

Sessional Assignment, Course: - Cloud Computing

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Question No1

Explain in detail Service Oriented Architecture (SOA) in cloud computing.

Answer:

SOA (Service Oriented Architecture) is built on computer engineering approaches that offer an architectural advancement towards enterprise system. It describes a standard method for requesting services from distributed components and after that the results or outcome is managed

Benefits of SOA

With high-tech engineering and enterprise point of view, various offers are provided by SOA which proved to be beneficial.

These are:

- **Language Neutral Integration:** Regardless of the developing language used, the system offers and invoke services through a common mechanism. Programming language neutralization is one of the key benefits of SOA's integration approach.
- **Component Reuse:** Once an organization built an application component, and offered it as a service, the rest of the organization can utilize that service.
- **Organizational Agility:** SOA defines building blocks of capabilities provided by software and it offers some service(s) that meet some organizational requirement; which can be recombined and integrated rapidly.
- **Leveraging Existing System:** This is one of the major use of SOA which is to classify elements or functions of existing applications and make them available to the organizations or enterprise.

Key Benefits Along with SOA

- Dependence on the network
- Provider cost
- Enterprise standards
- Agility

SOA Architecture

SOA architecture is viewed as five horizontal layers. These are described below:

- **Consumer Interface Layer:** These are GUI based apps for end users accessing the applications.
- **Business Process Layer:** These are business-use cases in terms of application.
- **Services Layer:** These are whole-enterprise, in service inventory.
- **Service Component Layer:** are used to build the services, such as functional and technical libraries.
- **Operational Systems Layer:** It contains the data model.

Security in SOA

With the vast use of cloud technology and its on-demand applications, there is a need for well - defined security policies and access control. With the betterment of these

issues, the success of SOA architecture will increase. Actions can be taken to ensure security and lessen the risks when dealing with SOE (Service Oriented Environment). We can make policies that will influence the patterns of development and the way services are used. Moreover, the system must be set-up in order to exploit the advantages of public cloud with resilience. Users must include safety practices and carefully evaluate the clauses in these respects

Question No2

Explain in detail prominent security threats to the cloud computing.

Answer:

The main security risks of cloud computing are:

- Compliance violations
- Identity theft
- Malware infections and data breaches
- Diminished customer trust and potential revenue loss

Question No3

Explain in detail Cloud Infrastructure Mechanisms.

Answer:

Cloud infrastructure mechanisms are foundational building blocks of cloud environments that establish primary artifacts to form the basis of fundamental cloud technology architecture.

The following cloud infrastructure mechanisms are described below:

• Logical Network Perimeter

The isolation of a network environment from the rest of communications network, the logical network perimeter establishes a virtual network boundary that can encompass and isolate a group of related cloud-based IT resources that may be physically distributed.

• Virtual Server

The virtual server represents the most fundamental building block of cloud environment. The instantiation of virtual servers from image files is a resource allocation process that can be completed rapidly and on-demand.

• Cloud Storage Device

The cloud storage device mechanism represents storage devices that are designed specifically for cloud-based provisioning.

• Cloud Usage Monitor

The cloud usage monitor mechanism is a lightweight and autonomous software program responsible for collecting and processing IT resource usage.

• Resource Replication

Replication is usually performed when resource's availability and performance need to be enhanced.

• Ready-Made Environment

The ready-made environment mechanism is a defining component of the PaaS cloud delivery model that represents a platform comprised of a set of already installed IT resources, ready to be used and customized by a cloud consumer.