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Wearable Technology Orientation using Cloud Computing for Improving Quality of Human Life

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Abstract: Many industries, such as banking, healthcare and education are moving towards the cloud due to the efficiency of services provided by the pay-per-use pattern based on the resources such as processing power used, transactions carried out, bandwidth consumed, data transferred, or storage space occupied etc. In a cloud computing environment, the entire data presides over a set of networked resources, enabling the data to be accessed through virtual machines. In proposed system many advantage like accessing the home page before we request the admin for key generation once admin generate the key then they send it by mail id the user can get the key from the mail and apply the required place, if the which is generated by admin is correct means the home page will open otherwise it will shows wrong message, Upload the image with encryption and store in the database, in admin side the admin will decrypt the image, the other user can view the data if admin decrypt the data otherwise it can't showed the image. Data sharing the data from one user to another user with encryption technique as well as non-encryption techniques.

Keywords: Wearable Technology, Big data, Hadoop, Map reduce and Cloud Computing.

I. INTRODUCTION

Hadoop, the open source implementation of the map reduce programming model is increasingly popular in big data analytics due to its fault tolerance, simplicity of use and the scalability to large clusters. however, studies have shown that current use of hadoop in enterprises and research stay in an ad hoc manner, leaving advanced features underused potential performance unexploited and resources in hadoop clusters inefficiently utilized. in particular, load imbalance among hadoop tasks poses significant challenges to achieving good performance and high resource utilization. skew that could come from uneven data distribution or non-uniform data processing cost creates stragglers, tasks that runs significantly slower than others. such sluggish tasks can take more than five times longer to complete than the fastest task slowing the overall job completion. to address hardware failure and mis configuration, hadoop speculatively runs a backup copy of a slow task on a different machine. besides fault-tolerance, speculative execution is able to expedite stragglers due to skew to a certain extent as the backup copy may run on a better performing machine. however, the differences in machines are not significant enough to mitigate skew and job performance is still bottlenecked by stragglers. although skew can be eliminated by using customized and job specific data partitioners for balancing workload among tasks this approach requires domain knowledge on the structure of input data and imposes burdens on users. to this end, researchers proposed to mitigate skew by dynamically re-partitioning data during job execution. nevertheless, re-distributing data at runtime introduces overhead of moving data between machines. more importantly, re-distributing data is not very effective for map tasks since the data distribution is unknown prior execution.

II. CLOUD COMPUTING: OVERVIEW

In simple words, Cloud Computing is the combination of a technology, platform that provides hosting and storage service on the Internet [14].In such an environment users need not own the infrastructure for various computing services. In fact, they can be accessed from any computer in any part of the world. This integrates features supporting high scalability and multi-tenancy, offering enhanced flexibility in comparison to the earlier existing computing methodologies. It can deploy, allocate or reallocate resources dynamically with an ability to continuously monitor their performance [27]. Moreover, cloud computing minimizes the capital expenditure. This approach is device and user-location independent. Main goal of the cloud computing is to provide scalable and inexpensive on-demand computing infrastructures with good quality of service levels [18]. Cloud Computing is a general term for anything that involves delivering hosted services over the Internet. Instead of a static system architecture, Cloud Computing supports the ability to dynamically scale up and quickly scale down, offering cloud consumers high reliability, quick response times, and the flexibility to handle traffic fluctuations and demand [22]. Cloud Computing also supports multi tenancy, providing systems configured in such a way that they can be pooled to be shared by many organizations or individuals [8]. Virtualization technology allows cloud vendors to convert one server into many virtual machines, thereby eliminating client-server computing with single-purpose systems [17]. This maximizes hardware capacity and allows

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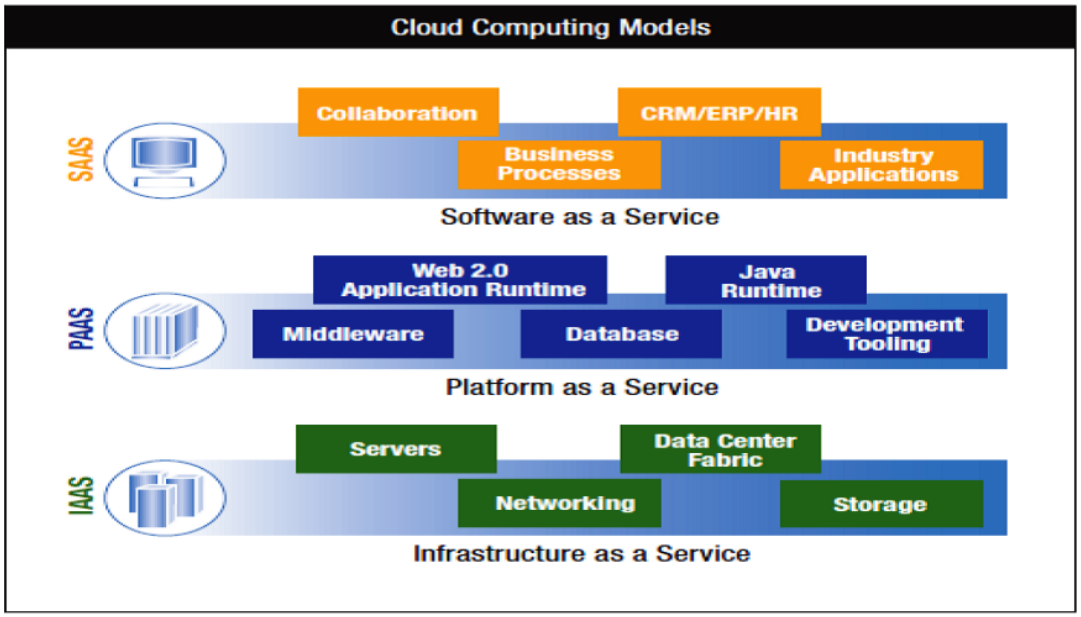
customers to leverage economies of scale [22]. Benefits of Cloud computing are enormous. The most important one is that the customers don't need to buy the resource from a third party vendor, instead they can use the resource and pay for it as a service thus helping the customer to save time and money. Cloud is not only for Multinational companies but it's also being used by small and medium enterprises.

III. FIVE ESSENTIAL CHARACTERISTICS OF CLOUD-COMPUTING

1) On-demand Self-Service: The consumer should be able to change the provisioned computing capabilities like number of cloud clusters and online storage unilaterally, without the intervention of human service provider.
2) Broad Network Access: Cloud services should be easily available through standard Internet mechanisms on all kinds of devices like mobiles, desktops, laptops, workstations etc.
3) Resource Pooling: It must be able to serve multiple consumers concurrently in location-independent way from same physical resources which are separated on logical level in a secure manner.
4) Rapid Elasticity: Resources should be provisioned and released on demand, and at any point of time, the consumer should have exactly the amount of resources he needs for his product. In essence, consumer should be able to scale up and down the resources, remove or add users, provision for more machines or storage in a seamless manner, and to him the resources should seem to be infinite, any amount of which can be provisioned at any point of time.
5) Measured Service: Cloud services should follow the pay-as-you-go pricing model. All consumption and usage of cloud resources should be monitored, logged and reported to consumer accordingly, and controlled from both sides under some agreement. A user should only be charged for what he used and also if there are limits on usage per user, it is the responsibility of service provider that such limits are not breached under normal circumstances.



IV. RESEARCH CHALLENGES IN CLOUD COMPUTING

Service Level Agreements (SLA's): Cloud is administrated by service level agreements that allow several instances of one application to be replicated on multiple servers if need arises; dependent on a priority scheme, the cloud may minimize or shut down a lower level application. A big challenge for the Cloud customers is to evaluate SLAs of Cloud vendors. Most vendors create SLAs to make a defensive shield against legal action, while offering minimal assurances to customers. So, there are some important issues, e.g., data protection, outages, and price structures that need to be taken into account by the customers before signing a contract with a provider [15].

Cloud Data Management: Even for a virtual private cloud, the service provider can only specify the security setting remotely, without knowing whether it is fully implemented. The infrastructure provider, in this context, must achieve the objectives like confidentiality, auditability. Confidentiality, for secure data access and transfer, and auditability, for attesting whether security setting of applications has been tampered or not. Confidentiality is usually achieved using cryptographic protocols, whereas auditability can be achieved using remote attestation techniques. However, in a virtualized environment like the clouds, VMs can dynamically migrate from one location to another; hence directly using remote attestation is not sufficient. In this case, it is critical to build trust mechanisms at every architectural layer of the cloud.

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Data Encryption: Encryption is a key technology for data security. Understand data in motion and data at rest encryption. Remember, security can range from simple (easy to manage, low cost and quite frankly, not very secure) all the way to highly secure (very complex, expensive to manage, and quite limiting in terms of access). You and the provider of your Cloud computing solution have many decisions and options to consider. For example, do the Web services APIs that you use to access the cloud, either programmatically, or with clients written to those APIs, provide SSL encryption for access, this is generally considered to be a standard. Once the object arrives at the cloud, it is decrypted, and stored. Is there an option to encrypt it prior to storing? Do you want to worry about encryption before you upload the file for cloud computing or do you prefer that the cloud computing service automatically do it for you? These are options, understand your cloud computing solution and make your decisions based on desired levels of security.

Migration of Virtual Machines: Applications are not hardware specific; various programs may run on one machine using virtualization or many machines may run one program. Virtualization can provide significant benefits in cloud computing by enabling virtual machine migration to balance load across the data center. In addition, virtual machine migration enables robust and highly responsive provisioning in data centers. Virtual machine migration has evolved from process migration techniques. More recently, Xen and VMWare have implemented ―live‖ migration of VMs that involves extremely short downtimes ranging from tens of milliseconds to a second. The major benefit of VM migration is to avoid hotspots; however, this is not straightforward. Currently, detecting workload hotspots and initiating a migration lacks the agility to respond to sudden workload changes.

Interoperability: This is the ability of two or more systems work together in order to exchange information and use that exchanged information. Many public cloud networks are configured as closed systems and are not designed to interact with each other. The lack of integration between these networks makes it difficult for organizations to combine their IT systems in the cloud and realize productivity gains and cost savings. To overcome this challenge, industry standards must be developed to help cloud service providers design interoperable platforms and enable data portability. Organizations need to automatically provision services, manage VM instances, and work with both cloud-based and enterprise-based applications using a single tool set that can function across existing programs and multiple cloud providers.

Access Controls: Authentication and identity management is more important than ever. And, it is not really all that different. What level of enforcement of password strength and change frequency does the service provider invoke? What is the recovery methodology for password and account name? How are passwords delivered to users upon a change? What about logs and the ability to audit access? This is not all that different from how you secure your internal systems and data, and it works the same way, if you use strong passwords, changed frequently, with typical IT security processes, you will protect that element of access.

Energy Resource Management: The goal is not only to cut down energy cost in data centers, but also to meet government regulations and environmental standards. Designing energy-efficient data centers has recently received

considerable attention. This problem can be approached from several directions. For example, energy efficient hardware architecture that enables slowing down CPU speeds and turning off partial hardware components has become commonplace. Energy-aware job scheduling and server consolidation are two other ways to reduce power consumption by turning off unused machines. Recent research has also begun to study energy-efficient network protocols and infrastructures. A key challenge in all the above methods is to achieve a good trade-off between energy savings and application performance.

Multi-tenancy: There are multiple types of cloud applications that users can access through the Internet, from small Internet-based widgets to large enterprise software applications that have increased security requirements based on the type of data being stored on the software vendor's infrastructure. These application requests require multi-tenancy for many reasons, the most important is cost. Multiple customers accessing the same hardware, application servers, and databases may affect response times and performance for other customers. For application-layer multi-tenancy specifically, resources are shared at each infrastructure layer and have valid security and performance concerns.

V. CONCLUSION

Cloud Computing, envisioned as the next generation architecture of IT Enterprise is a talk of the town these days. The way cloud has been dominating the IT market, a major shift towards the cloud can be expected in the coming years. Cloud computing offers real benefits to companies seeking a competitive edge in today's economy. The storing and maintaining the data from hackers is the difficult thing, they can't hide the data manually and so many problem were occurred while maintain the data in the database, sometimes data may be crashed because of irresponsible behaviors of data maintenance, so the user can face many problems in storing and retrieving the data's and information's. Normally the other user can view the data easily because there is no security in viewing the data's so the user can access the others data's without admin knowledge. many advantage like accessing the home page before we request the admin for key generation once admin generate the key then they send it by mail id the user can get the key from the mail and apply the required place, if the which is generated by admin is correct means the home page will open otherwise it will shows wrong message, Upload the image with encryption and store in the database, in admin side the admin will decrypt the image, the other user can view the data if admin decrypt the data otherwise it can't showed the image. data sharing the data from one user to another user with encryption technique as well as non-encryption techniques.

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