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Converging Technologies of Cloud and Big Data

K. Kala Bharathi

Department of Computer Science,
St. Pious X Degree & P. G. College for Women,
Nacharam, Hyderabad, India-500 076

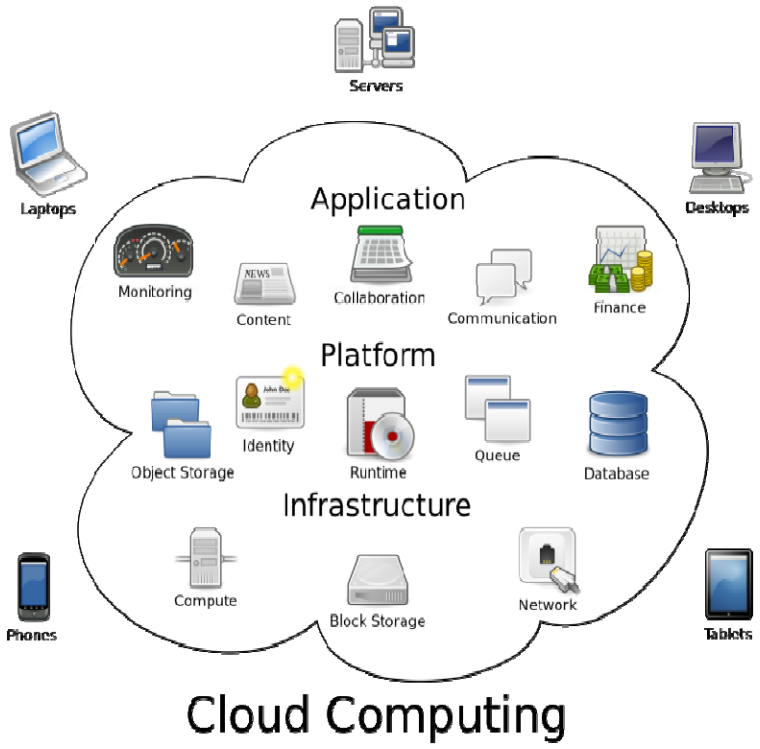
Abstract: Cloud technology is playing a vital role in present era to store and process massive amount of data, which leads to the convergence of cloud and big data. Cloud computing holds a tremendous promise of unlimited, on demand, elastic, computing and data storage resources. It has the potential to enhance business agility and productivity while enabling greater efficiencies and reducing costs. Big data environments require clusters of servers to support the tools that process the large volumes, high velocity, and varied formats of big data. It offers the promise of providing valuable insights that can create competitive advantage and also to explode new innovations. In this paper, I discussed how cloud and big data technologies are converged to improve quantitative decision making with minimal risk and to offer cost-effective delivery model for cloud-based big data analytics.

Keywords: cloud, big data, technology, analytics

1. INTRODUCTION:

1.1. Cloud Computing:

Cloud Computing technology depends on sharing of resources than having local servers or personal devices to handle the applications. In Cloud Computing, the word "Cloud" means "The Internet", so cloud computing means which performs operations or services through the Internet. The main objective of Cloud Computing is to make use of increasing computing power to execute millions of instructions per second. [1] It uses large group of servers with specialized connections to allocate data processing among the servers. By using this technology just there is a need to install single software in each computer that allows users to log into a Web-based service and which also hosts all the programs required by the user. In this system there will be a considerable workload shift and therefore, local computers no longer have to take the entire burden in running applications. Thus minimize the usage cost of computing resources [4]. The only thing that must be done at the user's part is to connect to the cloud. Cloud Computing consists of a front end and back end. The front end includes the user's computer and software required to access the cloud network. Back end consists of various computers, servers and database systems that create the cloud. The user can access applications in the cloud network from anywhere by connecting to the cloud using the Internet. Some of the real time applications which use Cloud Computing are Gmail, Google Calendar, Google Docs, etc.



1.2. Big Data

The term "Big Data" is used to describe massive volumes of structured and unstructured data that are difficult to process using traditional databases and software technologies.

The following are the properties of Big data:

a) **Volume:** Various aspects contribute towards increasing quantity flow of data.

b) **Variety:** In the present days data come up in all types of formats emails, video, audio, transactions etc.

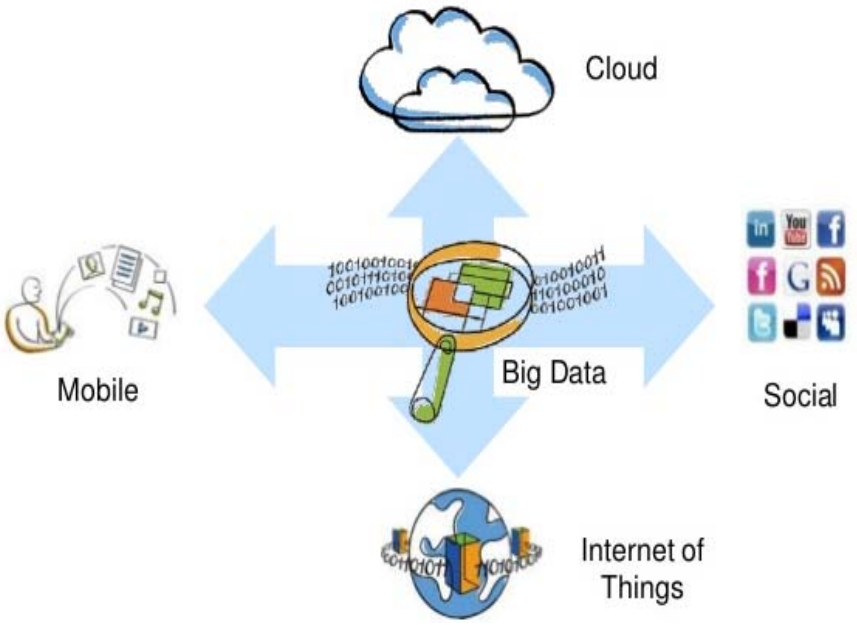
c) **Velocity:** This means how fast the data is being produced and how fast the data needs to be processed to meet the demand.[5].

d) **Variability:** Along with the Velocity, the data flows can be highly incoherent with regular peaks.

e) **Complexity:** Complexity of the data also needs to be considered when the data is coming from multiple sources. The data must be linked, matched, cleansed and transformed into required formats before actual processing.

2. CONVERGING TECHNOLOGIES OF CLOUD AND BIG DATA:

Data is becoming more valuable. Now-a-days the discussion is shifting from "What data should we store?" to "What can we do with the data?" to boost the competitiveness companies must find new approaches to processing, managing, and analyzing their data whether its structured data or more varied, unstructured formats.



2.1. Cloud technologies:

Cloud computing is becoming a reality for many businesses. Among different types of deployment models private cloud deployment model often leading the way in business.[2] Cloud technology is maturing and addressing barriers to adoption with improvements in security and data integration, while IT organizations are evolving to support cloud services delivery. As a result, businesses are demonstrating growing trust in cloud delivery models. Organizations continue to store more and more data in cloud environments, which represent an immense, valuable source of information to extract by offering business users scalable resources on demand.

2.2. Scope of big data analytics:

In the beginning day's interest in big data analytics focused first and foremost on business and social data sources, such as e-mail, videos, tweets, Facebook posts, reviews, and Web behavior. [3] But now the scope of big data analytics is growing to include data from intelligent systems, smart devices and device sensors at the boundary of networks because everywhere connectivity and the growth of sensors and intelligent systems have opened up a whole new storehouse of valuable information. By applying big data analytics to these increases richer insight to enhance machine-based decision making more cost effectively than in the past and to personalize customer experiences.

2.3. Cloud and big data:

Cloud delivery models offer incomparable flexibility, enabling IT to evaluate the best approach to each business user's request. For example, if organizations that already support an internal private cloud environment can add big data analytics to their in-house using a cloud services provider or by building a hybrid cloud to protect certain sensitive data in a private cloud. Private clouds can offer a more efficient, cost-effective model to implement analysis of big data in-house, while enhancing internal resources with public cloud services. This hybrid cloud option enables companies to use on-demand storage space and computing power via public cloud services for certain analytics initiatives like short-term projects and provide added capacity and scale as needed. While enterprises often keep their most sensitive data in-house, huge volumes of big data owned by the organization or generated by third-party and public providers may be located externally some of it already in a cloud environment. Moving relevant data sources behind the firewall can be a significant commitment of resources. Analyzing the data where it resides either in internal or public cloud data centers or in edge systems and client devices often makes more sense. Thus, cloud and big data technologies are converging to offer a cost-effective delivery model for cloud-based big data analytics.

CONCLUSION:

Cloud and big data technologies continue to evolve. Big data provided through Cloud is an absolutely necessary trait for today's businesses to make proactive, knowledge driven decisions, as it helps them have future trends and behaviors predicted. As data is growing every day, the ability of integrating big data in cloud has potential for elasticity, scalability, deployment time, and reliability by offering a cost-effective delivery model.

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