



GlassFish & Friends

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Sun's Open Stack

Flexible and Heterogeneous with Zero Barrier to Exit

Database Platform	
Application Infrastructure	
Virtualization	
Operating System	
Partners	
Architecture	

Java EE 5.0 = (J2EE 1.4).next

- Java EE 5 Theme: Ease of Development
- POJO-based programming
 - > More freedom, fewer requirements
- Extensive use of annotations
 - > Reduced need for deployment descriptors
 - > Annotations are the default
- DRY principle (better defaults)
- Resource Injection
- New APIs and frameworks

What Is GlassFish?

- A Java EE 5-compliant Application Server
 - > Can run J2EE applications too
- Open Source
 - > CDDL (like OpenSolaris, NetBeans)
 - > GPLv2 (like Java and NetBeans)
- Enterprise Quality
 - > GlassFish Enterprise Application Server
 - > Adds support, indemnification, and 99.999% availability



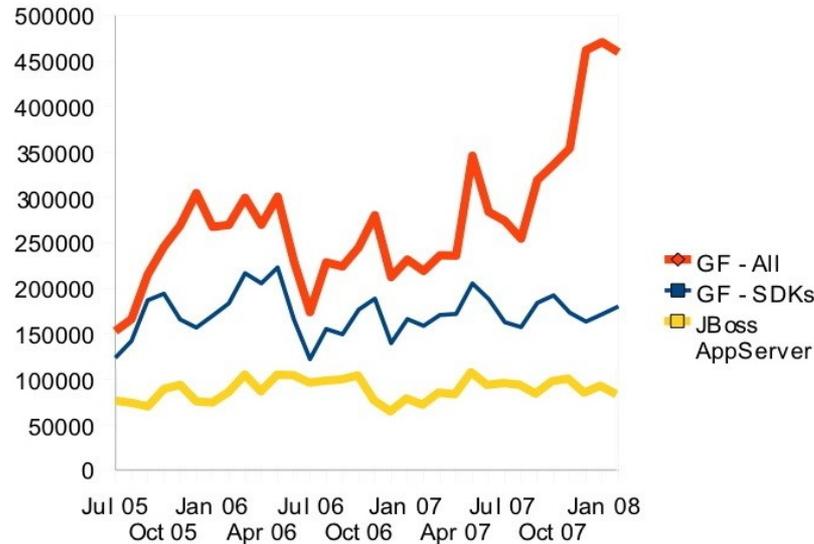
What Is GlassFish? (Cont.)

- Community at <http://glassfish.org>
 - > Sources, bug DBs, discussions
 - > Roadmaps
 - > Architecture Documents
- Governance Board
 - > 2 Sun members: Simon Phipps, Eduardo Pelegri-Llopart
 - > 3 Non-Sun individual members from Google, Wotif.Com, Amex



GlassFish Adoption

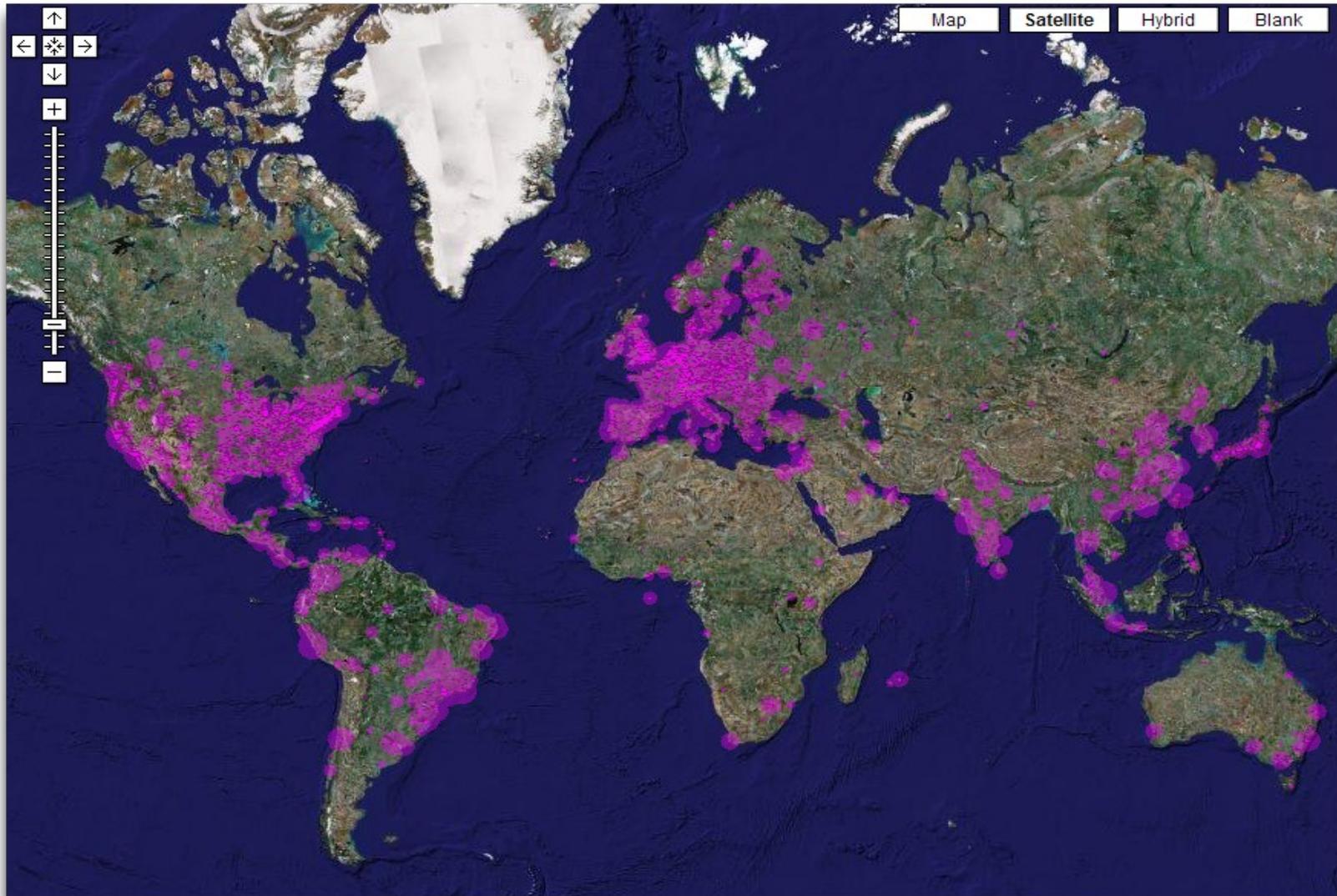
- Millions of downloads



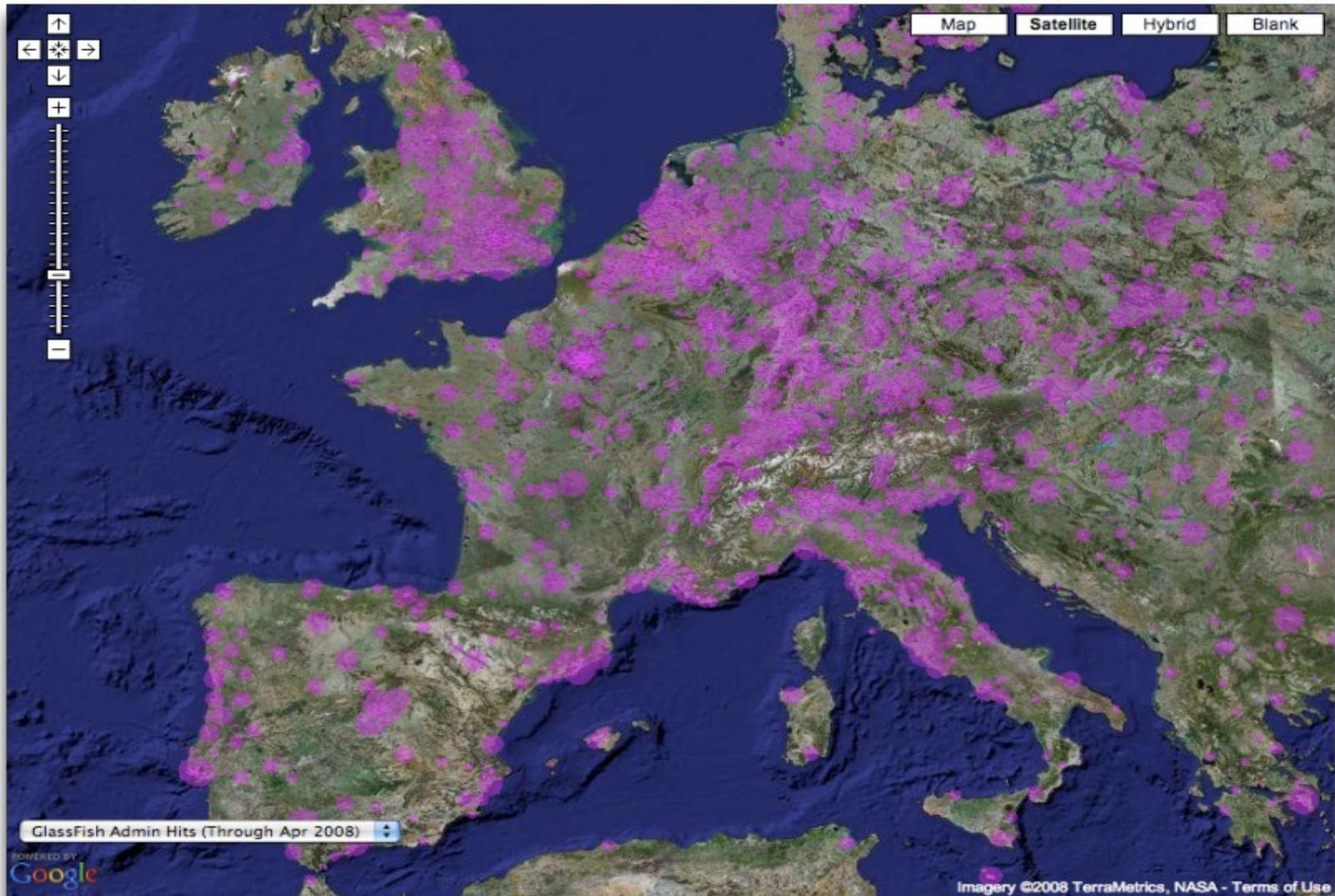
- Dozens of external committers
- Over 8,000 members
- Excellent analyst reviews
 - > Gartner, Forrester, etc...



GlassFish around you



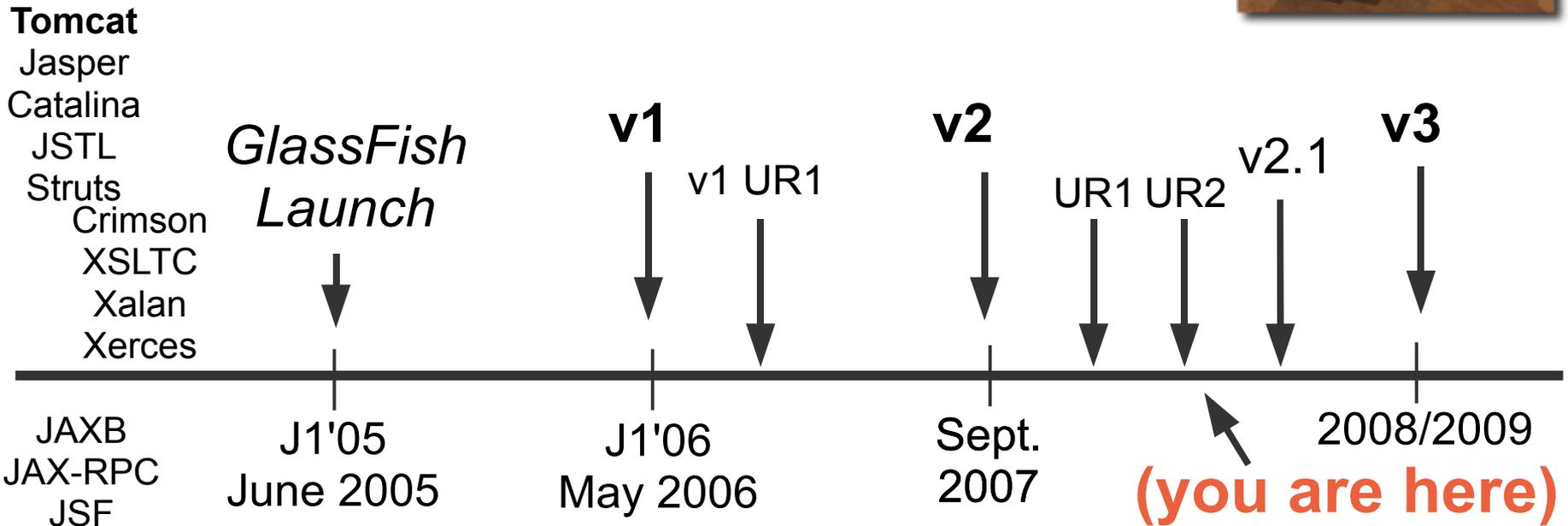
GlassFish around you



GlassFish around you



Timeline of Project GlassFish



GlassFish v2 for the Enterprise

- Metro Web Services Stack
 - > One-stop shop for Web Services starting with JAX-WS
 - > Performance, Advanced WS & Microsoft interoperability
- Clustering, Load-Balancing, HA
 - > Dynamic group management system (Shoal)
 - > In-memory replication
 - > Unified Management
- Web Tier
 - > Grizzly nio framework (HTTP, IIOP, SIP)
 - > Dynamic Web Container
 - > Ultra-fast JSP compilation

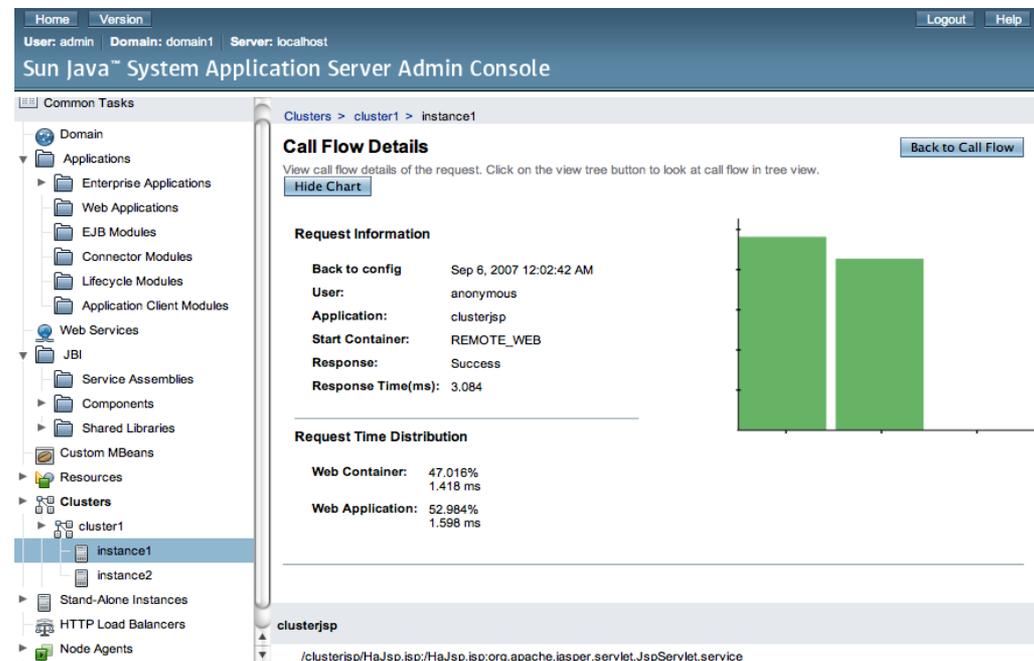
GlassFish v2 for the Enterprise

Integration

- Open MQ
 - > High performing JMS implementation
 - > HA for brokers and messages
 - > Available as standalone product
 - > Integration with GlassFish
 - > In memory, Out of process, or Remote
- JBI support
 - > OpenESB 2.0 as the integration back-bone
 - > Install, admin, and monitoring integrated in GlassFish v2
 - > Basis for Java CAPS Release 6
- Oracle TopLink as default JPA persistence engine
 - > Hibernate also easily usable

GlassFish v2 for Enterprises Management & Monitoring

- Graphical, command-line, tools, ANT ...
 - > JMX and Centralized
- Call Flow
- Self-management
- Diagnostic reports
- Multi-tier provisioning with N1 SPS

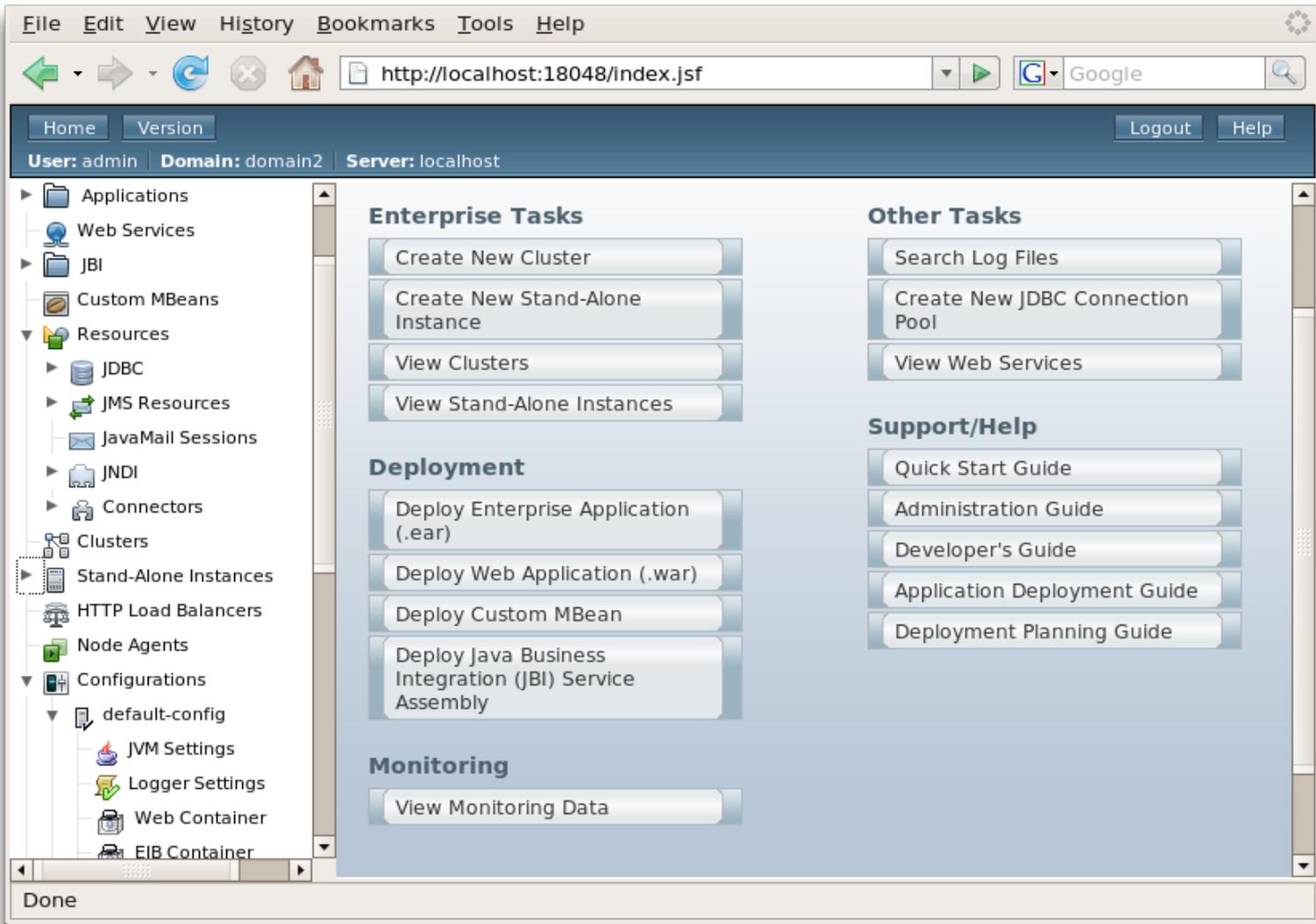


GlassFish v2 for the Developer

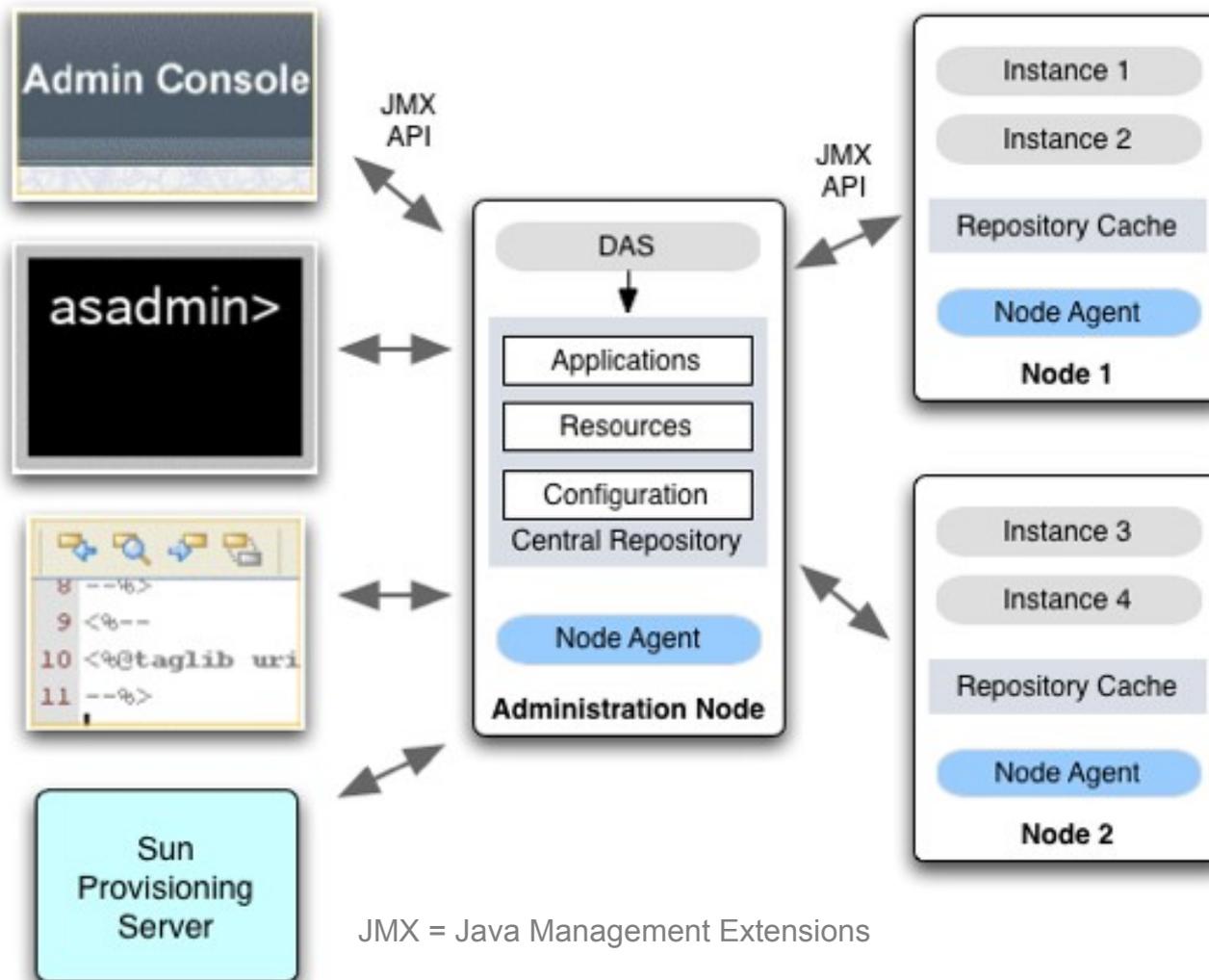


- **Single, smaller, download**
 - > Around 60 MB total
- **Multiple User Profiles**
 - > Developer, Cluster, Enterprise
 - > Upgrade from one to another
- **Better startup time**
 - > Almost matches Tomcat (see also GlassFish v3)
- **Cool Technologies**
 - > Grizzly's Comet, jRuby on Rails, jMaki, ...
- **Update Center**
 - > Provision and install new features, new frameworks, ...
- **Tools support**
 - > NetBeans, (My)Eclipse, IntelliJ, etc...

Web Admin Console



Clustering in GlassFish v2



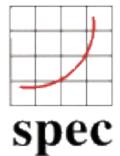
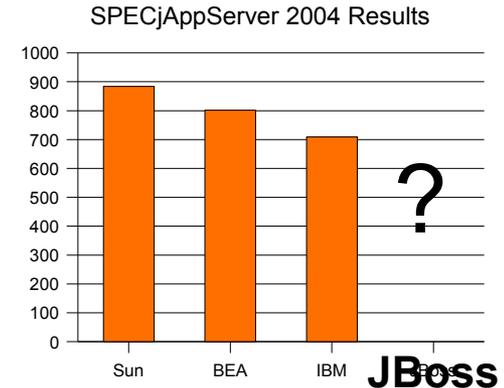
Performance

SPECjAppServer

- > July 2007: #1 score on T2000
 - > 883.66 JOPS@Standard for GlassFish v2
 - > + 10% vs. WebLogic, +30% vs. WebSphere 6.1

- > July 2007: Best \$/perf. on full Open Source
 - > GlassFish v2, OpenSolaris, Java 6, PostgreSQL
 - > 3x the price/perf vs. Oracle on HP score

- > November 2007: Massive Scalability Result
 - > 8,439.36 JOPS@Standard (6 nodes, 18 instances)
 - > Sun T5120 & E6900



You no longer need to chose between Open Source and Performance

GlassFish Partner Program



Migration considerations

- `verifier`
 - > Verifies the code and packaging against the Java EE specifications
 - > Ships with every copy of GlassFish and Java EE SDK
- `migrate2glassfish`
 - > Pick up where the verifier or AVK left off
 - > Migrates from Tomcat, JBoss, WebLogic, WebSphere
- `asupgrade`
 - > Migrate (applications, resources, configuration) from one version of GlassFish to another (newer) one

GlassFish v3

An ideal Web 2.0 container



- Small, Fast, and modular
 - > Very fast startup time
 - > Use what you need
 - > Developer-friendly
- Faster, lighter Java server engine
- Java and Scripting applications
 - > jRubyOnRails, Grails, PHP, Python/Django, Scala/Lift, ...
 - > A good fit for SOA/ESB solutions
- Available starting... now!
 - > Targeting beta by the end of 2008
- Final version will be Java EE 6

GlassFish v3

GlassFish @ JavaOne 2008

- GlassFish v3 Tech Preview 2 (TP2)
 - > HK2/OSGi-based Web container
 - > 21 MB download, 1-sec startup
 - > Admin and update tool downloaded on demand
 - > Add-ons available from update center :
 - > EJB 3.1 (preview)
 - > jRuby On Rails (no WAR packaging required)
 - > Grails (now also for GlassFish v2)
 - > Jersey and Metro (Web Services)
 - > jMaki (Ajax)
- Tools-ready: NetBeans 6.1, Eclipse 3.3

GlassFish @ JavaOne 2008 (2)

- GlassFish v3 – modular and extensible
 - > OSGi support (Apache Felix is the default)
 - > HK2 for extensibility
- Embedded GlassFish
 - > Single JAR file and Java API to replace asadmin
 - > Developer use-cases (Maven, Grails, Lift, IDEs, ...)

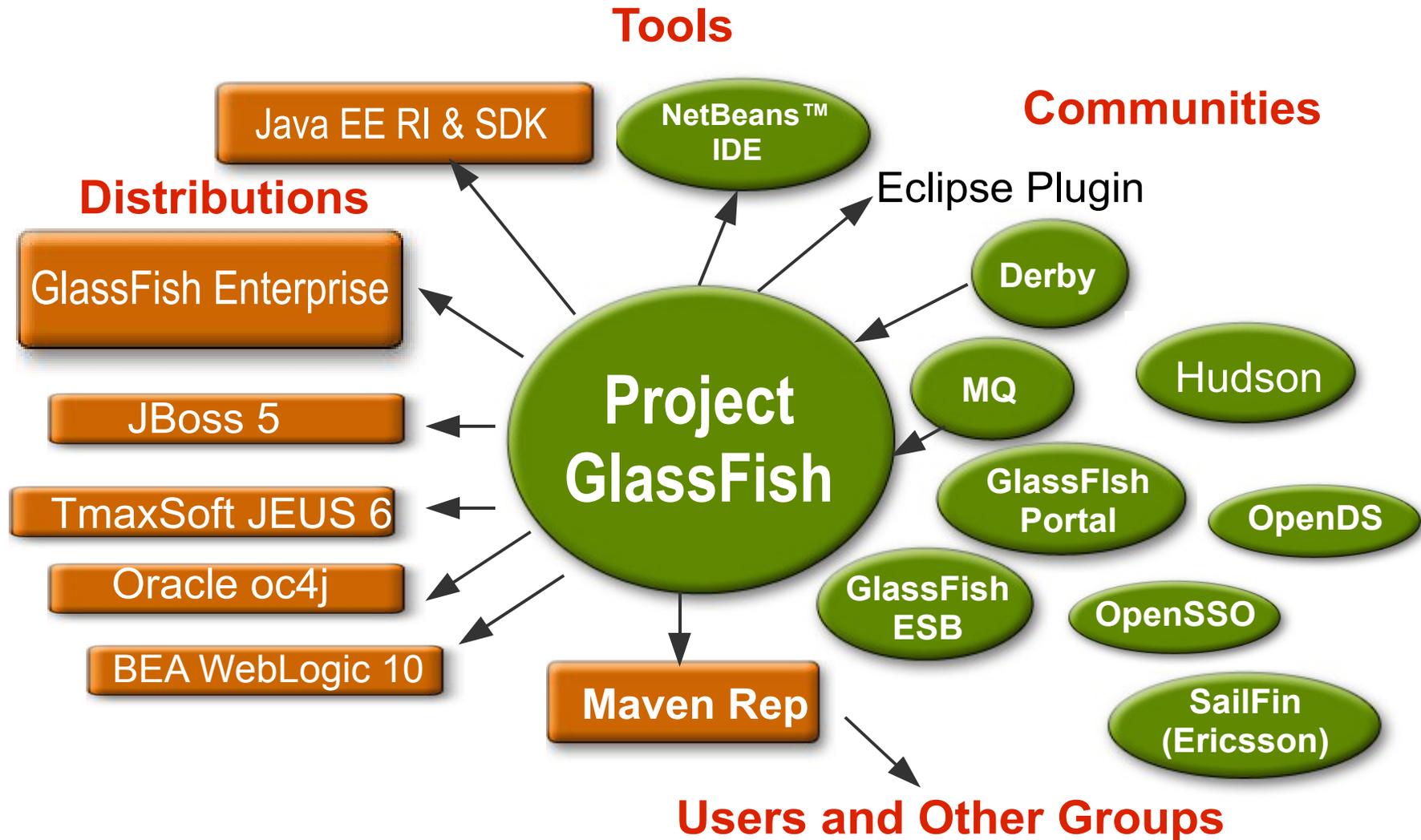
GlassFish @ JavaOne 2008 (3)

- GlassFish Enterprise
 - > Commercially supported product from Sun
 - > Access to support, patches, and indemnification
- GlassFish Unlimited
 - > Per-employee pricing (in addition to socket/CPU-based)
 - > Similar to MySQL unlimited
- GlassFish Partner Program
 - > 35+ ISVpartners signed up (SpringSource, IceFaces, TerraCotta, G2One, Synchronica, Liferay, ...)
 - > Integrator program coming up

GlassFish @ JavaOne 2008 (4)

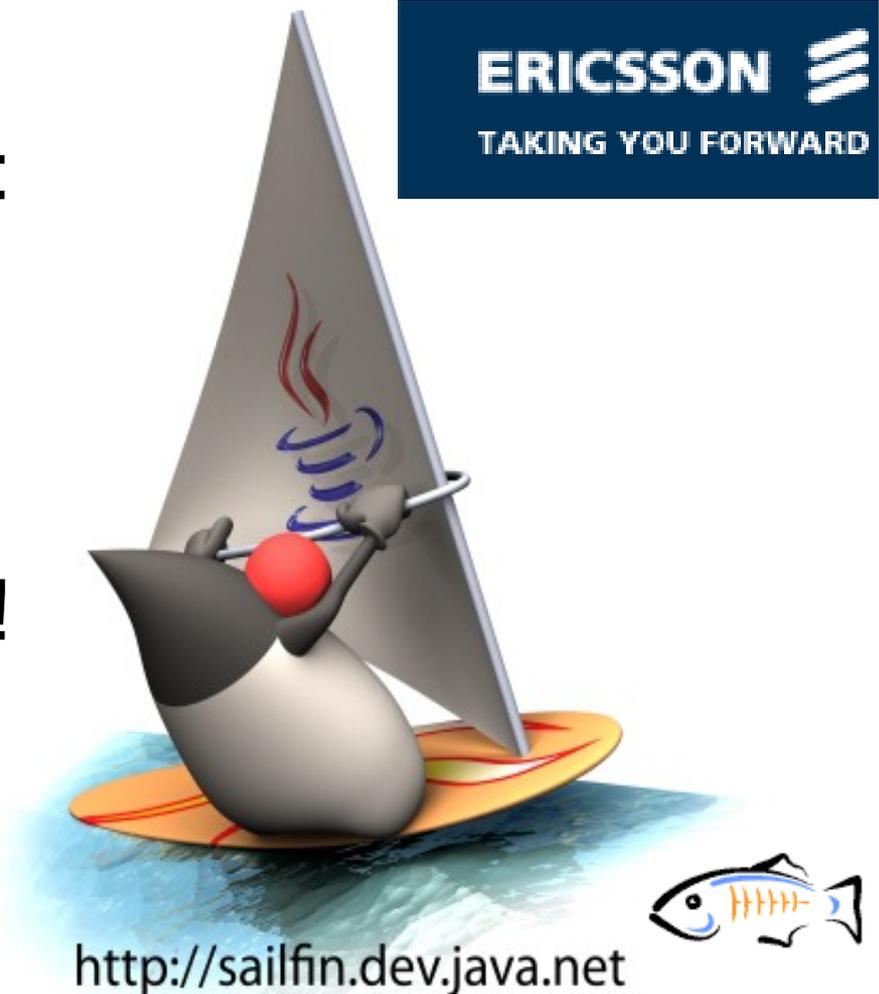
- GlassFish ESB
 - > GlassFish v3, OpenESB.next, JBI, OSGi (project Fuji)
- GlassFish Portal
 - > OpenPortal + Liferay = WebSynergy
 - > Integrated OpenSSO, Portlets 2.0, WSRP, and more
 - > 110MB download
- GlassFish Communications Server
 - > Sailfin-based commercially supported SIP App Server
 - > Preview (M4) available (almost feature-complete)

(Some) Distributions & Contributors



The SailFin Project

- Ericsson SIP Servlet Contribution is available at:
 - > <http://sailfin.dev.java.net>
- Visit, Download, Try, Join
 - > Milestone 4 available
 - > NetBeans and SDS tooling
- Not just for telco operators!
 - > Bridging the HTTP and SIP protocols
- Built on GlassFish v2 and expected in H2 2008



Hudson

- What?
 - > Continuous Integration Server
 - > Open Source
 - > Super easy to install, easy to use
 - > Extensible
 - > Helping all kinds of business, including GlassFish v3
- Why?
 - > Put computers at work
 - > Very active community
 - > Increase transparency
 - > Reduce people dependency



Practical Hudson

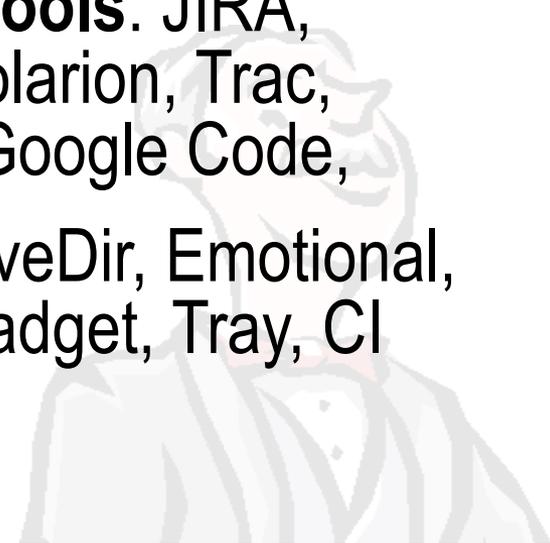
- Available as Web Application
 - > `java -jar hudson.war`
 - > Deploy in your favorite web container
- Out of the box features
 - > Maven 2, Ant, Windows batch, shell scripts
 - > Subversion and CVS
 - > Email notifications
 - > JUnit, JavaDoc



Hudson Plugins

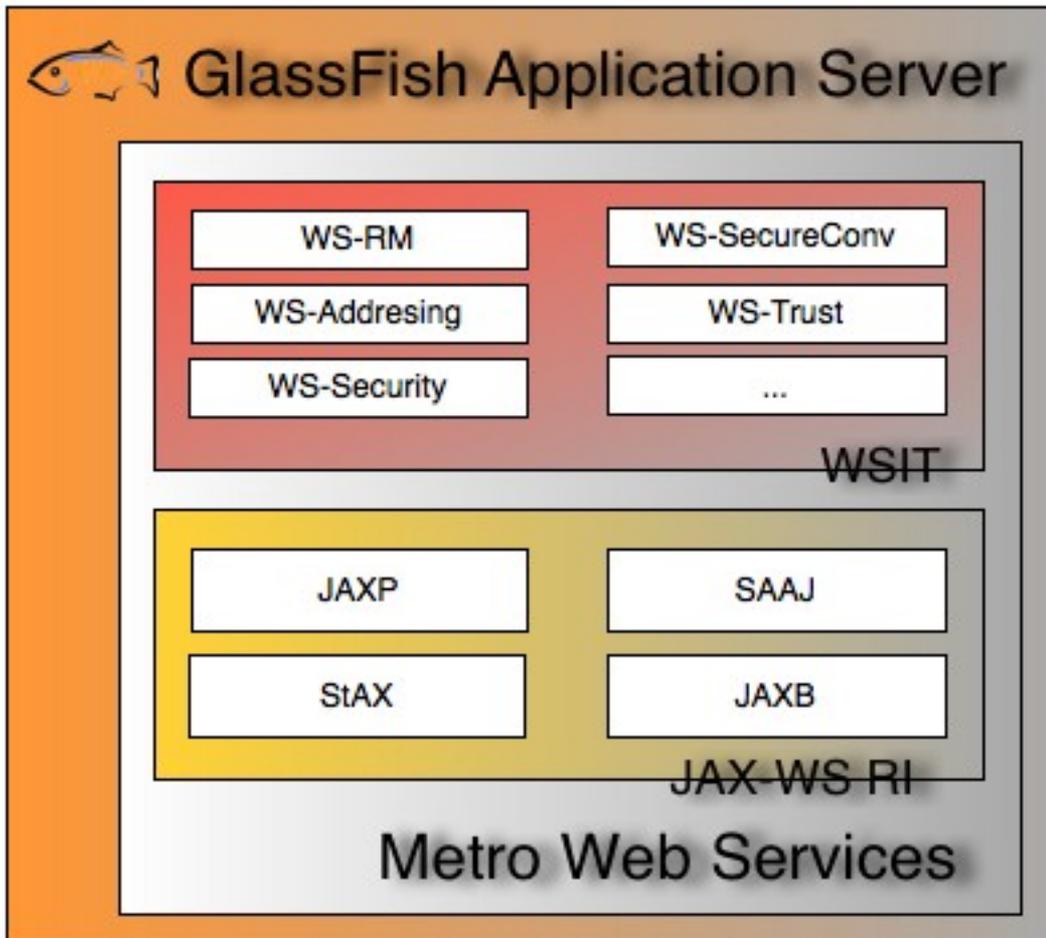
Drop-in installs

- **SCM:** Accurev, BitKeeper, ClearCase, Git, Mercurial, Perforce, StarTeam, URL, Visual SourceSafe
- **Triggers:** IRC, Jabber, Locks&Latches, Naginator, URL Change
- **Build:** batch, Gant, Groovy, MSBuild, NAnt, Ruby, VMWare, Xvnc
- **Notifiers:** GoogleCal, IRC, Jabber, Twitter
- **Reports:** Checkstyle, clover, cobertura, Crap4J, Emma, FindBugs, Japex, JavaTest, NUnit, Plot, PMD, Violations, WebTest
- **External tools:** JIRA, Mantis, Polarion, Trac, java.net, Google Code,
- **Misc:** ActiveDir, Emotional, Google Gadget, Tray, CI Game, ...





Metro Web Services



- Unified WS stack
- POJOs
- XML-free programming model
- Layered architecture
- Integrated use of JAXB 2.x
- JAX-WS 2.x also part of Java SE 6

JAX-WS 2.1 Layered Architecture

Application Logic

**Strongly Typed
Annotated Classes**

**Messaging Layer
Dispatch / Provider API**

Server-side Programming Model

- Starting from a **POJO**
 - > Write a POJO implementing the service
 - > Add **@WebService** annotation
 - > Build and deploy
 - > WSDL file generated automatically
- Starting from a **WSDL** file
 - > Generate implementation
 - > Implement Server Endpoint Interface
 - > Build and deploy

JAX-WS Web Service Implementation

```
package endpoint;  
import javax.jws.WebService;  
  
@WebService  
public class Bonjour {  
  
    public String ditBonjour(String nom) {  
        return "Bonjour " + nom;  
    }  
  
}
```

Application Logic

Annotated Classes

Dispatch / Provider

Client-side Programming Model

wsimport <http://host/webcontext/Bonjour?wsdl>

- No factories yet the code is fully portable
- XML is completely hidden from programmer

```
BonjourService service = new BonjourService();
```

```
Bonjour port = service.getBonjourPort();
```

```
String nom = "Peter";
```

```
String result = port.ditBonjour(nom);
```

Finer-grained Annotation Attributes

```
@WebService(serviceName = "BonjourService",
    portName = "BonjourPort",
    endpointInterface = "Bonjour",
    targetNamespace = "http://endpoint/",
    wsdlLocation = "../BonjourService.wsdl")
public class Bonjour {

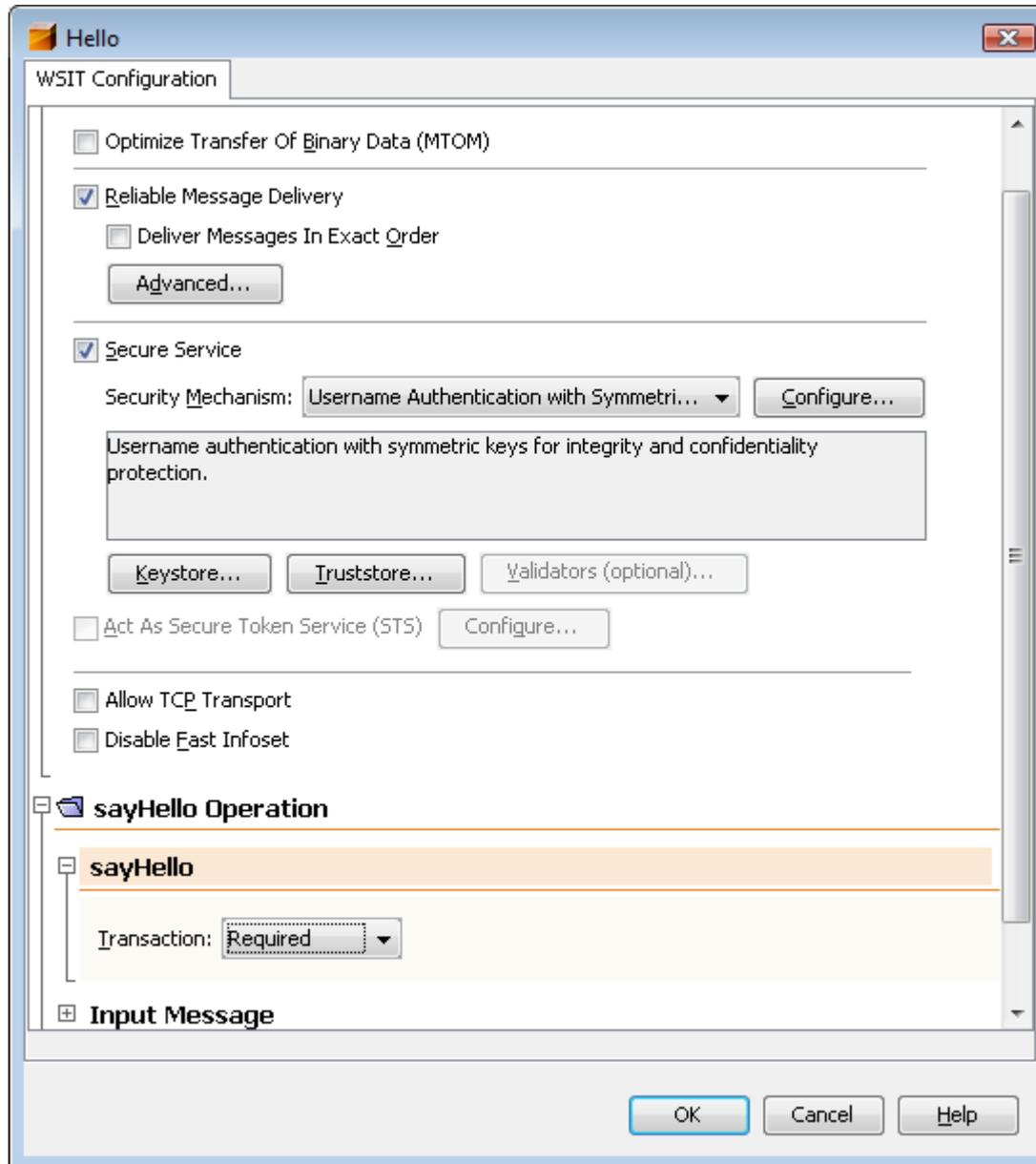
    @WebMethod(
        action="sayHello",
        operationName="OpName" )
    public String ditBonjour
        (@WebParam(name = "name") String nom){
        return "Bonjour " + name;
    }
}
```

JAX-WS Handlers

- Protocol Handler
 - > May change protocol specifics
 - > Corner cases or specific protocol (profile)
- Logical/Message handler
 - > Protocol agnostic
 - > Used to access the message payload
- Chaining of handlers is possible

Metro Interoperability

- Standards Compliant
 - > JAX-WS 2.1 & JAXB 2.1
 - > W3C SOAP 1.1/1.2, WSDL 1.1, WS-Addressing, MTOM
 - > WS-I Basic Profile 1.x, SSBP 1.0, AP 1.0
- .Net 3.0 interoperable
 - > WS-* specs used by .NET 3.0
 - > Reliable Messaging, Secure Conversation, Trust, Security, SecurityPolicy, MetadataExchange, Atomic Transaction, Coordination, Policy
 - > Secure, Reliable, Transactional
 - > Working on .Net 3.5 interop



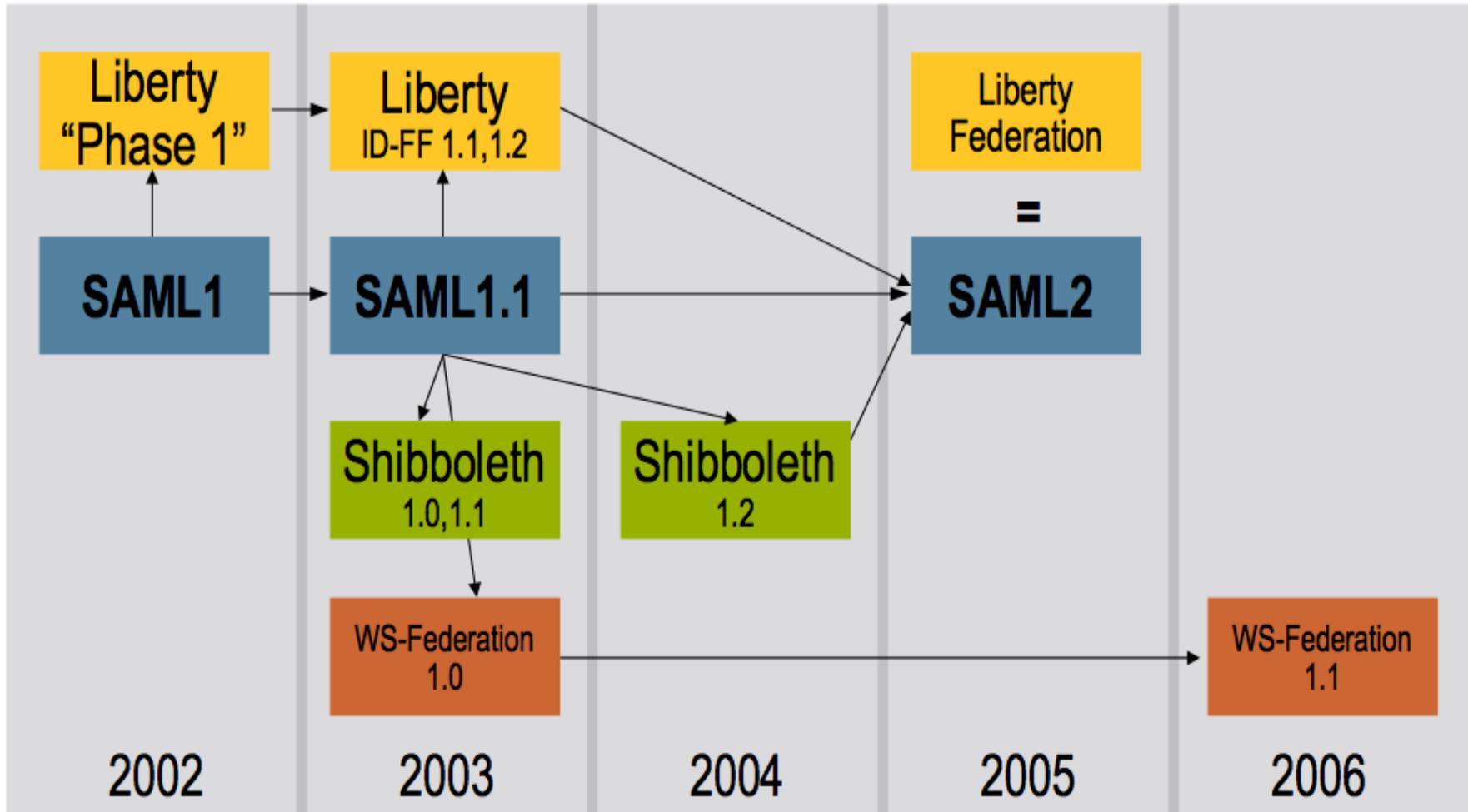
OpenSSO – Why?

- Web Access Management
 - > From user convenience to regulation requirements
 - > Browser cookies in a DNS domain
 - > Proxy or agent architecture for RBAC (server-based)
 - > Users get SSO, IT gets control
- Federation
 - > SSO beyond a single enterprise or service

OpenSSO – Federation

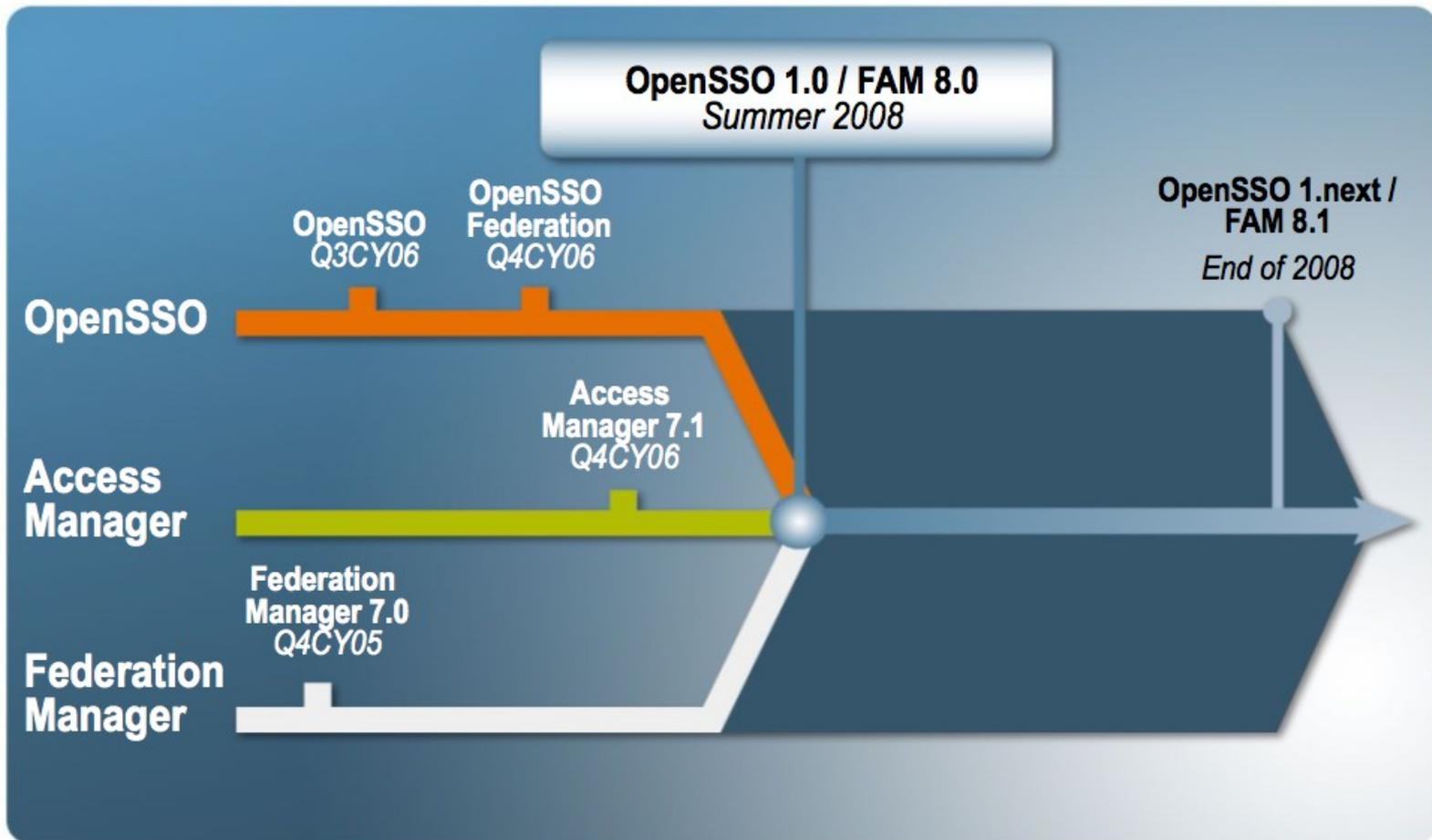
- SSO across organizations
- Cookies no longer work
 - > Need a more sophisticated protocol
- Can't mandate single vendor solution
 - > Need standards for interoperability

SSO Standards



OpenSSO – What?

- Sun Federated Access Mgr 8.0 = OpenSSO 1.0



OpenSSO 1.0

- Access Management
 - > Centralized Agent Configuration & Deployment
 - > Centralized Configuration
 - > XACML Request/Response
 - > Wide choice of Application Servers
- Federation
 - > Fedlet
 - > Virtual Federation
 - > Multi-Federation Protocol Hub
 - > WS-Federation 1.1
 - > 3rd Party WAM Interoperability

OpenSSO – A scenario

- Drop the WAR binary on to one of 8 supported containers (GlassFish, Tomcat, ...)
- Configure OpenSSO
 - > Specify the administrator password, data store, agent, ...
- Configure OpenSSO for users
 - > Create SAML 2 IDPs and a circle of trust with attribute mappings, such as cn (common name).
- Create a Fedlet
 - > Quickly federation-enable a small service provider
 - > SAMLv2 intermediary created on server, deployed on SP
- Credentials stay with the IDP (not passed on to the SP)

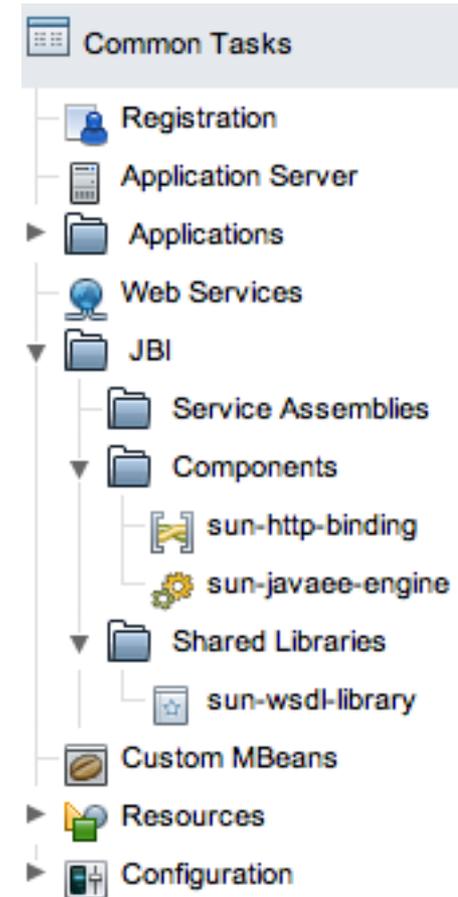
OpenSSO 1.0 – Identity Services

- Authentication, Authorization, Audit
- SAML 2.0: Java, PHP, Ruby
- OpenID
 - > OpenID 1.1 provider (deployed on openid.sun.com)
- Authentication extension modules
 - > ActivIdentity 4Tress
 - > Hitachi Finger Vein Biometric
 - > Information Card (aka CardSpace)

<http://opensso.org/public/extensions/>

GlassFish ESB

- OpenESB integrated into GlassFish v2
 - > JBI 1.0 Reference Implementation
 - > Services Engines (SE) and Binding Components (BC) added when needed
 - > Implemented as a GlassFish life-cycle module
 - > NetBeans Tooling



- Project Fuji – building on OSGi and GlassFish v3



Questions ?

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<http://glassfish.org>