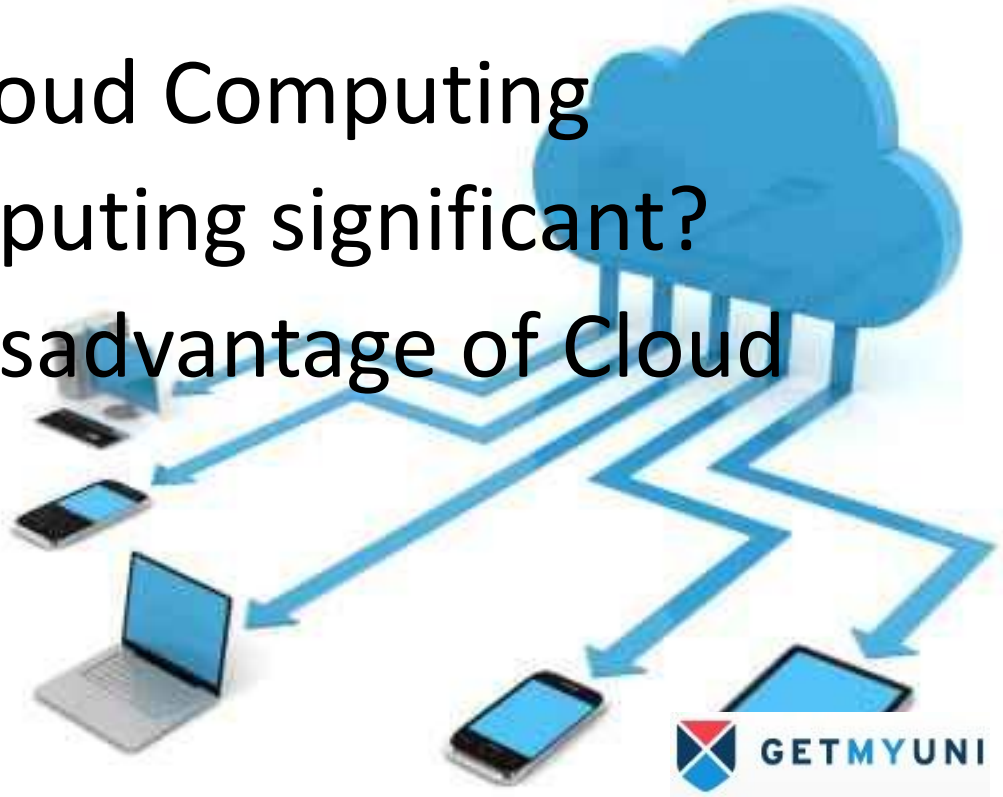
Application of Cloud Computing

About my Talk

- Understand basic concept of Cloud Computing
- Application of Cloud Computing
- Present some case study of Cloud computing
- Build-up your idea for apply cloud computing to your organizes
  - Disaster Prevention
    - Flooding?

Outline

- What is cloud computing?
- Cloud Service Model
- Cloud Characteristics
- Applications of Cloud Computing
- Why is cloud computing significant?
- Advantage and Disadvantage of Cloud Service
- Questions?



What is Cloud Computing?

Do you know this?

Google Docs

foursquare

ERICSSON

Schneider Electric

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Cloud is all around you

What is Cloud Computing ?

- The Fifth Generation of Computing

(After Mainframe, Personal Computer, Client-Server Computing, and the web)

- The biggest thing since the web?

Forrester Research, October 13, 2009 :

"……that cloud computing is one of the Top 15 Technology Trends and that it warrants investment now so you can gain the experience necessary to take advantage of it in its many forms to transform your organization into a more efficient and responsive service provider to the business."

What is cloud computing?

--Wikipedia Definition

"**Cloud computing** is Internet-based computing, whereby shared resources, software, and information are provided to computers and other devices on demand through the Internet"

What is cloud computing?

--Some more serious definitions

- **Cloud computing** is a general term for anything that involves delivering hosted services over the Internet.
- These services are broadly divided into three categories:

  Infrastructure-as-a-Service (IaaS),

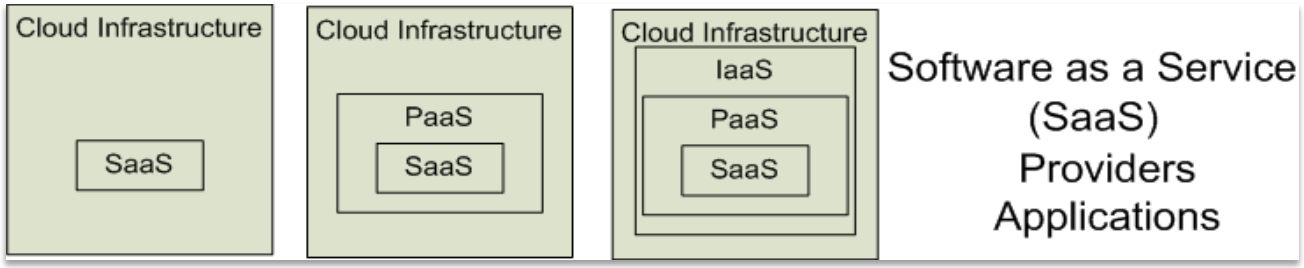
  Platform-as-a-Service (PaaS) and **Software-as-a-Service (SaaS).**

Cloud Service Models

Software as a Service (SaaS)	Platform as a Service (PaaS)	Infrastructure as a Service (IaaS)

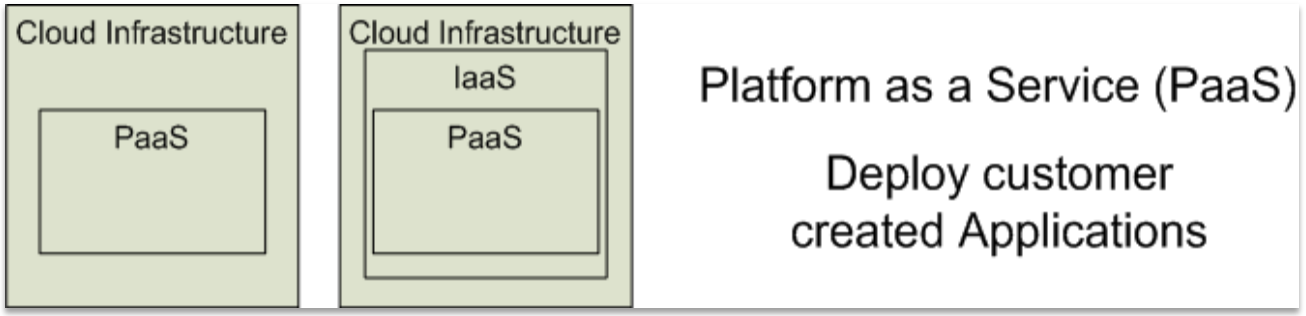
SalesForce CRM

LotusLive



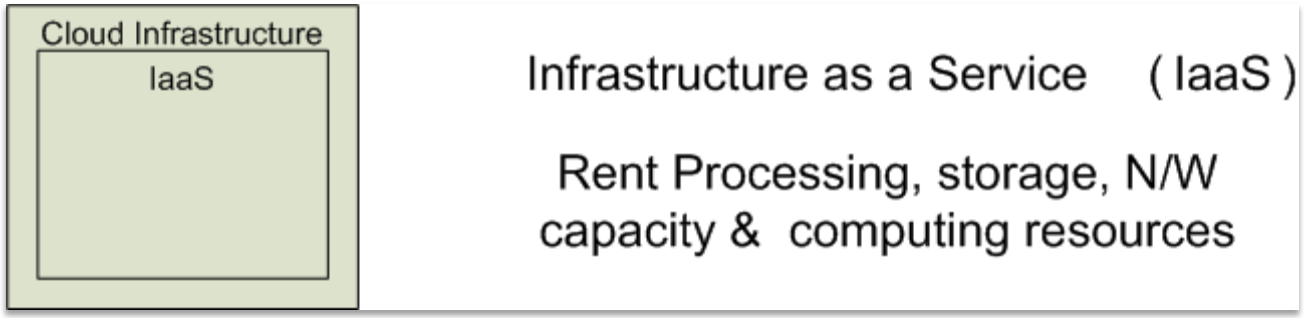
Google App

Windows Azure
The Future Made Familiar

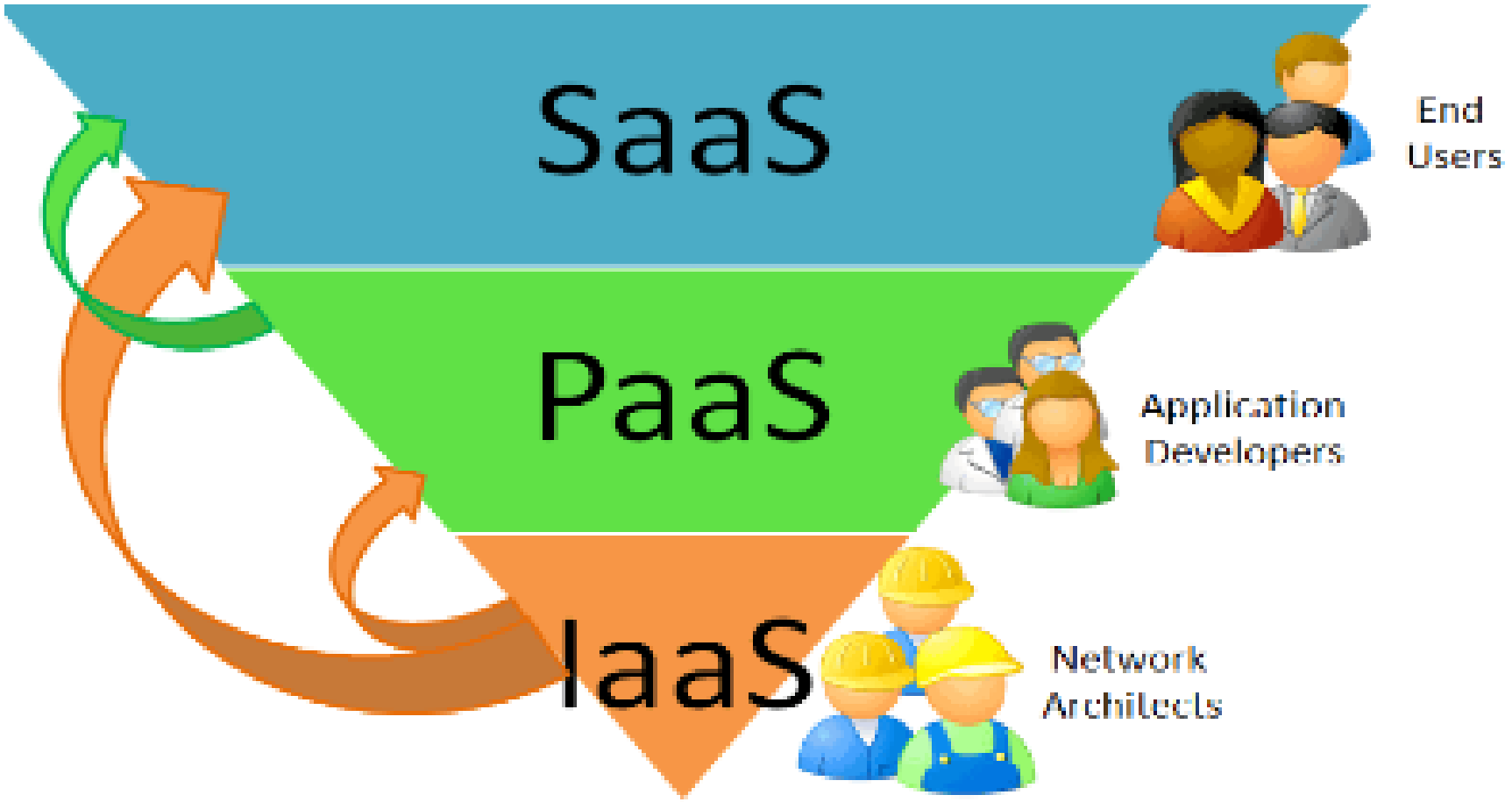


amazon web services™

rackspace HOSTING

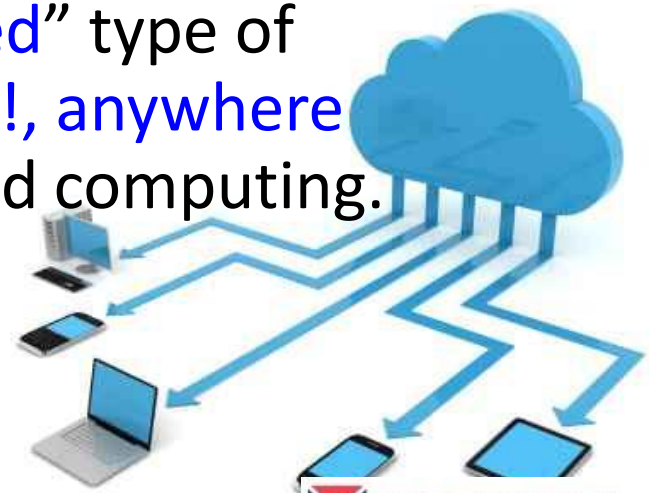


Cloud Service Model



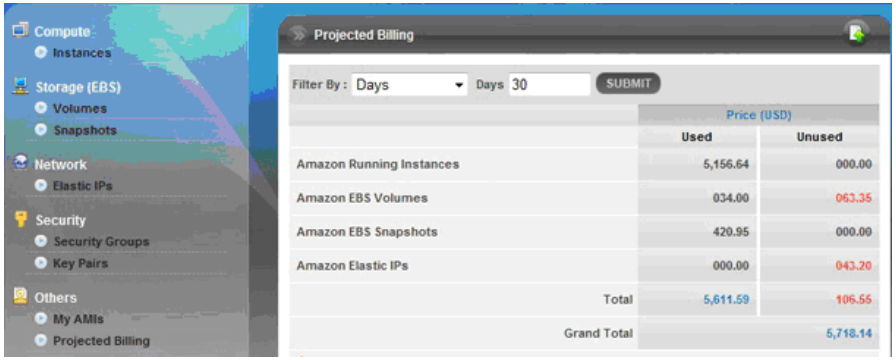
Basic Cloud Characteristics

- The "no-need-to-know" in terms of the underlying details of infrastructure, applications interface with the infrastructure via the APIs.
- The "flexibility and elasticity" allows these systems to scale up and down at will – utilizing the resources of all kinds (CPU, storage, server capacity, load balancing, and databases).
- The "pay as much as used and needed" type of utility computing and the "always on!, anywhere and any place" type of network-based computing.



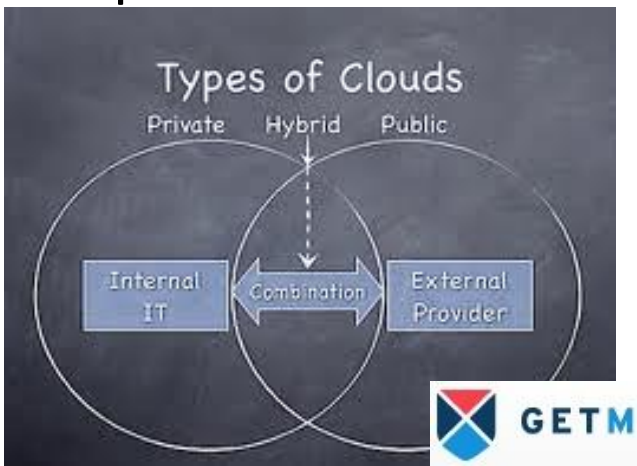
Keys Concept of Cloud Computing

- On-demand self-service
- Broad network access (Internet)
  - Online
- Resource pooling
  - Location independence
- Rapid elasticity
  - Virtualization Technology
- Measured service



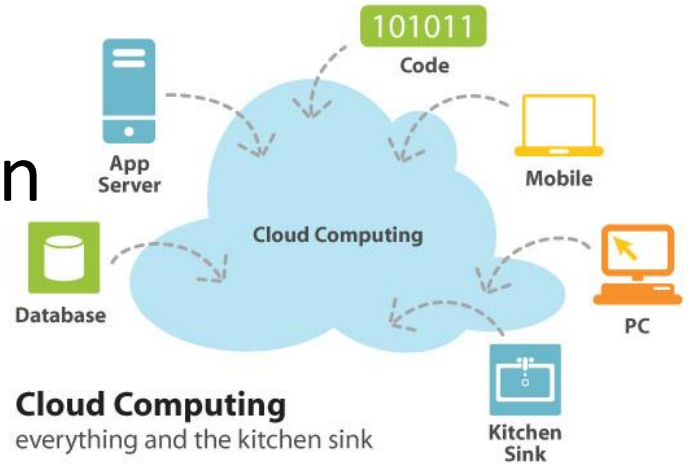
Cloud computing types

- **Public clouds** computing environment are open for use to anyone who wants to sign up and use them. These are run by vendors and applications from different customers are likely to be mixed together on the cloud's servers, storage systems, and networks.
- A **private cloud** is basically an organization that needs more control over their data than they can get by using a vendor hosted service.
- A **hybrid cloud** combine both public and private cloud models.



Daily life Cloud's Application Example

- Email on the Go
- Backup Personal information
- No local Storage
- Virtual Collaborate
- Virtual Office
- Extra Processing Power



Email on the Go

- Access to email form everywhere
- No downtime
- No-need to delete the messages
- No-loosed email?

Backup Personal information

- Address Book
- Contacts list
- Personal ID
- Favorites URL

Google Contacts

iCloud

No local Storage

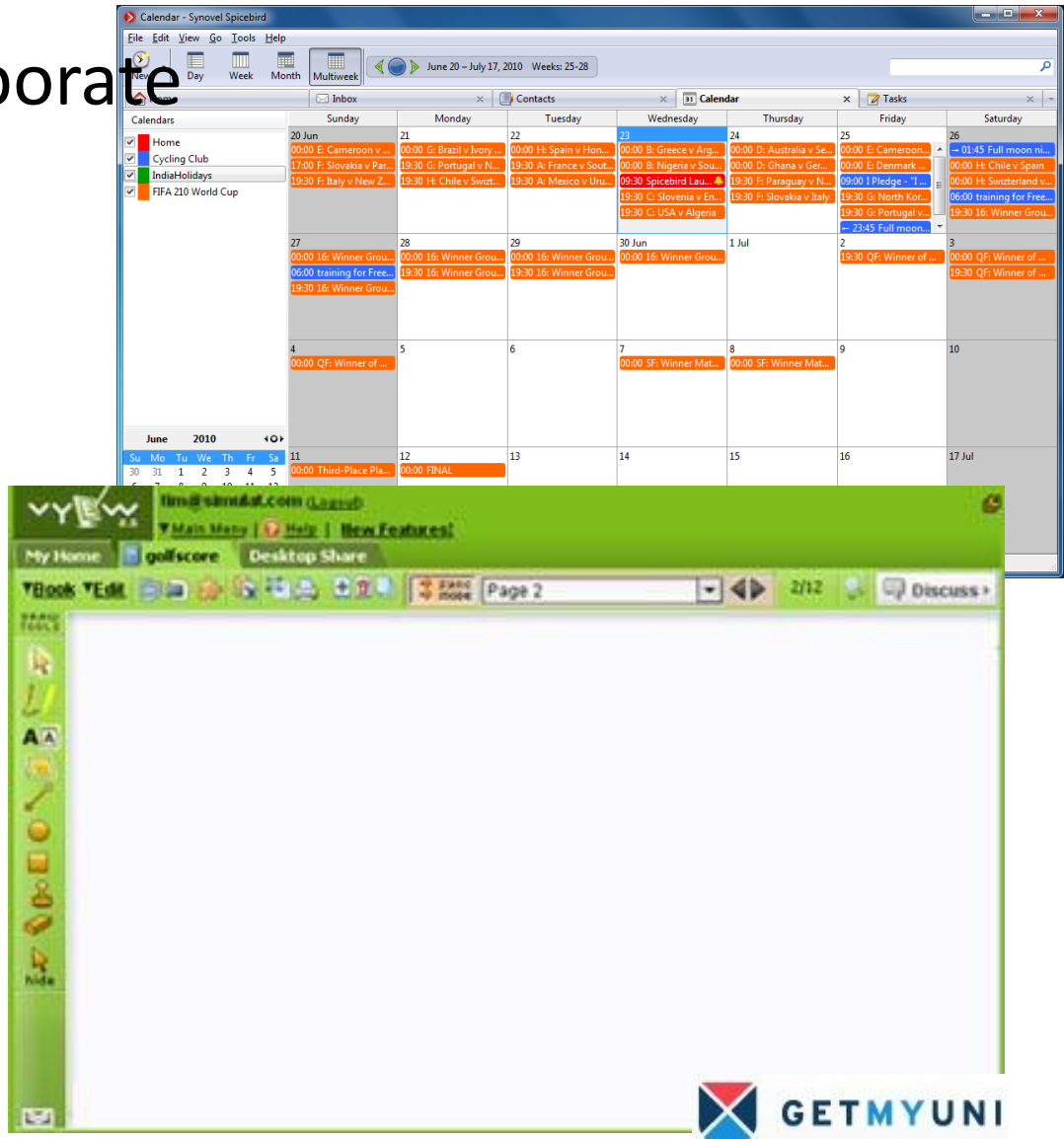
- Storing your MP3's, video, photos and documents online instead of at home gives you the freedom to access them wherever you can find the means to get online.

Google Drive

Dropbox

Virtual Collaborate

- Online Virtual Collaborate
- Team Working
  - VDO Conference
  - Whiteboard
  - Screen Sharing
  - Calendar
  - Instant Messenger
  - Mind Map

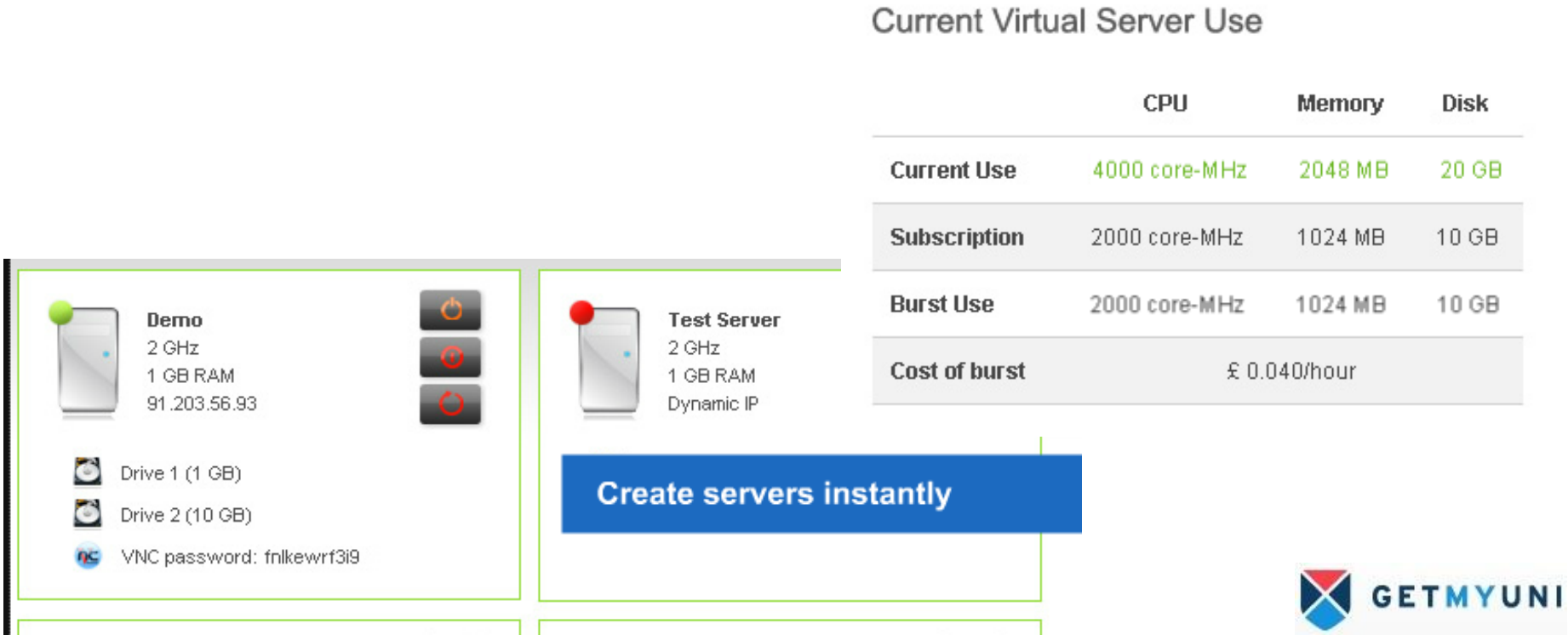


Virtual Office

- Online Office software
  - Word Processing
  - Spreadsheet
  - Presentation
  - PDF
- Used Online Storage

Extra processing Power

- For the dedicated cloud enthusiast, something like Amazon's EC2 might be the answer to all your needs.
- Rather than purchasing servers, software, network equipment and so on, users would buy into a fully outsourced set of online services instead.



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Case Study of Cloud Applications

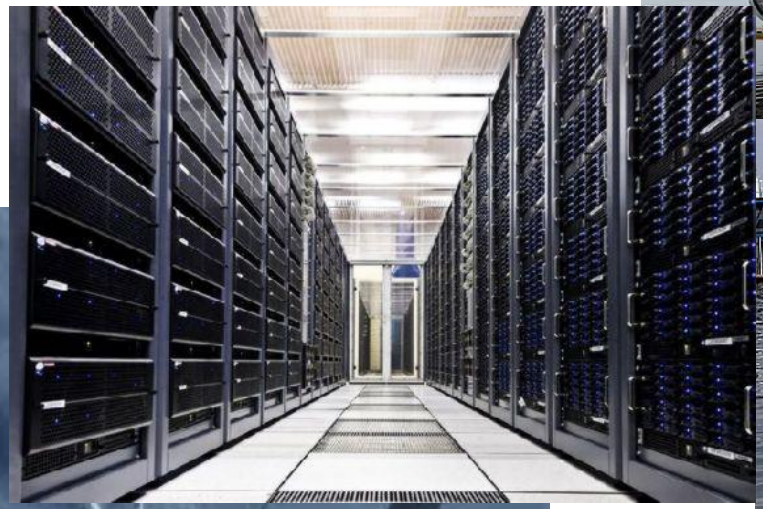
- Infrastructure as a Service
  - Hosting Service
  - Disaster Recovery
  - Resource Provisioning
- Platform as a Service
  - Google App engine
- Software as a Service
  - Licensing on demand
  - Application server on the Cloud

Hosting Service

- Three distinct characteristics that differentiate clouds from traditional hosting
  - It is sold on demand
    - Typically by the minute or the hour
  - It is elastic
    - A user can have as much or as little of a service as they want at any given time
  - The service is fully managed by the provider
    - The consumer needs nothing but a personal computer and Internet access

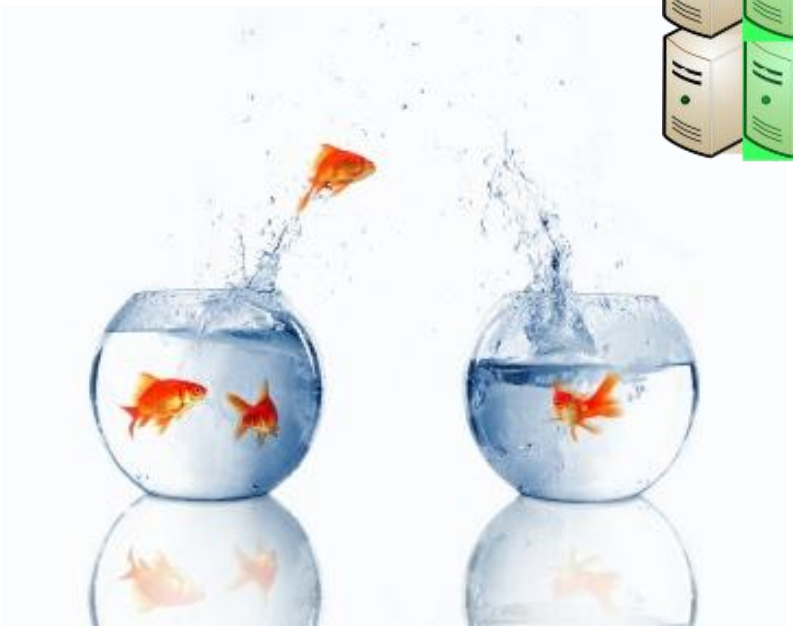
Disaster Recovery

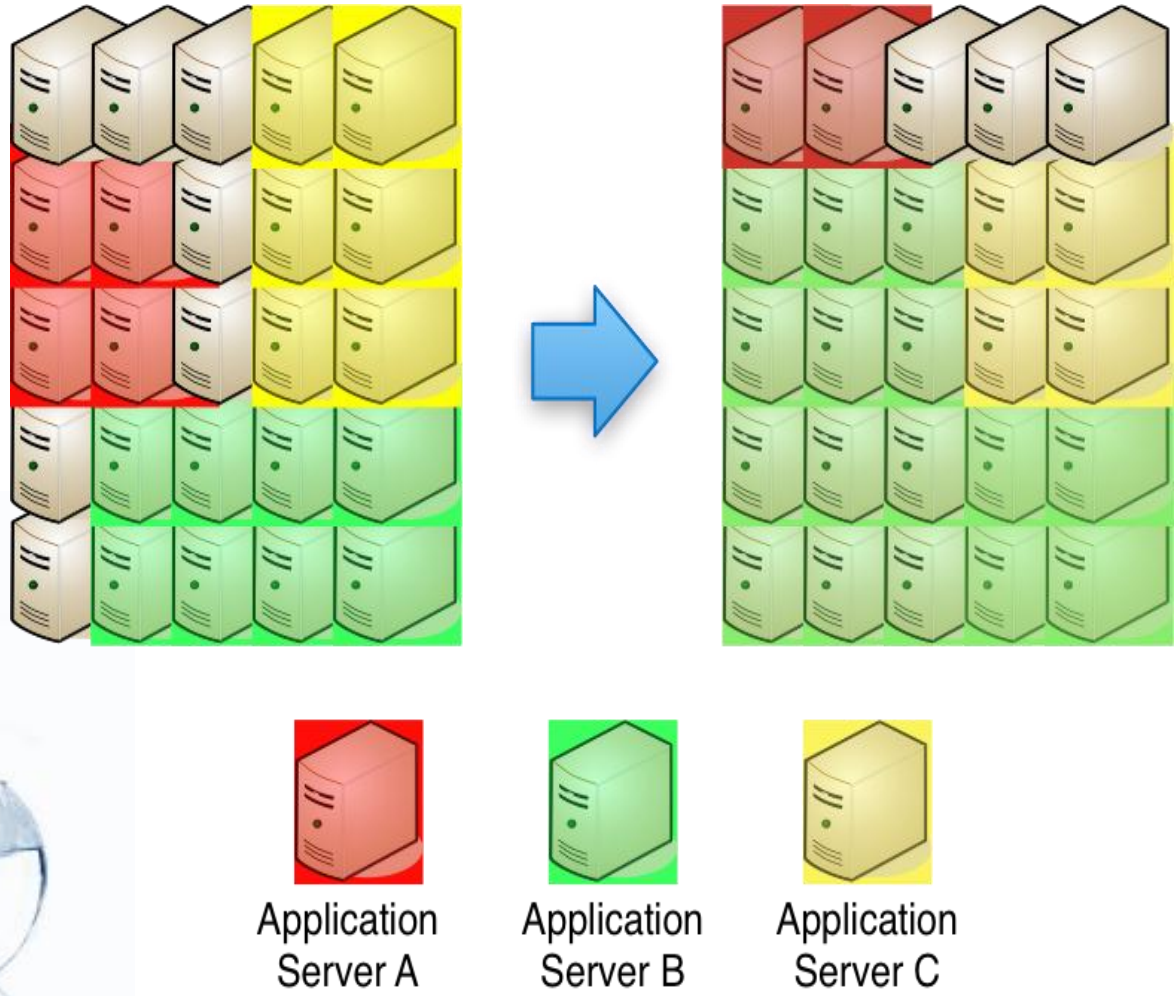
- Virtual Backup sites
- Rapid Recovery
- Online Backup



Resource Provisioning

- Elastic Resources
- Examples
  - Mobile Operator
  - Revenue



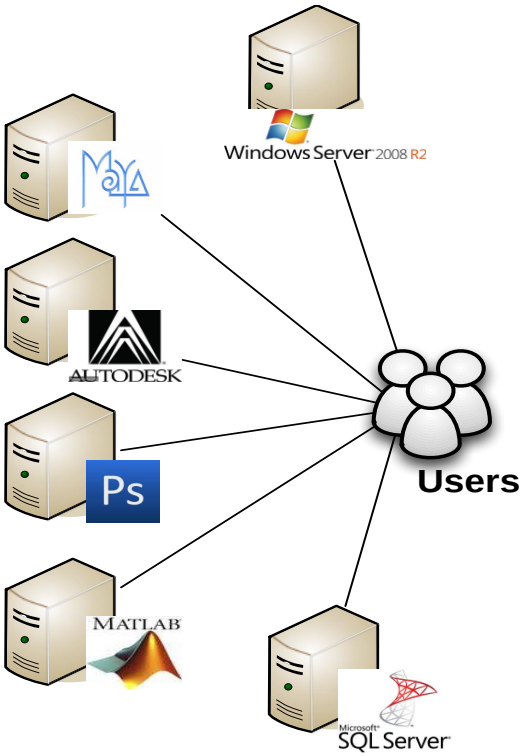


Google App Engine

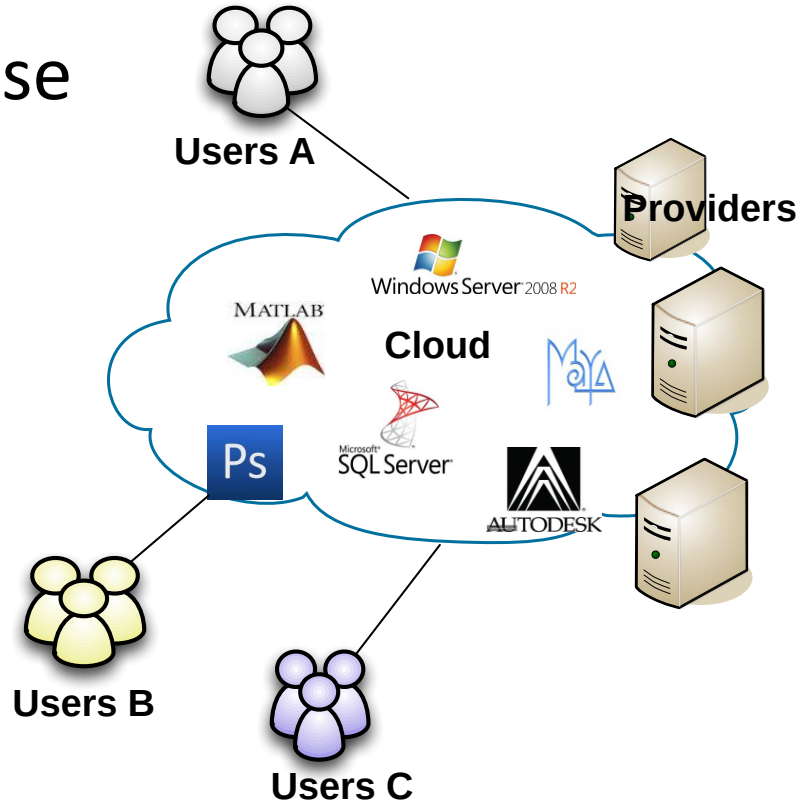
- GAE is a platform for developing and hosting web application in Google-managed data centers.
  - Google Sing-on
    - Single Sign-on and OpenID
  - SSL accessing
  - Enable connecting to Google software
  - Database Storage & Searching with GQL
  - Transaction management
- Up to 10 applications (for Free)

Licensing on Demand

- Shared Licenses
- Shared Cost of License
  - Depend on term of uses
- On demand and pay per use



Local Licensing



Cloud Licensi

Application Server on the Cloud

- Disaster prevention
  - No single point of failure
- System Migration
  - Live migrate/small downtime
- Based on features of Virtualization
  - Virtual Machine Technique

Why cloud computing is significant?

Significance of Cloud Computing

- **Cloud computing reduce energy consumption significantly.** **The 1000 plus US government data centers, for example, were consuming 6 billion kWh of energy in 2006, and if left unchecked, the consumption can be double by 2011.**

- **Cloud computing involves centralizing the computing resources on the Internet (the cloud) and making these available to those who need it, when needed.** Because the resources are shared by many, capacity utilization goes up. And modern developments like virtualization can make the same resources available to multiple users "simultaneously," thus reducing the need for physical resources even further.

- **At the micro level, enterprises that used cloud computing services are freed of worrying about the technological issues related to IT installations.** They can replace their complex installations of servers, workstations, networking and numerous applications with simple workstation computers and fast Internet connectivity. The cloud service providers will attend to the infrastructure, platforms and even applications needed by the enterprises.

- **Cloud computing resources are available immediately as soon as the agreement with the service provider is executed.** Under the utility model of service provision, users are charged o for what they use, for the memory, CPU, data transfer, I/O requests, storage space and so on. the business expands, the enterprises can seamlessly expand their computing capacities.

Advantages of Cloud Computing

- 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.
- 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.

Advantages of Cloud Computing

- Instant software updates:
  - Centralize updated
  - When you access a web-based application, you get the latest version
- 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
- Unlimited storage capacity:
  - Cloud computing offers virtually limitless storage.
- 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

Advantages of Cloud Computing

- 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

Advantages of Cloud Computing

- 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.

Disadvantages of Cloud Computing

- **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.

Disadvantages of Cloud Computing

- **Does not work well with low-speed connections**:
  - 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
- **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.
  - 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.

Disadvantages of Cloud Computing

- **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 unauthorized 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.

Disadvantages of Cloud Computing

- **Today no general standard**
  - But have a communities standard

Questions & Answers