Nx Monorepo build system

START HERE

npx nx *<target>* *<project>*
Run one task

nx show projects
List projects

nx run-many -t build
Run in all projects

nx g *<plugin>*:*<generator>*
Scaffold code

nx affected -t test
Only what changed

nx reset
Clear cache and daemon

nx graph
See the project graph

nx *<target>* *<project>* --skipNxCache
Bypass the cache

Project graph projects + deps → **target deps** **Task graph** what to run → **hash inputs** **Cache** hit: replay → **miss: run** **Run** parallel

CONCEPTS

A project has targets (build, test, ...). Nx runs a target, replays cached output when inputs are unchanged, and runs dependencies first.

Without a global install use npx nx, pnpm nx or yarn nx; the workspace version is used.

Task flags not known to Nx can be passed after the project: nx test web --watch.

RUN TASKS

nx run *<project>*:*<target>*
Run one target

nx *<target>* *<project>*
Shorthand for run

nx run *<p>*:*<t>*:*<config>*
Use a configuration

nx *<target>* *<project>* -c *<config>*
Set configuration by flag

nx run-many -t *<target>*
Run a target everywhere

nx run-many -t *<t1>* *<t2>*
Run several targets

nx run-many -t *<target>* -p *<a>* *<b>*
Limit to projects

nx run-many -t *<target>* -p "tag:*<tag>*"
Select projects by tag

nx run-many -t *<target>* --exclude *<p>*
Skip projects

nx affected -t *<target>*
Only affected projects

nx affected -t *<target>* --base=*<ref>* --head=*<ref>*
Compare two refs

nx affected -t *<target>* --uncommitted
Include local edits

nx affected -t *<target>* --explain=stdout
Why was it affected

--parallel=*<n>*
Max concurrent tasks (default 3)

--parallel=false
Run one task at a time

--nxBail
Stop after first failure

RUN TASKS (cont.)

--outputStyle=*<style>*
tui, stream, static, summary

--graph
Show the task graph, no run

nx watch --all -- *<cmd>*
Rerun a command on change

INSPECT

nx graph
Open the project graph

nx graph --focus=*<project>*
One project and neighbours

nx graph --affected
Highlight affected

nx graph --view=tasks --targets=*<t>*
Task graph view

nx graph --file=*<out>*.json
Write graph to file

nx show projects
List projects

nx show projects --withTarget=*<t>*
Projects with a target

nx show projects --type=*<app|lib|e2e>*
Filter by type

nx show projects --affected
Only affected ones

nx show project *<project>*
Resolved project config

nx show target inputs *<project>*:*<t>*
What feeds the hash

nx show target outputs *<project>*:*<t>*
What gets cached

nx list
Installed plugins

nx list *<plugin>*
Plugin generators and executors

GENERATE AND SET UP

nx g *<plugin>*:*<generator>* *<name>*
Run a generator

nx g *<plugin>*:*<generator>* --dry-run
Preview file changes

GENERATE AND SET UP (cont.)

nx g @nx/js:library *<name>*
New library

nx add *<package>*
Install and set up a plugin

nx init
Add Nx to an existing repo

nx sync
Run sync generators

nx sync:check
Fail if out of sync (CI)

nx format:write
Format affected files

nx format:check
Check formatting (CI)

nx migrate latest
Plan an upgrade

nx migrate --runMigrations
Apply migrations.json

nx migrate latest --createCommits
Commit per migration

CACHE AND DAEMON

nx reset
Clear cache, daemon, graph data

nx reset --onlyCache
Clear only local cache

nx reset --onlyDaemon
Restart the daemon

--skipNxCache
Bypass local cache for a run

--skipRemoteCache
Bypass remote cache

NX_DAEMON=false
Disable daemon for a run

nx connect
Connect to Nx Cloud

A cache hit replays terminal output and restores outputs. Stale results usually mean inputs are missing from the hash.

CONFIG FILES

project.json: targets
Per-project task definitions

project.json: tags
Labels for tag: selectors

CONFIG FILES (cont.)

targets.*<t>*.executor
What the task runs

targets.*<t>*.command
Plain shell command

targets.*<t>*.dependsOn
Tasks that run first

"^build" in dependsOn
Same target in dependencies

targets.*<t>*.inputs
Files and vars that affect hash

targets.*<t>*.outputs
Paths to cache

targets.*<t>*.cache: true
Make a target cacheable

targets.*<t>*.configurations
Named option sets

nx.json: targetDefaults
Shared target settings

nx.json: namedInputs
Reusable input groups

nx.json: plugins
Inferred targets from tools

nx.json: defaultBase
Base branch for affected

nx.json: nxCloudId
Remote cache workspace

RECIPES

nx.json defaults

```
{
  "defaultBase": "main",
  "targetDefaults": {
    "build": {
      "dependsOn": ["^build"],
      "cache": true,
      "outputs":
["{projectRoot}/dist"]
    },
    "test": { "cache": true }
  }
}
```

CI: only what a PR touched

```
nx affected -t lint test build
--base=origin/main
# shallow clones hide history:
# fetch full history (fetch-
depth: 0)
```

Upgrade Nx

```
nx migrate latest
npm install
nx migrate --runMigrations
# review diff, then delete
migrations.json
```

Debug a stale cache

```
nx show target inputs
<project>:build
nx build <project> --
skipNxCache
nx reset
```