Deploying Web Applications

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Current situation (running on our laptop)

port
80/443

port
27017

Static Files

Web App

What we want to achieve

DNS server(s)

1.2.3.4

Who is example.com?

Static Files

port 80/443

port 27017

Web App

HTTPS

1.2.3.4
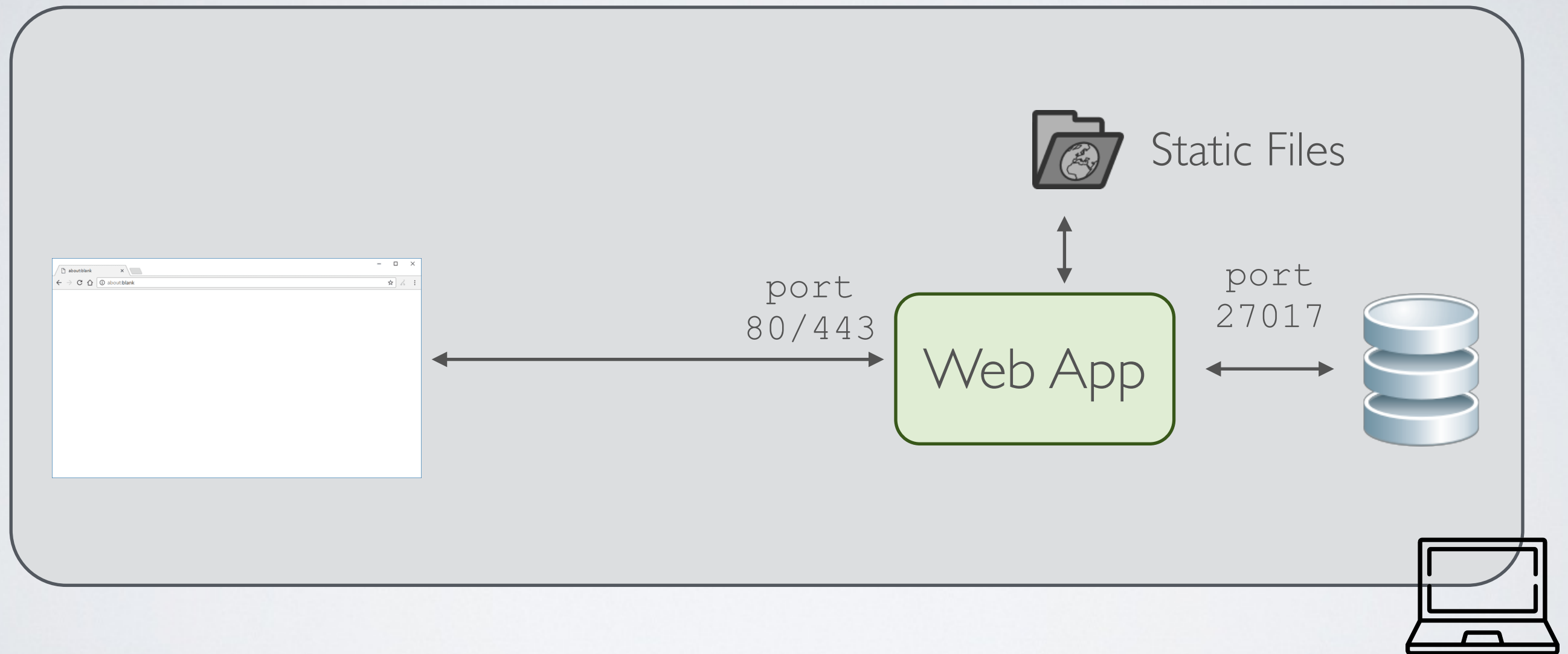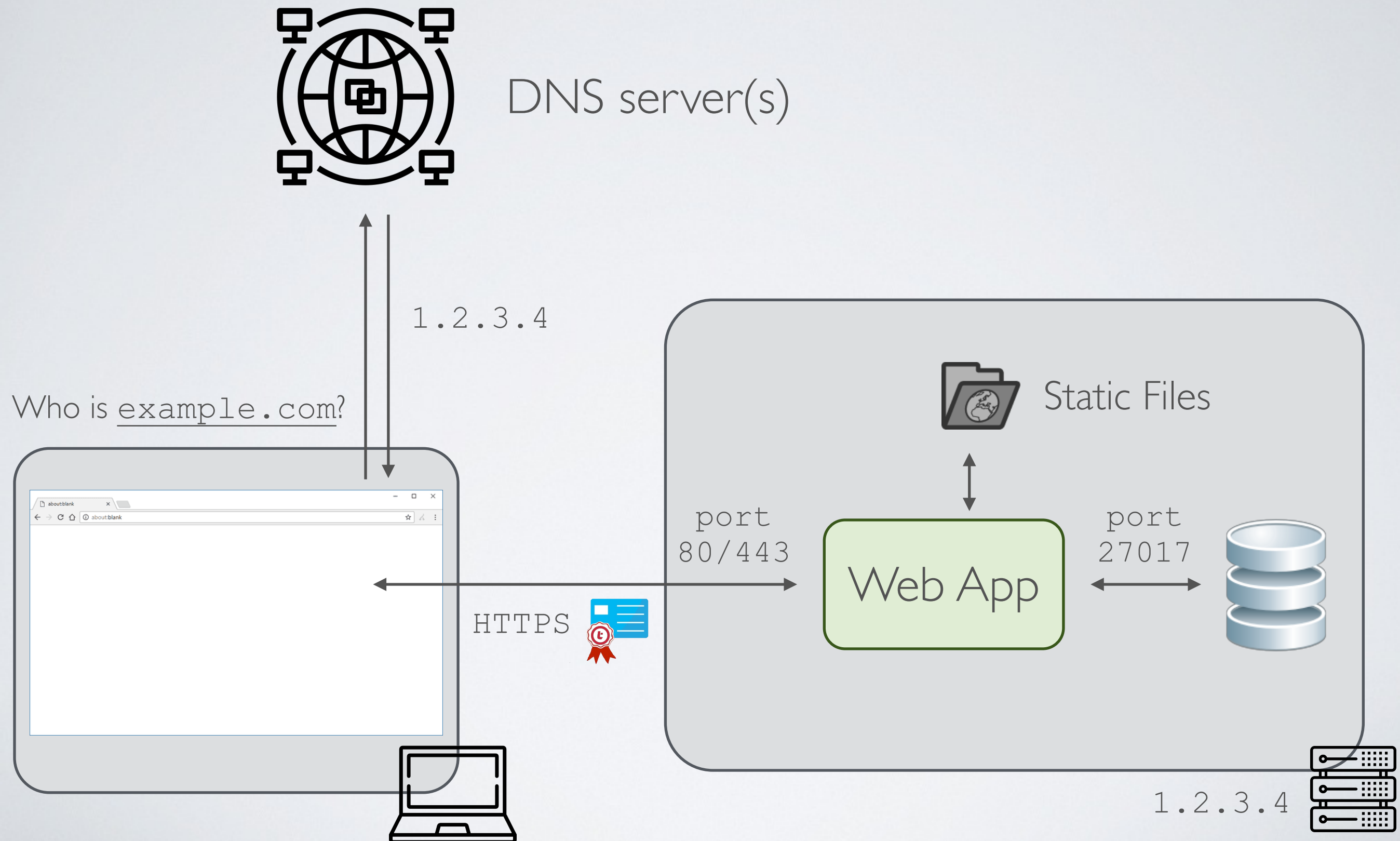
What you need

Web Host	A server to host your website
Domain Name	A url for your website
Valid Certificate	A signed certificate for HTTPS

Web Hosting

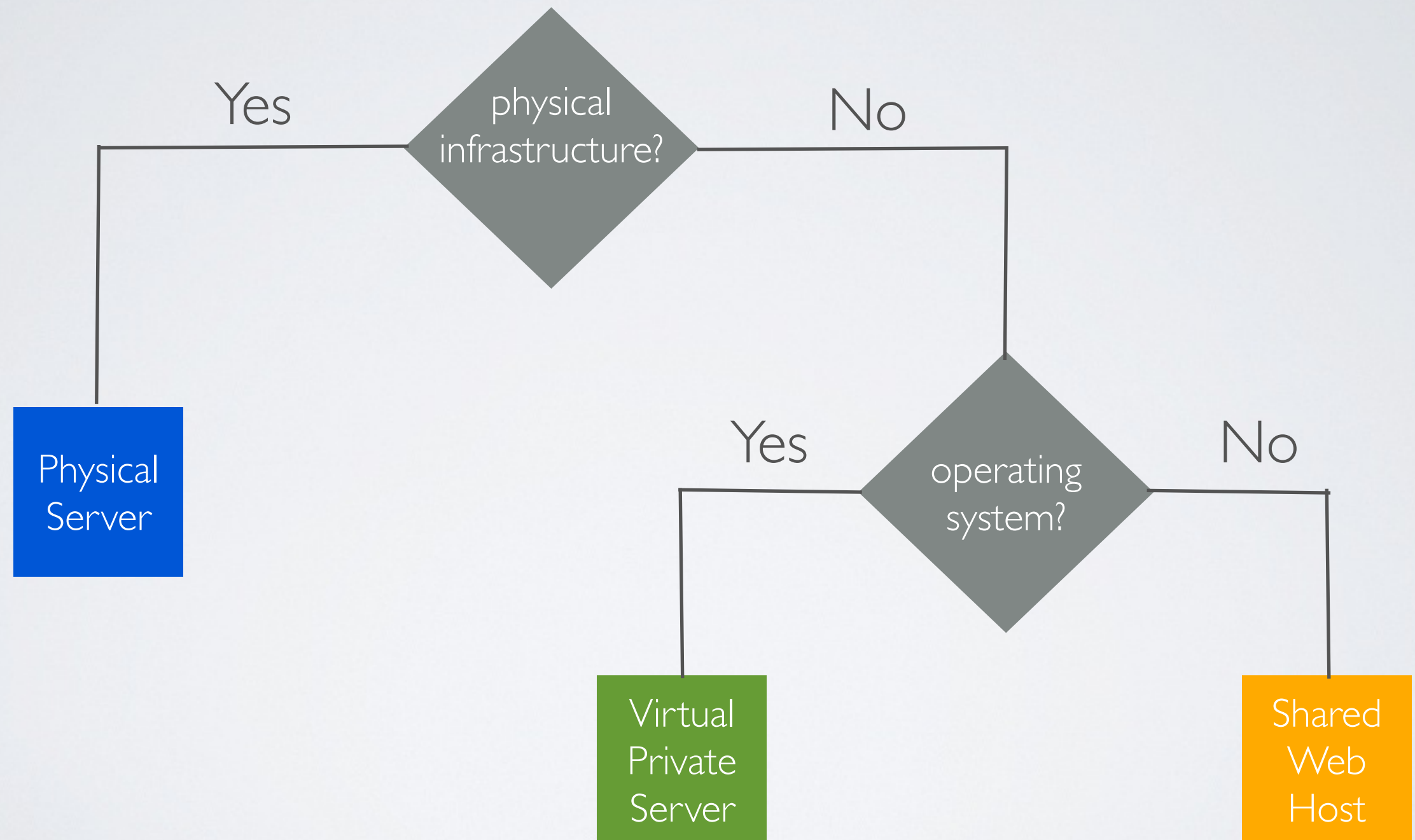# Development Server vs Production Server

➡ Most web frameworks provide a <u>development server</u>

◉ Not all are production ready and might not scale with multiple requests (multi-threading)

Web Hosting

Processing Power	How much CPU and RAM do you need?
Storage	How much space do you need?
Bandwidth	How much traffic do you expect?
Money	How much do you want to spend daily?

Do you want/need to manage ...

Yes — physical infrastructure? — No

Physical Server

Yes — operating system? — No

Virtual Private Server

Shared Web Host

Choosing a hosting solution

Depends on

Specific needs	Specific applications that your web applications uses
Security	What you are comfortable to administer

Dedicated Physical Server

✓ Total Control

◉ Maintenance of the physical infrastructure

◉ Administration of the operating system

◉ Flexibility
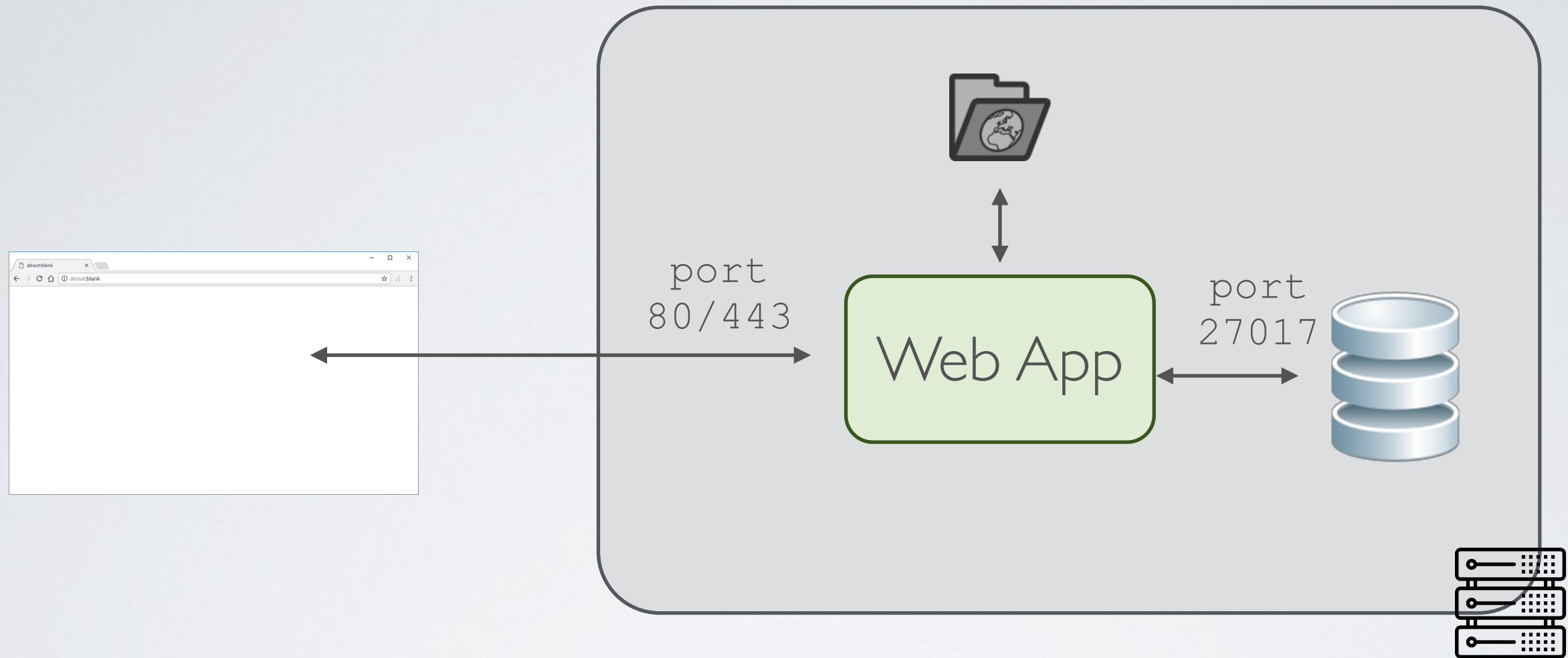
Virtual Private Server (VPS)

◉ Administration of the operating system

✓ No maintenance of the physical infrastructure

✓ Flexibility (pay for what you need)

Shared Web Host

✓ No administration of the operating system

◉ Cost

◉ Not adequate for specific needs
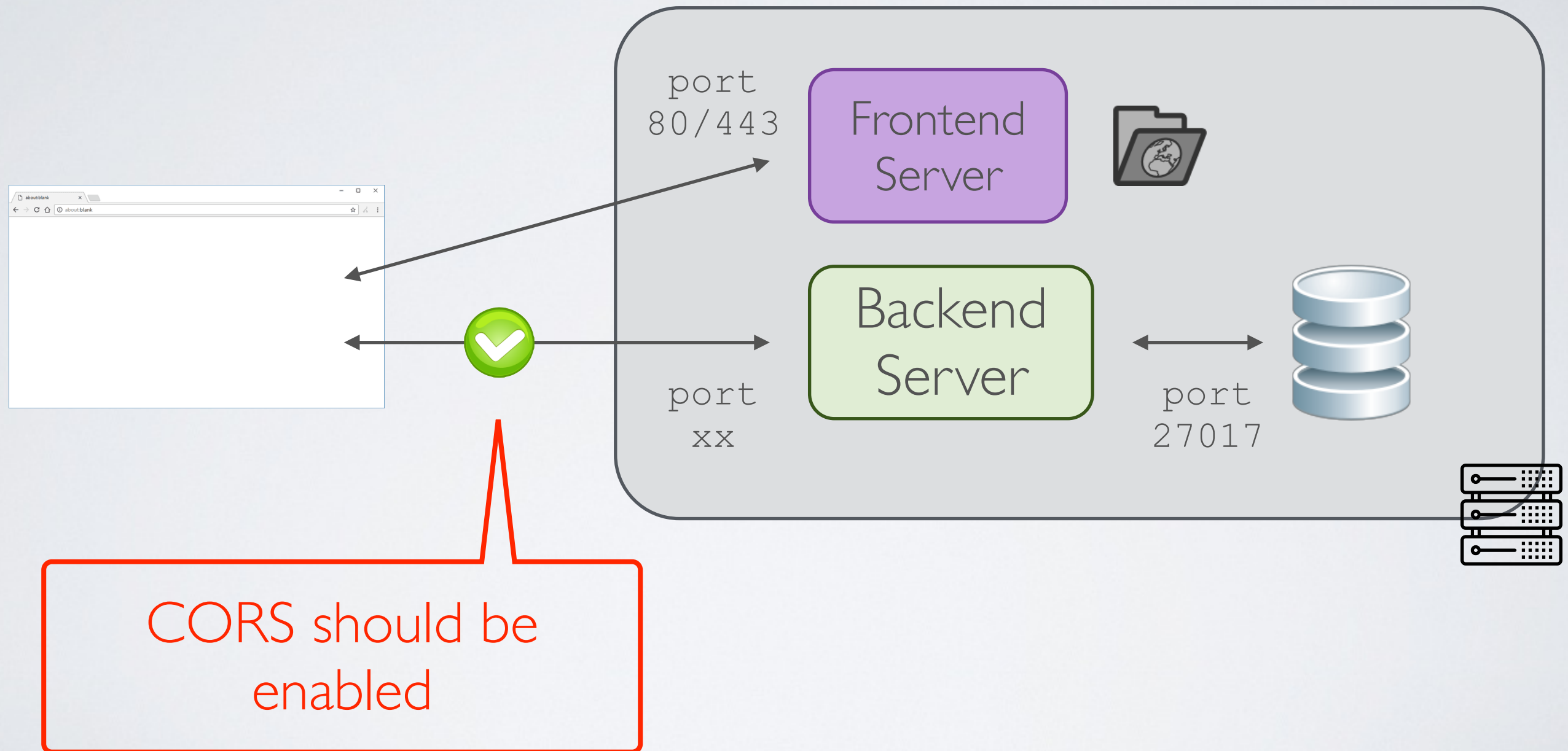
Deploying on physical or virtual server

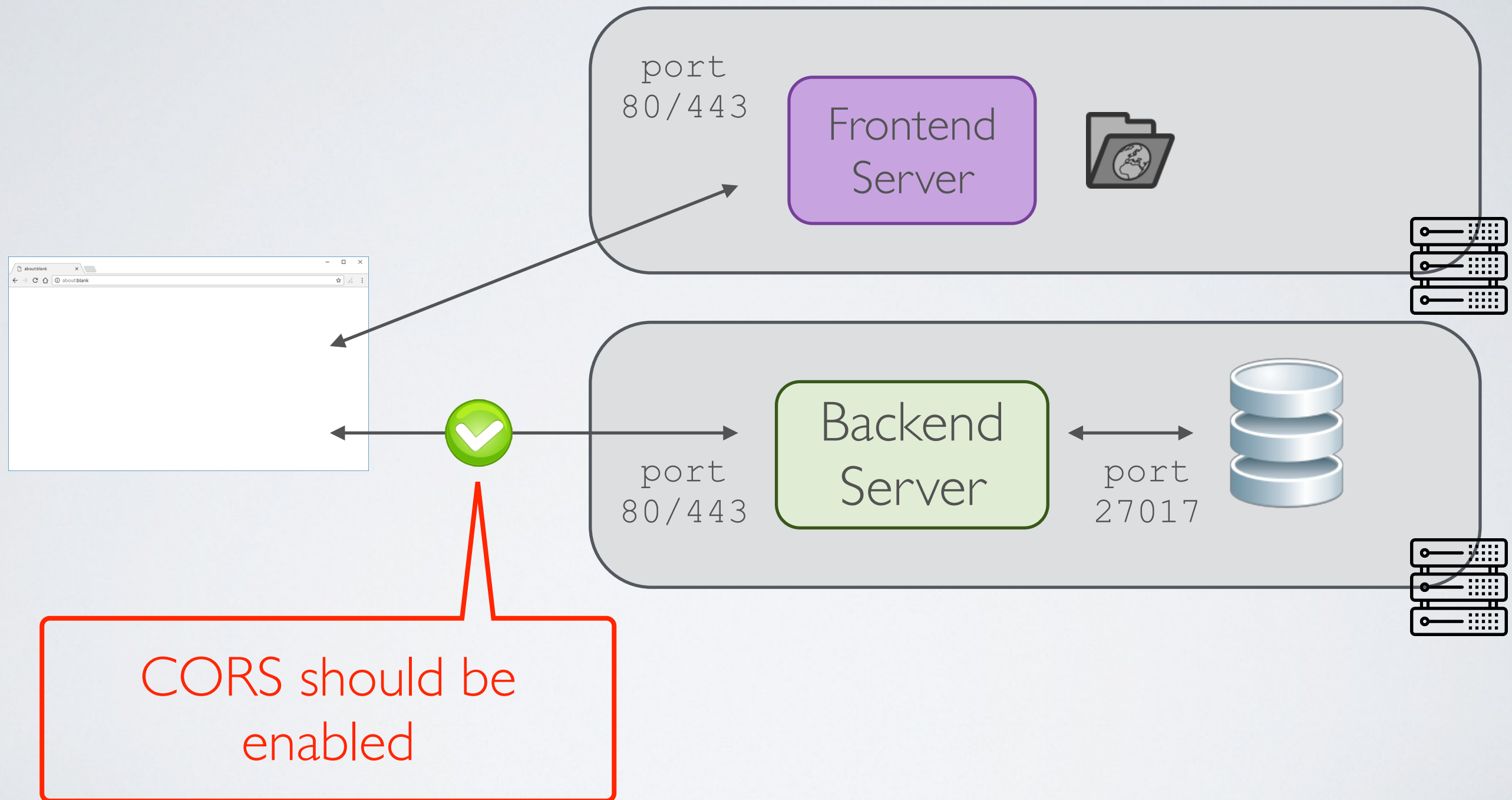# Current situation

port
80/443

Web App

port
27017

Two types of content
- Frontend content : html, css, js, images and so on
- Backend content : database, uploaded files

Two servers on the same host
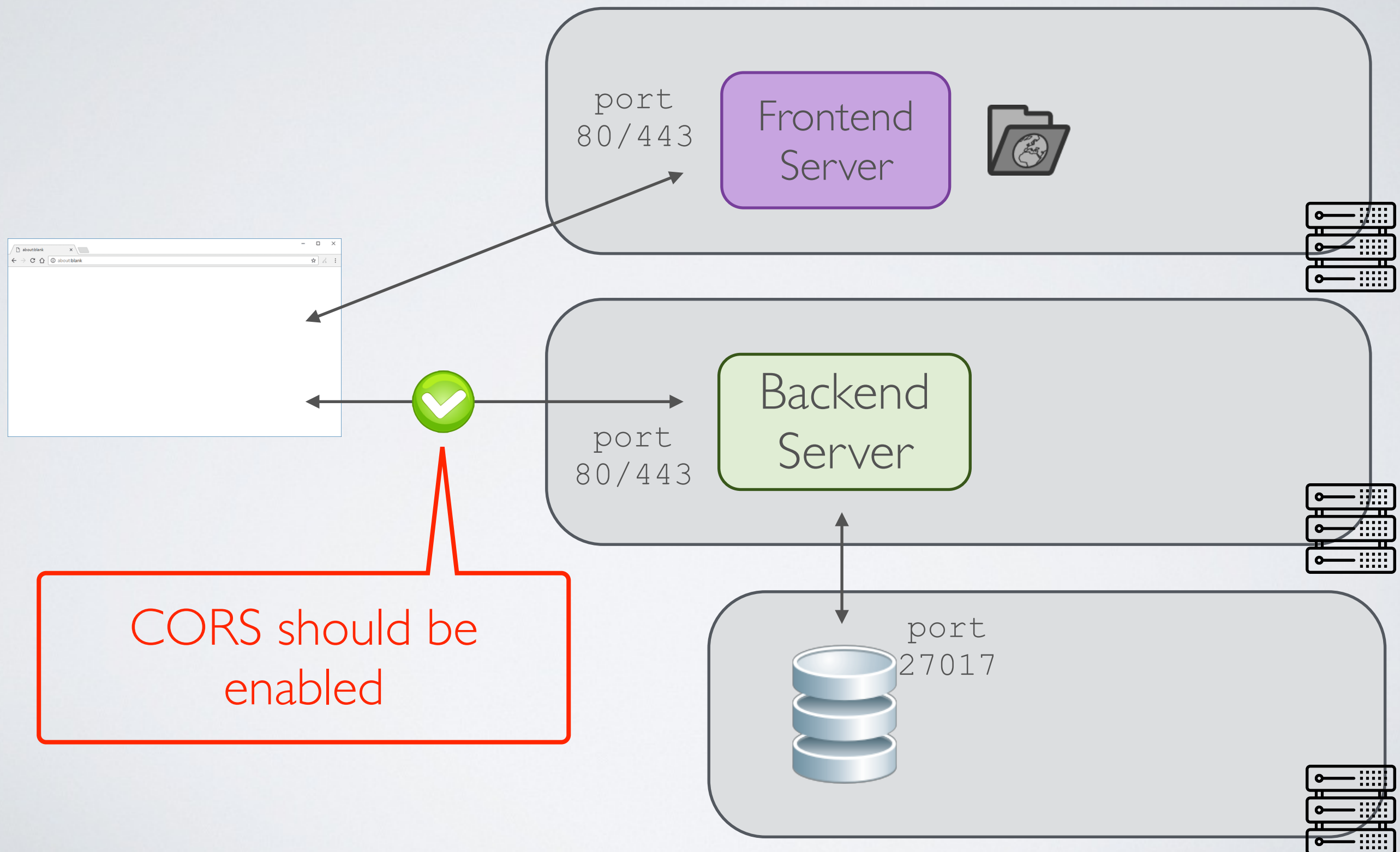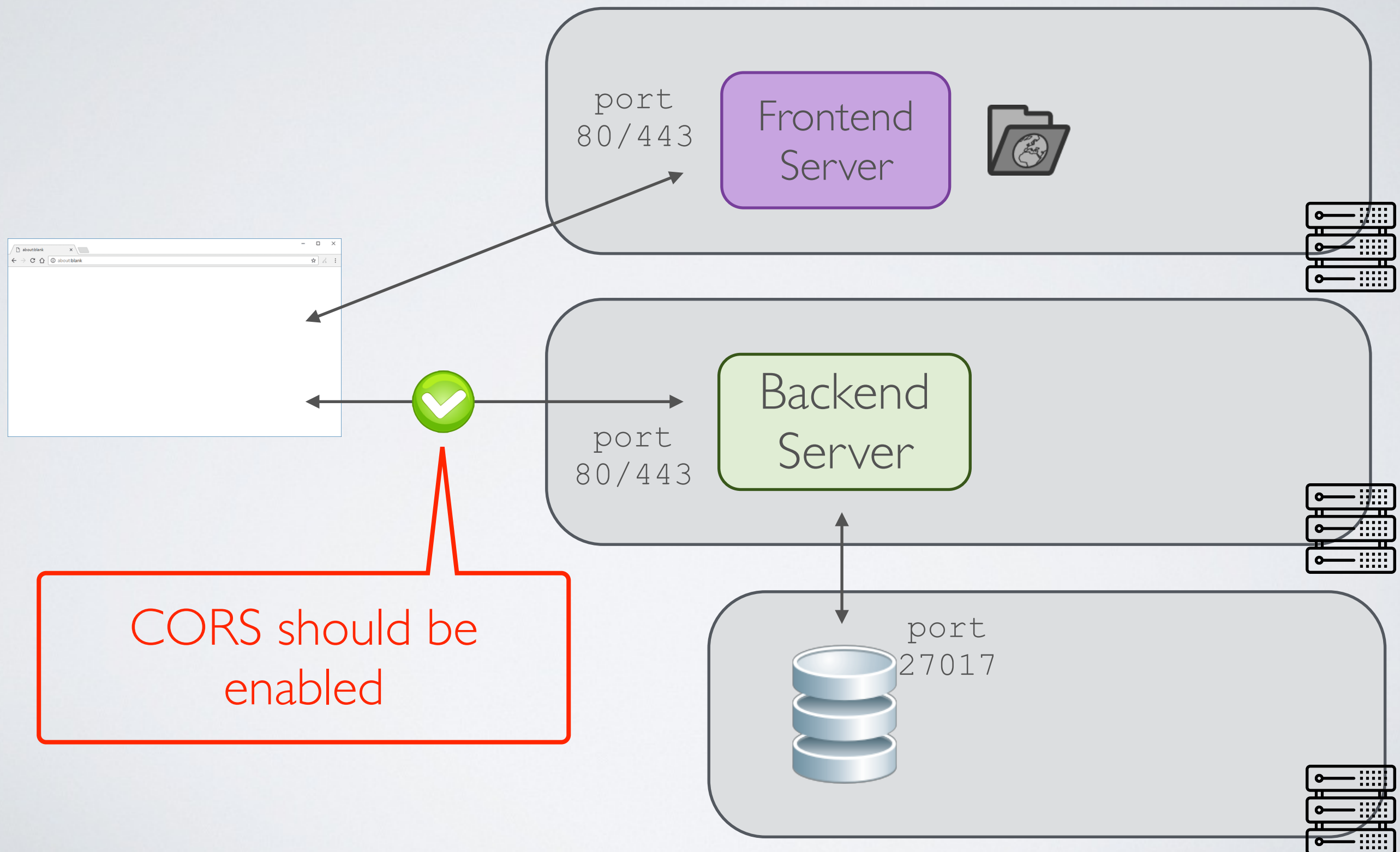
port
80/443

Frontend
Server
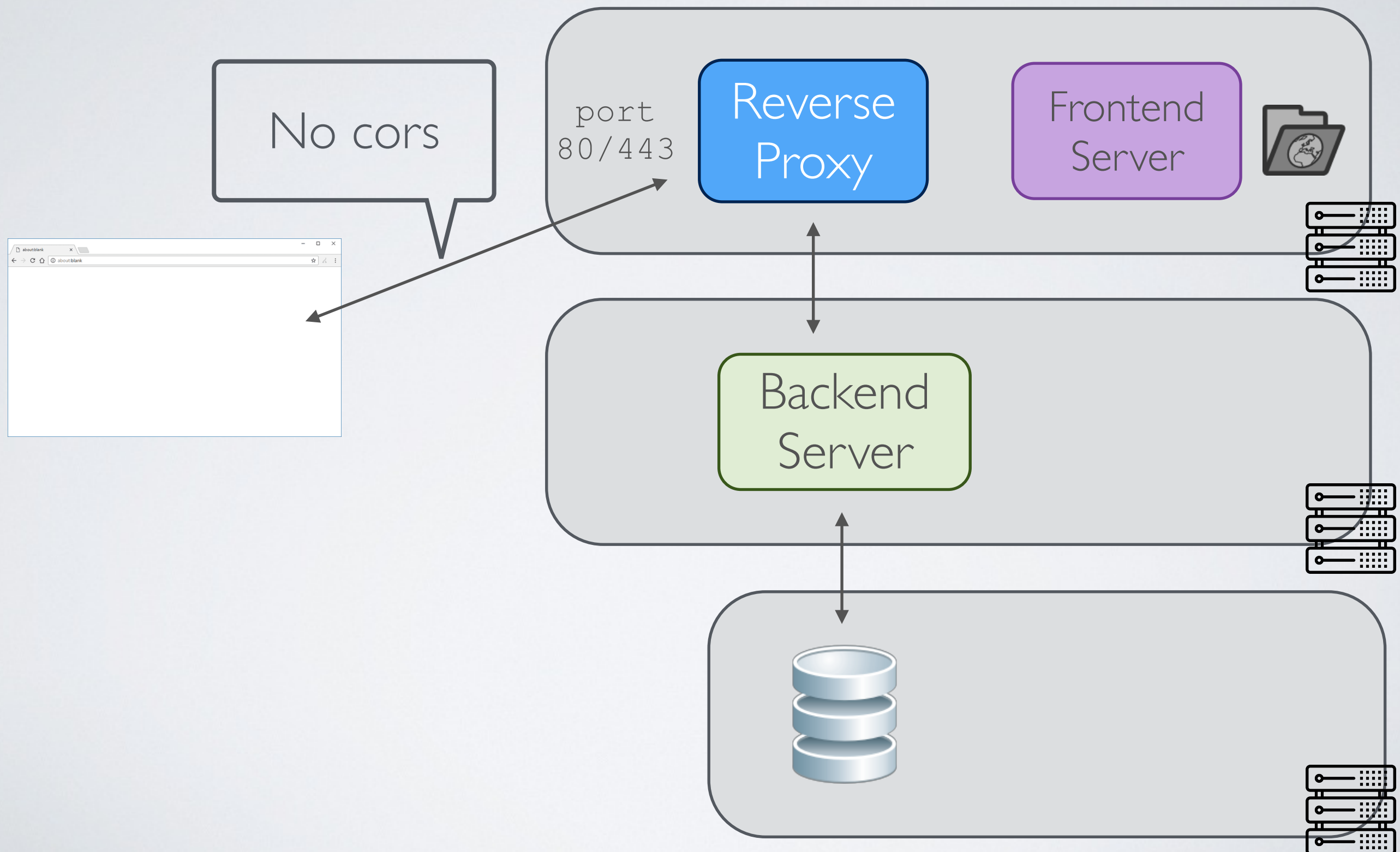
Backend
Server

port
xx

port
27017

CORS should be
enabled

Two servers on different hosts

port
80/443

Frontend
Server

port
80/443

Backend
Server

port
27017

CORS should be
enabled

Three-tiered architecture on different hosts

port
80/443

Frontend
Server

port
80/443

Backend
Server

port
27017

CORS should be
enabled

Three-tiered architecture on different hosts

port
80/443

Frontend
Server

Backend
Server

port
80/443

CORS should be
enabled

port
27017

Three-tiered architecture with reverse proxy

No cors

port 80/443

Reverse Proxy

Frontend Server

Backend Server

Why having separated servers?

Each piece of our three-tiered architecture relies on specific OS configurations, libraries and runtime environment

◉ These environments might conflict with each other

➡ Having several servers enable to isolate them

✓ Easier to maintain and more reliable
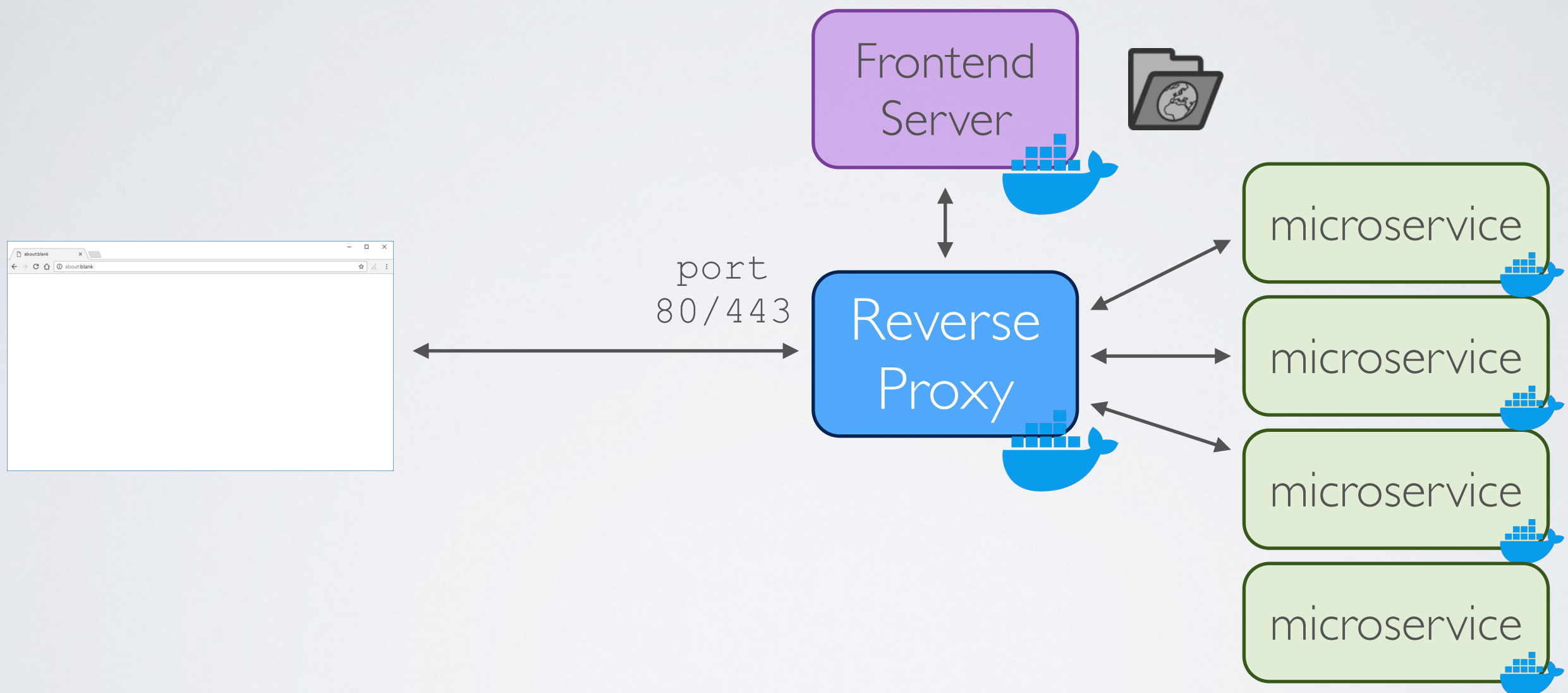
◉ But having several servers has a cost!

➡ Use virtual servers (or containerized servers)

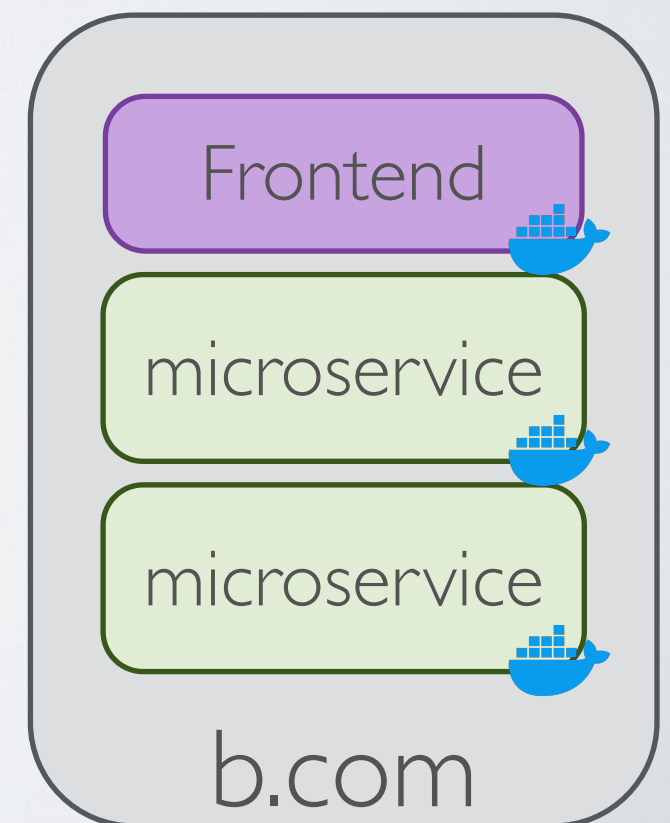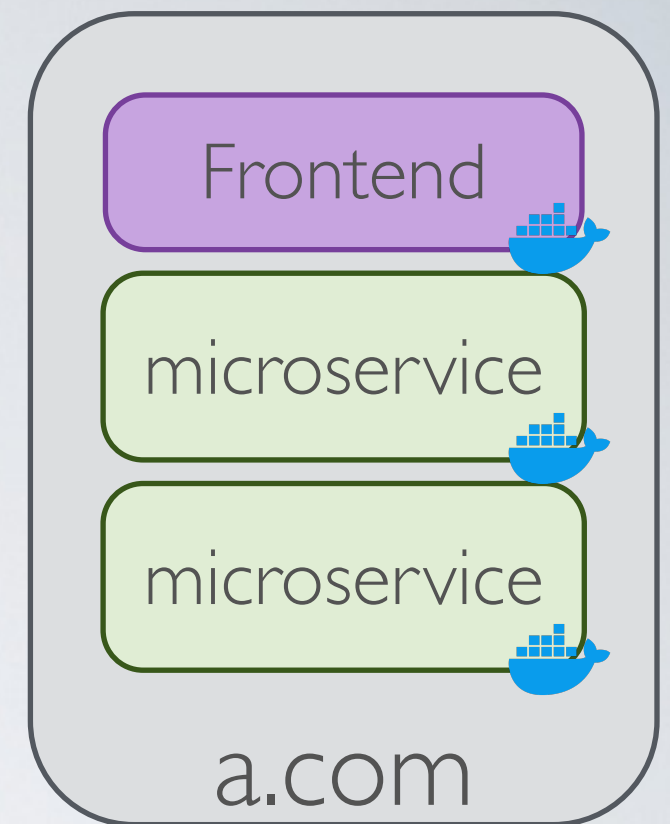✓ Cost effective and even simpler to maintain (and to scale, coming later)

Dockerized three-tiered architecture
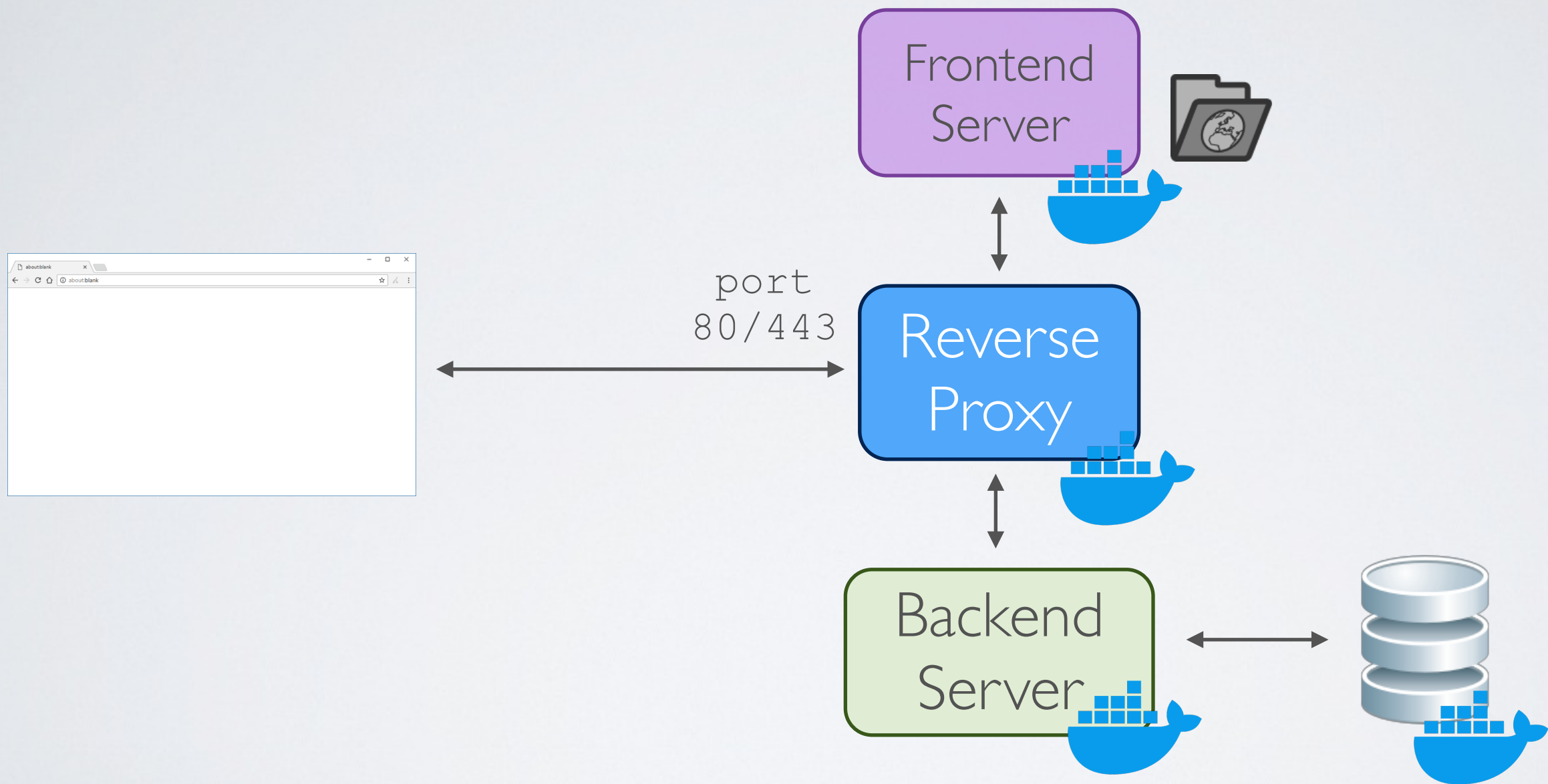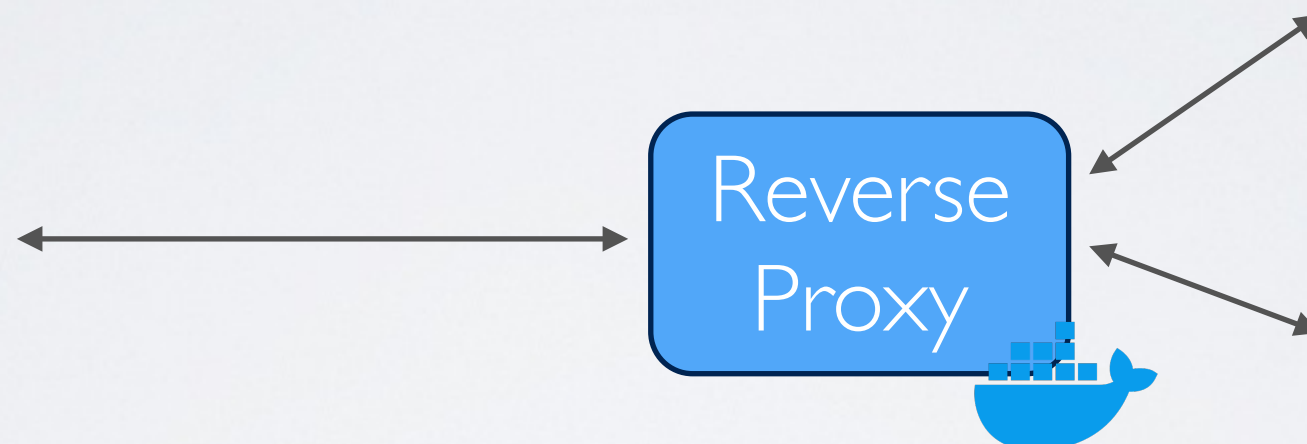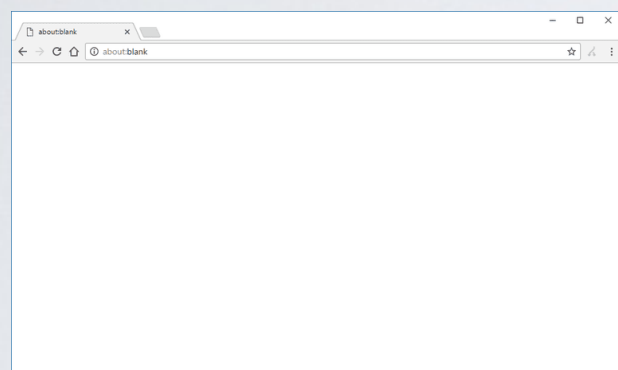
Dockerized micro-service architecture

Frontend
Server

port
80/443

Reverse
Proxy

microservice

microservice

microservice

microservice

Multi-hosting

Domain Name

Internet Top Level Names

See *List of Internet top-level domains* (Wikipedia)

How to get a domain name?

You need to buy one from a *Domain Name Registrar*
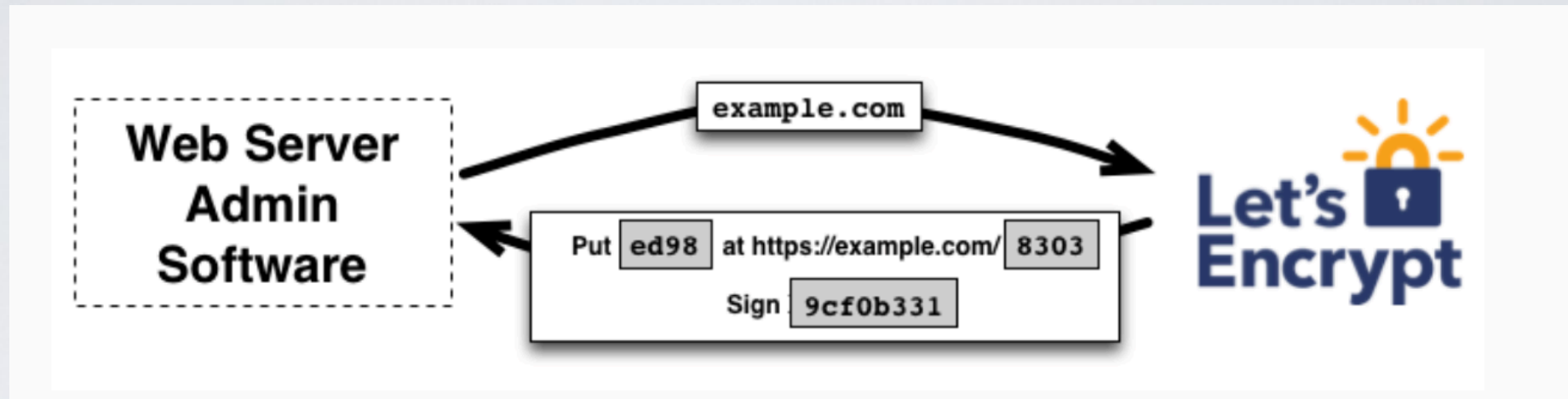
whois

Get information about a website

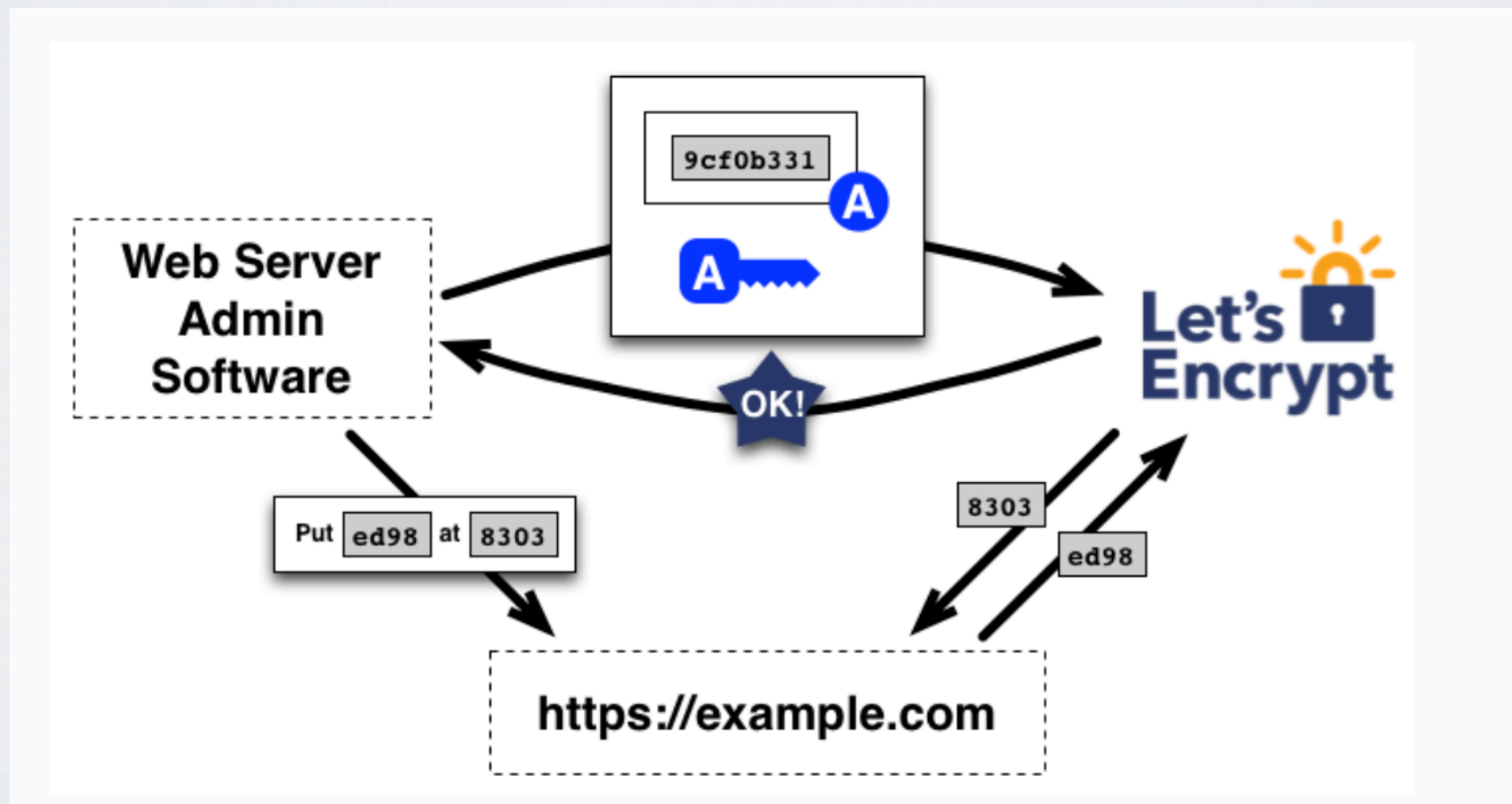A valid certificate

Getting a signed SSL certificate

Let's encrypt

Step 1

Step 2

Certificate Manager in the Dockerized architecture

port
80/443