Cloud: The Future Backbone of Businesses
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Introduction

With new technologies and the rapid pace of change in video and mobile communications, businesses are finding better ways to improve the level of communication to increase their productivity and performance which is an ultimate goal of every business. Today, most B2B communication market has been significantly influenced by a series of trends such as seamless mobility and enhancement which is imbibing the consumer communication devices and application within the enterprise. Also, the impact of limited resources on businesses is making it difficult to balance the quality, cost and end-user acceptance.

Need of New Technology

With the emerging technologies and solutions arriving at our doorstep, there has been a tremulous shift in the way we communicate and connect via mobile, social and text. Now, the increasing needs of businesses are aiming to combine the scattered parts of communication (voice, video, call and text message) into single platform to reduce the complexity and cost. Also, they are finding all possible means of unified communication to accelerate their projects from any location to the experts in a minimum span. The evolution of new technology is increasing awareness among the companies about their business value and objectives to ease their computing needs and concern towards business productivity and cost-effective communication.

Dynamic Scalability

Sometimes, it’s necessary for the enterprises to include a large buffer than average computing needs, to ensure that the capacity is in place to satisfy the peak demands. The new technology provides an extra processing buffer at a low cost and without capital investment for users.

Cost Saving

Cost saving has always been the important driver. Businesses can save money on hardware and IT infrastructure cost by integrating remote workers and distributed sites into a single solution. Cost-saving in new technology is significant when IT infrastructure is treated as an operating expense.

It helps to improve the collaboration and needs of the businesses by simplifying the complex tasks of:
Types of Cloud

The practice of using virtual networks and software of remote servers on the internet which is no longer constrained by physical location has resulted in the growth of “Cloud Computing” or “Services in the Cloud”. Cloud is a type of internet based computing that relies on sharing computing resources rather than having local servers or devices to handle applications.

Cloud services can be leveraged for efficient operations with various deployment models depending on specific business requirements. There are primarily four deployment models(1):

Private Cloud

Private clouds are owned and managed by a single organisation. Data security is the biggest advantage with private cloud since the infrastructure usually resides in organisation’s premises. The IT resources that an on-premise infrastructure hosts, are still considered "cloud-based" as they are made remotely accessible to cloud consumers.

Hybrid Cloud

Hybrid cloud is a cloud which uses a combination of public cloud with the strategic use of private cloud and can be handled individually by multiple cloud service providers. It takes the advantage of public cloud to keep shared data & applications and private cloud for secured applications across data centers. For example, organisations can use a public cloud for sharing or storing data but may use a private cloud for storing critical information.

Community Cloud

Community cloud is shared by a specific group of organisations which help to reduce cost as compared to private cloud. It may be deployed on-premise or off-premise or may be managed by third party service providers or by organisations collectively.

Public Cloud

In this deployment model, services and infrastructure are owned and operated by cloud providers to various clients to offer rapid access to affordable computing resources. This model is best suited for business requirements where no large investment is required to utilize infrastructure for developing, testing and managing applications. Thus, public cloud helps to reduce Capex.
Security and Privacy Challenges for Cloud

Unlike any new technology, the adoption of cloud also brings on a new set of challenges but still its aim, potential and approach to overcome the challenges related to security and privacy is convincing many businesses to move their communication to the cloud. Here are several critical loopholes from the security and privacy point of view that are being discovered by cloud researchers and developers while inspecting and implementing the current cloud:

Security Risks

Data security is the biggest issue with cloud-based services. Data hacking and damage of business data are the primary concerns as cloud-based resources are generally shared by multiple organisations. The security risks can be lowered by using encrypted file systems, security applications. Also, by buying security hardware users can track and manage the server utilization to an optimum level.

Private Cloud

The most common challenge of cloud is location of data and servers in the cloud as the cloud technology allows the cloud servers to reside anywhere in the cloud. Thus, it becomes difficult for the enterprise to know the physical location of the server to store and access their data and applications. To overcome the challenge of data location and portability, it is important to avoid lock-in which has the potential to obstruct mobility and interoperability. Using existing technologies and techniques it is possible to handle data in the cloud to keep it accessible and ensure

What are the servicing models for Cloud?

Currently, the cloud systems typically centre on one type of cloud functionality: Software/Applications, Platform or Infrastructure.\(^2, 3, 4\):
Software as a Service (SaaS), also sometimes referred to as Service or Application Clouds provide applications / services using a cloud infrastructure, but don’t provide cloud features themselves. There is no third-party development or resources for the user, but SaaS applications can offer powerful tools right from one’s web browser. Examples: Google Docs, DropBox

Platform as a Service (PaaS), provide computational resources through a platform upon which applications and services can be developed and hosted. PaaS allows businesses to have proprietary API’s (application programming interfaces) to make applications that will run in a specific environment. Examples: Google App Engine, Facebook Apps

Infrastructure as a Service (IaaS) also referred to as Resource Clouds, provide resources as services to the user. While SaaS allows usage of cloud apps, and PaaS allows development of apps, IaaS provides infrastructure for developing, running and storing apps in cloud environments. Through IaaS, businesses can have virtually limitless storage and computing power without having any on-site hardware. Examples: Amazon S3, SQL Azure.

Considering the three service models, we can say that there are significant differences and similarities as well among these service models. It is the customer’s choice to choose which service model best suits their company needs and goals in order to use this service to its fullest potential.

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How have the businesses benefited from Cloud?

The cloud based services arose due to their intangibility and virtualization which gives companies the opportunity to access data, outsource and save the valuable resources in terms of operational and capital expenditure. Enterprises have greatly benefited from cloud based services such as cloud storage, web applications to get access of the reliable technological solution in an efficient manner. In addition, the biggest benefit of cloud based services for small businesses is to get access of the already tested software solutions and applications making their budgeting & planning easier.

Drives Business Growth and Revenues

Cloud Computing seamlessly integrates an organisation’s resources into it’s existing system.

Mostly, small businesses posses no ICT (Information and Communication Technology) infrastructure so they require reliable and fully functional ICT services in a minimum span to implement and enhance their business ideas. Cloud Computing therefore, to meet the demands of businesses and increase the productivity provides scalable and flexible solution at a foreseeable cost. Also, the young companies can reduce their hardware and software cost by using the cloud server which simultaneously provides some security mechanisms. The small businesses can also save their capital in other core activities as initially they can only access their own application such as access to their e-mail’s and software from anywhere at any time. According to the study it was predicted that by 2014, small businesses will spend almost $100 billion on Cloud Computing services.\(^5\)

In comparison with small businesses, larger companies often value security aspects higher than computing flexibility. This is because of the well established ICT departments and resources available to operate and store the data. For a company’s survival and growth, safety and security of data is of utmost importance which can be made available through cloud. Also, the unused resources can be made available to other companies via cloud which results in increasing the business revenues. Additionally, Gartner, an American IT research firm has found that by the end of 2016 more than 50% of global companies will store the customer sensitive data in the cloud.\(^6\)
Enhancement of Business Ecosystem\(^{(7)}\)

The strong alignment of Cloud Computing with the requirements of business is re-inventing the way IT can rapidly enable the business outcomes. As the cloud is the emergence of a new way of delivering the computing services, it also impacts all the features of the business ecosystem. In order to enhance the business ecosystem, IT solutions and service vendors will need to adapt their people, infrastructure and processes.

• Role of Leadership in adopting the Cloud ecosystem

The business owners now need to act as Strategic Executives in order to expedite and transform the business through innovations and improvements in modern technology adopted by the organisation. They are also expected to set certain strategic direction to guide their partners on the development and execution of cloud strategy. This will help the in-house team to focus more on technology decisions and usage of the cloud to meet the business demands rather than focusing on strategic business decisions.

• Role of Leadership in adopting the Cloud ecosystem

Use of high capacity and reliable network connection to access the cloud could be achieved by utilizing the cloud service models.

For on-premise/co-located data centres, IaaS service model is used for efficient collaboration in the cloud. Similarly, implementing, developing and hosting the applications through PaaS service model will help to reduce the cost and save the time for application development.

• Access the Cloud Through Quick Processes

The computing resources available will enable the organisation to quickly meet the business needs. The bottom line is that the businesses could rapidly deploy the scalable applications using the key features of cloud and easily balance the market needs in a nimble manner. This could lead to business productivity and development of new business models.
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Leverages the Computing Needs of the Customers

Cloud Computing and its innovative business model leads to a paradigm change for production and innovation across businesses and customer value proposition. Cloud is viewed as a means to move from Capex to Opex. Enterprises with well-established infrastructure still struggle, in offering secure solutions to their clients and how they can securely share their employee's information internally using cloud applications.

Cloud service enablers are therefore aiming to address these concerns efficiently. The critical success factors for our customers will include:

- **Trust and Security**
  This includes securing data, support and backup in large and medium-sized organisations. Cloud service providers should therefore ready to invest in providing best digital security to the customers.

- **Simplicity and Usability**
  Managing the applications with simplicity is a key differentiator for small and medium sized organisations as handling their complex application is a burden for them. Hosted or managed services can help address these issues, thus aiding the business scalability and growth.

  Also for superior customer experience, the easy to use, buy and understand services are primary factors when building the market.

Online 24-hr customer support is a must for businesses to handle critical services like communication and application issue.

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E-mail : dobig@tatatel.co.in
Cloud usage in various industries

Cloud is widely recognized as an important technology which helps to drive innovations in various sectors and offering capabilities that positively affect the IT industry. The impact of cloud would be most advantageous in certain sectors like Government, Healthcare, Education and SME’s (Small and Medium Enterprises).

Bridge the Communication Gap in Government Sectors

The adoption of cloud in government sectors will help to increase the interoperability and collaboration between various government agencies, monitor the effective government schemes, reduce the redundancy and simplify the work proficiently. It helps to build effective communication especially with the citizens living in remote parts of the country. The cloud services improved technology, applications and computing resources empowers the Central and State government to share critical information and achieve transparency at a faster pace. This results in reducing infrastructure cost. The cloud service potential has not only benefited government sectors but also millions of people.

Streamline Workflows for Healthcare Service Providers

Cloud can be leveraged in Healthcare Information Technology (HIT) to provide seamless management and access to Electronic Health Records (EHR) of patients, thus increasing access to remote locations and making health care products and quality medical services available to them. This will relieve the stakeholders from the burden of maintaining the records and enable them to focus on their core competencies.

Overcome the Challenges of Education Sectors

The adoption of cloud in education sectors helps to overcome the barriers of high cost, quality and limited reach which have become a matter of grave concern especially in remote areas. The education sector has already embraced the cloud for email services, and now, its potentiality and unique resources are moving the education system towards critical applications, such as LMS (Learning management System) and SIS (Student Information System) to make these resources readily available to all students.
Small and Medium Enterprises (SME's)

SME's are facing lot of issues with IT system and solutions due to their high upfront cost of sourcing. They are unable to take advantage of IT system because of the issues related to management in their supply chain, finances, customer relationship and human resources. The cloud might just prove to be the catalyst that will reduce the burden of SMEs by providing access on a usage based pricing model. Also, the other benefits of cloud services such as scalability, flexibility, and on-demand service help in business growth for SMEs.

Cloud usage in various industries

The cloud services’ innovative business model is leading organisations to growth and the way these services are procured and used is paramount to set clear objectives for an enterprise. These objectives span from the top of the line such as productivity gains, to the bottom line, like operational expenses.

The success stories of the legendary cloud deployments shows how the various companies using Cloud Computing have made a big jump to meet their business needs. Some of the companies that have successfully adapted Cloud Computing are:

**Netflix**

Netflix is taking advantage of cloud services and its unique resources as it meets up the demand for its Internet subscription service for movies and TV shows. Netflix grew up in the cloud, having built its very custom applications around the way in cloud. As per the survey, 33% of respondents accepted this as an advantage of cloud; greater business scalability and flexibility enables online video retailer to meet their demands.
Etsy

Etsy, an online marketplace for handmade goods, is an excellent example which characterizes a definitive milestone in the market by using cloud-based capabilities. The cost flexibility and pay-as-you-go cost structure provided through cloud allows Etsy access to tools and computing power that might only be affordable for larger retailers.

Xerox

Xerox, through its Cloud Print solution, enables the workers to get their desired content printed from anywhere by using Xerox’s cloud. This helps to access printers outside their own organization as well.

For efficient access, cloud requires a bit of data management with numerous files to be stored, converted to print-ready format and distributed to printers.

Future Growth of Cloud Computing

Through Cloud Computing, the world is experiencing a digital and mobile transformation, with more information, services and resources available more quickly in more mediums than ever before. The advent of new technologies and analytics capabilities are sweeping changes in almost every aspect of daily business and consumer life.

The biggest growth areas in cloud communication field will be for both business (hosted PBX) and residential (mobile VoIP) markets. The unified or rich communication services have the highest potential of growth in these areas. The growth of cloud communications will pick up the pace of delivery of advanced features, such as video calling and conferencing over the next few years.

As per the study, the worldwide Cloud Computing market will grow at 36% compound annual growth rate (CAGR) through 2016, reaching a market size of $19.5B by 2016. According to Gartner, the cloud is accelerating globally in the market. Based on their forecast for 2011-2017, it is expected that adoption of cloud will hit $250 billion by 2017.

Further, in the next few years more application will be available on the cloud for better future of businesses. With new software being built for cloud from the outset, it is predicted that by 2016 over a quarter of all applications (around 48 million) will be available on the cloud.
Conclusion

Cloud Computing is a breakthrough in information technology that is not only impacting the way the computing services are used and delivered but also the way in which the users will adopt Cloud Computing. Cloud is a game changing phase of IT and other industry sectors such as Government, Healthcare, SME’s and Education sectors which enables them to compete more effectively with other sectors and larger organisations.

Cloud’s cutting-edge technology and unique resources delivers affordable, reliable and flexible computing solutions to businesses but the challenges too need to be considered when planning for cloud adoption. For businesses to move to the cloud, requires a well planned strategy to gain a competitive-edge in the market. Also, the need to redefine their business models is a critical success factor in the cloud to better reflect changing trends in the use of IT and other sectors.

In a nutshell, the businesses will continue to adopt cloud in order to increase their productivity and stay ahead of the curve. Considering the recent advances and offerings in Cloud Computing, it is clear that this technology has begun to realise its potential and is here to stay with its new offerings.
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Annexure