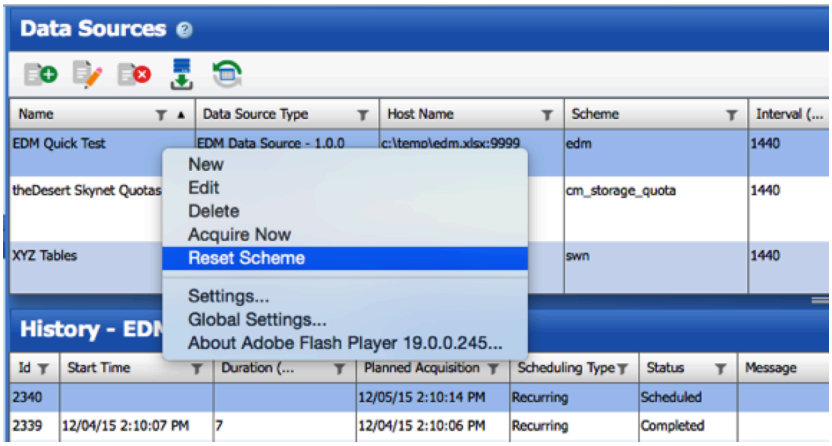
The following show how to create an execution Data Source on your WFA server to acquire from the example 'edm' tables.

WFA Scheme: edm, Dictionary: site,storage - Excel Spreadsheet: edm.xlsx	Notes
	1) The site table as defined by the dictionary has **name** and **description** columns 2) The **name** column is marked as **natural key** and it's value must be unique. *NOTE: Internally the MySQL **site** table also has an **id** column (site.id) which is the primary key and is normally populated with unique incrementing numeric values.*
	1) The storage table as defined by the dictionary has **name** and **site** columns 2) Following EDM mapping rules, **site** is set as a foreign key into the **edm.site** table. Select edm.site as the Type. 3) The **storage** table **name** field is a natural key and hence name values must be unique

To test the the sample EDM spreadsheet you must import it into the included sample edm scheme and dictionaries. To do this you need to create an Exceution Data Source. This is done by:

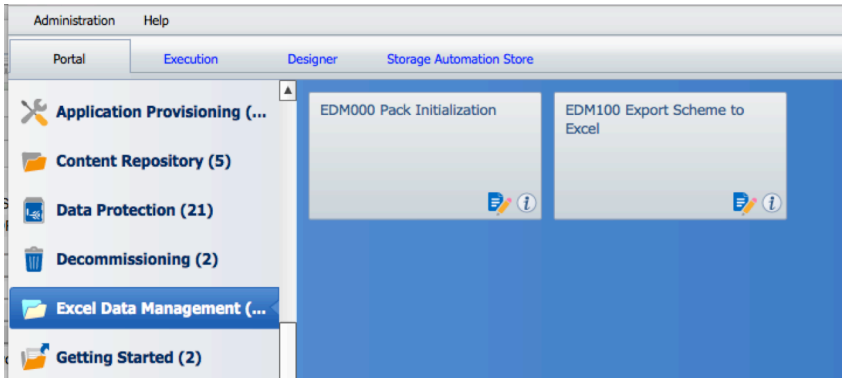
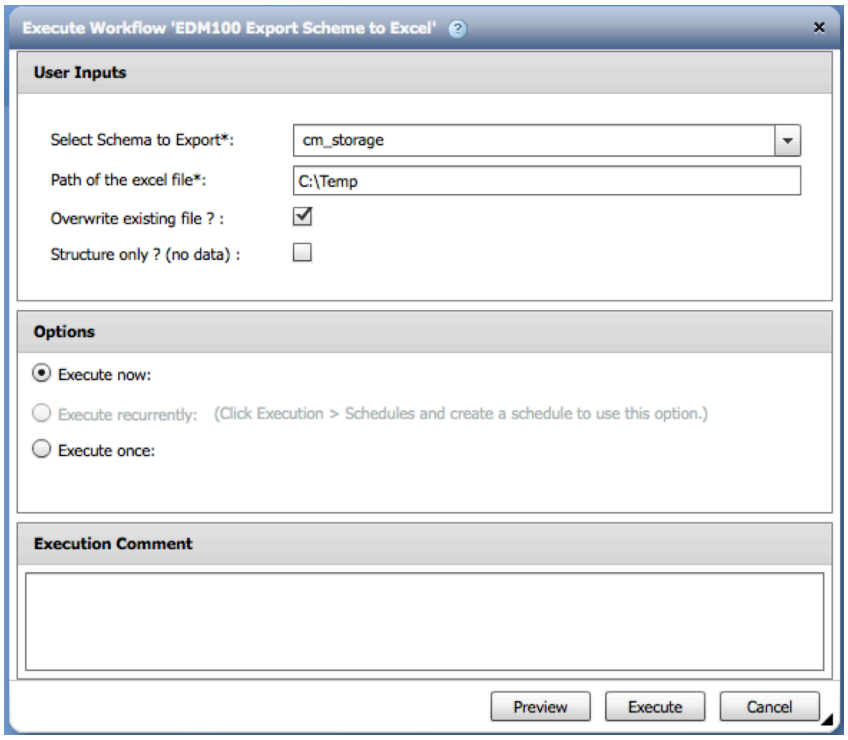
- Click on the **Execution** tab
- Click on **Data Sources** in the left panel
- Click on the **New** icon button

The following notes describe how to create the sample edm Execution Data Source.

WFA Execution Data Source, Reset Scheme, Acquire Now	Notes
	1) The Name: is what ever you like, such as **EDM Quick Test** in this example. 2) Select the Data source type: as **EDM Data Source – 1.0.0** 3) Enter the path to edm.xlsx in the Host name: field such as: **c:\temp\edm.xlsx** 4) When you click **[Save]** the EDM Data Source should begin it's first acquisition from the edm.xlsx file *Note-1: for simplicity the EDM000 Pack Initialize workflow places the sample edm.xlsx in this location* *Note-2: Port, User name, password, Database are not used and can be left as shown*
	4) You may need to perform a **Reset Scheme** as shown at left. This creates the scheme and tables in the MySQL database 5) Normal status after creating the Execution Data Source is that it runs and then shows a 'Completed'. If you do not get status 'Completed', then do an **Acquire Now** to invoke the EDM Data Source to acquire from the Excel acquire again. 6) The Data Source reports detailed a error message next to status column. *Note-3: Entering a value of **1** in the Execution Data Source Port field enables debug mode which logs more information to the data source file located on the WFA server under the WFA install location:* *..\WFA\jboss\standalone\log\edm.log*

4 Exporting a Custom or Standard Scheme into Microsoft Excel

In addition to the ability to import into the WFA Cache DB, the EDM-Pack includes a workflow which will export WFA Cache DB Schemes out to Excel spreadsheet files. This is useful to view what is currently in any current WFA Cache DB scheme. This may be used for viewing, reporting, or potentially WFA debugging purposes when a SQL Database tool is not available for viewing the WFA Cache DB directly.

Workflow: EDM Export Scheme to Excel	Notes
	1) Go to the **Portal** tab and select the **Excel Data Management** category of workflows. 2) Click on the **EDM100 Export Scheme to Excel** workflow,
	3) The **Export Scheme to Excel** workflow lets you pick a scheme and a target directory on the WFA server to export to. The example at left, will create the file: **c:\temp\cm_storage.xlsx** 4) After executing the workflow, the spreadsheet file can be opened with Excel after being moved to a system with Excel or accessed remotely via a share. *Note-1: The '**Overwrite exising file?**' option allows you to indicate if the workflow can overwrite the output file if one with that name already exists.* *Note-2: The '**Structure only?**' option instructs the workflow to output an Excel file with no data, only the tabs and row headings that map to an existing WFA scheme. Creating structure-only spreadsheets can be useful to create an empty Excel file to be populated by the user and then later imported via the associated custom scheme's EDM Data Source.*

Document History

Version	Date	Document Version History
Version 1.0.0	December 7th, 2015	First version (re-written from previously ACE version)

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