

Containers for NDHL

or: "I might offer more problems than solutions"

Kalle Happonen – Nordic NDHL Gothenburg 18.12.2019



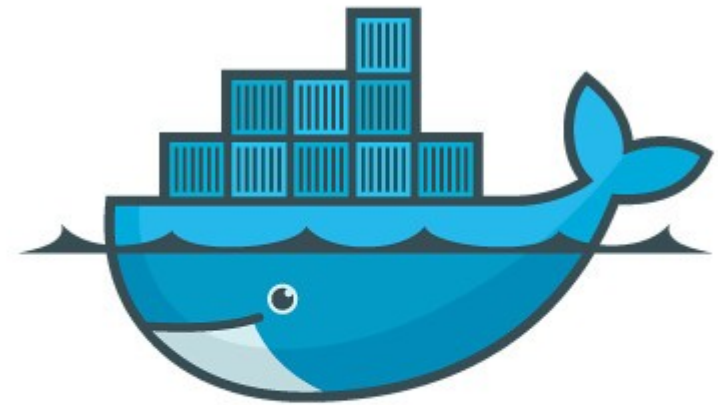
CSC – Finnish research, education, culture and public administration ICT knowledge center

Who am I, and what am I doing here?



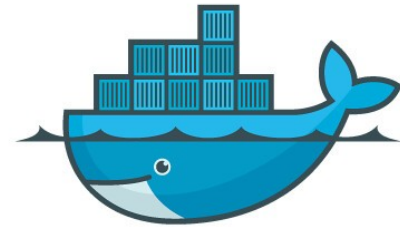
<https://rahti.csc.fi> (Kubernetes/OpenShift/OKD)
<https://pouta.csc.fi> (OpenStack)

Containers

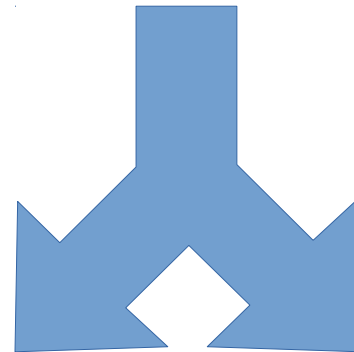


docker

Containers



docker



Images
(oci image-spec)

Runtime
(oci runtime-spec)

Docker (OCI) images

- A way to package Linux software
- “RPM on steroids”
- “Very light virtual machine image”
- Does not take into account how it’s being run

Docker (OCI) runtime

- How a container gets executed
- Container equivalent of virtual machine KVM, Virtualbox
- Docker runtime most popular
- New ones popping up, e.g. CRI-O, g-virt, kata

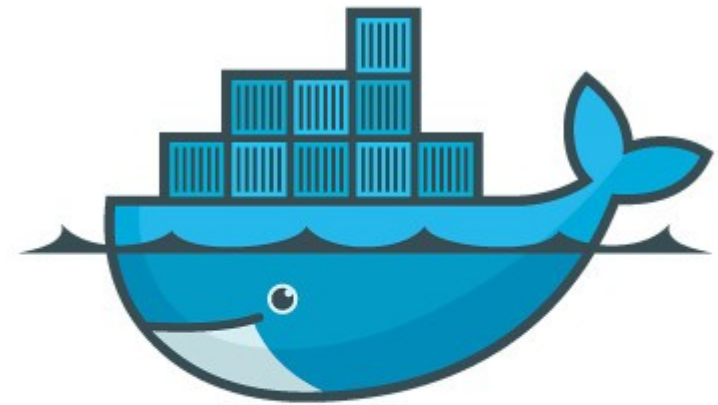
Containers



OCI?

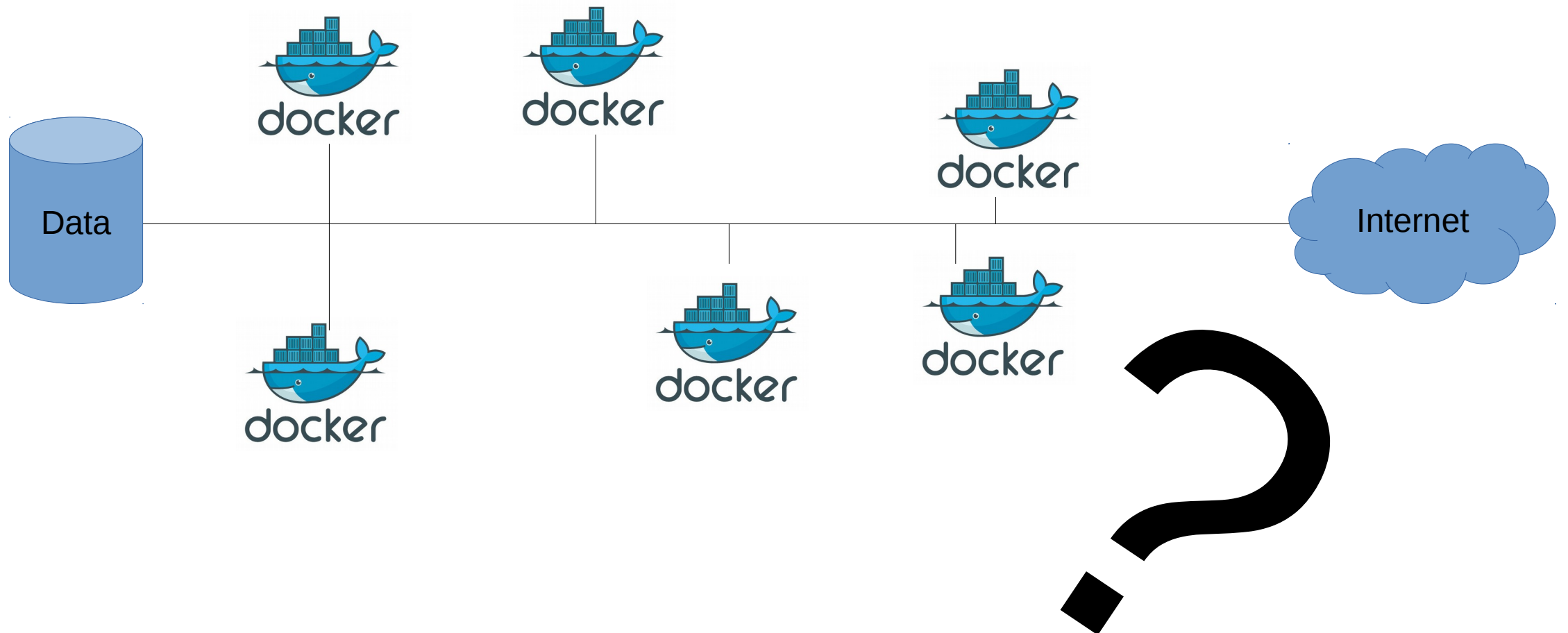
<https://opencontainers.org>

Containers

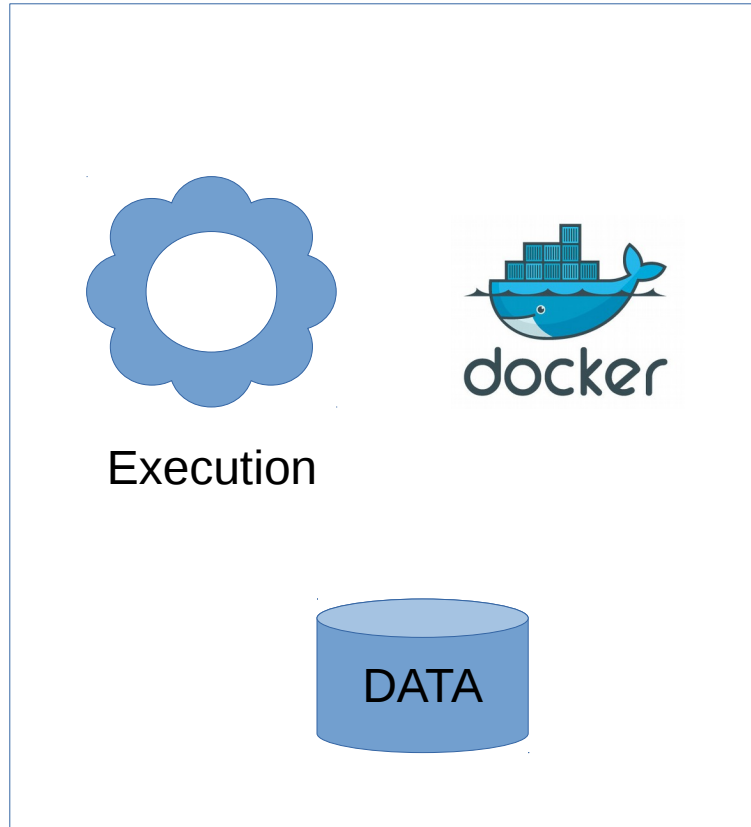


docker

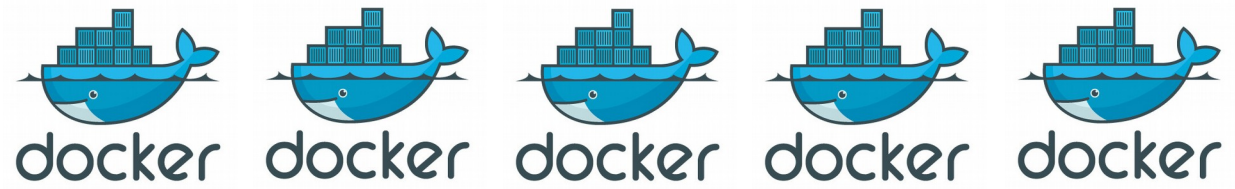
Containers



Containers



Scheduling

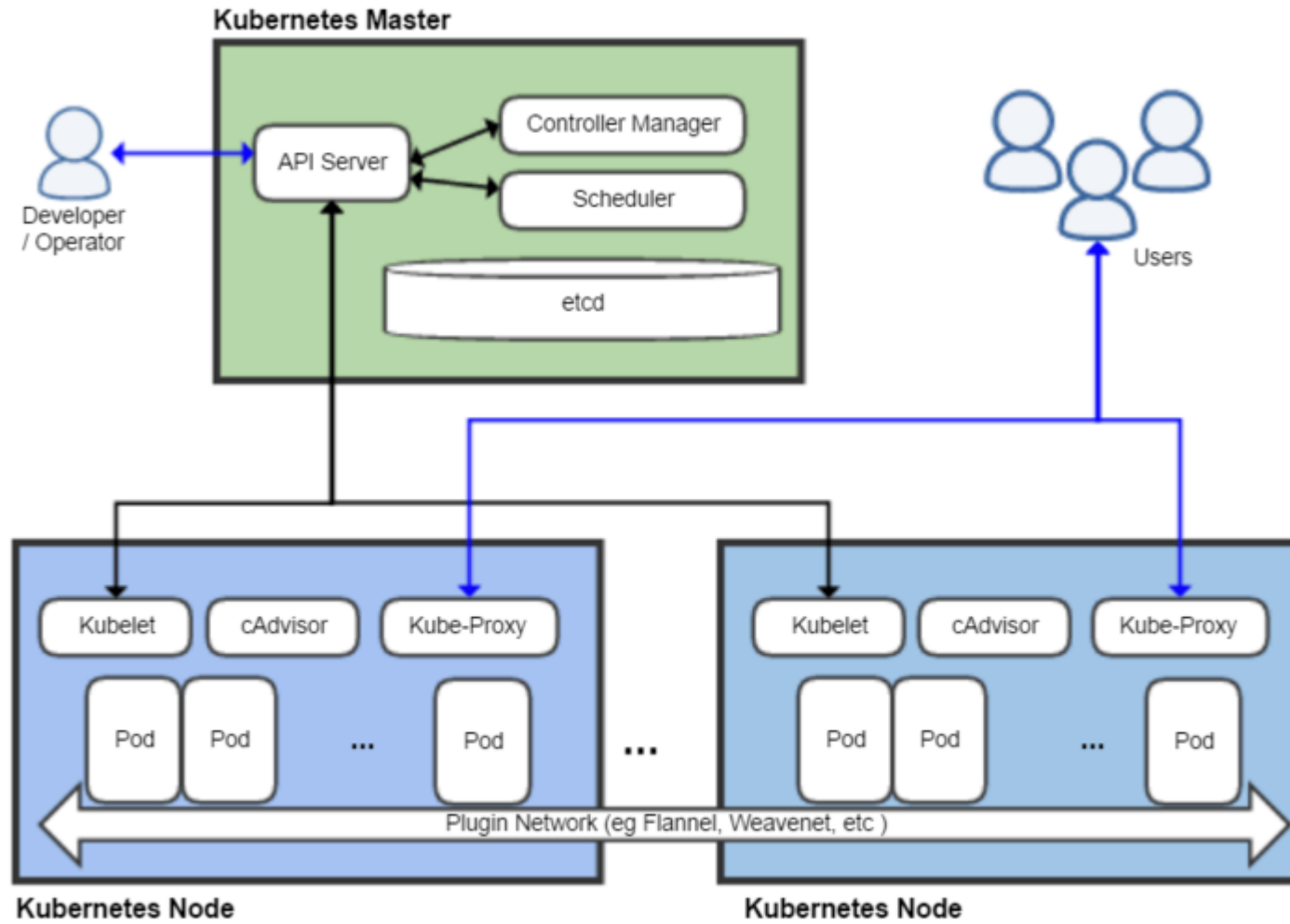


Containers



How do we want to run our containers?

Kubernetes



“SLURM with containers”

Kubernetes

What does Kubernetes address?

- “Container orchestration”
- Network management
- Storage management**

** Kalle, remember to clarify

Kubernetes

Based on your needs, with Kubernetes you can:

- Execute the same container image in several places

It does not provide a direct answer to:

- How to import data into the Kubernetes clusters
(Or, do access authorization and control for the data)
- How to do AAI for either kubernetes access or application access
- How to ensure data doesn't leave the system

So basically data and access.

Kubernetes



I had a problem.

I tried to solve it with Kubernetes.

Now I have two problems.

Kubernetes

Running production kubernetes is not trivial.
Running a lot of interoperable distributed clusters is harder.



Unlikely bedfellows?



Global Alliance
for Genomics & Health
Collaborate. Innovate. Accelerate.

<https://www.ga4gh.org/genomic-data-toolkit/>

Kielipankki



<https://www.kielipankki.fi/>



Click icon to add
picture



<https://www.facebook.com/CSCfi>



<https://twitter.com/CSCfi>



<https://www.youtube.com/c/CSCfi>



<https://www.linkedin.com/company/csc---it-center-for-science>