

# Developing Web Applications with Oracle and XML

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Jason Cohen  
Jason@webspedito.Com

# 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 – AN EXAMPLE

`<?xml version="1.0"?>` ← **XML Identifier**

`<EMPLIST>` ← **Start Tag**

`<EMP>` ← **Node Element**

`<EMPNO>7654</EMPNO>`

`<ENAME>MARTIN</ENAME>`

`</EMP>`

`<EMP>`

`<EMPNO>7788</EMPNO>`

`<ENAME>SCOTT</ENAME>`

`</EMP>`

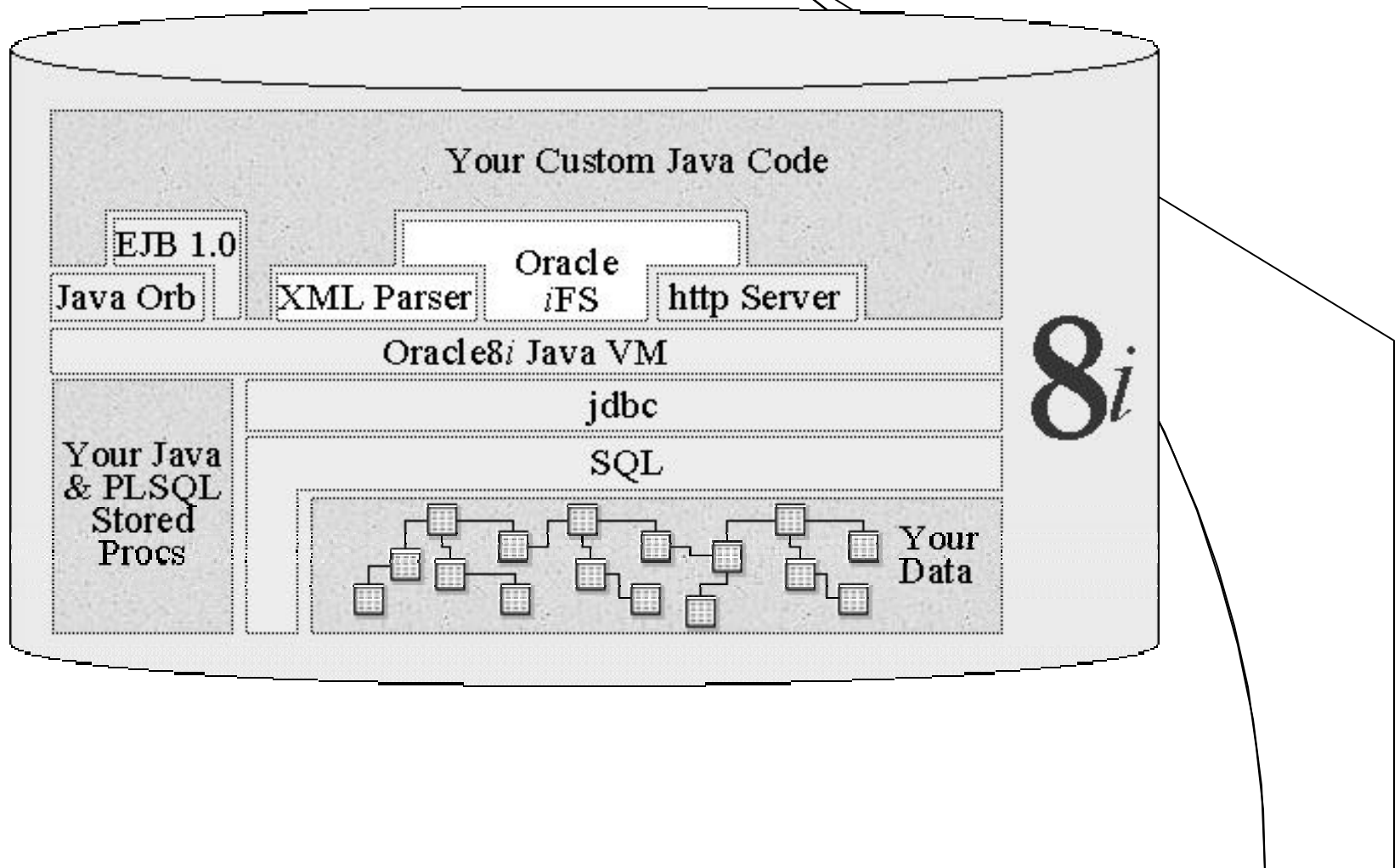
`</EMPLIST>` ← **End Tag**



# 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.

# XDK

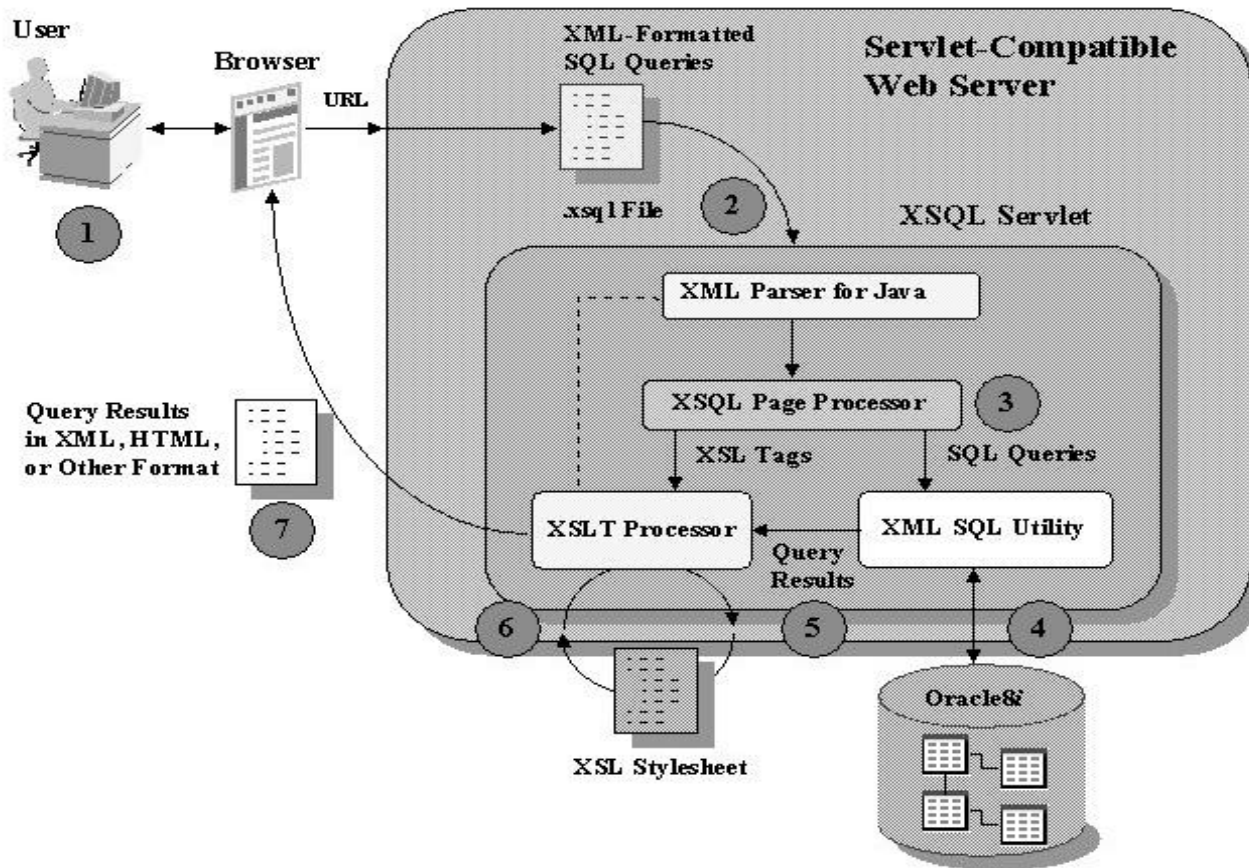
- Supports both DOM/SAX Interfaces.
- Supports XML Namespaces.
- Integrated XSLT 1.0 support.
- Schema support is early release.
- Build graphical apps with Transviewer beans.
- XML Class generator is beta.



# 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'reilly site.
    - [Ftp://ftp.oreilly.Com/pub/examples/oracle/orxmlapp/](ftp://ftp.oreilly.com/pub/examples/oracle/orxmlapp/)

# XSQL Servlet Engine



# XSQL – Servlet Engine

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

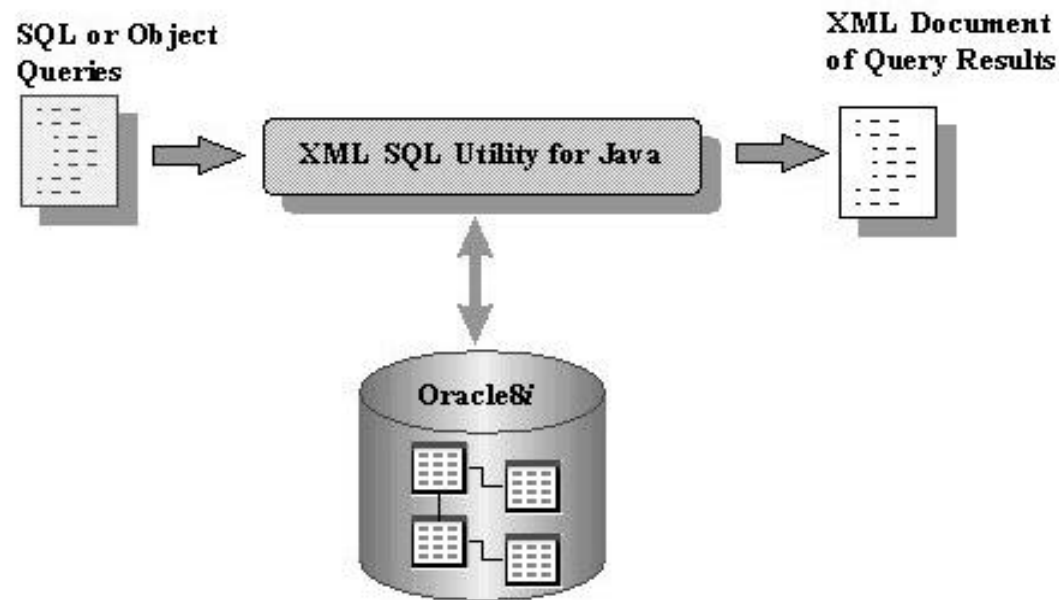
## **HTTP Request:**

`http://yourcompany.com/ListOfEmployees.xsql?dept=IT`

## **XSQL File to process HTTP request:**

```
<?xml 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



# 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.

# XSU – Sample Code

```
SELECT source as party,  
       text,  
       transitionnumber  
FROM   org_table  
WHERE  org_id = 'ORGWILL';
```

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

ORG\_TABLE

ORG_ID
SOURCE
TEXT
TRANSITION_NUMBER

```
<?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.

```
Xmlgen.setBindValue('emp_id', emp_id);  
  
SelectString := 'SELECT *  
  
                FROM employee  
  
                WHERE id = :emp_id ' ;  
  
Xml_clob := Xmlgen.getXML(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.
- CTXSRV 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.

# Intermedia Text - Examples

```
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 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:
  - [Http://technet.us.oracle.com/support/bboard/discussions.htm](http://technet.us.oracle.com/support/bboard/discussions.htm)
- [www.xml.com](http://www.xml.com)
- <http://technet.oracle.com/tech/xml>
- “Building Oracle XML Applications”, by Steve Muench.
- <http://www.megginson.com/SAX/index.html>