

New Hampshire and BizTalk

What We Node

History:

New Hampshire has participated in all phases of Node development to date. This includes the Alpha, Beta, Node 1.0 and now with the Node Mentoring Grant group which we joined to share our experiences with those of you looking to take advantage of the knowledge we have gained from these experiences.

Network Node Project

The Alpha phase occurred in spring-summer of 2001 and was essentially a proof of concept and an opportunity to discover those issues that would have to be tested further.

Participating in Alpha were New Hampshire, Delaware, Nebraska and Utah.

We quickly demonstrated that XML could be used to build nodes as described in the Blueprint using a common piece of middleware (Xaware).

Network Node Project

Node Beta took the project a step further in an effort to come closer to a Version 1.0 of the network. The goals of Beta:

1. Identify recommendations for node design specifications.
2. Scope the development of a “node package”
3. Implement a fully normalized facility data exchange template.
4. Involve 2-4 more state agencies as appropriate as resources allow.

Node Beta Goals (continued)

- Test and resolve performance issues.
- Explore Security issues and options.
- Link state environmental agency node data transfers through EPA's node (CDX).
- Pilot and/or execute TPAs for additional nodes.

Node Beta Goals (continued)

10. Automate Validation of flows against a
DET
11. Send production data from nodes to FRS
12. Test interoperability

Node 1.0 produced the following two very important documents

1. Node Functional Specification
2. Network Exchange Protocol

The Node Functional Specification provides a detailed description of an Exchange Network Node's expected behavior including function invocation and expected output.

The Network Exchange Protocol V1.0 defines the set of rules intended to govern the generation and use of valid service requests and responses on the Exchange Network. The Protocol document is intended for node implementers to embed data content standards (defined as Schemas) in service requests and responses.

Both of these documents were produced by the Node 1.0 team and are available on <http://www.exchangenetwork.net> (search on keyword Node 1.0)

Why did New Hampshire select BizTalk?

The short answer is that we in the State of NH have a considerable investment in Microsoft products. We have strong relationships with Microsoft vendors, many of which indicated they could work with us on deploying this strategy. We also felt that training would be more readily available for this product.

Network Node Project

New Hampshire recently chose to upgrade its node infrastructure. We will be installing a Win 2003 Compaq Proliant DL370 2U server with a single 3.2 GHz processor, 4-72GB drives and 4GB of RAM running BizTalk Enterprise, Visio and SQL.

Network Node Project

This configuration is expected to be able to support the current efforts in NH to flow data. These currently include FRS, Beach Data and support of the endeavors of the Laboratory challenge grant group to receive lab test results via the node. We also have a multitude of other groups looking to participate including RCRA and FRS.

Network Node Project

These flows are capable of running without human intervention. The node links to our back end Oracle applications. We can schedule jobs to occur at required intervals where data is queried from the back end systems, packaged and delivered to CDX according to the exchange protocol.

Some of these flows are continuing to be controlled by the stakeholders due to the sensitivity of their data and their need to QA that data prior to its leaving.

Flows can occur either way.

Vendor Selection for Node 1.0 Project

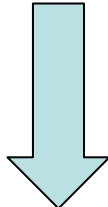
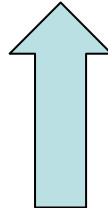
- New Hampshire chose to use enfoTech to build our Node 1.0 environment.
- We chose them based on their response after an RFP was issued.
- Our experience with enfoTech was excellent.
- We chose enfoTech to do the DNC portion of the project.

NH Reason for Selecting enfoTech

- enfoTech demonstrated to us that they had considerable experience with EPA, BizTalk and with setting up interactive database solutions for environmental agencies.
- We had prior experience with working with members of the enfoTech team.

Involving the Programs

- It's personal

- Combination of top  , bottom 

- WII-FM

Getting Started, Keeping Going

- Need technical, mngm't. contacts
- Data stewards
- Network team

Node Hardware

- 3.2GHz Processor
- 2GB RAM
- 4 72 GB Hard drives in a RAID5 + Spare Configuration

Node Software

- Windows Server 2003
- BizTalk 2002 Enterprise
- SQL Server 2000 Professional
- Visio 2000 Professional
- .NET Framework 1.1
- Oracle 8.1.7.4 on the backend

Set Up

- Network Admin set up server hardware and configured OS
- Installed BizTalk, SQL Server, Visio etc.
- Worked with contractor to iron out bugs
- 3 days to setup

Testing

- Used tool provided by contractor for initial testing
- Moved on to testing via CDX
- Working with Maine to do state-to-state flows
- Alaska currently testing our DNC

3 Steps to Flows

- Create map from database to schema file
 - 1) Create XML file from data
 - 2) Use BizTalk Mapper to map data to schema
- Create the channel for the flow
 - Wizard based
- Add flow to configuration file
 - Editing a text file

Staffing

(with contractor support)

- Someone who can write stored procedures
- High level understanding of BizTalk or able to quickly pick up the necessary information
- Understanding of MSMQ

Staffing

(without contractor support)

- Can write stored procedures
- Understands how to use BizTalk and can write programs to interface with it
- Understands MSMQ and understands how to interface with it
- Can program in .NET

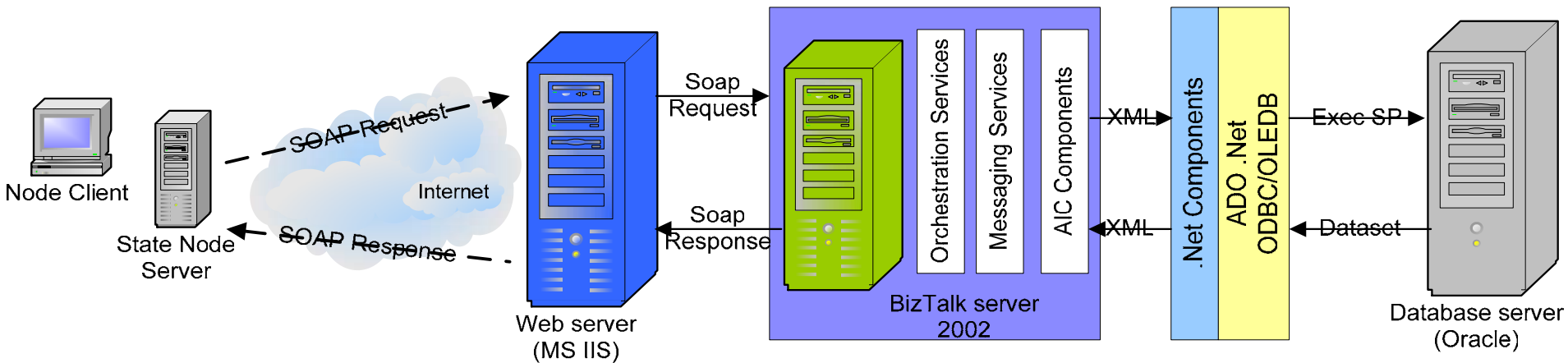
Training

- DNC Training
 - Provided by vendor
 - Good documentation available
- BizTalk
 - Hard to come by
- .NET
 - Plenty of documentation
 - User groups available and helpful

BizTalk Server 2002 Key Processes

- Receive documents submitted to BizTalk Server.
- Channels can transform documents, manage encryption, digital signatures, and logging.
- Messaging ports send documents to schedules or to external organizations and trading partners.
- Schedules orchestrate business processes.
- BizTalk Server 2002 tools like BizTalk Orchestration Designer, Editor, Mapper, Server Administration and est..

Overview of NH BizTalk Server Implementation



NH BizTalk Server Node Setup Procedure

- Register .Net component as COM component
- Create BizTalk Server Orchestration Process as AIC components
- Create Organization, Inbound/Outbound message and channels for data transformation

Add new data flow to NH Node

- Create new store procedure
- Create data schema file
- Create XSLT style sheet
- Add/Modify Node configuration file
- Run utility tool to create new channel for data transformation

BizTalk Server Pros and Cons

PROS

- Provides integration tools to reduce the development time and cost of an “enterprise-wide”
- Support Node protocol (XML & SOAP) standard and security services (encryption & digital signatures)
- Ease and flexibility to visually configure or change the Node workflow and processes with Orchestration Services
- Provides a set of tools to build, transform, manage, track, and analyze Node documents

BizTalk Server Pros and Cons (continue)

CONS

- Higher initial software cost for BizTalk Server and implementation effort when a Node is designed for simple applications
- Requires supporting software such as Microsoft SQL Server and Microsoft Visio
- Node Business processes designed by Orchestration Designer need to be recompiled when the interfaces of COM+ components change. This will also require more development and maintenance effort.

BizTalk Server Pros and Cons (continue)

CONS

- Orchestration Designer can not directly call the Web service. Therefore more development effort is required to create the proxy object to call the Web service. (For BizTalk Server 2002)
- Lacks built-in support for the W3C standard like XSD standard.

What's new in BizTalk Server 2004

- MS Visual Studio .Net Development Environment Integration
- MS Office InfoPath Integration
- Business Process Execution Language (BPEL)
- XML Web Services
- Business Activity Monitoring and Real-time tracking
- Human-based workflow (orchestration engine)

enfoTech e-Node Implementation Experience

New Hampshire

- IIS, BizTalk Server, Facilities data flow
- Node 1.0 and DNC delivered Q2 2003
- Node 1.1 delivered Q1 2004

Delaware

- Node 1.0 support

Michigan

- IIS and MS .Net infrastructure
- Node 1.1 and DMR data flow in production since Q4 2003

New Jersey

- Sun One Web and Application Server
- Node 1.1 implementation begin Q1 2004

enfoTech Node Development Lessons Learned

- **Needs Web service requestor capabilities (Node Client)**
 - Automated or 'on demand' Web service requesting
 - Data flow orchestration
 - Email notification
- **Needs to be easy to configure new data flows**
- **Value of additional Node administration capabilities**

enfoTech e-Node Capabilities

Ease of Use

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|---|
| ✓ One click installation file |
| ✓ Web-enabled User Interfaces |
| ✓ User Configurable components throughout |
| ✓ Java and .NET compatible versions |

Core Node Functionality

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|---|
| ✓ Node 1.1 Web Services Interface |
| ✓ Security Management - Central (NAAS) or Local |
| ✓ Inbound and outbound transaction management |
| ✓ Native data access for Oracle and SQL Server |
| ✓ Self-configuration tools for existing and future data flows |
| ✓ Web-based Node Testing Tool |
| ✓ Open Architecture XML schema-driven Node configuration |

Data Flow Orchestrator (Node Client)

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| ✓ Web and local service initiation and orchestration |
| ✓ Data flow scheduler |
| ✓ User-configurable Email notification system |
| ✓ Node partner configuration and account management |

Node Admin Tool

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|---|
| ✓ Node (Internal User) account management |
| ✓ Full data flow monitoring, logging, and Node auditing |
| ✓ Configurable automatic task scheduling tools |
| ✓ On-Demand task execution |

What We Node Now

- How to create a BizTalk channel
- How to create a schema map
- How to set up a messaging queue
- Basically how to set up a flow