Nx Monorepo build system

CONCEPTS

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

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

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

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

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

RUN TASKS (cont.)

--parallel=false
Run one task at a time

--nxBail
Stop after first failure

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

INSPECT

nx graph
Open the project graph

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

nx show projects
List projects

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

nx show projects --affected
Only affected ones

nx show project *<project>*
Resolved project config

GENERATE AND SET UP

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

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

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 migrate latest
Plan an upgrade

nx migrate --runMigrations
Apply migrations.json

CACHE AND DAEMON

nx reset
Clear cache, daemon, graph data

nx reset --onlyDaemon
Restart the daemon

--skipNxCache
Bypass local cache for a run

CACHE AND DAEMON (cont.)

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

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

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

nx.json: targetDefaults
Shared target settings

nx.json: plugins
Inferred targets from tools

nx.json: defaultBase
Base branch for affected

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
```