# **Docker**

Julian Tiemann

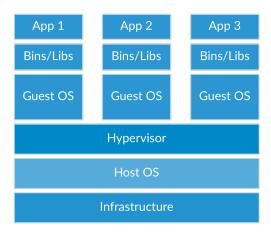
Universität Hamburg

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Virtuelle Maschinen

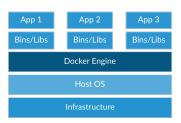
## Virtuelle Maschinen



# Container

## **VM** vs Container

App 1	App 2	Арр 3
Bins/Libs	Bins/Libs	Bins/Libs
Guest OS	Guest OS	Guest OS
Hypervisor		
Host OS		
Infrastructure		



#### **Funktionsweise**

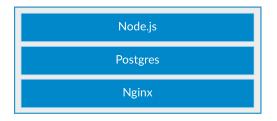
- Change root (chroot)
  Anwendung auf Verzeichnis "rooten"
- Controlgroups (cgroups)
  Ressourcenmanagement
- Kernel Namespaces
  Prozesse/Prozessgruppen voneinander isolieren zB. net für eigene
  Netzwerkkonfiguration, ipc für "Inter-Process Communications"

## **OS** Container

Node.js Postgres Node.js Postgres Nginx

- Leichtgewichtige VMs
- Nutzung wie normales OS

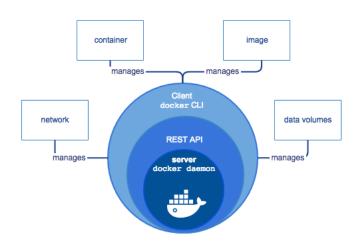
# **Application Container**



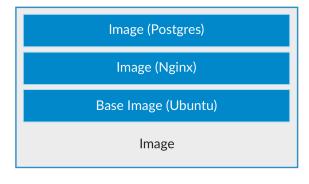
- Transportfähiges Paket mit allen Abhängigkeiten
- Enthält meist mehrere vorkonfigurierte Layer

# Docker

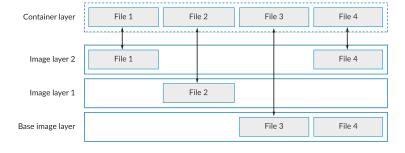
# **Docker Engine**



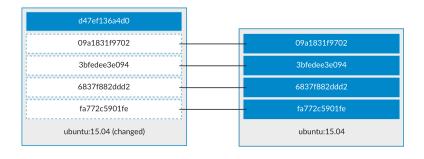
# **Docker Images**



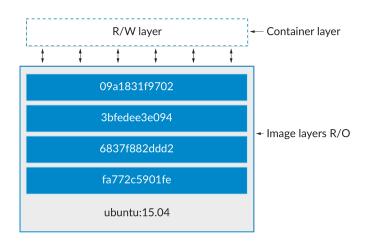
## **Union View**



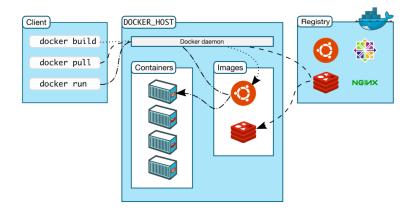
## **Docker Image Layer Sharing**



#### **Docker Container**

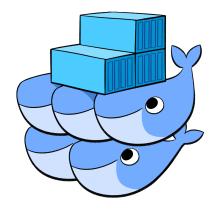


## **Docker Daemon**

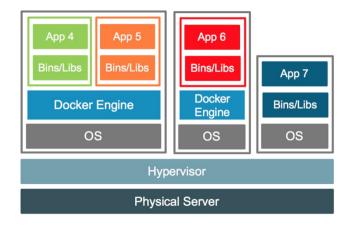


# Demo

# Fragen?



## Container und VMs kombiniert



## References

```
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Mike Coleman. Containers and VMs together. URL: https://blog.docker.com/2016/04/containers-and-vms-together/(visited on 01/22/2017).

#### Docker. URL:

https://docs.docker.com/engine/understanding-docker/ (visited on 01/22/2017).

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#### References II

Akshay Karle. Operating System Containers vs. Application Containers. URL: https://blog.risingstack.com/operating-system-containers-vs-application-containers/ (visited on 01/22/2017).

C. Pahl. "Containerization and the PaaS Cloud". In: *IEEE Cloud Computing* 2.3 (May 2015), pp. 24–31. ISSN: 2325-6095. DOI: 10.1109/MCC.2015.51.