INCITEST 2020

The 3rd International Conference on Informatics, Engineering, Sciences & Technology

UNIVERSITAS KOMPUTER INDONESIA
UNIKOM

"Humanized Technology : The Digital To Win Competition"

PROCEEDING

UNIKOM International Conference on Informatics, Engineering, Sciences & Technology (INCITEST) 2020

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Preface

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PREFACE

It is our great honor and pleasure to introduce the Proceedings of the 3rd International Conference on Informatics, Engineering, Science, and Technology (INCITEST 2020). The event is valuable and meaningful since it brings together scientists, engineers, researchers, practitioners, students, and civil society organization representatives to nurture research networks between universities and industries. With its main theme on "Humanized Technology, the Digital Journey to Win Competition", this event is expected to serve as a platform of gathering for anyone interested in exploring potential solutions and answering issues and challenges to enter the 5.0 society. Amid the worldwide spread of the novel coronavirus (COVID-19) and the uncertainty surrounding the end of this pandemic, there are several issues we should describe as follows:

1. Universitas Komputer Indonesia (UNIKOM) as the organizer of INCITEST 2020 will hold the conference on 11th June 2020 in an online or virtual format. The organizing committee will manage the conference from our campus which is located in Bandung, West Java Province, Indonesia.
2. In this correlation, we should adhere to the regulation of the government of West Java Province and the government of the Republic of Indonesia which currently is implementing Large-Scale Social Restrictions to reduce the risk of virus transmission. Therefore, the online conference is considered the best way we can do to serve our participants concerning the fact that people safety is second to none. In this condition, there is no specific date deemed safe to which we could postpone the conference until either worldwide travel or crowd-gathering is safe again. We have all put so much effort in preparing the papers, organizing the event, as well as conducting the review process, working on the program, and everything surrounding it that we feel very motivated to pull this through
3. The conference is divided into two sessions: plenary and parallel sessions. In the plenary session, we will use zoom as the media. Besides, to assure the dissemination of the conference to all participants, we will also broadcast the plenary session live using Open Broadcaster Software (OBS) connected to

YouTube live streaming and IG TV. Moreover, we will use live chat on YouTube and Google forms for the discussion session.

4. The plenary session will be chaired by one moderator who will not only be critically summarizing the keynote presentations but also handling participants' enthusiasm in asking any possible questions. In doing so, the participants will be following the conference at their respective personal corners through YouTube live streaming and IG TV.
5. The plenary session will be presented by our keynote speakers in online format (via Zoom) from each country such as Prof. Abdulkareem from Malaysia, Prof. Yuto Lim from Japan, and Irfan Dwi Sumitra, Ph.D. from Indonesia. Each keynote has 45 minutes duration including the discussion session.
6. Following the success of INCITEST 2018 and 2019, the enthusiastic responses to the call-for-papers in the third INCITEST were increasing. More than 450 papers were submitted to the organizing committee from both local and foreign participants. A peer-review process has been conducted to all the articles based on their originality and quality, resulting in 347 accepted papers to be presented.
7. Of 347 accepted papers, 216 of them will be presented via Zoom in the duration of 10 minutes for each paper. Additionally, 129 papers will be displayed in the poster session (the link of the posters will be available on the INCITEST website).
8. The parallel session will be divided into 10 classes; each class will be participated by around 21 to 22 presenters. A parallel session chair will manage the presentation time and discussion session in each class. Each presenter should present their paper within 5 minutes via Zoom. 5 minutes after the presentation will be given to each of them for the discussion session.

We hope that with the above arrangement, we can serve our participants in the best way we could. The conference's success is also due to the hard work of all involved parties. Therefore, the organizing committee would like to express appreciation to all supporters, sponsors, and participants for a great contribution to

the conference's success. Many thanks go as well to all of the reviewers who helped us maintain the quality of manuscripts included in the Proceedings published by IOP. We also express our sincere thanks to the members of the organizing team for their hard work.

Finally, our continuing success of this conference series can be one of indicator that we have through our right pathway to realign technology with the best interests of humanity. We hope this first time experience of the online conference in the 3rd INCITEST will bring fruitful outcomes as well as give the participants great experience in an online conference.

Thank you

Best Regards,

Dr. Poni Sukaesih Kurniati, S.IP, M.Si.
The Chief of the Conference

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Peer review statement

All papers published in this volume of *IOP Conference Series: Materials Science and Engineering* have been peer reviewed through processes administered by the proceedings Editors. Reviews were conducted by expert referees to the professional and scientific standards expected of a proceedings journal published by IOP Publishing.

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Private Cloud Development in West Java Cooperative and Entrepreneurship Education and Training Center

A Setiyadi[1*], E B Setiawan[2]
[1,2]Departemen Teknik Informatika, Universitas Komputer Indonesia, Jl. Dipatiukur 102-116 Bandung, West Java, Indonesia

Email : *angga.setiyadi@email.unikom.ac.id

Abstract. The purpose of this research is to build a private cloud that is used as an FTP server and database server as well as an integrated data storage medium in the education and training center of cooperatives and entrepreneurs in West Java. The stages of research from the development of private cloud in the education and training center cooperatives and entrepreneurs in West Java adopted the method of the Network Development Life Cycle (NDLC). The stages in the network development life cycle consist of six stages including the analysis phase, the design phase, the simulation stage, the implementation phase, the monitoring phase, and the regulatory stage. The results of this study are the existence and availability of server virtualization that is used to provide data-based services at the West Java Education and Cooperative Education and Entrepreneurship Training Center and the availability of integrated data storage at the West Java Education and Cooperative Education and Entrepreneurship and Training Center. The impact of this research is to be able to minimize the cost of procuring servers using private cloud using virtualization technology at the education and training center of cooperatives and entrepreneurs in West Java.

1. Introduction

Training Center for Cooperatives and Micro, Small and Medium Enterprises (BALATKOP) is one of the regional technical implementation units (UPTD) under the auspices of the Office of Cooperatives and SMEs which acts as a business clinic in solving cooperative problems [1]. The Cooperative and Micro, Small and Medium Enterprises (BALATKOP) Training Center is currently supporting a new entrepreneurship printing program in West Java. The activity that is always carried out by the Training Center for Cooperatives and Micro, Small and Medium Enterprises (BALATKOP) is to provide regular training which is held every two weeks. In the training process employees of the Center for Cooperatives and Micro, Small and Medium Enterprises (BALATKOP) Workforce always make documentation of training activities. Documentation of training activities at the Training Center for Cooperatives and Micro, Small and Medium Enterprises (BALATKOP) in the form of a photo that will be collected in an external hard drive to be used as an archive for evaluation in the next training. An archive is a collection of data records and information collected and can be accessed and used and associated with a particular object [2]. Archive storage using external hard disk media is very susceptible to damage, because external hard drives at the Training Center for Cooperatives and Micro, Small and Medium Enterprises (BALATKOP) are always used for all employees. One method of evaluating records in a company using interview-based competency methods. The interview-based competency method is a structured interview technique, which is used to explore information in-depth about one's abilities and competencies [3].

Data corruption and data loss by various disasters have become more dominant, accounting for over 60% [4,5]. It took an average of 55 hours to repair damage to the archive, for $ 5,270 to the victim [6], In addition to recovering data, processes such as keyword search, binary search, corrupted and file engraving, recovery of certain types of files using digital forensics tools [7,8]. In addition to data corruption, one that can be detrimental to company data is malware. malware is very dangerous, Once malicious Software gains access to a computer system, it takes various actions resulting in a variety of undesirable results depending on the type of malware [9]. Such malware attacks are capable of stealing data by sending user keystrokes or information stored on a user's computer back to a host, changing data or destroying data on personal computers and/or servers and/or other computerized devices, especially through the Internet. In the least, these items represent a nuisance that interferes with the Smooth operation of the computer system, and in the extreme, can lead to the unauthorized disclosure of confidential information stored on the computer system, significant degradation of computer system performance, or the complete collapse of computer system function [10,11].

The developments in information technology have a major impact on the sustainability of a company. Most of the activities in a company require information technology, information technology and communication roles, such as for communication, or administrative work [12]. The appropriate solution is with a centralized data storage system on the computer server. A centralized data storage system requires a network system that is supported by adequate hardware and software [13]. The Cooperative and Micro, Small and Medium Enterprises (BALATKOP) Training center has one server that is currently used for data collection applications. There is a technology that can be used, namely Cloud Storage technology. Cloud storage is several virtual systems that exist in one physical PC server and virtual server by running a variety of different server functions [14,15]. The development of private cloud in the Training center for Cooperatives and Micro, Small and Medium Enterprises is expected to overcome the existing problems.

2. Method

2.1. Data Collection Method

The method used in this study for data collection is to use descriptive research methods. The descriptive research method is a research method that provides an objective description of an existing problem [16]. According to Sujana and ibrahim descriptive research is research that describes a phenomenon, event, event that is happening at the present time [17]. Based on the definition of descriptive research from a reference, it can be concluded that descriptive research is research that describes a phenomenon, event, event and provides an objective picture of a problem that exists at the present time. Data collection methods in this study are divided into 3 parts, namely interviews, literature study and observation.

2.2. System Development Method

The method used in the construction of the Private Cloud at the Center for Education and Training of Cooperatives and Entrepreneurs in West Java is to use the Network Development Life Cycle method which consists of analysis, design, simulation prototyping, implementation, monitoring, and management. Model network development life cycle as shown in Figure 1.

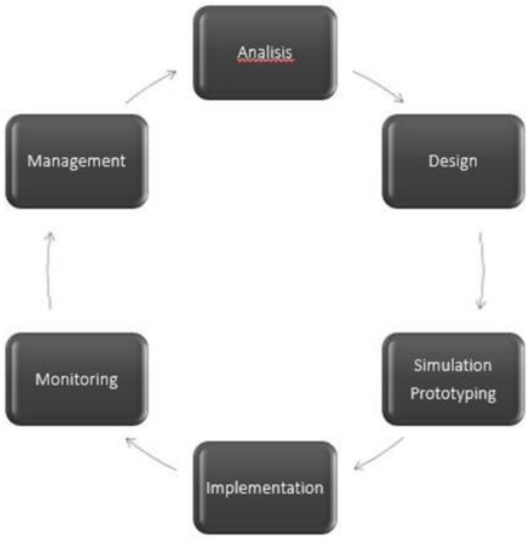

Figure 1. Model Network Development Life Cycle

3. Results and Discussion

3.1. Analysis of the proposed computer network

A computer network is a set of interconnections between two or more autonomous computers connected by a cable or wireless transmission media. Computer networks have become a very important thing to support various activities [2]. The following is a proposed computer network analysis. Analysis of the proposed computer network as shown in Figure 2.

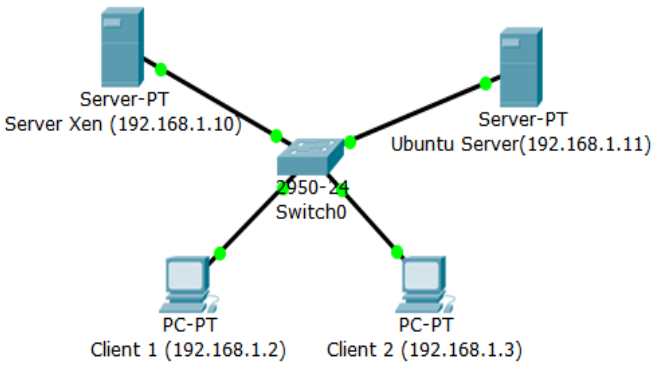

Figure 2. Analysis of the proposed computer network

Based on Figure 2, there are two servers including the XenServer and the Ubuntu server, the XenServer is used for a virtual operating system that will run the Ubuntu server as an integrated storage medium.

3.2. Server Price Analysis in Training Center for Cooperatives and Micro, Small and Medium Enterprises (BALATKOP)

The server is a central computer that handles data sets (databases) and provides services to client computers [18]. One of the optimal network supporters is the server [19]. The following is an

application server price analysis at the cooperative training center and micro, small and medium enterprises as shown in Table 1.

Table 1. Price of Servers in the Cooperative and Micro Small and Medium Enterprises Training Center

Hardware	Price
mobo intel des 1300	Rp. 800.000
Processor xeon 1225 v6	Rp. 3.800.000
RAM 8 giga	Rp. 1.500.000
Hdd 1 tb (ssd)	Rp. 2.168.000
Casing ATX	Rp. 1.425.000
PowerSupply 400w	Rp. 660.000
Sum	Rp.10.353.000

3.3. Installing XenServer on a Virtual Machine

Citrix XenServer is a complete virtualization platform based on the hypervisor used in the Xen Project [20]. The following are the steps to install Xenserver on a virtual machine as shown in Figures 3 and 4.

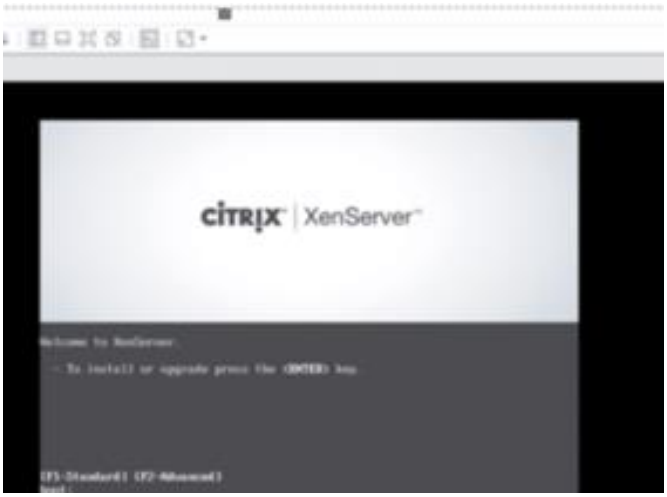

Figure 3. Start the XenServer Installation

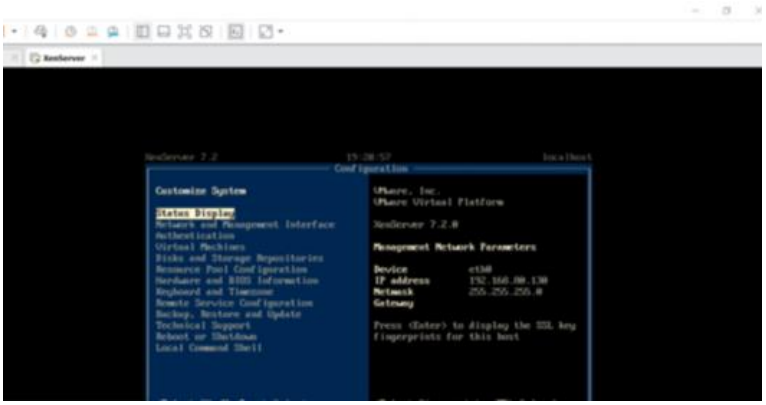

Figure 4. The XenServer Configuration Page on the Server

3.4. Operating System Configuration on XenServer

System configuration is a process carried out by the administrator to maximize the performance of a system. The following are the operating system configuration steps for Xenserver as shown in figure 5 and Figure 6.

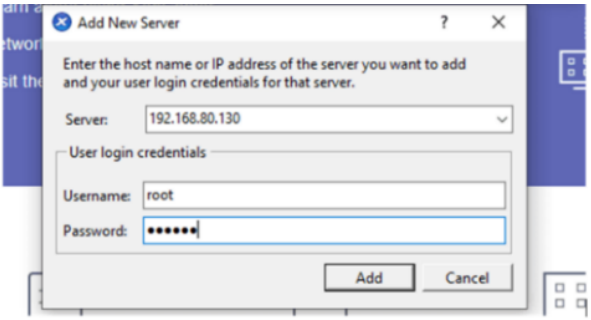

Figure 5. Login page on xenserver Client

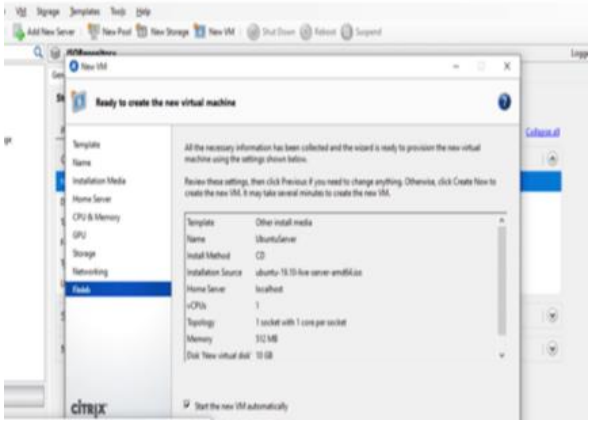

Figure 6. The page successfully created the ubuntu server configuration

3.5. Installing the Ubuntu Operating System on XenServer

The operating system functions as an interface between the application and hardware. In general, the operating system is the first layer of software that is placed in the computer's memory when the computer is turned on [21]. The following is an overview of the installation of the operating system in Ubuntu operations as shown in Figures 7 and 8.

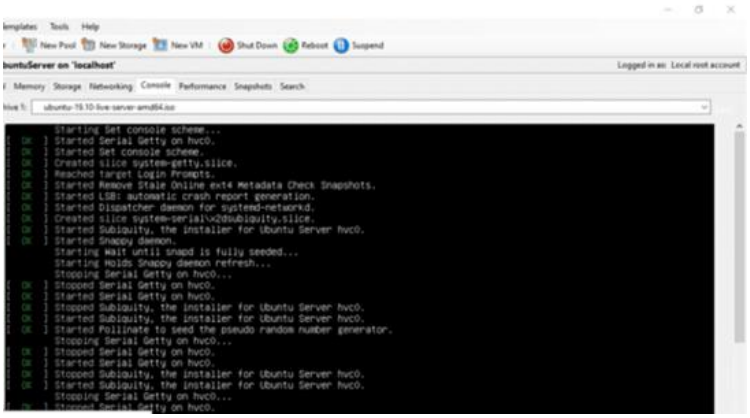

Figure 7. Start Page installing the Ubuntu operating system on the XenServer

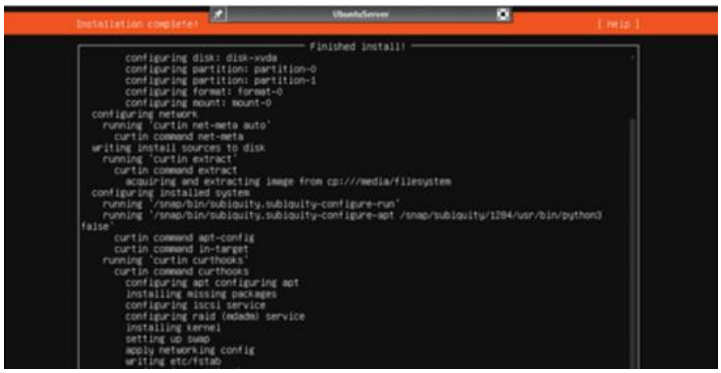

Figure 8. The Installation page is complete on the Ubuntu operating system on the XenServer

3.6. Installing and testing an FTP server on an Ubuntu operating system

File transfer protocol is a protocol that functions to exchange files in a network that supports TCP / IP protocol. Each server is marked with an address called IP (internet protocol). This IP will distinguish the connections on the server from one another [22]. The following are the steps for installing an FTP server on the Ubuntu operating system as shown in Figures 9 and 10.

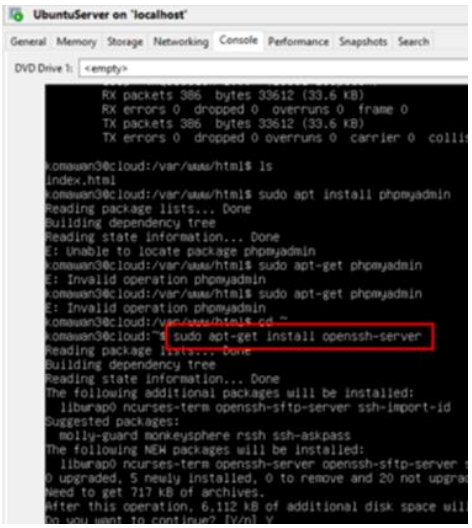

Figure 9. A page to install the sftp server

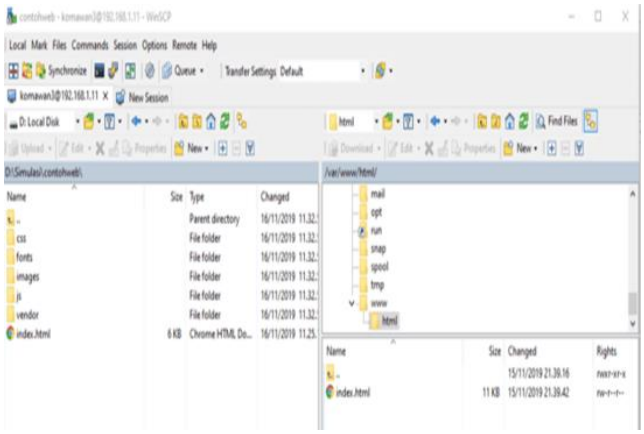

Figure 10. The page has been successfully accessed into the ubuntu directory.

3.7. Server Price Testing at the Center for Cooperative and Micro, Small and Medium Enterprises (BALATKOP)

Server testing is performed to determine price comparisons after using private cloud technology in West Java Cooperative and Entrepreneurship Education and Training Center. in testing, there is one physical server and two virtual servers that are used to store all activity documentation data at the Center for Cooperative and Micro, Small and Medium Enterprises. The following are the physical server unit prices if using two ftp servers as shown in Table 2 and the following are the virtual server unit prices if using two ftp servers as shown in Table 3.

Table 2. The physical server unit prices if using two ftp servers

Hardware	Unit Price	Items	Total Prices
mobo intel des 1300	Rp. 800.000	2	Rp. 1.600.000
Processor xeon 1225 v6	Rp. 3.800.000	2	Rp. 7.600.000
RAM 8 giga	Rp. 1.500.000	2	Rp. 3.000.000
Hdd 1 tb (ssd)	Rp. 2.168.000	2	Rp. 4.336.000
Casing ATX	Rp. 1.425.000	2	Rp. 2.850.000
PowerSupply 400w	Rp. 660.000	2	Rp. 1.320.000
			Rp. 20.706.000

Table 3. Virtual server unit prices if using two ftp server

Hardware	Price
mobo intel des 1300	Rp. 800.000
Processor xeon 1225 v6	Rp. 3.800.000
RAM 8 giga	Rp. 1.500.000
Hdd 1 tb (ssd)	Rp. 2.168.000
Casing ATX	Rp. 1.425.000
PowerSupply 400w	Rp. 660.000
Sum	Rp.10.353.000

4. Conclusion

Based on the results of implementation and testing, this research has been able to build a private cloud in the Cooperative and Micro Enterprise Training Center to exchange data and to minimize the cost of purchasing and maintaining the server. if using two physical servers, the total funds spent by the Cooperative and Micro Enterprise Training Center are twenty million seven hundred and six thousand rupiahs, whereas if using one physical server and two virtual servers, the total funds spent are ten million three hundred five thirty three rupiah. By using virtual server technology at the Cooperative and Micro Enterprise Training Center, it can be used more efficiently both for application servers, databases, and servers to store archives centrally.

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References

[1] Kurniasih, D., & Setiyadi, A. 2019, November. Geographic Information System for Mapping New Entrepreneurs in West Java. In *IOP Conference Series: Materials Science and Engineering*, **662**(2), pp. 022126.
[2] Setiyadi, A., & Setiawan, E. B. 2019, November. Blind scanner Server and Batch Programming Implementation in the Process of Automatically Scan Documents. In *IOP Conference Series: Materials Science and Engineering*, **662**(2), pp. 022068.
[3] Priladha, A., & Setiyadi, A. 2019, November. Designing Information System Recruitment Professional Gamers Web-Based. In *IOP Conference Series: Materials Science and Engineering*, **662**(2), pp. 022072.
[4] Wang, Y., Li, Z., & Lin, W. 2007, September. A fast disaster recovery mechanism for volume replication systems. In *International Conference on High Performance Computing and Communications*, pp. 732-743.
[5] Lwin, T. T., & Thein, T. 2009. High availability cluster system for local disaster recovery with Markov modeling approach. *arXiv preprint arXiv:0912.1835*, *International Journal of Computer Science Issues, IJCSI*, **6**(2), pp. 25-32.
[6] Monahan, M. T. 2007. 2006 Identity Fraud Survey Report-Identity Fraud is Dropping, Continued Vigilance Necessary. *Javelin Strategy and Research*.
[7] Lee, S., Savoldi, A., Lee, S., & Lim, J. 2007, November. Password recovery using an evidence collection tool and countermeasures. In *Third International Conference on Intelligent Information Hiding and Multimedia Signal Processing (IIH-MSP 2007)*, **2**, pp. 97-102.
[8] Park, B., Savoldi, A., Gubian, P., Park, J., Lee, S. H., & Lee, S. 2008, April. Recovery of damaged compressed files for digital forensic purposes. In *2008 International Conference on Multimedia and Ubiquitous Engineering (mue 2008)*, pp. 365-372.
[9] J. Niemelä, "Restoration of file damage caused by malware." Google Patents, 2014.
[10] A. F. Rozman and A. J. Cioffi. 2009, "System and method for protecting a computer system from malicious software." Google Patents.
[11] Chapman, I. M., Leblanc, S. P., & Partington, A. 2011, April. Taxonomy of cyber attacks and simulation of their effects. In *Proceedings of the 2011 Military Modeling & Simulation Symposium*, pp. 73-80.
[12] Setiyadi, A., & Setiawan, E. B. 2018, August. Information System Monitoring Access Log Database on Database Server. In *IOP Conference Series: Materials Science and Engineering*, **407**(1), pp. 012110.
[13] Wagito. 2007. Sistem Penyimpanan Terpusat Pada Sistem Jaringan Komputer," *Majalah PAKAR Universitas Teknologi Yogyakarta*, Yogyakarta.
[14] Drago, I., Mellia, M., M. Munafo, M., Sperotto, A., Sadre, R., & Pras, A. 2012, November. Inside

dropbox: understanding personal cloud storage services. In *Proceedings of the 2012 Internet Measurement Conference*, pp. 481-494.
[15] Wu, J., Ping, L., Ge, X., Wang, Y., & Fu, J. 2010, June. Cloud storage as the infrastructure of cloud computing. In *2010 International Conference on Intelligent Computing and Cognitive Informatics*, pp. 380-383.
[16] Rukajat, A. 2018. *Pendekatan Penelitian Kuantitatif: Quantitative Research Approach*. Deepublish.
[17] N. Sujana. 1989. *Penelitian Kualitatif dan Kuantitatif*. Bandung.
[18] Afrianto, I., & Setiyadi, A. 2019. Sistem Informasi Monitoring Perdagangan Pariwisata Dan Investasi Di Indonesia Dengan Negara-Negara Di Kawasan Amerika Dan Eropa. *INFORMATICS FOR EDUCATORS AND PROFESSIONALS*, **3**(2), pp. 171-184.
[19] Imam Rasyid, A. 2017. *Optimalisasi Jaringan Dan Monitoring Di SMAN 4 Bandung Menggunakan WEBMIN* (Doctoral dissertation, Universitas Komputer Indonesia).
[20] N. pl, *XenServer: Linux Virtulization. AL5-013*. NOITE S.C.
[21] Komputer, W. 2013. *Menjadi Teknisi Komputer Profesional*. Elex Media Komputindo.
[22] Setiyadi, A. 2017. Implementasi Modul Network MITM Pada Websploit sebagai Monitoring Aktifitas Pengguna dalam Mengakses Internet. In *Seminar Nasional Komputer dan Informatika*.