

# Research on the design of Virtual Cloud Desktop Access Control System

Dunkai Zhou

Language learning center, Foreign Languages Institute, Hubei University of Technology, Chian,430070

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**Abstract:** Virtual cloud computing is a typical application of cloud computing. Based on physical server and desktop virtualization technology, hardware, software, network and data are allocated with virtualization means to provide flexible and scalable service platform for applications, which can make more effective use of IT resources, greatly reduce the maintenance and management costs of equipment and application environment, and provide a share Open and efficient experimental teaching environment. This paper introduces the relevant technologies of virtual cloud desktop, analyzes the overall architecture of virtual desktop platform and its application in teaching management, and provides ideas and methods for computer experiment teaching innovation management.

## 1. Introduction

### 1.1 Cloud computing introduction

Cloud computing is a computing method based on the Internet. In this way, shared hardware and software resources and information can be provided to computers and other devices as required. The typical application modes of cloud computing can be divided into three categories: IAAs (infrastructure as service), PAAS (platform as service), SaaS (software as service). Among them, SaaS layer cloud desktop technology based on remote desktop view delivery is a desktop virtualization technology that transfers data computing from traditional terminals (desktops, etc.) to back-end servers, and the terminal side is only responsible for graphics display and mouse keyboard operation. The implementation of cloud desktop can significantly improve the level of data security management, reduce the cost of software and hardware management and maintenance, and reduce the terminal energy consumption, which is an important development direction of cloud computing industry chain.

### 1.2 Cloud desktop introduction

The desktop in the computer refers to the main screen area we see after opening the personal computer and logging in to the operating system. This is the desktop we work on. The cloud desktop is also a desktop displayed on our screen, but its back is not a real computer, but a remote server connected through the network. In other words, the cloud desktop is provided by the server. All data computing runs on the server. The cloud desktop only displays the desktop image, and accepts the input operation of peripheral devices such as keyboard and mouse. The server can provide different desktops for many people at the same time, such as Windows desktop, Linux desktop, etc. We only need a client device, or any other mobile device that can connect to the network. Through a browser or a special program, we can access the personal desktop residing on the server. The user experience is basically the same as when we use a traditional PC. The access terminal of cloud desktop is generally thin terminal or ordinary PC (personal computer). Some cloud desktop systems also support smartphone, pad and other terminal access devices. The access terminal is used to process the remote connection protocol, I / O device, peripheral device driver, etc. with the server, and map the terminal connection device to the server session, so that the user can perform save, print and output operations.

## 2. Cloud desktop system frame

Desktop workflow: users access the cloud desktop access address or portal through various terminals through the desktop display protocol, and the access address or portal generally has a load balancing device. The user management server verifies the user's identity through the user management system, usually Microsoft's ad (active directory). After the authentication, the request is directed to the random or customized cloud desktop. After users log in to the cloud desktop, they can access the business system for operation just as they log in to the local desktop.

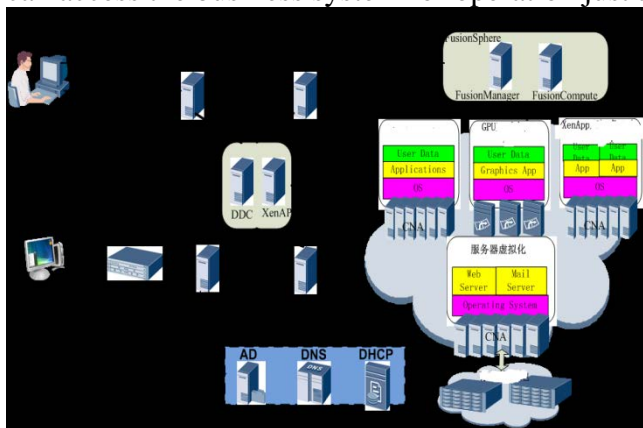


Figure 1: Cloud Desktop System Architecture

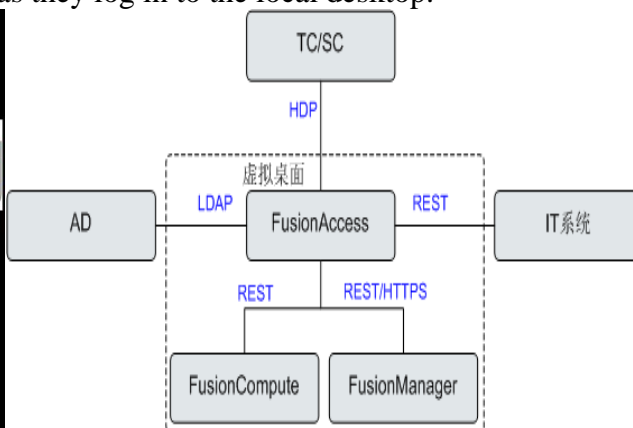


Figure 2: Cloud desktop component interface

## 3. Constitutions of Virtual Desktop

3.1 The server planning vmaware view virtual desktop is built on an HP dl388 G7 server, which is configured as CPU:  $2 \times 2.4\text{G}$  Xeon 5606; memory: 16g; hard disk:  $4 \times 500\text{GB}$ ; network card:  $4 \times 1000\text{m}$ . Vmaware view is based on esxi and vCenter, and forms desktop virtualization environment through connection server. Its infrastructure is shown in Figure 1. The role of the DOM Ian controller server is to dynamically allocate DHCP to the active directory ad, Domain Name Service DNS and IP address. Esxi server is a bare metal virtualization software. VCenter is a centralized management component of virtual machine. Connection server is a connection management server. With the help of view composer, it can realize the advanced management functions of virtual desktop, including power operation management, virtual desktop pool management, user authentication, desktop rights granting, virtual desktop session management, etc

virtual desktop resource pool planning at present, the IT courses in Colleges and universities are mainly divided into: the use of windows series operating system; the use of Microsoft Office; the use of professional graphics and image software such as Photoshop; VS.NET, Java program development. The virtual desktop resource pool can be grouped according to different courses. In the following table, the virtual desktop uses a non permanent desktop pool, so that after the next restart, the virtual machine will go back to its original state, and any changes will not be retained for future use by others. The switching, upgrading and recovery of virtual desktop are also very simple: 1) for the switching of virtual desktop environment in different courses, simply close the desktop pool and open another type of desktop pool. 2) after upgrading the master operating system, upgrading the patch, and updating the pre installed software, you only need to perform the recommend action; 3) when the system is poisoned, the system is slow due to expansion, and the system files and applications are deleted by mistake, you only need to perform the refresh action to return to the initial state of the system.

3.2 Storage system planning the performance of storage system is often the bottleneck of virtual desktop, which needs good planning.

If the storage capacity is calculated by 50g system space and 10g data space per user, when using composer technology, multiple users can share the system space, which can save nearly 70% of the storage space. Considering the redundancy, 50 users need 1.5T of storage space. The storage

system also needs to consider the startup storm of virtual desktop. Generally, the virtual desktop running Windows 7 will generate 50-100 IOPs when it starts, but after it starts, it will drop to 5-10 IOPs on average. Since linked clones are used, most of the disk activity when the desktop virtual machine starts comes from the master image. Therefore, the master image files and copies of the virtual machine can be placed in the SSD storage pool of the SSD. Since a SSD can handle about 5000 IOPs, it can meet the startup requirements of about 50 virtual desktops.

#### **4. Through the test and application of virtual desktop, it is found that virtual desktop can significantly improve the management and maintenance of the computer room, which is mainly reflected in the following aspects:**

1) centralized operation of the user's operating system in the data center, and its unified management and maintenance, greatly reducing the application of it management personnel to run virtual desktop after the test of virtual desktop Through trial and application, it is found that virtual desktop can significantly improve the management and maintenance of the computer room, which is mainly reflected in the following aspects: 1) centralized operation of the user's operating system in the data center, and unified management and maintenance, greatly reducing the operation and maintenance costs of IT managers. 2) the system deployment time is accelerated, and the administrator can deploy the user desktop to be used within minutes. 3) extend the service life of user's desktop PC, reduce the purchase cost of desktop update, and greatly reduce the cost of desktop maintenance. 4) realize the centralized management of information security and guarantee the normal teaching activities.

#### **5. Conclusion**

Vmware view is a virtual desktop software with excellent performance, which can greatly simplify the deployment, upgrading and maintenance of the computer room desktop, make full use of a large number of old equipment in the computer room, complete the security protection work in the middle of the server, solve a series of problems faced by the computer room in Colleges and universities, and point out a new road for the construction of the computer room in Colleges and universities.

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