What is Virtualization?

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Overview

- Virtualization Defined
- Many Forms of Virtualization
- Definition of a Hypervisor
- What is Server Virtualization?
- What Is a Virtual Machine?
- Understanding Virtual CPU, Memory, Storage, and Network

Overview

- Type 1 vs. Type 2 Hypervisors
- How You Administer Enterprise Virtualization
- Virtualization vs. "The Cloud”
- Virtualization vs. Containers

Virtualization

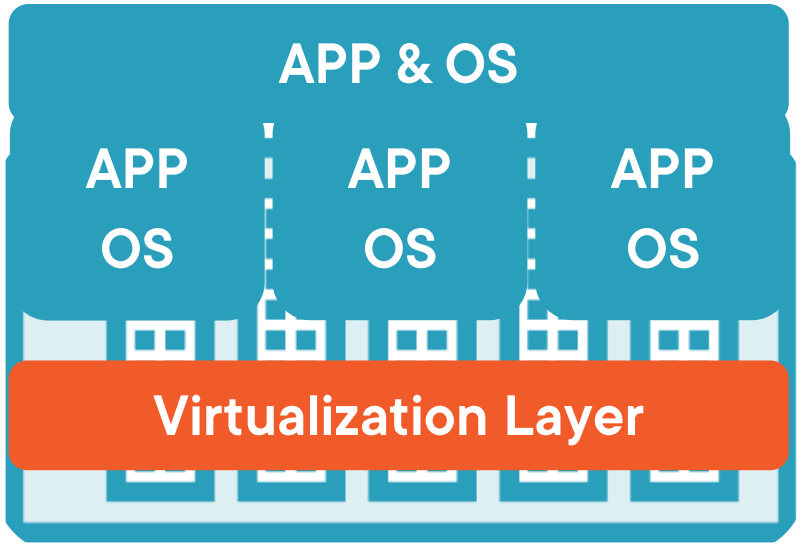
"In computing, virtualization refers to the act of creating a virtual (rather than actual) version of something, including virtual computer hardware platforms, storage devices, and computer network resources."

-Wikipedia

Virtualization Defined

The virtualization layer is an abstraction layer

The OS is abstracted from the hardware



Server

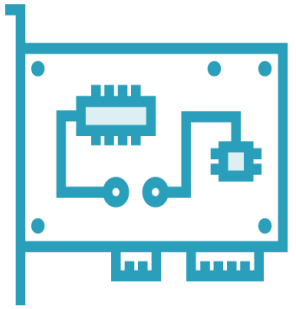
OS no longer has to be bound to the server that it runs on

Most well-known form of virtualization is server virtualization

Many Forms of Virtualization

Server

Storage



Network

Desktop

I/O

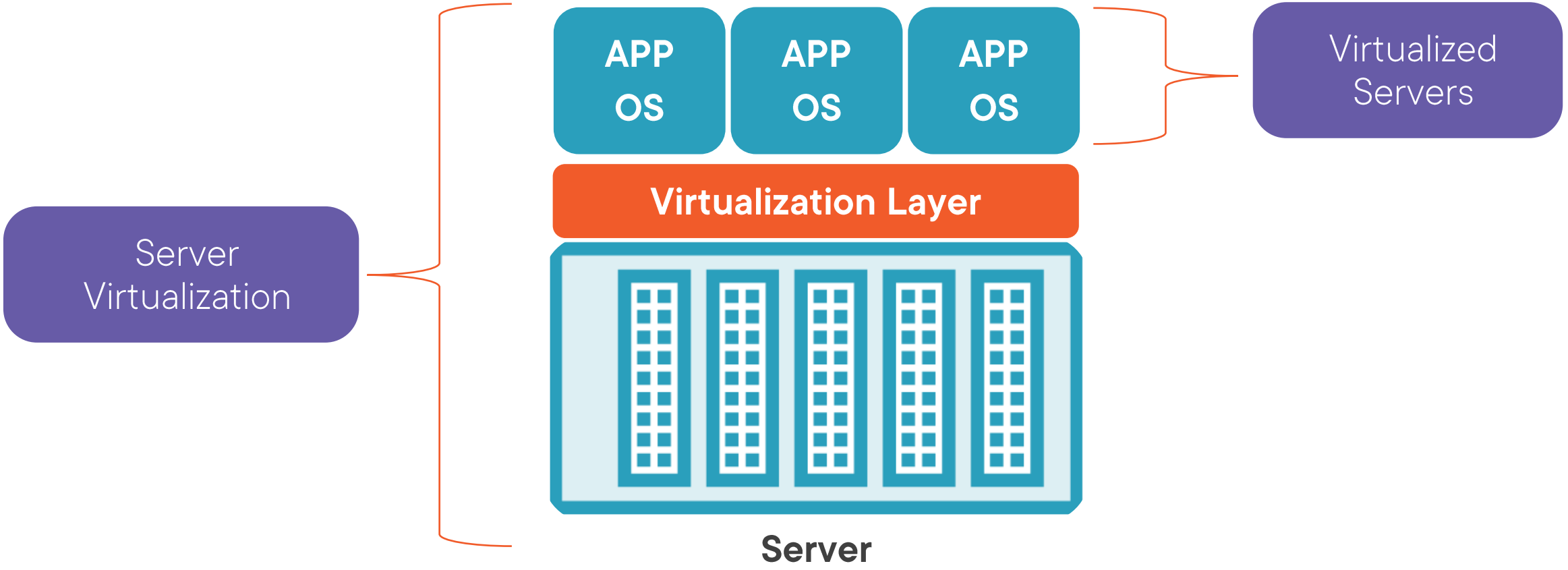
Application

Hypervisor

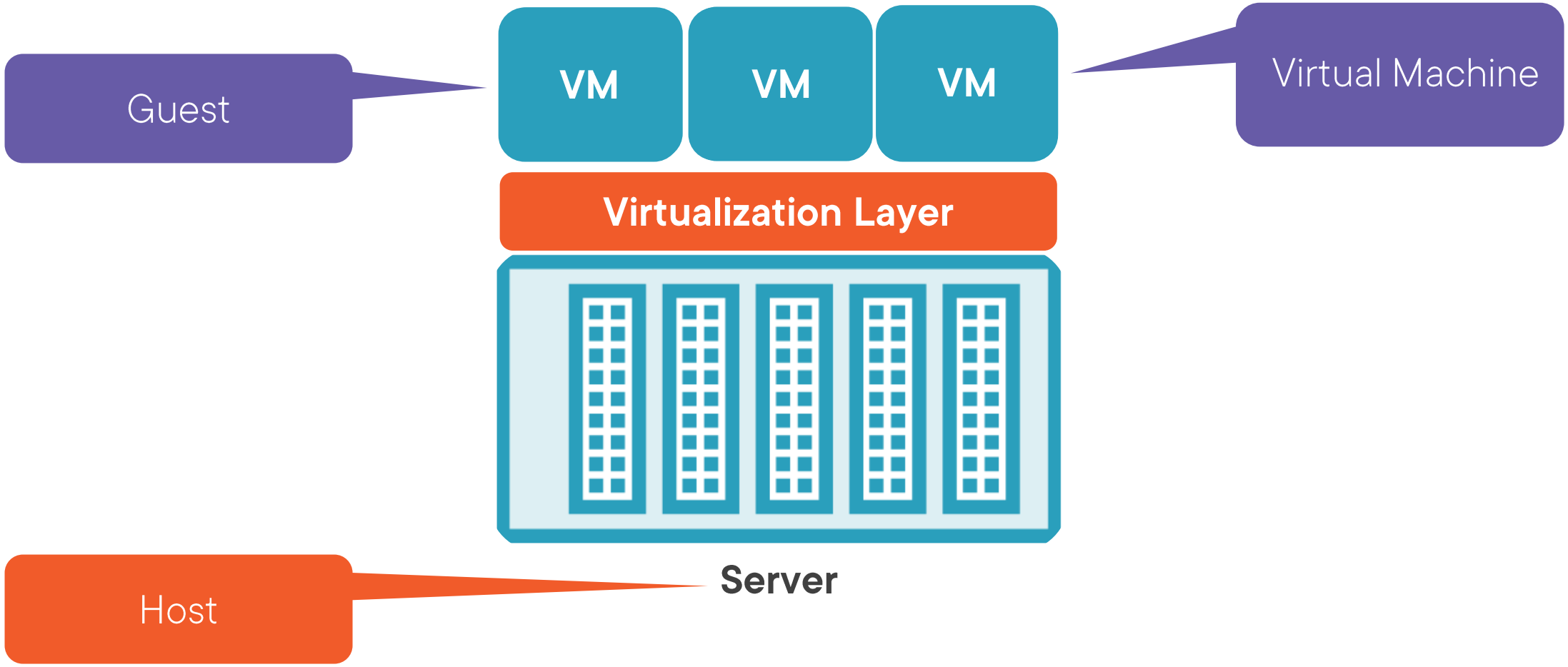
“A hypervisor or virtual machine monitor (VMM) is computer software, firmware or hardware that creates and runs virtual machines.

-Wikipedia

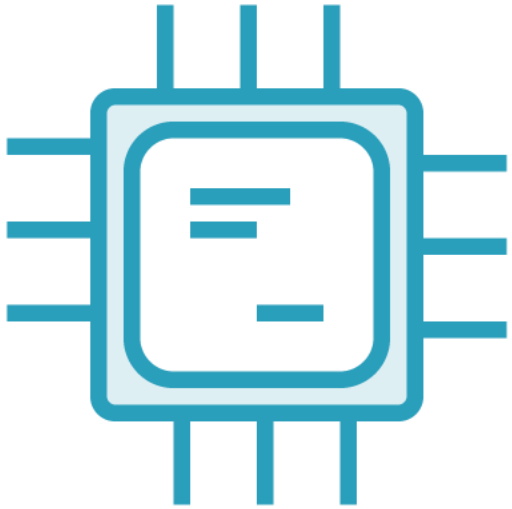
What is Server Virtualization?



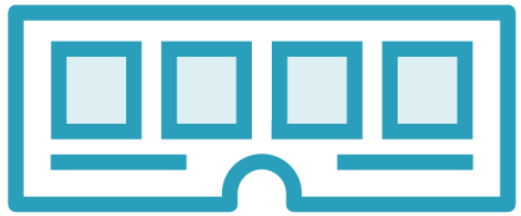
What is a Virtual Machine?



Understanding Virtual CPU, Memory, Storage, and Network

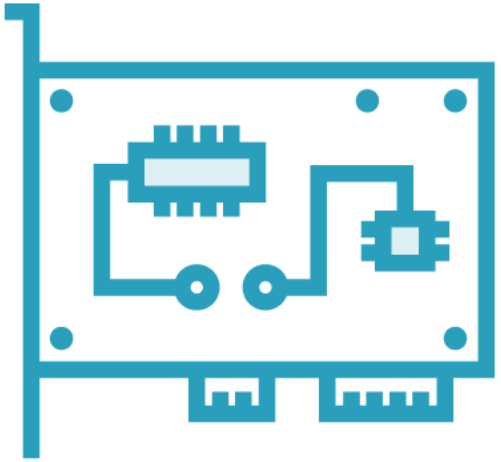


Virtual CPU



Virtual Memory

Virtual Disk



Virtual Network

Type 1 vs. Type 2 Hypervisors

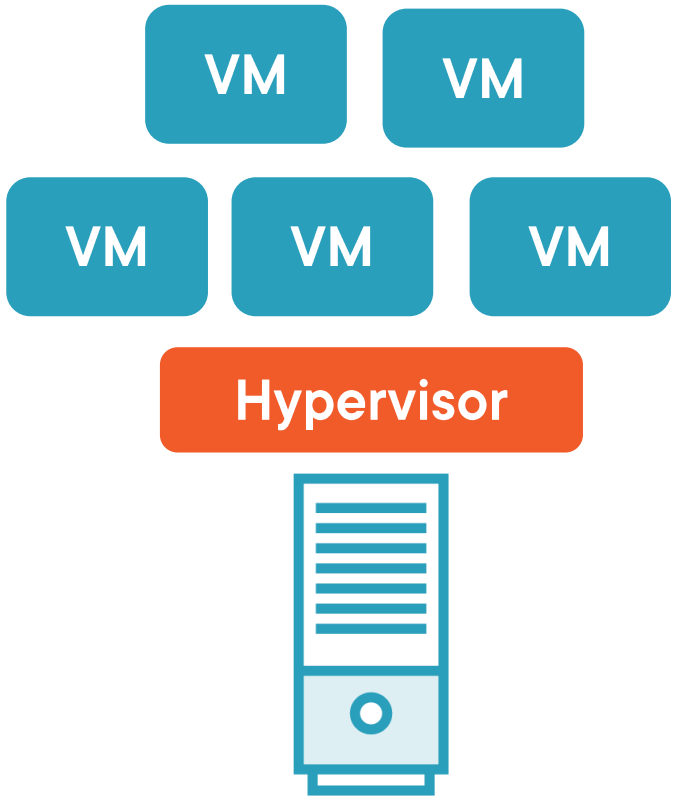
Type 1 Hypervisor

- Loaded directly on the hardware
- Examples:
  - Hyper-V
  - ESXi / vSphere
  - KVM

Type 2 Hypervisor

- Loaded in an OS running on the hardware
- Examples:
  - Workstation / Fusion
  - Oracle VM (Virtual Box)
  - Parallels

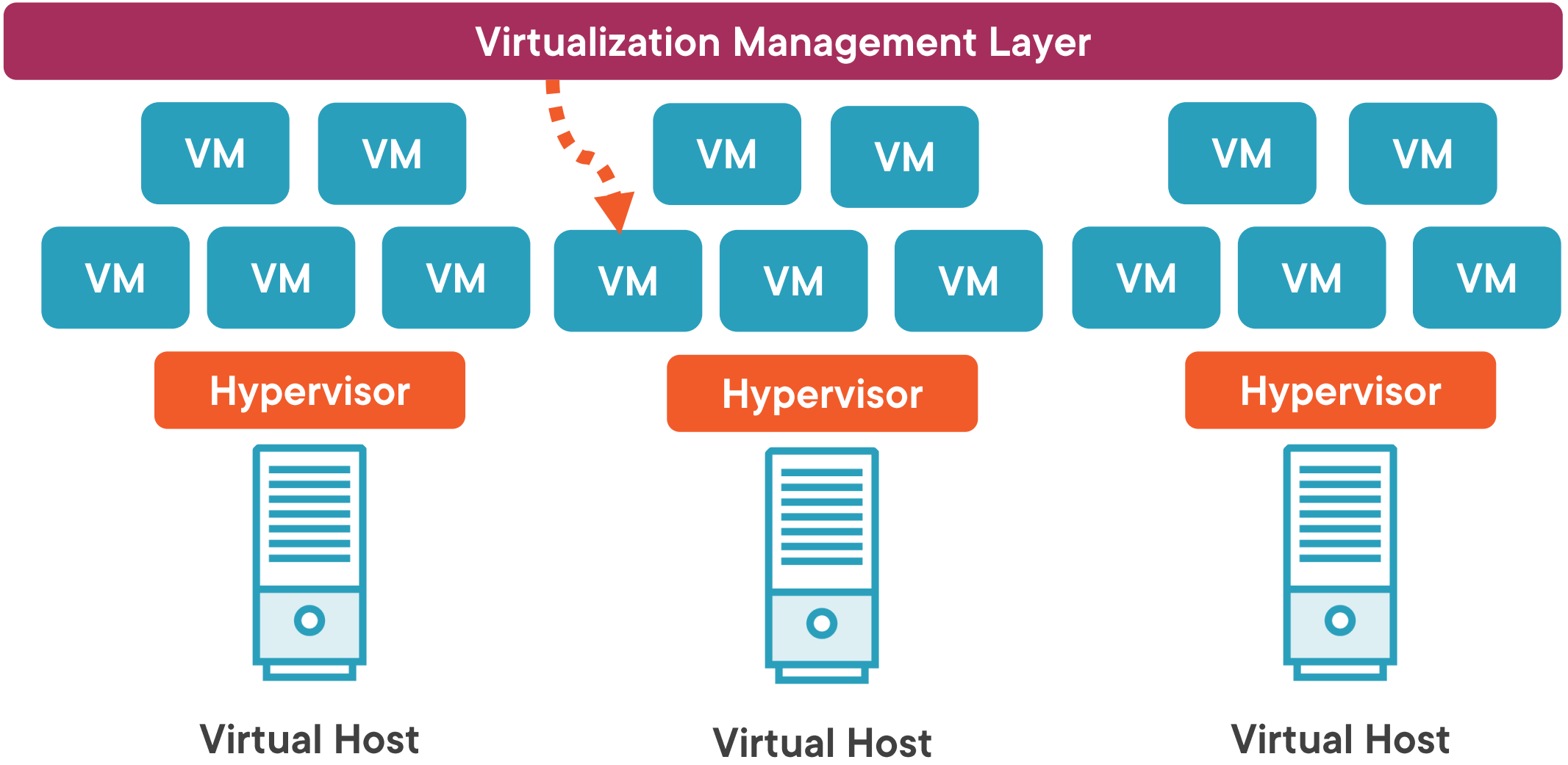
Type 1 vs. Type 2 Hypervisors



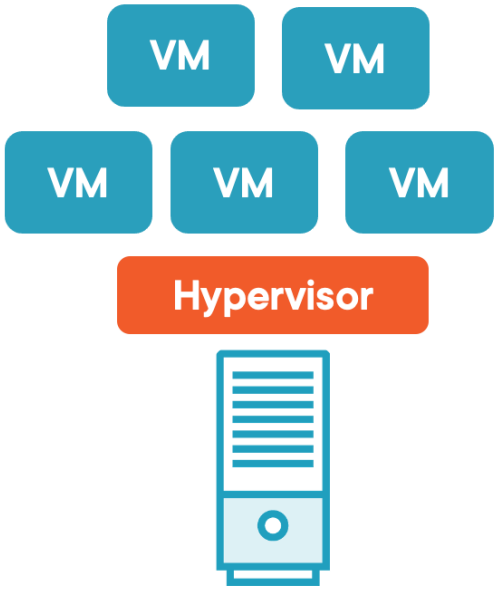
Type 1
Bare Metal
Hypervisor

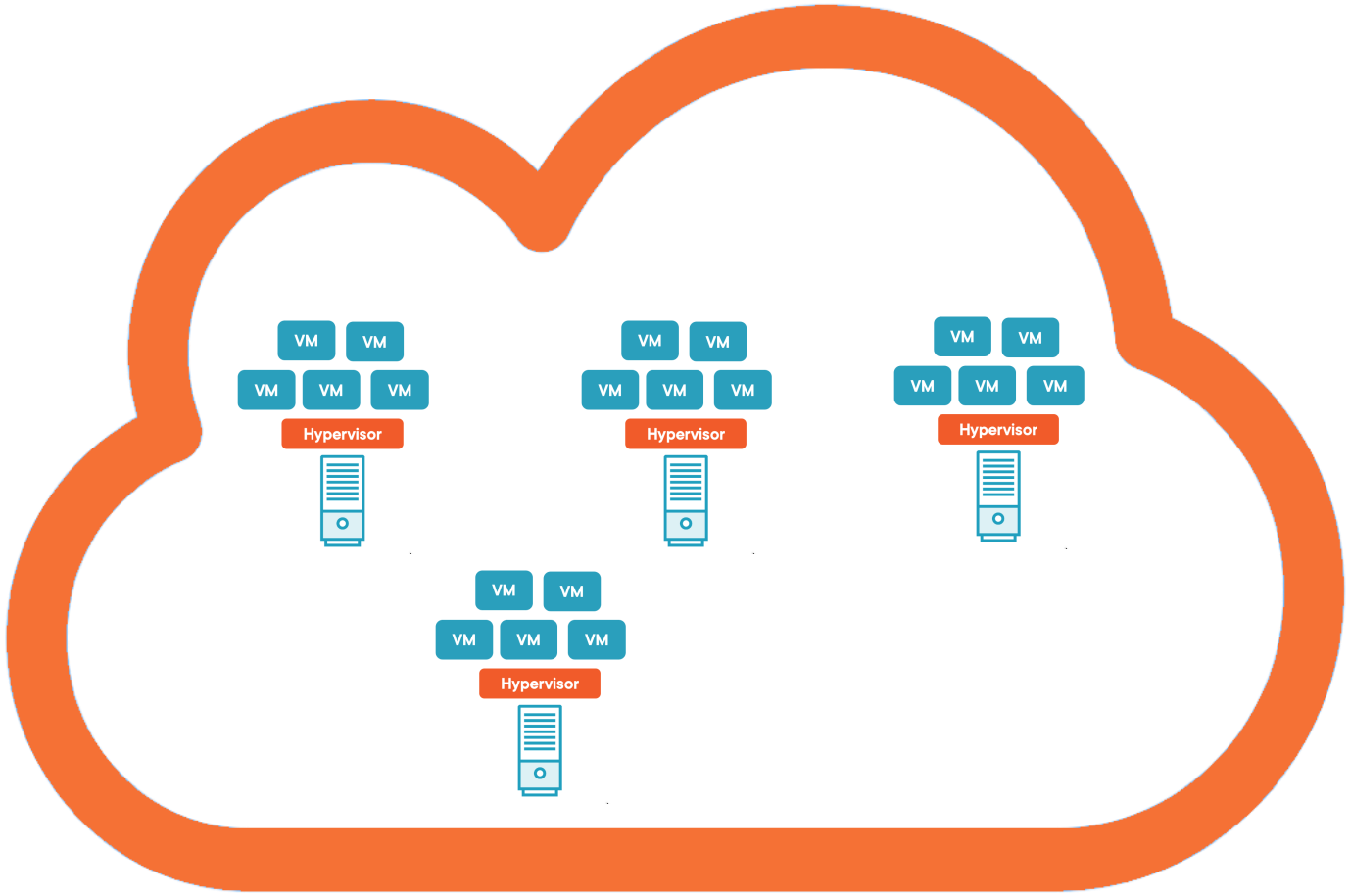
Type 2
Hosted
Hypervisor

How You Administer Enterprise Virtualization



Virtualization vs. "The Cloud"





Virtualization vs. Containers

Virtualization

- Software construct
- Includes OS, shared libraries, applications, and data
- Larger in size and slower to start up
- Requires more updating

Container

- Software construct
- Includes applications and sometimes data
- OS and libraries are shared by the host running the containers
- Smaller in size and faster to startup

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Up Next:
Why Do You Need to Learn Virtualization?