Integrating Heterogeneous IT Environments Using Microsoft's Integration Solution

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Agenda

- Remaining Enterprise Integration Challenges
- Microsoft’s Technical Vision for Enterprise Integration
- Solution Components
  - Host Integration Server
  - **BizTalk Server 2004**
  - Microsoft Visio
  - Microsoft InfoPath
- Bringing it all together
Enterprise Integration
What’s Still Missing?

- 80% of the Data in an enterprise resides on the desktop*
- Typical Global 2000 companies – for every SAP user, there are 5 non-SAP users
  - How do the masses tie into business processes?
- System driven integration is only half the battle
- Connecting the Information Worker to Business Processes through the desktop is the missing piece of the puzzle

* Gartner Research
Microsoft’s View on Enterprise Integration

- Business Analysts / Information Workers define business processes and business rules
- Developers make business processes actionable by tying them to systems, trading partners and employees
- Business Processes need to be flexible enough to accommodate ad-hoc, human based interactions
- The exchange between Information Workers, Business Analysts, IT Professionals and Developers should be as seamless as possible
- Integration should solve business needs and be actionable for business analysts and information workers
Unique Users with Unique Needs

Information Workers
- Define Business Process
- Define Business Rules
- Access to real time data

IT Professionals
- Tools for:
  - Deployment
  - Management
  - Monitoring

Developers
- Single Integrated Development Environment
- Work collaboratively with Information workers

Technology Infrastructure
Standards Across Products
Use the tools they already know
Integrating the Heterogeneous Enterprise

- Almost Every Enterprise is Heterogeneous
  - .NET / J2EE
  - Desktop / Mid Range Unix / Mainframe
  - SQL Server / DB2 / Oracle
  - Multiple Application development environments
  - Multiple Management / Monitoring tools

- Microsoft solutions are only for Microsoft shops. Right?
  - Wrong. Single most deployed E-Business Application is SNA Server / Host Integration Server
  - Vast majority of BizTalk Server customers use it in conjunction with J2EE components
  - Connecting to Mainframes through MQSeries is common
Host Integration Server 2000

“Integration Components for Host Systems”

- Comprehensive Network Support
  - SNA and TCP/IP Connectivity Support
  - Security integration (password sync, Single Sign-on)
  - Network gateway (Emulation, Printing and File Transfer)

- Comprehensive Data Access
  - Extensive Data Access Providers (DB2, AS/400 and VSAM)

- Comprehensive Application Integration
  - Transactional Integration via COMTI
  - Messaging Integration via MQ Series Bridge (MOM)

- Deployable on Windows NT 4.0 and Windows 2000
- Scalable, secure and manageable
BizTalk Server 2004 Architecture

Orchestration

Other Apps

Activation & Instance Management

Correlation & Content-based Routing

Message Box

Message Pipeline

Decode
Encode
Decrypt
Encrypt
Authenticate
Sign
Parse
Serialize
Extract
Properties

Transport Handlers

HTTP
Web Services
MQSeries
MSMQ
SAP
SQL
FTP
Custom Adapters

Administration

Deployment

Process Management

Trading Partner Management

Business Intelligence

Reporting

Monitoring

Administration

Deployment

Process Management

Trading Partner Management

Custom Adapters

SQL
FTP
SAP
SMS
MQSeries
Web Services
HTTP

Business Intelligence

Reporting

Monitoring
BizTalk Solution Flow

- Receive Location
- Receive Pipeline
- Orchestration
- Send Pipeline
- Send Port
- Messaging Box
- Tracking Database
- Config Database

- Transport Adapter
- XML, Flat File, Binary

Transactions:
- Purchase Request
- Send Transaction
- Receive Transaction

Data Formats:
- XML
- Flat File, Binary
BizTalk Server 2004
Universal MessageBox Architecture

- Consistent scale-out model built on SQL Server 2000 SP3
- Pub/sub architecture
- Stateless servers
- Low-latency high volatility routing
- Large Message support
- Pluggable adapters
- Security and auditing
Minimize Time to Implementation
Over 350 Adapters available
One Developer Experience

- Leverage existing skills
- Harness the .NET framework
- Build with standards
Rich Business Process Design

- Nested processes
- Long running transactions
- Simplified correlation
- Flexible mapping between messages
- Super-set of BPEL4WS capabilities
  - Business Process Execution Language for Web Services
  - Created by Microsoft, IBM, and BEA for Business Process Interop.
  - Specification submitted to OASIS
XML Web Services Overview

Orchestration Exposed as Web Services Method

Web Services Method Consumed by Orchestration
Service Oriented Architecture (SOA)

- A development and management architecture for loosely-coupled applications
  - Promotes interoperability and federation
- Web Services are the messaging fabric for a SOA
- Can use .NET programming model and Windows Server to quickly build and host web services (or something else)
Business Rules/Policy

- Use business process rules for simple cases or complete inference engine for more complex scenarios.
- Rules change more often than processes.
- Business Rules provide increased flexibility.
- Rules are abstracted from process and user code.
- Complements orchestration.
- Rules engine is high throughput low latency.
Additional Rules Scenarios

- Dynamic Business Policy management
- Cross-Field/Constraint Validation
- Decision support

Business Process Automation Engine

Orchestration

Rules

Tracking

- Validation Rule: A valid credit card number must be provided
- Discount Rule: If Customer is a Gold Customer Then Apply 10% discount
- Human based workflow

Business Process Automation Engine

- Routing Rule: If the customer wants to buy cars Then route to Ford dealer
- If the customer wants to buy books Then route to Barnes and Nobles
- Notification
  - If purchase order amount is more than $1000 Then notify sales manager

- Customization Rule: If the purchase amount is over 500 Then obtain Manager's approval

- Workflow customization

Business Activity

OLAP

- Key Performance Indicators (KPI) Reasoning

- Messaging Bus
- Intelligent Routing
- Intelligent Notification

Purchase Volume Rule: If the purchase volume is over 100 Then launch the premier procurement process

11/17/2003
Enterprise Single Sign-on (SSO)

Problem Space
- User
  - Too many credentials
  - Which one for which app
  - Multiple logons
- IT
  - Mapping Accounts
  - Password Management

The Business Impact
- Increases risk of compromise
- Reduced productivity
- Increased helpdesk expenses
Single Sign-on Example

DOMAIN\Username

Get 401K Balance

Web Client

IIS - Web Server and BizTalk Server

BizTalk HTTP Receive Transport

Issue Ticket

SSO Service 1

SSO Service 2

Validate and Redeem Ticket

Get Credentials for DOMAIN\Username for Mapped Application

Mainframe Adapter in BizTalk & COMTI

SNA Server

Get 401K Balance

BizTalk Message Box

SSO Credential Database
Business User: Activity Monitoring and Services (BAS)

- Ask real-time questions
  - How long is production taking right now?
- Ask aggregation questions
  - How much money did we make last month?
- Use Data from documents or Process
- Complements existing SQL BI solutions

BizTalk Server

SQL OLAP
Business Activity Monitoring and Services Overview

**Business Analyst**
- Defines business data to collect and how to interpret

**Developer**
- Business Activity Services XML

**Business End User (Information Worker)**
- View Business Activities and perform everyday business operations

**Excel Workbook**
- Business Activity Query Web Service

**Windows SharePoint Services Website**
- BAS Storage
Human Workflow Services

- Simple authoring of workflow by performing business actions
- Workflow responsive to task responses, business policy and organizational changes
- Real-time visibility into workflow activities
- Focused on workflow for people
  - Tracking of tasks, actions and processes
  - Composition of actions into dynamically evolving processes
  - Instantiation of Activity Models that are captured or predefined processes
- Integration of machine processes with human workflow
Workflow Building Blocks

- **Task**
  - Communication with Actor

- **Action**
  - WF Services feature
  - Composable at runtime

- **Activity Model**
  - WF Services feature
  - A priori composition of Actions

Activity Flow
Real-Time Tracking For Admin And Debugging

- View a process end-to-end
- Track
  - Messages
  - Processes
- Debug
  - Suspend
  - Resume
- Manage suspended messages
System Administration

- Versioned deployment based on the .NET framework
- One console to
  - Manage server farm including adapters
  - Scale solution to new servers
    - New Processing Servers
    - New Database Servers
  - Create secure boundaries
Scaling Out Processor Machines

Network Load Balance

Machine

Host

Machine

Host

Machine

Host

Machine

Host

SQL Server

MessageBox

Stored Procedures

Data (messages, subscriptions, etc.)
Scaling Out Storage

Network Load Balance

Machine

Host

Machine

Host

Machine

Host

Machine

Host

SQL Server Machine (Master)

MessageBox

Stored Procedures

Data

SQL Server Machine

MessageBox

Stored Procedures

Data
Hub: Large Scale Trading Partner Management

- Manage relationships with thousands of trading partners
- Relationship is separated from process increasing reusability
- Enable
  - Easy configuration of new trading partners
  - Communicate across heterogeneous messaging and transport protocols
  - Deal with large variety of data formats
  - Enable Multi-party Business Processes
Spoke: Rapid Trading Partner Roll-Out

- Next generation SEED technology
- Trading partner obtains package
- Trading partner completes deployment with simple Office wizard
- Trading partner manages orders with Windows SharePoint Services
- Web Services available to any client
- User Interface leverages WSS
Simplifying the interaction of Business Analysts and Developers

Business Analysts - Construct Business Process (Visio)

Bidirectional & collaborative

Developers - Tie processes in with systems and other processes (BizTalk Orchestration)
Office/InfoPath Integration

- **Scenarios**
  - Route InfoPath documents through the enterprise
  - Input data from InfoPath documents into enterprise systems

- **Capabilities**
  - Open XML Schema directly inside BizTalk
  - Send from InfoPath through XML Web Services to BizTalk
  - Much, much more…
Example: BizTalk and InfoPath

1. Get sales rep info via ADO

2. Get daily minimum prices via XML Web Service

3. Submit sales call report

4. Send summary mail

5. Submit action to be taken to BizTalk

6. Query Company history

Company Employee Database

Product Pricing Database

InfoPath

BizTalk Server

Summary Email Attachment

Call Reports Database

Daily Sales Database

Update call reports database

Update daily sales database

Company History Query

11/17/2003
What makes Microsoft unique?

- Reducing Complexity
  - Use Microsoft Office Tools for Business Analysts and Information Workers to define, manage and react to business processes
  - Single Integrated Development Environment for developers

- Empowering Organizations
  - Empower customers through great software to solve their integration challenges and meet their goals
  - Seamless hand-off of information from Information Workers to Developers
  - Allowing the right people in the organization to make an impact

- Understanding Time to Value
  - Days not weeks
  - Lowering the cost of implementation
Microsoft Enterprise Integration

Analysts agree

“Gartner’s placement of BizTalk Server in the Leader Quadrant for integration demonstrates the product’s vision and underlines its ability to provide a scalable and reliable integration solution for any enterprise.”

—Gartner, Inc.
May 2003

“They’re really the company that has emerged from nowhere and made itself a player with the BizTalk product. BizTalk is probably the easiest to use in the integration market.”

—Chris Dial
Analyst, Forrester Research
## High Volume Customers

<table>
<thead>
<tr>
<th>Customers with over 200,000 messages per day</th>
<th>High Volume B2B Customers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Marks &amp; Spencer – 2500 / second*</td>
<td>AkzonNobel – 5000</td>
</tr>
<tr>
<td>Lotte Magnet – 100 / second</td>
<td>Lotte Management – 1500</td>
</tr>
<tr>
<td>Itau – 100 / second</td>
<td>Osram Sylvania – 800</td>
</tr>
<tr>
<td>London Drug – 52 / second</td>
<td>Marks &amp; Spencer – 500</td>
</tr>
<tr>
<td>Waste Management – 35 / second</td>
<td>ASUS – 500</td>
</tr>
<tr>
<td>CNF / Emery – 20 / second</td>
<td>Kinpo Electronics – 350</td>
</tr>
</tbody>
</table>

* With no unplanned downtime in 24 months
Microsoft Enterprise Integration

Real customers, solving real problems

“By building our event notification solution using BizTalk Server, we were able to bring a solution to market a year and a half earlier than if we had developed it internally, which gives us a definite competitive advantage.”

—Ron Berger
Managing Director of IT
Emery Forwarding
Menlo Worldwide Technologies

“BizTalk Server brings us greater agility because we can use it to tie together systems throughout the company.”

—Bill Greene, Manager
Certified Supplier Business Center
Cinergy

“By automating transactions, we can eliminate the manual effort and touch points in everything we do, which will have a considerable impact on speed and efficiency, not to mention reduced costs.”

—David Smith
Vice President of Information Technology
PPG Industries
Summary

- Make the Hard Stuff Simple
  - Connecting systems and processes with the desktop
  - Unique tools for unique users
    - Developers: Visual Studio .NET
    - IT Professionals: Windows – standard, repeatable process
    - Information Workers: Rich Office view into business

- Standards
  - Fully Leverage Mature Standards (XML, XSD)
  - Champion Emerging Standards (XML WS, WS-I)
  - Partner with Industry to build frontier standards (BPEL)

- Beta availability now at
  - [http://www.microsoft.com/BizTalk](http://www.microsoft.com/BizTalk)
Microsoft Windows Server System Online Books

http://msdn.microsoft.com/servers/books

- “Real-world” customer deployments and integration stories
- Task-based IT books that go beyond help files and white papers
- Scenario-based development books with comprehensive code samples to solve real problems
- Partnership with ISVs, consultants, and technical specialists
- Books available by product:
  - BizTalk Server, Content Management Server, SQL Server, Exchange Server
Interex, Encompass and HP bring you a powerful new HP World.