Testing Java EE 6 Applications: Tools and Techniques

Reza Rahman
Expert Group Member, Java EE 6 and EJB 3.1
Resin EJB 3.1 Lite Container Developer
Author, EJB 3 in Action
reza@caucho.com
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
- HttpUnit
- 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
- Apache MyFaces CODI Testing another option
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 Demo!
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-RS/JAX-WS

- 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
References

- JUnit, http://www.junit.org
- Cactus, http://jakarta.apache.org/cactus/
- JSFUnit, http://jboss.org/jsfunit
- Arquillian, http://jboss.org/arquillian
References

- EasyMock, http://easymock.org
- Mockito, http://mockito.org
- EJB3Unit, http://ejb3unit.sourceforge.net
- DbUnit, http://www.dbunit.org
- soapUI, http://www.soapui.org
- GlassFish, https://glassfish.dev.java.net
- Embedded GlassFish, https://embedded-glassfish.dev.java.net
References

- JBoss, http://jboss.org/jbossas
- Derby, http://db.apache.org/derby/
- HSQL, http://hsqldb.org
Thanks!

Email: reza@caucho.com

Twitter: cauchoresin

Facebook:
http://www.facebook.com/pages/Caucho-Technology/8671323790

Presentation materials: http://www.caucho.com/articles/