Agenda

- What is XML?
- Oracle and XML
- XSU
- SNC and XML
- Tuning XML
- Intermedia Text
- Issues
- How to get more info.
What Is XML?

- A universal standard for electronic data interchange.
- XML is a markup language for documents containing structured information.
- XML provides a facility to define tags and the structural relationships between them.
- A sequence of text characters that encodes data using tags.
- DTD, Schemas, define the legal names for the tags in a particular XML vocabulary (i.e. fpml)
<?xml version="1.0"?>
<EMPLIST>
    <EMP>
        <EMPNO>7654</EMPNO>
        <ENAME>MARTIN</ENAME>
    </EMP>
    <EMP>
        <EMPNO>7788</EMPNO>
        <ENAME>SCOTT</ENAME>
    </EMP>
</EMPLIST>
Why XML?

- Vendor, platform, language neutral technology for web-based data exchange.
- XML was created so that richly structured documents could be used over the web.
- HTML, comes bound with a set of semantics and does not provide arbitrary structure.
- Simplifies the task of connecting applications and services over the web.
- Looks good on a resume.
Oracle 8i Platform for XML
Oracle 8i Platform for XML

- **XDK**
  - XML parser for PL/SQL, java, c, c++
  - XSLT processor for java
  - XML schema processor for java
  - XML Transviewer beans
  - XSQL Servlet
  - XSU
  - Conforms to XML 1.0 standard.
- Supports both DOM/SAX Interfaces.
- Supports XML Namespaces.
- Integrated XSLT 1.0 support.
- Schema support is early release.
- Build graphical apps with Transviewer beans.
- XML Class generator is beta.
Oracle 8i Platform for XML

- Helper packages (xpath, xml, etc.)
  - Developed by oracle XML development team.
  - Uses PL/SQL parser.
  - Reduces coding time.
  - Download from O’reilley site.
XSQL Servlet Engine

1. User
2. Browser
3. Servlet-Compatible Web Server
4. XSQL Servlet
5. XML SQL Utility
6. XSLT Processor
7. Query Results in XML, HTML, or Other Format

Database: Oracle8i

Diagram flow:
1. User requests URL
2. Browser sends request to Web Server
3. Web Server processes XSQL File
4. XSQL Page Processor processes SQL Queries
5. XML SQL Utility returns query results
6. XSLT Processor processes XSL Stylesheet
7. Output is displayed to user
XSQL – Servlet Engine

- Requires configuration file containing connection info.
- Requires .xsql file to be passed to the servlet engine.

**HTTP Request:**
http://yourcompany.com/ListOfEmployees.xsql?dept=IT

**XSQL File to process HTTP request:**
```xml
<?xml version="1.0"?>
<xsql:query connection="demo" xmlns:xsql="urn:oracle-xsql">
    SELECT EMP_FNAME, EMP_LNAME, TITLE
    FROM EMPLOYEE E
    WHERE E.DEPT = '{@dept}'
</xsql:query>
```
XSU – XML SQL Utility

Diagram:
- SQL or Object Queries
- XML SQL Utility for Java
- Oracle
- XML Document of Query Results
XSU - Cont.

- Core Java class libraries for automatically and dynamically rendering the results of arbitrary SQL queries into canonical XML.
- Contains PL/SQL wrappers for most of the classes.
- Installed into SYS account.
- Native with 8.1.7 and higher.
- Uses column names or alias as tags.
- XMLGEN or DBMS_XMLQUERY?
- Use LOADJAVA utility to load XSU classes.
SELECT source as party,
       text,
       transitionumber
FROM    org_table
WHERE   org_id = 'ORGWILL';

setRowTag('conversation');
setRowsetTag('conversations');
useLowerCaseTagNames();
setErrorTag('Error');
setRowIdColumn('ORG_ID');

<?xml version = '1.0'?>
<conversations>
  <conversation num="ORGWILL">
    <party>Jason Cohen</party>
    <text>Hello...</text>
    <TransitionNumber>3</TransitionNumber>
  </conversation>
</conversations>
Tuning XML

- Use bind variables instead of string concatenation.

```java
Xmlgen.setBindValue('emp_id', emp_id);

SelectString := 'SELECT *
    FROM employee
    WHERE id = :emp_id ';

Xml_clob := Xmlgen/XML(SelectString, 0);
```
Tuning XML

- Use generic insert for bulk inserts.
- Requires about 50mb for java_pool_size for install of JVM.
- Uses around 10mb of java pool.
- Use Intermedia text for searching large XML objects.
- Use SAX API instead of DOM when processing structured data.

"SAX, the simple API for XML, is a standard interface for event-based XML parsing"
Intermedia Text

- Enables text-pattern searching within XML documents.
- Creates special indexes on XML tags being searched.
- Must update index to include new rows.
- CTXSsrv to rebuild indexes.
Intermedia Text

• Similar to XPATH expressions.
• Limited attribute value searching functionality.
• When InterMedia indexes exist on a table the cost-based optimizer is always used.
A) SELECT id
    FROM employee
    WHERE dept = 'MARKETING'
    and  contains (details, 'BOB WITHIN emp_fname') > 0

B) SELECT ID
    FROM employee_relocation
    WHERE dept = 'MARKETING'
    and ( contains (source, '(DESKA WITHIN desk) and
        (USRA WITHIN user)') ) > 0 OR
        contains (destination, '(DESKA WITHIN desk) and
        (USRA WITHIN user)') ) > 0 )   and
    ( contains (source, 'DESKA WITHIN desk') ) > 0 )   and
    ( contains (destination, 'DESKA WITHIN desk') ) > 0 OR
    contains (destination, 'DESKA WITHIN desk') ) > 0 );
Issues

- XSU is separate install with 8.1.6 or lower.
- Need to upgrade to 8.1.6.2 for large XML result sets due to bug with dbms_lob.Append failing with an ORA-600.
- SelectNodes() bug failing with an ORA-29532.
- No PL/SQL interface to SAX. Must use JAVA, C, or C++.
Issues

- Treats XML stored in a column as string not as XML.
- Slow on inserts (1000 inserts > 20 sec).
- Older versions of OO4O didn’t support temp lob’s.
- XML Query is only working draft.
- XML PL/SQL PARSER CRASH
Oracle 9i XML Features

- XDK is built in.
- XML-based messaging with Advanced Queuing.
- New XML type.
Summary

- XML is a vendor, platform, language neutral technology for data exchange over the web.
- Use Oracle’s XDK for developing XML applications
- Use XSU to transform SQL queries into XML.
- Use XSQL to submit HTTP request from a browser.
- Intermedia Text for fast searching within XML documents.
Where to Get More Information

- XML discussion group at:
- www.xml.com
- http://technet.oracle.com/tech/xml
- “Building Oracle XML Applications”, by Steve Muench.