

The Commercial Value of UC and its Application in the Management of University Laboratory

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Abstract: The paper discusses the advantages of unified communication technology and its commercial value. Through the research of Microsoft server Lync 2010, Server EXChange 2010 products, UC system architecture design, operation mode and research plan, build a unified communication management program adapted to laboratory in university. The program can manage laboratory sciencely, At the same time reduce equipment, software and hardware, network, maintenance services and technical support and other aspects of the cost, better service to teachers and students, and promote the campus information.

Key words: Unified Communications; laboratory management; Campus information

I. FOREWORD

Unified Communications call UC, Its core content is to integrate the existing variety of communication, the purpose is to make people no matter any time, any place, can be through any device, any network achieve free communication.

Communication is divided into 2 types : real time communication and non real time communication, real time communication includes basic telephone, multi-media meeting, visual communication...etc.; non real time communication includes Email, voice mail, fax...etc. Unified communication is a new generation of communication system, which is the integration of real time communication, non real time communication, and various business applications. It is a basic IT facilities with Scalability and development .In a word , Unified communication is the fusion of real-time and non real time communication applications.

UC is used in enterprise mostly, it is not a new technology, but a specific solution and application. That is to say, unified communication is the integration of telephone services, e-mail and voice mail, necessary information will be through the unified communication system to inform, publish, transmit to each of the relevant information in the first time,

anytime, anywhere, truly realize the integration of various types of communication and enterprise process integration, improve the production efficiency, enhance the enterprise market competitive advantage [1] The core value is to reduce the time of interaction between people and people in the business process, to achieve high efficiency. The low consumption of communication whenever and wherever possible.

II. RESEARCH STATUS AND COMMERCIAL VALUE OF UC

Microsoft's unified communication platform program in Beijing, Shanghai, Guangzhou and Chengdu four major cities of China, have held a grand marketing activities, attracting business users, business decision makers, technical supervisors, technical decision makers, IT experts and other participants. At the same time, many system integrators, telecom solutions provider, independent software vendors, phone and equipment manufacturers and the terminal user showed wide attention and support to Microsoft unified communication[4]. Bill Gates in the unified Communications conference, said: " Technological innovation promoted by the software will be swept through the world in the next ten years, Communication technology has a new look, so that people's communication and cooperation way forward take a big step forward." Hundreds of global customers like the early bird catches such as the Volvo Group, virgin megastores, and global crossing...etc, after the first experience of Microsoft unified communication platform, Appreciation of the generous application value provided by it. They believe that the efficient communication software compared with the traditional communication technology can save a lot of time for customers and

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improve the production efficiency.

Traditional communication systems transmit information to several different types of systems, such as voice mail system, email server, telephone, fax machine, and so on. Unified communication integrates various of communication technologies into a single solution, merging previously independent systems and services into an efficient package. Combined with the use of text, voice and video communication means, almost anywhere through PC, smart phones and similar devices to access, so as to achieve the goal of reducing costs. These technologies include email, SMS, instant messaging, group chat, voice and video calls and meetings; directory, calendar management and tasks; and various sets of programs that contain these features to work specific applications (such as business workflows)[5].

In addition to the user, information technology department (IT) can also benefit from unified communication. Today's IT professionals need to maintain a separate system for each type of message communication. They have to accept the training of different systems, the implementation of monitoring and troubleshooting in multiple locations, to establish an account for each new employee in a variety of directory structures and to fully manage the security and maintenance of these basic systems. By using the unified communication, these different systems can be integrated. At the same time, the IT department can reduce the management problems and reduce the total cost.

Inc. Gartner, a report said: "the final push of the Internet phone is not just the cost savings, but the business process integration. Enterprises should evaluate the long-term strategy of the IP telephone application (including business application integration), which is intended to develop a basic phone call [1]."

For the direct cost reduction brought by the unified communication, communication will bring considerable changes at almost any time, and will increase with the globalization of business scope. Long distance telephone calls, mobile phones, conference services, travel expenses and conference expenses are in the category of communication expenses, which can be quickly cut

through the effective application of unified communication solutions. In addition, it is often used to achieve considerable cost savings (for example, the traditional PSTN phone system in the engineering cable and room space is always a great investment) by combining multiple older communication systems into a single integrated communication platform. Microsoft's official commissioned by Forrester consulting company to do the survey shows: the enterprise through the deployment of UC unified communication products and services to achieve the potential savings of more than \$500 per year for each of the 1000 employees[6].

III. THE CONSTRUCTION OF UC PLATFORM, THE DESIGN AND IMPLEMENTATION OF LABORATORY MANAGEMENT PLAN

At present, the major colleges and universities are equipped with the basic information publicity Center to maintain the internal network, but many schools are limited to the use of the internal network, where the communication is very inconvenient. UC realizes the functions of Email, instant message, audio and video conference, OCS soft phone, etc. based on the advantages of UC, If it can be applied in the field of teaching can realize the campus information.

In the design process of Building UC platform, we learn from the industry's advanced application cases. Through the case analysis of an enterprise UC platform based on Server Office 2010 and Communicator Server 2007R UC, Combined with the laboratory management requirements as Yuying Occupation Technical College to do the following design.

A. UC Product Selection and Functional Design

UC is not unique to Microsoft products, in fact, Cisco's unified communication products earlier than Microsoft.

1) Product Mix

Microsoft only through the exchange server and lync server product portfolio to achieve unified communication. Cisco needs to be based on a huge network and hardware architecture, while the external claims based on software, hardware and network based solutions, but most of the

software products are to be deployed on " the Cisco media fusion server".

2) *Hardware Investment*

Microsoft can be expanded, fully utilize the existing assets, and retain the original phone, meeting the use of habits, only to strengthen their functions, fully integrated. Reduce duplication of investment and avoid the practice of the re. Cisco need to replace the original program control switch and traditional phone, in order to achieve their unified communication.

3) *Virtualization*

All of the Microsoft products can be built through the virtual private cloud, such as the unified communication platform installes all services on a virtual machine, effectively saving hardware, computer room construction, management, operation and maintenance costs, provide a flexible deployment of a unified communication architecture. Cisco future expansion also need to buy a large number of hardware products to meet the needs of more users, the key is not all of the product can be virtualized, which in the network era has undoubtedly increased the management and operation costs.

4) *External Experience*

Microsoft's unified communication regardless of whether the user is able to enjoy the internal and external communication experience, do not need to buy additional new services and software and hardware. Cisco's unified communication if you need to keep the external users to communicate, you need to deploy the relevant network, security hardware, build VPN network connection.

Through the comparison of UC products, we choose Microsoft, Merging UC related applications to Microsoft UC products as shown in Table1.

TABLE 1 MICROSOFT UC PRODUCT LIST

Lync Server 2010	Exchange Server 2010
Video conference system	Voice mail and unified messaging system
Audio conference system	
Traditional telephone system based on PBX	Mobile email
Public timely information and state alert	VPN software
Group chat system	Email security encryption

B. *Topology Design of System based on UC*

Through the research of the application of UC system in many enterprises, it is found that the data redundancy in the system will be redundant, As shown in Fig.1. When a problem occurs when a mailbox server or a LYNC server is in use, the application automatically runs to another machine to make sure that the user is not using the server problem and causes the system to crash, in order to ensure the effectiveness of the business system in the enterprise.

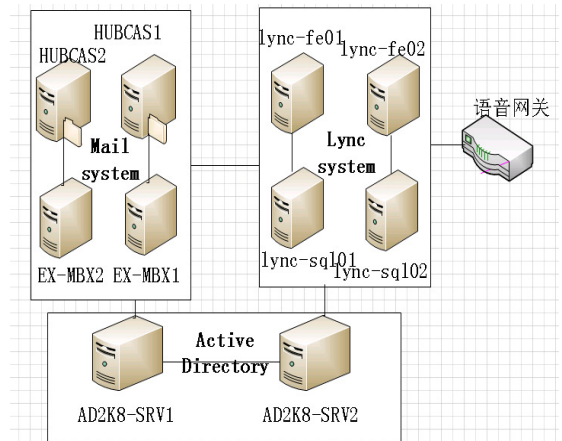


Fig. 1. Lync Server 2010 Enterprise system topology diagram

Campus structure is similar to the enterprise, but not like enterprise which has complex needs. Here we are using only a microcosm of the laboratory, so the topology can be relatively simple to the minimum. Due to funding constraints, we can not do redundancy, only need to allocate the administrator account server and backup; Manage LYNC account server and backup; voice database and voice gateway and other equipment. According to the laboratory management needs to build

the system topology. Lync Server 2010 Laboratory system topology diagram As shown in Fig.2.

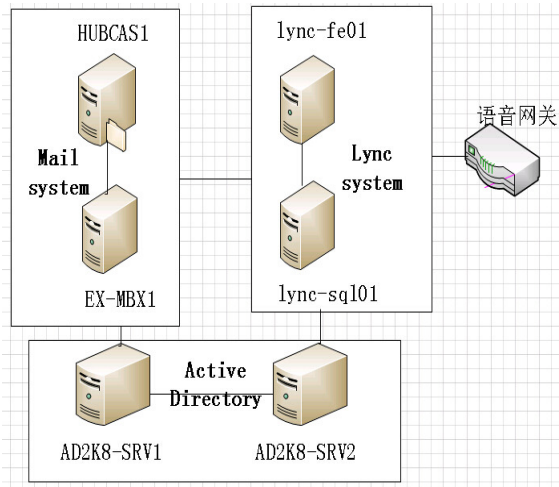


Fig.2. Lync Server 2010 Laboratory system topology diagram

C. Server Role Definition

- 1) AD2K8-SRV1: Used to manage account and computer
- 2) AD2K8-SRV2: For AD2K8-SRV1 backup
- 3) Lync-FE01: Manage all LYNC user accounts
- 4) Lync-SQL01: background database, store all user message records
- 5) EX-MBX1: Support and save user data for the completion of voice mail and email.
- 6) HUBCAS1: For mail sending and contact search.
- 7) Voice gateway: Provide support for the SIP protocol, complete the IP network to the PSTN network access conversion

D. Design and Implementation of Laboratory Management Scheme

After the UC platform is built, it will be displayed to the user of a system which can be accessed by PC, Web, smart phones and other devices. The following is a brief introduction to how to design and implement the laboratory management program.

1) Use AD to Establish an Account

Set a laboratory manager as an example, I need to establish self-accounts and under the jurisdiction of experimental teacher machine account. So teachers can access to the corresponding laboratory administrator

through the teacher machine, give him a message, e-mail or remote requests.

2) The Unification of Voice Mail and Email

The feature of UC is to realize the unification of voice mail and email, so we should set up the electronic mail account. It can be automatically converted to voice mail waiting for the user to receive when the phone call is unreachable.

3) Personal Account Interface Display

After the account was completed, we will show UC personal account interface, as shown in Fig.3. Since the fund has not been put into use, this figure is the use of a corporate resource design, From Figure 3 we can see that the general function of the UC platform, it is similar to QQ platform, but it can achieve most of the functions of QQ in the LAN, is very suitable for the "no net" environment of laboratory management. In addition, it also can realize the phone call, save resources, improve efficiency.



Fig.3. Personal account interface display

4) Network Function

Due to the "no net" between the laboratory and laboratory manager we use the UC local area network function, in fact, the powerful UC is highlighted in the network. If have the "net", teachers can install Lync software on their mobile phone whenever and wherever react Laborator conditions, realize mobile office laboratory managers of different branch can Promote mutual communication by creating groups, voice chat, video conferencing, etc, to improve the technical level of the

laboratory management.

5) *Out Service*

Go out or leave, Lync software can be used to realize free communication through any network equipment, not only real-time follow-up work, but also to achieve free calls, reduce cost and improve work efficiency.

IV THE SIGNIFICANCE OF UC IN LABORATORY MANAGEMENT AND CAMPUS INFORMATION

UC is a kind of innovation in the management of university laboratories, laboratory management personnel under the guidance of modern education management concept, to play a subjective initiative, to break through the original concept of restraint and thinking, so as to form a guiding significance of laboratory management [6]. in laboratory management, we must always adhere to the concept of innovation, to improve the quality of experimental teaching.

The key of unified communications is collaboration with each other, institutions of higher learning is very similar to enterprise at teaching facilities and resources, team of teachers and laboratory system, but the mutual communication between teachers is not high, especially among the different branches of the Department. Unified communication is the integration of various forms of communication and information at any time and anywhere. It will be the first time to publish the information to each other. It can realize the integration of various types of communication and the integration of the process, improve production efficiency and enhance the competitive advantage. In recent years, the continuous development of Internet technology and the popularity of mobile terminal products spread the road for Microsoft's unified communication technology. It can provide an essential solution to reduce cost for teachers and students, compared with today's high cost, multi device, isolated application environment solution, meeting the needs mostly.

Building laboratory management program based on UC platform is integrating a variety of commonly used communication functions into an integrated, highly scalable platform. Not only can manage laboratory scientifically, but also can reduce the cost of

communication between laboratory manager, teachers, technicians and the travel office, bring more features and values. Unified communication platform in the process of information expansion of the most able to see considerable benefits. So, we can start from the laboratory management program, expand it to the entire campus, a region of the University, and even across the country. The geographical scope is big, the benefit is more obvious, the main benefit is as follows.

1) Through the UC conveniently realize remote audio and video conferencing, reduce unnecessary travel.

2) High long distance calls charge cutting for business users, especially the country training, study abroad, the use of UC to complete voice calls can save nearly 80% of the cost.

3) Work efficiency improvement: IT Microsoft sector by measuring its wide deployment of OCS 2007 R2, according to the report of Microsoft UC users, the production efficiency increased by 28 minutes per day (5.8%) [7].

V SUMMARY

The laboratory management goal is to gradually scientific, efficient and standardized. Conservative management will lead to difficult operation, high management costs. Laboratory is a teaching assistant department in the school, the laboratory manager in addition to adhere to the strict implementation of job responsibilities, to build a harmonious working atmosphere and better serve the teaching and scientific research, but also to use a bold and innovative heart, learning modern educational technology, the organization of internal learning and communication, improve the quality and level of technical personnel. The laboratory management program based on UC platform can not only lower the cost of scientific management of the laboratory, but also strengthen the technical exchanges between laboratory managers, the problem communication between manager and teachers, carry out resource sharing with the relevant departments, set teaching, research, training, vocational skills identification and technical services as one of the integrated service platform [8]. Better service for teachers and students to promote the campus information.

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