

Container Clusters on OpenStack

和信雲端 首席技術顧問

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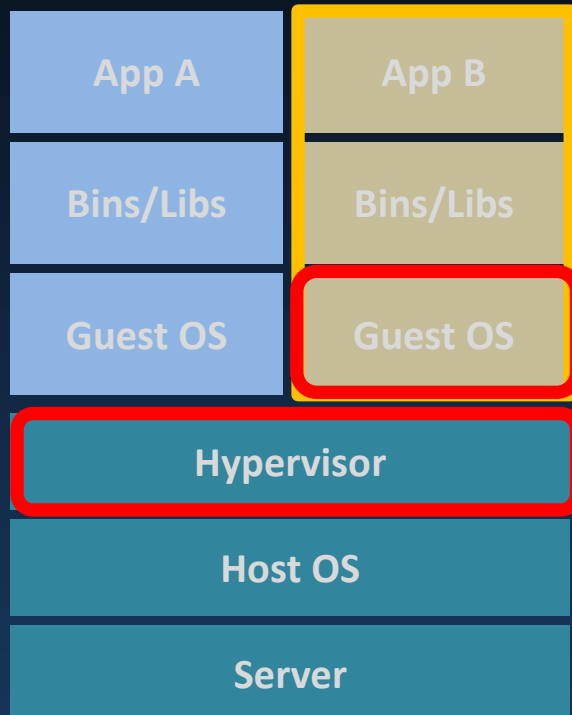
Outlines

- **VMs vs. Containers**
- **N-tier Architecture & Microservices**
- **Two Trends Emerging**
- **Ecosystem**

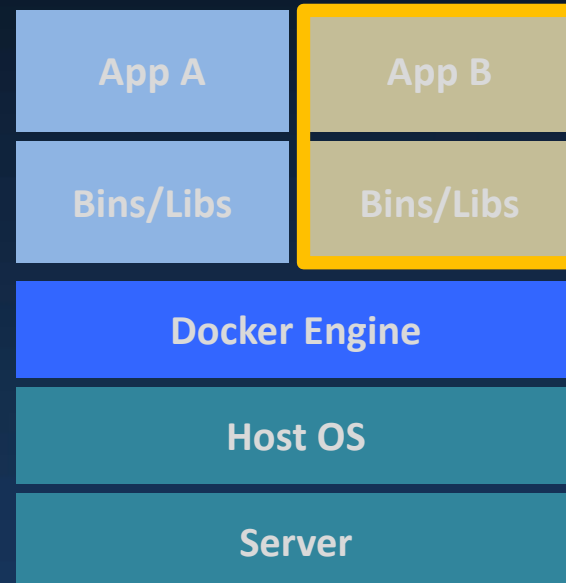
VMs vs. Containers

VMs vs. Containers

Virtual Machines

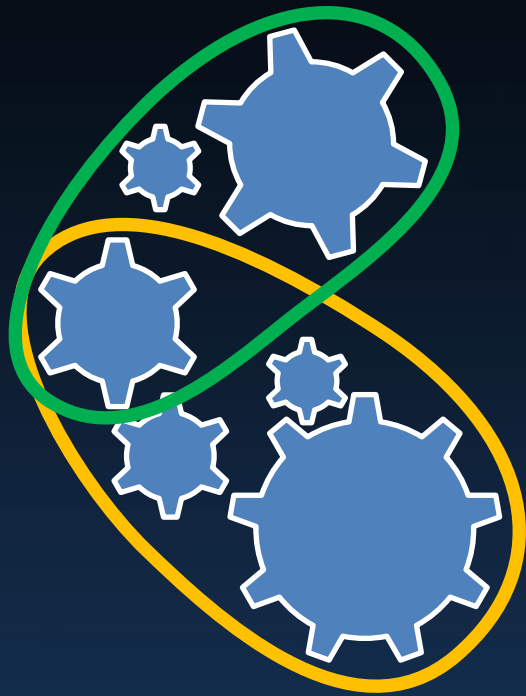


Containers

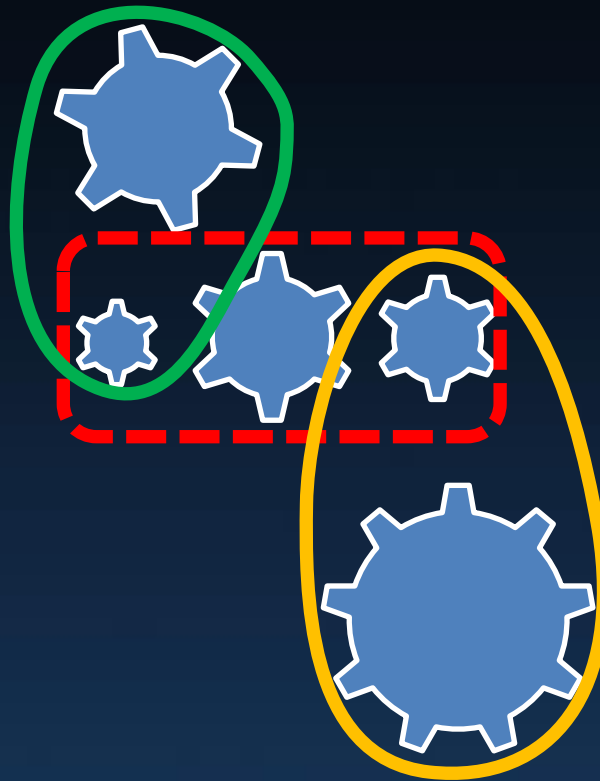


N-tier Architecture & Microservices

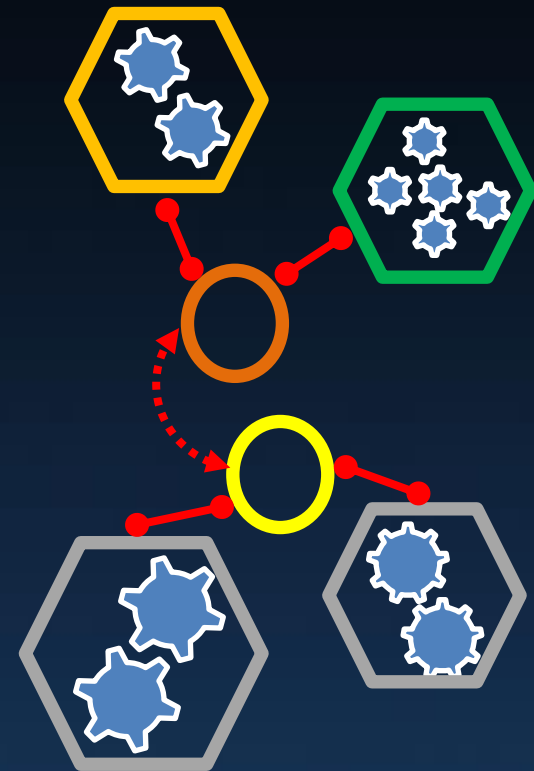
Evolution of Services Orientation



1990s & earlier
Pre-SOA (Monolithic)
Tight coupling



2000s
Traditional SOA
Looser coupling



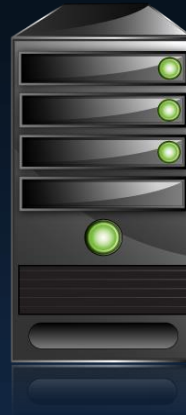
2010s
Microservices
Decoupled

Traditional SOA

**Real Implementation
of 3-tier Architecture**

IP: 59.120.2.5
Port: 443

IP: 192.168.1.2
Port: 3306



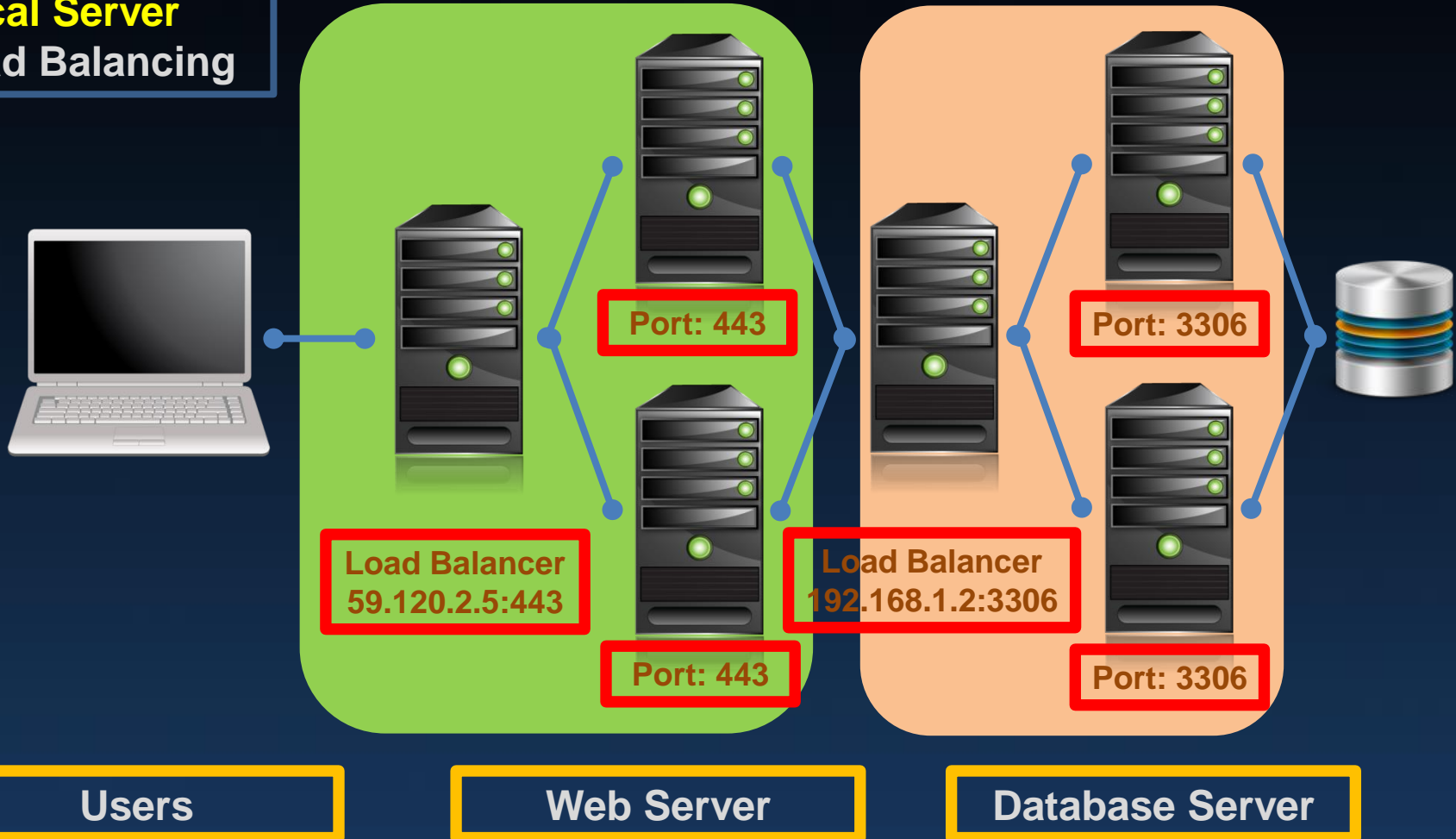
Users

Web Server

Database Server

Traditional SOA

**Physical Server
w/ Load Balancing**



Modern Microservices

Microservices
w/ Load Balancing



Legends:



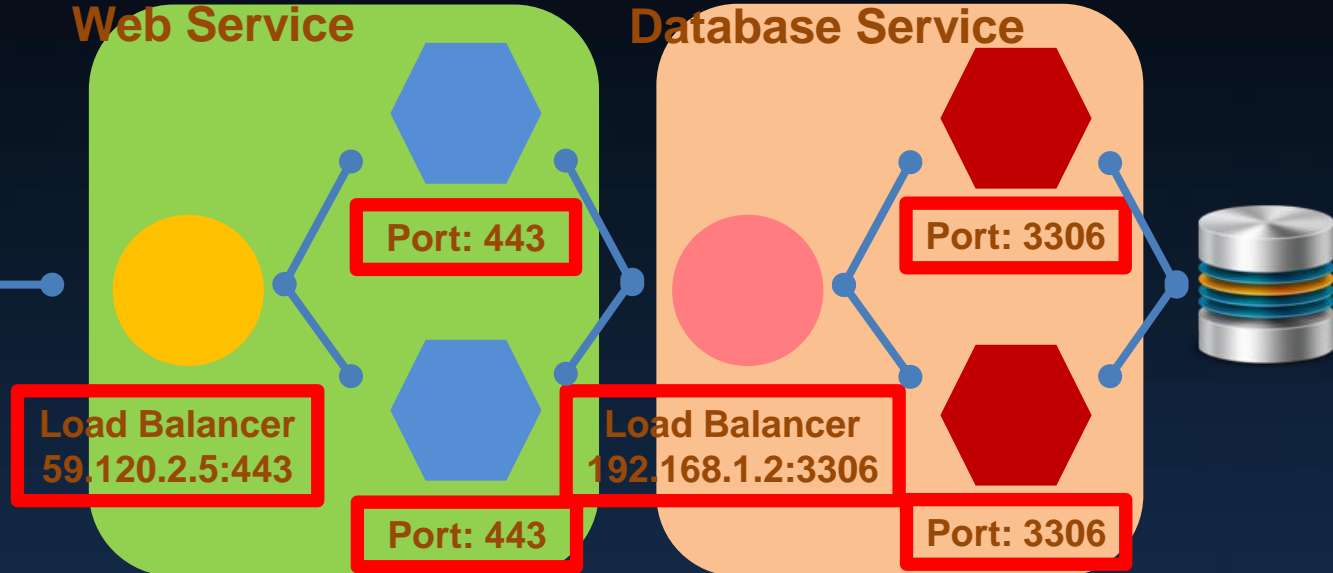
Service (Proxy)



Container

Web Service

Database Service



Users

Web Server

Database Server

Two Trends Emerging



Containerization

Virtualization

Two Trends Emerging

- Proposition of OpenStack
- Benefits
 - Cloud native computing
 - More than just the container
 - Hybrid cloud

Two Trends Emerging

- Proposition of OpenStack
 - As OpenStack COO Mark Collier noted during the last OpenStack Summit in Vancouver, OpenStack sees itself as **an integration engine**.
 - OpenStack is a platform that frees users to run proven technologies like VMs as well as new technologies like **containers**.

Two Trends Emerging

- Cloud Native Computing
 - Running application containers at scale in the enterprise is **a lot more than just Docker**.
 - To properly take advantage of a cloud platform, including IaaS and PaaS, you have to design the applications so that they're **decoupled** from any specific physical resource.
 - To power the enterprise's data centers using commodity hardware can reduce the burden of running **distributed systems** for it.

Two Trends Emerging

- More Than Just The Container



Two Trends Emerging

- More Than Just The Container (Cont.)
 - Product Life Cycle
 - Build environment overrides for **Development**, **Staging**, **QA** and **Production**
 - Continuous Integration (CI) & Continuous Delivery (CD)
 - DevOps
 - **Developers (Dev)** get a simple way to compose Docker applications without worrying about resource management details.
 - **Operations (Ops)** get security, user separation, and resource pools to manage how users, groups, and applications access resources.

Two Trends Emerging

- Hybrid Cloud
 - A single control plane across all of the enterprise's infrastructure, which will include **legacy virtualized** and **containerized** workloads.
 - Enterprises can move their workloads between their on-premise OpenStack clouds and use public clouds which support containerized computing to **scale out** as necessary.

Ecosystem

Ecosystem

- Container Formats
- Container OSes
- Container Orchestration Tools
- Containers as a Service

Ecosystem

- Container Formats

- Docker

- Docker has made building a container a smooth process for most developers to package, ship and run programs.

- Rocket (rkt)

- In December 2014, CoreOS announced the new container runtime intended to address issues around security and composability.
 - Today rkt is a leading implementation of App Container (appc), a specification defining a container image format, runtime environment and discovery protocol.

Ecosystem

- Container Formats (Cont.)
 - Open Container Project (OCP)
 - **DOCKERCON – SAN FRANCISCO – June 22, 2015**
 - OCP is housed under the **Linux Foundation**, and is chartered to establish **common standards** for software containers.
 - We're starting to see the concepts behind the **App Container (appc) spec** and **Docker** converge.

Ecosystem

- Container OSes
 - The minimal operating systems for running Docker container
 - CoreOS
 - RancherOS
 - Snappy Ubuntu Core
 - Red Hat Project Atomic
 - Mesosphere DCOS
 - VMware Photon

Ecosystem

- Container Orchestration Tools
 - Docker Machine, Swarm and Compose
 - OpenStack Magnum
 - Google Kubernetes

Ecosystem

- Containers as a Service
 - Amazon EC2 Container Service (ECS)
 - Google Container Engine (GCE)

Thank you