EPAM University Programs

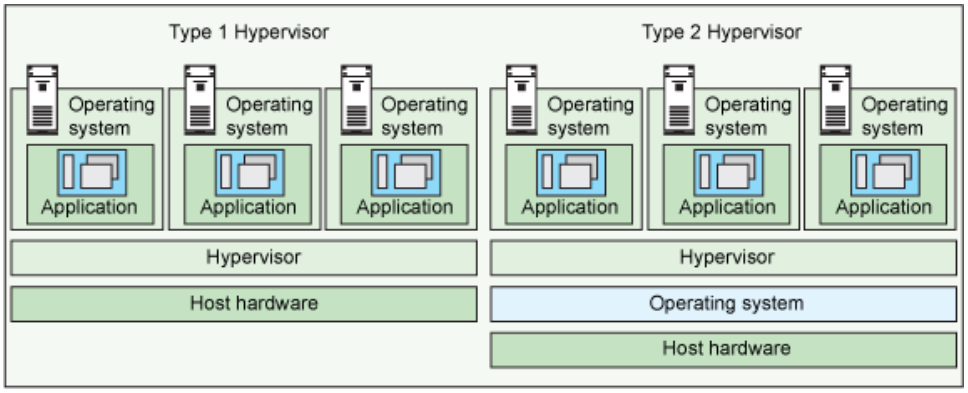
DevOps 2020

Virtualization and Cloud Basics

TASK 2.1

There are two types of hypervisors:

- **Type 1 hypervisor: hypervisors run directly on the system hardware – A "bare metal" embedded hypervisor,**
- **Type 2 hypervisor: hypervisors run on a host operating system that provides virtualization services, such as I/O device support and memory management.**



Type 1 hypervisors:

1. VMware ESX and ESXi

These hypervisors offer advanced features and scalability, but require licensing, so the costs are higher. There are some lower-cost bundles that VMware offers and they can make hypervisor technology more affordable for small infrastructures.

VMware is the leader in the Type-1 hypervisors. Their vSphere/ESXi product is available in a free edition and 5 commercial editions.

2. Microsoft Hyper-V

The Microsoft hypervisor, Hyper-V doesn't offer many of the advanced features that VMware's products provide. However, with XenServer and vSphere, Hyper-V is one of the top 3 Type-1 hypervisors. It was first released with Windows Server, but now Hyper-V has been greatly enhanced with Windows Server 2012 Hyper-V. Hyper-V is available in both a free edition (with no GUI and no virtualization rights) and 4 commercial editions – Foundations (OEM only), Essentials, Standard, and Datacenter.

3. Citrix XenServer

It began as an open source project. The core hypervisor technology is free, but like VMware's free ESXi, it has almost no advanced features. Xen is a type-1 bare-metal hypervisor. Just as Red Hat Enterprise Virtualization uses KVM, Citrix uses Xen in the commercial XenServer. Today, XenServer is a commercial type-1 hypervisor solution from Citrix, offered in 4 editions.

4. Oracle VM

The Oracle hypervisor is based on the open source Xen. Oracle VM lacks many of the advanced features found in other bare-metal virtualization hypervisors.

Type 2 hypervisors:

1. VMware Workstation/Fusion/Player

VMware Player is a free virtualization hypervisor.
It is intended to run only one virtual machine (VM) and does not allow creating VMs.
VMware Workstation is a more robust hypervisor with some advanced features, such as record-and-replay and VM snapshot support.
VMware Workstation has three major use cases:

- **for running multiple different operating systems or versions of one OS on one desktop,**
- **for developers that need sandbox environments and snapshots, or**

- **for labs and demonstration purposes.**

2. VMware Server

VMware Server is a free, hosted virtualization hypervisor that's very similar to the VMware Workstation. VMware has halted development on Server since 2009

3. Microsoft Virtual PC

This is the latest Microsoft's version of this hypervisor technology, Windows Virtual PC and runs only on Windows 7 and supports only Windows operating systems running on it.

4. Oracle VM VirtualBox

VirtualBox hypervisor technology provides reasonable performance and features if you want to virtualize on a budget. Despite being a free, hosted product with a very small footprint, VirtualBox shares many features with VMware vSphere and Microsoft Hyper-V.

5. Red Hat Enterprise Virtualization

Red Hat's Kernel-based Virtual Machine (KVM) has qualities of both a hosted and a bare-metal virtualization hypervisor. It can turn the Linux kernel itself into a hypervisor so the VMs have direct access to the physical hardware.