Security issues and associated mitigation techniques information technology essay...

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Cloud computing is a new technology model for enabling convenient, on-demand access to a shared computing resources such as networks, servers, storage, application and services which eliminates the requirements of setting up a huge cost involved infrastructure for IT solutions that a industry needs. It gives a flexible and a non-standard architecture yet easily accessible through internet from any computing device. Cloud allows multifold increase of storage capacity and capable of accessing any kind and any source of data from the existing or new software. It is one of its state of the art architecture that the entire data presides over a set of networked resources. These network enabled resources enables the data accessing through virtual machines. Hence, the data centres may locate in any part of the world out of reach and control of users. But, one has to understand that various issues need to be understood before getting into a new technology of architectural framework. There needs to be addressed a variety of sensitive security issues along with the privacy in a cloud-based environment. This widespread paper aims in elaborating and analyzing the numerous non-resolved issues which are threatening the overall architecture of cloud computing adoption and diffusion affecting stake holders connected with it. INTRODUCTIONCloud is a visible gathering of a huge amount of information at a particular place. Recently, many new technologies has been arising everyday for the access of data over the internet from a specific location. Perhaps, Cloud Computing is the most discussed among all of them. In the last few years of technological era, the cloud computing protocol has witnessed a massive shift to its adaption. This has become the trend in the information technology as its guarantee the overall cost reduction and new

business potential for all users and providers. Cloud computing has its own specific characteristics that distinguish it from traditional resource management and service provisioning environments: i) it is more scalable, ii) it provides an infrastructure for platform for application, iv) cost effective, v) major cloud service providers already invested in large scale to exploit it, vi) non-agreed interfaces, vii) provides data centres for outsourcing, viii) has security as a major concern if a business shifts its expensive data, information or knowledge for its outsourcing, ix) has huge risks in terms of business continuity depending on cloud – where there are many examples of failures of industry giant companies, x) limitations in data shipping over the speed allocated or availabilityThere are plenty of definitions given explaining about cloud computing as it is a model for enabling omnipresent, more convenient, on-demand accessible that can be easily provisioned and upgraded with minimal manageable effort or service provide interactions needed. If this is the point of architecture, the users need not have to be worried about the infrastructure. This integrated feature supports high scalability and enhanced flexibility when compared to early existed computing methodologies. Cloud can be easily able to allocate, reallocate or deploy resources with dynamism with an increased ability to monitor continuously their speedy performance. TAXONOMY OF CLOUD, ITS CHARACTERISTICS AND BENEFITSCloud computing has been broadly classified based on the services and the deployment models. According to the different types of services offered to the users, cloud can be considered into three different layers. Infrastructure as a Service (IaaS) – the lowest layer which provides the basic infrastructure support platformPlatform as a

Service (PaaS) – the middle layer which offers platform oriented services along with the environment for user application hostingSoftware as a Service (SaaS) – the topmost layer which is the complete application that offers service on demand. Software as a Service (SaaS) ensures whether the overall application is hosted on the internet for users use. This application model payment can be utilized as we go, payperuse model. SaaS eliminated the installation need and running an application on a desktop or a users system which can be also be a local computer. Thus, it alleviates the customers burden for maintaining a software locally. There is a Divided Cloud and Convergence coherence mechanism where each and every data item may be ' Read Lock' or ' Write Lock' protected. Saas uses two types of servers: Main Consistence Server (MCS)Domain Consistence Server (DCS)The coherence can be achieved by the mutual aid of these two servers. If MCS gets damaged, the overall users control over the cloud will be lost. Hence, huge security has be given of much importance for this main consistence server and it is of great importance. Platform as a Service (PaaS) approach is a software executing application environment. In a PaaS application server, the developer can deploy the web-based applications. The user doesn't need to buy the actual server(s) for setting them. PaaS aims to secure the data on its server only if it is storage as a service. Thus, in congestion, there always a problem of outage which has to given of much importance to ensure balanced service. Every time, the data has to be encrypted during hosting for security reasons. Hence, cloud uses multiple cryptographic techniques and our paper proposed a cryptographic cloud storage. Infrastructure as a Service (IaaS) is sharing all hardware resources for executions. Especially,

using virtualization technology. Prospectively, with IaaS model, several users access available resources on the server. These resources can be easily scaled on demand from the user. The charges are based on pay-per-use basis. IaaS are entirely the virtual machines that needs to be handled. A managed framework is necessary to control the access of these virtual machines. Thus, it helps to achieve uncontrolled access to users data. DEPLOYMENT TYPESClouds may be hosted and employed into different styles according to the use, but especially depends on the type of business model. They major deployed categories are as follows: Public Cloud: A third party will be managing the cloud infrastructure consists of many customers. Many number of users from multiple enterprise can work on the provided infrastructure at the same time. Users can access to their resources dynamically providing resources over the internet from a remote service provider. Users need not have to pay for the data which was not used or wasted. Private Cloud: This type of is only available to a specific customer and administered either by the organization or a third party service provider. Private cloud uses the virtualization machine concept since it is a and is a owner network. Community cloud: This type of infrastructure will be shared by multiple organizations for a grouped task may be supervised by themselves or a third party service provider. Hybrid Cloud: Hybrid cloud is a composition of two or more cloud deployment models. The data transferring will takes place between the multiple users without affecting each other. As the technological advancement keeps growing, the cloud deployment models emerge everyday to support and compete with the emerging need and demand, depending upon the users requirements. Along with the

materialization of high-end network accessing technologies such as 2G, 3G and wi-fi, and android mobile phones, cloud computing is getting a turn-around to its new faces of interfaces in its environment. This in order, coined to the term ' Mobile Cloud Computing (MCC)' where MCC is a composition of mobile technology with cloud computing interface. And, to the interest, it is becoming a trend nowadays that many MNC's and major organizations are likely providing their data accessing through employees mobile devices when they are at office through office network. The surfacing of HTML5 and other browser development technology tools have increased the demand in market for mobile cloud computing. And, thus the advanced feature facility providing phone adoption is ramping up in the market. The earlier computing technology paradigms such as Internet computing and Grid Computing had now been put apart in front of Cloud Computing, is a distinguished feature of itself for its on demand service. A few techniques that adds privilege to cloud computing are: Virtualization: The underlying concept for the base for emergence of Cloud Computing in this technology era is the Virtualisation. The key term refers to an environment that provides all the services supported by hardware's that a local computer encompass with it. Virtualization can be categorized into three forms which are under existence: Server virtualizationStorage virtualization andNetwork virtualizationThese have relentlessly piloted to the fruition of Cloud computing. For example: Many physical servers which are underutilized may be a number of underutilized physical servers may be combined to a small number of servers of better utilization. Web Service and SOA: The web technologies such as XML, WSDL, SOAP, etc., are used to provide service over the web.

The cloud is managed internally by a service oriented architecture (SAS). Hence, we call SOA as the controller over a managed multiple server. Application Programming Interface (API): Without APIs it is hard to imagine the existence of cloud computing. The whole bunch of cloud services depend on APIs and allow deployment and configuration through them. Based on the API category used viz. control, data and application, different functions of APIs are invoked and servicesare rendered to the users accordingly. Web 2. 0 / Mash-up: Web 2. 0 is a technology that is used to create web pages and allows users to interact over a virtual network. It acts as a collaborative platform on the World Wide Web technology. The new web application called the Mash-up combines data from multiple source to a single online integrated storage area. These are the major technologies that made many multi-national corporations to let them avail free from storing and accessing data and entered into a hassle free world of virtualization. Few prominent clouds are: Salesforce. comRightScaleGoogleMicrosoft Windows-AzureSimpleDBSun MicrosystemsS3 (Simple Storage Service)CF (Cloud Front)Amazon-EC2 (Elastic Compute Cloud)WorkdayEach of the above are categorized either under one of the three main classification of cloud structure: private, public and hybrid. Each has its own limitations and delimitations.