iJRASET
International Journal For Research in Applied Science and Engineering Technology



INTERNATIONAL JOURNAL FOR RESEARCH

IN APPLIED SCIENCE & ENGINEERING TECHNOLOGY

Volume: 2 **Issue:** IX **Month of publication:** September 2014

DOI:

www.ijraset.com

Call: 08813907089 | E-mail ID: ijraset@gmail.com

ISSN: 2321-9653

INTERNATIONAL JOURNAL FOR RESEARCH IN APPLIED SCIENCE AND ENGINEERING TECHNOLOGY (IJRASET)

Cloud Computing: Its Advantages and Security Issues

Mandisha Sharma[1], Manish Sharma[2],Mansi Kakkar[3]

[1,2,3]*B.Tech(Student)Department Of Applied Science, Dronacharya College Of Engineering, Gurgaon*

Abstract: Cloud computing is the technology which getting attention in these days due is low-cost, flexibility and independence of the hardware and software. There are lots activities and advantages in this area but still there are many concerns about cloud computing that its speeds down the momentum of this technology as a new future. In the paper we will characterize whereas concerns, effects on the clients adopting the technology, how its adoption advantageous to whereas concerns,effects on the clients adoptingthe technology, how its adoption advantageous to whereas enterprise and users by providing an isolation from the software. Also we will discuss the legal issue regarding the same.

Keywords: Cloud computing, Data centre, Data protection, Legal liabilities.

I. INTRODUCTION

When you store your photos online instead of on your home computer, or use webmail or a social networking site, you are using a “cloud computing” service. If you are an organization, and you want to use, for example, an online invoicing service instead of updating the in-house one you have been using for many years, that online invoicing service is a “cloud computing” service.

Cloud computing refers to the delivery of computing resources over the Internet. A common understanding of “cloud computing” is continuously evolving, and the terminology and concepts used to define it often need clarifying.Instead of keeping data on your own hard drive or updating applications for your needs, you use a service over the Internet, at another location, to store your information or use its applications. Doing so may give rise to certain privacy implications.

This white paper introduces internet-based cloud computing, exploring the characteristics, service models, and deployment models in use today, as well as the benefits and challenges associated with cloud computing. Also discussed are the communications services in the cloud (including ways to access the cloud, such as web APIs and media control interfaces) and the importance of scalability and flexibility in a cloud-based environment.

Also noted for businesses desiring to start using communication services, are the interface choices available, including Web 2.0 APIs, media control interfaces, Java interfaces, and XML based interfaces, catering to a wide range of application and service creation developers

II. CLOUD COMPUTING

The term "cloud" is analogical to "internet". Cloud computing is a model for enabling convenient, on-demand network access to a shared pool of configurable computing resources (e.g., networks, servers, storage, applications, and services) that can be rapidly provisioned and released with minimal management effort or service provider interaction.

Cloud computing is the delivery of computing services over the Internet. Cloud services allow individuals and businesses to use software and hardware that are managed by third parties at remote locations. Examples of cloud services include online file storage, social networking sites, webmail, and online business applications. The cloud computing model allows access to information and computer resources from anywhere that a network connection is available. Cloud computing provides a

IJRASET: ISSN: 2321-9653 Volume II, Issue IX, September 2014

shared pool of resources, including data storage space, networks, computer processing power, and specialized corporate and user applications.

Many companies are delivering services from the cloud. Some notable examples as of 2010 include the following:

• Google — Has a private cloud that it uses for delivering many different services to its users, including email access, document applications, text translations, maps, web analytics, and much more. • Microsoft — Has Microsoft® Sharepoint® online service that allows for content and business intelligence tools to be moved into the cloud, and Microsoft currently makes its office applications available in a cloud.

• Salesforce.com — Runs its application set for its customers in a cloud, and its Force.com and Vmforce.com products provide developers with platforms to build customized cloud services.

2.1 Characteristics Cloud computing has a variety of characteristics, with the main ones being:

The characteristics of cloud computing include on-demand self service, broad network access, resource pooling, rapid elasticity and measured service. On-demand self service means that customers (usually organizations) can request and manage their own computing resources. Broad network access allows services to be offered over the Internet or private networks. Pooled resources means that customers draw from a pool of computing resources, usually in remote data centres. Services can be scaled larger or smaller; and use of a service is measured and customers are billed accordingly.

• Shared Infrastructure — Uses a virtualized software model, enabling the sharing of physical services, storage, and networking capabilities. The cloud infrastructure, regardless of deployment model, seeks to make the most of the available infrastructure across a number of users. • Dynamic Provisioning — Allows for the provision of services based on current demand requirements. This is done automatically using software automation, enabling the expansion and contraction of service capability, as needed. This dynamic scaling needs to be done while maintaining high levels of reliability and security.

• Network Access — Needs to be accessed across the internet from a broad range of devices such as PCs, laptops, and mobile devices, using standards-based APIs (for example, ones based on HTTP). Deployments of services in the cloud include everything from using business applications to the latest application on the newest smartphones. • Managed Metering — Uses metering for managing and optimizing the service and to provide reporting and billing information. In this way, consumers are billed for services according to how much they have actually used during the billing period.

2.2 Service models

Once a cloud is established, how its cloud computing services are deployed in terms of business models can differ depending on requirements. The primary service models being deployed (see Figure 1) are commonly known as:

• Software as a Service (SaaS) — Consumers purchase the ability to access and use an application or service that is hosted in the cloud. A benchmark example of this is Salesforce.com, as discussed previously, where necessary information for the interaction between the consumer and the service is hosted as part of the service in the cloud.

Also, Microsoft is expanding its involvement in this area, and as part of the cloud computing option for Microsoft® Office 2010, its Office Web Apps are available to Office volume licensing customers and Office Web App subscriptions through its cloud-based Online Services.

• Platform as a Service (PaaS) — Consumers purchase access to the platforms, enabling them to deploy their own software and applications in the cloud. The operating systems and network access are not managed by the consumer, and there might be constraints as to which applications can be deployed. • Infrastructure as a Service (IaaS) — Consumers control and manage the systems in terms of the operating systems, applications, storage, and network connectivity, but do not themselves control the cloud infrastructure.

Also known are the various subsets of these models that may be related to a particular industry or market. Communications as a Service (CaaS) is one such subset model used to describe hosted

IJRASET: ISSN: 2321-9653 Volume II, Issue IX, September 2014

IP telephony services. Along with the move to CaaS is a shift to more IP-centric communications and more SIP trunking deployments. With IP and SIP in place, it can be as easy to have the PBX in the cloud as it is to have it on the premise. In this context, CaaS could be seen as a subset of SaaS.

2.3 Deployment Models

Deploying cloud computing can differ depending on requirements, and the following four deployment models have been identified, each with specific characteristics that support the needs of the services and users of the clouds in particular ways (see Figure 2).

• Private Cloud — The cloud infrastructure has been deployed, and is maintained and operated for a specific organization. The operation may be in-house or with a third party on the premises.

• Community Cloud — The cloud infrastructure is shared among a number of organizations with similar interests and requirements. This may help limit the capital expenditure costs for its establishment as the costs are shared among the organizations. The operation may be in-house or with a third party on the premises.

• Public Cloud — The cloud infrastructure is available to the public on a commercial basis by a cloud service provider. This enables a consumer to develop and deploy a service in the cloud with very little financial outlay compared to the capital expenditure requirements normally associated with other deployment options.

• Hybrid Cloud — The cloud infrastructure consists of a number of clouds of any type, but the clouds have the ability through their interfaces to allow data and/or applications to be moved from one cloud to another. This can be a combination of private and public clouds that support the requirement to retain some data in an organization, and also the need to offer services in the cloud.

III. BENEFITS OF CLOUD COMPUTING

Cloud computing offers your business many benefits. It allows you to set up what is essentially a virtual office to give you the flexibility of connecting to your business anywhere, any time. With the growing number of web-enabled devices used in today's business environment (e.g. smartphones, tablets), access to your data is even easier. There are many benefits to moving your business to the cloud:

3.1 Reduced IT costs

Moving to cloud computing may reduce the cost of managing and maintaining our IT systems.Basically Reduce capital costs. There's no need to spend big money on hardware, software or licensing fees.

Rather than purchasing expensive systems and equipment for our business, we can reduce our costs by using the resources of our cloud computing service provider. we may be able to reduce our operating costs because:

- the cost of system upgrades, new hardware and software may be included in our contract
- we no longer need to pay wages for expert staff
- our energy consumption costs may be reduced
- thereare fewer time delays.

3.2 Scalability

Our business can scale up or scale down our operation and storage needs quickly to suit our situation, allowing flexibility as our needs change. Rather than purchasing and installing expensive upgradesourself, our cloud computer service provider can handle this for you. Using the cloud frees up our time ,so we can get on with running our business.

3.3 Business continuity

Whether you experience a natural disaster, power failure or other crisis, having your data stored in the cloud ensures it is backed up and protected in a secure and safe location. Being able to access your data again quickly allows you to conduct business as usual, minimizing any downtime and loss of productivity.

3.4 Collaboration efficiency

IJRASET: ISSN: 2321-9653 Volume II, Issue IX, September 2014

ISSN: 2321-9653

Collaboration in a cloud environment gives your business the ability to communicate and share more easily outside of the traditional methods. If you are working on a project across different locations, you could use cloud computing to give employees, contractors and third parties access to the same files. You could also choose a cloud computing model that makes it easy for you to share your records with your advisers (e.g. a quick and secure way to share accounting records with your accountant or financial adviser). Stay within budget and ahead of completion cycle times.

3.5 Flexibility of work practices

Cloud computing allows employees to be more flexible in their work practices. For example, you have the ability to access data from home, on holiday, or via the commute to and from work (providing you have an internet connection). If you need access to your data while you are off-site, you can connect to your virtual office, quickly and easily.

3.6 Access to automatic updates

Access to automatic updates for your IT requirements may be included in your service fee. Depending on your cloud computing service provider, your system will regularly be updated with the latest technology. This could include up-to-date versions of software, as well as upgrades to servers and computer processing power. You have access anytime, anywhere, making your life so much easier!

3.7 Achieve economies of scale

Increase volume output or productivity with fewer people. Your cost per unit, project or product plummets.

3.8 Reduce spending on technology infrastructure

Maintain easy access to your information with minimal upfront spending. Pay as you go based on demand.

People worldwide can access the cloud, provided they have an Internet connection.

3.9 Streamline processes

Get more work done in less time with less people.

3.10 Less Globalize your workforce on the cheappersonnel training is needed

It takes fewer people to do more work on a cloud, with a minimal learning curve on hardware and software issues.

3.11 Minimize licensing new software

Stretch and grow without the need to buy expensive software licenses or programs

IV. SECURITY AND PRIVACY ISSUES IN CLOUD COMPUTING

Organizations use the Cloud in a variety of different service models (SaaS, PaaS, IaaS) and deployment models (Private, Public, Hybrid). There are a number of security issues/concerns associated with cloud computing but these issues fall into two broad categories: Security issues faced by cloud providers (organizations providing software-, platform-, or infrastructure-as-a-service via the cloud) and security issues faced by their customers. In most cases, the provider must ensure that their infrastructure is secure and that their clients' data and applications are protected while the customer must ensure that the provider has taken the proper security measures to protect their information.

The extensive use of virtualization in implementing cloud infrastructure brings unique security concerns for customers or tenants of a public cloud service. Virtualization alters the relationship between the OS and underlying hardware - be it computing, storage or even networking. This introduces an additional layer - virtualization - that itself must be properly configured, managed and secured. Specific concerns include the potential to compromise the virtualization software, or "hypervisor". While these concerns are largely theoretical, they do exist. For example, a breach in the administrator workstation with the management software of the virtualization software can cause the whole datacenter to go down or be reconfigured to an attacker's liking.

V. CLOUD SECURITY CONTROLS

Cloud security architecture is effective only if the correct defensive implementations are in place. An efficient cloud

IJRASET: ISSN: 2321-9653 Volume II, Issue IX, September 2014

security architecture should recognize the issues that will arise with security management. The security management addresses these issues with security controls. These controls are put in place to safeguard any weaknesses in the system and reduce the effect of an attack. While there are many types of controls behind a cloud security architecture, they can usually be found in one of the following categories:

5.1 Deterrent controls

These controls are set in place to prevent any purposeful attack on a cloud system. Much like a warning sign on a fence or a property, these controls do not reduce the actual vulnerability of a system.

5.2 Preventative controls

These controls upgrade the strength of the system by managing the vulnerabilities. The preventative control will safeguard vulnerabilities of the system. If an attack were to occur, the preventative controls are in place to cover the attack and reduce the damage and violation to the system's security.

5.3 Corrective controls

Corrective controls are used to reduce the effect of an attack. Unlike the preventative controls, the corrective controls take action as an attack is occurring.

5.4 Detective controls

Detective controls are used to detect any attacks that may be occurring to the system. In the event of an attack, the detective control will signal the preventative or corrective controls to address the issue.

VI. SECURITY AND PRIVACY

6.1 Identity management

Every enterprise will have its own identity management system to control access to information and computing resources. Cloud providers either integrate the customer's identity management system into their own infrastructure, using federationor SSO technology, or provide an identity management solution of their own.

6.2 Physical and personnel security

Providers ensure that physical machines are adequately secure and that access to these machines as well as all relevant customer data is not only restricted but that access is documented.

6.3 Availability

Cloud providers assure customers that they will have regular and predictable access to their data and applications.

6.4 Application security

Cloud providers ensure that applications available as a service via the cloud are secure by implementing testing and acceptance procedures for outsourced or packaged application code. It also requires application security measures be in place in the production environment.

6.5 Privacy

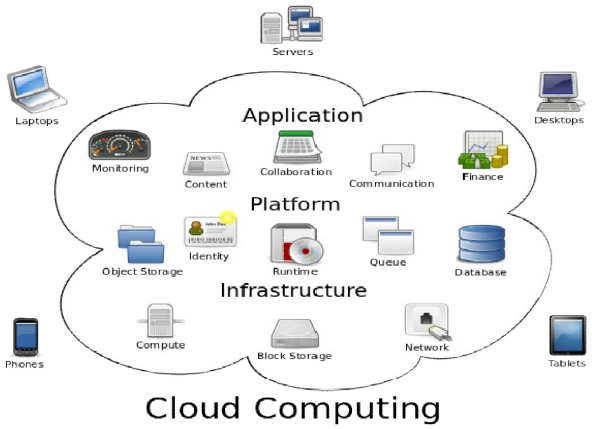
Finally, providers ensure that all critical data (credit card numbers, for example) are masked or encrypted (even better) and that only authorized users have access to data in its entirety. Moreover, digital identities and credentials must be protected as should any data that the provider collects or produces about customer activity in the cloud.

6.6 Legal issues

In addition, providers and customers must consider legal issues, such as Contracts and E-Discovery, and the related laws, which may vary by country.

IJRASET: ISSN: 2321-9653 Volume II, Issue IX, September 2014

VII. LEGAL IMPLICATIONS OF CLOUD COMPUTING



7.1 Electronic-discovery.

Utilizing the cloud can be problematic in the context of the process of taking legal action. First off, when litigation happens and a litigation hold is initiated, the organization will have to deal with a third party cloud provider in order to get at the information relevant to the litigation. It may not be easy for that provider to actually preserve the data that is needed for several reasons. For example, an organization may be using a third party software provider that itself utilizes the cloud platform. The data subject to the litigation hold therefore may actually reside in the cloud and may not be readily preserved by the software provider. This could complicate gathering electronic evidence and responding to e-Discovery requests. Moreover, it could lead to spoliation of evidence. In addition, considering that multiple copies of data may be created, stored, recompiled, dispersed, reassembled and reused, the idea of what constitutes a "record" or a "document" for evidentiary purposes may be difficult to grapple with in the cloud.

7.2 Reasonable Security under the Law.

Then there is the issue of "reasonable security" in the cloud computing context, and potential obligation of entity arising out of security breaches in the cloud. Generally speaking if a company outsources the handling of personal information to another company they may have some responsibility to make sure the outsourcer has some level of reasonable security to protect personal and confidential information. What happens when the cloud is utilized? Service providers using the cloud platform essentially rely on the security of each of the cloud participants receiving personal information. That could be name brand companies like Google who are likely to have some level of adequate security, but it could also be lesser players trying to engage in business as cheaply as possible and not implementing rigorous controls. The bottom line again is that the organization seeking to do business in the cloud has no way to even perform a due diligence of "the cloud" to ensure that adequate security is in place. Moreover, cloud companies and service providers that contract directly with such companies are not likely to make any contractual promises around security since they ultimately don't control it (or even know how good or bad it is within the cloud).

7.3 Data Flow crossing the border Triggering Legal Obligations in Multiple Jurisdictions.

This sharing and transfer of data within the cloud, the inability for anybody to easily say where the data is or has been, is the key problem that creates legal issues. An obvious problem is data flow across different countries. For example under the EU Data Protection Directive, unless they take certain steps, organizations are prohibited from transferring personal information to countries that do not provide the same level of protection with respect to personal information of EU residents (the United States is one such country). A company that does its processing in the cloud may be violating EU law if data goes to servers outside of the EU to prohibited countries. Unfortunately, contracts may not be too helpful because cloud providers will not be in any position to make any contractual promises to their clients because in many cases they cannot say which countries data will be transferred to or from.

VIII. CONCLUSION

So as far as the IT business grows the role of cloud computing come into play and it provide great advantages to the organizations, it can help in effective utilization of both resources and time , reduction of capital expenditure .Cloud computing enables companies to get agile, leverage

IJRASET: ISSN: 2321-9653 Volume II, Issue IX, September 2014

infrastructure on demand, and run it like a utility. We don't build electricity power plants in the backyard of every business or building any more, we should do the same with IT infrastructure. Cloud computing offers your business many benefits. It allows you to set up what is essentially a virtual office to give you the flexibility of connecting to your business anywhere, any time. With the growing number of web-enabled devices used in today's business environment .Also some legal issues are there to implement this model which resist many firm because it is sometime tedious.

The Future of Cloud Computing

Presence of Internet will boost its future: The cloud computing will becomes all the more important with the omnipresence of high-speed, broadband Internet. Slowly but steadily we are getting closer. Even airlines are offering satellite based wi-fi services in flights. In a mass drive to connect every village with Internet wireless Internet services are offered through the help of satellite, although speed is a bit slow. This increasing presence of Internet is opening new vistas in educations and healthcare. With the help of cloud computing we can use these services at a little cost.

No more software updates: Most of the computer professionals loose lots of their time and efforts downloading different versions of software so that they can access the various programs and data with little efforts. Most of the software's are on the cloud servers so you don't need to down and install for little use. So, whether you want to access emails or go through spreadsheet, it has become fun with the arrival of cloud computing. As per some estimates a sizable number of software's will be delivered through the Internet.

Hardware optional: With the arrival of cloud computing it is no longer necessary to purchase hard drives with large storage capacity, as it can be stored on cloud. So keep the fear of losing your data away. All your data with complete back up can be stored on the cloud. So with rising popularity the computers will act as an interface to communicate with cloud Computing.

Entertainment unlimited: As hardware is no more mandatory, so there is no limit on entertainment options. Uploading latest software and buying games from the market is going to be things of the past. In the future, there will be mobile 3D games to entertain your kids.

Medical treatments simplified: The future of cloud computing is not confined to entertainment and gaming options as it can contribute massively in the fields of medical sciences as well. As most of the contemporary treatment require computer assistance, as data have to be searched for various things like DNA samples and other biochemical procedures and hence cloud computing is going to play its part in the most of the therapies. In addition, it will make easy the task of data processing.

Weather Forecasting: It is believed that with increased level of computing coupled with improved climate models it will be lot more easy makes weather forecasts.

Education for all: With lot of educational institutions offering free course material for everyone over the Internet it is here cloud computing can play a great role delivering education on the doorsteps of learners over an interface. In addition, it will be a giant leap towards digitalization of education. So what if you have not secured admission at a reputed university, you can learn various things over computer with Internet connection.

Freedom from Wallets: With the advent of mobile phones the concept of traditional wallets has gone for toss. Now everything right from your contact details to your shopping related needs and you air ticket for vacations to clicking the pictures of happy

IJRASET: ISSN: 2321-9653 Volume II, Issue IX, September 2014

moments, everything can be done by you smart phone. The cloud has made it possible. It is possible in the futures that you can store all you valuable documents like driving license and voter identity with the help of your smart phone.

REFERENCES

[1] "4 Cloud Computing Security Policies You Must Know". CloudComputingSec. 2011. Retrieved 2011-12-13.

[2] "Gartner: Seven cloud-computing security risks". InfoWorld. 2008-07-02. Retrieved 2010-01-25.

[3] ^ "Security Guidance for Critical Areas of Focus in Cloud Computing". Cloud Security Alliance. 2011. Retrieved 2011-05-04.

[4] ^ "Cloud Security Front and Center". Forrester Research. 2009-11-18. Retrieved 2010-01-25.

[5] ^ http://www.cloudsecurityalliance.org/guidance/csaguide.v3.0.pdf

[6] ^ "It's Time to Explore the Benefits of Cloud-Based Disaster Recovery". Dell.com. Retrieved 2012-03-26.

[7] ^ Winkler, Vic (2011). Securing the Cloud: Cloud Computer Security Techniques and Tactics. Waltham, MA USA: Elsevier. pp. 65,

[8] Mariana Carroll, Paula Kotzé, Alta van der Merwe (2012). "Securing Virtual and Cloud Environments". In I. Ivanov et al. Cloud Computing and Services Science, Service Science: Research and Innovations in the Service Economy. Springer Science+Business Media. doi:10.1007/978-1-4614-2326-3.

[9] Vibha Sahu, Brajesh Dubey, Dr.S.M. Ghosh " Clouding Computing Threats", International Journal for Research in Applied Science and Engineering Technology (IJRASET), Volume 2 Issue VIII, August 2014, Page No: 207-213

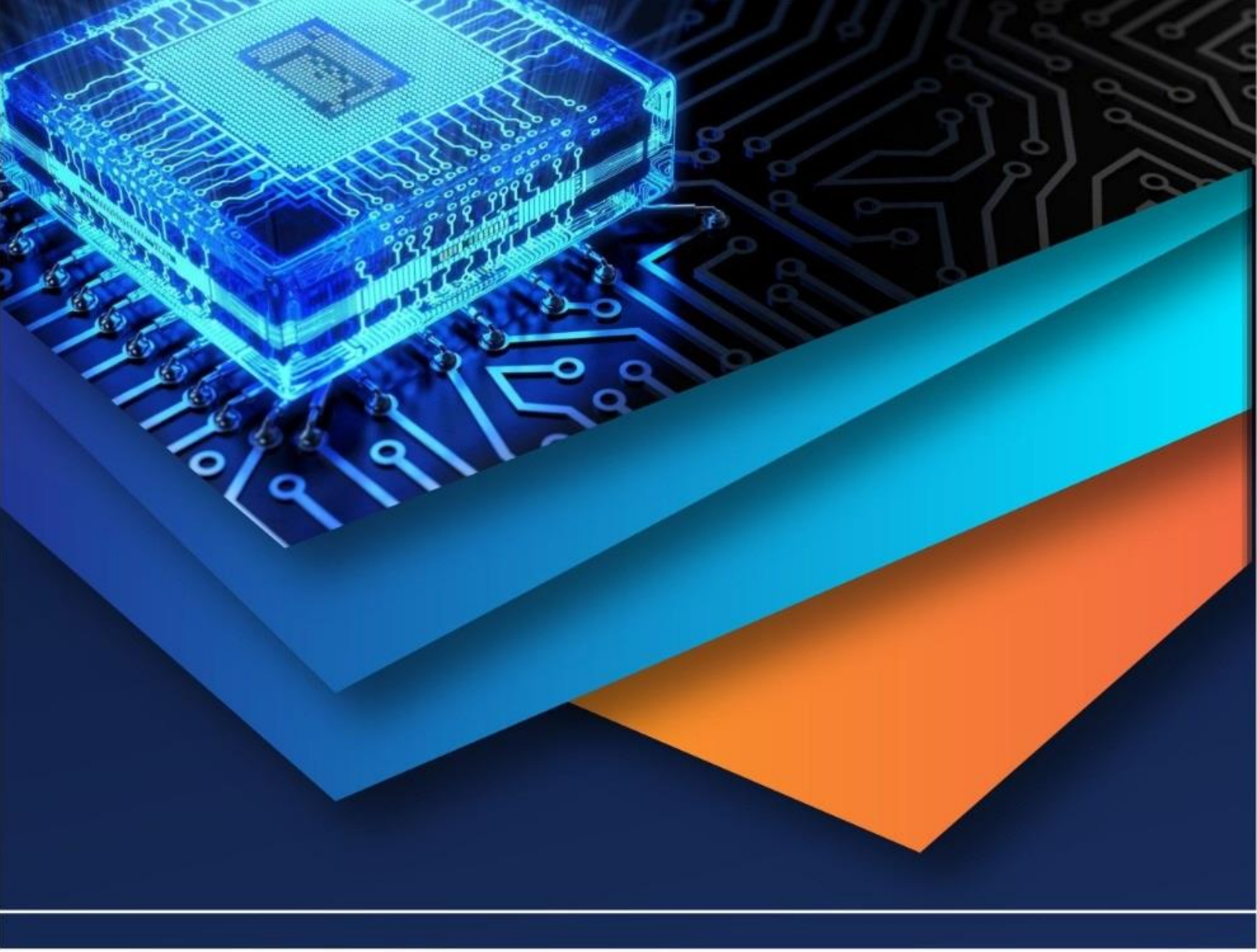
[10] K. Vijesh, P. Santhadevi "Cloud Computing: A Beginners Primer", International Journal for Research in Applied Science and Engineering Technology (IJRASET), Volume 2 Issue VII, July 2014, Page No: 42-52

[11] Sonam Sudha, Ms.Vasudha Arora "Identity and Access Management in Cloud Computing", International Journal for Research in Applied Science and Engineering Technology (IJRASET), Volume 2 Issue VII, July 2014, Page No: 146-153

[12] Anil Behal, Dr. Harish Rohil "Data Encryption Using Cloud Computing", International Journal for Research in Applied Science and Engineering Technology (IJRASET), Volume 2 Issue VII, July 2014, Page No: 234-241

[13] B. Pavan Kumar, Prof. GVNKV Subba Rao "Secure Multi-Owner Data Sharing for Dynamic Groups in the Cloud", International Journal for Research in Applied Science and Engineering Technology (IJRASET), Volume 2 Issue VII, July 2014, Page No: 273-278

IJRASET: ISSN: 2321-9653 Volume II, Issue IX, September 2014



10.22214/IJRASET

45.98

IMPACT FACTOR: 7.129

IMPACT FACTOR: 7.429

INTERNATIONAL JOURNAL FOR RESEARCH

IN APPLIED SCIENCE & ENGINEERING TECHNOLOGY

Call : 08813907089 (24*7 Support on Whatsapp)