Modern Operating Systems

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Modern Operating System

- Cloud OS
- Mobile OS

Cloud Computing

- Cloud Computing provides us a means by which we can access the applications as utilities, over the Internet.
- It allows us to create, configure, and customize applications online.
- With Cloud Computing users can access database resources via the internet from anywhere for as long as they need without worrying about any maintenance or management of actual resources.

Cloud

- The term Cloud refers to a Network or Internet.
- In other words, we can say that Cloud is something, which is present at remote location.
- Cloud can provide services over network, i.e., on public networks or on private networks, i.e., WAN, LAN or VPN.
- Applications such as e-mail, web conferencing, customer relationship management (CRM), all run in cloud.

Cloud Computing

- Cloud Computing refers to manipulating, configuring, and accessing the applications online.
- It offers online data storage, infrastructure and application.
- Cloud Computing is both a combination of software and hardware based computing resources delivered as a network service.

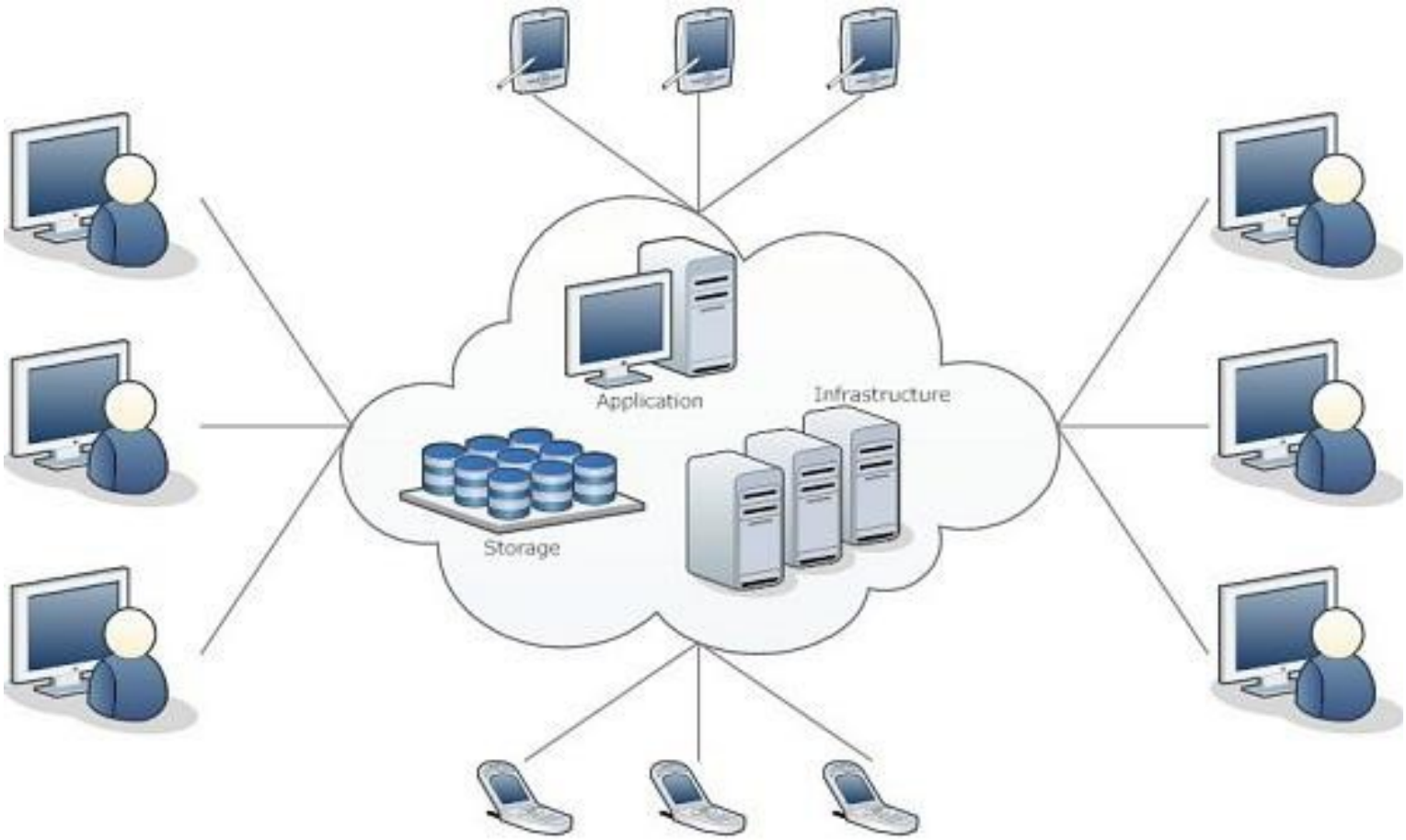
Uses

- Helps to use applications without installations.
- Access the personal files and data from any computer with internet access.
- This technology allows much more efficient computation by centralizing storage, memory and processing .

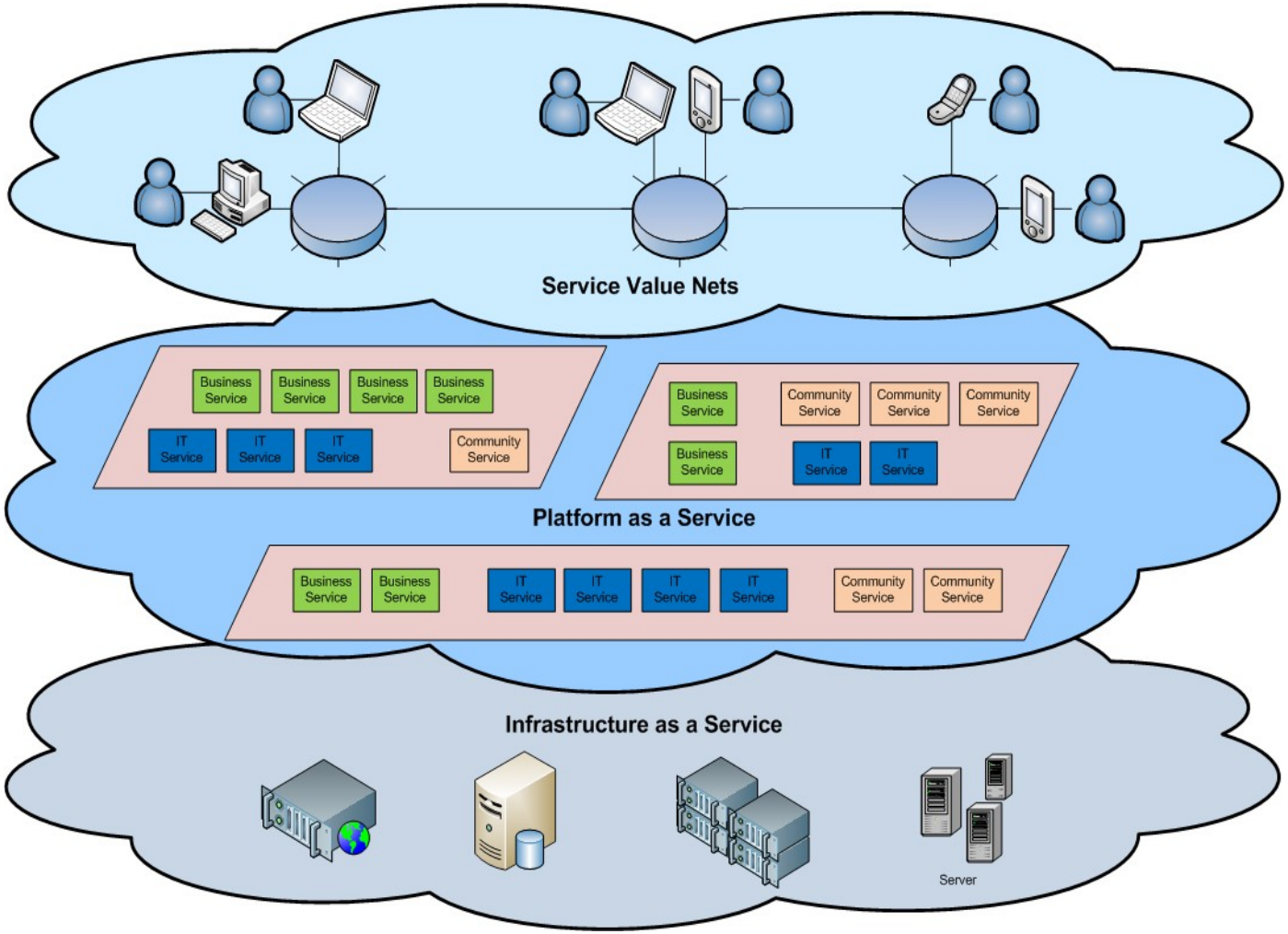
Characteristics

- On-demand self-service
- Broad network access
- Resource pooling
  - Location independence
- Rapid elasticity
- Measured service
  - Pay as you go.

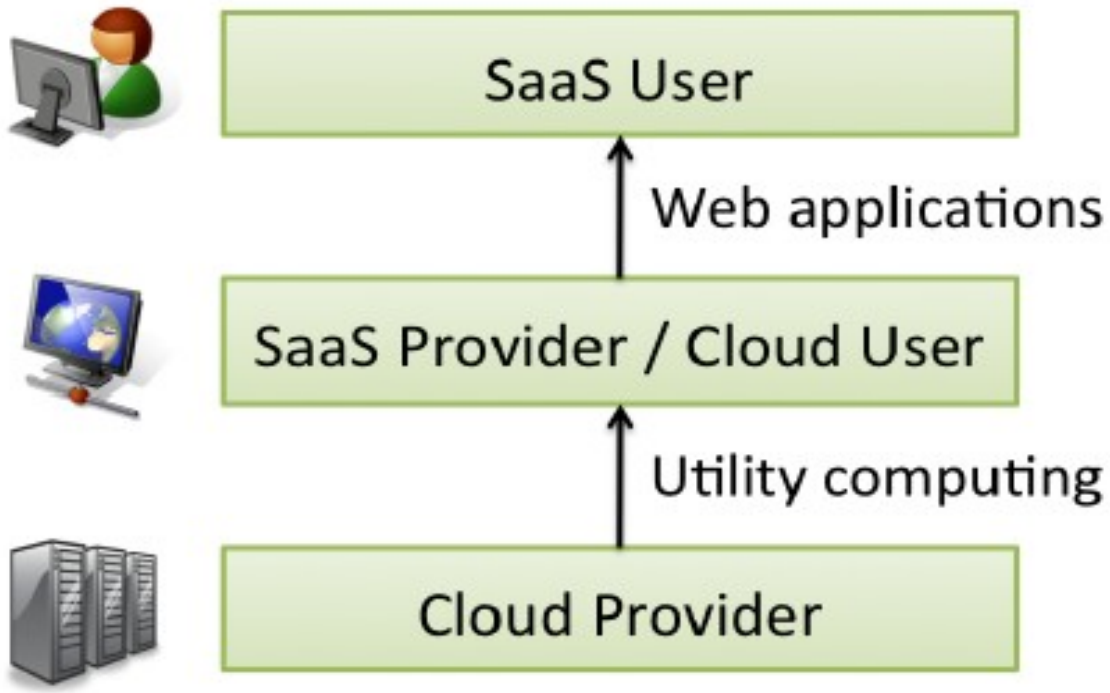
Cloud Computing Architecture



Cloud Computing Architecture



Simplified Architecture



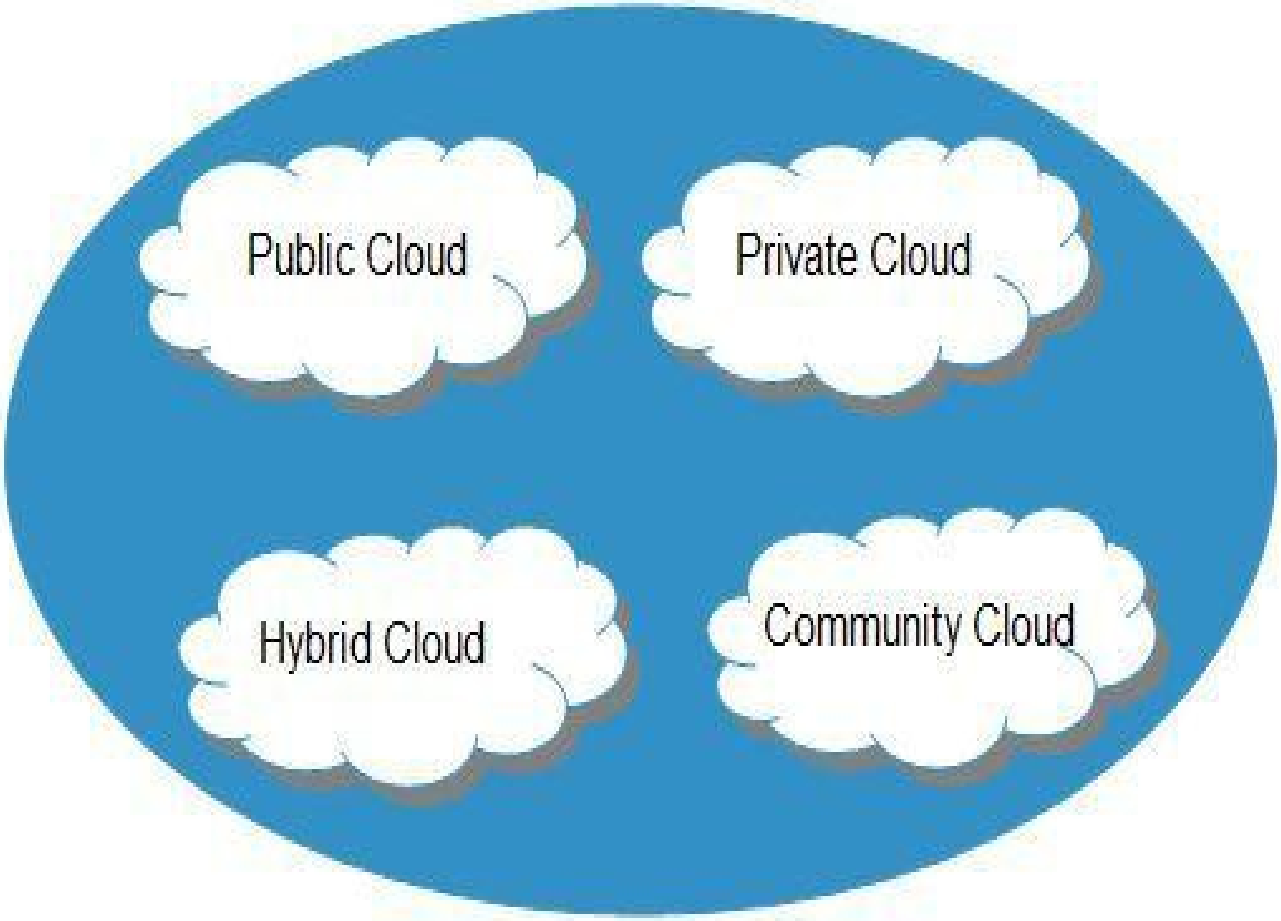
Models of Cloud

- There are certain services and models working behind the scene making the cloud computing feasible and accessible to end users.
- Following are the working models for cloud computing:
  - Deployment Models
  - Service Models

Deployment Models

- Deployment models define the type of access to the cloud, i.e., how the cloud is located?
- Cloud can have any of the four types of access: Public, Private, Hybrid and Community.

Deployment Models



Deployment Models

- PUBLIC CLOUD : The Public Cloud allows systems and services to be easily accessible to the general public. Public cloud may be less secure because of its openness, e.g., e-mail.
- PRIVATE CLOUD : The Private Cloud allows systems and services to be accessible within an organization. It offers increased security because of its private nature.

Deployment Models

- COMMUNITY CLOUD : The Community Cloud allows systems and services to be accessible by group of organizations.
- HYBRID CLOUD : The Hybrid Cloud is mixture of public and private cloud. However, the critical activities are performed using private cloud while the non-critical activities are performed using public cloud.

Service Models

- Service Models are the reference models on which the Cloud Computing is based.
- These can be categorized into three basic service models as listed below:
  - Infrastructure as a Service (IaaS)
  - Platform as a Service (PaaS)
  - Software as a Service (SaaS)

IaaS

- IaaS is the delivery of technology infrastructure as an on demand scalable service.
- IaaS provides access to fundamental resources such as physical machines, virtual machines, virtual storage, etc.
- Usually billed based on usage
- Usually multi tenant virtualized environment
- Can be coupled with Managed Services for OS and application support

IaaS Examples

OpSource

NTT Communications

GO GRID

terremark

BLIZZARD ENTERTAINMENT

at&t ECT

Platform as a Service

- PaaS provides the runtime environment for applications, development & deployment tools, etc.
- PaaS provides all of the facilities required to support the complete life cycle of building and delivering web applications and services entirely from the Internet.
- Typically applications must be developed with a particular platform in mind.
- Multi tenant environments
- Highly scalable multi tier architecture

Platform as a Service - Examples

Software as a Service

- SaaS model allows to use software applications as a service to end users.
- SaaS is a software delivery methodology that provides licensed multi-tenant access to software and its functions remotely as a Web-based service.
- Usually billed based on usage
- Usually multi tenant environment
- Highly scalable architecture

SaaS Examples

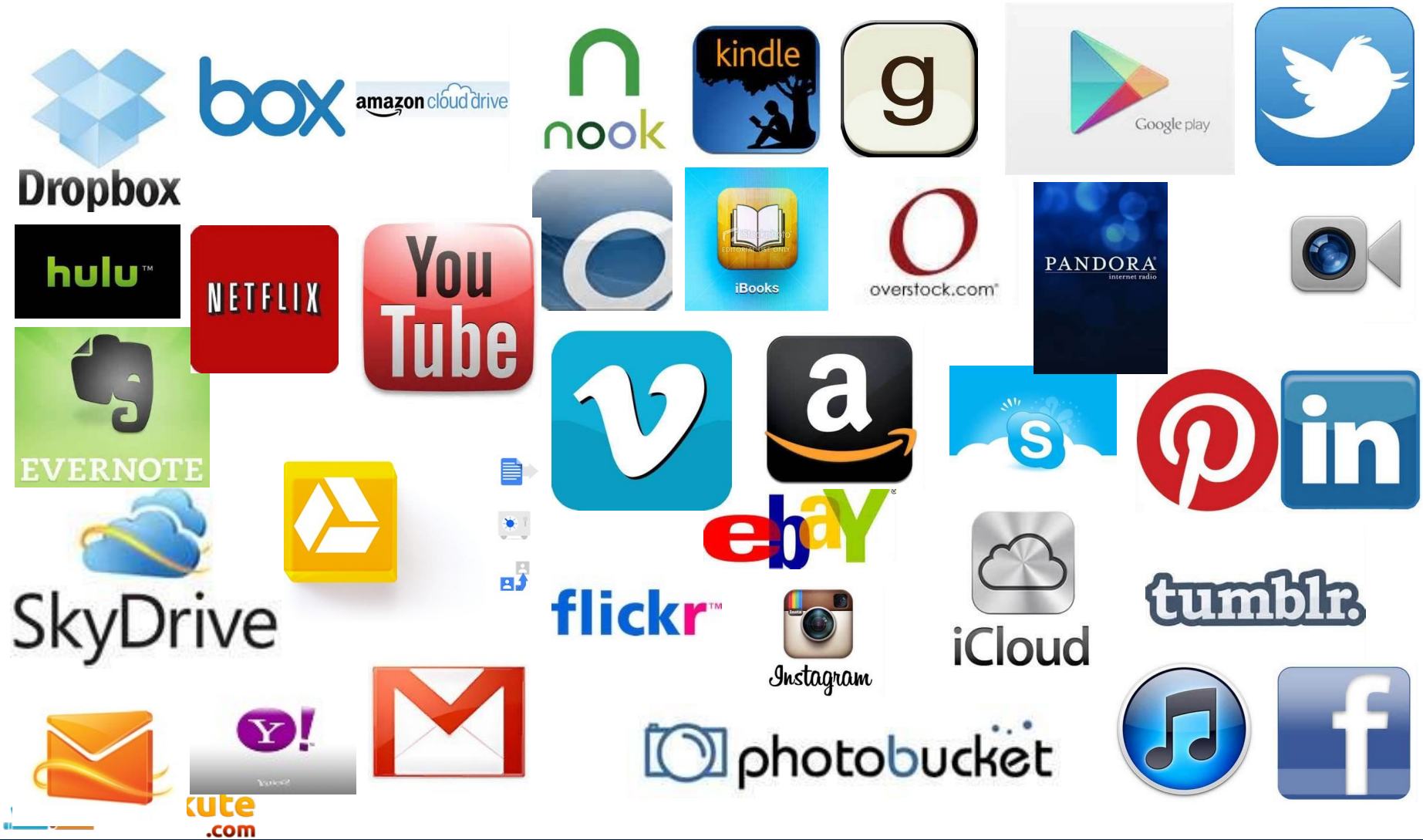
salesforce.com
Success On Demand.

NETSUITE
ONE SYSTEM. NO LIMITS.

postini

facebook

Which cloud do we use?



Cloud OS

- The Cloud Operating System is OS that designed to operate virtualization and computing environment.
- It stores assessing a web-based application from a remote server also used as hardware and software resources.
- The Cloud OS is processed to operate, execute, and manage the application such as pdf reader, address book, word processor and many more to determines users' response to it.

Cloud OS

- Cloud Operating System operates virtual machines within the virtualized environment functions of the operating system are varies.
- Cloud OS is used in computing specific environment, users need to preinstalled applications and services can able to assess through web browsers.
- It provides supercomputing power, a revolution cannot stop by anyone, home pc are going to happen future will become more super wonderful by using all cloud services.

Cloud OS

- Some extremely popular OS helps to used multiple machines at a time and helps to manage the cloud environment.
- OS has many features as it saves a lot of time, increases efficiency, some OS comes with business solutions.
- Designed to operate virtual servers, infrastructure, this allows users to access the preinstalled application by browsing the internet the extent of it first. This is known as Cloud Operating System.
- Cloud OSn architecture includes cloud infrastructure cloud storage cloud platform etc

Cloud OS: Purpose

- It gives access to the variety of web-based application which an application can operate
- It allows users of cloud computing to ensure peak performance Worldwide availability of cloud os,
- Allows the user to access their own desktop.
- Dynamic content and design,
- Requires only browsers.
- Rich text editing facility.
- An extensive list of application.

Cloud OS: Purpose

- Require only browsers.
- Cloud OS is designed for notebooks, mobile internet, devices, pcs which used to browse the internet
- Allows the user to perform any easy task.
- Allows the user to access their own virtual desktop from anywhere in the country and perform many easy tasks.

Cloud OS: Top 10

- Netvibes
  - designed to run within popular browser Adfree Cloud computing solution. include news, social media, websites, apps, and devices.
- Amoeba
  - take a collection of machines and works, doing the same manner which we thought it develop the collateral system, languages and many more
- SLAP OS
  - users used this for selling software or services it is a simple language os

Cloud OS: Top 10

- EyeOS
  - Customised tools commonly in javascript social media is not part of the system but can link files on users pc by saving them.
- CloudMe
  - is appropriate for freelancers, small business. Customised sharing of information facilities. Every one can gate real-time details of what's happing in the given time.
- OSV
  - It includes superior performance and management, simple to manage, open-source os.

Cloud OS: Top 10

- Ghost
  - the popular computing cloud for the users, storage services both for individuals and business files, personal security offered. Cloud found on Webb browsing users can get it free on the internet called the virtual operating system
- Joli
  - cloud operating system multiuser user-friendly offer various application make more interesting.
- The Slive OS
  - operating system allows users to write make notes, play, music, calculation paint and many more.

Cloud OS: Best OS

- Microsoft Windows
- Azure
- Google Chrome
- Easy Peasy
- OSW3
- OWN Cloud
- Joli OS

Cloud OS: Advantages

- Low cost of the software.
- Performance Improved
- Updation of software becomes immediately
- Data reliability increases
- Latest version availability
- Documentation
- Storage capacity unlimited

Cloud OS: Disadvantages

- Internet connection requires continuously.
- Not perform on a low-speed connection.
- Limited features available
- Hardware failure might lose in data
- Without proper administration data not secure properly.

Cloud OS: Summary

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Cloud OS: Summary

- Cloud operating systems are helpful to manage multiple virtual machines at a time.
- Helps a lot in managing a cloud environment and setting up the dashboard for meeting specific goals cloud OS comes with a business solution through which you can choose the data-centric approach and incorporate result-driven solutions.
- Cloud Operating System operates virtual machines within the virtualized environment functions of the operating system are varies.

Cloud OS: Summary

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Mobile Operating System

- A mobile operating system is an operating system for mobile phones, tablets, smartwatches, smartglasses, 2-in-1 PCs, smart speakers, or other mobile devices.
- While computers such as typical laptops are 'mobile', the operating systems used on them are generally not considered mobile ones, as they were originally designed for desktop computers that historically did not have or need specific mobile features.

Mobile Operating System

- Mobile operating systems combine features of a desktop computer operating system with other features useful for mobile or handheld use, and usually including a wireless inbuilt modem and SIM tray for telephony and data connection.
- In Q1 2021, over 383 million smartphones were sold (highest ever recorded) with 86.2 percent running Android and 12.9 percent running iOS

Mobile Operating System

- Nonetheless, although not as many as 2018 (1.56 billion), 2021 still had soaring sales, 1.43 billion to be exact with 83.32 percent being Android.
- Android alone is more popular than the popular desktop operating system Microsoft Windows, and in general smartphone use (even without tablets) outnumbers desktop use.

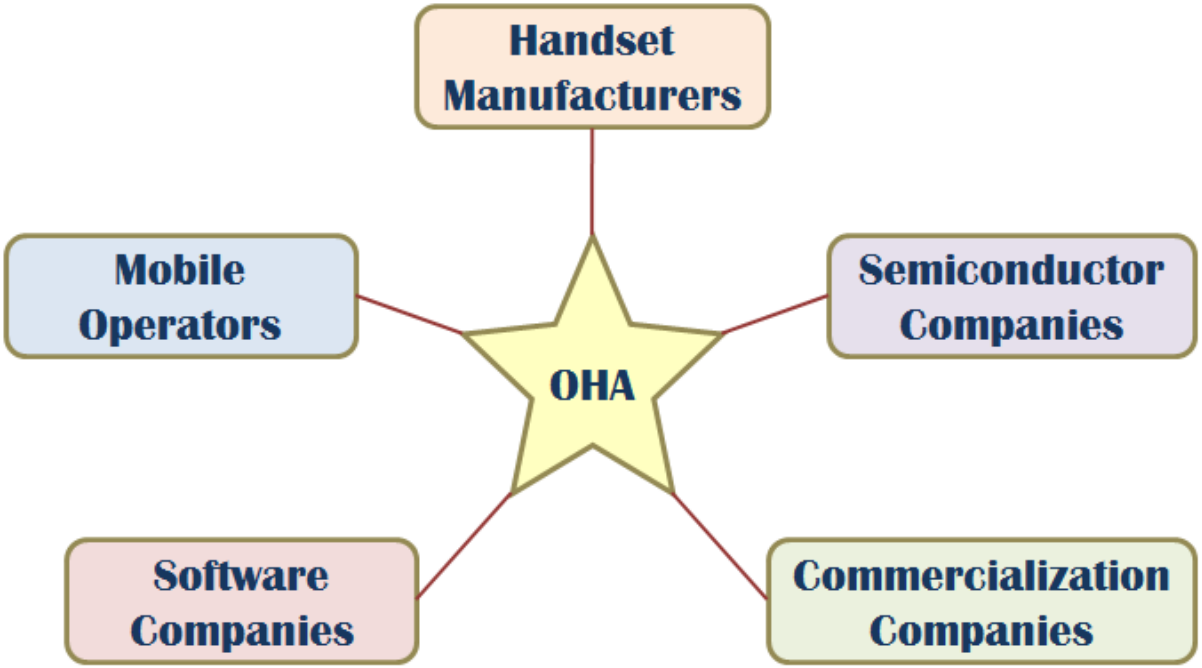
Android

- Android is an open source and Linux-based Operating System for mobile devices such as smartphones and tablet computers.
- Android is a software stack for mobile devices that includes an operating system, middleware and key applications.

History

- The first beta version of the Android Software Development Kit (SDK) was released by Google in 2007 where as the first commercial version, Android 1.0, was released in September 2008.
- The source code for Android is available under free and open source software licenses. Google publishes most of the code under the Apache License version 2.0 and the rest, Linux kernel changes, under the GNU General Public License version 2.

Open Handset Alliance



Phones using Android

HTC G1,
Droid,
Tattoo

Motorola Droid (X)

Suno S880

Samsung Galaxy

Sony Ericsson

Tablets

Velocity Micro Cruz

Gome FlyTouch

Acer beTouch

Dawa D7

Toshiba Android SmartBook

Cisco Android Tablet

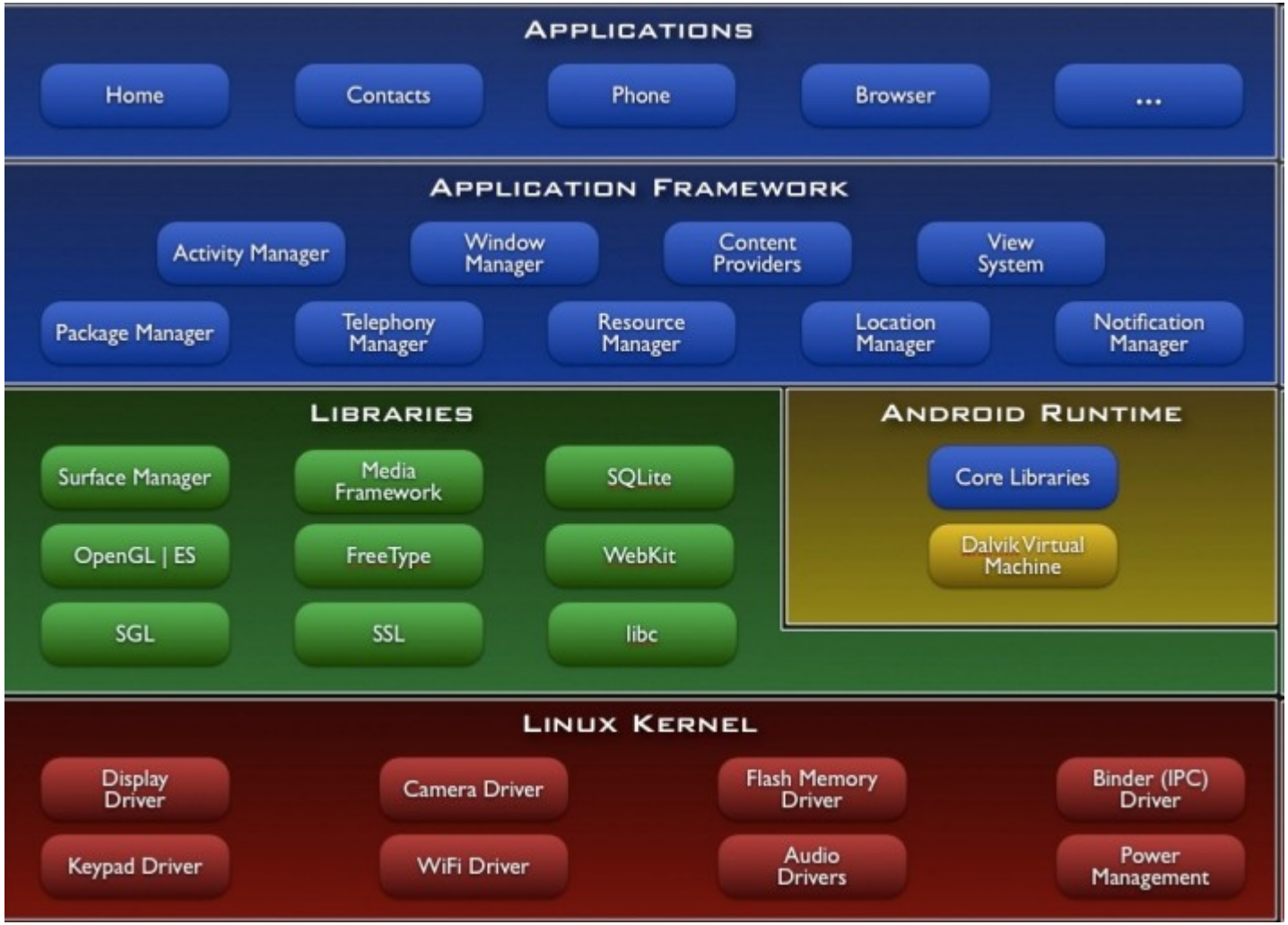
Features of Android

Feature	Description
Beautiful UI	Android OS basic screen provides a beautiful and intuitive user interface.
Connectivity	GSM/EDGE, IDEN, CDMA, EV-DO, UMTS, Bluetooth, Wi-Fi, LTE, NFC and WiMAX.
Storage	SQLite, a lightweight relational database, is used for data storage purposes.
Media support	H.263, H.264, MPEG-4 SP, AMR, AMR-WB, AAC, HE-AAC, AAC 5.1, MP3, MIDI, Ogg Vorbis, WAV, JPEG, PNG, GIF, and BMP
Messaging	SMS and MMS

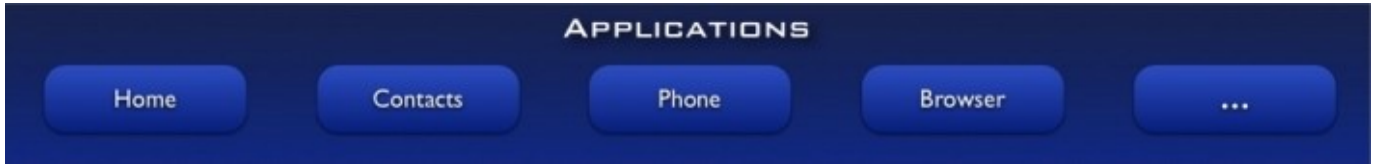
Features of Android

Web browser	Based on the open-source WebKit layout engine, coupled with Chrome's V8 JavaScript engine supporting HTML5 and CSS3.
Multi-touch	Android has native support for multi-touch which was initially made available in handsets such as the HTC Hero.
Multi-tasking	User can jump from one task to another and same time various application can run simultaneously.
Resizable widgets	Widgets are resizable, so users can expand them to show more content or shrink them to save space
Multi-Language	Supports single direction and bi-directional text.
GCM	Google Cloud Messaging (GCM) is a service that lets developers send short message data to their users on Android devices, without needing a proprietary sync solution.
Wi-Fi Direct	A technology that lets apps discover and pair directly, over a high-bandwidth peer-to-peer connection.
Android Beam	A popular NFC-based technology that lets users instantly share, just by touching two NFC-enabled phones together.

Android Architecture



Android Software Stack



- Android provides a set of core applications:
  - Email Client
  - SMS Program
  - Calendar
  - Maps
  - Browser
  - Contacts
  - Etc
- All applications are written using the Java language.

Android Application Framework

- Enabling and simplifying the reuse of components
  - Developers have full access to the same framework APIs used by the core applications.
  - Users are allowed to replace components.

Android Application Framework

Feature	Role
View System	Used to build an application, including lists, grids, text boxes, buttons, and embedded web browser
Content Provider	Enabling applications to access data from other applications or to share their own data
Resource Manager	Providing access to non-code resources (localized strings, graphics, and layout files)
Notification Manager	Enabling all applications to display customer alerts in the status bar
Activity Manager	Managing the lifecycle of applications and providing a common navigation backstack

Android Software Stack-Libraries

- Including a set of C/C++ libraries used by components of the Android system
- Exposed to developers through the Android application framework.

Android Software Stack-Runtime

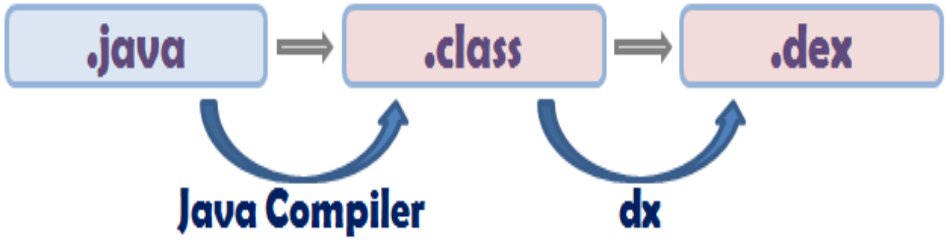
- Core Libraries
  - Providing most of the functionality available in the core libraries of the Java language
  - APIs
    - Data Structures
    - Utilities
    - File Access
    - Network Access
    - Graphics
    - Etc

Android Software Stack-Runtime

- Dalvik Virtual Machine
  - Providing environment on which every Android application runs
  - Each Android application runs in its own process, with its own instance of the Dalvik VM.
  - Dalvik has been written such that a device can run multiple VMs efficiently.
- Register-based virtual machine

Android Software Stack-Runtime

- Dalvik Virtual Machine (Cont)
  - Executing the Dalvik Executable (.dex) format
  - .dex format is optimized for minimal memory footprint.



- Compilation
  - Relying on the Linux Kernel for:
    - Threading
    - Low-level memory management

Android Software Stack-Linux Kernel

- Relying on Linux Kernel 3.0+ for core system services
  - Memory and Process Management
  - Network Stack
  - Driver Model
  - Security
- Providing an abstraction layer between the H/W and the rest of the S/W stack

Thank you

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