

1. Cloud Infrastructure consists

- a. Data center
- b. Storage
- c. Network component
- d. Compute resource

2. Compute resource**a. Virtual server**

- i. Rapidly provisioned
- ii. Provide an elastic & scalable environment
- iii. Low cost to use

b. Bare Metal Server

- i. Single-tenant, dedicated physical server
- ii. Work best for
 - 1. Cpu and i/o intensive workloads
 - 2. Excel with highest performance and security
 - 3. Satisfy strict compliance requirements
 - 4. Offer complete flexibility control and transparency

c. Serverless Server**3. Storage****a. File storage**

- i. is typically presented to compute nodes as a Network File System (NFS), which means that the storage is connected to compute nodes over a standard ethernet network.

b. Block storage

- i. is presented to compute nodes using high-speed fiber connections, typically provisioned in volumes, which are mounted onto a compute node.

c. Object storage

- i. is accessed via an API and doesn't need an underlying compute node. Object Storage offers infinite capacity as you can keep adding files to it and just pay for what you use. Compared to the other storage types, object storage is slowest in terms of read and write speeds.

- ii. Content Delivery Network (CDN)

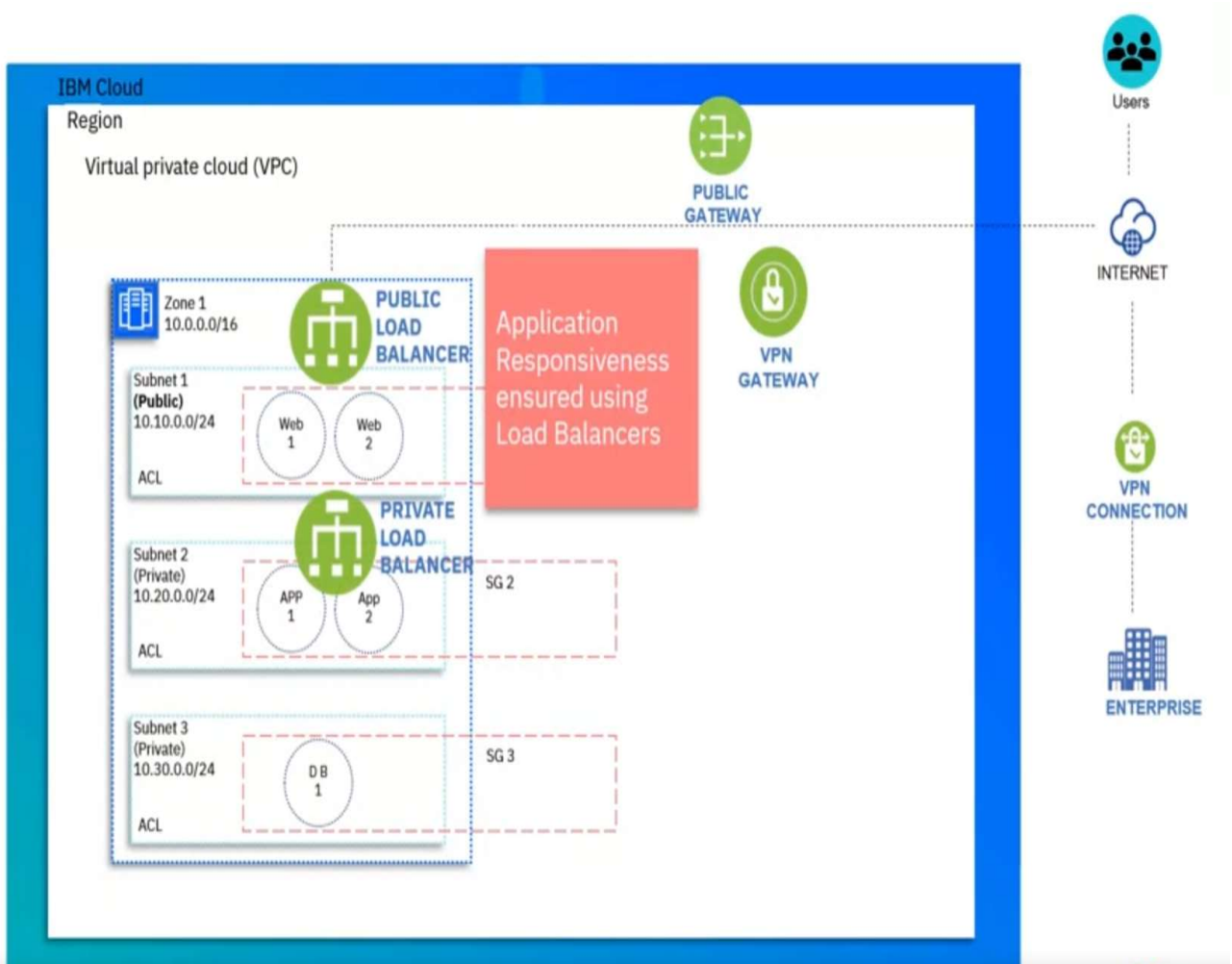
- 1. is a distributed server network that accelerates internet content delivery by delivering temporarily stored or cached copies of website or media content to users based on their geographic location.

d. Direct attached storage (Local storage)

4. Network component

a. Subnet

- i. Access Control List (ACLs)
- ii. VSI



5. **Hypervisor** : piece of software that pull resource and allocate them to virtual environment

- a. Type 1 : install directly on top of the physical server ex. VMware
- b. Type 2 : install on top of the Host OS ex. Oracle, Virtual Box

6. **Containers** : a standard unit of software that packages up code and all its dependencies so the application runs quickly and reliably from one computing environment to another

7. **Virtual machine**

- a. Shared/Public cloud VM
 - i. provider-managed, multi-tenant deployment with predefined sizes
- b. Transient or spot VM
 - i. Cloud providers make this unused capacity available to users at a much lower cost
 - ii. Great for non-production and testing/ developing
- c. Reserved VM
- d. Dedicated hosts
 - i. Single tenant isolation

Q: Virtual Machine (VM) 跟 容器 (Container) 有什麼差異?

簡單回答:

Virtual Machine (VM) 模擬的是硬體資源, 跑在上面的載體是 作業系統 (Operating System), 隔離的是 硬體資源。通常在玩 VM 工具, 建立的時候都要選擇要幾個 CPU、Memory、Disk、Network、I/O Devices ... 等, 然後也會選擇作業系統類型。

VM 相關工具市面上常見的有 [VMWare](#)、[Oracle VirtualBox](#)、[QEMU](#)、[Proxmox](#)。

Container 是在作業系統裡面, 模擬的是 應用程式的 Process, 隔離的是 Process 之間的資源與通訊。跑 Container 建立時選擇的是 應用程式 (Application), 配置的是 volume、port mapping、resource allocate 等。容器的實踐有 docker、lxc, 乃至於後來 K8s 因應 CRI (Container Runtime Interface) 的實作, 像是 [CRI-O](#)、[containerd](#)、[kata containers](#)

簡單列表如下:

類型	模擬對象	載體	實作
Virtual Machine	硬體 (CPU, Memory, I/O)	作業系統 (OS)	VMWare, VirtualBox
Container	程序 (Process)	應用程式 (Application)	Docker, LXC

列表不比較:

- 1. 快慢的問題: 這兩個東西本質上不一樣, 比較的基準也不一樣。
 - 就像房子裡放了一個電視, 然後比較房子和電視兩個移動五公尺, 誰比較快? 或者誰比較輕 ... 有點鬼打牆。
- 2. 誰取代誰的問題: container 還是跑在 host machine 上, 至於 host machine 用什麼? 取決於需求。至少目前為止還沒有真的誰取代誰的問題。