

# **Desktop Cloud Technology Promotes the Popularization and Application of Office Mobilization in Universities**

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**ABSTRACT:** *The variety and quantity of office terminal equipment in colleges and universities are increasing, and the contradiction between individualized demand and fast response service is becoming more and more acute. Desktop cloud, which depends on cloud computing and virtualization technology, will become a feasible solution to solve the problem of office terminal equipment management and office mobility in colleges and universities. Based on the typical desktop cloud technology architecture, three main virtual desktop publishing modes are proposed, and the corresponding cloud desktop delivery mode is proposed according to different mobile office requirements.*

**KEYWORDS:** *desktop cloud; cloud computing; virtualization technology*

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## **I. THE PRESENT SITUATION OF INFORMATION CONSTRUCTION IN COLLEGES AND UNIVERSITIES**

With the continuous integration of teaching, scientific research, management, service and information, the types and quantity of office terminal equipment in colleges and universities are increasing, and the contradiction between individualized demand and fast response service is becoming increasingly acute. Based on the traditional desktop of personal computer, the IT architecture is more and more difficult to cope with the demands of staff and staff (inter-campus office, wireless mobile office, rapid installation of applications on different operating systems). It even becomes a short board to affect the office mobility of university staff. How to solve these problems has brought great test to university IT administrators<sup>[1]</sup>.

To address the problem of poor user experience in traditional office scenarios that typically use USB drives or exchange documents via email, Desktop cloud, which depends on cloud computing and virtualization technology, will become a feasible solution to solve the problem of office terminal equipment management and office mobility in colleges and universities, which can greatly promote the popularization and application of office mobility in colleges and universities. Virtualization is to improve the efficiency of machines, play to the value of assets and information, desktop cloud and mobile office is to enhance the efficiency and satisfaction of people, play to the value of people<sup>[2]</sup>.

## **II. THE OVERALL ARCHITECTURE OF DESKTOP CLOUD TECHNOLOGY**

The desktop cloud technology combines the virtualization technology of hardware and software, moving computing resources, storage resources and user data sets back to the university data center, simplifying the user terminal into a thin client, all user applications, desktop, The data are placed in the data center to realize the unified management of application, desktop and data. Users can access the desktop and data in the cloud at anytime, anywhere and safely through the network<sup>[3-4]</sup>.

Desktop cloud technology architecture includes terminal access layer, application delivery layer, core application layer and hardware resource layer.

Terminal access layer mainly refers to all kinds of terminal devices that ordinary users and platform administrators access virtual desktop resources, including PC (Windows, Mac and Linux desktops and notebook), TC, handheld intelligent terminals (IOS, Android, RIM and WebOS tablets) and soft terminals, etc.

The application delivery layer is mainly responsible for the session connection, authorization authentication and terminal equipment management of the virtual desktop in the desktop cloud, so as to ensure the security of the user access to the desktop cloud platform<sup>[5]</sup>.

The core application layer includes two basic platforms: server virtualization software and desktop management system. Server virtualization software is a platform for basic resource management, layout and scheduling. It provides network monitoring, layout and scheduling functions for logical computing resources, logical storage resources and logical network resources, and realizes intelligent management of logical resources. Provides an engine for the allocation of applicability for desktop management systems. According to the user desktop requirements, the desktop management platform distributes the virtual resources (including computing

resources, storage resources, network resources, etc.) to end users<sup>[6]</sup>.

Hardware resource layer mainly refers to the basic hardware facilities of building desktop cloud platform, mainly including server, storage device, network equipment, security equipment and other hardware resources.

### III. MAINSTREAM VIRTUAL DESKTOP PUBLISHING MODE

Depending on how the desktop is generated, the virtual desktop publishing model consists of three main types: shared desktop, pool desktop, and exclusive desktop

(1) Shared desktop

- a) Users have a separate personal data space and personalized settings, such as desktop, background, favorites and so on;
- b) Users do not have the freedom to install software, the software must be the desktop cloud platform administrator unified planning installation;
- c) Users do not have operating system level permissions, such as not restarting the desktop, modifying the registry, and so on.

(2) Pool table

- a) Users have a separate personal data space and personalized settings, such as desktop, background, favorites and so on;
- b) All virtual desktops are built on a standard template, and every time the virtual machine is restarted, all changes made by the user to the operating system level of the virtual machine are discarded. Bring the user virtual desktop back to a completely new state (note: the first point above is still reserved for personal data space and personalization), but the user cannot install the software on his own (the desktop will be restored after the restart), but can use the Non-installation of the green version of software;
- c) The administrator manages and maintains the application by updating the template.

(3) Exclusive desktop

- a) Users have a separate personal data space and personalized settings, such as desktop, background, favorites and so on;
- b) The user has the complete operating system authority, can install all the software freely;
- c) Administrators need to maintain each virtual machine independently to manage and maintain applications such as adjustment or upgrade.

### IV. THE NEED OF UNIVERSITY OFFICE MOBILIZATION BASED ON DESKTOP CLOUD TECHNOLOGY

Teachers in different positions in colleges and universities need different types of desktops. Some office staff require simple, practical and standardized desktops, while others value excellence and individuation<sup>[7]</sup>.

(1) **Standardized cloud desktop**

The user daily work is the ordinary OA office, the document, the class courseware preparation, the chat communication work, the video and so on load simple application program, the request to the computation resource is the general application, only needs to visit a few commonly used peripherals, Without too many desktop customization requirements, such users have the following characteristics:

**Table 1** Characteristics of user daily work

<b>Daily application</b>	Universal use OA、Microsoft Office、QQ、E-mail and other common office software. The application is relatively simple and the requirement for computing resources is relatively low.
<b>Peripheral access</b>	Few peripherals are required to support commonly used network printers, USB drives, etc.
<b>Multimedia playing</b>	HD video /Flash animation play demand is not many, belongs to the accidental access.
<b>Safety</b>	Access to a large number of sensitive information, high data security requirements.
<b>Network bandwidth</b>	The application scene is relatively simple, the multimedia access is not many, the bandwidth demand is not high.
<b>User permission</b>	You can use applications and store data properly.

(2) **Personalized cloud desktop**

This type of desktop cloud users in colleges and universities, in addition to the daily work of OA office, documents, courseware preparation, chat and communication work, but also to the desktop cloud system for the environment of personalized DIY equipment, As well as the use of installation configurations for a variety of different applications, such users have the following features:

**Table 2** Characteristics of cloud desktop users

<b>Daily application</b>	Universal use OA、Microsoft Office、QQ、E-mail common other third-party applications that need to be installed; relatively simple for resource applications and relatively low for computing resources.
<b>Peripheral access</b>	Few peripherals are required to support commonly used network printers, USB drives, etc.
<b>Multimedia playing</b>	HD video /Flash animation play demand is not many, belongs to the accidental access.
<b>Safety</b>	Access to a large number of sensitive information, high data security requirements.
<b>Network bandwidth</b>	The application scene is relatively simple, the multimedia access is not many, the bandwidth demand is not high.
<b>User permission</b>	Need full control to add remove applications and devices to personalize your desktop environment.

### V. DELIVERY MODE OF OFFICE MOBILIZATION IN COLLEGES AND UNIVERSITIES BASED ON DESKTOP CLOUD TECHNOLOGY

Combined with the business needs of university teacher office mobility, it is suggested that the following categories of university desktop cloud users should be carried out and delivered and deployed in different ways:

**Table 3** Cloud desktop classification

NO.	Desktop mode	User classification	Desktop hair style	Merit	Shortcoming
1	Personalized cloud desktop	School leaders, professors, IT technicians and IT managers.	Exclusive desktop publishing; Assign virtual desktop operating system administrator account permissions.	The user has the complete control function; Have good DIY experience effect.	Account permissions are too large, prone to DIY personalization resulting in virtual desktop crash.
2	Standardized cloud desktop	Non-computer major teacher.	Use shared pool desktop publishing; Assign common account permissions to virtual desktop operating systems.	Unified standardized desktop delivery saves storage resources investment costs; Safety and reliability of pre-installation using standard applications; Greatly reduce the maintenance and management of IT maintainers.	No DIY personalization permission, if you want to install other third-party applications, submit a request to the IT administrator.

### VI. ADVANTAGES OF UNIVERSITY OFFICE MOBILE APPLICATION BASED ON DESKTOP CLOUD TECHNOLOGY

Desktop cloud technology can combine resources on demand, provide users with different scenarios of desktop, on demand configuration resources do not waste, the best matching requirements to meet office applications, do not change the user experience and operation habits, safe, reliable, flexible configuration, Elastic expansion, simple operation and maintenance. As a result, desktop cloud technology offers many of the following advantages<sup>[8]</sup>:

(1) The realization of mobile office: college teachers can work safely, efficiently and flexibly, no matter at any time, in any place, on campus or outside network, and can use many kinds of mobile intelligent terminal devices at the same time. Such as iPad tablets, iPhone smart-phones, Android series tablets, smart-phones and other devices seamless access.

(2) Resource usage improvement: desktop cloud technology will compute, memory performance will be unified to the data center server side, can achieve more than 85% of the server resource utilization. The performance load of traditional PC machine is usually about 15%, the remaining 85% can not be used, resulting in a great waste of resources.

(3) Efficient and secure management: after the desktop cloud concentration, the administrator can carry on the system health inspection in the data center, discovers the potential risk point, handles ahead of time,

prevents the trouble in the early stage, compared with the PC way after the fire, the cost is lowest, the benefit is best. At the same time, through controlling access to external equipment to reduce the threat brought by external equipment access, through the unified virus library update, unified patch loading, unified application management and so on to reduce the maintenance workload, through the desktop and user one-to-one correspondence, Achieve positioning and traceability.

(4) The idea of green sharing: desktop cloud technology through the desktop sharing pool to achieve the largest possible operating system to share CPU, hard disk and other resources, thin client power consumption can be reduced to less than 10 w, far lower than the traditional PC machine about 220 W power consumption. Can effectively reduce the comprehensive energy consumption, achieve green office.

## **VII. SUMMARY**

With the development and application of virtualization, cloud computing technology and the maturity of desktop cloud technology, desktop cloud has become a mainstream mode of office in the future. Work is no longer the "place we are going", it should return to what it should focus on "what we have to do." If school teachers are allowed to choose their own ideal time, place and equipment for flexible mobile work, perhaps everyone will achieve greater value at work. To construct a desktop cloud office system in colleges and universities to provide teachers with efficient and easy to use, flexible and safe office use experience, to make the school teaching and office more creative, for the university information construction and education and teaching reform, Has the very big promotion function, is the university future development inevitable trend.

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