CompTIA Cloud Essentials+ Master Cheat Sheet

On-Demand service

- deliver service at any time or anywhere (eg AWS) Measured service
- fees based on the amount of resources actually used Broad Network Access
- ability to access cloud services from any type of device Resource Pooling
- cloud provider invests in the necessary hardware, configuration, and maintenance of physical infrastructure Elasticity
- ability to quickly add or remove resources to meet changing business needs

Virtualization

- allows multiple servers to be deployed on a single device
- enables more efficient allocation of resources
- allows server to be operated independently of an os
- mature technology

Benefits of cloud computing

- allows users to quickly add more servers (elasticity)
- additional resources can be added on demand (memory/cpu)
- server resources can be quickly duplicated (cloning)
- backups can be performed quickly (snapshots)

Private Cloud

- privately shared virtualized resources
- cluster of dedicated customers
- connectivity over internet, fibre, and private network
- suited for secure confidential information

Public Cloud

- publicly shared virtualized resources
- supports multiple customers
- suited for less confidential data
- supports connectivity over internet

Hybrid Cloud

- mixed private and public cloud

Community Cloud

- shared virtualized resources
- designed to help organization reduce costs
- infrastructure shared between several organization for same community (eg. university)

Organizations that can benefit from cloud computing

- slow time to market
- excess capital investment
- costly excess capacity
- rapid growth
- existing large data centres
- operational assurance

Organizations that may not benefit from cloud computing

- fixed predictable workloads (can't take advantage of elasticity)
- compliance issues

Cloud service categories

- Software as a Service (SaaS), Applications, eg. salesforce, gmail
- Platform as a Service, (PaaS), Software components, eg Google app engine, AWS elastic beanstalk, oracle
- Infrastructure as a Service (IaaS), Computing Resources, eg. rackspace, S3
- Anything as a service (XaaS)

Outsourcing

- service contract
- scope of services

Cloud computing

- cloud provider
- standard service offering

Scalability

- ability of an application to meet changing demands

OPEX

- operating expenses

CAPEX

- capital expense, to classify long-term investments in infrastructure for a company

Cloud Self Service

- form of private cloud

SOA

- service oriented architecture

Identify Federation

- federated identify management (FIM), arrangement that is made among multiple enterprises to let subscriber use the same identification data to obtain access to the networks

SLA

- service level agreement, contract between service provider and user

SSO

- single sign on

Security concerns of cloud computing

- Compliance
- Confidentiality (only authorized parties can view data)
- Data integrity (data has not been tampered with)
- Data loss
- Unauthorized access

How cloud computing vendors address these

- Compliance certification

- Regular audits
- Robust backup and recovery systems
- Increased logging and security reports
- Delivery of data over https

Hardware independence

- company not dependent on a vendor (vendor lock-in)
- software compatibility
- lead time
- hardware upgrades

Variable cost model

- pay as you go

Why time to market is important

- rapid innovation
- increased market share
- fast revenue growth
- superior customer loyalty

Advantages of cloud systems being delivered over the internet

- available over any device anywhere in the world
- data collection is easily centralized
- cloud data systems are very flexible (data collaboration)
- access for system admins is simplified
- configure secure connections

Challenges of cloud computing

- no single network perimeter
- each internet connection is a single point of failure for organization
- internet bandwidth can be a limiting factor for both employees and customers
- denial of service attacks

Automation

- can build a template out of server configuration settings

Federation

- FIM (federated id management) common in hybrid clouds
- eliminates need to have multiple usernames and passwords
- identity provider vouches for saying you are who you are
- Microsoft Active Directory - manages users. some cloud providers can utilize this as a provider

Standardization

- prevents vendor lock-in (exit strategy)
- streamlines operations

Identity information standards

- OAuth
- OpenID
- SAML

Cloud storage challenges

- migration
- storage access speed
- security
- data leakage

Security challenges

- data loss
- insecure APIs
- data breach
- insider threats
- DDOS

Issues with integrating cloud computing into an organization existing compliance framework

- compliance (do you comply with regulations)
- Auditing (how can you be sure you're getting what you pay for?)
- Security (are proper controls in place?)
- SLA (does SLA define correct performance metrics?)

- Licensing (how will existing licensing models change after cloud adoption?)
- Legal implications (does the contract define correct liabilities?)

Direct cost and cost allocation

- budget formulation -> budget approval -> budget execution -> budget oversight
- put spending limits on certain areas
- long term investments (CAPEX)
- short term expenses (OPEX)

Strategic flexibility

- vendor dependencies (what would be affect if provider was turned off)
- alternative solution (what do you do if service provider goes out of business)
- data migration (process to move/copy data between service providers)
- exit strategy

Typical steps leading to successful cloud adoption

i.   pilot
     - select low risk application
     - applications with variable load

ii. service model
     - Select best model for business, eg. Sass, IaaS, or PaaS

iii. provider capabilities

     - do capabilities meet business objectives
     - can you expand with selected provider

iv. examine dependencies

     - perform risk assessment

v.   organizational skills

     - determine new skills need
     - determine possible changes to organization roles

Roles and capabilities of cloud computing vendors

- virtualization
- software libraries
- software packages (sass)
- management software (portal)
- service/support
- broker (negotiate sla)
- audits (ensure you're getting what you're paying for)

Organizational capabilities relevant for realizing cloud benefits

- SLA
- security
- measurement
- technology
- cost management
- enterprise architecture

Approaches for migrating applications to the cloud

- move (move tech stack)
- replace (find functional equivalent software)
- refactor (break application into pieces)