Integrating Database Native Web Services Into Oracle's SOA Architecture

dai clegg
Director of Development, Oracle Development Tools
dai.clegg@oracle.com

OOW, October 2009
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Topics

• Why a SOA
• The database in a SOA
• Choices in exposing database as services
• Designing the services
• Resources
Why a Service Oriented Architecture?

• It’s the new buzzword
• It’s a must-have for the resume

• To integrate applications
• To build flexible processes
• To modernize applications
Anatomy of a SOA

The 3 tier architecture

SQL Net
JDBC
ODBC
etc

Relational Data
Anatomy of a SOA

The integration architecture
Anatomy of a SOA

The service-oriented architecture

- Relational Data
- Legacy Data
- Packaged Apps
- XML Data

SOAP over HTTP to WSDL Services
Anatomy of a Service

Service Consumer

Service Interface
Transformation Layer
Service Implementation

New Service
Wrapped Legacy
Composite Service

Interface Proxy
A Composite (BPEL) Service
Anatomy of a SOA

The service-oriented architecture

Relational Data

Legacy Data

Packaged Apps

XML Data

SOAP over HTTP to WSDL Services
Anatomy of a SOA – summary

- To run a web service you need a server
  - J2EE, .Net or other (e.g. Oracle Database)
- Once you have it deployed it has a URL
  - So it can be reached from anywhere accessible
- WSDL describes the messages it expects & returns
  - So a consumer/client can know how to interact
- A service can be implemented in any technology
  - As can the consumer
- A service can consume other services
  - E.g. BPEL
How Do Database Services Play?

• Four (count them) ways
  • Native Database Web Services
    • Database (11g)
  • ADF Application Module
    • Middle tier ADFm AM as a Service
  • JPublisher
    • Middle tier POJO with JPub mappings
  • TopLink DBWS
    • Middle tier POJO with JAXB mappings (coming)
Database-native Web Services
Middle-tier Data Service

SOAP Request

SOAP Request

SQL Net
JDBC
ODBC
When Do Native Services Play?

• When we prefer to use SOAP/HTTP to connect
• When we want to avoid adding another server
  • Zero deploy services

• Less moving parts
When Do Native Services Play?

- a word of caution

- Less moving parts

- Less integration into the SOA infrastructure
  - Where are my services?
    - Application Server management console (EM)
    - Service registry
  - How are my services protected?
    - Policy manager
Demonstration summary

- Database tier
  - Native Web Services
- Middle tier
  - JPublisher Web Services
- Finding my services
Top Down & Bottom Up Service Development

Top-down: WSDL drives the development

Bottom up: PL/SQL drives the development
Meet in the Middle Service Development

WSDL

Mapping logic

Business Logic
Designing business services top-down

- processes
  - usually event driven
    - Customers
    - Suppliers
    - Partners
    - Employees
- ‘business algorithms’
  - Building up a result from multiple systems
Publishing the legacy bottom-up

- Stick with existing interfaces
  - Business-oriented?
  - Technology-oriented?
  - Design for re-use

- Protect the data
  - Thoughtful interface design
  - Tight input validation
  - Good error & exception reporting
Choices in exposing PL/SQL services

- Platform
  - DB native
  - Middleware
    - ADF, JPub, Toplink DBWS
  - Bottom up or meet in the middle
    - …or meet in the database
      - Consider wrapping packages in service-oriented way
How to Choose

• Mix & Match or pick a platform?
• Factors
  • Skills
  • Architecture
    • Database business logic vs middle tier business logic
    • Re-usable business logic vs re-developed business logic
  • Management
    • Unified catalog
    • Unified governance
Resources

• Mastering SOA White Paper Series

• Chris Muir’s web services paper at ODTUG 2009

• Gerard Davison’s blog
  • [http://kingsfleet.blogspot.com/](http://kingsfleet.blogspot.com/)