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 J2EE
- Java EE 6 helps enormously by providing a number of enabling features geared towards testing
- Still somewhat a patchwork of evolving solutions
- Focus on developer (unit and integration) testing
- Focus on JUnit
- More about new tools rather than new techniques
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
- HttpServletRequest
- 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
Testing EJB 3.1/CDI

- Check to see if your application server provides specific testing or JUnit integration support (Resin provides excellent JUnit integration support, for example)

- 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 Démо!
Testing JPA 2

- Embedded containers/CDI tools with JUnit integration works well for JPA 2 as well
- 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/JAX-RS

- You can use JAX-WS/JAX-RS client APIs with JUnit, especially with embedded containers and Arquillian
- Jersey Test Framework is also very good
- For more complex cases consider soapUI (supports SOAP and REST)
JAX-WS/JAX-RS Testing Demo!
Summary

- JSF 2 component model, 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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