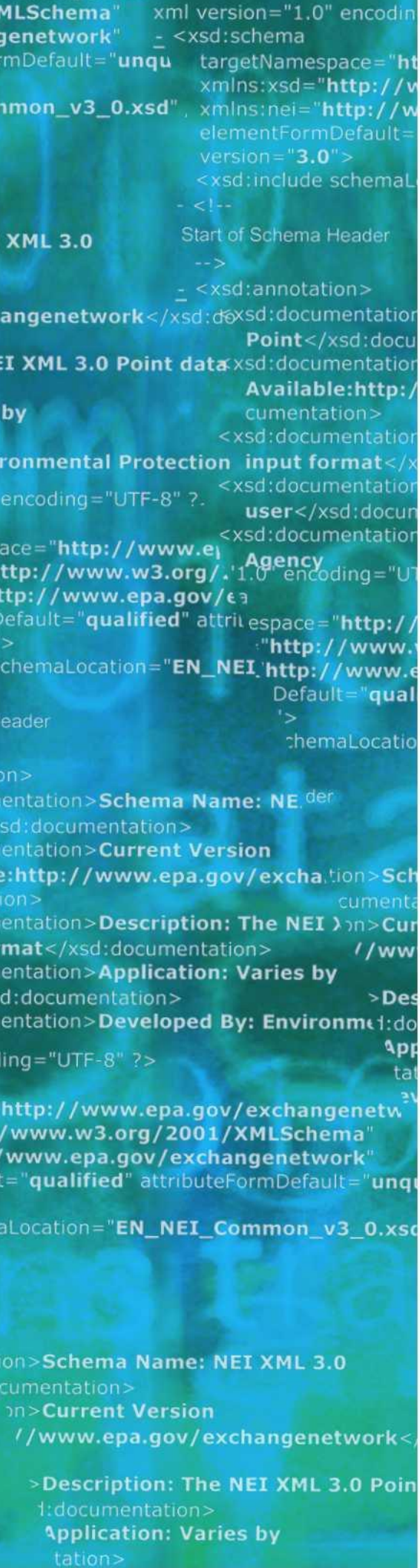

OpenNode2

RCRAInfo v.5.10
Data Exchange Implementation Guide (Java)

Revision Date: 03/22/2021

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Environmental Information exchange Network

Revision History

Date	Author	Changes	Version
1/9/2017	Windsor	Updated to include new 5.4 version and new OpenNode2 User Interface.	1.0
4/11/2018	Windsor	Updated to include new 5.6 version.	1.1
10/5/2020	Windsor	Updated to include new 5.9 version.	1.2
3/22/2021	Windsor	Updated to include new 5.10 version.	1.3

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Data Exchange Overview

The purpose of this document is to provide detailed instructions for the installation and configuration of the Exchange Network Resource Conservation and Recovery Act information system (RCRAInfo) data exchange on the JAVA implementation of the Exchange Network OpenNode2 (OpenNode2).

The RCRAInfo data exchange offers data services that are used to prepare and submit data from the State program system to the EPA RCRAInfo system.

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

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

Terminology

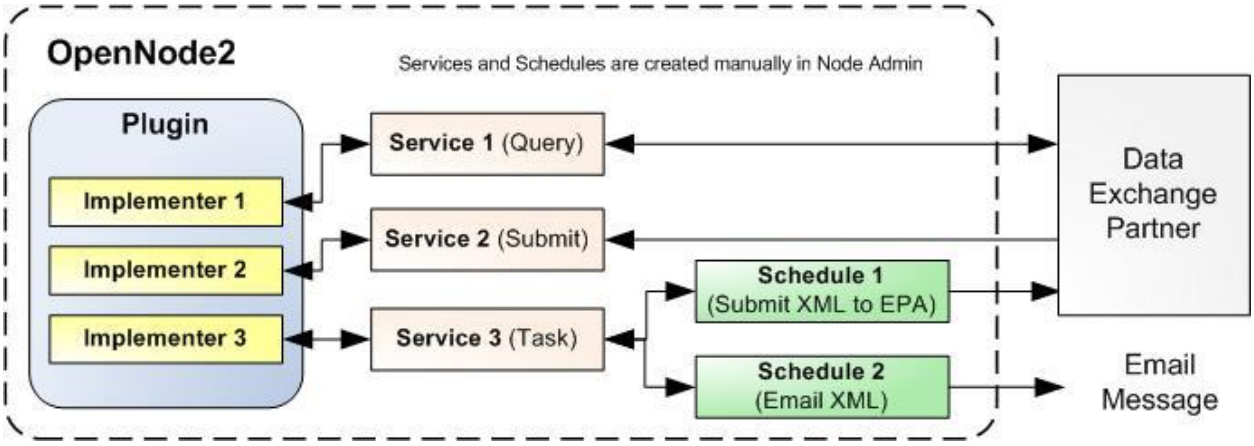
Inbound data flow refers to the ability for a partner to push data to another partner. In the case of EPA, the data is going from the State, and data is coming Inbound into the EPA.

Outbound data flow refers to the ability to obtain (solicit, query) data from the EPA. In other words, it is data outbound from the EPA.

This document describes the RCRA Inbound data flow. Separate documentation can be found on GitHub that describes the RCRA Outbound data flow.

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.



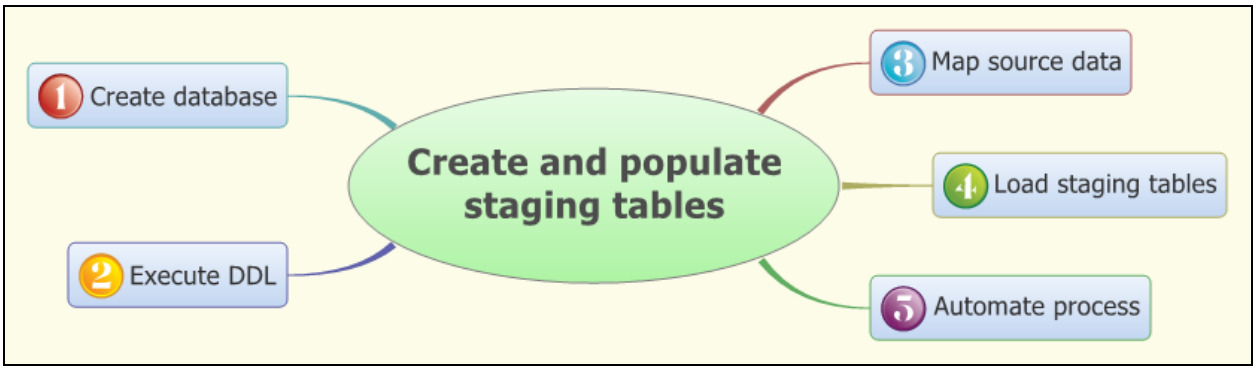
A plugin contains one or more **implementers**. Implementers are canned functionality that are specific to the data exchange. An implementer performs some task, such as composing XML from a series of staging tables.

A node administrator exposes 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 used by the plugin implementer assigned to the schedule.

Create and Populate the RCRAInfo Staging Database

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 RCRAInfo data exchange. This section outlines the steps required to set up the RCRAInfo data exchange database staging tables.

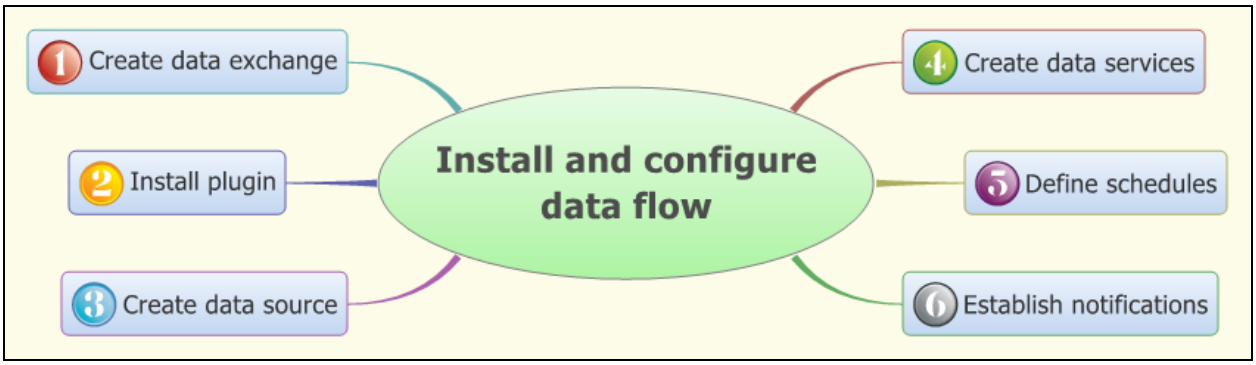
The following figure illustrates these steps:



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 themselves that will be used to store the data being made available through the RCRAInfo data exchange. Note: there are typically both update scripts (migrating from previous versions) and new scripts (creating brand new staging tables) for Oracle and SQL Server.
3. With the staging environment established, data must now be mapped from the source database to the equivalent fields in the RCRAInfo staging tables. The staging tables closely reflect the structure and naming of the RCRAInfo 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.

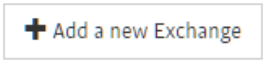
Install and Configure the RCRAInfo Data Flow

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

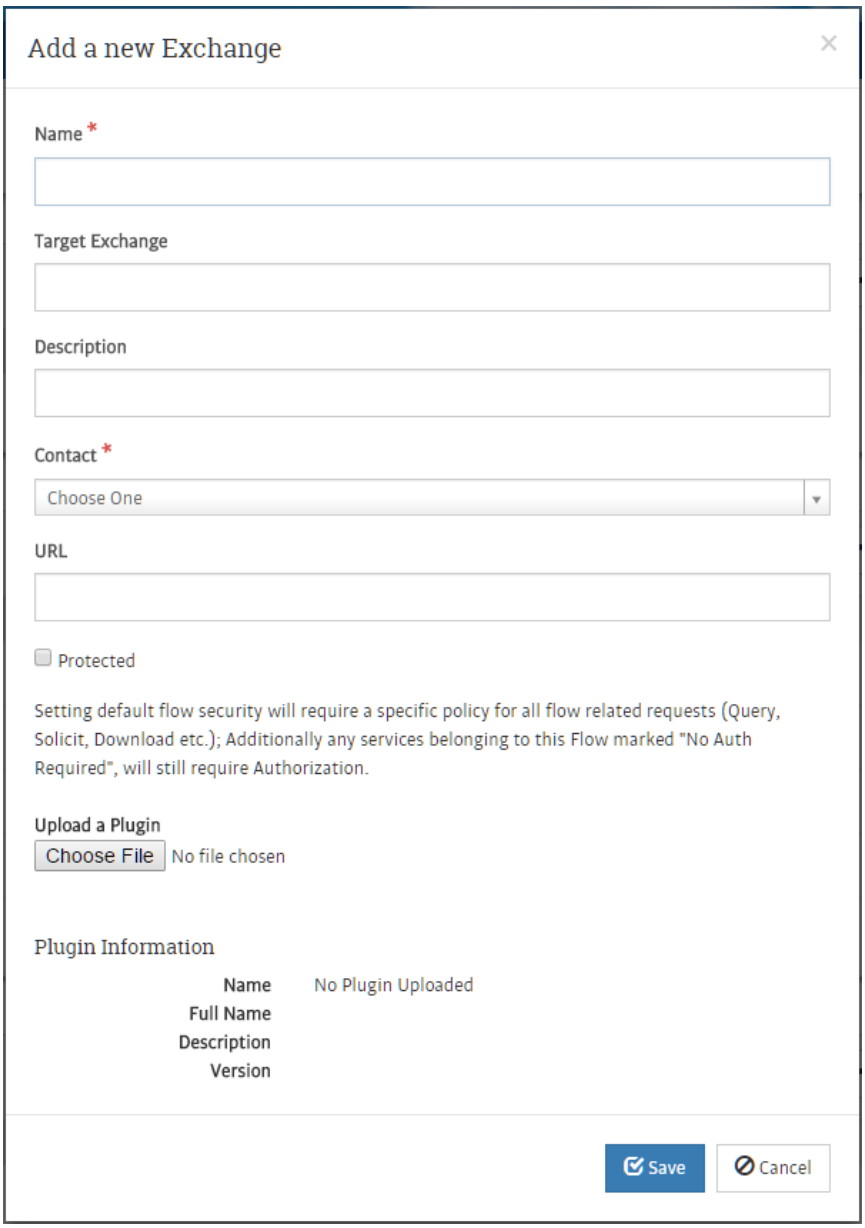


Create the RCRAInfo Data Exchange

The first step is to create the RCRAInfo data exchange using the OpenNode2 Node Admin Web application.

1. After logging into the Node Admin, click the **Exchange** tab on the top navigation bar.
2. Click the 

button on the right side of the screen. The Manage Data Exchange screen will be displayed as follows:



3. Type "RCRA 5.10" in the **Name** field (this field can be named as desired)
4. Type "RCRA" in the **Target Exchange** field. (must be RCRA)
5. Type a short description in the **Description** field.
6. Select a user account name from the **Contact** drop down box. Contacts are populated with all accounts that have been set up on the Node since 2008. See the **Security** tab for a list of available accounts. Type-ahead functionality exists in this dropdown, allowing users to begin typing the contact information. This will limit the results to those records which match only.
7. In the URL field, enter a web address where more information can be found about this exchange. It is recommended that the following URL be used for this purpose: http://www.exchangenetwork.net/data-exchange/rcrainfo/

8. It is recommended that the **Protected** box be checked. This will require special flow specific security permissions for this data flow. 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.
9. Click the Choose File button under **Uploaded a Plugin**
10. Navigate to the appropriate .zip file stored on your machine. This Java Node and all plugin files can be found on the GitHub site: https://windsorsolutions.github.io/opennode2/. Click Download Java (version num) to download a zip of the full package.
11. Click the **Save** button to save the data exchange to the OpenNode2 repository. **Note:** The Plugin Information fields on the bottom of the modal window Do Not update until the Save button has been clicked. To verify that the correct plugin information was uploaded, re-open the Exchange and view the populated fields.

Create the RCRAInfo Data Service

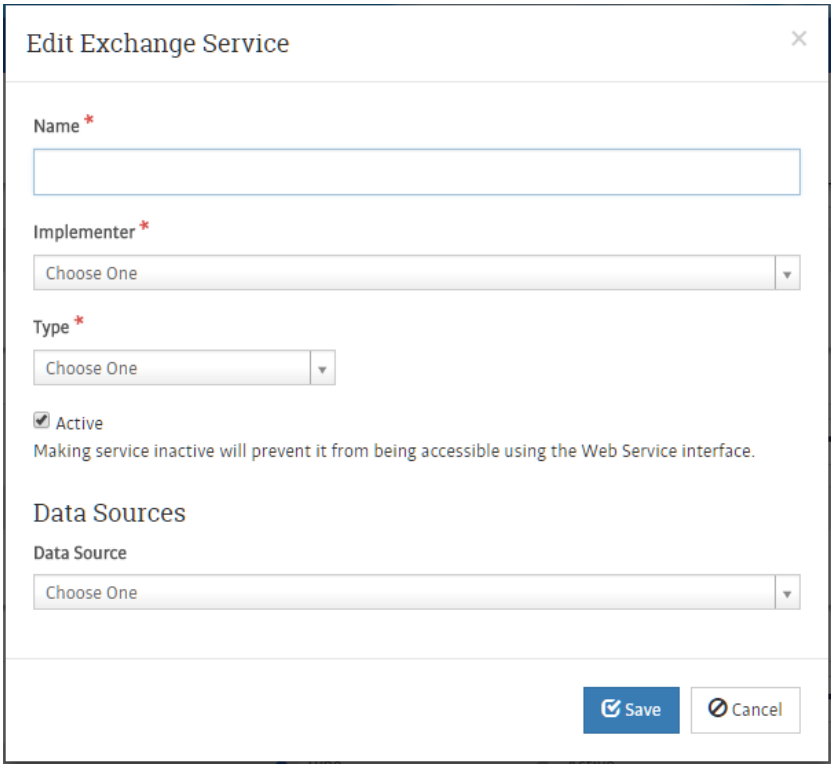
Data services are distinct functions provided by a plugin to support a given data exchange. In the case of the RCRAInfo data exchange, there are 6 data services provided by the plugin:

- Submit RCRA CME Data
- Submit RCRA Corrective Action Data
- Submit RCRA Financial Assurance Data
- Submit RCRA GIS Data
- Submit RCRA Handler Data
- Submit RCRA Permitting Data

Note: Above is the comprehensive list of all services provided, however only the services for the submission type that you implement will need to be setup.

Any or all of the data services must be created and configured before they can be accessed through the OpenNode2 endpoints.

1. From the **Exchange** tab, locate the RCRA 5.6 data exchange in the list of available exchanges.
2. Click the  button located just to the right of the RCRA 5.6 exchange header. The following page will be displayed to allow a new data service to be added.



3. In the **Name** field, type the name of the service that is being installed.
4. From the **Implementer** drop down box, select the associated Implementer for the data service provided by the plugin[1].

   Note: When the implementer is selected, several arguments and data sources will appear. The Node Admin application will obtain these properties directly from the RCRAInfo plugin. The steps are the same for all of the data services.

5. From the **Type** drop down box, select Task.
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 display the relevant data entry fields as follows:

   i. In the argument labeled **Add Header**, enter *true* if the data service is to be used to provide data to the EPA RCRA system or any other Exchange Network partner who may invoke this data service. Otherwise, enter *false*.

   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.

   ii. In the argument labeled **Author**, type the name of the developer of the data service.

[1] This assumes that the user is deploying the RCRAInfo data flow plugin provided freely with OpenNode2 by Windsor. If a different plugin is being deployed, then these configuration instructions will need to be modified as appropriate.

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 of the textbox.

iv. In the argument labeled **Notifications**, type the email addresses to which notifications should be sent by the receiving partner following processing of a file extract from this data service. If multiple addresses are entered they should be separated with a comma.

v. 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.

vi. In the argument labeled **Payload Operation**, verify that the correct payload operation has been pre-populated.

vii. Set the **RCRAInfoStateCode** to the two character RCRAInfo state code for the data being submitted.

viii. Set the **RCRAInfoUserID** to the three character RCRAInfo system user id with appropriate security to update the data for this State.

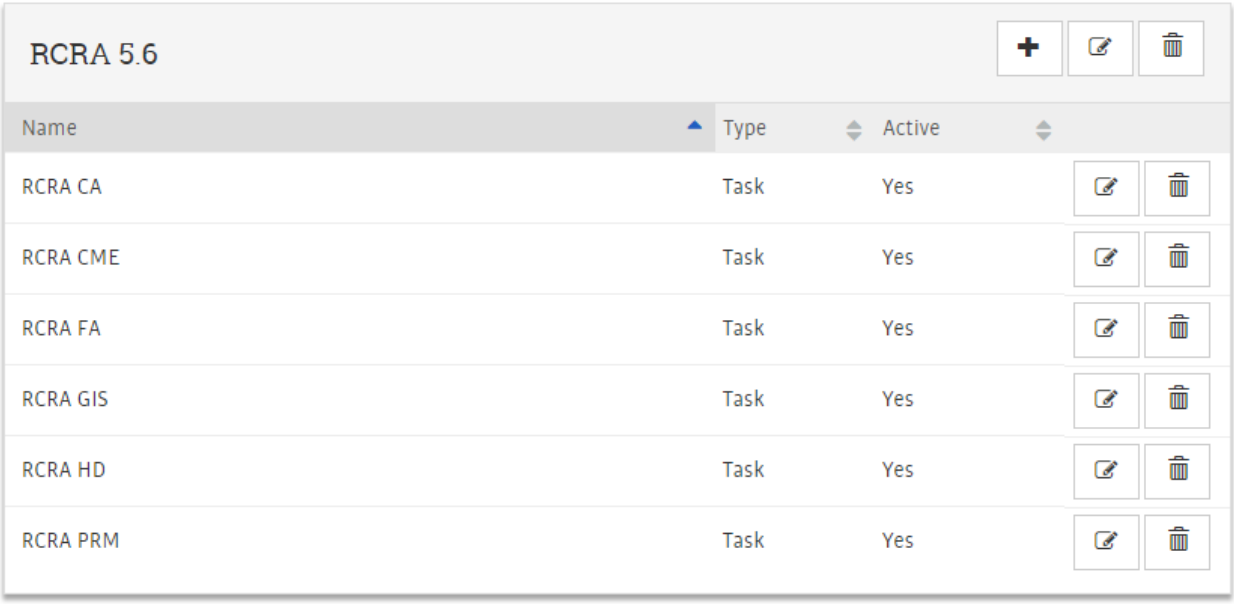
ix. In the argument labeled **Stored Procedure,** fill in the name of the stored procedure that will populate the staging tables before the XML extract is generated. If the staging tables are already populated by some other mechanism, leave this field blank.

x. In the argument labeled **Title**, type *GetRCRAData*.

xi. If the argument **notificationURI** is visible, populate with an email address where automatic email notifications should be sent when the RCRAInfo processing is complete.

8. Set the **Data Source** to the data source that connects to the RCRAInfo staging tables.
9. Click the **Save** button to save the service.

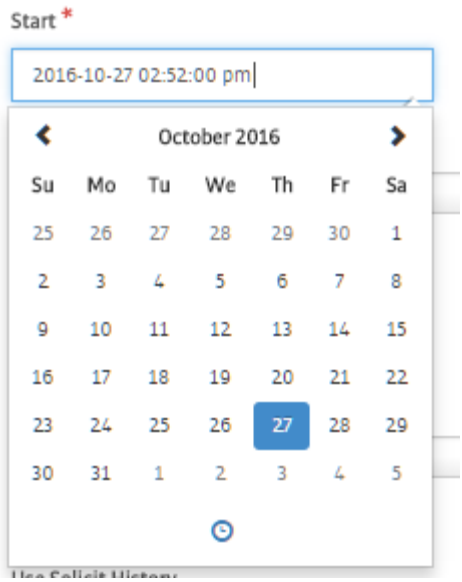
10. If at any time a user is required to edit or remove an existing Implementer, this can be accomplished using the buttons to the right of the implementer name.



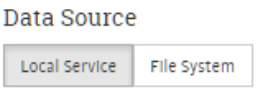
Configure Node Job Schedules

Scheduled Node jobs will be required for the RCRAInfo Data Flow implementation. Select Schedules from the main menu bar, and locate the RCRA 5.4 exchange that was established during the last step. These steps will be repeated in order to solicit additional modules. Each Data Exchange created will have an accompanying Schedule block automatically created.

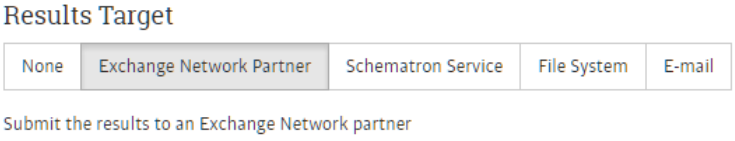
1. From the **Schedules** tab, click the  button next to the labeled block.
2. Type the name of the data service in the **Name** field depending on the service being scheduled.
3. Enable the schedule by clicking the **Active** checkbox
4. **Start**: *<Select Date> by typing or selecting date/time from picker tool.* For an exact time, select the clock icon at the bottom of the calendar.



5. **End**: *<Select Date> by typing or selecting date/time from picker tool.*
6. **Frequency**: *This is a number incrementer – set this to the frequency numeric which will combine with the "Every" field to the right. Example "1 every Week"*
7. **Every:** *Choose the appropriate time frame to correspond to the frequency field to the left. Example "1 every Week"*
8. In the **Data Source** area, *Select the* **Local Service** *option*



9. Select from the dropdown the correct data source under **The data source is the result of a local service**
10. In the **Results Target** area, check the radio button labeled **Exchange Network partner.**



11. Select the value corresponding to the name of the EPA CDX Node endpoint from the **Choose One** dropdown box.

> **Note:** In order to receive notification emails from CDX, you must specify a CDX Node v1.1 endpoint. This is due to how notifications are handled differently at CDX for v1.1 and v2.0 endpoints. OpenNode2 does not use the NotificationURI submit parameter in Node 2.0. Instead, the NotificationURI parameter in the XML Header is used which requires submitting to a v1.1 endpoint in order to work. This is behavior is described in the official RCRA FCD.

12. Click the **Save** button to save the schedule.
13. This process is repeated for each Implementer in use.

Contact CDX to Establish Exchange Settings

Contact the EPA CDX Node helpdesk and ask them to perform the following tasks:

1. Authorize the OpenNode2 runtime (operator) NAAS account to submit to the RCRAInfo data exchange on the EPA systems.
2. Map the OpenNode2 runtime NAAS account to the CDX Web user account that currently administers EPA RCRAInfo data for the organization.

Set Up 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 RCRAInfo data exchange. Please see the Node Administration Guide for more information on setting up notifications.

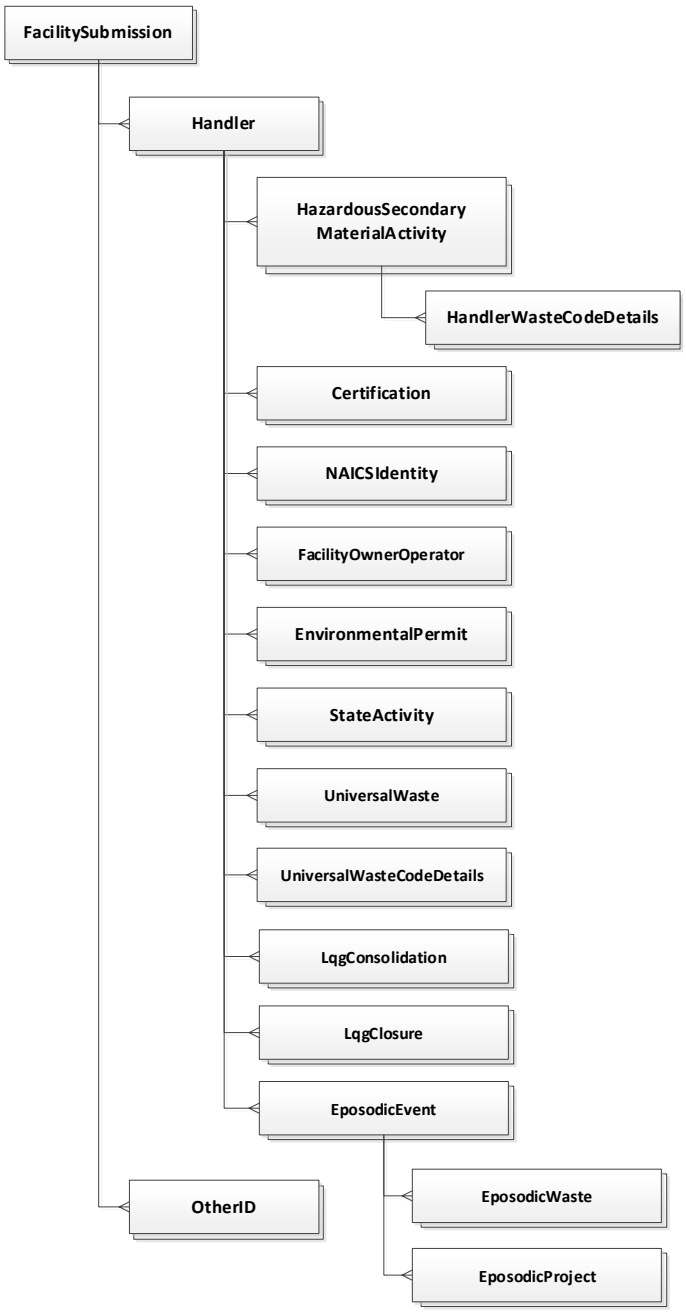
Monitor Flow Activity

The OpenNode2 will track all RCRAInfo 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.

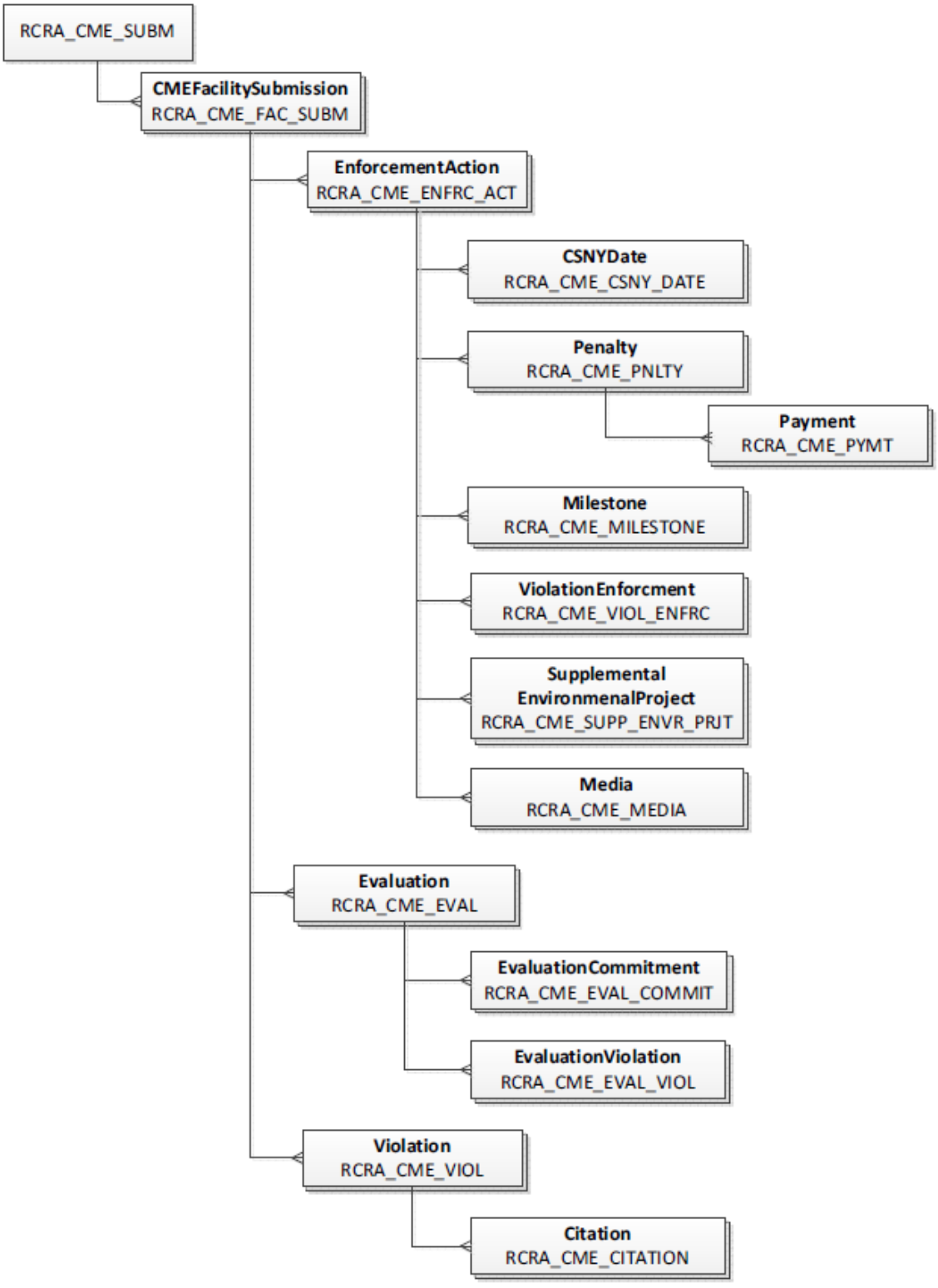
Appendix A: Staging Table Diagrams

The diagrams below show the relationship between the major RCRA schema components and their corresponding OpenNode2 staging table name.

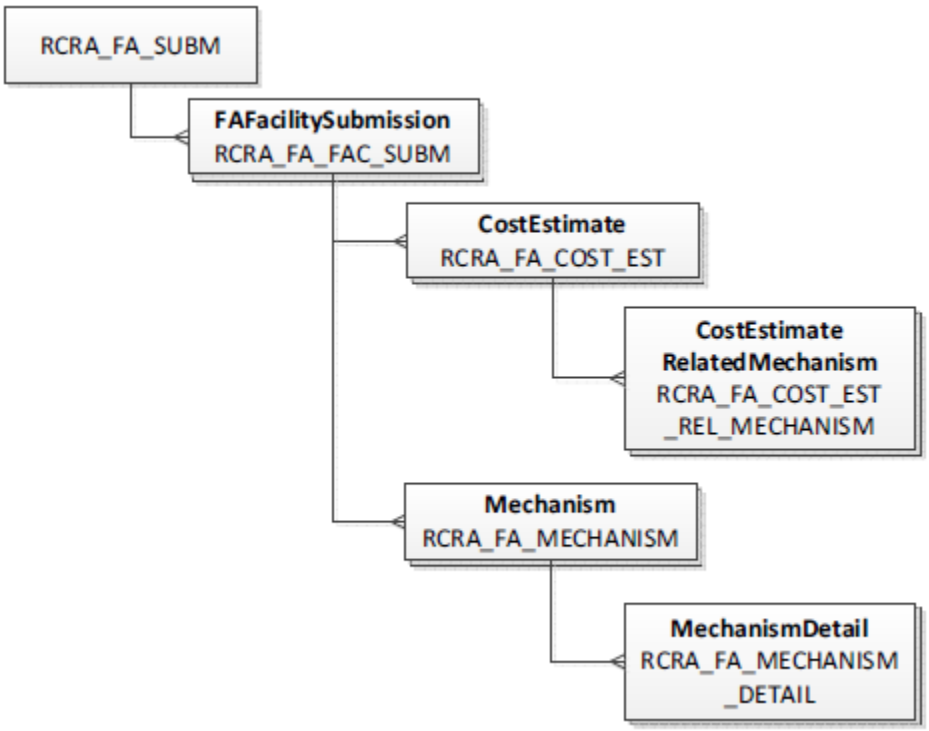
Handler (HD)



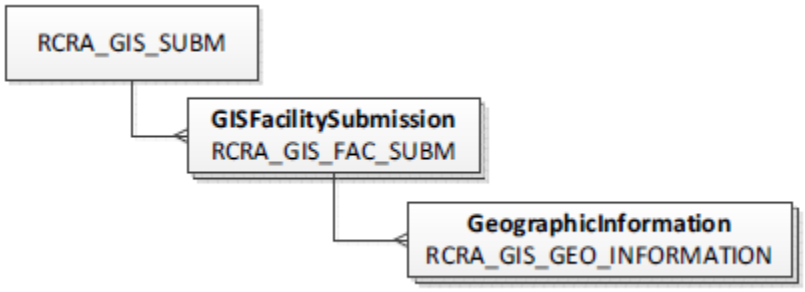
Compliance Monitoring and Enforcement (CME)



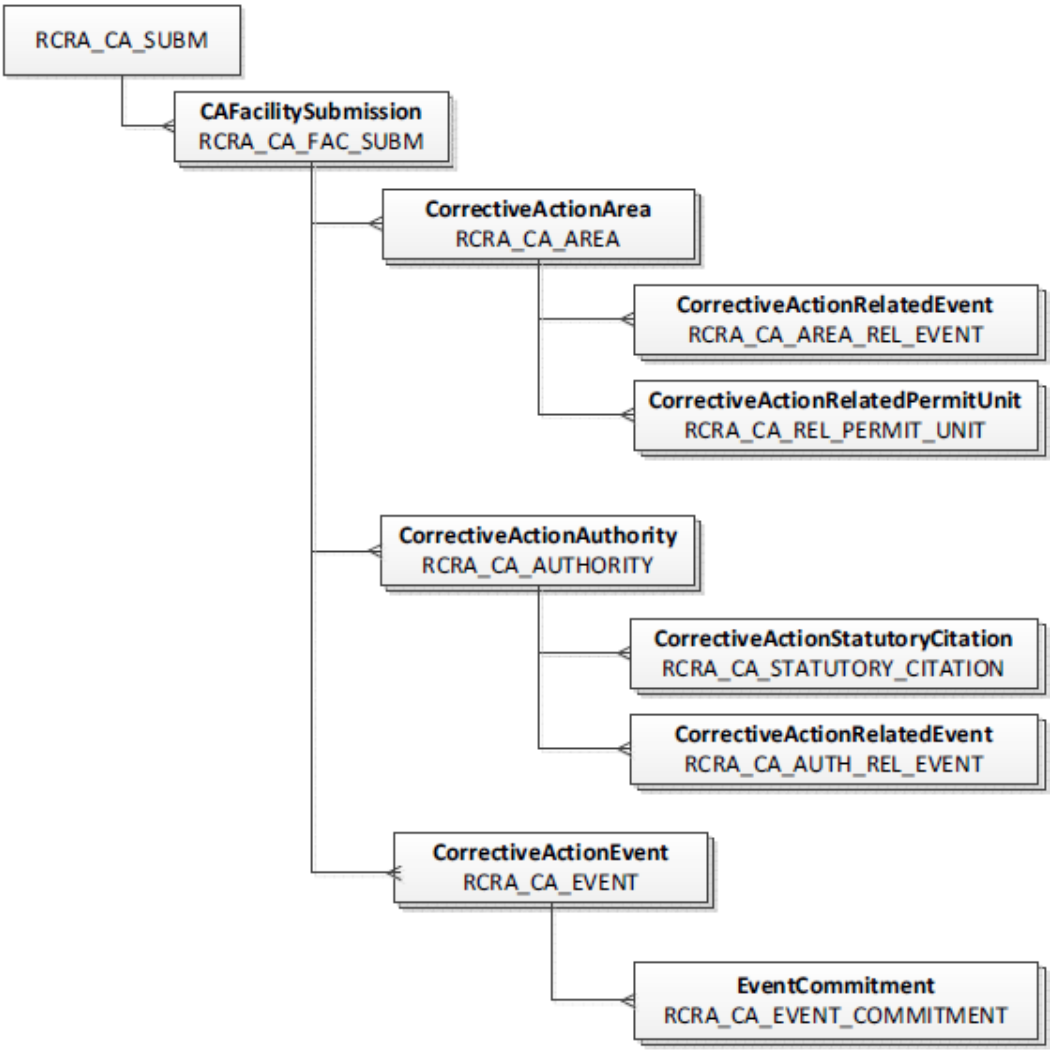
Financial Assurance (FA)



Geospatial Information (GIS)



Corrective Action (CA)



Permitting (PM)