Testing Java EE 6 Applications: Tools and Techniques

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Testing and Java EE

• Testing critical in enterprise development
• Pain-point that was not addressed well by Java EE
• Java EE 6 helps enormously by providing a number of enabling features geared towards testing
• Still somewhat a patchwork of evolving solutions
• Only covers developer (unit and integration) testing
• Primarily based on JUnit
• More about tools rather than new techniques per se
Testing Java EE Applications

- HTTP
- Component Architecture
- Embedded Containers, CDI
- Pluggability, EJB 3.1, CDI
- SOAP, REST
- Servlet 3
- JSF 2
- CDI
- EJB 3.1
- JPA 2
- JAX-WS
- JAX-RS
- HttpSession
- JSFUnit
- Arquillian
- Embedded Containers, Embedded Databases
- soapUI
Testing Servlet 3

• JUnit, HttpUnit, HtmlUnit great choices
• See if your container can be embedded into a unit test
• Cactus and Selenium can be good choices too
• Simulated Servlet containers like ServletUnit or mocking Servlet objects with EasyMock or Mockito options for very simple cases
Servlet 3 Testing Demo!
Testing JSF 2

- JSF 2 project stages invaluable for debugging, test configuration, component development
- For simple cases, generic Servlet testing tools could be used, especially Selenium
- JSFUnit ideal for more complete JSF testing
- JSFUnit uses Cactus, JUnit, HttpUnit, HtmlUnit under the hood
JSF 2 Testing Demo!
Testing EJB 3.1/CDI

• CDI increases Java EE middle-tier testability by leaps and bounds

• EJB 3.1 embedded containers, generic dependency injection, @Alternative, portable extensions, XML deployment descriptors key enablers

• Arquillian/ShrinkWrap ideal cross-vendor CDI/EJB 3.1 testing tools

• Check to see if your application server provides specific testing or JUnit integration support (Resin provides excellent JUnit integration support, for example)
Testing EJB 3.1/CDI

- Embedded containers can be used directly with JUnit for simpler cases, especially OpenEJB
- For the simplest cases, JUnit with EasyMock or Mockito is fine
EJB 3.1 + CDI Testing Demo!
Testing JPA 2

• Embedded containers/CDI tools with JUnit integration works well for JPA 2

• Consider using embedded databases like Java DB, Derby, HSQL

• You can use DBUnit for better data consistency

• JPA supports Java SE environments, non-JTA transactions, JDBC database connections for simpler cases

• For simplest cases JUnit, EasyMock, Mockito or even EJB3Unit works
JPA 2 Testing Demo!
Testing JAX-WS and JAX-RS

• You can use JAX-WS, JAX-RS client APIs with JUnit
• For more complex cases consider soapUI (supports SOAP and REST)
JAX-WS/JAX-RS Testing Demo!
Summary

• JSF 2 project stages, EJB 3.1 embedded containers, JPA 2 pluggability, CDI @Alternative, portable extensions, XML deployment descriptors key enablers for Java EE testing
• Range of new and existing tools available to fit your testing methodology, requirements
• Tools diversification, gradual convergence and further standardization likely going forward
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