Integrating J2EE and .NET Applications with Web Services

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 Agenda

• Interoperation Goals
• Issues
• Steps
• Trends
• Example
Application Integration

- Integration of J2EE (and other enterprise) applications with .NET applications
  - .NET clients to J2EE services
  - J2xE clients to .NET services
  - Peer to Peer: J2EE and .NET services
- What does this mean?
  - Discovery
  - Connectivity
  - Security, Transactions, etc…
Technologies

- WSDL 1.1 (WSDL v1.2 – spec not complete)
- SOAP 1.1 (SOAP v1.2 – spec not complete)
  - SOAP with Attachments
  - Encoding styles
    - RPC/Encoded (common)
    - RPC/Literal
    - Document Encoded
    - Document Literal (more robust w/ XML Schema)
- WSIL (used by VS.NET)
- UDDI
- HTTPS
## Technology Stack

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<th>WSDL</th>
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<td>Application Level Services</td>
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Interoperability

• SOAP messages and data types
  – Round 1
  – Round 2
  – Round C (Headers)
  – [http://www.xmethods.net/ilab/](http://www.xmethods.net/ilab/)

• WSDL
  – Rounds D, E, F
  – February 27-28
  – hosted by IONA in Waltham
The Semantic Mismatch

• J2EE (and CORBA) interfaces are typically too low level for web services
  – Request granularity
  – Interaction Style
  – Data types
• Can’t just take existing J2EE and transform into a web service
• Can design J2EE interfaces to also be exposed as web services
• Or…
Interface Refactoring (1)

package Services {
    interface Service {
        readonly attribute string name;
    }
    struct Currency {
        string CurrencyCode;
        float value;
    }
    interface CurrencyConversionService : Service {
        Currency convert(in Currency from);
    }
    interface ServiceManager {
        Service getService (in string serviceName);
    }
};
Interface Refactoring (2)

<operation name="dollarsToEuros">
  <soap:operation soapAction="" style="document"/>
  <input name="dollarsToEuros">
    <soap:body namespace="http://xmlbus.com/Conversion"
               use="literal"/>
  </input>
  <output name="dollarsToEurosResponse">
    <soap:body namespace="http://xmlbus.com/Conversion"
               use="literal"/>
  </output>
</operation>
Enterprise Capabilities

• What technical capabilities are essential before Web Services can realistically be deployed?
  – Security
  – Transactions
  – Reliable Messaging
  – Enterprise Qos
  – Other?

• What interoperability is there at this level?
Microsoft GXA

• Global XML Architecture
• Current ‘Global XML Web Services’ initiative
• Releases ‘open standards’
• Relevant works:
  • WS-Inspection
  • WS-License
  • WS-Referral
  • WS-Routing
  • WS-Security
  • WSDL
  • SOAP 1.0

Microsoft GXA

Infrastructure Protocols
- Transactions
- Reliable Messaging

SOAP Modules
- Referral
- Security
- Routing
- License

Discovery
- Directory
- Inspection
- Description

SOAP

The Internet
Nordstrom.com Gift Cards

**Web Site**
- ASP.NET
- IIS

**Enterprise Operations**
- J2EE
- XMLBus
- Unix

**Enterprise Data**
- DB2
- CICS

**UDDI**

**Web Services**