Section 11 -

1 Introduction to Container Orchestration

Computer cluster (1)

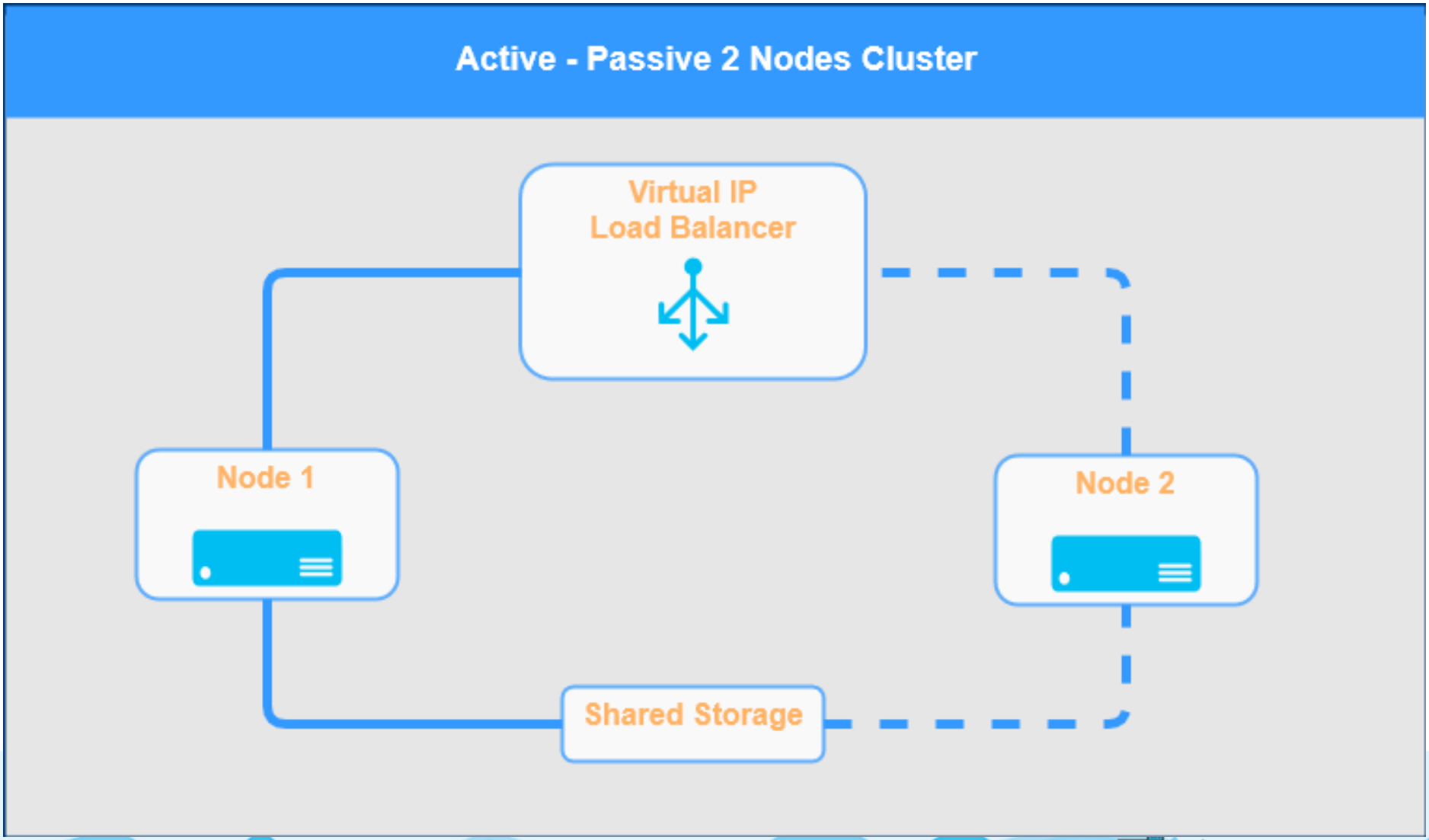
- A computer cluster is a set of connected computers (nodes) that work together so that, in many respects, they can be viewed as a single system
- The components of a cluster are usually connected to each other through fast local area networks
- In some circumstances, all the nodes of a cluster use the same hardware and the same OS

Computer cluster (2)

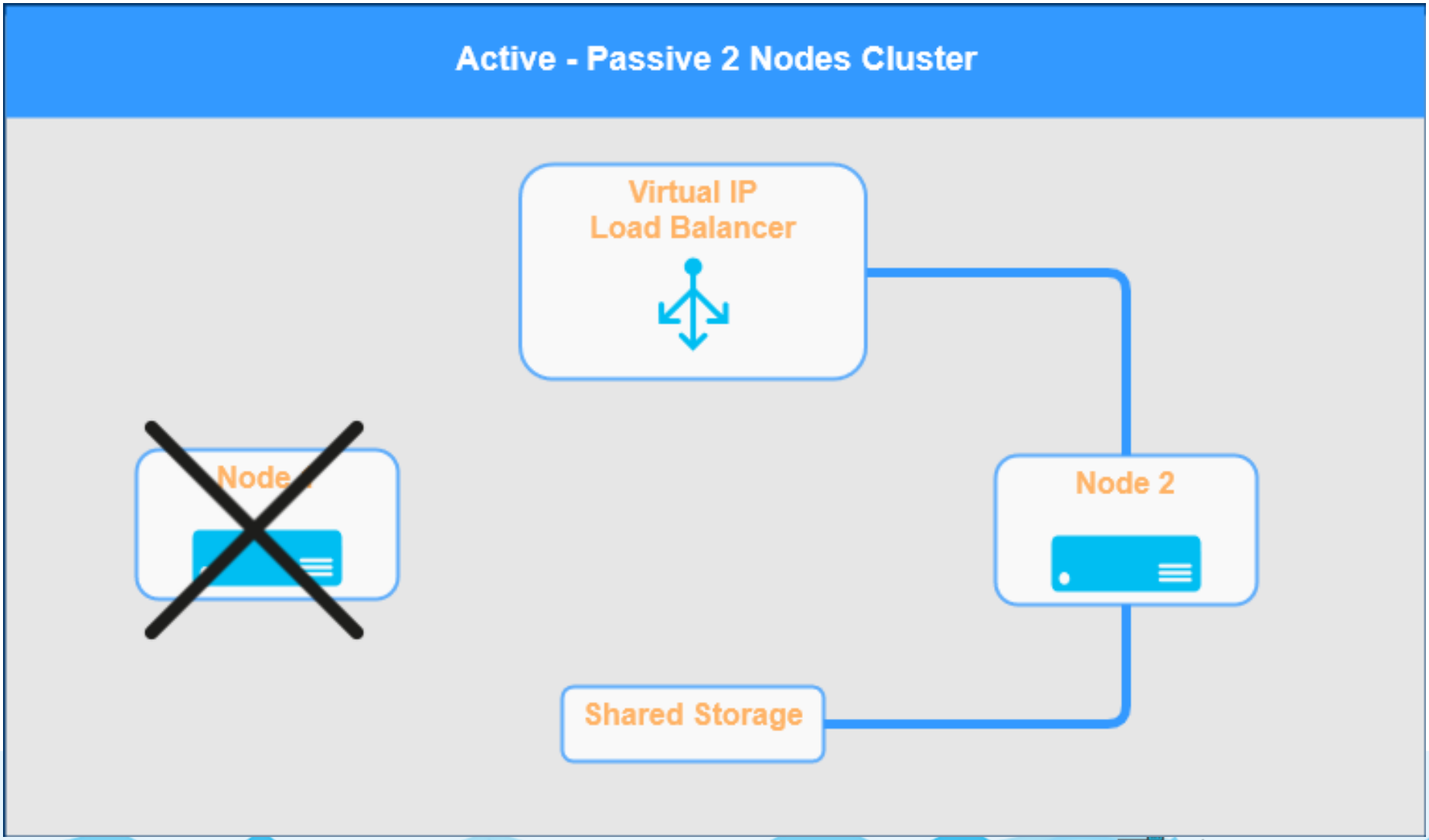
- Clusters are deployed to improve availability and performance over that of a single computer
  - High availability (HA) => Recover from failures (fault tolerance)
  - Horizontal Scaling => distribute the load across multiple replicated services

> Ref: wiki

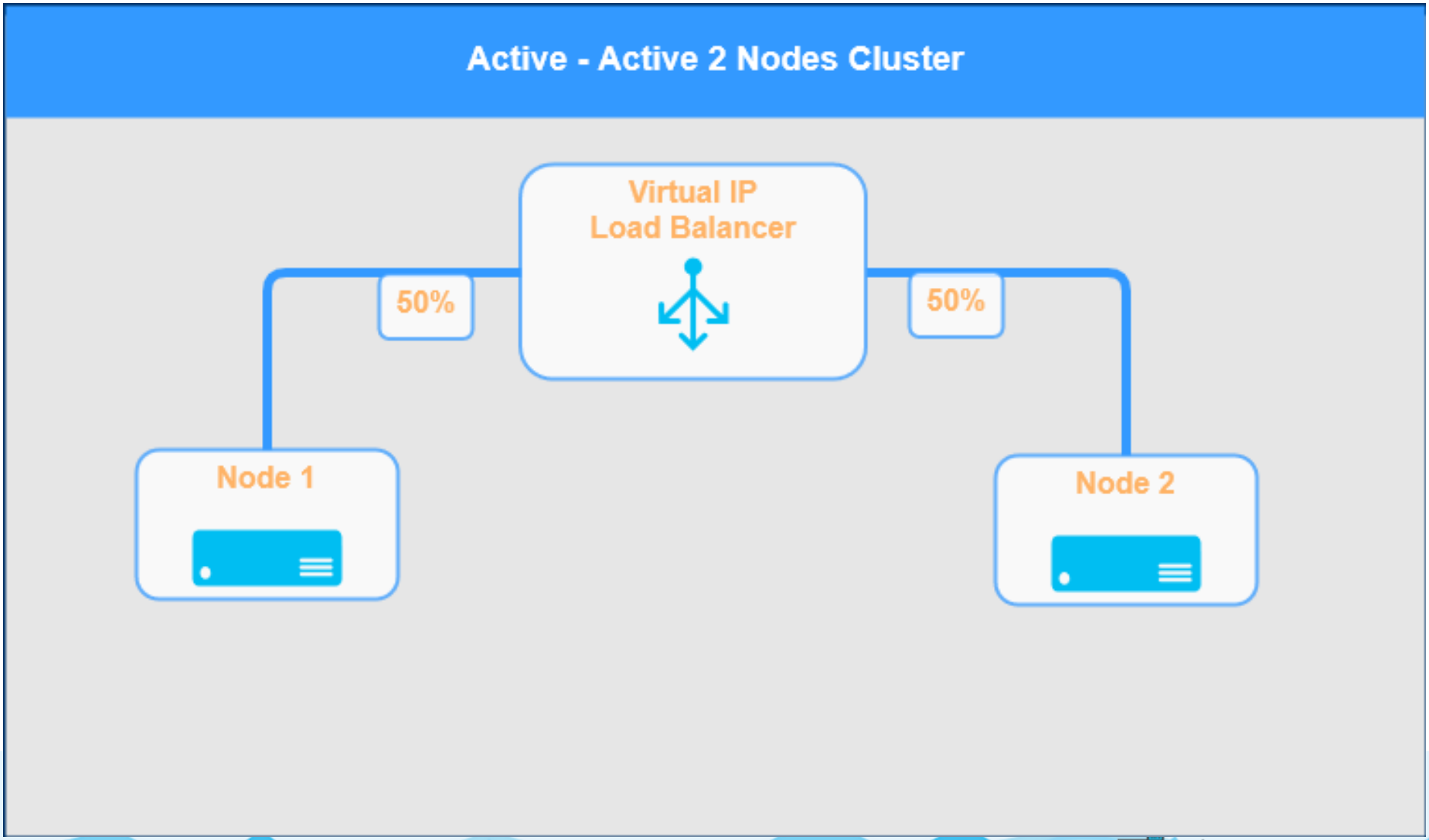
Active/Passive Cluster (1)



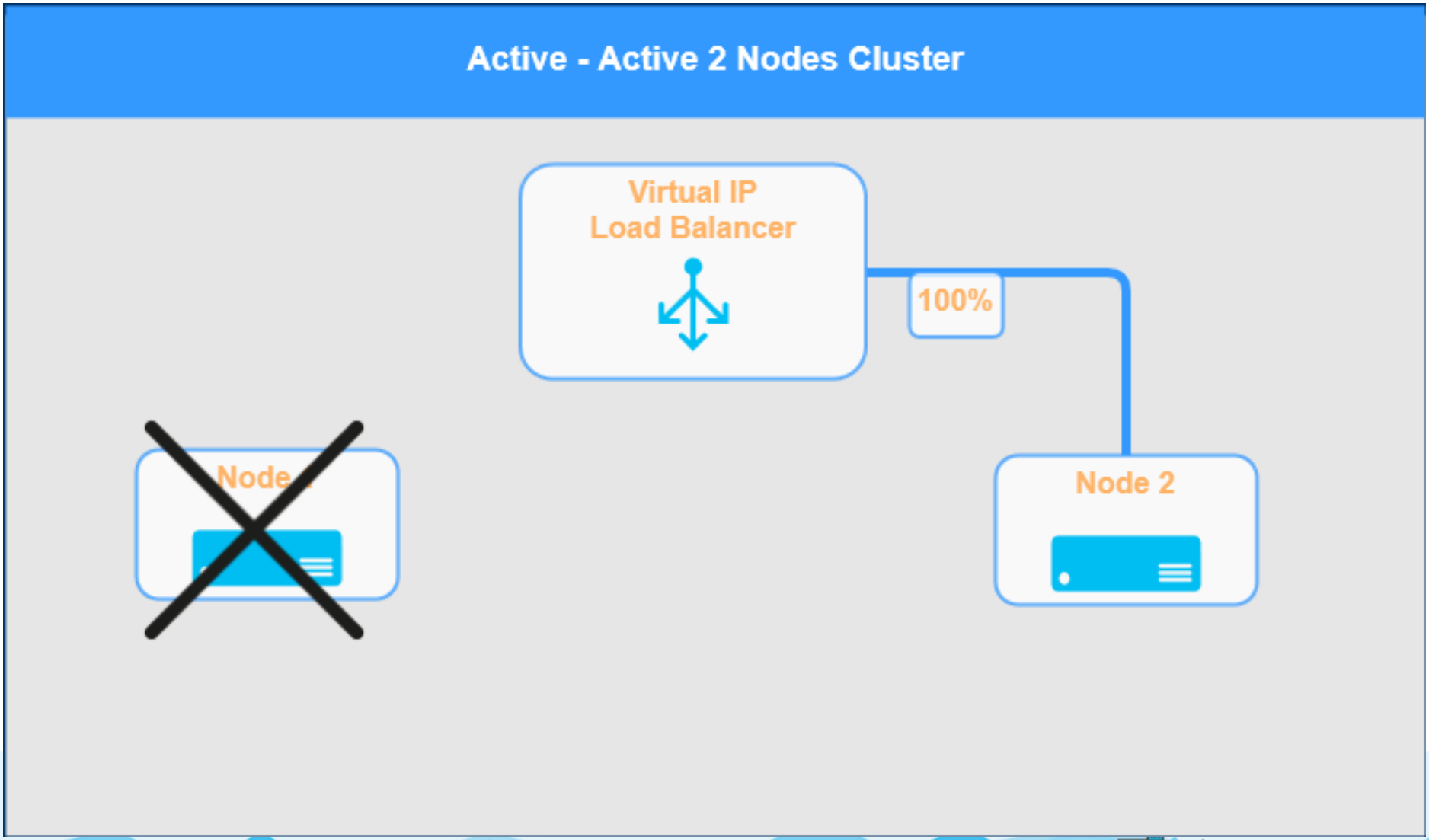
Active/Passive Cluster (2)



Active/Active Cluster (1)



Active/Active Cluster (2)



List of cluster management software

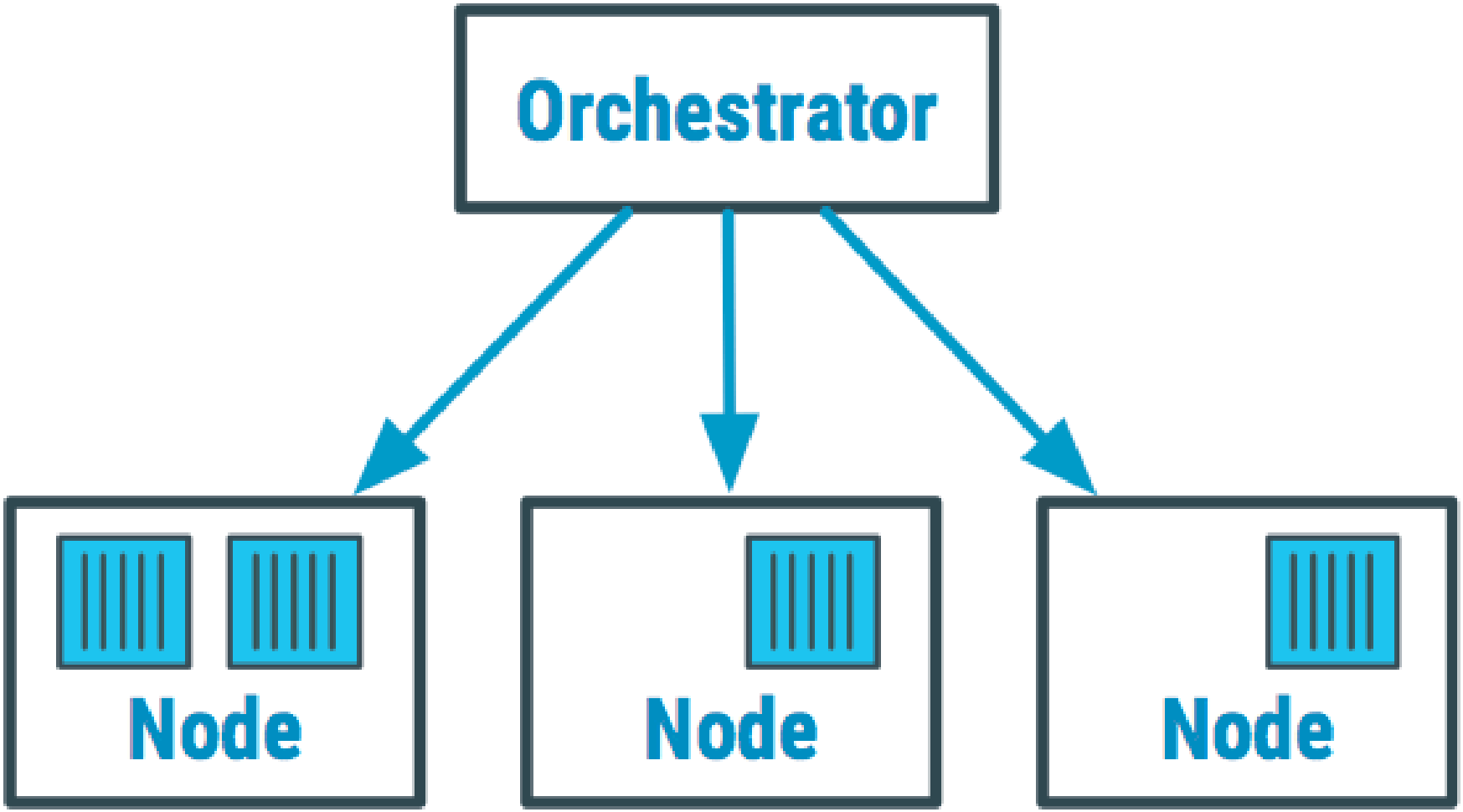
- Docker Swarm
- Kubernetes
- Apache Mesos
- Red Hat cluster suite
- Heartbeat, from Linux-HA
- Nomad, from HashiCorp
- Service Fabric, from Microsoft

Ref: wiki

Container Orchestrator (1)

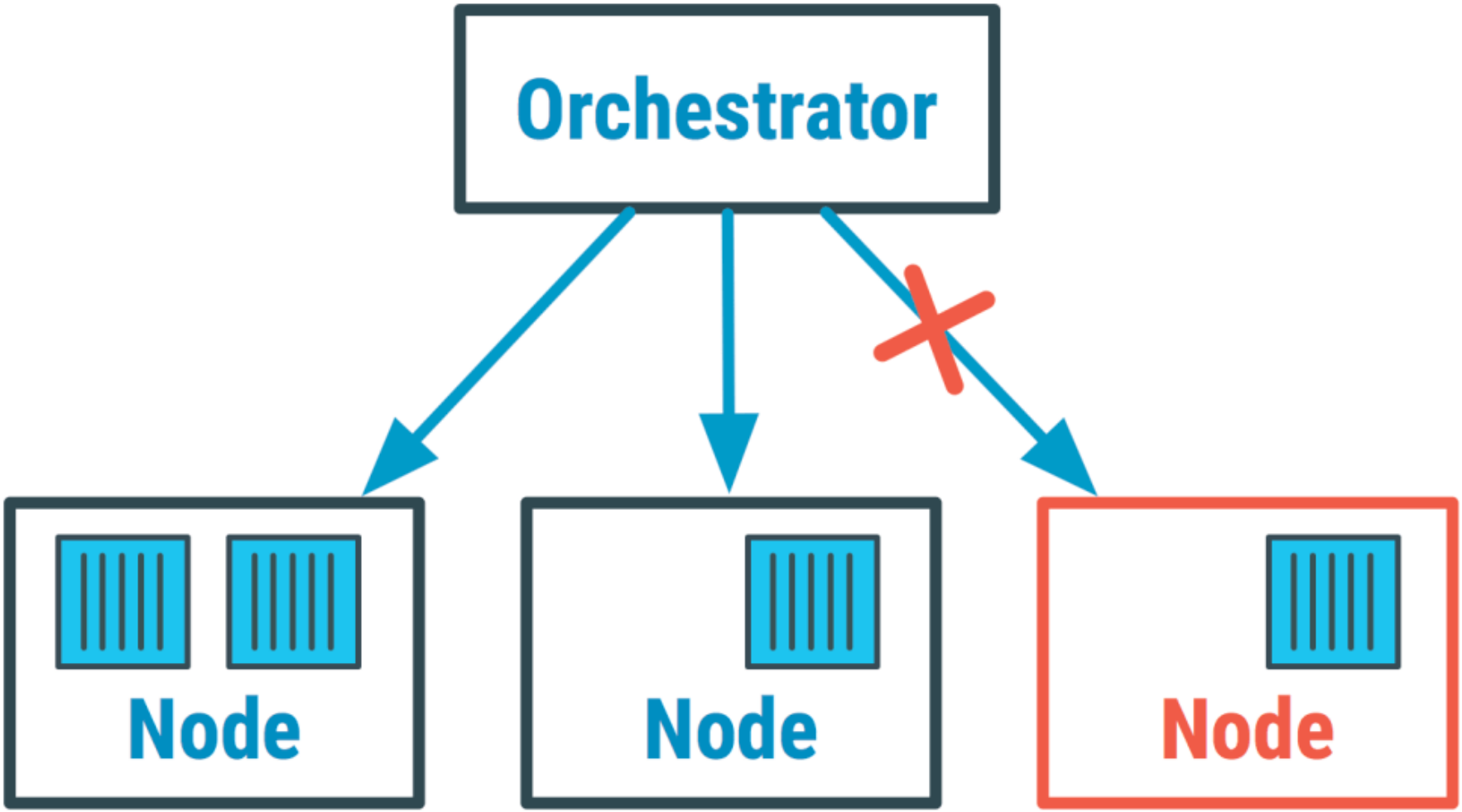
- A Container Orchestrator is a clustering solution
- It has a set of tools that are designed to easily manage complex container deployments across multiple nodes from one central location.
- This includes:
  - The containers themselves
  - The hosts
  - The virtual networking
  - The storage
  - etc…

Container Orchestrator (1a)



docker

Container Orchestrator (1b)



Container Orchestrator (2)

- Well known container orchestrators that are on the market today are:
  - Kubernetes
  - Docker Swarm
  - Mesos/Marathon
  - ...
- The most popular Container Orchestration solutions are
  - Kubernetes
  - Docker Swarm