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"IMPROVING EFFICIENCY OF CLOUD NETWORKING BY UTILIZING VIRTUAL INFRASTRUCTURE ARCHITECTURE"

“Improving Efficiency of Cloud Networking By Utilizing Virtual Infrastructure Architecture”

Harsha Narayan Jawale[1] Dr. M. Kameswara Rao[2]

[1]Research Scholar

Abstract – In this paper we present about Improving Efficiency of Cloud Networking by utilizing virtual infrastructure architecture.

Provisioning processing, storage, networks, and other fundamental computing resources means the consumer of those resources does not manage or control the underlying cloud physical infrastructure but has control over operating systems, storage, deployed applications, and possibly limited control of select networking components.

Keywords: Efficiency, cloud networking, infrastructure

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INTRODUCTION

Cloud computing [1] evolved as a successful utility computing paradigm for Information and Communication Technology (ICT) resources delivery as a service over the Internet. The adoption of cloud computing spans across industry, governments, and academia alike. Cloud computing [10] is a paradigm that enables the acquisition of computational resources on demand in a pay-per-use model. Mobile cloud computing is deals with the problem of enhancing the capacity of mobile devices by offloading resource intensive applications to components external to the device itself [11]. Such external devices can be cloud servers [12], other mobile devices [13], or cloudlets (powerful servers that are spread around the mobile’s coverage area to provide extra capacity or to offload workload to the cloud) [14]. System virtualization focused on optimizing the technology for cloud data centers, in order to improve its security [20], or providing scalable management systems for the VMs in the data center [21]. Network virtualization has been extensively studied to augment the standard network technologies stack, which is hard to modify [17].

Virtualization is the key concept to reduce capital expenses through server consolidation and reduce operating expenses through automation, while minimizing lost revenue by reducing both planned and unplanned downtime.

Virtualization is a key infrastructure element for cloud computing because:

1. Allows sharing, manageability, and isolation of computing resources.
2. Significant cost savings via server consolidations and optimal resource utilization.
3. Provides a way for provisioning a computing resource dynamically and automatically.

Automation in an IT infrastructure, describe how it is a key infrastructure management attribute of cloud computing so that how automation can reduce system administrative tasks and achieve cost saving has been explained.
With emphasis on performing the following tasks:
Automation is a key infrastructure management for cloud computing because without the benefits of automation, the complexity of a cloud environment is increased significantly and thus generate added costs – costs high enough to cancel out the cost savings derived from cloud computing in the first place.

1. Provides standardization and automation for deployment and management of IT services.
2. Provides the ability to maintain or improve quality and cost per IT service.
3. Provides a management stack that is easier to handle and provides for smoother workload migration.

4. Provides the ability to be audit proof and integrated with process governance.

5. Provides the ability to reduce costly manual interventions.

6. Provides the ability for IT to reduce the skill requirements needed for deploying and managing IT services.

7. Reduces errors caused by manual processes.

NETWORK VIRTUALIZATION:

Network virtualization is the complete reproduction of a physical network in software. Virtual networks offer the same features and guarantees of a physical network, yet they deliver the operational benefits and hardware independence of virtualization—rapid provisioning, no disruptive deployment, automated maintenance, and support for both legacy and new applications.

Network virtualization presents logical networking devices and services—logical ports, switches, routers, firewalls, load balancers. Applications run on the virtual network exactly the same as if on a physical network.

STORAGE VIRTUALIZATION:

Today, huge data volumes and real-time applications are pushing storage demands to new levels. Conventional storage systems are overwhelmed, and IT is looking for better alternatives. What's needed is a new approach to storage.

Storage virtualization technology provides a fundamentally better way to manage storage resources for your virtual infrastructure, giving your organization the ability to:

- Significantly improve storage resource utilization and flexibility.
- Simplify OS patching and driver requirements, regardless of storage topology.
- Increase application uptime and simplify day-to-day operations.
- Leverage and complement your existing storage infrastructure.

CONCEPTUAL ARCHITECTURE-INFRASTRUCTURE:

One of the key drivers of the layered approach to the infrastructure architecture presented here is to enable complex workflow and automation to be developed over time by creating a collection of simple automation tasks, assembling them into procedures that are managed by the management layer, and then creating workflows and process automation that are controlled by the orchestration layer. However, before you can implement these key features of a cloud solution, you need to understand key definitions and design points relevant to a well architected cloud infrastructure. The cloud infrastructure should address the following components:

1. Scale Units

2. Storage

3. Networking

4. Virtualization platform

CONCLUSION:

In this paper we found that combining cloud computer clients the efficiency per physical hosted server is improved greatly. Consolidation of 10 virtual servers like physical server and 40 virtual physical servers for desktop clients is possible. We found that servers, desktop clients and telephony can be virtualized. End users can use thin clients for computer and telephony activity for further energy efficiency. Modern virtual server environments can allocate resources as demand requires including powering down physical servers when requirements are low automatically.

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