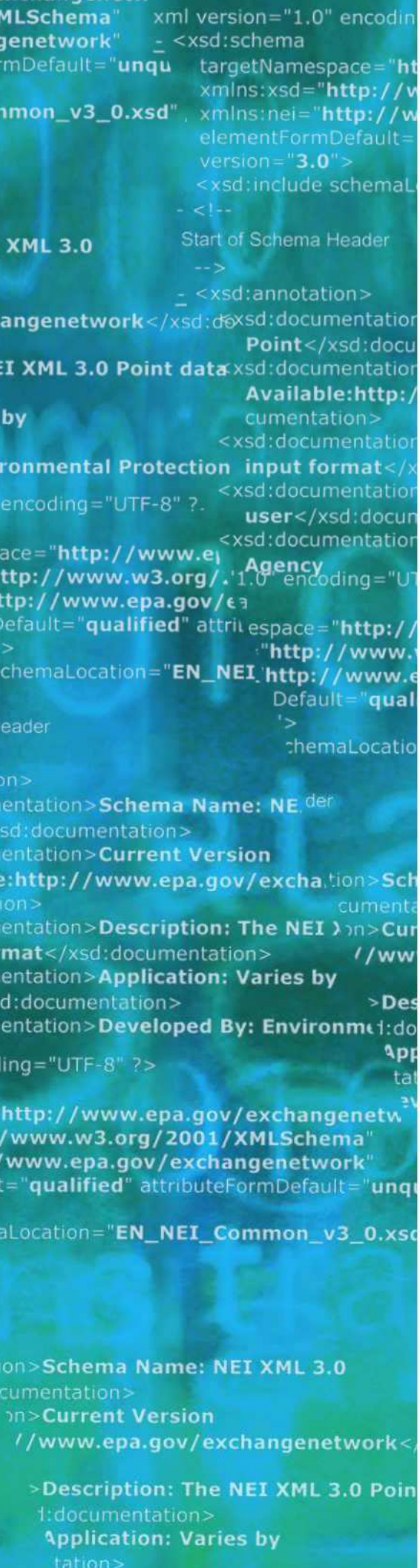

OpenNode2

FacID 3.0 Data Exchange Implementation Guide

Revision Date: 6/11/2012

Applies to Java OpenNode2 v2.0+

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Revision History

Date	Author	Changes	Version
6/11/2012	Windsor	Initial version	1.0
8/28/2013	Windsor	Updated with OpenNode2 v2.08 screen images	1.1

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Data Exchange Overview

The purpose of this document is to provide detailed instructions for the installation and configuration of the Facility Identification (FacID) data exchange on the Java implementation of the Exchange Network OpenNode2 (OpenNode2).

The FacID data exchange offers seven data services that expose facility and environmental interest data to Exchange Network partners through Query and Solicit requests:

- **GetFacilityByChangeDate_v3.0:** Show all facilities modified after a given change date (useful for data synchronization processes).
- **GetFacilityByID_v3.0:** Provides information about a facility matching a provided identifier.
- **GetFacilityCount_v3.0:** Provides a simple count of all facilities meeting entered criteria. This service might be used for query costing purposes.
- **GetFacilityInterest_v3.0:** Provides a listing of facility information and their associated environmental interests with few other details.
- **GetFacilityList_v3.0:** Provides a listing of facility information with a minimum number of details for each facility (useful for large listings of facilities).
- **GetFacility_v3.0:** Provides a fully-detailed listing of facilities matching provided criteria, together with their environmental interests.
- **GetDeletedFacilityByChangeDate_v3.0:** Show all facilities deleted after a given date (useful for data synchronization processes).

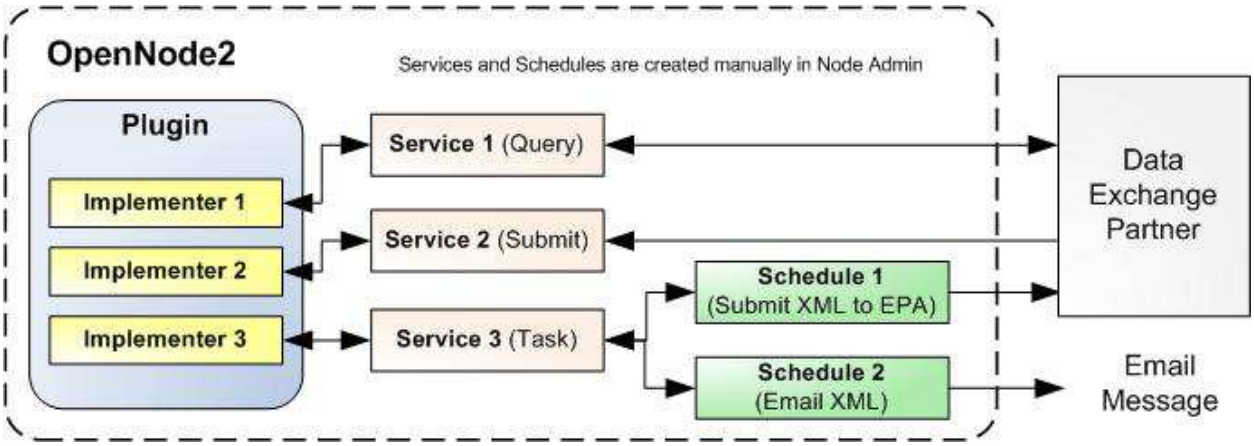
Further detail about the supported FacID data services is available in the relevant Exchange Network Flow Configuration Document (FCD) published at www.exchangenetwork.net.

The FacID data exchange services may be exposed to Exchange Network partners, allowing each to obtain data from your facility data repository. The Environmental Protection Agency (EPA) Central Data Exchange (CDX) Node will also periodically call these services to populate the EPA Facility Registry System (FRS) data warehouse.

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

OpenNode2 Plugin Architecture

The diagram below shows the architecture of a typical OpenNode2 plugin and how services that access the plugin's functionality are configured by a Node Administrator.



A plugin contains one or more **implementers**. Implementers are specific functional components that are specific to the data exchange. An implementer performs a specific task, for example, composing XML from a series of staging tables.

A Node Administrator makes available the functionality in an implementer by creating **services**. When a service is created, an implementer must be chosen. Each service may have one or more configuration arguments, defined by the implementer. For example, the service may require that a database connection or Node partner URL be provided. Services can be made available to external partners in the form of a query or solicit or as an inbound submission processor. "Task" services are internal only and are accessed via a **schedule**. Schedules also can have configuration arguments which are required by the data service assigned to the schedule.

Query/Solicit Implementers

There are seven implementers in the FacID_v3.0 plugin that expose Query and/or Solicit primitives. These services can be called by external partners or invoked by a schedule.

The seven implementers are:

- GetFacilityCount
- GetFacilityList
- GetFacility
- GetFacilityInterest
- GetFacilityByID
- GetFacilityByChangeDate
- GetDeletedFacilityByChangeDate

Data Service and Schedule Parameters

All seven implementers support the same arguments and are described below:

Service Parameters:

Add Header: Type either true or false. Indicates whether to include the standard Exchange Network Header in the XML generated by the implementer.

Note that the EPA FacID backend processor is currently unable to accept the standard Header document format used by EPA CDX and other backend EPA systems, but the Header may still be used for other partner exchanges.

Author: The value to insert in the Author element in the Exchange Network Header document.

Contact Info: The value to insert in the Contact Info element in the Exchange Network Header document.

Organization: The value to insert in the Organization element in the Exchange Network Header document.

Payload Operation: The value to insert into the Payload Operation attribute of the Exchange Network Header document.

Data Source Provider: Set the Data Source to the data source that connects to the FacID staging tables.

Schedule Parameters:

The schedule parameters supported by the implementer are the same as are defined in the FacID 3.0 FCD for Query and Solicit requests. Please refer to the FCD for descriptions of each parameter.

The following schedule parameters are used by the FacID data services. The corresponding staging database table and field name used for the filter are provided:

Standard Environmental Interest Type: Table FACID_ENVR_INTR column ENVR_INTR_TYPE_TEXT.

ZIP Code: Table FACID_FAC column ADDR_POST_CODE_VAL (starts with)

Tribal Land Code: Table FACID_FAC column TRIB_LAND_INDI

Federal Facility: Table FACID_FAC column FED_FAC_INDI

Facility Name: Table FACID_FAC column FAC_NAME (contains)

Facility Status: Table FACID_FAC column FAC_ACTIVE_INDI

SIC Code: Table FACID_FAC_FAC_SIC column SIC_CODE (starts with)

NAICS Code: Table FACID_FAC_FAC_NAICS column NAICS_CODE (starts with)

City Name: Table FACID_FAC column LOCA_NAME

State: Table FACID_FAC column STA_CODE

County Name: Table FACID_FAC column CNTY_NAME

N Bounding Latitude: Table FACID_FAC_PRI_GEO_LOC_DESC column LATITUDE (Less than or equal to)

S Bounding Latitude: Table FACID_FAC_PRI_GEO_LOC_DESC column LATITUDE (Greater than or equal to)

E Bounding Longitude: Table FACID_FAC_PRI_GEO_LOC_DESC column LONGITUDE (Less than or equal to)

W Bounding Longitude: Table FACID_FAC_PRI_GEO_LOC_DESC column LONGITUDE (Greater than or equal to)

Change Date: Table FACID_FAC column LAST_UPDT_DATE (Greater than or equal to)

Facility Site Identifier: Table FACID_FAC column FAC_SITE_IDEN_VAL

Originating Partner Name: Table FACID_FAC column ORIG_PART_NAME

Information System Acronym Name: Table FACID_FAC column INFO_SYS_ACRO_NAME

Deleted Date: Table FACID_FAC column DELETED_ON_DATE (Greater than or equal to)

Implementing the Data Exchange

Step 1: Create and Populate FacID Staging Tables

Data must first be loaded into a set of staging tables before it can be extracted by the plugin and shared through the FacID data exchange. This section outlines the steps required to set up the FacID data exchange staging database tables.

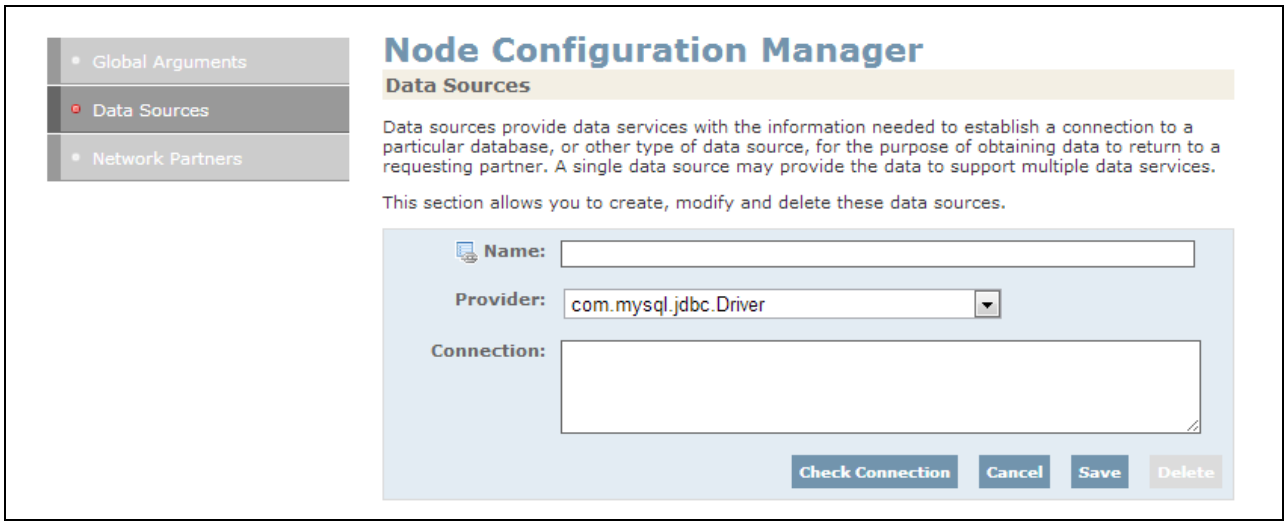
Establish Staging Database

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 themselves that will be used to store the data being made available through the FacID data exchange.
3. With the staging environment established, data must now be mapped from the source database to the equivalent fields in the FacID staging tables. The staging tables closely reflect the structure and naming of the FacID XML schema, and it is recommended that the Data Exchange Template (DET) published at www.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.

Define OpenNode2 Data Source

Once the staging database has been established, a data connection must be created in the Node Admin to allow the OpenNode2 data services to access the database.

1. After logging into the Node Admin, click the **Configuration** tab on the top navigation bar.
2. From the **Configuration** tab, click the **Data Sources** button on the left navigation bar.
3. Click the **Add** button. The Data Source Manager screen will be displayed.
4. Type the desired name of the data source in the **Name** field.
5. Type the appropriate database provider string in the **Provider** field.
6. Type the appropriate database connection string information in the **Connection** field.
7. Click **Check Connection** to confirm the configuration information.
8. Click **Save** to save the data source.



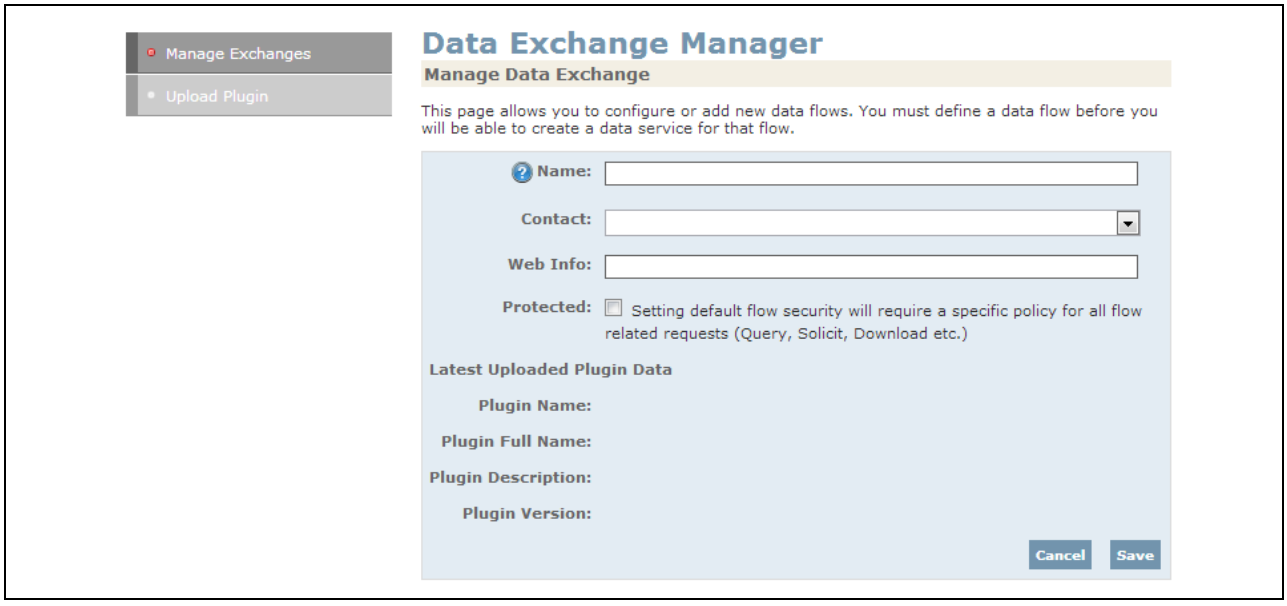
Step 2: Install and Configure the FacID Data Exchange

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

Create FacID Data Exchange

The first step to implement the FacID 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:



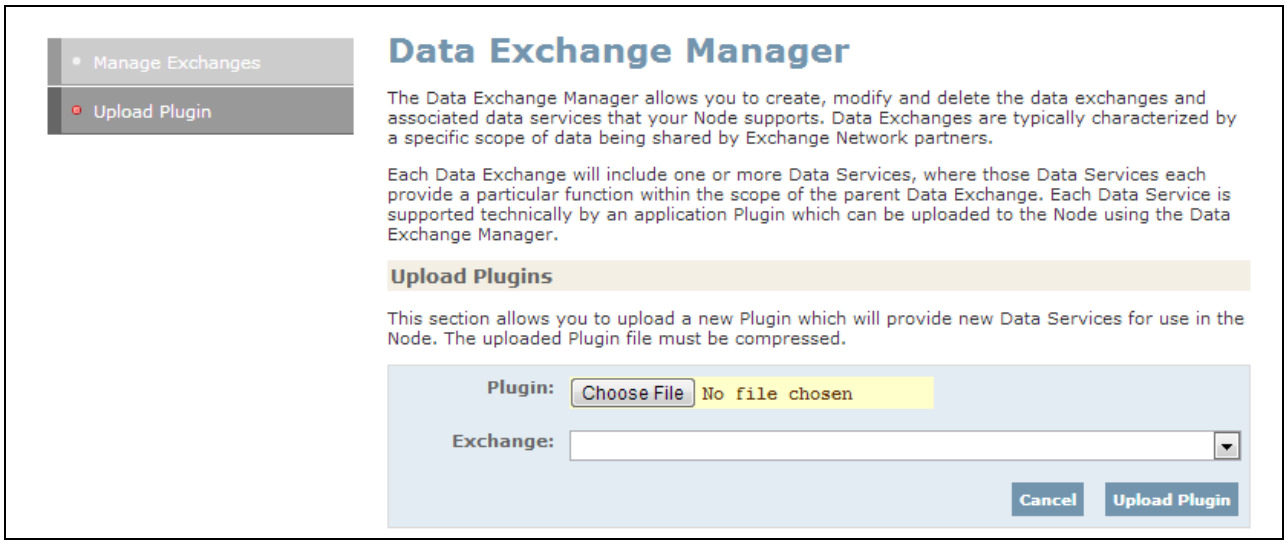
3. Type *FacID_v3.0* in the **Name** field.
4. Select a user account name from the **Contact** drop-down menu. Contacts are populated with all accounts that have been set up on the OpenNode2. See the **Security** tab for a list of available accounts.
5. Type any valid URL in the **Web Info** field. Ideally, this will be the page on the Exchange Network Web site that describes the FacID data exchange:

   http://www.exchangenetwork.net/data-exchange/facility-identification/
6. It is recommended that the **Protected** checkbox remain unchecked. This will enable all authenticated OpenNode2 users to access the FacID data services without needing special data exchange specific security permissions.
7. Click **Save** to save the data exchange.

Install FacID Plugin

Once the FacID data exchange has been created, the next step is to upload the FacID plugin provided by Windsor or downloaded from the OpenNode2 open-source code repository.

1. From the **Exchange** tab, click the **Upload Plugin** button on the left navigation bar.
2. Click the **Browse** button.
3. Locate and select the compressed (zipped) file containing the code component for the FacID plugin.
4. Select *FacID_v3.0* from the **Exchange** drop-down menu. If this data exchange name is not available, ensure that the previous step was completed.
5. Click the **Upload Plugin** button to install the FacID 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.

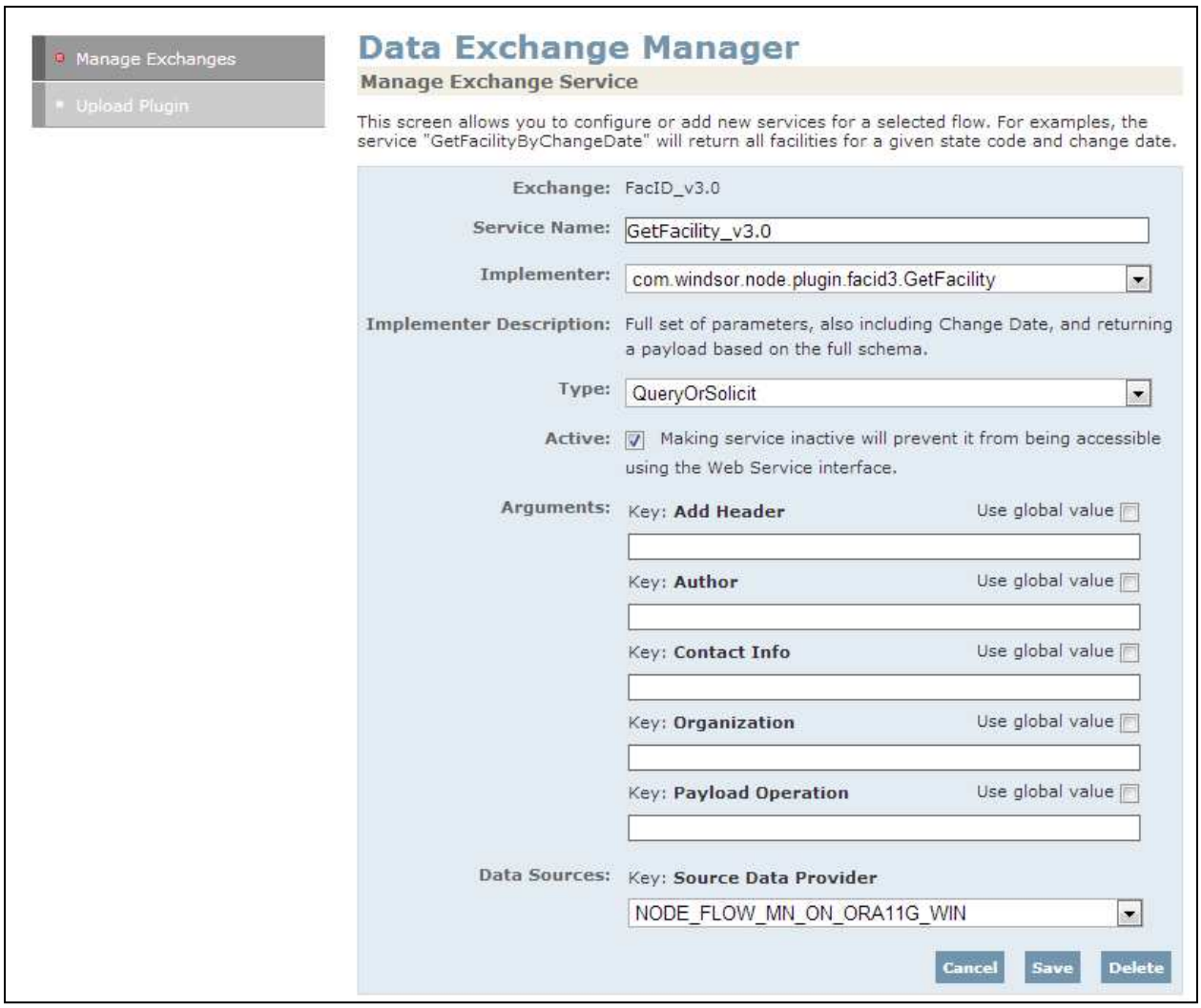
Step 3: Create FacID Data Services

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

- GetFacilityCount_v3.0
- GetFacilityList_v3.0
- GetFacility_v3.0
- GetFacilityInterest_v3.0
- GetFacilityByID_v3.0
- GetFacilityByChangeDate_v3.0
- GetDeletedFacilityByChangeDate_v3.0

Each of these data services must be created and configured before they can be accessed through the OpenNode2 endpoints. The following instructions should be repeated for each of the data services that the organization wishes to make available.

1. From the **Exchange** tab, locate the FacID data exchange in the list of available exchanges.
2. Click the **Add Service** button located just beneath the FacID data exchange entry. The following page will be displayed to allow a new data service to be added.
3. In the **Name** field, enter the name of the service being configured (see above).



4. From the **Implementer** drop down box, select the appropriate value for this data service. This implementer provides the functionality for all of the FacID data services. The following table specifies the relevant implementer for each of the data services to be configured:

Service	Plugin
GetFacilityCount_v3.0	com.windsor.node.plugin.facid3.GetFacilityCount
GetFacilityList_v3.0	com.windsor.node.plugin.facid3.GetFacilityList
GetFacility_v3.0	com.windsor.node.plugin.facid3.GetFacility
GetFacilityInterest_v3.0	com.windsor.node.plugin.facid3.GetFacilityInterest
GetFacilityByID_v3.0	com.windsor.node.plugin.facid3.GetFacilityByID
GetFacilityByChangeDate_v3.0	com.windsor.node.plugin.facid3.GetFacilityByChangeDate
GetDeletedFacilityByChangeDate_v3.0	com.windsor.node.plugin.facid3.GetDeletedFacilityByChangeDate

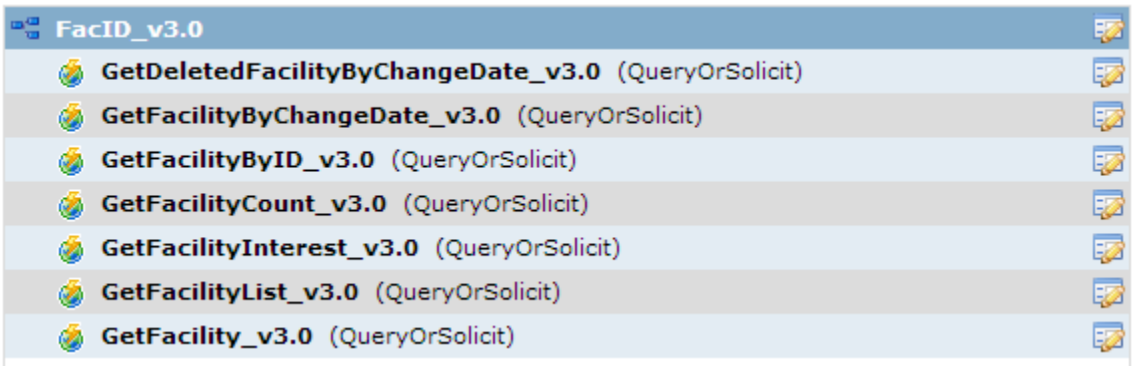
5. From the **Type** drop-down menu, select how you wish to make the services available. The options available will also be obtained by the Node Admin from the plugin. It is recommended that all of the FacID data services allow *Query or Solicit*.
6. Enable the service by checking the **Active** checkbox.
7. Based on the selection made from the implementer drop-down menu, the Node Admin will determine what service parameter and data source requirements the plugin has and will refresh the page to display the relevant data entry fields.
8. Enter the service parameter settings as follows. Note that these settings relate to the optional inclusion of the Exchange Network Header document on the generated XML files. The EPA FacID processor is currently unable to accept the standard header document format used by EPA CDX and other EPA systems, and the header document is not required by the FacID FCD.
   i. In the argument labeled **Add Exchange Header (true or false)**, enter *false*.
   ii. In the argument labeled **Author**, type the name of the developer of the data service.
   iii. In the argument labeled **Contact Info**, type the name of the person who should be contacted regarding any submission created from the data service. Also include the person's email address and phone number. For example, enter *John Smith, (999) 999-9999, john@smith.com*, etc.

   Alternatively if a global variable has been set up to provide this value, check the **Use global value** checkbox and select the appropriate variable name from the drop down box that appears in place f the textbox.
   iv. In the argument labeled **Organization**, type the name of the organization that is providing submissions created from the data service. For example, enter *Smith, Inc.*, etc.

   Alternatively if a global variable has been set up to provide this value, check the **Use global value** checkbox and select the appropriate variable name from the drop down box that appears in place of the textbox.
   v. In the argument labeled **Payload Operation**, leave blank.
9. Set the Data Source to the data source that connects to the relevant FacID staging tables. Reference the Creating the FacID Staging Tables section in this document for further details.
10. Click the **Save** button to save the data service.

Repeat these steps for the remaining data services.

The **Manage Exchanges** page for the FacID_v3.0 data exchange should now appear as follows:



Step 4: 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. However, the FacID FCD specifies that the EPA CDX Node will solicit FacID data from State and Tribal nodes on a regular basis. Consequently there are currently no schedules required to support the FacID exchange.

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

Step 5: Contact CDX to Establish Data Exchange Settings

Once the FacID data exchange is installed and configured, inform the EPA CDX Node Helpdesk that the FacID flow is available. You will need to provide your OpenNode2 endpoint URL and establish a process to update the FacID staging tables. Reference the *Creating the FacID Staging Tables* section in this document for more information.

Step 6: 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 FacID data exchange. Please see the OpenNode2 Administration User Guide for more information on creating data exchange email notifications.

Step 7: Monitor Flow Activity

The OpenNode2 will track all FacID 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.