Research on IT Operation and Maintenance and Management and Maintenance Methods in Cloud Computing Environment

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ABSTRACT

Research on operation and maintenance technology in cloud computing environment aims to effectively promote the implementation of cloud computing and provide new development ideas for operation and maintenance technology. Cloud computing technology and operation and maintenance technology are bound to be closely related in the future development. In the process of building information system and using storage, cloud computing technology can solve relevant problems to a certain extent, but the intelligent storage operating system needs to be expanded and reformed. Considering the problems and challenges of IT and current management, this paper analyzes the current key technologies and cloud computing technology as well as the improvement on planning management through three different IT implementation schemes and cloud management models, as well as the three-stage cloud computer model and data management structure model.

Keywords: cloud computing; IT; operation and maintenance management

1. INTRODUCTION

At present, the data center is getting bigger and bigger, the IT service model is changing, and the management and operation and maintenance work are becoming more and more difficult. Cloud computing has changed the typical IT organization model, and transformed the decentralized data center and separated information management system into a construction and shared service system of standard integration, management integration, and service integration. How to improve IT and maintenance, storage performance through cloud computing, build cloud computing operating system and efficient, efficient, stable and reliable maintenance management system, has become an urgent problem to be solved.

2. OVERVIEW OF BASIC CLOUD COMPUTING TECHNOLOGIES

Cloud computing is an emerging computer model that has seen unprecedented development with its unique technology and support for a range of other traditional technologies involved.

2.1. Rapid Deployment

Rapid deployment has been an important operational requirement since the inception of the data center. Data center administrators and users always have faster, more efficient, and more flexible delivery options. Cloud computing sites are in high demand for faster distribution. First, in the cloud space, resources and applications are not only fragmented, but also very powerful[1]. Second, different levels of cloud computing services are provided in different ways. In addition, the software programs that support the transportation process have a wide variety of systems and structures, and the means of transportation must be able to adapt to changes in the materials used.

2.2. Resource Scheduling

Specifies the process of adjusting services according to specific operating rules among different service users within a specific region. These application users are compatible with a variety of computer functions, all of which follow one or more operating system processes. The primary technology of a virtual machine is a hypervisor. The hypervisor establishes an inaccessible

layer between the virtual machine and computer components and captures hardware-to-hardware calls from the system operating system hardware[2]. And manipulate virtual memory and CPU resources. Due to the separation of virtual machines, the use of flexible migration technology of virtual machines can eliminate the migration of computer functions.

2.3. Processing data at scale

Using online cloud computing as a computer platform will be involved in the main data processing tasks. As critical data processing tasks become more common, many researchers conduct systematic studies on models that support large-scale data processing. Without a doubt, the most popular data processing software in the world today is the MapReduce editing model designed by Google[3]. The MapRduce editing model decomposes tasks into smaller, more complex tasks among empty processing nodes, allowing faster processing stations to process multiple tasks, thus avoiding smoothing the processing speed to scale the entire process.

3. ISSUES AND DEVELOPMENTS IN IT MANAGEMENT AND GOVERNANCE SYSTEMS

3.1. The era of big data brings challenges to operation and maintenance management

The era of big data has come, and it has shifted from focusing on a single project to contributing to the development of business and business strategy knowledge. Due to the continuous development of IT infrastructure in various industries, additional servers and storage devices are required for information peaks, and network performance and maintenance face new challenges. In the era of big data, IT monitoring systems need to monitor tens of thousands of data information in real time, and analyzing and processing massive data monitoring is the key to realizing functions and performance[4]. Especially large companies with complex standards, government departments and agencies, have high requirements on the type, quantity, speed and complexity of data.

3.2. Virtualization technology has changed the way of operation and maintenance management

Server management is a business venture. Unlike traditional data centers, cloud-based servers are usually virtual machines using vision technology. Networks play a very important role in coping with complex and flexible network management, and visual monitoring management has become commonplace[5]. In the visualization data center, the computer characteristics of virtual machines

are flexible. Traditional network management systems cannot access virtual machines, and network security management of various services cannot access virtual machines.

3.3. The dynamic migration of virtual machines causes uncontrollable operation and maintenance management

Portable servers in public data centers are often connected to a network network and services are deployed from the portable servers. The security control is relatively stable, the operation and maintenance management system is clearly marked, and the visual interface is clear. The high-density components visible to cloud computing change that[6]. It can be seen that the dynamic characteristics of the machine make it impossible for the network to locate its specific location, making the adjustment operation and management uncontrollable. Only a conceptually flexible management system can solve this problem.

4. CLOUD COMPUTING STARTUP PROGRAM AND IT OPERATING SYSTEM AND MANAGEMENT MODE

4.1. Implementation plan of IT operation and maintenance management mode in cloud computing environment

Facing the status quo of IT operation and maintenance management, the previous independent and separated operation mode will no longer be able to meet the requirements of IT operation and maintenance services, and the new IT operation mode poses challenges to the normal operation and maintenance management system. Meeting the visualization, flexible automation and other requirements of cloud computing services requires an integrated performance management and maintenance platform that can detect the latest deployments of automation equipment and cloud-based business services.

4.1.1. Centralized and unified cloud computing operation and maintenance management mode

Running and managing the data center management system in an integrated and centralized structure is a logical structure with simple logic, clear structure and few management levels. This management and performance and storage model is a fully integrated cloud computing platform that includes basic computer, network and storage systems in cloud operations, allowing users and administrators to see a single system interface[7]. Mid-range computer computing, while detecting integrated deployment and automated service planning, requires both a complete and integrated business management system, which requires a high degree of scale and

functional expertise, and a rigorous level of business team operations and maintenance.

4.1.2. Two-tier cloud computing operation and maintenance management mode

A two-phase cloud computing model and an improved management model, in addition to integrating management and performance model platforms, basic computing, data storage, networking, etc. It is divided into its own professional management system. This two-stage model simplifies the complexity of operating models with integrated care and adds a common performance management model and tuning capabilities to the model. Subdivision of basic resources and basic storage management have become a structural model that can work in one place and work together. This model also has limitations, as there are two command systems for charging portable hardware devices, and there may be operational biases. Therefore, the program needs to pre-determine key performance characteristics to avoid command conflicts. The disadvantage of the two sets of instructions is that the system telephony protocols may be different, and platform configuration is required, which increases the complexity of the system configuration.

4.1.3. Three-tier cloud computing operation and maintenance management mode

The three-phase model builds on the performance of the two-phase cloud computing and configuration management model, adding a centralized performance management layer. The performance management component includes cloud computing platform commands to create a set of operational commands that are evenly distributed on the local hardware platform. Cloud computing platforms and maintenance management platforms serve as top-level services[8], while the function of feed services involves integrated system changes across the bottom layers. For example, data migration can lead to changes in storage space. These related changes include information exchange, protocol notifications, connection checks, etc. Used to ensure continuity and continuity of cloud services. As the application performance management layer, the central layer accepts cloud service calls from the upper layer and converts them into the operation and maintenance of computer infrastructure. As a special system, the central layer can also redirect, operate and maintain computer hardware.

4.2. Three-stage cloud computing and management system architecture

The structure of the three-layer cloud management system is: the first layer is an integrated cloud computing and maintenance management program, which provides visualization and cloud computing services for users and administrators. This layer does not directly control and operate the infrastructure. The central layer is a performance management platform. As the service management layer, the central layer receives cloud service calls from the top layer. And translate it into the operation and maintenance of computer infrastructure. The third layer is the basic layer of computer infrastructure, a virtual layer composed of cloud computing resources such as basic computing, network, and storage.

The advantage of the three-stage cloud computing model and the adjustment management model is that the middle layer, as a hardware-level command layer, can meet many needs[9]. It integrates the operation information of various systems equally from the cloud computing service level, processes it into user-friendly commands, and sends it to the basic device layer. The central layer realizes the data flow of the basic layer and the information flow of the control layer of the entire cloud computing system. Mode 1 is easy to understand and naturally blends the differences between cloud services and infrastructure. Mode 2 and Mode 3 incorporate real-world IT requirements and maintenance management, and also acquire normal IT functions and architecture, functions and decoration, which they can choose according to their needs.

5. RESEARCH ON KEY POINTS AND IMPROVEMENT METHODS OF IT OPERATION AND MAINTENANCE MANAGEMENT IN CLOUD COMPUTING ENVIRONMENT

In the cloud computing environment, IT performance and configuration management include network management, daily operation management, software management, user management and many other functions. Need to schedule performance and cloud computing data storage management, even in the early morning. Program design, resource allocation, and service requests. Functions such as security require the participation of operation and maintenance personnel. Therefore, in the process of improving IT performance and maintenance management in the cloud computing environment, it is necessary to start with normal daily operations, and use automated operation technology and maintenance equipment for daily monitoring, service response, error management, and platform systems. Storage, security configuration management, general testing and other functions, intelligent detection performance and cloud storage storage management management. Focusing on operation monitoring, safety maintenance, automation capabilities and IT operation and logistics management, it realizes the integrated management of visual resources and portable devices, and develops comprehensive operation and maintenance management capabilities.

5.1.Monitor IT operations and adjust management

Monitoring IT performance and maintenance management should start daily, and complete real-time monitoring from day care functions, change management, event management, emergency planning, etc., to identify and discover potential security risk causes early, so as to eliminate security risks in a timely manner[10]. Through detailed performance monitoring, the performance of each system is comprehensively managed, various service functions are comprehensively collected, and various information is processed. Under the operation monitoring, if there is a problem with the system, the controller will be notified in time in advance, so that the problem can be solved in advance, so as to avoid various losses caused by system failure.

5.2.Maintain IT performance security and maintenance management

IT operation and maintenance management needs to be taken into account, and the knowledge of the entire system must be consistent, such as the tracking and evaluation of key resource information; equipment and media transmission that may have virus interference and information leakage should be managed early; this article applies to managers at all levels; illegal software and applications, etc. Such standard management can ensure the security of cloud services, further strengthen operational security and storage management, and ensure system security.

5.3.Automated and intelligent IT operation and maintenance management skills

Long-term performance and maintenance cannot meet the current operation and maintenance requirements, and automated and intelligent processing can meet the deep-level IT construction. High-level automation and intelligent processing capabilities are required, and automated and intelligent repair tools are used to complete tasks such as system monitoring, resource allocation management, and security alarm reporting, which can significantly reduce the failure rate and improve business response efficiency. Automated and intelligent operation and maintenance has become an inevitable norm in the development of operation and maintenance management.

6.CONCLUSIONS

The emergence of cloud computing has brought significant changes to the traditional IT industry. In the case of cloud computing, IT performance and storage management utilize complete planning and management of information service resources, network resources, application information resources and server resources in cloud computing systems to provide a single function and data center repair process. The performance management and maintenance services are automated and intelligent, and the performance and maintenance processes are up to standard. Develop operation and maintenance plans, improve management capabilities, and ensure system security. Operating and managing IT in a cloud computing environment greatly improves efficiency and performance and storage, solves the big data issues, virtualization and capabilities of IT operations and storage management, and introduces cloud applications and storage services at the operational level.

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