

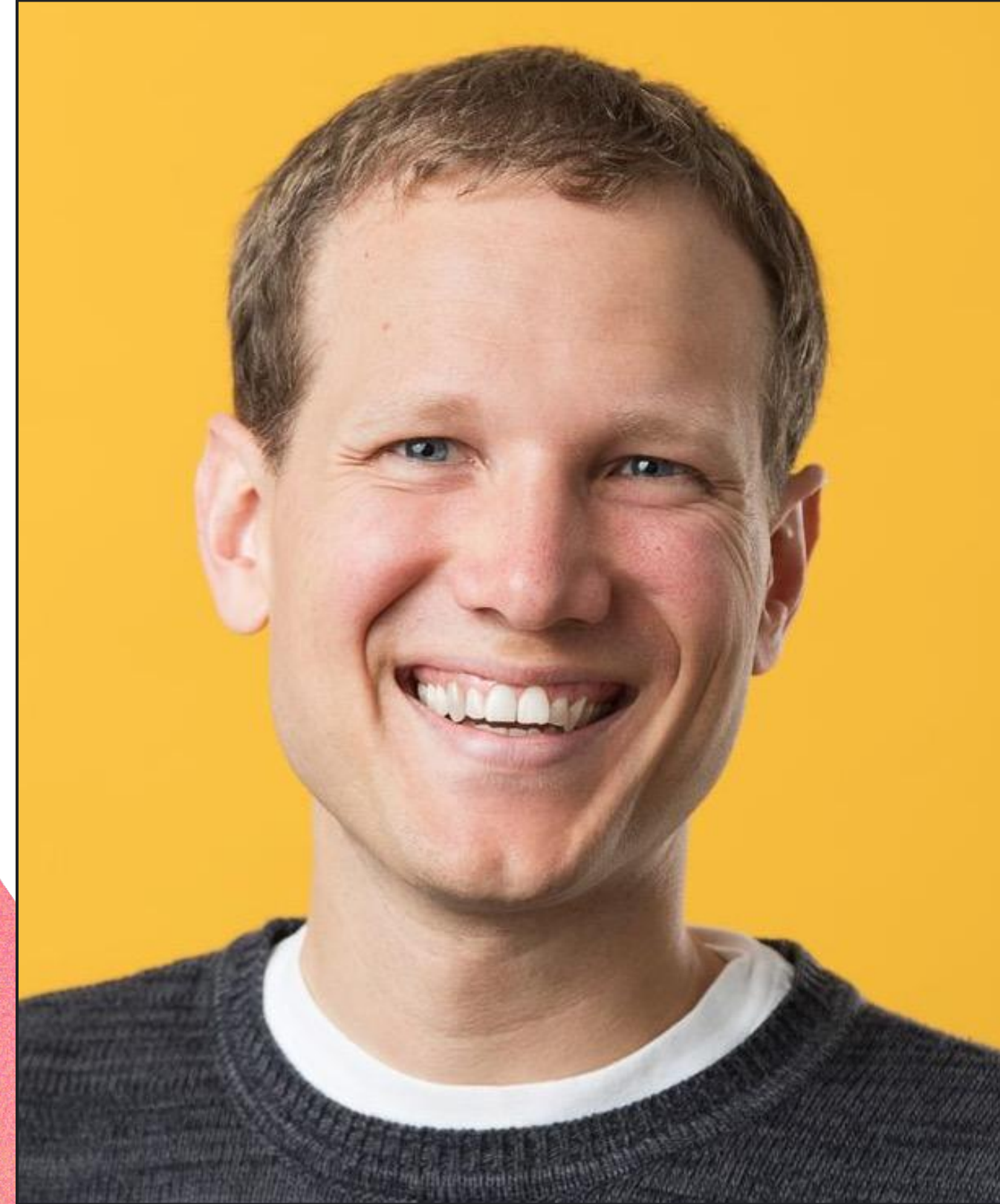
Google Cloud

Next '24

How to deploy all the JavaScript frameworks to Cloud Run

Luke Schlangen

Developer Advocate,
Google Cloud



Rules for today

➔ Success means a public URL like `https://my-app.a.run.app/`

Rules for today

- ➔ Success means a public URL like `https://my-app.a.run.app/`
- ➔ No previously-written code

Agenda



- 01 Angular SSR
- 02 Nuxt.js
- 03 Next.js
- 04 Remix
- 05 SvelteKit
- 06 SolidStart
- 07 Astro
- 08 Qwik

JavaScript Server Side Rendering Frameworks



Framework Built on

Angular SSR

Angular

Nuxt.js

Vue.js

Next.js

React

Remix

React

SvelteKit

Svelte

SolidStart

Solid.js

Astro

Astro

Qwik

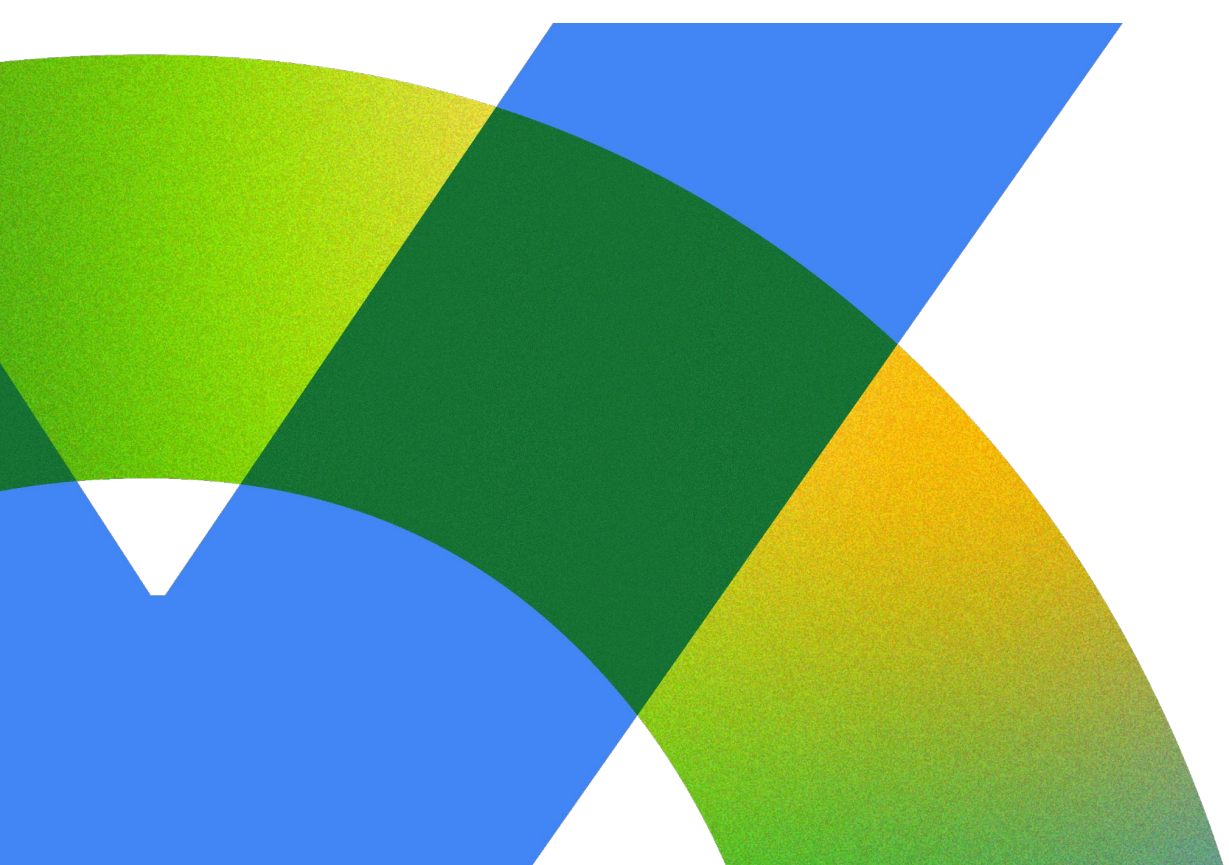
Qwik

Quick Note

**Before hosting static sites on Cloud Run,
you should take a look at Firebase Hosting**



JavaScript Server Side Rendering Frameworks



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Cloud Shell

shell.cloud.google.com



Rules for today

- ➔ Success means a public URL like `https://my-app.a.run.app/`
- ➔ No previously-written code
- ➔ Fresh Cloud Shell environment - gcloud CLI, git, Node.js, and npm

Cloud Shell Setup

- ➔ `gcloud config set run/region us-central1`
- ➔ `gcloud config set project my-project-name`
- ➔ `git config --global user.email "you@example.com"`
- ➔ `git config --global user.name "Your Name"`

Angular SSR

(Angular)

→ `npm install --global @angular/cli@latest`

→ `ng new --ssr angular-app`

→ `cd angular-app`

→ `gcloud run deploy --allow-unauthenticated`

Angular SSR

(Angular)

➔ `npx -p @angular/cli@latest ng new --ssr angular-app`

➔ `cd angular-app`

➔ `gcloud run deploy --allow-unauthenticated`

Angular SSR

(Angular)

➔ `npm create @angular@latest angular-app -- --ssr`

➔ `cd angular-app`

➔ `gcloud run deploy --allow-unauthenticated`

Angular SSR

(Angular)

➔ `npm init @angular@latest angular-app -- --ssr`

➔ `cd angular-app`

➔ `gcloud run deploy --allow-unauthenticated`

Angular SSR

(Angular)

➔ `npm init @angular angular-app -- --ssr`

➔ `cd angular-app`

➔ `gcloud run deploy --allow-unauthenticated`

Rules for today

- ➔ Success means a public URL like `https://my-app.a.run.app/`
- ➔ No previously-written code
- ➔ Fresh Cloud Shell environment - gcloud CLI, git, Node.js, and npm
- ➔ Shortest command possible

Angular SSR

(Angular)

➔ `npm init @angular angular-app -- --ssr`

➔ `cd angular-app`

➔ `gcloud run deploy --allow-unauthenticated`

Rules for today

- ➔ Success means a public URL like `https://my-app.a.run.app/`
- ➔ No previously-written code
- ➔ Fresh Cloud Shell environment - gcloud CLI, git, Node.js, and npm
- ➔ Shortest command possible
- ➔ Accept the defaults

Angular SSR

(Angular)

➔ `npm init @angular angular-app -- --ssr`

➔ `cd angular-app`

➔ `gcloud run deploy --allow-unauthenticated`

JavaScript Server Side Rendering Frameworks

Framework	Built on
✓ Angular SSR	Angular
Nuxt.js	Vue.js
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Nuxt.js

(Vue.js)

➔ `npx nuxi init nuxt-app`

➔ `cd nuxt-app`

➔ `gcloud run deploy --allow-unauthenticated`

Next.js

(React)



```
npm init next-app nextjs-app
```



```
cd nextjs-app
```



```
gcloud run deploy --allow-unauthenticated
```

Remix

(React)

➔ `npm init remix remix-app`

➔ `cd remix-app`

➔ `gcloud run deploy --allow-unauthenticated`

JavaScript Server Side Rendering Frameworks

Framework Built on

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Deployment process



Deployment process



Buildpacks

- Detect the JavaScript application
- Install the dependencies
- Build the application
- Decide how the application will start

Angular SSR package.json

```
{  
  "name": "angular-app",  
  "version": "0.0.0",  
  "scripts": {  
    "ng": "ng",  
    "start": "ng serve",  
    "build": "ng build",  
    "watch": "ng build --watch --configuration development",  
    "test": "ng test",  
    "serve:ssr:angular-app": "node dist/angular-app/server/server.mjs"  
  },  
}
```

Buildpacks (Angular)

```
func ExtractAngularStartCommand(pjs *PackageJSON) string {  
    for k, v := range pjs.Scripts {  
        if strings.HasPrefix(k, "serve:ssr:") {  
            return v  
        }  
    }  
    return ""  
}
```

<https://github.com/GoogleCloudPlatform/buildpacks/blob/main/pkg/nodejs/angular.go>

Nuxt.js package.json

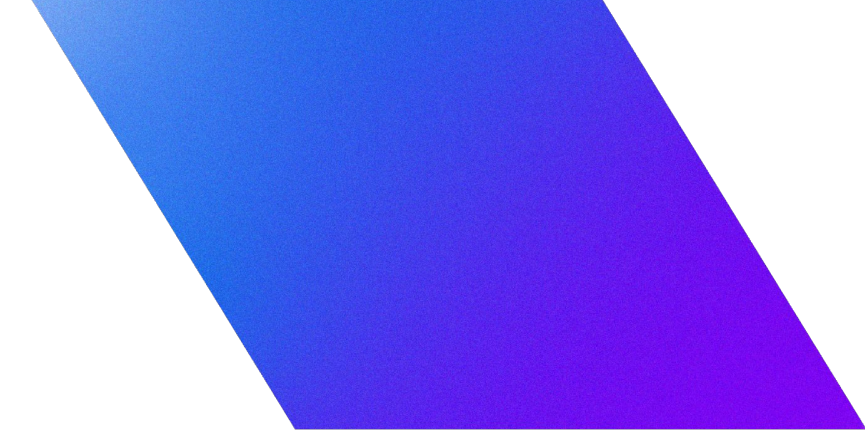
```
{  
  "name": "nuxt-app",  
  "private": true,  
  "type": "module",  
  "scripts": {  
    "build": "nuxt build",  
    "dev": "nuxt dev",  
    "generate": "nuxt generate",  
    "preview": "nuxt preview",  
    "postinstall": "nuxt prepare"  
  },  
}
```

Buildpacks (Nuxt.js)

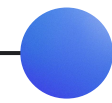
```
func NuxtStartCommand(ctx *gcp.Context) ([]string, error) {
    configExists, err := ctx.FileExists(ctx.ApplicationRoot(), "nuxt.config.ts")
    if err != nil {
        return nil, err
    }
    serverExists, err := ctx.FileExists(ctx.ApplicationRoot(), ".output/server/index.mjs")
    if err != nil {
        return nil, err
    }
    if configExists && serverExists {
        return []string{"node", ".output/server/index.mjs"}, nil
    }
    return nil, nil
}
```

<https://github.com/GoogleCloudPlatform/buildpacks/blob/main/pkg/nodejs/nuxt.go>

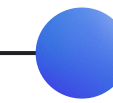
Deployment process



Cloud Build
Buildpacks



Artifact Registry



Cloud Run

JavaScript Server Side Rendering Frameworks

Framework Built on

✓ Angular SSR	Angular
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SvelteKit	Svelte
SolidStart	Solid.js
Astro	Astro
Qwik	Qwik

SvelteKit

(Svelte)

→ `npm init svelte sveltekit-app`

→ `cd sveltekit-app`

→ `gcloud run deploy --allow-unauthenticated`

SolidStart

(Solid.js)

➔ `npm init solid`

➔ `cd solid-project`

➔ `gcloud run deploy --allow-unauthenticated`

Astro (SSR)

- `npm init astro astro-app`
- `cd astro-app`
- `npx astro add node`
- `npm pkg set scripts.start="HOST=0.0.0.0 node ./dist/server/entry.mjs"`
- `gcloud run deploy --allow-unauthenticated`

Astro (SSR)

- `npm init astro astro-app`
- `cd astro-app`
- `npx astro add node`
- `npm pkg set scripts.start="HOST=0.0.0.0 node ./dist/server/entry.mjs"`
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- `npm init astro astro-app`
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Astro (SSR)

- `npm init astro astro-app`
- `cd astro-app`
- `npx astro add node`
- `npm pkg set scripts.start="HOST=0.0.0.0 node ./dist/server/entry.mjs"`
- `gcloud run deploy --allow-unauthenticated`


```
{
  "name": "astro-app",
  "type": "module",
  "version": "0.0.1",
  "scripts": {
    "dev": "astro dev",
    "start": "astro dev",
    "build": "astro check && astro build",
    "preview": "astro preview",
    "astro": "astro"
  },
  "dependencies": {
    "@astrojs/check": "^0.5.9",
    "@astrojs/node": "^8.2.3",
    "astro": "^4.5.4",
    "typescript": "^5.4.2"
  }
}
```

package.json

Before `npm pkg set scripts.start`

Buildpacks (Node.js)

```
func DefaultStartCommand(ctx *gcp.Context, pjs *PackageJSON) ([]string, error) {  
    if pjs == nil {  
        return []string{"node", "index.js"}, nil  
    }  
    if _, ok := pjs.Scripts["start"]; ok {  
        return []string{"npm", "run", "start"}, nil  
    }  
}
```

<https://github.com/GoogleCloudPlatform/buildpacks/blob/main/pkg/nodejs/npm.go>

Buildpacks (Node.js)

```
func DefaultStartCommand(ctx *gcp.Context, pjs *PackageJSON) ([]string, error) {  
    if pjs == nil {  
        return []string{"node", "index.js"}, nil  
    }  
    if _, ok := pjs.Scripts["start"]; ok {  
        return []string{"npm", "run", "start"}, nil  
    }  
}
```

<https://github.com/GoogleCloudPlatform/buildpacks/blob/main/pkg/nodejs/npm.go>

```
{  
  "name": "astro-app",  
  "type": "module",  
  "version": "0.0.1",  
  "scripts": {  
    "dev": "astro dev",  
    "start": "astro dev",  
    "build": "astro check && astro build",  
    "preview": "astro preview",  
    "astro": "astro"  
  },  
  "dependencies": {  
    "@astrojs/check": "^0.5.9",  
    "@astrojs/node": "^8.2.3",  
    "astro": "^4.5.4",  
    "typescript": "^5.4.2"  
  }  
}
```

package.json

Before `npm pkg set scripts.start`

```
{  
  "name": "astro-app",  
  "type": "module",  
  "version": "0.0.1",  
  "scripts": {  
    "dev": "astro dev",  
    "start": "astro dev",  
    "build": "astro check && astro build",  
    "preview": "astro preview",  
    "astro": "astro"  
  },  
  "dependencies": {  
    "@astrojs/check": "^0.5.9",  
    "@astrojs/node": "^8.2.3",  
    "astro": "^4.5.4",  
    "typescript": "^5.4.2"  
  }  
}
```

package.json

Before `npm pkg set scripts.start`

```
{
```

```
  "name": "astro-app",
```

```
  "type": "module",
```

```
  "version": "0.0.1",
```

```
  "scripts": {
```

```
    "dev": "astro dev",
```

```
    "start": "node ./dist/server/entry.mjs",
```

```
    "build": "astro check && astro build",
```

```
    "preview": "astro preview",
```

```
    "astro": "astro"
```

```
  },
```

```
  "dependencies": {
```

```
    "@astrojs/check": "^0.5.9",
```

```
    "@astrojs/node": "^8.2.3",
```

```
    "astro": "^4.5.4",
```

```
    "typescript": "^5.4.2"
```

```
  }
```

```
}
```

package.json

After `npm pkg set scripts.start`

package.json

After `npm pkg set scripts.start`

```
{  
  "name": "astro-app",  
  "type": "module",  
  "version": "0.0.1",  
  "scripts": {  
    "dev": "astro dev",  
    "start": "HOST=0.0.0.0 node ./dist/server/entry.mjs",  
    "build": "astro check && astro build",  
    "preview": "astro preview",  
    "astro": "astro"  
  },  
  "dependencies": {  
    "@astrojs/check": "^0.5.9",  
    "@astrojs/node": "^8.2.3",  
    "astro": "^4.5.4",  
    "typescript": "^5.4.2"  
  }  
}
```

Astro (SSR)

- `npm init astro astro-app`
- `cd astro-app`
- `npx astro add node`
- `npm pkg set scripts.start="HOST=0.0.0.0 node ./dist/server/entry.mjs"`
- `gcloud run deploy --allow-unauthenticated`

Astro (SSR)

- `npm init astro astro-app`
- `cd astro-app`
- `npx astro add node`
- `npm pkg set scripts.start="HOST=0.0.0.0 node ./dist/server/entry.mjs"`
- `gcloud run deploy --allow-unauthenticated`

Qwik

→ `npm init qwik`

→ `cd qwik-app`

→ `npm run qwik add cloud-run`

→ `gcloud run deploy --allow-unauthenticated`

Qwik

→ `npm init qwik`

→ `cd qwik-app`

→ `npm run qwik add cloud-run`

→ `gcloud run deploy --allow-unauthenticated`

Qwik

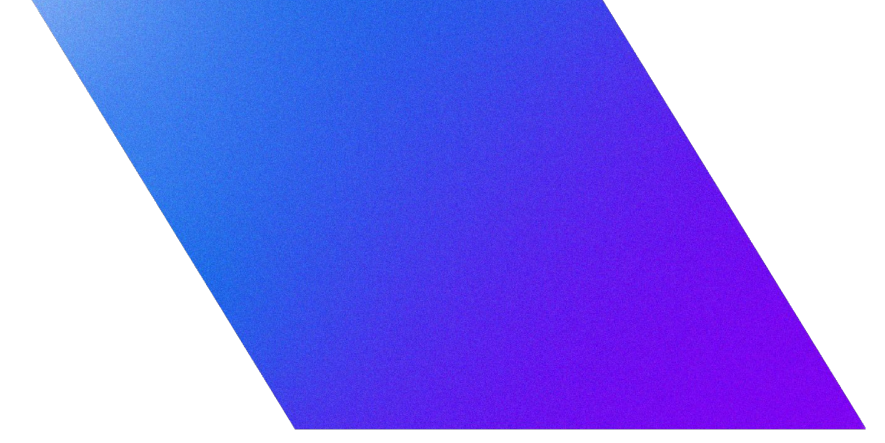
→ `npm init qwik`

→ `cd qwik-app`

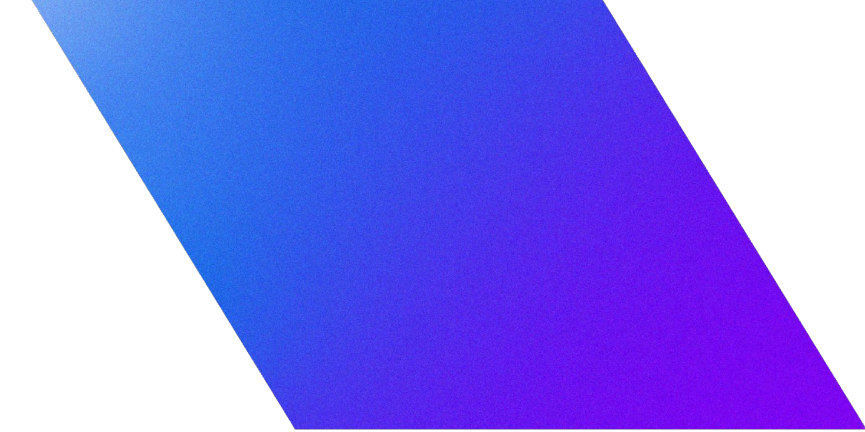
→ `npm run qwik add cloud-run`

→ `gcloud run deploy --allow-unauthenticated`

Deployment process

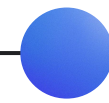


Deployment process

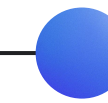


Cloud Build

Buildpacks
Dockerfile



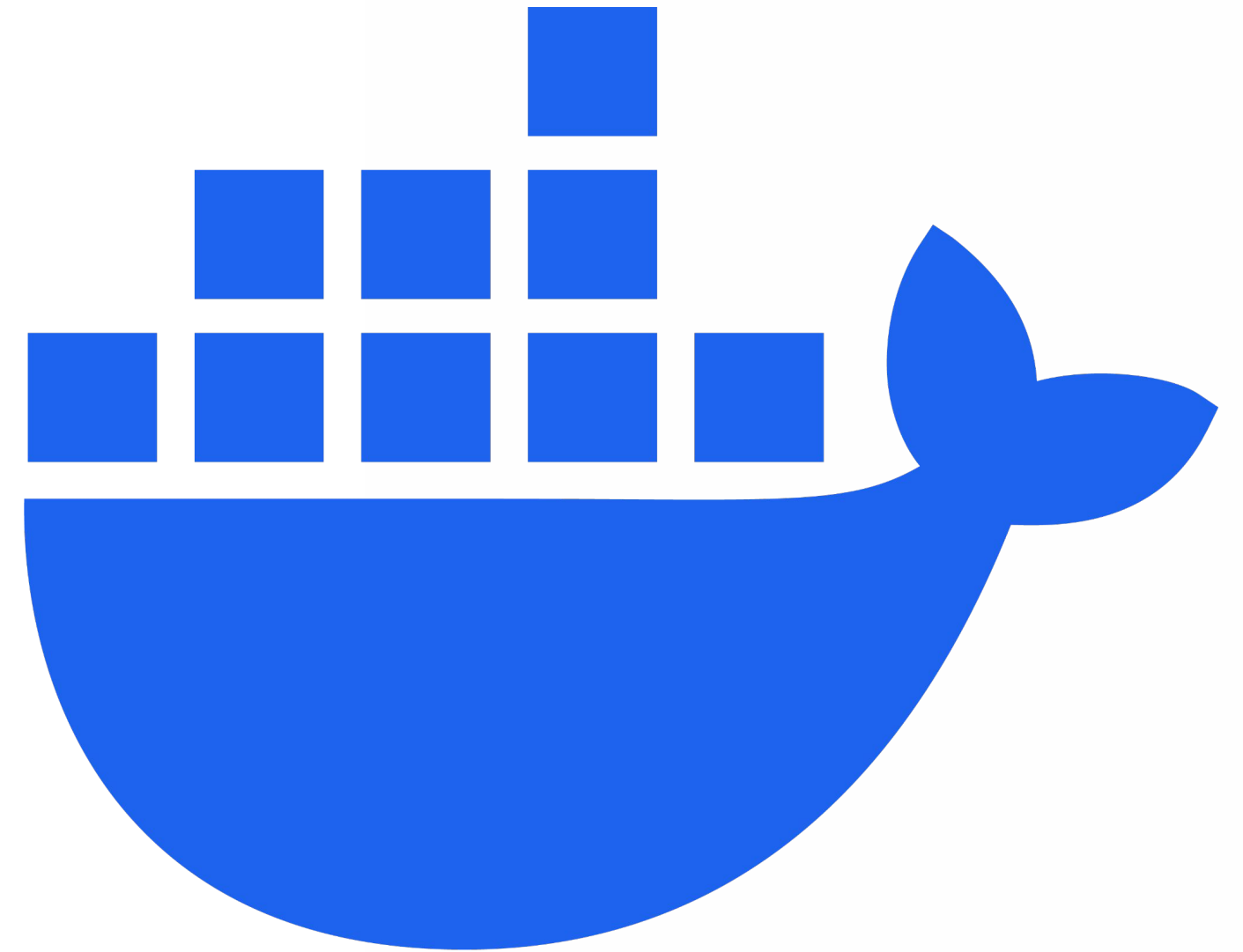
Artifact Registry



Cloud Run



A Dockerfile is a text document that contains all the commands a user could call on the command line to assemble an image.”



Dockerfile

```
FROM node:20
```

```
COPY . /app  
WORKDIR /app
```

```
RUN npm install  
RUN npm run build
```

```
CMD ["npm", "start"]
```


Dockerfile

```
FROM node:20
```

```
COPY . /app  
WORKDIR /app
```

```
RUN npm install  
RUN npm run build
```

```
CMD ["npm", "start"]
```

Qwik

→ `npm init qwik`

→ `cd qwik-app`

→ `npm run qwik add cloud-run`

→ `gcloud run deploy --allow-unauthenticated`

Qwik

→ `npm init qwik`

→ `cd qwik-app`

→ `npm run qwik add cloud-run`

→ `gcloud run deploy --allow-unauthenticated`

We did it!

JavaScript Server Side Rendering Frameworks

Framework

Built on

✓ Angular SSR	Angular
✓ Nuxt.js	Vue.js
✓ Next.js	React
✓ Remix	React
✓ SvelteKit	Svelte
✓ SolidStart	Solid.js
✓ Astro	Astro
✓ Qwik	Qwik

Add a Globally Distributed CDN

Cloud Run Firebase Hosting Integration

➔ `gcloud beta run integrations create \`
`--type=firebase-hosting \`
`--service=SERVICE \`
`--parameters='site-id=SITE_ID'`

Cloud Run Integrations

Firestore Hosting

➔ `gcloud beta run integrations create \`
`--type=firebase-hosting \`
`--service=nuxt-app \`
`--parameters='site-id=my-fancy-nuxt-app'`

Your site will be available at:

`my-fancy-nuxt-app.web.app`

Deploy from Source

Deploy from Source

cloud.console.google.com/run



Cloud Run

Services

[+ CREATE SERVICE](#)

[+ CREATE JOB](#)

SERVICES

JOB

Services

Filter Filter services

<input type="checkbox"/>	<input type="radio"/>	Name	Req/sec	Region	Authentication	Ingre
<input type="checkbox"/>	<input checked="" type="radio"/>	angular-ssr-app	0	us-central1	Allow unauthenticated	All
<input type="checkbox"/>	<input checked="" type="radio"/>	astro-app	0	us-central1	Allow unauthenticated	All
<input type="checkbox"/>	<input checked="" type="radio"/>	docusaurus-app	0	us-central1	Allow unauthenticated	All



Cloud Run



Create service

A service exposes a unique endpoint and automatically scales the underlying infrastructure to handle incoming requests. Service name and region cannot be changed later.



Artifact Registry



Docker Hub



GitHub

Deploy one revision from an existing container image

Continuously deploy from a repository

One last thought

Which is not a JS Framework?

? Backbone

? Knockout

? Ember

? Wasp

? Waku

? Tanstack Start

They all are!

✓ Backbone (2010)

✓ Knockout (2010)

✓ Ember (2011)

✓ Wasp (2019)

✓ Waku (2023)

✓ Tanstack Start (2024)

JavaScript Ecosystem Optimism

This is a good thing.

JavaScript Ecosystem Optimism

**Thank you to the
open source maintainers**

Ready to build what's next?

Tap into **special offers** designed to help you **implement what you learned** at Google Cloud Next.

Scan the code to receive personalized guidance from one of our experts.



Or visit g.co/next/24offers

Thank you