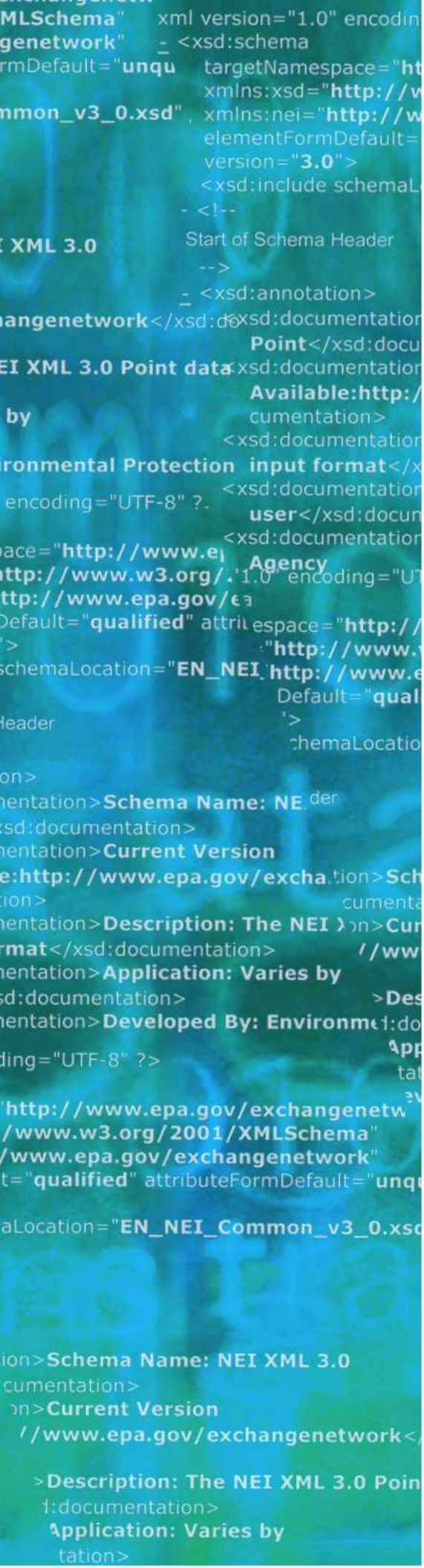

OpenNode2

AQS Data Exchange Implementation Guide for AirVision™

- Java Node

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Revision History

Date	Author	Changes	Version
7/25/2011	Windsor	Original version	1.0
5/8/2012	Windsor	Major revision to include changes required by version 2.2a of the AQS data flow.	2.0
10/9/2013	Windsor	Revised cover page	2.0a
3/24/2014	Windsor	Corrected date format for Start and End time on Schedule.	2.0b
7/9/2014	Windsor	Updated Install Plugin section to describe pre-bundled plugin process starting with OpenNode2 v2.6	2.1
8/28/2015	Windsor	Updated parameter tables.	2.2
4/18/2016	Windsor	Corrected ParameterOccurrenceCode to just OccurrenceCode	2.3
7/22/2016	Windsor	Update screenshots to current OpenNode2 admin version	2.4
7/26/2016	Windsor	Minor typographic corrections. Include instructions on creating of result download schedule.	2.5
10/19/2016	Windsor	Updated to mirror Java version.	2.6

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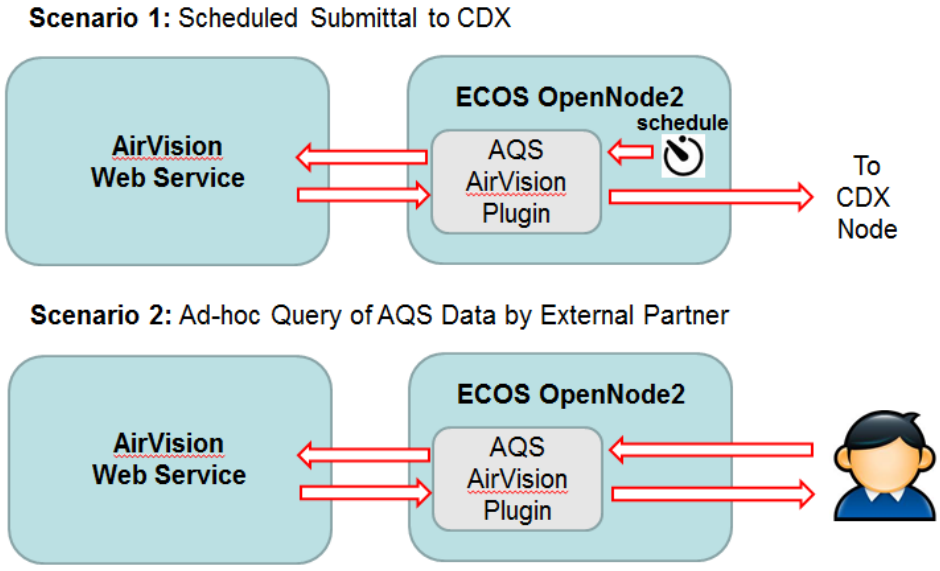
Data Exchange Overview

The purpose of this document is to provide detailed instructions for the installation and configuration of the Air Quality System (AQS) data exchange on the Java implementation of the Exchange Network OpenNode2 (OpenNode2) to be used in conjunction with the Agilaire AirVision™ commercial software product (more information at http://www.agilairecorp.com/).

The AQS data exchange involves a periodic submittal to EPA for the purposes of updating the EPA AQS database that manages ambient air quality monitoring data. The frequency and content of each submission can be configured to meet specific needs, although submissions are typically made on a quarterly basis.

The AQS AirVision™ plugin serves as an Exchange Network proxy web service interface to the AirVision™ software. The plugin is designed to operate in two scenarios: a scheduled AQS submittal to the EPA AQS system, or as an ad-hoc query mechanism exposed to network partners for retrieving air quality monitoring data. Each scenario is illustrated in the diagram below:



The AQS data exchange processing workflow can be summarized as follows:

1. Data for a given reporting period will be collected and validated by the State or Tribe air program using the AirVision™ software.
2. Once the data is considered valid by the air program, the program user will request that the Node Administrator execute a scheduled process on the OpenNode2 to initiate the data transfer to EPA CDX over the Exchange Network.
3. The relevant site, monitor, and raw measurement data will be extracted from the AirVision™ database by the provided Web service and packaged as an XML document.
4. OpenNode2 will then transfer the generated XML document to the EPA CDX Network Node, which in turn will transfer the file to the AQS Network Node for further processing into the AQS database.
5. OpenNode2 will periodically check the status of processing of the AQS submission at CDX and will email specified State or Tribe air program staff with the results of processing.

This plugin requires version 3.0 or later of the AirVision™ software.

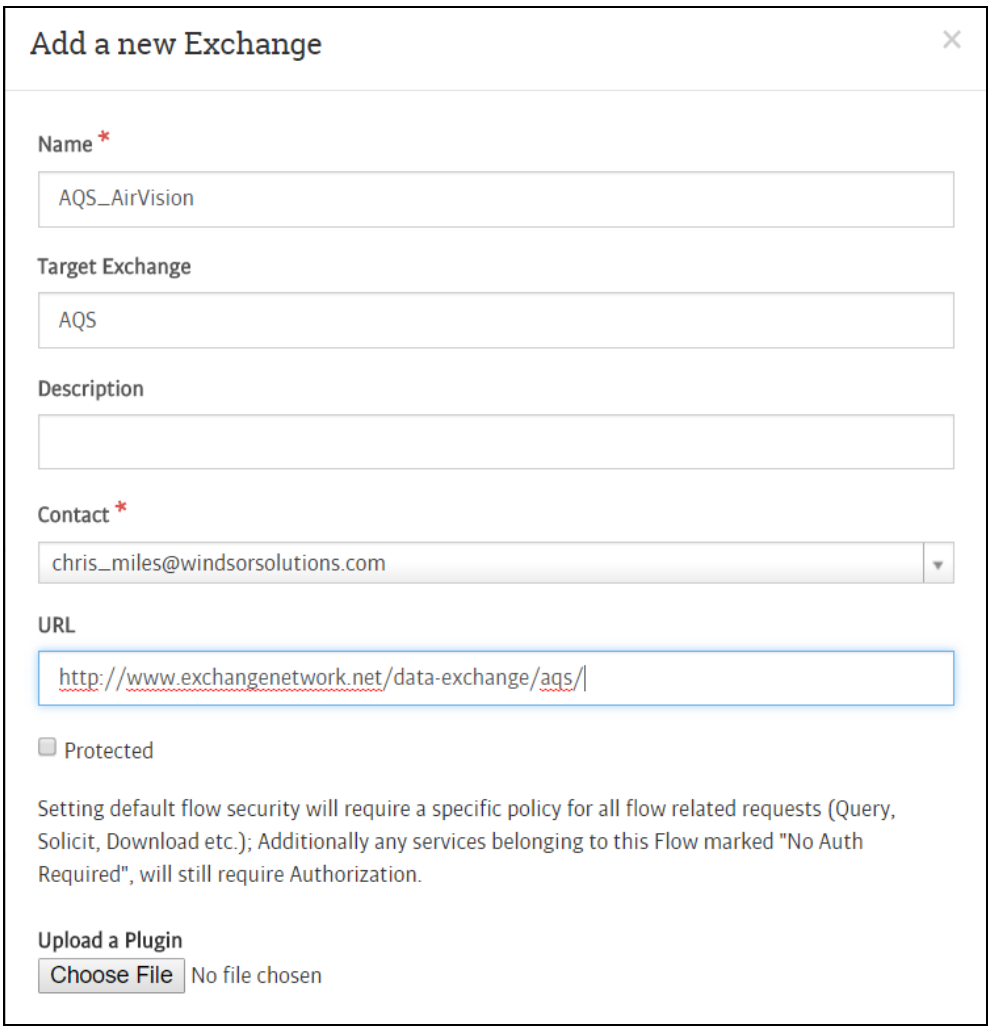
Install and Configure AQS Data Flow

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

Create AQS Data Exchange

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

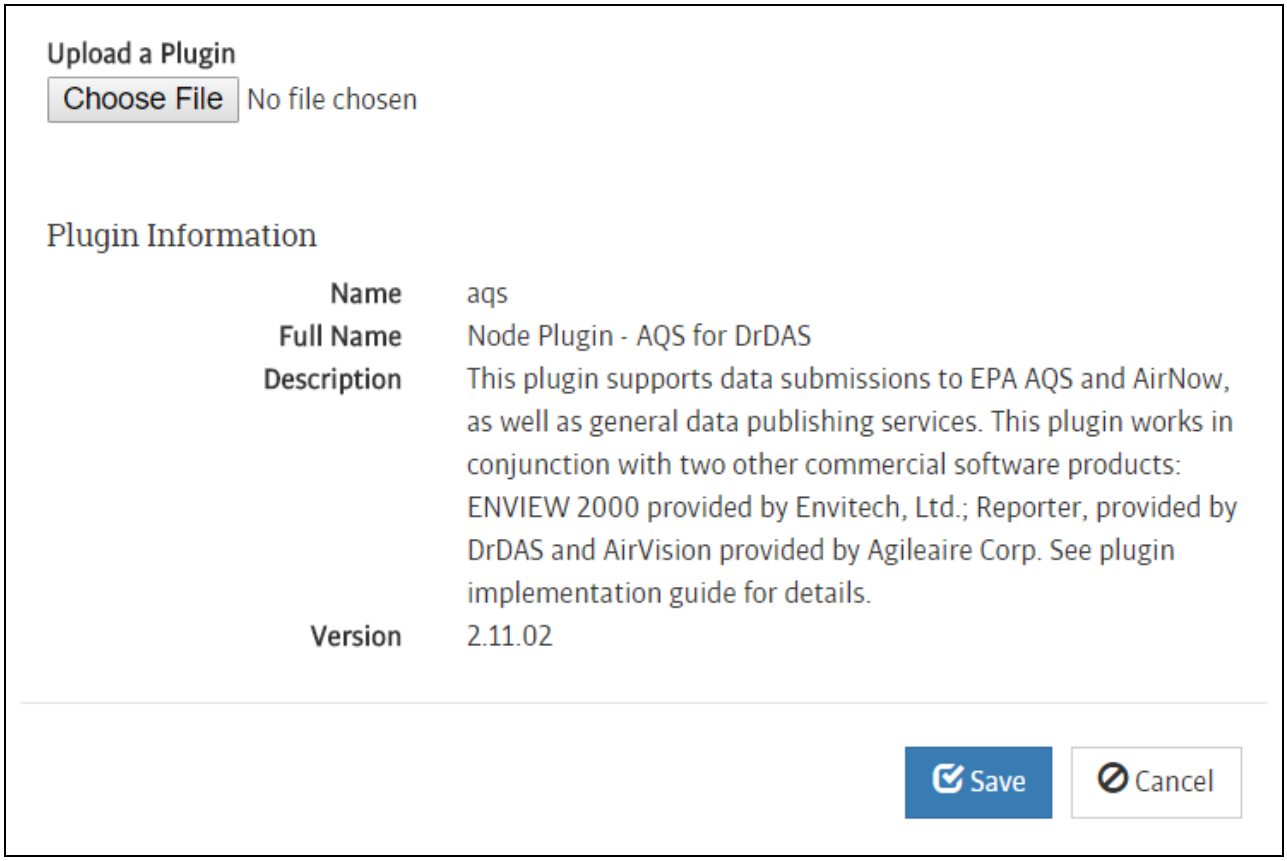
1. After logging into the Node Admin, click the **Exchange** tab on the top navigation bar.
2. Click the **Add Exchange** button. The Data Exchange Manager screen will be displayed:



3. Type *AQS_AirVision* in the **Name** field (or any desired name).
4. Type AQS in the **Target Exchange Name –** for this flow to work, AQS must be entered in the Target Exchange Name.

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. This selection has no consequence on the exchange configuration.
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 AQS data exchange:

   http://www.exchangenetwork.net/data-exchange/aqs/
7. If the service is not going to be exposed as an ad-hoc query service (see Scenarios 1 and 2 in the introduction), it is recommended that the **Protected** box be checked. This will limit external access to the AQS data services. External access is not required if the purpose of this flow is solely as a means of data submission to EPA's AQS System.
8. Unzip the **java_aqs_plugin_v2.12.zip** file. And locate the aqs.zip file.
9. Click **Choose** file and Locate and select the compressed (zipped) file containing the code component for the AQS AirVision™ plugin you created in Step 2 above (**AQS.zip**).



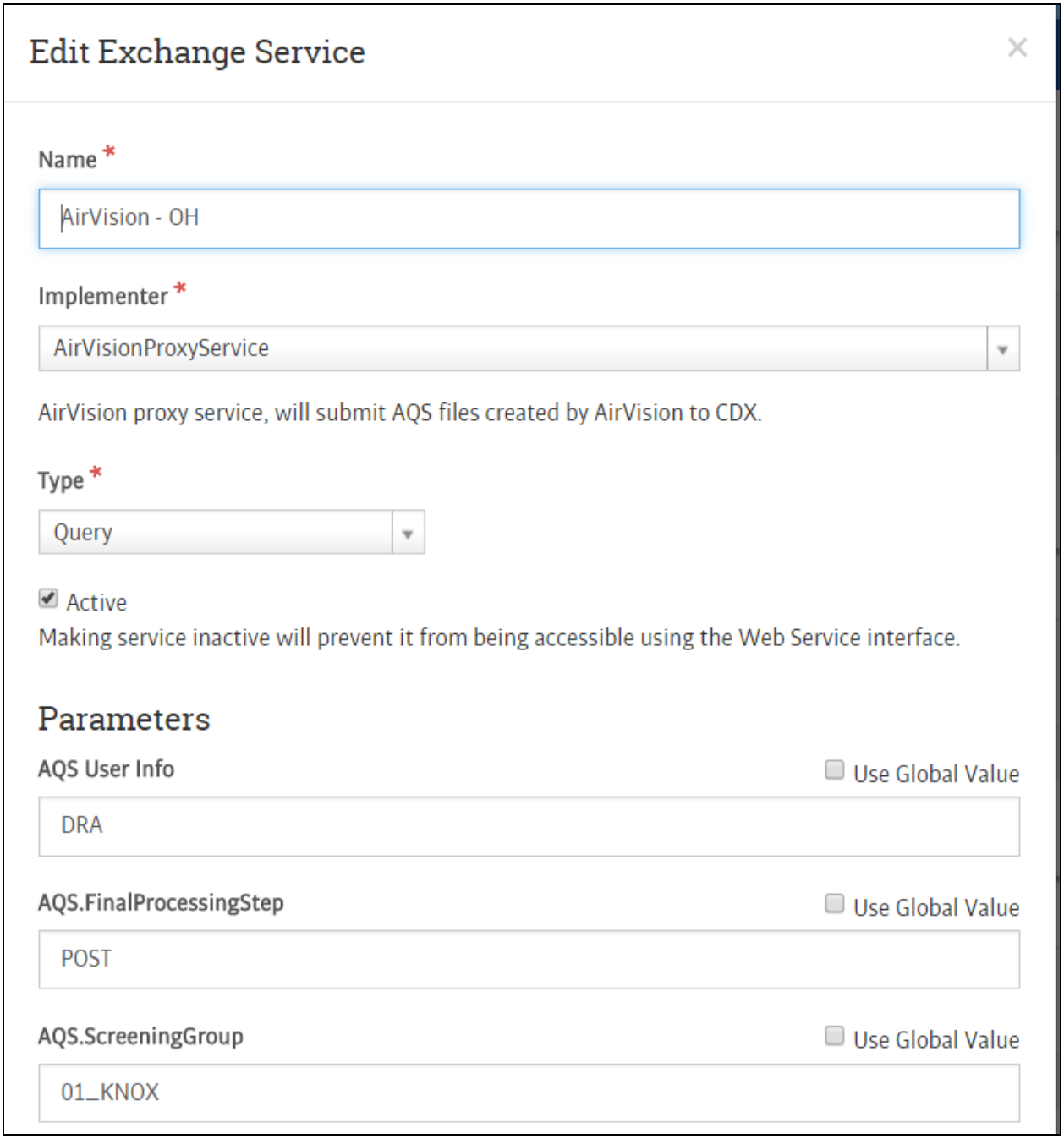
10. Click the **Save** button to install the plugin.

Create AQS Data Services

Data services are distinct functions provided by a plugin to support a given data exchange. For the AQS data exchange using AirVision™, the plugin provides a single ProxyService which gets the XML data from AirVision and submits the data to the specific network partner.

Air Vision Proxy Service

1. From the **Exchange** tab, locate the *AQS_AirVision* data exchange in the list of available exchanges.
2. Click the **Add (+)** button located to the right of the *AQS_AirVision* data exchange title. The following page will be displayed to allow a new data service to be added.



3. In the **Name** field, enter desired name.
4. Select the implementer "AirVisionProxyService" from the **Implementer** drop-down menu. The page will refresh to display additional configuration parameters for the data service obtained automatically from the plugin.
5. From the **Type** drop-down menu, select *Query*.
6. Enable the service by checking the **Active** checkbox.
7. When the implementer is selected, several service parameter arguments will appear. The Node Admin will obtain these properties directly from the loaded plugin. These parameters are used to customize the operation of the data service. In many cases, these parameters are used to

configure the content of the Exchange Network Header document that will be generated along with the XML payload to be submitted to EPA CDX. For further explanation of the use of the Header Document for the AQS data flow, please see **Appendix A**.

8. For the argument labeled **AQS User Info**, type the AQS user id for the individual at the agency having authority to submit data to AQS over the Exchange Network. This user id must be granted access to perform submissions by EPA.
9. For the argument labeled **AQS Final Processing Step**, type either "*Stage*", "*Load*", or "*Post*" as desired to indicate to the EPA AQS load processor the last step of the process that should be performed on the submitted data.
10. For the argument labeled **AQS Screening Group**, type the name of the AQS screening group that owns the monitors included in the data submission.
11. For the argument labeled **AQS Stop On Error**, type either "Yes" or "No" as desired to indicate to the AQS load processor whether or not to stop processing of valid input transactions if any one of the transactions submitted contains an error.
12. In the argument labeled **AirVision URL**, enter the URL to the web service on your implementation of the AirVision™ software. Consult AirVision™ product documentation or support for the correct URL.
13. For the argument labeled **Author**, type the name of the developer of the data service

    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.
14. For the argument labeled **Contact Info**, type the email address(s) that will receive a submit notification email. Note that this notification will be in addition to emails automatically sent to the AQS user id specified in step 13 above, as obtained from the address defined in the AQS Profile record for that user.
15. In the argument labeled **Document Title** enter the name of the submission, for example: OH AQS Submission".
16. For the argument labeled **Organization**, type the name of the organization that is providing submissions created from the data service.
17. Click the **Save** button to save the data service.

Define Data Exchange Schedules

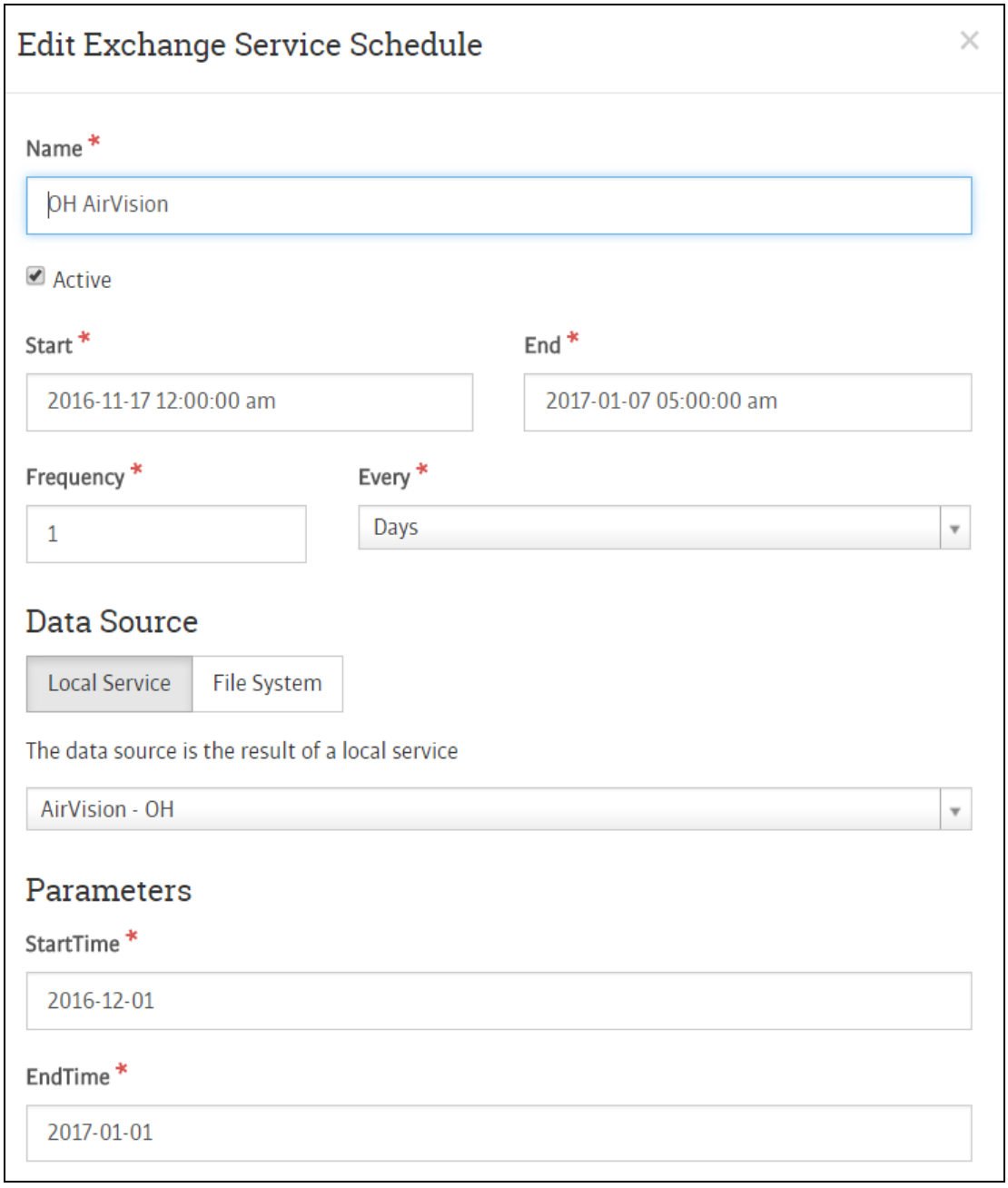
Scheduled jobs can be configured in the OpenNode2 to perform automated tasks, for example, submitting data to external Exchange Network partners or processing received files. The Node Admin can be used to create AQS submission schedules.

Submit AQS Data Schedule

This scheduled job will request the AQS XML data from the AirVision™ web service, and submit the returned compressed XML document to EPA CDX for validation and processing.

1. Click the **Schedules** tab and click the **Add (+)** button next to the AQS_Airvision title. The schedule manager screen will appear.
2. In the **Name** field, type *Submit AQS Data*.

3. Select *AQS_AirVision* for the **Exchange** drop down box.
4. Set the start date to the date on which you wish the schedule to run, typically todays date.
5. Set the end date to the same date.
6. Set the frequency to "*Once*". This schedule will typically be run on request from the air program one time only for each date period.
7. In the **Data Source** area, check the radio button labeled **Results of local service execution**.
8. In the **Service** dropdown box, select the *AirVision*. This informs the schedule to use this data service as the data source for the submission.



9. Use the **Additional Parameters** area to define the filter criteria to apply to the dataset requested from AirVision™. Sufficient criteria should be supplied to only return a "thin" dataset from AirVision™ to ensure the service does not time out. Constraints will vary depending on each partner's dataset size and hardware/network performance.

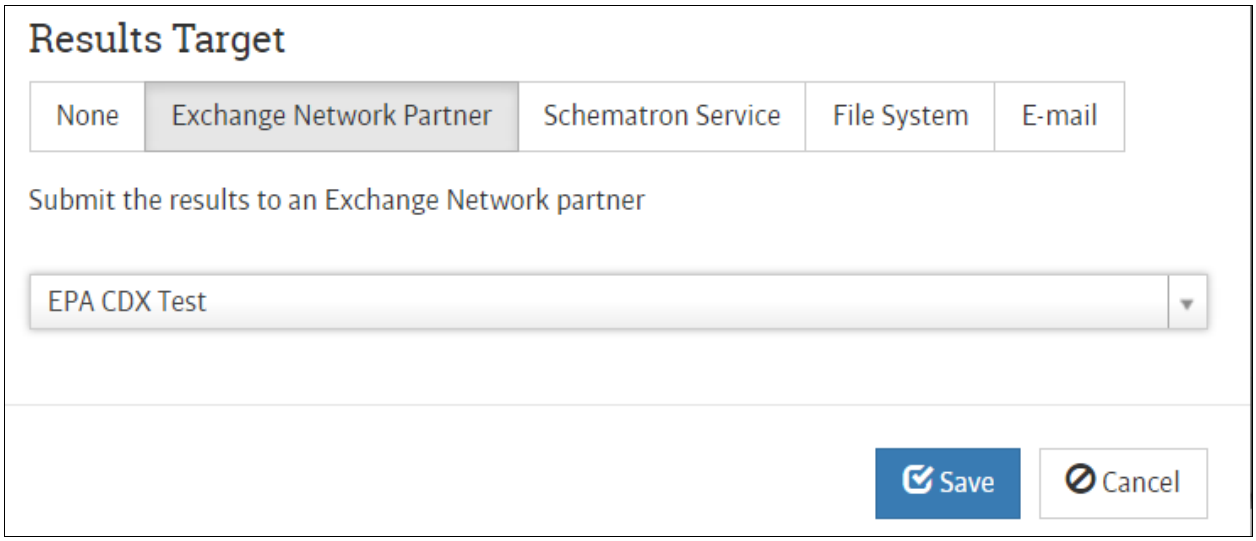
   The following criteria are available:

Parameter Name	Definition	Example
StartTime	The earliest date for which to return data in YYYY-MM-DD format	2013-12-01 or 2013-11-31 23:59:59
EndTime	The latest date for which to return data in YYYY-MM-DD format	2011-07-31 or 2011-07-30 23:59:59
SendRDTransactions	Flag indicating whether to include RD transactions in the query result	True or False
SendRBTransactions	Flag indicating whether to include RB transactions in the query result	True or False
SendMonitoring AssuranceTransactions	Flag indicating whether to include RA transactions in the query result	True or False
SendOnlyQAData	Flag indicating whether to include only QA transactions in the query result	True or False
AgencyCode	AirVision™ Agency Code	123
SiteCode	AirVision™ Site Code	0005
ParameterCode	AirVision™ Parameter Code	42401
DurationCode	If there are multiple monitors for the same substance at a single site, each monitor must have a unique substance occurrence code.	1
OccurrenceCode	If there are multiple monitors for the same substance at a single site, each monitor must have a unique substance occurrence code.	1
StateCode	AirVision™ StateCode	08
CountyTribalCode	AirVision™ CountyTribalCode	001

Note that AgencyCode, SiteCode and ParameterCode criteria can be chained to create any combination of AND/OR criteria between the three parameters. These three parameters work in conjunction with one another to form a table of additional filter criteria. For example, to filter on Agency Code 01_KNOX, Site Code DRA and parameters 42401, 65102, or 44201, the parameters would be entered as follows:

In this usage there should be an equal number of pipe-delimited arguments for each of the three parameters.

10. In the **Result Process** area, check the radio button labeled **Submit result to an Exchange Network partner**.
11. From the **To** dropdown list select the partner configuration value for the EPA production (or EPA Test during the testing period) CDX Node.



12. Click the **Save** button to save the schedule.

Contact CDX to Establish Data Exchange Settings

Once the AQS data exchange is installed and configured, 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 AQS data exchange on the EPA systems.
2. Map the OpenNode2 runtime NAAS account to the CDX Web user account that currently administers EPA AQS data for the organization.

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 AQS 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 AQS 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 – Header Document Settings

Element Name	Required	AQS Use	OpenNode2 Implementation
AuthorName: Originator of the document. This should be the name of a person or a network node ID if the document is automatically generated.	No	Not Used by AQS.	Populate from Service Parameter. Optional.
OrganizationName: The organization to which the author belongs. It may be a state name, an organization name or a company name. For submissions to the CDX node, this should be the name of the organization.	No	Not Used by AQS.	Populate from Service Parameter. Optional.
DocumentTitle: Title of the document.	No	Not Used by AQS.	Set to "AirVision Data via OpenNode2" by the plugin.
CreationDateTime: This is a timestamp that marks when the document, including payloads and header part, was created.	No	Not Used by AQS.	Insert current timestamp from node server.
Keywords: Words that best describe the payload. Multiple keywords should be separated by commas. This is for transaction categorization and searching.	No	Not Used by AQS.	(null)
Comment: Additional comments for processors.	No	Not Used by AQS.	(null)
DataFlowName: The name of the data flow associated with the payload. It could be the name of the data source for Query results.	Yes	AQS	Set to "AQS" using the Target Exchange Name in the exchange setup.
DataServiceName: Name of a data service that generated the document. This is the name of the procedure that was used to initiate the creation of the payload. This would apply only for Query and Solicit and would not be applicable for Download and Submit.	No	N/A	(null)

Element Name	Required	AQS Use	OpenNode2 Implementation
SenderContact: The sender's additional contact information. It could contain sender's electronic address and/or telephone numbers where the author can be reached.	No	Not Used by AQS.	(null)
ApplicationUserIdentifier: The user ID for the backend system if it is different from the NAAS user ID.	Yes	AQS User-ID	Populate from Service Parameter. Required.
SenderAddress: A well-formed URI where result/report can be sent. Currently the Network will make use of the Notification mechanism at the Document Level as described in the Protocol and Specification. Note that this could contain multiple addresses, including that of the submitter and/or other technical people related to contents of the payload.	No	Email address, in addition to that stored for the AQS user in the AQS Profile, that will receive the submit notification email.	Populate from Service Parameter. Optional.
Property Begin Tag: Other properties of the document (use name value pairs). This is an extension mechanism to cover any other elements that are not defined in the specification.	Yes	<hdr:Property>	
Property: AQS.Screening Group	Yes	<hdr:PropertyName> AQS.ScreeningGroup </hdr:PropertyName> <hdr:PropertyValue> The AQS screening group that owns the monitors related to the submission. </hdr:PropertyValue>	Populate from Service Parameter. Required.
Property: AQS.FinalProcessingStep Last step of the AQS Load process that will be performed on the user's data.	No	<hdr:PropertyName> AQS.FinalProcessingStep </hdr:PropertyName>	Populate from Service Parameter. Optional.

Element Name	Required	AQS Use	OpenNode2 Implementation
		<hdr:PropertyValue> Member of the set: {“Stage”,” Load”, “Post”}. </hdr:PropertyValue>	
Property: AQS.StopOnError Option to tell AQS whether or not to stop processing of valid input transactions if any one of the transactions submitted contains an error.	No	<hdr:PropertyName> AQS.StopOnError </hdr:PropertyName> <hdr:PropertyValue> Member of the set: {“Yes”, “No”}. </hdr:PropertyValue>	Populate from Service Parameter. Optional.
Property: AQS. PayloadType	Yes	<hdr:PropertyName> AQS.PayloadType </hdr:PropertyName> <hdr:PropertyValue> Member of the set: {“XML”, “FLAT”,”CARD”}. </hdr:PropertyValue>	Set to “XML” by the plugin.
Property: AQS.SchemaVersion	Yes if AQS.FileType = “XML”	<hdr:PropertyName> AQS.SchemaVersion </hdr:PropertyName> <hdr:PropertyValue> The schema version	Populate from Service Parameter. Required.
Property End Tag	Yes	</hdr:Property>	
Signature: An XML signature associated with the document (Use http://www.w3.org/2000/09/xmldsig#)	No	Not Used by AQS.	(null)

Element Name	Required	AQS Use	OpenNode2 Implementation
id: A unique identifier for the document. This is an attribute of ExchangeNetworkDocument and provides a unique Id for each document in the payload.	Yes	User name for input file – This is the name that will show up on the AQS Batch form for the submitted document.	GUID generated by OpenNode2 and set by the plugin.