

[EasyBeans prototype on top of OSGi](#)

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This pages describes the EasyBeans over OSGi's architecture and the way to test it from the EasyBeans svn repository.

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1 What is OSGI ?

OSGi is an independent corporation that defines a specification for service delivery over wide-area networks to local area networks and devices. For additional information see <http://www.osgi.org>

2 Why EasyBeans on top of OSGi ?

OSGi is mainly used in the embedded domain but begins to be the basis of plugin application (like Eclipse for instance) at server level. It is the heart of dynamic and adaptable service oriented architecture which can bring many benefits:

- On demand building of the application.
- Deployment capabilities (installation, un-installation of the components).
- Component lifecycle (start, stop of the components).
- Update of a part of the application during runtime.

By relying on this framework, EasyBeans is benefiting from the dynamic deployment (for the server, the

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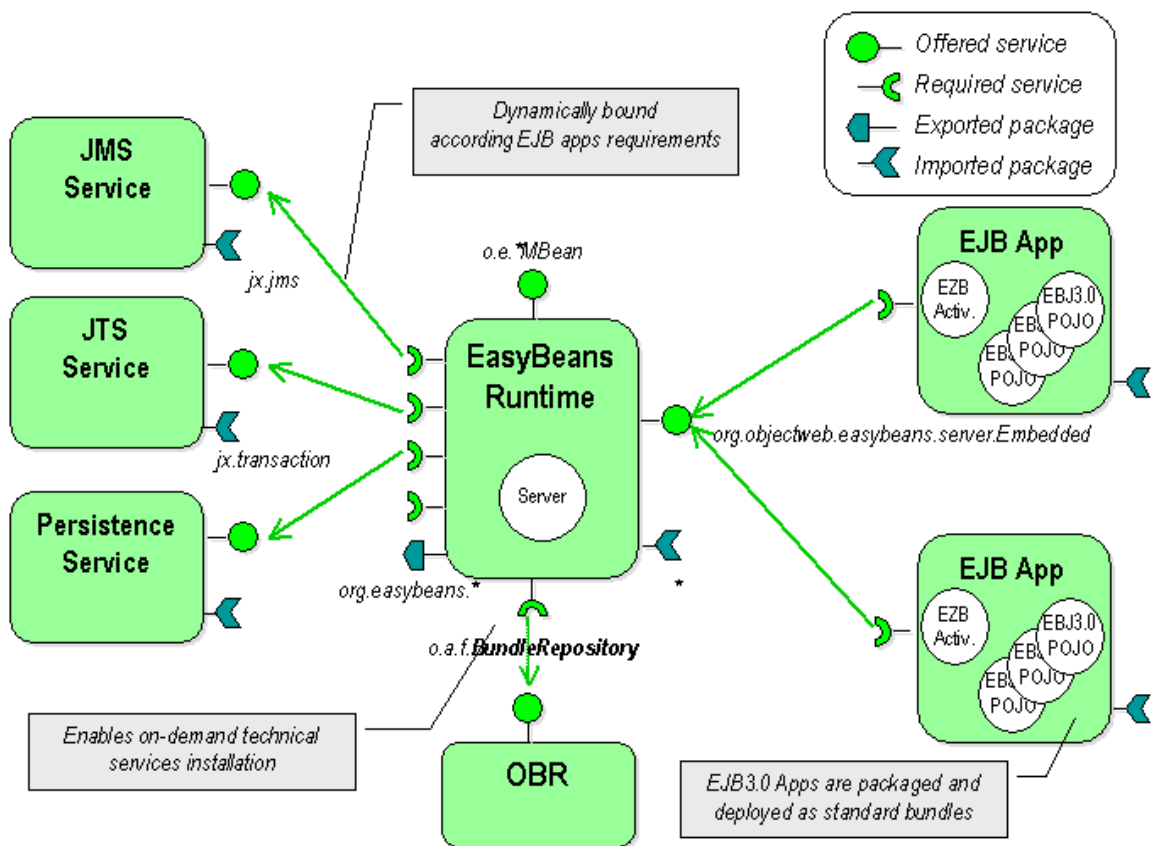
associated services and the beans) and assembly of OSGi services to provide an EJB3 container service adaptable on demand.

As JOnAS 5.0 is also built on top of OSGi, it will allow a smooth integration of the EJB3 container technology inside the Java EE application server.

3 Architecture

The objective is to obtain a more fine grained architecture by extracting all the components used by EasyBeans that are currently instantiated inside the EasyBeans bundle.

Packaging each of them in a bundle is allowing to only deploy/activate them when needed (to save resources) and to improve the update capabilities.



4 Download

The OSGi version of EasyBeans has been validated with the Apache Felix OSGi implementation ([Apache Felix](#)) and the Eclipse Equinox implementation ([Eclipse Equinox](#)).

Apache Felix can only be downloaded from the [Apache Felix Downloads Page](#).

Eclipse Equinox can be downloaded from the Equinox [download page](#).

... EasyBeans ... OSGi

For EasyBeans/OSGi, the classical EasyBeans project is needed. See [EasyBeans](#) for how to download, compile and install it. EasyBeans/OSGi and the samples EjbJars are available from the EasyBeans source repository. (svn://svn.forge.objectweb.org/svnroot/easybeans/trunk/easybeans-osgi). The sources can be browsed with [FishEye](#)

All these projects are Eclipse projects but Eclipse is not mandatory, [Maven](#) is enough for compiling. 4.1 EasyBeans/OSGi Compilation

Simply enter mvn clean install in the root of the project. It will produce an assembly by default.

Detailed running instructions are available on a [separate page](#). 4.2 Binary distribution

Binary distribution is available here : http://forge.objectweb.org/project/showfiles.php?group_id=5

5 List of available bundles

Bundle	Description	Location
easybeans.jar	The EasyBeans EJB3 server	core/output/bundle
ow_ezbccomponent_osgi_carol.jar	Carol EasyBeans Component	components/carol/output/bundle
ow_ezbccomponent_osgi_jotm.jar	JOTM EasyBeans Component	components/jotm/output/bundle
ow_ezbccomponent_osgi_joram.jar	JORAM EasyBeans Component	components/joram/output/bundle
ow_ezbccomponent_osgi_hsqldb.jar	HSQl DB EasyBeans Component	components/hsqldb/output/bundle
ow_ezbccomponent_osgi_jdbcpool.jar	JDBC Pool EasyBeans Component	components/jdbcpool/output/bundle
ow_easybeans_agent.jar	The EasyBeans OSGi Agent	agent/output/bundle
easybeans-slsb.jar	The stateless example	examples/stateless/output/bundle
easybeans-sfsb.jar	The stateful example	examples/stateful/output/bundle
easybeans-entity.jar	The entitybean example	examples/entitybean/output/bundle
easybeans-mdb.jar	The mdb example	examples/mdb/output/bundle

6 Limitations

At the moment, the EasyBeans Core Bundle is using Hibernate as JPA provider. Using another provider will almost certainly fails. 6.1 Clients for Entities

If an entity client is running outside of an OSGi Context (aka not packaged as a Bundle), trying to launch directly the client will produce the following output :

```
[java] Exception in thread "main" javax.ejb.EJBException: Error while sending a request [java]
at
org.objectweb.easybeans.rpc.ClientRPCInvocationHandler.invoke(ClientRPCInvocationHandler.java:127)
[java] at %Proxy0.findEmployee(Unknown Source) [java] at
org.objectweb.easybeans.examples.entitybean.Client.main(Client.java:70) [java] Caused by:
java.lang.RuntimeException: Error while handling answer on the remote side [java] at
org.objectweb.easybeans.rpc.rmi.client.RMIClientRPC.sendEJBRequest(RMIClientRPC.java:90) [java]
at
org.objectweb.easybeans.rpc.ClientRPCInvocationHandler.invoke(ClientRPCInvocationHandler.java:124)
[java] ... 2 more [java] Caused by: java.rmi.UnmarshalException: IOException unmarshalling
returnjava.net.MalformedURLException: unknown protocol: bundleentry [java] at
org.objectweb.carol.rmi.jrmp.server.JUnicastRef.performRemoteCall(JUnicastRef.java:209) [java]
at org.objectweb.carol.rmi.jrmp.server.JUnicastRef.invoke(JUnicastRef.java:158) [java] at
org.objectweb.easybeans.rpc.rmi.server.RMIServerRPCImpl_Stub.getEJBResponse(RMIServerRPCImpl_Stub.java:48)
[java] at
org.objectweb.easybeans.rpc.rmi.client.RMIClientRPC.sendEJBRequest(RMIClientRPC.java:88) [java]
... 3 more
```

This is because of the ClassLoader annotations coming back within the downloaded EJBResponse instance. The OSGi gateway handle 'bundle:' style URLs, but the client (running outside of OSGi) doesn't

know that protocol.

The solution consists of 2 steps :

1. Add the **ow_easybeans_osgi_client_rt.jar** to your client classpath

7 Future improvements

- Upgrade the architecture as described in the architecture section.
- Expose the EJB3 local interfaces as OSGi services.
- Specialize EZBComponent interfaces, this will help for a natural launch order (registry first, event without the core, ...).

Resources

- [EasyBeans/OSGi Assembly README](#)

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