

Fearlessly move to the cloud - Compute-as-a-service**Súbase a la nube sin miedo - Compute-as-a-service**

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Received January 10, 2021; Accepted June 30, 2021

Abstract

The aim of this article is an overview on the subject known as Compute-as-a-Service. The latent idea of this document shows how organizations have used cloud computing to improve competitiveness, recognizing the benefits of the improvement in business agility and streamlined business processes. Cloud services are based on a model approach of personalized service, self- service access to servers, applications and development platforms. Companies and service providers have been slower to adopt cloud computing due to concerns about security, compliance, integration, performance, implementation and operational risks.

Compute-as-a-Service, Cloud services, Companies and service providers

Resumen

El objetivo de este artículo es una visión general sobre el tema conocido como Compute-as-a-Service. La idea latente de este documento muestra cómo las organizaciones han utilizado la computación en la nube para mejorar la competitividad, reconociendo los beneficios de la mejora en la agilidad del negocio y la racionalización de los procesos empresariales. Los servicios en la nube se basan en un enfoque de modelo de servicio personalizado, acceso de autoservicio a servidores, aplicaciones y plataformas de desarrollo. Las empresas y los proveedores de servicios han sido más lentos a la hora de adoptar la computación en nube debido a la preocupación por la seguridad, el cumplimiento, la integración, el rendimiento, la implementación y los riesgos operativos.

Compute-as-a-Service, Servicios en la nube, Empresas y proveedores de servicios

Citation: MEJÍA, Giselle. Fearlessly move to the cloud - Compute-as-a-service. Journal-International Economy. 2021. 5-8:1-4.

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Introduction

Globalization and economic pressures are changing the business landscape, increasing pressure to accelerate time to market with new products and services. The constant change in technology has given rise to ad-hoc infrastructure, creating complexity involving the management and support of IT infrastructure. The cloud computing market is estimated to grow to over \$241,000,000,000,000 by 2020 (Ried and Kisker, 2015).

While the benefits of cloud computing are significant, so is the complexity of planning, building and managing a cloud.

Forrester found that only 6% of enterprises today have a true self-service private cloud. (Nelson, 2015) Gardner considers the implementation of a "mature private cloud" to be a journey that can take 3 to 7 years. The cloud enables private provisioning of resources and services by a non-technical business audience, strong governance process (e.g., request management, configuration, change management, capacity management) end-to-end orchestration and service assurance. (Perilli, 2015)

Compute-as-a-Service is a dedicated Infrastructure-as-a-Service (IaaS) cloud that provides on-demand self-service access and control of public and private virtual servers, storage and networking. The private cloud service is hosted within the data center and includes enterprise-class security, performance controls and guarantees, as well as an application interface (API) for easy integration into back-end systems.

Why do organizations want Compute-as-a-service?

Organizations considering cloud computing generally have these challenges:

Improve agility

Agility is the ability of a company to adapt quickly and respond efficiently to changes in the business environment. Strategic agility, or "business agility," can be achieved quickly by adapting goods and services to meet customer demands.

Agility is a concept that incorporates the ideas of flexibility, balance, adaptability and coordination under one umbrella. In a business context, agility typically refers to an organization's ability to adapt quickly to market and production environment changes.

The agile enterprise is an extension of this concept, referring to an organization that uses the fundamental principles of complex adaptive systems and complexity science to achieve success. (Hatsum, 2014)

In the context of cloud computing, agility often refers to the ability to quickly develop, test and launch software applications that drive business growth.

Agility is achieved in different ways:

- Time to market/time to revenue: Cloud computing allows companies to significantly decrease the time it takes for IT infrastructure and provisioning, which accelerates the delivery of IT projects that are critical to revenue growth or cost reduction. While a physical server could take days or weeks to procure and provision, a cloud server takes only minutes to perform the same activity.
- Adaptive systems: Due to the API accessibility of cloud platforms, it is typically easier to automate IT management and provisioning in a cloud environment by integrating business intelligence platforms and IT analytics and monitoring tools with the cloud that allow systems to be more adaptive. For example, new servers can be automatically provisioned or de-provisioned when load balancing thresholds are met.
- New business models/New markets/Innovation: Cloud computing enables companies to align infrastructure and management IT costs with success and scale as new markets(products, geographies, services, customer segments).

- Flexibility and scalability: The ability to rapidly increase or decrease resources on demand to meet unpredictable application development or production needs. In the case of the cloud, this could mean the ability to spin up 10x to 100x the average utilization of computing resources to support a new project or sudden burst of demand or website traffic. Because of the pay-as-you-go flexibility of the cloud, end users are able to scale fast or fail fast based on business demands.

Reduced costs

- Using the cloud can reduce the total cost of infrastructure ownership significantly. Some customers report savings of 50-75%, because each customer is unique, the potential savings achieved by leveraging cloud technologies or services can vary. Several factors impact the total cost of ownership of operating infrastructure:
- CapEx reduction: Capital spending on equipment allows companies to depreciate what it will cost over three to five years; however, many IT projects do not last that long. Reducing CapEx (capital expenditures) on equipment and moving investment to the cloud (operating expenses) allows companies to better align investment and cost with enterprise initiatives for cost reduction
- Virtualization: The use of virtualization technology creates virtual machines on a single physical machine, which can significantly reduce hardware and energy costs.
- Pay-as-you-go: Cloud computing end users only pay for the resources they use. For example, an end user may need to use ten servers to test and develop an application in a few months, instead of having to buy the hardware, colocation space and power to support the temporary project, they can simply use ten cloud-based servers for two months.
- On-Demand Capacity and Elasticity: Being able to adjust resource usage dynamically and on-demand to allow companies to reduce over-provisioning.

- Efficiency: Cloud computing simplifies the provisioning, de-provisioning and re-deployment of resources through automation, consoles and easy-to-use web APIs. The efficiency of cloud computing reduces the amount of time an IT systems administrator has to spend on management and supporting infrastructure. The average number of server fans in a typical data center is 50 servers: 1 administrator. The average data center ratio is 500:1 (Wicklund, 2014).

- Economies of scale: In theory a cloud provider should be able to pass on the benefits of economies of scale and expertise derived from providing standardized services to multiple customers. The reality is that it may be less expensive for a customer to build and manage internal IT resources for certain application workloads that are predictable. It is important to understand the relevant costs for the customer to manage their own resources in-house.

- Resource leverage: Multi-tenant architectures allow for the exchange and sharing of resources and costs when running the application. In this sense, this architecture can be seen as an alternative to virtualization. (Wilder, 2014)

Risk reduction

- Companies evaluating cloud are trying to reduce complexity and risk.
- Business continuity: The cloud can be used as a cost-effective way to backup data or provide a disaster recovery site to improve business continuity and uptime.
- Technology independence: The cloud service does not specify the provider and is often delivered as a subscription or pay-as-you-go service, which technology providers are able to avoid.
- Operational Complexity: The cloud enables enterprises to reduce operational complexity, simplifying and standardizing the way IT resources are managed and delivered.

- Governance, compliance, monitoring and control: Fundamental to achieving governance and compliance requirements, such as auditing skills, secure access to data and control and enterprise resources. Cloud providers must improve the way in which resources are tracked, secured and controlled by end users, often an enhancement for companies must be the ability to be compliant (SSAE 16, HIPAA, CFR 21 Part 11, etc.) and meet internal control requirements.
- Data sovereignty: Increasingly, an organization is required to restrict data transmission and storage to a specific geography (country or region). Using a public cloud or deploying a private cloud in a country or region allows companies to better satisfy the data sovereignty requirement.
- Standardized services: In a large global enterprise, standardization must be ensured; it is critical to efficiently manage and support IT. Because the cloud (SaaS, PaaS, IaaS) offers a standardized set of services, it is easier to manage and reduce errors and execution risk.
- Specialized skills: Organizations often lack internal skills to migrate to new models and platforms, such as cloud computing. A lack of practical experience, internal skills (multi-user, database architecture design, Microsoft application migration, cloud operations, user, interface development, etc.) and operational benchmarks, increases the risk of failure, and lengthens the time required for cloud-related initiatives. Relying on an experienced cloud reduces risk.

And while it is not without its problems, security, compliance, integration, global coverage and internal readiness cannot be considered secondary issues.

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Conclusions

The use of the cloud should represent a means to meet the growing technological needs of a company. Reducing costs and the time needed to implement and support IT infrastructure and reducing risks are just the basic requirements of this trend, which is now within everyone's reach. Optimizing human and financial resources to focus on business growth will be the end result of choosing the right cloud.