OpenNode2

ATTAINS Data Exchange Implementation Guide (Java)

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Environmental Information eXchange Network

Revision History

Date	Author	Changes	Version
9/17/2019	Windsor	Initial version for the Java plugin.	1.0

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Data Exchange Overview

The purpose of this document is to provide detailed instructions for the installation and configuration of the Assessment TMDL Tracking and ImplementatioN System (ATTAINS) data exchange on the Java implementation of the Exchange Network OpenNode2 (OpenNode2). The ATTAINS data flow supports state reporting under Clean Water Act Sections 303(d) and 305(b).

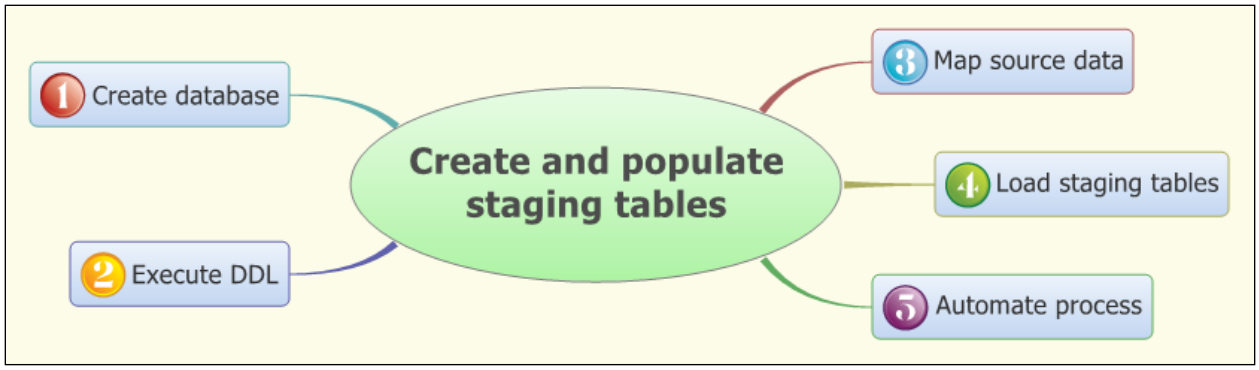
The ATTAINS Exchange involves a periodic submittal to EPA for the purposes of updating the EPA ATTAINS system. The ATTAINS Flow Configuration Document (FCD) should be consulted for details regarding how the flow is used.

To download the latest Java Node and obtain the ATTAINS plugin, please click Download Java at the following GitHub website: https://windsorsolutions.github.io/opennode2/.

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

The following figure illustrates these steps:



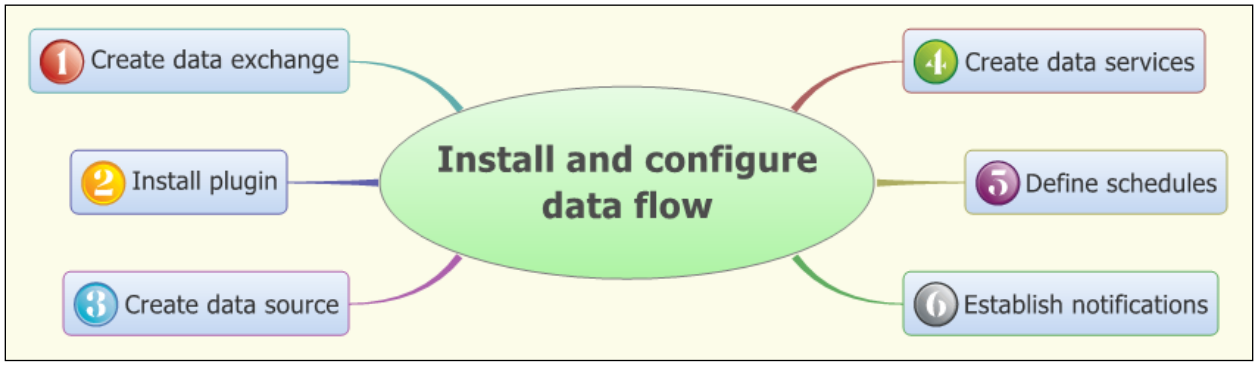
1. The first step is to create the staging database itself if one has not already been established to support another data exchange (typically named NODE_FLOW).
2. Once the staging database itself is created, a Database Definition Language (DDL) script included in the OpenNode2 deployment package can be executed to create the staging tables themselves that will be used to store the data being made available through the ATTAINS data exchange.
3. With the staging environment established, data must now be mapped from the source database to the equivalent fields in the ATTAINS staging tables. The staging tables closely reflect the structure and naming of the ATTAINS XML schema, and it is recommended that the Data Exchange Template (DET) published at exchangenetwork.net be used to facilitate this mapping.

   Note: See Appendix A for a block diagram showing the relationship between the ATTAINS staging tables and the ATTAINS XML schema.
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 can be automated to execute on a regular schedule as appropriate to the needs of the organization for submissions to EPA.

Install and Configure the ATTAINS Data Exchange

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

The following figure illustrates these steps:

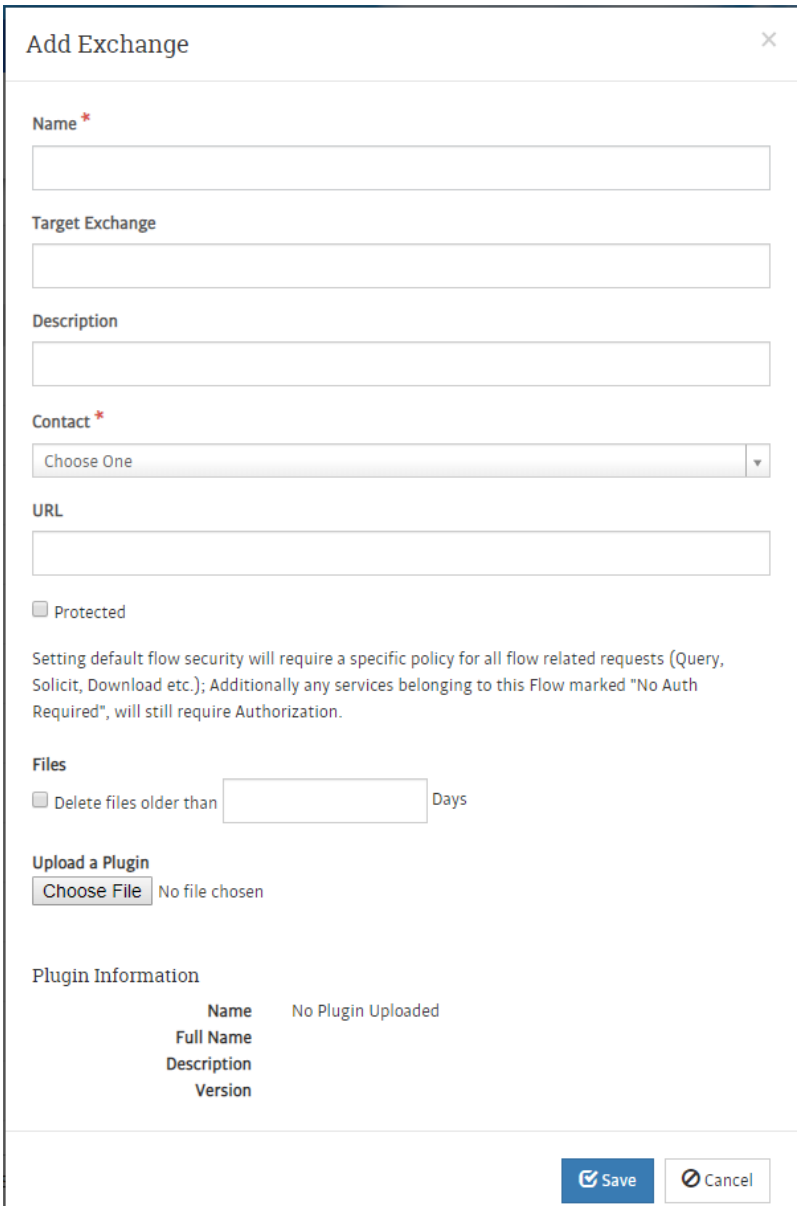


Create the ATTAINS Data Exchange

The first step is to create the ATTAINS 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 a New Exchange** button under Actions on the top right of the page.

   a. The Add Exchange screen will be displayed as follows:



3. Type "ATTAINS" in the **Name** field.
4. Type a short description in the **Description** field (optional).
5. Select a user account name from the **Contact** drop down box. 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. In the **URL** field, enter a URL where more information can be found about the ATTAINS exchange (optional).
7. It is recommended that the **Protected** box be checked. This will limit external access to the ATTAINS 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. OpenNode2 can automatically delete files older than a set number of days. Users can check the box under **Files** and populate the field with a number. The node will delete files older than this number of days if selected. (optional)
9. Click the **Choose File** button under **Upload a Plugin**
10. Locate and select the compressed (zipped) file containing the ATTAINS plugin.
11. Click the **Open** button to upload the plugin.
12. Click **Save** to save the data exchange to the OpenNode2 metadata database.

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.

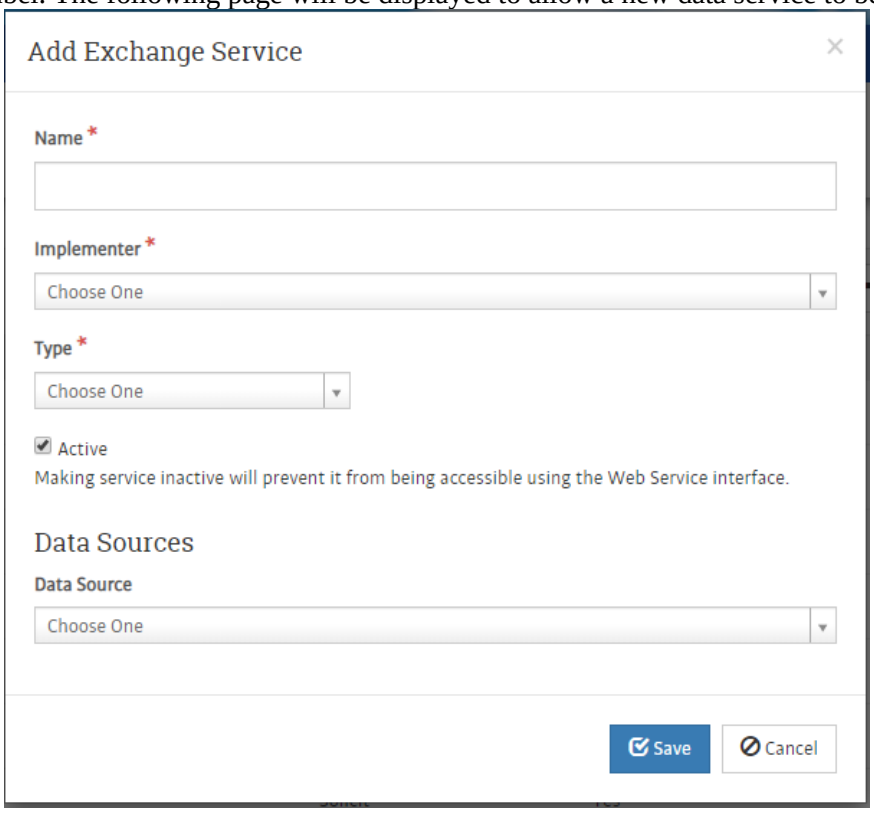
Create the ATTAINS Data Services

Submit Service

Data services are distinct functions provided by a plugin to support a given data exchange. In the case of the ATTAINS flow, only one service is used in a typical installation: **SUBMIT**.

This data service will retrieve all data from the staging database according to a set of input runtime parameters (see later section on defining schedules) and will generate an XML file containing the required data.

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

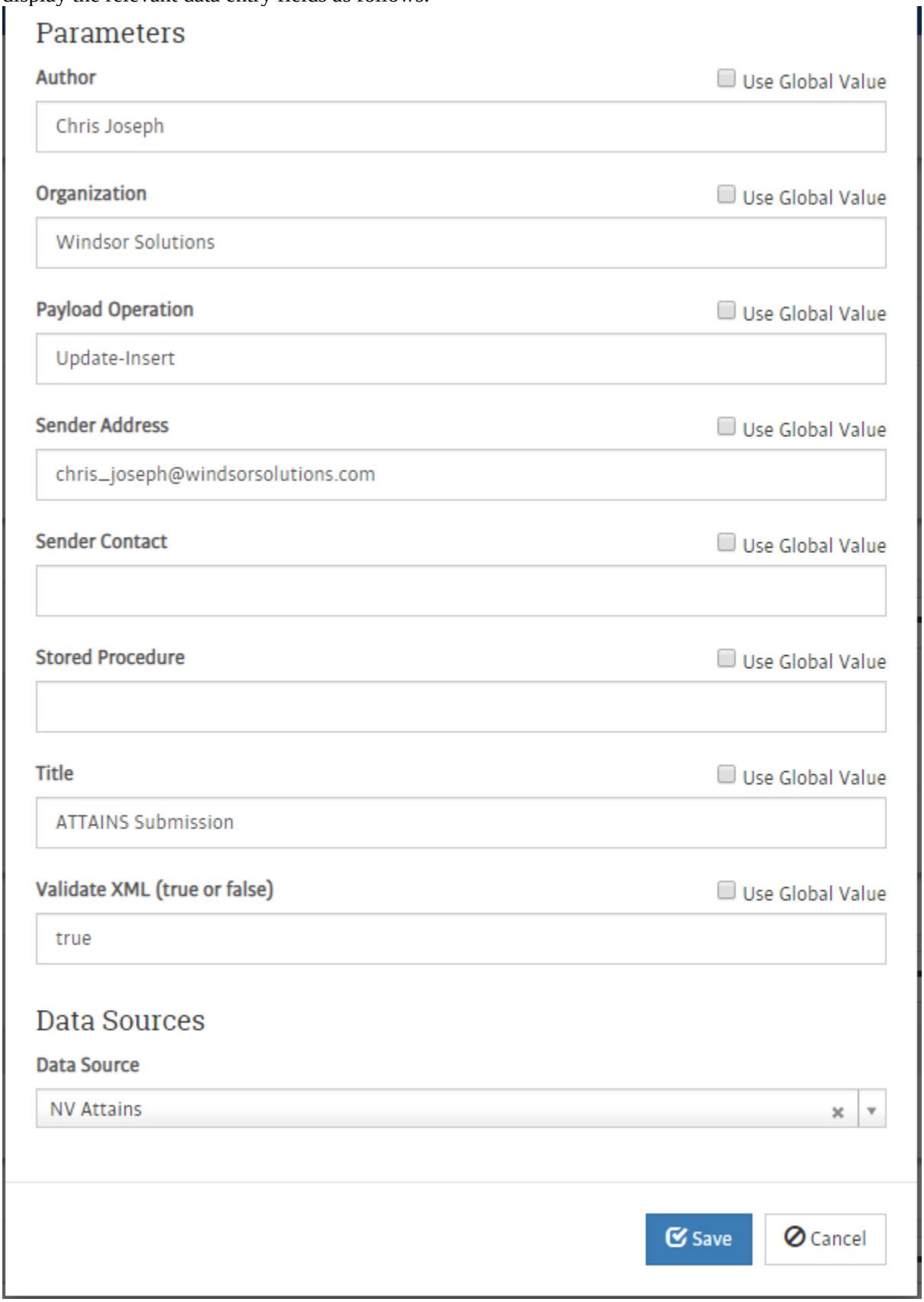


3. In the **Name** field, type "Submit".
4. From the **Implementer** drop down box, select **Submit ATTAINS Documents**.

   Note: When the implementer is selected, several additional arguments will appear. The Node Admin application will obtain these properties directly from the ATTAINS plugin.

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 refresh the page to

display the relevant data entry fields as follows:



i. The arguments named **Author, Organization, Title, Sender Address** and **Sender Contact** are used to populate the XML Header added the ATTAINS XML submission file. Consult the ATTAINS FCD for specifics regarding the usage of these values. Type the text to be used or alternatively if a global variable has been set up to provide a value, check the Use Global Value checkbox and select the variable name from the drop-down box that appears in place of the textbox.

ii. The Payload Operation should be set to "Update-Insert".

iii. The **Stored Procedure** field should be left blank.

iv. For the argument labeled **Validate XML (True or False)**, enter either "True" or "False". It is recommended that this value be set to True to ensure the XML is validated before being submitted.

8. Set the **DataSource** to the data source that connects to the ATTAINS staging tables.

   Note: If you have not previously set up a connection to the database hosting the ATTAINS staging tables, this can be done from the Configuration tab under the Data Sources sub-menu. See the OpenNode2 Administration Guide for details on setting up data sources.

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

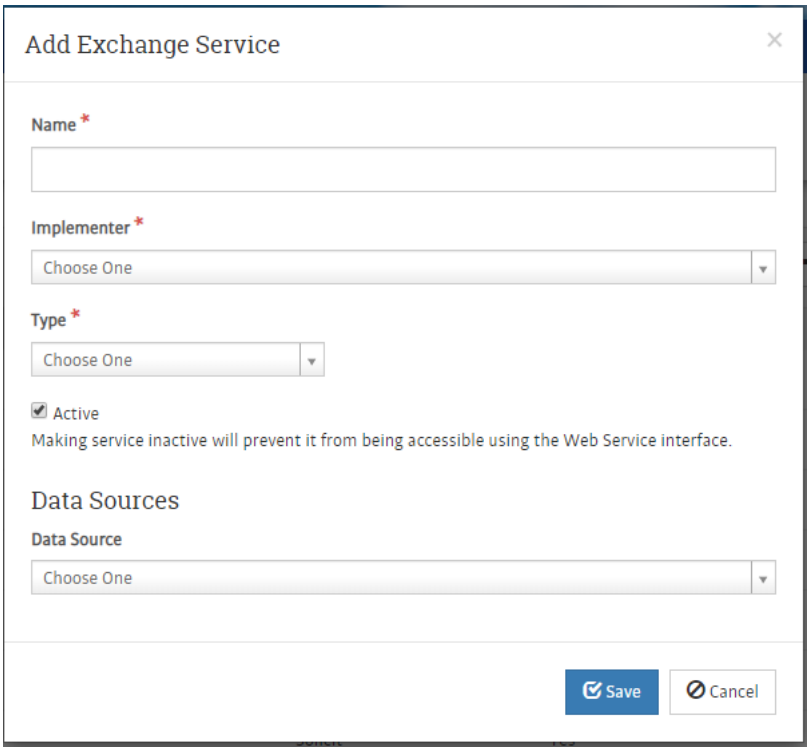
Delete Service

Although rarely required, OpenNode2 ATTAINS also includes a service for removing submitted data: **DELETE**.

This data service will remove all data from the staging database according to an XML file containing the required data.

10. From the **Exchange** tab, scroll down the list of installed data exchanges until the ATTAINS exchange is located.

11. Click the **Add Service** button located in the ATTAINS data exchange header to the right



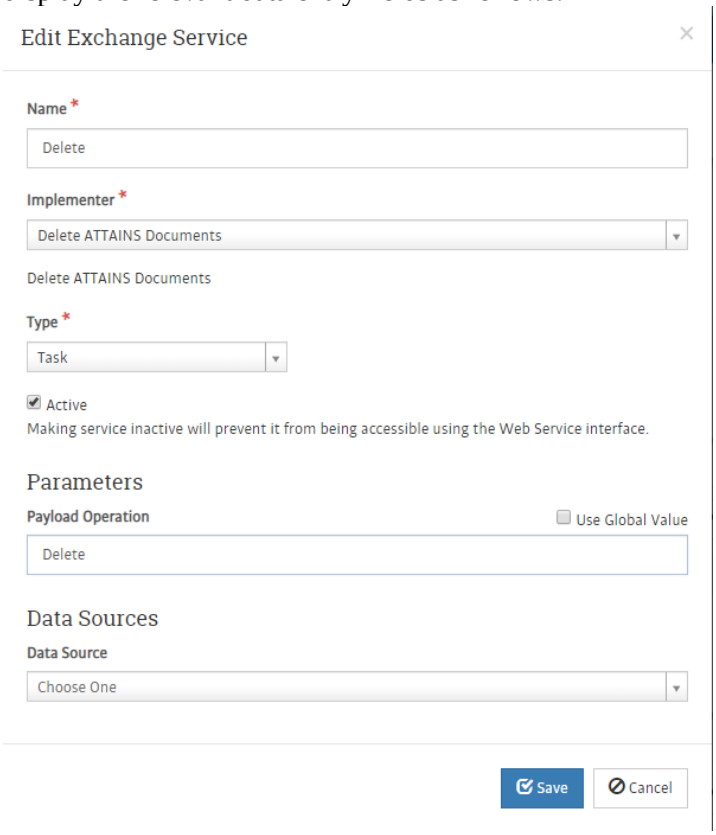
of the label. The following page will be displayed to allow a new data service to be added.

12. In the **Name** field, type "Delete".
13. From the **Implementer** drop down box, select **Delete ATTAINS Documents**.

    Note: When the implementer is selected, a Payload Parameter argument will appear. The Node Admin application will obtain these properties directly from the ATTAINS plugin.

14. From the **Type** drop down box, select **Task**.
15. Enable the service by checking the **Active** checkbox.
16. 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. The Payload Operation should be set to “Delete”.

ii. The **Data Source** should be left blank.

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

Define Data Exchange Schedules

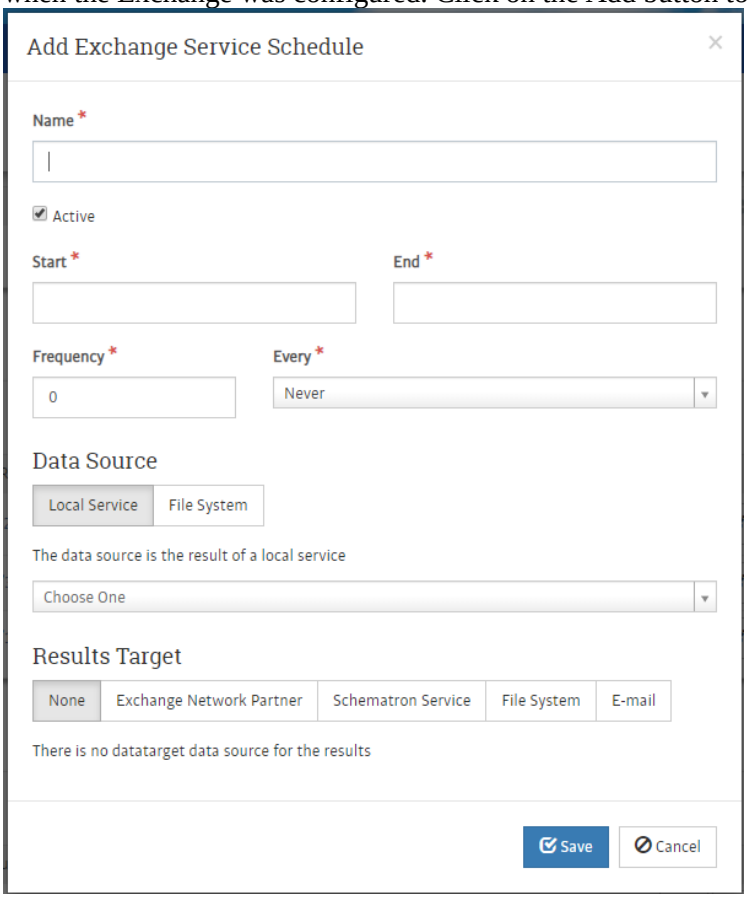
Scheduled jobs can be configured in the OpenNode2 to perform automated tasks such as submitting data to external partners or processing received files.

The ATTAINS data exchange requires only one schedule to be established using the OpenNode2 Node Admin to submit data to ATTAINS. Once a submission has been performed, the Transaction Details screen in OpenNode2 can be used to manually check the status of the submission and download any documents (such as processing reports) related to the submission.

Create Submit Schedule

This schedule will be used to execute Submit data service to load all data from the ATTAINS staging database to be sent to EPA.

1. From the **Schedule** tab, scroll down to the ATTAINS schedule that was automatically created when the Exchange was configured. Click on the Add button to the right.



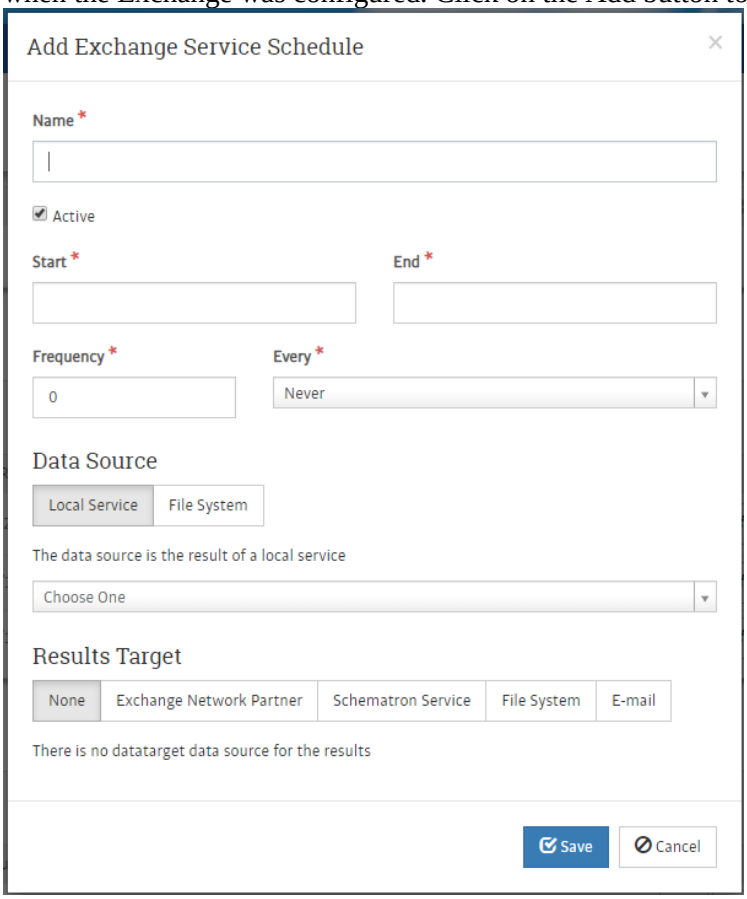
2. Type “Submit” in the **Name** field.
3. Enable the schedule by clicking the **Active** checkbox.
4. Set the start date to the first date when you wish the schedule to run. If the date is equal to the current or a past date, the schedule will execute immediately upon saving.
5. Set the end date to some point in the distant future.
6. Set the **Frequency** to 0. And set **Every** to Once.

7. In the **Data Source** area, check the button labeled **Local Service**.
8. In the **"The data source…"** dropdown box, select the value "Submit". This informs the schedule to use the selected ATTAINS service as the data source for the submission.
9. In the **Results Target** area, check the radio button labeled **Exchange Network Partner.** Select the appropriate exchange network partner for the ATTAINS CDX endpoint (not published at the time of this writing).
10. Click the **Save** button to save the schedule.

Create Delete Schedule

This schedule will be used to execute Delete data service to remove all data from the ATTAINS staging database sent to EPA.

1. From the **Schedule** tab, scroll down to the ATTAINS schedule that was automatically created when the Exchange was configured. Click on the Add button to the right.



2. Type "Delete" in the **Name** field.
3. Enable the schedule by clicking the **Active** checkbox.
4. Set the start date to the first date when you wish the schedule to run. If the date is equal to the current or a past date, the schedule will execute immediately upon saving.
5. Set the end date to some point in the distant future.
6. Set the **Frequency** to 0. And set **Every** to Once.

7. In the **Data Source** area, check the button labeled **File System**.
8. In the **"File System Path"** dropdown box, set the value to the path to the XML document containing the data you wish to have removed.
9. In the **Results Target** area, check the radio button labeled **Exchange Network Partner.** Select the appropriate exchange network partner for the ATTAINS CDX endpoint (not published at the time of this writing).
10. Click the **Save** button to save the schedule.

Contact CDX to Establish Exchange Settings

Contact the EPA STORET group (STORET@epamail.epa.gov) and ask them to perform the following tasks:

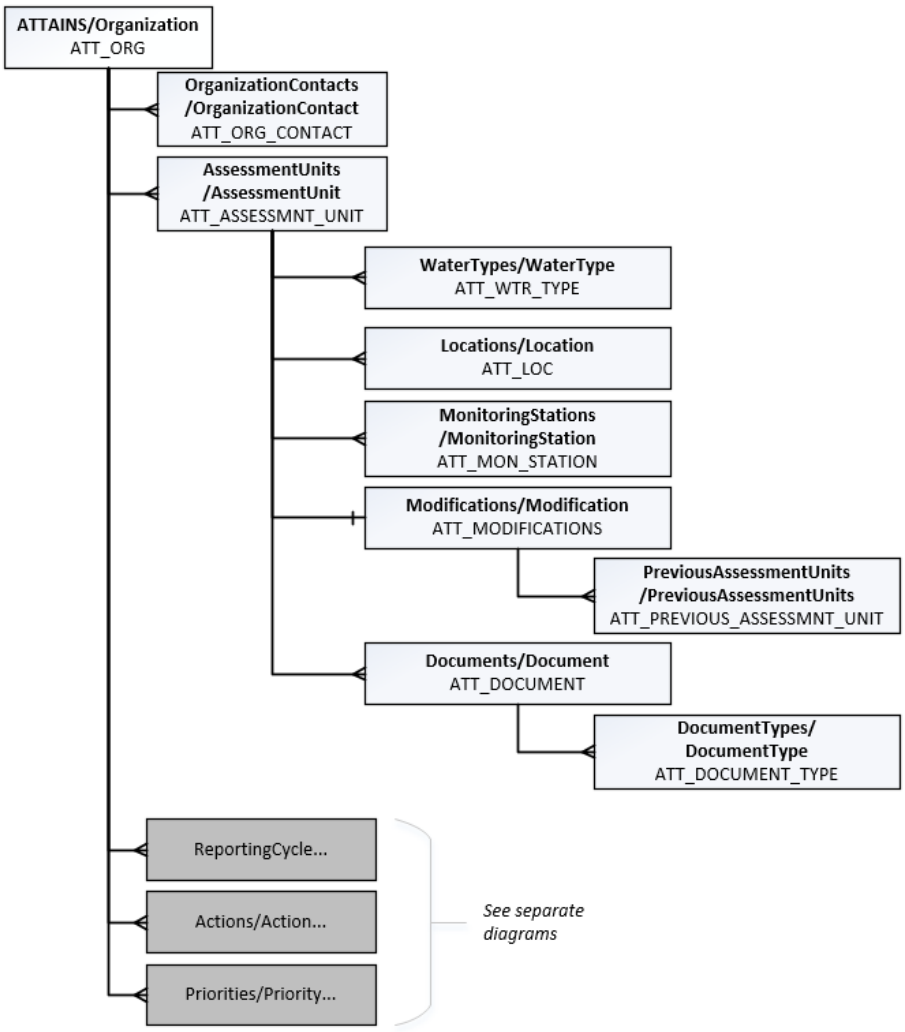
1. Authorize the OpenNode2 runtime (operator) NAAS account to submit to the ATTAINS data exchange on the EPA CDX.

Establish Email Notifications

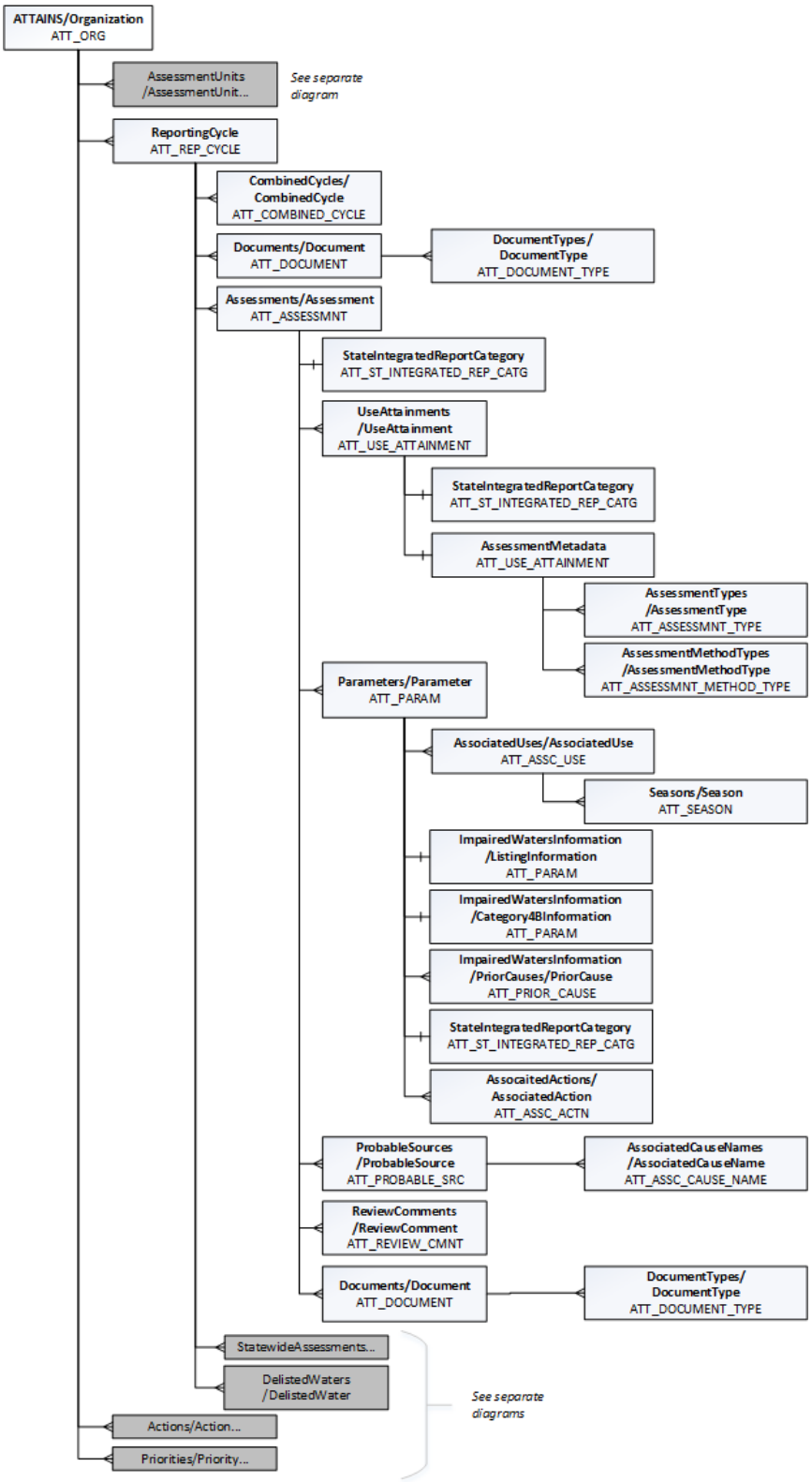
If desired, the Node administrator may create NAAS accounts for one or more staff members and create notifications for the any OpenNode2 events related to the ATTAINS data exchange. Please see the OpenNode2 Administration User Guide for more information on setting up notifications.

Appendix A: Staging Table Block Diagrams

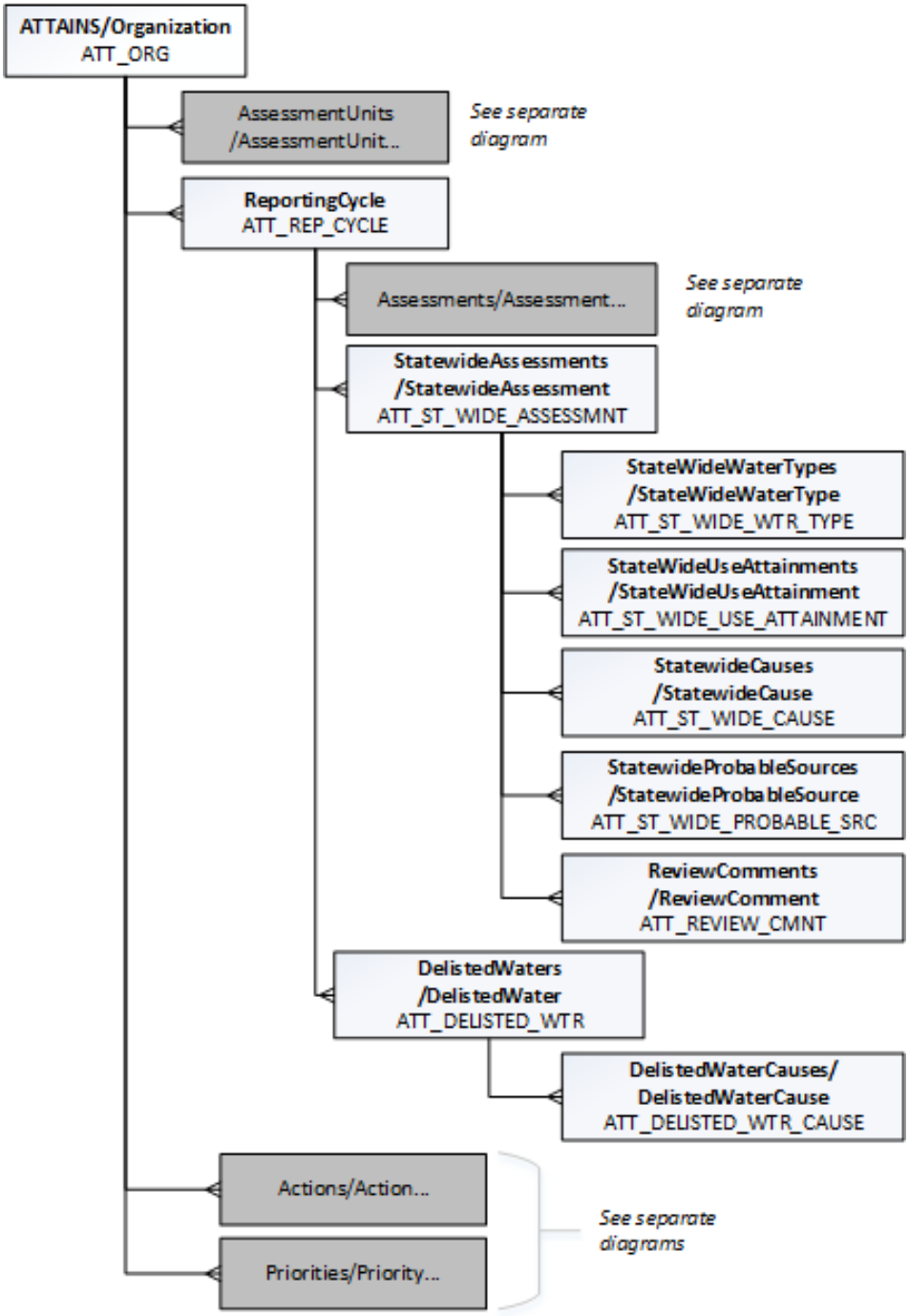
Assessment Units Module



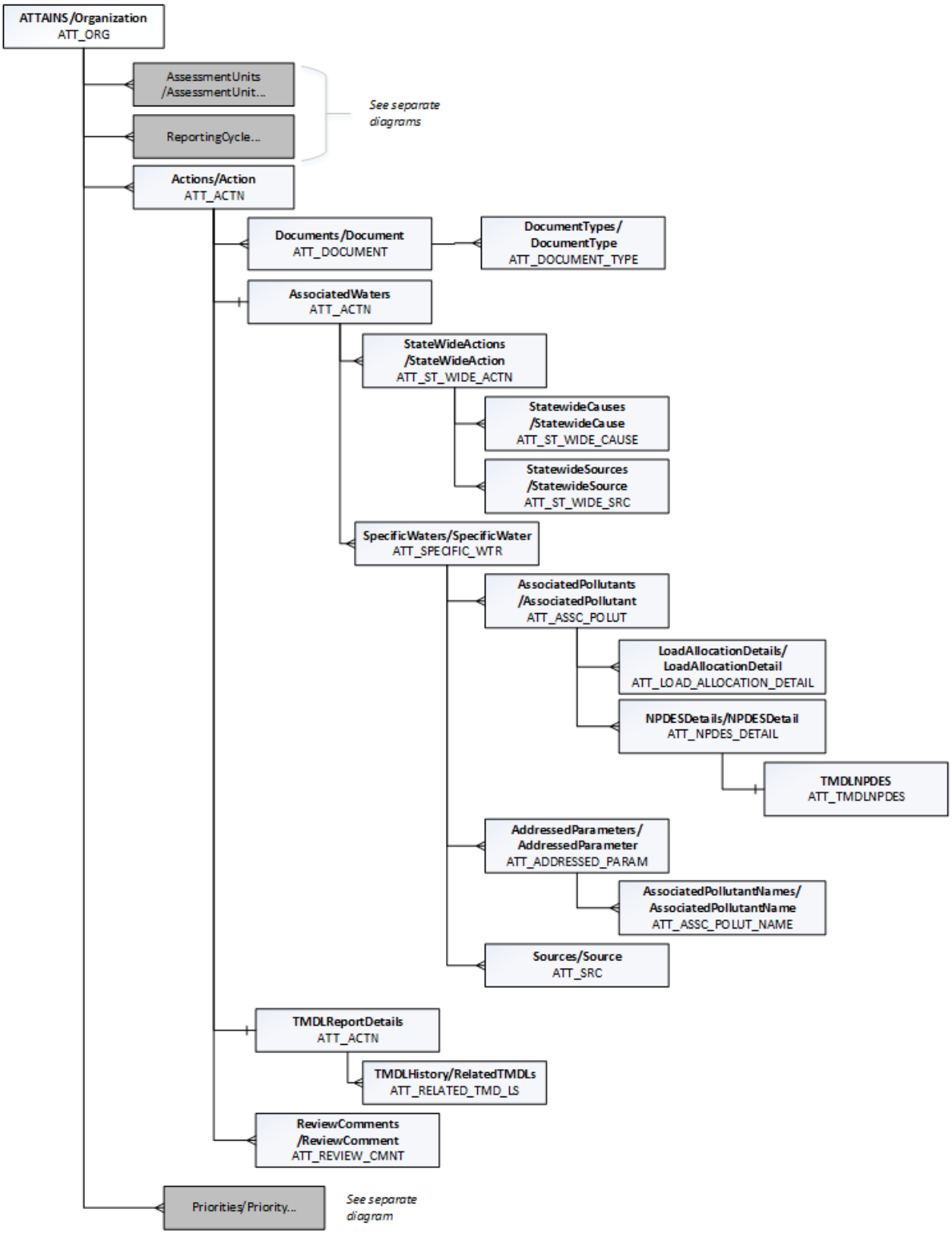
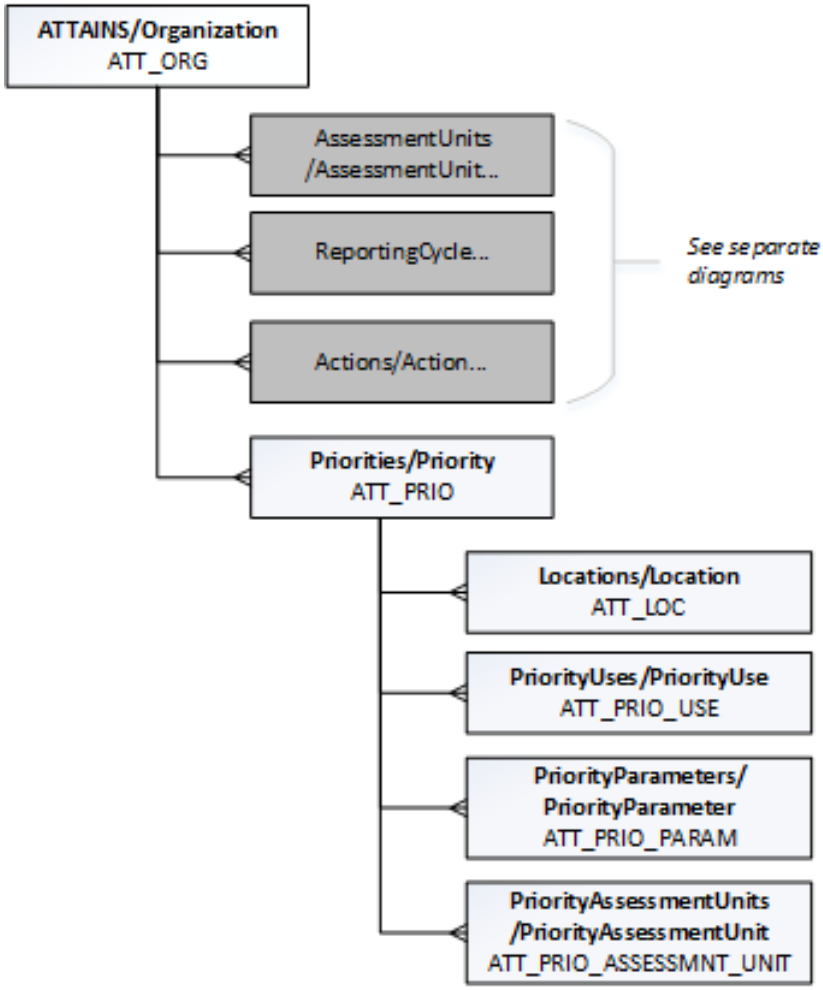
Reporting Cycle Module (Part 1 of 2)



Reporting Cycle Module (Part 2 of 2)



Actions Module



Priorities Module