

Session id: 40375

# **Developing Occasionally Connected Applications Using Oracle 9iLite**

***Adding Mobility to Enterprise Application***

**Shawn Casey, Intel Corporation  
Sharad Singhani, Oracle Corporation**

# Agenda

- Trends Towards Mobile Computing
- Occasionally Connected Computing
- Converting DB Apps to OCC Apps
- Conclusion

# 2006 Laptop WiFi Environment

Mobility  
Vectors

Performance  
Battery Life  
Form Factor  
Wireless

Pentium® II  
Processor

Projected 50M  
Intel® Centrino™  
Mobile  
Technology based  
Cs, 2003-06

Source: Gartner mobile PC  
M (Mar'03)

**SEARCH** The Web CNN.com

**A first: Laptop sales beat desktops**

Thursday, July 3, 2003 Posted: 9:56 AM EDT (1356 GMT)

**NEW YORK (AP) --** Notebook computer sales surpassed sales of desktop computers for the first time in May thanks to an increasing desire for mobility, according to a survey by market research firm NPD Group.

Notebooks accounted for more than 54 percent of the nearly \$500 million in retail computer sales in May, the Port Washington, New York, concern said Wednesday. That compares with January 2000, when laptops represented less than 25 percent of sales volume.

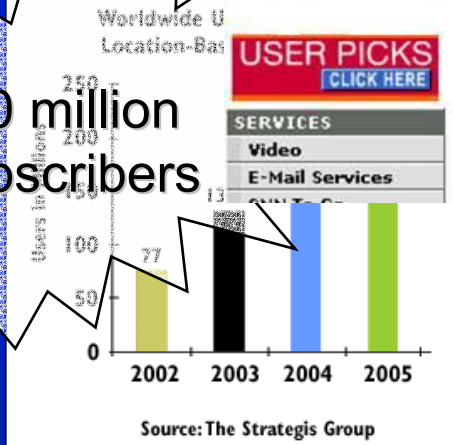
**USER PICKS**  
[CLICK HERE](#)

**SERVICES**  
[Video](#)  
[E-Mail Services](#)

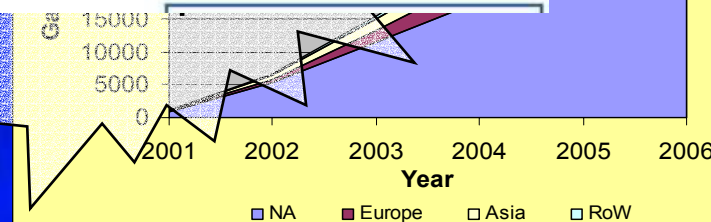
**Story Tools**  
[SAVE THIS](#) [EMAIL THIS](#)  
[PRINT THIS](#) [MOST POPULAR](#)

1998-1999

200 million  
Subscribers



Gartner 2001



intel

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Intel engaged with 50 worldwide  
Public WLAN service providers;  
Plan to enable 15,000 Hotspots by  
year end '03

# Occasionally Connected Computing

Benefits  
Features  
Vector

Increased User Productivity

Transparent User Experience

Consistent User Experience

Increased efficiency and utilization

Access Your Data Anytime

Dynamically manage intermittent connections

Common technologies/mechanisms

Run All Day Unwired

Offline Data Management

Seamless Connectivity

Multiple Platform Support

Power and Performance Management

**OCC enables applications to overcome mobility challenges**



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# Drive for Mobile Computing

**“Consumers want more from their mobile devices and applications, especially in the future. Enhancements need to provide greater utility in order to lure consumers to the buying table.”**

***Mobilizing the Consumer, Randy Giusto, IDC. – 8/02***

- **Mobile Users Want:**
  - **Seamless connectivity**
    - Graceful handling of connection changes
    - Networked applications with “offline” mode
  - **Longer Battery Life**
  - **High Performance**



# Mobility Inflection Point

**Wireless Roaming Stressing Traditional Applications**  
Resets, Reboots, Service Disruptions, Refreshes, etc.

+

**Volume Mobile Platforms**  
Laptops, Handhelds, Phones

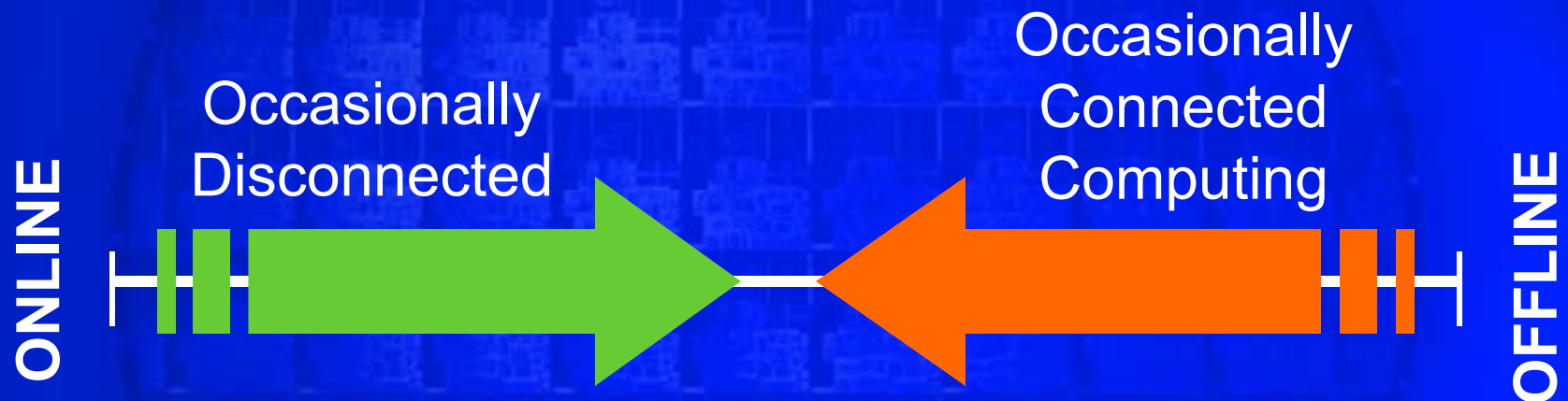
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## **Opportunity to “Mobilize” Applications**

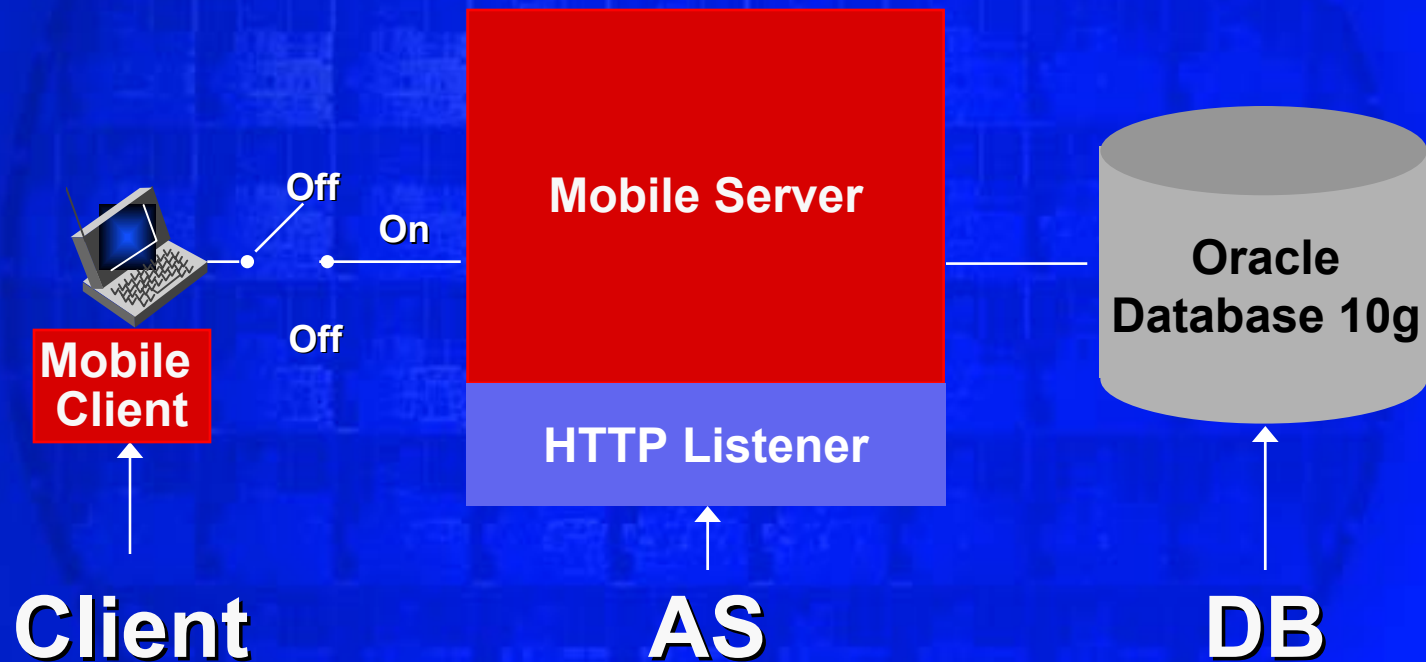
- Develop an Occasionally Connected Computing SW Arch.
- Develop to Standards for the Robustness IT Requires



# Mobility Spectrum



# Occasionally Connected Computing Architecture





# **Secret of Building OCC Application**

**Design the Application by Factoring in Mobile Device and Network Characteristics!**

- **Device CPU, Disk, Display, Peripherals**
- **Mobile Database Size**
- **Data Synchronization Load**
- **Network Bandwidth and Latency**



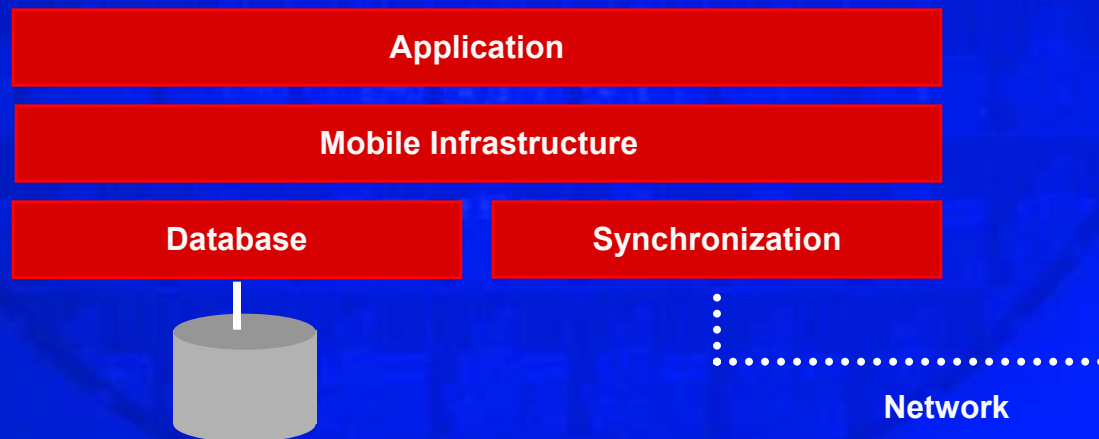
# **Five Steps of Building an OCC Application**

- 1. Create Application Code**
- 2. Package Application**
- 3. Publish & Provision Application**
- 4. Deploy Application and Mobile Database**
- 5. Run OCC Application**



# Step 1: Create Application cont'd

- Application (API)
- Mobile Infrastructure (API)
- Database (API)
- Synchronization (API)



# Step 1: Application API

cont'd

- Programming Languages options
  - C++, Java, .Net\*, **Java Servlet/JSP/HTML**
- Database API options
  - ODBC, **JDBC**, ADO(CE), ADO.Net
- Synchronization API options
  - Mobile Sync C++
  - Mobile Sync Java
  - Mobile Sync COM
  - Mobile Sync .Net





# **Step 1: Application API**

## **cont'd**

- **We will convert an existing online Web Application into a Occasionally Connected Application**
- **Step 1: Install Oracle JDeveloper**
- **Step 2: Load an existing Web Application using Java Servlet 2.2, JSP 1.1, Oracle BC4J**
- **Step 3: Modify the Java Application Code**
  - 1. User Profile**
  - 2. JDBC Connection**



# Step 1: Application API

## cont'd

- User Profile

- This object can be obtained from the `oracle.lite.web.servlet.OraHttpServletRequest`.
- *Servlets* can typecast the request parameter to the `OraHttpServletRequest` object and call the `getUserProfile` method to obtain the user profile object

```
public void doGet(HttpServletRequest request,
    HttpServletResponse response) throws ServletException,
    IOException
{ // Retrieve the User Profile,
  java.security.Principal user = request.getUserPrincipal();
```



# Step 1: Application API

## cont'd

- **JDBC Connection**
  - JDBC connection can be retrieved from User Profile

```
public void doGet(HttpServletRequest request,
    HttpServletResponse response) throws
    ServletException, IOException
{ // Retrieve the JDBC Connection,
    java.security.Principal user =
    request.getUserPrincipal();
    Connection conn = ((OraUserProfile)
    user).getConnection();
```

# Adding Mobility the Easy Way

- Application Designer is fully aware of Mobility...
- ...but Application Developer only applies minor modifications to Application Code and Database Schema
- **Mobility** aspects are added after programming is complete using **declarative** techniques → Step 2: Packaging





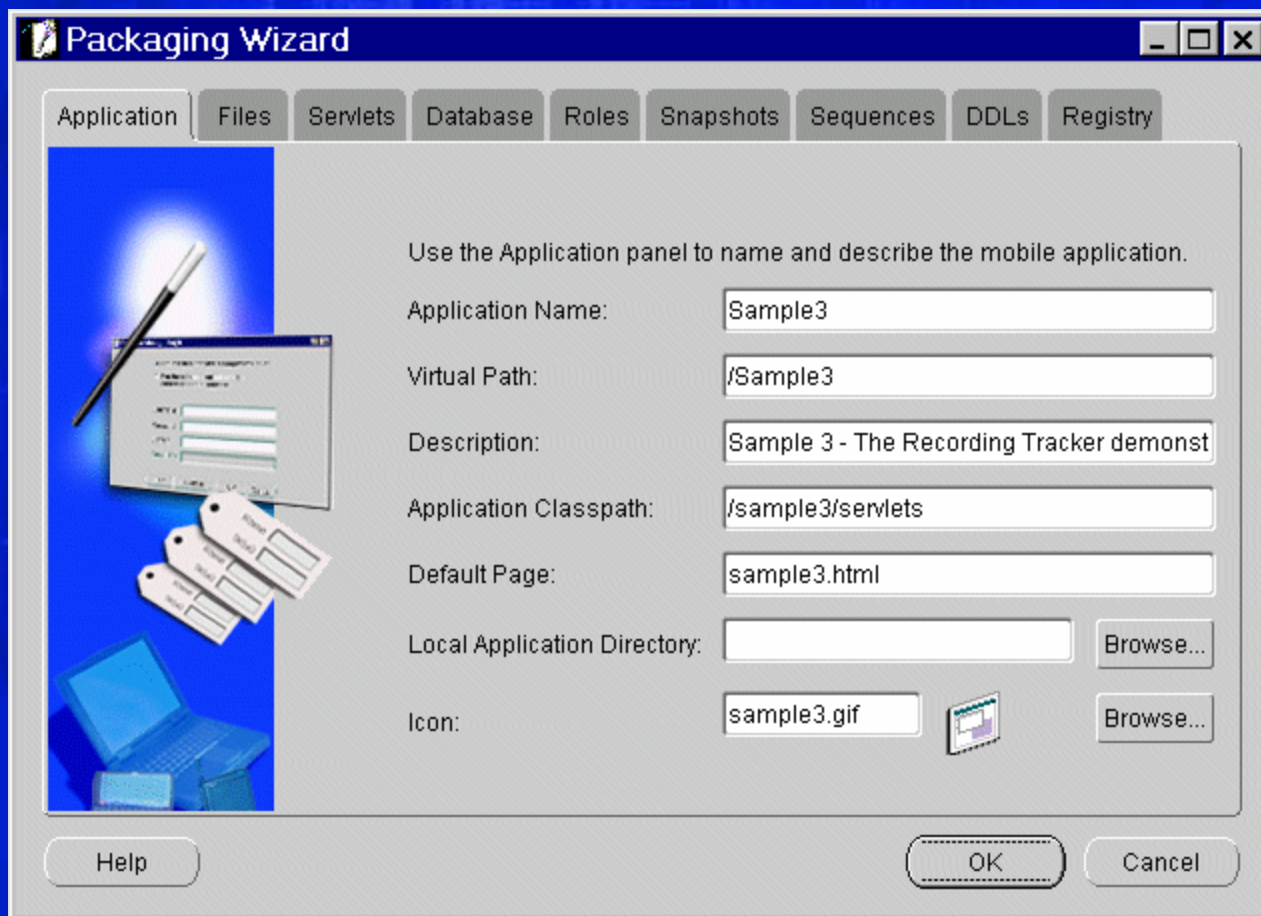
# **Step 2: Package Application** cont'd

## **APPLICATION** specific Information:

- 1. Name**
- 2. Application Files**
- 3. Database Name**
- 4. Snapshot Definition**
- 5. Sequence Definition**
- 6. Create JAR/WAR**

# Step 2: Application Name

## cont'd



The image shows a 'Packaging Wizard' dialog box with a blue title bar and standard window controls. It features a tabbed interface with tabs for 'Application', 'Files', 'Servlets', 'Database', 'Roles', 'Snapshots', 'Sequences', 'DDLs', and 'Registry'. The 'Application' tab is active, displaying a blue sidebar with icons of a pen, a document, and a laptop. The main area contains a text box with instructions: 'Use the Application panel to name and describe the mobile application.' Below this are several labeled text fields: 'Application Name' (containing 'Sample3'), 'Virtual Path' (containing '/Sample3'), 'Description' (containing 'Sample 3 - The Recording Tracker demonstr'), 'Application Classpath' (containing '/sample3/servlets'), 'Default Page' (containing 'sample3.html'), 'Local Application Directory' (empty), and 'Icon' (containing 'sample3.gif'). The 'Local Application Directory' and 'Icon' fields have 'Browse...' buttons next to them. At the bottom are 'Help', 'OK', and 'Cancel' buttons.

Packaging Wizard

Application Files Servlets Database Roles Snapshots Sequences DDLs Registry

Use the Application panel to name and describe the mobile application.

Application Name: Sample3

Virtual Path: /Sample3

Description: Sample 3 - The Recording Tracker demonstr

Application Classpath: /sample3/servlets

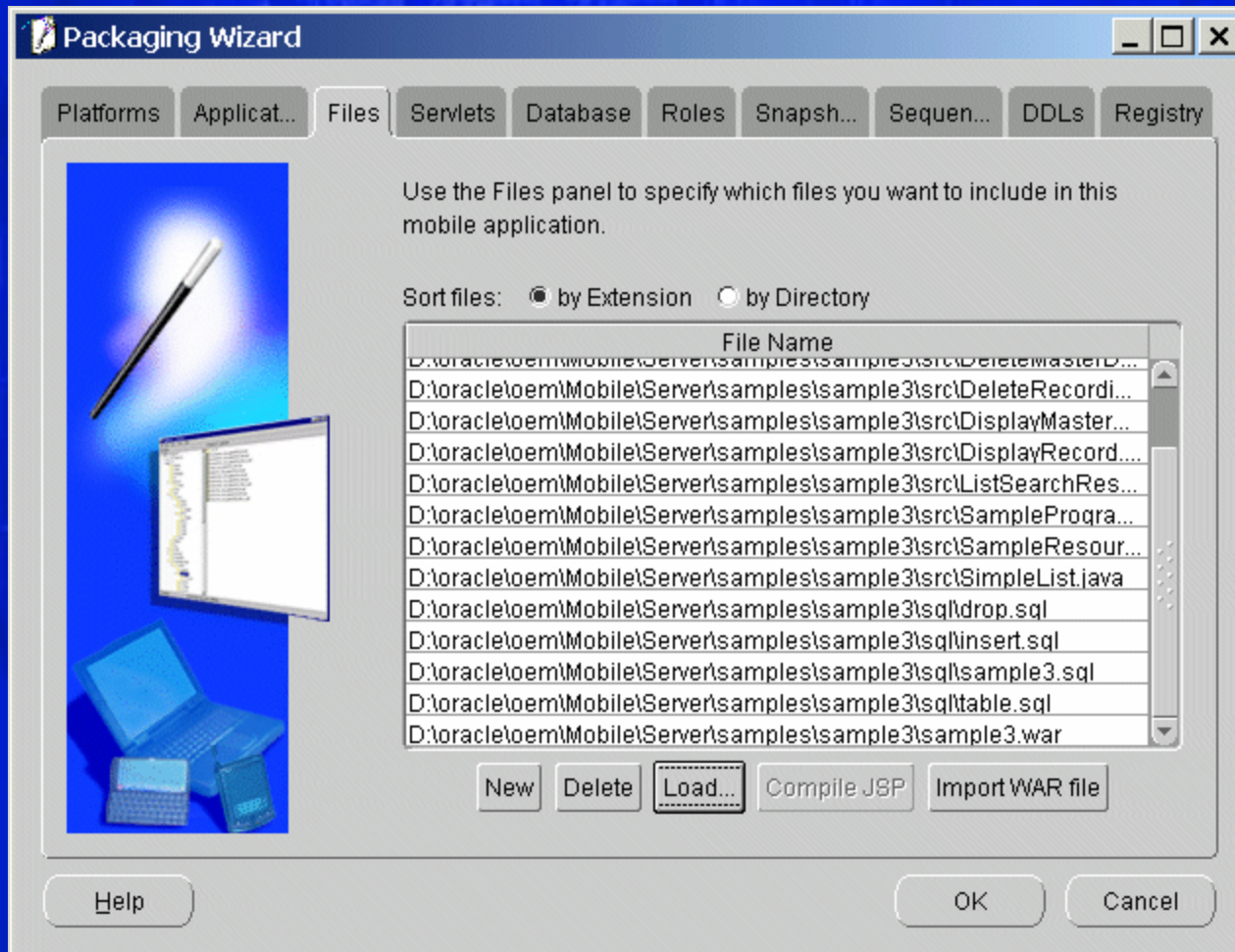
Default Page: sample3.html

Local Application Directory: Browse...

Icon: sample3.gif Browse...

Help OK Cancel

# Step 2: Application Files cont'd



# Step 2: Application Database cont'd

**Packaging Wizard**

Application Files Servlets **Database** Roles Snapshots Sequences DDLs Registry

Use the Database panel to specify how the mobile application interacts with the Oracle database.

**Server side**

Database Username:

Number of Connections:

Share Connections: ☐

**Client side**

Database DSN Name:

Help OK Cancel



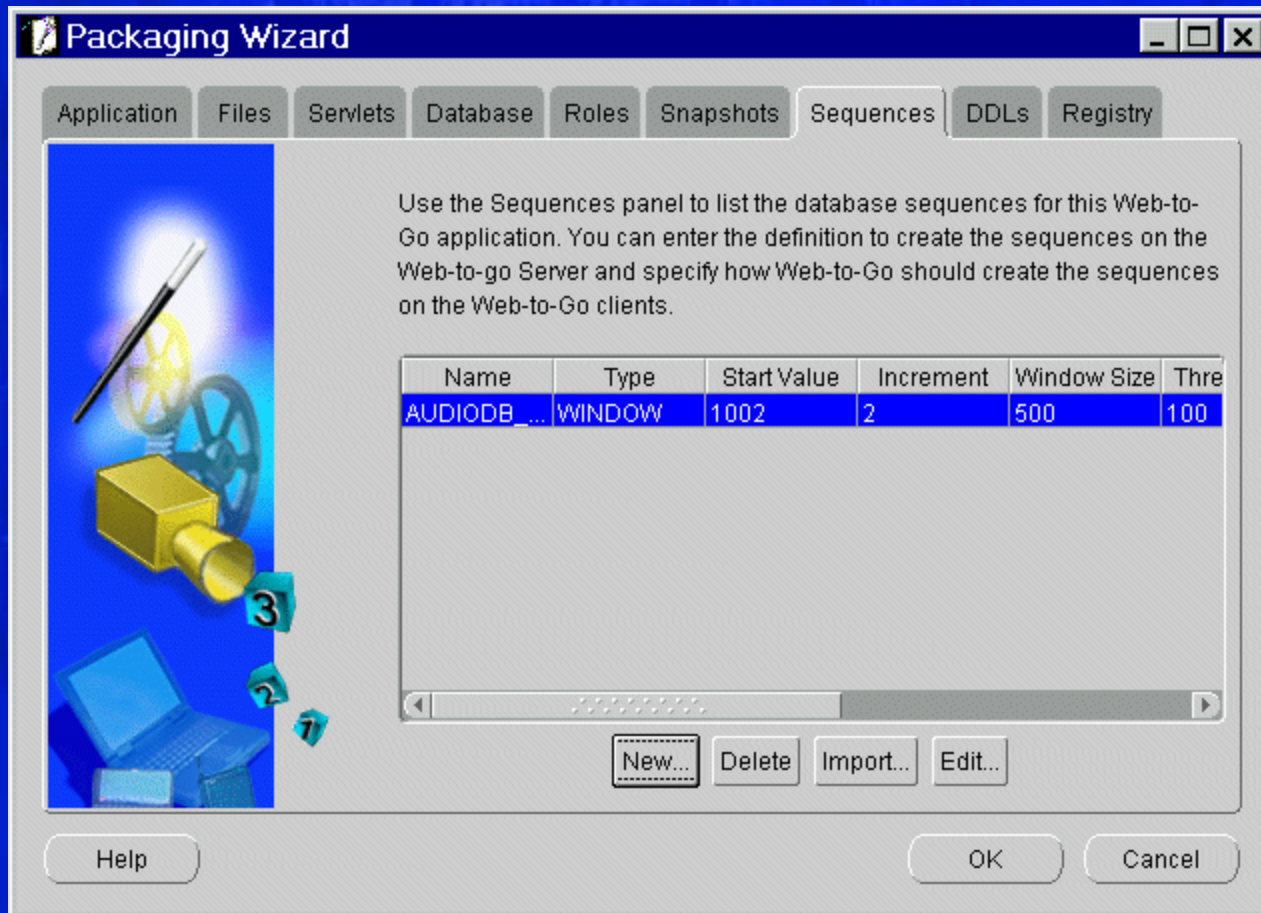
# Step 2: Snapshot Definition

## cont'd

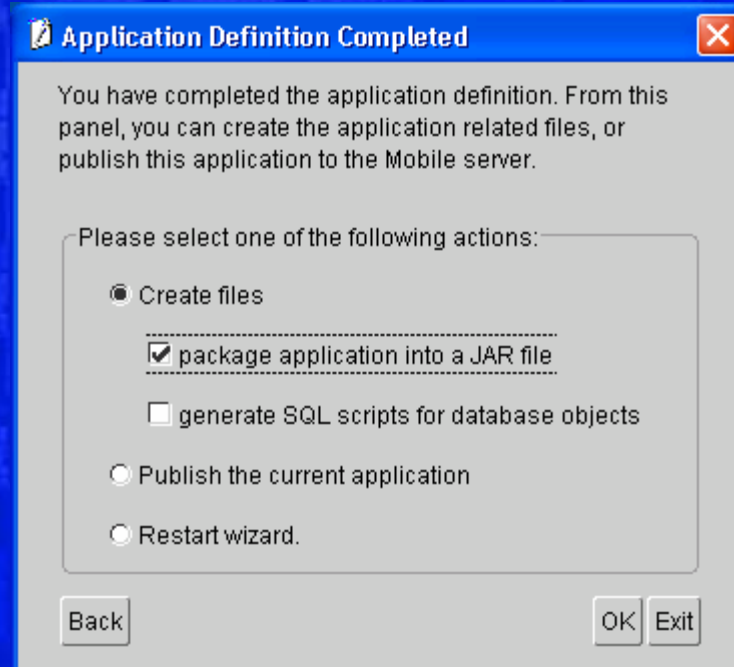


# Step 2: Sequence Definition

## cont'd



# Step 2: Generate JAR cont'd



# **Step 3: Publish & Provision cont'd**

- **Step 3.1 Publish**
  - Publish JAR/WAR file on the Server
- **Step 3.2 Provision**
  - Create User
  - Define ACL
    - → Bind user to application & data
  - Define User Profile
    - → Specify user specific data subset (next slide)



# Step 3: Define User Profile

- Temporary Snapshot Definition (from Packaging Wizard)

```
select * from scott.emp where code = :code
```

DBA defines a value for each user using a GUI Tool

The screenshot shows the Oracle9i Lite Control Center interface. The 'Applications' tab is selected. On the left, under 'Find Applications', 'By Name' is selected. The 'Data Subsetting parameters' section is active, showing a table of users and platforms. The 'Selected User' section shows 'User Name: JOHN' and 'Platform Name: WIN32'. Below this, the 'Data Subsetting parameters' table has a 'Name' column and a 'Value' column. The 'CODE' row has a value of '1111' entered in the 'Value' field. 'Save' and 'Reset' buttons are visible at the bottom right of the configuration area.

User	Platform
JACK	WIN32
JANE	WIN32
JOHN	WIN32
SHARAD	WIN32

Name	Value
CODE:	1111

## Final Snapshot Definition

```
select * from scott.emp where code = 1111
```

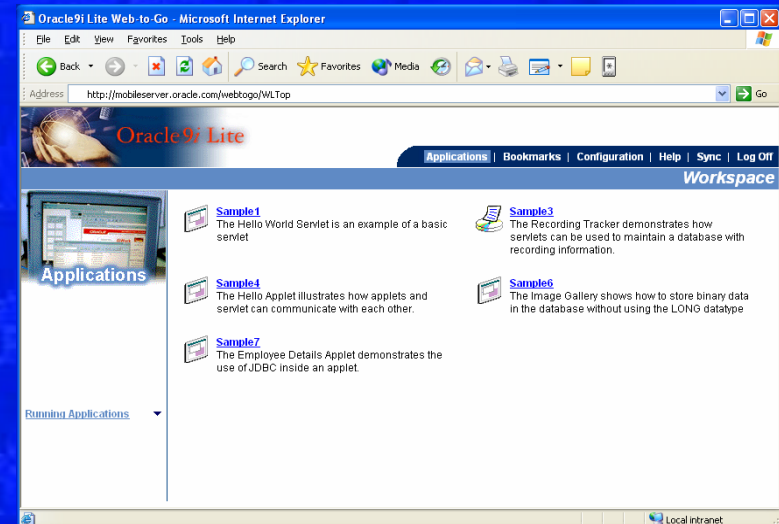
# **Step 4: Deploy Application and Mobile Database**

- **Step 4.1 Install Mobile Client on the Device**
  - Installs and register Mobile Client libraries on the Intel® Centrino™ Mobile Technology Laptop
- **Step 4.2 Synchronize Application and Data**
  - Deploys and install Web Application and mobile Database on Intel Centrino Mobile Technology Laptop



# Step 5: Run OCC Application

- **Step 5.1 Run OCC Application from Workspace**
  - The Web application updates the mobile database using JDBC



- **Step 5.2 Synchronize**
  - Today: Manually by the mobile user
  - Future: Automatically when roaming into HotSpot

# Overcoming Application Limitations

- **Offline Data Management**
  - Data caching and Synchronization
  - Security Protection
  - Manageability
- **Seamless Application Connectivity**
  - Detect changes in network state & take action
- **Multiple Platform Support**
  - Identification of Platform Attributes
- **Power Reduction and Performance Management**





# OCC Technical Development Kit

- Release mid-Q4
- Reference Architecture Guides
  - Database, Portal, Distributed Document architectures
- Tools
  - Communication management/simulation
  - Power management/simulation
- APIs
  - ITI – Intel Transport Interface
    - Information and notification about network status
    - QoS\*\*, Bandwidth\*\*, Reliable messaging\*\*
  - Power APIs\*\*

**\*\* Will be included in OCC TDK 2.0**



# Conclusion

- **Mobility is happening now**
  - Large Mobile Computing Base Today
  - Ever Increasing Connectivity
- **Oracle provides solution to convert existing DB applications to an OCC apps using 9iLite**
- **Join Intel and Oracle in pioneering user friendly mobile applications**

***Join us at the Intel Sponsored Wireless Pavilion  
for a demonstration of our ISV's mobile solutions***



**Reminder –  
please complete the  
OracleWorld online  
session survey**

**Thank you.**



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