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Programming OSGi with Eclipse

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Eclipse and OSGi = Equinox

- The runtime has been OSGi-based since 2003
- Eclipse team was very active in developing R4
- Eclipse is deeply committed to OSGi

All bundles. All the time.



Plug-in == Bundle

Equinox Promoted!

- Originally an incubator
- Promoted to be an Eclipse Project
 - Community pull
 - Recognition of our commitment to OSGi
- Standalone OSGi framework implementation
- Scope broadened to include
 - Implementations of all OSGi specifications
 - Research into new areas such as Aspects and Security



Using Equinox Standalone

- Get it from Equinox download site
 - <http://download.eclipse.org/eclipse/equinox>
- Run it
 - `java -jar org.eclipse.osgi_3.2.0.jar -console`
- See Quick Start Guide
 - <http://eclipse.org/equinox/quickstart.html>

Demo – Equinox on a Slug

- Linksys NLSU2 network attached storage
- Attach USB drive (or stick)
- 133+++MHz xscale, 32MB RAM, 8MB Flash
- Linux
- ~US\$80

Eminently hackable

<http://nslu2-linux.org>



Demo – Slug OSGi setup

- J9 VM with Foundation 1.0
- Equinox OSGi framework
- Eclipse 3.2 IDE on laptop
- Direct connect net,
- SMB mounted 2GB stick as drive Z:

Demo – Developing on the Slug

- Running the Slug
- Creating new Bundles
- Bundlizing existing code (MP3 server)
- Hook it all together and start

Let's take a look!



Classpath Management

Properties for test

type filter text

- Info
- Builders
- Java Build Path
- Java Code Style
- Java Compiler
- Javadoc Location
- Plug-in Development
- Project References
- Work in Progress

Java Build Path

Source | Projects | Libraries | Order and Export

JARs and class folders on the build path:

- [-] JRE System Library [Foundation 1.0]
- [-] Plug-in Dependencies
 - [-] Access rules: No rules defined
 - [-] com.oti.j9.mp3
 - [-] Access rules: 2 rule(s) defined, added to all projects
 - Accessible: mp3server/*
 - Forbidden: **/*
 - [-] org.eclipse.osgi_3.2.0.jar - D:\j1004\eclipse\plugins
 - [-] Source attachment: src.zip - D:\j1004\eclipse\pl
 - [-] Javadoc location: D:\j1004\eclipse\plugins/org.e
 - [-] Native library location: (None) - non modifiable
 - [-] Access rules: 2 rule(s) defined - non modifiable
 - Accessible: org/osgi/framework/*
 - Forbidden: **/*

Default output folder:
test/bin

Buttons: Add JARs..., Add External JARs..., Add Variable..., Add Library..., Add Class Folder..., Edit..., Remove, OK, Cancel

Demo – Debugging

- Launching
 - Look Ma! No “deploy”!
- Remote debugging
- Hot code replace
- On-the-fly variable modification

PDE Build

- Automated or UI-driven
- Given a list of bundles
 - Checks them out of repo
 - Reads manifest information and build.properties
 - Generates Ant files with detailed classpath
 - Builds the Ant build
 - Packages as desired
- Simultaneous cross-platform
- Customizable

PDE – What's next?

- More bundle-specific tooling
 - Import/Export management
 - Quick fixes
- More accurate class paths
 - JRE filtering
 - Javac access filters
- Per-bundle execution environment management
- Remote Monitoring

Equinox - What's next?

- Equinox community development
 - Service implementations
 - Research (Security, Aspects, ...)
- Eclipse 3.2
 - Reduce dependencies (e.g., JRE, other bundles)
 - Clarify characteristics
 - Easy discovery and acquisition of bundles

Reference Information

- Equinox Home
 - <http://eclipse.org/equinox>
- RCP Book
 - <http://eclipsercp.org>