# REVIEW PAPER ON CLOUD COMPUTING

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*Abstract*—Abstract—Cloud computing is a new paradigm for delivering remote computing resources through a network. However, achieving an energy-efficiency control and simultaneously satisfying a performance guarantee have become critical issues for cloud providers. In this paper, three power-saving policies are implemented in cloud systems to mitigate server idle power. The challenges of controlling service rates and applying the N-policy to optimize operational cost within a performance guarantee are first studied. A cost function has been developed in which the costs of power consumption, system congestion and server start-up are all taken into consideration. The effect of energy-efficiency controls on response times, operating modes and incurred costs are all demonstrated. Our objectives are to find the optimal service rate and mode-switching restriction, to minimize cost within a response time guarantee under varying arrival rates. An efficient green control (EGC) algorithm is first proposed for solving constrained optimization problems and making costs/performances trade off in systems with different power-saving policies. Simulation results show that the benefits of reducing operational costs and improving response times can be verified by applying the power-saving policies combined with the proposed algorithm as compared to a typical system under a same performance guarantee.

Big data analytics is the processing of the huge volume of data that has resulted from our day to-day digitalization. It is basically the use of advanced analytic and parallel techniques to process very large records that include different types of contents. On one hand, big data analytics represents big opportunity for many industries and decision makers but on the other hand, it also represents a big risk for many users. This risk arises from the fact that these analytics tool consist of storing, managing and efficiently analysing varied data gathered from all possible sources. The consequence is that it is possible to collect more data than it should have which leads to many security and privacy violations. Privacy and security of these collected records are of very high importance and high priority.

Healthcare organizations use big data analytics to transform data into actionable information by producing data-driven insights to smarter business and clinical decisions like reducing readmissions, cut hospital-contracted conditions, identifying and eliminating waste, improved clinician workflow etc. Both Proactive and Reactive analytics can be done for Healthcare data by extracting, analysing and presenting the relevant information from big data. Big data in healthcare consists of a) Structured data like insurance details, electronic health records etc. b) Unstructured data like treatment data, research data, treatment procedures, social networking, emails, chats, SMS, blogs, mobile data etc.
c) Sensor data medical research data, tele-health, scans, images etc.

Big data and analytics are some of the most effective defences against cyber intrusions. Better, faster, actionable security information reduces the critical time from detection to remediation,

enabling cyber warfare specialists to proactively defend and protect your network. The age of big data and cyber security is here. And that means both opportunity and risk for most businesses. If you are in the cyber security field you are likely very familiar with big data, which is the term used to describe a very large data set that is mined and analysed to find patterns and behavioural trends. It is generally defined as being dense in variety, velocity and volume. From a cyber security standpoint big data has ushered in new possibilities in terms of analytics and security solutions to protect data and prevent future cyber-attacks. But just as big data has opened new possibilities for cyber security teams, it has also given cyber criminals the opportunity to access mass quantities of sensitive and personal information using advanced technologies.

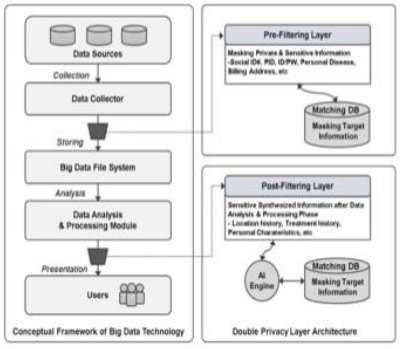


Fig. 2. Data travelling from sources to users

## I. ADVANTAGES

1)Fraud detection is one of the most visible uses for Cloud analytics: credit card and phone companies have conducted large-scale fraud detection for decades; however, the custom-built infrastructure necessary to mine big data for fraud detection wasn't economical enough to have wide-scale adoption. One of the main impacts from big data technologies is that they're facilitating a wide variety of industries to build affordable infrastructures for security monitoring.

2)Readmissions: Understand the clinical and nonclinical factors that affect readmissions and prevent avoidable readmissions in the most appropriate and cost-effective ways.

3)Health outcomes: Analyse huge volumes of structured and unstructured clinical and operational data to uncover hidden insights on indications, patient/provider concerns and other issues that can affect patient care. Then turn that insight into evidence-based knowledge that can help you predict and improve outcomes.

4)One of the most critical privacy aspects is the quality or accuracy of the data and how an enterprise uses it might, negatively, affect an individual in decisions that are made. If we know the challenges, we can overcome them easily.

5)With more transactions, conversations, interactions and data now online, the incentives for cybercriminals have never been better.

## II. DISADVANTAGES

1)Advances in cloud computing analytics have given us tools to extract and correlate this data, making privacy violations easier. Therefore, we must develop big data applications with an understanding of privacy principles and recommendations. 2)Healthcare organizations can take some steps today to ensure better security of big data. Big data runs on open source technology with inconsistent security technology. To avoid big problems, organizations should be selective about big data vendors and avoid assuming that any big data distribution they select will be secure.

3)There is concern that big data could make patents harder to obtain because patent offices will not be able to verify if a submitted patent is unique since there will be too much data to check through within all the growing no. of big data repositories. 4)Big data have many threats like- Protecting sensitive and personal information, data rights and ownership and not having the talent (i.e. data scientists) to analyse the data.

## III. INFERENCES

TABLE I

TYPES OF ANALYSIS WITH THEIR PERFORMANCE

| SOLUTIONS | PERFORMANCE (In percentage) |
|---|---|
| Root cause analysis | 90 |
| Pathway analysis | 85 |
| Application discovery | 98 |
| Data leakage discovery | 70 |
| Insider threat analysis | 75 |

TABLE II

CHALLENGES WITH THEIR PERCENTAGE

| CHALLENGES | PERCENTAGE |
|---|---|
| Infrastructure security | 90 |
| Data privacy | 95 |
| Data management | 80 |
| Integrity and Reactive security | 90 |

## IV. FUTURE WORK

1)Securely authenticate who is coming into the network.

2)Only the data, which is needed, should be extracted. This will prevent privacy violation. 3)Get to know the exact location of storage and processing which will avoid many security problems and regulation breaches.

4)Prevent the system from any attempt to spy on it. Ensure the validity and trust level of data while relying on a suspect or compromised record. 5)New secure network protocols should be adopted in order to protect interactions between different parties, which in turn will prevent modification, and extraction of valuable information.

6)Any modification in clusters? state such as addition or deletion of nodes should be monitored by an authentication mechanism to protect the system from malicious nodes.

7)Future innovations in health IT, big data in particular, will focus on the aggregation and transformation of patient data into actionable knowledge that can improve patient and financial outcomes. 8)Security in healthcare needs to come a long way to get up to speed in innovation and connectivity. 9)Tracking consumer behaviour and sharing them with third party without proper authorization for targeting and other purposes.

## V. CONCLUSION

Cloud computing has been envisioned as the next generation architecture of IT enterprise. Cloud Computing moves the application software and data bases to the large data centres, where the management of the data and services may not be fully trustworthy.

The growing crisis in power shortages has brought a concern in existing and future cloud system designs. To mitigate unnecessary idle power consumption, three power-saving policies with different decision processes and mode-switching controls are considered. Our proposed algorithm allows cloud providers to optimize the decision-making in service rate and mode-switching restriction, so as to minimize the operational cost without sacrificing a SLA constraint. The issue of choosing a suitable policy among diverse power managements to reach a relatively high effectiveness has been examined based on the variations of arrival rates and incurred costs.

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