The Network is Powered Up — Are You?

Organizations wanting to participate can use a variety of resources for information and assistance:

Exchange Network Web Site

The Exchange Network web site at www.exchangenetwork.net provides a centralized resource for assistance and information. There you'll find:

- Current announcements and news regarding the Exchange Network
- Network Node developer tools, including free executable files for establishing new Nodes for a variety of technology platforms. New partners need not start from scratch.
- Guidelines for developing XML schema or Data Exchange Templates (DETs)
- Information on the Node Mentoring Program — advice and help from existing partners
- Best Practices for establishing Trading Partner Agreements — agreements that assist partners in establishing exchange frequency and content
- Registry containing all developed DETs/XML schemas and supporting documentation
- Progress reporting — showing which data is being exchanged between partners
- Documents to learn more about the Exchange Network and help guide implementation
- Message boards to discuss specific issues on all aspects of node development/ implementation as well as exchanges
- Frequently Asked Questions (FAQs)

Exchange Network Hotline and Help Desk

For general information on the Exchange Network, please contact:

- Molly O'Neill, State Director, Network Steering Board (202-624-3507 or moneill@sso.org)
- Patrick Garvey, EPA Director, Network Steering Board (202-566-1687 or garvey.pat@epa.gov)

A Help Desk for partners who are implementing the Exchange Network is also available:

- The Help Desk provides data submission technical support between the hours of 8:00 am and 6:00 pm (EST) at 1-888-890-1995.

EPA Grant Program

EPA has been supporting the implementation of the Exchange Network by providing an extensive grant program for state and tribal participants. Information on EPA's Environmental Information Exchange Network Grant program can be found at www.epa.gov/Networkg/. (Please note: this URL is case-sensitive.)

www.exchangenetwork.net

Environmental Information

eXchange Network

The Exchange Network

The Exchange Network — What Is It?

State environmental departments and the U.S. Environmental Protection Agency (EPA) are partnering to develop the National Environmental Information Exchange Network (Exchange Network).

The Exchange Network is an Internet- and standards-based approach for exchanging data and information among partners. Built on principles of applying data standards, providing secure, real-time access, and electronically collecting and storing accurate information, the Exchange Network will replace and complement traditional approaches to exchanging environmental data.

By facilitating the efficient exchange of environmental information among interested parties at all levels of government and the public, the Exchange Network is revolutionizing the way information is sent to and received by EPA, states, and tribal and territorial partners.

EPA and States Working Together

In 1998, state environmental agencies, through the Environmental Council of the States (ECOS), and EPA formed the Information Management Work Group (IMWG) to address growing issues related to information management. The IMWG focused on the problem of how data is exchanged between partners. In 2000, the National Environmental Information Exchange Network Blueprint was developed, which proved to be the conceptual design for how the Exchange Network would use the latest technologies to share and exchange environmental data more effectively and efficiently. An implementation plan was developed in 2002, and the Network Steering Board (NSB) was formed to steer the implementation of this national initiative. The NSB, equally represented by senior executives at EPA and the states, oversees the implementation of the Exchange Network.

Principles of the Exchange Network

The Exchange Network provides an automated machine-to-machine exchange mechanism that facilitates more timely, efficient, and high-quality data exchanges to occur. Network Nodes process web services on the Internet and transfer data through Data Exchange Templates (DETs) and eXtensible Markup Language (XML). The XML schema are used to standardize and identify the way information is shared, so partners can obtain and understand the data they need when they need it.

Network Overview
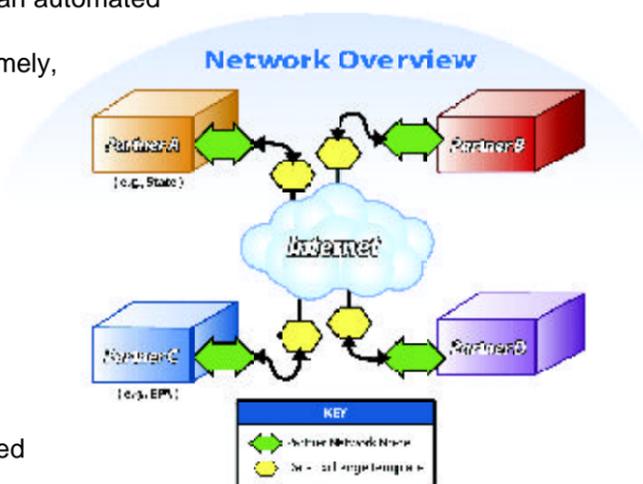
The Network Nodes automatically listen for requests for data and then deliver or publish the data based upon pre-described methods. The Nodes are secure, and messages are authenticated for each user.

Benefits of Participating

The Exchange Network was designed as a more effective and efficient way of exchanging information between partners. By using common XML language and incorporating data standards, information exchange is not only more efficient, the quality of the exchange is also better.

Fostering New Exchanges among States and EPA

Traditionally, most of the environmental information exchanges are driven by regulatory reporting relationships between the state environmental departments and EPA. Negotiation of new data exchanges was difficult due to the burden of designing systems and exchange mechanisms that work for all partners. The Exchange Network provides the infrastructure for exchanging data between the states and EPA; so, for a new exchange type, XML schema is developed and then states and EPA map to the XML schema for that new exchange. New exchanges are easier — all partners do them the same way, and they're no longer dependent on backend systems!

Saving Money and Resources

Over the years, exchanging data was costly and time-consuming. It required ongoing resources to build and maintain interfaces and/or perform data entry activities. Implementation of the Exchange Network reduces the cost and resources of data sharing. The Exchange Network allows partners to map data to XML schema, a universal language, and then send or publish with web services via a Node. Double data entry and developing and maintaining interfaces between systems are eliminated. It no longer matters if partner systems are different — the computers can now exchange the data using a common language!

Sharing Data among States and Other Agencies

In recent years, it has become apparent that new data exchanges needed to occur in order to prepare an environmental analysis of a region, watershed, or airshed. The Exchange Network allows state-to-state exchanges so multiple state data can be viewed, analyzed, and interpreted to appropriately understand changing environmental conditions. One of the foundations of the Exchange Network is that data doesn't have to be physically moved to another database. Instead, web services can be deployed to publish the data in the XML formats on each Network Node, and the data can then be queried and used. Real-time data is now at your fingertips!

Improving Data Quality

In the past, the quality of environmental data has been compromised due to traditional exchange methods, which include faulty data entry, double data entry, transmitting wrong data types through file formats, and sporadic use of data standards. The Exchange Network improves data quality by incorporating data standards up-front and establishing standard business rules in the XML schema used to package the data for exchange. Metadata can also be wrapped in the exchange easily so the data can be qualified!

Making Data More Timely

The current time-consuming approaches to data exchange often lead to exchanging outdated information. Today, we live in a point-and-click culture — the public demands more timely access to information about environmental conditions. By utilizing web services and the Internet, the Exchange Network can provide real-time information. In addition, web services allow data to be stored at the data owner location and published to the Internet for easy access in a secure environment. Not only does this make data more timely, it ensures that the quality of the data isn't compromised. Data is available for real-time environmental decision-making!

Project Highlights

Michigan Department of Environmental Quality

Discharge Monitoring Reports (DMRs) are one of the nation's largest reporting requirements, second only to tax reporting. Typically, DMRs are submitted monthly by permitted and regulated wastewater dischargers. DMRs identify the monitoring results against the permitted limits. Most of the states have authority to implement this program for EPA. Like most states, Michigan had to get these results into its own system and then into EPA's Permit Compliance System to meet its reporting requirements. Given the volume of these reports, a huge backlog began to occur. Michigan used the Exchange Network to address these issues. The state first established an electronic reporting mechanism with its regulated facilities. Starting in the spring of 2003, facilities could go to the state web site to upload their DMRs electronically. This data is captured and sent via XML to the Michigan NPDES Management System (NMS). In January 2004, Michigan established its Network Node and began exchanging this data with EPA to meet reporting requirements. After the first nine months, more than 20% of Michigan facilities were reporting electronically, and this data was automatically sent to EPA via the Exchange Network. The savings in regulatory staff resources from the reduction in manual data entry and correction of data entry errors, coupled with the elimination of the 80-column batch file format previously used to exchange data, is projected to be between $250,000 and $500,000 annually. Already, the DMR backlog is gone and cost savings are being achieved in this early implementation.

Pacific Northwest Water Quality Exchange

Today, environmental regulation isn't only about exchanging data between states, tribes, and EPA. States have the challenge of addressing environmental conditions that are impacted by multi-state activities. The states of Oregon, Washington, Idaho, and Alaska use the Exchange Network to aggregate and access a comprehensive source of high-quality water data in the Pacific Northwest. Working together, the states developed XML schema to share water quality data. Each state then established a Network Node — the same Node they can use to exchange data with EPA — and began publishing the data in XML on its secure Network Node. A simple query tool was then developed to query each Node for information. For example, each state can query for sampling results from all states in watershed areas like the Columbia and Snake River basins. In the near future, this will include water quality sampling and monitoring data from voluntary monitoring groups, watershed councils, tribes, and the government of British Columbia.