

虛擬化環境建置與應用入門



新北市政府

Education Department,
New Taipei City Government

教育局

教育研究發展科

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VM虛擬化環境建置與應用入門



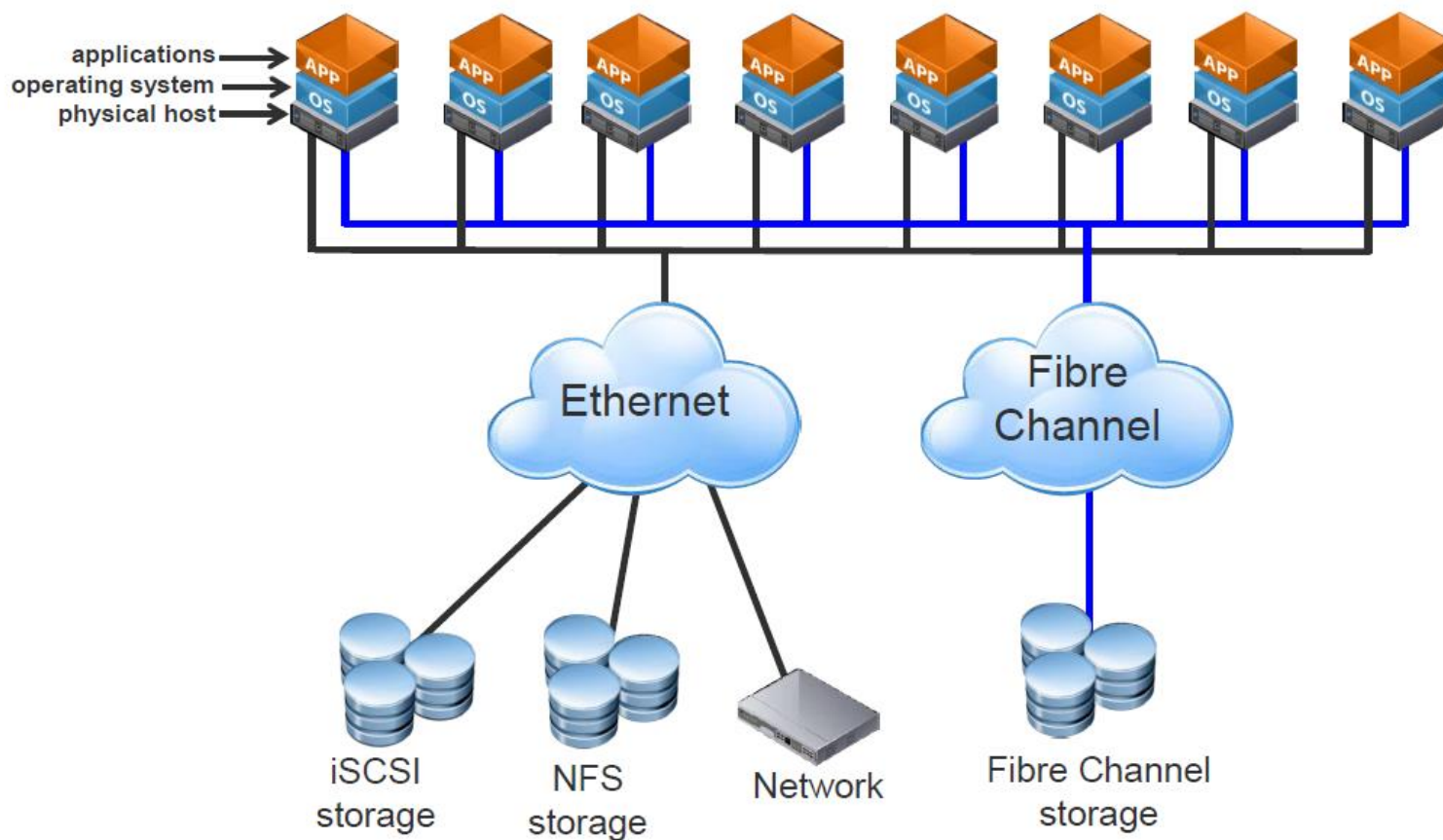
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- VMware Workstation Player
 - 下載與安裝 VMware Workstation Player
 - 建立與安裝 CentOS 7 虛擬機及設定虛擬網路
 - 建立與安裝 Windows 10 虛擬機及設定虛擬網路
 - 匯出與匯入虛擬機
- VMware vSphere Hypervisor
 - 下載與安裝 VMware vSphere Hypervisor (ESXi)
 - 安裝授權序號、校時、與上傳檔案
 - 建立與安裝 Windows 10 虛擬機
 - 匯入 OVF 虛擬機
 - 虛擬機快照與還原
 - 資源監控
 - 設定虛擬機自動開機
 - 匯出與匯入虛擬機

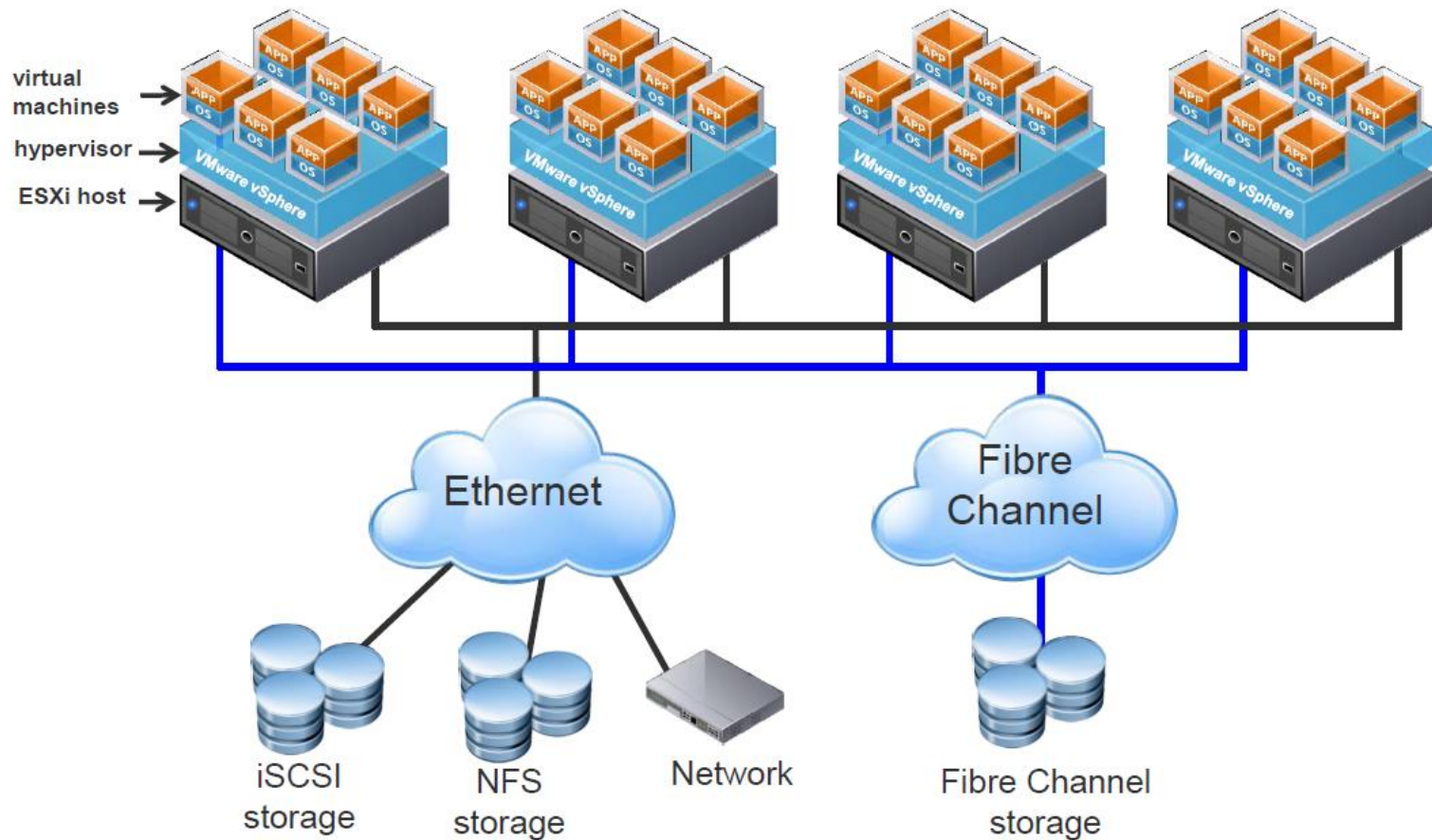
實體機多伺服器架構

Physical Infrastructure



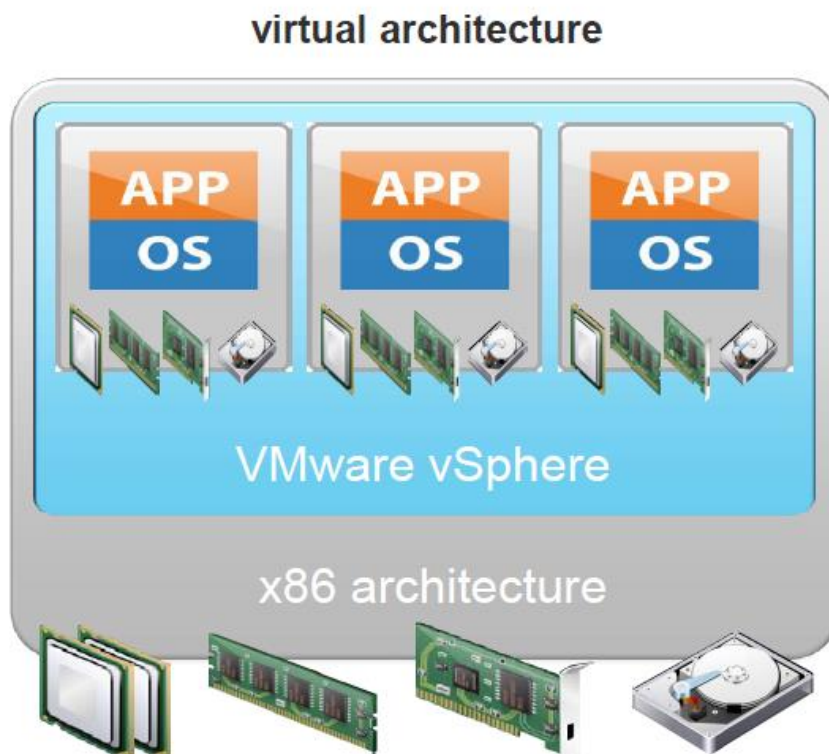
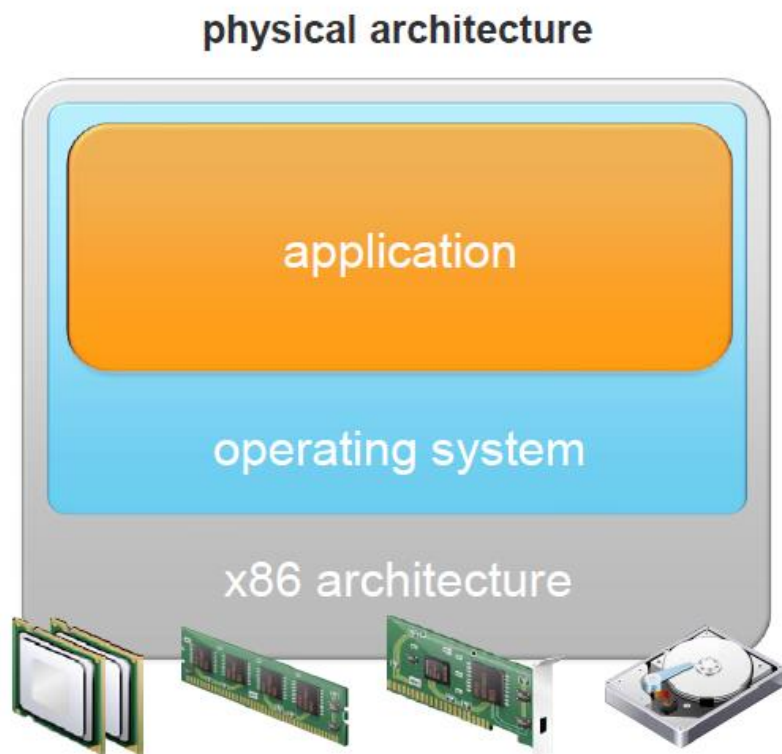
虛擬化多伺服器架構

Virtual Infrastructure



實體與虛擬比較

Physical and Virtual Architecture



為何虛擬化

Why Use Virtual Machines?

Physical machine

Difficult to move or copy

Bound to a specific set of hardware components

Often has a short lifecycle

Requires personal contact to upgrade hardware



Virtual machine

Easy to move and copy:

- Encapsulated into files
- Independent of physical hardware

Easy to manage:

- Isolated from other virtual machines
- Insulated from hardware changes

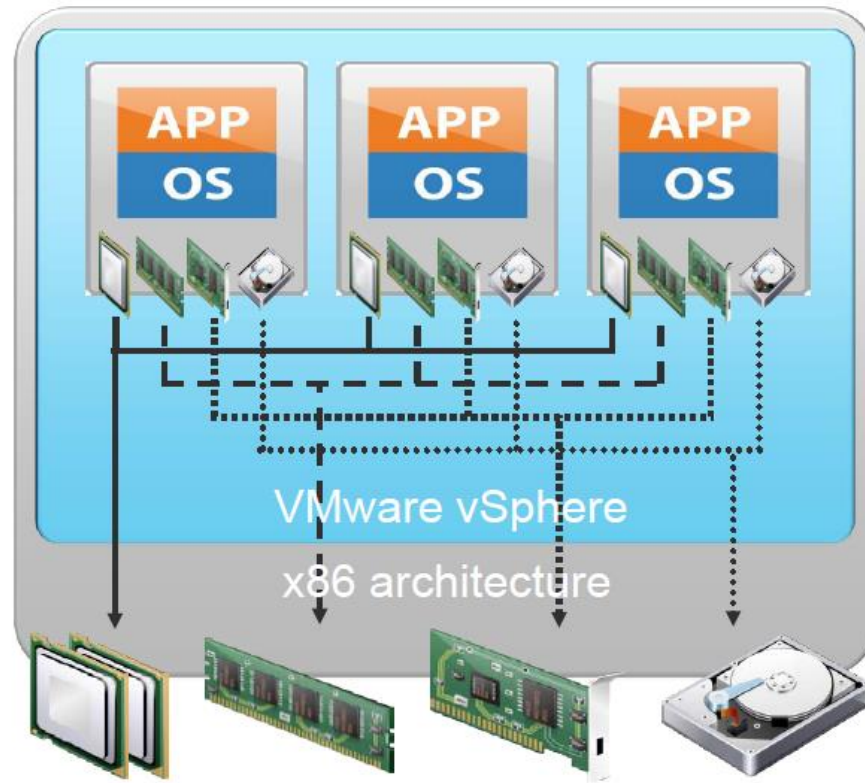
Provides the ability to support legacy applications

Allows servers to be consolidated



虛擬化基本概念資源共用

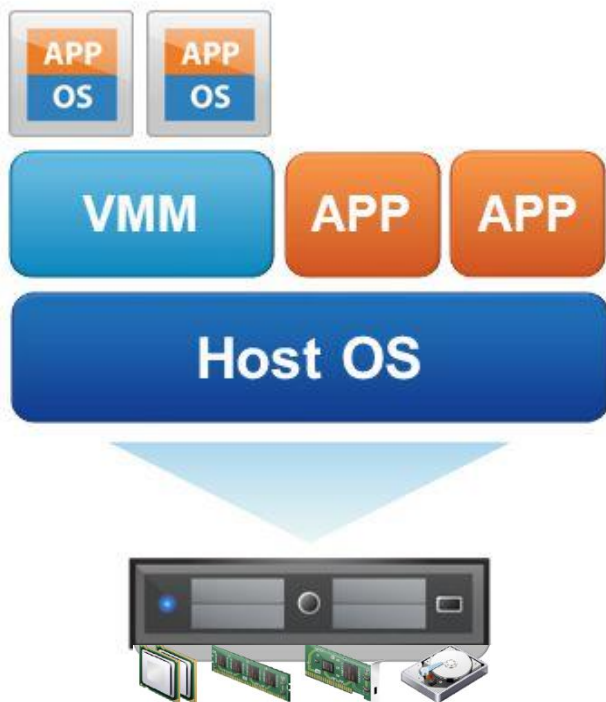
Resource Sharing



虛擬化型態

Types of Virtualization

Hosted

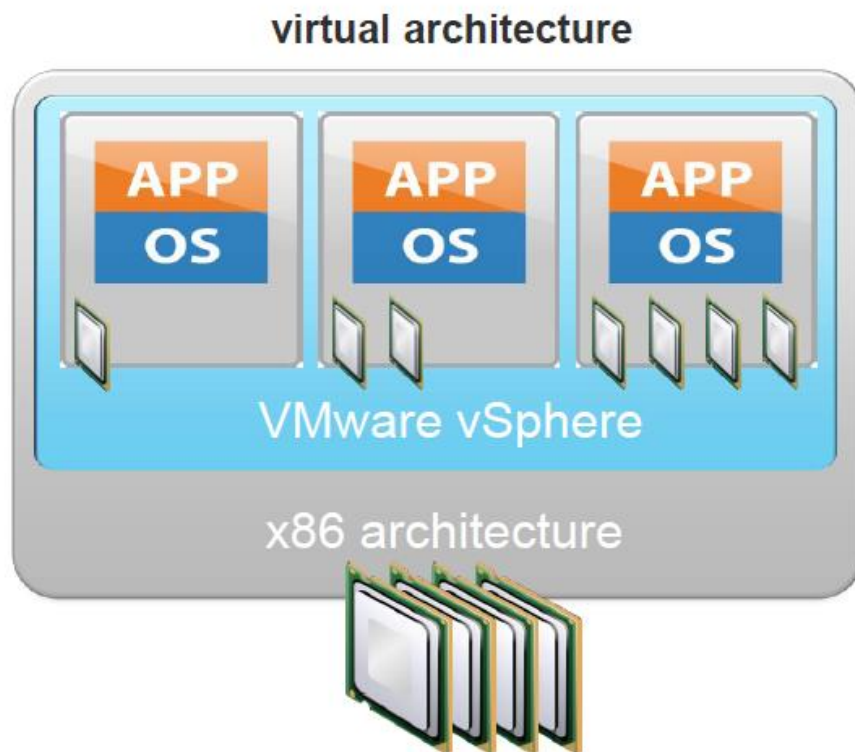
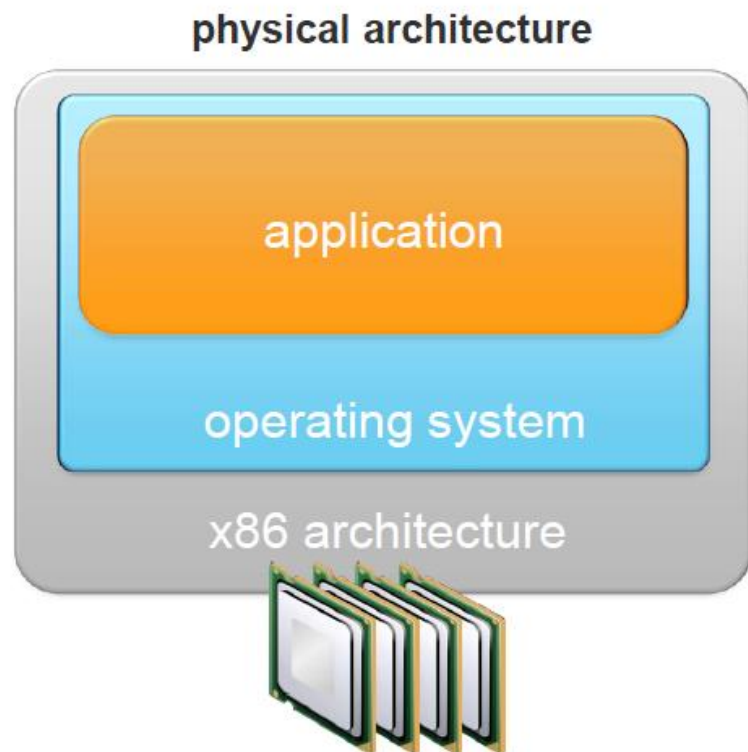


Bare Metal



CPU資源虛擬化

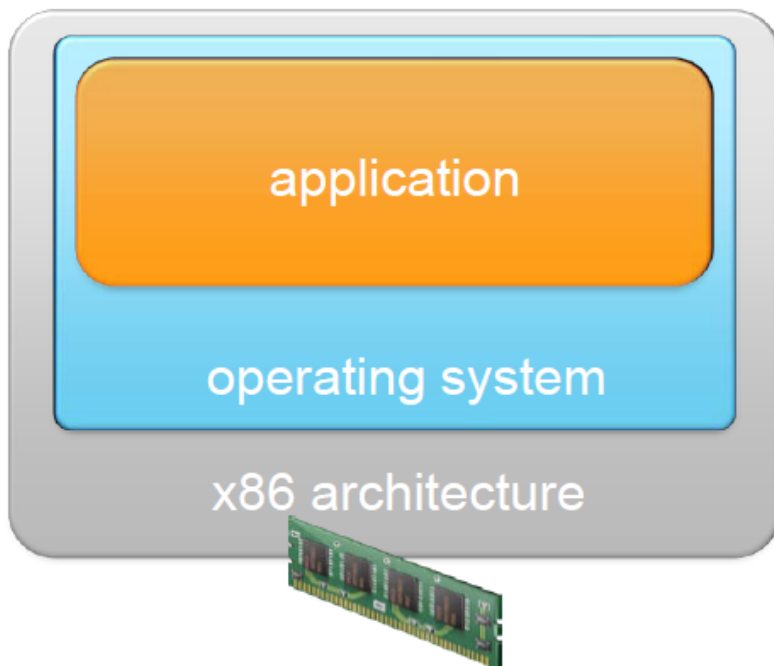
CPU Virtualization



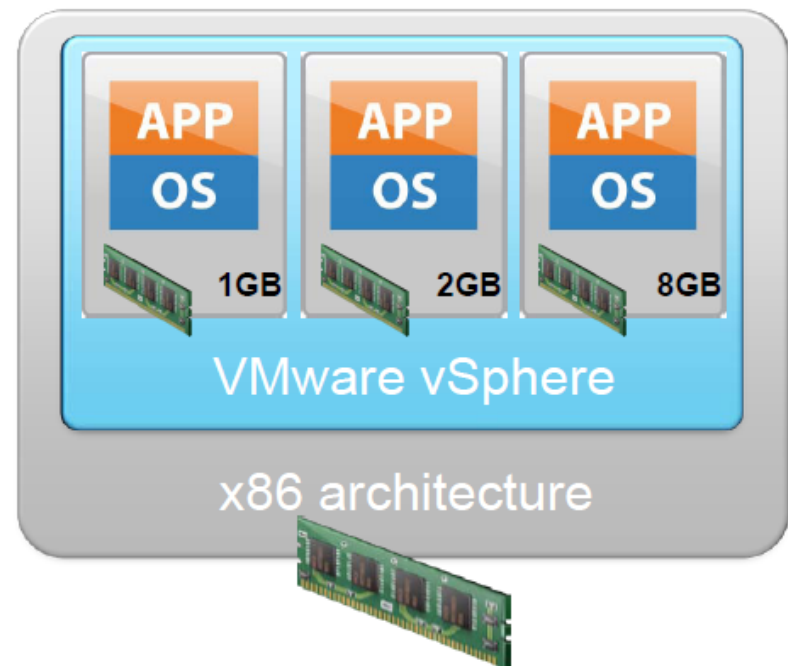
記憶體資源虛擬化

Physical and Virtualized Host Memory Usage

physical architecture

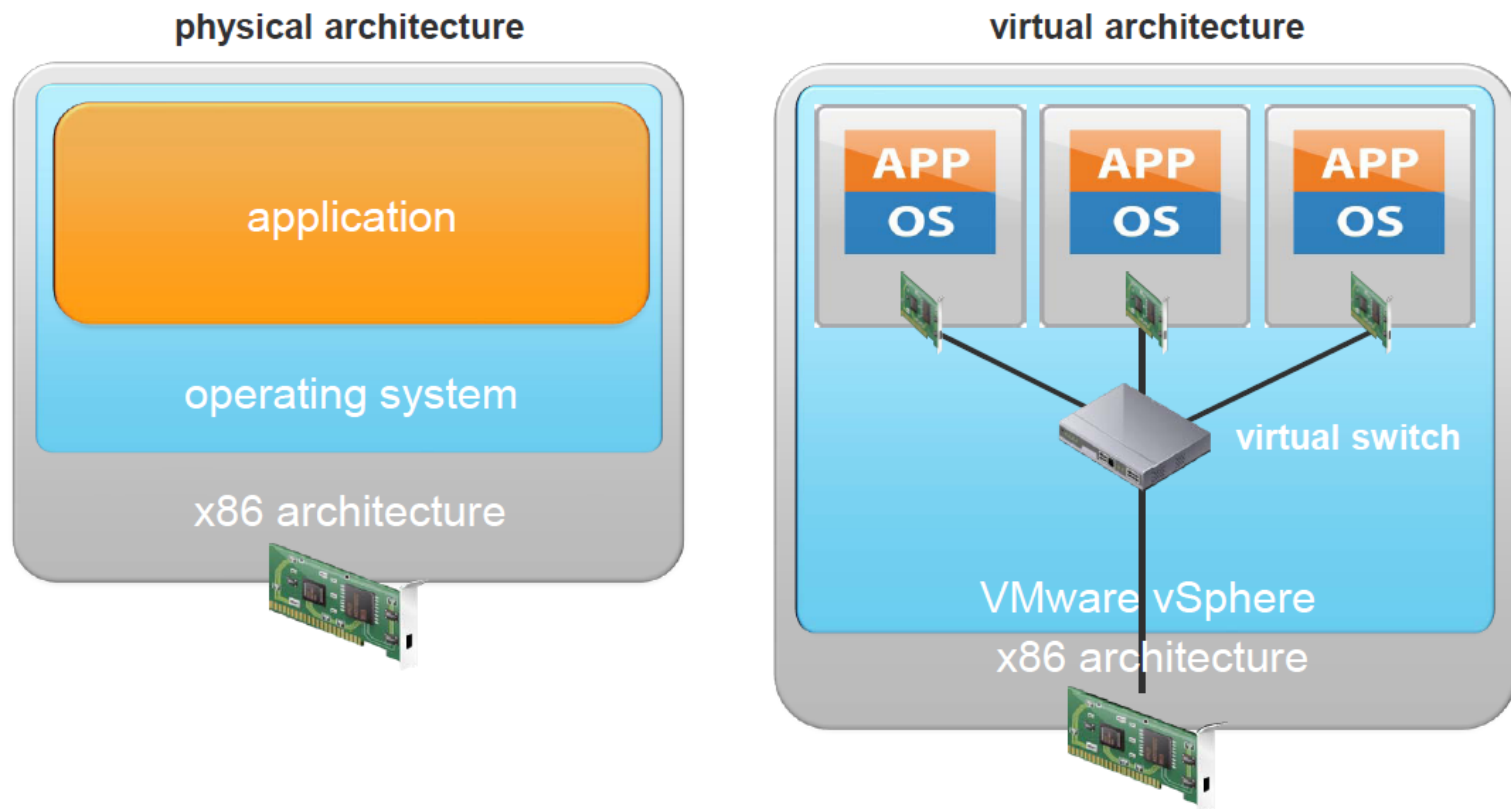


virtual architecture



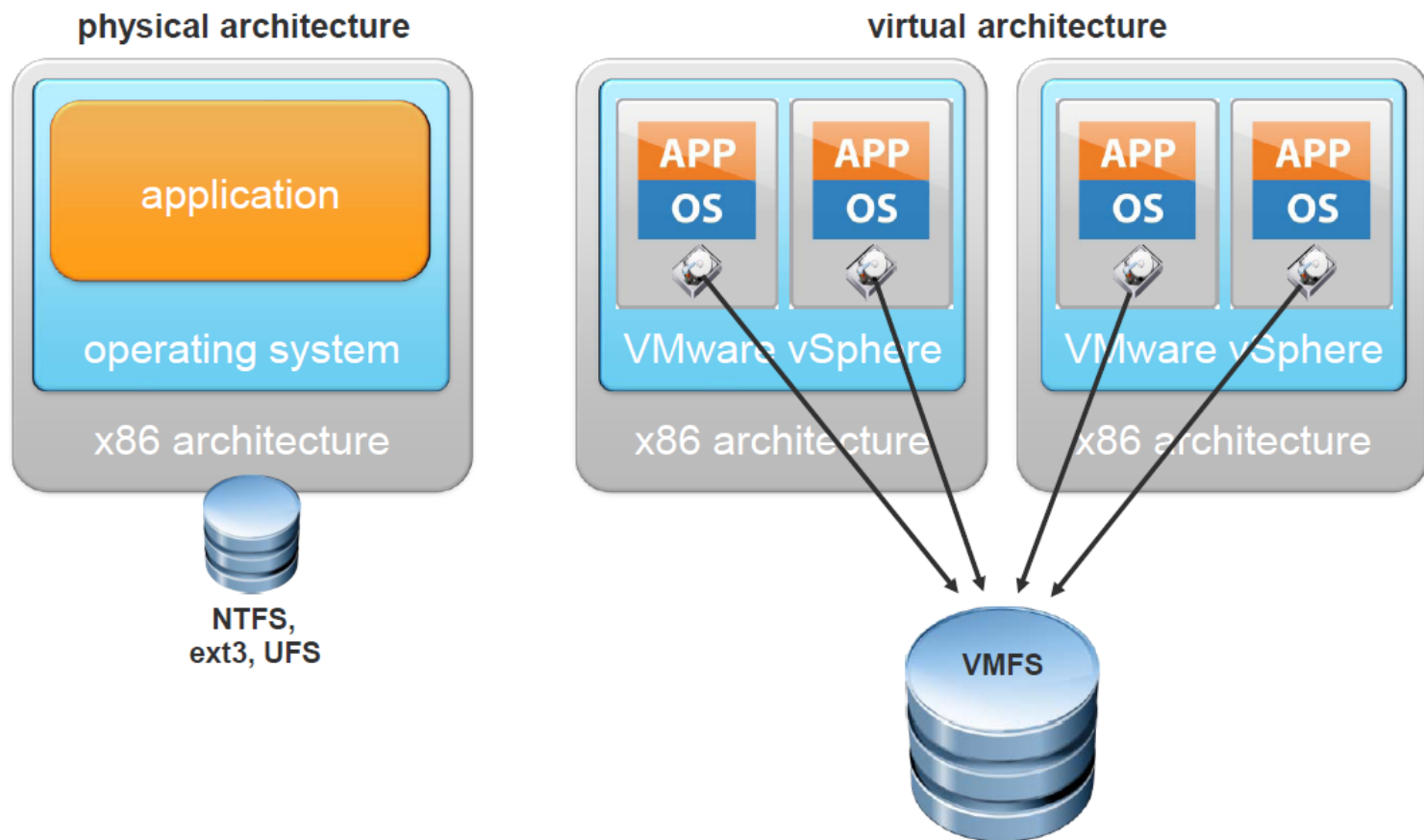
網路資源虛擬化

Physical and Virtual Networking



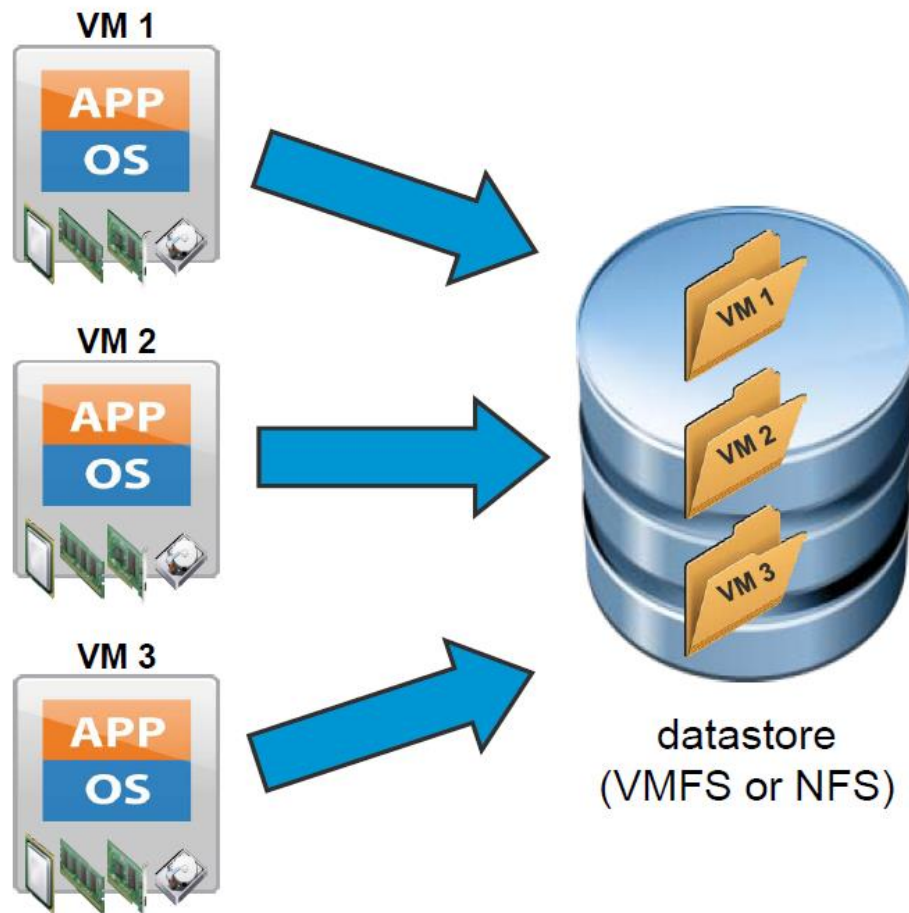
儲存資源虛擬化

Physical File Systems and VMware vSphere VMFS



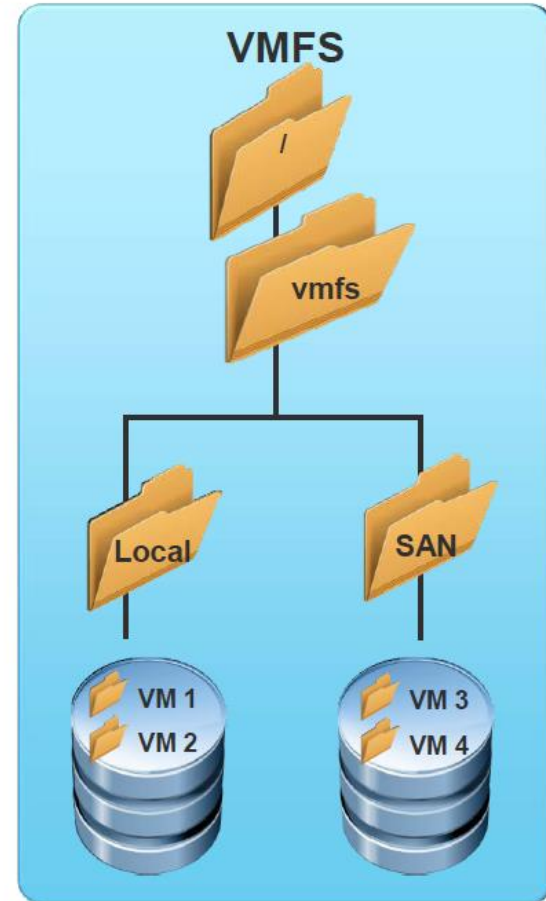
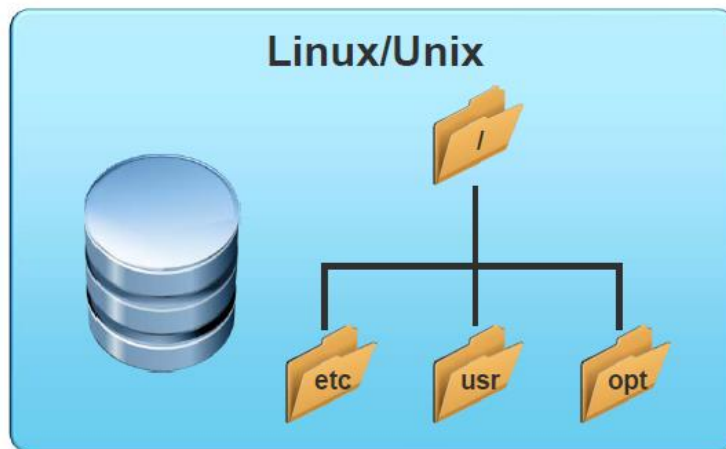
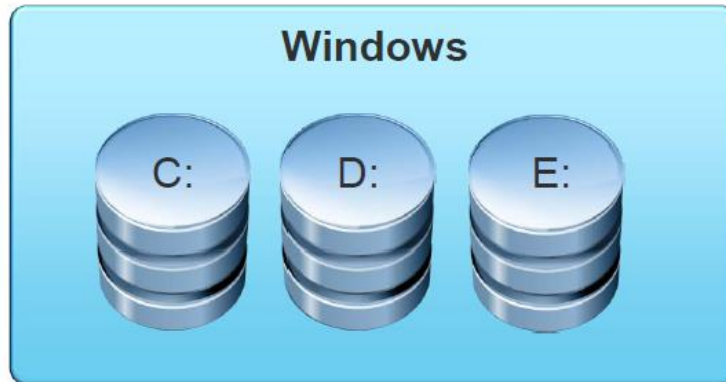
虛擬化封裝概念

Encapsulation



檔案系統架構

File System Layouts



何謂虛擬機器

What Is a Virtual Machine?

A virtual machine is:

- A set of virtual hardware on which a supported guest operating system and its applications run
- A set of discrete files

A virtual machine's configuration file describes the virtual machine's configuration, including its virtual hardware.

- Avoid using special characters and spaces in the virtual machine's name.



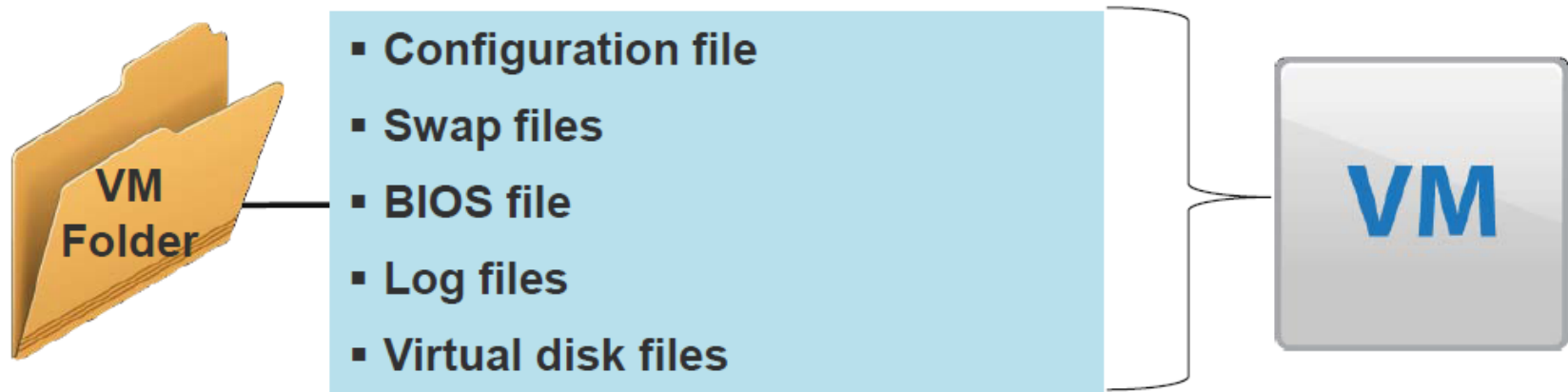
virtual machine

MyVM.vmx

```
...  
guestOS = "winnetstandard"  
...  
displayName = "MyVM"  
(etc.)
```

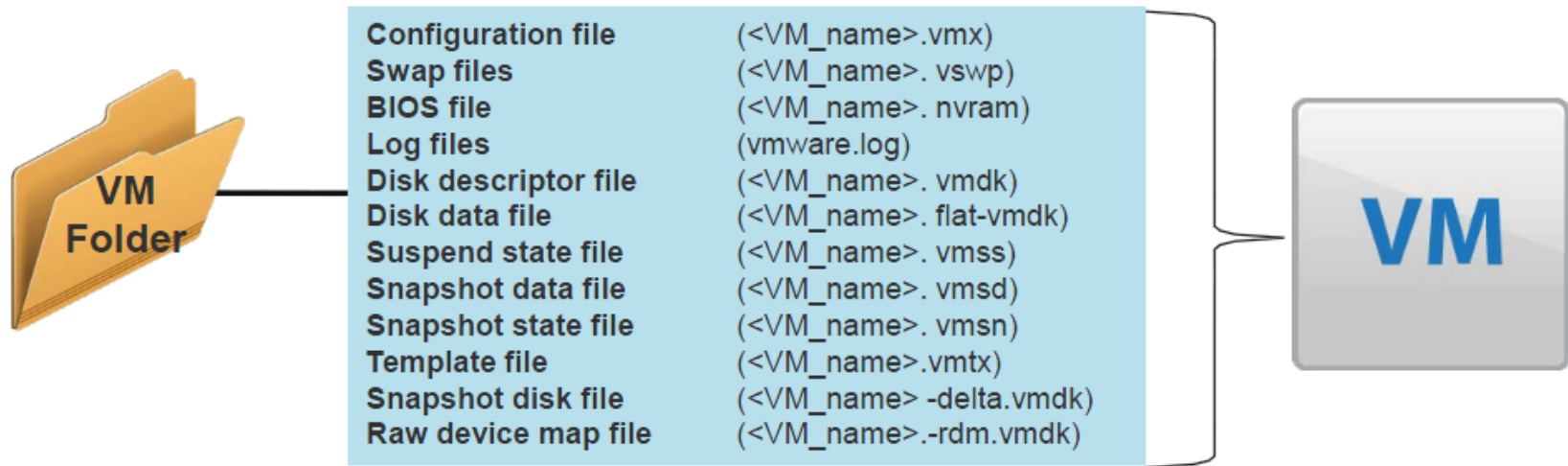
虛擬機器檔案類型

Virtual Machine Files



虛擬機器檔案說明

The Files That Make Up a Virtual Machine



虛擬機器快照資料整併



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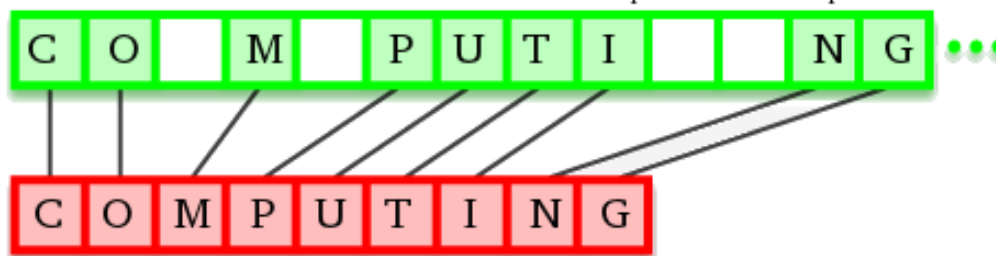
Note : Current State show the view of a sparse disk.
This means that continuous free blocks are not available.
Hence a file spans across multiple blocks.



Current State



Base Disk



STEP 1



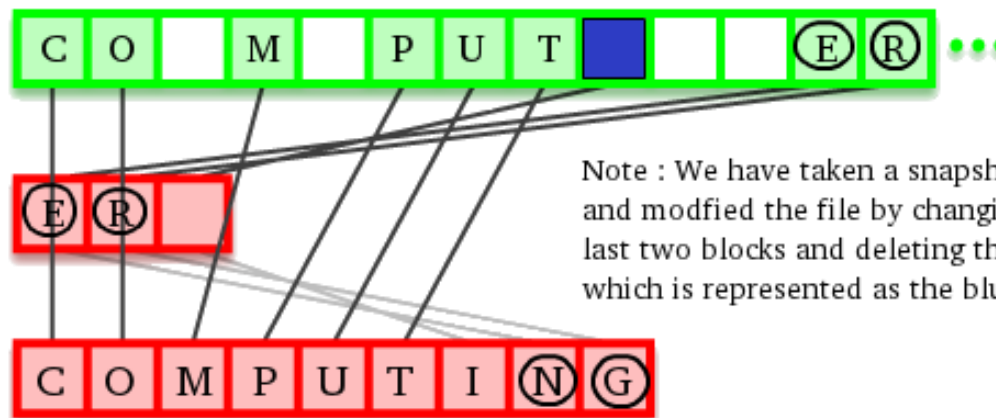
Current State



Snapshot 1



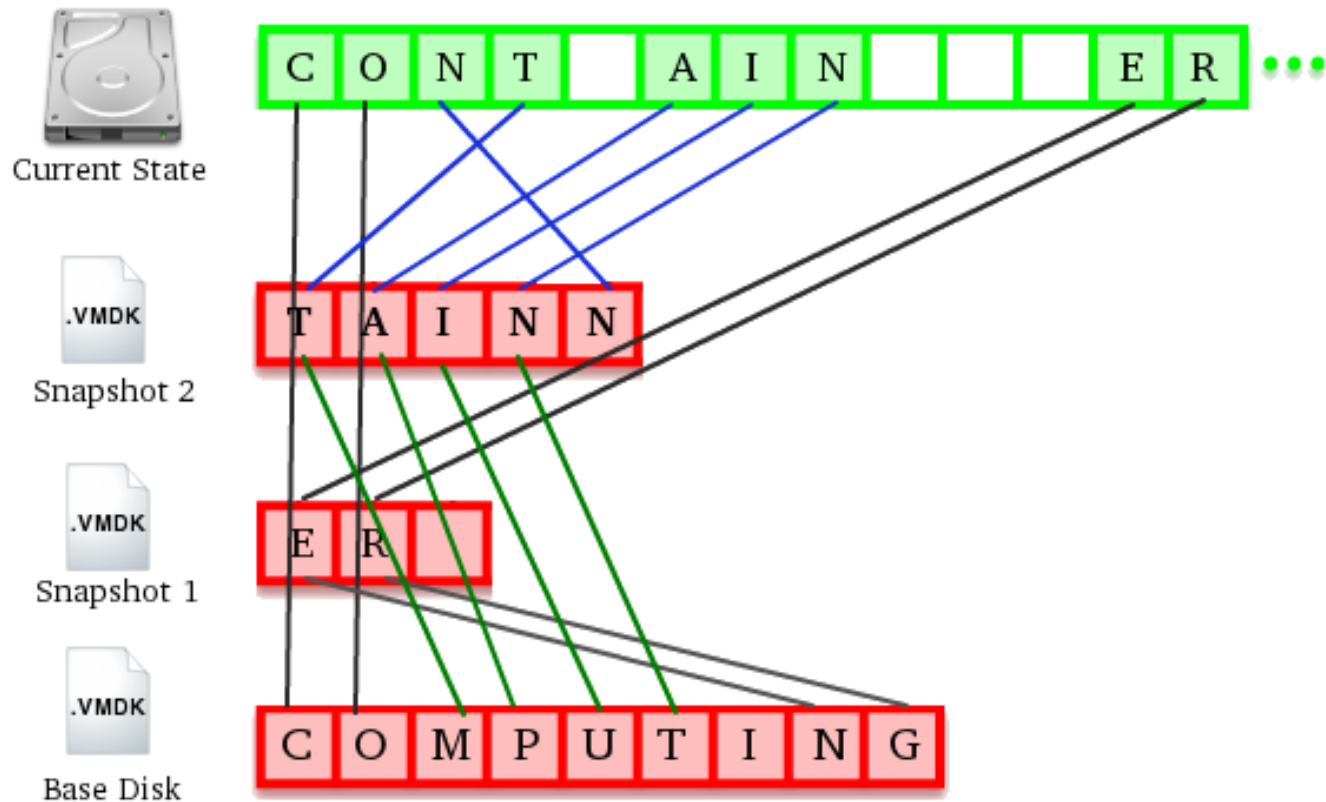
Base Disk



Note : We have taken a snapshot
and modified the file by changing the
last two blocks and deleting the letter I,
which is represented as the blue block,

STEP 2 : After First Snapshot

虛擬機器快照資料整併



STEP 3 : After Second Snapshot

VM虛擬化環境建置與應用入門 謝謝指教



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