

Research Article

## Implementation of Social Media Network Block Access Using Fortinet Case Study at PT Estrada

Rasiban<sup>1\*</sup>, Tri Wahyudi<sup>2</sup>, Elviwani<sup>3</sup>, Aditya Bagas Pramudhi<sup>4</sup>

<sup>1</sup> Sekolah Tinggi Ilmu Komputer Cipta Karya Informatika Jakarta, Indonesia;  
email: [rasiban@stikomcki.ac.id](mailto:rasiban@stikomcki.ac.id)

<sup>2</sup> Sekolah Tinggi Ilmu Komputer Cipta Karya Informatika Jakarta, Indonesia;  
email: [triwahyudi@stikomcki.ac.id](mailto:triwahyudi@stikomcki.ac.id)

<sup>3</sup> Sekolah Tinggi Ilmu Komputer Cipta Karya Informatika Jakarta, Indonesia;  
email: [elviwani@stikomcki.ac.id](mailto:elviwani@stikomcki.ac.id)

<sup>4</sup> Sekolah Tinggi Ilmu Komputer Cipta Karya Informatika Jakarta, Indonesia;  
email: [adityabagas.pramudhi@gmail.com](mailto:adityabagas.pramudhi@gmail.com)

\*Corresponding Author: [rasiban@stikomcki.ac.id](mailto:rasiban@stikomcki.ac.id)

**Abstract:** Computers in one of the network companies at PT. Estrada uses the Fortinet operating system. The final result expected through this implementation is to comprehensively see the capabilities of the firewall on Fortinet in overcoming the problem of blocking social media applications and streaming platforms during working hours. Blocking the application in question is the ability to filter web processes such as Facebook, Instagram, YouTube, etc. In the tests carried out, web filtering was able to block applications on social media and streaming platforms, which proves that the performance of web filtering is quite good. In analyzing web filtering performance, use the office hour rule tool by carrying out the rule schedule in the Fortinet network and displaying all the information in detail. The final result obtained in the network application filtering simulation process using Fortinet is that every network sent cannot be entered (blocked) on both social media applications and streaming platforms.

**Keywords:** Firewall Filtering; Fortinet; Network Security; Social Media; Web Filtering Implementation.

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### 1. Introduction

Development technology Information in the modern era is developing very rapidly, especially in technology. computers and networks computer that connects users to all over the world through system network international or the internet. Progress the participate influence pattern communication and activities society, including in use of social media in the environment Work.

Social media develop rapidly Because users can access, edit, add, and modify various form information such as writing, images, or videos with easy and relatively inexpensive low compared to traditional media like newspapers, radio, and television. In addition that, social media utilized as means share ideas, collaborate, build relationship, until form community. In its use, social media is also often used as means actualization self and personal branding, including by employees in something organization.

Based on report Data Reportal 2023, social media with amount users The largest number of users in Indonesia is YouTube with 119.9 million users, followed TikTok as many as 109.9 million users, and Instagram as many as 89.15 million users. The height use of social media the can give impact negative if No used at the right time and place. Use of social media in a way excessive can cause addiction, lowering focus work, and reduce productivity employee.

Study previously show that use of social media in the environment Work can give impact positive and negative to productivity employees. Leftheriotis and Giannakos (2014) stated that social media can cause waste time work, but also can increase productivity if utilized For share knowledge and support collaboration between employees. In addition that, Munene and Nyaribo (2013) explain that use of social media give impact negative in the form of use time Work For interest personal, but also can utilized For look for related information with work.

Research conducted by Dewi and Islami (2021) regarding implementation of web filtering using the Fortigate FG300D Router shows that blocking of social media sites such as Facebook, Instagram, Twitter, and YouTube can done through web filtering configuration using device Fortigate. Implementation the aim for limit access against sites that are not related with work so that can increase effectiveness Work employees. Research also added using the Linksys EA8500 access point as transmitter network to device users such as smartphones and laptops.

Based on a number of study previously the can concluded that use of social media in the environment Work need restricted, especially during working hours, in order to minimize impact negative to productivity employee.

PT Estrada is one of the companies that utilize technology network for support operational company. One of the devices used is Fortigate working as system security network both a gateway and a router on a Local Area Network (LAN). Use Fortigate allows company manage security network without need device additional load balancing though use more from One Wide Area Network (WAN) connection. Technology FortiASIC and processor Fortinet networks enable system detect and address threat network in real time without lower performance network. Besides that, the system integrated management, analysis, database, and endpoint protection capable increase efficiency management security network as well as pressing cost operational company.

Based on background behind said, research This lift title “Implementation Access Social Media Network Block using Fortinet Study Case of PT Estrada”. Research this aim for implement system restrictions social media access use Fortinet devices for increase effectiveness and productivity Work employees in the environment company.

## 2. Literature Review

### Systematic Literature Review (SLR)

A Systematic Literature Review (SLR) is a literature review method used to identify, evaluate, and interpret various studies relevant to a particular research topic. This method is conducted systematically to answer previously defined research questions.

The stages in an SLR consist of three main parts: planning, conducting, and reporting. The planning stage is carried out by determining the research questions as the basis for the literature search. The conducting stage includes the processes of searching, selecting, and extracting data from various literature sources using the PICOC method (Population, Intervention, Comparison, Outcomes, and Context). The final stage, reporting, is the process of compiling the literature review results into a scientific paper.

In this study, the PICOC method was used to determine the research focus, namely the implementation of social media network access blocking using Fortinet. The literature search process was conducted on publications from 2019–2024 using the keywords networking, Fortinet, and block website. Based on the study selection results, 20 scientific articles relevant to the research topic were obtained.

### Previous Studies

Research related to network security implementation and social media access restrictions has been widely conducted. Prasetia et al. (2023) explained that the use of Fortinet devices as firewalls can help block access to social media and streaming platforms during working hours, making network usage more effective. The study showed that restricting access to non-work-related websites can reduce internet misuse by employees.

Dewi and Islami (2021) explained that the web filtering configuration on the Fortigate FG300D was capable of blocking access to websites such as Facebook, Instagram, Twitter, and YouTube, preventing employees from accessing sites unrelated to work. This implementation helped improve the effectiveness of corporate network usage.

Arbie and Raharjo (2024) stated that the implementation of security profiles on Fortigate devices was able to integrate security features such as web filtering, application control, and antivirus to improve corporate network security. In addition, Setiawan and Raharjo (2023)

explained that the implementation of a Next-Generation Firewall on Fortinet devices was capable of restricting internal access that could potentially create network security threats while also improving network traffic monitoring.

Sidik et al. (2023) stated that the implementation of firewall filtering methods using MikroTik RB1100 was effective in filtering internet content unrelated to work, resulting in more controlled internet usage and increased work productivity. The study also showed that content filtering methods can help prevent access to negative websites and content that may threaten network security.

Fitri et al. (2018) explained that the use of social media in the workplace has an influence on the performance of employees and lecturers. Social media can be utilized as a medium for communication and information sharing; however, supervision is still required to prevent disruptions to work productivity.

Based on several previous studies, it can be concluded that the implementation of firewall filtering and social media access restrictions using Fortinet and MikroTik devices can improve network security, reduce internet misuse during working hours, and help increase employee productivity.

### **Internet Network**

An internet network is a system that connects various computer devices worldwide to exchange data and information. Internet networks consist of several types, namely Local Area Network (LAN), Metropolitan Area Network (MAN), and Wide Area Network (WAN).

A Local Area Network (LAN) is a network that connects devices within a limited area such as an office or building. A Metropolitan Area Network (MAN) is a network that connects several LANs within a broader regional scope, such as a city. Meanwhile, a Wide Area Network (WAN) is a network that connects various networks over a very large geographical area, such as between cities or countries.

### **Firewall and Fortinet**

A firewall is a network security system that functions to control incoming and outgoing data traffic within a computer network. A firewall works by filtering data packets based on specific rules, thereby preventing unauthorized access to the network.

Fortinet is a network security solution provider company that offers Fortigate Firewall devices. These devices function as network security systems as well as gateways and routers within corporate networks. Fortigate provides various security features such as web filtering, application control, intrusion prevention systems (IPS), and traffic monitoring, which help companies manage network security effectively.

### **Internet Service Provider (ISP)**

An Internet Service Provider (ISP) is a company that provides internet access services to users. ISPs provide internet connectivity through various transmission media such as cables, radio signals, modems, and wireless networks. The use of ISPs enables companies and individuals to connect to local and global internet networks.

### **Social Media**

Social media is a digital technology-based platform that enables users to interact, share information, and build online communication. According to Carr and Hayes, social media has three main characteristics: it is based on digital technology, has interactive media characteristics, and forms social networks such as Facebook, Twitter, and Instagram.

Kietzmann et al. (2011) explained that social media has seven main elements within the honeycomb framework: identity, conversations, sharing, presence, relationships, reputation, and groups. These elements describe how users build identities, communicate, share information, and establish social relationships through digital media.

### **Qualitative Data**

Qualitative data is a type of data that is non-numerical and generally presented in descriptive or narrative form. This data is used to describe phenomena, opinions, or certain conditions based on observations and researcher interpretations. In this study, qualitative data was used to describe the implementation of a social media access restriction system using Fortinet devices within the PT Estrada environment.

## **3. Materials and Method**

### **Research Location and Time**

This research was conducted at PT Estrada, a company engaged in providing Fortinet devices and network integration services. The company is located at Rukan Pesona View, Jl. Ir. H. Juanda Block A1, Bakti Jaya, Sukmajaya, Depok City, West Java 16418. The research

was carried out from May until the completion of the Fortinet monitoring activity contract at the company.

### Types and Sources of Data

This study used qualitative data in the form of information related to the implementation of a social media access restriction system using Fortinet devices. The research data consisted of primary data and secondary data.

Primary data were obtained through observation and interviews. Observations were conducted by directly examining user data, Internet Service Provider (ISP) data, as well as the network structure or network topology at PT Estrada to facilitate the system design process. Interviews were conducted directly with the IT staff of PT Estrada to obtain information regarding system requirements, network conditions, and the implementation of the Fortinet configuration used in the company.

Secondary data were obtained through a literature study by collecting 20 previous research journals related to the implementation of Fortinet devices as firewalls to block access to social media and streaming platforms during working hours.

### Network Topology

Based on the observation results, PT Estrada uses a single ISP as the internet service provider connected to a Fortinet device functioning as both a router and firewall. The network is then distributed to a Local Area Network (LAN) used by employee computers and access points to provide wireless network access within the company environment.

The interview results with the IT support team showed that PT Estrada did not yet have an optimal network monitoring system and had not fully implemented social media access restriction configurations on Fortinet devices. Therefore, the company required a system capable of supporting network monitoring and remote control of social media access without requiring continuous supervision.

### Research Data Attributes

This study classified several social media platforms and websites to be blocked on the PT Estrada network. The list of websites used in the testing process is shown in Table 1.

**Table 1.** List of Blocked Social Media Platforms.

No	Social Media Platform	Website
1	YouTube	<a href="https://www.youtube.com">https://www.youtube.com</a>
2	Facebook	<a href="https://www.facebook.com">https://www.facebook.com</a>
3	TikTok	<a href="https://www.tiktok.com">https://www.tiktok.com</a>
4	Instagram	<a href="https://www.instagram.com">https://www.instagram.com</a>
5	Twitter	<a href="https://www.twitter.com">https://www.twitter.com</a>
6	Netflix	<a href="https://www.netflix.com">https://www.netflix.com</a>
7	Shopee	<a href="https://www.shopee.com">https://www.shopee.com</a>
8	Bukalapak	<a href="https://www.bukalapak.com">https://www.bukalapak.com</a>
9	Tokopedia	<a href="https://www.tokopedia.com">https://www.tokopedia.com</a>
10	Kaskus	<a href="https://www.kaskus.co.id">https://www.kaskus.co.id</a>

### Methodology Implementation

The research methodology used included the stages of data collection, system requirements analysis, firewall configuration design, system implementation, and system testing. During the implementation stage, configurations were applied to Fortinet devices to restrict social media access during working hours according to company policies. The designed system used web filtering methods and IPv4 Policy settings on Fortinet devices to restrict access to certain social media websites. In addition, the system utilized log and report features to monitor user network activities.

### Testing Design

System testing was conducted using the User Acceptance Test (UAT) method to determine whether the designed system operated according to the company's requirements. Testing was carried out on network monitoring features, social media access restrictions, and the detection of websites violating the company's internet usage policies.

**Table 2.** User Acceptance Test (UAT).

Testing	Description and Procedure Testing	Input	Expected Output	The results obtained	Test Result ID		
					Accepted	Accepted with notes	Rejected
<b>A.1</b>		<b>Access Model Testing</b>					
<b>A.1.1</b>		<b>Case Form</b>					
1	Monitoring to network Bandwidth using Fortinet	Forti Source	Usage Users	Know client users who are currently connect	<input checked="" type="checkbox"/>	No There is notes	
2	Monitor social media users with useful web filter methods to company	Web Filter	Social Media Access / URL	For monitor rush hour Work social media activities What only the most targeted	<input checked="" type="checkbox"/>	Must be monitored for prevent there is access	
3	Restrictions to employe using social media	IPV4 Policy	Arrange Timetable Access	More notice use so that prevent activities that are not desired	<input checked="" type="checkbox"/>	Back to Normal when go home Work	
4	Violating browser / url detection	Kaskus	Block	Very good Because prevent unprovoked attacks desired	<input checked="" type="checkbox"/>	No There is notes	
5	Detection of blocking of unauthorized use of social media allowed	Youtub e	Block	Very useful Because For reduce media social	<input checked="" type="checkbox"/>	Reopened at the time go home Work	

Test results show that system restrictions social media access use Fortinet devices can walk in accordance with need company. Implementation firewall filtering and web filtering capable help company in control Internet use during working hours so that expected can increase productivity employee.

**4. Results and Discussion**

**Research Tools**

Study This done use two component that is device soft (software) and devices hard (hardware).

**Software Specifications**

Software specifications refer to the software used as supporting tools in conducting this research. The software used in this study can be seen in Table 3 below:

**Table 3.** Software.

NO	Technology System supporters	Description technology	Use in study
1	FortiOS	FortiOS provide various feature security such as firewall, VPN, intrusion prevention, antivirus, and management Then cross network .	

**Hardware Specifications**

Hardware specifications refer to the equipment used to support this research. Table 4 below presents the hardware utilized in conducting this study:

**Table 4.** Hardware.

NO	Device Supporters	Description
1	ISP Modem	For send internet data
2	Fortinet Router	Protect data from hackers and users No authorized block Unauthorized messages desired block of unwanted content desired and convenient bandwidth monitor access VPN service
3	Laptop	For monitoring firewall system on Fortinet

### Implementation and Testing

During the implementation stage, the researcher first configured the firewall system. In configuring the system, the researcher logged into the Fortinet interface as shown in Figure 1.



Figure 1. Fortinet Interface Display.

### Work Hour Time Configuration

In this configuration, access to social media and streaming platforms was blocked during working hours at PT Estrada, which are from 08:00 AM to 05:00 PM. First, the user navigated to the Policy & Objects > Schedule menu and clicked Create New. In this section, the Time Schedule name, working days, and related hours for the rule to be created were entered, then the OK button was clicked.

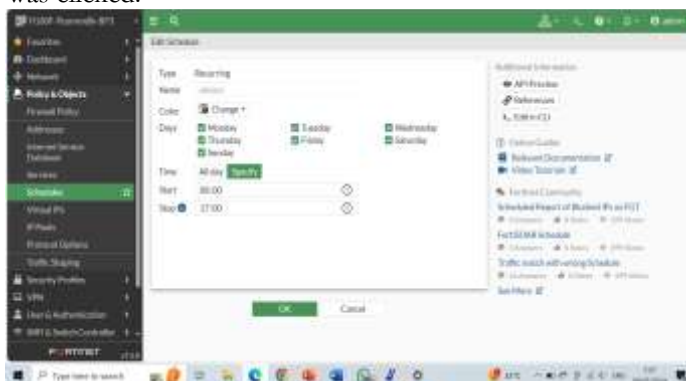


Figure 2. Schedule Menu (1).

After completion, the following display appeared, indicating that the rule had been successfully created, as shown in Figure 3.

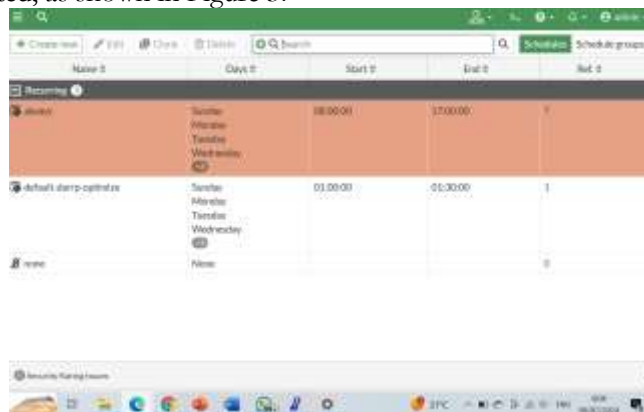


Figure 3. Schedule Menu (2).

### Testing Results

The overall results of the penetration testing method for social media blocking at PT Estrada on July 09, 2024, can be seen in the table below. This testing included various types of social media platforms to measure effectiveness and prevent social media usage during working hours.

### Web Filter Configuration

The researcher configured the system to block social media access that was not appropriate during working hours. Several steps were carried out, and Figure 4.4 shows the web filter interface before entering the names of social media websites.

- A. Enter the Security Profile > Web Filter menu.
- B. Add a new profile by pressing the Create Filter button in the menu.

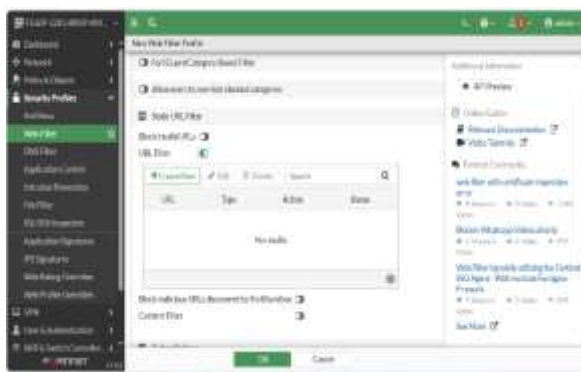


Figure 4. Web Filter Menu.

**Social Media Classification**

The following website categories were blocked because they were not related to the work responsibilities of PT Estrada employees: Facebook, YouTube, Instagram, TikTtok, Netflix, Shopee, Bukalapak, Tokopedia, Kaskus, and Twitter.

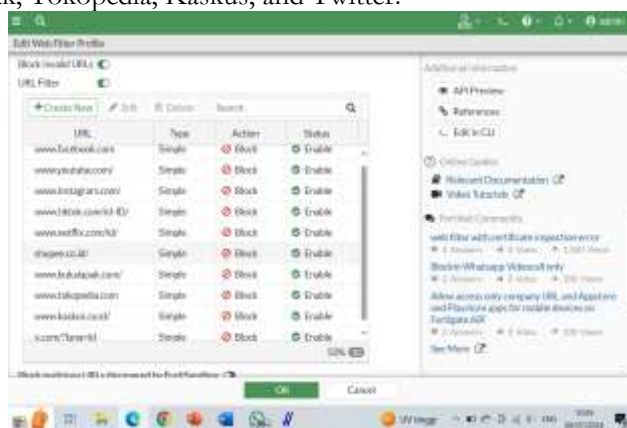


Figure 5. Social Media Platforms to be Blocked.

**IPv4 Policy Configuration**

As shown in this figure, the next step was configuring or creating policies to regulate network access for client computers (employees) so that their access could be restricted.

In this section, the Office Hour rule was activated by clicking the LAN name to be scheduled and then selecting Edit.

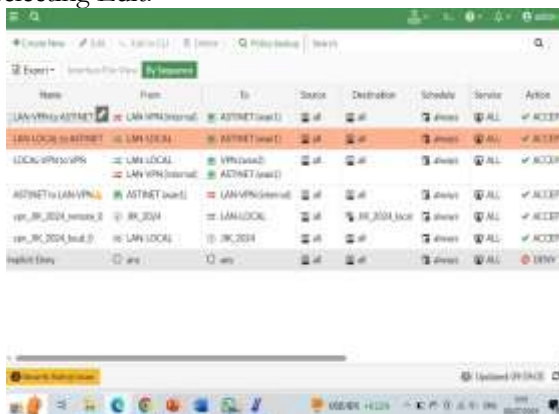


Figure 6. IPv4 Policy Menu.

### Social Media Blocking Testing

In this study, the researcher tested 10 social media platforms by comparing conditions before and after social media blocking implementation. The following are several examples tested by the researcher.

a). Facebook



Figure 7. Before Blocking Facebook.

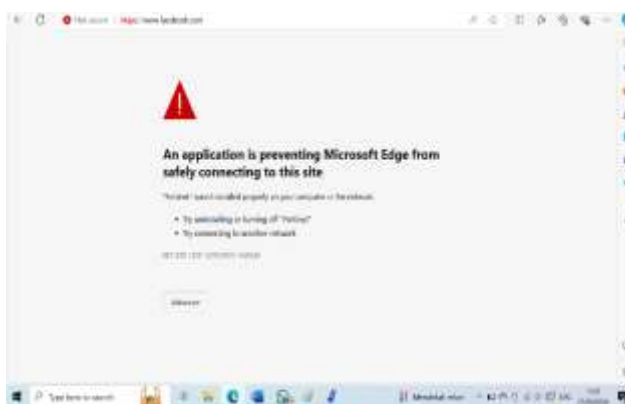


Figure 8. After Blocking Facebook.

b). YouTube



Figure 9. Before Blocking YouTube.



Figure 10. After Blocking YouTube.

c). Twitter



Figure 11. Before Blocking Twitter (X).

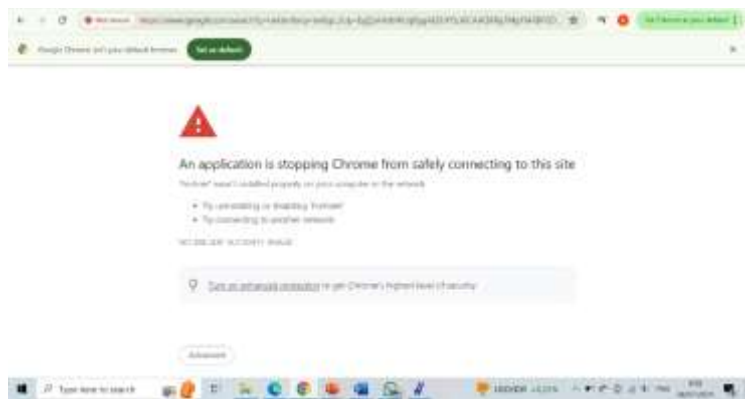


Figure 12. After Blocking Twitter (X).

d). Netflix



Figure 13. Before Blocking Netflix.

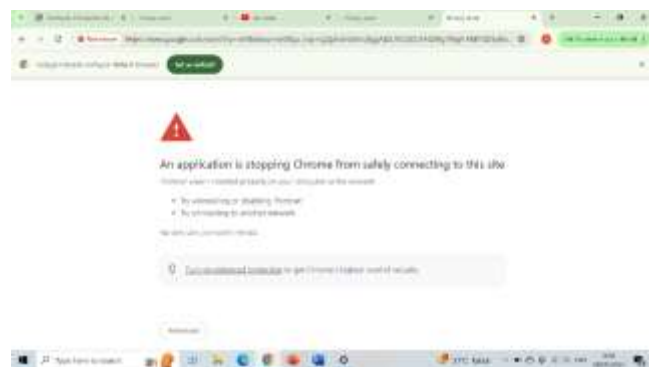


Figure 14. After Blocking Netflix.

e). TikTok



Figure 15. Before Blocking TikTok.



Figure 16. After Blocking TikTok.

f). Kaskus

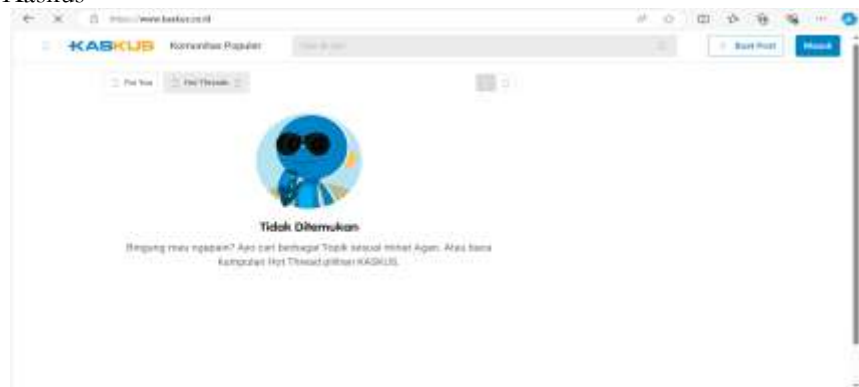


Figure 17. Before Blocking Kaskus.

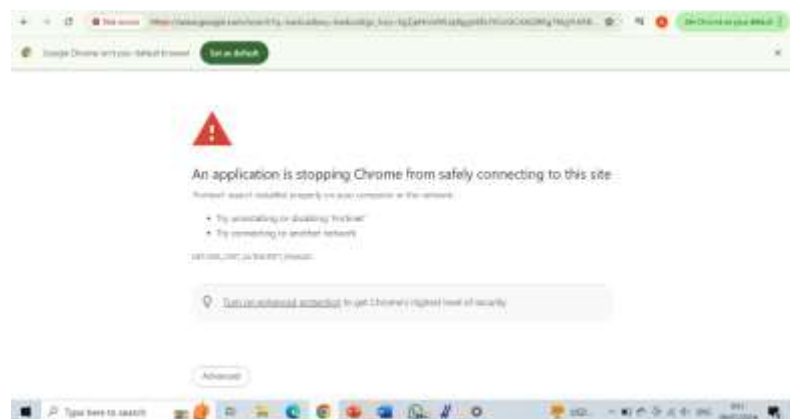


Figure 18. After Blocking Kaskus.

g). Shopee



Figure 19. Before Blocking Shopee.



Figure 20. After Blocking Shopee.

h). Bukalapak






Figure 21. Before Blocking Bukalapak.



Figure 22. After Blocking Bukalapak.

**Table 5.** Social Media Blocking Results.

NO	Social Media Name	Site	Action	Status
1	Youtube	<a href="https://www.Youtube.com">https://www.Youtube.com</a>		Succeed
2	Facebook	<a href="https://www.Facebook.com">https://www.Facebook.com</a>		Succeed
3	TikTok	<a href="https://www.tiktok.com/id-ID/">https://www.tiktok.com/id-ID/</a>		Succeed
4	Instagram	<a href="https://www.Instagram.com">https://www.Instagram.com</a>		Succeed
5	Twitter	<a href="https://www.Twitter.com">https://www.Twitter.com</a>		Succeed
6	Netflix	<a href="https://www.Netflix.com">https://www.Netflix.com</a>		Succeed
7	Shopee	<a href="https://www.Shopee.com">https://www.Shopee.com</a>		Succeed
8	Bukalapak	<a href="https://www.Bukalapak.com">https://www.Bukalapak.com</a>		Succeed
9	Tokopedia	<a href="https://www.Tokopedia.com">https://www.Tokopedia.com</a>		Succeed
10	Kaskus	<a href="https://www.kaskus.co.id/">https://www.kaskus.co.id/</a>		Succeed

## 5. Conclusion and Suggestions

### Conclusion

Based on the results of computer network security testing at PT Estrada presented in this study, the researcher draws the following conclusions: a) the implementation helps prevent excessive social media usage during working hours and reduces the decline in employee productivity; b) employee performance during working hours improves because employees are able to focus more on their work and are not distracted by social media and streaming platforms; c) Social media and streaming platform access can be restricted during working hours using the Schedule Rule feature; d) The implementation helps maintain network stability and monitor internet usage levels.

### Suggestions

In this study, the researcher hopes that limiting social media and streaming usage can create greater effectiveness and productivity among employees, preventing excessive social media usage and encouraging more beneficial activities. The researcher also designed a testing framework for the system to be implemented. The testing design was developed according to the firewall system requirements determined by PT Estrada, particularly regarding social media blocking implementation.

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