



在小學有效運用雲端電腦以促進電子學習



Centre for the Advancement of Information Technology in Education,
Hong Kong Institute of Educational Research
The Chinese University of Hong Kong

用昨天的方法 教育今天的孩子，可以嗎？

排。學習，是家長細心的
有策略支援今天孩子的
言，利用今天的科技，
離手的狀況。在
打機，
會想到孩
子學習，家長
認知但當談及電
基本原則，鞏固對筆順
戲，訓練孩子手眼協調
《星際大戰》
下學習知識。
設計學習活動，讓孩子
地學習寫「毛」字，我
的同時，「教育」的本
上述的想法
用這個方法
的孩子身上



朱子穎

浸信會天虹小學校

[fb.com/mrchuclan](https://www.facebook.com/mrchuclan)

浸信會天虹小學校長，並獲
科技教育領袖協會 (AITLE)
員。連續三年獲選Micros
師最傑出教師，且四度代表
「全球創意教育比賽」。

TEDx

朱子穎校長

MrChuClassroom



課程目標

- 完成課程後，學員可以：
 - 了解學校採用雲端電腦基本原則、成本、技術要求和安全問題；
 - 了解全球趨勢，並認識到雲端電子學習之好處；
 - 安裝雲端系統；
 - 制定合適的教學方法，採用雲計算以促進學習和教學效果；
 - 了解雲端電腦的機會、特點、優勢和局限性。

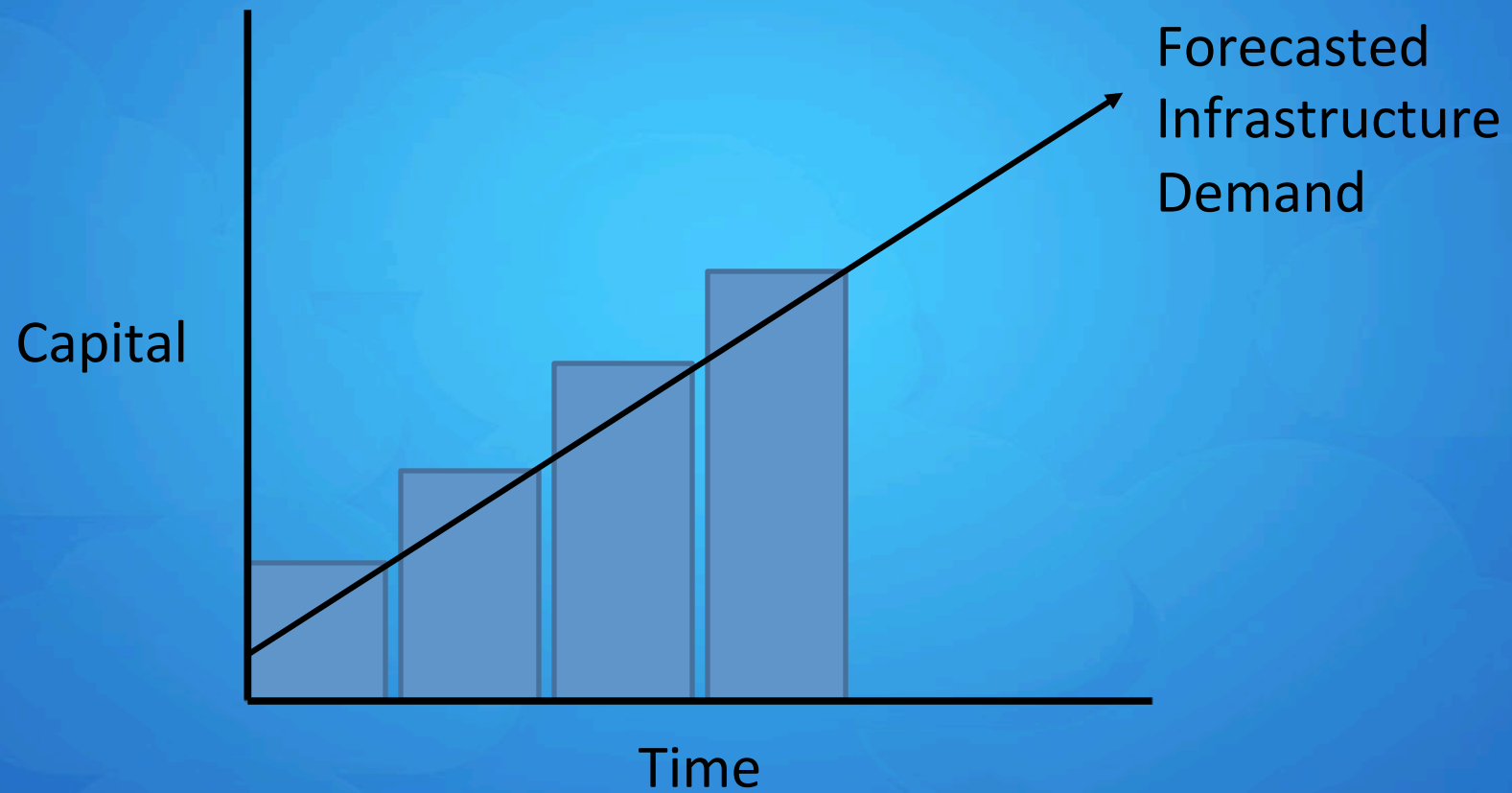
第一節流程安排



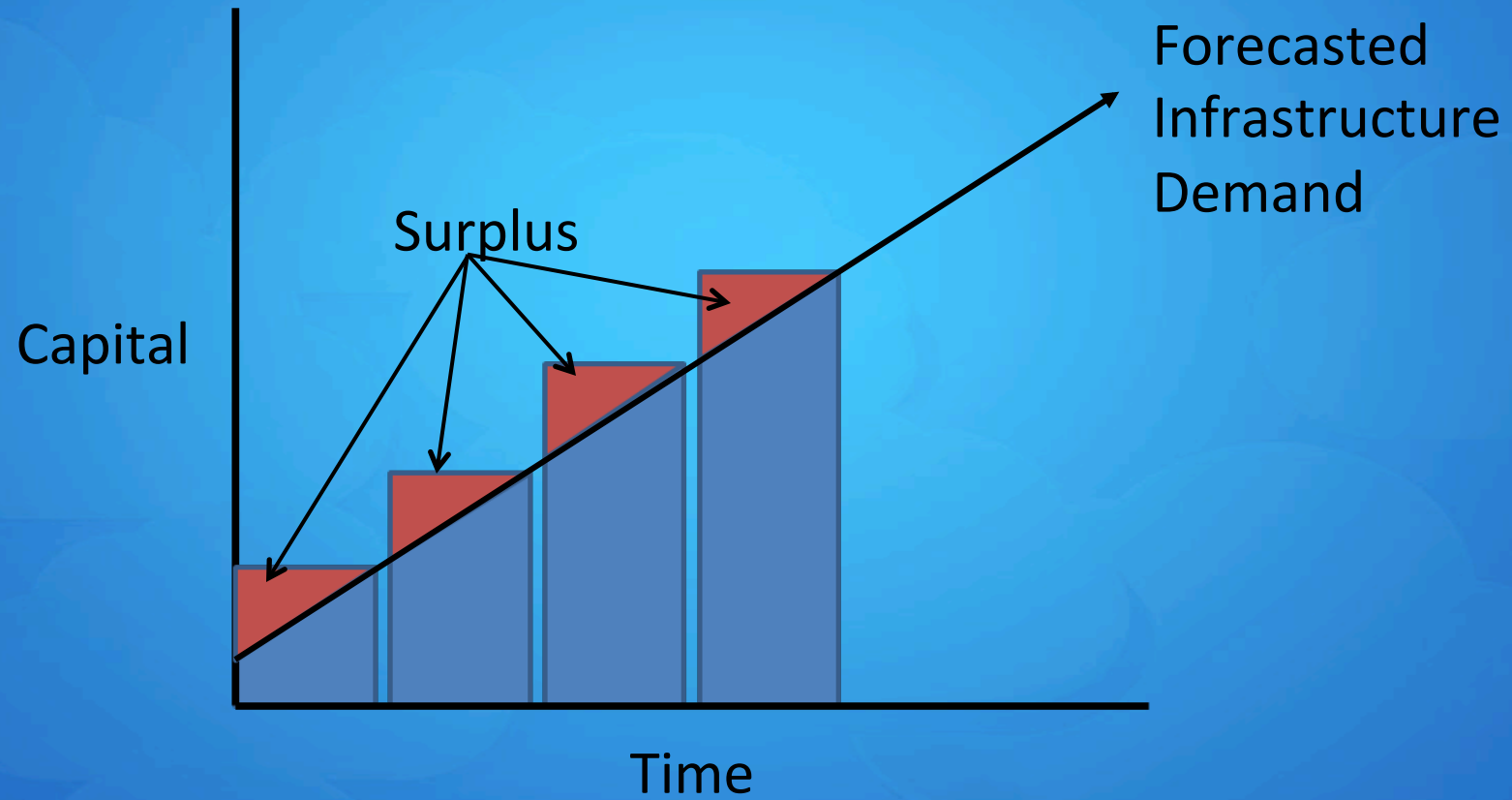
- 雲端電腦概述
- 學校採用雲電腦概述
- 學員討論：在學校應用雲端電腦的機會、安排、優勢及限制
- 小休
- 設置公共雲系統的實現與教學實例
 - 動手實踐和深入的討論：O365
- 作業安排

雲端電腦概述

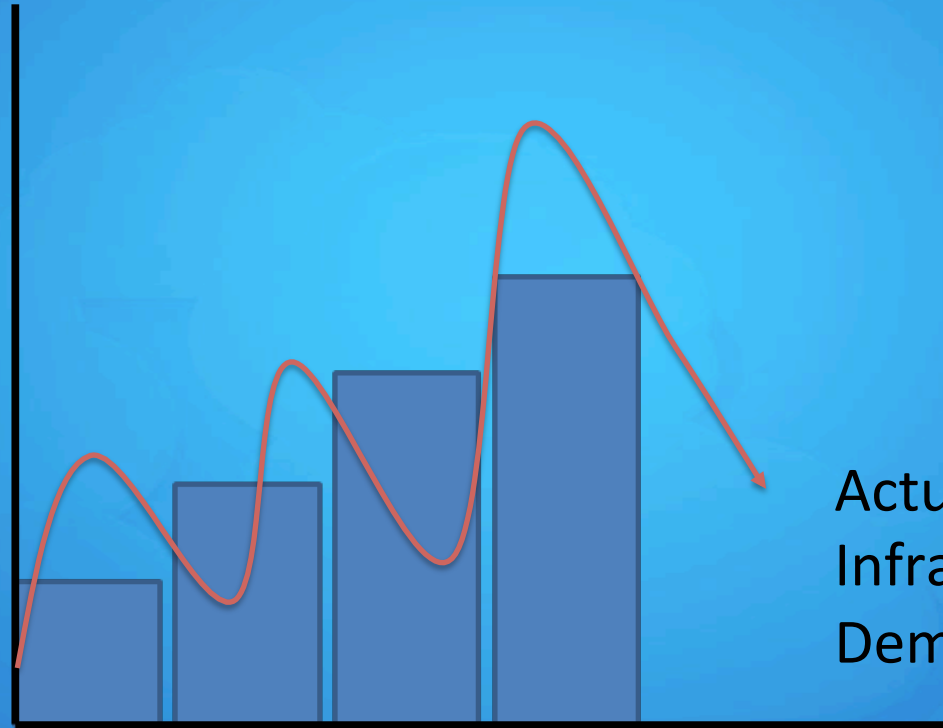
Traditional Infrastructure Model



Acceptable Surplus



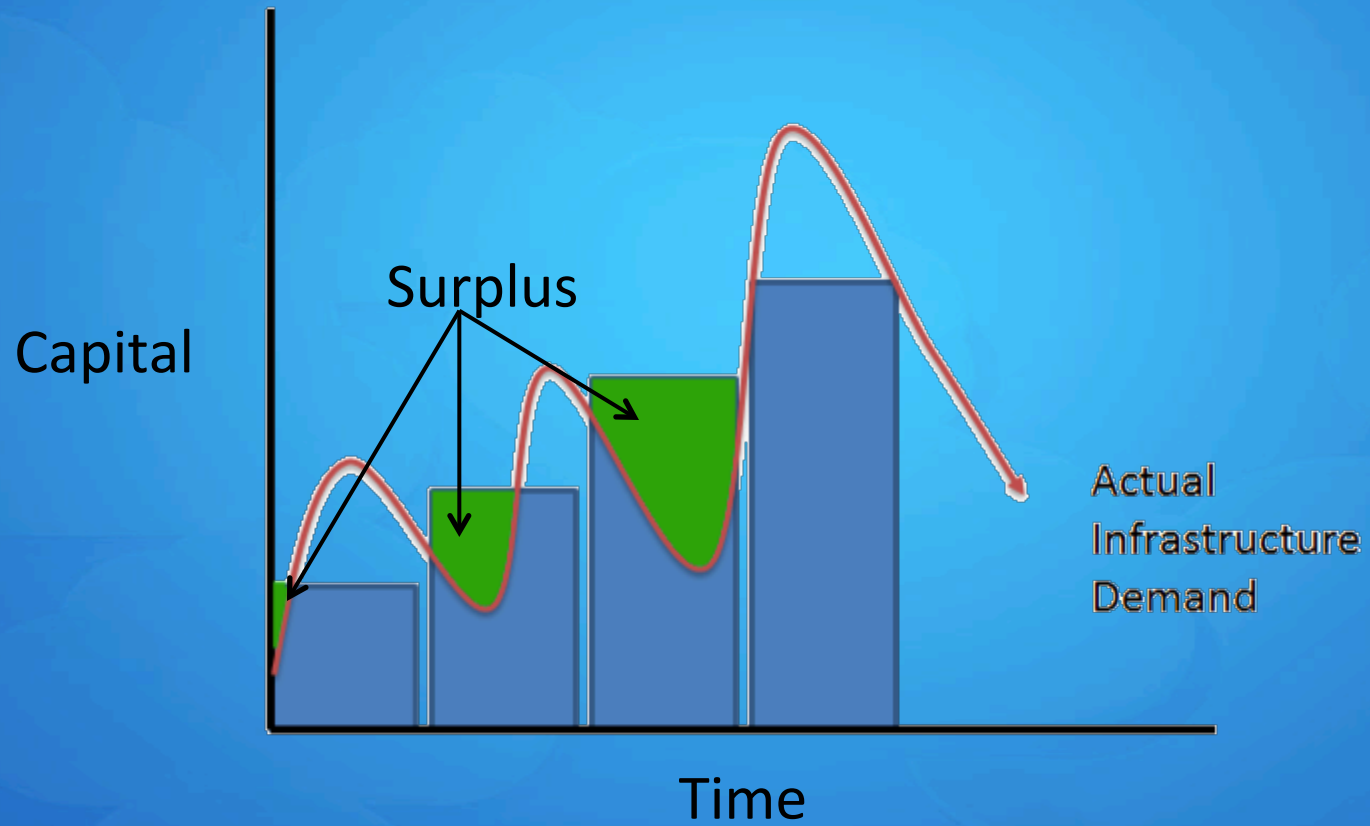
Capital



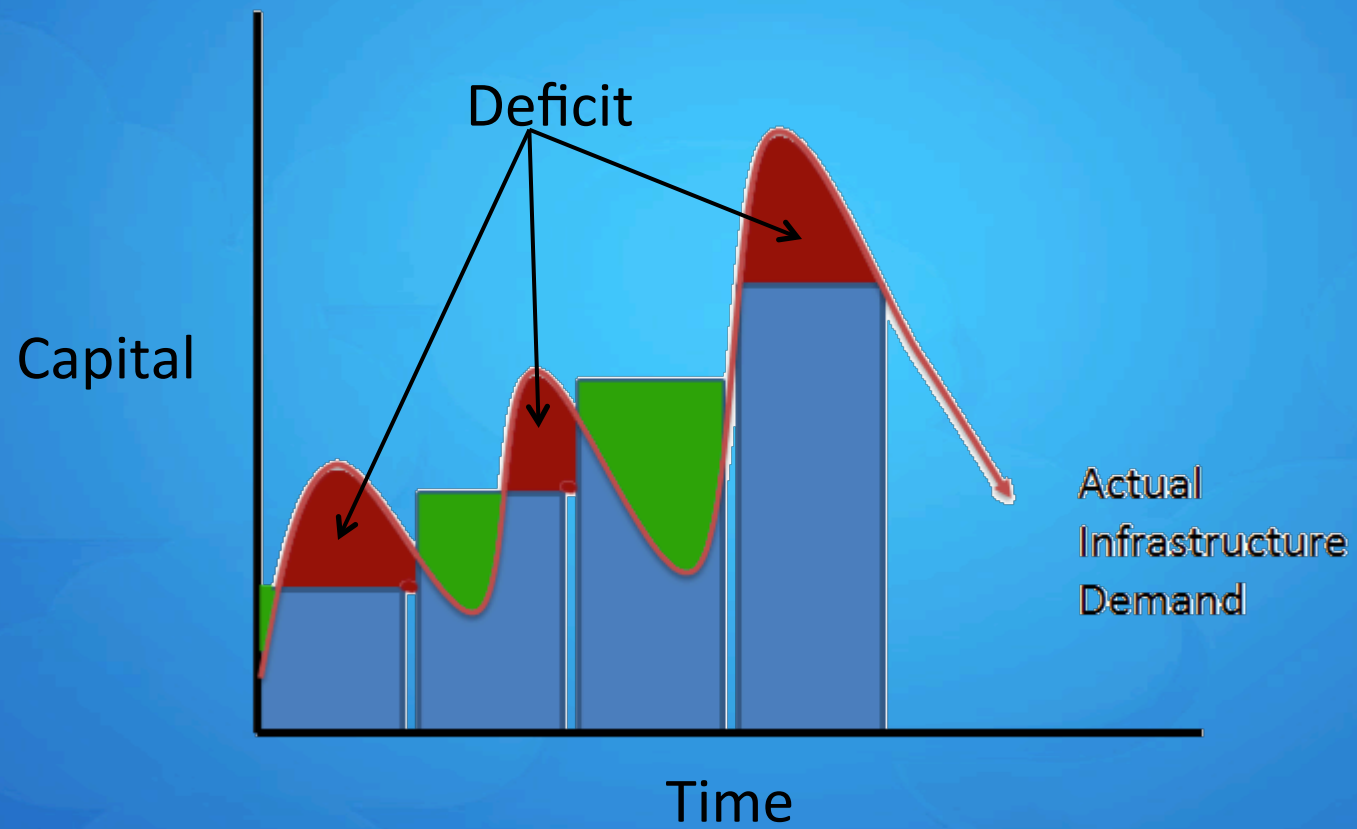
Time

Actual
Infrastructure
Demand

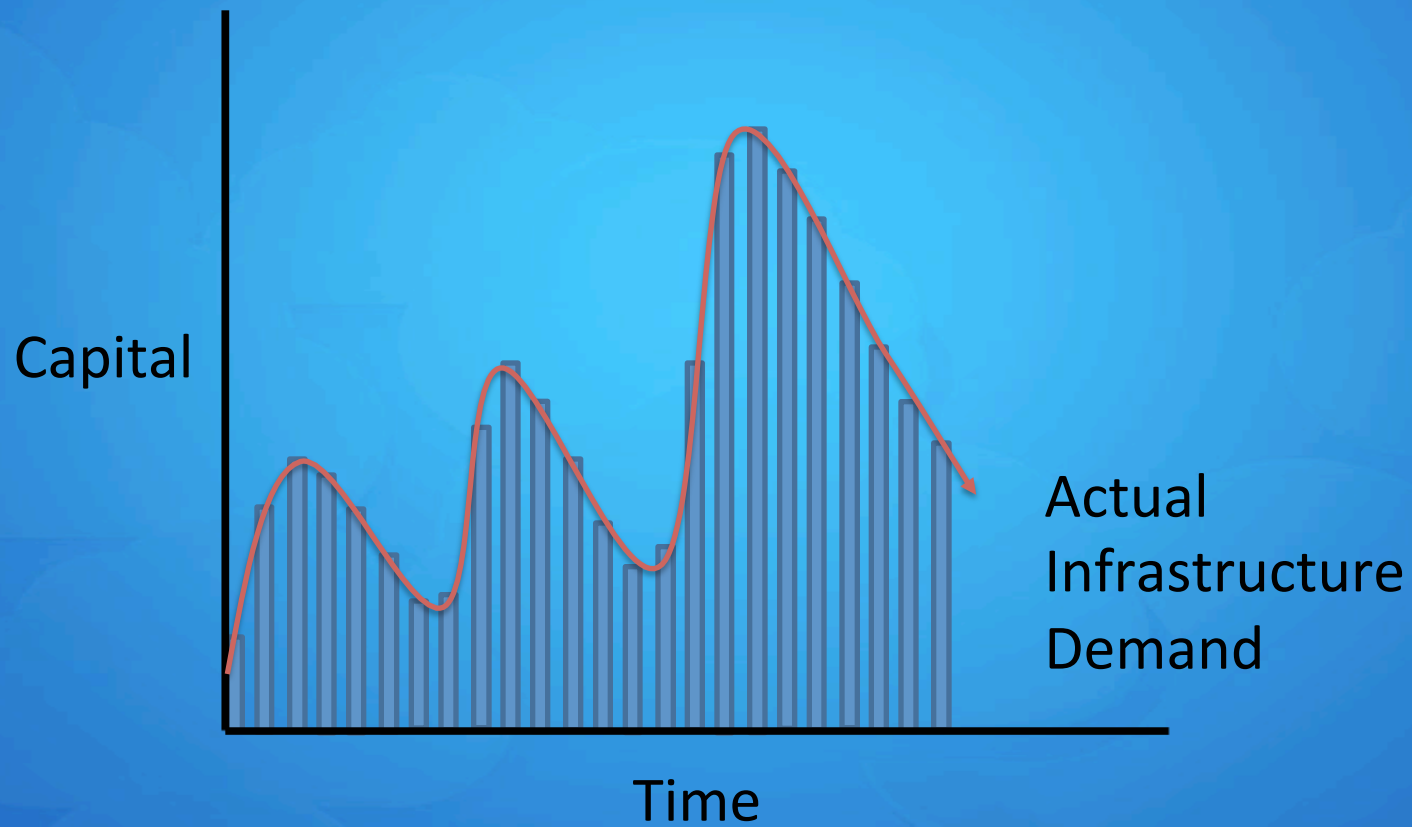
Unacceptable Surplus



Unacceptable Deficit



Utility Infrastructure Model



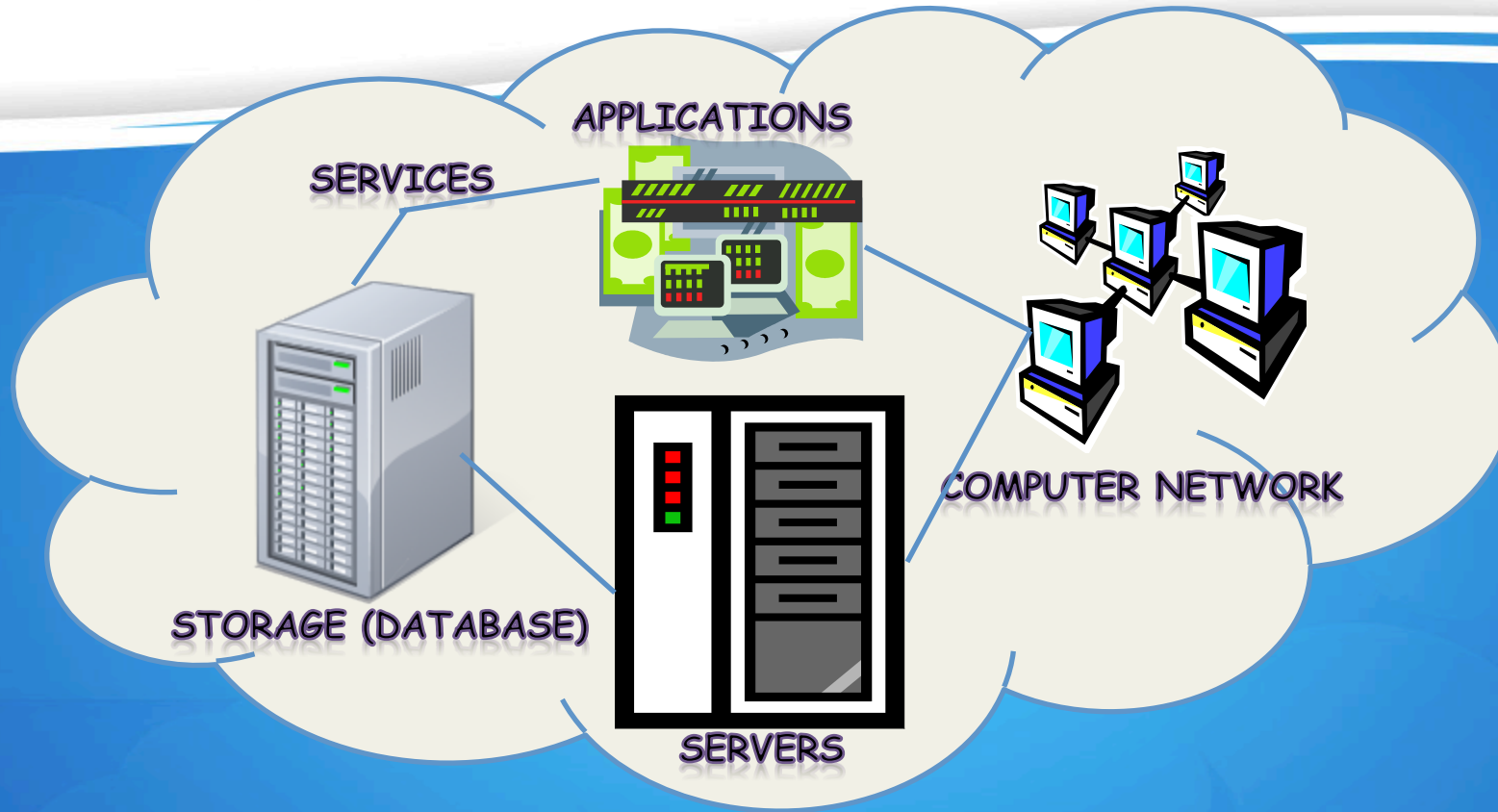
什麼是雲端電腦？

- **Cloud Computing** is a general term used to describe a new class of network based computing that takes place over the Internet,
 - basically a step on from Utility Computing
 - a collection/group of integrated and networked hardware, software and Internet infrastructure (called a platform).
 - Using the Internet for communication and transport provides hardware, software and networking services to clients
- These platforms hide the complexity and details of the underlying infrastructure from users and applications by providing very simple graphical interface or API

什麼是雲端電腦？

- In addition, the platform provides on demand services, that are
 - always on, anywhere, anytime and any place.
- Pay for use and as needed, elastic
 - scale up and down in capacity and functionalities
- The hardware and software services are available to
 - general public, enterprises, corporations and businesses markets

什麼是雲端電腦？

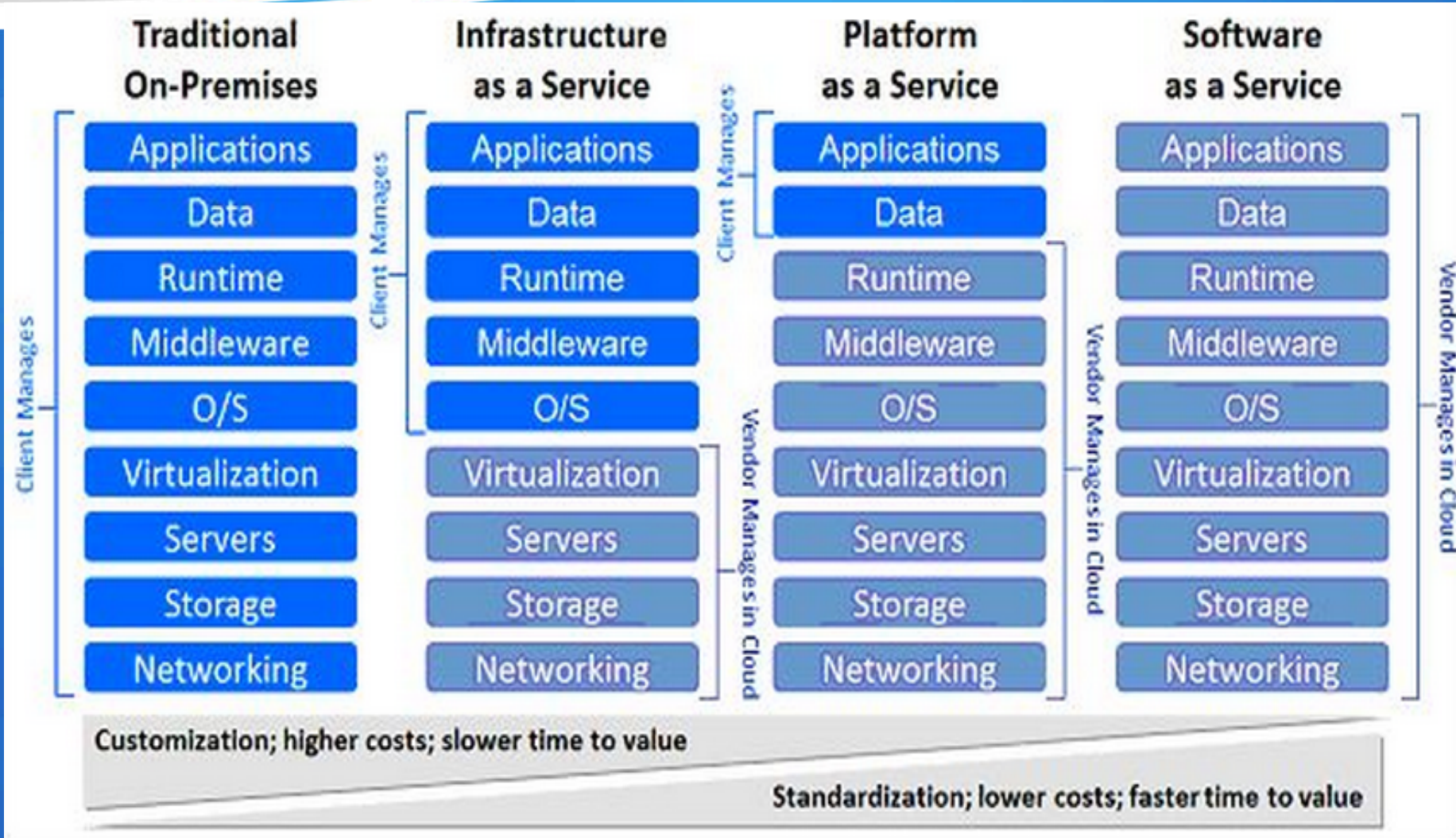


- Shared pool of configurable computing resources
- On-demand network access
- Provisioned by the Service Provider

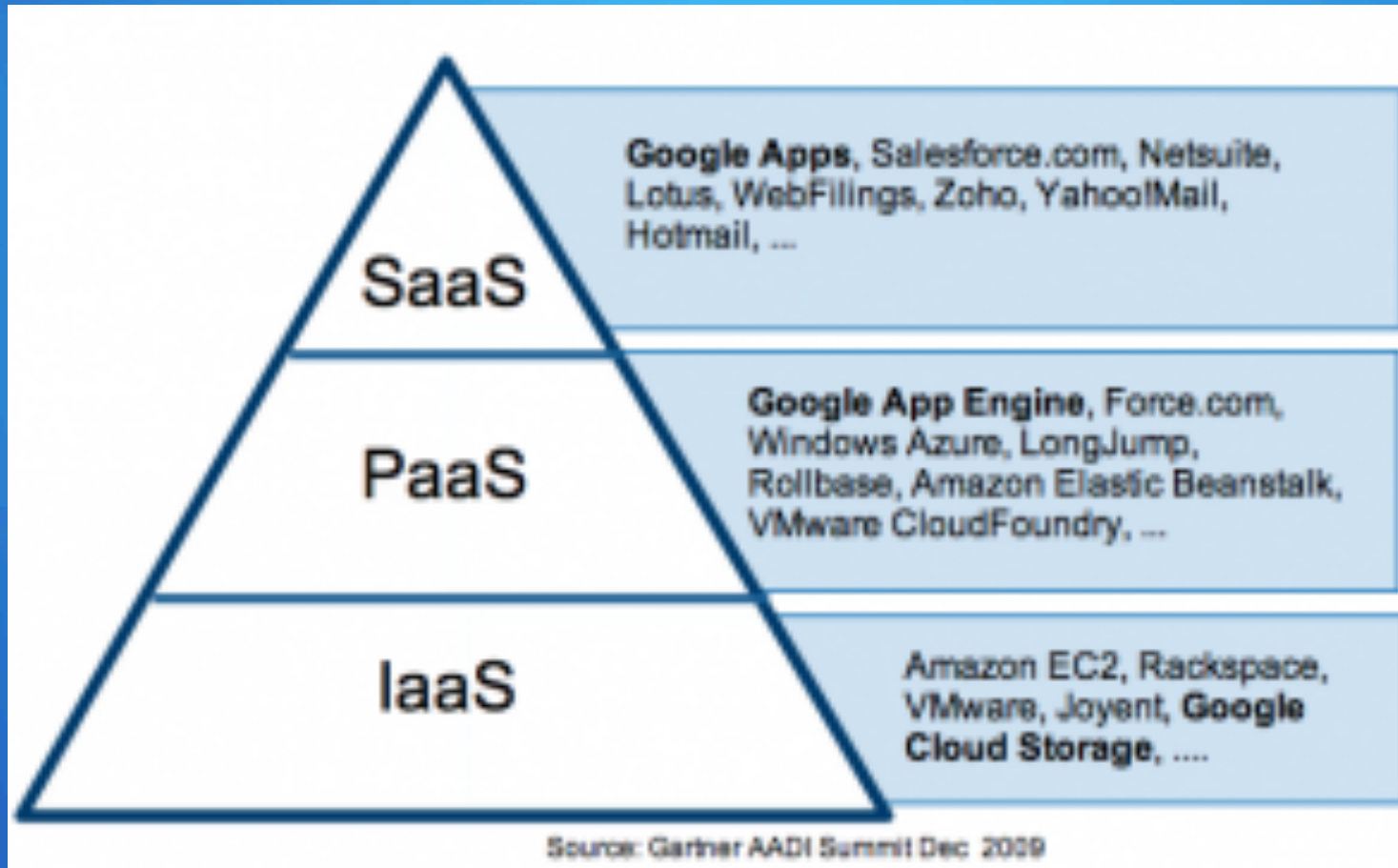
Cloud Summary

- Cloud computing is an umbrella term used to refer to Internet based development and services
- A number of characteristics define cloud data, applications services and infrastructure:
 - **Remotely hosted:** Services or data are hosted on remote infrastructure.
 - **Ubiquitous:** Services or data are available from anywhere.
 - **Commodified:** The result is a utility computing model similar to traditional that of traditional utilities, like gas and electricity - you pay for what you would want!

Cloud Services Models

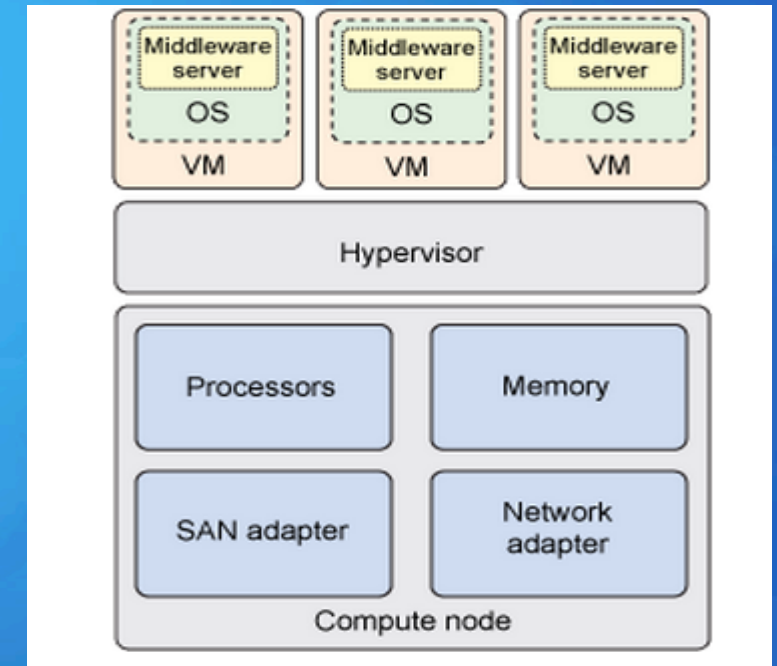


Example Cloud Services

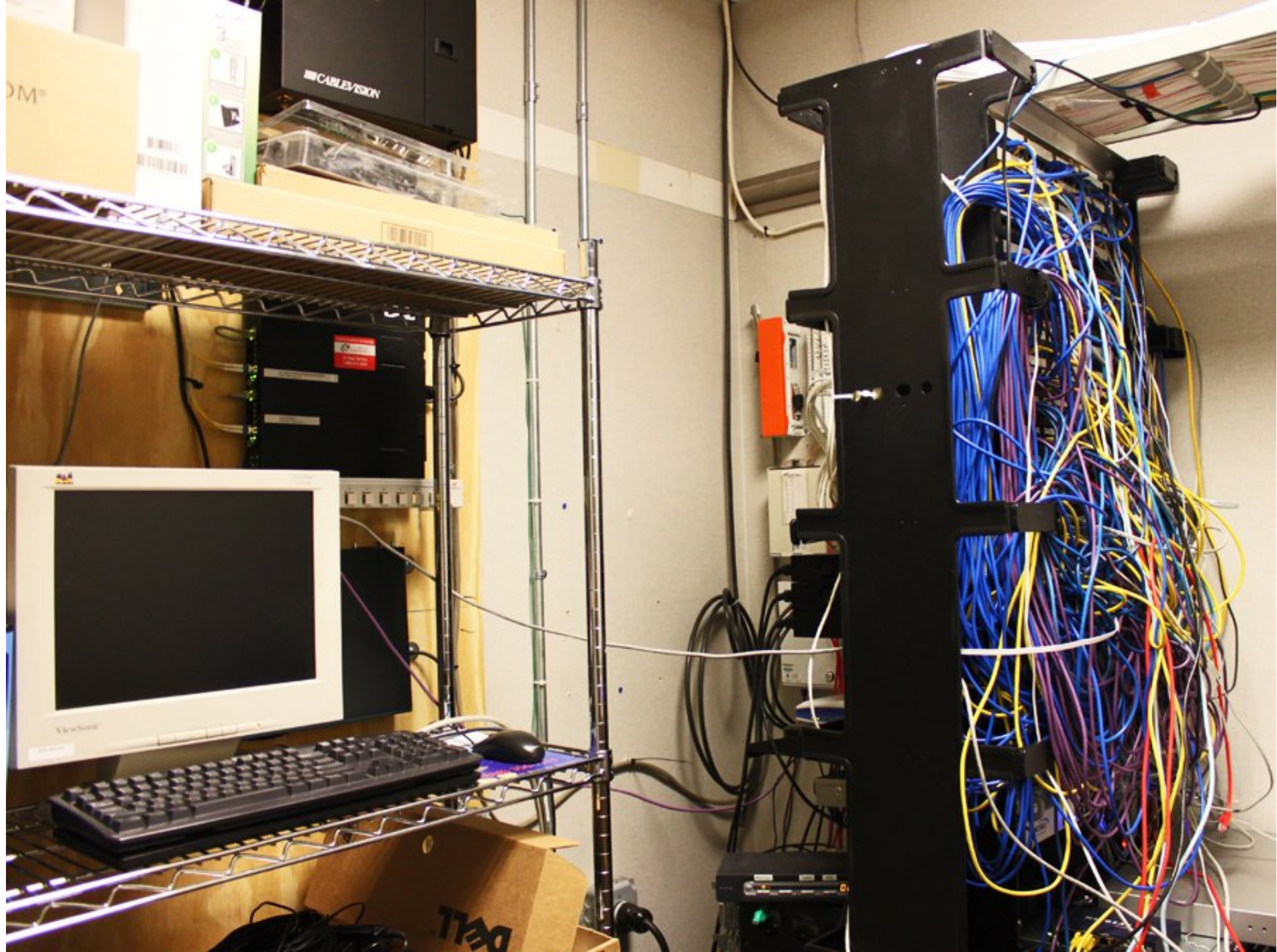


Infrastructure As A Service (IaaS)

- IaaS also known as HaaS (Hardware as a Service) provides access to computing resource in a virtualised environment:
- Virtual server space, network connections, bandwidth, IP addresses and load balancers.
- Physically, the pool of hardware resource is pulled from a multitude of servers and networks usually distributed across numerous users/clients.



虛擬伺服器技術



虛擬伺服器技術

Firewall +Proxy +Web



NetProtect 防火牆



External T-Resource



Internal T-Resource



SAMS DB Server



Office Admin



WebMail



Backup Server

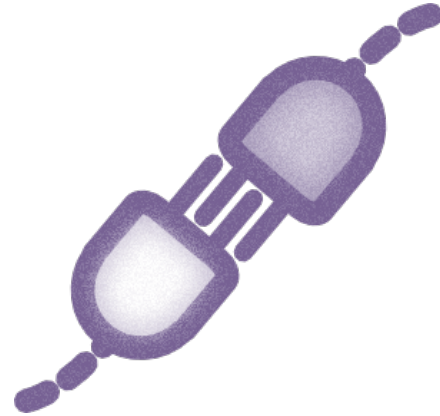


LDAP



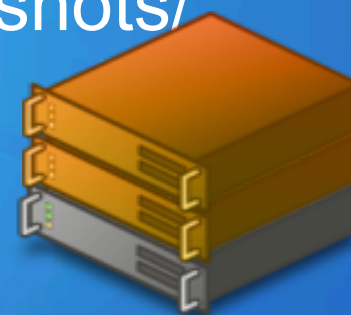
Running Windows Server 2012/2008 R2 – Hyper-V

Failover Clustering



虛擬伺服器技術之好處

- 1部伺服器 - 虛擬技術
- 電費減少
- 節省位置
- 極容易Recovery - 使用 Hyper-V 內的快照功能 (Snapshots/Checkpoint)
- 快速遷移虛擬伺服器 - 減少停機時間
- 減少硬件 - 少硬件少問題
- 隨時增加資源 - 提高所有虛擬伺服器可用性
- 統一管理介面方便TSS



虛擬伺服器技術學校實例

學校伺服器	電力度數	費用	等同二氧化碳排放
每日用8台舊型號350W伺服器24hrs	24528度	中電：每年 \$25,631.76 港燈：每年 \$33,088.27	中電：每年13,242kg 港燈：每年19,622kg
每日用1台新型號1200W伺服器 24hrs	10512度	中電：每年 \$10,985.04 港燈：每年 \$14,180.68	中電：每年5,676kg 港燈：每年8,409kg
註一：直至2013年1月1日為止，在包括了燃料價的淨電費方面，中華電力（每度電1.045元）較香港電燈（每度電1.349元） 註二：中華電力（每度電耗0.54kg二氧化碳）、香港電燈（每度電耗0.8kg二氧化碳）			

一年最少可減省\$14,646及7,566kg的CO₂的排放



Server Manager ▸ Local Server

- Dashboard
- Local Server
- All Servers
- File and Storage Services
- Hyper-V

Hyper-V Manager

File Action View Help

Hyper-V Manager

- HYPERV01
- HYPERV03
- HYPERV02
- HYPERV04

Virtual Machines

Name	State	CPU Usage	Assigned Memory
CLOUD-CM02	Off		
CLOUD-DB03	Off		
CLOUD-DC01	Off		
CLOUD-JE02	Off		
CLOUD-OR02	Off		
Cloud-VM02	Off		
Gateway	Off		

Snapshots

The selected virtual machine has no snapshots.

Cloud-VM02

Created: 8/24/2012 2:14:15 PM **Clustered:** No

Notes: #CLUSTER-INVARIANT#:(b65e7d08-bad4-42e1-b0b2-b2449e6fa27c)

Actions

- HYPERV02
 - New
 - Import Virtual Machine...
 - Hyper-V Settings...
 - Virtual Switch Manager...
 - Virtual SAN Manager...
 - Edit Disk...
 - Inspect Disk...
 - Stop Service
 - Remove Server
 - Refresh
 - View
 - Help
- Cloud-VM02
 - Connect...
 - Settings...
 - Start
 - Snapshot
 - Move...
 - Export...
 - Rename...

實例- 天水圍香島中學

- 六台 Linux 伺服器系統相容構成管理上的困難
- Linux 屬開放源碼的作業系統 - 欠缺支援
- 數百部電腦運作不同的系統 - 產生大量問題
- 系統的維護, 支援 - 極度倚賴個別 IT 技術人員
- IT 技術人員花時間自行摸索尋找解決方法
- 無法支援和配合學校的軟件更新

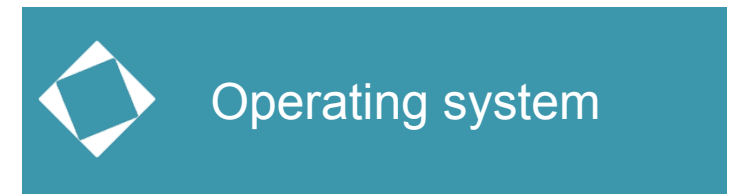
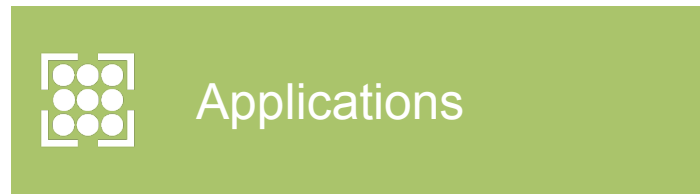


天水圍香島中學副校長伍學齡

DESKTOP VIRTUALIZATION (VDI)

Microsoft Desktop Virtualization

Centralized and Unified Management



*Change the device,
keep your experience*

User Experience
Virtualization (UE-V)
Folder Redirection



*Desktop
everywhere*

Deliver virtualization to the user through a more comprehensive platform!

User State Virtualization



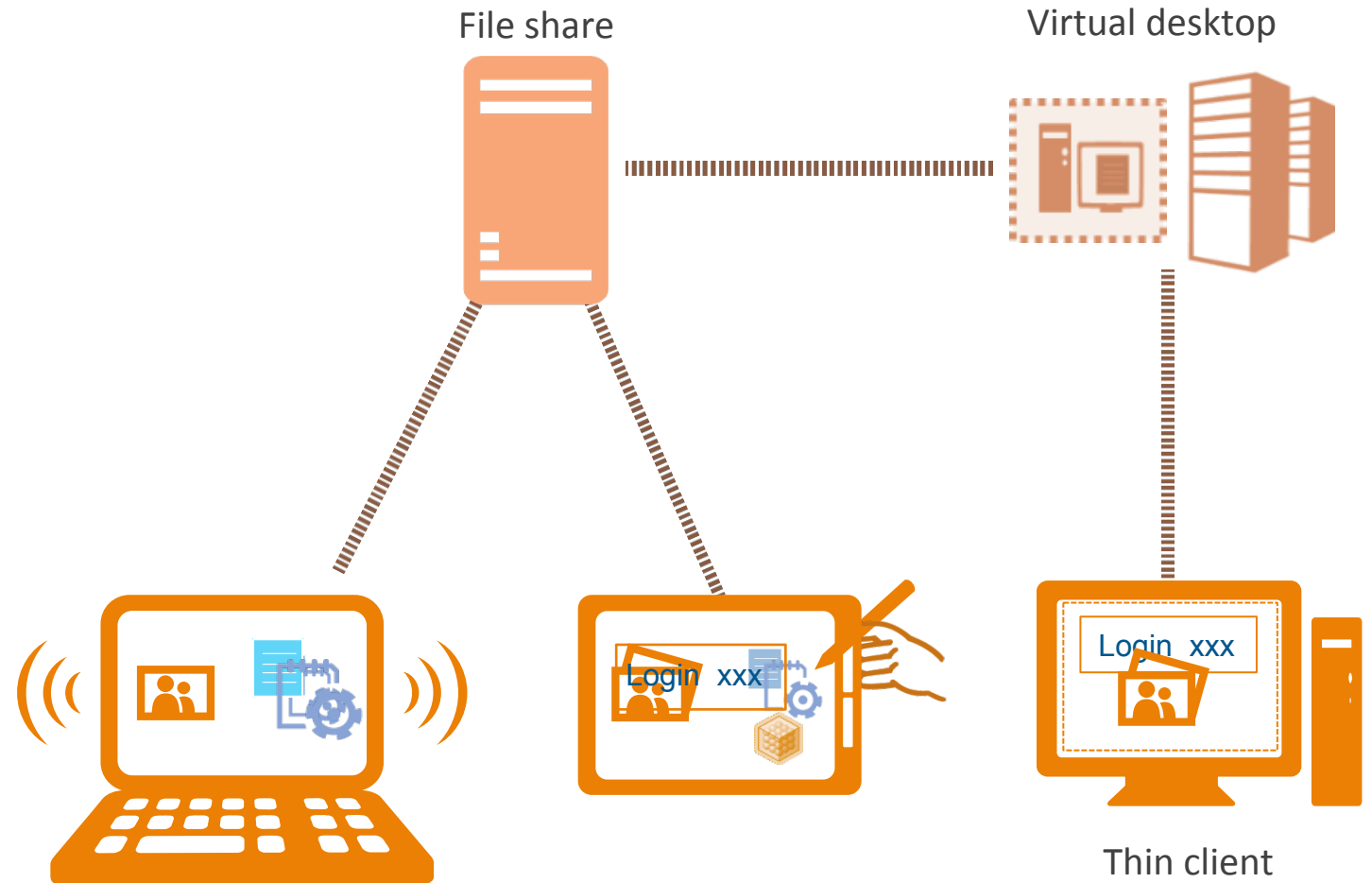
User state

四圍學習

Access to data and personal settings on any device

文件跟著走

Log in to retrieve your data and restore productivity



*Includes User Experience Virtualization (UE-V), Folder Redirection and Offline Files

Application Virtualization



Applications

軟件唔洗裝既!

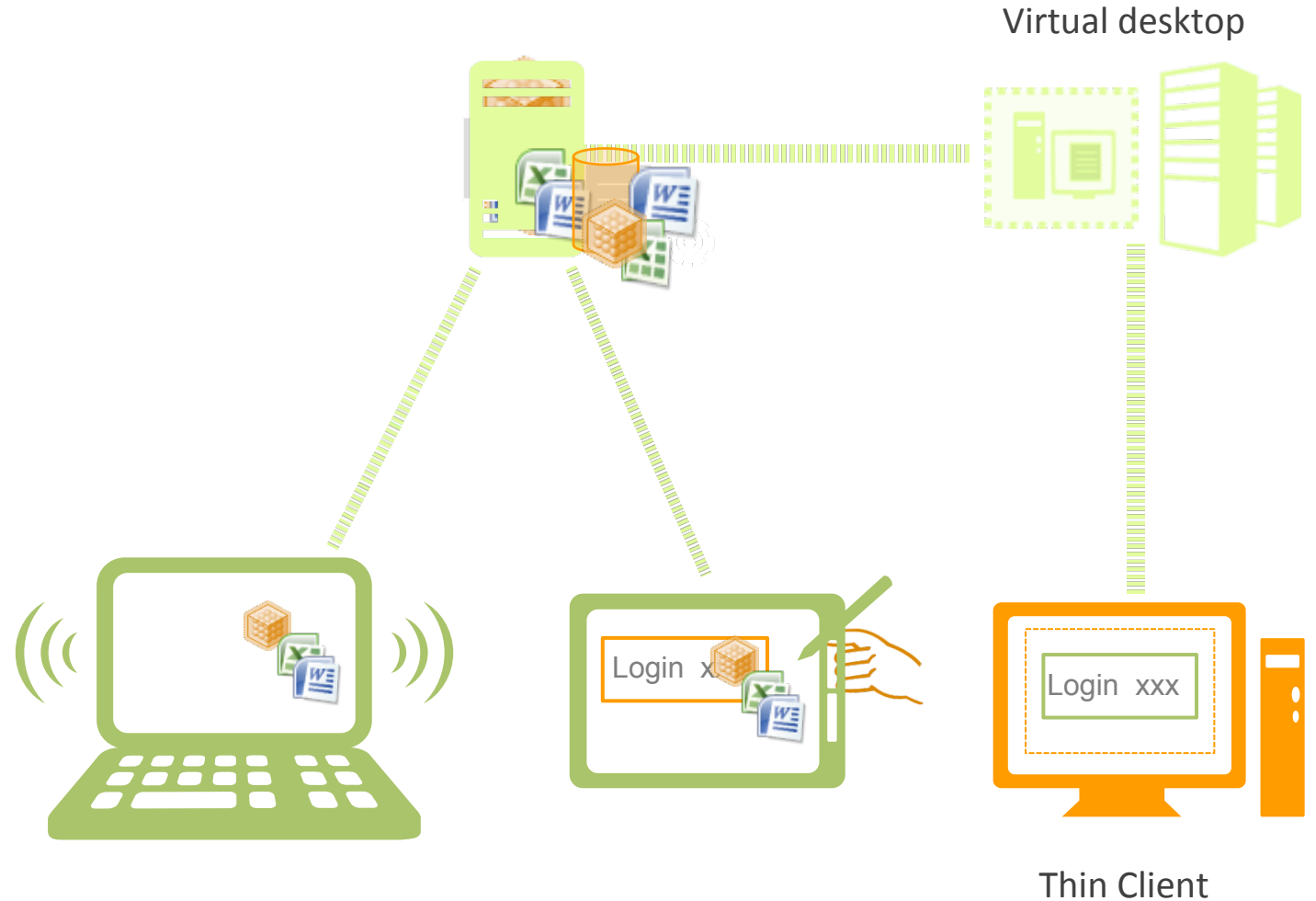
Access to applications on
any device without installs

即開即用

Log in to retrieve applications
and restore productivity

容易更新

Faster provisioning of virtual
applications on demand



Virtual Desktop Infrastructure Hosted Virtual Desktops

靈活存取 Windows

Secure access to Windows from any connected device

Pursue “Bring Your Own Device” programs

保護學校數據

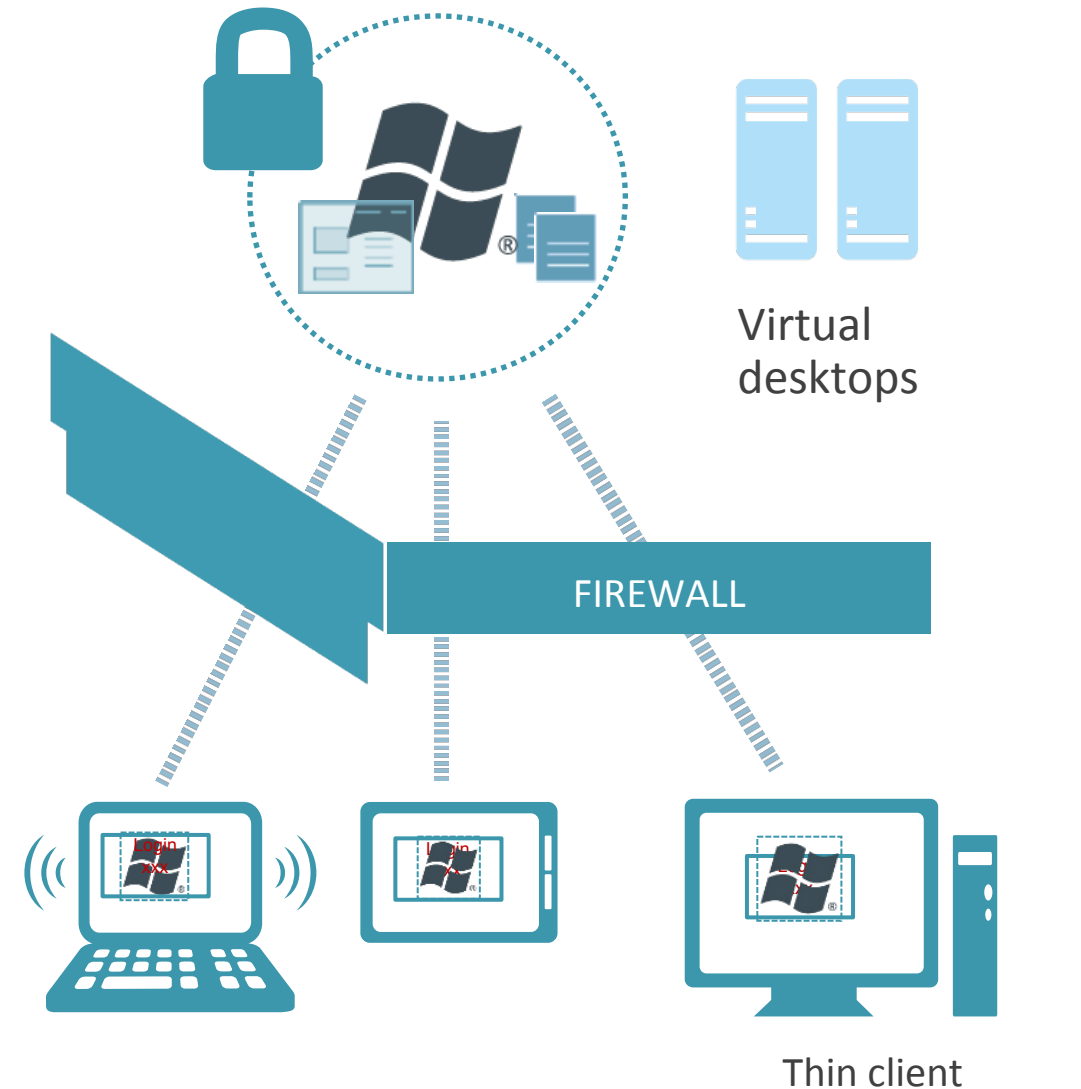
Centralize school data and control user access

一按即有

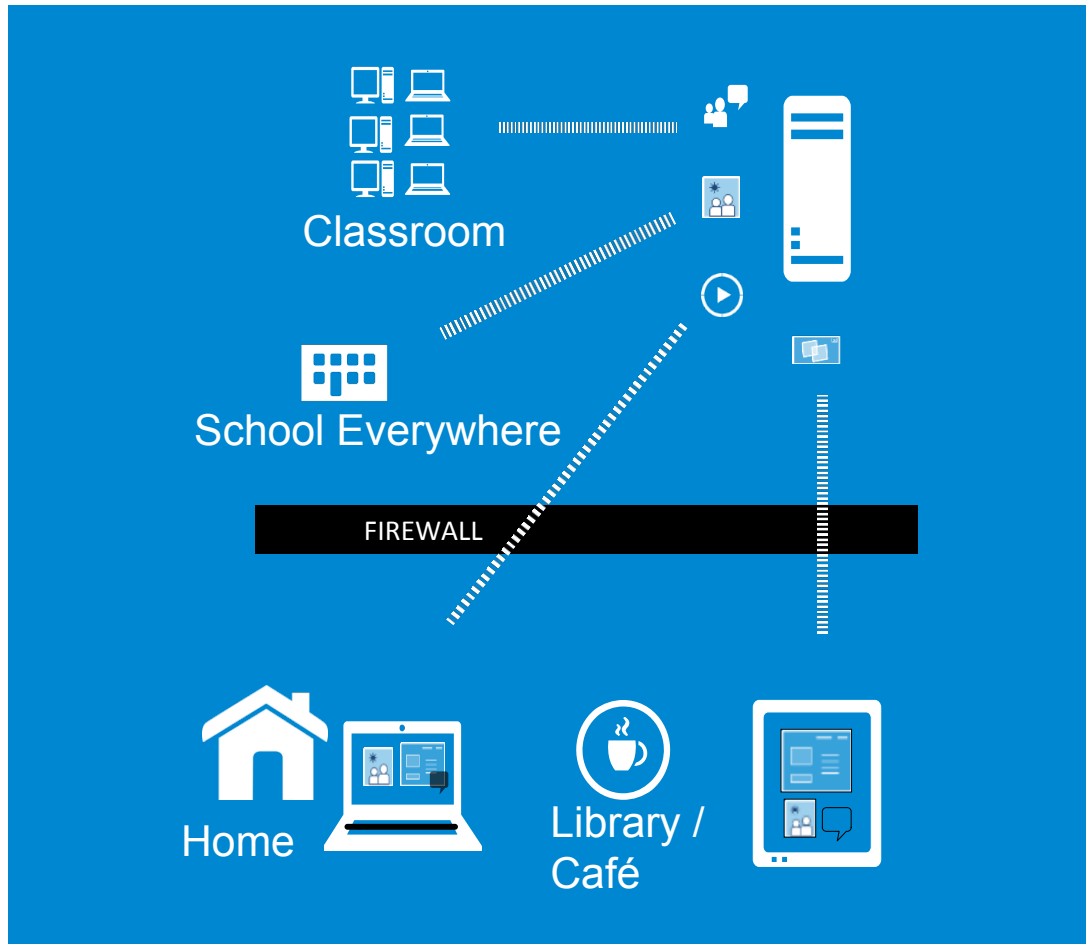
Instant provisioning of school resources

集中化管理

Fast desktop delivery with centralized management



Microsoft VDI Solution with Windows Server 2012

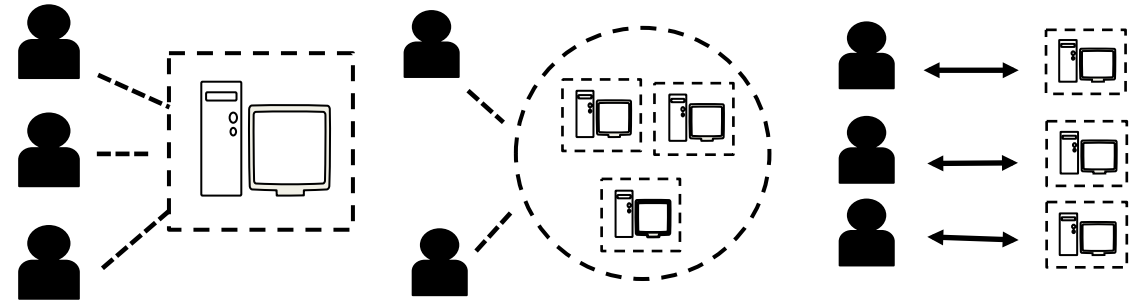


Powered by Windows Server 2012
Remote Desktop Services

Desktop sessions

Pooled VMs

Personal VMs



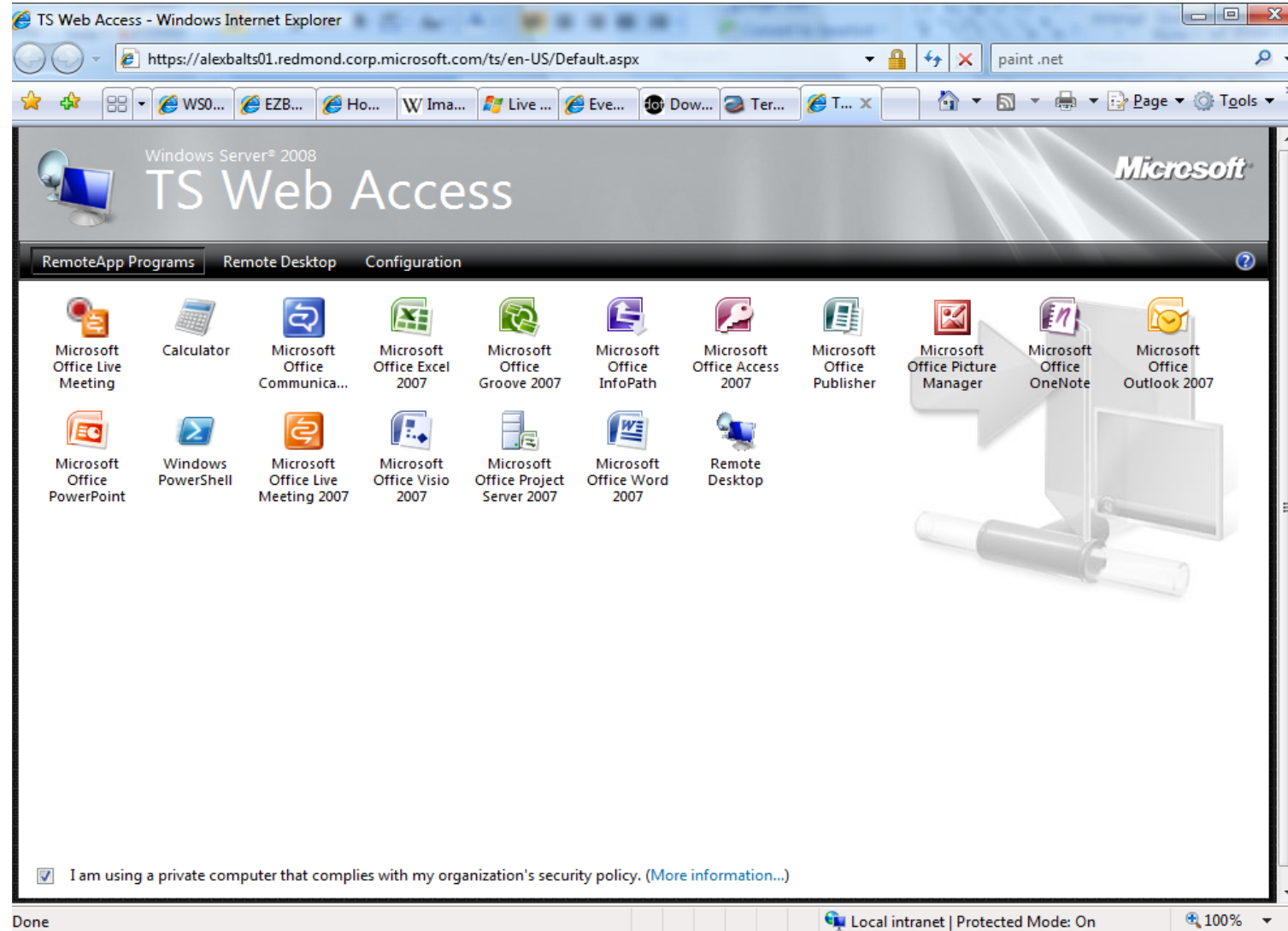
1 platform | 1 experience | 3 deployment choices

Efficient management
Best value for VDI
Rich experience online everywhere

Microsoft RemoteApp: Hosted Virtual Application



Applications



Hardware Requirements



Server



Thin client

Server Requirements - Example

Server Estimation: 4GB Ram, 10GB Hard disk for 30 Users

CPU: Intel(R) Xeon(R) Processor E5-2630 2.30GHz, 15M Cache, 7.2GT/s QPI, Turbo, 6C, 95W x 2

RAM: 160GB RAM

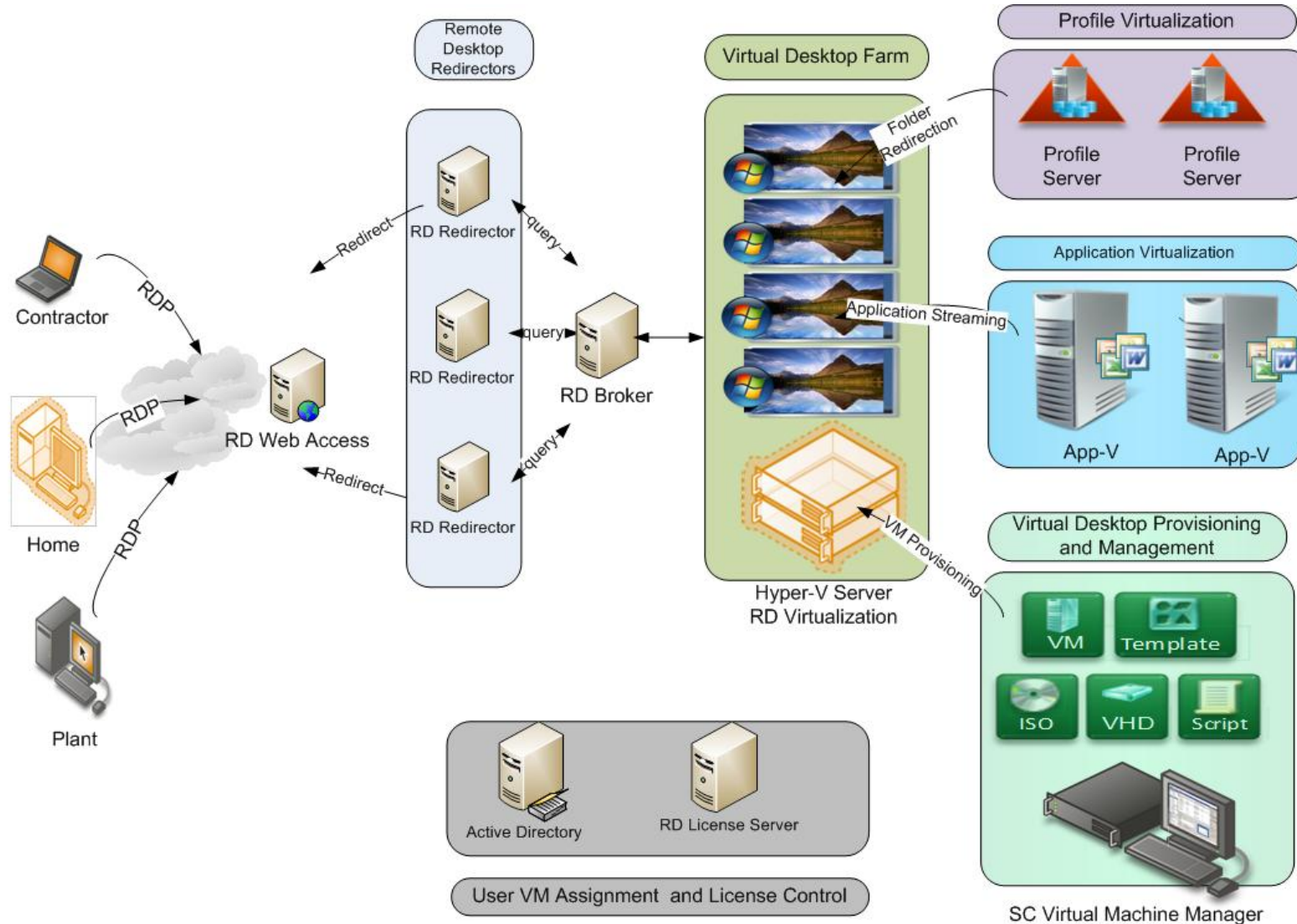
Hard Disk: 6 x 2TB 7.2K RPM Near Line, 6Gbps SAS 3.5" Hot Plug Hard Drive

Power Supply: Redundant Power Supply

Thin Client - Example

Thin Client
OS: Windows Embedded Standard 7
CPU: Single Core
Memory: 4GB Flash / 1GB RAM
Display Port: DVI – D adapter available
Network: 10/100/1000 Gigabit Ethernet / Wireless 802.11 a/b/g/n
Graphics: On-Board Graphic Card

Microsoft VDI Architecture



Case Sharing

Staff Room: 75 PCs

Original PC Specification:

CPU : Pentium 4 3Ghz
RAM : 2 GB DDR2-Synch DRAM
HDD : 80GB 5400RPM HDD
Display : Integrated Intel® 3100
OD : DVD R/W

Requirements:

O/S : Windows 7 Enterprise
B. S/W : Microsoft Office 2010

Estimated Specification:

Intel i3 processor with 4 GB RAM



Estimated cost to replace all PC
~ HKD 4500.00 X 75
= ~ HKD 337,500.00

實例- 中華基金中學

必須為學生提供最新軟件應用程式

軟件種類和版本不斷推陳出新 - 需要不斷進行更新

更換速度未如理想的電腦硬件 - 必要改進

管理效能和環保原則方面皆有改進必要

Microsoft®
Virtual Desktop Infrastructure

Microsoft®
System Center 2012

Microsoft®
Application Virtualization



中華基金中學校長區光榮及資訊科技科主任林志煒老師

Desktop Virtualization 好處

- 舊機重生
- 省時省力Upgrade軟件
- 舊軟件繼續運行 - 作業系統相容性
- 增加電腦的安全性
- 極方便還原應用程式
- 桌面電腦,手提電腦, 平板電腦皆可運行



Microsoft Remote Desktop

[View More By This Developer](#)

By Microsoft Corporation

Open iTunes to buy and download apps.



Description

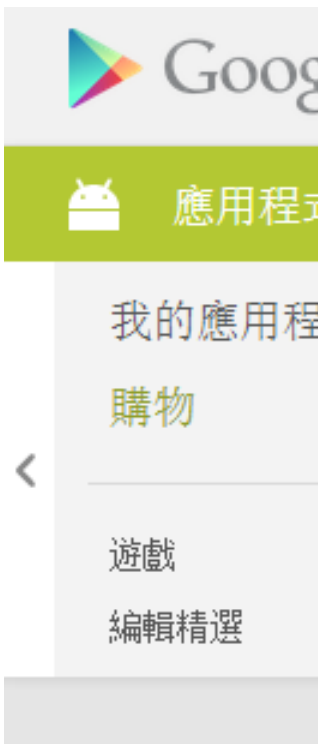
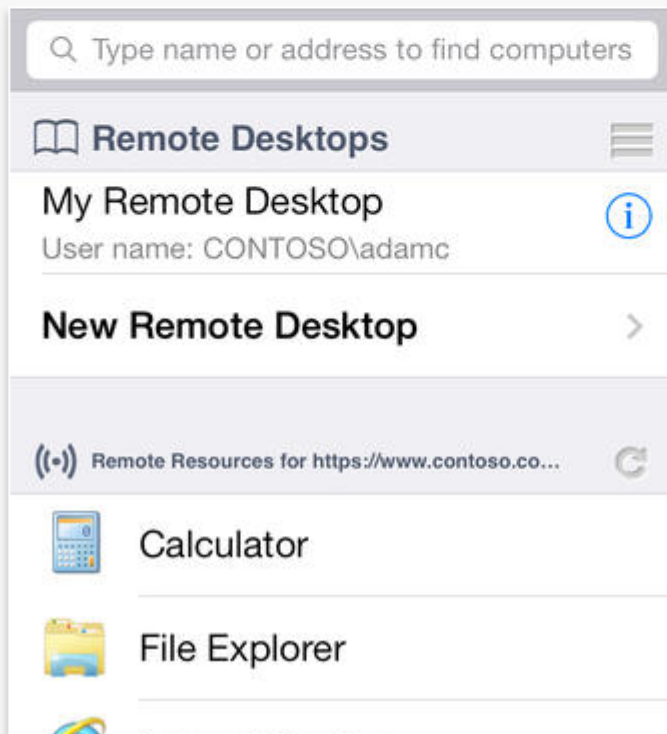
With the Microsoft Remote Desktop app, you can connect to a remote PC and your work resources from almost anywhere. Experience the power of Windows with RemoteFX in a Remote Desktop client designed to help you get your work done wherever you are.

[Microsoft Corporation Web Site](#) ▶ [Microsoft Remote Desktop Support](#) ▶ [Application License Agreement](#) ▶

...More

Screenshots

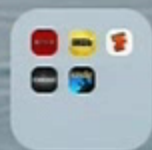
iPhone | iPad



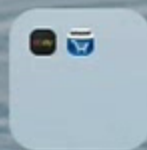
e 上推薦這個網址



Social



Entertainment



Shopping



SkyDrive



Bing for iPad



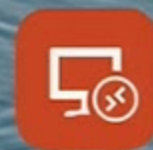
iBooks



Lync 2013



OWA



RD Client



Skype



OneNote



Safari



Mail



Photos



Music

Platform as a Service

- PaaS is a category of cloud computing that provides a platform and environment to allow developers to build applications
- Allows users to create software applications using tools supplied by the provider. PaaS services can consist of preconfigured features that customers can subscribe to; they can choose to include the features that meet their requirements
- The infrastructure and applications are managed for customers and support is available.
- Services are constantly updated, with existing features upgraded and additional features added.
- PaaS providers can assist developers from the conception of their original ideas to the creation of applications, and through to testing and deployment.

Platform as a Service

- Key PaaS Offerings:
 - Operating system
 - Server-side scripting environment
 - Database management system
 - Server Software
 - Support
 - Storage
 - Network access
 - Tools for design and development
 - Hosting
- PaaS Advantages
 - No investment in Infrastructure:
 - Being able to 'rent' virtual infrastructure has both cost benefits and practical benefits.
 - No need to purchase hardware or employ the expertise to manage it. Focus on the development of applications.
 - Makes Development/Quality Content Creation possible for 'non-experts'
 - With some PaaS offerings anyone can develop an application. They can simply do this through their web browser utilising one-click functionality.
 - Salient examples of this are one-click blog software installs such as WordPress.

Platform as a Service

- PaaS Advantages contd...

- **Flexibility**

- Customers can have control over the tools that are installed within their platforms or create a platform that suits their specific requirements.
 - Allows to 'pick and choose' the features that are necessary.

- **Adaptability**

- Features can be changed if circumstances dictate that they should.
 - Teams in various locations can work together; as an internet connection and web browser are all that is required
 - Developers spread across several locations can work together on the same application build.


- **Security**

- Security is provided, including data security and backup and recovery.

- **PaaS examples**

- AWS Elastic Beanstalk, Cloud Foundry, CloudControl, Cloudera, Engine Yard, Google App Engine

PaaS Example: Google App Engine

 Google Cloud Platform

Go to my console | Sign out


Search this site

Q

Why GoogleProducts ▾SolutionsPricingCustomersDocumentationSupportPartners

Free TrialContact Sales

Products > Documentation > Google App Engine

Google App Engine  8.9k

Report documentation issue

What is App Engine?

App Engine Features

▸ Pricing and Quotas

Downloads

▸ Python

▸ Java

▸ PHP **Beta**

▸ Go **Beta**

▸ Managed VMs **Beta**

▸ Managing Your App

▸ Sample Code, Tutorials and Videos

Google App Engine: Platform as a Service

Tools you know and love. Python, Java, PHP, Go and our MySQL compatible [Cloud SQL](#).

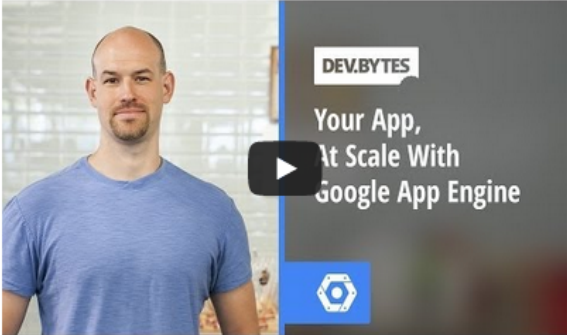
Used by millions. [Snapchat](#), [Rovio](#), and [Khan Academy](#) run on App Engine.

Build and deploy. No worrying about DBAs, servers, sharding, and load balancers.

Scale. Auto scale to 7 billion requests per day.

Sign up for a free Cloud account, create and run a sample app on your local machine and deploy it to the cloud - in five minutes.

[Try it now](#)



Software as a Service

- Software as a Service (SaaS) is a software distribution model in which applications are hosted by a vendor or service provider and made available to customers over the network.
- Software vendors host and maintain the servers, databases and code that constitute an application
- Allows buyers to pay an annual or monthly subscription fee, which typically includes the software license, support and most other fees. A major benefit of SaaS is being able to spread out costs over time
- Key Characteristics:
 - **A multitenant architecture:** in which all users and applications share a single, common infrastructure and code base that is centrally maintained.
 - **Easy Customization:** The ability for each user to easily customize applications to fit their business processes without affecting the common infrastructure
 - **Better Access:** Improved access to data from any networked device while making it easier to manage privileges, monitor data use, and ensure everyone sees the same information at the same time

Software as a Service [19]

- **SaaS characteristics Contd..**

- **Harnesses Web:** Anyone familiar with Amazon.com or My Yahoo! will be familiar with the Web interface of typical SaaS applications.
- **Updates are automated:** whenever there is an update it is available online to existing customers, often free of charge. No new software will be required as it often is with other types of applications and the updates will usually be deployed automatically by the cloud provider.
- **Cross device compatibility:** SaaS applications can be accessed via any internet enabled device, which makes it ideal for those who use a number of different devices, such as internet enabled phones and tablets, and those who don't always use the same computer.
- **Accessible from any location:** rather than being restricted to installations on individual computers, an application can be accessed from anywhere with an internet enabled device

SaaS Examples

- Google – Mail, Drive Calendar etc., Twitter, Facebook and Flickr etc. are all examples of SaaS, with users able to access the services via any internet enabled device. Enterprise users are able to use applications for a range of needs.



Cloud Service Models

Software as a Service (SaaS)

Platform as a Service (PaaS)

Infrastructure as a Service (IaaS)

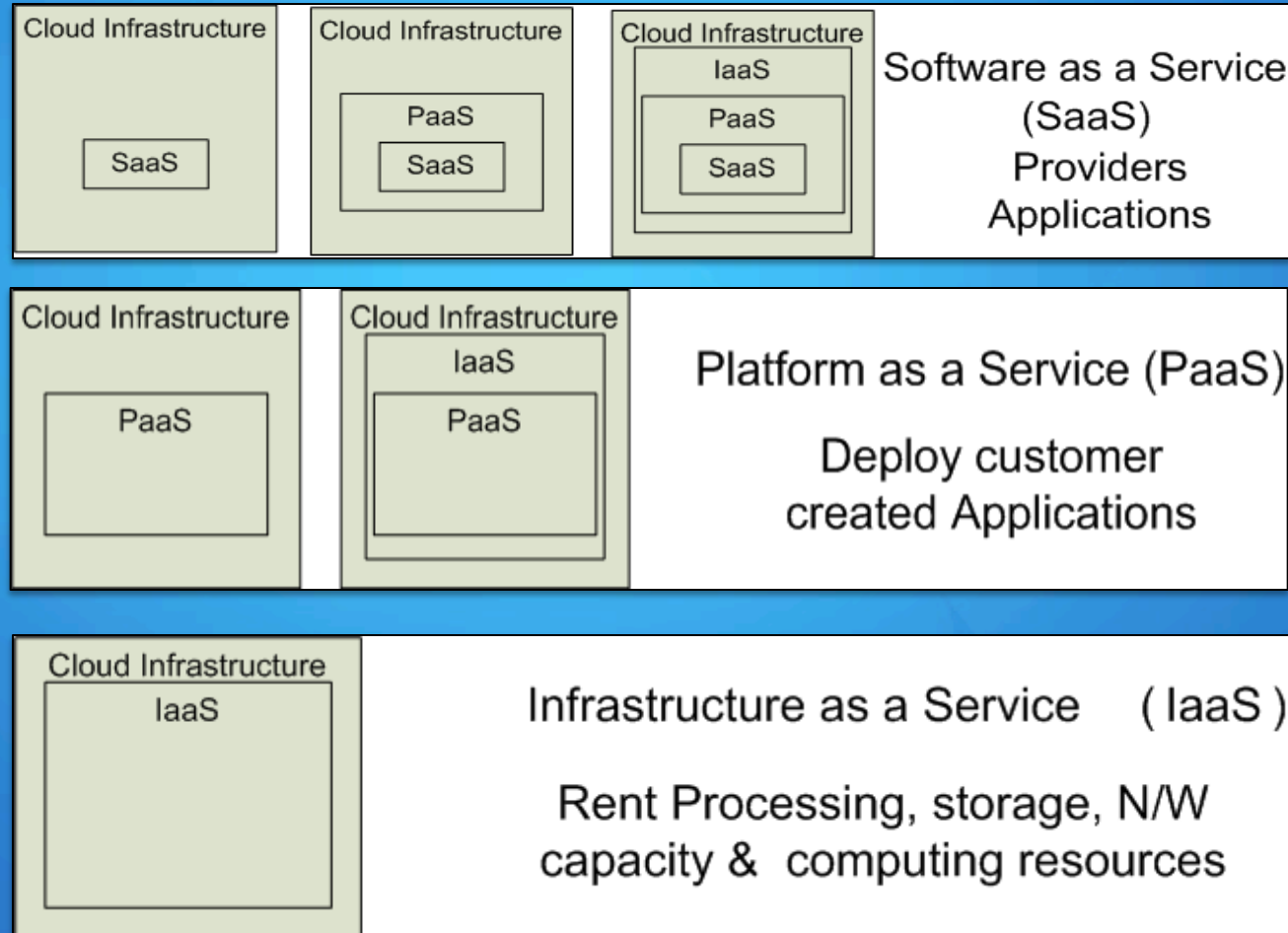
SalesForce CRM

LotusLive



Google App

Windows Azure
The Future Made Familiar



Cloud Computing Service Layers

		Services	Description
Application Focused		Services	Services - Complete business services such as PayPal, OpenID, OAuth, Google Maps, Alexa
		Application	Application - Cloud based software that eliminates the need for local installation such as Google Apps, Microsoft Online
		Development	Development - Software development platforms used to build custom cloud based applications (PAAS & SAAS) such as Salesforce
Infrastructure Focused		Platform	Platform - Cloud based platforms, typically provided using virtualization, such as Amazon ECC, Sun Grid
		Storage	Storage - Data storage or cloud based NAS such as CTERA, iDisk, CloudNAS
		Hosting	Hosting - Physical data centers such as those run by IBM, HP, NaviSite, etc.

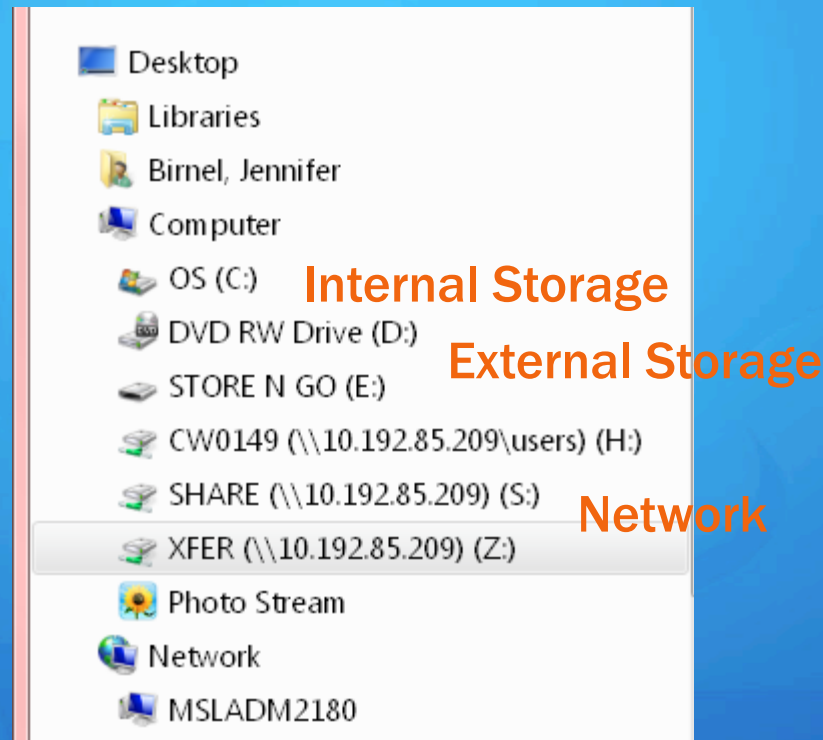
Cloud Storage

- Large Web companies are exploiting the fact that they have data storage capacity that can be hired out to others.
 - allows data stored remotely to be temporarily cached on desktop computers, mobile phones or other Internet-linked devices.
- Amazon's Elastic Compute Cloud (EC2) and Simple Storage Solution (S3) are well known examples
 - Mechanical Turk



Saving documents

- When you do a “save as” on your computer, you choose where to save the material.



學員討論：
在學校應用雲端電腦的機會、安排、優勢及
限制

在學校使用雲端電腦的優點

- Lower computer costs:
 - You do not need a high-powered and high-priced computer to run cloud computing's web-based applications.
 - Since applications run in the cloud, not on the desktop PC, your desktop PC does not need the processing power or hard disk space demanded by traditional desktop software.
 - When you are using web-based applications, your PC can be less expensive, with a smaller hard disk, less memory, more efficient processor...
 - In fact, your PC in this scenario does not even need a CD or DVD drive, as no software programs have to be loaded and no document files need to be saved.

在學校使用雲端電腦的優點

- Improved performance:
 - With few large programs hogging your computer's memory, you will see better performance from your PC.
 - Computers in a cloud computing system boot and run faster because they have fewer programs and processes loaded into memory...
- Reduced software costs:
 - Instead of purchasing expensive software applications, you can get most of what you need for free-ish!
 - most cloud computing applications today, such as the Google Docs suite.
 - better than paying for similar commercial software
 - which alone may be justification for switching to cloud applications.

在學校使用雲端電腦的優點

- Instant software updates:
 - Another advantage to cloud computing is that you are no longer faced with choosing between obsolete software and high upgrade costs.
 - When the application is web-based, updates happen automatically
 - available the next time you log into the cloud.
 - When you access a web-based application, you get the latest version
 - without needing to pay for or download an upgrade.
- Improved document format compatibility.
 - You do not have to worry about the documents you create on your machine being compatible with other users' applications or OSes
 - There are potentially no format incompatibilities when everyone is sharing documents and applications in the cloud.

在學校使用雲端電腦的優點

- Unlimited storage capacity:
 - Cloud computing offers virtually limitless storage.
 - Your computer's current 1 Tbyte hard drive is small compared to the hundreds of Pbytes available in the cloud.
- Increased data reliability:
 - Unlike desktop computing, in which if a hard disk crashes and destroy all your valuable data, a computer crashing in the cloud should not affect the storage of your data.
 - if your personal computer crashes, all your data is still out there in the cloud, still accessible
 - In a world where few individual desktop PC users back up their data on a regular basis, cloud computing is a data-safe computing platform!

在學校使用雲端電腦的優點

- Universal document access:
 - That is not a problem with cloud computing, because you do not take your documents with you.
 - Instead, they stay in the cloud, and you can access them whenever you have a computer and an Internet connection
 - Documents are instantly available from wherever you are
- Latest version availability:
 - When you edit a document at home, that edited version is what you see when you access the document at work.
 - The cloud always hosts the latest version of your documents
 - as long as you are connected, you are not in danger of having an outdated version

在學校使用雲端電腦的優點

- Easier group collaboration:
 - Sharing documents leads directly to better collaboration.
 - Many users do this as it is an important advantages of cloud computing
 - multiple users can collaborate easily on documents and projects
- Device independence.
 - You are no longer tethered to a single computer or network.
 - Changes to computers, applications and documents follow you through the cloud.
 - Move to a portable device, and your applications and documents are still available.

在學校使用雲端電腦的缺點

- Requires a constant Internet connection:
 - Cloud computing is impossible if you cannot connect to the Internet.
 - Since you use the Internet to connect to both your applications and documents, if you do not have an Internet connection you cannot access anything, even your own documents.
 - A dead Internet connection means no work and in areas where Internet connections are few or inherently unreliable, this could be a deal-breaker.

在學校使用雲端電腦的缺點

- Does not work well with low-speed connections:
 - Similarly, a low-speed Internet connection, such as that found with dial-up services, makes cloud computing painful at best and often impossible.
 - Web-based applications require a lot of bandwidth to download, as do large documents.
- Features might be limited:
 - This situation is bound to change, but today many web-based applications simply are not as full-featured as their desktop-based applications.
 - For example, you can do a lot more with Microsoft PowerPoint than with Google Presentation's web-based offering

在學校使用雲端電腦的缺點

- Can be slow:
 - Even with a fast connection, web-based applications can sometimes be slower than accessing a similar software program on your desktop PC.
 - Everything about the program, from the interface to the current document, has to be sent back and forth from your computer to the computers in the cloud.
 - If the cloud servers happen to be backed up at that moment, or if the Internet is having a slow day, you would not get the instantaneous access you might expect from desktop applications.

在學校使用雲端電腦的缺點

- Stored data might not be secure:
 - With cloud computing, all your data is stored on the cloud.
 - The questions is How secure is the cloud?
 - Can unauthorised users gain access to your confidential data?
- Stored data can be lost:
 - Theoretically, data stored in the cloud is safe, replicated across multiple machines.
 - But on the off chance that your data goes missing, you have no physical or local backup.
 - Put simply, relying on the cloud puts you at risk if the cloud lets you down.



小休

設置公共雲系統的實現與教學實例 動手實踐和深入的討論O365

Office 365 全方位的雲端分享及協作平台



- OneDrive 提供校內使用者每人 1TB 雲端儲存空間 (市面上的手提電腦容量大約為 500GB)



- Project 小組/校內社交平台
- 提供:
 - Newsfeed
 - 文件儲存/分享/Co-authoring
 - 可因應不同需求設計你的 SharePoint Site



- Office 365 上提供一個校內的影片庫
- 影片庫內可設立不同的頻道給不同的學科/年級/活動



- 一個強大的網上版 Office
- 支援網上編輯你的 Office 文件
- 支援不同的操作系統，包括你的智能電話



- 一個免費的電子教材製作工具
- 以簡易的步驟將現有的教學材料，老師就能輕易地製作出出色的互動教材

Apply: <https://products.office.com/zh-HK/academic/>

Sway



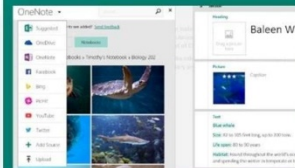
- 一個免費的電子教材製作工具
- 以非常簡易的步驟將現有的教學材料，老師就能輕易地製作出出色的互動教材

Create and share something new



Immersive, interactive, web-based
New types of layout options
Layouts adapt, look great on devices
Share via email and social networks

Add your content easily




Include a variety of multimedia types
Integrated with your cloud storage, your devices, social networks, web
Drag and drop your content into Sway
Built-in Bing Image Search and Suggested searches

Effortless design



Assisted and adaptive design/layout
"Always done"
Natural, intent-based feedback/tuning
Click to transform content

More Details : <https://sway.com/>



Office 365 | Sites

BROWSE PAGE FILES LIBRARY

Weather EDIT LINKS

Home
 Notebook
 Documents
 Site Contents
 Recycle Bin
 EDIT LINKS

Weather

Newsfeed

User 2
Discovery Channel - Global Warming
@ User 6, User 7, and 3 others like this.
September 24 · Like · Reply · Follow User 2 · ...

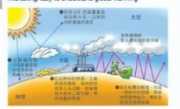
~ Show all 3 replies

User 5 great
September 24 · @ 1 · Like · Follow User 5 · ...

User 6 got it
September 24 · @ 2 · Like · Follow User 6 · ...

Add a reply

Teacher
Interesting, easy to understand global warming



@ You, User 6, User 7, and 2 others like this.
September 24 · Unlike · Reply · ...

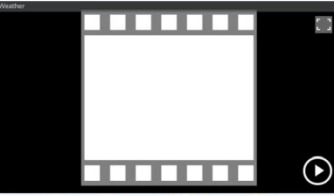
~ Show all 4 replies

Teacher it horrible
September 24 · @ 3 · Unlike · ...

User 6 yes
September 24 · @ 2 · Unlike · Follow User 6 · ...

Add a reply

Example




Documents

New Upload Share

✓	Name	...
	Book 书	...
	參考資料 书	...
	温室效應 Group 1	...
	温室效應 Group 3	...
	温室效應 Group 2	...

Drag files here to upload

Teacher
Interesting, easy to understand global warming



@ You, User 6, User 7, and 2 others like this.
September 24 · Unlike · Reply · ...

~ Show all 4 replies

Teacher it horrible
September 24 · @ 2 · Like · ...

User 6 yes
September 24 · @ 2 · Unlike · Follow User 6 · ...

Add a reply

You can post the newsfeed on a team site you're following at any time, or see updates about other people conversation.

- Follow up – add the conversation in your task list.
- Like – you can like the post which you feel interesting
- Reply – make a conversation with your teammate.

As one of the important features, teachers can manage the newsfeed effectively, i.e. Delete and Block.

Documents

New Upload Share

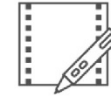
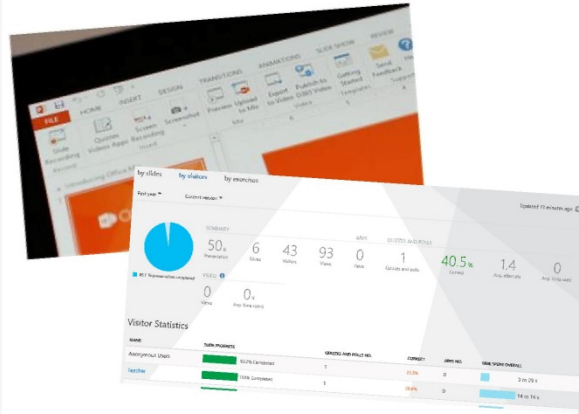
✓	Name	...
	Book 书	...
	參考資料 书	...
	温室效應 Group 1	...
	温室效應 Group 3	...
	温室效應 Group 2	...

SharePoint document library is a place on the site where you can create, collect and update files with others.

- "New" – Create your Office document (Word, PowerPoint, Excel) in document library
- "Upload" – Upload your existing document from your computer.
- "Co-Authoring" – We support co-authoring on Office online, teammate can edit the same document at the same time and save automatically.

Office Mix

- 免費的 PowerPoint add-in
- 利用 PowerPoint 2016 提供簡單的方式製作網上教室內容及報告



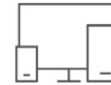
Voice, Video
& Digital Ink



Polls, Quizzes &
Interactive Apps



Insights &
Analytics



Playback On
Any Device

More Details: <https://mix.office.com>

OneNote Class Notebook Creator

A framework for teaching and learning with OneNote and Office 365

1 Teacher:
Creates shared notebook,
adds students
Sees everything in notebook

2 Students:
Get link to notebook, opens on their device or browser
Sees shared sections and only their personal notebook along
with collaboration space and copy-only content library.

 Collaboration space

 Content Library

 Student Notebooks

- "Anything, anywhere" canvas (type, write, clip web, insert files)
- Ready-made digital portfolio for any class.
- Real-time coaching ("Flip the classroom")
- Natural learning with digital ink to write or annotate
- Fits many learning styles with a variety of inputs and uses
- *One Powerful Notebook for an entire class*



Go to [OneNoteForTeachers.com](http://onenoteforteachers.com)
to learn more!

More Details: <http://onenoteforteachers.com/en-US/teachers/>

課後作業

- 在第一節課裡, 我們討論了 O365的基本操作, 是時候學以致用
- 任務: 在 O365上建立一組學習材料
- 要求
 - 課程內容可以是任何學科
 - 下一節本課程學員會以學生身份參與你的網上課程