

# Building OSGi Projects with Bnd in Maven

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# Existing maven OSGi Tools

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[Apache Felix](#) `maven-bundle-plugin`

[Eclipse Tycho](#)

[Bndtools.org](#) `bnd*-maven-plugin`

*... note there are a number of gradle plugins for OSGi, including ones from bnd*

# maven-bundle-plugin

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most widely adopted tool for working with OSGi across the Java ecosystem

still very relevant because keeping pace with underlying **bnd** dependency

supports additional functionalities like deploying bundles to OSGi repositories and **baseline**

# Eclipse Tycho

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focused on a manifest-first approach

associated primarily with building Eclipse RCP applications and Eclipse plugins using PDE

# bnd\*-maven-plugin

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state of the art OSGi development

provided by a suite of plugins

each one focused on an individual aspect

designed to be composed to meet developer needs

# bnd-maven-plugin

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the core plugin, used to generate manifest and other metadata for projects that build an OSGi bundle

# setup

```
1 <plugin>
2   <groupId>biz.aQute.bnd</groupId>
3   <artifactId>bnd-maven-plugin</artifactId>
4   <executions>
5     <execution>
6       <id>bnd-process</id>
7       <goals><goal>bnd-process</goal></goals>
8     </execution>
9   </executions>
10 </plugin>
```

# configuring manifest

```
1 <plugin>
2   <groupId>org.apache.maven.plugins</groupId>
3   <artifactId>maven-jar-plugin</artifactId>
4   <configuration>
5     <archive>
6       <manifestFile>
7         ${project.build.outputDirectory}/META-
8         INF/MANIFEST.MF
9       </manifestFile>
10    </archive>
11  </configuration>
12</plugin>
```



# bnd-indexer-maven-plugin

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used to generate an OSGi repository index from a set of Maven dependencies. The entries in the index will reference the location of the bundles in the remote repositories to which they have been deployed

# setup

```
1 <plugin>
2   <groupId>biz.aQute.bnd</groupId>
3   <artifactId>bnd-indexer-maven-plugin</artifactId>
4   <configuration>...</configuration>
5   <executions>
6     <execution>
7       <id>index</id>
8       <goals><goal>...</goal></goals>
9     </execution>
10  </executions>
11 </plugin>
```

# variety of indexing options

- `index` - generates OSGi index output files which are attached as deployable artifacts
- `local-index` - generates OSGi index output files which are *not* attached as deployable artifacts
- local vs. external urls
- selection of scopes from which to select artifacts to index
- transitivity

# bnd-baseline-maven-plugin

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plugin used to validate that a bundle correctly uses **semantic versioning** as described by the **OSGi Alliance**

*... and not semver.org*

# setup

```
1 <plugin>
2   <groupId>biz.aQute.bnd</groupId>
3   <artifactId>bnd-baseline-maven-plugin</artifactId>
4   <configuration>...</configuration>
5   <executions>
6     <execution>
7       <id>baseline</id>
8       <goals><goal>baseline</goal></goals>
9     </execution>
10  </executions>
11 </plugin>
```

# bnd-export-maven-plugin

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plugin to export **bndrun** files, *OOTB* as:

- bundles in a directory
- an executable jar
- an OSGi subsystem bundle

*... plugable export SPI*

# setup

```
1 <plugin>
2   <groupId>biz.aQute.bnd</groupId>
3   <artifactId>bnd-export-maven-plugin</artifactId>
4   <configuration>...</configuration>
5   <executions>
6     <execution>
7       <id>export</id>
8       <goals><goal>export</goal></goals>
9     </execution>
10  </executions>
11 </plugin>
```

# bnd-resolver-maven-plugin

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plugin to resolve **bndrun** files

*... verification that all requirements are satisfied*



# setup

```
1 <plugin>
2   <groupId>biz.aQute.bnd</groupId>
3   <artifactId>bnd-resolver-maven-plugin</artifactId>
4   <configuration>...</configuration>
5   <executions>
6     <execution>
7       <id>resolve</id>
8       <goals><goal>resolve</goal></goals>
9     </execution>
10  </executions>
11 </plugin>
```

# bnd-testing-maven-plugin

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plugin to run integration tests from **bndrun** files

# setup

```
1 <plugin>
2   <groupId>biz.aQute.bnd</groupId>
3   <artifactId>bnd-testing-maven-plugin</artifactId>
4   <configuration>...</configuration>
5   <executions>
6     <execution>
7       <id>testing</id>
8       <goals><goal>testing</goal></goals>
9     </execution>
10  </executions>
11 </plugin>
```

# bnd-run-maven-plugin

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plugin to *run* a **bndrun** file

# setup

```
1 <plugin>
2   <groupId>biz.aQute.bnd</groupId>
3   <artifactId>bnd-run-maven-plugin</artifactId>
4   <configuration>...</configuration>
5   <executions>
6     <execution>
7       <id>run</id>
8       <goals><goal>run</goal></goals>
9     </execution>
10  </executions>
11 </plugin>
```

# bnd-reporter-maven-plugin

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plugin to generate and export reports of projects

# setup

```
1 <plugin>
2   <groupId>biz.aQute.bnd</groupId>
3   <artifactId>bnd-reporter-maven-plugin</artifactId>
4   <configuration>...</configuration>
5 </plugin>
```