

EL4J

Frequently Asked Questions

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1 Frequently Asked Questions

1.1 Purpose

The purpose of this topic is twofold: A) it should serve as a standard FAQ. C) it helps with troubleshooting EL4J problems and C) its questions highlight some important points that we assume you should know. So if when you are browsing through the basic questions and are much surprised, we recommend to have a closer look at the EL4J documentation.

1.2 EL4J FAQ

1.2.1 Questions about this FAQ

- **Q** Certain links do not work for me
- **A** Yes, unfortunately some links only work within ELCA (the main sponsor for EL4J). We are looking into interesting solutions for this. We estimate that there is still interesting content for those external people.

1.2.2 EL4J/ Spring core FAQ

- **Q** How to find information about EL4J?
- **A** Please refer to <http://el4j.sourceforge.net/documentation.html> (ELCA–internal persons may also consult our twiki directly under <http://wiki.elca.ch/twiki/el4j/bin/view/EL4J>)
- **Q** I understand that EL4J combines many existing frameworks. What are the unique additions of EL4J?
- **A** Please refer to [FeaturesOfEl4j](#) or <http://el4j.sourceforge.net/docs/pdf/UniqueEL4JFeatures.pdf> .
- **Q** How to get started with EL4J?
- **A** [IntroductoryReadingListForEl4J](#)
- **Q** Why are there modules in EL4J? What features do they provide?
- **A** Please refer to the section (I) of http://el4j.sourceforge.net/docs/pdf/EL4J_IntroductionArticle1.pdf
- **Q** How do configuration overrides in Spring and EL4J work? Why are they there?
- **A** Configuration overrides work in the following way:
 - ◆ The content of all the different XML files is combined. Optionally you can specify that when a bean is defined twice, the second one overwrites the first one (this is a parameter of the the `El4j*ApplicationContexts`).
 - ◆ Spring allows extending the definition of a bean (please refer to section 3.5 of the spring reference manual)
 - ◆ There are the overriders of configuration of spring: `PropertyOverrideConfigurer`, `PropertyPlaceholderConfigurer`
 - ◆ There is a merge configurer of EL4J: `ListPropertyMergeConfigurer`. It allows extending existing lists in spring configuration
- **Q** Assume you have a spring bean that is proxied to allow a logging interceptor. What happens if the spring bean has the following method `m` defined: `"void m(int i) { this.n(i); }"` Does the call to `this.n(i)` go through the interceptor?

- **A** No! As the proxy does not replace the spring bean, it only *wraps* the spring bean. The `this` pointer remains on the original (=unproxied) object.
- **Q** What Spring configuration files are used and in what order are they read?
- **A** The easiest way to get the list of configuration files that are read by spring is to look them up in the JMX module under each application context. The EL4J `ModuleApplicationContext` has a complex logic to ensure the correct loading order of resources, even in special contexts that mangle the classpath (such as certain application servers do it).
- **Q** How to see the currently active configuration settings, by taking into account the configuration values overridden in property files?
- **A** `JmxModuleForTheImpatient`. Setting this up for your application by default is actually quite practical: you can rapidly check what spring read and merged of your application configuration file(s).
- **Q** How to enable logging in your application?
- **A** `DebuggingHowTo` and `TracingStackEl4j`
- **Q** How to do debugging? Local/ remotely?
- **A** `DebuggingHowTo`
- **Q** How to start a new project?
- **A** We recommend to start from an existing application template or a demo application. There is a web, swing, and a ULC web application template. There is a demo applications for the daemon manager. Duplicate the chosen existing project and start coding. For more info on this please contact the EL4J team under `el4j_team@elca.ch`.
- **Q** What are the features of the EL4J remoting? Why is it there? Why is there implicit context passing? And how does it work?
- **A** Please refer to the section (II) of http://el4j.sourceforge.net/docs/pdf/EL4J_IntroductionArticle1.pdf. For more details, please refer to `ModuleRemoting`.
- **Q** In what order are spring beans created?
- **A** Please consult <http://static.springframework.org/spring/docs/1.2.x/spring-reference.pdf>, chapter 3. In the JMX module under each application context you can get the list of config files that will be used in your application, together with their order.
- **Q** How do I get the classpath of a running application?
- **A** Please consult the class-path Java system property visible via the EL4J JMX module under the Root MBean.
- **Q** What is the difference between singleton beans and prototype beans?
- **A** Please consult the spring documentation under <http://static.springframework.org/spring/docs/2.0.x/spring-reference.pdf>, section 3.4.
- **Q** How to figure out what interceptors are active on a spring bean?
- **A** There are different ways to figure this out:

- ◆ Have a look at the stack trace when a method on the bean is executed. This can be done via the debugger, via an exception or via a Thread dump.
- ◆ The following blog entry describes simple code to get all interceptors on a spring bean: <http://swik.net/Spring/Ben+Hale's+Blog/Another+Reason+to+Love+Spring+2.0:+Interceptor+Combinator>
- ◆ The new EL4J JMX support allows to see all the interceptors on a spring bean.

Remark

It is possible that there are **multiple proxies** around a spring bean! You can detect this e.g. in the stack trace of a call to the bean. Please refer also to the next question.

- **Q** My interceptor is not added to the interceptor chain as I expect it. What shall I do?
- **A** Check the above question to ensure that your interceptor is really not added.
 - ◆ A known issue is that you may have multiple proxies around the spring bean that confuses the code that adds the interceptor. E.g. when configuring the trace-interceptor and the transaction-interceptor (e.g. directly or indirectly via annotations), the transaction-interceptor may not work!
We plan to provide some improvement for this "feature" (in order not to speak of a bug) of spring. It seems that Spring 2.0 also fixes this issue.
 - ◆ Another issue we have encountered is that due to a circular dependency a spring bean was not proxied (and therefore also had no interceptor around it).
 - ◆ Sometimes the commons attribute files are not generated correctly (there is 1 class file per annotated java class). Try clean/ rebuild, and verify that commons attribute is activated in the build system.
 - ◆ It is also possible that the support to combine JDK 1.5 annotations or commons attributes with interceptors is not turned on. Please check in the documentation of your annotation/ attribute whether the corresponding config file is loaded
(framework\modules\core\src\main\resources\optional\interception\transactionJava5Annotations.xml).
- **Q** I use the @Transactional annotation (propagation = Propagation.REQUIRED), but no transaction will be created. What could be the problem?
- **A** Check the above question to ensure that your interceptor is added to the chain as expected.
- **Q** I don't like the fact that EL4J loads all configuration files from the mandatory folder automatically. What shall I do?
- **A** You have different options:
 - ◆ You can not put the recommended `classpath*:mandatory/*.xml` (it loads all files in each mandatory directory of the classpath) in the argument of the `el4jModuleApplicationContext`. You then can enlist explicitly the configuration files you want.
 - ◆ You can explicitly exclude configuration files that you don't want Spring to load from a default list via the exclusion list.

1.2.3 Maven FAQ

- **Q** How to get more information about Maven?
- **A** Please refer to [MavenBuildSystem](#), in particular to [MavenCheatSheet](#).
- **Q** Why do you use your own version of Maven?
- **A** We need some bug fixes and Maven is very slow to add them to the released version. Please refer to the top-level pom.xml (the trunk is available here: http://svn.sourceforge.net/viewvc/*checkout*/el4j/trunk/el4j/pom.xml?revision=1839&content-type=text%2Fplain). We list each bugfix with its JIRA link and rationale.
- **Q** I'd like to have the log4j output sent to a file instead of the console. How do I do it?

- **A** Locate the `resource/log4j.xml` files and uncomment the file logging feature.
- **Q** What do *transitive dependencies* mean? What dependencies are transitive in EL4J?
- **A** If A transitively depends on B and B transitively depends on C, it means that A also automatically depends on C. The dependencies to modules are transitive in EL4Ant. This means that if you depend on a module X (in other words: you use the module X), you can automatically use all the modules that are used by module X. This works recursively: you can also use the modules used by the modules used by module X, etc.
Remark: When you use a module, you have access to all its code, jar-files and configuration.
- **Q** Why are there binary modules? How do they work?
- **A** They help to deploy modules without having all source directories. Please refer to the doc of maven for more details.
- **Q** How can JVM parameters be passed to the JVM of a cargo started web container like Tomcat or Weblogic?
- **A** You can set a property called `cargo.jvmargs` to the desired parameters. For a full reference see [Configuration Properties](#) e.g.

```
<plugin>
  <groupId>org.codehaus.cargo</groupId>
  <artifactId>cargo-maven2-plugin</artifactId>
  <configuration>
    ...
    <configuration>
    ...
    <properties>
      <cargo.jvmargs>-XX:PermSize=256m -XX:MaxPermSize=256m</cargo.jvmargs>
    </properties>
    </configuration>
  </configuration>
</plugin>
```

- **Q** There are duplicated jars in the generated war or ear files. How does this occur and how can I resolve this? (there are 2 answers!)
- **A** In the directory of the pom.xml that generates the file with the duplicated jar files, execute `mvn project-info-reports:dependencies` to get a report on the dependencies (the report is then under `target/site/dependencies.html`). In the dependency tree of this report, you will find the conflicting definition that lead to the duplicated jar files. Usually it occurs because a dependency to a same jar file is named differently. Ideas to resolve it: unify the naming or make an exclude statement when adding the the dependency. Here is a sample exclusion statement:

```
<dependency>
  <groupId>org.codehaus.xfire</groupId>
  <artifactId>xfire-core</artifactId>
  <version>1.2.4</version>
  <exclusions>
    <exclusion>
      <groupId>commons-logging</groupId>
      <artifactId>commons-logging</artifactId>
    </exclusion>
    <exclusion>
      <groupId>jdom</groupId>
      <artifactId>jdom</artifactId>
    </exclusion>
  </exclusions>
</dependency>
```

- **A2** To do this on a whole project, try the following:

```
cd $EL4J_ROOT/external ; mvn depgraph:fullgraph -Ddepgraph.filterEmptyArtifacts=true -Ddepgraph.dotFile=
grep label el4j.dot | sort > DuplicateCandidates.txt
# resolve candidates manually (find in DuplicateCandidates.txt)
# determine candidates graphically (in el4j.png) or in text (in el4j.dot)
```

- **Q** During a build, I receive the following error: "java.io.EOFException: Unexpected end of ZLIB input stream" during the extraction of the tomcat zip file.
- **A** Try deleting the tomcat .zip file that was incompletely downloaded and start again. (It is in the tomcat5x.basedir as defined in the m2 settings.xml).
- **Q** I get a [NullPointerException](#) in [FtpWagon](#).openConnection when executing mvn deploy?
- **A** Try setting the correct user name and password in your settings.xml file (under servers/server/username and servers/server/password).
- **Q** The deployment with tomcat does not work well. What can I do?
- **A** Some hints:
 - ◆ Try rebuilding with `mvn clean install`
 - ◆ Try copying the file `etc/tomcat/context.xml` to the tomcat conf directory.
 - ◆ Remove the deployed directory and the deployed war file in the webapps directory of tomcat and try again
 - ◆ Sometimes if only a xml file is changed, the application is not reloaded. Try making a touch (command in cygwin) on another file to force a reload.
 - ◆ Add a user with the role "admin" in the file "conf/tomcat-users.xml". This allows that you can manage the application via the tomcat manager (web user interface).

1.2.4 Data access FAQ

- **Q** What is CRUD?
- **A** This stands for the 4 basic operations a database provides: create, read, update, delete.
- **Q** When do we recommend Hibernate, when do we recommend Ibatis?
- **A** In general we recommend Hibernate now, due to the fact that it integrates nicely with our Domain Driven Design ideas (auto-CRUD via generic repository, validation on domain objects, declarative optimistic locking, more flexible mapping to the database, auto-support for the Query Pattern, ...) Please refer to the slides of the J2EE architecture presentation for more information (http://leaffy.elca.ch/java/el4j/Documentation_Mirror/miscellaneous/j2eeCourse/ , the integration tier part)
- **Q** What is the purpose of the generic DAO interface?
- **A** You don't need to hand-code the basic CRUD functionality of your DAO. The idea is discussed under <http://www.hibernate.org/328.html> (we use a slightly different implementation, as the one of hibernate is buggy). Advantages:
 - ◆ you don't need to repeat boring code
 - ◆ you can cleanly extend the generic DAO for your needs (just write a subclass of the generic repository)
 - ◆ data binding to the GUI is simplified (as it can be made more generic)
- **Q** Why does the saveOrUpdate method of the generic repository return the object?

- **A** An insert operation can change the object (e.g. add a db-generated Primary key).
- **Q** Why do we use optimistic locking in the generic repository or DAOs?
- **A** Please refer to the slides of the J2EE architecture presentation (http://leaffy.elca.ch/java/el4j/Documentation_Mirror/miscellaneous/j2eeCourse/ , the integration tier part)
- **Q** What is the purpose of the lazy loading exception of hibernate? How to avoid it?
- **A** Please refer to the documentation of the [HibernateFramework](#).
- **Q** What is the purpose of the Identity Fixer?
- **A** Please refer to the article on this under <http://el4j.sourceforge.net/docs/pdf/IdentityFixerAnnouncement.pdf>
- **Q** I have upgraded to new Hibernate an now I get a `NoCachingEnabledException`. How can I fix that?
- **A** Since Hibernate 3.2.0-cr3 you have to set the caching provider hibernate property `hibernate.cache.provider_class` in bean sessionFactory. For EhCache, what was the default in < 3.2.0-cr3, set property's value to `org.hibernate.cache.EhCacheProvider`
- **Q** How do I switch between ibatis and Hibernate?
- **A** You make the maven module dependency to the corresponding EL4J module (i.e. the ibatis or the hibernate modules).

1.2.5 More advanced EL4J FAQ

- **Q** How do you resolve circular dependencies in the spring config file?
- **A** Please refer to [BasicSpringGuidelines#Circular_references_0](#)
- **Q** With EL4J/ Spring you can easily exchange your remoting protocol. But how to chose a remoting protocol?
- **A** Please consult <http://static.springframework.org/spring/docs/2.0.x/spring-reference.pdf> section 17.7
- **Q** How to quickly setup performance measurements for your project?
- **A** Please consult [the documentation of the light statistic module](#). It should not take you longer than 15 minutes to set this up for your project.
- **Q** How to get traces of the spring transaction management? (I.e. how to know when and how spring gives out a connection, starts/commits/rollbacks a transaction).
- **A** Please ensure first that your transaction interceptor is turned on as you expect it. Then try to set the logging level of the classes in the package "org.springframework.jdbc." to "debug". Then you see in the log what the spring transaction management does.
BTW: this only works if you have the EL4J-default, non-JTA transaction manager. Otherwise you need to adapt the package above to include your particular transaction manager.

1.2.6 Troubleshooting of EL4J

- **Q** `mvn site` does not work in the external directory. What to do?
- **A** `mvn site` does only work in the external/site directory
- **Q** My build process (started e.g. with `mvn install`) hangs or shows strange behavior. What are ideas to solve it?
- **A** There are several things that can go wrong:
 - ◆ You use backslashes `\` instead of slashes `/` in your settings.xml file.
 - ◆ Have you followed all steps of the [GettingStarted](#) guide?
 - ◆ Have you defined "db.name" (either to db2 or oracle) in your environment variables (this is currently a bug, we try to make this cleaner)
 - ◆ When you interrupt the downloading of the tomcat zip file, the unzip process does not work. Delete the incomplete tomcat*.zip file and try again.
 - ◆ Under cygwin, the `~` is sometimes set to something like `c:/cygwin/home/` (via the environment variable HOME). But in general under Windows, `~` is located under `C:/Documents and Settings/`. Mvn and svn take the default `~` setting of Windows.
 - ◆ Under Windows only: Sometimes there are issues with paths that are interpreted by Windows or Unix (Cygwin). When a script is launched in cygwin, it uses the Unix conventions. But as soon as a call is made to Java, the (Windows) executable uses the Windows conventions. Unix conventions contain e.g. `/` as directory separator and `:` as a path separator. Windows conventions contain e.g. `\` as directory separator and `;` as a path separator.
 - ◆ It's possible that you have 2 different JVM versions in eclipse and in mvn. Use the same version.
- **Q** I need to diagnose some issues in my JVM (memory leaks, class loading, threading, gc, performance, hanging system, crashes, ...). How to find more help?
- **A** Check out the java diagnosis guide from sun.
http://leaffy/java/javaTechnologyDoc/docs/javaDiagnosticAndTroubleShooting_jdk50_ts_guide.pdf
- **Q** I installed EL4J as described. When using eclipse, if I put my cursor on a class name, I often get the error "A Runtime Error has occurred. Do you wish to debug?". When I debug it, it points me to a line of javascript (method `printFileStatus`) inside the javadoc. What can I do?
- **A** This happens because the javascript function inside the javadoc can not be found. Normally this will be ignored but the Office-Suite installs a debugger which will be launched. To turn this "feature" off just disable the JIT debugging of this debugger.
- **Q** Why does JBoss AS always stop working after a few (re)deployment cycles?
- **A** JBoss supports hot re-deployment of WARs and EARs. Unfortunately, due to bugs in the JVM, repeated redeployment of an EAR eventually causes the JVM to run out of perm gen space. For this reason, we recommend running JBoss in a JVM with a large perm gen space at development time (configure this in `bin/run.conf`): `-Xms512m -Xmx1024m -XX:PermSize=256m -XX:MaxPermSize=512`

This list of questions will be extended. Please send other questions to add to [PhilippHOser](#)

1.3 Legacy questions

1.3.1 EL4Ant FAQ

- **Q** When do you switch your build system from EL4Ant to maven?
- **A** We plan to switch to maven during the summer of 2006. For details, please contact the EL4J team.
- **Q** When do you need to invoke `ant -f bootstrap.xml`?
 - a) after a code change in eclipse/ outside?
 - b) after a change in a spring xml or property configuration file
 - c) after adding a new spring configuration file
 - d) when changing project description files
 - e) when adding a jar file or a module dependency
- **A** Only after d) and e)! The cases a)–c) require a rebuild, e.g. with `ant jars`.
- **Q** Where should you add a jar or a module dependency?
 - a) in eclipse
 - b) in project description files
 - c) in both
- **A** in b), then do a bootstrap and reload the eclipse workspace
- **Q** What plugins are available for EL4Ant?
- **A** Please refer to: [EL4Ant standard plugins](#) [EL4J-specific plugins](#) [PluginIncubator](#)
- **Q** Why are there binary modules? How do they work?
- **A** Refer to the doc of [EL4Ant](#)