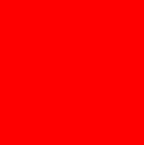


GlassFish Server 3.1


Deploying your Java EE 6 Applications

Arun Gupta, Java EE & GlassFish Guy
blogs.oracle.com/arungupta, @arungupta



The following is intended to outline our general product direction. It is intended for information purposes only, and may not be incorporated into any contract. It is not a commitment to deliver any material, code, or functionality, and should not be relied upon in making purchasing decisions.

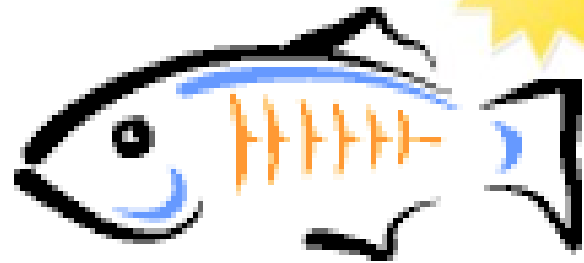
The development, release, and timing of any features or functionality described for Oracle's products remains at the sole discretion of Oracle.



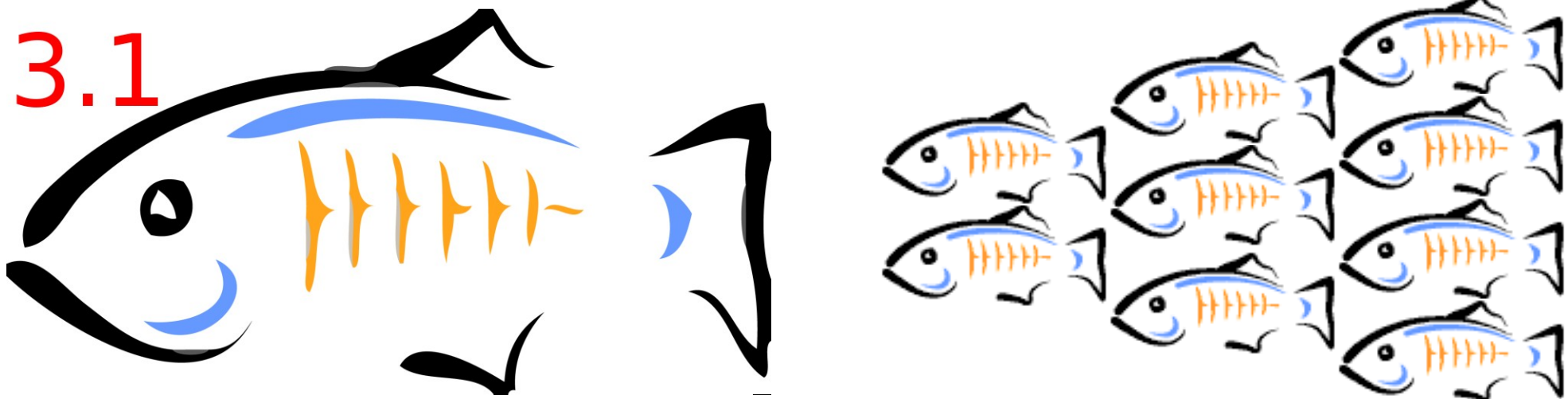
JavaEE 6

Done!

Done!

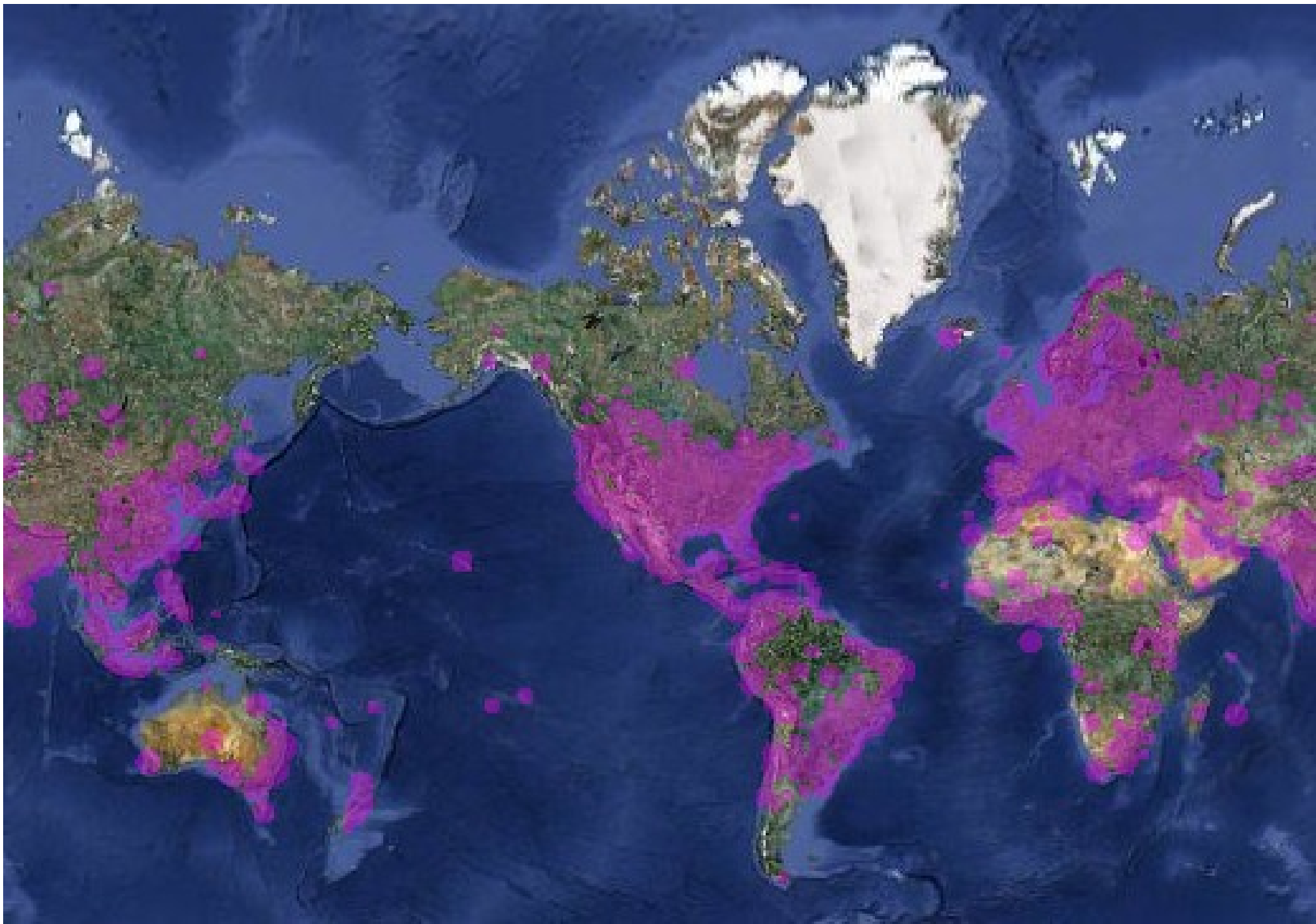


Java EE 6 and GlassFish Server 3
shipped **final releases** on
December 10th 2009



World's **First** Java EE 6 Compatible
App Server with
Clustering & High Availability
Shipped Feb 28th 2011

GlassFish Around You



<http://maps.glassfish.org>

GlassFish Server Chronology*

2006

2007

2008

2009

2010

2011

...

GlassFish v1

Java EE 5, Single Instance

GlassFish v2

Java EE 5, High Availability

GlassFish Server 3

Java EE 6, Single Instance

GlassFish Server 3.1

Java EE 6, High Availability

GlassFish.next

Java EE 7

* GlassFish Server Open Source Edition

GlassFish Community

- Proven by developers
 - Over 24 million downloads
 - Over 22 million active users (cumulative in past 4 yrs)
 - 900K+ upgrades from GlassFish Server 3 to 3.1 in just 2 months
 - Active user forums
 - Sub-projects
 - Jersey (JAX-RS), Metro (JAX-WS), Grizzly (nio), Atmosphere, OpenMQ (JMS), and more

Deliverables

- **Application Server**
 - Open Source and high-quality runtime
 - Java EE 5 / 6 Reference Implementation, early access to latest standards
 - Clustering and High Availability
 - Full Commercial Support from Oracle
- **Continued Investment in Open Source**
 - Open Source license, governance, participation, transparency, ...

General Picture of Distributions

This diagram shows the components of the GlassFish Server Open Source Edition 3.1 distribution. It is presented as a yellow rounded rectangle containing several blue boxes for additional resources and a central green box for the main product. The blue boxes include 'API Docs', 'JDK Co-bundle', 'Samples', and 'Tutorial'. The central green box contains the text 'GlassFish Server Open Source Edition 3.1 (glassfish.org)'. Below this, the text 'Java EE 6 SDK Update 2 (oracle.com/javaee)' is displayed.

API Docs

JDK Co-bundle

Samples

Tutorial

**GlassFish Server
Open Source
Edition 3.1**
(glassfish.org)

Java EE 6 SDK Update 2
(oracle.com/javaee)

This diagram shows the components of the Oracle GlassFish Server 3.1 distribution. It is presented as a red rounded rectangle containing several blue boxes for additional resources and a central green box for the main product. The blue boxes include 'DAS Backup & Recovery', 'Performance Tuner', 'Monitoring Scripting Client', 'Coherence ActiveCache', and 'OAM Integration'. The central green box contains the text 'GlassFish Server Open Source Edition 3.1 (glassfish.org)'. Below this, the text 'Oracle GlassFish Server 3.1 (oracle.com/goto/glassfish)' is displayed. A grey box labeled 'LB Plugin & Installer' is also present in the top right corner.

DAS Backup & Recovery

Performance Tuner

Monitoring Scripting Client

Coherence ActiveCache

OAM Integration

LB Plugin & Installer

**GlassFish Server
Open Source
Edition 3.1**
(glassfish.org)

Oracle GlassFish Server 3.1
(oracle.com/goto/glassfish)

This legend defines the colors used in the diagrams: a blue box represents 'Integrated' components, and a grey box represents 'Installed Separately' components.

Integrated

Installed Separately

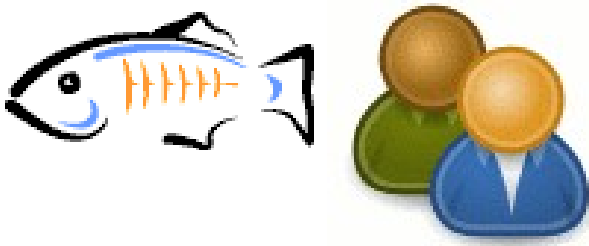
GlassFish 3.1 Download Helper

GlassFish Server Distributions

Distribution	License	Features
GlassFish Server Open Source Edition 3.1 <i>Web Profile</i>	CDDL & GPLv2	<ul style="list-style-type: none">• Java EE 6 compatibility• Web Profile support• In-memory replication / clustering• Centralized Administration
GlassFish Open Source Edition 3.1	CDDL & GPLv2	<ul style="list-style-type: none">• Java EE 6 compatibility• Full Java EE distribution• In-memory replication / clustering• Centralized Administration
Oracle GlassFish Server 3.1 <i>Web Profile</i>	Commercial	<ul style="list-style-type: none">• Adds<ul style="list-style-type: none">• Oracle GlassFish Server Control• Patches, support, knowledge base
Oracle GlassFish Server 3.1	Commercial	<ul style="list-style-type: none">• Adds<ul style="list-style-type: none">• Oracle GlassFish Server Control• Patches, support, knowledge base

GlassFish and WebLogic together

- Best open source application server with support from Oracle
- Open source platform of choice for lightweight Web applications
- Focus on latest Java EE standards and community driven innovation
- Certified interoperability with Fusion Middleware
- Differentiated innovation, scout thread



Production Java
Application Deployment

GlassFish Server

- Best commercial application server for transactional Java EE applications
- Platform of choice for standardization
- Focus on lowest operational cost and mission critical applications
- integration with Oracle Database, Fusion Middleware & Fusion Applications



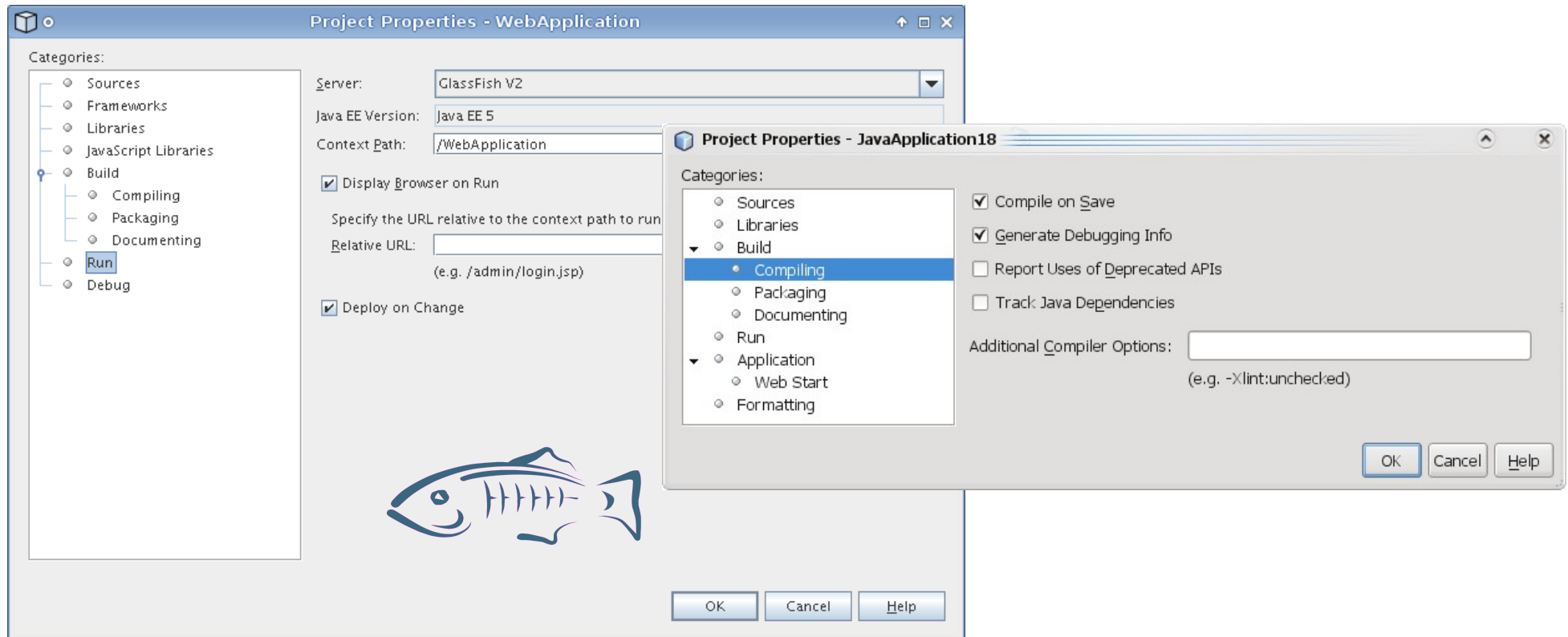
Production Java
Application Deployment

WebLogic Server

Painless Java EE development !

The save/reload paradigm

- Auto-deploy of all Java EE and static artifacts

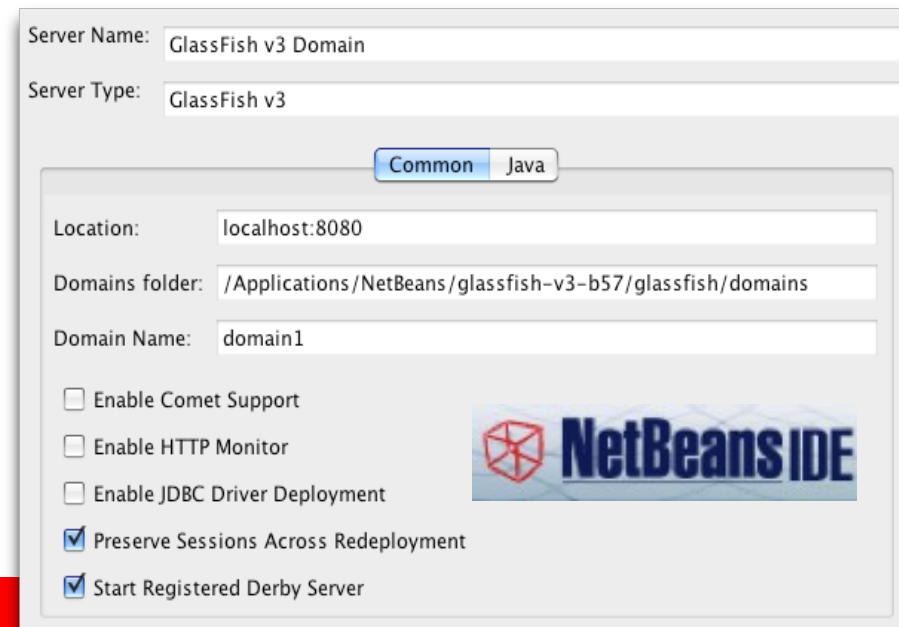


Session Retention

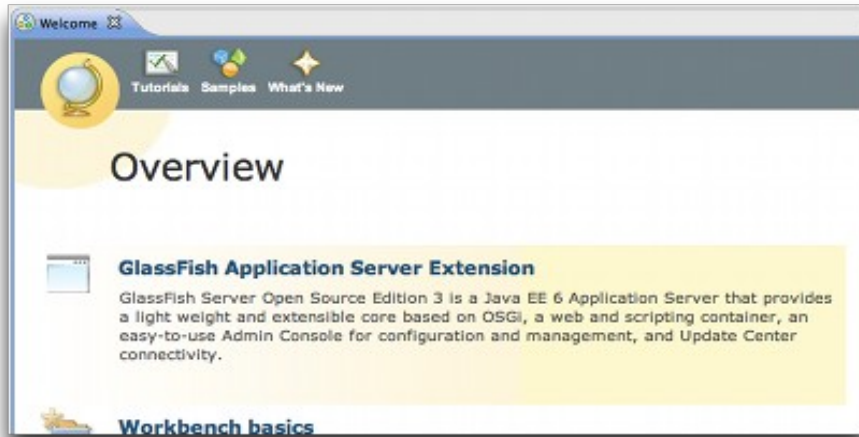
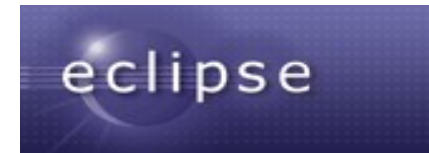
- Deployment option to maintain stateful sessions across re-deployments

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

- Greatly simplifies the development paradigm
- Integrated in IDEs



Yes, Eclipse too !



New GlassFish v3 Java EE 6 Server
Create a new GlassFish v3 Java EE 6 server

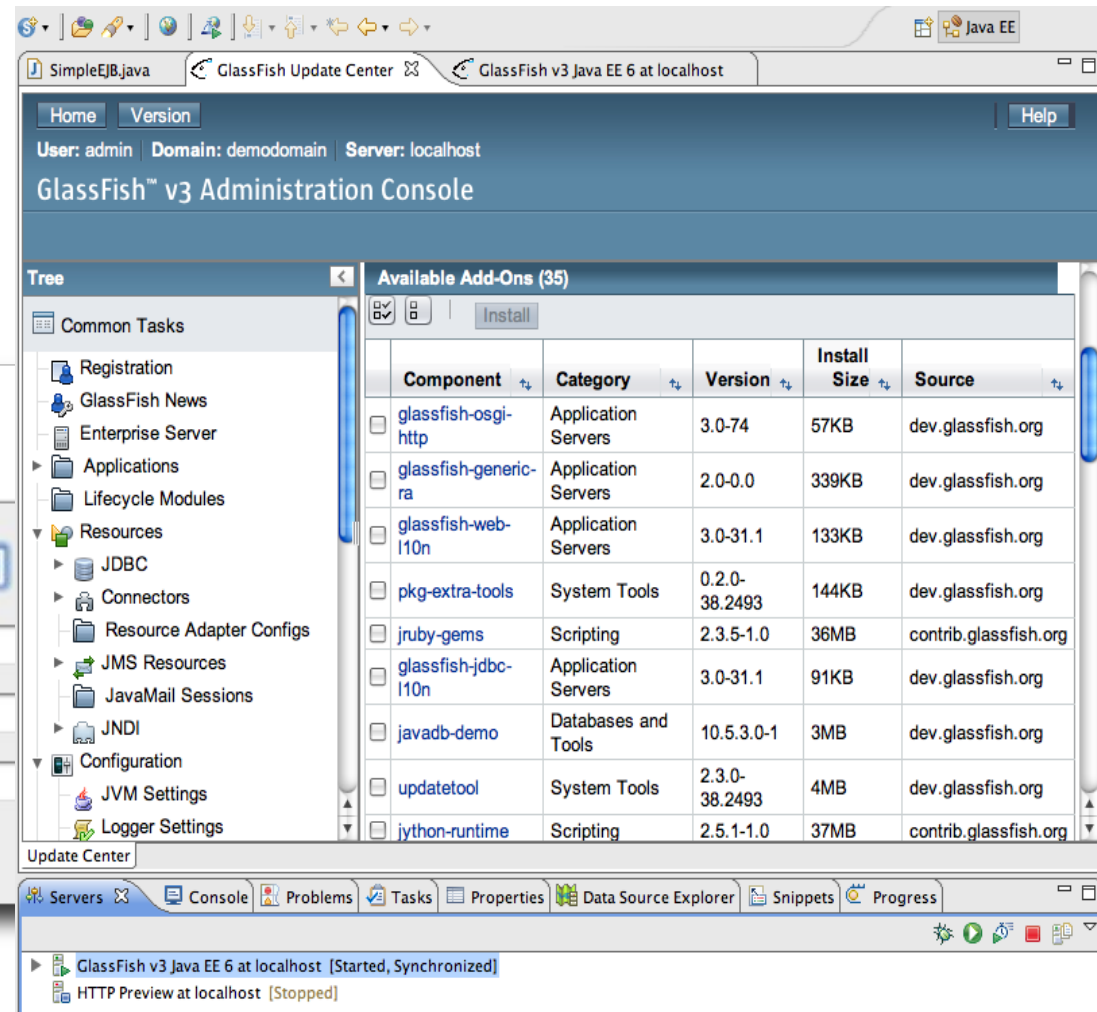
Domain Directory:

Domain Name:

Administrator Id:

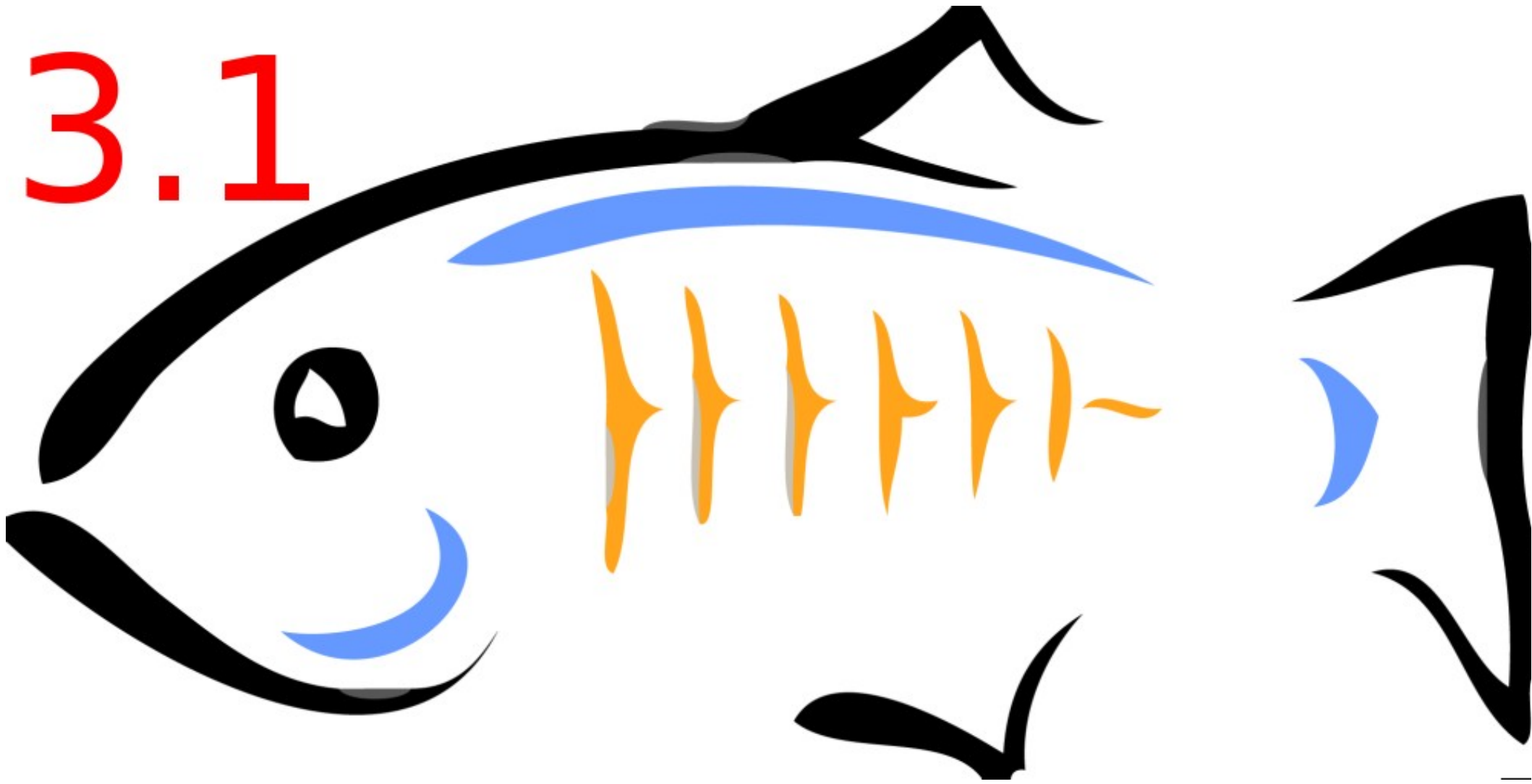
Administrator Password:

Preserve Sessions Across Redeployment

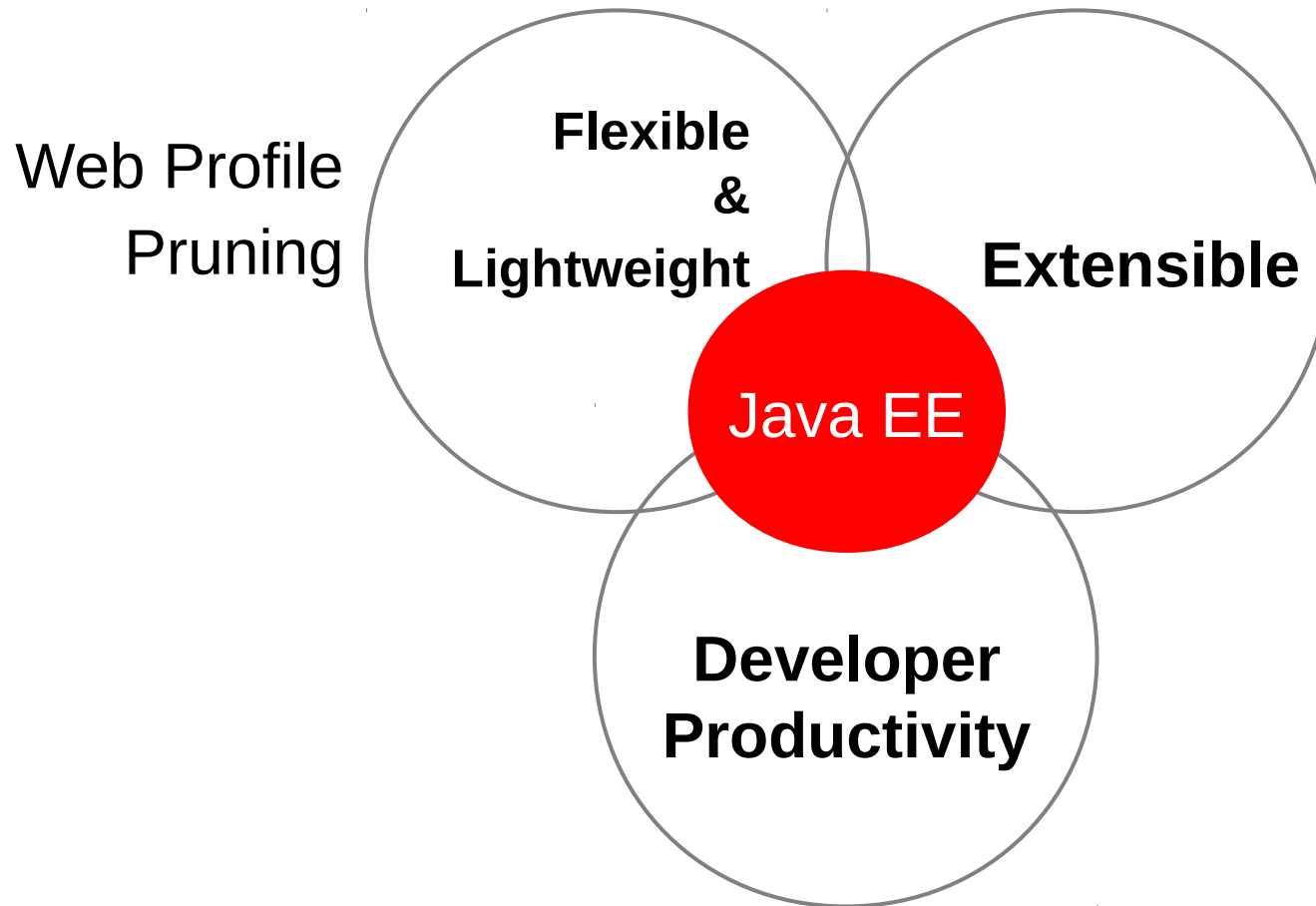


Introducing GlassFish Server 3

3.1



Java EE 6 Themes

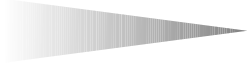
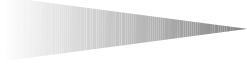



Embrace open source frameworks

Enables Drag & Drop framework installation

More annotations
POJO development
Less XML configuration

GlassFish Server Goals

Java EE 6 Themes	Oracle GlassFish Server
<ul style="list-style-type: none">• Flexibility 	<ul style="list-style-type: none">• Flexibility
<ul style="list-style-type: none">• Extensibility 	<ul style="list-style-type: none">• Extensibility
<ul style="list-style-type: none">• Developer Productivity 	<ul style="list-style-type: none">• Developer Productivity
	<ul style="list-style-type: none">• Modularity / OSGi / Hybrid Apps
	<ul style="list-style-type: none">• Manageability
	<ul style="list-style-type: none">• High availability clustering
	<ul style="list-style-type: none">• 24 x 7 x 365 support

3.1 Overview

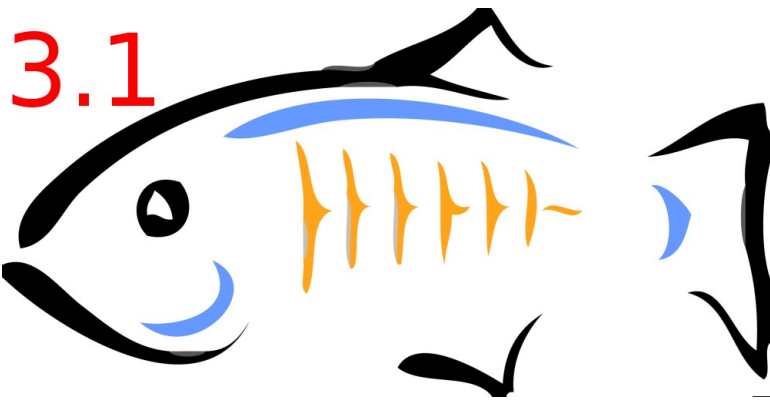
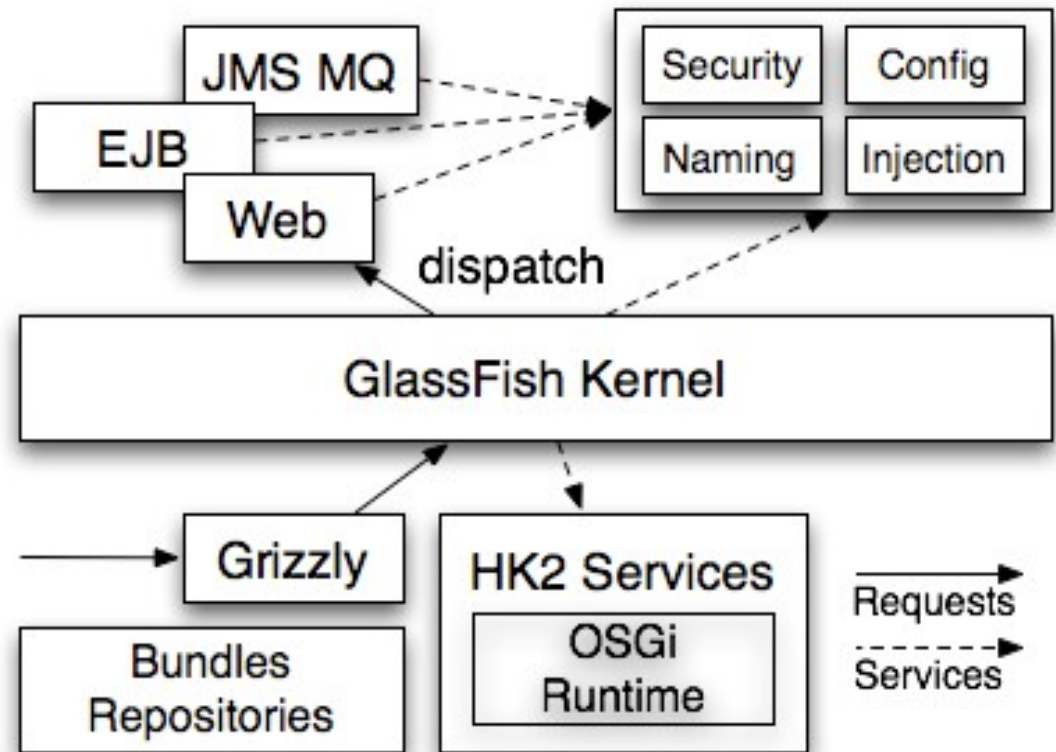
- Built on GlassFish 3
- Modular and Extensible HK2 Kernel
 - ~260+ modules
- Clustering and High Availability
 - HTTP, EJB, IIOP, SSO, Metro
- Dynamic Invocation of Services
- End-to-end extensibility

Fast and Furious ...

- 29% better startup/deploy/re-deploy cycle over 3.0.1
- 33% better HA performance over 2.1.1
 - Scalable Grizzly Adapter based on Java NIO
 - Full-session and Modified-attribute* scope
- Multiple Standalone instances and Clusters per domain

Modular and Dynamic

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



GlassFish™ Server Open Source Edition

Tree

Common Tasks

- Registration
- GlassFish News
- Enterprise Server
- Applications
- Lifecycle Modules
- Resources
 - JDBC
 - JDBC Resources
 - Connection Pools
 - __TimerPool
 - DerbyPool
 - Connectors
 - Resource Adapter Configs
 - JMS Resources
 - JavaMail Sessions
 - JNDI
- Configuration
 - JVM Settings
 - Logger Settings
 - Web Container
 - EJB Container
 - Ruby Container
 - Java Message Service
 - Security

- General
- Advanced
- Additional Properties

Edit JDBC Connection Pool

Save Cancel

Modify an existing JDBC connection pool. A JDBC connection pool is a group of reusable connections for a particular database.

Load Defaults Flush Ping

* Indicates required field

General Settings

Pool Name: DerbyPool

Resource Type:

Must be specified if the datasource class implements more than 1 of the interface.

Datasource Classname:

Vendor-specific classname that implements the DataSource and/or XADataSource APIs

Driver Classname:

Vendor-specific classname that implements the java.sql.Driver interface.

Ping: Enabled

When enabled, the pool is pinged during creation or reconfiguration to identify and warn of any erroneous values for its attributes

Description:

Pool Settings

Initial and Minimum Pool Size: Connections

Minimum and initial number of connections maintained in the pool

Maximum Pool Size: Connections

Maximum number of connections that can be created to satisfy client requests

Pool Resize Quantity: Connections

More Painless Development

- Fast auto-deploy of all Java EE and static artifacts
- Application runner
 - `java -jar glassfish.jar toto.war`
- Maven integration
 - `mvn gf:run, gf:start, gf:deploy, ...`
- Containers added dynamically and transparently
- Excellent Tools support

Embedded uses

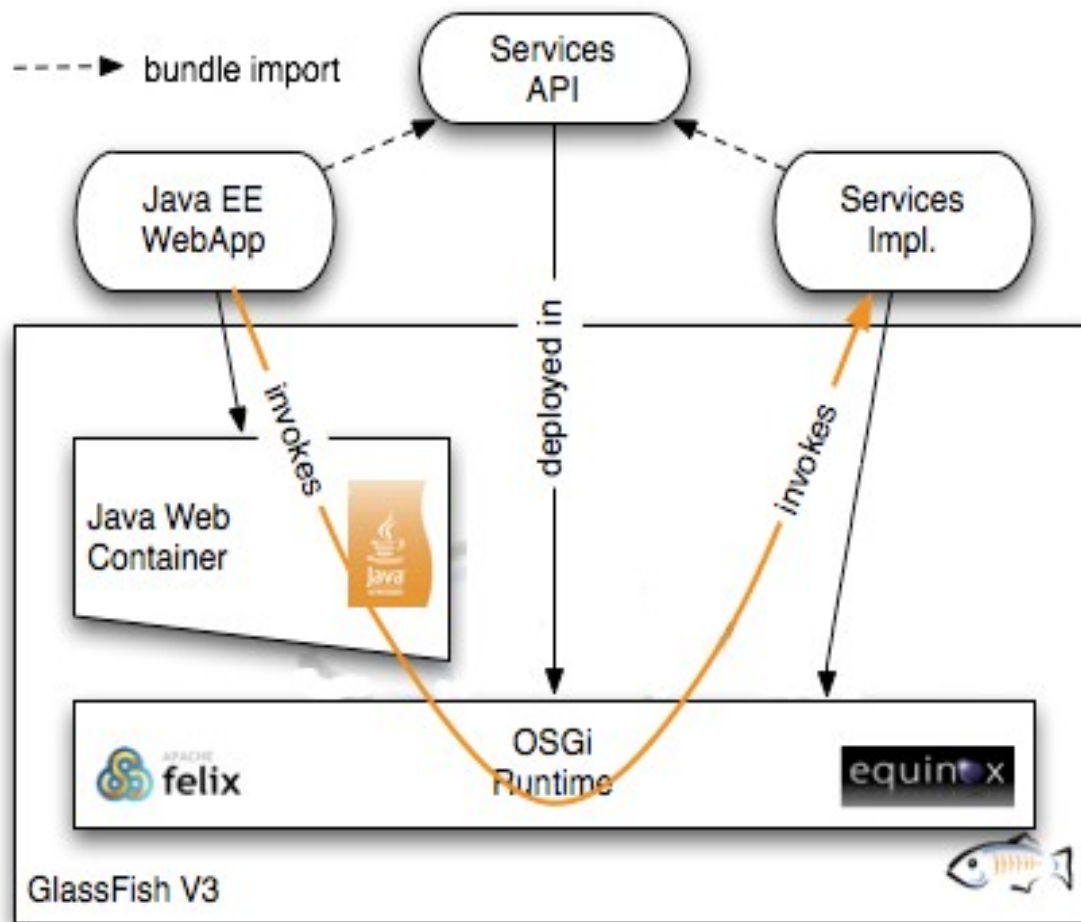
- Testing
 - EJBContainer API (EJB 3.1)
 - Simple testing using Java SE (JUnit, Maven, ...) using EJB container
- Packaging / Bundling
 - Beyond the specification: control all of GlassFish Server with an API = GlassFish Embedded
 - Integration testing & ship the server inside the app

What's the deal with OSGi?

- GlassFish Server runs on top of OSGi (Felix)
 - Also runs unmodified on Equinox (and Knopflerfish)
 - GlassFish ships as 260+ bundles
 - Can run without OSGi (Static mode)
 - Can use OSGi management tools (CLI or Web)
 - Can be installed on top of existing OSGi runtime
- Any OSGi bundle will run in GlassFish Server
 - Drop it in `glassfish/modules{/autostart}`
 - Can also `asadmin deploy` it using `--type osgi`
 - GlassFish OSGi admin console

Extending GlassFish

OSGi-style – an example, a demo and a picture

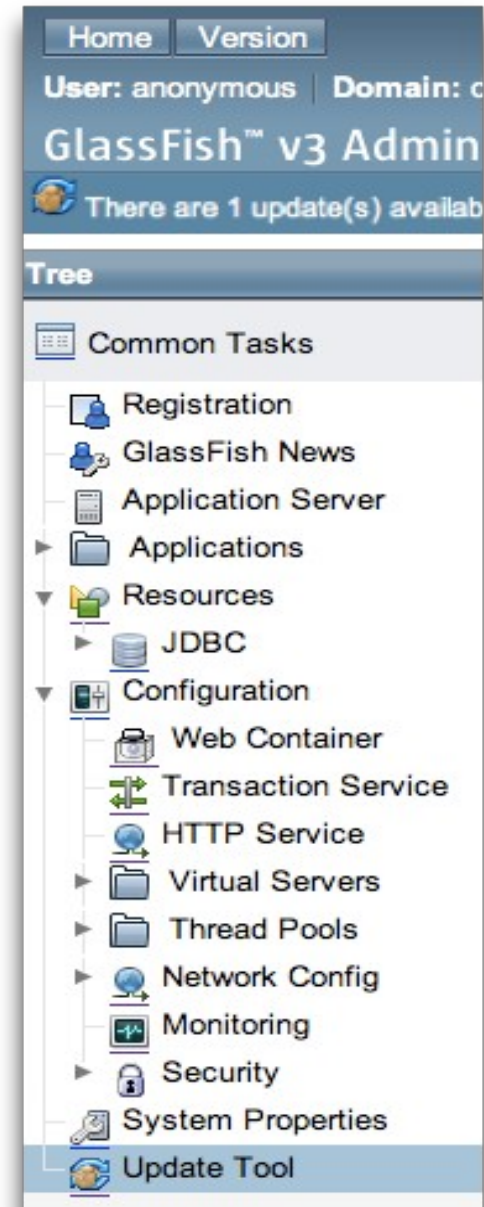
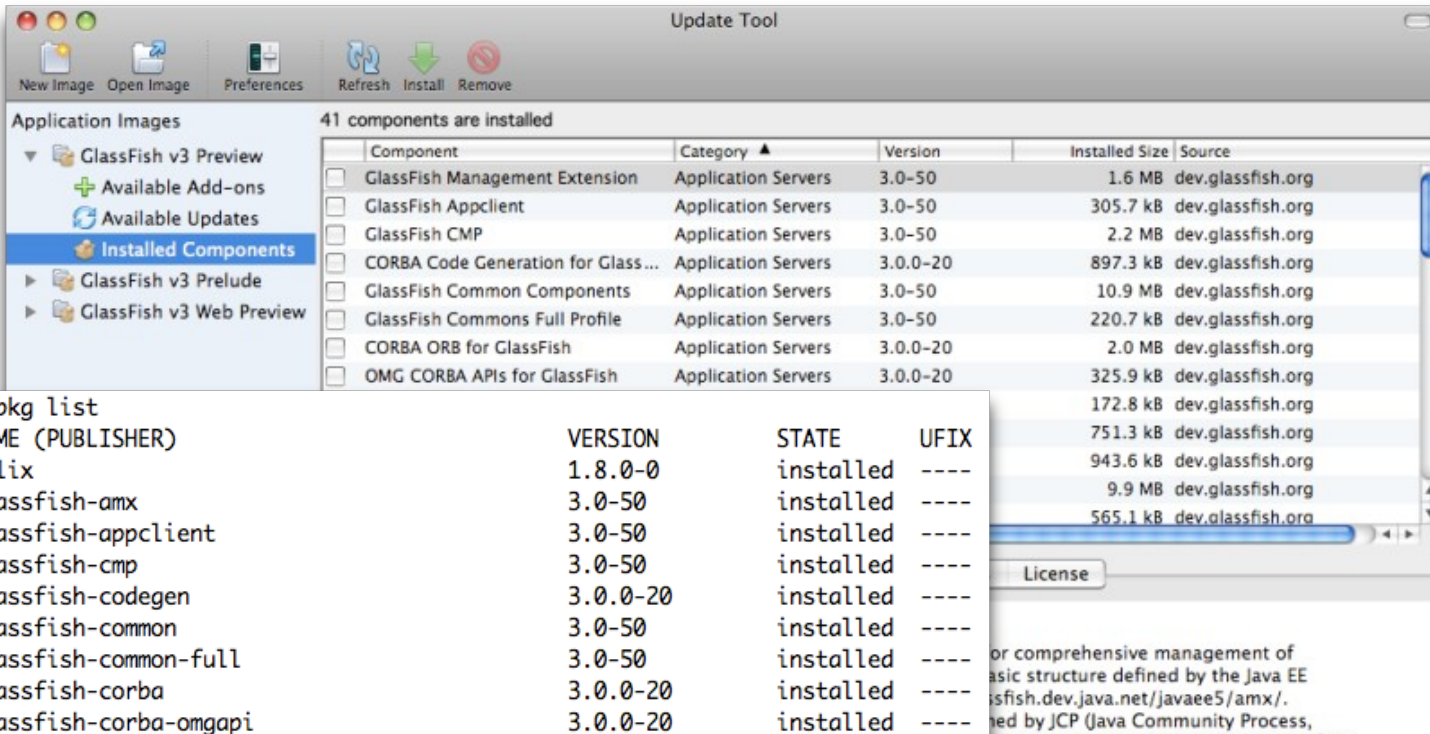


- OSGi declarative service
- Service-Component entry in the JAR Manifest
- Invoke the service from a servlet using standard @Resource injection
- Never use a GlassFish API !
- No need to chose between OSGi and Java EE

OSGi + Java EE = Hybrid Apps

- GlassFish Server as the modular runtime
 - Assembled spontaneously
 - Admin tools (Web & CLI)
- Implementation of Java EE related OSGi services & standards
 - OSGi RFC's
- Support for Java EE 6 platform
 - e.g. JPA, EJB, JDBC, JTA, ... as OSGi services
- Web Application Bundle (WAB)
 - WAR + OSGi metadata + Web-ContextPath header

Update Center



```

% pkg install hibernate
DOWNLOAD          PKGS      FILES      XFER (MB)
Completed        1/1       13/13      4.87/4.87

PHASE            ACTIONS
Install Phase    21/21
  
```

```

% pkg
Usage:
pkg [options] command [cmd_options] [operands]
  
```

Monitoring and Management

Beyond web console and `asadmin`



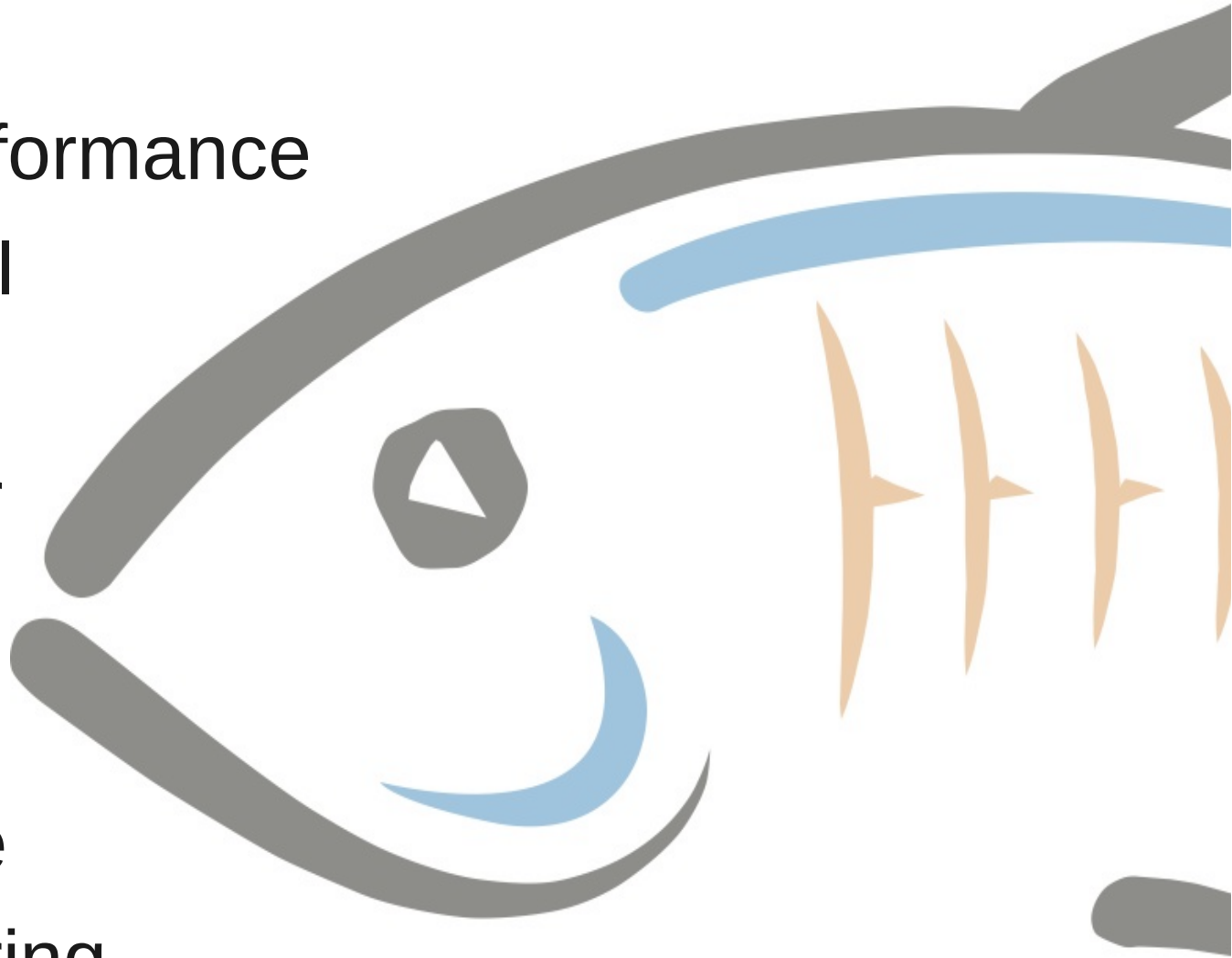
- Dynamic and non-intrusive monitoring
 - BTrace integration
 - Portable, dynamic and safe tracing tool for Java
 - Btrace annotations and API to write scripts
 - Java-defined Probe Providers
 - RESTful interface
 - DTrace for end-to-end
- JavaScript Monitoring tool (add-on)
- Still exposed via JMX
 - `jconsole` and `visualvm` as natural clients

RESTful admin

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

More GlassFish Server 3.x

- Developer performance
- Embedded API
- RESTful API
- Update Center
- Metro 2.0
- OpenMQ 4.x
- Admin console
- Btrace monitoring
- ...



GlassFish Server Users



GlassFish Server 3.1

Developer Highlights

- Developer Productivity
 - Improved embedded API support
 - Updated NetBeans and Eclipse plugin
- Updated Technologies
 - Grizzly WebSocket support
 - Improved CDI, JSON, hypermedia support in Jersey
 - Technology refresh – JSF, CDI, Grizzly, OSGi, JPA, Jersey, Bean Validation, Metro, UC, etc.
 - Implementation of various Enterprise OSGi Specs

GlassFish Server 3.1

Clustering Highlights

- HTTP, EJB, IIOP, SSO, Metro
 - New - RM Sequence, Secure Conversations
- Session-based replication using Shoal
 - Distributes session state uniformly & consistently among instances
- Shoal OSGi module, loaded when HA-enabled apps are deployed
- Support for conventional clustering of MQs brokers in embedded mode

GlassFish Server 3.1

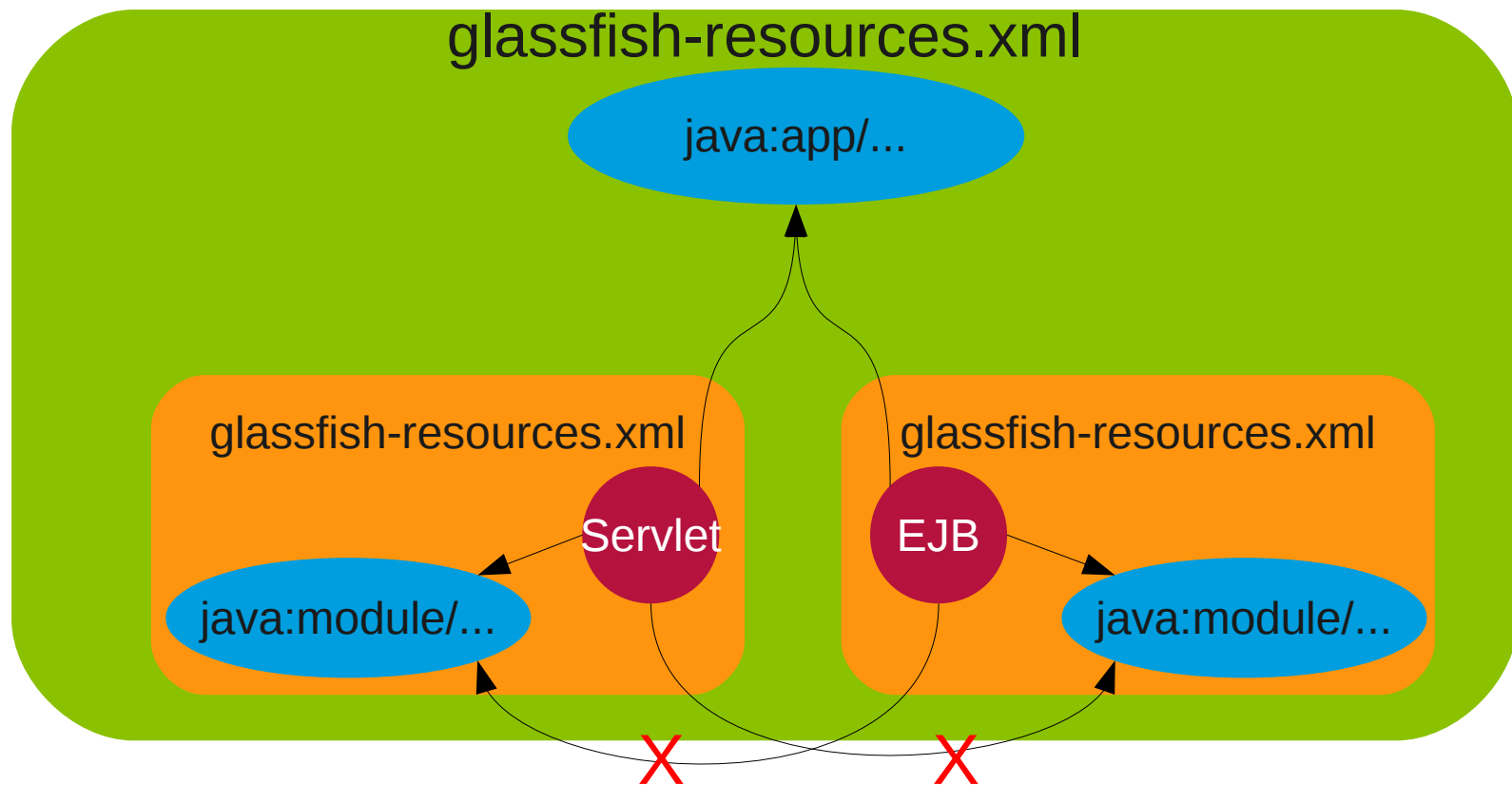
Manageability Highlights

- SSH based remote management and provisioning
- Application versioning support
- Application scoped resources
- Statement leak detection and reclaim
- Improved monitoring
- Console based on RESTful API

Application-Scoped Resources

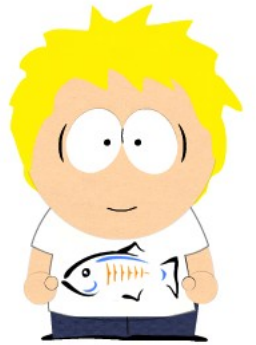
“glassfish-resources.xml”

- Created/deleted with app deploy/undeploy
- Supported in NetBeans



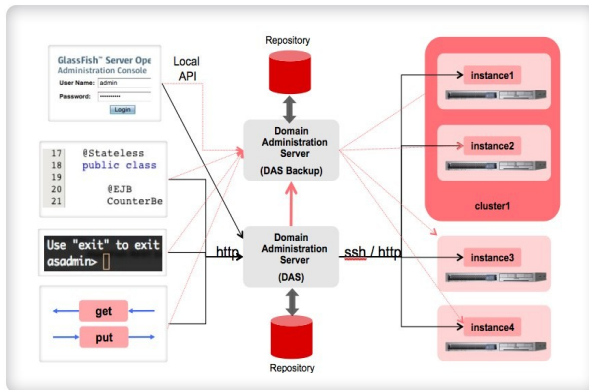
Application Versioning

- Deploy multiple versions of an application, only one enabled
- Commands
 - `asadmin deploy foo.war`
 - `asadmin deploy --name=foo:BETA-1 foo.war`
 - `asadmin deploy --name=foo:BETA-1.1 --enable=false foo.war`
 - `asadmin enable foo:BETA-1.1`
 - `asadmin deploy --name=foo:RC1 foo.war`
 - `asadmin undeploy foo:BETA*`
 - `asadmin undeploy foo:*`



GlassFish Server Control

DAS Backup & Recovery



Performance Tuner

Server Performance Tuner (Step 1 of 2)

This step gathers information about your server instance(s), which is used to present you with proposed changes.

Configuration to Tune: Select the configuration to be tuned. Changing this selection resets the configuration to default.

Number of Cores: * The number of cores each server instance can utilize.

Maximum Heap Memory Available: * MB Heap memory for the JVM in which the server instance(s) run.

Allocation Time for Database Access: Allocation time for database access.

Garbage Collection Strategy: Garbage collection strategy.

Disable Security Manager? Yes If this box is checked, the Java Security Manager is disabled.

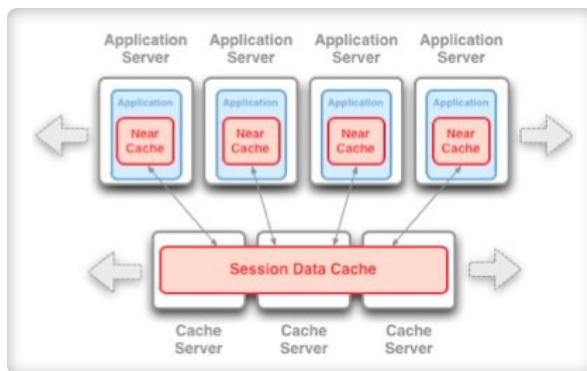
Disable Access Logger? Yes If this box is checked, access logging is disabled.

Running on CMT (Niagara)? Yes Check this box if the server instances are running on CMT.

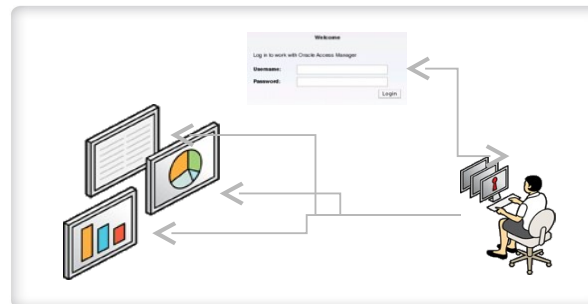
Monitoring Scripting Client

Thread Id	Count	Duration
http-thread-pool-8080-(3)	2	52
http-thread-pool-8080-(4)	9	221
http-thread-pool-8080-(5)	9	1769
http-thread-pool-8080-(6)	5	122
http-thread-pool-8080-(7)	0	1
http-thread-pool-8080-(8)	2	457
http-thread-pool-8080-(9)	17	237
http-thread-pool-8080-(10)	20	552
http-thread-pool-8080-(11)	21	253
http-thread-pool-8080-(12)	10	146
http-thread-pool-8080-(13)	7	93
http-thread-pool-8080-(14)	2	43
http-thread-pool-8080-(15)	12	128
http-thread-pool-8080-(16)	9	127
http-thread-pool-8080-(17)	6	71

Coherence Active Cache



Oracle Access Manager Integration



Load Balancer Plugin & Installer

The screenshot shows the 'iZPACK - Installation of GlassFish Loadbalancer: Configurator' wizard. It includes fields for 'Webserver Instance ID*', 'Admin Username*', 'Admin Password*', 'Admin Host*', and 'Admin Port*'. There is also a 'DAS Certificate File' field with a 'Browse...' button. A note at the bottom states '* Indicates mandatory field'. Navigation buttons 'Help', 'Previous', 'Next', and 'Quit' are visible at the bottom.

Strategy for continued success

- Continue to deliver outstanding performance
- Continue to improve developer productivity
- Continue product execution
 - Deliver Java EE 7 first
 - Deliver on product roadmap
- Continue to innovate
 - Improve manageability
 - Hybrid OSGi / Java EE applications



MOVING

JAVA

FORWARD

OCT 2-6 2011
SAN FRANCISCO

- Find out what's new with Java technology
- See new tools and techniques
- Learn how to create solutions
- Network with peers
- Meet with experts
- Influence the future of the Java platform
- 400+ sessions/BoFs/HOLs
- . . .

References

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- glassfish.org
- oracle.com/goto/glassfish
- blogs.oracle.com/theaquarium
- youtube.com/GlassFishVideos
- Follow @glassfish