Emerging Trends in Cloud Computing

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Abstract: In the IT industry, we are now in the era of Cloud Computing Technology. In the middle of a pandemic, Cloud is the saviour. The most efficient architecture of computation is cloud computing, which is based on the Internet. Its emergence aims to optimise on-demand technology, hardware, and information provisioning as a service, achieving economies of scale in IT strategies delivery and operation.This paper presents a brief of emerging trends in cloud computing . The outcome of this review is an overall idea about what will be the future of cloud computing.

IndexTerms- Artificial Intelligence, Machine Learning, Hybrid Cloud,Serverless Computing,Big Data ,IoT

I. INTRODUCTION

We are now in a technologically advanced period. Different industries' work cultures are being changed by new digital technologies. Cloud computing is as critical to the data world as it is to consumers' lives. All major profit-making companies are using cloud computing technologies to ensure that they can function quickly during the current COVID-19 pandemic crisis. In the fast-paced customer world, cloud computing will be more open, agile, and competitive by 2021. When data is stored on the internet rather than on a server or device, it is referred to as cloud computing. It enables on-demand access to resources such as applications, servers, and data storage, among other things. Cloud service providers are companies that host these services (CSP). Amazon Web Services, NetApp, and Google Cloud are among the main CSPs. Customers essentially borrow the infrastructure to store resources when they use CSPs. This reduces IT costs while also allowing for faster scalability. Cloud computing is used by many of the services we use on a regular basis. This includes communication tools like Gmail, smart home devices like Alexa and Siri, streaming services like Netflix, and social media platforms like Facebook. The current literature explores emerging trends in cloud computing . The paper is structured as follows: Section 2 presents 6 latest trends in cloud computing technology and its advantages. Finally, Section 3 concludes the paper.

II. LATEST TRENDS IN CLOUD COMPUTING

Cloud computing has gained huge importance in different sectors due to the wide range of benefits. This section aims at describing the latest trends in cloud computing.

2.1 AI and Machine Learning with Cloud Computing

The most critical technological strategic developments for 2021. Cloud-based AI-powered applications are important for supporting the Covid-19 vaccination campaign and businesses. The convergence of fast computers, inexpensive storage, and free software has resulted in recent stunning advancements in artificial intelligence (AI) software, but the combination of cloud computing and AI has been the most powerful driving force. AI cloud computing blends machine learning capabilities of artificial intelligence with cloud-based computing environments to provide intuitive, linked experiences. Digital assistants such as Siri, Amazon Alexa, and Google Home combine a seamless flow of artificial intelligence technology with cloud-based computing services to enable users to make transactions, change a smart thermostat, and more. Using AI and Machine Learning in conjunction with Cloud Computing is both cost-effective and reliable. It also improves productivity. The majority of tasks will be automated, and AI will assist data centres in learning from previous data and more efficiently distributing workloads across the organisation through the cloud. The following are some of the most significant advantages of combining AI and machine learning with cloud computing:

2.1.1 Managing the cloud

Core workflows can be monitored using AI. As a result, the IT team of the business will concentrate on higher-value strategic activities, while AI captures the cloud's productivity by automating routine processes. It's expected that public and private cloud instances will soon rely on AI to not only monitor and handle problems, but also to self-heal.

2.1.2 Processing Data

To handle large data repositories, cloud computing solutions use AI methodologies. Data streamlining through AI has a huge effect on how data is updated, managed, and consumed. It makes it easier for financial institutions and customer service organisations to detect high-risk factors and provide real-time data to their customers. The ease with which AI can process data has opened the way for its inclusion in SaaS solutions. SaaS providers should provide AI tools for managing large data sets and also make recommendations on how to keep and expand their customer base.

2.1.3 Dynamism in Cloud Services

The combination of AI and cloud computing allows for rapid business transformation. So far, we've established methods for enhancing cloud computing services using AI. Cloud computing, on the other hand, makes AI adoption much simpler. Since AI applications are high-performance and run on many, fast GPUs, they are prohibitively expensive for many businesses.AI as a

service in cloud applications makes AI more available to companies, and at affordable costs. As a result, through cloud computing, the advantages of AI that previously only benefited a select few are now available to the masses.

2.2 Hybrid Cloud Services

The cloud computing industry is currently undergoing a new cycle of evolution. This new development is known as hybrid cloud.Following the huge success and adoption of traditional cloud, the industry is now transitioning to more flexible cloud-based services. Companies have access to the cloud in a variety of ways, including private and public access. Hybrid cloud refers to a setup that incorporates private and public cloud options, as well as on-premise and off-premise facilities. Hybrid cloud enables companies to work in the cloud while remaining within their budgetary and space limits, while also having the functionality they want. More companies are expected to take advantage of the following hybrid cloud computing trends:

2.2.1 Security options

Companies who are reluctant to transfer all of their data to a single cloud-based location and prefer to keep it on-premise will benefit from hybrid cloud. This way, they get all of the advantages of a private cloud with the additional protection and help of a public cloud.

2.2.2 Remote Support

In 2021, permanent remote work is expected to double. Hybrid clouds enable businesses to allow off-site workers to work remotely by storing required data and software on public clouds while retaining sensitive data on-site. The cloud makes it simple to scale operations up and down to meet users changing needs as remote workforce expands and shrinks.

2.2.3 Increased Speed

Hybrid clouds are one way to increase operational speeds and lower latency, enabling users to take on more projects with less downtime.

2.3 Edge Computing

In recent years, edge computing has increased in popularity. Edge computing is a networking concept that focuses on getting computing as close as possible to the source of data in order to minimise latency and bandwidth consumption. Edge computing, in simple terms, means running fewer processes in the cloud and relocating them to local locations, such as a user's computer, an IoT system, or an edge server. By bringing computation to the network's edge, the amount of long-distance contact between a client and server is reduced. Edge computing is particularly useful in remote areas with limited access to the type of centralised site where data is typically stored. In a self-driving vehicle, for example, edge computing will run the algorithm locally instead of using a conventional cloud computing service. The reliability and speed of distribution are improved as a result of this.

Faster decision-making would be possible with machine learning at the edge. Furthermore, the combination of edge computing and artificial intelligence would accelerate real-time personalization. By 2024, a quarter of businesses will have improved their business agility by combining edge data with cloud-based applications.Organizations are now beginning to look beyond conventional data centres and deployment locations for systems that can support real-time analytics. Devices and computing systems that are closer to end users and/or co-located with physical assets will become a more important part of this IT portfolio. Edge computing will be part of a broader computing fabric that includes public cloud platforms as well as on-premises locations. In 2021, mobile edge computing (MEC) will be a critical component of supply chain resilience.

2.4 Serverless Computing

Serverless computing refers to the practise of delivering backend resources on a per-use basis. Users can write and deploy code without having to think about the underlying infrastructure with a serverless provider. A business that uses a serverless provider for backend services is paid depending on their calculations, rather than having to reserve and pay for a certain amount of bandwidth or number of servers. Physical servers are also used, despite the name serverless, but developers aren't required to be aware of them. Serverless computing systems allow developers and coders to concentrate on the app rather than infrastructure management.

In the world of post-virtual computers, serverless cloud computing, which is on the verge of the second cloud revolution, has resulted in a drastic transition. Businesses in sectors other than technology are introducing serverless architectures and systems at all stages of production due to the cost-effective pay-per-use model. Adoption of this technology has improved the flexibility of IT architectures in the Functions-as-a-Service (FaaS) domain on a technological level as well. Kubernetes as the basis for serverless infrastructure has a number of advantages; it standardises and allows vendors to truly deliver a multi-cloud or hybrid-cloud serverless solution. The limitations are being solved by the new serverless vendors, enabling us to quickly get to rapid development and implementation without any infrastructure strain or vendor lock-in. Serverless computing's financial benefits and economics are causing a noticeable increase in interest, experimentation, and adoption of the technology.

2.5 Virtual Cloud Desktops

Virtual cloud desktops (also known as desktop as a service, or DaaS) are cloud-based workstations. Anything from computer settings to operating systems is delivered via the internet. As more people work from home, DaaS will become more relevant because it allows us to work from any location and on any device. Businesses can also save money by eliminating the need for hardware updates and redundant technology with DaaS. Furthermore, because it is a by-the-hour subscription model, businesses can plan ahead of time for costs and adjust their needs as needed. When a company hires new employees, for example, their capabilities will need to be expanded. This is simple to accomplish using virtual desktops. It is also secure. Everything is backed up automatically and stored in a secure data centre. Since everything is centralised, it's much safer than if all the data was stored on an individual device. And it can be recovered quickly if damaged.Because of these reasons virtual desktop services are likely to become increasingly popular in coming years.

2.6 Joined Services of Cloud Computing, Big Data, and IoT

Cloud computing will boost in 2021 as it combines with Big Data and IoT. Big Data and the Internet of Things are still evolving, and a few businesses are relying on them. The Internet of Things (IoT) is a worldwide network of internet-connected devices and machines that can capture and share data. After it has been processed and analysed, Big Data provides data that is connected to a specific company.If cloud computing, big data, and IoT combine, an enterprise's performance can be increased.Organizations will gain access to their competitors' sensitive data and invest more time to making better long-term strategic decisions. The biggest advantage of combining Cloud Computing with IoT and Big Data is that it provides companies with a flexible, secure, and agile solution.

III. CONCLUSION

The emerging developments in cloud computing, as well as some of its benefits, were briefly discussed in this paper .The number of applications for cloud computing will continue to grow. Cloud computing is now used by almost all small and large businesses to handle storage, traffic, and hardware requirements. As a consequence, it is clear that cloud computing has a huge influence on society and industry.

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