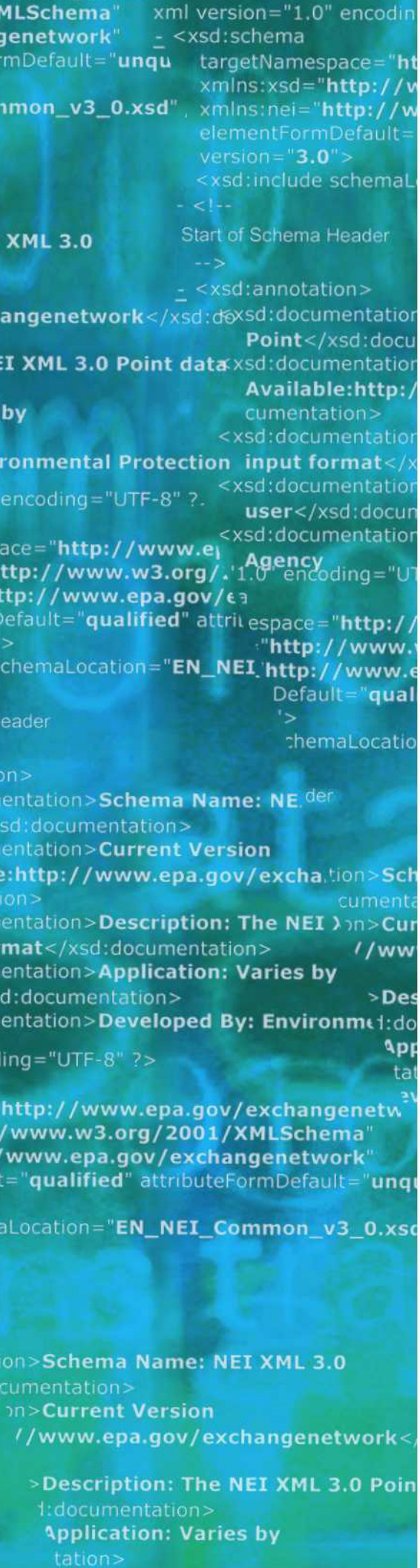


OpenNode2

UIC 2.0 Data Exchange Implementation Guide (.NET)

Revision Date: 7/9/2014

Prepared By:

WINDSOR SOLUTIONS

4386 SW Macadam Ave, Suite 101
Portland, OR 97239
(503) 675-7833

Environmental Information exchange Network

Revision History

Date	Author	Changes	Version
7/9/2011	Windsor	Updated for v2.0. Implementation basically unchanged from UIC v1.0 version of this document	1.0
1/10/2013	Windsor	Added schema block diagram to Appendix	1.1
4/5/2013	Windsor	Fix schedule parameter description to reference ORG_ID instead of ORG_NAME	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

THIS PAGE INTENTIONALLY LEFT BLANK

Data Exchange Overview

The purpose of this document is to provide detailed instructions for the installation and configuration of the Underground Injection Control (UIC) data exchange on the Microsoft .NET implementation of the Exchange Network OpenNode2 (OpenNode2).

The Underground Injection Controls (UIC) data exchange allows Network partners to share information on underground injection wells. The UIC data exchange offers a data service that is used to prepare and submit quarterly UIC data to the Environmental Protection Agency (EPA) UIC system.

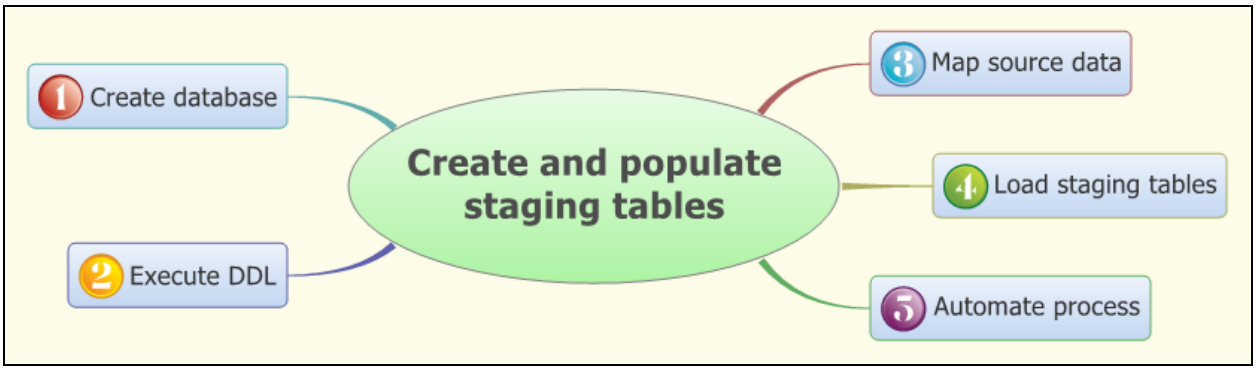
Further detail about the UIC data exchange is available in the Flow Configuration Document (FCD) published at exchangenetwork.net.

The UIC data exchange configuration process involves two main steps: 1) create and populate the UIC staging tables and 2) install and configure the UIC data flow. The rest of this document will describe these two processes in detail.

Create and Populate UIC 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 UIC data exchange. This section outlines the steps required to set up the UIC data exchange database staging tables.

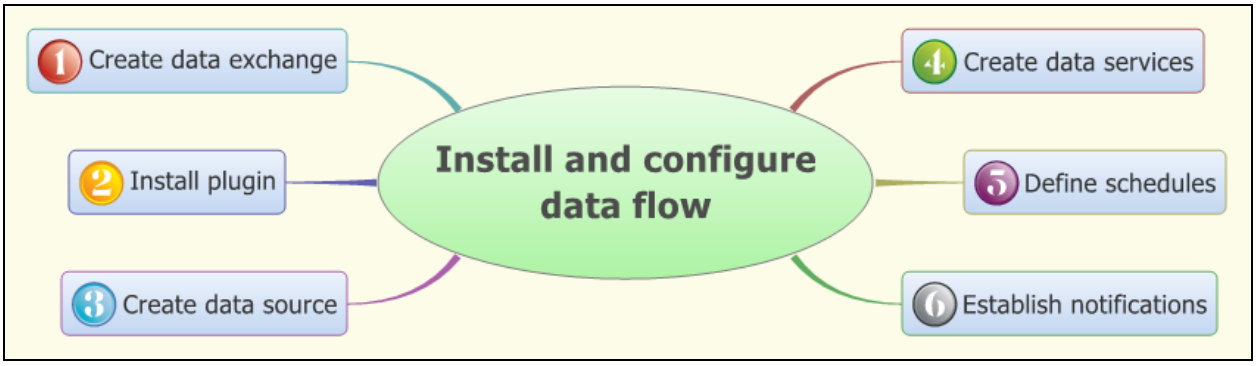
The following figure illustrates these steps:



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 itself is created, a Database Definition Language (DDL) script included in the OpenNode2 deployment package can be executed to create the staging tables that will be used to store the data being made available through the UIC data exchange.
3. With the staging environment established, data must now be mapped from the source database to the equivalent fields in the UIC staging tables. The staging tables closely reflect the structure and naming of the UIC XML schema, and it is recommended that the Data Exchange Template (DET) published at exchangenetwork.net be used to facilitate this mapping.
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 earlier step. This should be a repeatable process that will empty and replace all of the data in the staging tables, or a procedure that will incrementally add, update and remove data as it changes in the source system.
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 UIC Data Flow

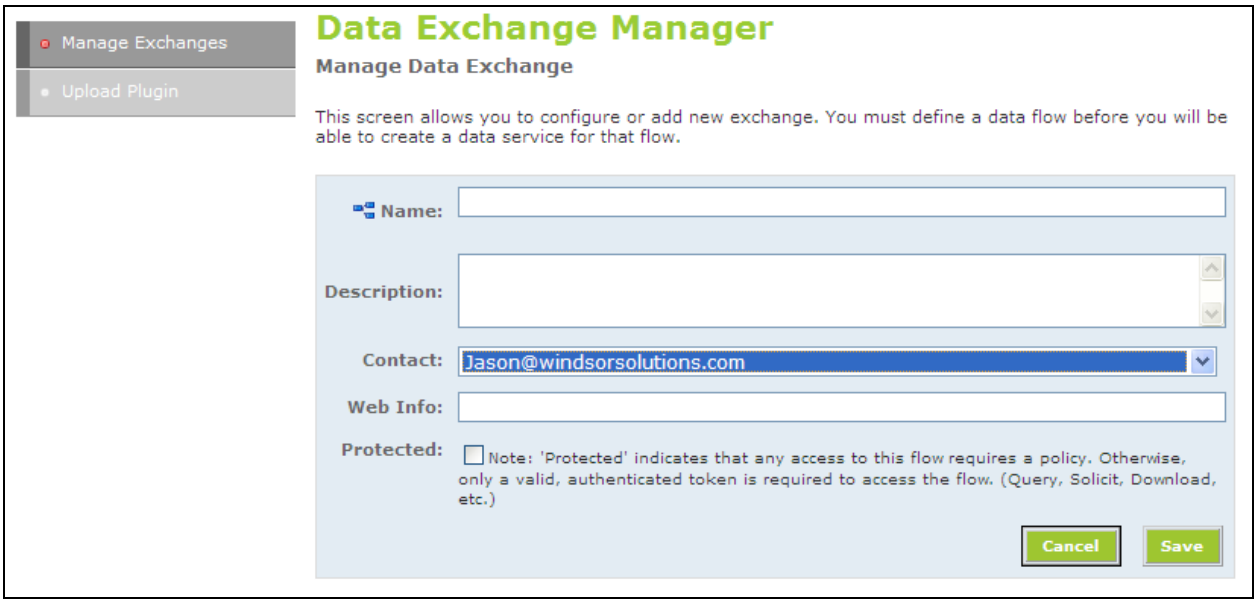
This section describes the steps required to install and configure the UIC data exchange on the Microsoft .NET and Java implementations of the OpenNode2 using the Node Administration Web application (Node Admin).



Create UIC Data Exchange

The first step to implement the UIC data exchange on the OpenNode2 is to create the data exchange using the Node Admin Data Exchange Manager.

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



3. Type *UIC* in the **Name** field.
4. Type a short description in the **Description** field, e.g., *Underground Injection Control data exchange*.

5. Select a user account name from the **Contact** drop-down menu. Contacts are populated with all accounts that have been set up on the OpenNode2. See the **Security** tab for a list of available accounts.
6. Type any valid URL in the **Web Info** field. Ideally, this will be the page on the Exchange Network Web site that describes the UIC data exchange:

   http://www.exchangenetwork.net/exchanges/water/UIC.htm
7. It is recommended that the **Protected** box be checked. This will limit external access to the UIC data services. External access should not be required at this time given the current purpose of this flow is solely as a means of data submission to EPA.
8. Click **Save** to save the data exchange.

Install UIC Plugin

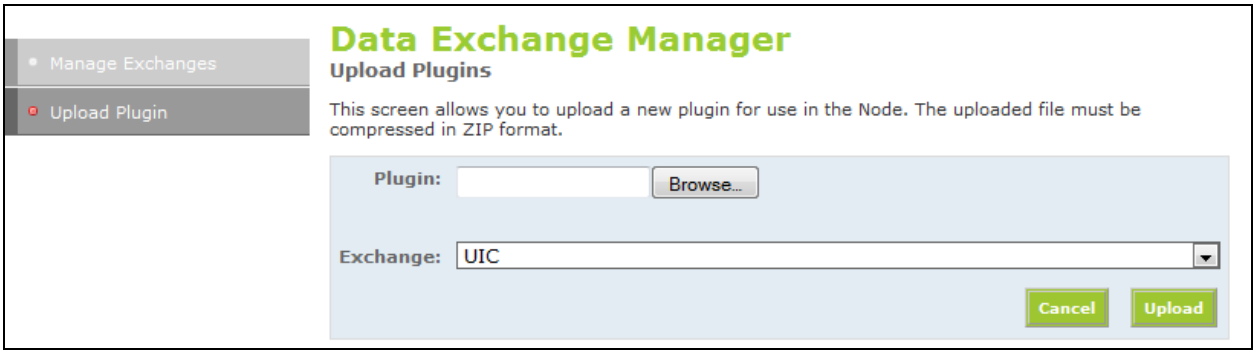
Once the UIC data exchange has been created, the next step is to upload the UIC plugin provided by Windsor into the OpenNode2 plugin repository.

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. From the **Exchange** tab, click the **Upload Plugin** button on the left side navigation block.



4. Click the **Browse** button located to the right of the **Plugin** field.

5. Locate and select the compressed (zipped) file containing the code component for the UIC plugin you created in step 2 above.
6. Select *UIC* from the **Exchange** drop-down menu. If *UIC* is not available, ensure that the previous step was completed (*Create UIC Data Exchange*).
7. Click the **Upload** button to install the UIC plugin.

The newly uploaded plugin code 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 UIC Data Services

Data services are distinct functions provided by a plugin to support a given data exchange. For the UIC data exchange, there are two data services provided by the plugin:

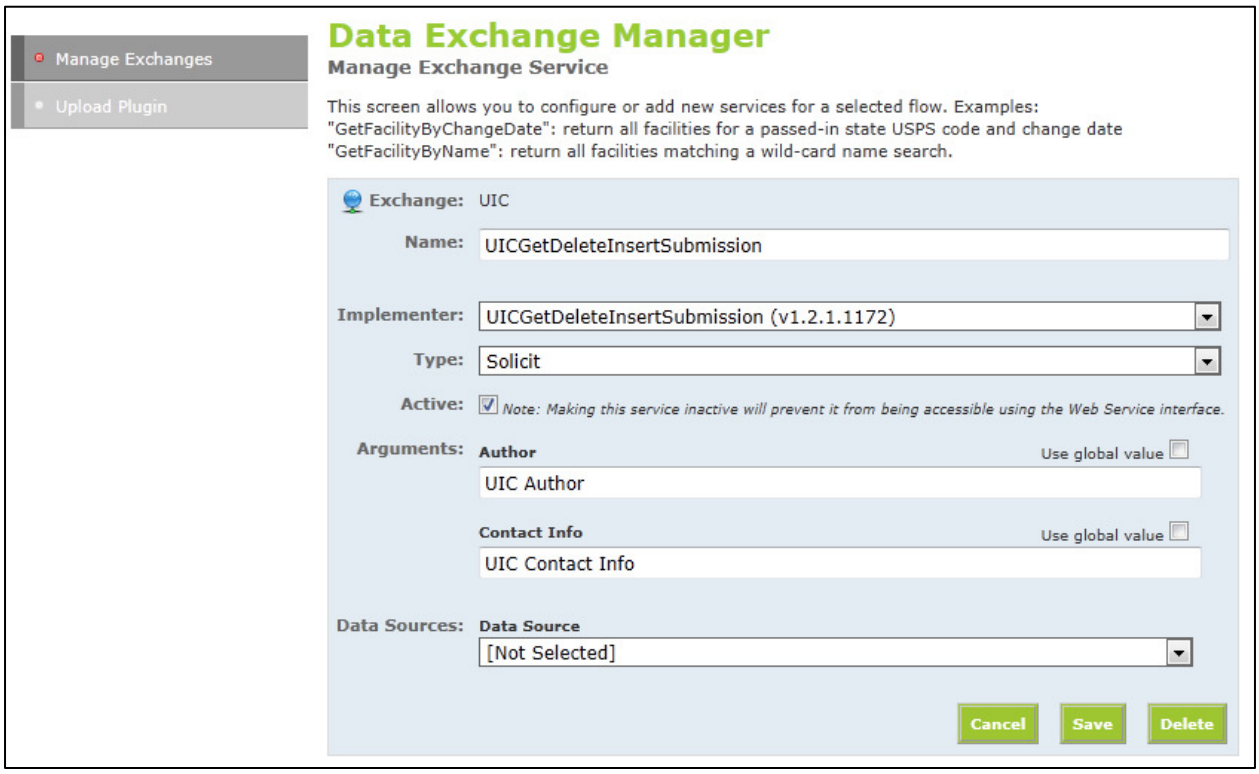
- UICGetDeleteInsertSubmission
- UICSubmissionProcessor

Most agencies will only need the first service that performs UIC submissions. The second service provides a "reverse flow" that parses received UIC XML data and inserts the data into the UIC staging tables. Configuration of the Submission Processor service is out of scope for this document.

Data services must be created and configured before it can be accessed through the OpenNode2 endpoints.

GetDeleteInsertSubmission Data Service

1. From the **Exchange** tab, locate the UIC data exchange in the list of available exchanges.
2. Click the **Add Service** button located just beneath the UIC data exchange entry. The following page will be displayed to allow a new data service to be added.



3. In the **Name** field, enter *UICGetDeleteInsertSubmission*.
4. Select the implementer from the **Implementer** drop-down menu.

   Note: When the implementer is selected, several arguments and data sources will appear. The Node Admin will obtain these properties directly from the loaded UIC plugin.
5. From the **Type** drop-down menu, select *Solicit*.
6. Enable the service by checking the **Active** checkbox.
7. Based on the selection made from the implementer drop-down menu, the Node Admin will determine what argument and data source requirements the plugin has and will refresh the page to display the relevant data entry fields as follows:

   i. In the argument labeled **Author**, enter the text you wish to include in the payload header's <Author> element.

   ii. In the argument labeled **Contact Info**, type the name of the person who should be contacted regarding any submission created from this service. Also enter this person's email address and phone number. For example, enter *John Smith, (999) 999-9999, john@smith.com*, etc.

   iii. Set the **Data Source** to the data source that connects to the UIC staging tables. Reference the *Creating the UIC Staging Tables* section in this document for further details.

   Data sources can be created from the **Configuration** tab in the Node Admin. Reference the OpenNode2 Administration User Guide for more information.
8. Click the **Save** button to save the data service.

Define Data Exchange Schedules

Scheduled jobs can be configured in the OpenNode2 to perform automated tasks, for example, submitting data to external Exchange Network partners or processing received files. The Node Admin will be used to create a UIC submission schedule. This scheduled job will extract data from the UIC data exchange database staging tables, generate an UIC XML document that is formatted according to the *UIC_UIC_v1.0* schema, and submit the UIC XML document to EPA CDX for validation and processing.

The following parameters should be used in creating the UIC submission schedule within the OpenNode2 Node Admin:

1. Click the **Schedules** tab and click the **Add Schedule** button. The schedule manager screen will appear.
2. In the **Name** field, type *Submit UIC Data*.
3. Select *UIC* for the **Exchange** drop down box.
4. Set the **Availability** information, including start and end date and hour of execution.
5. Set the **Frequency** to *Once*. Setting the execution dates and execution frequency in this way will result in the submission occurring only one time which is consistent with the operation of this data exchange.
6. In the **Data Source** area, check the radio button labeled *Results of local service execution*.
7. In the **From** dropdown box, select the *UIC - GetDeleteInsertSubmission*. This informs the schedule to use this data service as the data source for the submission.
8. Enter one **Additional Parameter** (by Index). This parameter is required by this data service.
    a. Index: 0
    b. Name: *OrganizationIdentifier*
    c. Value: The ORG_ID in the UIC_ORG staging table for the organization's data to send. Typically, agencies will only send their own UIC data and will therefore only have one record in the UIC_ORG staging table. This parameter allows OpenNode2 to send different UIC payloads for different organizations if required.
9. In the **Result Process** area, check the radio button labeled *Submit result to an Exchange Network partner*. Select the value corresponding to the name of the EPA CDX Node endpoint from the **To** drop-down menu and enter *UIC* as the **Exchange**.

Please see the OpenNode2 Administration User Guide for more information on scheduling data exchanges.

Contact CDX to Establish Data Exchange Settings

Once the UIC data exchange is installed and configured, contact the CDX Node Help Desk and ask them to grant Submit permissions to the UIC data exchange for the OpenNode2 NAAS runtime account.

Establish Email Notifications

If desired, using the Node Admin, a Node administrator may create NAAS accounts for one or more users and set up email notifications for the any OpenNode2 events related to the UIC data exchange. Please see the OpenNode2 Administration User Guide for more information on creating data exchange email notifications.

Monitor Flow Activity

The OpenNode2 will track all UIC data exchange activity and can be accessed to monitor and debug related flow activities. Please see the OpenNode2 Administration User Guide for more information on accessing and searching the available OpenNode2 activity reports.

Appendix A: UIC Staging Table Block Diagram