Recitation 7

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Project Intermediate Report

Project Intermediate Report

- Due next week.
  - No late day/grace period.
  - Slightly longer, 2-3 pages.
  - Reasonably well formatted, e.g., ACM template.

Project Intermediate Report, cont’d

- Opinion, how will I write the report?
  - Introduction:
    - Incentive: How does the application solve your problem? Why is it important to you? Why do you want to do it?
    - Status quo: Are there similar products? How do they compare to mine?
  - Architecture/Specification:
    - How does users use your application?
    - How do you design your control flow and data flow?
    - How do microservices work together?

Project Intermediate Report, cont'd

- Technology:
  - Describe key algorithms.
  - Describe how you will put your design into real code, with library/framework/etc…
  - Name what Azure components you'll use and how you'll use them.
- Implementation
  - Be specific about what is done and what will be done. Give a timetable.
  - Where's your data? ML, IoT, etc.
- Evaluation:
  - What is deliverable? In what format?
  - What will you demo?
  - How can we evaluate your implementation?

Project Intermediate Report, cont’d

- TA Comment Feedback:
  - (If not answered in previous sections) Please answer the questions TA raises.
  - Be specific, especially for the technically trivial issues.

How will we grade your report?

- Do you address our concerns as raised in the initial report?
- Have you really started with your project?
- …

Some tools you might use

Docker

- Everything starts from a docker file.
  - https://docs.docker.com/engine/reference/builder/
  - Start from some base “images”.
  - Set up your own environment with very simple terminologies.

Docker

- Docker file -> docker image
  - Using docker build command.
  - You can maintain different versions for management.
  - You can also publish your image using docker hub.
  - This is a time-taking process and sometimes caching by layers saves your time.

Docker

- Docker image -> docker container
  - Using docker run command.
  - You can feed more parameter, like port mapping, to the container.

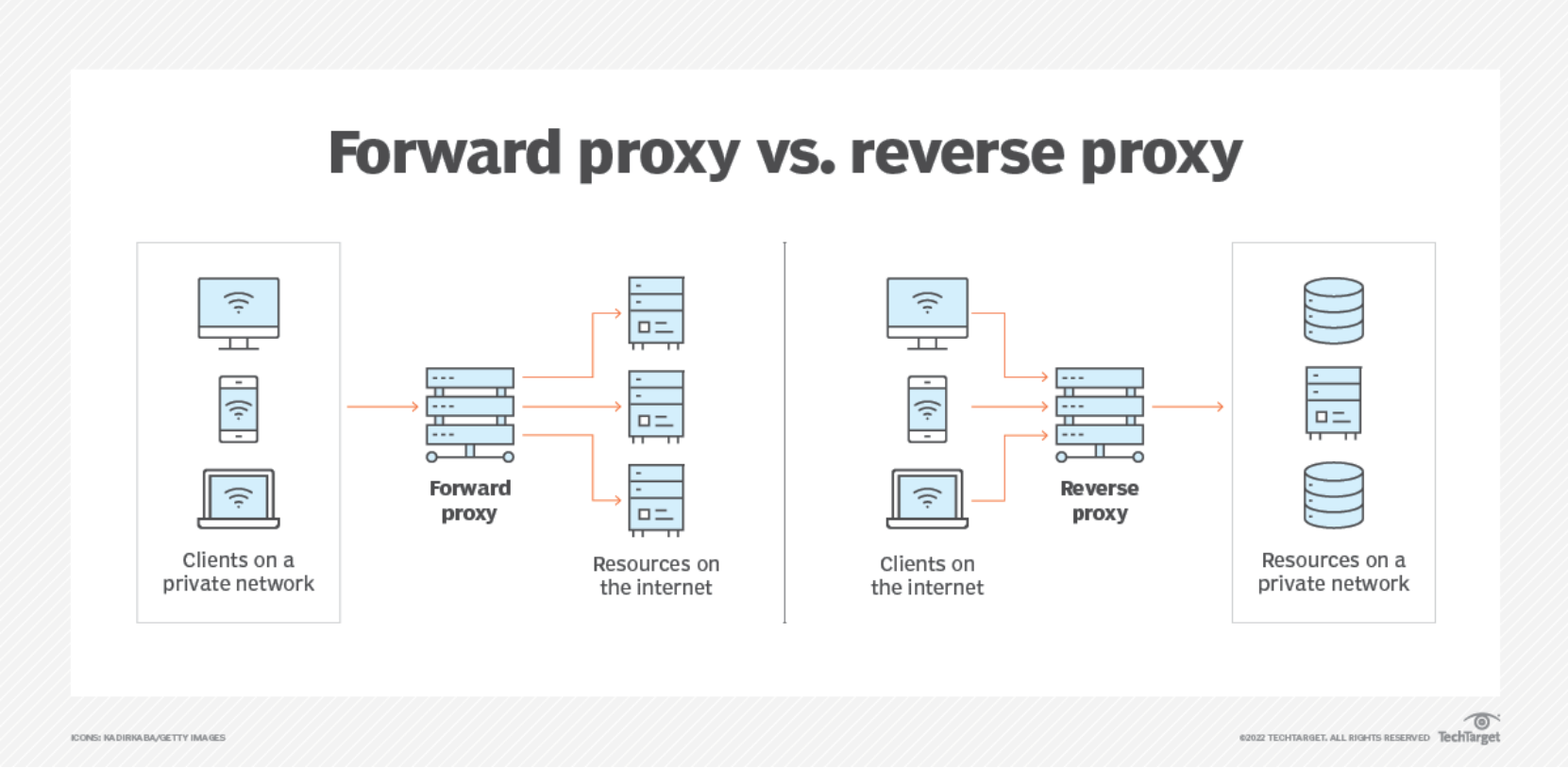
- Many other commands like
  - docker start
  - docker container rm
  - docker logs

Docker

- Practices:
  - Docker is not a VM, think of sysctl command.
  - Nested containers usually is not a good idea, e.g., I want my database "live" together with the service?
  - You need to design how containers talk to each other, thinking about proxy servers.

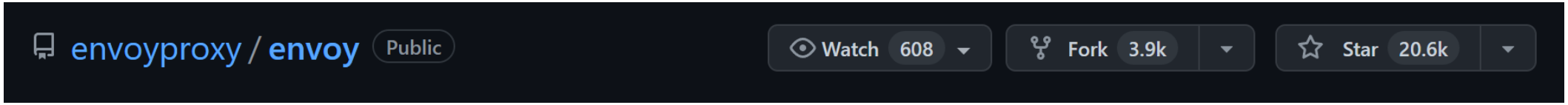
Proxy server

- Forward proxy vs. reverse proxy



Proxy server

- Does it support the “protocol” you use?
- Does it work with http2 (TLS/SSL)?
- Can it work with microservices, service mesh?
- My guess for your pick:

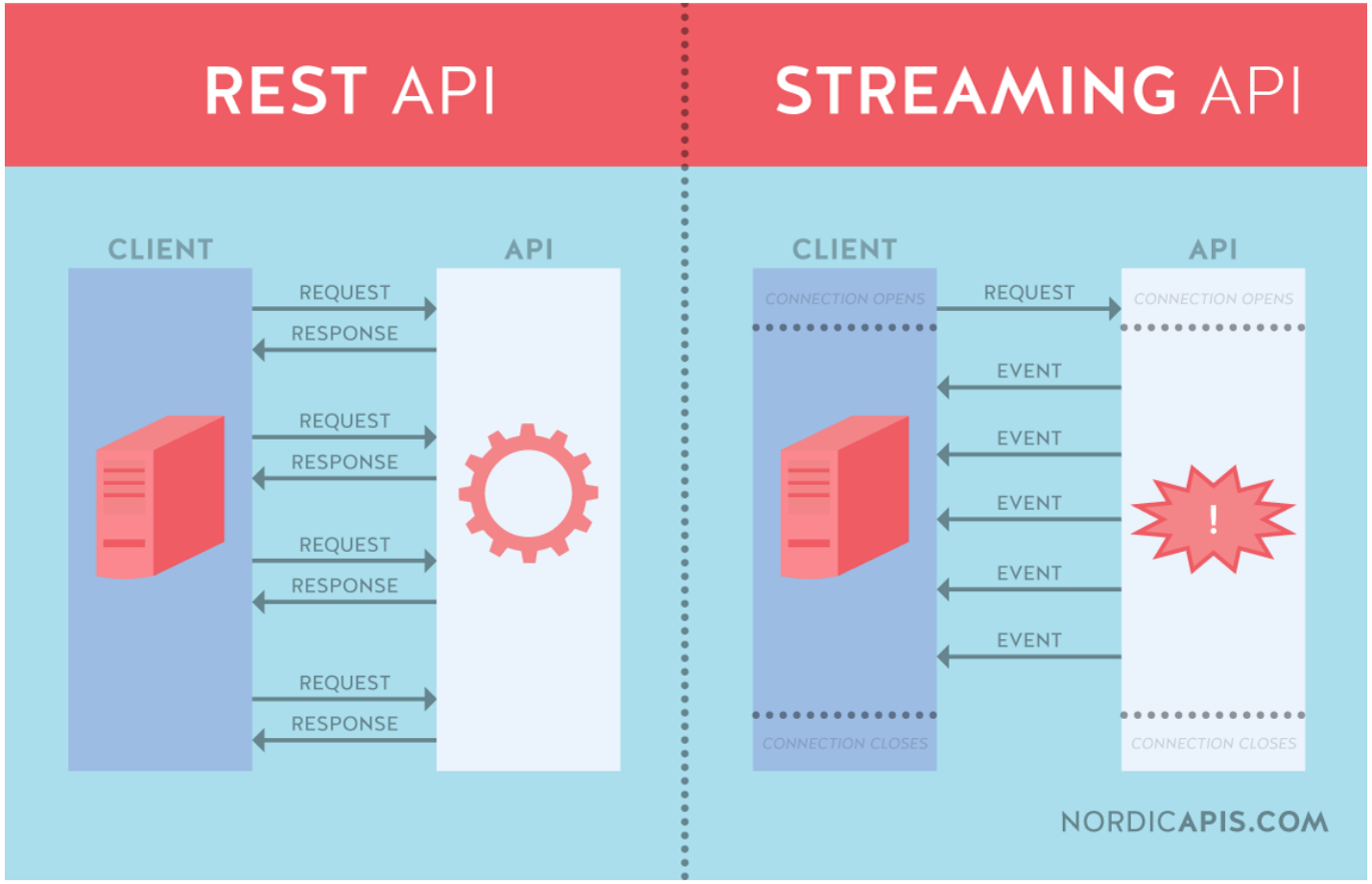


How does your application communicate?

- REST APIs:
  - **RE**presentational **S**tate **T**ransfer
  - Uniform Interface, Client-Server, **Stateless**, Cacheable, …
  - Doesn't necessarily be http request. But http request can be restful.

- Easy to implement using popular server frameworks.
  - Python Flask
  - Java Spring Boot
  - You define the "access point" and the framework help you with the rest of work.

RPC


REST API
STREAMING API
CLIENT
API
REQUEST
RESPONSE
REQUEST
RESPONSE
REQUEST
RESPONSE
REQUEST
RESPONSE
CLIENT
API
CONNECTION OPENS
CONNECTION OPENS
REQUEST
EVENT
EVENT
EVENT
EVENT
EVENT
!
CONNECTION CLOSES
CONNECTION CLOSES
NORDICAPIS.COM

Demo

https://grpc.io/docs/platforms/web/basics/