

National Emissions Inventory

Exchange Network Overview and NEI
XML Submission Training

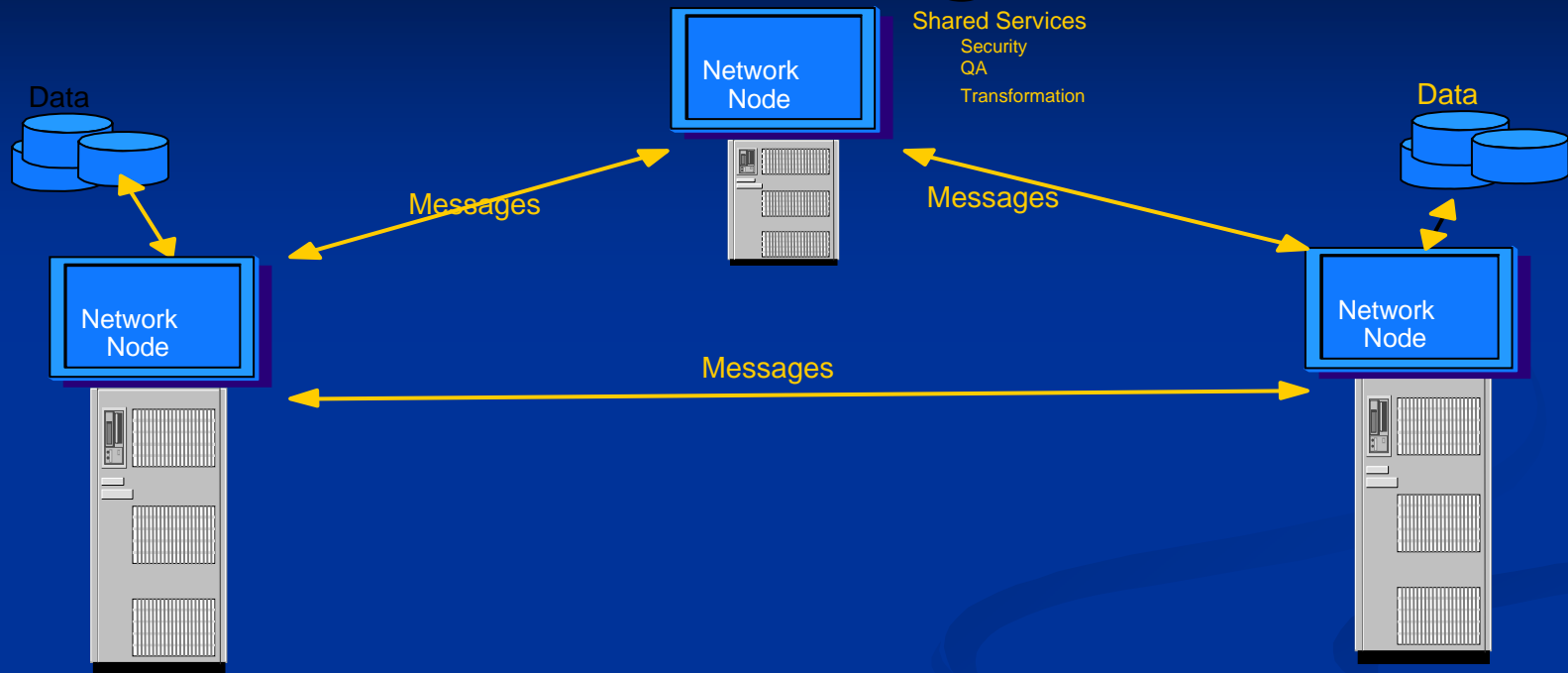
Topics

- Overview
 - Exchange Network
 - Nodes
 - Web Services

- XML and Schemas
- Data Exchanges
- Service Oriented Architecture
- Establishing Nodes
- Resources
- Quality Assurance Services
- Data Mapping and Transformation
- How do you set up an NEI XML submission?
- What happens to your data when you send it to CDX?
- What are submitter responsibilities?
- Node Client Demonstration

- Questions and Answers?

What is the Exchange Network?



An Internet and standards-based method for exchanging environmental information between partners

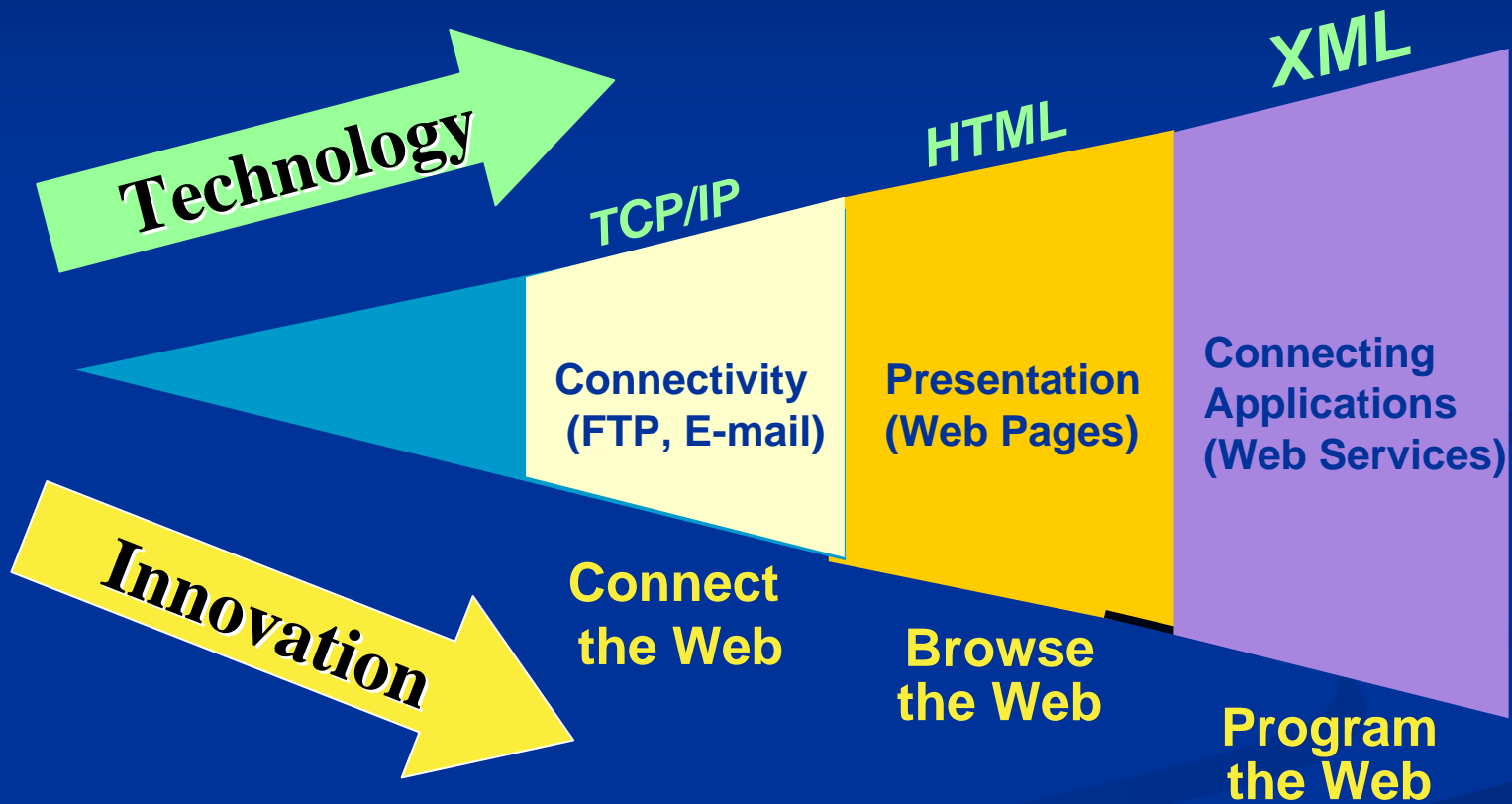
Purpose of Network

- Support automated exchange of data
- Enable timely and accurate exchange
- Reduce reporting burden
- Improve data quality

What is a Network Node ?

“A simple environmental information Web service that initiates requests for information, processes authorized queries, and sends/receives the requested information in a standard format.”

Underlying Technologies



Web Service Definition

■ Definition

- Web services are information sources/application components whose functionality and interfaces are exposed to consumers using standard messaging protocols including XML, SOAP, WSDL, and HTTP

■ Definition by counter-example

- In contrast to Web sites, browser-based interactions or platform-dependent technologies, Web services are services offered computer-to-computer, via defined formats and protocols, in a platform-independent and language-neutral manner

Simple Object Access Protocol (SOAP)

```
<?xml version="1.0" encoding="UTF-8" ?>
- <soapenv:Envelope xmlns:soapenv="http://schemas.xmlsoap.org/soap/envelope/"
  xmlns:xsd="http://www.w3.org/2001/XMLSchema"
  xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance">
- <soapenv:Body>
  - <ns1:NodePing soapenv:encodingStyle="http://schemas.xmlsoap.org/soap/encoding/"
    xmlns:ns1="http://www.ExchangeNetwork.net/schema/v1.0/node.xsd">
    <Hello xsi:type="xsd:string">Hello</Hello>
  </ns1:NodePing>
</soapenv:Body>
</soapenv:Envelope>
```

```
<?xml version="1.0" encoding="UTF-8" ?>
- <soapenv:Envelope xmlns:soapenv="http://schemas.xmlsoap.org/soap/envelope/"
  xmlns:xsd="http://www.w3.org/2001/XMLSchema"
  xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance">
- <soapenv:Body>
  - <ns1:NodePingResponse
    soapenv:encodingStyle="http://schemas.xmlsoap.org/soap/encoding/"
    xmlns:ns1="http://www.ExchangeNetwork.net/schema/v1.0/node.xsd">
    <return xsi:type="xsd:string">Ready</return>
  </ns1:NodePingResponse>
</soapenv:Body>
</soapenv:Envelope>
```

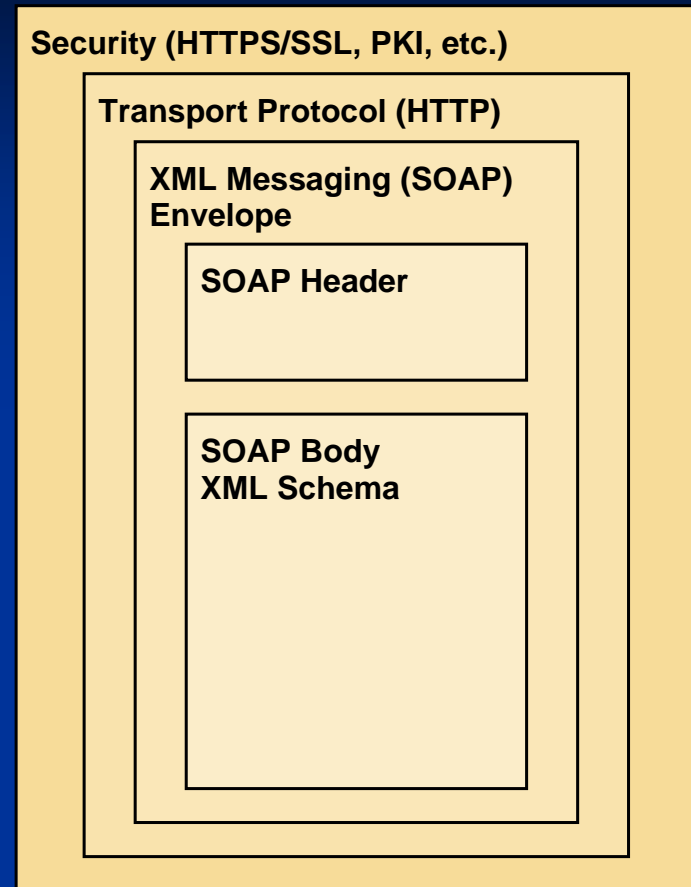

Web Services Description Language (WSDL)

- XML document that describes structure of SOAP message
 - Name
 - Input Parameters
 - Return type

Web Services Message Structure

■ Message Structure

- Transport - HTTP
- Security – HTTPS/SSL
- XML Message - SOAP
- Message Payload
 - XML
 - Attachments (DIME, SWA)
- Types of XML Messages

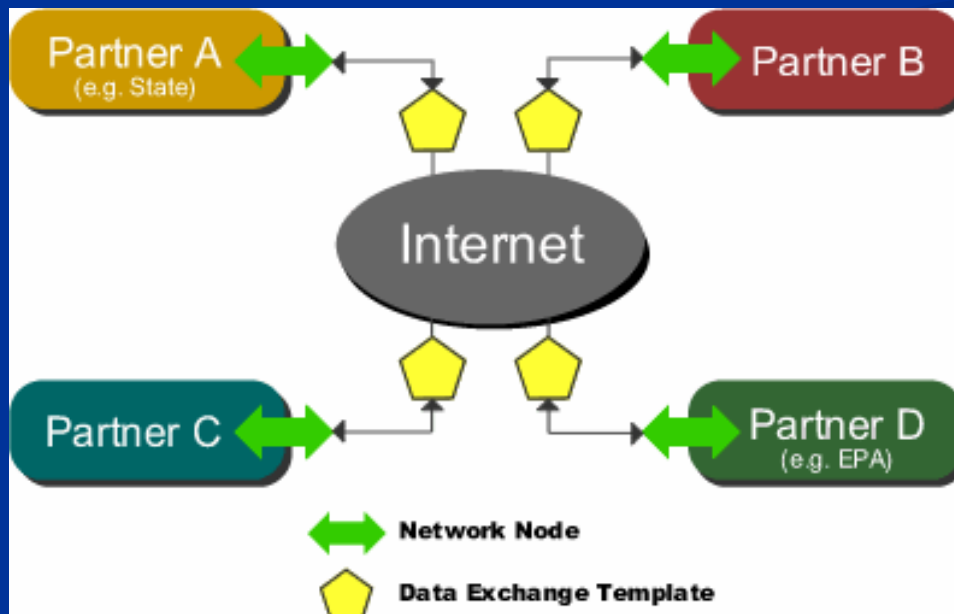


Why use Web Services?

- Timeliness and accuracy of data
 - Automation
 - Data Publishing allows for data quality improvements
- Data Integration
 - Internal and external data sharing
 - Platform, device and language independence
 - Self describing and easily discoverable
- Cost Reduction
 - Consistent and reliable data exchanges between partners
 - Leveraging sharable web services

A Node

- Is a Server accessible on the Web
- Complies with the protocols to ensure secure exchanges
- Sends and receives standards based messages
- Returns requested information as XML
- Each partner has only one Node



Flat Files for Exchange

- A simple way to share data
- Cannot be validated without custom software
- Very hard to read
- Cannot accommodate complex data in one file
- Simple but messy

XML Schema

- Describes the format of data being exchanged
- Incorporates data standards
- Reuses XML schema components

XML Terms

- XML: eXtensible Markup Language
- XML Schema: defines the Structure and the Rules of data to be shared
- XML Document: a file that contains the data (and references the Schema)

Create an XML document, open it with Internet Explorer and it validates itself against the schema before it displays.

This process is called parsing, Explorer has a built in parser.

Data:

Just the facts

DATA STORE: TSDF

ACME CORP

3121, RUMINGTON AVE, DUKE, DE

DEW123412312

F001 D002 P032

4343, DEXTER AVE, DUKE, DE

BOCACIOUS ENTERPRISES

DEW234317657

F001 D002 P032

1222, BRUSER AVE, DUKE, DE

CORNY CANDY

DEW145323423

F001 D002 P032

9898, LEXOR AVE, DUKE, DE

FRACTIOUS CORP

DEW123324234

F001 D002 P032

2222, TENBY AVE, DUKE, DE

FRIVIOUS INC

DEW234234234

F001 D002 P032

XML Schema:

A data entry form and instructions

LEGAL TREATMENT FACILITIESFORM	
RCRA ID:	<input type="text"/>
FACILITY NAME:	<input type="text"/>
FACILITY ADDRESS:	<input type="text"/>
PERMITTED WASTE CODES:	<input type="text"/> <input type="text"/> <input type="text"/>
CANNOT EXCEED 12 CHARACTERS	
RCRA ID:	<input type="text"/>
FACILITY NAME:	<input type="text"/>
FACILITY ADDRESS:	<input type="text"/>
PERMITTED WASTE CODES:	<input type="text"/> <input type="text"/> <input type="text"/>
RCRA ID:	<input type="text"/>
FACILITY NAME:	<input type="text"/>
FACILITY ADDRESS:	<input type="text"/>
PERMITTED WASTE CODES:	<input type="text"/> <input type="text"/> <input type="text"/>
CODES MUST START WITH D, F, P, K OR X	
RCRA ID:	<input type="text"/>
FACILITY NAME:	<input type="text"/>
FACILITY ADDRESS:	<input type="text"/>
PERMITTED WASTE CODES:	<input type="text"/> <input type="text"/> <input type="text"/>
RCRA ID:	<input type="text"/>
FACILITY NAME:	<input type="text"/>
FACILITY ADDRESS:	<input type="text"/>
PERMITTED WASTE CODES:	<input type="text"/> <input type="text"/> <input type="text"/>
AT LEAST ONE CODE REQUIRED, NO LIMIT OF HOW MANY	

XML Document:

A filled out form

LEGAL TREATMENT FACILITIES

RCRA ID: DEW123412312
FACILITY NAME: ACME CORP
FACILITY ADDRESS: 3121, RUMINGTON AVE, DUKE, DE
PERMITTED WASTE CODES: F010 D002 P032

RCRA ID: DEW1234317657
FACILITY NAME: BOCACIOUS ENTERPRISES
FACILITY ADDRESS: 4343, DEXTER AVE, DUKE, DE
PERMITTED WASTE CODES: F001 D002 P032

RCRA ID: DEW145323423
FACILITY NAME: CORNY CANDY
FACILITY ADDRESS: 1222, BRUSER AVE, DUKE, DE
PERMITTED WASTE CODES: F001 D002 P032

RCRA ID: DEW123324234
FACILITY NAME: FRACTIOUS CORP
FACILITY ADDRESS: 9898, LEXOR AVE, DUKE, DE
PERMITTED WASTE CODES: F001 D002 P032

RCRA ID: DEW234234234
FACILITY NAME: FRIVIOUS INC
FACILITY ADDRESS: 2222, TENBY AVE, DUKE, DE
PERMITTED WASTE CODES: F001 D002 P032

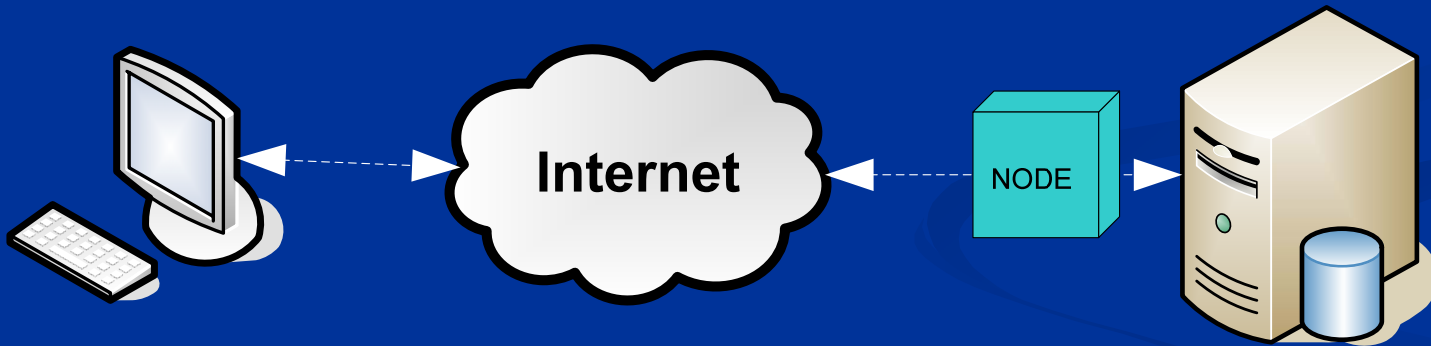
Data Mapping

- Determine how data from your database will be converted if necessary and then put into the appropriate position in the XML document



Node Client

Node
Client



Network Exchange

'Exchange': the sharing of a specific type of data between two or more Partners; for example, sharing of water quality data. This is often also referred to as a 'flow'.

Network Exchanges

Data Reporting

Data submitted to another Node

Data Synchronization

Changes or full replaces of data are sent between nodes to keep databases up to date

Data Publishing

Data is made available for queries by authorized partners

Query and Solicit

Requesting Data from the Exchange Network

- If requesting a large set of data
- Immediate response may not be practical
- Query Service is immediate, Solicit is delayed (asynchronous)
- Take a ticket (AKA transaction id)

SOA Definitions

- Service Oriented Architecture is a collection of interconnected services.
- SOA is an architecture of standards based web services using a common messaging technology model. (XML, SOAP, UDDI, WSDL etc..)

Why SOA ?

- High Business Adaptability: More applications can use services.
- Increased Flexibility: Consumer applications are isolated from internal business changes.
- Improved Reusability: Services can be shared by many applications.
- Interoperable – Standard format enables consumers to interoperate with service providers.
- Cost Effective – Standard based components cost much less than custom-built ones. Sharing also reduces costs.

SOA Services

- Security Services (NAAS)
 - Security Services for CDX and the Exchange Network
 - Integrated with E Authentication services
- Universal Description and Discovery Interface
 - Catalog of web services
- Network Node Services
 - Standards based web service protocols and XML schemas used
 - Supports machine-to-machine data exchanges
- Quality Assurance server
 - Parsing Services
 - Extended Business Rule Validation
- XML Firewall
 - A hardware appliance that validates and filters XML traffic .
 - Application level security
- Orchestration is a standards driven approach to simplifying and automating business process.
 - BPEL 1.1 is the leading standard.

Establishing Nodes

- Research the Network
 - Exchange Network Web Site
 - <http://www.exchangenetwork.net/node/index.htm>
- 30 minutes Guide to Implementing a Node
- Consult Other Partners States
- Don't Reinvent the Wheel

Node Capabilities +

- Administration interface.
- Separation of the Node and the individual data exchange.
- Support of authentication and authorization through NAAS.
- Support for both incoming and outgoing data flows.

Node Building Resources

- **Exchange Network Node Building Home Page**
- <http://www.exchangenetwork.net/node/index.htm>
- **Node Functional Specification 1.1**
- http://www.exchangenetwork.net/node/dev_toolbox/node_functional_spec_v1.1.pdf
- **Network Exchange Protocol 1.1**
- http://www.exchangenetwork.net/node/dev_toolbox/network_exchange_protocol_v1.1.pdf
- **Exchange Network Node Implementation Guide 1.0**
- http://www.exchangenetwork.net/node/dev_toolbox/implementation_guide_v1.0_032504.pdf
- **Understanding Exchange Network Security**
- <http://test.epacdxnode.net/faq/ch02.html>
- **Exchange Network Grant Guidance**
- <http://www.epa.gov/neengprg/index.html>
- **Exchange Network Frequently Asked Questions (FAQ)**
- <http://test.epacdxnode.net/faq/>

**Quality Assurance
and
Transformation
Services**

Quality Assurance Services

- QA tools are available that can be used to validate data against a standard parser and business rules
 - XML Schema Validation Service
 - Pre-submission validation
 - Post-submission Validation Service
 - Business Rule Validation Service
 - More than XML schema can do
 - Schematron
 - Lookup tables from endpoint datastore
 - Combined Validation Service

QA Service Demonstration

Online Response Message

- `<?xml version="1.0" encoding="UTF-8" standalone="no" ?>`
- `<SOAP-ENV:Envelope xmlns:SOAP-ENV="http://schemas.xmlsoap.org/soap/envelope/" xmlns:tns="http://www.neien.org/schema/v1.0/validator.wsdl" xmlns:xsd="http://www.w3.org/2001/XMLSchema" xmlns:soap="http://schemas.xmlsoap.org/wsdl/soap/" xmlns:typens="http://www.neien.org/schema/v1.0/validator.xsd" xmlns:dime="http://schemas.xmlsoap.org/ws/2002/04/dime/wsdl/" xmlns:wsdl="http://schemas.xmlsoap.org/wsdl/" xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" xmlns:SOAP-ENC="http://schemas.xmlsoap.org/soap/encoding/">`
- `<SOAP-ENV:Body>`
- `<mns:SchemaValidateResponse xmlns:mns="http://www.neien.org/schema/v1.0/validator.xsd" SOAP-ENV:encodingStyle="http://schemas.xmlsoap.org/soap/encoding/">`
- `<return xsi:type="xsd:string">Congratulations! The document,d:\TEMP\DEPT03.xml, is valid according to the schema.</return>`
- `</mns:SchemaValidateResponse>`
- `</SOAP-ENV:Body>`
- `</SOAP-ENV:Envelope>`

Online Response Message

The XML Data Validation service has finished processing your document (d:\TEMP\DEPT02.xml) at Tue Apr 25 13:55:00 2006 . It returned the following message:

The document,d:\TEMP\DEPT02.xml, contains the following error(s):

The element 'http://www.epa.gov/exchangenetwork:EmissionSubmissionGroup' has invalid child element 'http://www.epa.gov/exchangenetwork:UnitNumeratorValue'. Expected 'http://www.epa.gov/exchangenetwork:EmissionUnitNumeratorValue'. An error occurred at file:///d:/TEMP/DEPT02.xml, (9224, 622).

An exception occurred while validating the XML document.

The document contains too many errors, validation aborted.

XLST Transformation Service

- A utility service that can be invoked by all network users.
- Perform data transformation using specified style-sheet.
- Use DIME attachment as payload.
- Document can be in either ZIP or XML format.
- Run in synchronous mode (small payload) or asynchronous mode (large payload)
- Service will be available on the QA server.

Document Transformation

■ Service Definition:

```
- <message name="TransformFile">
  <part name="userId" type="xsd:string" />
  <part name="password" type="typens:PasswordType" />
  <part name="styleSheet" type="xsd:string" />
  <part name="xmlDocument" type="xsd:base64Binary" />
  <part name="docFormat" type="typens:DocumentFormat" />
  <part name="sendResultTo" type="xsd:string" />
</message>
- <message name="TransformFileResponse">
  <part name="return" type="xsd:string" />
</message>
```

- User authentication is required.
- Style Sheet can be local or remote.
- xmlDocument should be a DIME attachment
- docFormat is either ZIP or XML.

Data Mapping and Transformation

Data Transformation

- Convert from one data format to another
 - XML
 - Flat file (i.e. delimited)
 - Database
- Handle large file sizes
 - Use streaming approach rather than in memory
- Provide a robust and reusable interface
 - Standard configuration files
 - Standard APIs
 - Reusable across multiple tiers

Data Transformation

- TRI OUT – flat file to XML
- NC Node – database to XML for Beaches and NEI data
- Puerto Rico Node – flat file to XML for AQS data
- Wind River Node – database to XML for AQS
- Geo Toolkit for Region 5 – XML to XML for Geo data
- EnviroFlash – flat file to unstructured email (text)
- TRIME (XML to database)
- Water Sentinel (database to XML, XML to database)
- GLNPO (database to Excel, database to XML)

Data Transformation

- Architecture
 - Mapping engine
 - Run the transformation process
 - Built on the Velocity open source project
 - Configuration files
 - Mapping instructions
 - Location of the data sources and data targets
 - Conditional logic, custom methods
 - Custom Java methods - provides the custom transformation such as data formatting.
 - Pluggable readers
 - Pluggable writers

Data Transformation

- Mapping steps
 - Logical mapping
 - The process of analyzing the data source and the data target and creating the document that specifies the relations between the source and target fields.
 - If the data source is relational database, this process includes developing the query to extract the data from the database.
 - Physical mapping - the process of creating the configuration files to implement the logical mapping specifications.
 - Custom methods (if needed)

Data Transformation

- Database to XML example

```
## Database Query
#set ($sqlQuery = "select distinct TRANSACTION_TYPE, ACTION_CODE, STATE_CODE,
COUNTY_CODE, SITE_ID from ${tableName}RA where ACTION_CODE = 'D' and
TRANSACTION_TYPE = 'RA'")
## Set Reader properties
#set ($tmp = $MapperEngine.setMapReaderProperty('SQL_COMMAND', $sqlQuery ) )
#set ($tmp = $MapperEngine.setMapReaderProperty('ENCODING', 'XML_ENCODING' ) )
## Loop for each record in result set
#foreach($row in $MapperEngine.getIterator())
## Write XML
<aqs:ActionRawDataDelete>
  <aqs:SiteIdentifierDetails>
## Use value from record as a variable
    <aqs:StateCode>${!row.STATE_CODE}</aqs:StateCode>
    <aqs:CountyCode>${PRFunctions.getNumberDigitStr(!row.COUNTY_CODE ,
3)}</aqs:CountyCode>
    <aqs:SiteNumber>${PRFunctions.getNumberDigitStr(!row.SITE_ID , 4)}</aqs:SiteNumber>
  </aqs:SiteIdentifierDetails>
## Call subsequent execution
#set( $config = $MapperEngine.createMapperConfiguration() )
#set ($tmp = $!config.ContextConfig.put( 'SITE_ID', $!row.SITE_ID ))
#set ($tmp = $!config.ContextConfig.put( 'tableName', $tableName ))
#set ($tmp = $!config.ContextConfig.put( 'subs', 'PRMonitorDeleteRAMap' ))
$MapperEngine.subExecute('MapperServices/PR/PRDBReadConfig.vm',
'MapperServices/PR/PRMonitorDeleteRAMap.vm', $config)
</aqs:ActionRawDataDelete>
#end
```

Data Transformation

- Advantages

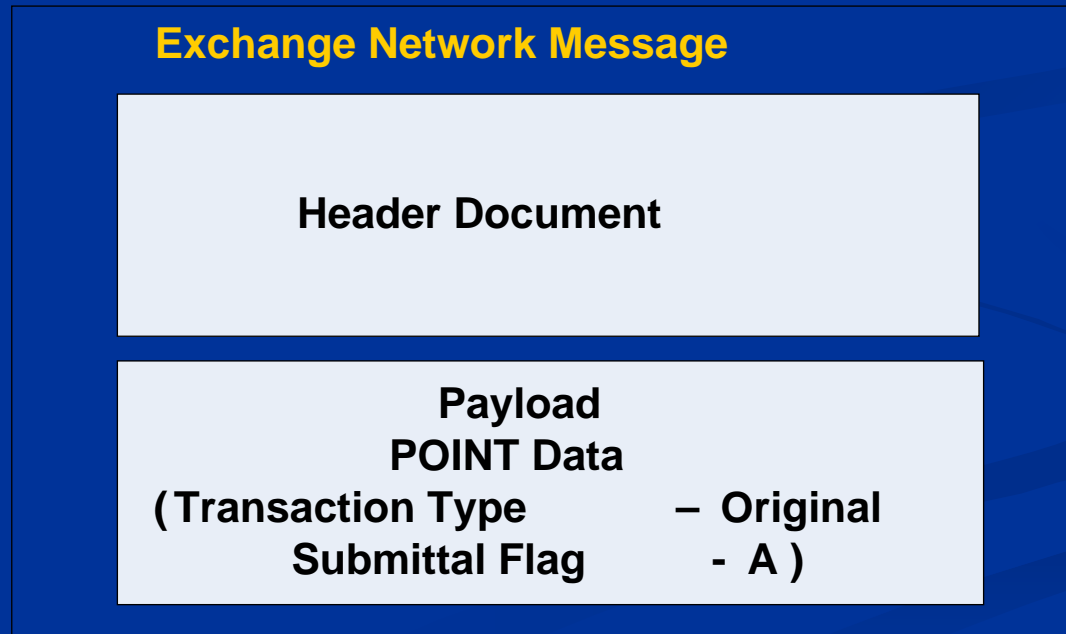
- Provides an ability to concentrate mapping logic within the configuration file and custom methods.
- Provides ability to handle several data source types.
- Provides an ability to decouple readers and writers.
- Provides streaming capabilities to handle large size files (tested against 680 MB).
- Provides an ability to use custom Java methods.
- Does not require license fee.
- Requires minimum coding.
- Superior performance compared to commercial tools (XAware, BEA Liquid Data) - 30 times faster on large data sets.
- Uses streaming approach for low memory overhead.

NEI Flow Configuration Document (FCD)

- Describes NEI XML-based data submissions for Node-to-Node transfers.
http://exchangenetwork.net/exchanges/air/nei_fcd_v1.0.doc
- Implementing the Header Document
 - Exchange Network Header document is XML that describes the payload content of a Network message
- Configuring each of the four data source types
 - Point Sources
 - Nonpoint and Nonroad Mobile Sources
 - Onroad Mobile Sources
 - Biogenic Sources
- Configuring Network Data Services
 - Services to provide additional information to trading partners.

Implementing the Header Document

- Header Document Toolkit
 - Tool Box section of the Exchange Network Web site
- Message Structure



Header Sample

- <hdr:Header>
- <hdr:Author>**Dennis Burling**</hdr:Author>
- <hdr:Organization>**Nebraska Environmental Quality**</hdr:Organization>
- <hdr>Title>**PointSource**</hdr>Title>
- <hdr:CreationTime>**2004-04-05T09:30:47-05:00**</hdr:CreationTime>
- <hdr:Comment>**This is a test file**</hdr:Comment>
- <hdr:DataService>**DataService**</hdr:DataService>
- <hdr:ContactInfo>**PO Box 98922, Lincoln, NE, 68509, 402-471-4214, dennis.burling@ndeq.state.ne.us**</hdr:ContactInfo>
- <hdr:Notification>**dennis.burling@ndeq.state.ne.us**</hdr:Notification>
- <hdr:Sensitivity />
- = <hdr:Property>
- <hdr:name>**GeographicCoverageState**</hdr:name>
- <hdr:value>**31**</hdr:value>
- </hdr:Property>
- = <hdr:Property>
- <hdr:name>**InventoryYear**</hdr:name>
- <hdr:value>**2002**</hdr:value>
- </hdr:Property>
- </hdr:Header>

Implementation and Testing Checklist

(See Appendix B of Flow Configuration Document)

- **Register with EPA CDX**
- **Create XML Document**
- **Create Header Document**
- **Validate XML Document**
- **Submit XML Document to EPA CDX Test**
- **Submit XML Document to EPA CDX
Production**

Register with EPA CDX

- Establish a NAAS operator account (Your Node Admin)
- CDX Help Desk by calling 1-(888)-890-1995
 - Establish a CDX Web account with the authority to upload NEI files.
 - Match the operator account with the CDX Web account that you have set up.

Create XML Document

- Download XML schemas from the Exchange Network Web site. There are five schema files are provided, one for each of the four NIF source types and a fifth that describes common elements used throughout the other four.
- Map data to the XML schemas using the NIF documentation provided on the EPA Web site <http://www.epa.gov/ttn/chief/net/>. This documentation includes Microsoft Excel files that fully describe the data elements included in each source file type. The NIF 3.0 User Guide provides a summary of the NIF format specifications and detailed business rules for their completion.
- Generate an XML document containing the emissions data according to the XML schema
Once you have mapped your data, consult the Flow Configuration Document to create your own XML instance file.

Create Header Document

- The Header Document is XML which serves as a wrapper around the individual XML documents or payloads. It is used to describe the payload documents, providing basic metadata for the submission. The Header Document can describe what a data payload contains, who submitted it and when, as well as instructions on processing payload contents, such as whether the contents are additions, deletions, or updates.

Validate XML Document

- Prior to transmitting validate XML files
- EPA's XML schema validation tool called Schematron. This Web based validation tool is a set of XML Web services for validating XML documents against the associated schemas and custom rules, and can be found at <http://tools.epacdxnode.net/>.



Submit XML Document to EPA CDX Test

- The XML document should be sent to the EPA CDX Test Node as a properly constructed Exchange Network message with associated Header Document information as described earlier.
- The EPA CDX Node will validate the XML document against the relevant XML schema and the Schematron process.
- CDX Test Node:
 - https://test.epacdxnode.net/cdx/services/NetworkNodePortType_V10

Submit XML Document to EPA CDX Production

- Once the EPA CDX Test Node has successfully processed the submitted file, the same file may be submitted to the CDX Production Node.
- CDX will retrieve the payload XML document from the message and will extract pertinent information from the message header into a “metadata” text file. Both metadata file and XML payload will be placed in the EPA Emission Inventory Group’s outbound directory for further processing.
- CDX Production Node:
 - https://cdxnode.epa.gov/cdx/services/NetworkNodePortType_V10

After Submitting Your Data

- Submissions are validated through parser and schematron
- Validation errors will be made available via your transaction id that you can download.
- Obtain submission status by issuing a `GetStatus` with the transaction id that you received from the submission.
- Issuing a `GetStatus` will confirm that your submission was successfully processed by CDX and that the NEI team was notified of your submission.
- The NEI team will attempt to load your submission and send any reports to your CDX Web Inbox.

Quality of Service Checks

- Rules enforced
 - one document in list (from Submit)
 - the document is a ZIP file
 - the ZIP has only one XML file
 - the XML has only one payload
 - the payload has a valid payload operation attribute:
 - operation [Replace | Original],
 - source category [Point, NonpointNonroad, Onroad,Biogenic])
 - Exchange Network user has a valid CDX Web Id
 - Exchange Network user has a valid state affiliation
 - the header is valid (well-formed)
 - the header is complete (all FCD-required header fields are provided)
 - the payload is valid according to schema and/or schematron

Quality of Service Checks

■ On Failures

- 1) A downloadable error report is attached to the transaction (flat file) with the context-sensitive failure information
- 2) The help desk is notified via an e-mail which contains the dataflowname, server IP, transaction id, transaction status, and context-sensitive failure information



Network Node Client Demonstration

If you have any saved queries they are listed here. You can re-execute any saved query, or begin a new query by clicking Start Query Wizard.

Once you have saved a query, you can share it with other Client users by clicking the Share button and selecting the people you wish to share it with.

Node Client Dashboard

1 2 3 4 5

My saved queries:

- 4 FRS Flow Query 20060314
- 5 Flow Query 20060314
- CAFO Demo
- DC Exxon
- Exxon Flow Query 20060314
- FRS Flow Query 20060314
- Multi 20060227
- My FRS Query Test
- My FRS Flow Query 20060227
- My FRS Flow Query 20060313
- My PNWWQX Flow Query 20060227
- My PNWWQX Flow Query 20060314
- New Exxon Query 20060314
- OR PNWWQX Flow Query 20060314
- SAFETYKLEEN Facilities from many Nodes
- Simple Facility By Name For 5 Nodes
- test pnw

Use

Share

New

Queries shared by others:

- "flow from howard" By tsai.howard@epa.gov
- "SAFETYKLEEN Facilities from many Nodes" By guy@windsorsolutions.com
- "SAFETYKLEEN Facilities from many Nodes" By guy@windsorsolutions.com
- "Simple Facility By Name For 5 Nodes" By mark@windsorsolutions.com

Dismiss

Import

Current session information:

User Account: clark.chris@epa.gov
Registered On: 2/8/2006 8:52:46 AM
Last Access On: 2/27/2006 10:25:47 AM
Last Access From: 161.80.71.227
User Version: 1.0.11
Current Version: 1.0.11

Client is up to date.

Node Client news:

Welcome to the Node Client!

This area displays up-to-date information about the latest features and enhancements to the Node Client 2006. In addition to feature updates, this area can be used to alert you to Exchange Network events such as availability of new services, Network service outages and other important information.

Node Client Features Include:

- Query multiple nodes at once!
- Query Wizard makes getting data easy
- Save your queries and rerun them anytime
- Built-in storage of historical query result



Exchange Network Query Wizard

Select one flow for which you want to query data. If a flow has a information web page that is provided and you can click on the link to discover more about the flow.

If you click 'Refresh Metadata, then the Client will download any updates to the list of available flows, node or services from the national Network Discovery server.

Choose Data Flow

- 1
- 2
- 3
- 4
- 5

Refresh Metadata

Select data flow:

- CAFO
- FRS
- PNWWQX
- TRI

Additional data exchange information...

<http://www.epa.gov/frs/>

Previous

Next





Exchange Network Query Wizard

Select one or more Nodes that which to query by left clicking on each one. Only Nodes that support the selected exchange are listed here.

If a Partner has published a web site to provide details about they way they have implemented a flow, then this can be accessed by right clicking on a Node and linking to that web page.

Advanced: If all of the Nodes selected accept Production NAAS credentials then check the 'Use single Production NAAS Token' checkbox. If however, any one or more Nodes requires other forms of credentials (e.g., a Test NAAS account) then you need to uncheck the option, and potentially specify different credentials for each Node by right clicking on that Node. To add additional sets of credentials, you will need to access the Advanced Option > ...

Choose Nodes to Query

Select on or more node:

Select All

- EPA CDX Production
- EPA CDX Test
- Colorado Department of Protection Health and Environment
- KSDHE Outbound Node
- North Carolina DENR Node
- NY Department of Environmental Conservation
- Oregon RPC Exchange Production Node
- Washington ECY Exchange Production Node
- Windsor Solutions Endpoint 1.1

Default Credential For Selected Endpoints:

NAAS Production

Use single NAAS Token to authenticate against each endpoint (or authenticate against each endpoint)?

Previous Next

Exchange Network Query Wizard

If the flow already selected supports many different data services, you can select the one service that you wish to query.

You must also specify if the service will be executed immediately (Query) or only once the Node is able to perform that operation (Solicit). Some Nodes disallow some services or the volume of data returned unless they are performed using a Solicit.

Advanced: If a Solicit is to be used, then you may specify the location (URL) of your organization's Node to which you want the returned data to be submitted. Otherwise the Client can download the data from the Node once it is available.

Choose Data Service

Select request method:

Query Solicit

Choose a data service:

GetFacilityByName	▼
GetFacilityByChangeDate	
GetFacilityByName	
	▼

Data service description:

Get Facility By Name - (Supported By: CDX,CODPHE,KSDHE,NCDENR,ORDEQ,WAECY,Windsor)





Exchange Network Query Wizard

Each available search parameter for the chosen service is listed. You must fill in at least those marked as Required.

You can see a pop-up description of a parameter by hovering over its entry field. If a parameter allows for specific values, such as a date or a list of codes, then the button on the right of the field will provide an interactive way of setting the value.

Advanced: If you are querying multiple Nodes and need to use different parameter values for each, the check box will allow you to enter the values for each Node.

The MaxRows field may be used to limit the number of records returned by the query. The RowID field can be used to exclude that number of the first records from being returned.

Choose Query Criteria

- 1
- 2
- 3
- 4
- 5

Provide query parameter values:

Same parameters for all endpoints

State USPS

(Data Type: String | Required: Yes | Array: No)

Facility Site Name

(Data Type: String | Required: Yes | Array: No)

Row Id:

Max Rows:

Previous

Next





Exchange Network Query Wizard

The details of your query are summarized on this page. If you would like to save the query so that you could re-execute it later, you can enter the name of the query at the bottom of the page.

When you click Execute, the Client will execute the query concurrently against each Node, and display the progress of that query, and any errors that are encountered. Once all the processes are complete the returned data will be displayed – unless all Node's have returned an error.

If the request is via a Solicit, then the results will not be automatically returned, you will need to check the History page to see the status of that request, and once it has been completed, you can then download the results.

Confirm your Query

- 1
- 2
- 3
- 4
- 5

Confirm your query criteria:

Request Mode:	Query - I will wait for response
Data Exchange:	FRS
Endpoints:	WAECY (https://fortress.wa.gov/ecy/node/service.asmx)
Data Service:	GetFacilityByName
Parameters:	Endpoint: WAECY
Paging:	Maximum allowed number of records, starting with row 0
Return Endpoint:	
<input type="checkbox"/> Save Criteria	

Previous Execute





Exchange Network Query Wizard

Current Node Query Status:

Endpoint:

Progress:

Status:



Exchange Network Query Wizard

Save
 Save Data
 Print
 Show Results Using...
 Modify Query...
 Review Criteria...
 Map Using Grid Data...
 KML Export

NewDataSet:

FacilityRegistryIdentifier	FacilitySiteName	FederalFacilityIndicator	TribalLandIndicator	CongressionalDistrictNumber
WAD000711622	Boeing Company Kent Benaroya	N	N	09
	Boeing Company Renton	N	N	09
WAH000023246	Boeing Company Seattle	N	N	07
	Boeing Company Terminal 105	N	N	07
	Boeing Creek North Stormwater Pond	N	N	01
	Boeing Creek Stormwater Detention Dam	N	N	01
WAD988475943	Boeing D & SG MFC Site	N	N	07
	Boeing D & SG Oxbow Site	N	N	07
	Boeing Development Center Norfolk	N	N	07
WAD988491304	Boeing Duwamish Office Park	N	N	09
	BOEING ELECTRONIC MFG	N	N	07
	BOEING ELECTRONICS CENTER	N	N	09
	BOEING ELECTRONICS CO	N	N	09
	BOEING EMPLOYEES CREDIT UNION	N	N	02
WAD041585464	Boeing Everett	N	N	02
	Boeing Flood Control Dam	N	N	02
	BOEING INFORMATION & SUPPORT SERVICES	N	N	08
	BOEING ISAACSON PROPERTY	N	N	07
	BOEING ISAACSON THOMPSON	N	N	07
	Boeing King Cnty Airport Office Center	N	N	07
	Boeing Lincoln Executive Ctr 7341 Bldg	N	N	08
WAD988482097	Boeing Longacres	N	N	09
	BOEING MILITARY FLIGHT CENTER	N	N	07
WAD980982037	Boeing North Boeing Field	N	N	07
	BOEING NORTH FIELD	N	N	07

To help protect your security, Internet Explorer has restricted this file from showing active content that could access your computer. Click here for options...

```
- <FacilitySiteList xmlns:xsd="http://www.w3.org/2001/XMLSchema"
  xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
  xsi:schemaLocation="http://www.epa.gov/xml
  http://www.epa.gov/enviro/html/frs_demo/presentations/version2.3/FACID_FacilitySiteAll_v2.3.xsd"
  schemaVersion="2.3" xmlns="http://www.epa.gov/xml">
- <FacilitySiteAllDetails>
- <FacilitySite>
  <FacilityRegistryIdentifier>WAD988482535</FacilityRegistryIdentifier>
  <FacilitySiteName>Boeing 5th & Park Building</FacilitySiteName>
  <FederalFacilityIndicator>N</FederalFacilityIndicator>
  <TribalLandIndicator>N</TribalLandIndicator>
  <CongressionalDistrictNumber>09</CongressionalDistrictNumber>
  <LegislativeDistrictNumber>11</LegislativeDistrictNumber>
</FacilitySite>
- <LocationAddress>
  <LocationAddressText>500 PARK AVE N GARAGE BLDG 1013 & 1016</LocationAddressText>
  <LocalityName>RENTON</LocalityName>
  <CountyStateFIPSCode>00033</CountyStateFIPSCode>
  <CountyName>KING</CountyName>
  <StateUSPSCode>WA</StateUSPSCode>
  <StateName>WASHINGTON</StateName>
  <CountryName>USA</CountryName>
  <LocationZIPCode>98055</LocationZIPCode>
</LocationAddress>
- <EnvironmentalInterestDetails>
  <InformationSystemAcronymName>HAZWASTE</InformationSystemAcronymName>
  <InformationSystemIdentifier>WAD988482535</InformationSystemIdentifier>
  <EnvironmentalInterestTypeText>Haz Waste Management
  Activity</EnvironmentalInterestTypeText>
```



Exchange Network Query Wizard

Boeing 5th & Park Building

State ID: 85524291

Address: 500 PARK AVE N GARAGE BLDG 1013 & 1016
 RENTON, WA
 USA
 98055

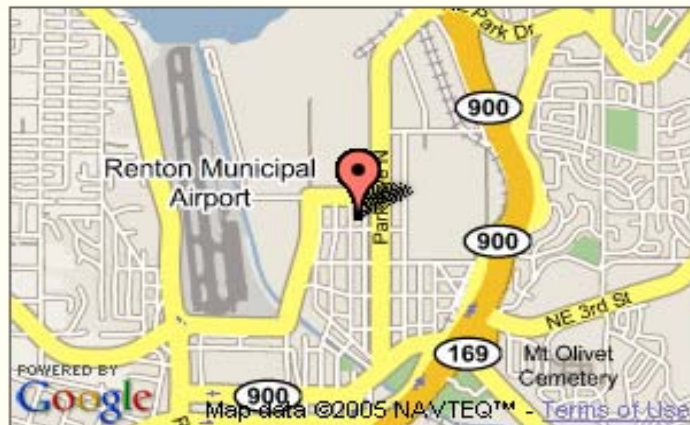
County: KING

Reference Point: UNKNOWN

Latitude: 47.4907

Longitude: 122.204

Collection Method: UNKNOWN



Environmental Interests

Identifier	Type	Start Date	End Date
WAD988482535	Haz Waste Management Activity	2003-12-31	

Last Updated at: Department of Ecology on 2004-06-01

BOEING 800 PARK RENTON State ID: 64745478

Boeing A&M Developmental Center State ID: 2101

Boeing A&M E Marginal Way Corporate Park State ID: 52828576

Boeing A&M Electronic Mfg Facility State ID: 73142589



Data Exchange Resources

- Data Exchange Home Page
 - <http://www.exchangenetwork.net/flow/index.htm>
- Trading Partner Agreement Best Practices
 - http://www.exchangenetwork.net/flow/TPA_Final_Report_Best_Practices.pdf
- Link to NEI Flow Configuration Document:
 - http://exchangenetwork.net/exchanges/air/nei_fcd_v1.0.doc
- Facility Identification (FRS) Data Exchange FCD
 - http://www.exchangenetwork.net/flow/cross/frs_fcd_v1_061804.doc

Other Good Information

- **Getting Assistance**
 - US EPA CDX/Exchange Network Help Desk
 - <http://www.epa.gov/cdx>
 - phone: 1-888-890-1995
 - Email: nodehelpdesk@csc.com
- **Node Mentoring Contacts**
 - http://www.exchangenetwork.net/node/mentoring/node_mentoring_services_v1.0.doc
- **Exchange Network Message Board**
 - <http://www.websitetoolbox.com/tool/mb/exnet>
- **Online Test Tools and Utilities**
 - **Node Developer Toolbox**
 - http://www.exchangenetwork.net/node/dev_toolbox/index.htm
 - **Network Authentication and Authorization Service (NAAS)**
 - <http://naas.epacdxnode.net/>
 - **Exchange Network Document Validation Service**
 - <http://tools.epacdxnode.net/>