Docker Buildx

Docker's BuildKit CLI

START HERE

`docker buildx build -t <tag> .`
Build an image

`docker buildx build --load -t <tag> .`
Build into local Docker

`docker buildx build --push -t <tag> .`
Build and push

`docker buildx build --platform linux/amd64,linux/arm64 .`
Multi-arch build

`docker buildx create --use`
New builder, select it

`docker buildx ls`
List builders

`docker buildx bake`
Build from a bake file

`docker buildx imagetools inspect <image>`
Inspect a registry image

Dockerfile or bake file → `buildx build` → **Builder** BuildKit driver → `--load` / `--push` → **Output** local store or registry

CONCEPTS

Buildx is the front end for BuildKit. Only the default docker driver builds into your local image store; other drivers need --load or --push.

Multi-platform images cannot be loaded into the classic image store. Use --push, or the containerd image store, to keep them.

The cache stays in the builder. With CI runners that start empty, export it with --cache-to and read it back with --cache-from.

BUILD

`docker buildx build -t <tag> .`
Build an image from a Dockerfile

`docker buildx build --load -t <tag> .`
Build and load into local Docker

`docker buildx build --push -t <tag> .`
Build and push to a registry

`docker buildx build -f <dockerfile> <context>`
Use another Dockerfile

`docker buildx build --target <stage> .`
Stop at a multi-stage target

`docker buildx build --build-arg <KEY>=<value> .`
Set a build argument

`docker buildx build --no-cache .`
Ignore the cache

`docker buildx build --pull .`
Pull newer base images first

`docker buildx build --progress=plain .`
Show full, unfolded build logs

`docker buildx build --secret id=<id>,src=<file> .`
Pass a secret without baking it in

Read it in the Dockerfile with RUN --mount=type=secret,id=<id>.

`docker buildx build --ssh default .`
Forward your SSH agent into the build

`docker buildx build -o type=local,dest=<dir> .`
Export files instead of an image

BUILD (cont.)

`docker buildx build --check .`
Lint the Dockerfile without building

`docker buildx build --builder <name> .`
Use a specific builder for one build

MULTI-PLATFORM

`docker buildx build --platform linux/amd64,linux/arm64 --push -t <tag> .`
Build and push a multi-arch image

`docker buildx build --platform linux/arm64 --load -t <tag> .`
Build one other-arch image locally

`docker buildx imagetools inspect <image>`
Show platforms of an image

`docker buildx imagetools create -t <new> <src1> <src2>`
Merge per-arch images into one tag

`docker buildx imagetools create -t <new> <src>`
Copy or retag within a registry

BUILDERS

`docker buildx ls`
List builders and their nodes

`docker buildx create --name <name> --use`
Create a builder and switch to it

`docker buildx create --driver docker-container --use`
BuildKit in a container (multi-arch, cache export)

`docker buildx use <name>`
Make a builder the default

`docker buildx inspect --bootstrap`
Show the current builder, starting it

`docker buildx inspect <name>`
Show a builder's nodes and platforms

`docker buildx stop <name>`
Stop a builder

`docker buildx rm <name>`
Remove a builder

BUILDERS (cont.)

`docker buildx version`
Show buildx version

CACHE

`docker buildx build --cache-from type=registry,ref=<r> --cache-to type=registry,ref=<r>,mode=max`
Registry-backed cache

mode=max also caches intermediate stages.

`docker buildx build --cache-from type=local,src=<dir> --cache-to type=local,dest=<dir> .`
Cache in a local directory

`docker buildx build --cache-from type=gha --cache-to type=gha,mode=max .`
GitHub Actions cache

`docker buildx du`
Show build cache disk usage

`docker buildx prune`
Remove dangling build cache

`docker buildx prune -a`
Remove all build cache

`docker buildx prune --filter until=<24h>`
Remove cache older than a duration

BAKE

`docker buildx bake`
Build the default group of a bake file

`docker buildx bake <target>`
Build one or more named targets

`docker buildx bake -f <file>`
Use a specific bake file

`docker buildx bake --print`
Show the resolved config as JSON

`docker buildx bake --list=targets`
List targets in the file

`docker buildx bake --push`
Push every target's image

`docker buildx bake --load`
Load every target into Docker

`docker buildx bake --set <target>.platform=linux/arm64`
Override a target's setting

`docker buildx bake -f compose.yaml`
Build from a Compose file

BAKE (cont.)

Bake file blocks

Block	Purpose
`target`	One build: context, dockerfile, tags, platforms
`group`	Names several targets to build together
`variable`	Value you can override with an environment variable
`inherits`	Reuse another target's settings

HISTORY AND ATTESTATIONS

`docker buildx history ls`
List recent build records

`docker buildx history logs <ref>`
Print the log of a past build

`docker buildx build --provenance=mode=max --push .`
Attach full provenance

`docker buildx build --sbom=true --push .`
Attach an SBOM

Attestations add extra manifests to pushed images. Some tools or registries trip over them; add --provenance=false to turn them off.

RECIPES

Multi-arch image in one go

```
docker buildx create --name multi --driver docker-container --use
docker buildx build --platform linux/amd64,linux/arm64 \
  -t <registry>/<app>:<tag> --push .
docker buildx imagetools inspect <registry>/<app>:<tag>
```

CI build with a registry cache

```
REF=<registry>/<app>:buildcache
docker buildx build -t <registry>/<app>:<tag> \
  --cache-from type=registry,ref=$REF \
  --cache-to type=registry,ref=$REF,mode=max \
  --push .
```

Minimal bake file

```
# docker-bake.hcl
group "default" { targets = ["app"] }
target "app" {
  context = "."
  tags = ["<registry>/<app>:latest"]
  platforms = ["linux/amd64", "linux/arm64"]
}
# then: docker buildx bake --push
```