Bazel Fast, hermetic builds

CONCEPTS

A label is //package:target. The package is a directory with a BUILD file; //pkg alone means //pkg:pkg.

Load read BUILD files
↓ packages
Analyze build the action graph
↓ actions
Execute run actions, use cache
↓ outputs
bazel-bin/ results

Builds are hermetic and cached: a rerun with no input changes does nothing. --nobuild stops after analysis.

BUILD

`bazel build <targets>`
Build the given targets

`bazel build //...`
Build every target in the main repo

`bazel build //<pkg>/...`
Build a package and all below it

`bazel build //<pkg>:all`
Build all rule targets in one package

`bazel build -- //... -//<pkg>/...`
Build all except a subtree

`bazel build -c <mode>`
fastbuild, dbg or opt

`bazel build -k`
Keep going after errors

`bazel build --config=<name>`
Apply a named .bazelrc config

TEST

`bazel test <targets>`
Build and run tests

`bazel test --test_output=errors`
Print output of failed tests only

`bazel test --test_output=all`
Print all test output

`bazel test --test_filter=<expr>`
Select tests inside a target

`bazel test --cache_test_results=no`
Force tests to rerun

RUN

`bazel run <target>`
Build then run a target

`bazel run <target> -- <args>`
Pass args to the program

QUERY

`bazel query "deps(<t>)"`
All dependencies of a target

`bazel query "rdeps(//..., <t>)"`
Who depends on this target

`bazel query "somepath(<a>, <b>)"`
One dependency path from a to b

`bazel query "kind(<regex>, //...)"`
Targets by rule kind

`bazel query //<pkg>/... --output=label_kind`
List targets with their rule

`bazel cquery <expr>`
Query with configurations applied

DEPENDENCIES (BZLMOD)

`bazel mod graph`
Show the module dependency graph

`bazel mod explain <module>`
Why is this module here?

`bazel mod tidy`
Format MODULE.bazel, fix use_repo

SERVER AND CLEANUP

`bazel clean`
Delete build outputs

`bazel version`
Print Bazel version

`bazel help <command>`
Help for one command

DEBUGGING BUILDS

`bazel build --verbose_failures`
Print the failing command in full

.BAZELRC

`build --<flag>`
Default flag for build and its children

`build:<name> --<flag>`
Flag group used by --config=<name>