



INTERNATIONAL RESEARCH JOURNAL OF HUMANITIES AND INTERDISCIPLINARY STUDIES

(Peer-reviewed, Refereed, Indexed & Open Access Journal)

DOI : 03.2021-11278686

ISSN : 2582-8568

IMPACT FACTOR : 6.865 (SJIF 2023)

A Study Of Management Of Cloud Computing

Dr. Savita R. Rasam

M.A., LL.M., Ph. D (Law)
Associate Professor,
Shahaji Law College,
Kolhapur (Maharashtra, India)
E-mail: rasamsavita@gmail.com

Mr. Sairaj S. Suryavanshi

BCA, LL. B. II Student,
Shahaji Law College,
Kolhapur (Maharashtra, India)
E-mail: sairajsuryavanshi22@gmail.com

DOI No. **03.2021-11278686** DOI Link :: <https://doi-ds.org/doi/10.2023-53621113/IRJHISIC2302010>

Abstract:

Cloud computing is a new paradigm for hosting and delivering services over the Internet, and it makes use of the standard protocols that are already in place. There are many benefits to using service-oriented architecture, including ubiquitous and convenient computing, greater flexibility, on-demand services, a lower total cost of ownership, a lower information technology overhead for the end-user, and many other benefits. Using a configurable pool of resources that are rapidly provisioned and released dynamically, provides access to massive amounts of computing power in a fully virtualized environment. It also provides the capability of utilizing scalable, distributed computing environments within the confines of the Internet while maintaining a single coherent system view with minimal management effort.

In the information technology industry, cloud computing is constantly gaining popularity. and as a result, a growing number of issues and challenges are being identified that must be addressed in order for this paradigm to be successful. It provides an overview of cloud computing as well as a comparison of cloud computing and grids, which is presented in this paper. A mathematical comprehension of a number of concerns among these questions is also proposed.

Cloud administration is the process by which administrators govern and orchestrate all of the products and services that function in the cloud, including users and access control, data, apps, and services. It's about giving administrators access to the resources they need, automating the procedures they want to, and making adjustments as needed, all while monitoring consumption and cost. It's also how administrators maintain flexibility and scalability while adapting swiftly when things change.

Keywords: Business, Cloud, Computing, Data, Management, Services.

Introduction:

Cloud Computing means the systematic oversight, control, administration, and maintenance of public cloud computing infrastructure, private cloud computing infrastructure, or more typically, hybrid (public and private) multi-cloud computing infrastructure services, and resources that are

organized. It provides IT teams with a good grasp of scalable and dynamic cloud-based computing infrastructures.

The cloud enables us to handle the control of technologies and software, assists with the administration of resources and the automation of operations. Cloud management serves the needs of products and services by offering the necessary functions such as flexibility, scalability, security, and customization.

Cloud management empowers firms to effortlessly interact and exchange data. It gives multiple individuals access so you can work on a certain file at the same time. It's a flexible method to expand a firm. As you understand cloud management, you expedite service delivery, enhance efficiency, and develop a workflow between IT and the business unit. On the other hand, cloud computing and its administration are not a decision that needs to be handed on to the IT department as it pertains to IT affecting, and impacting your business.

What Is Cloud Management in Cloud Computing?

Cloud computing management is the process of maintaining and regulating cloud services and resources, regardless of whether they are public, private, or hybrid clouds. The following are some of its aspects: load balancing, performance, storage (including backups), capacity, deployment, and so on. In order to do so, cloud management professionals must have complete access to all of the capabilities of the cloud's resources. Various software products and technologies are combined to form a unified cloud management strategy and process that is easy to understand and implement.

Cloud management tools assist administrators in overseeing various forms of cloud and cloud-related activities, such as resource deployment and usage tracking, as well as data integration, Kubernetes, and disaster recovery. The grant administrators access to the architecture, platforms, and applications of the cloud, as well as to the resources and data of cloud providers and service providers.

Since private cloud infrastructure is run exclusively for a single business, it can be controlled either by the organization or by a third party, as previously stated. Public cloud services are supplied over a network that is open to the public and available for use by anybody who wants to use them. According to this concept, the information technology infrastructure is held by a private corporation, and members of the general public can buy or lease data storage or processing capacity as needed. Combining public and private cloud services from different providers, hybrid cloud systems are becoming increasingly popular. Most firms store critical information on private cloud servers due to privacy concerns, while using public cloud applications for less sensitive information since they are more cost-effective. Hybrid cloud servers are those that use both the public and private clouds in conjunction with one another.

Basic Services of Cloud Computing:

Increasingly, IT businesses are transferring their apps to the cloud in order to lower the upfront costs associated with IT infrastructure. On-demand storage and processing capacity are provided by these environments for enterprises to handle large volumes of data and fluctuating or growing demand for application access and services. These environments provide Cloud computing services that can be deployed in one of three ways:

1) Private Cloud Services:

A private cloud is a form of cloud computing in which all of the resources are controlled by a single entity. In-house or third-party management is possible. Although private cloud systems can offer a wide range of customizable storage and computing power, they lack the hands-off administration that makes cloud computing a compelling economic model for exploiting IT infrastructures.

2) Public Cloud Services:

A network that is available to the whole public is used to supply public cloud services. A commercial firm (such as Amazon Web Services, Google, Microsoft, or Oracle) owns the IT infrastructure in this approach, and the general public can buy or rent storage or computing power as needed.

3) Hybrid Cloud Services:

Private cloud services from various providers are mixed with public cloud services from various providers to create hybrid cloud environments. Organizations may wish to store some data on private cloud servers for reasons of privacy and security, while also utilizing less expensive public cloud applications for less sensitive information to reduce costs. It is possible to create a hybrid cloud environment by connecting these public and private cloud environments together.

Why is cloud management important?

It is critical for organizations to have a cloud management strategy in place because there are so many options available in the cloud. This strategy should allow organizations to make informed decisions about how and when to use cloud-based services while also ensuring that their use of the cloud is cost-effective. The use of cloud management technologies makes it possible to automate this process.

Why the sudden demand for cloud management tools? Over the last decade, we've seen a growing number of IT companies take advantage of the flexibility and cost benefits afforded by cloud-based infrastructure models. In reality, because of the low deployment costs associated with cloud services, IT firms are increasingly deploying applications to the cloud.

Platforms For Cloud-Based Data Management.

Cloud platforms give all of the capabilities necessary to assist businesses in scaling up their cloud environments. Private, public, hybrid, and multi-cloud environments are all possible in the cloud.

Top 5 Cloud computing services that have been recommended:

- Microsoft Azure
- Amazon Web Services
- Google Cloud
- IBM Cloud
- Oracle Cloud Infrastructure

Cloud computing services have the unrivaled potential for enhancing business performance and generating profitability, and in this article, we'll look at the top cloud computing service provider available.

1. Microsoft Azure:

Microsoft Azure offers a diverse range of solutions that are ideal for businesses of all sizes and in all industries. Each and every one of your company's requirements will be taken into consideration. As a result, a package that is more suited to requirements is created.

Azure eliminates the need for physical servers to be installed on-premises. Typical costs, such as an onsite server support team, are reduced as a result of this.

The Azure Migration Center makes cloud transfers more efficient and convenient. The solution is also compatible with the Linux operating system.

2. Amazon Web Services:

AWS has a secure Web client that provides access to a wide range of administrative controls. Encryption key creation and auditing are just two of the functions that may be accessed from here. AWS gives you the freedom to design your own infrastructure. Compared to setting up a business on your own, this is a lot less expensive. EC2 services are also available to users. In order to run and acquire servers, this allows you to do so.

3. Google Cloud:

Google Cloud allows users to build business solutions by utilizing Google's modular web services. It provides a diverse range of services, including IaaS and PaaS solutions.

Users can be confident that anything they construct, develop, code, or save will be secure. Thanks to Google Cloud's multilayered secure infrastructure. This is accomplished through a dedication to transparency and a highly skilled engineering team.

Google Cloud provides a number of tools for ensuring constant performance and control. Compute Engine, App Engine, Container Engine, Cloud Storage, and Big Query are among them.

Google also provides a simple transition to virtual machines with customizable pricing.

4. IBM Cloud:

IBM Cloud has many services. It includes both virtual and hardware-based servers, as well as public, private, and management networks.

On-demand cloud computing allows you to control your infrastructure from a single platform. IBM calls their servers 'bare metal'. These provide clients with complete control over their servers. As a result, performance is considerably improved.

The IBM Cloud is governed by a single system via a web interface, API, or mobile apps. IBM's Bluemix cloud SaaS management features are extensive.

5. Oracle Cloud Infrastructure:

Oracle Cloud Infrastructure is another strong and feature-rich cloud solution from a computing behemoth. In a recent Forrester evaluation, Oracle's services were praised for their versatility in handling IoT, OLTP, microservices, and AI/ML workloads. There are two main service offerings: cloud architecture and data storage.

The Oracle Data Cloud is used to drive big data analytics for business intelligence insights. Oracle also offers SaaS systems for HR, EPM, SCM, and social media.

Using Oracle's cloud services has a lot of potentials, but they're primarily built for enterprises, as opposed to small firms or individuals.

Need of Cloud Management:

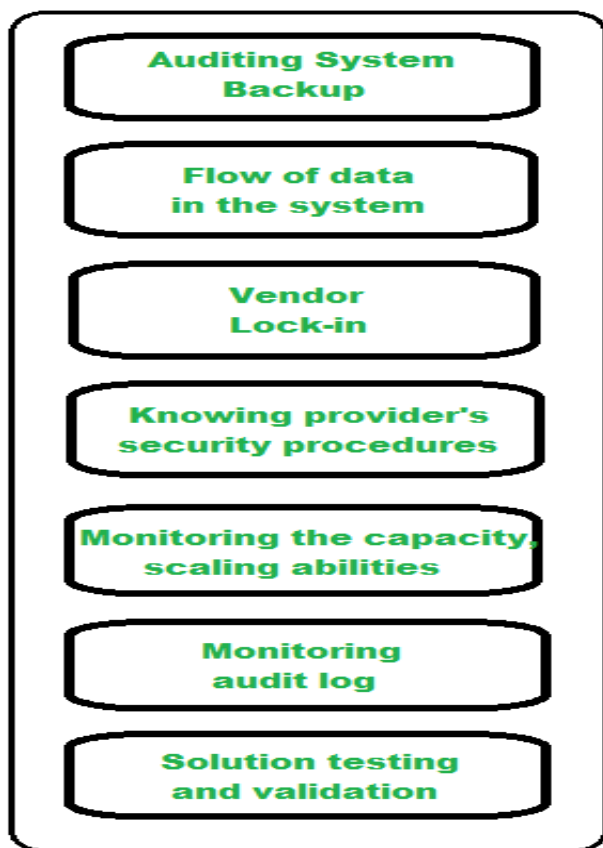
Cloud storage is increasingly being used as the primary data storage method for large organizations. Inconvenience and loss to the business can result from even a minor interruption or error. There are specific members who are responsible for making sure everything goes as planned and for dealing with any issues that may arise in the process of designing, managing and maintaining a cloud computing service.

You can access your files from any device, anywhere, as long as you have an internet connection. Cloud storage comes in a variety of types, including block, file, and object. There are a variety of uses for each of these, including backup and archiving, block-based volumes, and shared filesystems.

Computing in the cloud, in its simplest definition, is the delivery of computing services via the Internet in order to provide faster innovation, flexible resources, and economies of scale.

Cloud Management Tasks :

The diagram below depicts various cloud management tasks:



[Fig. 1.]

[Source: media.geeksforgeeks.org]

Challenges Of Cloud Management:

From storing data locally to executing applications online, enterprises have made the switch. Managing the cloud doesn't come without its share of bumps in the road.

The price of resources is a significant unknown. Understanding the problems of cloud management will help us realize the benefits of cloud management.

The following are some of the difficulties in cloud administration, as well as possible solutions:

Management of the cost of doing business:

- Companies can better manage the value of their cloud service thanks to it. The management of resources can become out of control and even redundant, making this a difficult task. The cost of cloud storage rises as more people use it.

Efforts to lessen the effects of

- Government rules and regulations should encourage businesses to use cloud storage.
- Analyze your finances in detail.
- Plan ahead of time by determining a reasonable spending limit.
- Make use of the services of value-management professionals.

Clouds are spreading like wildfire.

- It is a situation in which a company loses track of its cloud assets. A company's cloud service, instance, and provider are all in a state of unchecked growth.
- When a company's cloud infrastructures aren't properly managed, this is what happens.
- Efforts to lessen the effects of Cloud management tools should be used by businesses.
- They need to know how to implement and adhere to specific user policies.

Set up a cloud computing plan.

- Cloud audits should be performed on a regular basis by organizations.
- Auto-scaling.
- Set up alerts to notify management if you lose control of the situation.

Interactivity:

This focuses on the sharing, exchanging, and using of knowledge between the computer system and the program. Lock-in periods are a feature of cloud services. This makes it harder to exchange information with other forums or environments. In the end, all cloud migrations result in data reformatting.

Efforts to lessen the effects of creating programs that can be run on multiple platforms.

- A multi-cloud strategy should be implemented
- Make use of microservices.
- Follow a system influenced by events.
- To meet a customer's cloud computing requirements, cloud providers must be well-equipped.

Benefits of Cloud Management

Scalability:

Depending on the situation, the cloud might boost or decrease its resources. Upscaling the resources has the effect of reducing the burden while simultaneously increasing the costs. When resources are not required, we reduce their availability.

Resilience Cloud:

Resilience Cloud is a data recovery service that is available. When there are server and storage failures, they rely on third-party apps to segregate resources from one another.

Multi-tenancy Deal:

Cloud services may accommodate multiple users on a single cloud infrastructure by using virtualization technology.

Conclusion:

Cloud computing is a new paradigm for hosting and delivering services over the Internet. It provides access to massive amounts of computing power in a fully virtualized environment. A

growing number of issues and challenges are being identified that must be addressed in order for this paradigm to be successful. Cloud computing management is the process of maintaining and regulating cloud services and resources. Various software products and technologies are combined to form a unified cloud management strategy.

Cloud users need to understand the workings of the cloud environment. Understanding how to manage a cloud environment is crucial to any organization's success. Public cloud services are supplied over a network that is open to the public and available for use by anybody who wants to use them. Cloud computing services can be deployed in one of three ways: private, public, or hybrid. IT firms are increasingly deploying applications to the cloud because of low deployment costs. Cloud management tools make it possible to automate this process and ensure cost-effective use of the cloud.

Cloud services may accommodate multiple users on a single cloud infrastructure by using virtualization technology.

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