Tutorial

Dynamic Server Applications with Eclipse RT

```java
package hello.jaxrs;

import hello.service.GreetingService;

/**
  * Hello World JAX-RS Resource
  */
@Path("/greetings")
public class GreetingsResource {
    // inject OSGi service using JAX-RS @Context
    @Context
    private GreetingService greetingService;

    // inject OSGi service using JSR 330 @Inject
    @Inject
    private GreetingService greetingService2;

    @Context
    private UriInfo uriInfo;
}
```
In this tutorial you will

- **LEARN** what modern server applications need to feature
- **UNDERSTAND** the usage of selected EclipseRT technologies
- **BUILD** an EclipseRT server application based on Equinox and Eclipse Gyrex
- **SETUP** a private cluster connecting all attendees
Modern Server Application Requirements

- Support high traffic use cases
- Support different frontend technologies and devices
- Modular in development and deployment
- Easy to setup
- Open for new technologies → easy to extend AND to shrink
  - e.g. persistence

Million transactions per hour
Eclipse RT

“EclipseRT is the collection of OSGi-based runtimes and frameworks built by the Eclipse open source projects.”

Containers, Middleware, EnterpriseFrameworks
Equinox

- reference implementation for OSGi spec
- foundation of EclipseRT
- component oriented development and assembly
Eclipse jetty

features

- Asynchronous HTTP Server
- Standard based Servlet Container
- Web Sockets server
- Asynchronous HTTP Client
- OSGi, JNDI, JMX, JASPI, AJP support

Small foot print allows large scaling

Jetty runs in
- Apache Hadoop
- Google AppEngine
EclipseLink

Comprehensive Java persistence solution addressing relational, XML, and database web services.

- Java SE
- Java EE
- OSGi
- Spring
- ADF

- JPA
- MOXy
- EIS
- SDO
- DBWS

EclipseLink

Databases
XML Data
Legacy Systems
GYREX

lightweight application stack for building server applications using EclipseRT technologies.

- built-in clustering
- built-in web-based administration UI
- built-in multi tenancy
- enhancements for professional maintenance
  - centralized logging
  - cluster provisioning UI
GYREX Components

Repositories (JDBC, EclipseLink, NoSQL)
HTTP Applications (Jetty, OSGi HttpService)

Contextual Runtime

Logging
Metrics
Debug/Trace
Monitoring

RAP
Console
Admin

Cloud

Clustering & Coord. (ZooKeeper)
Configuration (Eclipse Preferences API)
Provisioning (p2)
Processing (Eclipse Jobs API)

Equinox

GYREX Components
Tutorial: Dynamic Server Applications with EclipseRT
Gunnar Wagenknecht, Andreas Mihm, Jochen Hiller
GYREX Infrastructure Setup
For a High Traffic Application with different frontends

- PHP WebApp
- InternetOfThings Device
- Native App

LoadBalancer

Gyrex Node
Gyrex Node
Gyrex Node
Gyrex Node
Gyrex Node
Gyrex Node
Gyrex Node
Gyrex Node

ZK Node
ZK Node
ZK Node

- coordinates the cluster
- Holds the complete application- and cluster configuration

iPad App
Mobile Apps

data repositories

p2 repo

GYREX

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GYREX Features

- light weight application stack
- fast 100% OSGi runtime
- central cluster configuration through zookeeper
- cluster aware job scheduling
- multi tenant application support
- automated deployment through p2
- support for cluster node roles, e.g. "job worker node" and "api node"
Excercises

- Setup workspace and target platform
- Simple OSGi Service implementation
- JAXRS example application
- Private cluster setup
Setup Steps

- Copy USB-stick content to local disk
- Extract fresh Eclipse installation from archive
- Copy samples folder into eclipse/dropins
- Start Eclipse with new workspace
- Open Java Perspective
- Import targetplatform project (File->Import->Existing Projects)
- Set LOCAL TargetPlatform
GYREX Features

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For more information

- http://www.eclipse.org/gyrex/
- http://www.eclipse.org/equinox/
- http://www.eclipse.org/rt/
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Making ALM Work - Transform your Application Lifecycle Management to Foster Innovation (presented by HP)
Ronit [HP]
Thank You for your attention