Dynamic Server Applications with EclipseRT

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Topics

- **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 ... using the conference WiFi
Modern Server Applications

- **High traffic**

- **Different frontend technologies and devices**

- **Modular in development and deployment**

- **Easy to setup and run**

- **Open for new technologies**
EclipseRT (RT = Runtime)

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

Containers, Middleware, EnterpriseFrameworks
Equinox

- OSGi reference implementation
- Foundation of EclipseRT
- Component Oriented Development and Assembly
Jetty

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

- Small foot print
- Excellent scalability

- 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

EclipseLink

- JPA
- MOXy
- EIS
- SDO
- DBWS

Databases
XML Data
Legacy Systems
Eclipse Gyrex

A lightweight application stack for building server applications using EclipseRT technologies.

Built-in:

- Clustering
- Web-based administration
- Multi-tenancy
Gyrex Features

- lightweight application stack
- pure OSGi runtime
- central cluster configuration through Apache ZooKeeper
- cluster aware job scheduling
- automated deployment through p2
- support for cluster node roles, e.g. “job worker node” and “api node”
Gyrex Components

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

Logging
Metrics
Debug/Trace
Monitoring

RAP
Console
Admin

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

Cloud
Equinox
Infrastructure Setup
For a high traffic application with different frontends

Load Balancer

- REST API
- Gyrex Node
- Gyrex Node
- Gyrex Node
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- Gyrex Node

ZooKeeper Cluster

- ZK Node
- ZK Node
- ZK Node

Coordinates the cluster and holds the complete application- and cluster configuration

- p2 repo
- data repositories

- iPad App
- Mobile Apps
- Native App
- Internet Of Things Device
- PHP Web App
Exercises

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

- You need to have **Java 7** installed!

- **COPY** USB-stick content to local disk or **DOWNLOAD** from http://... 

- Extract **fresh Eclipse** installation from archive

- Copy samples folder into **eclipse/dropins**

- Start Eclipse with **new workspace**
Q&A

- More information
  - http://www.eclipse.org/gyrex/
  - http://www.eclipse.org/equinox/
  - http://www.eclipse.org/rt/

- Session feedback / questions
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Thank You!