

BUILDING A HEALTHY INTERNET WITH MIKROTIK

Adrian K Tarigan¹, Jonathan Dingel², Diana Florenta Butar-Butar³, Hadi Panjaitan⁴
Universitas Efarina^{1,3,4}

Associate Professor of Economics and James S. Kemper Foundation Faculty Scholar²

*Correspondence: adriantarigan31@gmail.com

Abstract

The development of the digital world and technology plays an active role in everyday human life and activities. The use of the digital world and technology provides a lot of information so that it can be accessed easily so that it is not uncommon for the use of technology to be used for things that are not good, such as accessing sites that contain negative content. Not everyone knows how to filter sites that contain negative content, so we need a system that can filter sites that contain negative content. This study aims to build a system that can filter sites on the internet so that healthy internet use can be implemented. Sites are filtered using a web proxy proxy. Data collection was carried out using the literature study method, system design, topology design, and filter application. Testing of blocked sites using a browser. The results of this study web proxies can block sites such as URLs, websites, keywords, and the download process of a file. Web proxies cannot block some sites with certain domains. Filtering with a web proxy takes quite a long time because of the many configurations needed.

Keywords: Healthy Internet, Web Proxy, Mikrotik

INTRODUCTION

The development of the digital world and today's technology plays an important role in everyday life. Almost all human activities depend on technology. One form of technological development is the existence of the internet. The internet provides extraordinary benefits to its users, ranging from education, health, business, and even social culture. On the education side, the internet helps students and teachers find subject matter and carry out the teaching and learning process online (online). But the availability of the internet can also have positive and negative impacts for users.

The positive impact that is obtained with the existence of the internet is the convenience provided to users in obtaining the information needed. While the negative impact is the lack of restrictions in accessing existing information, so that the internet is used for bad purposes such as opening porn sites, gambling, violent fraud, and social networking. Of course, this is a particular concern for parents, considering that many teenagers can easily access the internet, both via mobile phones and computers, so it is not uncommon to find teenagers who misuse internet advances.

One of the cases of abuse of internet progress by teenagers occurred in May 2016. During that period there were 6 cases of crimes of internet abuse by teenagers, namely hacking Instagram, pornography, online fraud, incitement via Facebook, bomb threats, to online prostitution. (news.detik) .com, 3 June 2016).

Given this, it is necessary to find a solution that can provide restrictions to users in terms of using the internet so they can maintain it healthy use of the internet. Based on this

background, the authors try to make a solution, namely by Building a Healthy Internet with Mikrotik. By building a healthy internet with Mikrotik, users will have limitations in accessing information so that it will not have a negative effect on internet users. Internet users can no longer access negative sites such as pornography, violence, social networking and gambling. With the construction of a healthy internet, it will support positive activities for both students, workers, and other users who actively use the internet, so that internet use continues to follow existing ethical paths.

LITERATURE REVIEWS

Basic Concepts of Computer Networks

A computer network is the connection of two or more computers with a connecting cable (in some cases, without cables or wireless as a link), so that computers can exchange information with each other. (Muhammad m & I hasan) The purpose of using a computer network is:

- a) To share resources, such as sharing printers, CPU, memory, hard drives, and others.
- b) For communications such as email, instant messaging, chat, and others.
- c) To access information such as web browsing, file servers, and others. (Andi publisher)

Oshi Layer

The OSI model was published by the International organization for Standardization (ISO) in 1984. The OSI model can be used to explain how computer networks work. The OSI model divides various network functions into seven layers. The seven layers are:

1. Physical
2. Link Data
3. network
4. Transport
5. Sessions
6. Presentations
7. Application

Definition of Healthy Internet

The internet (interconnection networking) is a global communication network that is open and connects millions and even billions of computer networks of various types and types, using types of communication such as telephone, satellite, and so on.

Healthy internet is the use of the internet in accordance with the limits, ethical and does not make people anti-social. Can provide benefits including increasing knowledge, learning, and supporting positive activities (educational, social, cultural).

Understanding Mikrotik

MikroTik was originally a small company (now it has become a big company) headquartered in Riga, Latvia, a country in Europe. MikroTik was originally built by John Trully and Arnis Riekstins in 1995.

The history of Mikrotik began in 1996 in Moldova, when John and Arnis began to combine Linux and MS DOS systems with AERONET Wireless LAN (W-LAN) technology with a speed of around 2Mbps.

Definition of Build

Build comes from the basic word wake (verb) which means to establish, build, repair, rise and rise.

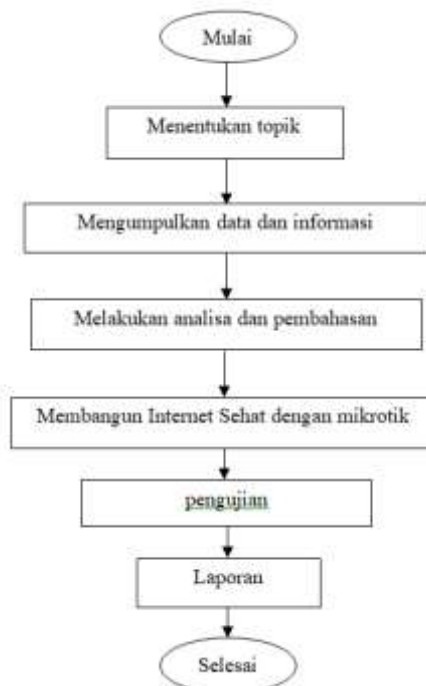
Mikrotik Proxy Servers

Proxy server is a server that is placed between a client application and the server application that is contacted. Client applications can be web browsers, FTP clients, and so on. While server applications can be in the form of web servers, FTP servers and so on. The proxy server that is placed between the client and the server application can be used to control or monitor data packet traffic that passes through it.

METHODS

Research design

Systematic steps are needed in a study so that the design that is made is orderly and according to plan. The flow of this design will be made in the form of a flowchart to explain the steps to be carried out. The design flow created can be seen in Figure 4.



Picture of research design flow

Test results

After the system has been successfully built, the next step is testing the results. Testing the results will be carried out by trying to access negative sites that have been previously blocked using a proxy whether they can still be accessed or not. The results of

this study are in the form of a filtering system for sites that contain negative content using a proxy.

Method of collecting data

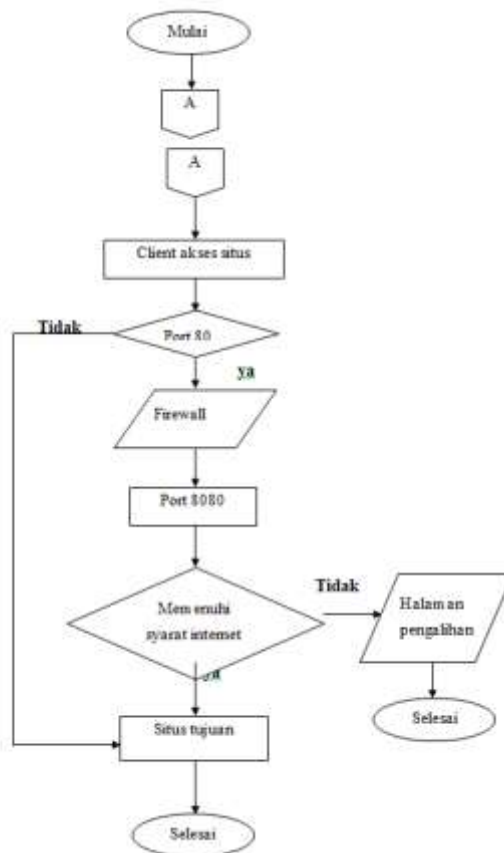
The data collection methods used in this study are as follows:

Study of literature

The author uses the literature study method, namely by collecting journals from the internet and books as a theoretical basis, so that material about building a healthy internet with a proxy has a good and appropriate foundation and knowledge.

Mikrotik Proxy Flow

The blocking flow using the proxy web proxy in this study is as follows:



Picture of proxy proxy web flow

1. Requests from the client to a site via port 80 will be forwarded to port 8080, which is a web proxy port with a redirect function from the firewall, otherwise the request will be forwarded directly to the destination.
2. Furthermore, the web proxy will block sites that do not meet predetermined healthy internet criteria
3. Blocked requests will be forwarded to the redirect page

4. Requests that meet the rules of healthy internet use will be forwarded directly to the destination page site

The network topology used

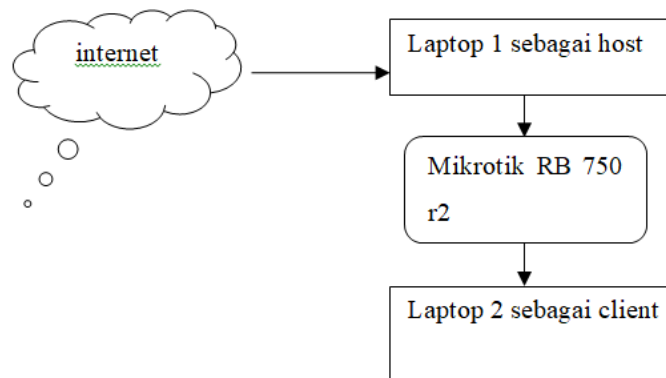


Image of the built network topology

The topology above is the topology that will be used in building a healthy internet. The topology above uses 2 laptops that have functions as a host and client. The host laptop will provide an internet connection to the proxy via a LAN cable and then forward it to the client laptop. The topology uses a laptop as a host because the RB 750 r2 proxy does not yet support wireless connections, so the internet network is forwarded using a LAN cable to the proxy. The laptop client here functions to configure and test whether the healthy internet that is built later is running as it should or not.

RESULTS AND DISCUSSION

Connecting Mikrotik To The Internet

IP settings

The first step is to provide an IP address that can connect to the internet with the same IP class. Ether 1 on the proxy is used for the interface that will connect to the internet. The steps can be seen in the following image:



Figure Filling the ip address on ether 1

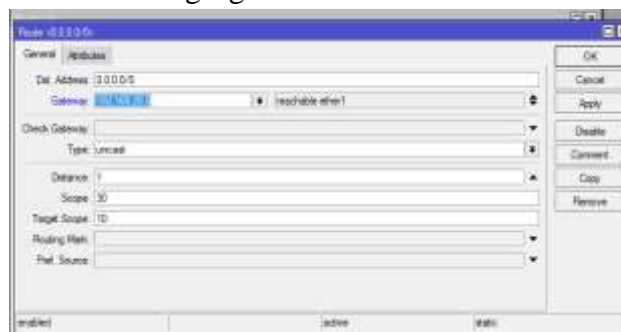
The picture above is a display picture of filling in the IP address address on the proxy. The steps taken are as follows:

1. Do a remote proxy using the Winbox application from a laptop
2. Click IP in the display on the left on the proxy
3. Then select addresses and click the + sign to add the ip to be used, the ip used is 192.168.20.10
4. Then in the interface menu select ether 1
5. Then click apply then ok to save the settings that have been made

The steps above are how to add an IP manually on ether 1. Entering an IP can be done automatically, but ether 1 must already be connected to an internet source, for example a modem or cable that has been connected to another internet source.

Gateway settings

The gateway serves as a path to the destination, namely the internet. Gateway settings can be seen in the following figure:



Gateway settings image

The steps taken in setting the gateway are as follows:

1. Click IP on the left of the main proxy display
2. Then click routes
3. In the main route view, click the + icon
4. Then in the dst address fill in with ip 0.0.0.0
5. The IP gateway used is 192.168.20.5
6. Click apply then ok to save

Mikrotik DNS settings

The DNS settings on the proxy are intended so that the proxy can access sites on the internet. DNS itself is a mapping of ip addresses to a name. For example <http://www.google.com> is an ip address converted to a DNS.

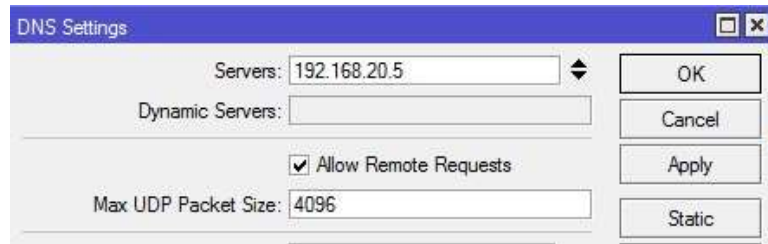


Figure 6. DNS settings

The steps taken for the DNS settings contained in the image above are as follows:

1. Click IP on the left of the main view of the proxy
2. Then select DNS
3. Then enter the previous IP gateway, namely 192.168.20.5
4. Then put a checkmark on Allow Remotes Request
5. Then click apply then ok to save the settings

Client IP address

After the above steps have been completed, the next step is the IP client experience.

The steps taken are as follows:

1. Click start on the bottom left of the laptop you are using
2. Double click on the control panel
3. Then select network and internet
4. Then click network and sharing center
5. Click on the local area connection that is used to connect the client to the proxy (in this case the author uses local area connection 4)
6. Select properties
7. Then double click internet protocol version 4
8. Then enter the IP address that has the same class as the proxy
9. Enter the ip address that is on ether 2 to be the gateway on the client pc
10. Then click ok to save

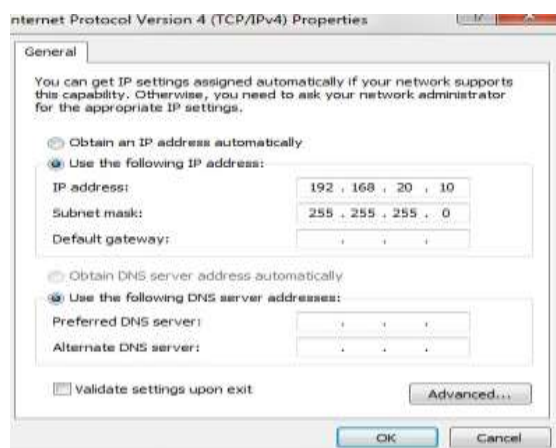


Figure 9. Filling in the IP client

Test the client connection with the proxy

After completing the IP addressing on the proxy and the client, the next step is to test the connection between the client and the proxy whether it is connected or not. The steps for testing the connection are as follows:

1. Click start on the laptop client
2. In the search field enter the word cmd and then enter
3. Then type ping 192.168.20.1 (ip proxy)

If it is already connected, a command will appear as shown below:

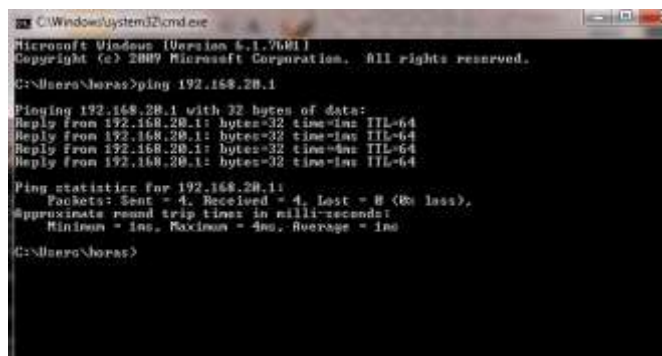


Figure Testing the connection from the client to the proxy

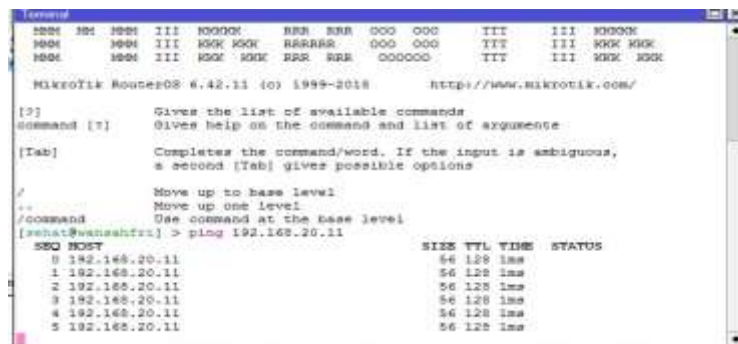


Figure Testing the connection from the proxy to the client

Enable Web Proxies

To start blocking websites that will be blocked, the first step to take is to activate the web proxy on the proxy. the steps to activate the web proxy are as follows:

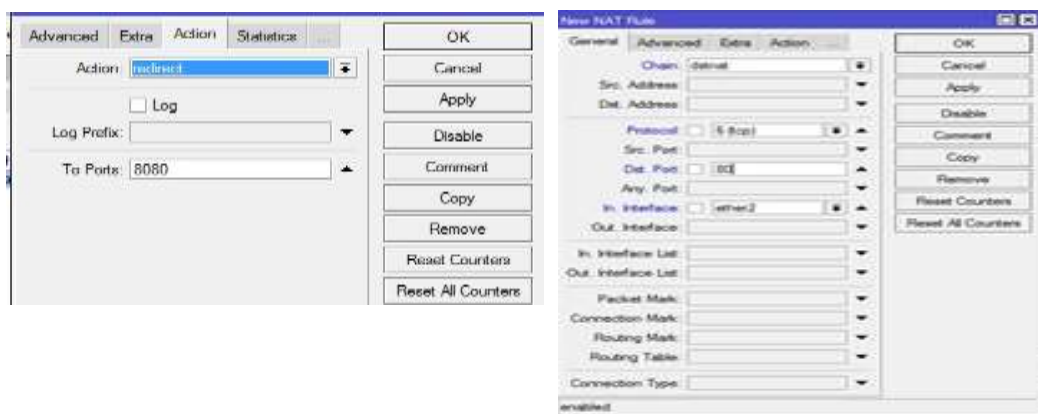


Figure Activating web proxy

The explanation about the picture above about the steps to activate the web proxy on the proxy is as follows:

1. Click the IP menu on the proxy
2. Select the web proxy menu
3. Check the enable option
4. Determine the port proxy will work, in this case the author uses port 8080, which is the default port on the proxy
5. Click apply then OK to save the settings that have been made

After completing the previous steps, the web proxy on the proxy is active as a Regular HTTP Proxy, which means that if a client wants to use this proxy setting, it must be set manually in each client's web browser by pointing to the IP proxy 8080. So that you don't need to make settings one by one. one on the web browser client, then this can be done by changing the proxy web proxy Aagr to function as a transparent proxy. The method used is to utilize the NAT feature to divert all HTTP (tcp 80) browsing traffic originating from the client to the internal web proxy feature that was previously activated. The steps taken are as follows:



Transparent proxy configuration image

The picture above is the steps to change the web proxy to function as a Transparent proxy. The configuration steps are as follows:

1. Click the IP option on mikrotik
2. Then click the NAT option
3. Then click the + sign
4. Change the options in the chain to "dstnat"
5. Then in the protocol options change to "6(tcp)"
6. In Dst.port, enter the number 80 because the port for deflecting browser traffic is port 80
7. Then move on to the action tab
8. In the action option, change it to redirect
9. And the option to port change to 8080
10. Then click apply and ok to save

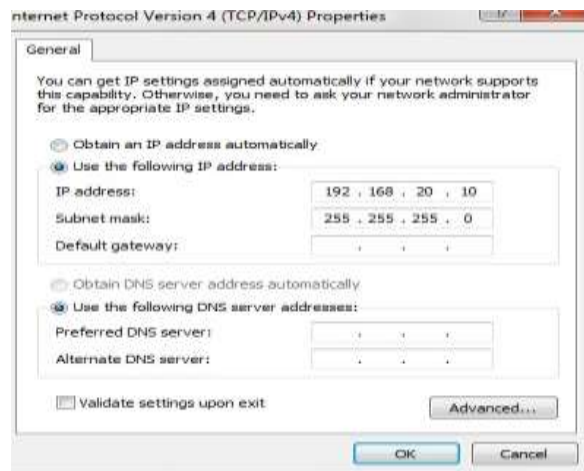


Image Charging client ip

Make lists of sites and download processes that will be blocked.

The list of URLs that will be blocked can be seen in the following table:

Table List of URLs that will be blocked using a web proxy

URLs	No web proxies	Using web proxies
www.xvideos.com	Allow	Deny
www.zedge.com	Allow	Deny
www.Pornhub.com	Allow	Deny
www.ganool.com	Allow	Deny
www.gamawap.com	Allow	Deny
www.gratisindo.com	Allow	Deny
http://vkwap.com/ytube	Allow	Deny
http://keepvid.com	Allow	Deny
http://3gpsearch.com	Allow	Deny
www.wapdam.com	Allow	Deny
http://videos.yaaya.mobi	Allow	Deny
http://youtubemyway.com	Allow	Deny
http://3gpfind.com	Allow	Deny
http://mywibes.me	Allow	Deny
http://www.mv3gp.com	Allow	Deny
http://freemobilvideos.com	Allow	Deny

The table above is a table that contains negative sites (porn videos) that will be blocked using the proxy. If blocked sites are accessed using a browser, the page will automatically be redirected to <https://com977755463.wordpress.com/>. The page is a healthy internet block site created for redirect pages only, so there is no other information on the blog. The display of the redirect page can be seen in the following image:

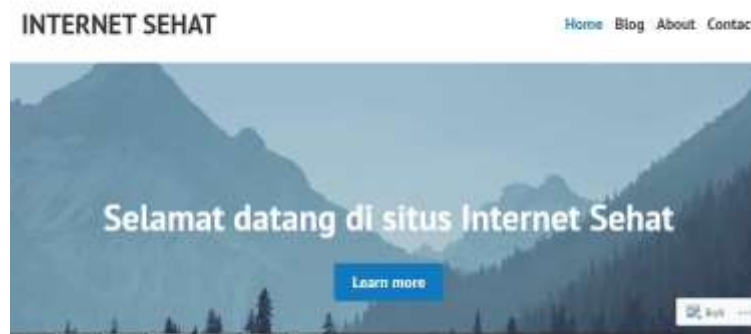


Image Redirection page display

System Testing

System testing is done by trying to access blocked sites using a browser. The results of testing the system that has been built are as follows;

Testing Access to Urls Containing Porno Content

Image Trial access www.xvideos.com

The image above is a display of the url www.xvideos.com which has been blocked using a proxy web proxy but with a redirect page that has not been made so that access is not forwarded to other sites. Here is a view from www.xvideos.com which has been blocked and made a redirect page. The next test is testing the site www.zedge.com which in this case was successfully blocked using a proxy web proxy.

CLOSING

Conclusion

Mikrotik web proxies can block urls in the form of http and websites that contain negative content, namely gambling and violence. Web proxies can also block urls that contain certain words. In addition to blocking web sites, a proxy can also be used for cache object storage. When a client accesses the same object or content, it doesn't need to use an internet connection and bandwidth so access will be faster. However, web proxies cannot block websites with https urls such as www.facebook.com, www.instagram.com, and www.twitter.com. Web proxies are not able to block a word that is not in the form of a url. Web proxies are also unable to block games that are currently very popular with teenagers today. Web proxies cannot block a site that has a domain other than “.com”, as in the previous chapter on blocking the <http://mywibes.me> site. The site has a “.me” domain so it cannot be blocked using a web proxy

Suggestions and Acknowledgments (if any)

Research on building a healthy internet with a proxy would be better if it used more than one blocking method, so that sites that cannot be blocked using a web proxy can be blocked with other blocking methods. Blocking sites should be carried out in stages and still carry out checks on sites that have been blocked, because the address of a site that contains negative content tends to change frequently.

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BUILDING A HEALTHY INTERNET WITH MIKROTIK

Adrian K Tarigan¹, Jonathan Dingel², Diana Florenta Butar-Butar³,
Hadi Panjaitan⁴

