

ROLES AND SECRETS OF IAAS (INFRASTRUCTURE AS A SERVICE) FOR CLOUD COMPUTING

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ABSTACTION - We need to drill into specific characteristics, to define Infrastructure as a Service (IaaS). A cloud platform[1] provider must provide infrastructure as a Service. This has been no easy task as nearly every cloud platform provider has recently services designed and promoted features to address the IaaS and cloud computing market. A definition of cloud computing fortunately, as the technology has evolved has emerged from the National Institute of Standards and Technology that is composed [2] of five essential characteristics, three service models, and four deployment models.

Key Words: IaaS, deployment, platform etc...

1. IAAS (INFRASTRUCTURE AS A SERVICE):

Infrastructure as a Service (IaaS) abstracts hardware (storage, server, and network infrastructure) into a pool of storage, computing, and connectivity[3] capabilities that are delivered as services for a usage-based (metered) cost.

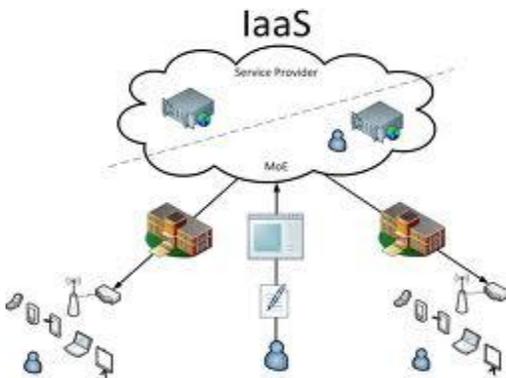


Fig - 1: IaaS in Cloud Computing.

IaaS goal is to provide a storage, flexible, and virtualized operating environment that can become a foundation for SaaS and PaaS. to provide a standardized virtual server,

usually said as IaaS. The consumer takes responsibility for operations and configuration of the guest Operating System (OS), software, and Database (DB). Compute capabilities (such as bandwidth, performance, and storage access) are also standardized. Service levels cover the availability and performance[3] of the virtualized infrastructure. The consumer takes on the operational risk that exists above the infrastructure by investing in more capital equipment, traditionally by which companies meet their growing IT needs. Today, competitive pressures continue to demand improvements, despite growing numbers of users and applications in quality of service.

1.2 Essential Characteristics IAAS:

- On-demand self-service - A consumer can independently and unilaterally provision computing capabilities, such as network connectivity, compute time and storage, as needed automatically without **requiring human interaction with each service's provider.**
- Broad network access - Capabilities are available over the network and accessed through standard mechanisms that promote use by heterogeneous thick or thin client platforms.
- Resource pooling -**The provider's computing resources are pooled to serve multiple consumers using a multi-tenant[4] model, with different virtual and physical resources dynamically assigned and reassigned according to consumer demand.**
- Rapid elasticity -Capabilities can be elastically and rapidly provisioned in some cases to quickly and automatically scale out and rapidly released to quickly scale in.
- Scale Units: The Private Cloud Reference Architecture defines the private cloud pattern of a Scale Unit. However, there is no specific predefined selection or set of values that comprise a scale unit. The determination is part of the private cloud planning and design[5] process. A Scale Unit is a pool of storage, computing and network resources that can be deployed

as a single unit or in bundles that allow both extensibility and reuse or reallocate without physical reconfiguration.

Examples of these resources are:

- ❖ Compute – Blade servers, deployed by one or more racks at a time.
- ❖ Storage – Enterprise SAN, with disk capacity to match compute capability.
- ❖ Network – New access and distribution designs to meet storage and compute requirements.

The architect should consider future availability as changes in hardware architectures will influence Management Fabric implementations over time, when selecting elements of a scale unit. A scale unit should be sized to accommodate[3] future growth over a period that is meaningful to the business. Some businesses will plan on a quarterly basis while others may forecast by fiscal year or more.

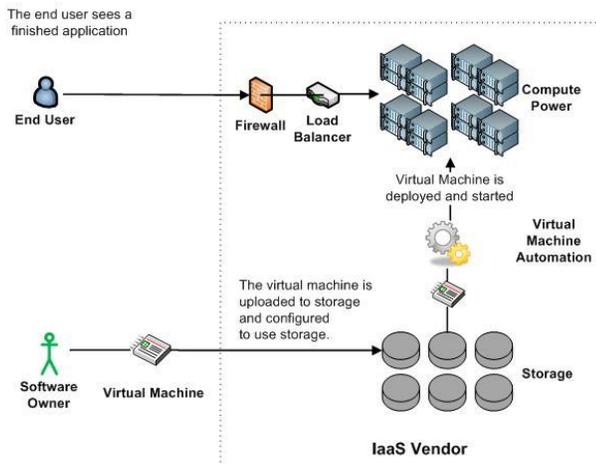


Fig - 2: Resources of IaaS.

2. RESOURCE POOLS

A resource pool is comprised of network, server and storage scale units that share a common hardware and configuration baseline[1] but does not share a single point of failure[5] with any other resource pool other than the facility itself. A resource pool could be subdivided further into Fault Domains..

Fault Domains: The Physical Fault Domains pattern is defined in the Private Cloud Reference Architecture. A fault domain is a set of physical infrastructure with a common configuration within a resource pool that does not share a single point of failure with any other fault domain, in an Infrastructure as a Service design.

Upgrade Domains: An upgrade domain is infrastructure within a resource pool that can be taken offline, or

upgraded[6] and maintained without downtime to the workloads running in the resource pool.

Putting It All Together: Private Cloud Infrastructure as a Service is an evolution in the IT industry and it forms the foundation of cloud computing for all cloud enabled workloads. Designing for Infrastructure as a Service raises the Maturity[2] level and IT Capability to realize cloud capabilities in allowing the business to focus on objectives, respond with agility and realize economies of scale.

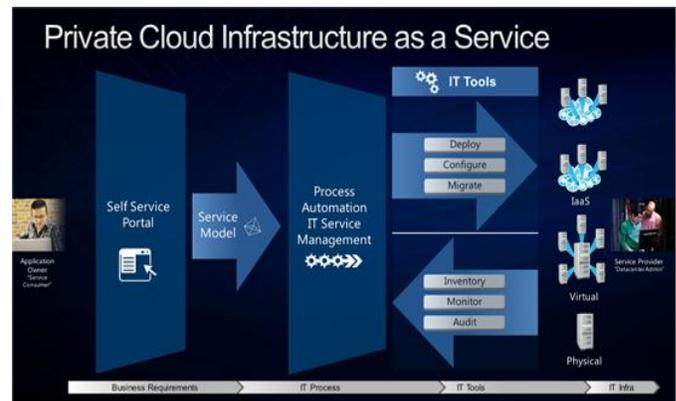


Fig - 3: Private Cloud IaaS.

3. CONCLUSION

The promise of cloud computing has long been a new height of convenience, rapidly and easily provisioned pay-per-use computing resources which can automatically scale and instantly to meet changing demands. Emerging at the convergence of major computing trends such as service-oriented architectures, virtualization[6] and standardization of the Internet, IaaS comes closer than ever before to fulfill that vision. IaaS is being deployed by world-class organizations as well as aggressive SMBs. Companies that effectively leverage the benefits of an IaaS environment may be able to gain an edge in a rapidly evolving economy.

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BIOGRAPHIES



ARABOLU CHANDRA SEKHAR was born in Nandyal Town, India, in 1973. He received the M.Sc. degree in Information Technology (IT) from the Kuvempu University, Shimoga, India in 2008, MBA degree in Marketing from Alagappa University, Karaikudi, India in 2008, M.Sc. degree in Psychology from Karnataka State Open University, Chennai, India in 2013 and PG Diploma in Telecommunication from Periyar University, Salem. Now he is pursuing PhD Degree in Computer Science (Cloud Computing) from the Bharathiar University, Coimbatore, India.

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He is having 13 years of teaching experience, presently he is working as a professor of Computer Science and Engineering department for G.Pulla Reddy Engineering College (Autonomous), Kurnool City, India. He has a total of 25 publications out of which 13 papers in International and National Journals and 12 papers in National and International Conferences. He is a member of various professional bodies like ISTE, IE, CSI, IAENG, CSTA, and IACSIT.

He received Minor Research Project titled "Developing Disaster Management Applications using Mobile Ad Hoc Network Tested" sanctioned by UGC for a period of 2 years in March 2014.