

General Discussion on Cloud for CISSP.

Terms and Concepts.

Session 1 8/29/2020 Classroom-1

NOTES

NIST Identifies 5 Characteristics

On Demand - Self Service - A customer can provision conveniently the required run time, server time and storage.

Broad Network Access - The system provides capabilities to be easily accessed through various network interfaces and devices.

Resource Pooling - Multiple resources are pooled to provide services to multiple customers in a multi-tenant model. Resources include storage, memory, network bandwidth etc.

Rapid Elasticity - Being able to scale up or down. Inwards or Outwards.

Measured Service - Being able to automatically optimize based on performance indicators or demand.

Modes of Cloud Services

- **Software as a Service (SaaS)**

A method for delivering software applications over the Internet as per the demand and on a subscription basis. SaaS Company helps you host and manage the software application and underlying infrastructure and handle any maintenance (software upgrades and security patching).

- **Platform as a Service (PaaS)**

A method that offers to provide an on-demand environment for developing, testing, delivering and managing software applications. It is designed to quickly create web or mobile apps, without worrying about setting up or managing the underlying infrastructure of servers, storage, network and databases needed for development.

- **Infrastructure as a Service (IaaS)**

IaaS is the most basic category of cloud computing services that allows you to rent IT infrastructure (servers or VM's) from a cloud provider on a pay-as-you-go basis.

Cloud Models:

A cloud deployment model is defined according to where the infrastructure for the deployment resides and who has control over that infrastructure.

Private Cloud:

A private cloud is typically infrastructure used by a single organization. Such infrastructure may be managed by the organization itself to support various user groups, or it could be managed by a service provider that takes care of it either on-site or off-site.

Community Cloud:

This deployment model supports multiple organizations sharing computing resources that are part of a community; examples include universities cooperating in certain areas of research, or police departments within a county or state sharing computing resources

Public Cloud:

As the name suggests, this type of cloud deployment model supports all users who want to make use of a computing resource, such as hardware (OS, CPU, memory, storage) or software (application server, database) on a subscription basis.

Hybrid Cloud:

In a hybrid cloud, an organization makes use of interconnected private and public cloud infrastructure.

Responsibility:

When an organization runs its own on-premise data centers, control over security is pretty straightforward: it falls solely on the shoulders of internal teams. They are the ones responsible for keeping servers secure, as well as the data stored within them.

In a hybrid or cloud environment, the conversation around security inevitably shifts as a cloud service provider (CSP) enters the picture. While the CSP is responsible for some aspects of security, there is a tendency for customers to "over trust" cloud providers when it comes to securing their data.

So CSPs together with the customers came up with a Shared Responsibility Model.

It's critical to understand the shared responsibility model and which security tasks are handled by the cloud provider and which tasks are handled by you as a customer.

Shared Responsibility Model

Reference to AWS Shared Responsibility model:

<https://aws.amazon.com/compliance/shared-responsibility-model/>

Azure Shared Responsibility model:

<https://docs.microsoft.com/en-us/azure/security/fundamentals/shared-responsibility>

Cloud service delivery models: The three basic types are SaaS, IaaS, and PaaS

Cloud deployment models: The four basic types are Public, Private, Community, and Hybrid

Essential Characteristics of Cloud:

- Resource pooling. Multiple customers
- On-demand self-service. Unilateral provisioning
- Broad network access. Network and client
- Rapid elasticity. Speedy provisioning and deprovisioning
- Measured Service. Pay per use

References:

The NIST definition of cloud computing:

<https://icsbits.com/go/clouddef>

Special Publication 800-145

Process Guide:

<https://icsbits.com/go/processguide>

Cheatsheet for Processes in CISSP.