Virtual Machines (VM)

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What is a Virtual Machine

- A software abstraction of computer hardware
  - CPU
  - RAM
  - Storage
  - Networking
- Gives us the opportunity to maximize hardware's potential

What is a Hypervisor (Credit: Redhat)

- ▶ Software that creates and runs Virtual Machines
- ▶ Allocates/manages resources for Virtual Machines
- ▶ Can be referred to as a Virtual Machine Monitor (VMM)
- ▶ May be backed by hardware based virtualization (Intel VT/AMD SVM)

Types of Hypervisors

Type 1
- ▶ Runs directly on hardware with its own minimal operating system
- ▶ Generally provides better performance
- ▶ Preferable for "real world" workloads

Type 2
- ▶ Can run on top of an existing operating system
- ▶ Preferable for at home use or per-machine use

Examples of Hypervisors

Type 1	Type 2
VMWare ESXI	VMWare Workstation
HyperV	Virtual Box
KVM	
Proxmox	
Citrix XenServer	

Virtualization is NOT emulation

Instruction Set	Bits
x86	32 bit
x86_64	64 bit
ARM	32 bit
ARM64/AArch64	64 bit

Resources

What is a hypervisor - Redhat

What is a virtual machine - Redhat