

# Building and Serving

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# Building and Serving



**Building with the Angular CLI**

**Build targets**

**Exploring the builds**

**Serving**

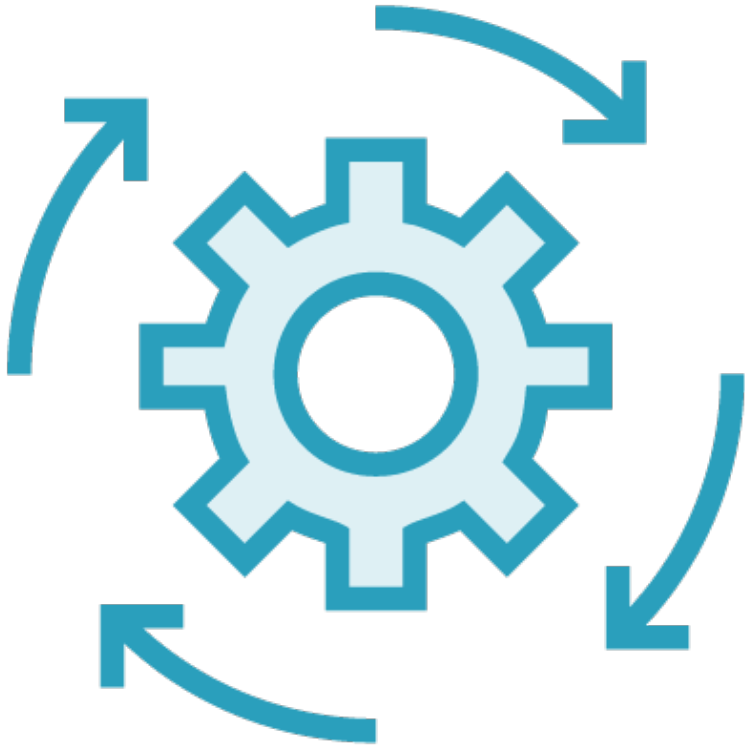
**Development cycle**



# Building Angular

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# Builds

Compile the app to an output directory

Build targets determine the output

All builds use bundling

Prod builds add uglification and tree-shaking



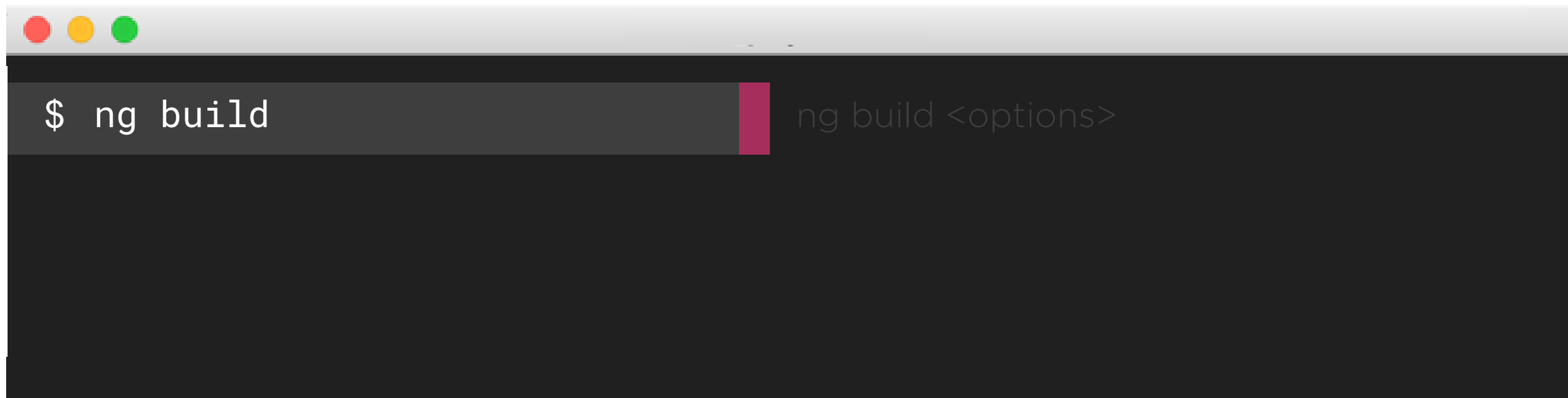
# Getting Help

Add the **--help** flag



```
$ ng build --help
```

A terminal window with a dark background and a light gray title bar. The title bar has three colored window control buttons (red, yellow, green) on the left. The terminal displays the command `$ ng build --help` in a white monospaced font.



```
$ ng build
```

ng build <options>

## Development Builds

**Ideal for development**

Output to **/dist/[your app]** folder, by default (see **angular.json**)



# Exploring the Build Bundles

## File

## Description

runtime.js

WebPack runtime

main.js

App code

polyfills.js

Platform polyfills

styles.s

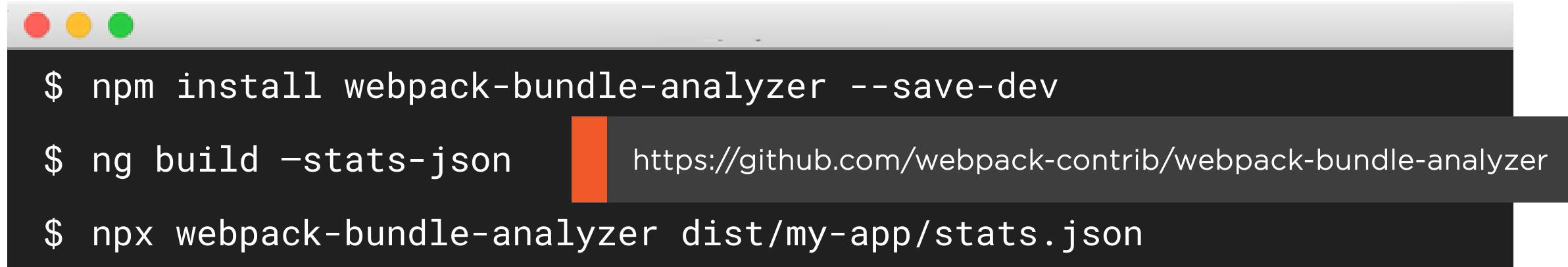
Styles

vendor.js

Angular and other vendor files

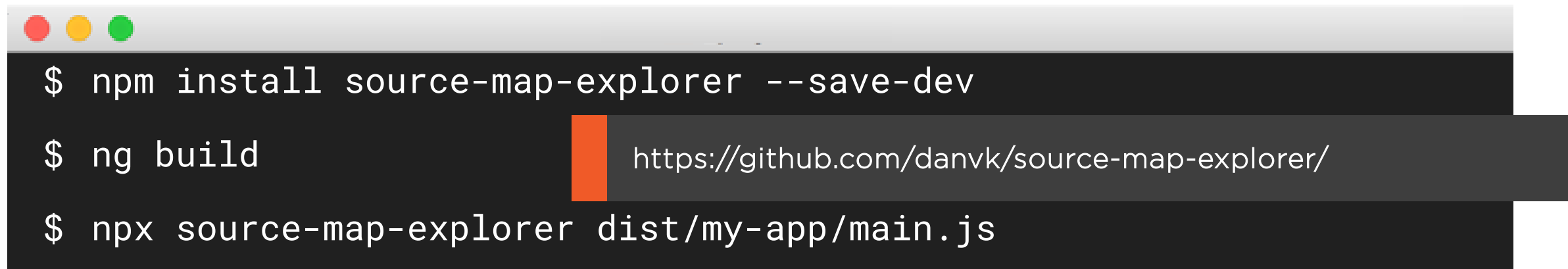


# Exploring the Source in the Output



```
$ npm install webpack-bundle-analyzer --save-dev  
$ ng build -stats-json https://github.com/webpack-contrib/webpack-bundle-analyzer  
$ npx webpack-bundle-analyzer dist/my-app/stats.json
```

A terminal window with a macOS-style title bar (red, yellow, green buttons) and a dark background. It contains three lines of terminal output. The second line includes a link to the webpack-bundle-analyzer GitHub repository.



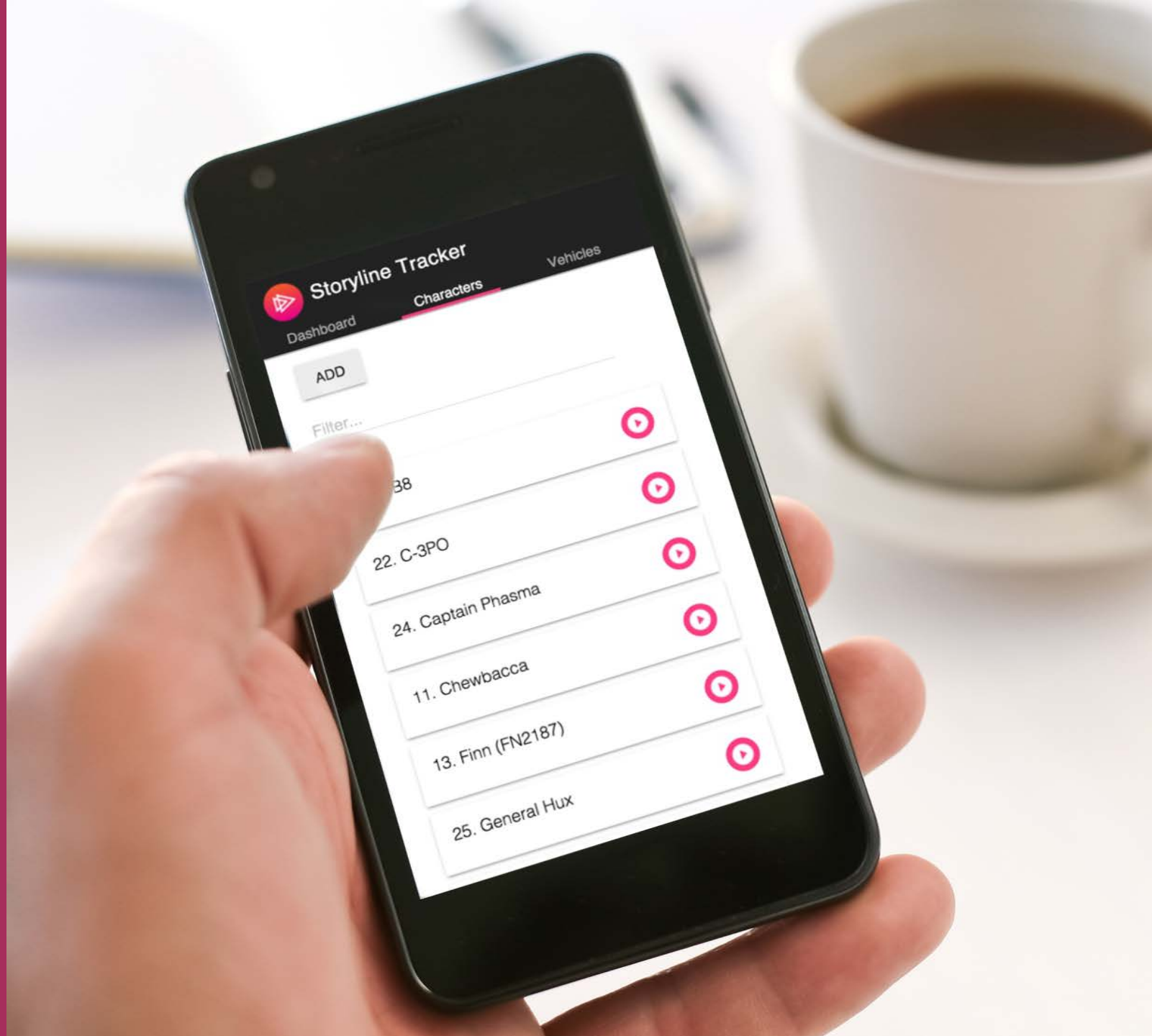
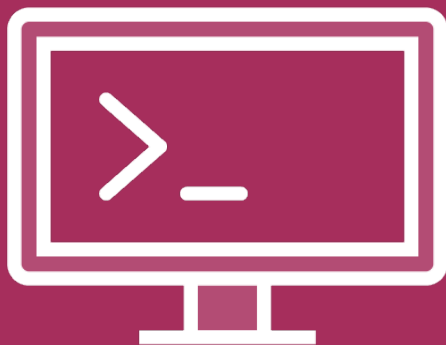
```
$ npm install source-map-explorer --save-dev  
$ ng build https://github.com/danvk/source-map-explorer/  
$ npx source-map-explorer dist/my-app/main.js
```

A terminal window with a macOS-style title bar (red, yellow, green buttons) and a dark background. It contains three lines of terminal output. The second line includes a link to the source-map-explorer GitHub repository.





# Demo



# Build Targets and Environments

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# Environment

Indicates which file to use between  
environment.prod.ts and environment.ts

# Target

Defines how (and if) the files are optimized



# Comparing Dev and Prod Build Targets

	ng build	ng build --prod
<b>Environment</b>	environment.ts	environment.prod.ts
<b>Cache-busting</b>	only images referenced in css	all build files
<b>Source maps</b>	generated	not generated
<b>Extracted CSS</b>	global CSS output to .js	yes, to css file(s)
<b>Uglification</b>	no	yes
<b>Tree-Shaking</b>	no	yes
<b>AOT</b>	no	yes
<b>Bundling</b>	yes	yes

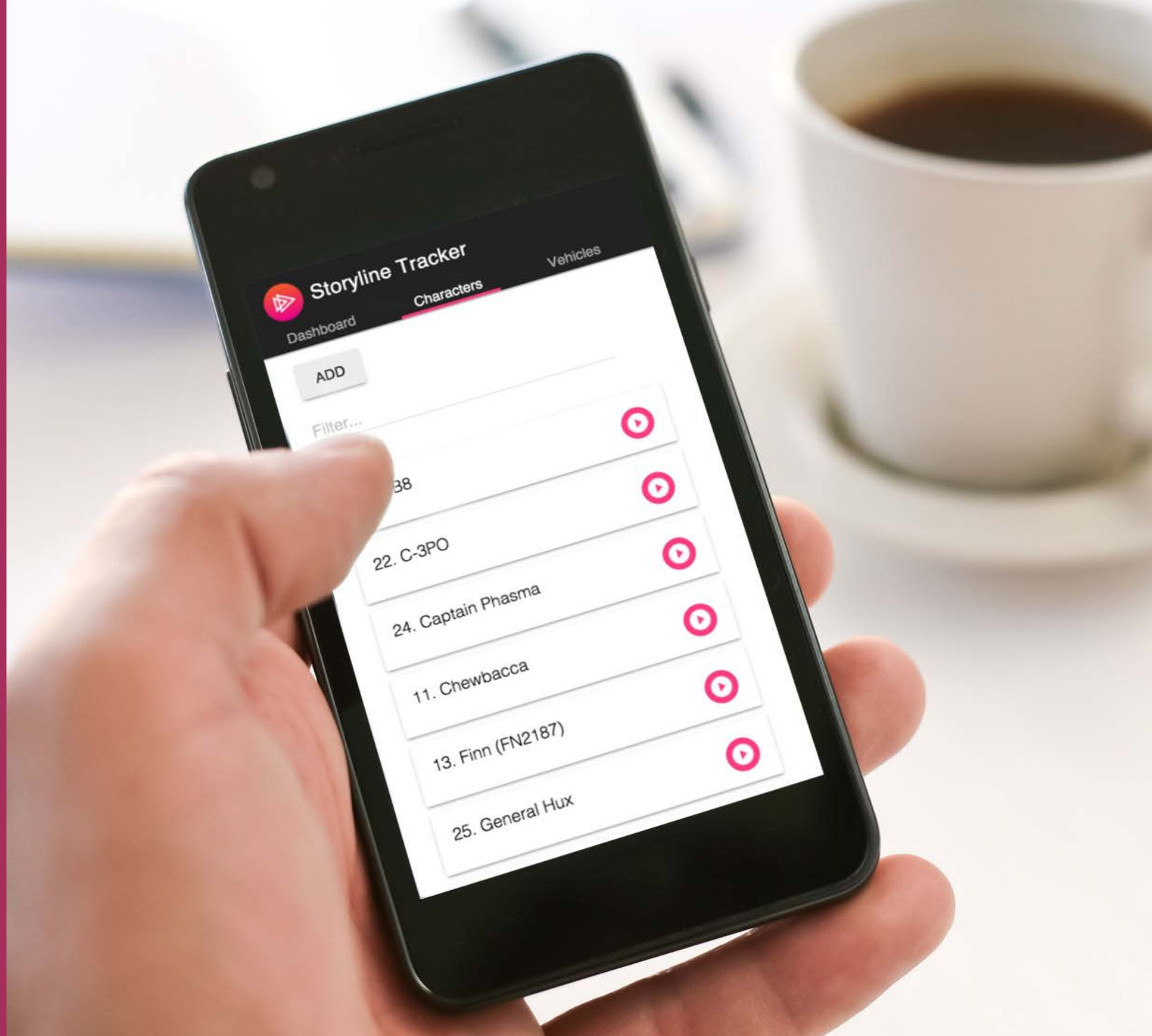
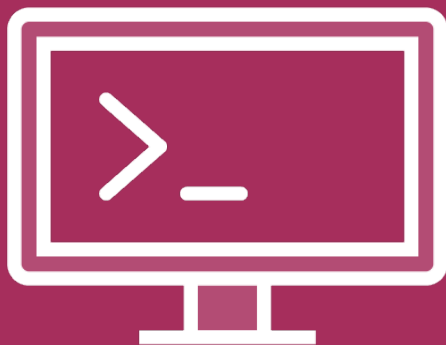


# Common ng build Options

Options	Alias	Description
--source-map		Generate a source map
--aot		Ahead of Time compilation
--watch	-w	Watch and rebuild
--prod	-e	Shortcut for prod env and target



# Demo



# Serving Angular

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# Serving

Compiled output is served from memory

Efficient for reloads





# Getting Help

Add the **--help** flag

A terminal window with a dark background and a light gray title bar. The title bar has three colored window control buttons (red, yellow, green) on the left. The terminal displays the command '\$ ng serve --help' in white text.

```
$ ng serve --help
```



# Common `ng serve` Options

All build options are available on `serve`, plus the following ...

## Options

## Alias

## Description

`--open`

`-o`

Opens in the default browser

`--port`

Port to listen to when serving

`--live-reload`

Reload when changes occur

`--ssl`

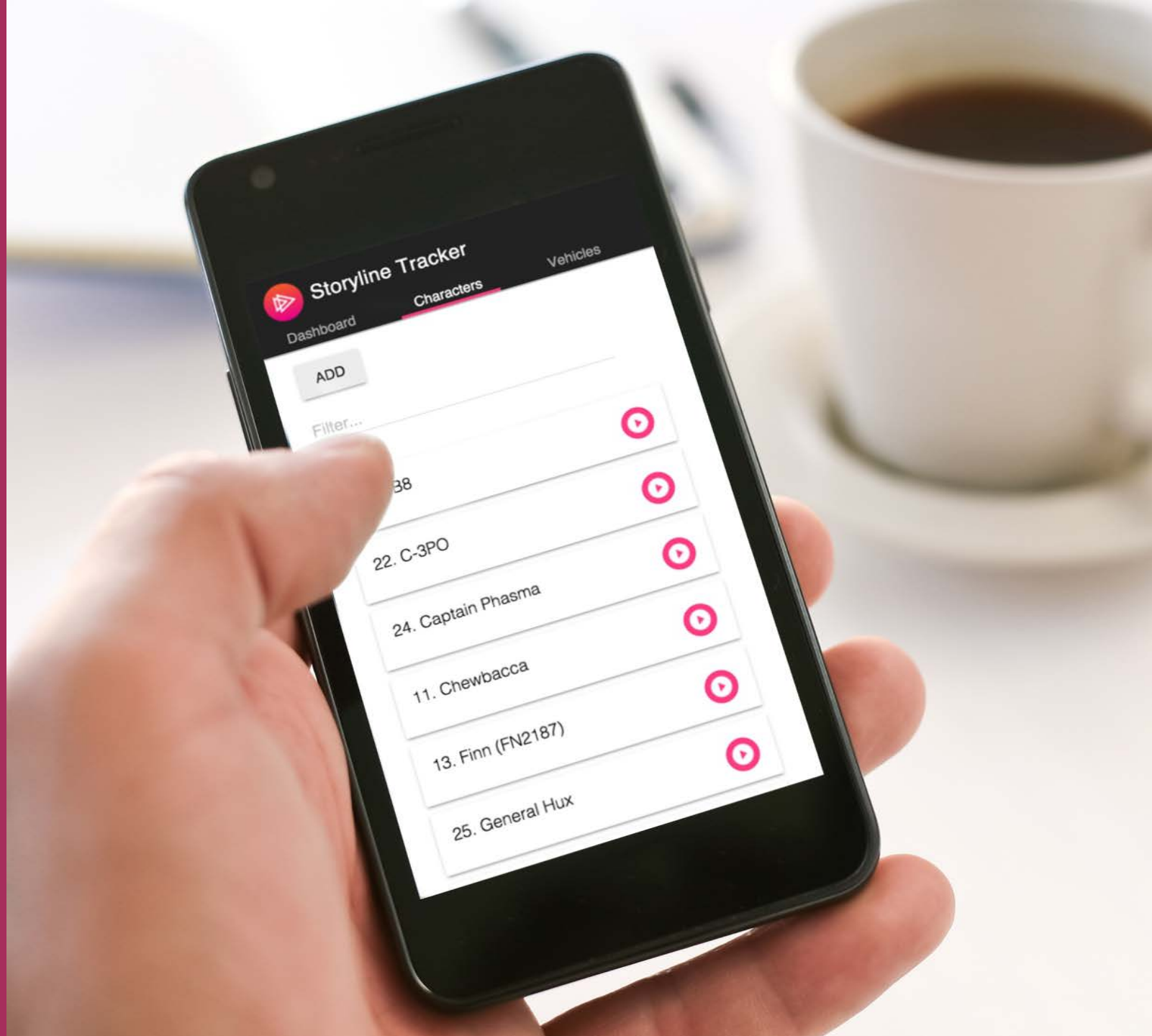
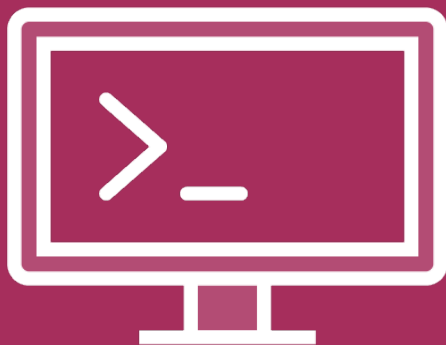
Serve using HTTPS

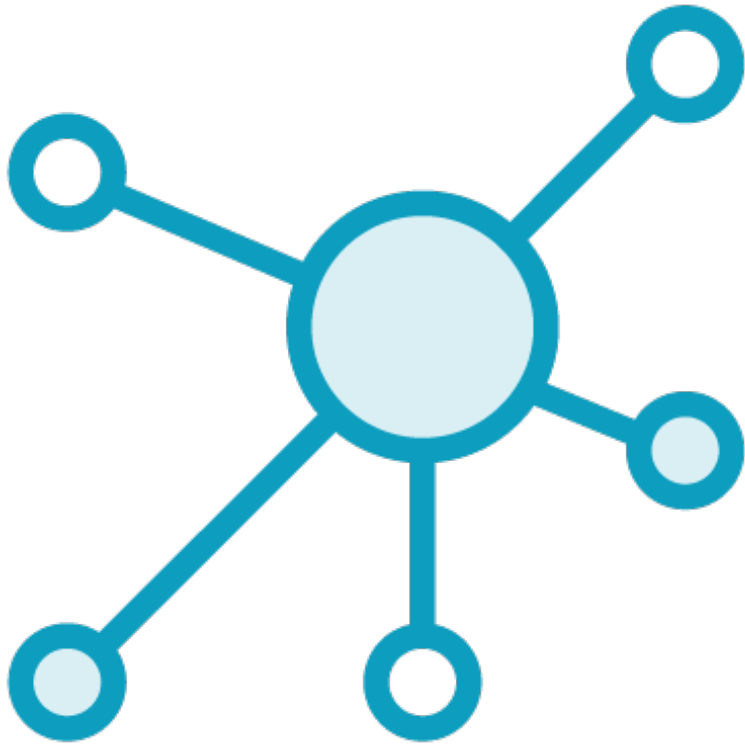
`--proxy-config`

Proxy configuration file



# Demo

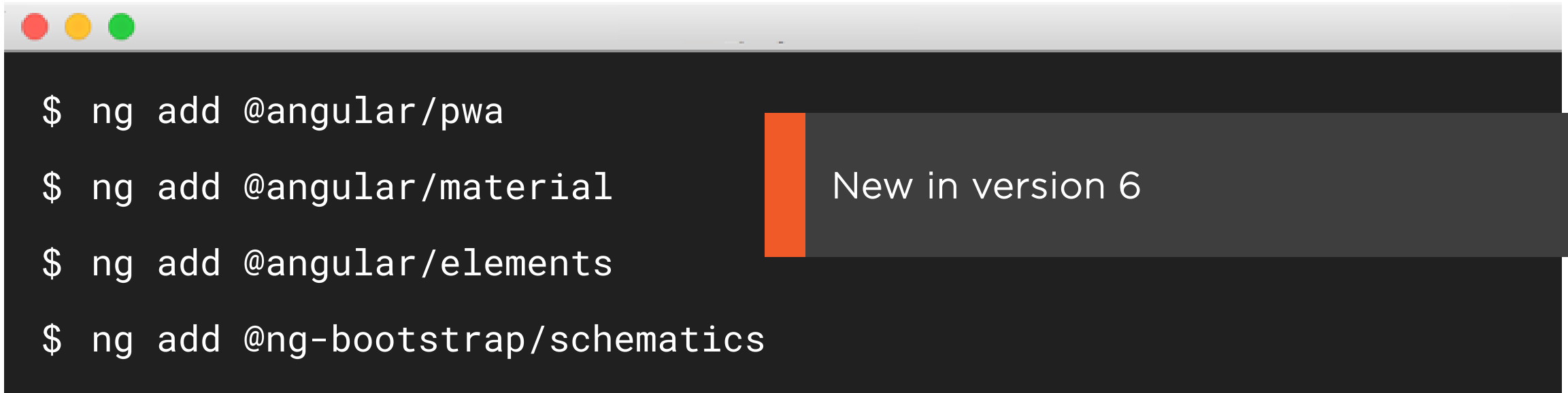




# Adding New Capabilities

ng add <package>





```
$ ng add @angular/pwa
$ ng add @angular/material
$ ng add @angular/elements
$ ng add @ng-bootstrap/schematics
```

New in version 6

ng add **package**

Adds new capabilities

Downloads dependencies

Update a project configuration

Scaffold new capabilities



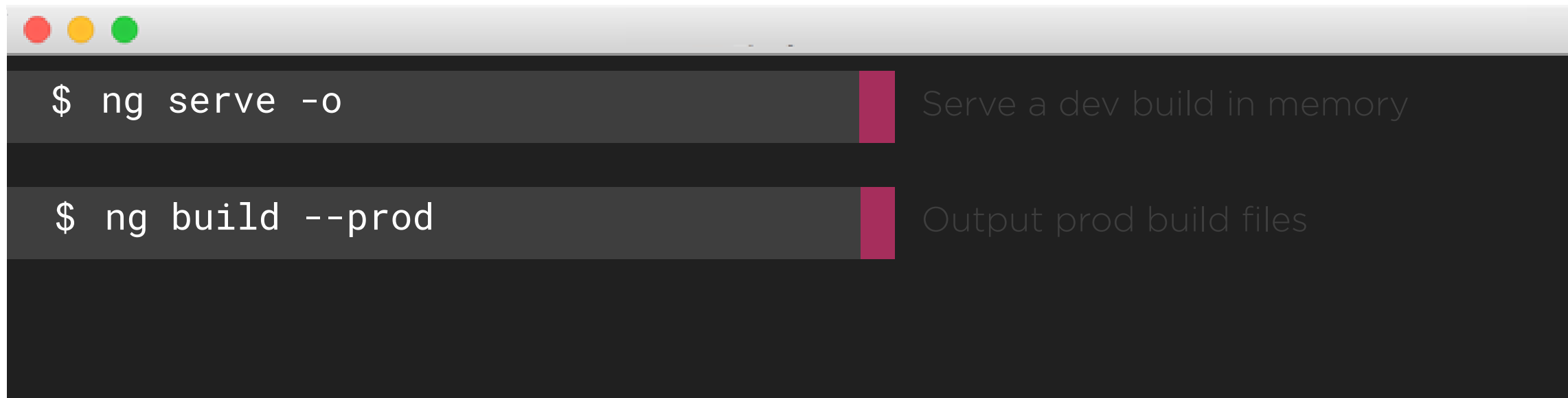


# What Else

Building with external libraries

Angular Material





## Remember These Commands

Fast development cycles with **ng serve -o**

When ready to promote your code, use **ng build --prod**



# Building and Serving



**Build to output the production files**

**Many customizations**

**Serve is intended for development**

**Build with external libraries**

