



Building And Analyzing The Use Of Network Systems In Diskless-Based Intro Internet Café

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Abstract: The use of computers and internet has become an integral part of daily life. A popular use is online gaming, where access convenience is often lower through smartphones compared to computers, leading many gamers to continue using their computers or visit internet cafes to meet their gaming needs. The success of internet cafes also depends on internet speed and computer device maintenance. The process of updating games on each client computer also affects overall internet speed. To address this issue, Intro internet cafe has built a diskless-based system, which centralizes data on the server so that game updates only need to be done on the server, allowing users to access the latest version without manual updates on each client computer, while also having sufficient security. This research aims to build and analyze the use of network systems in Diskless-Based Intro internet cafe. With a focus on configuration, performance, and efficiency, this research addresses several issues that arise with the use of diskless systems. The results show that the diskless system provides many benefits, such as reducing hardware costs, easier management, and increased data security. This system allows client computers to boot via the network and efficiently run the operating system. It is expected that the implementation of a diskless system in the operations of Intro internet cafe will provide efficiency and significant benefits.

Keywords: Network, Internet, Internet Cafe, Hard Disk, Diskless

Introduction

Computers are one of the most needed tools, both in schools, offices, factories, and at home. The need for computers is also influenced by the internet as one of the supporting facilities in helping computer users find information and other things needed such as browsing, video streaming, downloading and online games. Currently, online games can not only be accessed through computer devices, but also using other devices, namely smartphones.

However, accessing online games through smartphones is not as convenient as when users access them through computer devices, so many online game users fulfil their needs by accessing online games using computer devices at home or visiting internet facility providers. Because the interest of online game players is considered quite high, many business actors try to provide this facility to online game enthusiasts, one of which is by building an internet cafe business or commonly abbreviated as warnet.

Internet speed as well as the maintenance of computers and their devices are needed for the convenience of consumers. In addition to these two things, sometimes the activities in the internet cafe are hampered because the computer network used is problematic so that the smooth running of the internet cafe business is disrupted. Because of this, internet cafe owners must be able to choose networks and systems that are considered effective and efficient enough in terms of price and time so that the internet cafe business can run optimally.

One of the biggest expenses of an internet cafe is the maintenance of PCs that are often problematic. The damage is often caused by the lack of attention from the user when operating the computer and the active hours of the computer which is almost twenty-four hours. This can reduce the performance of the computer in processing games and can even make the computer's hard drive become bad sectors. In addition, users must update the games they play on each computer device they use. This update process is sometimes done simultaneously on different computer devices. With a bandwidth of 10Mbps, this certainly affects the internet speed for internet cafe users, both for users who are accessing or updating online games and users who are doing regular browsing activities.

To overcome this problem, Intro cafe built a diskless-based system that is considered capable of overcoming this problem. With a centralised system on the server computer, which concentrates all data on the server, then the data can be accessed by the client, the update process is only done on the server so that all clients can run games with the latest updates, without the need to manually update each computer device. The server can also manage the update queue and set speed limits during the update, so as not to make users wait in front of their computers, which keeps their time and billing running. With a diskless system, the possibility of client computers being exposed to viruses is very small because the data is centralised on a server that is continuously monitored by the server admin.

With this diskless system, it is expected to minimise the costs incurred to build one unit of client computer because there is no need to buy a hard drive. The software and game update system on the client is also made easier because there is no need to update the game on the client computer, just update it on the server side.

Methodology

The research method that the author will use is the NDLC (Network Development Life Cycle) method which is a method dependent on the previous development process. Here is an overview of NDLC:



Figure 1 Cycle In NDLC

Result

1. Discless System Implementation

The implementation of a diskless system is done by setting up an internet cafe system that uses this approach. The main server is configured with sufficient specifications to centrally manage the operating system and user data. Client computers are set up to boot over the network and utilise the main server as the main source for the operating system.

Before implementing diskless at the Intro internet cafe, the following are things that must be considered which can be used as the main requirements or basic things that must be done on the server and client in order to achieve standards when implementing diskless implementation on servers and clients, the following points are below:

Table 1 Diskless Standards On Server And Client

Sever Checking	Ket	Client checking	Ket
Pre-Installation Checklist Completed		The name of all PCs is according to the layout	
IP settings have been set manually (not auto DHCP)		IP settings have been set manually (not auto DHCP)	
Anti virus is installed (If you must, and make sure cyberindo software is included in the whitelist/exclusion list)		Optimisation settings have been done (Defrag and LAN settings) before driver writeback	
Basic server settings have been completed		All drivers are installed and correct	
Sync console settings have been set		Partition and drive letter settings are correct.	
The gamedisk name on the diskless console is GD0 (automatic)		Basic client settings have been completed	
Gamedisk download location is correct (E:)		Gamedisk must appear as E	
All client details are in list mode client view		All required and owner-desired client applications are installed and saved	
All client PCs are in group settings and cyberindo diskless (In image and on gamedisk)		Games can be played on the client	
All basic discless console settings			

are done			
Path writeback, image, etc. are correct			
Cache has been set			
Test game has been done			

Based on the table above, the author has done important things that have become the main points in building diskless at Intro cafe, the following are the stages that the author has done, the following steps and explanations:

In the implementation stage, the steps that have been determined are followed carefully. The main server and client are installed with the Windows 7x64 operating system and the client computer boots over the network without a local hard disc. Each client computer can connect to the main server and run the operating system efficiently. The next process after the installation of the main server is the division of the hard disc into several partitions with the provisions of each mode as follows:

Table 2 Division Of Server Hard Disk Partitions

Fungsi Drive	Letter	Penamaan
Operating System	C	OS Win 7 x64
Drive Image untuk diskless	D	Image
Drive penyimpanan game	E	Game
Drive Writeback untuk diskless	F	Writeback
Cache SSD untuk diskless	J	SSD Cache
Backup Sistem Cyberindo	Z	Backup

The software used for the main server is Cyberindo Diskless Server and is installed on the Z:\Cyberindo partition. After the installation process is complete, the next step is to make the initial settings by entering Options (F4) then please set the writeback location (F:).

Table 3 Testing Results Of Diskless Network Design

No	Test	Details Test	Result	Ket.
1.	Testing the process of installing new applications	In this test process, the process of installing an application on a server computer will be carried out to find out whether the application is automatically installed on the client computer, according	In accordance with what is expected, that is, applications that have been installed on the server will automatically appear on the client.	All clients can immediately use the new application in the cafe console menu, or restart the client PC if needed.

		to how the diskless network works.		
2.	Testing the process of updating the application	In this test process, the process of updating an application on a server computer will be carried out to find out whether the application is automatically updated on the client computer, according to how the diskless network works.	Applications that have been updated on the server, are automatically updated on the client	All clients will thoroughly get the latest update of any application that has been updated on the server, restart the PC if necessary.
3.	Testing the process of uninstalling applications	In this testing process, the process of uninstalling an application on a server computer will be carried out to find out whether the application is automatically uninstalled on the client computer, according to how the diskless network works.	After the server uninstalls an application, the client automatically cannot use the application	The application does not appear or disappear from client storage. And directly cannot use applications that have been uninstalled (if the client is on).
4.	Monitoring sever and client	View and analyse the work of a PC server and client when the system is operating.	On the server CPU usage is stable at 32%-33%. Memory at 3.9/7.9 GB (49%) Disk 30-35%.	It is recommended to restart the client PC

Discussion

Implementing a diskless system in an internet cafe using a star network topology is a smart decision to improve efficiency, manageability, and security. The star topology allows for efficient access control, easy monitoring, and uninterrupted stability as the internet cafe grows. In addition, administrators can easily manage and maintain network

security from one central point, making the implementation of a diskless system a very potential step in dealing with the operational demands in an ever-growing internet cafe environment.

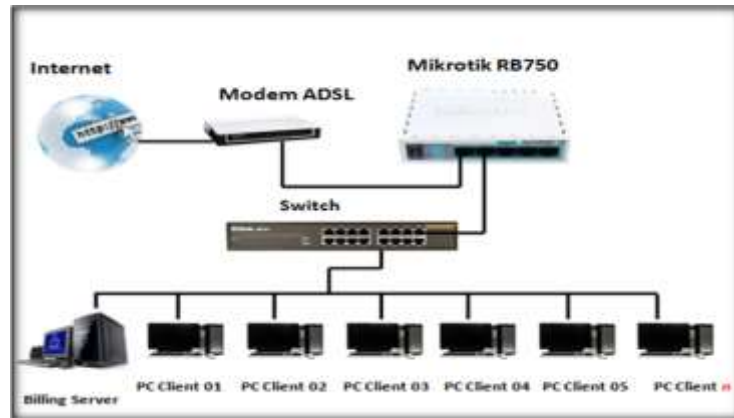


Figure 2 Internet Cafe Network Topology

The use of a diskless system in the construction of this internet cafe provides significant benefits. Firstly, a reduction in hardware costs can be achieved as there is no need for a hard disc in each client computer. In addition, the management and maintenance of client computers becomes easier as changes or updates to the operating system can be done centrally on the main server.

The use of a diskless system also increases the security of user data. User data is not stored on client computers, reducing the risk of data loss or theft. All sensitive data and configurations are stored on the main server, which can be managed with strict security policies.

1. Challenges In Diskless Implementation

The challenges faced in implementing a diskless system include the initial configuration of the main server and the selection of the right operating system. Selecting an appropriate operating system and configuring the server properly requires a deep understanding of networking and system administration.

In addition, network stability and performance are also a challenge. Poor connectivity between the main server and client computers can lead to long boot times or system instability. A network infrastructure capable of handling high data traffic and providing consistent performance is important to be well organised.

2. Diskless System Performance And Efficiency

In the tests conducted, the diskless system showed satisfactory performance and high efficiency. Client computers were able to boot up quickly over the network and run applications with good responsiveness. The use of computing resources is managed efficiently as all computing processes are centralised on the main server. In addition, the use of a diskless system also reduces the power consumption of client computers as there are no hard discs to run. This has a positive impact on energy

efficiency and operational costs. However, keep in mind that the performance and efficiency of a diskless system may vary depending on the specifications of the main server, the quality of the network, and the number of client computers used.

Conclusion

In the development of an internet cafe system using a diskless approach, the implementation of a diskless system was shown to provide a number of significant benefits. The use of a main server to centrally store the operating system and user data reduces hardware costs, eases management and maintenance, and improves data security. Client computers can boot over the network and run operating systems efficiently. Diskless system performance is proven and energy efficiency is achieved through the use of computing resources centralised on the main server. However, there are some challenges in implementing a diskless system, such as the initial configuration of the main server and the stability of network performance. Proper configuration, sufficient specifications and a good network infrastructure are essential to support the effective operation of a diskless system. And also client computers that have successfully obtained the operating system and data they need will continue to use the existing devices on the client itself, such as the use of RAM, VGA, Processor. This device will still be needed as it should be a personal computer to support the performance of the client computer. In implementing diskless on a network, of course, an OS image is needed which will later be used by the client, from several Oses that are often used, namely Windows 7 64bit, Windows 10 64bit. However, what happens if the OS image is a licensed operating system, in this case the author draws conclusions from several discussion forums and information from several technicians who handle this matter, the author concludes that if the operating system image is a licensed OS, it can still be used, and later all clients will get the license according to the licensed OS image that has been prepared. Because diskless itself in general can be said to be a parallel system, which means that they can run simultaneously independently and will not meet.

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