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SECURITY ISSUES AND ENVIRONMENTS IN CLOUD COMPUTING

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Abstract

This paper will explore the service models and background and also presents the existing research issues implicating in cloud computing such as security, privacy, reliability, and so on. Cloud Computing, Architecture and Characteristics of Cloud Computing and also different Services and Deployment models provided in Cloud Computing. This paper provides a better understanding of the cloud computing and identifies important research issues in this rapidly growing area of computer science.

Keywords: Cloud-Computing; Cloud Security; Cloud Service Models; Cloud Deployment Models; Cloud Architecture; Cloud Environments.

1. Introduction

Cloud computing brings us the facilities of approximately infinite computing capability, good scalability, on-demand service, also challenges services of reliability, security, and privacy, legal issues. The results evaluation shows that the proposed system provides high security and efficiently improves the processing speed. The main objectives of the present research work are:

- Determine factors affecting the performance.
- Compare the cloud tools.
- Study response time dependency on service broker policies, number of datacenter and number of users and also load balancing techniques.
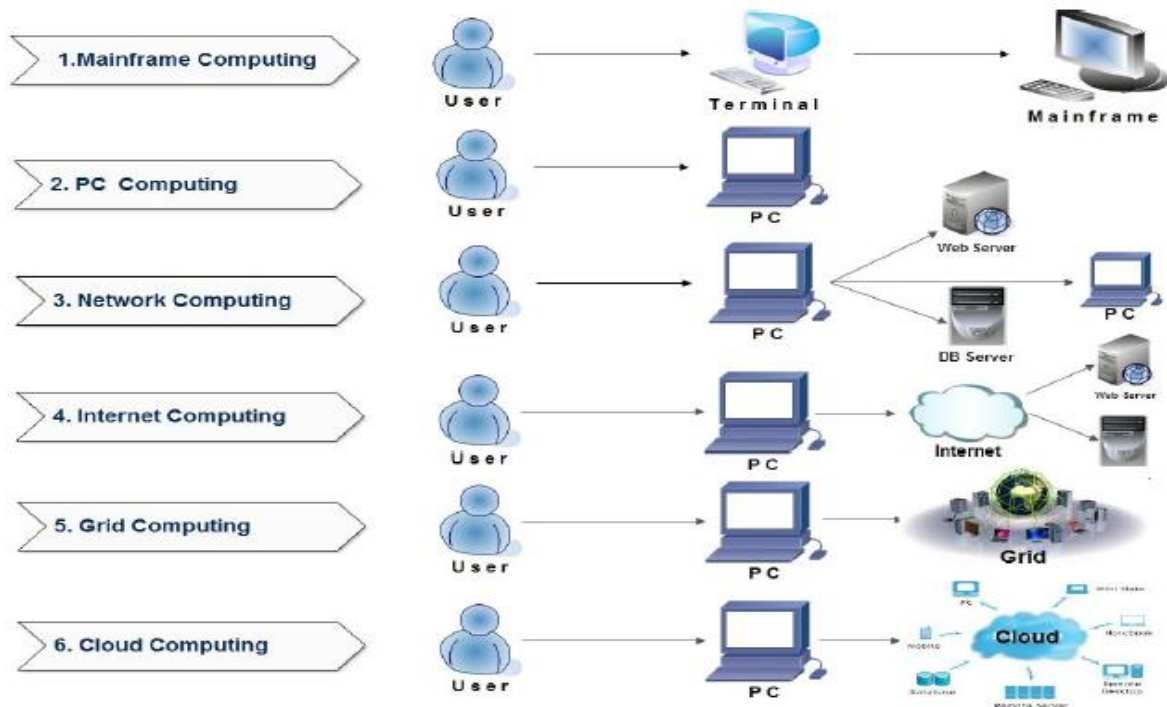
2. Literature Review
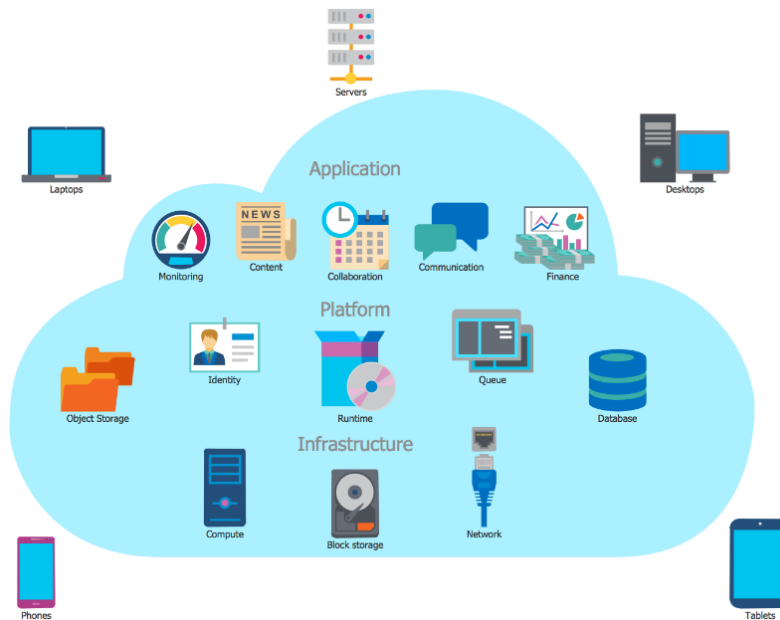
Artur ROT (2018) studied Data and Services Security Issues and Challenges in Cloud Computing Environments. In today's world, modern information technologies are advancing at an amazingly fast rate, influencing the way and range of organizations' operations. Cloud computing, which is the subject if this article, provides a new paradigm for the delivery of IT services, bringing a radical change to the current model of IT management. The dynamic development of cloud computing

services which has been observed in the recent years, results from many advantages which offered by this model of IT resource management. However, cloud computing is a relatively new model and its further development, apart from bringing new opportunities, can also cause new threats. The security issues of cloud computing are considered to be one of the main barriers to the development of such solutions.

M. Rajendra Prasad, R. Lakshman Naik, V. Bapuji (2013) studied Cloud Computing: Research Issues and Implications, the evolving is one of the core platform for Computer Science (academics) and Information Technology (industry) in the professional world. There is no doubt that the cloud computing is the emerging development trend in the future. Cloud computing brings us the approximately infinite computing capability, good scalability, on-demand service and so on, also challenges at security, reliability, and privacy, legal issues and so on. Because of this, it has been attracted by everyone including the attackers. The paper is expected to be a right path or URL for those who works or does research in cloud computing. We acknowledge the cloud computing era, to solving and prevent the existing issues and implications for maximum necessity is required.

Mohsin Nazir (2012), Cloud Computing: Overview & Current Research Challenges, Cloud computing has the potential to become a front runner in promoting a secure, virtual and economically viable IT solution in the future. As the development of cloud computing technology is still at an early stage, this research effort will provide a better understanding of the design challenges of cloud computing, and pave the way for further research in this area.

3. Technology/Methodology Used

Cloud Service Models:
- Software as a Service (SaaS): This feature helps customer to use the existing cloud provider's applications running on a cloud infrastructure. The services can be accessible from various customer devices through an interface such as a web browser (e.g., chat and email applications etc.)
- Platform as a Service (PaaS): This feature helps customer to set up the cloud infrastructure customer created or received applications which are developed with the help of programming languages and tools supported by the cloud provider.
- Infrastructure as a Service (IaaS): This feature helps customer to supply networks, storage, processing, and other central computing resources where the customer is able to setup and run an arbitrary software, which involves operating systems and its corresponding applications.

Cloud Deployment Models:
- Public Cloud: The cloud infrastructure is made available for the general public or any large industry group and is owned by an organization providing cloud services.
- Private Cloud: The cloud infrastructure is operated only for a single organization. It may be managed by the organization on its own or any third party, and may exist on- premises i.e at the organization or off premises i.e at the cloud service provider.
- Community Cloud: The cloud infrastructure is shared among various organizations and also supports specific community that has shared concerns (e.g., mission, security requirements, policy, or compliance considerations may be some of them).

- Hybrid Cloud: The cloud infrastructure is a combination of two or more clouds (maybe private, community, or public) that remain unique like stand-alone entities but are bounded together by standardized or proprietary technology. This technology enables portability data and application.

The most significant attributes of the cloud:
- Measured Service
- Broad Network Access
- Resource Pooling
- Rapid Elasticity
- On-Demand Self-Service

4. Working Architecture
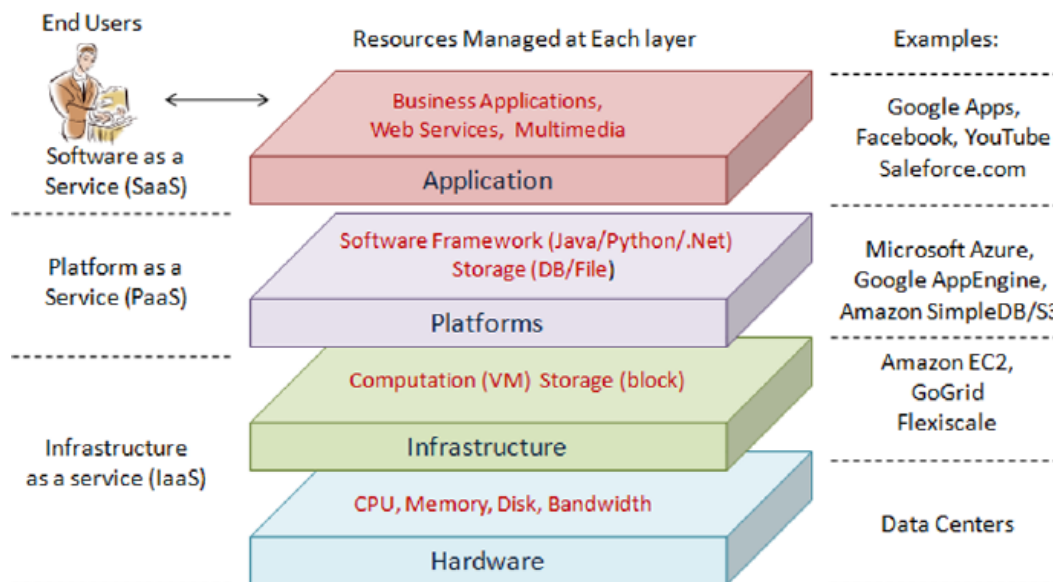
The architecture of a cloud computing system can be categorized into four layers:
The Physical layer, the Infrastructure layer, the Platform layer and the Application layer, all these layers stand one after another as indicated above.

1) The Hardware layer
Also known as Physical Layer. The hardware layer is responsible for dealing with the physical assets of the cloud which includes routers, switches, servers, cooling systems along with power.

2) The Infrastructure layer:
Also known as Virtualization layer. The infrastructure layer provides a pool of storage capacity and resources used for computing by partitioning the physical resources using virtualization technologies such as VMware and KVM.

3) The Platform layer:
This layer based on top of the infrastructure layer, and this layer consists of operating systems and its requisition structures.

4) The Application layer:

The application layer consists of the actual cloud provisions, for e.g. Multimedia & Web Services, Business Applications, etc.

5. Advantage and Disadvantages

Advantages of Cloud Computing

Cloud Computing, envisioned as the next generation architecture of IT Enterprise is a talk of the town these days. The way cloud has been gaining dominance in the IT market, in the coming years a major shift can be expected towards the cloud. Cloud computing helps companies seeking a competition in today's economy with the real benefits. Hence, many more providers are interested into this field, and this competition is diverting prices to be even lower. Attractive pricing, the ability to free up staff for other duties, and the ability to pay for —as needed services will continue to drive more businesses to consider cloud computing. Mobile cloud computing is expected to emerge as one of the biggest markets for cloud service providers and cloud developers.

Disadvantages of Cloud Computing

- **Security**

It is clear that the safety issue has competed the foremost necessary role in preventive cloud computing acceptance. No doubt, golf shot your information, running your software system on somebody else's magnetic disc victimization somebody else's hardware seems frightening several. Well-known security problems like information loss, phishing cause serious threats to organization's information and software system.

- **Cost Accounting Model**

Cloud customers should think about the tradeoffs amongst computation, communication, and integration. On the other-hand migrating to the Cloud will also scale back the infrastructure value of the company, also the price of information communication will increase gradually, i.e. the amount charged for transferring information to and from the general public and Cloud. Therefore, the cost per unit of resource used in computing is probably going to be increase.

- **Charging Model**

The value analysis is made lot more difficult than regular information centers by elastic resource pool. Regular information centers which regularly calculates the price of supported consumptions of static computing. Moreover, associate degree instantiated virtual machine has become the unit of analysis instead of the underlying physical server. For SaaS cloud suppliers, the value of developing multi residency among their giving is terribly substantial.

- **Service Level Agreement (SLA)**

The cloud customers don't have to manage the underlying computing resources, they are making sure the quality, convenience, security, and performance of those resources. This is must once customers have migrated their core business functionality over the trusted cloud infrastructure.

- **Cloud Interoperability Issue**

At present, every cloud provider has its own methods on how clients move with the cloud. This results in the "Hazy Cloud" development. This severely disturbs the events of cloud ecosystems

by enforcing protection from marketer that restricts the flexibility of users to decide from various vendors at the same time so as to optimize resources at different levels inside a company.

6. Result

In cloud computing performance, some of the work has already been carried out. Such related work has been discussed review of literature highlight the development that took place in cloud computing performance area. From the related works it is evident that majority of them were focused in some particular area such as data center location or scheduling, virtual machine or migration of virtual machine or managing the cloud at application level.

7. Conclusion

It aims to build and forecast sophisticated service environment with powerful computing capabilities through an array of relatively low-cost computing entity, and using the advanced deployment models like (Software as a Service), (Platform as a Service), (Infrastructure as a Service), (Hardware as a Service) to distribute the powerful computing capacity to end-users. Cloud computing is a new technology wide studied in recent years. At present several cloud platforms are employed in trade and educational purposes. The issue could be the way we need to use these platforms. In this paper, we had a tendency to describe the cloud computing, services, model and challenges in terms of its definition, styles, and characteristics. At the same time there are several issues in cloud computing. As an example of cloud computing issues is ability, Performance, SLA, Security and measurability of data, its Integrity, Load equalization, Synchronization among clusters in cloud platform, and standardization of cloud platform.

8. Future Scope

We acknowledge the cloud computing era, to solving and prevent the existing issues and implications for maximum necessity is required. Cloud computing is developing at a serious time for the IT trade. There is growing awareness that physical and IT states, system, and structure are fast success a breaking point. The explosion of data, transaction, and digitally aware devices is straining existing IT setup and acts. Cloud computing is at an early stage of research and development, we believe our paper will provide a better understanding of the cloud computing and different research issues, thereby bolstering further research in this arena.

References

[1] M. Rajendra Prasad, R. Lakshman Naik, V. Bapuji, Cloud Computing: Research Issues and Implications, International Journal of Cloud Computing and Services Science, 2013.
[2] Rajat, Manish Kumar, Shivani Chauhan, Ajay Singh, An Analysis and Survey of Security Techniques for Cloud Computing, International Journal of Cloud Computing and Services Science, 2019.
[3] Jyoti Arora, Deepak Kumar Verma, Deepa Gupta, Cloud Computing Security Concerns and Alleviation Controls, Research gate, 2018.
[4] K. Mehala, Dr. A. Senthil Kumar, Novel Secure Lightweight Data Sharing Framework for Mobile Cloud Computing, International Journal of Cloud Computing and Services Science, 2018.

[5]   Dr. Ajay Kumar, Bharti, Performance Analysis of Cloud Computing, International Journal of Cloud Computing and Services Science, 2018.
[6]   Arun Prasath. M, Mrs. T. Sathiyabama, Virtualization in Cloud Computing, International Journal of Trend in Scientific Research and Development, 2018.
[7]   Palvinder Singh, Er. Anurag Jain, Survey Paper on Cloud Computing, International Journal of Innovations in Engineering and Technology, 2014.
[8]   Artur ROT, Data and Services Security Issues and Challenges in Cloud Computing Environments, World Multi-Conference on Systemics, Cybernetics and Informatics, 2018.
[9]   Gajender Pal, Kuldeep Kumar Barala, Manish Kumar, A Review Paper on Cloud Computing, INTERNATIONAL JOURNAL FOR RESEARCH IN APPLIED SCIENCE AND ENGINEERING TECHNOLOGY, 2014.
[10] Mohsin Nazir, Cloud Computing: Overview & Current Research Challenges, IOSR Journal of Computer Engineering, 2012.

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