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JavaOneSM

Dynamic Languages
Powered by GlassFishTM
v3 Application Server

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Who We Are

> Vivek Pandey

- GlassFish Tech lead for scripting languages support
- <http://weblogs.java.net/blog/vivekp/>

> Jacob Kessler

- GlassFish Scripting Engineer / Code Monkey
- <http://blogs.sun.com/Jacobkessler/>



Sinatra



Agenda

- > Introduction
- > Dynamic Languages and the Java Virtual Machine™
- > GlassFish: A Multi-Language Application Server
 - Ruby
 - Python
 - Groovy
- > JavaEE™ and Dynamic Languages
- > Q&A

Agenda

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What is a Dynamic Language?

- > Broadly, a language that allows a program to change its own code at runtime
 - Evaluate data as code
 - Manipulate code as data
 - Higher-order functions
 - Dynamic typing
- > Often have an emphasis on readable syntax
- > Lisp, Ruby, Python, Groovy, ...

What is GlassFish?

- > Open Source Application Server
 - Platform for serving web applications
 - Java Enterprise Edition 5 reference implementation
 - Support for EE 6 in v3 full release
 - Modular + Extensible
 - Scalable
 - Management tools
- > Traditionally for deploying Java EE applications

Why Use an Application Server?

- > Serving web content well is difficult
 - Web server protocols
 - Multiple hosted sites
 - Scalability
 - Clustering/failover
- > Much easier to build on an existing platform
 - Java Enterprise Edition standard

Why Use Dynamic Languages in GlassFish?

- > Dynamic Languages provide advantages over Java
 - Bits By Friday
 - Faster development time – less overhead
 - Shorter code iterations
 - But sometimes more of them
 - Cleaner Syntax
 - Braces, Blocks, Semicolons, “fluff”
- > GlassFish allows you to use those advantages while preserving Java EE features

Java vs. Ruby Code

```
public class Fib {  
    public static void main () {  
        System.out.println(fib(10));  
    }  
    private static int fib(int n) {  
        if (n == 0) {  
            return 0;  
        } else if (n == 1) {  
            return 1;  
        } else {  
            return fib(n-1)+fib(n-2);  
        }  
    }  
}
```

```
def fib ( number )  
    if number == 0  
        0  
    elsif number == 1  
        1  
    else  
        fib(number - 1) +  
        fib(number - 2)  
    end  
end  
puts(fib 10)
```

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Dynamic Languages and the Java Virtual Machine

- > Python
 - Jython interpreter provides interoperability through Java interfaces
- > Ruby
 - Jruby interpreter provides automatic translation and Just-In-Time compilation
- > Groovy
 - Dynamic language fully compiled to Java bytecode
- > Glassfish handles all of this transparently

Advantages of Dynamic Languages

- > Agile development
- > More flexibility
- > Metaprogramming and run-time code generation
- > Domain-specific languages

Disadvantages of Dynamic Languages

- > Slower execution
 - Not always an issue
 - Developer time vs. processor time
- > Scalability
 - Global locks
- > Maturity

Advantages of Java

- > Speed
- > Scalability
- > Available libraries and frameworks
 - More time
 - More contributors
 - More testing

Disadvantages of Java

- > Verbose syntax
 - `System.out.println("Hello world")`
 - Casting and subclasses
- > Some unavailable features
 - Metaprogramming

The Right Tools for the Job

- > Integration allows each language to be used for the parts of the overall project for which it is best suited
- > Example: Access JMS queue from Rails
- > Example: Accessing Java-based cryptography libraries from a Groovy Web application

Agenda

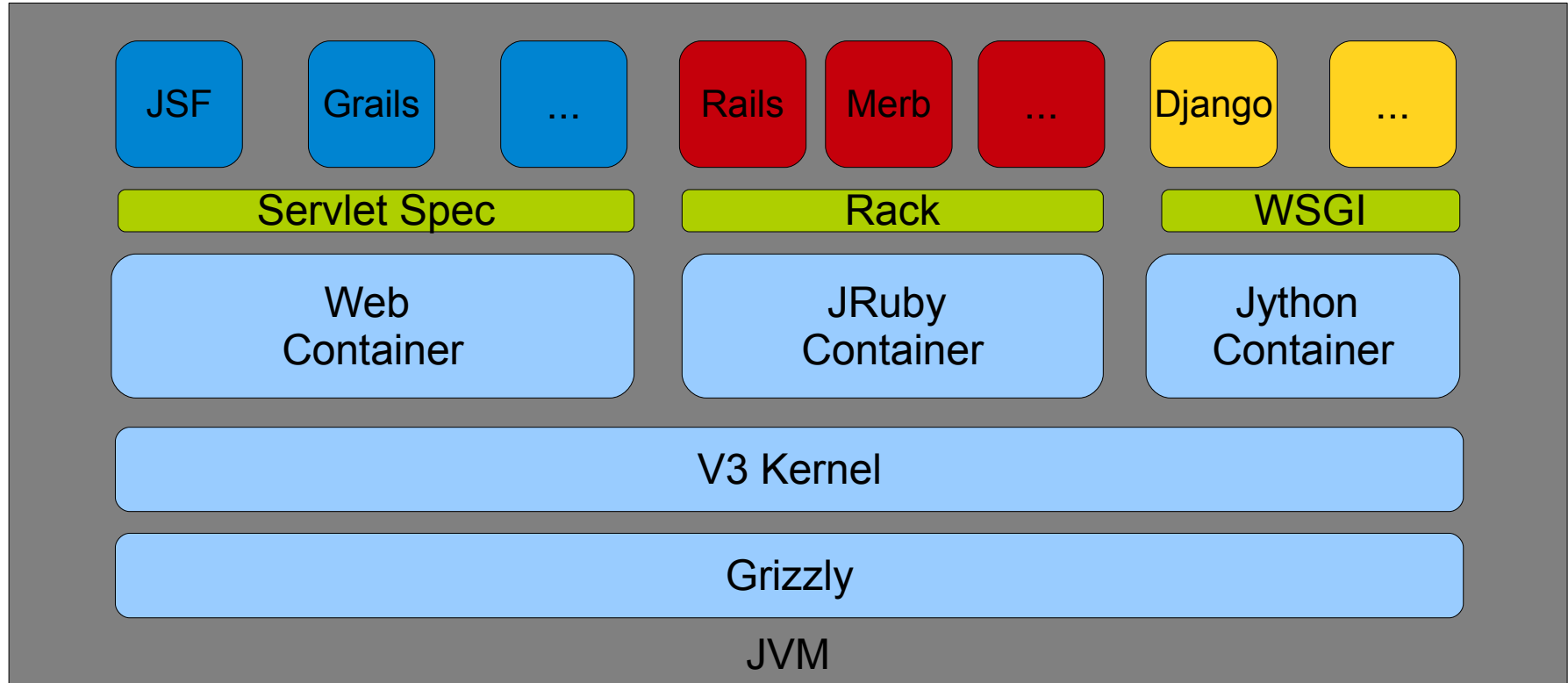
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GlassFish v3

A multi-language application server

- > Support for many web-frameworks
 - Grails, Rails, Merb, Sinatra, Django
- > No prior JavaEE experience required
 - Same deploy command for all frameworks
 - No packaging (no WAR) required
 - No change in programming model
- > Best of both worlds
 - Run dynamic language applications along side JavaEE apps

Pluggable Web Frameworks



Key



GlassFish v3 Modules

Web Framework Interface



Java Framework

Ruby Framework

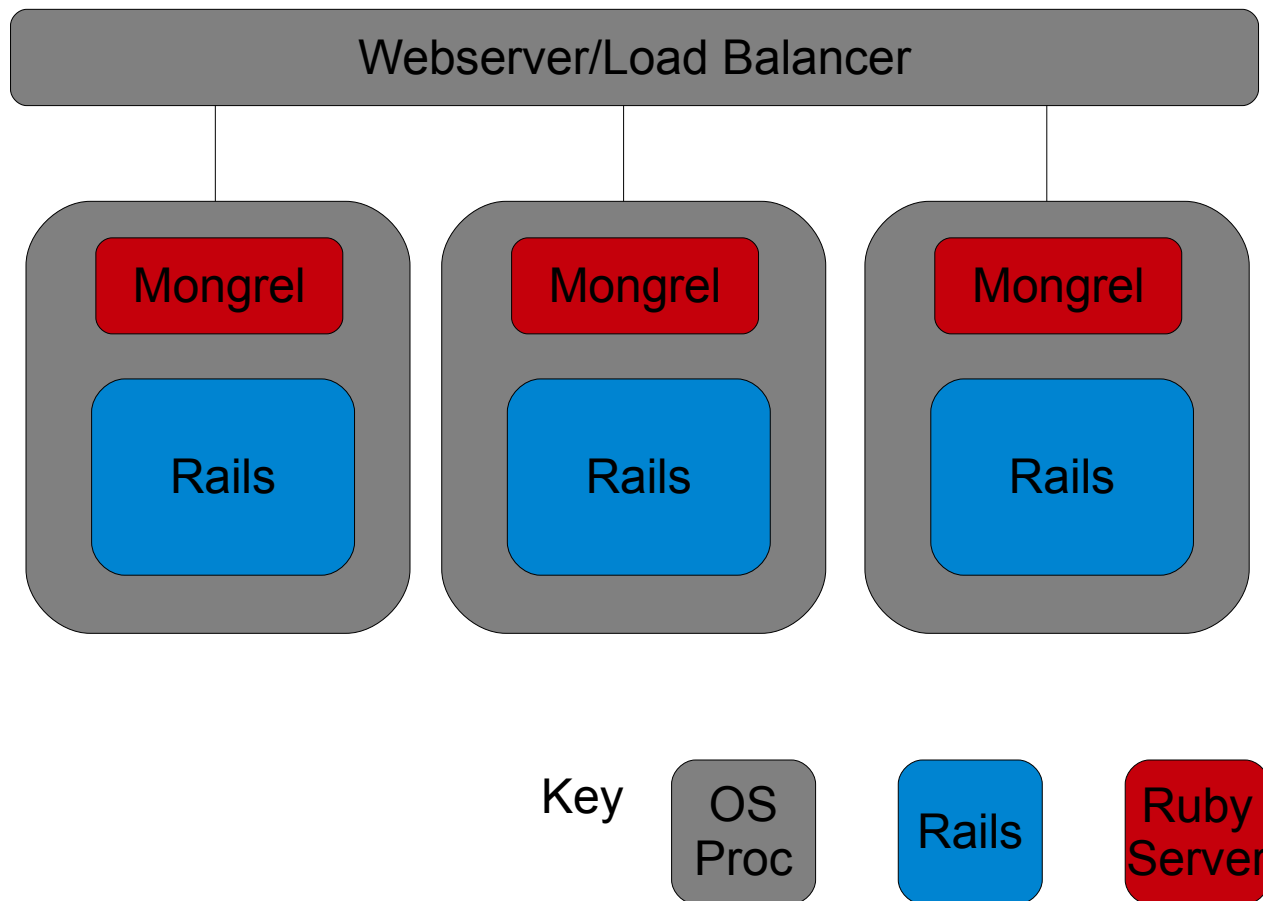


Python Framework

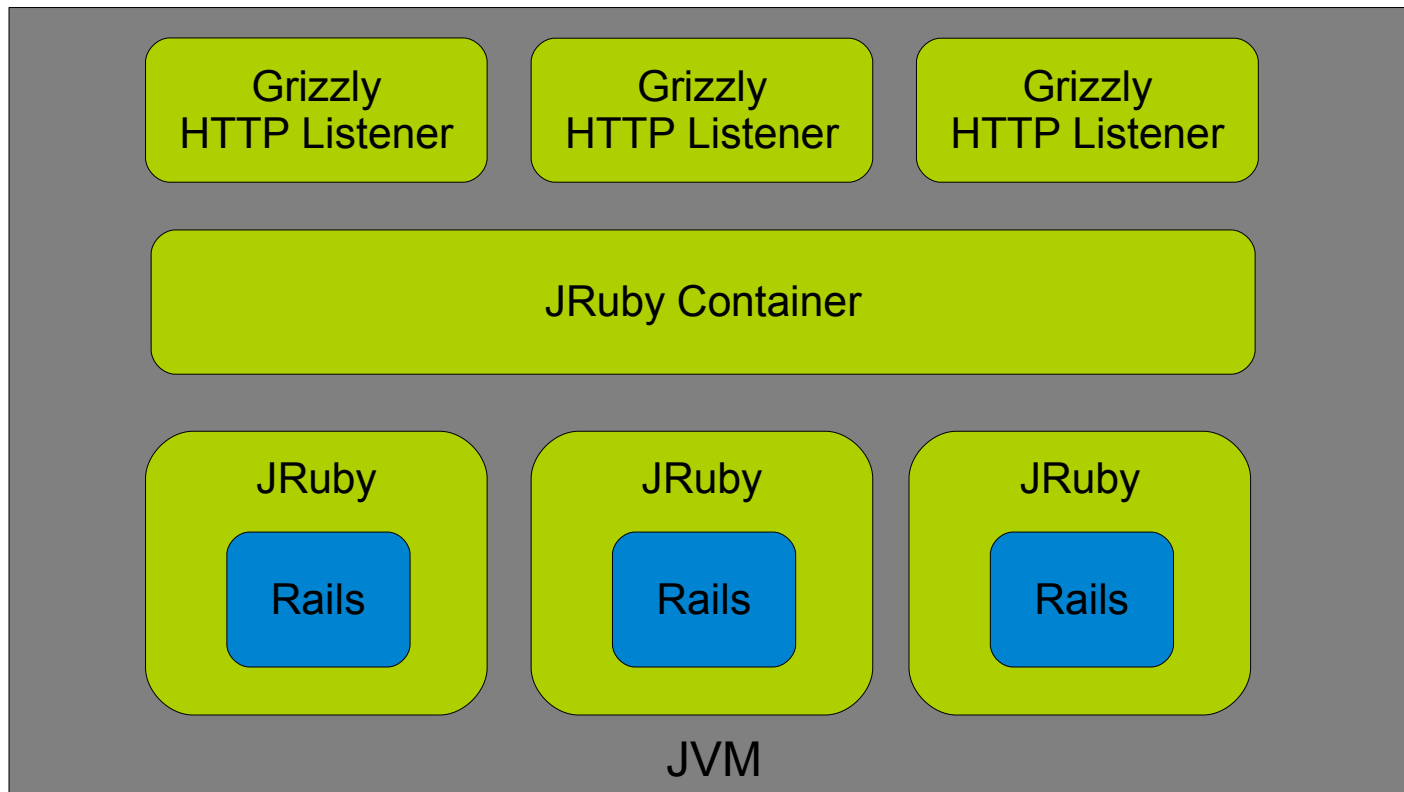
Embedded Interpreters

- > Configured interpreter for optimized usage
- > Dynamic runtime pools
 - Single threaded languages/frameworks
 - Better scaling
 - JRuby runtime pool, Jython runtime pool

Ruby scaling on native servers



Ruby scaling on GlassFish v3



Key

Java

Ruby

Monitoring and Administration

- > GlassFish Admin console
 - Manage JavaEE as well as Ruby, Python or Groovy applications
- > Or use RESTful admin services
- > Transport agnostic monitoring
 - dTrace
 - JMX
 - RESTful service
- > Customized monitoring
 - Write monitoring client in JavaScript and deploy as a service on GlassFish

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Ruby



Ruby support on GlassFish

- > Rack compliant
 - Wires a web server to a Ruby application
 - Based on WSGI from Python
- > Run any Ruby application that supports Rack

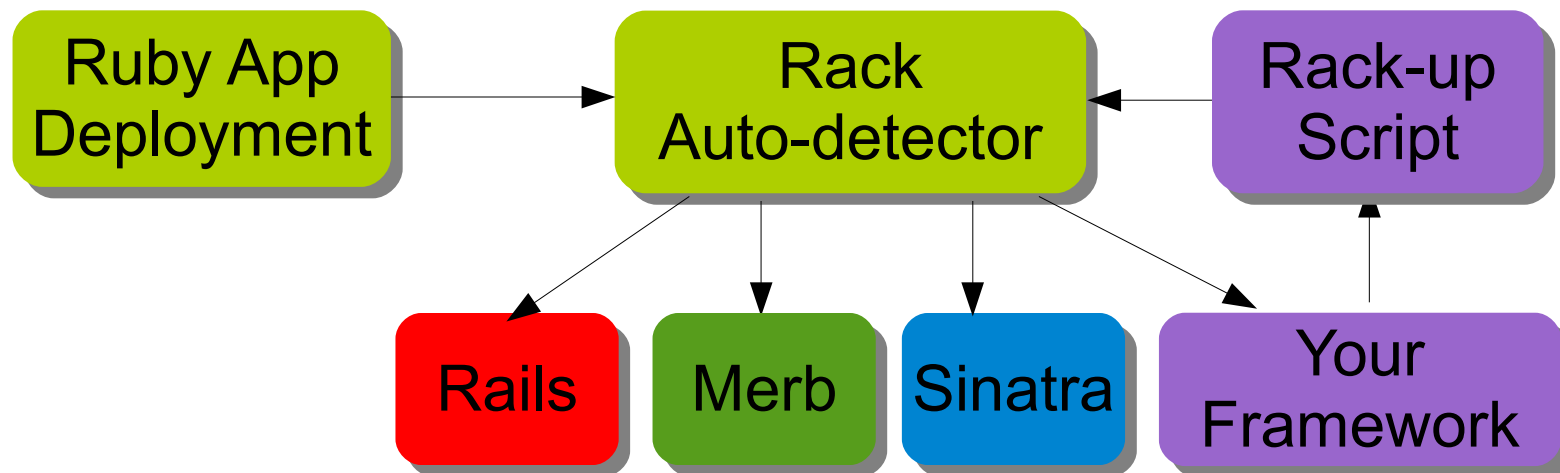
```
1 class HelloWorld
2   def call(env)
3     [200, {'Content-Type'=>'text/plain'}, ["Hello World!"]]
4   end
5 end
```

Ruby support on GlassFish

- > All major Ruby frameworks support Rack
 - Rails (Starting 2.3.2), Merb, Sinatra, Campsite...
- > GlassFish has in built support for Rails, Merb and Sinatra
- > Or you can run your own Ruby framework...

Pluggable Framework support

- > Rack-up script
- > `jruby.applicationType` deployment property
- > GlassFish auto-detects your application

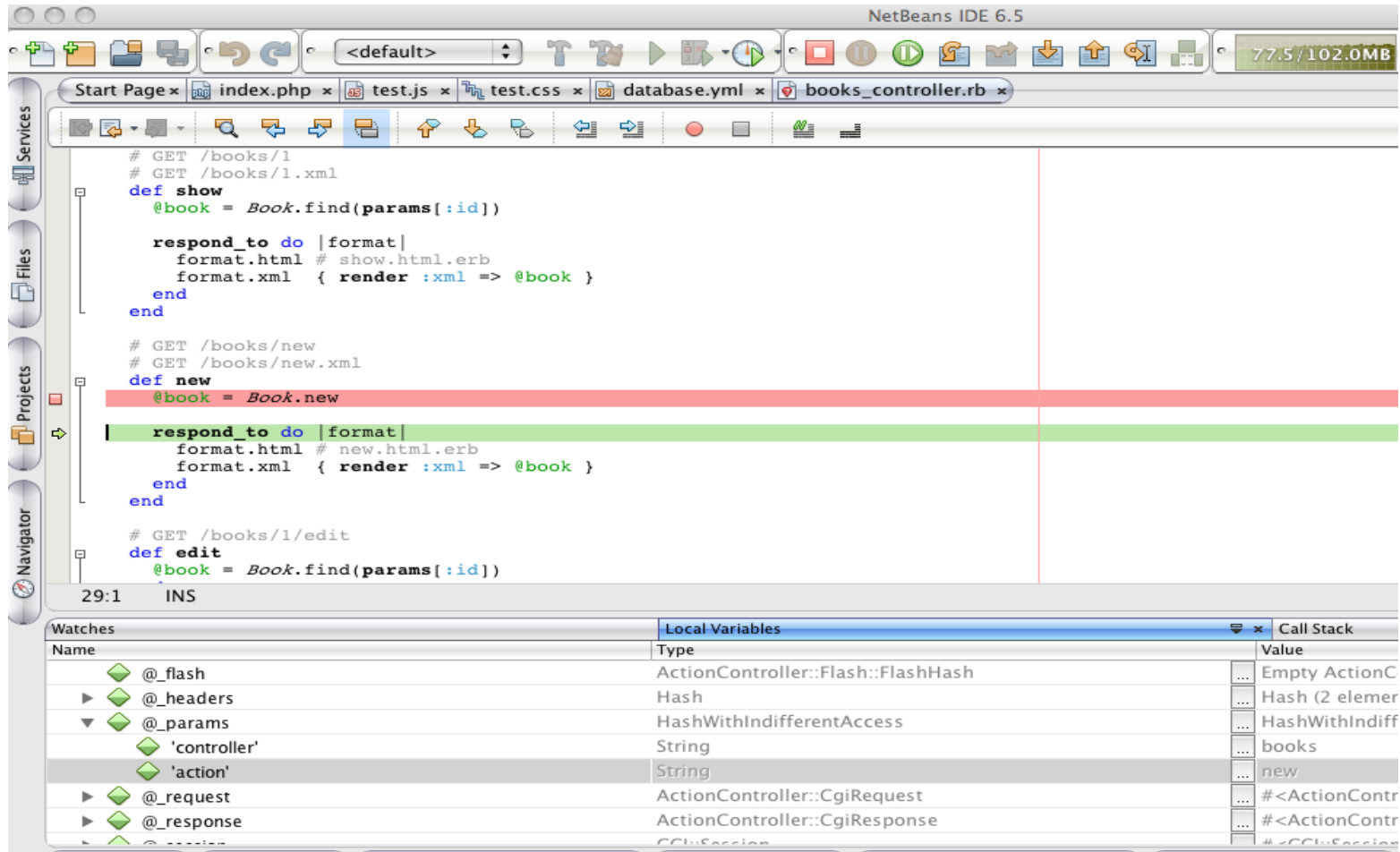


Ruby Monitoring

- > What can be monitored in Ruby/Rack applications?
 - HTTP stats
 - JRuby interpreter stats
 - JRuby runtime pool stats
- > Monitor using
 - dTrace or JMX or your custom script or REST

NetBeans support

Develop, deploy and debug



GlassFish gem

- > Based on GlassFish v3 Kernel
- > Just about 2.5 MB in size
- > Ruby friendly
- > More info
 - <http://glassfishgem.rubyforge.org/>

Using GlassFish gem

- > How simple can it get?

Using GlassFish gem

> How simple can it get?

```
$ gem install glassfish
```

Using GlassFish gem

> How simple can it get?

```
$ gem install glassfish
```

```
$ glassfish -e production
```

Demo

Ruby RESTful service on GlassFish

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Python



(J)Python and Django on GlassFish

- > Jython as Python interpreter
- > Jython container
 - Like JRuby, extends GlassFish
 - Jython Grizzly Adapter for HTTP processing
 - WSGI support makes other Python frameworks simple to plugin
- > Simple deployment

```
$ asadmin deploy myDjangoApp/
```

Demo

Django application deployment on GlassFish v3

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Groovy and Grails



Grails Application Deployment

> WAR deployment

- grails war
 - Creates grailsApp.war (with ~48 jars and ~18MB in size)

> Efficient deployment

- grails shared-war
 - Creates grailsApp.war but only ~200KB
- Available through Grails package on GlassFish v3 update center

GlassFish Grails Plugin

- > Embedded GlassFish for Grails
- > Same server for development and production
- > Supports Grails run-app and run-war command
- > Install GlassFish as Grails plugin
 - `$ grails install-plugin glassfish`
 - `--global`
- > Now run your application on GlassFish
 - > `$ grails run-app`

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JavaEE and Dynamic Languages

- > JavaEE is a mature and robust enterprise platform
 - Servlet, EJB, JMS, JAX-RS, JAX-WS...
- > Hybrid Rails and Servlet/JSP application
 - Forward to and from Rails to Servlet/JSP
 - HttpSession as Rails session
 - ServletRequest/Response API available to Rails
- > JDBC connection pool
 - Efficient Database access
- > JMS
 - Async messaging in Rails

Servlet 3.0 pluggability

- > JavaEE 6 and Dynamic Languages
 - No boilerplate web.xml
 - Dynamically add ServletFilter and ServletContextListener
- > Simple packaging
 - No need to package as WAR
 - Hence no Warbler needed
 - Place Rails application inside WEB-INF directory

Demo: Rails and JavaEE

Scripting Sessions and BOF

- > PAN-5348:Script Bowl 2009: A Scripting Languages Shootout
- > TS-5413:JRuby on Rails in Production: Lessons Learned from Operating a Live, Real-World Site
- > TS-5033:Scripting Java™ Technology with JRuby
- > BOF-4434:Hacking JRuby
- > TS-5216:Toward a Renaissance VM
- > TS-4955:Comparing Groovy and JRuby
- > TS-5015>Welcome to Ruby
- > BOF-5058:JRuby Experiences in the Real World
- > Scripting POD#566

Q&A

Resources

- > <http://glassfish-scripting.dev.java.net/>
- > <http://glassfishgem.rubyforge.org/>
- > <http://glassfish.dev.java.net/>
- > <http://jruby.org>
- > <http://jython.org>
- > <http://grails.org>
- > Mailing List
 - users@glassfish.dev.java.net
- > Issue Tracker
 - <https://glassfish.dev.java.net/servlets/ProjectIssues>



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Thank You

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GlassFish Community

Open Source and Enterprise Ready



- **GlassFish V3 Preview Available now!**

- Java EE 6 reference implementation
- Modular OSGi architecture – easy to develop & deploy
- Runs in-process and easy to extend
- Support for Ruby-on-Rails, Groovy and Grails, Python and Django

- **GlassFish V2 – Production Ready**

- Best price/performance open source App server with Clustering, High Availability, Load Balancing
- Secure, Reliable, Transactional, .NET-interop Web svcs
- Support for Ajax and Comet

- **GlassFish ESB**

- SOA and Business Integration platform

- **GlassFish Communications App Server**

- SIP servlet technology for converged services

glassfish.org

- **24x7 Enterprise and Mission Critical Support**

- sun.com/appserver

- **Tools Integration**

- NetBeans and Eclipse

- **Pavilion booth numbers: 550, 566, 567**

- **Meet Java EE spec leads and experts at Ancillary Event & Booth**