GlassFish v3

The future of app servers and Java EE is here

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GlassFish v3
The future of app servers and Java EE is here
...well almost

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What a difference one year makes

GlassFish v3 Prelude just released

3x hits growth
v3 soon to be released
Disclaimer

This presentation has no GlassFish v2.1 content (and thus no...)

Record breaking perf numbers
Web Services interop (Metro)
Easy clustering and centralized admin
Large deployment success stories
April 20\textsuperscript{th}, 2009

Oracle to Buy Sun
Dependency injection in Java EE 6

One big topic of discussion at JavaOne was the recently filed JSR-330, “Dependency injection ft. alignment of JSR-330 and JSR-299 (formerly known as “Web Beans”) was in order. What would space, if we end up with competing/diverging solutions in the Java enterprise space?

I'm happy to announce that, thanks to the work of many individuals, we've come to a positive res:

- JSR-299 will be updated to use the JSR-330 annotations
- The initial draft of JSR-330 has evolved to take into account requirements coming from J:
- Both JSRs will be part of the Java EE 6 Platform

Normally, we would not be too happy (That's putting it too kindly! -- Eds.) about adding a new JS

http://weblogs.java.net/blog/robc/archive/2009/08/dependency_inje.html
In the mean time in GlassFish land...

- **Releases**
  - v3 Preview + refresh, and 16 promoted builds
- **Numerous new features**
  - Java EE 6 API's, restart, btrace/dtrace, embedded, modularity, OSGi, RESTful Admin, ACC, ...
  - Sub-projects: Jersey 1.x, Grizzly 2.0, Grizzly Comet, Atmosphere, Metro, OpenMQ, and scripting: jRoR, Grails, and now Django (jython)
  - Tooling: Eclipse Bundle 1.1, NetBeans 6.8 M1
- **4 patch releases for the GlassFish v2.1 branch**
  - Now at v2.1patch5
- **On track for November release of v3 Final**
Demo

Painless development with GlassFish
Painless Java EE development!

- Incremental compile of all Java EE artifacts
- Auto-deploy of all Java EE and static artifacts
Session Retention

- Deployment option to maintain stateful sessions across re-deployments

$ asadmin redeploy --properties keepSessions=true myapp.war

- Greatly simplifies the development paradigm

- Integrated in NetBeans 6.x:
Java EE

• Java EE 5
  • Arguably the most important enterprise release
  • Learning from past mistakes and from others
  • Innovation with compatibility

• Java EE 6
  • More Ease of Use
  • Extensibility
  • Profiles
  • Pruning

Homogeneous Platform
Java EE 6 (JSR 316)

- EJB 3.1
- JPA 2.0
- Servlet 3.0
- JSF 2.0
- Connector Architecture 1.6
- Bean Validation 1.0
- JSR 299 JCDI 1.0 (née Web Beans)
- JSR 330 (@Inject)

- JAXB 2.2
- JAX-WS 2.2
- JSR-109 1.3
- JAX-RS 1.1
- JSP 2.2, EL 2.2
- Authentication SPI 1.1
- Common Annotations 1.1 (JSR 250)
Web Profile

- EJB 3.1, EJB 3.1 lite
- JPA 2.0
- Servlet 3.0
- JSF 2.0
- Connector Architecture 1.6
- Bean Validation 1.0
- JSR 299 JCDI 1.0 (née Web Beans)
- JSR 330 (@Inject)

- JAXB 2.2
- JAX-WS 2.2
- JSR-109 1.3
- JAX-RS 1.1
- JSP 2.2, EL 2.2
- Authentication SPI 1.1
- Common Annotations 1.1 (JSR 250)
Beginning Java EE 6 w/ GlassFish 3
From Novice to Professional

• Antonio Goncalves
  • ParisJUG leader
  • JCP EG member
  • Independent consultant
• JavaOne Best seller
  • Covers JPA 2, EJB 3.1, JSF 2.0, JAX-RS, ...
Introducing GlassFish v3
Modular and Dynamic

- Modular : Apache Felix (OSGi)
- Extensible : HK2
- Yet very Fast !
Demo

Painless Java EE (6) development
Yes, Eclipse too!

GlassFish (v2/v3) + Eclipse 3.4 Tools Bundle: http://download.java.net/glassfish/eclipse/
Now version 1.1 (refreshed in August 2009), based on Eclipse 3.4.2
How hard should it be to test EJBs?

```java
EJBContainer c = EJBContainer.createEJBContainer();
Context ic = c.getContext();
SimpleEjb ejb = (SimpleEjb)
    ic.lookup("java:global/sample/SimpleEjb");
ejb.sayHello();
```
How hard should it be to test EJBs?

```java
EJBContainer c = EJBContainer.createEJBContainer();
Context ic = c.getContext();
SimpleEjb ejb = (SimpleEjb)
    ic.lookup("java:global/sample/SimpleEjb");
 ejb.sayHello();
```

New in EJB 3.1
How hard should it be to test EJBs?

```java
@Test public void test() {
    EJBContainer c = EJBContainer.createEJBContainer();
    Context ic = c.getContext();
    SimpleEjb ejb = (SimpleEjb) ic.lookup("java:global/sample/SimpleEjb");
    ejb.sayHello();
}
```

Demo
GlasFish Embedded

```java
org.glassfish.api.embedded.Server server;
Server.Builder builder = new Server.Builder();
server = builder.build();
```
GlassFish Embedded

```java
org.glassfish.api.embedded.Server server;
Server.Builder builder = new Server.Builder();
server = builder.build();

ContainerBuilder b =
    server.createConfig(ContainerBuilder.Type.web);
server.addContainer(b);
```
GlassFish Embedded

```java
org.glassfish.api.embedded.Server server;
Server.Builder builder = new Server.Builder();
server = builder.build();

ContainerBuilder b =
    server.createConfig(ContainerBuilder.Type.web);
server.addContainer(b);

File archive = new File("hello.war");
server.getDeployer().deploy(archive);
```

Same bits, different entry point
All in one JAR available
@BeforeClass public static void initContainer() {
    org.glassfish.api.embedded.Server server;
    Server.Builder builder = new Server.Builder();
    server = builder.build();

    ContainerBuilder b =
        server.createConfig(ContainerBuilder.Type.web);
    server.addContainer(b);

    File archive = new File("hello.war");
    server.getDeployer().deploy(archive);
}

@Test public static void pingApplication() {
    ...
}

GlassFish Embedded
```java
public static void main(String[] args) {
    org.glassfish.api.embedded.Server server;
    Server.Builder builder = new Server.Builder();
    server = builder.build();

    ContainerBuilder b =
        server.createConfig(ContainerBuilder.Type.web);
    server.addContainer(b);

    File archive = new File("realApplication.war");
    server.getDeployer().deploy(archive);
}
```

Ship app server inside the application
What's the deal with OSGi?

- GlassFish runs on top of OSGi (Felix by default)
  - Also runs unmodified on Knopflerfish and Equinox
  - GlassFish ships with 200+ bundles
  - Can run without OSGi (Static mode, thanks to HK2)
  - Can use OSGi management tools (CLI or Web)
- Any OSGi bundle will run in GlassFish v3
  - Drop it in glassfish/modules
  - Can also asadmin deploy it using --type osgi
Extending GlassFish v3
OSGi-style – an example, a demo and a picture

- OSGi declarative service
- Service-Component entry in the JAR Manifest
- Invoke the service from a servlet using standard @Resource injection
- Never use a GlassFish API!
- No need to chose between OSGi and Java EE

Step by step: http://blogs.sun.com/dochez/entry/glassfish_v3_extensions_part_4
Demo

Extending GlassFish v3
OSGi-style
Extending GlassFish v3
SpringDM – another example, demo and picture

- Extend GlassFish with an unmodified Spring dm container
- Simple Spring bean implementing the service
- Invoke the service from a servlet using standard @Resource injection
- Still no use of a GlassFish API
- Single runtime for both Spring and full Java EE

Step by step: http://blogs.sun.com/dochez/entry/glassfish_v3_extensions_part_4
Update Center
Demo

GlassFish à la Carte
Monitoring and Management
Beyond web console and asadmin

- Dynamic and non-intrusive monitoring of events from any GlassFish runtime classes
  - BTrace integration *new!*
    - Portable, dynamic and safe tracing tool for Java
    - Btrace annotations and API to write scripts
- Probe Providers defined in java or XML *new!*
  - Default providers & roll out your own
- RESTful interface *new!*
- DTrace for end-to-end *new!*
- Still exposed via JMX
  - jconsole and visualvm as natural clients
RESTful admin

- JAX-RS/Jersey + Grizzly to provide REST interfaces to:
  - Configure data (via GET, POST, DELETE)
  - Invoke commands (restart, stop, deploy, etc.)
  - Monitoring (GET only)
- Available from:
  - http://localhost:4848/monitoring/domain
- Use REST clients as Admin GUI substitute
  - Use you favorite glue/scripting language or tool
- Data offered as either XML, HTML or JSON
- Extensible
Demo

RESTful admin
A lot more ...

- Dynamic languages: Rails, Grails, Django, ...
- Comet, Cometd/Bayeux
- Embedded API
- Full support for mod_jk, WebDAV, CGI, SSI
- Web Services Metro 1.4 (.Net 3.5)
- OpenMQ
- Extensible!
GlassFish v3 – Practical

- Get it from http://glassfish.org
  - GlassFish v3 Preview today, Final in November

- Choice!
  - Eclipse or NetBeans (or vi...)
  - Felix or Equinox

- Download size: starting at 30MB
  - Graphical Installer, Zip version
  - Can move from Web profile to full (and vice-versa) using pkg/updatetool
  - Can always start from the IPS bootstrap...
GlassFish v3
The future of app servers and Java EE is here... well almost ;)

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