Maven Java build tool

CONCEPTS

Name a phase and Maven runs every earlier phase too: mvn package also compiles and tests.

validate check POM
↓
compile main sources
↓
test unit tests
↓
package jar / war
↓
verify integration tests
↓
install to ~/.m2
↓
deploy to remote repo

Default lifecycle: asking for a phase runs all phases before it

BUILD

mvn compile
Compile main sources

mvn test
Run unit tests

mvn package
Build the artifact into target/

mvn verify
Run integration tests and checks

mvn install
Copy artifact to local repo ~/.m2

mvn clean
Delete the target/ directory

mvn clean install
Fresh build, then install locally

mvn deploy
Publish to the remote repository

mvn test-compile
Compile test sources only

OPTIONS

-DskipTests
Compile tests but do not run them

-o / --offline
Use only the local repository

-q / --quiet
Print errors only

OPTIONS (cont.)

-e / --errors
Show full stack traces

-U / --update-snapshots
Force re-check of SNAPSHOT deps

-T *<n>*
Build modules in parallel with n threads

-B / --batch-mode
Non-interactive, no colours (CI)

-D*<key>*=*<value>*
Set a system property

MULTI-MODULE

mvn -pl *<module>*
Build only this module

mvn -pl *<module>* **-am**
Also build what it depends on

mvn -pl *<module>* **-amd**
Also build modules depending on it

mvn -pl '!*<module>***'**
Exclude a module

mvn -rf :*<module>*
Resume the reactor from a module

DEPENDENCIES

mvn dependency:tree
Print the resolved dependency tree

mvn dependency:tree -Dincludes=*<g>***:***<a>*
Find who pulls in a library

mvn dependency:analyze
Find unused or undeclared deps

mvn versions:display-dependency-updates
List newer dependency versions

INSPECT AND DEBUG

mvn help:effective-pom
Show the POM after inheritance

mvn help:effective-settings
Show merged settings.xml

mvn help:active-profiles
List active profiles

INSPECT AND DEBUG (cont.)

mvn help:evaluate -Dexpression=*<expr>* **-q -DforceStdout**
Print one POM value

mvn -v
Show Maven, Java and OS versions

mvn -Dtest=*<Class>*#*<method>*
Run one test method

mvn -Dmaven.surefire.debug test
Wait for a debugger on port 5005

PROFILES AND PROPERTIES

mvn -P*<id>*
Activate a profile (-Pa,b for several)

WRAPPER AND PROJECT

mvn wrapper:wrapper
Add mvnw and mvnw.cmd to the project

./mvnw *<args>*
Run with the pinned Maven version

Where things live

Path	Holds
`pom.xml`	project model
`~/.m2/settings.xml`	user settings, mirrors, servers
`~/.m2/repository`	local artifact cache
`target/`	build output
`.mvn/`	wrapper and jvm.config

RECIPES

Fast CI build

```
mvn -B -ntp -T 1C clean verify
```

Rebuild one module and its dependencies

```
mvn -pl services/api -am clean install -DskipTests
```

Find and read a version conflict

```
mvn dependency:tree -Dverbose \
  -Dincludes=com.google.guava
mvn help:effective-pom | less
```