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Security Analyzing in UNIX for Cloud Computing Environment

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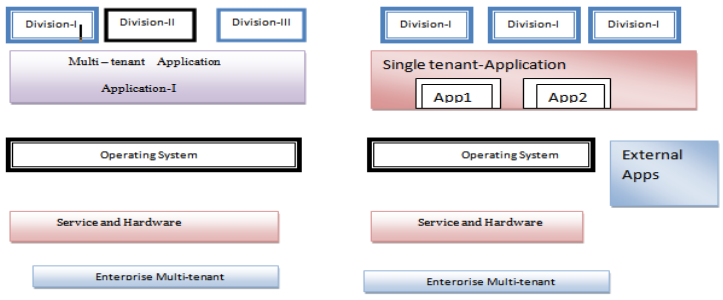
ABSTRACT: We study and evaluate the main attribute and concerns in placing current commodity operating systems UNIX in a cloud computing background. We suggest the security weaknesses and open challenges of UNIX operating systems when deployed in the cloud environment. In distinct, we examine and estimate a variety of operating system protection features which are significant in providing a protected cloud. These security features contain verification, permission and access control, physical memory security, privacy and encryption of stored data, network access and firewalling capabilities, and virtual memory.

KEYWORDS: Windows, Linux, UNIX, Cloud Computing, Operating System Security, Privacy

I.NTRODUCTION

Cloud computing is set of assets and services offered through the Internet. Cloud services are delivered from data centers located throughout the world. Cloud computing facilitates its clients by providing virtual resources via internet. common example of cloud services is Google apps, provided by Google and Microsoft SharePoint. Cloud computing is enclosed by many security issues like securing data, and probing the utilization of cloud by the cloud computing vendors. The broad acceptance www has raised security risks along with the uncountable benefits, so is the case with cloud computing. The explosion in cloud computing has brought lots of security challenges for the consumers and service providers. Cloud computing is emerging as a new attractive computing paradigm customized to meet most of today's Information Technology (IT) business requests. It is based on the offering of virtual IT infrastructures as a service through the Internet. The idea is to enable businesses to payment part of their required infrastructures using a pay-as-you-go model in which the number of virtual devices is dynamically scaled to meet the current business demands. Cloud computing describes a logical stack divided into three different layers: Infrastructure as a Service (IaaS), Platform as a Service (PaaS) and Software as a Service (SaaS). The IaaS layer is responsible for providing the virtual infrastructure (virtual machines, volumes, networks, etc.). The PaaS layer is in charge of providing middleware services which may be seen as value-added services. equally, the SaaS layer offers software features and services to end users, making use of the essential services provided by PaaS layer.



Fig(1) - Simplified multi-tenancy cloud scenario

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From the customer viewpoint, the usage of third-party virtual infrastructures require an important security challenge. The cloud provider potentially has full control over its own machines whereas the customer wants to keep his/her security and privacy in the rented infrastructure. Security and privacy are not only required for the external users of such an infrastructure but are also needed for the cloud infrastructure provider. These security and privacy issues still need to be addressed today for the cloud environment. VMs usually run a guest OS such as Windows-based and Unix-based. These guest OS images run in the VMs in the cloud provider's infrastructure. Generally, most cloud providers propose a set of predefined and preconfigured OS images and make them available to consumers. Some cloud providers do not propose the capability to upload bootable disk images while others bear this capability. In the later case, the cloud provider has full access to the guest OS for provisioning "security information" within the guest OS image. In both cases, a trust relationship between cloud provider and customer is enforced. This type of trust relationship is probably one of the main causes that prevent customers from using the cloud, particularly if the security of cloud provider gets compromised. In this paper, we explicitly try to avoid this forced trust relationship by assuming no trust relationship exists between the cloud customer and the cloud provider.

II THE ROLE OF THE OPERATING SYSTEM IN CLOUD ENVIRONMENTS

Cloud computing is a technology deployment outlook that has the potential to help organizations better use IT resources to increase flexibility and execution. The fundamental automation of cloud-based technology helps organizations reach the right computing resource at the right time for an economical price. In addition, cloud-based services can be packaged so that specific workloads can be more easily provisioned through the use of complicated automation software. Users of these cloud services are experiencing dramatic improvements in efficiency as a result of having consistent access to the right mix of technology to solve business troubles.

While these output reform result from cloud computing ability to lift complexity away from the individual user, the cost and productivity advantage of the cloud depend on a highly complicated underlying infrastructure One of the most significant requirements for companies adopting cloud computing is the need to adopt a hybrid approach to computing. To do so, most organizations will carry on maintaining their conventional data center to support composite mixed workloads. For example, an organization may choose a public cloud atmosphere for development and test workloads, a private cloud for customer-facing web environments that deal with personal information, and a conventional data center for legacy billing and financial workloads. It is no wonder that hybrid computing environments will be the norm. Therefore, it is more important than ever for the operating system to support and unite the a variety of computing deployment models so they emerge to be a single system from a customer experience and a systems and service management perspective. Operating systems have developed over the past decade to keep speed with the improvement of distributed computing. In the past it was regular to have each application exist as a closed environment—a planet unto itself. However, in order to maintain a competitive benefit in business environments that order superior customer service and well-organized operation, organizations engage interoperability across platforms that manage their important applications.

III. FIVE CLOUD BASED OS'S (OPERATING SYSTEMS) WORTH A CLOSER LOOK

iSpaces: Cloud Browser is a network browser inside a network that allows users to log in to the company's platform from multiple computers while saving the state of their interface to the company's data storage centers in the cloud. iSpaces runs on any Unix computer, with Mac coming soon, creating a virtual desktop that simplifies users' everyday life by eliminating the need to reopen numerous browser tabs and web applications[5].

Zero PC: ZeroPC confer deep combination with popular Web services to distribute a complete, integrated "social desktop" experience. Using ZeroPC's account manager device, we can easily sign-in and access many popular Web services such as Facebook, Twitter and more. A common 'drag & drop' process makes it fabulous easy to copy and paste content from one service to another [5].

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EyeOS: **E**yeOS Includes 5 powerful applications out of the box thought to be simple and easy to use: Word Processor, Calendar, Mail Client, Spreadsheets and Files Manager [5].

Cloudo: Cloudo is a free computer that lives on the Internet, right in your web browser. This means that we can access your documents, photos, music and all other files no matter where you are, from any computer or mobile phone[5].

Jolicloud: Jolicloud takes all the profit of cloud computing today, making our netbook the natural extension of all our other computers and mobile devices[5].

IV . LITERATURE REVIEW

Cloud Computing: this paper proposed a rising internet based super computing model is represented by cloud computing. Cloud computing is the convergence and development of a number of ideas from virtualization, distributed collection, grid, and automation management to enable a more flexible approach for deploying and scaling applications. However, cloud computing moves the application software and databases to the large data centers, where the management of the data and services may not be fully truthful. The concept of cloud computing on the basis of the various definitions available in the industry and the characteristics of cloud computing are being analyzed in this paper for Security providing for Unix in Cloud computing Environment. The paper also describes the main cloud service providers and their products followed by primary cloud computing operating systems [1].

A. System Management and Operation for Cloud Computing Systems:

This paper proposed operations management technologies in the cloud age. First, it describes the functions and roles expected of new operations management. It represents technologies for realizing life cycle management, which is at the heart of operations management, including application deployment and bottleneck analysis technologies. In particular, this paper explains operations-level visualization technology based on infrastructure visualization, which has been realized. This paper also converse technology to allow failures to be prevented by detecting predictive signs of system failures [3].

B . Performance Improvement of Software as a Service and Platform as a Service in Cloud Computing Solution: in this paper we have studied on Cloud computing model is composed of three service models Software as a Service (SaaS), Platform as a Service (PaaS) and Infrastructure as a Service (IaaS) and four deployment models Public, Private, Hybrid/mixed. We have also studied that Cloud computing system that consist of interconnected computers and virtualized computers that are dynamically provisioned and presented as one or more unified computing resources based on service-level agreements established through negotiation between the service provider and consumers[6].

C. **Analysis of Cloud Computing Security Issues in Soft ware as a Service**:
in This paper we discuss about Various level of Software as a Service examine. Cloud Computing is a term that doesn't describe a single thing – rather it is a universal term that sits over a variety of services from Software as a Service at the base, through Platform as a Service as a development tool and through to infrastructure as a Service replacing on-premise applications[7].

V.AUTHENTICATION

Authentication is the process by which the OS verifies that a user is really who he claims to be. Usually, the user is prompted for some credentials which are then checked to verify his identity. There are different types of credentials such as password, certificates, or biometrics, as well as different authentication mechanisms that verify these credentials.In Windows OS, authentication is mainly performed by the Local Security Authority (LSA) authentication component (Microsoft, 2003). Applications can make use of this component to authenticate users in the local system.

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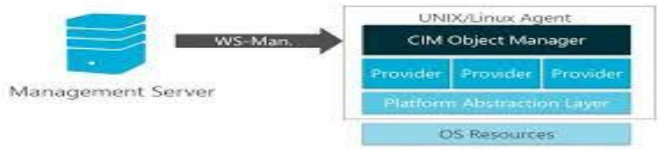
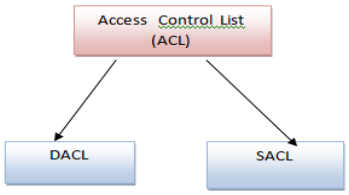


Fig(2) :Authentication Architecture in Windows (left side) and unix (right side)

Figure 2 shows an overview of the different authentication architectures provided by Windows and Unix operating system. In this analysis, we have considered cloud computing solutions that allow cloud customers the option to upload their own guest OS image. The other cloud computing solutions usually need to modify the OS image in order to configure the authentication.

VI. AUTHORIZATION

operating systems manages the privileges granted for a given authenticated user and checks and enforces such privileges when the user tries to perform actions over a set of securable objects. Windows and Unix or Linux provides different access control subsystems which are executing simultaneously at run-time. Firstly, it implements an access control subsystem to control all the resources managed in the OS. An overview of the authorization model executed by this subsystem is shown in Figure 3. In essence, a securable object is defined as any object which may be protected, for example, a file, directory, process, registry key, windows service, printer etc Each securable object is associated with a security descriptor which contains the security information related to that object.



Fig(3) Discretionary Access Control Model implemented in Windows and Unix or Linux Operating System

VII. DISCUSSION

A critical feature to integrate in cloud computing design is to provide cloud customers with the aptitude to upload and use their own guest OS images which can be managed, prepared, and controlled by themselves. By taking advantage of such functionality, customers have increased control and we can reduce scenarios where the customer cannot choose what to run in the cloud. The number of cloud providers providing this kind of functionally is inadequate nowadays. To date, uploading such guest OS images in an encrypted fashion is not being provided by cloud providers at all. The security analysis presented in previous sections has shown that it is essential to encrypt the guest OS image from the very beginning even before uploading the guest OS to the cloud in order to ensure that neither the end users nor the cloud provider can have access to the OS when the VMs are powered off.

VIII. CONCLUSION

Now is a mainly good time to channel Windows for high-quality, for workstations as well as servers. For example, now that Microsoft blocked supporting Windows Server 2003 on July 13, we will need to find something dissimilar to use for our servers. Whether it's switching from Windows Server 2003 to 2008 or to UNIX or Linux-based servers--or changing out

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tired and faulty Windows Vista desktops for the unfamiliar Windows 7 or something more user-friendly—UNIX provides you with freedom and freedom of selection. We might believe that dumping Windows and switching to Unix or Linux is a difficult task, but the change in thought and the watching of that switch are the mainly difficult. If we've attempted an upgrade from Windows XP to Windows 7, we know what pain is. Business owners find that UNIX, for what was once a "niche" operating system, provides the necessary mechanism and services on which many rely. Unix run on its entry into the world's major data centers, onto hundreds of thousands of distinct desktops, and it represents a near 100 percent domination of the cloud services industry.

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