

# Testing Java EE 6 Applications: Tools and Techniques

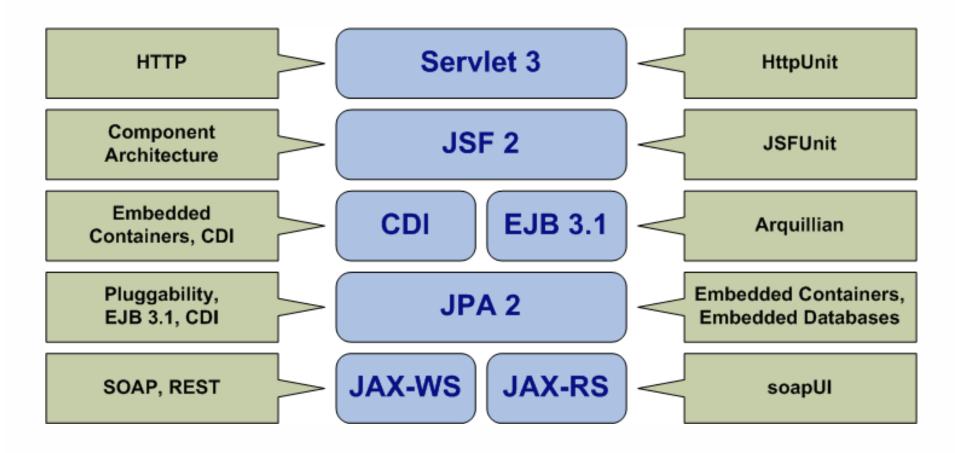
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#### Testing and Java EE

- 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

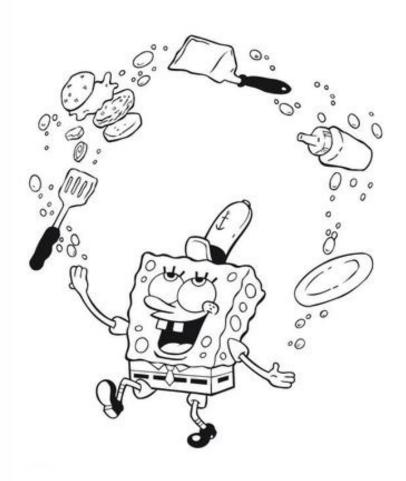




## **Testing Servlet 3**

- 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

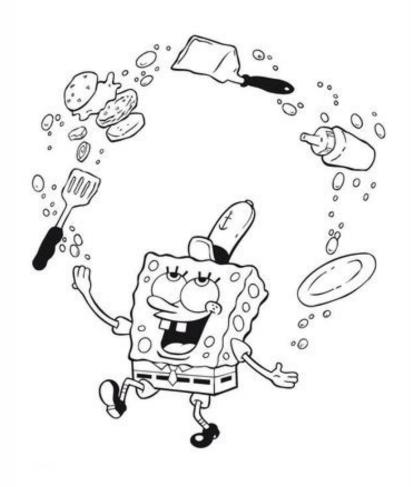
# Servlet 3 Testing Demo!



#### 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

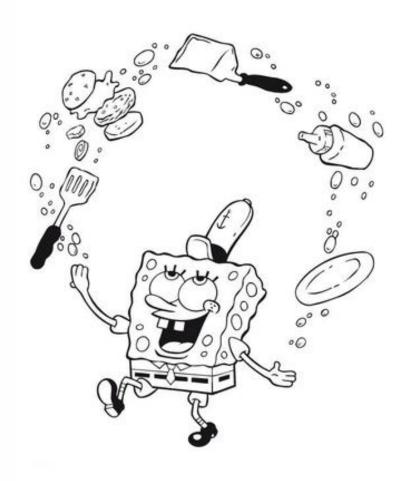
# EJB 3.1 + CDI Testing Demo!



## 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!

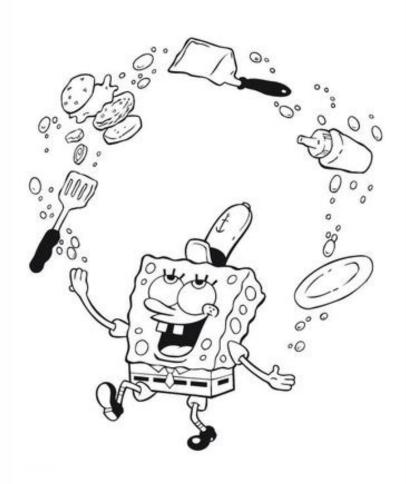




## Testing JAX-RS/JAX-WS

- 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

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#### Thanks!

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