

CCSP – Certified Cloud Security Professional

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What is Cloud?

Cloud computing is a model for enabling ubiquitous, convenient, on-demand network access to a shared pool of configurable computing resources (e.g., networks, servers, storage, applications, and services) that can be rapidly provisioned and released with minimal management effort or service provider interaction

— *Source: NIST*

What is Cloud?



– Image source: internet

Cloud Computing Roles

- Cloud Service Provider – CSP
- Cloud Customer
- Cloud Service Partner
- Cloud Access Security Brokers – CASB

AWS Partner Network – <https://aws.amazon.com/partners/>

Azure Partner – <https://azure.microsoft.com/en-us/partners/>

Cloud – Essential Characteristics

1. On-demand self-service
2. Broad network access
3. Resource pooling
4. Repaid Elasticity
5. Measured Service

Cloud – Service Models

1. Software as a Service (SaaS)
2. Platform as a Service (PaaS)
3. Infrastructure as a Service (IaaS)

Cloud – Deployment Models

1. Private
2. Public
3. Hybrid
4. Community

Cloud – Multitenancy

Multitenancy is a type of computing architecture in which one or more logical software instances are created and executed on top of primary software

— Source: techopedia



— Image source: internet

CBA – Cost Benifit Analysis

Google Drive [2 TB]	
Yearly	6500
5 Years	32500

Personal Server [2 TB]	
Dell PowerEdge R240 Rack Server	93000
Toshiba Canvio Basic 1TB A3 USB3.0	3799
Setup time	???
Electricity	??? X 5 years
Maintenance	??? X 5 years
IP address	??? X 5 years
Operating system	??? X 5 years

Virtualization

Virtualization is the act of creating a virtual version of something, including virtual computer hardware platforms, storage devices, and computer network resources.

— Source: Wikipedia



— Image source: internet

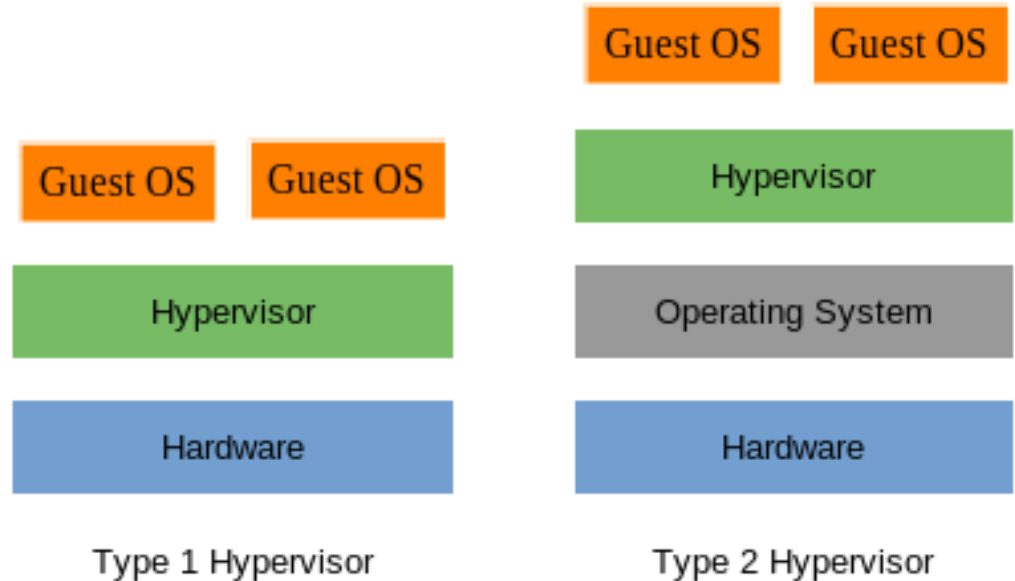
Virtualization – New Terms

1. Host Machine

2. Guest Machine

3. Hypervisor

- Bare-metal hypervisor (Type – 1)
- Hosted hypervisor (Type – 2)



Virtualization – Security Issues

1. VM Escape
2. VM Sprawl

Virtualization – Extra for the Experts

1. Desktop Virtualization
2. Application Virtualization

Cloud – Building Blocks

- Virtualization
- Storage
 - Block Storage (expensive)
 - Object Storage (Affordable)
- Networking
 - VPC – Virtual Private Cloud
- Database
 - Traditional Database
 - Managed Database
 - Cloud native Database
- Storage
 - Infrastructure as a Code
 - ◆ Vendor API
 - ◆ Third party API

Cloud – Shared Responsibility Model

	SaaS	PaaS	IaaS
Data			
User devices			
Identities			
Applications			
Network controls			
Operating system			
System hardware			
Network setup			
Datacenter			

	Managed by customer
	Shared between customer and CSP
	Managed by CSP

Cloud – Security Concerns

- Confidentiality
- Integrity
- Availability
- Privacy
- Legal and Regulatory compliance

✓ Governance must exist to address all the above and other concerns

Cloud – Operational Consideration

- Reversibility – Roll back plan
- Portability – Data
- Interoperability – Our solution / application

Cloud – Emerging Technologies

1. Machine Learning (ML)
2. Artificial Intelligence (AI)
3. Blockchain
4. Internet of Things (IoT)
 - ICS
 - SCADA
5. Containers
6. Quantum computing

Cloud – Evaluating CSPs

- ISO 27017
- PCI DSS
- FedRAMP – US Government cloud service certification

<https://marketplace.fedramp.gov/#!/products?sort=productName>

Template

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