International Journal of Advance and Applied Research
www.ijaar.co.in
ISSN – 2347-7075 Impact Factor – 8.141
Peer Reviewed Bi-Monthly
Vol. 7 No. 28 March - April - 2026

Cloud Computing Review

Mrs. Priyanka Sunil Aher
Department of Computer Science,
KTHM College, Nashik, India
Corresponding Author – Mrs. Priyanka Sunil Aher
DOI - 10.5281/zenodo.14784834

Abstract:

Cloud Computing is essential section in IT industry today. By using cloud computing, users and companies don't have to manage physical servers themselves or run software applications on their own machines. Because cloud computing is on-demand access, via the internet to computing resources applications, servers, data storage, development tools, networking capabilities, and more hosted at a remote data centre managed by Cloud Service Provider. The other key benefit is that IT staff within an organization no longer have to be physically present at a data centre facility, as this responsibility is off loaded to a cloud service provider who can take care of the physical environment including installations, cabling and replacing hardware. This allows your IT staff to safely access applications and databases remotely during a pandemic. Cloud computing offers organizations a compelling solution due to its ability to reduce long-term costs, provide instant data access, and enhance overall operational efficiency, resulting in significant economic benefits. We expect this study to enhance our knowledge and readiness for cloud computing.

Keywords: Cloud Service Provider, Cloud Computing, IaaS, PaaS, SaaS

Introduction:

Now in today's era, near about 92% of IT organization uses cloud computing because of its on-demand access, via the internet. Using cloud computing, there is no need for IT industries to set up physical servers or infrastructure on premises. Cloud Service Provider (CSP) provides servers, data storage, development tools, networking, and application available for a monthly subscription fee or bills them according to usage. Cloud computing helps the IT industries to Lower IT costs, Improve agility and time-to-value, Scale more easily and cost-effectively. Business owners are attracted to cloud computing concept because of its several features like self-service, per-usages metering or billing, elasticity, customization, scalability, etc. There are some benefits of cloud computing like easy implementation, accessibility anywhere at any anytime, no physical hardware required, pay as per use, flexibility in services, efficient recovery using backups and data security. Some cloud service providers are Amazon Web Services (AWS), Microsoft Azure, Google Cloud, Alibaba Cloud, Oracle Cloud Platform, IBM Cloud, Tencent Cloud Computing, and Digital Ocean etc.

Overview Of Cloud Computing:

A. What is Cloud Computing?

Nowadays, **Cloud computing** is adopted by every company, whether it is an MNC or a startup many are still migrating towards it because of the cost-cutting, lesser maintenance, and the increased capacity of the data with the help of servers maintained by the cloud service providers. Cloud computing is the delivery of

computing resources, including storage, processing power, and applications, over the internet, allow users to access services on demand without needing to manage physical infrastructure.

B. Benefits of Cloud Computing:

1. Faster time to market
2. Scalability and flexibility
3. Cost Savings
4. Better Collaboration
5. Advanced Security
6. Data Loss Prevention [3]

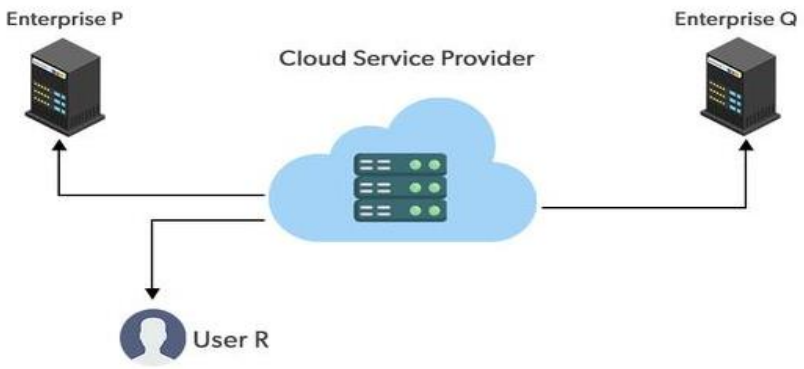
C. Characteristics of Cloud Computing

1. Measured Services
2. On demand self-service
3. Rapid Elasticity
4. Resource Pooling
5. Broad Network Access
6. Pay-per-use model.
7. 24/7 hours available.
8. Service orientation.
9. High performance and reliability.
10. Accessible from anywhere. [4,5]

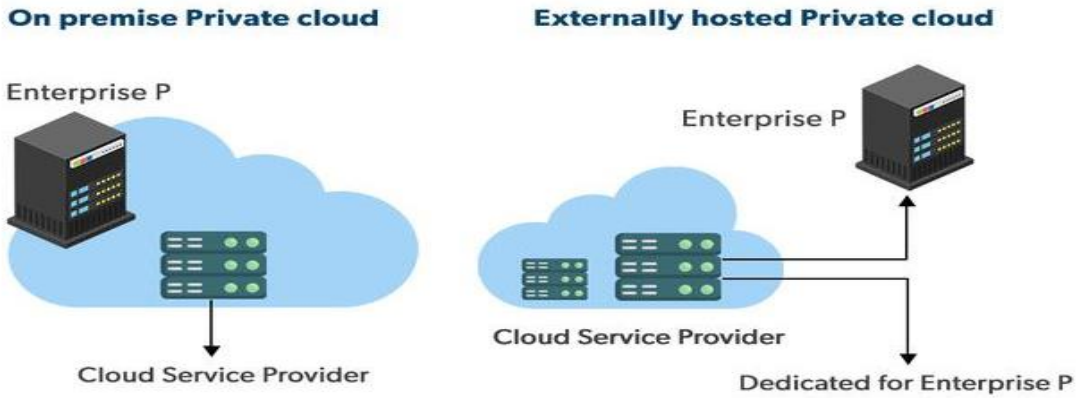
Categories Of Cloud:

Cloud can be categorized in four forms of access like public, private, hybrid, and community.

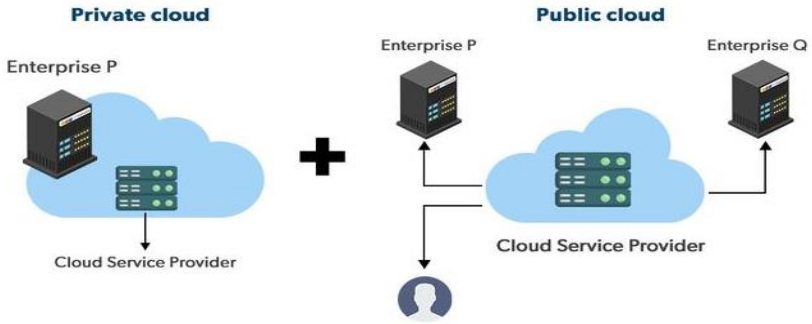
1. **Public Cloud**: Public cloud makes systems and services public to anybody with an internet connection. The fundamental characteristics of public clouds are **multitenancy**. A public cloud is meant to serve multiple users, not a single customer. A user requires a virtual computing environment that is separated, and most likely isolated, from other users. Public clouds are the go-to option for small enterprises, which can start their businesses without large upfront investments by completely relying on public infrastructure for their IT needs.[6] Because of its openness, the public cloud may be less secure. **Examples:** Amazon EC2, IBM, Azure, GCP



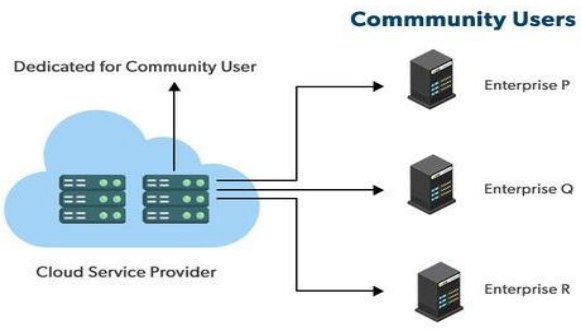
2. **Private Cloud**: Private clouds are distributed systems that work on private infrastructure and provide the users with dynamic provisioning of computing resources. Instead of a pay-as-you-go model in private clouds, there could be other schemes that manage the usage of the cloud and proportionally billing of the different departments or sections of an enterprise. Private cloud providers are HP Data Centers, Ubuntu, Elastic-Private cloud, Microsoft, etc. Examples: VMware vCloud Suite, OpenStack, Cisco Secure Cloud, Dell Cloud Solutions, HP Helion Eucalyptus. [6]



3. **Hybrid Cloud:** A hybrid cloud is a heterogeneous distributed system formed by combining facilities of the public cloud and private cloud. Important tasks are handled by the private cloud and non-critical tasks are handled by the public cloud. It is also known as heterogeneous clouds.
Examples**:** AWS Outposts, Azure Stack, Google Anthos, IBM Cloud Satellite, Oracle Cloud at Customer. [6]

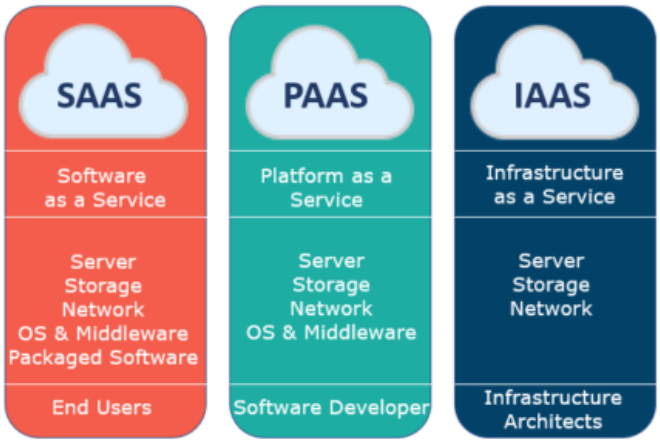


4. **Community Cloud**: In the community cloud, the infrastructure is shared between organizations that have shared concerns or tasks. An organization or a third party may manage the cloud.
Examples: CloudSigma, Nextcloud, Synology C2, OwnCloud, Stratoscale. [6]



Services Of Cloud Computing:

Cloud computing is the capability to deliver, on demand, a variety of IT services to users over the internet. Cloud computing service offerings into three major categories: Infrastructure-as-a-Service (IaaS), Platform-as-a-Service (PaaS), and Software-as-a-Service (SaaS).[5]



1. **Software as a Service (SaaS)**: The way of carrying applications as a service on the internet is known as software as a service.[8] SaaS incorporates both IaaS and Paas service offerings. It provides application-level services to diverse business needs like business analytics, CRM, or marketing automation. Some SaaS applications where users directly interact like Gmail, Netflix, Dropbox, Salesforce or JIRA. It is a subscription-based offering where users subscribe to s/w on a monthly basic instead of purchasing it.
   Examples: SAP Business by Design, Zoho CRM, AppDynamics, Microsoft Office 365, Pardot Marketing Automation.[2]
2. **Platform as a Service (PaaS)**: A development environment or platform is given to the consumers as a service in PaaS, upon which user can deploy their own software and coding. The customer has the liberty to construct his own applications that can run on the provider's infrastructure [8]. PaaS contributing in: Hosting Solutions, OS, Software tools for design and development, Environment for server-side scripting, DBMS, Network Access, Storage, Server Software, Support.
   Examples: Microsoft Azure, AWS Elastic Beanstalk, Force.com by Salesforce, Google App Engine, Rackspace Cloud Sites.[2]
3. **Infrastructure as a Service (IaaS)**: Many computing resources are provided by the IaaS in the form of storage, network, operating system, hardware, and storage devices on demand [8]. IaaS is beneficial for customers who want to create cost-effective and highly scalable IT solutions where the expenses and complexities involved in managing hardware resources are outsourced to a service provider.
   Examples: Amazon EC2, Windows Azure, Google Compute Engine. [2]

Cloud Computing In It Sector:

Nowadays cloud computing enters into various sectors like IT, Agriculture, Health Centre, Education Sector Etc.

A. Cloud Computing in Health Centre:

Cloud computing is basically a relatively new technology that has an immense impact on the healthcare sector for storing proper information about past incidents and outbreak of diseases as well as the details of patients. It is an important factor that can ease the work of the health care workers and the data management group. In

recent times the health care providers need to deal with enormous medical records of patients through the electronic media such as big data analytics, patient portals and mobile applications. Adaptation of cloud computing technology can make the health care industry able to store the data efficiently with minimum cost and help in avoiding physical servers.[9] Dilip Kumar Sharma et al. Concluded by, cloud computing can be an alternative in the health care industry for the betterment of the data management procedure. Cloud computing can help in storing and managing the data and make it easily accessible to the organization.

B. Cloud Computing in IT Sector:

In Recent years, the IT companies has a remarkable experience with computing services like cluster computing, grid computing, and cloud computing. From that Cloud Computing Facility delivers the hardware and software resources via the Internet. Various CSPs offer highly scalable, flexible, on-demand, pay-as-u-go, remote access which represent the aspect of cloud computing. It enables users across various geographic locations to collaborate on tasks in a highly convenient and secure fashion, highlighting the collaboration facet of cloud computing. In the Infrastructure as a Service (IaaS) model, cloud service providers supply users with essential public cloud components—like virtual machines, raw (block) storage, firewalls, load balancers, and networking infrastructure. Once you subscribe over the Internet, you gain on demand access to these resources, allowing you to use them whenever required throughout your subscription—without ever owning the physical equipment.[12]

C. Cloud Computing in Agriculture:

Agricultural pests cause between 20 and 40 percent loss of global crop production every year as reported by the Food and Agriculture Organization (FAO). Therefore, smart agriculture presents the best option for farmers to apply artificial intelligence techniques integrated with modern information and communication technology to eliminate these harmful insect pests. Consequently, the productivity of their crops can be increased. Hence, this article introduces a new mobile application to automatically classify pests using a deep-learning solution for supporting specialists and farmers. [13] Cloud computing in agriculture can help farmers with smart agriculture by using cloud-based data and IoT to make data- driven product decisions. Here are few ways how cloud computing impacts agriculture:

1. Enables precision farming tools, real-time monitoring, and accurate crop management.
2. Collects data from sensors, drones, and satellites to optimize resource usage and improve crop health.
3. Allows real-time product tracking, optimizes logistics, and expands market access for improved supply chain management.
4. Utilizes IoT devices for remote monitoring and regulation of crops and livestock, saving time and effort.
5. Cloud platforms foster collaboration and knowledge exchange among farmers, researchers, and policymakers.
6. Access to real-time data and predictive analytics enhances decision-making and minimizes risk.
7. Promotes sustainability by reducing adverse environmental effects and ensuring long-term agricultural viability.
8. It captures crop information.
1. 9.It gather soil information.
9. It captures cultivator’s data.[14]

D. Cloud Computing in Enterprise:

In Enterprise resource planning, using cloud computing there are some benefits like less initial capital investment, a smaller amount of time will be required to start new services, maintenance and operation costs could go lower, effective utilization through virtualization and the most important thing is simpler disaster recovery. The enterprise, Software-as-a-Service (SaaS) is a well-known and on demand hosted application for implantation in software applications like ERP systems. Using SaaS the operational cost is based on subscription either monthly or yearly so, this process absolutely represents savings in terms of money, IT resources, and time spent from development to implementation [11].

References:

[1].https://www.capita.com/sites/g/files/nginej291/files/2020-05/capita-role-of-cloud-computing-during-covid19.pdf
[2].A Book of "Cloud Computing", Dr. Rajesh K. Dhumal, Dr. Satish S. Ambike, Nirali Prakashan.
[3].https://cloud.google.com/learn/advantages-of-cloud-computing
[4].https://www.sanog.org/resources/sanog26/SANOG26_
Tutorial%20%20Introduction_Cloud_Computing_Sreenath.pdf
[5] Pratik Narendra Gulhane, Aditi Rajesh Nimodiya, "A Review Paper on Cloud Computing" , IARJSET, Vol. 9, Issue 2, February 2022.
[6] https://www.geeksforgeeks.org/types-of-cloud/
[7]https://www.edureka.co/blog/cloud-computing-services-types/
[8] Priyanshu Srivastava, Rizwan Khan, "A Review Paper on Cloud Computing", IJARCSSE, Volume-8, Issue-6, pp. 17-20, June 2018.
[9]O.Ali,A. Shrestha, J. Soar, S.F.Wamba, Cloud computing -enabled health care opportunities, issues, and applications: a systematic review, Int. J. Inform. Manage.43(2018)146–158.
[10] Dilip Kumar Sharma et. al., "The aspect of vast data management problem in healthcare sector and implementation of cloud computing technique", Materials Today: Proceedings, Volume 80, PP 3805-3810, 2023
[11] S L Saini,et. Al., "Cloud Computing and Enterprise Resource", Proceedings of the World Congress on Engineering,Vol I, WCE 2011, July 6 - 8, 2011
[12] Rongjinzi Wang et. al., "Managing life-cycle capacity of cloud computing: Integrating data-driven optimization and inventory theory for capacity investment and retirement", Elsevier Omega, Volume 138, January 2026.
[13] Mohamed Esmail Karar et. al., "A new mobile application of agricultural pests recognition using deep learning in cloud computing system", Alexandria Engineering Journal, Volume 60, Issue 5, October 2021
[14] Shiva Gaur, "The Role of Cloud Computing in Agriculture-A Comprehensive Guide", Successive Digital, July 2024.