

E-LIBRARY TECHNICAL SOLUTION: AN EXAMPLE OF ETU "LETI"

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Abstract: The practical experience of forming the e-library network environment of St. Petersburg Electrotechnical University "LETI" library is discussed. The major related problems are considered: managing library applications, managing user data, development and replication of software program configuration of library staff and users workstations, managing Internet access for library staff and users. The principal technologies used to solve these problems are described in brief.

1 INTRODUCTION

The ETU "LETI" corporate network – ETUnet – is rather complicated computing network distributed around the university campus. It is heterogeneous because a lot of different hardware, software, and protocols are used inside.

There are about 60 servers presented in the ETUnet at the moment, about 20 of them designated for centralized access and usage. These 20 servers are working under the Novell NetWare platform. All these allow the network of such level to support high-level productivity, secure access, data safety, scalability, etc. The number of the client's workstations is about 1000.

The ETUnet backbone was build on fibre optic cable with 2300 meters length. The FDDI is used for data transmission across the backbone.

The ETUnet is connected to the Russian University Network (RUNNet) and Internet via fibre optic channel with 10 Mbits per second throughput.

The university library divisions and offices are distributed around the campus. They are placed in different buildings and the distance between them is wide. All these pre-define the set of technologies, hardware, and software that was used for university e-library network environment creation.

In the ETUnet the Novell Directory Services is used. All network resources and services including allowed for library are integrated into NDS. The network management, user administration, and service access can be done from one control point via NDS.

2 THE GOALS OF THE E-LIBRARY NETWORKING ENVIRONMENT CREATION

"The networking environment" means a total combination of software and hardware resources, which gives a user all the complex of means for the most effective using of the computing network resources, and an administrator of the computing network gets the complex of means for users administration and control. In this case, speaking about the networking environment of the ETU "LETI" library, we mean resources which are given to different users of the library for usage by the university corporative computing network administrator.

The goals of the e-library networking environment creation are mostly in harmony with

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those goals that cause the wide using of the information technologies in our life:

The integrated information environment creation to ensure joint and effective work of the staff.

Provision of the “refusal steady” guided access of the library staff to supplements and databases used in the library work.

Provision of firm keeping of the library databases (keeping from the unauthorized access, technical breakdowns etc.).

Possibility of the access to Internet resources keeping necessary information safety of the library and the corporative net.

Forming and preparation of the workstations for the library staff (PC's software configuration, local and network resources access definition, resource access management by network administrator for each librarians).

Integration of the library into the university information and education space include:

- Making up students and teachers access to the library electronic catalogue via web technologies and special configured workstations.

- Administration and accounting of the library network resources via NDS.

3 ARCHTECTURE OF THE UNIVERSITY E-LIBRARY

Automation of the internal technological processes in the university library accomplished by IRBIS system. This system was built on for file-server operations. The IRBIS system includes three components:

- Functional modules for librarians and readers;
- Web-IRBIS module;
- Z39.50 module.

The three servers are used in purpose of the e-library network environment construction. The server Bibl_3, which operates under the Novell NetWare version 6.0 controls, gives the main providing the library activity services. The subsidiary services are hosted on the Bibl_1 server, which operates under the Novell NetWare version 5.0 (Fig. 1).

The Bibl_3 server is used for the storing and accessing the electronic catalogue, full text documents, and IRBIS functional modules.

The Bibl_2 server provides the web access to the electronic catalogue and full text documents (placed on Bibl_3) by Web-IRBIS module usage. The Z39.50 module also hosted and running on this server for the inter-libraries information exchange. For the Bibl_2 server transparent access to the Bibl_3 server file system was made.

4 USED TECHNICAL SOLUTIONS

For the successful e-Library network environment creation the following technical tasks must be solved:

Creating of the program configurations (images) for every kind of workstations that are used in the university library (library staff workstations, visitor workstations). Choosing and realizing the program for replication of these created program configurations.

Creating the model of personalization of the library staff works (creating and holding personal options, holding personal information (for documents, e-mails, etc.), conducting the actions for the users and workstations policies management).

Choosing and realizing the application management system for the university library. The application access and deliveries policies creation for librarians and library visitors (students, lectors, researchers, etc.).

Creating the policies for the RUNNet and Internet access for librarians and library visitors. Choosing and implementing the Internet access control system.

All technical solutions and used technologies are based on integration of ZENworks software package (produced by Novell, Inc) with directory services NDS of ETUnet.

4.1 The workstation software configuration management

Among the library workstations there are two types of them – for the librarians and for readers of the library. In the librarians computers Microsoft Windows 2000 Professional is used, in the readers computers – Microsoft Windows NT 4.0 Workstation.

While creating the software images of workstations to less the expenses for recreating the work ability of the workstation in case of wrong actions of the user or of some “wrong” programs, the model of minimization of the influence of user on work of the workstation system was chosen. During the log in procedure of the user in corporate university network on a local PC, from which the registration is made, network service ZENworks Workstation Management applies all the options (policies stored into NDS) to the user workstation, which are important for the effective work of the user. After the user logging off all the options connected with this user are removed from the workstation. The user cannot create anything on a hard disk of the computer (except the temporary

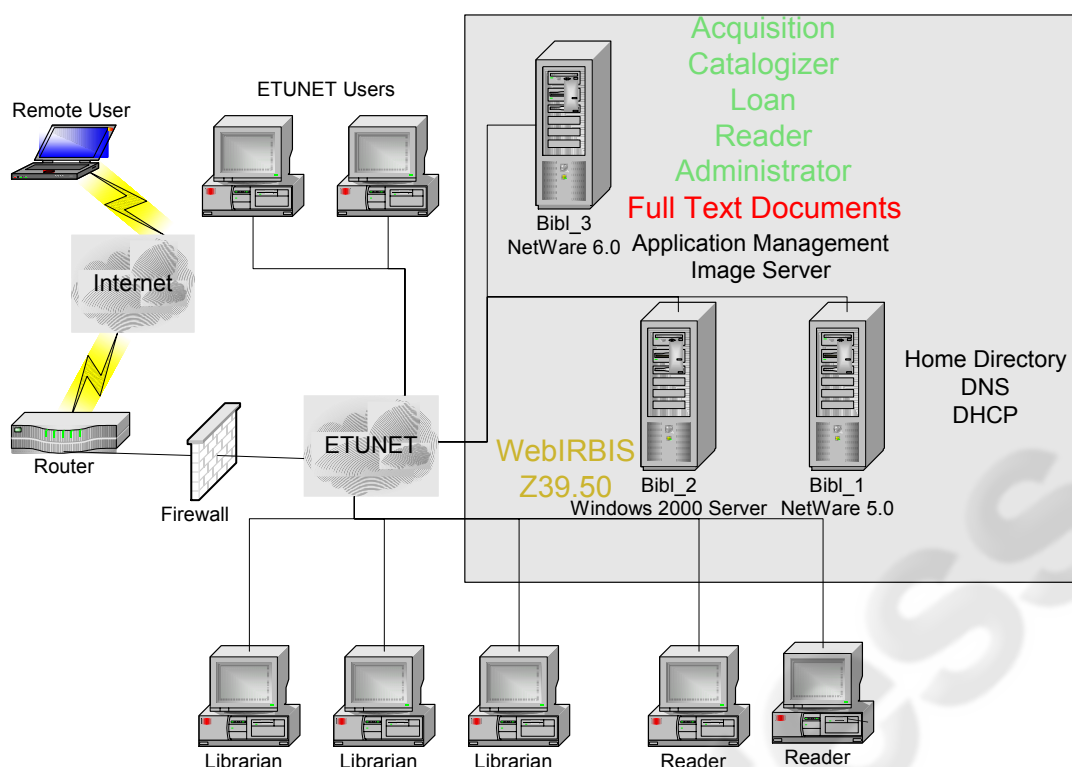


Figure 1: The structure of the ETU "LETT" eLibrary.

folders and files), have an access to the floppy disk on a computer (except the cases when it is important to work according to their work duties), and install new programs, changing the system configuration. All the information, that the user can operate or change is placed on a hard disk system of the server. An access to it is controlled by the security system of Novell NetWare.

The using of this model of creating program configurations of workstations helps to make the reliability of them much more higher and as a result, to make the "pressure" on a technical support services less.

The replication of the program configurations of the workstations is realized with the help of Novell ZENworks Imaging. It helps to create multicast of the "images" of these stations. This replication uses an automatic choosing of the "image" according to the typical workstation, under the influence of its configuration. It helps to get the "image" of the workstation though the network. More ever, due to the high developed functions of conducting and to the close integration with Novell NetWare and directory services NDS, ZENworks Imaging helps to carry out all the important actions directly from the workplace of an network administrator or technical

support service staff, and it doesn't matter where the workstation is really situated.

4.2 Application management

There are some main software applications that are important for the work of the library staff and its visitors. These are the groups of programs Netscape Communicator, IRBIS modules, Microsoft Office, Adobe Acrobat Reader, etc. During the creating of the program's configurations of the workstation it became evident, that the installation of all these software to every workstation can be unreasonable. And the reasonable base of such a solution can be invisible, because it could make the size of workstation "image" very large and make the "life" of the technical support services staff very hard.

That's why on the base of the service Novell ZENworks Application Management new effective application management system was created and integrated into ETUnet. It could solve many problems of creating a safe access to the useful software applications and keeping these applications in one central point on the main library server.

Starting all these library applications is realized from the server Bibl_3. For the most accurate work of the programs single time copying of the important

application files from the server to the workstation can be demanded, as well as the changing some of the keys in the workstation system registry. Checking up the importance of doing such operations and their realizing is made by the application management services automatically after the starting the work of this software application. Stored on the server application files are accessible for a user only for reading. It defends the files from corrupting by the user's wrong actions and protects them from the computer viruses.

Application management helps to conduct the user access to some software applications. On practice it means that the program "IRBIS Acquisitions" is able to be opened only by the librarian from the library acquisition office. All the rest of the users will not see the icon for "IRBIS Acquisitions" on the workstation desktops.

Also, there is a possibility to define availability of the software applications according to the software and hardware configurations of the user's workstation. By other words, the software application designed for Microsoft Windows 95/98 only cannot be accessible from the workstation with Microsoft Windows 2000 Professional.

4.3 Internet access management

The library staff and visitors access to the RUNNet and Internet is coordinated by the group of network services DHCP and Novell BorderManager.

The DHCP service, the one of the basic network services in the ETUnet, responses the accordance of every workstation sending DHCP-request and send back the IP address according to its MAC address.

Two diapasons of IP addresses are used for the library workstations in the university library. One of them is used for library staff workstations, the second one – for the library users workstations. The cause is that the library staff and the users have different accesses to the ETUnet, RUNNet, and Internet.

While the library staff has not limited access to the Internet, library users have access only to the pre-defined site addresses of other libraries in St. Petersburg, Russia, and Europe.

The direct regulation of the Internet access is made by Novell BorderManager software, which is installed on the one of the main servers in the ETUnet.

The BorderManager rules are the same as used in the most firewall and are defined who the concrete user or workstation with IP address inside the ETUnet can use the Internet resources.

5 CONCLUSION

Created e-library network environment help to organize an efficient management and network administration of the university library network, informational, and digital resources. The software applications, system policies, etc. can be effectively managed also. All of these is the base for creating of a modern digital library in the university in nearest future.

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