

Building and Serving



John Papa

PRINCIPAL DEVELOPER ADVOCATE

@john_papa www.johnpapa.net



Building and Serving



Building with the Angular CLI

Build targets

Exploring the builds

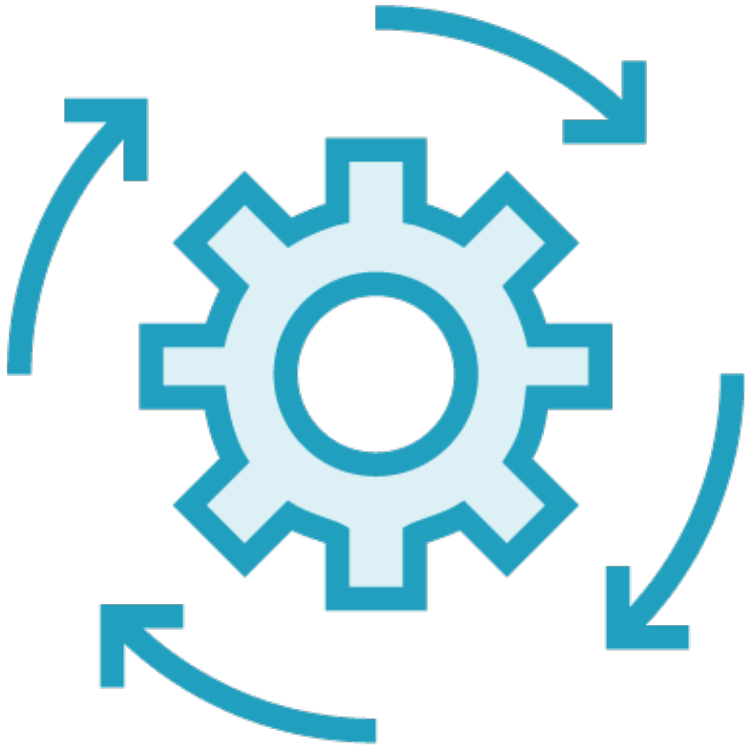
Serving

Development cycle



Building Angular





Builds

Compile the app to an output directory

Build targets determine the output

All builds use bundling

Prod builds add uglification and tree-shaking



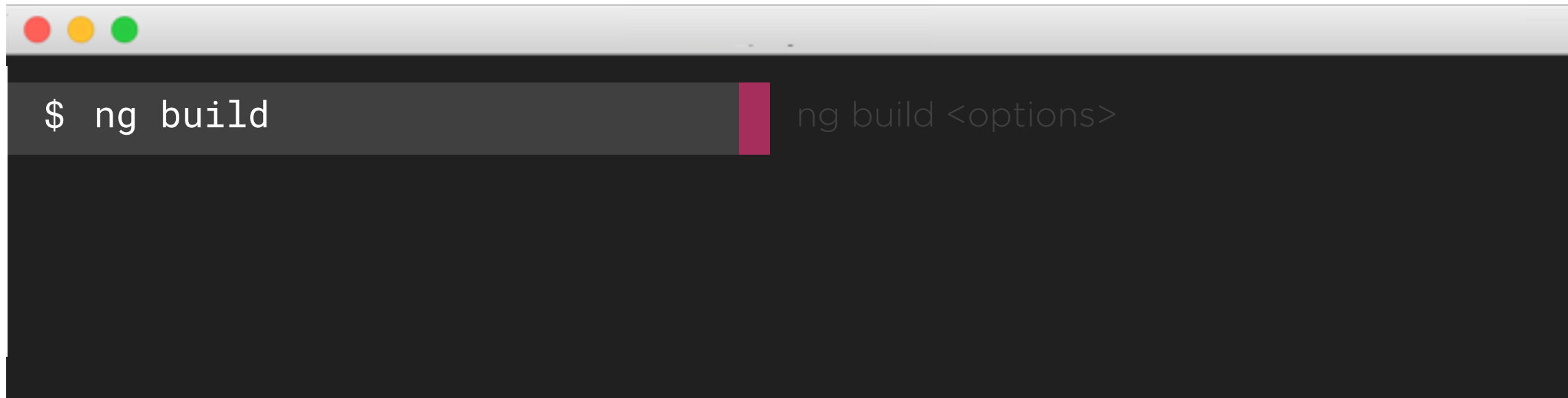
Getting Help

Add the **--help** flag

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 --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 shows the command '\$ ng build' in white text. To the right of the command, there is a vertical pink bar, and further right, the text 'ng build <options>' is displayed in a lighter gray 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

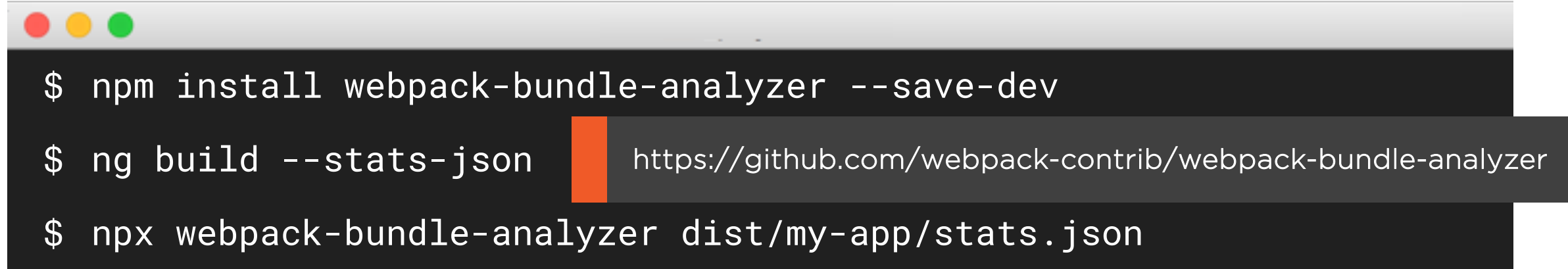
Styles

vendor.js

Angular and other vendor files

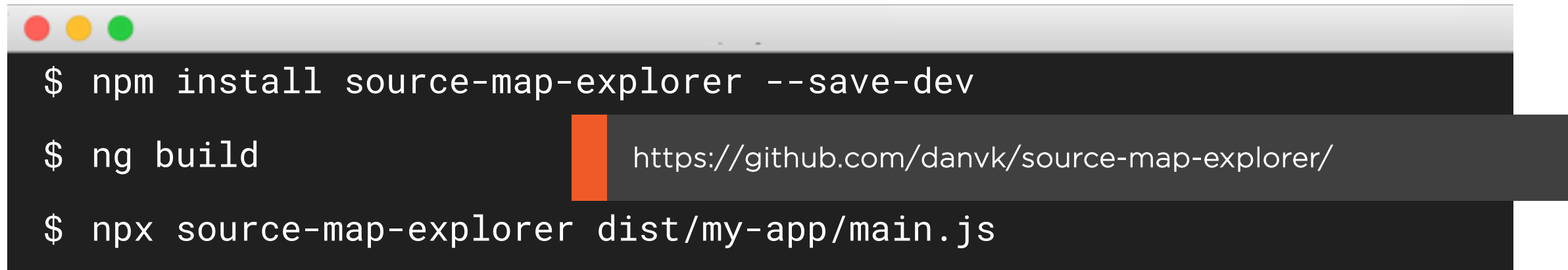


Exploring the Source in the Output



```
$ 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.

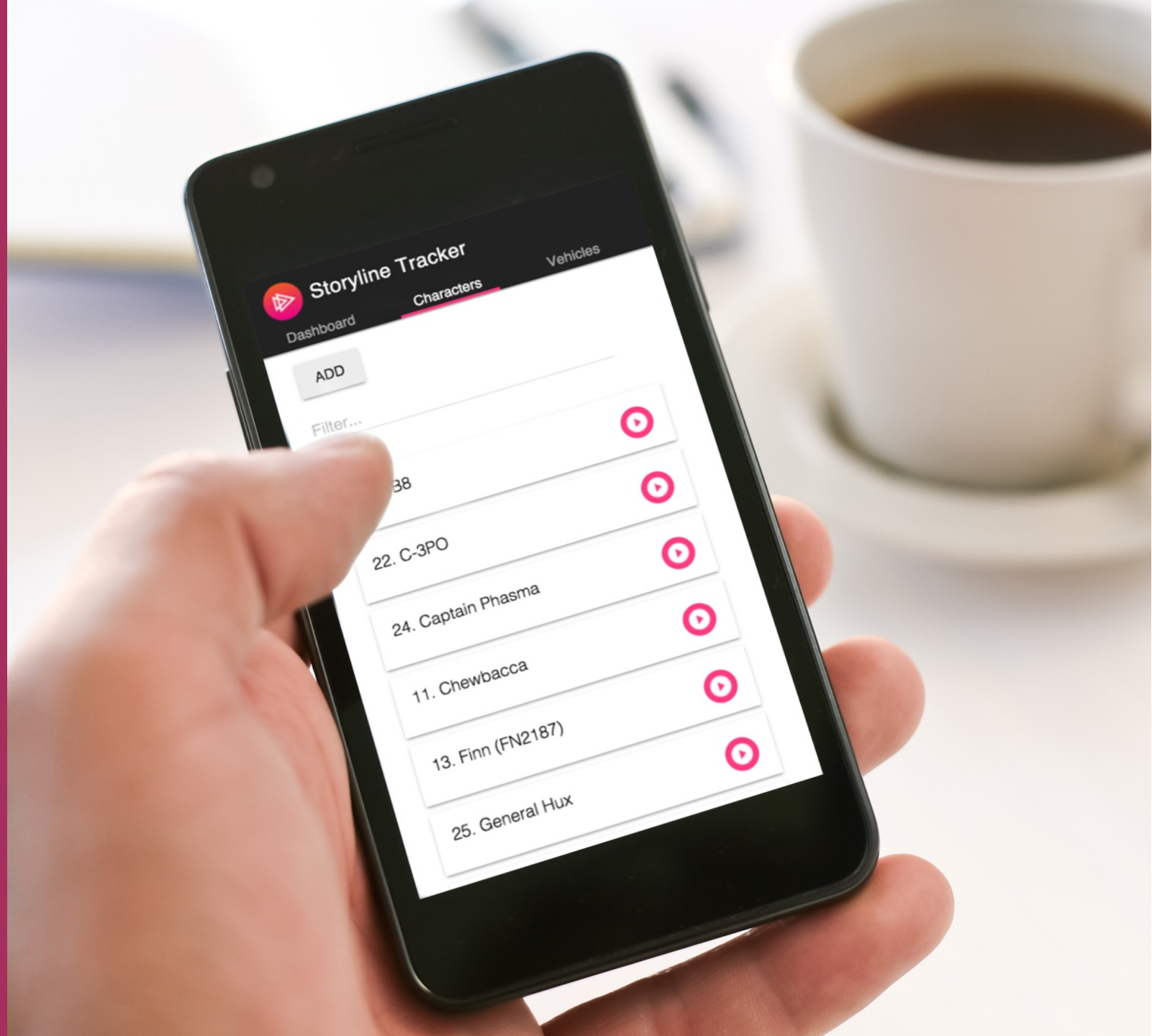
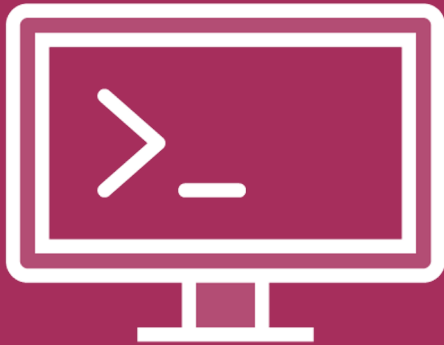


```
$ npm install source-map-explorer --save-dev  
$ ng build https://github.com/danvk/source-map-explorer/  
$ npx source-map-explorer dist/my-app/main.js
```

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



Environment

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



Comparing Dev and Prod Build Targets

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

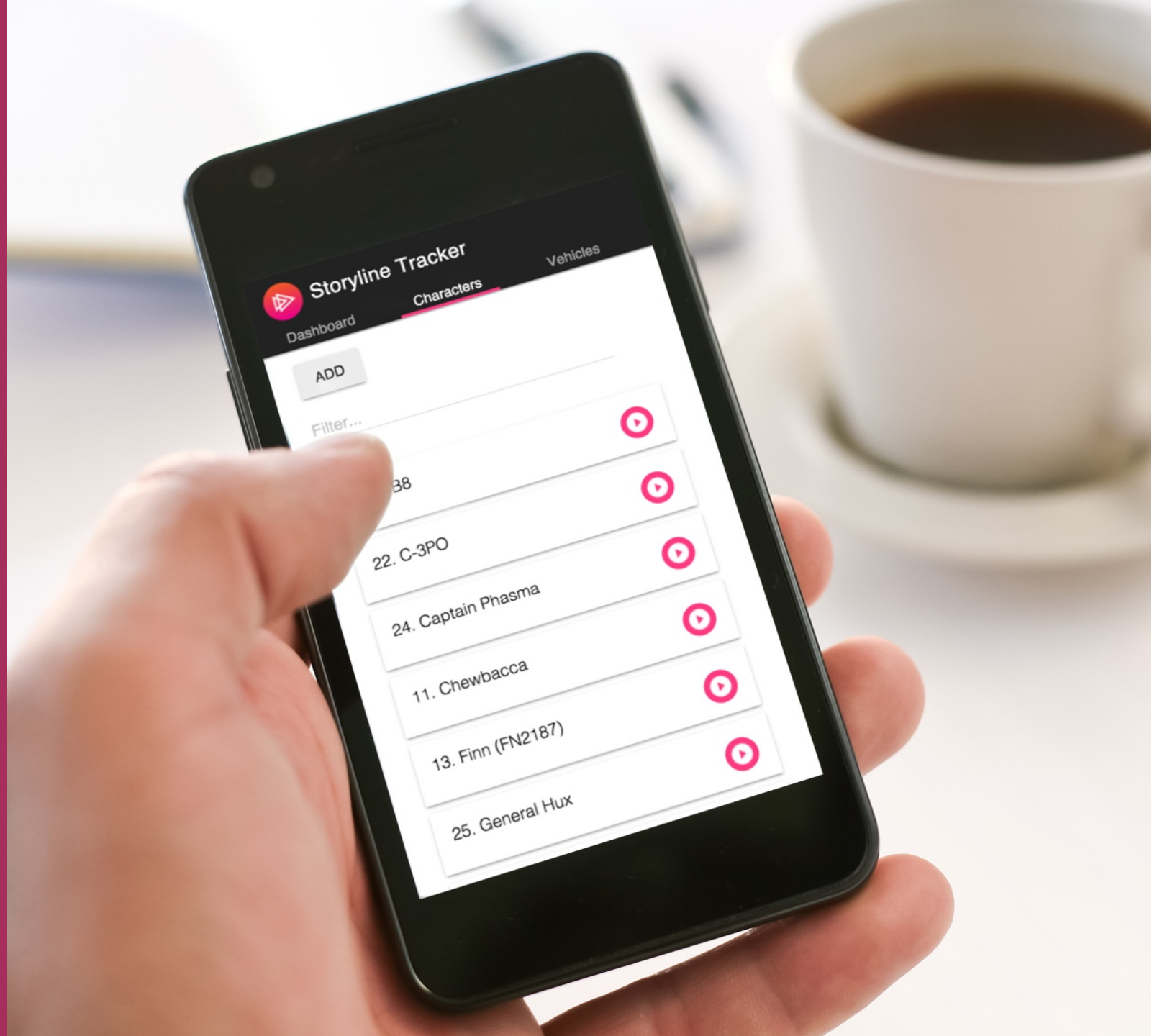
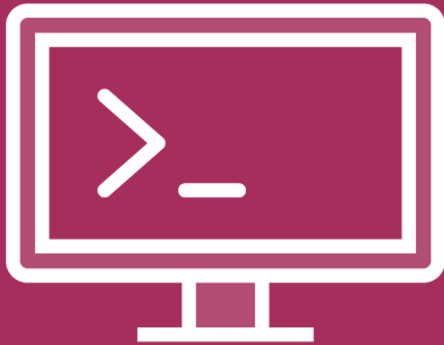


Common ng build Options

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





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 a white monospaced font.

```
$ 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`

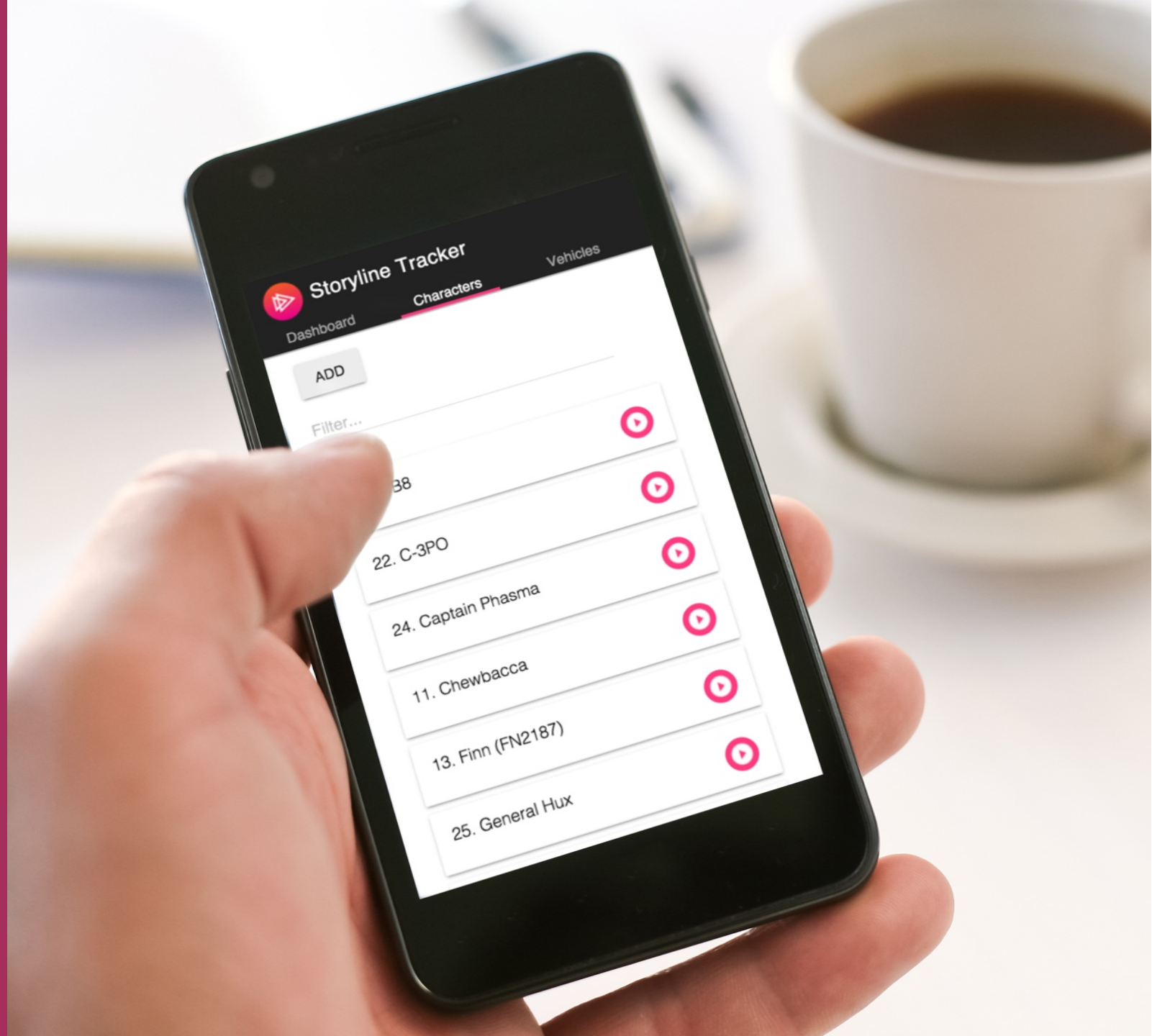
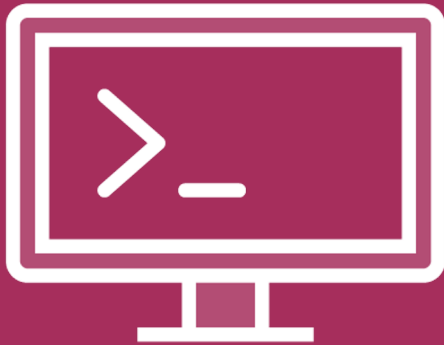
Serve using HTTPS

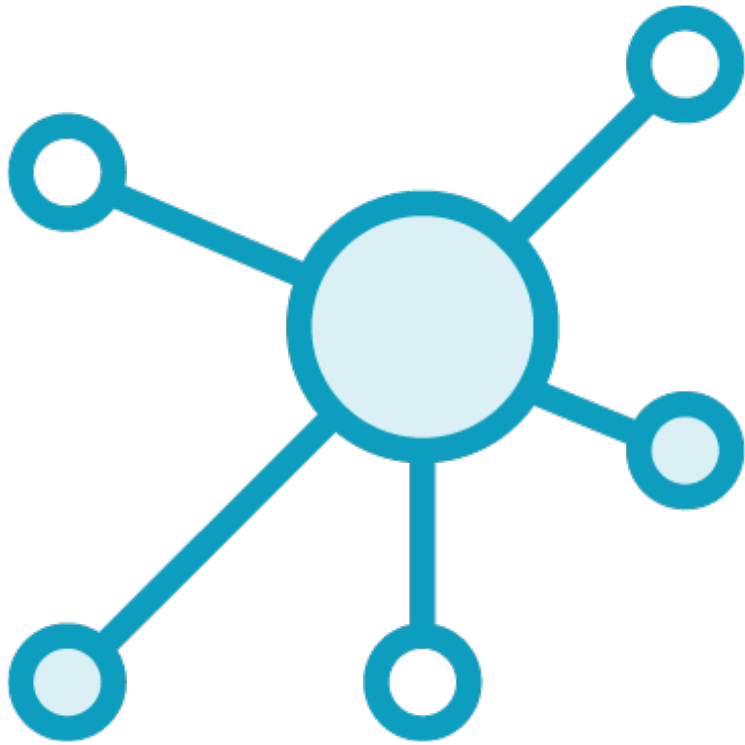
`--proxy-config`

Proxy configuration file



Demo

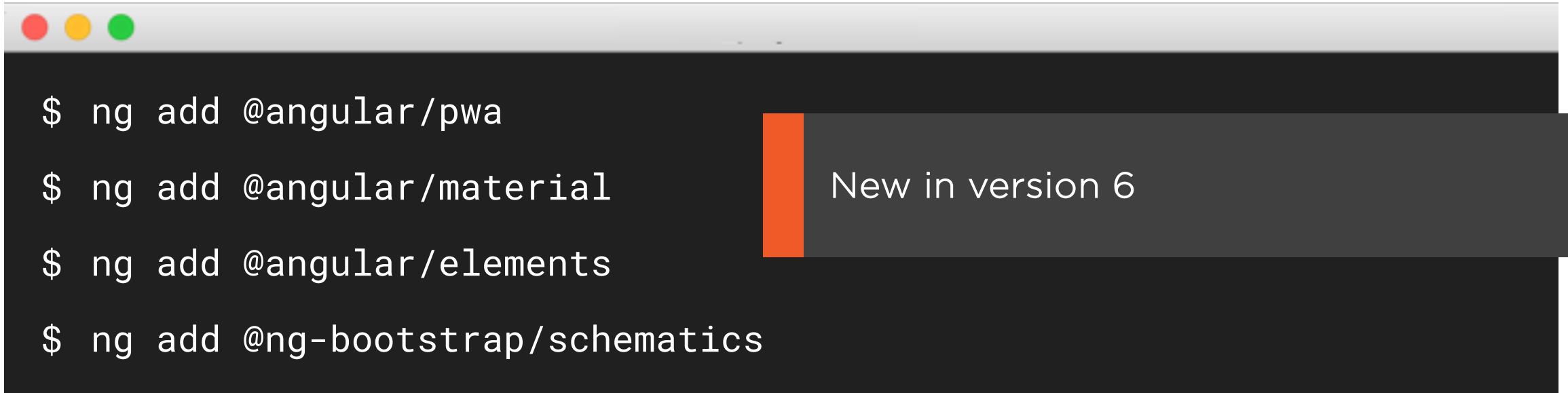




Adding New Capabilities

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



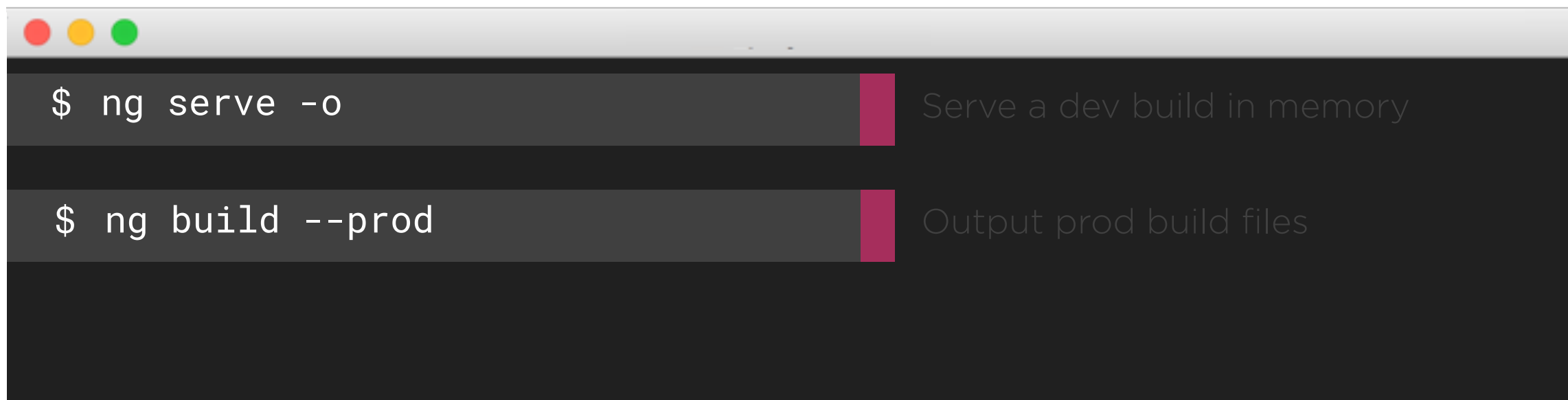


What Else

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

