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on>Current Version
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  >Description: The NEI XML 3.0 Poin
   Application: Varies by
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Administration User Guide For Node Administrators (Java)

Revision Date: 12/06/2016

Prepared By:



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Revision History

Date	Author	Changes	Version
4/20/2009	Windsor	Initial version	1.0
6/1/2010	Windsor	Added detailed login troubleshooting steps	1.1
9/20/2011	Windsor	Updated to include changes related to parity project	1.2
9/18/2013	Windsor	Updated for Java OpenNode2 v2.08	1.3
10/9/2013	Windsor	Revised cover page	1.4
12/8/2016	Windsor	Updated for Java OpenNode2 Redesign v.2.12	1.5

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Introduction

The OpenNode2 is an open-source National Environmental Information Exchange Network (Exchange Network) Node that can be freely downloaded and deployed by any Exchange Network partner. The OpenNode2 was developed by Windsor Solutions, Inc. (Windsor).

OpenNode2 fully supports the *Exchange Network Node Specifications version 2.1*, published in June of 2011.

Characteristics

Some of the key characteristics of OpenNode2 are:

Support for Node Specifications v2.1

OpenNode2 natively supports version 2.1 of the Exchange Network Node Specifications. http://www.exchangenetwork.net/Node/NodeFunctionalSpecification_v2.1.pdf

Distributed Architecture

OpenNode2 includes four primary application components:

- 1. Node Orchestration Service (WNOS), which provides the core processing functionality and coordinates all activities against the Node.
- 2. Node Admin application (WNA), which is a Web application that enables configuration and administration of the Node.
- 3. Node 1.1 Endpoint (WNE1.1), a Web service that is compliant with the *Exchange Network Node Specifications v1.1* and supports all access to the services provided by the Node using this interface specification.
- 4. Node 2.1 Endpoint (WNE2.1), a Web service that is compliant with the *Exchange Network Node Specifications v2.1* and supports all access to the services provided by the Node using this interface specification.

Each of these components may be installed on the same or separate physical machines and each of these elements supports a "clustered" deployment – multiple instances of each subsystem.

Plugin Based Configuration

Data Exchanges are based on a plugin architecture allowing for modification of existing Exchanges and/or publishing of new Exchanges without suspending the OpenNode2 activity. Each Exchange is managed and configured independently and can be configured during run time using the Node Admin.

Logging, Reporting, and Notification

All activity against the OpenNode2 is logged in a persistent state, allowing for ad-hoc queries using the WNA as well as more in-depth analysis using any standard database inquiry utility.

All activities against the OpenNode2 (inbound submit, query, solicit, notify, etc.) can be configured to provide a notification in the form of an email if required. This configuration can be set on an Exchange by Exchange basis.

Integrated NAAS Account Management

OpenNode2 includes an interface for creating and managing National Authentication and Authorization (NAAS) user accounts. Accounts are automatically synchronized with a local account store. Each account may be granted or denied access to specific exchanges.

Technical Components

The OpenNode2 solution includes the following key individual architectural elements:



Node Web Service (v. 1.1)

Responsible for exposing Exchange Network 1.1-specific services. This interface intercepts external requests conveyed over SOAP 1.1 protocol, transforms the requests into a Common Message Format (CMF) and relays these messages to the Node Orchestration Service (NOS) for further processing. Similarly, this interface is also responsible for transforming any results of previous NOS invocation into Exchange Network 1.1-specific message format. This bidirectional transformation occurs regardless of whether the orchestration service returns a successful response or CMF-specific invocation exception.



Node Web Service (v. 2.1)

Responsible for exposing Exchange Network 2.0-specific services. This interface intercepts external requests conveyed over SOAP 1.2 protocol, transforms these requests into the same CMF and relays these messages to the NOS for further processing. Similarly, this interface is also responsible for transforming any results of previous NOS invocation into Exchange Network 2.0-specific message format. This bidirectional transformation occurs regardless whether the orchestration service returns a successful response or CMF-specific invocation exception.



REST Service Endpoint

The OpenNode2 REST endpoint provides REST-like functionality to the Node web services in a manner compliant with Exchange Network REST Guidelines. Using only a URL, a person or software client can retrieve data from any OpenNode2 Query service. This provides a simpler means of interacting with OpenNode2 than traditional SOAP services.



Node Administrative Application

Allows for management of the NOS. This Web-based application provides a user interface to the otherwise transparent Exchange Network operations. Its sole purpose is to manage the Node configuration, activity and security as well as to provide an easy interface to monitoring the Node solution's overall health.



Node Orchestration Service

The NOS is a GUI-less application responsible for processing all of the CMF requests from the Node Web Service interfaces (regardless of their versions) as well as supporting all Node Administrative Application (NAA) functionality.

The NOS itself consists of many smaller logical components:

- Metadata manager
- Schedule manager

- Document manager
- Request processor
- Exchange Network client
- Security manager
- Plugin manager

The NOS also consists of a variety of providers. These are NOS extensions responsible for providing specific types of functionality. These extensions can be easily replaced and further customized to satisfy the specific requirements of a particular deployment.



Node Metadata Repository

All aspects of the NOS run-time configuration as well as its activity and, depending on the deployment, binary content is stored in a relational database. This metadata repository is accessed only by the NOS.

The purpose of this document is to provide a detailed introduction to the functionality provided by the OpenNode2 Administration Web application (Node Admin). The Node Admin allows you to manage all of the functionality of your OpenNode2, including configuration, security management, data exchange and data service management, and scheduling of common activities.

System Requirements and Troubleshooting

Required Software

To access the Node Admin Web application, a recent and actively supported browser (by any vendor) is required.

Required Hardware

The computer must be connected to the Local Area Network (LAN) and the Internet in order to access the Node Admin Web application.

Obtaining a User Account

The Node Admin Web application requires a username and password before enabling access to the system. User accounts are created and managed by the Node Administrator. Once the Node Administrator creates an account and password, an automated email is sent with the authentication information. These credentials can then be used to gain access to the system.

It should be noted that user accounts in the Node Admin are fully integrated with the NAAS. As a consequence, any user account established to provide access to the Node Admin will also be established as a valid NAAS account owned by your Node Administrator's NAAS account.

Troubleshooting

The following are common issues when logging into the application.

Problems Logging in to the Node Admin Web Application

Error "Authentication Error"

• This error is returned by the NAAS server. This indicates that the username and/or password not typed in correctly. Note both usernames and passwords are case-sensitive.

Error: "Could not access HTTP invoker remote service...Connection refused: connect

• The Admin application cannot communicate with the Node Orchestration Service (NOS). The NOS is inaccessible. Ensure that NOS is running and is accessible from the server running the Node Admin application. Lastly, check the connection settings in the Admin configuration. See the OpenNode2 Installation Guide from more information.

Error: "Could not access HTTP invoker remote service...Null admin account"

The NACCOUNT table in the Node database does not have a valid admin account set up.
 An admin account must exist in the NACCOUNT table that matches the NAAS runtime username as configured in the naas.properties configuration file.

Browser Cannot Find Node Admin Web Application

Common causes:

• The browser URL path is not correct. Please verify the URL is correct. If the user cannot find the URL, have the system administrator look into this problem.

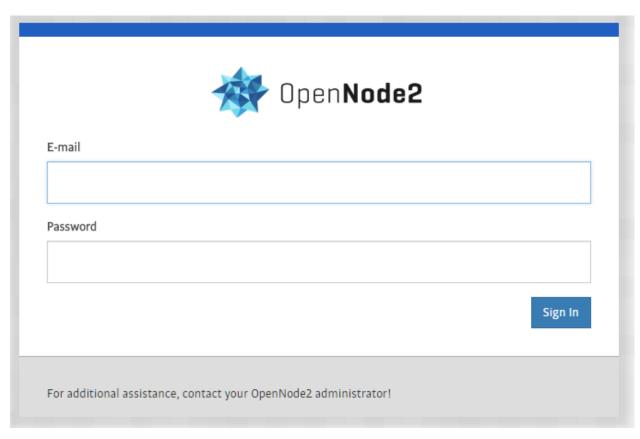
- There is no Internet/LAN connectivity. Work with the system administrator to resolve this issue.
- The application is not responding, but the computer has an Internet connection. The server(s) could be down. Contact the system administrator to review and possibly restart the service.

Getting Started

This section discusses how a user can log into and out of the Node Admin application. In addition, the section describes the navigation options available to the user.

Login Page

The login page is displayed upon navigating to the URL for the Node Admin Web application. This URL can be obtained from the Node Administrator.



The login page ensures that only authenticated users are able to access the Node Admin application. To log into the Node Admin, the user must enter a valid NAAS user account and password. Upon successful login, the Node Admin recognizes the user's system roles and customizes the application functionality to the specific role for that user.

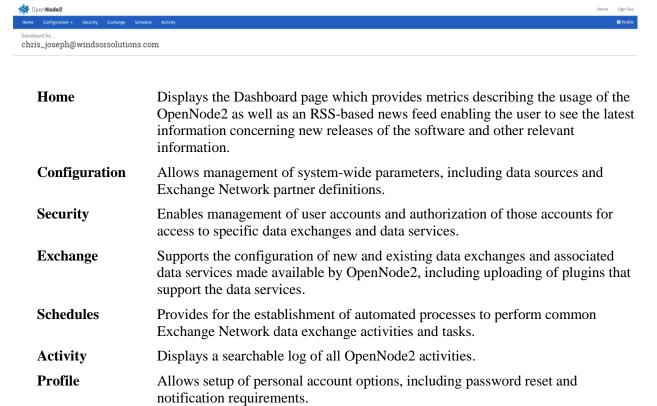
Each application session is valid until one of the following happens:

- User logs out of the Node Admin Web Application
- The browser becomes idle past a designated period (configurable during OpenNode2 deployment)
- The user terminates the browser session

If any of the above occurs, the user must log in again.

Navigation Bar

Once authenticated, the following options are available on a tabbed navigation toolbar displayed throughout the Node Admin application.



Additional detail on each of these functions is provided later in this document.

Page Footer

The following footer is displayed throughout the Node Admin.

OpenNode2 by Environmental Council of the States © 2016 Support Version: 2.12 NAAS: prod

If you encounter any problems when using the Node Admin, please contact the Node Administrator by clicking on the *support* link at the bottom of each page. This also displayed the Node version that is installed and which EPA NAAS repository the node is using for authentication.

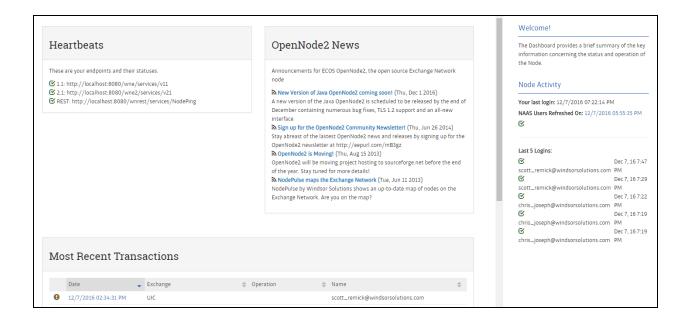
Logout

To exit the Node Admin application, select the *Sign Out* link in the upper right-hand corner of the page. The Node Admin will terminate the session and return to the Login page.

Dashboard

The Dashboard tab provides a brief summary of the key information concerning the status and operation of OpenNode2. This information includes current status of your endpoints, a chronological list of most recent transactions, recent Node activity, as well as an RSS news feed which provides a summary of important information and news relevant to users of the Node. This area will be used to provide users with updates and important service information related to the operation of the Node. The right panel shows the last time the user logged in, the last time NAAS was refreshed from the EPA and the last 5 user logins.

A typical display on the Dashboard will be as illustrated below:



The operational statistics displayed on the Dashboard include the following elements:

- **Heartbeats** A listing of each endpoint on this Node and their current operational status. A green checkbox indicates the endpoint is operational. A red mark indicates there is an issue with this endpoint.
- OpenNode2 News An RSS news feed of the latest OpenNode2 news.
- Most Recent Transactions A table showing the 15 most recently logged activities against the Node. Activities include items such as Node Admin audit records (such as login attempts), as well as external query requests and scheduled task executions.
- Node Activity Displays logged-in user's last login time and date and the date and time that the NAAS User list was last refreshed on. There is also a listing of the last 5 logins to the Node which includes a success or failure icon and date and time of attempt.

Configuration

About Configuration

The Configuration tab allows you to manage certain key parameters that are used by OpenNode2 to support the operation of the data services provided by OpenNode2. It allows for these key parameters to be managed in a single location but be used by multiple data exchanges and data services.

As the parameters that can be managed here will be used by many data services, care should be taken when editing these values as changes will have global impact.

There are three sections within the Configuration tab that may be selected from the dropdown list.

Global Arguments Provides a mechanism to create, edit, and delete global arguments that can be

used during data exchange and data service configuration.

Data Sources Provides a mechanism to create, edit, and delete connections to various data

sources that can be used by data services during execution.

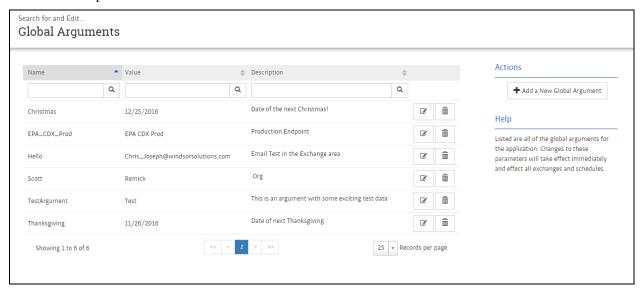
Network Partners Provides a mechanism to create, edit, and delete Exchange Network Partners

that can be used as the source or target for data exchange processes.

Global Arguments

Global arguments are parameters that can be used to direct the operation of multiple data services. For example, where a certain type of indicator or flag is used by multiple data services, a global value can be set for that indicator or flag and then simply referenced when the data services are defined to OpenNode2.

When selected, the Global Arguments section will initially display a list of existing arguments already stored in the OpenNode2 database as illustrated below.



Search and Filter list of Global Arguments

To search for and filter the list of global arguments:

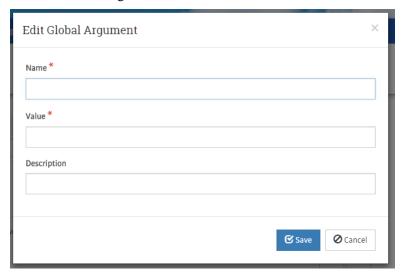
- Users can define the number of records displayed per page by clicking the
 Records per page on the bottom right side of the list.
- 2. If the result list exceeds the number of records defined per page, users will be able to navigate using the at the bottom of the list.
- 3. To filter all results, users can type any portion of the text they'd like to search into the at the top of the list. To reset this, simply clear the contents of the field and click the magnifying glass icon.

Note: Search is not case sensitive. All results will be filtered, not just the items displayed on screen. Multiple columns can be searched on at the same time. Populating more than one search field will return results that match ALL criteria only.

Adding a Global Argument

To add a new global argument, perform the following steps:

- 4. Click the display the global argument entry page.
- 5. Enter a name for the argument in the **Name** field. This name will be displayed as an available value in dropdown menus throughout the system.
- 6. Enter a value for the argument in the **Value** field. This is the actual value that will be utilized when this argument is selected.
- 7. Enter a description for the argument in the **Description** field (optional).
- 8. Click the **Save** button to add the argument to the database and return to the list of existing global arguments.
- 9. Click the **Cancel** button to discard any work and return to the list of existing global arguments.



Modifying a Global Argument

To modify a global argument, perform the following steps:

- 1. Click the button next to the global argument you wish to modify.
- 2. Modify the **Name**, **Value**, and **Description** fields as required.
- 3. Click the **Save** button to save any modifications to the database and return to the list of existing global arguments.
- 4. Click the **Cancel** button to discard any work and return to the list of existing global arguments.

Deleting a Global Argument

To delete a global argument, perform the following steps:

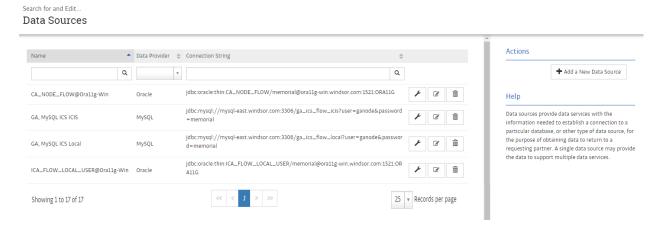
1. Click the button next to the global argument you wish to delete.

- 2. Confirm the deletion process when prompted. You will be returned to the list of existing global arguments.
- 3. Click the **No** button to discard any work and return to the list of existing global arguments.

Data Sources

Data sources can be defined to provide exchanges and data services with the information needed to establish a connection to a particular database, or other type of data source, for the purpose of obtaining data to return to a requesting partner. A single data source may provide the information to support multiple data services.

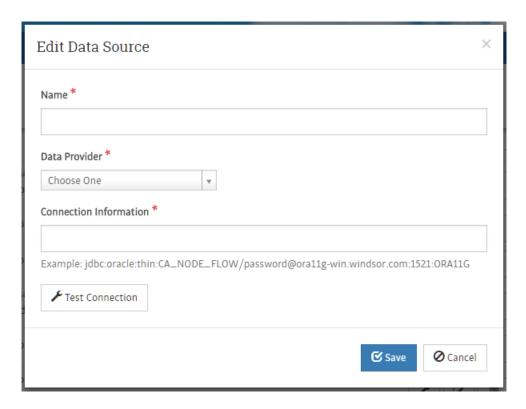
When selected, the **Data Sources** section will initially display a list of existing data sources already stored in the OpenNode2 database as illustrated below.



Adding a Data Source

To add a new data source, perform the following steps:

- 1. Click the hadd a New Data Source button on the right-hand side of the page.
- 2. Enter a name for the data source in the **Name** field. This name will be displayed as an available data source in dropdown menus throughout the system.
- 3. Select a database provider from the dropdown list for the data source in the **Data Provider** field. Additional providers may be added using the Node Admin installation configuration file if needed. This is beyond the scope of this document.
- 4. Enter the JDBC connection string for the data source in the **Connection Information** field. This is the actual connection string value that will be utilized when this data source is selected.
- 5. Click the button to ensure connection is successful.
- 6. Click the **Save** button to add the data source to the database and return to the list of available data sources.
- 7. Click the **Cancel** button to discard any work and return to the list of existing data sources.



Search and Filter list of Data Sources

To search for and filter the list of data sources:

- Users can define the number of records displayed per page by clicking the
 Records per page on the bottom right side of the list.
- 2. If the result list exceeds the number of records defined per page, users will be able to navigate using the
- 3. To filter all results, users can type any portion of the text they'd like to search into the at the top of the list. To reset this, simply clear the contents of the field and click the magnifying glass icon.

Note: Search is not case sensitive. All results will be filtered, not just the items displayed on screen. Multiple columns can be searched on at the same time. Populating more than one search field will return results that match ALL criteria only.

Test Connection to Data Source

To test the connection of a specific data source:

1. Find the Source you wish to test in the list and click the button to the right.

2. If the connection test was successful a green bar message will appear at the top of the

The data source "CA_NODE_FLOW@Ora11g-Win" was tested successfully!

3. If the connection test fails, a red bar message will appear at the top of the result list with a detailed explanation for the failure.

The data source "CA_NODE_FLOW@Ora11g-Win" failed, the error was "No suitable driver found for adbc:oracle:thin:CA_NODE_FLOW/memorial@ora11g-win.windsor.com:1521:ORA11G"

Modifying a Data Source

result list.

To modify a data source, perform the following steps:

- 1. Click the button next to the data source in question.
- 2. Adjust the Name, Provider and Connection fields as desired.
- 3. Test the connection.
- 4. Click the **Save** button to save any modifications and return to the list of existing data sources.
- 5. Click the **Cancel** button to discard any work and return to the list of existing data sources.

Deleting a Data Source

To delete a data source, perform the following steps:

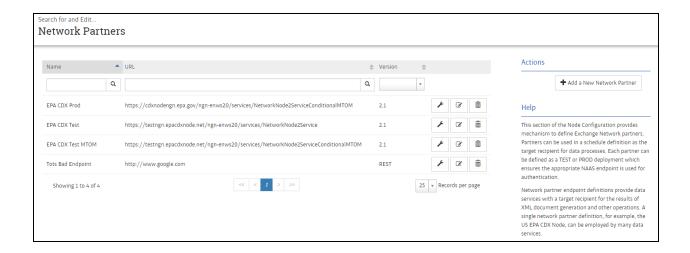
- 1. Click the button next to the data source in question.
- 2. Click the **Delete** button to delete the data source.
- 3. Confirm the deletion process when prompted. You will be returned to the list of existing data sources.
- 4. Click the **No** button to discard any work and return to the list of existing data sources.

Network Partners

Network partner endpoint definitions can provide data services with a target recipient for the results of XML document generation and other operations. A single network partner definition (for example, the US EPA CDX Node) can be employed by many data services.

Each partner can be defined as using either version 1.1 or version 2.1 of the Exchange Network Node services or via REST for restful web services specifications. This will drive the resulting message structure.

When selected, the **Network Partners** section will initially display a list of existing partners already stored in the OpenNode2 database as illustrated below.



Search and Filter list of Network Partners

To search for and filter the list of network partners:

- Users can define the number of records displayed per page by clicking the
 Records per page on the bottom right side of the list.
- 2. If the result list exceeds the number of records defined per page, users will be able to navigate using the at the bottom of the list.
- 3. To filter all results, users can type any portion of the text they'd like to search into the at the top of the list. To reset this, simply clear the contents of the field and click the magnifying glass icon.

Note: Search is not case sensitive. All results will be filtered, not just the items displayed on screen. Multiple columns can be searched on at the same time. Populating more than one search field will return results that match ALL criteria only.

Test Connection to Network Partners

To test the connection of a specific network partner:

- 1. Find the Partner you wish to test in the list and click the button to the right.
- If the connection test was successful a green bar message will appear at the top of the Successfully contacted the partner, the response was "Current status of node is Ready"

result list.

3. If the connection test fails, a red bar message will appear at the top of the result list with a detailed explanation for the failure.

Could not contact the partner: That type of endpoint does not support test pings: REST

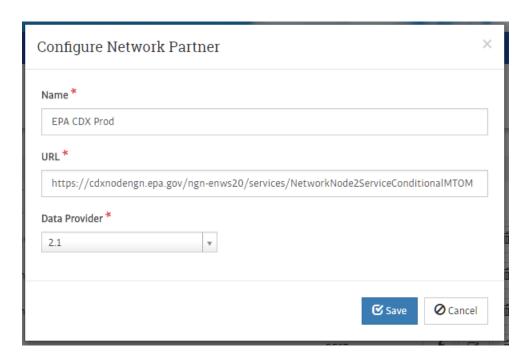
Adding a Network Partner

To add a new Network Partner, perform the following steps:

- 1. Click the Add a New Network Partner button on the right-hand side of the page.
- 2. Enter a name for the Network Partner in the **Name** field. This name will be displayed as an available Network Partner in dropdown menus throughout the system.
- 3. Enter the URL string for the Network Partner's Exchange Network Node in the **URL** field. This is the URL string value that will be utilized when this Network Partner is selected.

Note: EPA Endpoint URLs for various data flows can be found at http://www.exchangenetwork.net/epa-Node-endpoints/

- 4. Choose a **Data Provider** from the dropdown to select the appropriate version (1.1, 2.1, REST)
- 5. Click the **Save** button to add the network partner to the database and return to the list of available partners.
- 6. Click the **Cancel** button to discard any work and return to the list of existing partners.



Modifying a Network Partner

To modify a Network Partner, perform the following steps:

- 1. Click the button next to the Network Partner in question.
- 2. Adjust the Name, URL, and Data Provider fields as required.
- 3. Click the **Save** button to save any modifications and return to the list of existing partners.
- 4. Click the **Cancel** button to discard any work and return to the list of existing partners.

Deleting a Network Partner

To delete a Network Partner, perform the following steps:

- 1. Click the button next to the Network Partner in question.
- 2. Confirm the deletion process when prompted. You will be returned to the list of existing partners.
- 3. Click the **No** button to discard any work and return to the list of existing partners.

Security

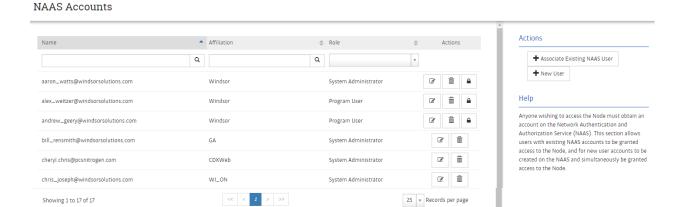
Search for and Edit.

The **Security** tab allows you to control and manage those able to access your Node and to define what data services they are able to use by establishing security policies for accounts.

Anyone wishing to access OpenNode2 must obtain a NAAS account. It is extremely important to note that the Node Admin automatically synchronizes user accounts and policies with the NAAS. When an account that does not already exist in NAAS is added to the Node Admin, it will be created in NAAS. If the account does already exist in NAAS, then no change is made at NAAS (the password is ignored). In either case, the account will be created in the OpenNode2 database upon saving.

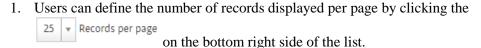
Account policies made in the Node Admin are only stored in the OpenNode2 database. NAAS policies are not modified when a policy is updated in the Node Admin.

When the **Security** tab is selected, the application will initially display a list of current NAAS Accounts.



Search and Filter list of NAAS Accounts

To search for and filter the list of NAAS Accounts:



2.	If the result list exceeds the number of records defined per page, users will be able to						
		<<	<	1	>	>>	
	navigate using the						at the bottom of the list.

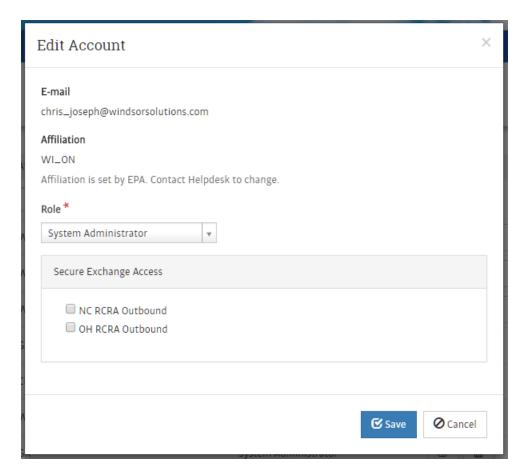
3.	To filter all results, users can type any portion of the text they'd like to search into the						
	C	2	at the top of the list. To reset this, simply clear the				
	contents of the field and click the magnifying glass icon.						

Note: Search is not case sensitive. All results will be filtered, not just the items displayed on screen. Multiple columns can be searched on at the same time. Populating more than one search field will return results that match ALL criteria only.

Modifying a NAAS Account

Many of the account details are managed by the EPA, such as affiliation and email address, these items cannot be modified from within OpenNode2. To modify Role and to enable/disable access to Secure Exchanges, perform the following steps:

- 1. Click the button next to the account in question.
- 2. Select the correct role from the **Role** dropdown list. Options in this dropdown include Program User and System Administrator. Program User role will provide the account with permissions to exchange data with the Node and to log in to the Node Admin application. Within the Node Admin application, the user will only be able to use the Home, Schedule and Activity tabs (the Configuration, Security, and Exchange tabs will be visible but no changes may be made to information displayed in these tabs). System Administrator role will provide the account with the permissions to exchange data with the Node and to log in to the Node Admin application. Within the Node Admin application, the user will have permissions to perform all application functions.
- 3. Check/Uncheck the boxes to allow access to Secure Exchanges. Exchange security configuration will determine which items are displayed in this list. See the Exchange section of this document for details on how to secure an exchange.
- 4. Click the **Save** button to save any modifications and return to the list of existing accounts.
- 5. Click the **Cancel** button to discard any work and return to the list of existing accounts.



Deleting a NAAS Account

To delete an account from the Node, perform the following steps:

- 1. Click the button next to the account name in question.
- 2. Confirm the deletion process when prompted. You will be returned to the list of existing accounts.
- 3. Click the **No** button to discard any work and return to the list of existing accounts.

Change a NAAS Account Password

Only accounts affiliated to the local Node will have the ability to change passwords. If the user whose password requires changing is affiliated to a different Node, the password will have to be changed on that Node.

- 1. Click the button next to the account name in question.
- 2. Enter the new password in the **New Password** and **Confirm** fields.

Note: The password must have a minimum of 8 characters, with an uppercase and lowercase letter.

3. Click the **Save** button to save the changes.

4. Click the **Cancel** button to discard any work and return to the list of existing accounts.

Associate Existing NAAS User

Anyone wishing to access the Node must obtain an account on the Network Authentication and Authorization Service (NAAS). If an existing account is to be associated to this Node follow the steps below. If the account does not already exist in NAAS, please see the section entitled **Add New User.**

- 1. Click the Associate Existing NAAS User button on the right of the screen.
- 2. Select the email from the **Account** dropdown list. Please note that this is a type-ahead field, allowing the user to begin typing the email address to filter the choices in the dropdown. If the email address cannot be found please see **Add New User** section of this document.
- 3. Select the role from the **Role** dropdown. Options in this dropdown include Program User and System Administrator. Program User role will provide the account with permissions to exchange data with the Node and to log in to the Node Admin application. Within the Node Admin application, the user will only be able to use the Home, Schedule and Activity tabs (the Configuration, Security, and Exchange tabs will be visible but no changes may be made to information displayed in these tabs). System Administrator role will provide the account with the permissions to exchange data with the Node and to log in to the Node Admin application. Within the Node Admin application, the user will have permissions to perform all application functions.
- 4. If any of the Exchanges on the Node have been configured as Secure, they will be displayed with Check Box options. To provide access to a secure exchange, check the appropriate box.
- 5. Click the **Save** button to save the changes and return to the list.
- 6. Click the **Cancel** button to discard any work and return to the list of existing accounts.

Add New User

Before adding a new user, it is recommended that users first verify that the user is not already an existing NAAS User. To do this, please see the section of this document called **Associate Existing NAAS User**. Once confirmed that the user is new, please follow the steps outlined below.

- 1. Click the hew User button on the right of the screen.
- 2. Enter the email address for the new user in the **E-mail** field.
- 3. Enter a new password in the **New Password** and **Confirm** fields.

 Note: The password must have a minimum of 8 characters, with an uppercase and lowercase letter.
- 4. Click the **Save** button to save the changes and return to the list.
- 5. Click the **Cancel** button to discard any work and return to the list of existing accounts.

Exchange

About Exchange and Data Services

The **Exchange** tab allows you to create, modify, and delete the data exchanges and associated data services that your Node supports.

Data exchanges are characterized by a specific scope of data being shared by Exchange Network partners, and provides a set of related functions for a given subject area that typically relates to a specific environmental program area or EPA data system. Each data exchange provides various functions to process inbound or outbound data relating to the specific scope of data. These functions are called data services and these are the actual workers of the data exchange, performing automated operations to process data. Data services typically fall into three categories:

On Request Data Providers Services that expose data to the outside world. These services are

intended to be implemented as Exchange Network primitive *Query* or *Solicit* actions and can be invoked at any time by external,

authorized users.

Scheduled Data Providers Services that are intended to provide a set of data to another

Exchange Network partner at regular intervals. While implemented identically to On Request Data Providers described above, they are crafted with the intent to be tied to a scheduled task within the Node. See the **Schedules** section of this document for more information.

Submission Processors Services that act upon data that has been submitted to OpenNode2. A

submission processor can do any number of things, including parsing data to a database or file system or relaying the submission to other

processes.

About Plugins

Data services are provided to OpenNode2 as "plugins." A plugin is a compiled code component which must adhere to a specific interface or set of capabilities expected by OpenNode2. A plugin may implement one or many of the data services for a given data exchange.

Exchanges with a Plugin

Each plugin contains one or more services. A Node administrator can expose a service as a *Query* or *Solicit*, or a service may be designed to act upon a submitted file, such as parsing the submission content to a database.

Plugin services lie dormant until they are explicitly added and configured using the Exchange interface. When configuring a service, the service's configurable parameters will display on the Edit Exchange Service interface, allowing an administrator to customize the variables (such as database connection strings) used by the service when it is executed.

Exchanges without a Plugin

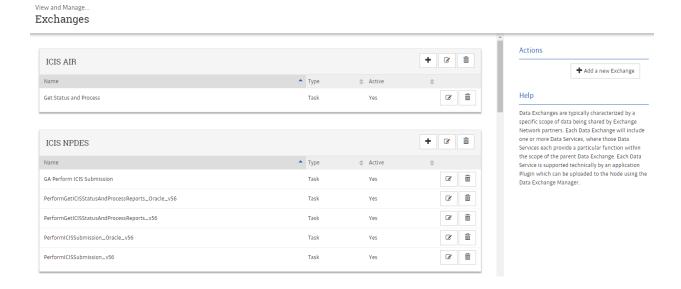
Data exchanges may utilize the functionality provided by a plugin, but it is not required. If a Node administrator simply wishes to enable the Node to receive submissions for a new exchange, no plugin is required. Upon adding the exchange using the Add a New Exchange interface, the Node will immediately be capable of receiving and storing submissions made to that exchange. Using the notifications feature, it is also possible to send an email alert to one or more people whenever a file is received.

The Node will receive and store files submitted to the exchange, but they will never undergo any automated processing by the Node, such as parsing to a database or saving the file to a network directory. For that, a plugin must be developed and installed to perform the desired processing.

View and Manage Exchanges

This section provides the ability to add, modify, and delete exchanges and data services. You must first define a data exchange before you are able to create a data service or upload plugins for that data exchange.

When selected, the **Exchange** section will initially display a list of the existing data exchanges already defined to OpenNode2. The data services that have been configured for each data exchange appear indented beneath each data exchange, as illustrated below.



Adding an Exchange

To add a data exchange to OpenNode2, perform the following steps:

1. Click the **+** Add a new Exchange button on the right hand side of the window.

Enter the **Name** representing the name of the exchange. This is typically the acronym that corresponds to the flow. All Submit operations to this exchange received

from partners must use the name specified in this box if the submission is to be accepted by OpenNode2.

Note: For flows that submit data to EPA, it is often important that the exact flow name as prescribed in the published Flow Configuration Document (FCD) is entered, including correct capitalization. Mistyped flow names will cause an E_InvalidDataflow error to be returned from CDX when you attempt to submit data to EPA.

- 2. Enter the **Target Exchange** name. When flowing data to a Production endpoint, this field must match the Name field exactly. Leave this field blank unless defined in your plugin implementation directions.
- 3. Optionally you can populate the **Description** field with a description of this exchange.
- 4. In the **Contact** field, select from the dropdown the email address for the main contact person for the exchange.
- 5. In the **URL** field, enter the URL where additional information on the exchange can be found. For example, http://www.exchangenetwork.net/exchanges/.
- 6. Check the **Protected** checkbox if this exchange will require specific user account access policies to be established to enable the data services to be invoked for this exchange.
- 7. Under the Upload a Plugin label, click the location of the compressed (zipped) file containing the code component for the plugin. Note: the details of the plugin will not be visible until you save your changes and go back into the window.
- 8. Click the **Save** button to save the exchange to the database and return to the list of data exchanges.
- 9. Click the **Cancel** button to discard any work and return to the list of existing exchanges and data services.

Modifying an Exchange

To view or modify an exchange, perform the following steps:

- 1. Click the button next to the exchange name in question.
- 2. Modify the fields as required. Users can also upload a new or altered plugin file at this time.
- 3. Click the **Save** button to save any modifications and return to the list of exchanges.
- 4. Click the **Cancel** button to discard any work and return to the list of exchanges.

Deleting an Exchange

To delete an exchange, perform the following steps:

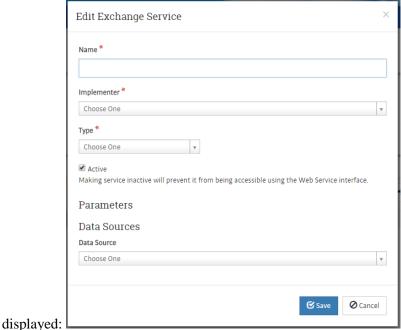
- 1. Click the button next to the exchange in question.
- 2. Confirm the deletion when prompted. You will be returned to the list of existing exchanges. Note that any schedules associated with the exchange will also be deleted.

3. Click the **No** button to discard any work and return to the list of existing exchanges.

Adding an Exchange Service

To add a data service to OpenNode2, perform the following steps:

1. Click the button located to the right of the exchange name. The following screen is



2. Type a name for the data service in the **Name** field.

Note: Depending upon the plugin that implements the data service, this name may need to correspond to one of the service names exposed by the relevant plugin for the exchange. Please consult the associated Plugin Guide for detailed instructions.

3. Select the desired **Implementer** from the dropdown box.

Note: The list of available implementers for the exchange will be determined by the Node Admin based on the plugins that have been uploaded for that exchange.

4. Select the type of service being configured from the **Type** dropdown. This determines how the data service may be invoked using the Exchange Network primitive commands.

Note: The list of available types for the data service will be determined by the Node Admin based on information in the plugin, once the Implementer has been selected. The list will only display the types of action supported by the plugin.

- 5. Check the **Active** checkbox if the data service is to be made available to schedules established using the Node Admin or to external partners through the OpenNode2 endpoints.
- 6. If the data service requires one or more **Parameters**, each will be listed, once the **Implementer** has been selected. Enter the value to be used for each parameter. Check

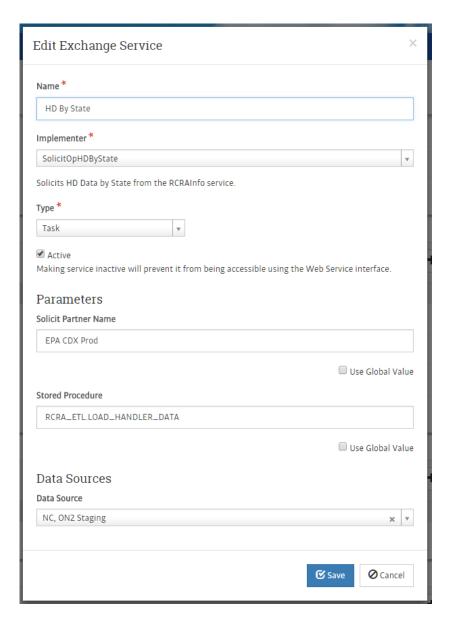
the **Use Global Value** checkbox if you wish to use a value established in the Global Arguments section of the Node Admin interface.

Note: Once the Implementer has been selected the list of required arguments for the data service will be automatically loaded by Node Admin based on information in the plugin.

7. If the data service requires one or more **Data Sources**, each will be listed, once the **Implementer** has been selected. Choose a data source from the dropdown list of available data sources populated from the list of Data Sources defined on the **Configuration** tab.

Note: The list of required data sources for the data service will be determined by the Node Admin based on information in the plugin, once the Implementer has been selected.

- 8. Click the **Save** button to save the data service to the database and return to the list of exchanges and data services.
- 9. Click the **Cancel** button to discard any work and return to the list of existing exchanges and data services.



Modifying an Exchange Service

To modify a data service, perform the following steps:

- 1. Click the button next to the data service name in question.
- 2. Modify the Name, Implementer, Type, Active checkbox, Parameters, and Data Sources values as required.
- 3. Click the **Save** button to save any modifications and return to the list of exchanges.
- 4. Click the Cancel button to discard any work and return to the list of exchanges

Deleting an Exchange Service

To delete a data service, perform the following steps:

- 1. Click the button next to the data service name in question.
- 2. Confirm the deletion when prompted. You will be returned to the list of existing exchanges. Note that any schedules associated with the data service will also be deleted.
- 3. Click the **No** button to discard any work and return to the list of existing user accounts.

NOTE

The process of configuring data services for a given exchange will be very specific to the properties of the plugin that implements those services. The configuration information that is specified for a specific data service must correspond precisely to that expected by the plugin. The configuration information will vary from plugin to plugin and be driven by the specific processing requirements for that code component.

As a consequence, it is important to note that the guidance provided in this document should be used in conjunction with separate implementation documentation provided by the developer of the relevant plugin.

Schedules

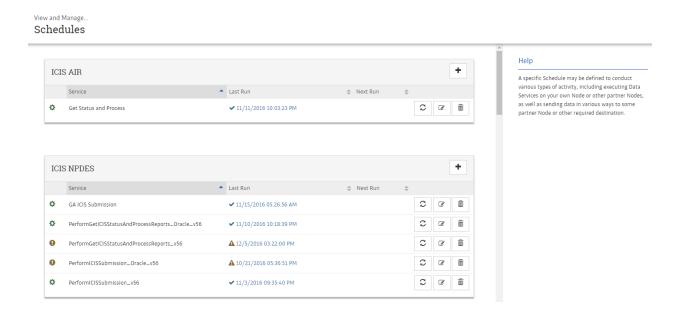
About Schedules

The **Schedule** tab allows you to create, modify, and delete certain types of regularly occurring processes that the Node itself should initiate. These differ from the external requests that require a response from the Node, and provide the core functionality supported by the Node.

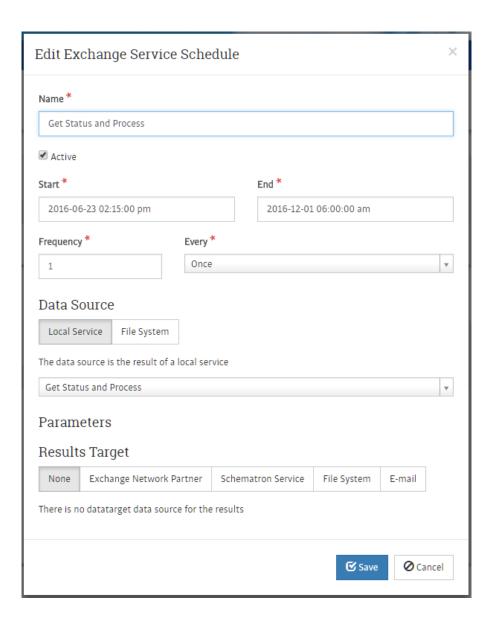
A specific Schedule may be defined to conduct various types of activity, including executing Data Services on your own Node or other partner Nodes, as well as sending data in various ways to some partner Node or other required destination. Schedules may be defined to execute on a regular basis, for example, by hour, day, or month and for a defined period of time. You may also request that a Schedule be executed immediately. The schedule job execution history can be reviewed and jobs can be manually started, as well as scheduled.

Each Schedule is designed to perform some specific operation on a set of data and, as such, each will have a specific data source from which to obtain the desired data and a process to execute against the resulting data set.

For each **Exchange** that is created, OpenNode2 will generate a Schedule Block. When the **Schedule** tab is selected, the application will display the **View and Manage Schedules** section. The **Manage Schedules** section will display a list of existing schedules already configured and stored in the OpenNode2 database as illustrated below.



When adding or modifying schedules, the following page is displayed.



Manage Schedules

Adding a Schedule

To add a schedule to OpenNode2, perform the following steps:

- 1. Click the button to the right corner of the Exchange name at the top of each block.
- 2. Enter a name for the schedule in the **Name** field.
- 3. The **Active** checkbox will be checked by default for a new schedule.
- 4. Enter the date and time to activate the schedule in the **Start** field. This can by manually entered or selected using the date/time picker tool. To set a specific time for a schedule start or end, click on the clock icon at the bottom of the date picker.
- 5. Enter the date and time to deactivate the schedule in the **End** field.
- 6. Use the numeric picker to set the frequency at which the schedule will be activated from the **Frequency** field.
- 7. Select the unit of measure for frequency in the **Every** dropdown. Available options include:

Never Not activated to run at any time.

Once One time activation based on the start date and the time that the schedule was saved.

Minutes Activation every minute based on the time that the schedule was saved.

Hours Activation every hour based on the time that the schedule was saved.

Days Activation every day based on the time that the schedule was saved.

Weekdays Activation every weekday based on the time that the schedule was saved.

Weeks Activation every day of the week based on the time that the schedule was saved.

Month Activation every month based on the time that the schedule was saved.

8. Select the desired **Data Source** radio button.

The **Data Source** enables you to specify an operation that, when completed, will make available a set of data for the schedule to act upon in some manner. Two data source types are available, each with a set of custom settings that will change dynamically based on the radio button selected. Please see below for details on configuring the Data Source for the Schedule.

9. Set the desired values for additional input arguments, if required.

If the Data Source is set to a local service execution, partner service *Solicit* or partner service *Query*, parameters can be provided. The parameters are provided



to the relevant service request. Please see below for details on configuring the Data Source for the Schedule.

10. Select the desired **Results Target** radio button.

The **Results Target** enables you to specify the operation that should be taken once the required data set has been obtained. Five result processing types are available, each with a set of custom settings that will change dynamically based on the radio button selected. Please see below for details on configuring the Result Process for the Schedule.

- 11. Click the **Save** button to save the schedule to the database and return to the list of existing Schedules.
- 12. Click the **Cancel** button to discard any work and return to the list of existing Schedules.

Modifying a Schedule

To modify an existing schedule, perform the following steps:

- 1. Click the button next to the schedule name in question.
- 2. Modify the Schedule configuration values as required.
- 3. Click the **Save** button to save any modifications and return to the list of Schedules.
- 4. Click the **Cancel** button to discard any work and return to the list of Schedules.

Deleting a Schedule

To delete a schedule, perform the following steps:

- 1. Click the button next to the schedule name in question.
- 2. Confirm the deletion when prompted. You will be returned to the list of existing Schedules.
- 3. Click the **No** button to discard any work and return to the list of existing Schedules.

Manually Run a Schedule

To kick off a schedule manually, perform the following steps:

1. Click the button next to the schedule name in question.

Data Source Configuration

The following Data Source options will be available for a Schedule.

Local Service

Indicates that the Schedule should obtain data by executing one of the data services defined for the selected exchange.

The following additional steps should be performed:

- Select a data source to be executed from the dropdown list. The list of available data services will be filtered based on the selected **Exchange**.
- Enter the parameters to be passed to the selected data service. The argument requirements will vary depending on Exchange and Service selected.



File System

Indicates that the Schedule should retrieve the desired data from a specific network path location.



The following additional steps should be performed:

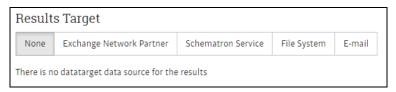
• Enter a fully qualified path to the location of the desired file.

Results Target Configuration

The following **Results Target** options will be available for a Schedule.

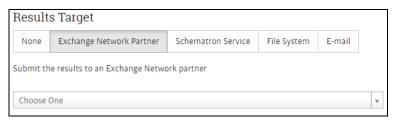
None

Indicates that the Schedule should take no specific action upon completion of the Data Source extraction.



Exchange Network Partner

Indicates that the Schedule should submit the data obtained from the Data Source to a partner Node.



The following additional steps should be performed:

Select a Network Partner to whom the resulting data file should be submitted.
 The dropdown list of Network Partners will be that defined on the Configuration tab.

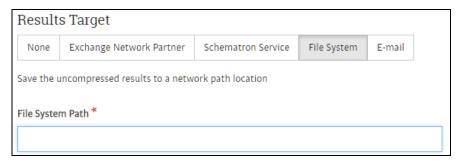
Schematron Service

The result data will be submitted to the EPA Schematron Web service-based XML document validation utility.



File System

The result data will be saved to a network location.

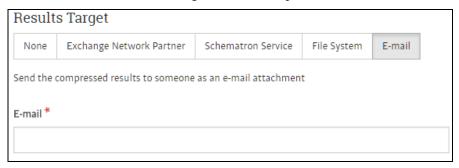


The following additional steps should be performed:

• Enter a fully qualified path to the desired destination of the resulting file.

Email

The result data will be sent to a given email recipient.

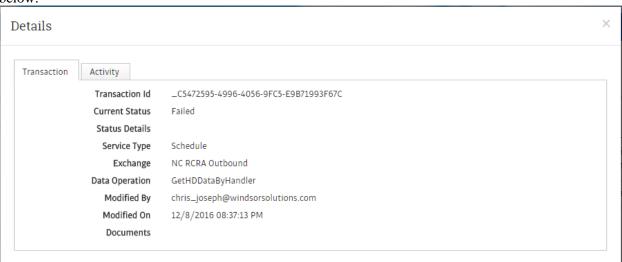


The following additional steps should be performed:

• Enter a valid email address to which the resulting file should be sent.

Viewing the Last Run Log for a Schedule

Click the **Last Run Date** link next to the service name for the desired Schedule from the main **Schedules** screen to view a log of events associated with the last execution of that Schedule. The processing results will be displayed as illustrated below.





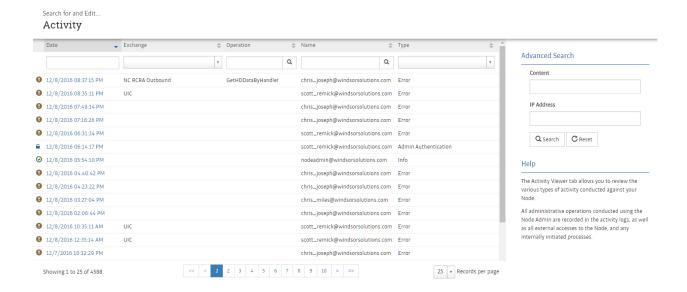
Activity

About Activity Logging

The **Activity** tab allows you to review the various types of activity conducted against your Node. You may specify a variety of criteria to search for specific operations or events of interest. The activities are logged in a persistent state in the supporting OpenNode2 metadata database

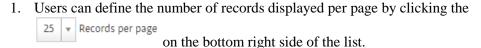
All administrative operations conducted using the Node Admin are recorded in the activity logs, as well as all external accesses to the Node, and any internally initiated processes.

When the Activity tab is selected, the application will initially display a list of the most recent activities on the log.

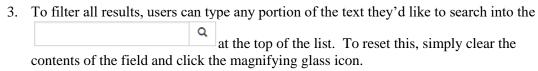


Search and Filter list of recent Activity

To search for and filter the list of Activities:







Note: Search is not case sensitive. All results will be filtered, not just the items displayed on screen. Multiple columns can be searched on at the same time. Populating more than one search field will return results that match ALL criteria only.

Advanced Activity Search

Using the Content and IP Address search boxes on the right of the screen allows the user to search for and return a list of activities that match the criteria selected.

- 1. Enter any text or numeric data in the **Content** field and click the will return any results that match the content entered. This is a "Google-style" search, meaning as long as the data entered is matched in any portion of the activity detail record, it will appear in the search results.
- 2. Enter a specific **IP Address** to search for and click the exact match style search, meaning the data entered has to match an **IP** Address exactly to return results.
- 3. To clear the search criteria and result list, click the C Reset button.

Note: Search is not case sensitive. All results will be filtered, not just the items displayed on screen. Multiple columns can be searched on at the same time. Populating more than one search field will return results that match ALL criteria only.

Viewing Activity Detail

To view the detailed information for a specific record in the activity log, perform the following steps:

- 1. Click the date hyperlink 12/8/2016 08:37:15 PM in the activity log. The details of the log item will be displayed immediately below the selected activity log entry as illustrated below.
- 2. Click the button in the top right corner to hide the details of the log item.



Entry Type Icons

Each entry in the activity log is classified as a specific type. Each entry is also displayed with a color coded flag icon for easy reference. The meaning of each of the entry types is as follows:

₩

These log entries describe general activities conducted against the OpenNode2. There are two types of activity classified in this way:

- a. Activities conducted within the Node Admin application, including adding, modifying, or deleting a record such as a global argument, a user account, or a schedule. The log entry will display the details of the change that was made.
- b. Activities conducted against one of the OpenNode2 endpoints, including invocation of the *Query*, *Solicit*, *GetStatus*, *Download*, and *Submit* primitive methods. The relevant primitive method will be displayed in brackets as part of the entry type.

These log entries indicate authentication attempts to the Node Admin application itself.

These log entries indicate authentication attempts to one of the OpenNode2 endpoints.

These log entries describe background processes that were executed successfully by the Node Admin in response to asynchronous processing requests to the OpenNode2. These will include processing of received *Solicit* requests, processing of received *Submit* requests, and processing of schedules defined within the Node Admin. The relevant processing type will be displayed in brackets as part of the entry type.

These log entries describe any type of error condition encountered by the OpenNode2. There are three types of activity classified in this way:

- a. Authentication failures to the Node Admin application or one of the OpenNode2 endpoints.
- b. Failures encountered in response to requests to the OpenNode2 endpoints, for example, errors during processing of a Query or Solicit request.
- c. Failures encountered by the background processes executed by the Node Admin in response to asynchronous processing requests to the OpenNode2.



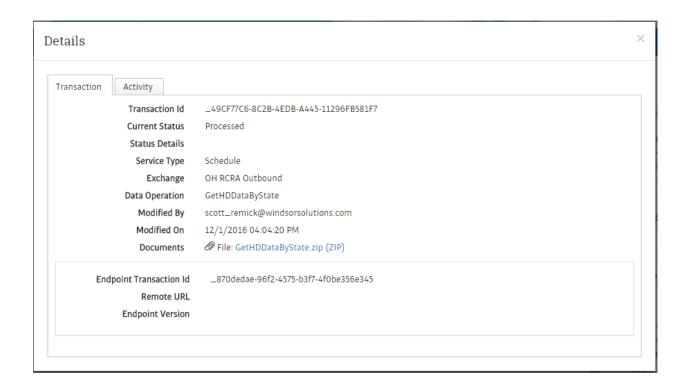


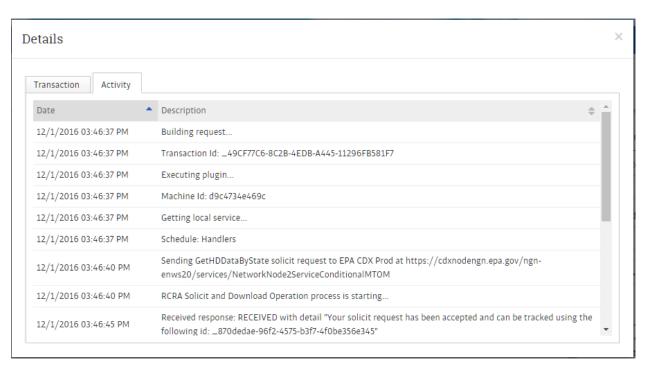


Viewing Transaction Detail

To view the transaction detail for a specific record in the activity log, perform the following steps:

1. Click the date hyperlink 12/8/2016 08:37:15 PM in the activity log in question. The transaction details page will be displayed as illustrated below.





A transaction may be associated with one or more documents. These documents can be downloaded by clicking on the hyperlink for the desired document from the list presented at the bottom of the page.

Profile

About Your Profile

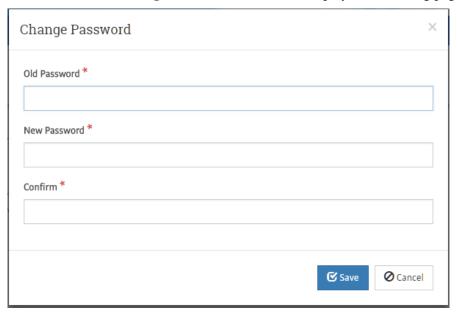
The Profile Tab allows you to review and modify information about your account, including password changes and management of notifications you wish to receive related to the activities of the Node.

When selected, the Account Profile section will display a brief summary of your account details.

Change Password

This button allows you to change the password for your account. Note that your password will be updated on the NAAS and will affect all uses of your account.

When selected, the **Change Password** section will display the following page.



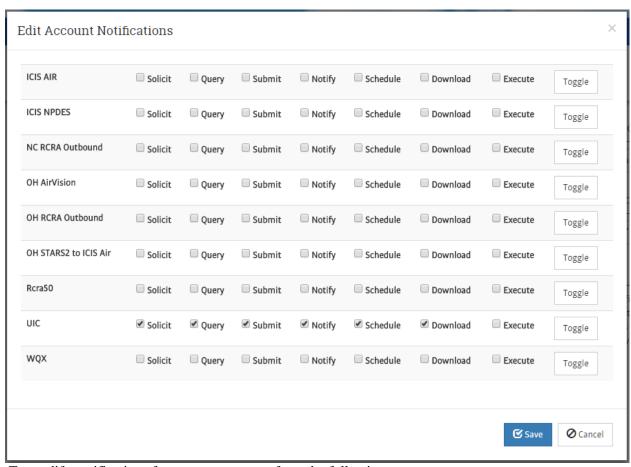
To change your password, perform the following steps:

- 1. Enter your current password in the **Old Password** field.
- 2. Enter your new password in the **New Password** field.
- 3. Re-enter your new password in the **Confirm** field.
- 4. Click the **Save** button to save the changed password to the OpenNode2 metadata database and to NAAS, and return to the Account Profile section.
- 5. Click the Cancel button to discard any changes and return to the Account Profile section.

Edit Notifications

This section allows you to view and modify the notifications that will be sent to your user account email address when certain Data Services are executed by the Node. You may request that you are notified in the event of a particular data service being queried, solicited, downloaded, submitted, executed (for schedules), or notified.

When selected, the Edit Notifications section will display a list of the available data exchanges defined to OpenNode2 together with a series of checkboxes that can be used to indicate that notifications should be sent to you for the relevant Exchange Network primitive operations conducted against each exchange.



To modify notifications for your account, perform the following steps:

1. Check the checkboxes next to each notification event desired. The five notifications options available for each exchange include:

Solicit The user will be notified if the *Solicit* primitive is invoked for the selected exchange.

Query The user will be notified if the *Query* primitive is invoked for the selected exchange

Submit The user will be notified if the *Submit* primitive is invoked for the selected exchange.

Notify The user will be notified if the *Notify* primitive is invoked for the selected

exchange.

Schedule The user will be notified if a schedule is executed for the selected exchange.

Execute The user will be notified if the *Execute* primitive is invoked for the selected

exchange.

Download The user will be notified if the *Download* primitive is invoked for the selected

exchange.

2. Click the **Toggle** hyperlink to either select or deselect the notification checkboxes for the relevant exchange. Each checkbox will switch from checked to unchecked or vice versa depending on its current state.

- 3. Click **Save** to save the changes to the notification settings and return to the Account Profile section.
- 4. Click the **Cancel** button to discard any changes and return to the Account Profile section.