Application of Server Virtualization in Data Center

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Abstract: In the era of rapid development of science and technology, the application scope and degree of Internet are expanding, and the dependence on the use of data center is increasing. At the same time, the requirements for the construction of data center are also increasing. Therefore, improving the utilization rate, resource utilization efficiency, compatibility and storage space of data center has become issues to be considered in the current construction of computer rooms. Server virtualization technology is the product of the improvement of science and technology and the development of society, which promotes the application of data center computer room. The server virtualization technology is applied to the data center computer room, and an efficient processing platform is constructed to carry out the required operations, efficiently operate and process information, increase the utilization rate, and meet the data center computer room construction and application requirements. This paper analyzes the value and significance of the application of server virtualization in the data center, and discusses the implementation measures of the application of server virtualization.

The convenience and efficiency of Internet technology in work and enterprise management make people gradually increase their application degree. At the same time, when they establish their own information management system in management, the degree of information is also increasing. However, in the management process, different departments and different work contents have different management methods and information processing methods. Different servers and different service management systems need to be applied, and certain information processing ability is required. In the process of processing, each department also needs to maintain a certain degree of contact to avoid repetitive operation and lack of communication. Generally, the data center is the core operation place of the information management system, so the construction of efficient, convenient and safe data center has a direct impact on the construction of the information management system, and has a close relationship with the quality and efficiency of work and management.

1. Server Virtualization

Virtualization is an information management technology based on Internet information technology. It mainly operates through specific applications and manages computer information resources to make efficient use of information resources. At the same time, it simplifies the access and management of computer information resources, breaks physical constraints, and improves the utilization rate and simplicity. Its essence is to introduce a virtual layer into the computer to shield the distribution, dynamics, and heterogeneity of the platform to provide users with an independent and isolated system. Meanwhile, it has the characteristics of software and hardware resource management sharing, information management and information reuse.

Server virtualization is operated in a service system, and is regarded as the backbone service system. Multiple operating systems are operated in a reasonable and scientific manner in accordance with management requirements, business requirements, and work requirements. Each server has its own operating system, but also can use the information, equipment, processing system of the backbone server. Through server virtualization, we can rely on the backbone service system to operate multiple virtual systems and carry out services with different needs, and improve the utilization rate of information resources and management efficiency.

2. Problems in Traditional Data Centers

2.1 Slow Recovery

In the development of enterprises, the significance and value of information construction and management will gradually rise, and the demand for data will also increase. In order to meet the management needs, work requirements, and business operation requirements of enterprises, the number of server devices will increase. In the case of low configuration and low performance, but a large number of hardware equipment, the data center is prone to failure. The server equipment in the traditional data center is usually weak and independent, so when a server fails, it will affect other server equipment in the data center, causing server paralysis and network interruption. In the traditional data center, fault repair is slow, and it needs a lot of manpower and physics, which will directly cause the loss of economic benefits. Facing this situation in the traditional data center, some enterprises regularly back up the data information in the data center to avoid failures that lead to information loss. However, it increases the workload and affects the application efficiency of the data center.

2.2 Low Resource Utilization

The data center is dependent on the operation of the network system and provides information and convenience for business management and work development. In the process of enterprise development, the data center will be set up according to the needs of the company's development and work development, and classified management as needed. In this process, traditional data centers are limited by equipment performance and multiple server operations. As a result, server utilization in the data center have not been significantly exerted, resulting in low resource utilization and affecting work efficiency and quality. On the other hand, in order to ensure the smooth operation and maintenance of the website during the management and work process, the number of servers and websites has gradually increased, increasing the management workload of the data center, affecting the work efficiency and the utilization of resources.

2.3 Low Compatibility

In the data center, the upgrade cycle of the software system is short, and that of the server equipment is long. Usually, the server equipment completes one update only after several updates of the software equipment. In the contradiction of this update cycle, the matching between the software and the server equipment is gradually weakened. In the process of updating the software system, the complexity is high, while the compatibility of the traditional data center is low, and the degree of integration with the newly upgraded software system is low, which has a bad impact on the management and utilization of data information, and it is difficult to play the function value of the server equipment.

3. Application value of server virtualization in data center

3.1 To Improve the Operation Efficiency of Data Center System

Server virtualization technology is the virtual differentiation of one server into multiple operations, and can dynamically manage the hardware equipment of the server to create a one-to-many service form for the data center. Each virtual server has independence, multiple functions, and supports the use of multiple software. An entity server can operate multiple operating platforms and software systems through multiple differentiated virtual servers to improve the efficiency of the server and meet the needs of enterprise management, work and business. The one-to-many form brought by server virtualization facilitates the management of data center, improves the management efficiency of computer room and system operation efficiency.

3.2 To Reduce the Operation Cost of Data Center

In the server virtualization technology, only one entity server is needed, which greatly reduces the data of server equipment in the data center, and reduces the operating cost of the data center

from the server equipment. On the other hand, with server virtualization technology, the independence and compatibility of virtual servers are enhanced, and the management of each independent operating platform and software system can be carried out from one entity server. The failure of one virtualization server will not affect the operation of the other virtualization server. It reduces the failure of the server to a certain extent, and decreases the cost of repair, maintenance, and management from reducing the failure, and reduces the operating cost of the data center.

3.3 To Realize Intelligent Management of Data Center

Server virtualization technology is relatively advanced with a more user-friendly design and higher intelligence, and it can maximize the use of information resources by managing, allocating, and planning the information resources of each virtualized server. At the same time, the physical backbone server is used to uniformly allocate each of the differentiated virtual servers. During the operation process, the server operation status can be monitored, and the resource allocation is performed according to the virtual server operation status. The memory of the virtual server is appropriately increased according to the system conditions to ensure the normal development of the virtual server and the efficiency of the work. When a virtual server fails, the system will migrate the server according to the situation without affecting the operation of the server. The data information of the virtual server can be viewed through the physical server to prevent data loss, ensure server security, and realize the intelligent management of the data center.

4. Application of Server Virtualization in Data Center

4.1 Overall Planning

Analysis can be done according to management, work, and business development, virtual server requirements and system conditions can be determined. And it is necessary to conduct overall planning of the data center settings, classify and use the required software systems, equipment, and application software, and allocate the resources of each virtual server, and reasonably plan the indicators of each virtual server.

4.2 Implementation Steps of Server Virtualization

To implement the application of server virtualization in a data center, it firstly needs to build a virtualization platform on the physical server to host the virtual machine. The main components are: host, management terminal, management server, network equipment, and disk array. The host is responsible for the operation of each virtual server, and the disks share storage space for the virtual server. During the application process, the management server and the management terminal can be used to manage the virtualization server. The data center can be created in two ways when creating virtual machines, namely manual creation and migration of existing server copy. And then the corresponding configuration of the secure virtual machine operation needs to be installed. The storage space location, CPU, and memory capacity should be determined during the configuration and installation operation. The connectivity of each virtual machine can be increased through storage devices and switches, and be monitored through the monitoring system to ensure the security of the data center.

5. Conclusion

The application of virtual server in data center is a product of social development. It can meet the current management needs and business development needs by improving the data utilization rate of data center, reducing the cost of data center, and making the data center intelligent. In the development of the enterprise, it is getting more and more application value, and it has gradually replaced the traditional data center and has been promoted and applied. Through server virtualization, the operation of data access, analysis, processing and use is simplified, and its utilization rate is improved, which provides a good guarantee for management, high efficiency and high quality. However, there are still some problems to be improved in the process of application

and implementation of server virtualization. But there is no doubt that server virtualization technology has a good prospect and high application value in the development.

References

[1] Liu Zhibo, Xu Li. *Application of Server Virtualization Technology in Data Center* [J]. Network Security Technology and Application, 2018 (10): 16-17.

[2] Zhong Ming, Fang An. *Application of Server Virtualization in Medical Data Center* [J]. Journal of Medical Informatics, 2017,38 (05): 29-33.

[3] Chen Yongping. *Application Research of Server Virtualization Technology in Data Center Construction* [J]. Electronic Technology and Software Engineering, 2017 (02): 198.

[4] Li zhenglei, Wu Cong. *Application Research of Server Virtualization Technology in Data Center* [J]. Information and Computer (theoretical Edition), 2016 (21): 57-59.

[5] Xu Huayu. *Application of Server Virtualization in Data Center of Higher Vocational Colleges* [J]. Electronic Technology and Software Engineering, 2016 (07): 176.

[6] Wang Fan. *Application Research of Server Virtualization Technology in Data Center Construction* [J]. Electronic Technology and Software Engineering, 2015 (23): 190.

[7] Wang Zheng. *Application of Server Virtualization in Enterprise Data Center* [J]. Network Security Technology and Application, 2015 (04): 99-100 + 102.

[8] Lin Yang, Zhang Ying. *Application of Server Virtualization in Data Center* [J]. South China earthquake, 2015,35 (01): 62-66.