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Hybrid Cloud in the Modern Age of Cloud Computing: A Comprehensive Insight

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Abstract

The concept of "cloud computing" has been widely discussed in the media as of late. Yet, many people who are just starting out in the IT field don't understand even the most basic explanations of cloud computing and the terminology around it. This study provides a framework for analyzing the existing literature on cloud computing and its applications. The concept of cloud computing is presented, along with an overview of the technology's history, current state, and potential future applications. The article also provides an in-depth look at the terminology and frameworks that make up cloud computing, shedding light on the field's rapid development and many practical applications. Cloud computing has been extensively accepted in certain business sectors, but its advantages have yet to be realized in others, as shown by the study's results. Sky Drive, hybrid cloud computing, and how they are affecting management strategies in Indian industrial sectors are extensively discussed, and then the study concludes with a comparison and contrast of other cloud computing apps including Drop Box, Google Drive, and Sky Drive.

1. Introduction

Cloud computing is a new computer paradigm that has gained a lot of traction in recent years due to its ability to provide scalable, readily available infrastructures, platforms, and SaaS applications. The term "cloud computing" refers to a method of storing and managing data and programs remotely through the Internet. Using purely digital techniques [14]. Like other programming languages, Go makes use of virtual technologies to reduce the amount of space needed for storage and make processes faster. To put it simply, cloud computing is the utilization of computing resources through the Internet rather than their local storage devices. Every device with an internet connection may access the user's data and files. By consolidating resources like RAM, CPU, and network connections, cloud computing makes computing more effective. The central computer or host server is the primary target of this technology's virtualization efforts. This server facilitates interaction between users, allowing data to be exchanged. With a vast worldwide platform, the data may be saved, accessed, and distributed at any time.

2. Methodology

This article seeks to answer the following research questions: How widely used is cloud computing in the IT industry, in government, and in educational institutions? How much of a technical breakthrough has cloud computing been over the last several years? Please explain the uses for and specifics of the many cloud-based services offered by today's businesses. Which widely-featured cloud Application is the greatest choice for widespread use? What are some examples of how big and medium-sized businesses might benefit from using hybrid cloud computing?
In this research, we take a quantitative and qualitative look at how different types of businesses are using cloud computing. The study is essentially a critical literature assessment of previously published material. The focus of this work is on providing a concise overview of the many relevant details, such as the practical implications of cloud computing. This systematic review not only looks at research specifically related to cloud computing, but also at research in the broader fields of computing and information technology, such as journals, conferences, books, white papers, and technical reports. This article seeks to answer the following research questions: How widely used is cloud computing in the IT industry, in government, and in educational institutions? How much of a technical breakthrough has cloud computing been over the last several years?

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3. Evolution of cloud computing

During the decades-long development of the Information Technology (IT) industry, cloud computing emerged in the 1980s [4]. In the 1990s, network and internet technologies allowed users to link their personal computers (PCs) to one another and to remote servers in order to share and access data and programs. Using a remote program [10]. Yet, no universal server or key for data exchange had emerged. In the early 2000s, because to developments in areas like Web 2.0 and distributed computing, it became possible for users to connect to an electronic grid across a network such as Ethernet or the Internet and have access to a pool of external and shared computing resources. Cloud computing is a paradigm for providing information technology services that allows users to access and manage their data and applications from remote servers using just a web browser, without needing to deal with the underlying hardware or software.

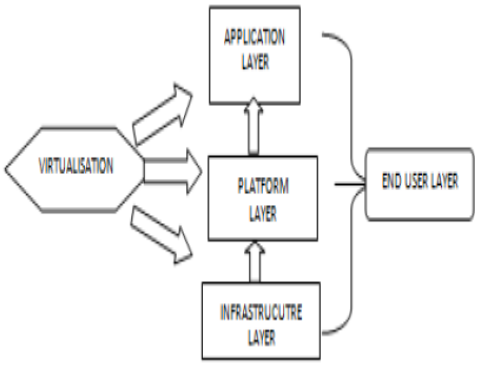

Fig.1: Distribution of cloud computing services

4. Hybrid cloud computing

Private and public clouds are both effective and adequate, but more specificity and accessibility of data and information is needed for large-scale development processes and sharing agendas [10]. The focus of a hybrid cloud computing model is on the combination or blending of features from many cloud computing models. Private and public cloud to make cloud computing more visible and effective in business. The hybrid model is, at its core, a private cloud that may, when needed, make use of the resources of a public cloud to facilitate collaboration and information exchange. This paradigm offers a more effective strategy for protecting sensitive information and applications. Yet, the hybrid cloud, in comparison to completely public cloud architecture, may offer a better degree of security for sensitive data and situations where firms are influenced by industry and financial rules. Both the approach and the concept are widely used in the corporate world because of their practicality. Using the cloud computing concept, businesses may vary their use of computer resources to meet their specific needs. Companies with fluctuating computing demands might benefit greatly from a hybrid architecture, which uses a public cloud when extra processing power is required. When a business needs more cloud space, it is far simpler to expand into the public sphere than to expand its private cloud. Hence, a hybrid

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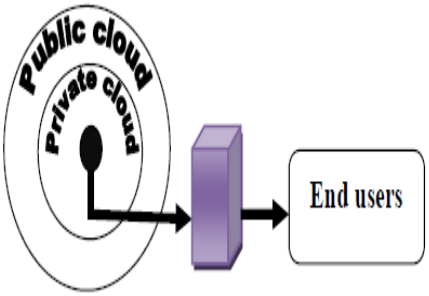
cloud may provide world-class computing capacity that is accessible anytime, anyplace at a lower cost than a private cloud. Hybrid clouds may be fixed in a number of different ways. Redistribution and sharing of data are also part of this process, as is the selection of the appropriate software and other services to be linked through cloud computing.



Combined private and public cloud computing, as shown in Fig. 2, offers a novel sharing mechanism to businesses.

5. Advantages of hybrid cloud over public and private cloud

Since all of the organization's infrastructure requirements are now met by third-party public cloud providers, the organization's capital expenditure on that area has been cut significantly [15] [17] [18]. Eliminating capital expenditures saves money and improves resource allocation. Savings in infrastructure costs occur at several points in an application's lifespan. Supports cloud-bursting and provides the granular control of a private cloud deployment along with the speed and scalability of the public cloud. The capacity to take use of public clouds increases the availability of solutions, which boosts the organization's total flexibility.

6. Solutions for security issues in Hybrid cloud

As more and more information is kept on the cloud, it becomes crucial to ensure its safety, privacy, and authenticity. Data storage and transmission between platforms and users is a time-consuming and sometimes risky process. The consequences of a data breach might be devastating. So, with data security as the primary goal, the following are a selection of approaches or procedures for stopping data from vanishing or getting out [18]:

Technique	Description
Data Handling Mechanism	• Confidential Data Is Classified • Geographical Location Of The Data Is Defined • Policies For Data Destruction Is Defined
Data Security Migration	• Personal Data Is Encrypted • Sensitive Data Avoided In Cloud
Standardization	• Standardization Should Be Maintained While Data Tracking And Handling
Accountability	• Data Loss, Leakage Or Privacy Violation In Business May Be Dangerous • Audit Needed In Each Step To Increase Trust

7. Sky Drive: -

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Microsoft Sky Drive is their official name for their cloud storage service. Windows Live Sky Drive and Windows Live Folders were the previous names for this service. A user may upload and synchronize files to the cloud, and then access them from any computer with an internet connection or a downloaded app. As a component of the Windows Live suite of web services, which lets users decide whether to share files just with certain people or with the world at large? The use of a Microsoft account is not needed to view publicly shared files. With the latest update to its Sky Drive service, Microsoft has made it easier to view media files uploaded and shared online. Sky Drive's storage capacity is the service's main selling point. New users get 7 GB of free space and students get an extra 3 GB for a whole year. There is no fee to use this service, and it is readily available for download from any outsourcing platform. Also, Microsoft offers a wide range of supplementary Sky Drive-related services, all of which may be obtained for a little fee.

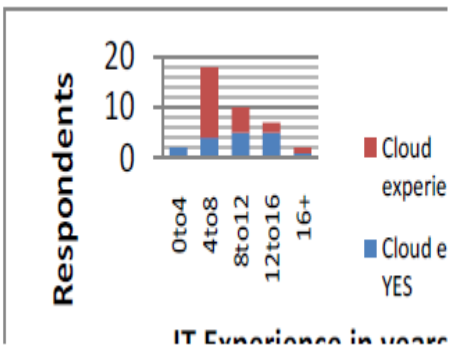
STORAGE PLAN	DESCRIPTION
SkyDrive +50	Adds 50GB to free storage amount
SkyDrive +100	Adds 100GB to free storage amount
SkyDrive +200	Adds 200GB to free storage amount

Fig.3: Sky Drive storage plans

8. Adoption of cloud computing in various sectors and data analysis:-

Asian countries

A number of different types of business have found cloud computing to be a huge technical improvement [2]. Nonetheless, there are still several industries that have yet to embrace cloud computing, maybe owing to the complexity of its implementation. The following data illustrates the prevalence of cloud computing in the information technology industry.



A bar chart depicting the cloud computing knowledge and expertise of IT professional the results show that as respondents acquire expertise in the IT industry, they get exposure to cloud computing and its benefits. Yet, the decline in the graph starts quite suddenly at many different locations. It may have taken some time for people to fully grasp the benefits of cloud computing and embrace it into their daily lives.

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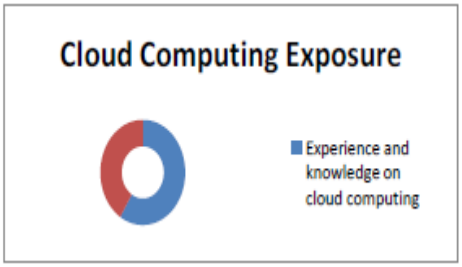

Fig.5: A graphical representation of IT workers' familiarity with cloud computing.

IT experts with extensive expertise in cloud computing and those with less experience are shown differently in the pie chart. Western states have the lion's share of responders. Nations, with 20% being from India. The responders are highly skilled IT professionals with extensive worldwide experience. They have worked with a wide range of customers in the manufacturing, service, and other sectors. The great majority of responders had more than four years of experience in the IT industry, as shown by the bar chart [4]. Cloud computing are becoming more familiar and many individuals having already used it in real life. Moreover, the percentages show that even respondents without any direct cloud experience have an excellent grasp of the fundamentals of this cutting-edge IT deployment strategy.

Western counties

Cloud computing meteoric ascent may be traced not only to the extensive technical advancements in the West, but also to the widespread use of the technology by businesses, educational institutions, and government agencies worldwide [3].

	Companies		
	Large companies	Mid-sized companie	Small companies
2011	37%	21%	21%
2012	44%	40%	42%
Inc.	+7%	+19%	+21%
	Governments		Medical Institutions
2011	Federal government	Regional governmer	
2012	29%	23%	30%
Inc.	42%	27%	35%
	+13%	+4%	+5%

Statistical statistics depicting the western world's use of cloud computing from 2011 to 2012. In western nations, cloud computing usage is shown here through survey data. The majority of business users on the cloud are small businesses. Elementary, middle, and high schools are the three basic levels of among educational institutions, high schools are leading the way in cloud computing adoption. The federal government has been the leader among governments in adopting cloud computing. It has been observed that when businesses, schools, governments, and hospitals are all compared, it is the businesses that have embraced cloud computing the most. The healthcare sector has been slow to embrace cloud computing. This may be the case for a number of reasons, including but not limited to concerns with service dependability, data security, system users, and costs.

9. Further discussions and implications:

A new report from the European Commission, "Advances in cloud Expert Group Report- Future Cloud Computing," reveals that the next IT infrastructure will be exceedingly large and diverse. More and more apps are taking use of data and code outsourcing due to the growing demand for online services of all types. Better

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upkeep and accessibility [2]. Important scholarly and practical ramifications of this study's findings are provided. Both newcomers and seasoned pros in the field of information technology may benefit from the offered data and technical specifics, which can be used to double-check the smallest of details or refresh one's memory on the fundamentals. As an added bonus, the study's results may help chief executive officers and internal IT managers make informed decisions and plans for adopting and using cloud computing. This study is an improvement on prior research in that it gives a clear and comprehensive overview of cloud computing, from its definition and history to its acceptance and use in different IT industries and other businesses throughout the globe. The findings of this study add to the body of literature on cloud computing. A mechanism that allows cloud computing and its client companies to work together to find solutions quickly and avoid future incidents is needed.

15. Conclusion

Cloud computing has grown into a thriving and quickly evolving field of study in recent years. IT capabilities may be provided through cloud computing services to both big and small businesses. According to the findings, the SaaS is the most effective model in terms of scalability, data accuracy, and overall efficiency. Assurance and financial services because to the adaptability of SaaS applications. At now, the most popular cloud services are Google Apps and Zoho Office. Based on the paper's study data, it's clear that Indian businesses, and notably the major IT sectors, have made the most effective use of cloud computing, leading to the growth and development of services that can be used across a variety of sectors. We began by giving a little background on cloud computing before moving on to discuss its many forms, the industries and regions where it has found the most success, and how rapidly it has expanded since 2011. We hope that our work will inspire others to join the ongoing research and find new ways to shed light on the many questions that remain unanswered.

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