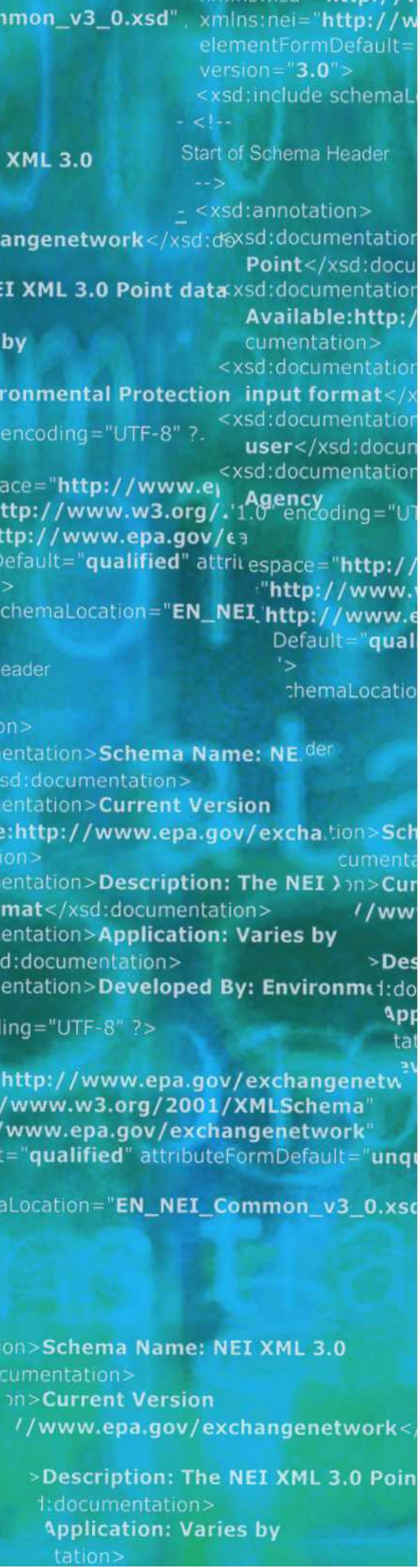

OpenNode2

EPA Moderated Transaction System (EMTS) 1.0 Data Exchange Implementation Guide

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Revision History

Date	Author	Changes	Version
5/27/2010	Windsor	Initial version	1.0
6/15/2010	Windsor	Updated schedule configuration to show Organization Identifier parameter	1.1
10/9/2013	Windsor	Revised cover page	1.2
7/9/2014	Windsor	Updated Install Plugin section to describe pre-bundled plugin process starting with OpenNode2 v2.6	1.3

Table of Contents

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Data Exchange Overview

To obtain the EMTS plugin, please send an email to bill_rensmith@windsorsolutions.com with your name, contact email address, company name, and desired platform (.NET or Java). Please use the email address above for inquiries about the EMTS plugin or other software or services that Windsor can provide. Please note that the EMTS plugin is only available for .NET OpenNode2 at this time.

The purpose of this document is to provide detailed instructions for the installation and configuration of the EPA Moderated Transaction System (EMTS) data exchange on the .NET implementation of the Exchange Network OpenNode2 (OpenNode2).

The EMTS plugin consists of two components: a set of database staging tables and the EMTS plugin itself.

EMTS Staging Database

Database Definition Language (DDL) scripts have been included to create the EMTS staging tables for either SQL Server or Oracle. The staging tables have a structure that is very similar to that of the EMTS schema, including separate tables for Generate, Buy, Sell, and Retire Renewable Identification Number (RIN) transactions.

EMTS Plugin

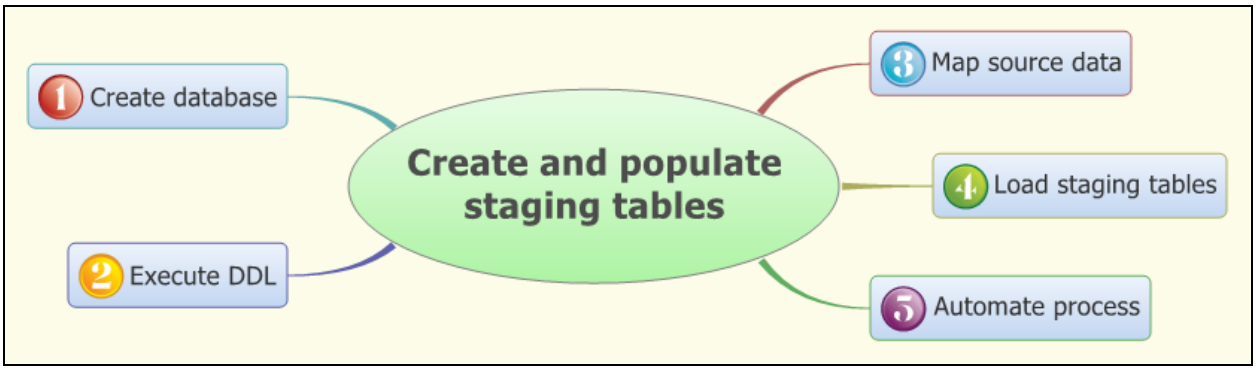
The primary function of the EMTS plugin is to prepare EMTS v1.0 XML data submissions from data hosted in the staging tables. OpenNode2 interacts with the plugin through a Schedule. The Schedule runs on an set interval. When the Schedule executes, EMTS v1.0 XML data is returned to the scheduler which, in turn, will most often be configured to submit the XML data to EPA's Central Data Exchange (CDX) node. Alternatively, the schedule can be configured to send the XML data as an email attachment to a specified recipient.

The EMTS plugin also contains an inbound submission processor. This enables the node to receive and process EMTS submissions back into the staging database tables. This function is not expected to be utilized very often by flow implementers as the most common workflow will be to perform outbound data submissions to EPA.

Create and Populate the EMTS Staging Tables

OpenNode2 uses a plugin-based architecture to support data exchanges with EPA and other Exchange Network partners. Data must first be loaded into a set of staging tables before it can be extracted by the plugin and shared through the EMTS data exchange. This section outlines the steps required to set up the EMTS data exchange database staging tables.

The following figure illustrates these steps:



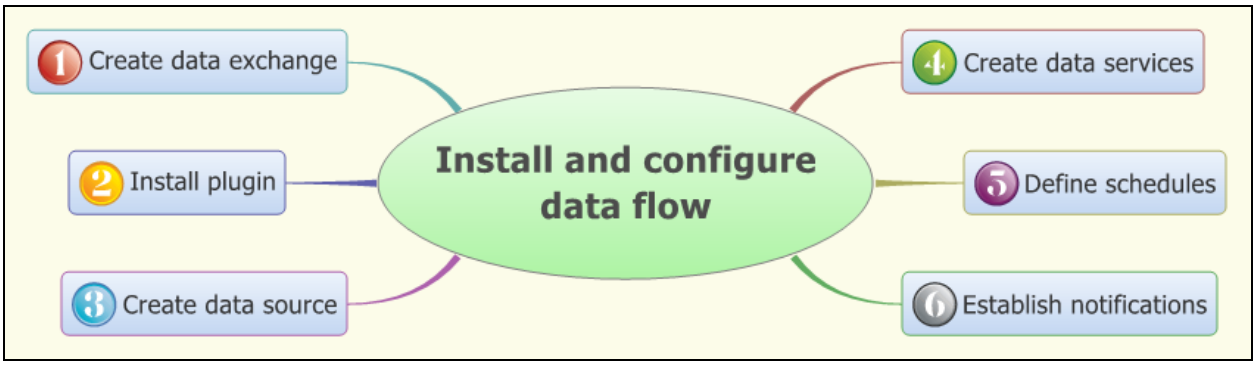
1. The first step is to create the staging database itself if one has not already been established to support another data exchange (typically named NODE_FLOW).
2. Once the staging database is created, a DDL script included in the EMTS plugin package can be executed to create the staging tables themselves that will be used to store the data being made available through the EMTS data exchange.
3. With the staging environment established, data must now be mapped from the source database to the equivalent fields in the EMTS staging tables. The staging tables closely reflect the structure and naming of the EMTS XML schema, and it is recommended that the Data Exchange Template (DET) published at http://www/exchangenetwork.net be used to facilitate this mapping.

   Note: The plugin submits all data in the staging tables each time the plugin executes. For this reason, it is important that the staging tables only contain new, unsent RIN transactions.
4. Once the mapping is complete, a database routine should be developed to populate the tables in the staging database using the mapping prepared during the previous step. This should be a repeatable process that will empty and replace all of the data in the staging tables.
5. Once the data extract process has been developed, it should be automated to execute on a regular schedule as appropriate to the needs of the organization for submissions to EPA.

Install and Configure the EMTS Data Exchange

This section describes the steps required to install and configure the EMTS data exchange on the Microsoft .NET implementation of the OpenNode2 using the Node Administration Web application (Node Admin).

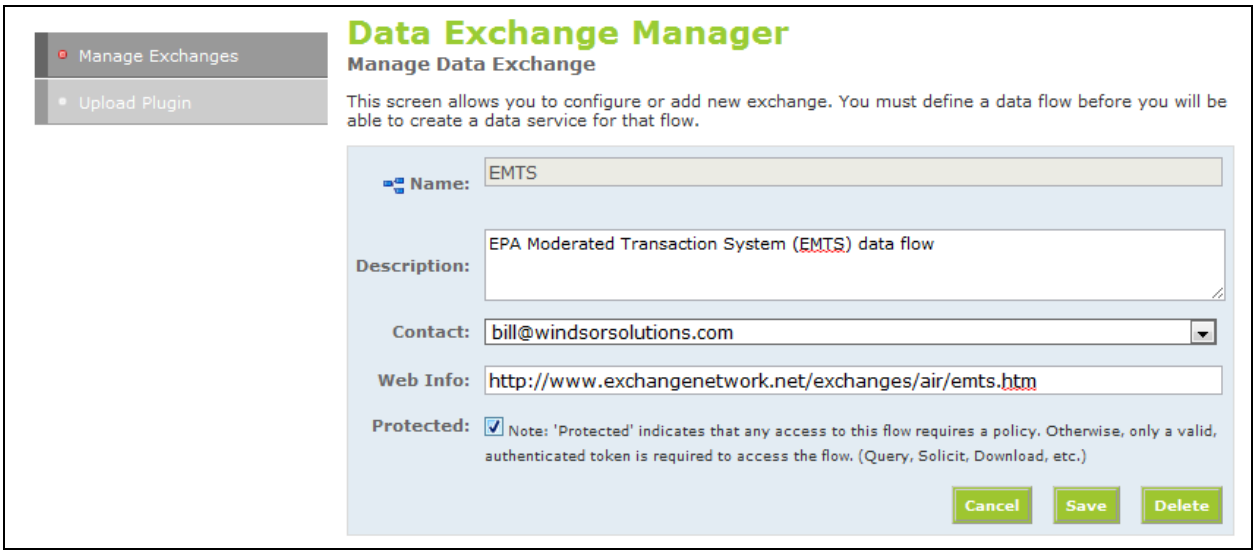
The following figure illustrates these steps:



Create the EMTS Data Exchange

The first step is to create the EMTS data exchange using the Node Admin Web application.

1. After logging into the Node Admin, click the **Exchange** tab on the top navigation bar.
2. Click the **Add Exchange** button. The Manage Data Exchange screen will be displayed as follows:



3. Type "EMTS" in the **Name** field.
4. Select a user account name from the **Contact** drop down box. Contacts are populated with all accounts that have been set up on OpenNode2. This setting has no effect on the exchange operation.

5. In the **Web Info** field, enter a URL where more information can be found about the BEACHES exchange. It is recommended that the following URL be used for this purpose http://www.exchangenetwork.net/exchanges/air/emts.htm.
6. It is recommended that the **Protected** box be checked. This will limit external access to the EMTS data services. External access should not be required at this time given the purpose of this flow is for the internal Scheduler to submit data to EPA.
7. Click the **Save** pushbutton to save the data exchange to the OpenNode2 metadata database.

Install the EMTS Plugin

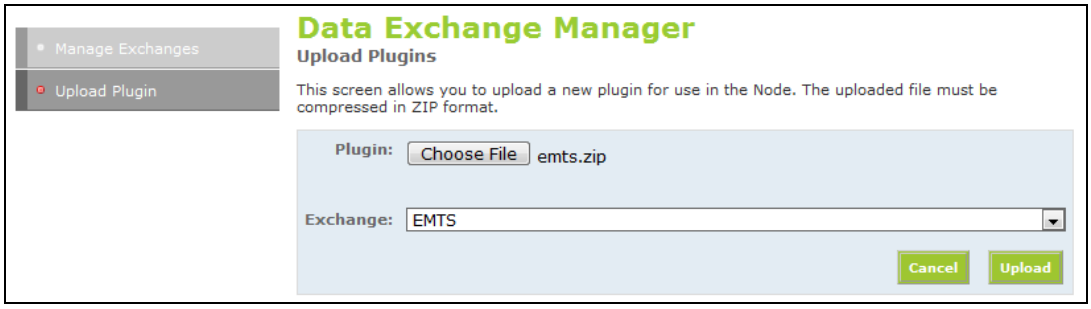
Once the data exchange has been created, the next step is to upload the EMTS plugin into the OpenNode2 plugin repository.

Note: If you are using OpenNode2 v2.6 or higher, this step is not necessary. Starting with v2.6, all plugins are pre-installed with the OpenNode2 software installation package. By creating the exchange above, the plugin will automatically be loaded and associated with the exchange. To validate that the plugin was installed automatically, follow the steps below:

1. From the **Exchange** tab, scroll down the list of installed data exchanges until the WQX exchange is located.
2. Click the **Add Service** button located just beneath the WQX data exchange record. If the Implementer drop down box is not empty, then the plugin has been installed successfully.

If the steps above reveal that the plugin is not installed, perform the following steps to install it.

1. Navigate to the plugin directory in the **Plugins\[Flow Name]\[version number]** directory included with the OpenNode2 installation files.
2. Create a new zip file containing the two Windsor.Node2008.WNOSPlugin.[Flow name].dll and .pdb files.
3. Click the **Exchange** tab on the top navigation bar.
4. Click the **Upload Plugin** section on the left navigation bar. The Upload Plugin screen will be displayed as follows:



5. Click the **Browse** button which is located to the right of the **Plugin** field.
6. Locate and select the compressed (zipped) file containing the code component for the EMTS plugin that you created in step 2 above.

7. Select the data exchange name "EMTS" created during the previous step from the **Exchange** dropdown box.
8. Click the **Upload Plugin** button to upload the plugin.

The uploaded plugin will be placed in the OpenNode2 plugin repository. Any previous plugin versions will be retained in the repository but won't be accessible through the Node Admin. Only the latest version of any one plugin is made available during the next step to establish data services.

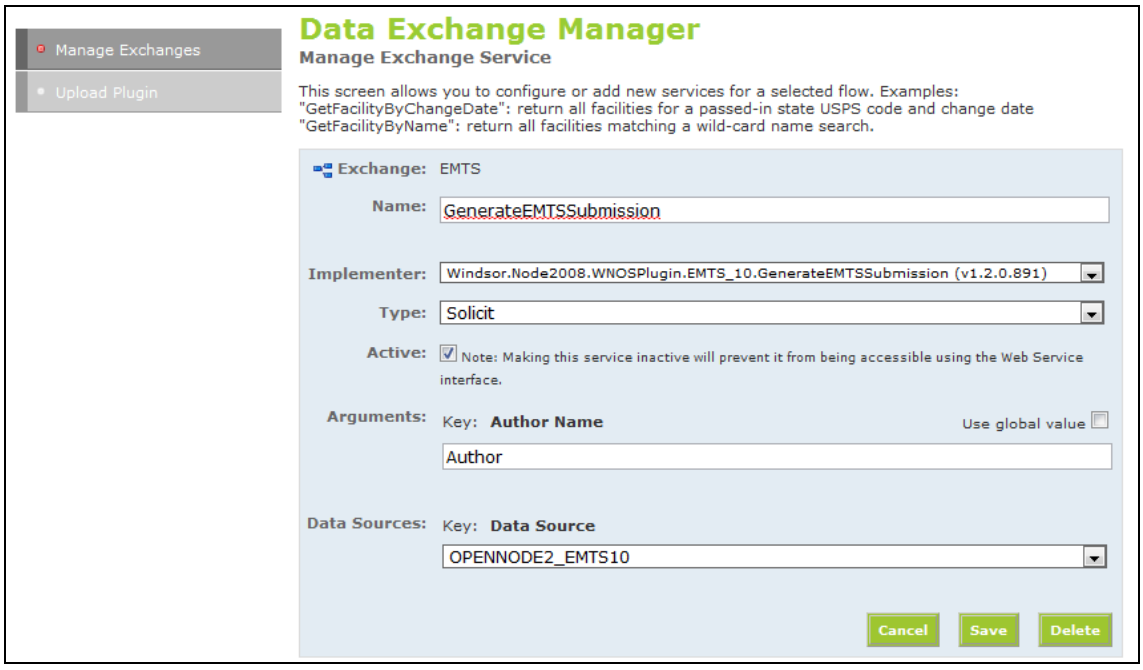
Create the EMTS Data Services

Data services are distinct functions provided by a plugin to support a given data exchange. In the case of the EMTS flow, two data services are offered:

- **EMTS Submission Generator** – for generating XML from data stored in the staging database
- **EMTS Submission Processor** – for parsing received XML back to the staging database

Creating the EMTS Submission Generator Service

1. From the **Exchange** tab, scroll down the list of installed data exchanges until the EMTS exchange is located.
2. Click the **Add Service** button located just beneath the EMTS data exchange record. The following page will be displayed to allow a new data service to be added.



3. In the **Service Name** field, type "Generate EMTS Submission".

   Note: An alternate name can be given if desired. There is no dependency on the Service Name and the plugin functionality.

4. From the **Implementer** drop down box, select service named GenerateEMTSSubmission.

Note: Several additional arguments will appear. The Node Admin application will obtain these properties directly from the BEACHES plugin.

5. From the **Type** drop down box, select "Solicit".
6. Enable the service by checking the **Active** checkbox.
7. Set the Author text. This is the text that is populated in the XML Author field of the XML header in the generated EMTS submission. See the EMTS FCD for more information about the header.
8. Set the **DataSource** to the data source that connects to the EMTS staging tables.

   Note: Please see the Node Administration Guide for information on setting up a new data source.

9. Click the **Save** button to save the service.

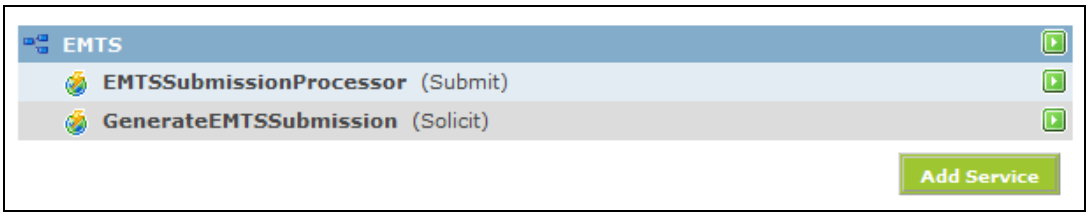
Creating the EMTS Submission Processor Service (Optional)

This service is only needed if OpenNode2 must receive and process inbound EMTS submissions.

- Follow the steps in the previous section to establish a second service with these important changes:
    - Set the **Name** to "EMTS Submission Processor"
    - Set the **Implementer** to the "Submission Processor" entry shown in the drop down box.
    - Set the **Type** to "Submit".
    - Set the "Delete Data Before Insert" Argument to either True or False, depending on the desired behavior.
    - Set the Data Source to the data source that connects to the EMTS staging tables.

      Note: A separate set of staging tables can be set up to store received EMTS data. This will ensure separation of data ready to be sent from that which was received

Once the service is saved, the Data Exchange Manager should show both services configured for the EMTS exchange:



Define Data Exchange Schedule

Scheduled jobs can be configured in the OpenNode2 to perform automated tasks such as submitting data to external partners or processing received files. The EMTS data exchange requires that a single schedule be established using the OpenNode2 Node Admin to trigger the plugin to generate the XML file and then send it to EPA's CDX Node for processing.

Create EMTSGetSubmission Schedule

1. From the **Schedules** tab, click the **Add Schedule** button.
2. Type "EMTSGetSubmission" in the **Name** field.
3. Enable the schedule by clicking the **Active** checkbox.
4. Select "EMTS" from the **Exchange** dropdown list.
5. Set the start date to the first date when you wish the schedule to run.
6. Set the end date to some point after the start date.
7. Set the frequency to the data submission at the desired interval, such as daily or weekly.
8. In the **Data Source** area, check the radio button labeled **Results of local service execution**.
9. In the **Service** dropdown box, select the value "GenerateEMTSSubmission". This informs the schedule to use the selected ETMS service as the data source for the submission.
10. In the **Arguments** area, add a parameter using the green plus icon. Set the **Name** to "OrganizationIdentifier" and set the **Value** to the Organization Identifier for the desired organization from the EMTS_EMTS staging table. This applies a filter on the ORG_IDEN field when selecting data to include in the XML submission.

    Note: Separate schedules can be configured for different organizations. This will be necessary if the node is configured to submit EMTS transactions on behalf of multiple organizations.
11. In the **Result Process** area, check the radio button labeled **Submit result to an Exchange Network partner.**
12. Select the desired Endpoint from the target node drop down box, depending on the desired setting. Please see the EMTS Flow Configuration Document (FCD) on the Exchange Network web site for proper endpoint configuration.

    *Note: For testing purposes, you may set the Result Process to **Send compressed result as an Email Attachment** and specify your own email address as the recipient. This will enable you to manually check the file before submitting to EPA.*
13. Click the **Save** button to save the schedule.

The EMTS schedule is now set up correctly. Please see the OpenNode2 Administration User Guide for more information on scheduling data exchanges.

Contact CDX to Establish Exchange Settings

Consult the EMTS FCD for proper procedures for establishing the data exchange to the EPA CDX Node. This will require obtaining NAAS accounts with appropriate permissions as well as having an account set up in EPA's EMTS database.

Establish Email Notifications

If desired, the Node administrator may create NAAS accounts for one or more staff members and create notifications for the any OpenNode2 events related to the EMTS data exchange. Please see the OpenNode2 Administration User Guide for more information on setting up notifications.