

# JUDCon

JBoss Users & Developers Conference

# 2012:India



# CapeDwarf: Running Google App Engine apps in JBossAS7

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# Agenda

- What is CapeDwarf
  - Green vs. Blue
  - How does it fit with GAE and JBossAS7
- Blue in more details
- Demo
- Q&A



# About me

- Old school JBoss-ian
  - Microcontainer co-author
  - Weld project lead
  - CapeDwarf founder
  - Ceylon core developer
  - OpenShift “guinea pig”



# What is CapeDwarf

- Well, it actually didn't start as a caped dwarf
  - Capedwarf => type of chameleon
    - Blending / adapting to the environment
- Project has two "colors"
  - Green – as in rookie green
  - Blue – more advanced





# What is CapeDwarf

- Green
  - Custom server side API – mocking GAE API
    - Direct GAE impl
    - JEE impl
  - CDI enabled
- Blue
  - GAE API implemented with JBoss tech
    - e.g. BigTable --> Infinispan



# GAE and JBossAS7

- Green
  - Abstracts away GAE API
    - Portable to any Servlet container
  - CDI and JPA workarounds
    - GAE is a black-box, hence no hooks
- Blue
  - Seamless switch between GAE and JBossAS7
  - It needs integration layer in JBossAS7
  - A bit easier since it's only web apps



# Blue in more details

- Closer look at GAE API
- The actual Blue implementation
- DataNucleus GAE plugin
- JBossAS7 CapeDwarf SubSystem



# Closer look at GAE API

- Open sourced
  - Much of the details hidden behind ApiProxy
- Pretty clean separation of API vs. impl
  - XServiceFactory --> XService
  - Although no lookup pattern usage
    - Direct static implementation

# The actual Blue impl.

- We need bytecode manipulation
  - “public static XService XServiceFactory::getXService”
  - Runtime vs. build time
- Ignoring current impl details
  - e.g. BlobstoreService keeps info from other services
- Do not re-invent the wheel
  - Use existing JBoss libs or any other OSS lib
- Designed to scale – as is of course GAE
  - No mocking (if possible); e.g. XMPP server



# API matrix

|              |   |               |   |
|--------------|---|---------------|---|
| AppIdentity  | ✓ | Multitenancy  | ✗ |
| Blobstore    | ✓ | OAuth         | ✓ |
| Capabilities | ✓ | Tasks         | ✗ |
| Channel      | ✗ | URLFetch      | ✓ |
| Conversion   | ✗ | Users         | ✓ |
| Datastore    | ✓ | XMPP          | ✗ |
| Files        | ✓ |               |   |
| Images       | ✓ | Admin Console | ✗ |
| Mail         | ✓ | JPA / JDO     | ✓ |
| Memcache     | ✓ | MapReduce     | ✗ |

# DataNucleus GAE plugin

- Old versions need some tweaking
  - e.g. 1.1.5 DN Core doesn't handle VFS correctly
    - Trunk now has proper handling (patched ;-)
- Pre-metadata scanning is limited to file://
  - Just added a patch to allow custom scanning
  - Has workaround; `allowLoadAtRuntime=true`



# JBossAS7 SubSystem

- Extending AS7 --> New SubSystem
- Initial configuration; almost none
- It's all about the DeploymentUnitProcessors
  - Remember JBoss Deployers?
  - Let's check DUPs in more details

# CapeDwarf DUPs

- Initialization
  - .war + WEB-INF/appengine-web.xml
  - Set a CapeDwarf marker
- Modify persistence.xml if DataNucleus provider
  - Nice VFS mounting trick
- Ignore any Weld web.xml config
- Add custom CapeDwarf web components
  - AppIdentity filter
  - Auth servlet
  - Infinispan container ref



# CapeDwarf DUPs

- Ignore Weld servlet -> Weld is already part of AS7
- Ignore JPA MSC service
  - Hack VFS bug in DataNucleus 1.1.5
- Add CapeDwarf and GAE dependencies
  - GAE is bundled -> bundle CapeDwarf
    - Runtime class transformation
  - GAE is not bundled -> add CapeDwarf, GAE as modules
    - GAE jar needs to be pre-transformed
  - Always add Infinispan -> ref dependency needs it
- Add any custom MSC dependencies
  - e.g. default cache -> cache config -> cache container

# Demo

- GAE -> demos -> helloorm
  - JPA and JDO
- CapeDwarf -> TattleTale
  - CDI, JPA, JSF, Validation, ...



# Q&A

- <https://github.com/capedwarf>
  - Green
  - Blue
  - Tattletale
- <https://github.com/alesj/jboss-as/tree/capedwarf>
- <https://issues.jboss.org/browse/CAPEDWARF>
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