



CAFÉ 企業雲端系統與應用

Cloud Appliance For Enterprise

雲端系統軟體研究所
財團法人資訊工業策進會
2013.1.18



大綱

- 雲端運算產業背景
- CAFÉ 企業雲端伺服器
- CAFÉ 教學應用
- 雲端人才培育



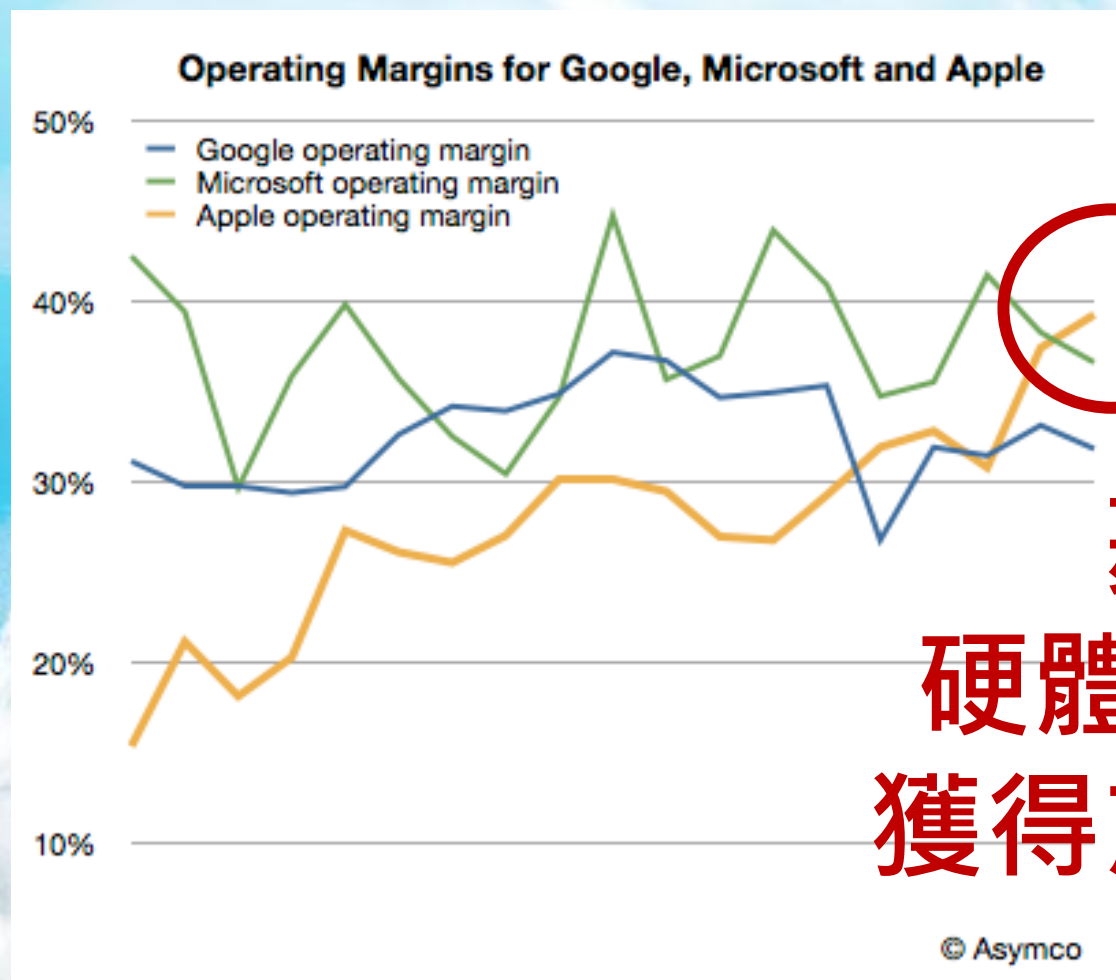
雲端運算產業背景

Internet Evolution

硬體 + 軟體 + 服務 = Cloud Computing



全球頂尖IT公司獲利比較



蘋果電腦從
硬體+軟體(雲+端)
獲得前所未有的成功

全球雲端產業

系統商



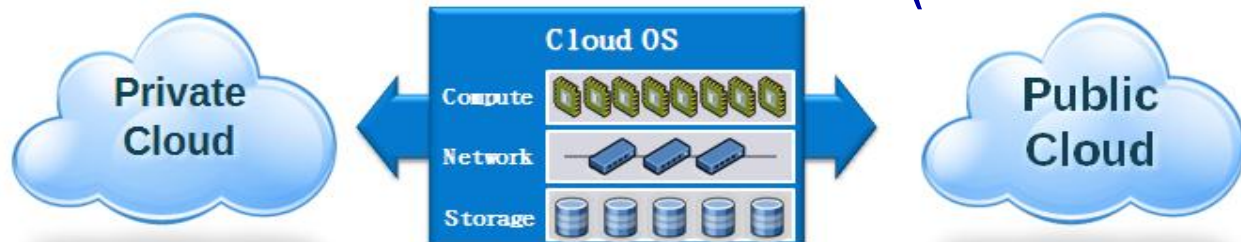
Trusted
Controlled
Reliable
Secure

服務商



Dynamic
Cost-Efficient
On-Demand
Flexible

設備商



(IaaS/PaaS/SaaS)

雲端伺服器



雲端資料中心



台灣雲端產業

智慧雲端裝置

個人雲端服務



Andorid Device + Cloud Service

Zero Client



華碩、宏碁、宏達電、Hami (中華電信)...

企業雲端伺服器



迎廣、...

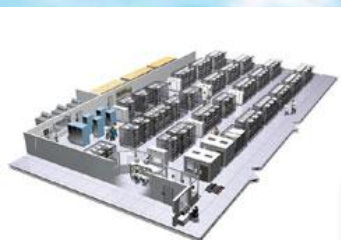


喬鼎



華碩、技嘉

企業雲端資料中心



宏碁 Acer eDC、
中華電信、遠傳電信、
台灣大哥大
是方、宏達、...



企業雲端服務



創作平台



SaaS

PaaS

IaaS

模組式雲端資料中心



廣達、英業達、緯創、台達電、...



電信公司 雲端資料中心



中華電信、遠傳電信、台灣大哥大、...



「雲端運算應用與產業發展方案」

兼顧「應用價值」
「產業產值」發展





CAFÉ 企業雲端伺服器 Cloud Appliance For Enterprise

資策會看準企業私有雲市場

- Business Week 2011 調查，企業基於機敏資料保管與控制權等理由，95%IT支出用於企業內部。(Gartner預測全球2012 Enterprise IT Spending預計達2.7兆美金)
- Gartner 指出 2012年企業將以10倍速進行私有雲佈建(自建或委外)，對於虛擬化平台技術需求，與搭配公共雲資源運用(Hybrid Cloud)將快速增加，考量不只是IT成本，更包含IT效率(Speed and Agility)。(Best Practice: Gartner's 5 drivers for greater Private Cloud up-take)
- IDC報告指出全球私有雲伺服器營收預測到2015年將增長至59億美元，超過公共雲伺服器營收35億美金，企業私有雲新興市場蘊藏龐大商機



企業IT升級雲端趨勢

PC Server



Physical

Less Space
Higher Elasticity
Higher Availability
Higher Performance
Lower TCO

Cloud Appliance



2~30 nodes
(near 16~480 VMs,
calc. by 16 VMs/node)



Virtual

•Fixed Computing Power

- Isolated Single Machine
- Limited Storage Space
- Single OS and Local Apps
- Single Client Device

•Elastic Computing Power

- Scalable Computing Resource
- Scalable Storage Resource
- Multiple OS and Remote Apps
- Multiple Client Device



Server/Storage Appliance Application Appliance

Vblock Introduction

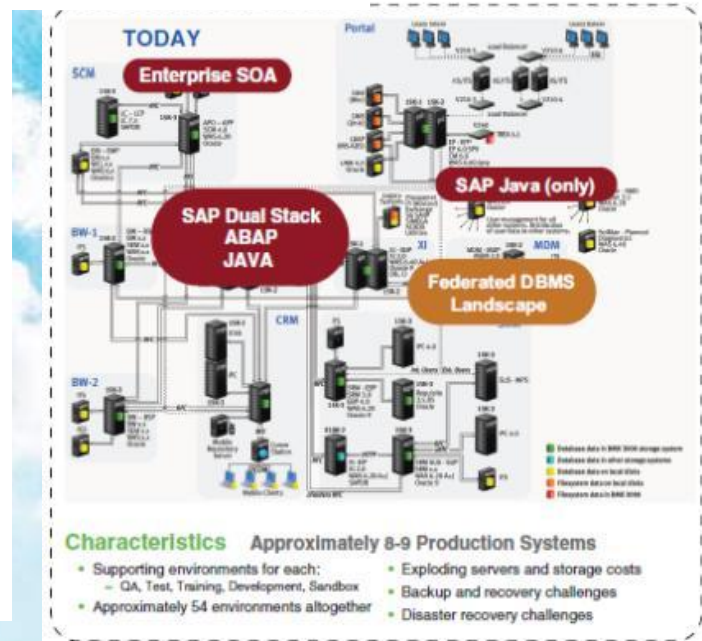
annualized order will soon hit 1 Billion USD in 2012

IT's transition to a private cloud infrastructure will allow IT organizations to provide a more service consumption model and more easily meet their service level agreements. Previous models hindered capability to respond to the business, and created a perception of IT as a cost center rather than a services provider.

Many IT environments that have outdated technologies are planning incremental approaches towards virtualization and private cloud computing, exposing themselves to risk at each incremental change. Vblock Infrastructure Platforms are now available to accelerate data center virtualization and private cloud adoption by implementing VCE's state of the art technologies together, at one time.

Deploying your SAP applications on Vblock technology creates minimum risk because the Vblock Infrastructure Platforms are:

- Production-ready, pre-engineered, integrated and tested units of virtualized infrastructure
- Best-of-breed virtualization, network, compute, storage, security, and management products
- SLA-driven, providing predictable performance capabilities and operational characteristics



台灣IT產業具備「硬體」競爭優勢



NB

WW No.1
TW/WW Mkt
Share
94.1%



Mother Board

WW No.1
TW/WW Mkt
Share
94.0%



LCD Monitor

WW No.1
TW/WW Mkt
Share
72.1%



Server

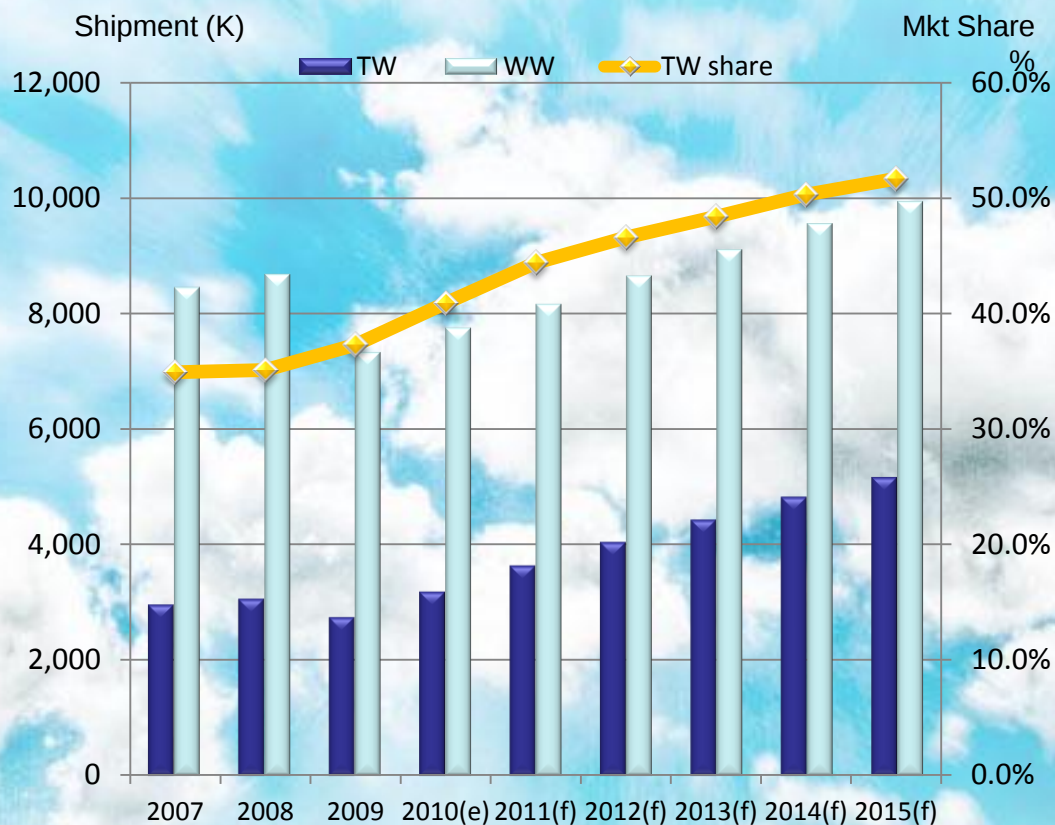
WW No.1
TW/WW Mkt
Share
40.9%



Thin Client

WW No.1

2007~2015年臺灣伺服器廠商出貨量與全球占比



台灣IT產業欠缺雲端系統「軟體」

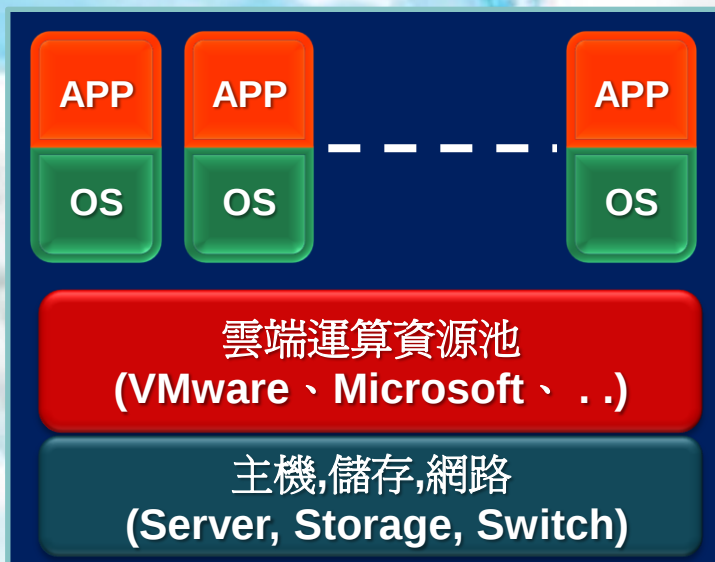
影響：

未來應用軟體與資料都移往資料中心，
IT產業競爭移往系統(System)、軟體(Software)與服務(Service)



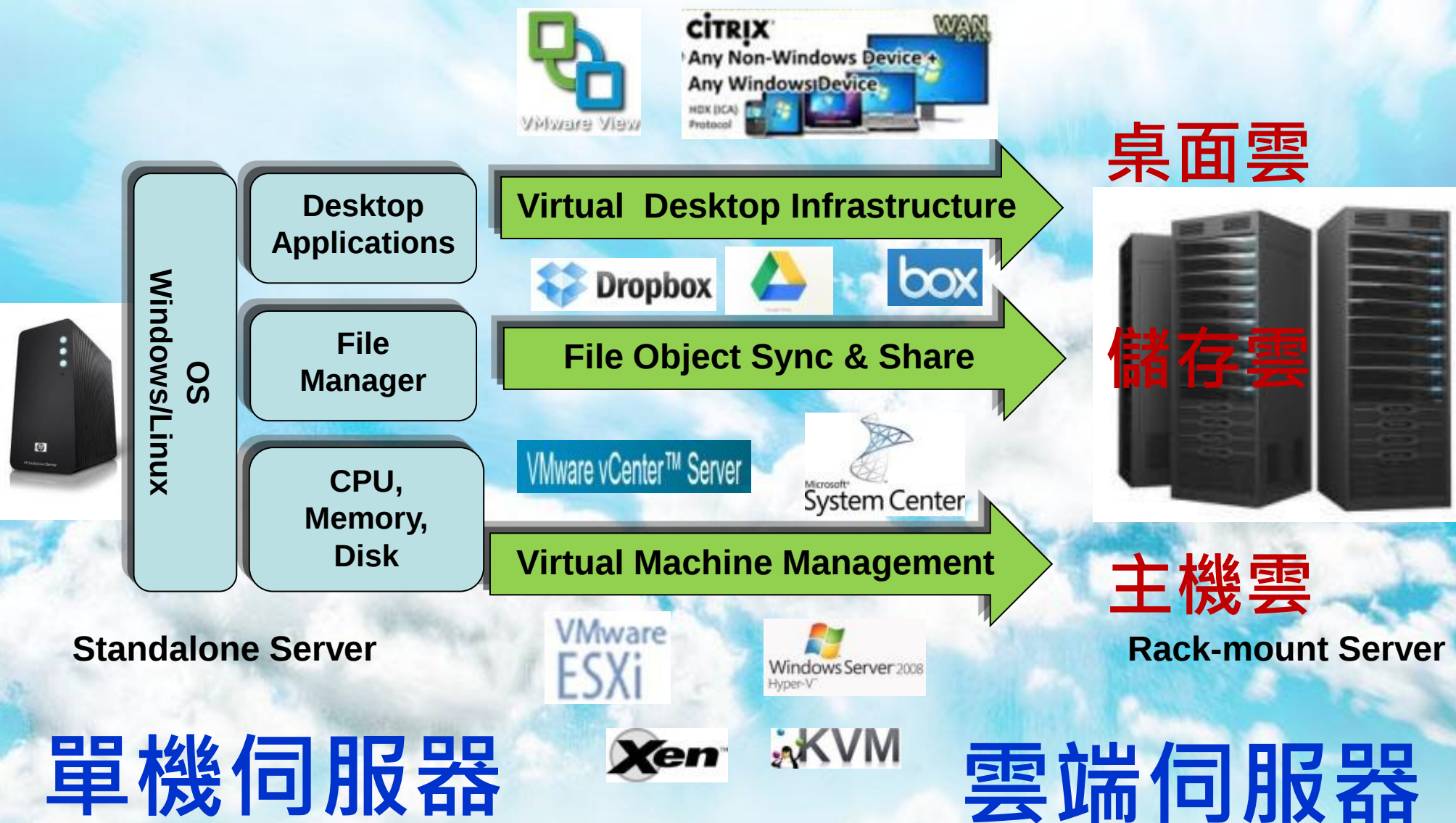
危機：

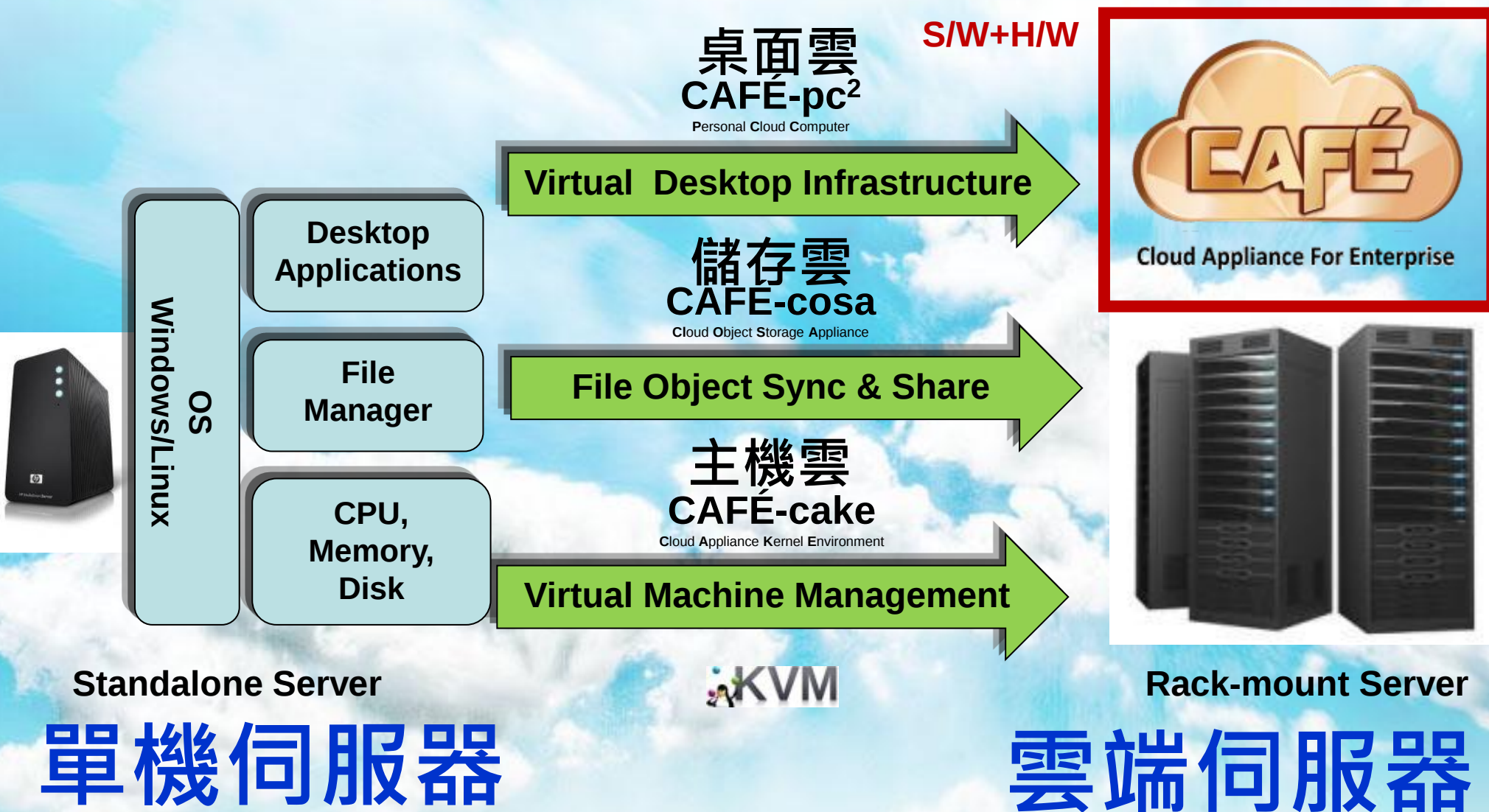
台灣如果沒有技術自主的雲端系統軟體，硬體毛利難以提升，應用服務成本爆增



- 1. VMware 虛擬化系統軟體的cost是硬體的三倍。
- 2. 系統軟體費用佔解決方案總成本40%。

外商供應企業私有雲「軟體/服務」







硬體產業

軟體產業

雲端產業

CAFÉ-Cloud Appliance For Enterprise



domain-specific application & service

協助資訊軟體/服務業者，開發
具競爭優勢、特定領域的雲端
應用解決方案產品與服務



Server/Storage Appliance
(企業雲端伺服器產品)

scalable virtual machine/storage/desktop/security

PC Server
(PC主機產品)

non-scalable physical machine

協助資訊硬體業者，針對企業機房，
發展小型規模、用戶可自行部屬、
隨插即用的主機、儲存雲端伺服器產品



促成IT軟硬體產業合作，
建立次世代「企業雲端伺服器」產業鏈，奠定台灣
在企業雲端伺服器產品輸出上的產業基礎



『硬+軟』企業雲端伺服器產品

 Inspiring Innovation • Persistent Perfection www.asus.com ASUS enters the Enterprise Private Cloud Market with ASUS Cloud Appliance 	 www.delta.com.tw Delta Electronics' Cloud Storage Solution innovation with CAFÉ 	 b2b.gigabyte.com GIGABYTE embraces CAFÉ strategy on its way to become a top Cloud solution provider. 	 www.in-win.com.tw CAFÉ enables In Win to enter the Desktop Cloud solution and Application Management market 	 www.promise.com CAFÉ Storage Cloud Helps Transform PROMISE Technology's Traditional NAS Device to a Dynamic Cloud System/ Solution 
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企業雲端伺服器
(CAFÉ/Cloud Appliance for Enterprise)



主機雲
CAFÉ-cake
Cloud Appliance Kernel Environment



桌面雲
CAFÉ-pc2
Personal Cloud Computer



儲存雲
CAFÉ-cosa
Cloud Object Storage Appliance

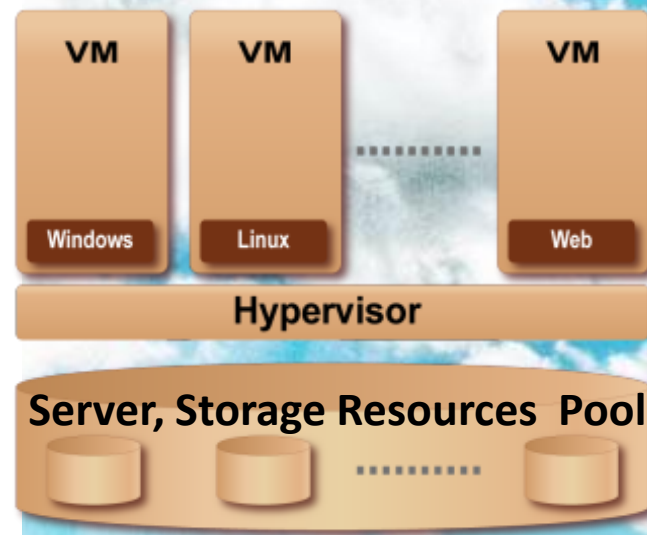
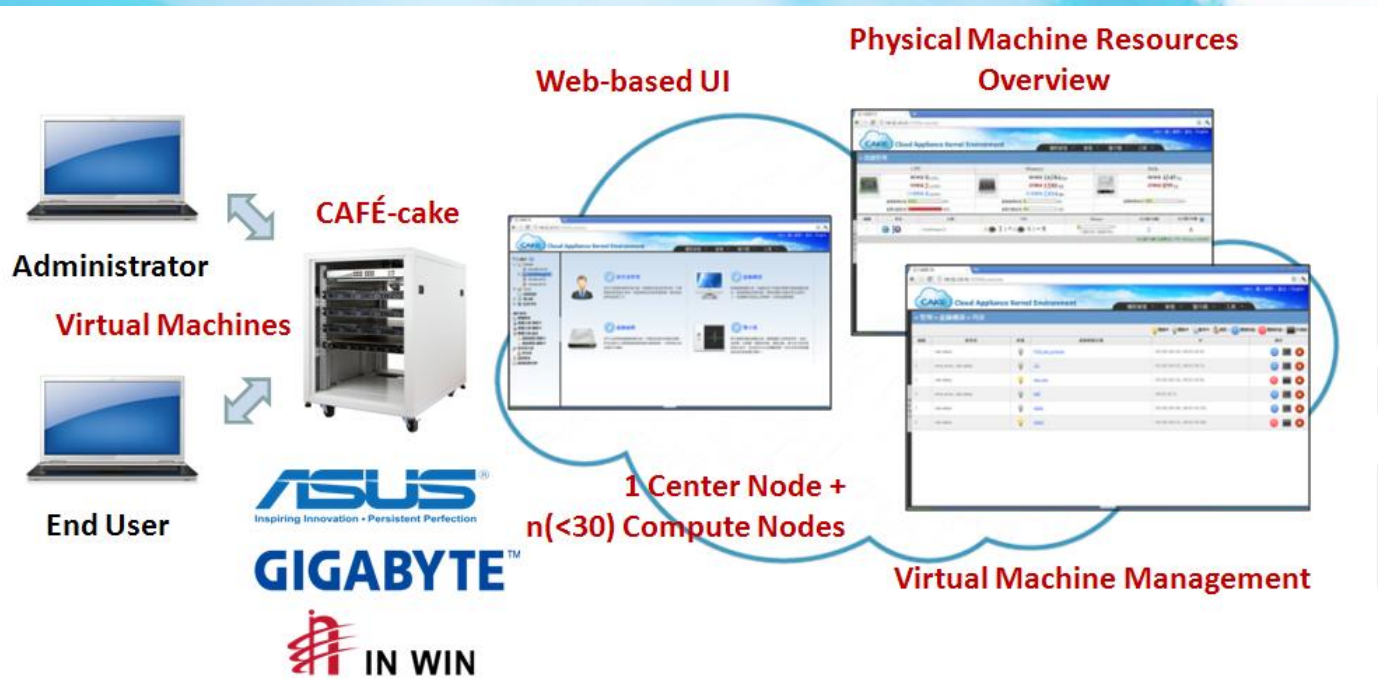


主機雲 CAFÉ-cake

Cloud Appliance Kernel Environment

主機雲(CAFÉ-cake)

- 基於開放的 **Linux KVM Hypervisor**發展與運行。
- 支持**Virtual Machine** 的生命週期管理(VMM, Virtual Machine Management)。
- 以網頁遠距操作，不用進機房就可以維護運算資源。
- 透過 **VM Cluster**設定與Amazon EC2 相容API使用，可讓應用軟體彈性擴充VM資源數量。

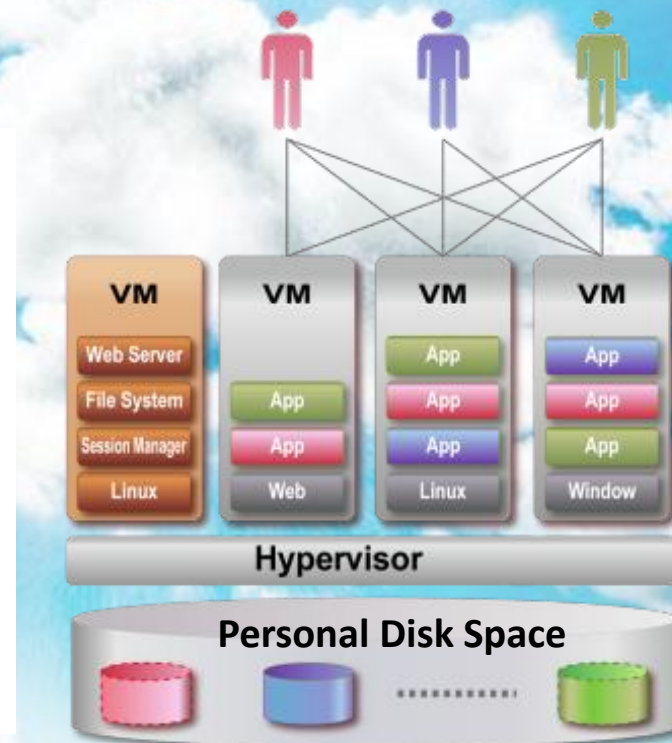


桌面雲(CAFÉ-pc2)



桌面雲 CAFÉ-pc2 Personal Cloud Computer

- 管理VM運算資源上所執行的應用軟體，支援多種作業平台-Web Application、Windows Application與Linux Application的集中共構管理，減少終端電腦維護作業，降低企業IT總持有成本(TCO/Total Cost Ownership)。
- 使用者只要透過瀏覽器與動態網頁技術，以虛擬桌面形式讓使用者遠距啟用Web/Windows/Linux Application三種作業系統應用軟體，如果搭配簡易終端(Thin Client)，更可大幅降低使用者終端採購與維護成本。



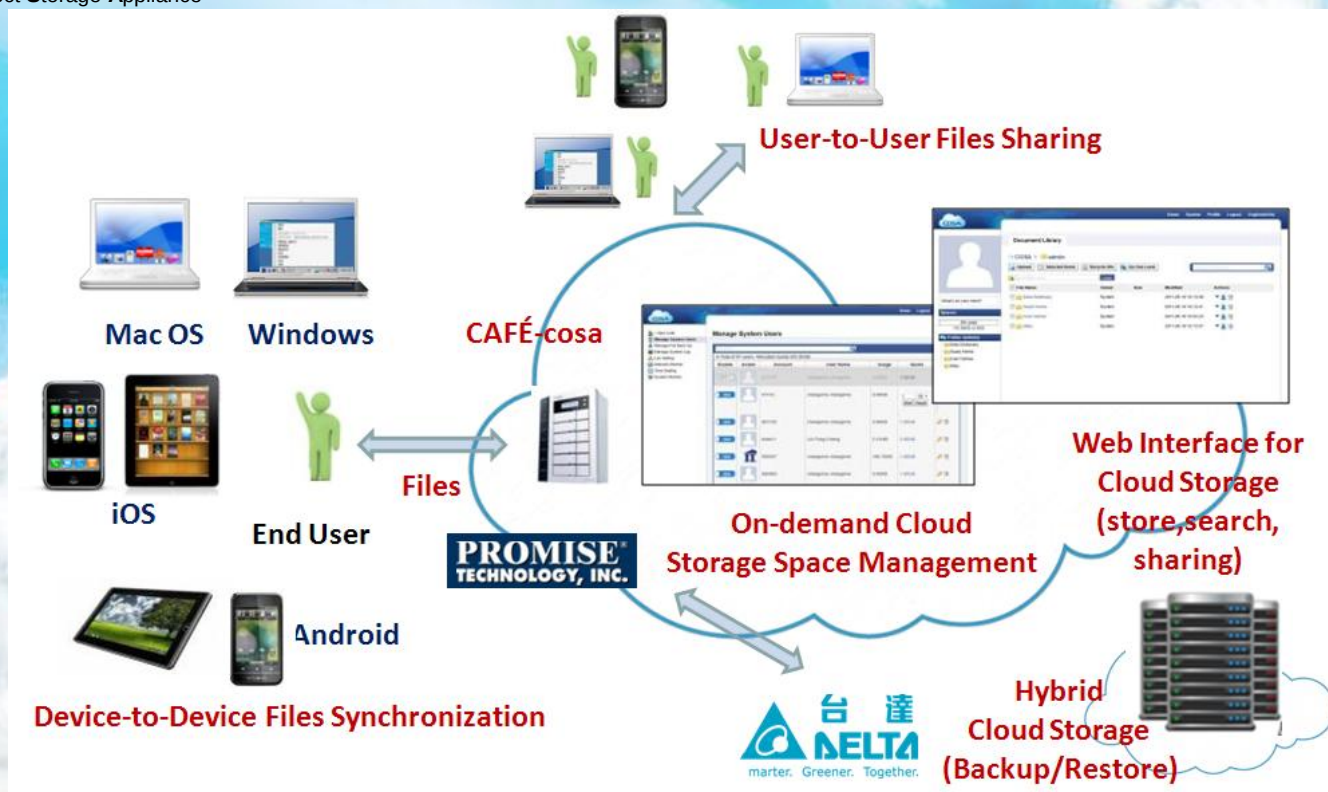
儲存雲(CAFÉ-cosa)



儲存雲 CAFÉ-cosa

Cloud Object Storage Appliance

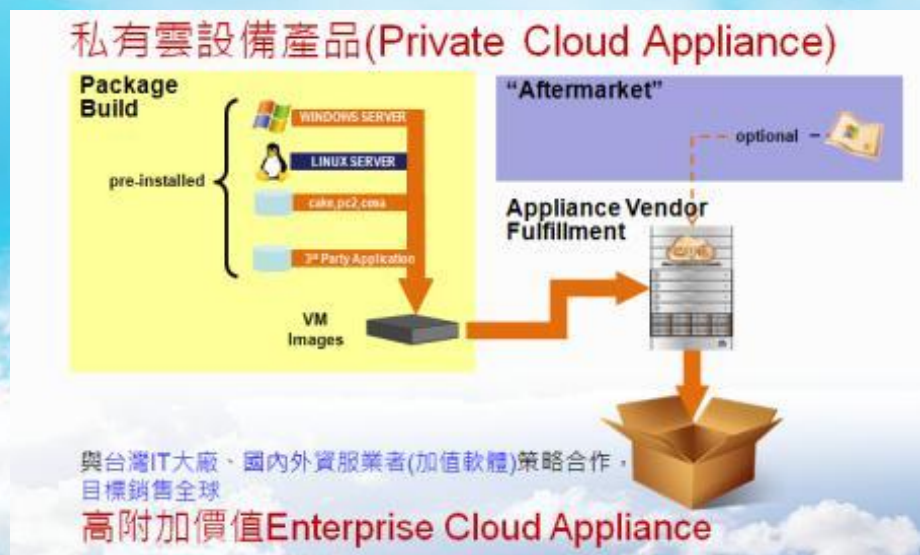
- 建構於私有雲環境，提供虛擬檔案儲存空間，及跨裝置與群組間之檔案同步與分享功能 (dropbox like)
- 協助儲存設備業者轉型升級，由網路儲存設備供應商，成為儲存服務業者
 - Promise SmartStor Cloud、Delta Hybrid Cloud Storage
- 軟體業者利用REST API快速開發創新服務
 - InfoPower MobileReport



CAFÉ 商業模式

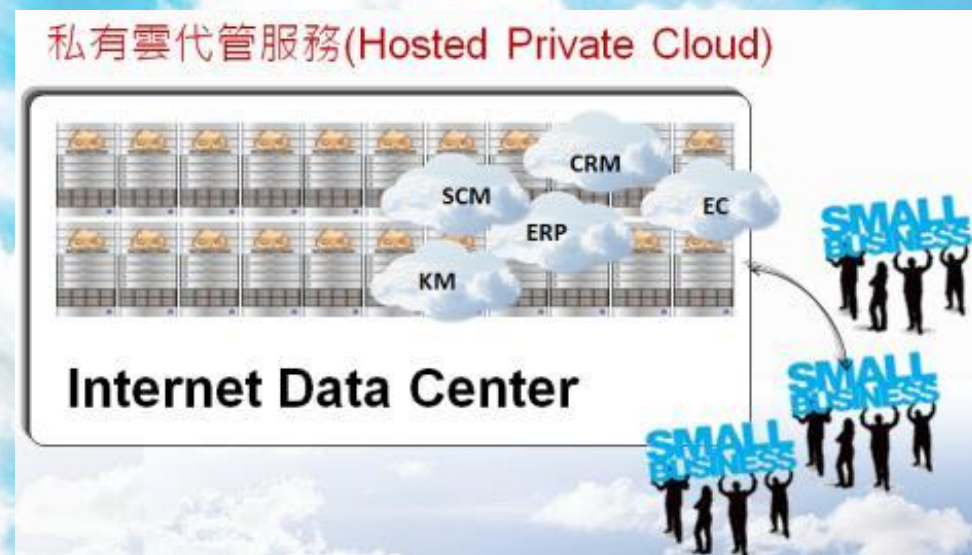
Hybrid Cloud(混合雲)

On-Premise Private Cloud (近端)私有雲



企業有機房

Hosted Private Cloud (局端)私有雲



企業無機房

混合雲(Hybrid Cloud)發展機會

D/R, Disaster Recovery

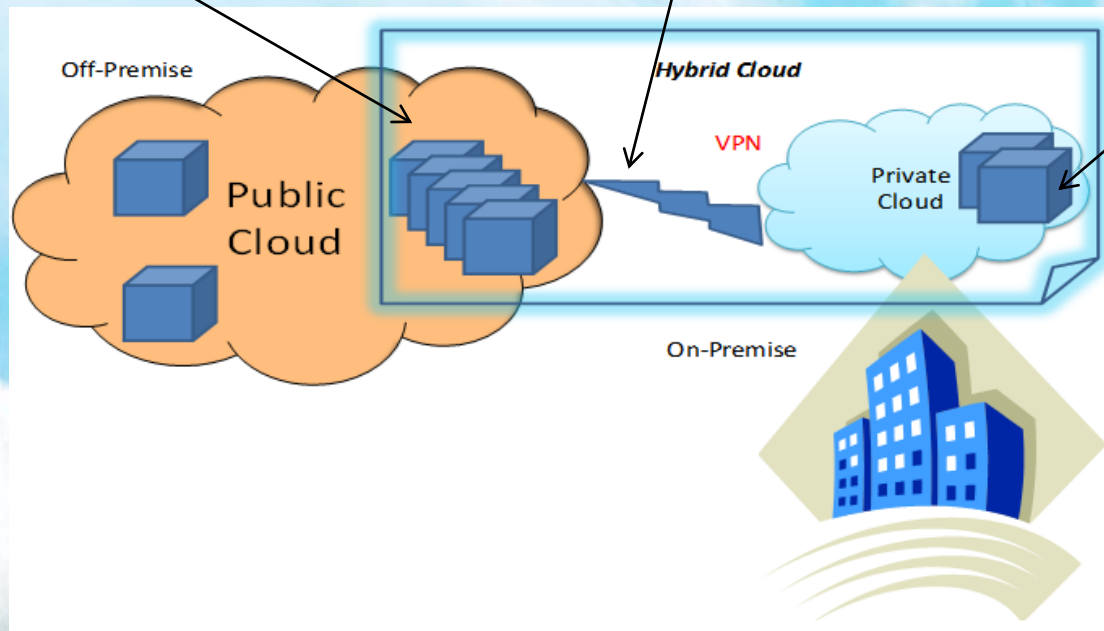
Scale-out

B/R, Backup/Restore

異地災難復原

資源彈性擴充

本地異機備份



A hybrid cloud is a cloud computing infrastructure composed of **two or more clouds** (**private**, community, or **public**) that remain unique entities but are **bound together** by standardized or proprietary technology **that enables data and application portability**



CAFÉ 教學應用

CAFÉ 支持雲端學程實習作法(1)

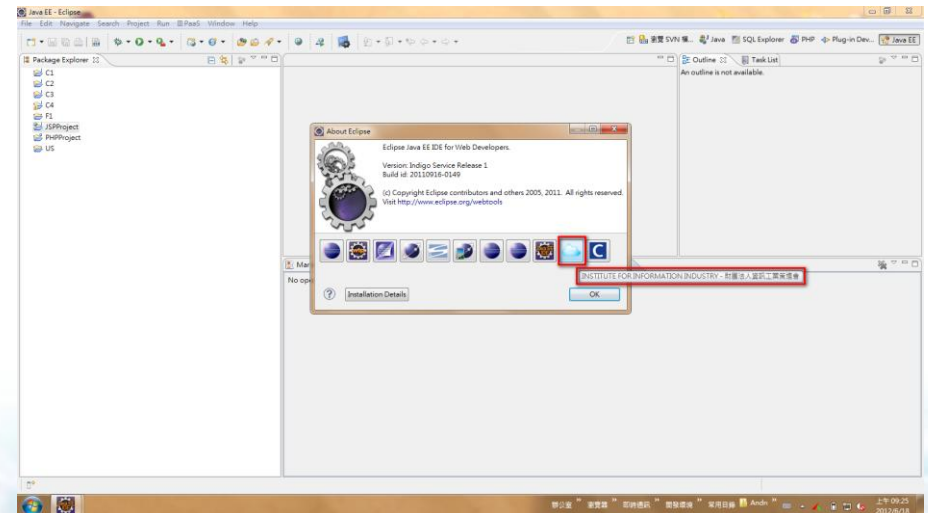


**1.學習 VMM
(Virtual Machine Management)**

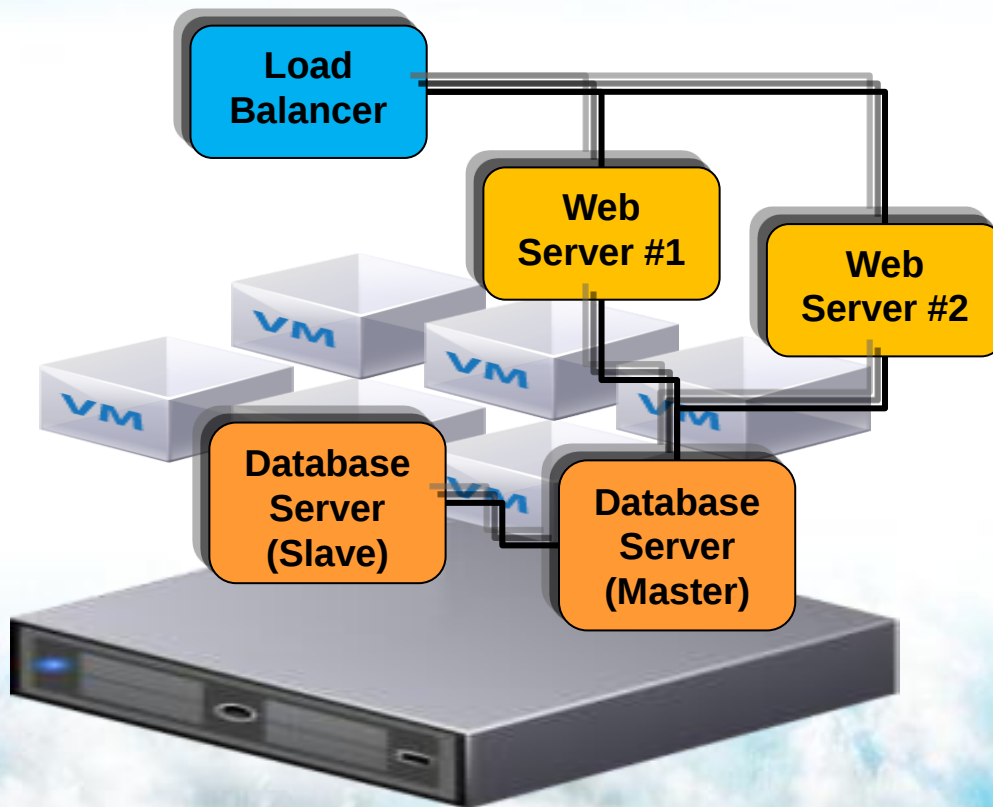
2.學習on-demand建置虛擬主機



1.學習 Eclipse/IDE Plug-in 與 佈署、執行與監控 PHP程式

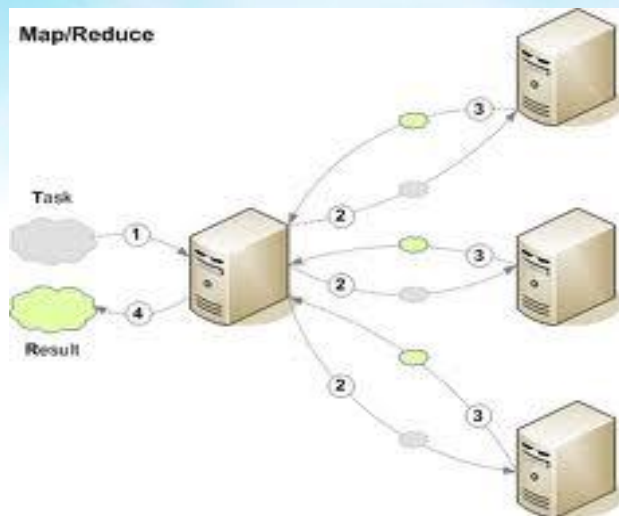


CAFÉ 支持雲端學程實習作法(3)



1.實習 Scalable
Web Application 開發

2.實習 Database Failover



1.學習 利用VM，佈屬 Hadoop (HBASE、HDFS)

2.實作 MapReduce 平行運算及演算法



1. 實習虛擬桌面後台應用程式管理



2. 實習虛擬桌面前台應用程式管理





雲端人才培育

「雲」與「端」軟體類型

- Devices
 - Systems software: simulator, debugger, compiler and operating system
 - Applications
 - Browser-based: AJAX and HTML5
 - Native code: downloaded apps
- Cloud Services
 - Multi-tier application architecture: presentation layer, business Logic layer, and persistence layer
- Cloud data center stack
 - Virtualization
 - Storage management
 - Security
 - Internet edge logic
 - System administration

雲端軟體人才需求類型

- Devise software product specification: product manager
- Design software architecture: architect
- Develop engineering solution: technical lead
- Write actual code: developer
- QA organization: SIT manager
- Market completed software product: technical product marketer

國內軟體人才能力觀察(1)

- Basic CS training (architecture, OS, compiler, networking, etc.) is weak
- Programming skill is never taught systematically
 - Language syntax
 - Programming technique
 - Reusable library
 - API design
 - Software architecture /design pattern
 - Coding convention/best practice

國內軟體人才能力觀察(2)

- Lack of training in “programming in the large”
 - Software architecture design trade-off: modularity, extensibility, readability, and reusability
 - Team-based software development environment and practices
 - Testing: unit, functional, integration, stress and performance
- Lack of training in “defensive programming”
 - Pre-defined notion of input range and input error
 - Checks against external inputs from OS, disk or network
 - Consistent strategy for error handling

學界培育軟體人才建言

- Research Side
 - Building real systems that are as close to industrial strength as possible is a big deal: easily 3 times more efforts
 - Publications in top-tier conferences (e.g. ACM sponsorship) ALONE carry a lot of weight
- Teaching Side
 - Encourage good teaching on coding
 - Code reading, e.g. Linux kernel code
 - Code review and critique
 - Industry-style development practice, e.g. team-based, testing driven
 - Certification



~ 謝謝 ~