

## Blocking Prohibited Sites Using Proxy Server In Mikrotik And Squid Proxy Debian Server, At The Nurul Anwar Education Foundation, Tanjungbalai City

Zulham Sitorus<sup>1</sup>, Mhd Arfan Sitorus<sup>2</sup>, Didi Riswan<sup>3</sup>, Heri Eko Rahmadi Putra<sup>4</sup>

1,2,3,4Master of Information Technology, Univeristas Pembangunan Panca Budi

### ABSTRACT

After the internet was discovered, humans were greatly helped by internet access, both in the economic sector and in the dissemination of news or information. However, the more the internet develops, the more uses the internet has, and the internet is often misused by internet users, such as online gambling, pornography and violent content. So if there are no restrictions on accessing content or websites that contain elements that are not good and can be accessed very easily by internet users, it is feared that if minors want to open these websites, it is feared that it could damage morals. children who are still immature in using the internet, therefore a Proxy Server is needed which aims to filter internet access from prohibited sites which are likely to be accessed by users who are immature in using the internet and provide healthy internet implementation by adding a proxy server as filtering websites. filtering or blocking websites that are inappropriate for internet users. The results of this research are that the network security tool using a proxy works if there is an attempt to open a website listed on the list of websites that are not allowed to be accessed and the proxy server network security system, there is no limit to how many websites can be blocked.

**Keyword :** Mikrotik, Proxy server, Squid Proxy.

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#### Corresponding Author:

Mhd Arfan Sitorus,  
Department of Information Technology  
Pembangunan Panca Budi  
Jl. Gatot Subroto KM. 4,5 Medan, 20122, Indonesia

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## 1. INTRODUCTION

The internet is an information medium that cannot be separated from people's lives today. One indicator can be seen from the number of internet cafes (cafes) that provide internet connections for their customers. An internet connection is not only needed for individuals, but also for a wider scope, such as companies and offices. With the large need for an internet connection.

Computer Network Technology is often used as a Communication and Transaction Media to this day. Moreover, in internet networks (interconnection networking), human needs are in the network, both hardware and software, so that technological developments are increasingly rapid. As technology continues to improve, more and more users want an efficient network and a good level of security.

A school definitely really wants good quality internet connections and security, the development of the internet in the world is not accompanied by maturity in healthy and appropriate use of the internet (interconnection networking), so there are often problems regarding the decline in morals of the nation's children due to pornographic sites and other prohibited sites. , so that internet users, especially minors, can open or access the site freely without any filters. Apart from that, on sites such as pornography and online gambling, there may be viruses that can harm the system they use

Private Madrasah Ibtidaiah (MIS) Nurul Anwar is a madrasah school located in the city of Tanjungbalai, North Sumatra, where MIS Nurul Anwar has 1 madrasah location, the madrasah location is in Sei sub-district. Tualang Raso, jln. Sei. Kedaung, Tanjungbalai city.

Currently, MIS Nurul Anwar already has internet access, and usually the internet is used by students during lessons and must be supervised by the teacher who is teaching, and also the use of internet access is also used by all teaching staff, operators, administration, school secretary and head. schools, and because students are allowed to access the internet, there is a risk of internet misuse.

Due to the lack of an adequate network security system at the Nurul Anwar Private Madrasah (MIS), namely the security of users when using the internet access provided by MIS Nurul Anwar, the Principal of MIS Nurul Anwar is concerned about misuse of the internet provided by the school, misuse is good. by students or teaching staff and staff at MIS Nurul Anwar. Because the head of the MIS school, Nurul Anwar, is aware of the huge impact of misuse of the internet access provided by the school, whether misuse in the form of violent content, gambling or pornography. So researchers are trying to create a system so that it can monitor and prevent internet misuse. So the way the system works is that when an internet

user wants to open or access a website that has been included in the list of blocked sites, the user will not be able to open that website.

Internet access control is very necessary so that misuse of the internet by users can be minimized, by using side blocking and also web filtering, users who want to open or access prohibited sites can be prevented, this blocking system can be used with proxy servers owned by Mikrotik, and the use of proxies. The server is not only for blocking prohibited sites, but can also reduce the frequency of bandwidth usage when there are repeated website requests, and the IP of the website that has been successfully opened will be saved by the proxy server so that when you open the same website for the umpteenth time it will speed up. website page opening time.

## 2. RESEARCH METHOD

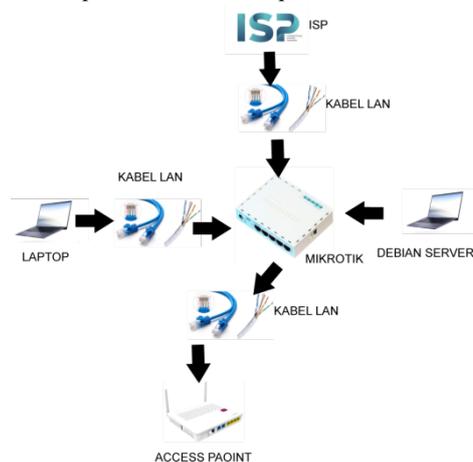
The method used in this research is a qualitative method, namely research that is descriptive in nature and uses more analysis. After that, the research continued to design network security tools.

### Data collection

There are several data collection techniques, namely:

1. Observation Technique (observation)  
The observation technique is a technique for collecting data that is very common in qualitative research methods. Quantitative observations are designed to establish standardization and control, while qualitative observations are naturalistic. Qualitative observation is applied in the context of a natural event, following the natural flow of the observer's life. Qualitative observations are not limited to measurement (quantitative) categorization and responses that have been estimated in advance [14].
2. Interview Techniques  
Interviews are one technique that can be used to collect research data. In simple terms, it can be said that an interview is an event or process of interaction between the interviewer and the source of information or the person being interviewed through direct communication. In-depth interviews: most qualitative research data sources are based on in-depth interviews, this technique uses open-ended questions, prioritizing ethical attitudes towards the informants being studied. The data obtained is in the form of perceptions, opinions, feelings and knowledge.
3. Documentation Techniques  
Documentation techniques are the collection of information obtained through facts stored in the form of letters, diaries, photo archives, activity journals and so on. Data in the form of documentation can be used to dig up information that happened in the past.

Configuration analysis is a thinking activity to decompose a whole into small components so that you can recognize the signs of the components, the relationship between each component.



picture 1 Tool Configuration Analysis

### General System Design

System design is describing how a system is formed so that it can provide a clear picture to users.

### Data Flow Diagram

Dataflow diagram or (DFD) is a description of the processes involved in a system..



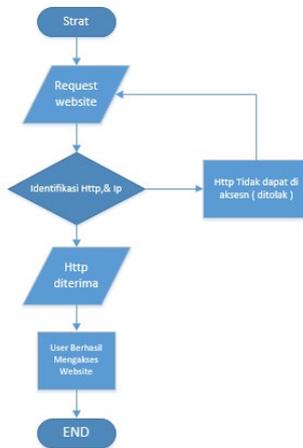
Picture 2 Context Diagram

**DataFlow Diagrams**

Data Flow Diagram is a tool that uses certain symbols to describe the flow of system data that flows from one part to another in a system.

**Flow chart**

A flowchart is a diagram that describes the workflow of a program. In a broader context, it can also be used to describe the processes of a system. Often also used in medical, chemical, engineering, or anything that requires complex visualization. Flowcharts help in understanding complex and long logical sequences. With a flowchart, you can communicate the course of the program to other people more easily



Picture 1 Flowchart

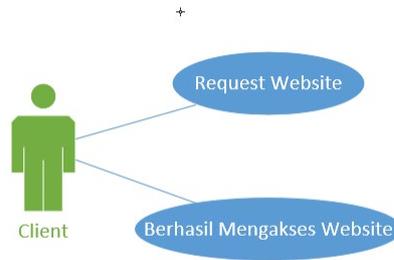
Skenario FlowChart :

Table 1: Internet network connection scenario

No	Actor Action	System Reaction
1	Request the website you want to access	Identify the Http and IP of the website you want to access, the request is accepted by the user to successfully access the website, otherwise the website request returns.

**Use Case Diagram**

Use case diagram menggambarkan bagaimana cara seorang aktor menggunakan atau memanfaatkan sistem yang dibuat, sedangkan aktor adalah seseorang atau user yang berinteraksi dengan sistem. Pada aplikasi pencarian jalur terpendek antar kota menggunakan algoritma genetika, use case menjelaskan tentang hubungan antara sistem dengan aktor. Hubungan ini dapat berupa inputaktor ke sistem ataupun output ke aktor. Use case merupakan dokumen naratif yang mendeskripsikan kasus-kasus atau kejadian-kejadian daripada aktor dalam menggunakan sistem untuk menyelesaikan sebuah proses



Picture 4: Use Case Diagram

Table 2: Table Aksi Use Case

Identifikasi	
Actor's action	System Reaction
Objective	Accessing the Website
Description	The website request process is a verification of whether the client is allowed to access the website or not.
Actor	clients
<b>Main scenario (Successful Process)</b>	
Fill in website links in search engines	Requesting a Website
	If the request is accepted, the client is allowed to access the website.
<b>Alternative Scenario (Process failed)</b>	
	Alternative Scenario (Process failed)
Refill the link on the share engine	Website requests are detected by the proxy server
	Identify the Website
Final condition	If the request is accepted, the client will immediately be able to access the website.

Table 1: Software used in research

NO	KONFIGURASI
1	Connect the ISP to Mikrotik using a LAN cable
2	Configure or set the proxy to become a proxy server using WinBox
3	Configure Mikrotik on Winbox using a laptop
4	Connect the Mikrotik to the HUB using a LAN cable
5	then connect the HUB to the access point using a LAN cable

### 3. RESULTS AND DISCUSSION

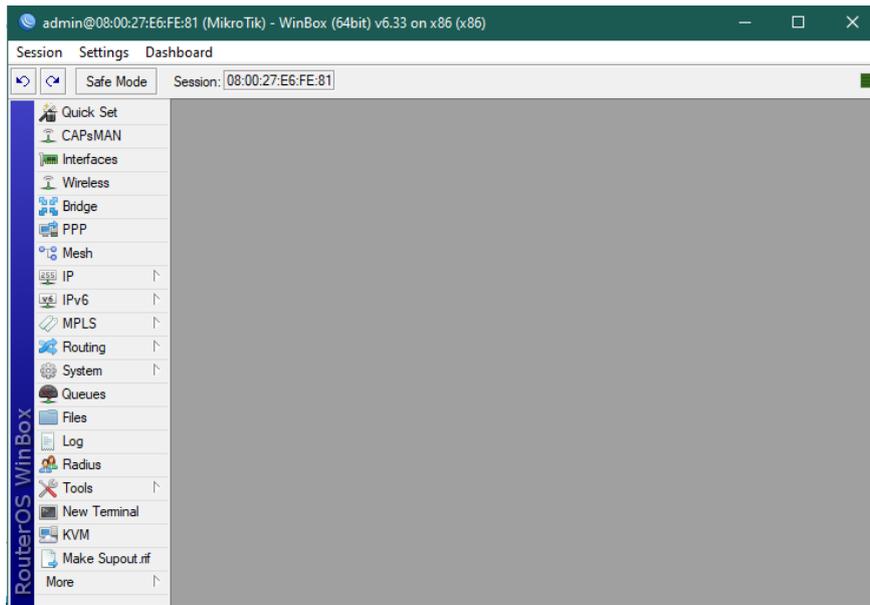
*Blocking Prohibited Sites Using Proxy Server In Mikrotik And Squid Proxy Debian Server, At The Nurul Anwar Education Foundation, Tanjungbalai City (Zulham Sitorus)*

Implementation of the system is the final stage of the tool manufacturing process after going through the design stage. So that the hardware and software implementation process can work perfectly. The application of network security tools that use a proxy server is applied in the form of a method using a proxy, access point, HUB, LAN cable, where all of these tools function for filtering websites that are prohibited from being accessed by the client. Testing is carried out by trying Open → websites that are included in the list of websites that cannot be accessed.

#### A. System Implementation

##### 1. The Winbox page appears

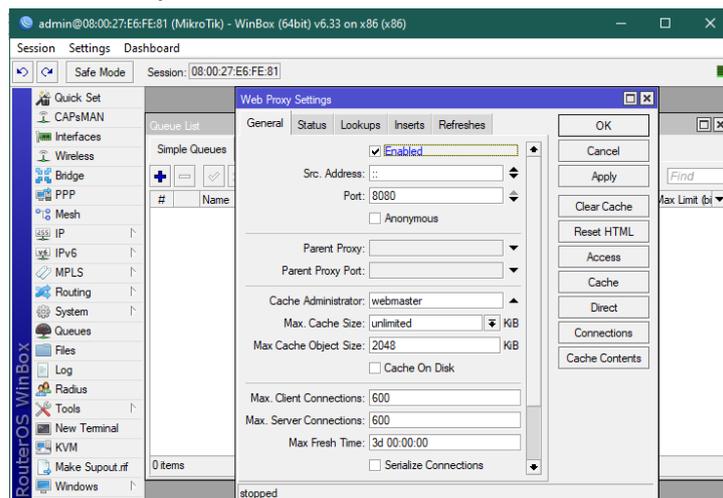
The Winbox page display is the main place for system configuration on Mikrotik. The following is the Winbox main page display after logging in.



Picture 5: Winbox Home Page

##### 2. Mikrotik Proxy Web Menu Display

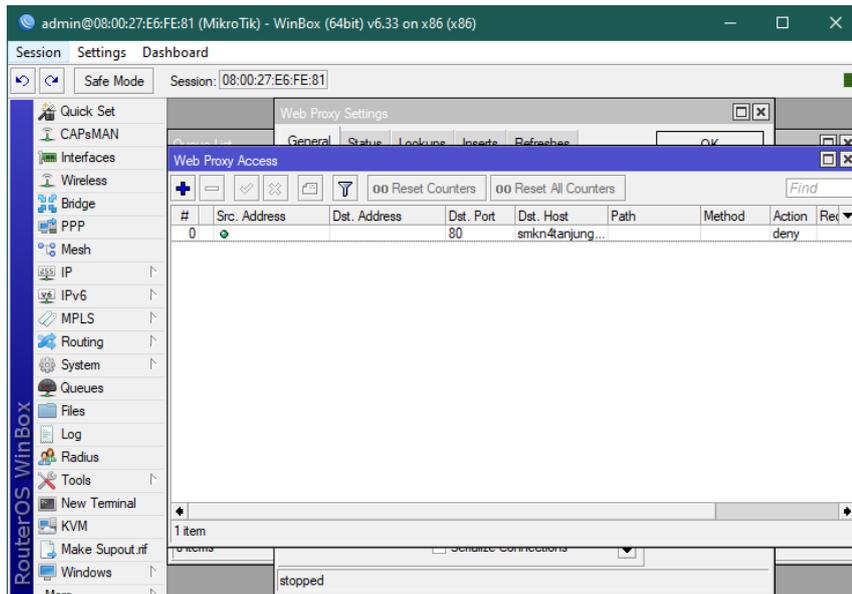
The webproxy menu is a menu for configuring any website that will be blocked. To open the webproxy menu, you can find it in the IP – WEB Proxy menu bar.



Picture 6: Menu Web Proxy

##### 3. Display of Website Blocking List on Mikrotik

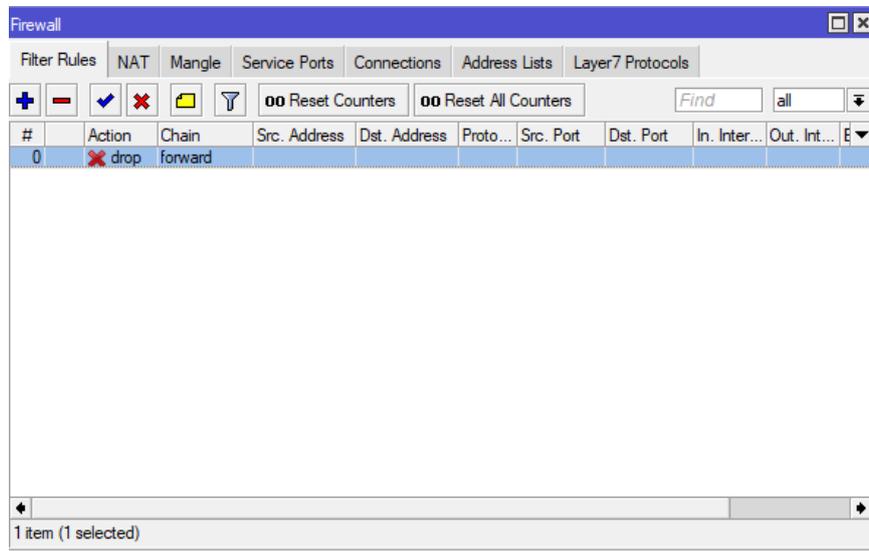
The website blocking list page contains any website that cannot be accessed by users or clients who are connected to the internet



Picture 7: List Blocking Mikrotik

#### 4. Display Mikrotik Filter Rules

The filtering rules display is a place for filtering websites that use Https so that they cannot be accessed by client, the filtering rule is in the firewall menu on Winbox.



Picture 8: Filter Rules

#### 5. Display the Debian Server Login Page

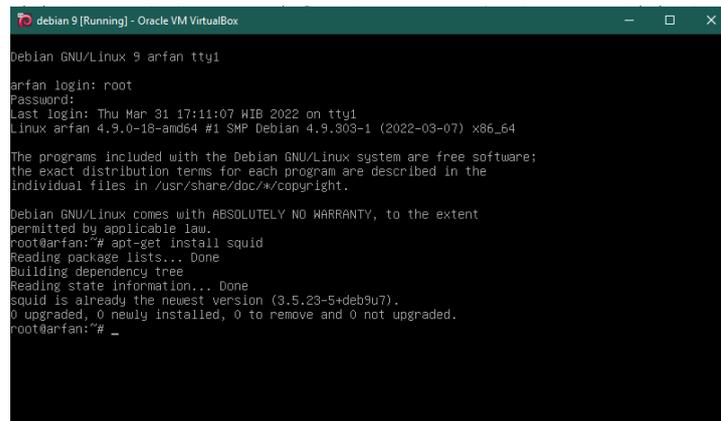
The Debian login page display is the main display for accessing features or tools on the Debian server, such as the squid proxy tool which we will use for blocking and filtering, along with the login display on the Debian server.



Picture 9: Page Login Debian Server

#### 6. Display after installing Squid Proxy

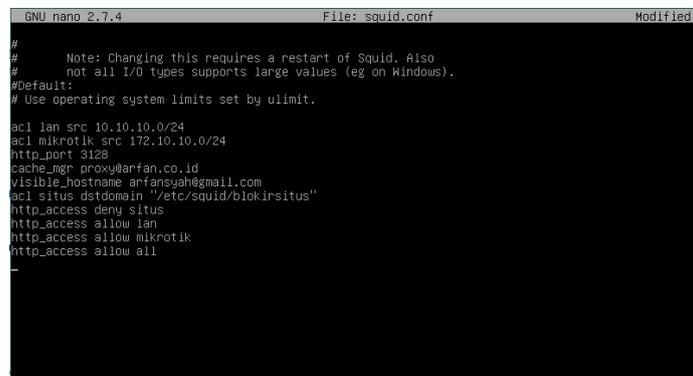
Basically, the squid proxy that will be used for blocking and filtering is not directly installed on the Debian server, therefore there must be a software update and installation of squid proxy tools, "apt-get update" (software update command), "apt-get install squid -y" (command to install squid proxy). Following is the display if squid proxy has been installed:



Picture 10: After Installing Squid Proxy

#### 7. Squid.conf Page View

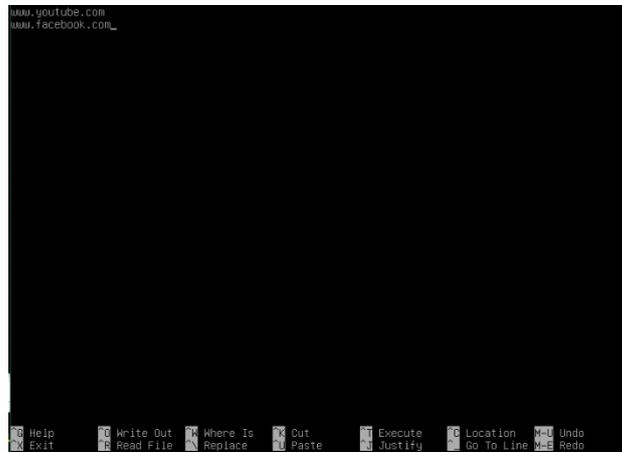
The following is a display of the squid.conf page, where the function of this page is to configure the squid proxy which will be used to block prohibited websites. "nano squid.conf". is the command to enter the squid.conf folder.



Picture 11: Squid.conf

## 8. Website Block List Display

The website blocking list page contains any website that cannot be accessed by users or clients who are connected to the internet. “nano blocksite” (instruction to enter the website blocking list). The following is a list of blocking websites on the Debian server:



Picture 12: List of blocked sites

## 9. Squid -z display

After configuring the Squid proxy, you must restart Squid with the command "service squid restart". And after restarting, we test whether Squid is running and make sure there are no errors with the squid -z command. The following is what the squid proxy will look like when it has finished configuring.

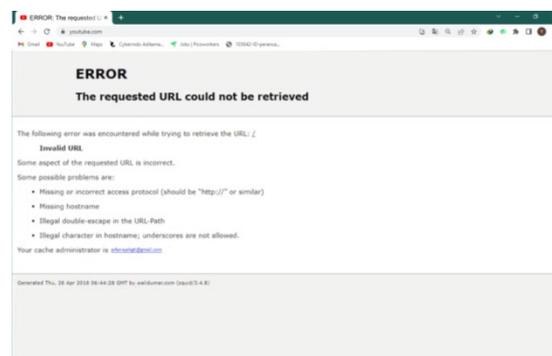
```
root@arfan:/etc/squid# service squid restart
root@arfan:/etc/squid# squid -z
2022/04/08 23:19:17| Squid is already running! Process ID 804
root@arfan:/etc/squid# _
```

Gambar 13. 1Squid -z

## 11 Tool Testing

### 1. Youtube Page Views

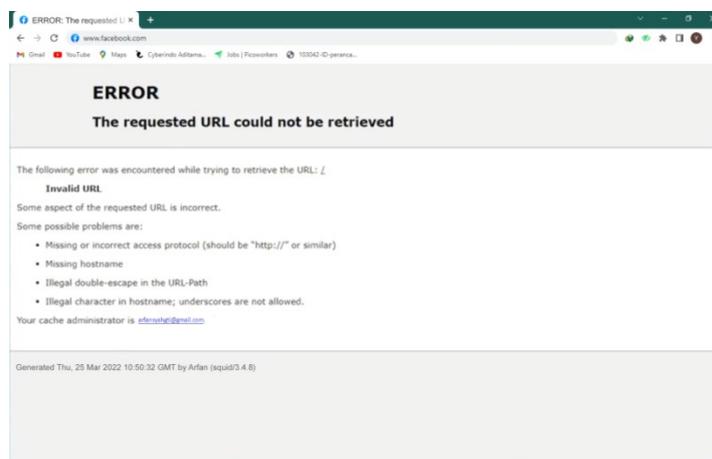
When the YouTube page displays, after blocking the YouTube website, YouTube will not be able to be accessed by clients connected to the internet network. The following is what the YouTube page looks like after blocking.



Picture 14: Results of blocking the YouTube website

## 2. Facebook Page Views

When the YouTube page displays, after blocking the YouTube website, YouTube will not be able to be accessed by clients connected to the internet network. The following is what the YouTube page looks like after blocking.



Picture 15: Results of Facebook Website Blocking

### Test result

The proxy server works when the website is registered on the blocked website list, where every website that is prohibited from accessing will not be able to be opened by the client.

## 4. CONCLUSION

Based on research conducted by the author regarding the creation of network security tools using Mikrotik, several conclusions can be drawn as follows:

1. Creating a network security tool using a proxy that works if there is an attempt to open a website listed on the list of websites that are not allowed to be accessed.
  2. By using a proxy server network security system, there is no limit to how many websites can be blocked.
- A proxy server using a proxy is designed for small-scale use

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