Cloud Computing

Winter Term 2020/2021

Tutorial Session 4

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Distributed and Operating Systems

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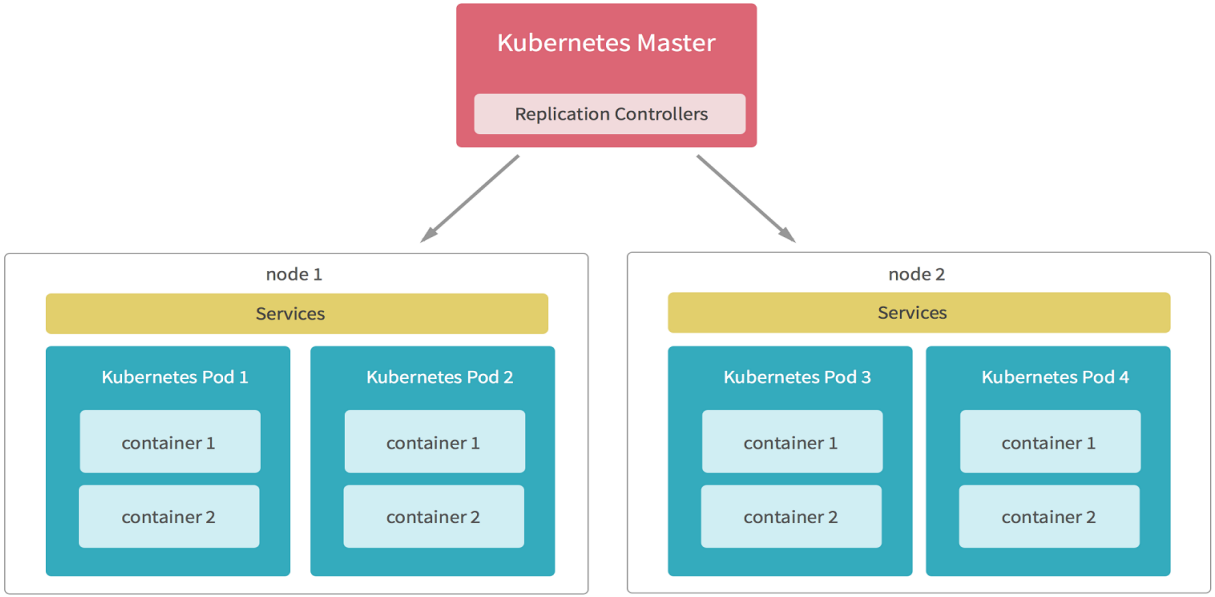
Assignment 4

- Containter Orchestration and Infrastructure-as-Code paradigm
- Goal:
  - Deploy two interdependent HTTPS services on a distributed infrastructure
- Tasks:
  1. Set up infrastructure using virtual machines
  2. Install Kubernetes on cluster
  3. Prepare application containers using Docker
  4. Deploy webservices to Kubernetes cluster in an Ansible playbook

Kubernetes

- Distributed platform for orchestrating containerized applications

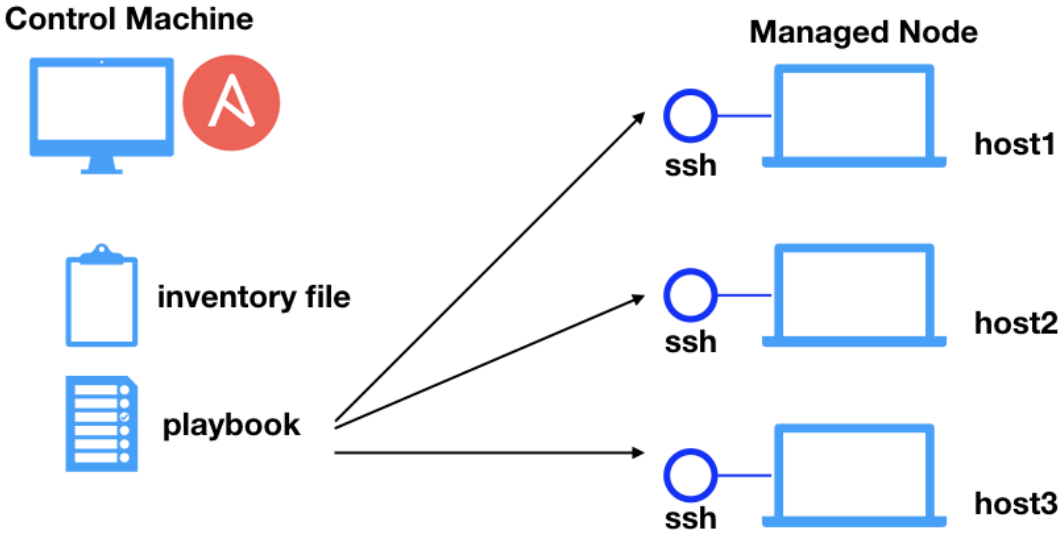


Kubernetes

- High-level concepts for powerful orchestration:
  - Pod
  - Deployment, ReplicationSet
  - Service, Endpoint
  - …

Ansible

- Declarative description of orchestration tasks on host level
- Idempotent “playbooks”
- Handy modules for all kinds of typical administration tasks



Target deployment

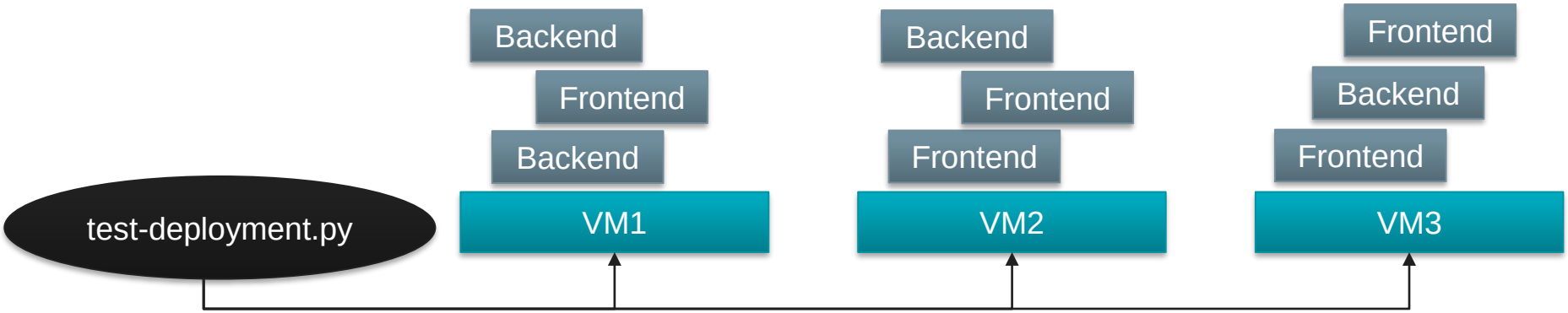
→ Attach HTTP response header:
CC-Frontend-Server = $hostname

→ Forward request to backend

→ Attach HTTP response header:
CC-Backend-Server = $hostname

→ Reply with simple text message

Target deployment



- Send many requests
- Evaluate Response headers

Practical Assignment 4

- Due: 17.01.2021
- Summary:
  - Prepare 3 VMs (in public cloud or locally)
  - Deploy Kubernetes cluster using Kubespray (Ansible playbook)
  - Prepare simple Docker containers for dummy web service
  - Roll out web service in Kubernetes cluster using an own Ansible playbook
  - Evaluate the deployment with a provided test script