Announcements

R3
Final Exam

Cloud Introduction

SWEN-343

Cloud Computing Services

SaaS: Software as a service

Apps through browser

PaaS: Platforms as a service

Delivery of a computing platform for custom software development as a service

IaaS: Infrastructure as a service

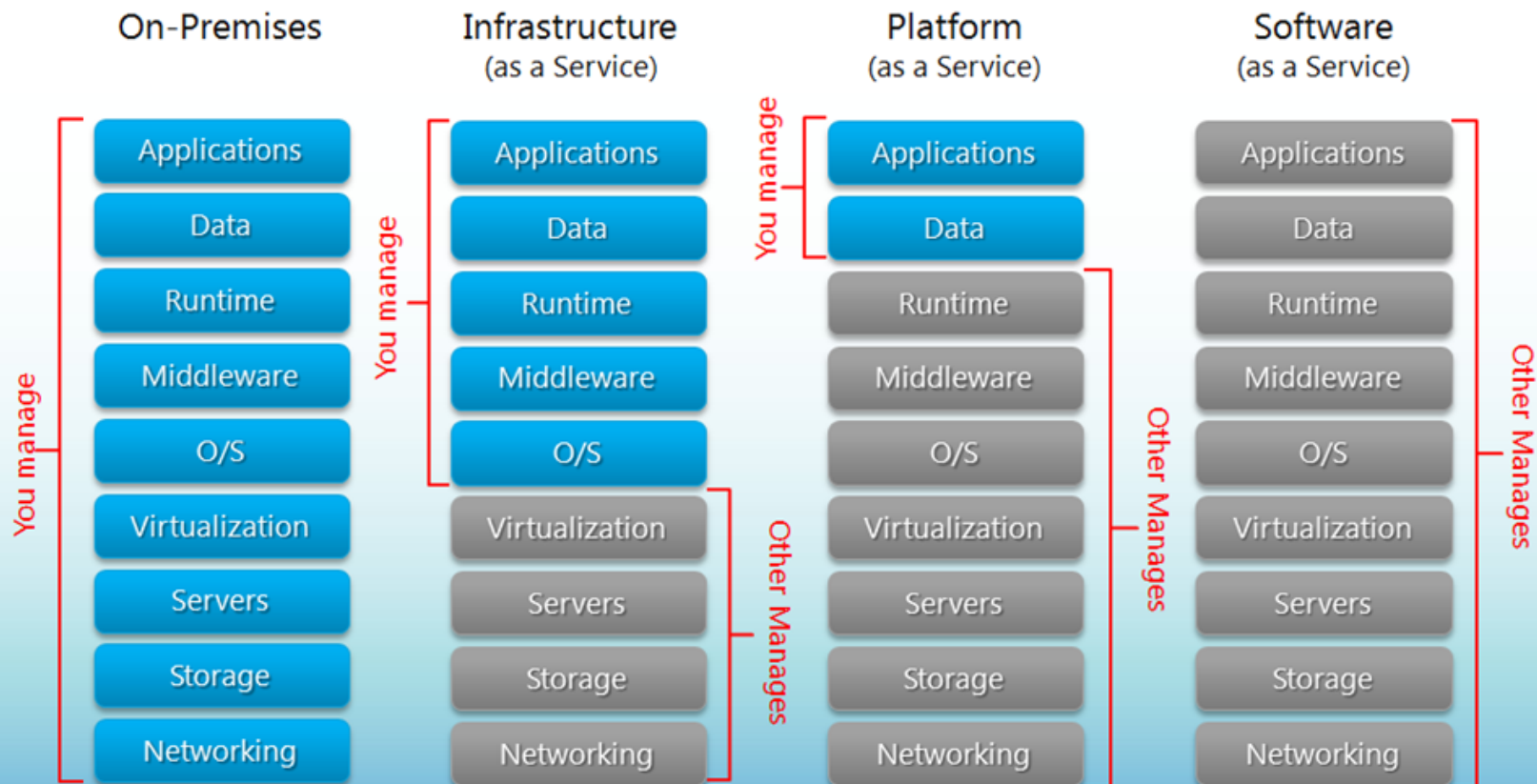Delivery of computer infrastructure as a service

Google Examples

IAAS : Google Compute Engine (One can develop programs to be run on high performing google's computing infrastructure)

PAAS : Google App Engine (One can develop applications and let them execute on top of Google app engine which take care of the execution)

SAAS : Gmail, Google+ etc (One can use email services and extend email/google+ based applications to form newer applications)

Separation of Responsibilities

On-Premises	Infrastructure (as a Service)	Platform (as a Service)	Software (as a Service)
Applications	Applications	Applications	Applications
Data	Data	Data	Data
Runtime	Runtime	Runtime	Runtime
Middleware	Middleware	Middleware	Middleware
O/S	O/S	O/S	O/S
Virtualization	Virtualization	Virtualization	Virtualization
Servers	Servers	Servers	Servers
Storage	Storage	Storage	Storage
Networking	Networking	Networking	Networking

You manage

You manage

Other Manages

You manage

Other Manages

Other Manages

Why Cloud Computing

Pay-as-you-go model

Small/medium size companies can tap the infrastructure of corporate giants.

- Time to service/market
- No upfront cost

Reliability

- The system's fault tolerance is managed by the cloud so providers and users no longer need to worry about it.

Cloud Drawbacks

Security
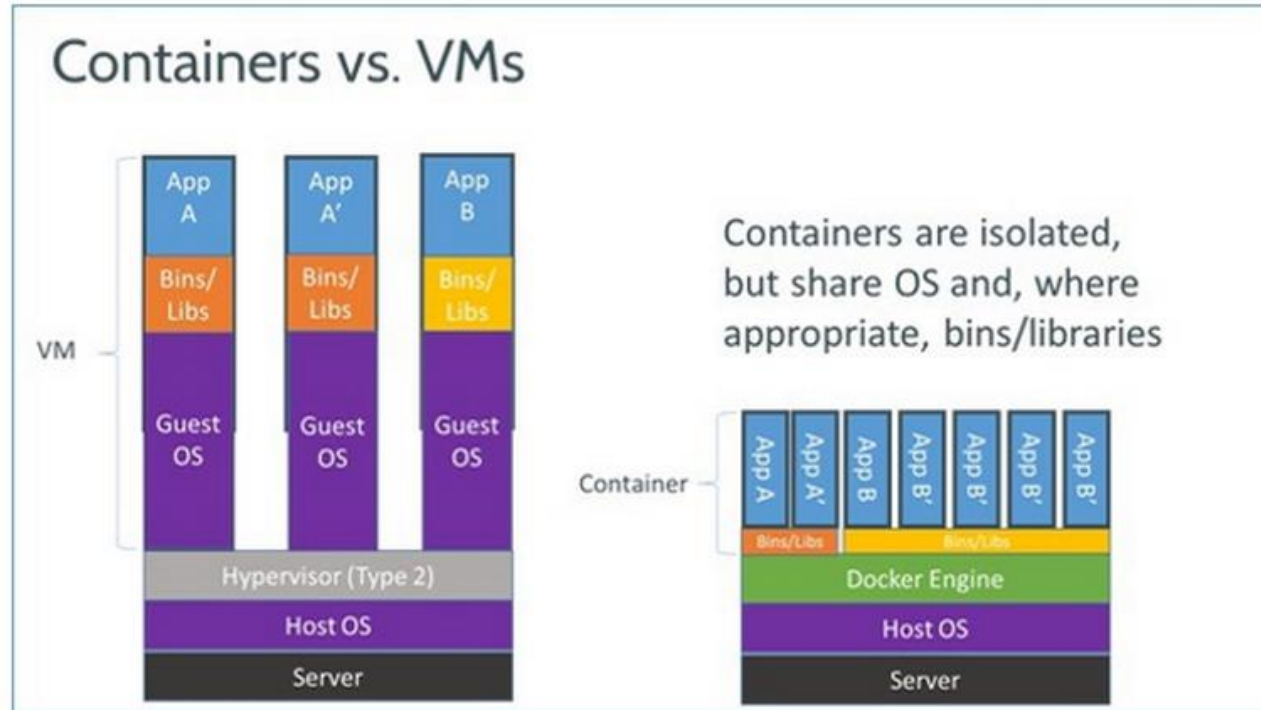Privacy
Vendor lock-in
Network-dependent Migration

Containers (detour)

Containers date back to circa 2000

Containers

Containers vs. VMs

Containers are isolated, but share OS and, where appropriate, bins/libraries

Advantages

Use shared O/S ➔ more efficient

Optimized resource use

- More application instances
- Program has it's "own" file system, storage, CPU, RAM..

Can setup multiple dev. environments

- Unique: software, configs, test projects

Ease of deployment

Disdvantages

Not a VM

Cannot use multiple O/S across instances

Does not do well with monolithic applications
(some "need" to be)

May limit portability
(e.g. when Docker not running on Windows)

Project investigation

http://www.se.rit.edu/~swen-343/activities/VM-Cloud-recommendation.html