

ILP / 2

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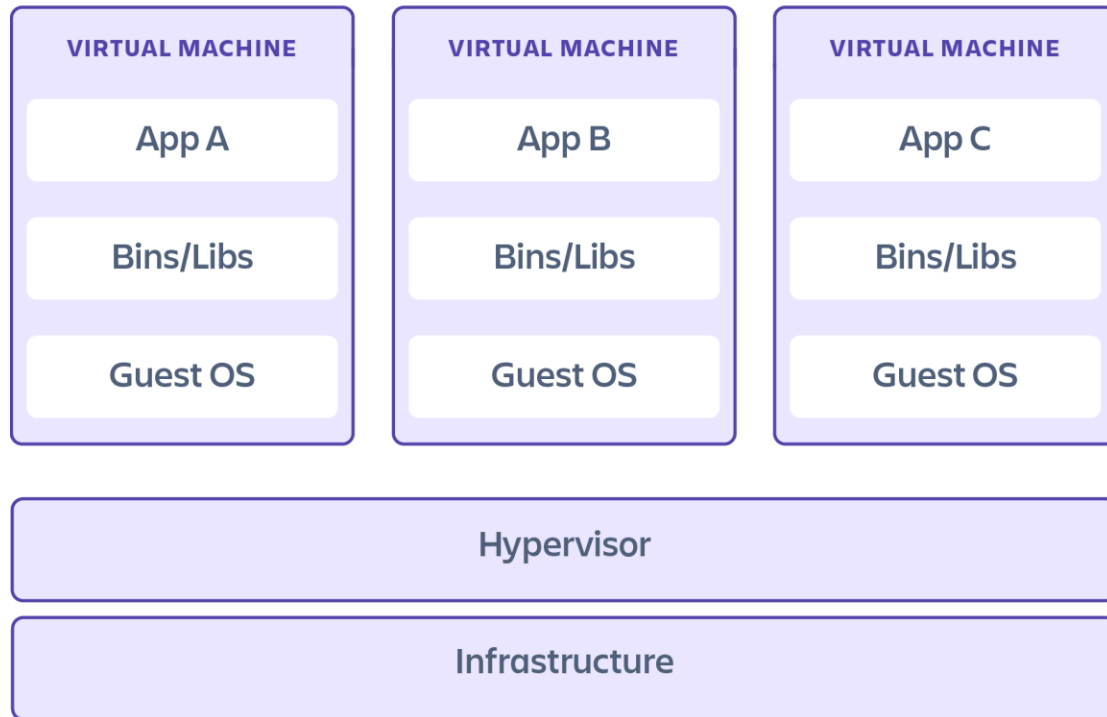
Tutorials / coverage

- What is intended
- Tools / What is assumed... (and some words about that)
 - IntelliJ
 - Maven
 - GIT
 - Postman / curl / IntelliJ HttpClient
- We will do an extra remote demonstration to go through those tools on Monday, 29th at 17:00 – 18:00

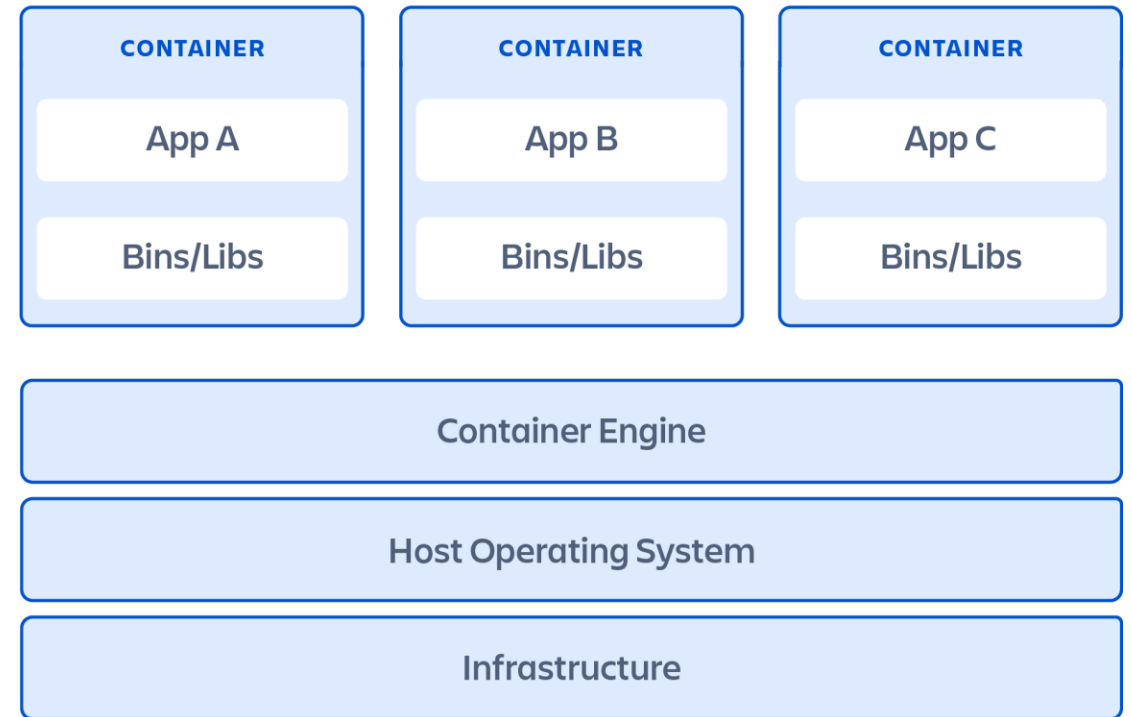
A bit of technology for warming up...

VM vs Containers

Virtual machines



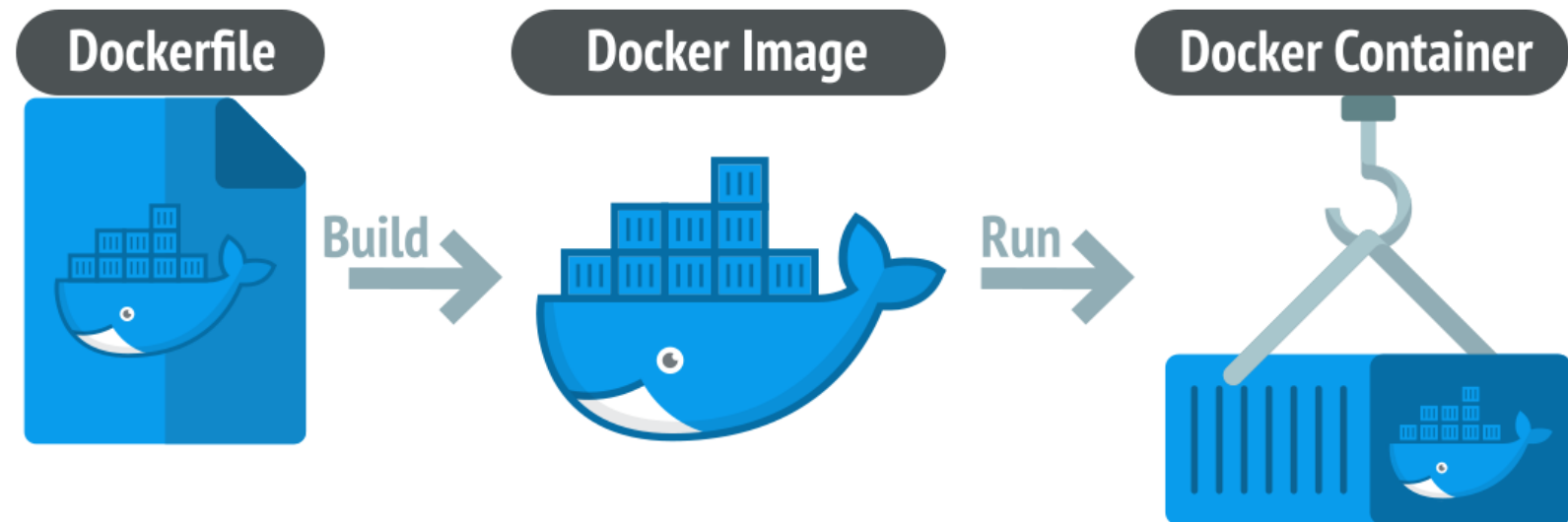
Containers



<https://www.atlassian.com/microservices/cloud-computing/containers-vs-vms>

Local application vs docker

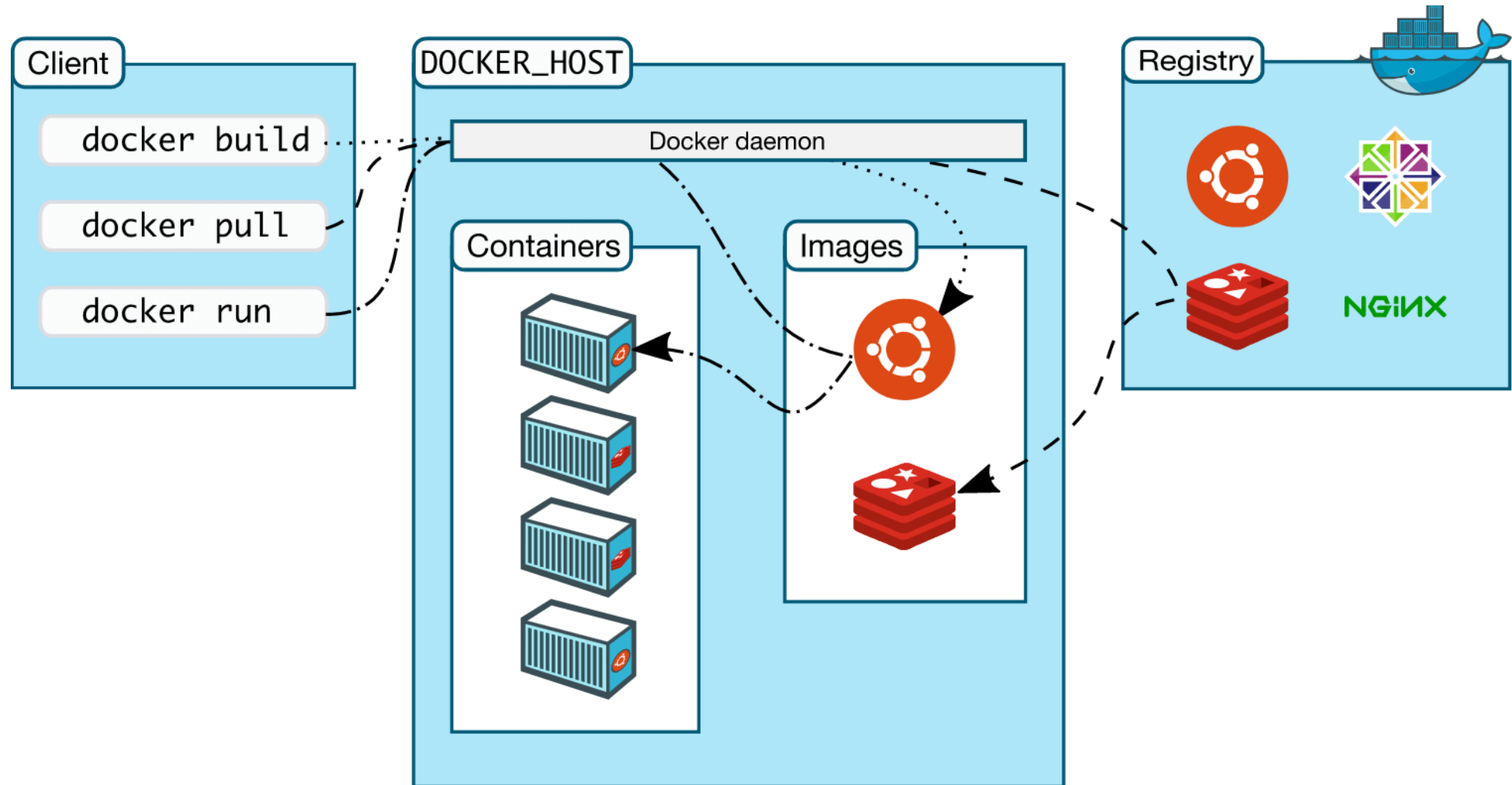
- What is docker? How does it work?
- What are the differences



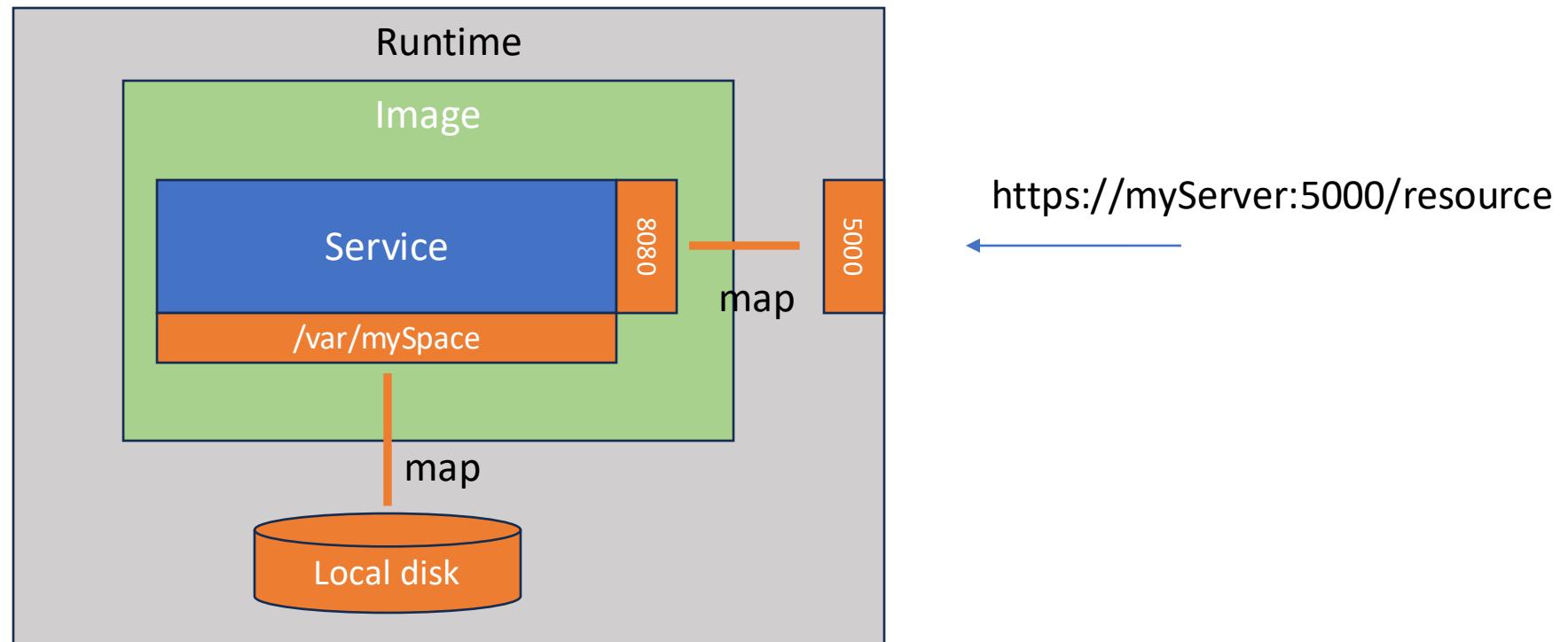
Containerization - how

- OCI based
 - <https://opencontainers.org/about/overview/>
 - <https://opencontainers.org/community/overview/>
- Images form the runnable applications
- Are loaded on demand
- Executed when needed
- All networking is mapped
- File system access is mapped to volumes

docker



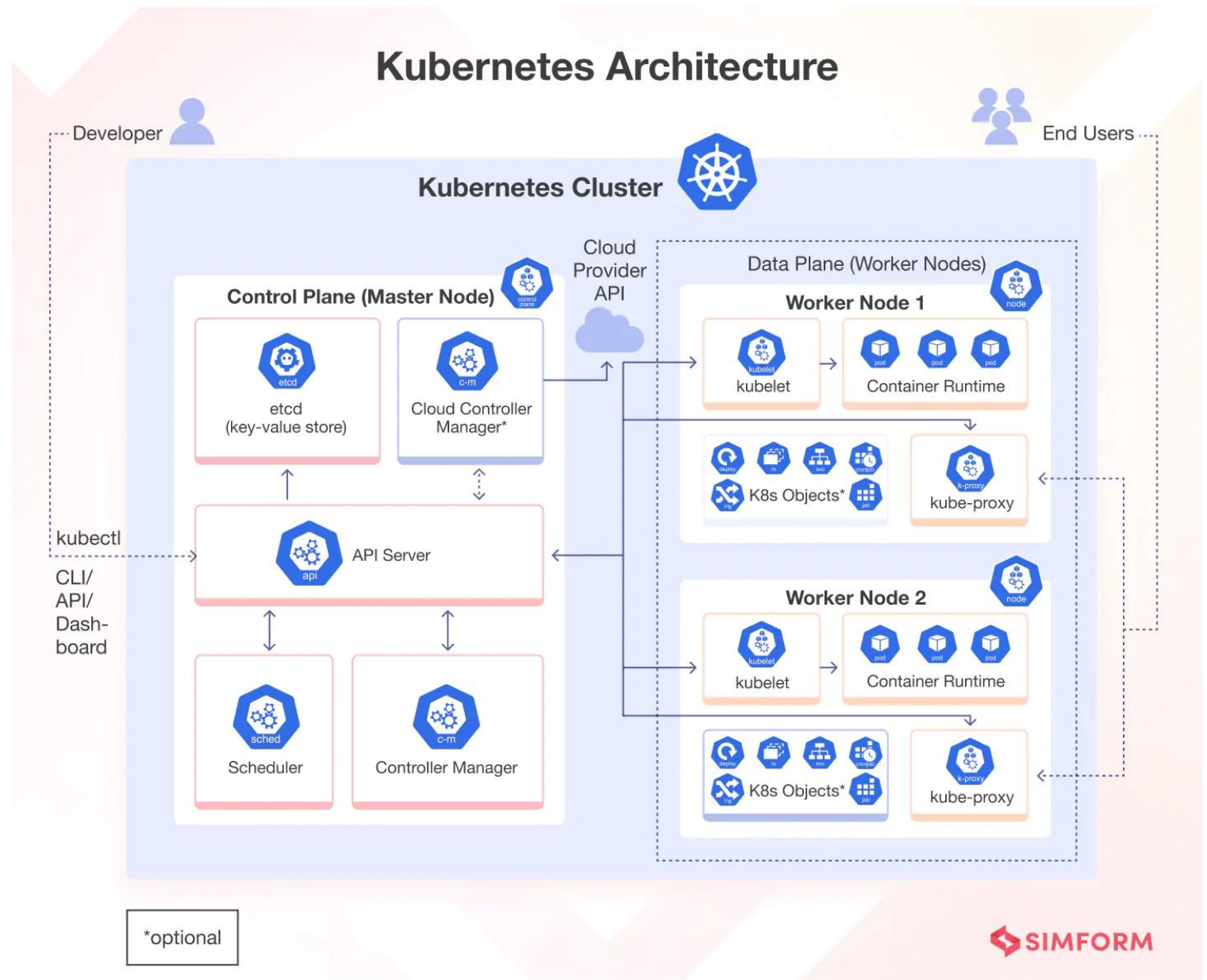
A microservice in docker



Running a microservice in docker

- One service / image
- Sidecar as an option
- Showing a small example

Kubernetes



Back to services, REST, etc...

General

- REST <> http
- REST is
 - Uniform
 - Stateless
 - Client-Server
 - Cacheable
- URL
 - Syntax: <https://www.w3.org/Addressing/URL/url-spec.html#:~:text=URL%20syntax,in%20an%20a%20later%20section>.
 - BNF: https://www.w3.org/Addressing/URL/5_BNF.html

REST details

- HTTP methods: <https://restfulapi.net/http-methods/>
- Style
- URL
- Exchanging URLs (remote / local)
- Mocking
- Unit testing

http-methods

- <https://restfulapi.net/http-methods/>
- Mainly used is:
 - GET
 - POST
- Sometimes
 - PUT
 - DELETE (most businesses either use POST or do a "soft-delete" approach)
- Almost never
 - PATCH

REST-styles

- Query string
- Body (not for GET!)
- Responses

Designing an API in REST

- Do it very careful as it will remain for a long time and cannot be easily changed
- API Management is a big issue in the industry
- RPC based designs
 - POST <https://.../createOrder> JSON data in Body
 - POST <https://.../createOrderPosition> JSON data in Body
- Resource based designs
 - GET <https://.../resource/sub/identifier>
 - PUT <https://.../orders/> JSON data in Body
 - PUT <https://.../orders/1/position> JSON data in Body

Testing (**very** briefly...)

- Unit-testing
- Integration-testing
- Round-trip testing

- Fitness functions

Mocking (**very** briefly...)

- Development takes time – services even longer
- UI depends on services and often needs something to work with
- Mock to the rescue
- What is mocking?

Things to be aware

- Life-cycle of a service
- Parallel requests
- Running parallel services
- Statelessness
- Concurrency
- Race-Conditions
- Cache
- ...

Spring Boot

- What is it
 - Anatomy of a service
 - Annotations
-
- pom.xml

Spring Annotations (and Lombok...)

- @Getter, @Setter, @Data
- @Builder
- @SpringBootApplication
- @RestController

- @Bean, @Service
- @Configuration

Spring annotations (processing)

- @GetMapping
- @PostMapping
- @PathVariable / @RequestParam
- @RequestBody
- @RequestHeader
- ...

JSON

- Structure
- Annotations for JSON
 - @JsonProperty
- Various JSON processors
 - **Jackson**
 - **Gson**
 - json-io
 - Genson