Deployment von Angular Applikationen

DWX 2017

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Who are we?

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trivadis
makes IT easier.

Who are we?

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Content

- TSLint
- Tuning Code
- Build Process
- Preloading Strategy

TSLint

TSLint

- Extensible static analysis tool
- Help to catches common errors
- Catches the «oops» moments (debugger, console.log etc.)

Run TSLint

Install TSLint

```
npm install tslint --save-dev        #local
```

```
npm install tslint -g                #global
```

Run TSLint

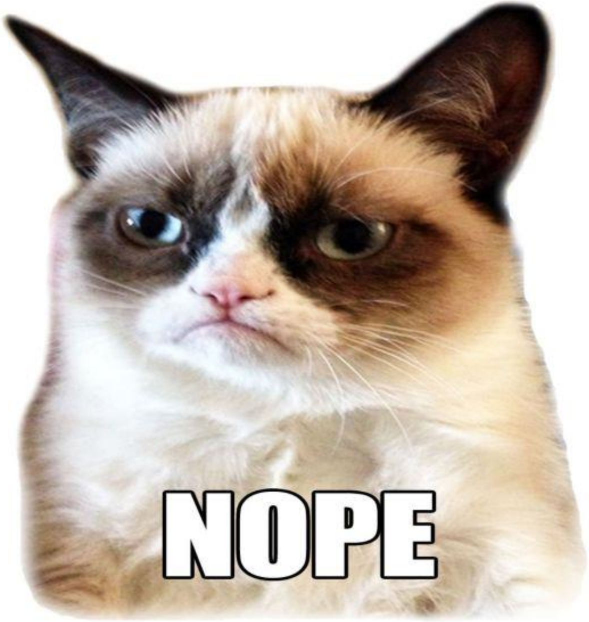
```
node_modules/.bin/tslint --init      #local: create tslint.json
```

```
tslint --init                        #global: create tslint.json
```

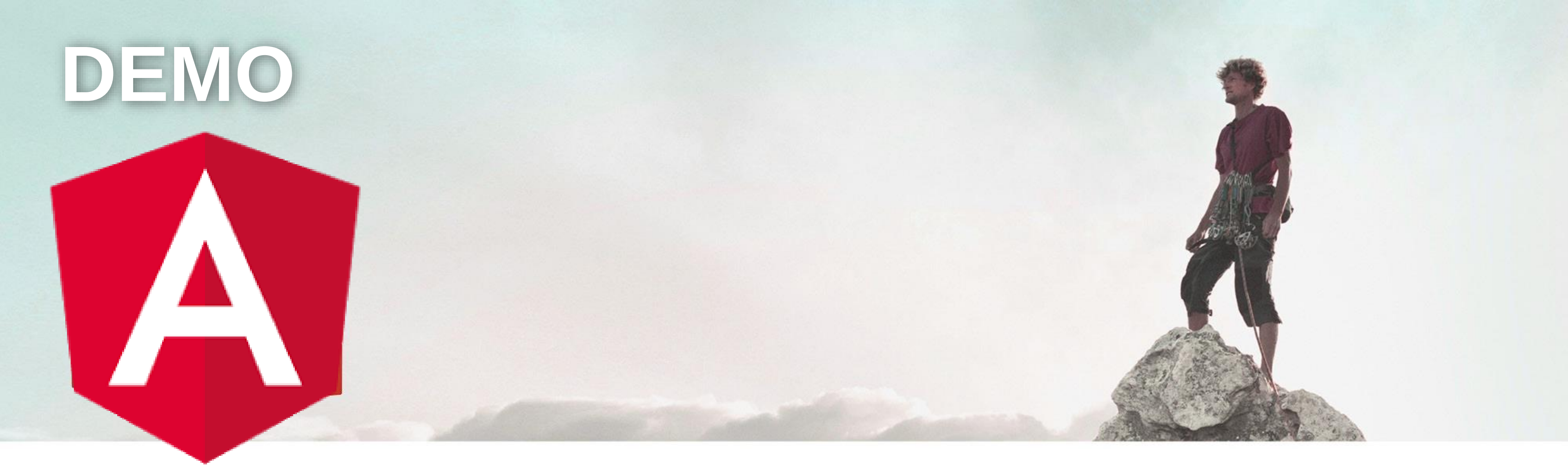
```
tslint "app/**/*.ts"                 #run TSLint
```

```
ng lint                              #using with Angular CLI
```

Don’t let lint errors in your repos



DEMO

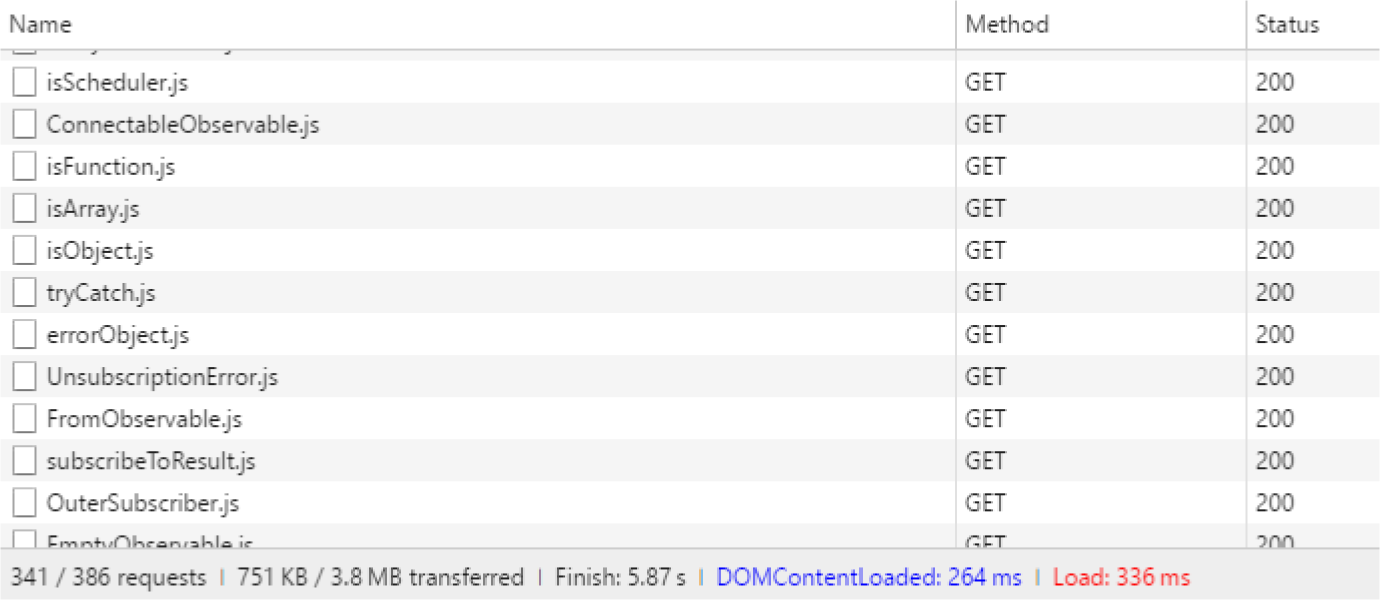


How to setup TSLint

How does it work

Tuning Code

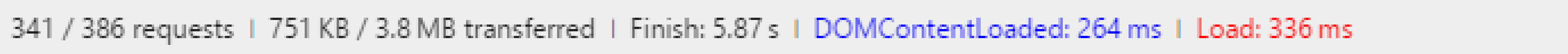
Why we need to optimize?



Name	Method	Status
□ isScheduler.js	GET	200
□ ConnectableObservable.js	GET	200
□ isFunction.js	GET	200
□ isArray.js	GET	200
□ isObject.js	GET	200
□ tryCatch.js	GET	200
□ errorObject.js	GET	200
□ UnsubscriptionError.js	GET	200
□ FromObservable.js	GET	200
□ subscribeToResult.js	GET	200
□ OuterSubscriber.js	GET	200
□ EmptyObservable.js	GET	200

341 / 386 requests | 751 KB / 3.8 MB transferred | Finish: 5.87 s | DOMContentLoaded: 264 ms | Load: 336 ms

Why we need to optimize?



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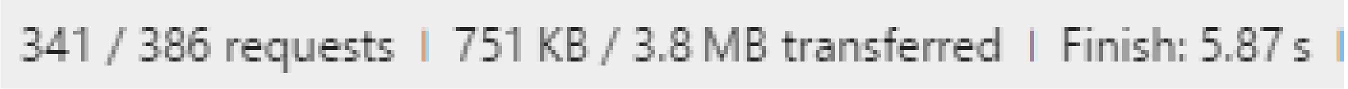
Why we need to optimize?



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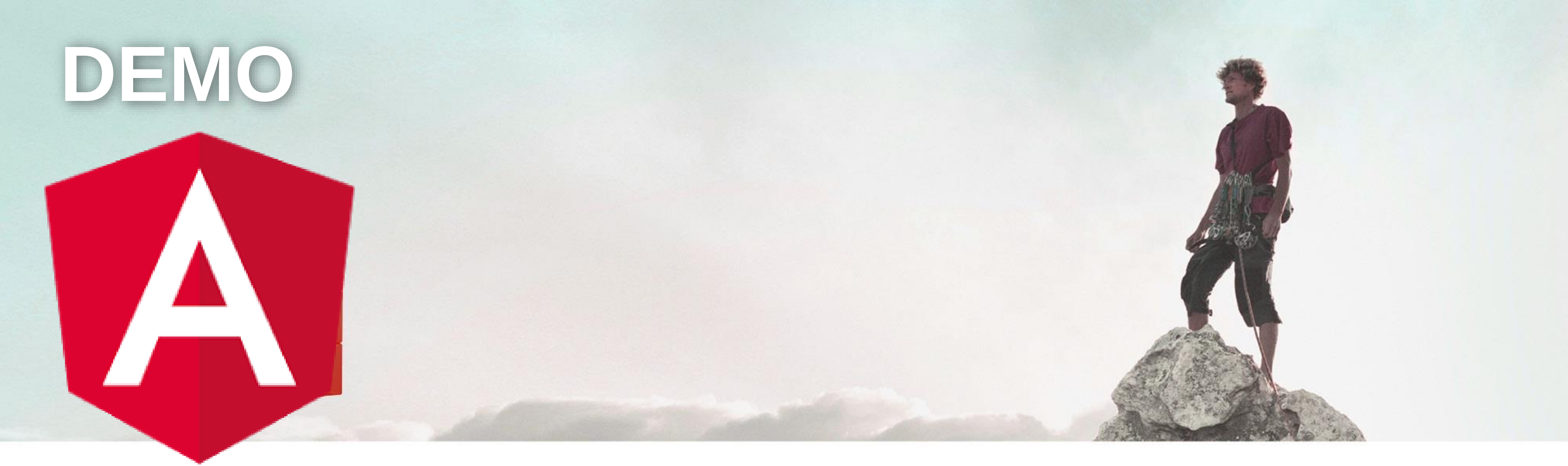
RxJS

- Often import whole module «rxjs/Rx»

```
import "rxjs/Rx";
```

- affects the size of the bundle (webpack)
- and the amount of requests to the server (system.js)

DEMO



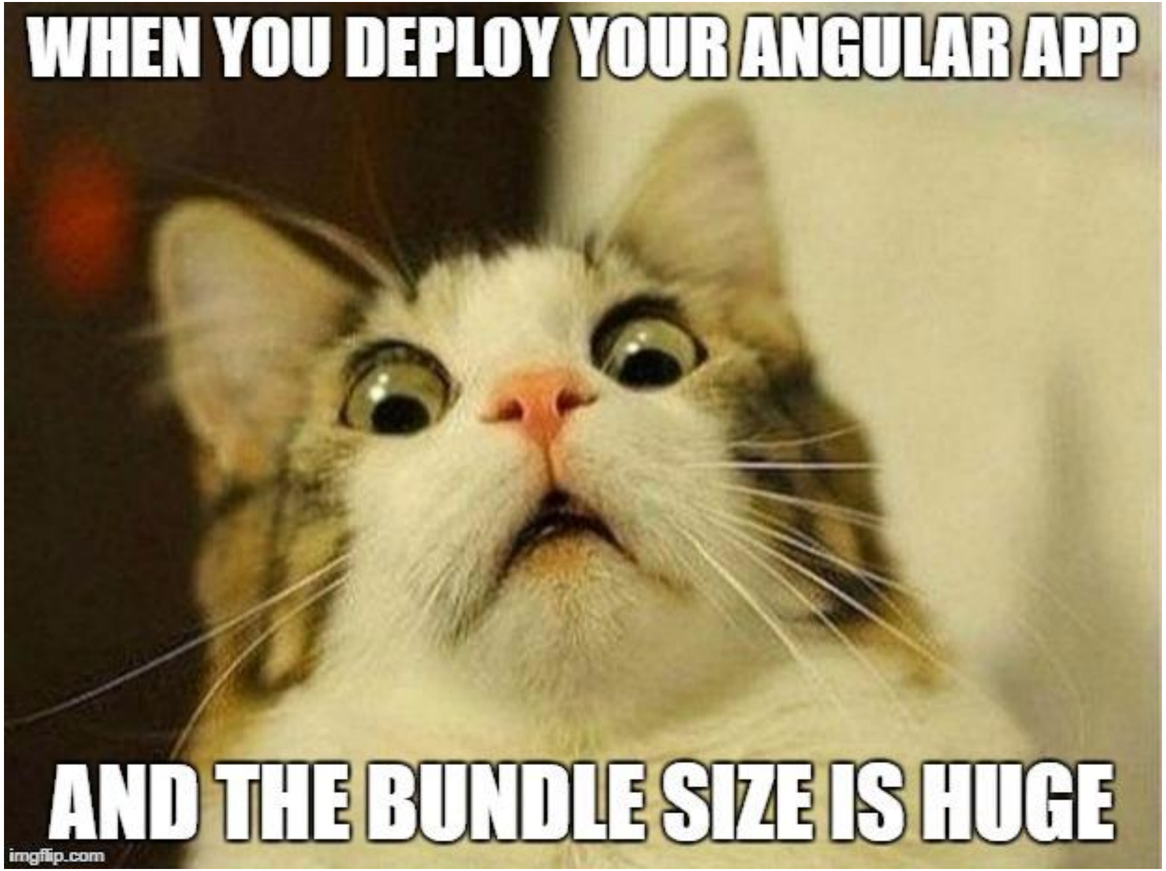
RxJS optimizations

enableProdMode

enableProdMode()

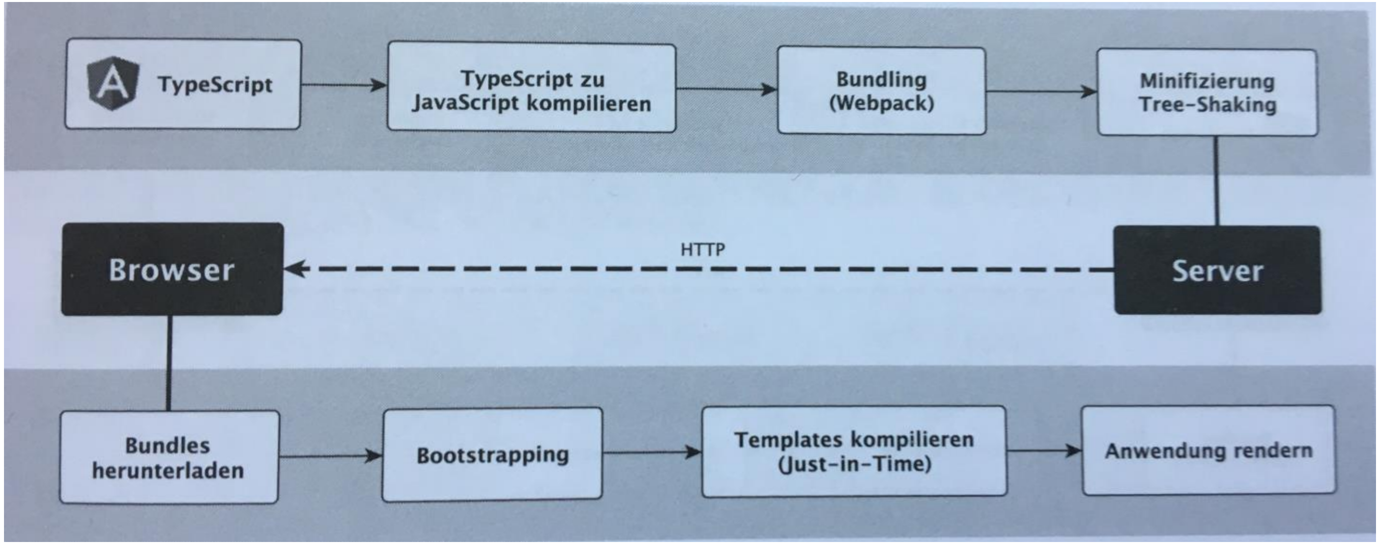
- Easy to implement, only one function call
- Only for production mode
- Is used by Angular internally ‘cause of the one way data flow
- An additional change detection cycle is executed

Build Process


WHEN YOU DEPLOY YOUR ANGULAR APP
AND THE BUNDLE SIZE IS HUGE
imgflip.com

Just in Time Compilation (JIT)

- Compilation is done during execution of our app


TypeScript
TypeScript zu JavaScript kompilieren
Bundling (Webpack)
Minifizierung Tree-Shaking
Browser
HTTP
Server
Bundles herunterladen
Bootstrapping
Templates kompilieren (Just-in-Time)
Anwendung rendern

Woiwode et al. (2017)
https://angular-buch.com/

Angular in JIT Mode

```
// The browser platform with a compiler
import { platformBrowserDynamic }
        from '@angular/platform-browser-dynamic';


// The app module
import { AppModule } from './app.module';


// Compile (JIT) and launch the module
platformBrowserDynamic().bootstrapModule(AppModule);
```

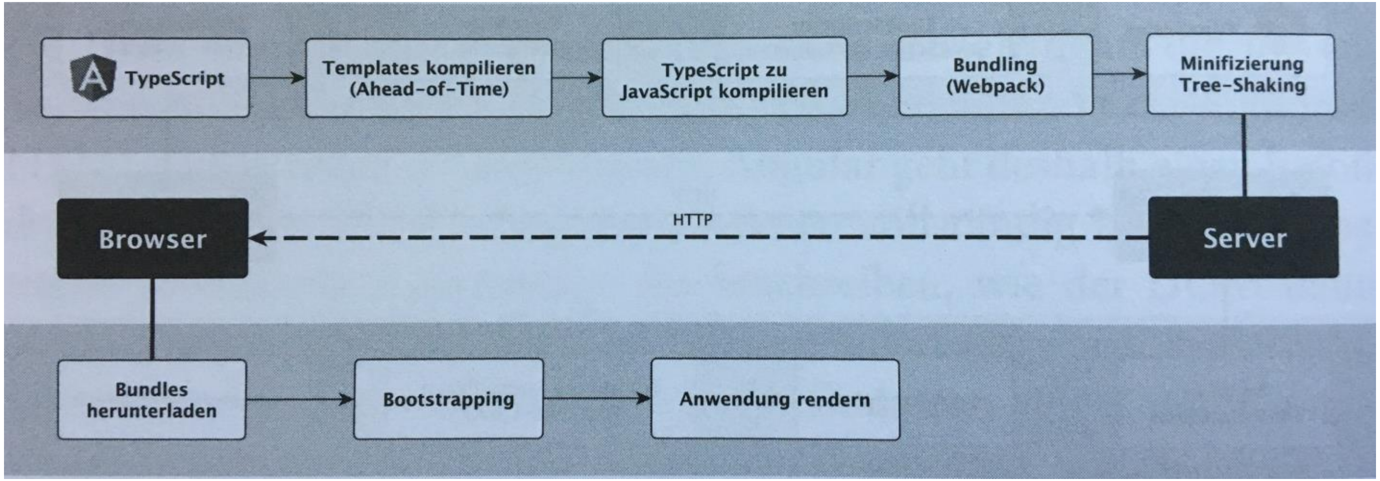
JIT Drawbacks

- Bundle size
- Slower rendering
- Errors in template can only be caught at runtime
- Security

The Angular 2 Compiler by Tobias Bosch (at Angular Connect 2016)
https://www.youtube.com/watch?v=kW9cJsvcsGo

Ahead of Time Compilation (AOT)

- Compilation is done during building our app


TypeScript
Templates kompilieren (Ahead-of-Time)
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Angular in AoT Mode

```
// The browser platform with a compiler
import { platformBrowser } from '@angular/platform-browser';

// The generated app factory (AOT)
import { AppModuleNgFactory }
       from './aot/app.module.ngfactory';

// Launch with the app module factory.
platformBrowser().bootstrapModuleFactory(
   AppModuleNgFactory
);
```

Build with Angular CLI

- Compile your app with the Angular CLI (JIT)

```
ng build                      #dev build
```

- Compile your app with the Angular CLI (AOT)

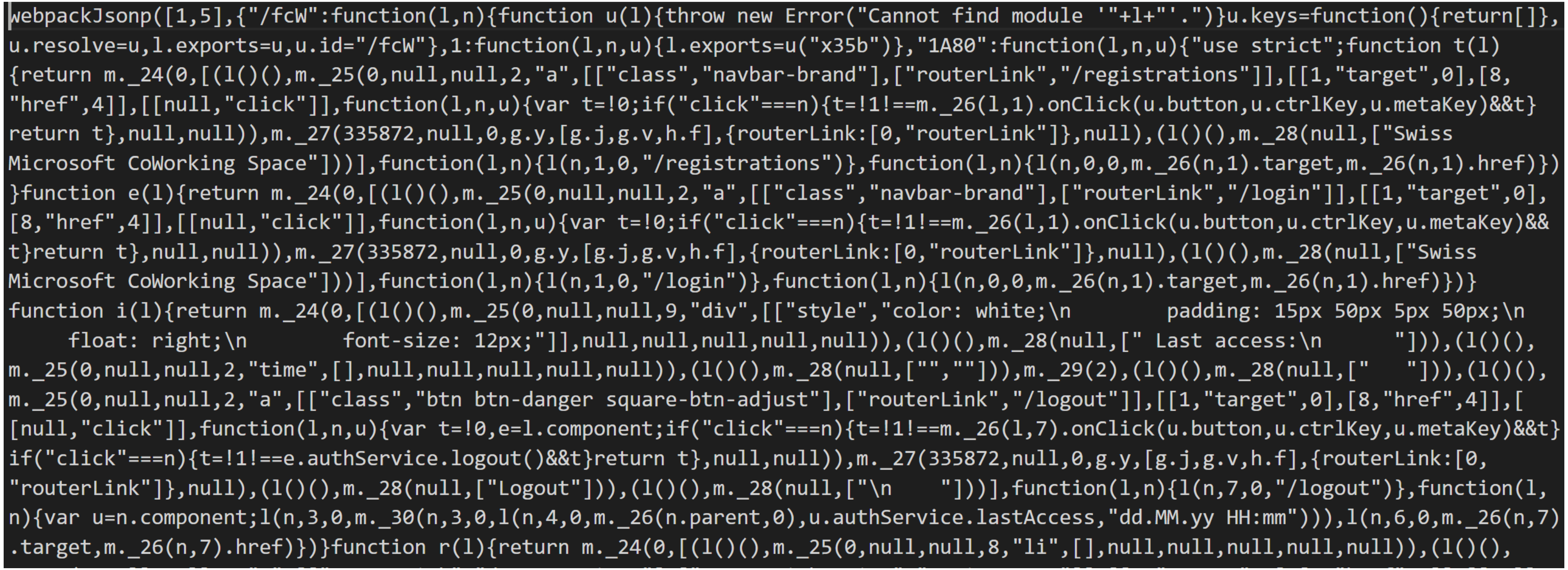
```
ng build --prod               #prod build
```

Build for production

```
ng build --prod                          #prod build
```

- **AOT** compilation
- **Minification**: Comments, line breakings are removed and variables are shorten
- **(limited) Tree-Shaking:** Drop unused module export code

Minification



```
webpackJsonp([1,5],{"/fcW":function(l,n){function u(l){throw new Error("Cannot find module '"+l+"'.")}u.keys=function(){return[]},
u.resolve=u,l.exports=u,u.id="/fcW"},1:function(l,n,u){l.exports=u("x35b")},"1A80":function(l,n,u){"use strict";function t(l)
{return m._24(0,[(l()(),m._25(0,null,null,2,"a",[["class","navbar-brand"],["routerLink","/registrations"]],[[1,"target",0],[8,
"href",4]],[[null,"click"]],function(l,n,u){var t=!0;if("click"===n){t=!1!==m._26(l,1).onClick(u.button,u.ctrlKey,u.metaKey)&&t}
return t},null,null)),m._27(335872,null,0,g.y,[g.j,g.v,h.f],{routerLink:[0,"routerLink"]},null),(l()(),m._28(null,["Swiss
Microsoft CoWorking Space"]))],function(l,n){l(n,1,0,"/registrations")},function(l,n){l(n,0,0,m._26(n,1).target,m._26(n,1).href)})
}function e(l){return m._24(0,[(l()(),m._25(0,null,null,2,"a",[["class","navbar-brand"],["routerLink","/login"]],[[1,"target",0],
[8,"href",4]],[[null,"click"]],function(l,n,u){var t=!0;if("click"===n){t=!1!==m._26(l,1).onClick(u.button,u.ctrlKey,u.metaKey)&&
t}return t},null,null)),m._27(335872,null,0,g.y,[g.j,g.v,h.f],{routerLink:[0,"routerLink"]},null),(l()(),m._28(null,["Swiss
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function i(l){return m._24(0,[(l()(),m._25(0,null,null,9,"div",[["style","color: white;\n        padding: 15px 50px 5px 50px;\n
     float: right;\n        font-size: 12px;"]],null,null,null,null,null)),(l()(),m._28(null,[" Last access:\n      "])),(l()(),
m._25(0,null,null,2,"time",[],null,null,null,null,null)),(l()(),m._28(null,["",""])),m._29(2),(l()(),m._28(null,["   "])),(l()(),
m._25(0,null,null,2,"a",[["class","btn btn-danger square-btn-adjust"],["routerLink","/logout"]],[[1,"target",0],[8,"href",4]],[
[null,"click"]],function(l,n,u){var t=!0,e=l.component;if("click"===n){t=!1!==m._26(l,7).onClick(u.button,u.ctrlKey,u.metaKey)&&t}
if("click"===n){t=!1!==e.authService.logout()&&t}return t},null,null)),m._27(335872,null,0,g.y,[g.j,g.v,h.f],{routerLink:[0,
"routerLink"]},null),(l()(),m._28(null,["Logout"])),(l()(),m._28(null,["\n    "]))],function(l,n){l(n,7,0,"/logout")},function(l,
n){var u=n.component;l(n,3,0,m._30(n,3,0,l(n,4,0,m._26(n.parent,0),u.authService.lastAccess,"dd.MM.yy HH:mm"))),l(n,6,0,m._26(n,7)
.target,m._26(n,7).href)})}function r(l){return m._24(0,[(l()(),m._25(0,null,null,8,"li",[],null,null,null,null,null)),(l()(),
```
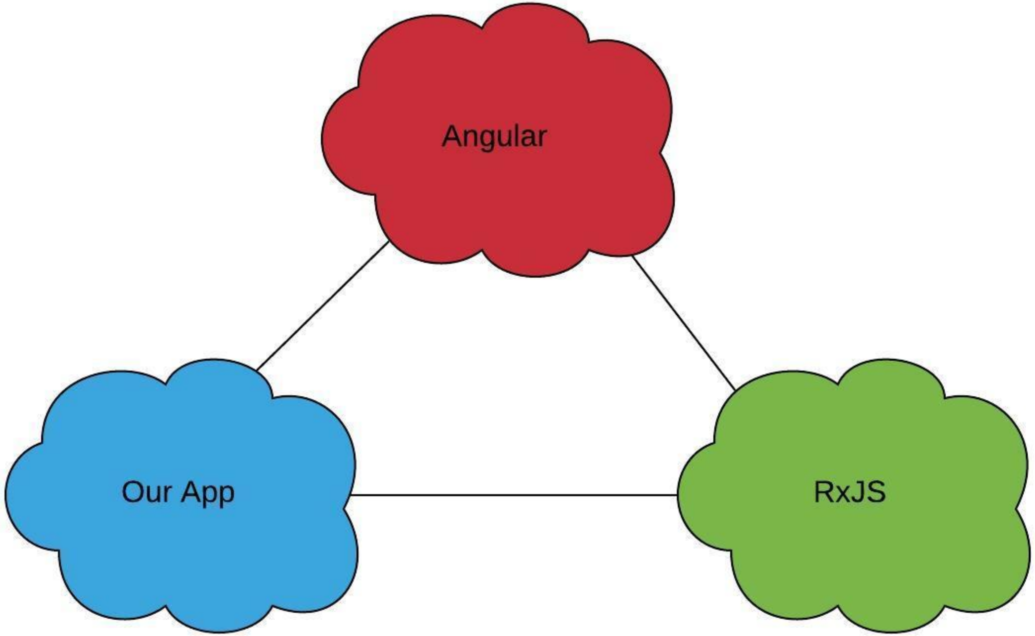

Build for production

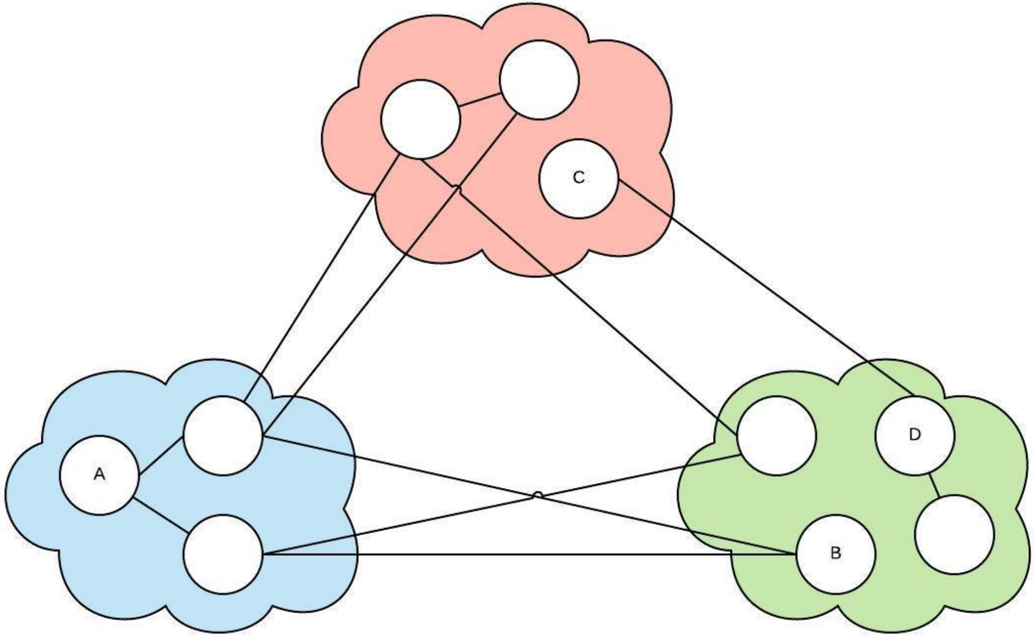
```
ng build --prod                             #prod build
```

- **AOT** compilation
- **Minification**: Comments, line breakings are removed and variables are shorten
- **(limited) Tree-Shaking:** Drop unused module export code

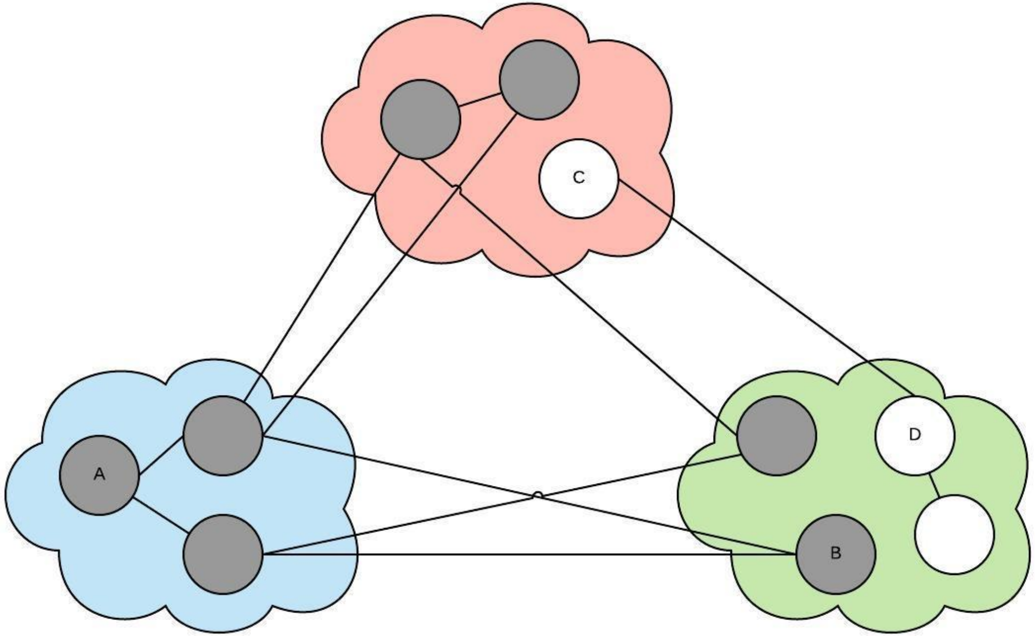
Tree-Shaking



Tree-Shaking



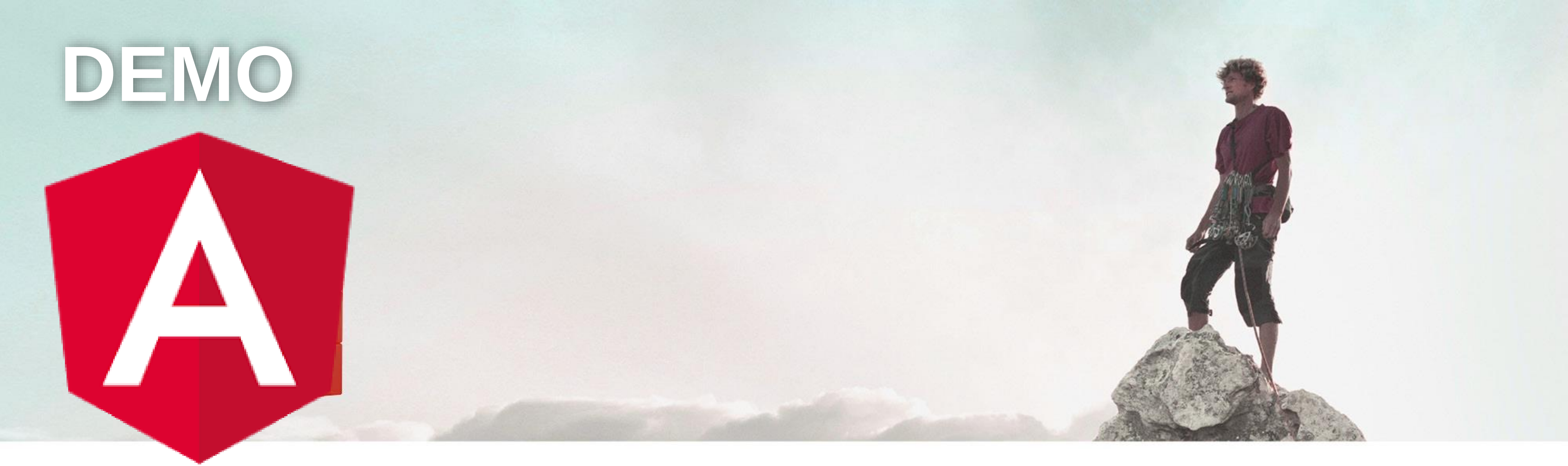
Tree-Shaking



Bundles – Output of build

main.bundle.js	Source from our app
vendor.bundle.js	External libraries (Angular, RxJS)
inline.bundle.js	Logic for loading our bundles
styles.bundle.js	CSS Styles

DEMO



JIT

AOT

SourceMap

Preloading Strategy

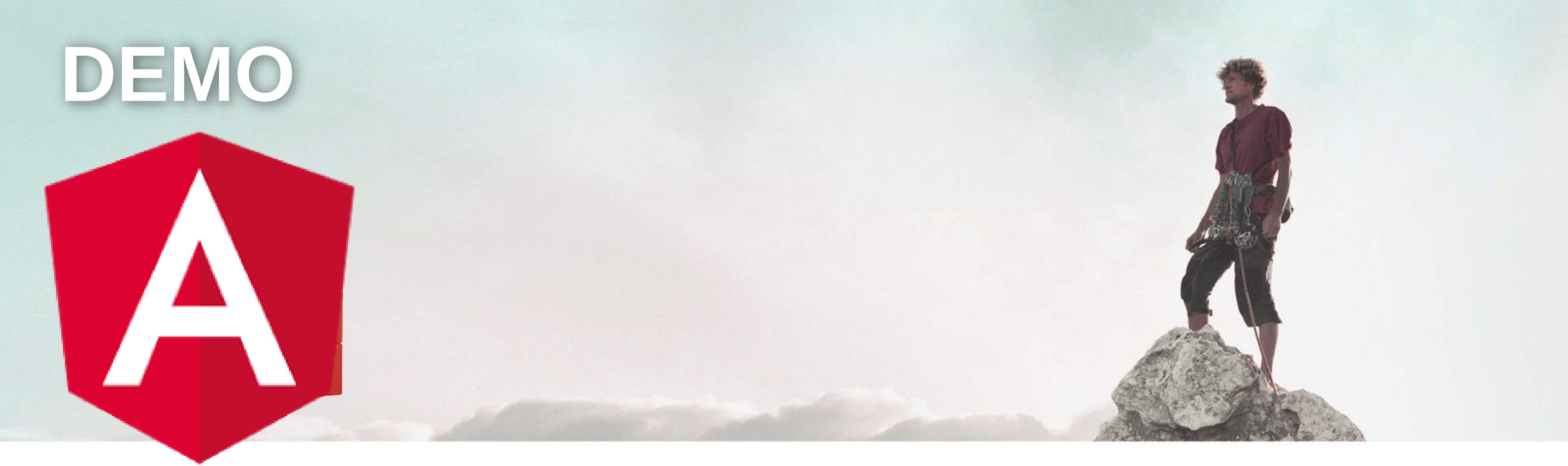
Preloading Strategy

No preloading

Preloading all

Custom

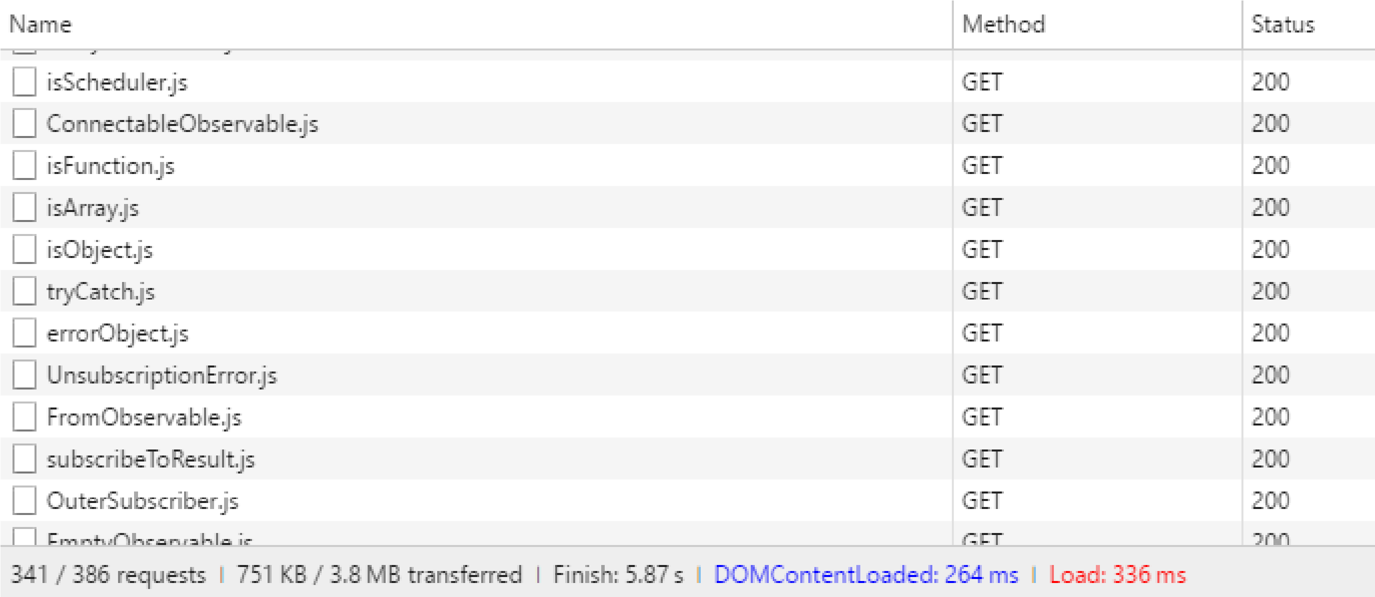
DEMO



Preloading Strategy

Outro

From



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□ tryCatch.js	GET	200
□ errorObject.js	GET	200
□ UnsubscriptionError.js	GET	200
□ FromObservable.js	GET	200
□ subscribeToResult.js	GET	200
□ OuterSubscriber.js	GET	200
□ EmptyObservable.js	GET	200

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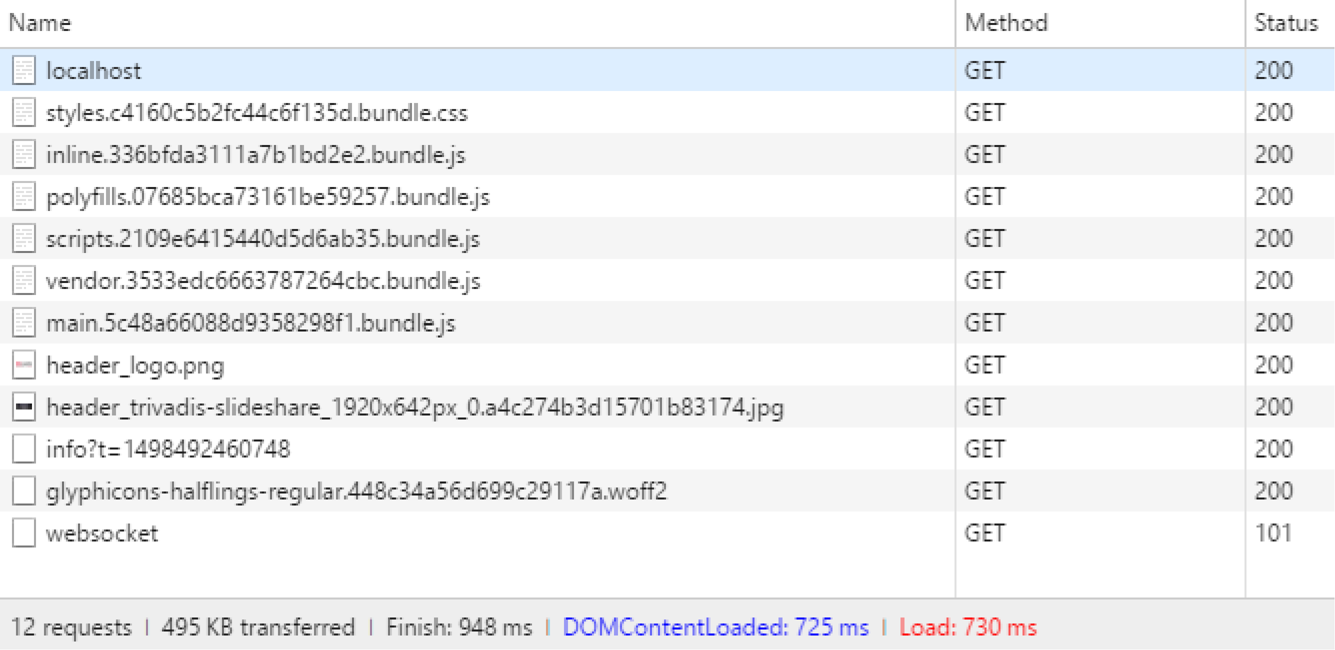
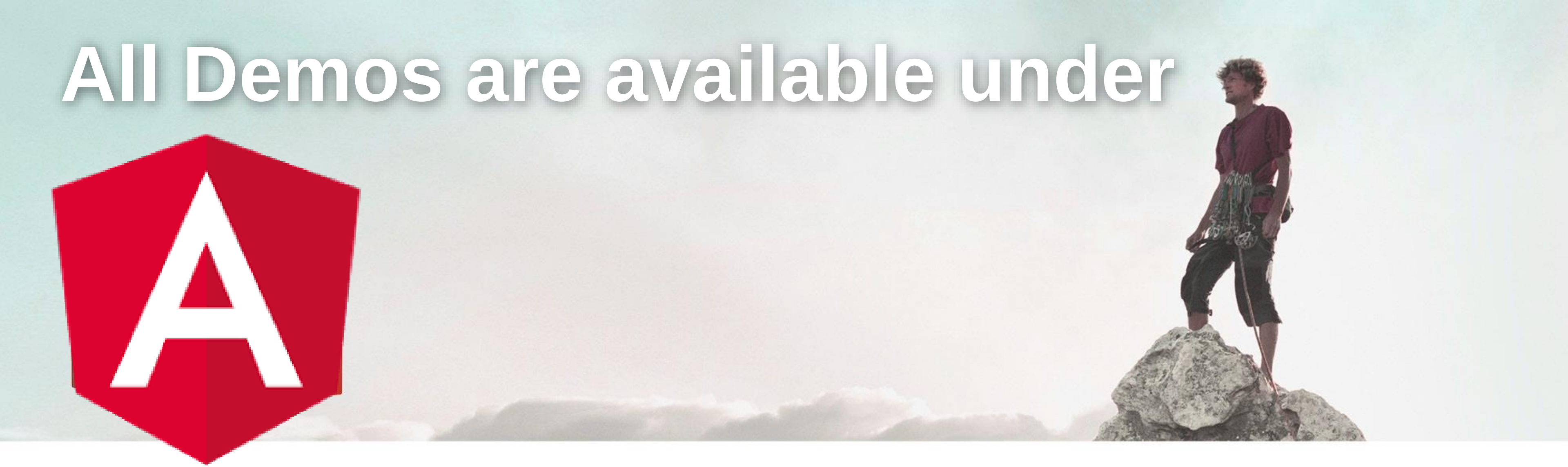
To



Name	Method	Status
localhost	GET	200
styles.c4160c5b2fc44c6f135d.bundle.css	GET	200
inline.336bfda3111a7b1bd2e2.bundle.js	GET	200
polyfills.07685bca73161be59257.bundle.js	GET	200
scripts.2109e6415440d5d6ab35.bundle.js	GET	200
vendor.3533edc6663787264cbc.bundle.js	GET	200
main.5c48a66088d9358298f1.bundle.js	GET	200
header_logo.png	GET	200
header_trivadis-slideshare_1920x642px_0.a4c274b3d15701b83174.jpg	GET	200
info?t=1498492460748	GET	200
glyphicons-halflings-regular.448c34a56d699c29117a.woff2	GET	200
websocket	GET	101

12 requests | 495 KB transferred | Finish: 948 ms | DOMContentLoaded: 725 ms | Load: 730 ms

All Demos are available under



github.com/gassmannT/AngularDeployment/

Next @DWX

Angular im Enterprise-Umfeld
Mit Manfred Steyer im Raum Hongkong

Vielen Dank

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