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DEVELOPMENT OF THE PAGARALAM COLLEGE OF TECHNOLOGY OF COMPUTER NETWORK TO ACCOMMODATE DIGITAL CAMPUS

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Abstract

The use of information and communication technology is very important in supporting all daily human activities. In the world of education, information and communication technology has a very important role or benefit because many activities in the world of education take advantage of this technology. Pagaralam College of Technology is one of the colleges utilizing information and communication technology, computer networks, but the existing network conditions are not optimal so that the quality needs to be improved to make it better. Also with the increasing competition in higher education management, it is very important for a college to think about how the institution can survive and be superior in determining its competitiveness with other colleges, so that the digitization of the campus or the creation of a digital campus is one of the strategies that must be implemented in the face of development existing information and communication technology. This study aims to improve the quality of computer networks to prepare the Pagaralam College of Technology to accommodate the need to become a digital campus, using SWOT analysis methods and TopDown Network Design, network quality testing or Quality of Service (QoS), and development methods using PPDIOO. (Prepare, Plan, Design, Implement, Operate, Optimaze). This research results in a better or more reliable new computer network design or blueprint to realize or accommodate a digital campus.

I. INTRODUCTION

Currently the development of science and technology is developing so rapidly in line with the times. Likewise, information and communication technology has had developments in the last few decades. Various supporting technologies have been developed both in terms of hardware and software, to facilitate human activities [1].

The use of information and communication technology helps humans in activities carried out within a company, institution or educational institution, such as a university. For higher education, the use of information and communication technology is very important because many activities are carried out by utilizing information and communication technology [2]. In addition, information and communication technology can improve the quality of education. [3] Therefore, it is very important that universities have good network quality so that it will facilitate all activities in higher education, in administration and academics or learning. According to [4] with the increasing competition that is getting tougher in higher education management, it is very important for a university to think about how the institution can survive and be superior in determining its competitiveness with other universities so that the digitization of the campus or the realization of a digital campus is one of the strategies implementing in the face of developments in existing information and communication technology.

Digital campus itself is a process of transforming all campus resources into digital form by utilizing information and communication technology [4]. The digital campus describes the management system or management of higher education digitally by utilizing information and communication technology, activities and interactions between students and the campus carried out without depending on the dimensions of space and time and summarizing the higher education bureaucratic system to be more efficient and effective because all are connected with information system integrated with the database. In addition, digital campuses must also have good ICT infrastructure connected to internet services with adequate bandwidth according to the needs of higher education.

Pagaralam College of Technology currently utilizes information and communication technology in carrying out activities so as to increase

productivity on campus. Therefore, a good quality computer network is needed to support all these activities. Based on the observations made, it turns out that the current condition of the computer network is still not optimal. This problem can be seen when there are many network users who will affect the quality and performance of the network, wifi signals that cannot be accessed everywhere in the campus environment, unequal distribution of bandwidth, and the absence of user management. Based on some of the problems found, it is important to improve the quality of existing computer networks in order to be better and meet user needs.

This study aims to improve the quality of computer networks to prepare STT Pagaralam to accommodate the need to become a digital campus. In the initial stage, a SWOT (Strength Weakness Opportunities Threats) analysis is carried out. This is done to evaluate both the internal and external conditions of the organization [5]. Furthermore, analyzing the quality of a computer network uses the Top Down Network Design method, with parameters used as a reference to determine the performance of a computer network, namely delay, jitter, packet loss, and throughput. Based on the results of the measurement, information is obtained to determine the performance of existing computer networks as a consideration for designing a new computer network using the PPDIOO method.

II. THEORETICAL BASIS

2.1. Computer Networks and Digital Campus

A computer network is a collection of several devices that are connected to each other in one unit and exchange data and information between devices with one another [6]. By using a computer network, users can share computer resources with each other. For example, a server can meet the needs of a file sharing service then known as a file server.

The problem of device management is to consider the ease of operation, maintenance and security [7]. The development of computer technology requires networks to adapt to technological developments. Computer network development can follow user needs.

Digital Campus is inseparable from the need for a computer network. Digital campus is a term used to indicate the use of information technology in every operational activity [8]. The use of computer technology, network technology, communication technology is carried out on campus or college, or there is digitalization of existing resources. In the end, every activity such as interaction between students and campus can be carried out without being hindered by the dimensions of money and time. This can summarize the bureaucratic process occuring to be more effective and efficient.

2.2. SWOT (Strengths, Weaknesses, Opportunities dan Threats)

SWOT is an analysis method used to develop strategies [9] needing to be done so that it is in line with the vision, mission and goals of the organization. In this analysis the internal condition of the organization is examined in the form of strengths and weaknesses. Furthermore, the analysis of the external conditions of the organization becomes an input in forming a strategy that will be carried out so that the organization is able to compete [5]. The analysis is carried out starting by examining the strategic plan, vision, mission and goals of the organization. Based on the analysis that will be carried out later, this will get the strengths and weaknesses of the organization, the results of which can be used for organizational development either from infrastructure, supporting applications or human resources. [10]

2.3. Top Down Network Design

Top Down Network Design [11] is an analytical method aiming to build or redesign a computer network. The design process for a network is quite complex. The complexity of device configuration can lead to its management requiring manual intervention [12]. This can be avoided by careful planning taking the user's needs into consideration. This analysis method can help in improving or optimizing the performance of computer networks to suit business goals [13].

As the name implies, this method starts from the highest level to the lowest level. The analysis process is carried out through stages [11]. The analysis begins by taking a picture of the existing system, determining user requirements and proposing a development network structure. Things needing to be considered include the type of data, the size of the path and how access is done. Understanding of the location and user needs is also an important part of this analysis. The next process is a logical design before a physical design is carried out. This logical design includes the basic building consisting of the functions and structures of the system while the physical design describes the devices and technology used. The specifications of the equipment to be used are a reflection of the previous needs analysis.

Like the software development life cycle, network development goes through cycles. Cisco introduces the life cycle of a network, namely PPDIOO (Prepare, Plan, Design, Implement, Operate, Optimize). PPDIOO is an analysis method to develop computer network infrastructure [14].

2.4. Qusality Of Service

Quality of Service (QoS) is a collection of techniques ensuring the performance of a computer network in providing services to applications on a computer network [15]. QoS is a method used to

determine or measure how good the quality of computer network services is in accordance with network quality standards. The standard used in QoS is the THIPON (Telecommunication and Internet Protocol Harmonization Over Network) standard. There are 4 parameters of concern in determining network quality [16]: jitter, packet loss, delay, and throughput. Jitter is a variation of delay occuring between packets in a computer network. The greater the jitter value, the worse the network quality. Packet loss or congestion is the number of packets lost during the delivery process. Bandwidth is related to the amount of data packets that can be passed. Throughput corresponds to the actual bandwidth measured per certain time. Latency is a measure of the quality of a network related to the waiting time. This varies depending on how busy a network is.

III. RESEARCH METHODOLOGY

This research uses literature study and field studies as a guide in conducting research, which consists of determining the location of the research, collecting data through observation, interviews and documentation. Then the data obtained is analyzed to produce useful information in the research carried out.

3.1. Design research

In conducting research there are stages describing thoroughly the flow or steps in conducting research starting from the initial steps of the research to the end of the research which is carried out in a structured manner and produces information that can be used. This is described in the form of design research (Figure 1.) which is useful and provides the same perception between the researcher and the reader of the flow of thoughts of the researcher.

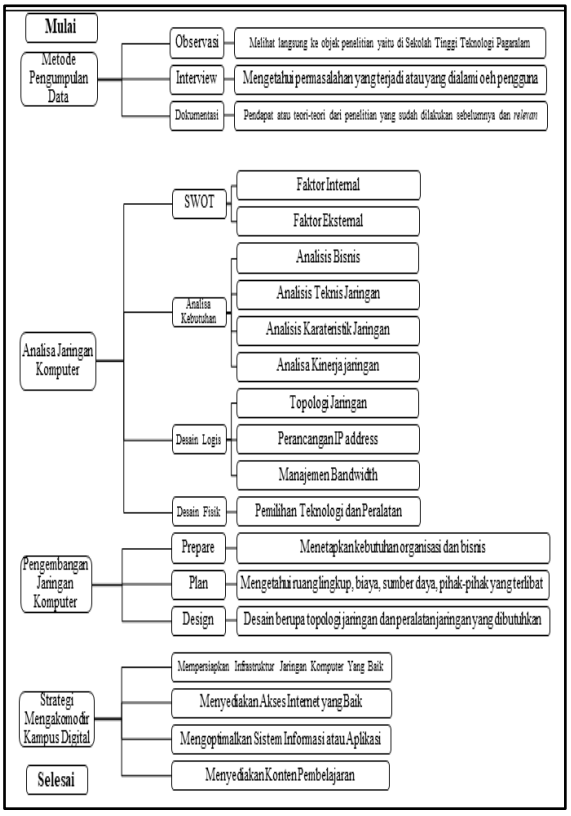

Figure 1. Design Research

3.2. Data collection

Data collection is an important step in carrying out a scientific research [17]. Data collection is carried out by conducting interviews with parties related to policy makers (Assistant Chair 1), IT managers and also users (head of the computer laboratory). This technique is done to collect data about hardware and also software used on the network, as well as find out the problems that occur or are experienced. Meanwhile, for data tringulation, this study also uses observation and documentation techniques. Observations are made by making direct observations of the condition of the installed network, the locations where connections need to be provided, the problems occuring and the results of measurements. In addition, documentation techniques are carried out by studying existing documents to understand the organizational structure, policies and needs for information technology.

3.3. Data analysis

The analysis process is carried out using several analytical techniques. First, SWOT analysis [9] is to determine the strategies needed to achieve a digital campus by considering internal and external factors. Second, QoS analysis [15] is to determine network quality. Table 1. presents the network quality measurement results at several measurement points. Third, the Top Down Network design [11] is used to rebuild the network when needed.

Table 1. Test results of network quality

No	Room	Troughput	Jitter	Delay	Packet Loss
1.	Library	5,18	39	25	2,0
2.	Language laboratory	6,82	14	17	1,2
3.	Classroom 1	4,36	271	28	0,0
4.	TS Study Program	8,63	9	18	0,0
5.	LPM	8,93	16	16	0,3
6.	Classroom 13	8,48	24	17	0,0
7.	Classroom 14	9,32	14	16	0,3
8.	Foundation Room	9,23	3	16	1,9
9.	Secretariat	9,63	3	16	1,0
10.	CTC	35,4	9	21	0,8
11.	Meeting room	11,7	19	16	4,0
12.	Classroom 15	14,9	3	16	8,4
13.	Classroom 16	14,2	0	16	1,0
14.	BAAK	15,8	50	15	0,8
15.	Entrepreneurship	35,8	3	16	0,1
16.	Classroom 3	15,0	1	15	1,7
17.	IT & LPPM Study Program	36,4	1	15	0,0
18.	Classroom 4	12,8	1	15	0,7
19.	BEM room	10,3	2	16	0,4

IV. RESULTS

4.1. Accomodating Digital Campus

Digital campus is an effort to change or realize existing resources in the campus environment into digital form by utilizing internet network technology and using various devices needed to make campus real life better. The resources at Pagaralam College of Technology are academic resources as the main resources consisting of teaching, research and community service. There are also supporting resources: financial administration, human resources, academic administration, asset management and libraries. All of these resources are manifested in digital form or in the form of an integrated information system and utilizing a digital campus database.

When students interact with higher education management, they can access the web portal (Figure 2.) or the official website of the Pagaralam College of Technology, http://www.sttpagaralam.ac.id.

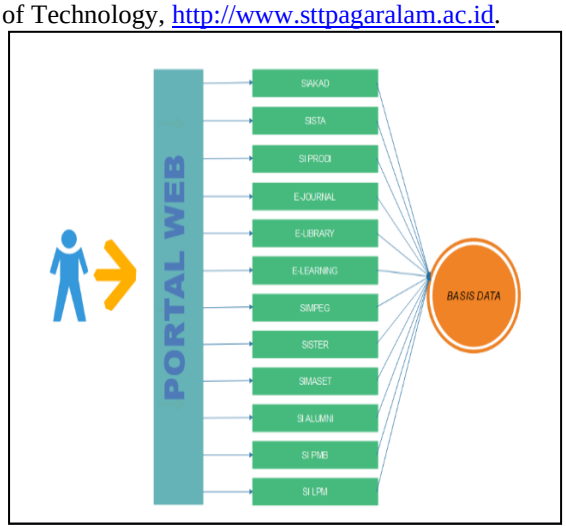

Figure 2. Web portal of STT Pagaralam

This web portal serves as a gateway to all services provided by the management of the Pagaralam College of Technology to users or students according to their needs, such as accessing academic data, libraries, journals or filling out LPM questionnaires and other information systems.

4.2. Strategies in Accommodating Digital Campus

In preparing a university to become a good digital campus and ready to compete with universities throughout Indonesia or even overseas universities, a strategy is taken, [18] so that the vision and mission of the Pagaralam College of Technology can be achieved. The strategies are:

4.2.1. Preparing a Good Computer Network Infrastructure

Computer network infrastructure is one of the requirements that must be present in the digitization of a university because all activities on a digital campus will not run if there is no computer network or internet connection. Therefore, a digital campus requires a computer network having good quality so that it will facilitate and increase work productivity both in the academic field or in college administration, so that there is an effort to optimize the existing computer network by analyzing the development of computer networks at the Pagaralam College of Technology.

A. Computer Network Analysis

Information and communication technology at Pagaralam College of Technology has a very important role so that good quality ICT is needed to support all existing activities. Therefore it is necessary to carry out an analysis of existing information and communication technology to determine the strengths, weaknesses, opportunities and threats that exist, in order to determine the level of urgent needs and determine the priority scale in the development of information and communication technology at the Pagaralam College of Technology. In this case, using the SWOT approach is shown in Table 2. It consists of internal factors, strengths and weaknesses as well as external factors of opportunities and threats, then formulated in the SWOT matrix based on four types of strategies, namely Strengths-Opportunities. (SO), Strengths-Threats (ST), Weaknesses-Opportunities (WO) and Weaknesses-Threats (WT).

Table 2. SWOT matrix

Strength–Opportunity (SO)	Weakness– Opportunity (WO)
• Developing information and communication technology (ICT) at the existing Pagaralam College of Technology,	• Improve the quality of ICT, by providing existing data and information that can be integrated with

because nowadays the use of ICT in life is very important, especially for universities to improve its quality. • Using or imposing the website of the Pagaralam College of Technology as a place to promote so that it can recognize the digital campus of the Pagaralam College of Technology.	each other so that it is easier to access the data and information needed. • Make proposals to get funding aimed at ministries or companies, which can be used in ICT development.
Strength – Treath (ST)	**Weakness – Treath (WT)**
With the policy implemented by the institution that the funds received from new students are used to improve infrastructure by procuring or purchasing the necessary equipment, such as routers, switches, access points and computers to improve the quality of ICT, so as not to be out of date.	Documenting the performance of computer networks at the Pagaralam College of Technology, by conducting analysis in the face of technological developments in realizing a digital campus.

The analysis is also carried out to determine the quality and condition of existing infrastructure needing to be developed in order to be better and can meet the needs of users to realize or accommodate a digital campus at the Pagaralam College of Technology. Analyzing computer networks using the Top Down Network Design method.

1. Need Analysis

This stage produces a model needed in the development of existing computer networks and this stage also measures the quality of the existing network.

a. Business Analysis

Utilizing information and communication technology will save you in purchasing a printer (saving money), because in each room you can use just one printer that can be used together (hardware sharing).

b. Network Technical Analysis

The computer network at Pagaralam College of Technology uses an Internet Service Provider (ISP) from Telkom's product, Indihome, with a bandwidth of 100 Mbps as shown in Figure 3. which is the test result using the speedtest application.

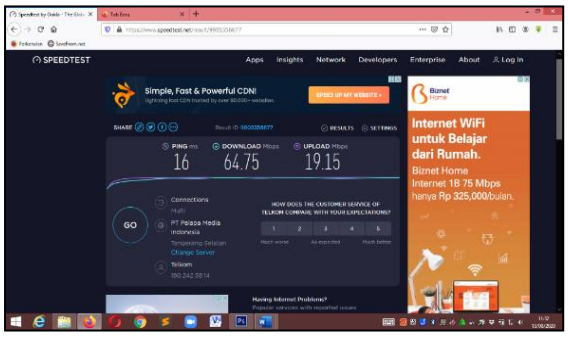

Figure 3. Bandwidth

a. Network Characteristics Analysis

On existing computer networks, there is no bandwidth management and user management so that users can freely use the internet, browse, download and upload with no good control in every part so that it will slow down the connection at rush hour due to busy network traffic.

b. Network Performance Analysis

Knowing the quality of existing computer networks by measuring or testing, which later can be used as a consideration in the development of computer networks, using parameters: delay, jitter, packet loss and throughput.

2. Logical Design

This stage will create or build a new computer network logical design in accordance with the results of the needs analysis in the previous stage. The resulting model is determining the network topology, mapping network addresses (IP addresses) and bandwidth management.

a. Network topology

Making a new computer network topology as an effort to develop computer networks at STT Pagaralam, as well as to configure switching and routing on the new computer network infrastructure. In designing the placement of network devices in the room, this must be done carefully and with careful consideration in order to support the network operations according to user needs without reducing the aesthetics.

b. Bandwidth management

In a computer network that has many users, a bandwidth management mechanism is needed to prevent monopolistic bandwidth usage. With the bandwidth settings, users can get a bandwidth quota according to their individual needs (Table 3.) from a bandwidth of 500 Mbps.

Table 3. Bandwidth distribution

No	Client	Bandwidth
1.	Campus Administration	300 Mbps
2.	College student	200 Mbps

3. Physical Design

This stage will produce a design or blueprint of the Pagaralam College of Technology computer network, by determining the technology used and the specifications of the devices or infrastructure used, such as access points, switches, routers and cables. Also in this design determines the placement of devices as efficiently as possible to improve the quality of the existing computer network, and also requires several devices that can support the optimization of computer networks (Table 4).

Table 4. Required device specifications

No	Device Name	Specification	Amount
1.	Mikrotik RBGroove GA-52 Hpacn	CPU QCA9556 720MHz, Main storage 16MB, RAM 64MB, 1 LAN Ports Gigabit, Wireless standards 802.11a/b/g/n/ac, Wireless Tx Power 26dBm, Operation system RouterOS level4	1 Pcs
2.	Sectoral Antenna	20 Dbi, 2 GHz	1 Pcs
3.	Bandwidth	Internet Service Provider (ISP)	300 Mbps
4.	Mikrotik routerboard CCR1036-12G-4S(v2)	4 GB RAM, 12 LAN port Gigabit Ethernet, Operating System RouterOSv6	1 Pcs
5.	Mikrotik RBSXTsq-5HPnD	CPU AR9344 600 Mhz, Main storage 16MB, Ram 64MB, RouterOS level4	13 Pcs
6.	Kabel Jaringan	UTP (Unshielded Twisted Pair) Belden CAT 6	2 Roll
7.	Switch 48 LAN port	Switch Hub Gigabit TP-LINK TL-SG1048 48 port, speed 10/100 Mbps	4 Pcs
8.	Switch 16 LAN port	Switch Hub Gigabit TP-LINK TL-SG1016D 16 Port, speed 10/1000 Mbps	2 Pcs
9.	Personal Komputer (PC)	Core i7, RAM 8 GB, SSD 1 TB	111 Pcs

B. Computer Network Development

After the analysis is carried out, several results are obtained used as references to develop existing computer networks in order to have better quality. In developing computer networks at the Pagaralam College of Technology using the PPDIOO method (Figure 5.) consisting of Prepare, Plan, Design, Implement, Operate, and Optimize.

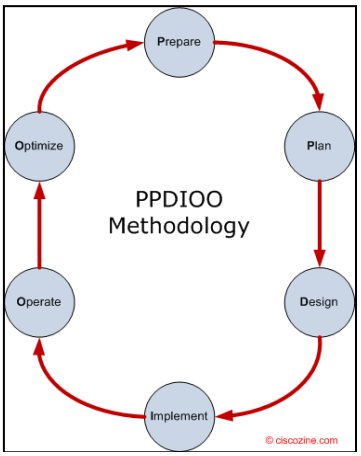

Figure 5. PPDIOO method

1. Prepare

The preparation phase is determining or identifying the problem, the existing network concept. Identification of the problem carried out in this study is to conduct a direct observation of the object of research to obtain data and information that will be analyzed later. Data collection is carried out by means of interviews and direct observation.

2. Plan

In this phase, planning what equipment needs, both hardware or software, are needed in each section or room (Table 5.) to meet the needs for developing and improving the quality of computer networks at the Pagaralam College of Technology.

Table 5. Device requirements for each part

No	Place/ Space	Existing Devices	New Device
1.	Server Room	a. Modem 1 pcs b. Router 1 pcs c. Switch 1 pcs d. Server 1 pcs	a. Router 1 pcs (change device) b. Switch 2 pcs
2.	Library	Access Point 1 pcs	Personal Computer (PC) 3 pcs
3.	Entrepreneurship	a. Switch 1 pcs b. Personal Computer (PC) 4 pcs	a. Personal Computer (PC) 1 pcs b. Router from the server room
4.	Programming Laboratory	Personal Computer (PC) Pentium4 20 pcs	a. Personal Computer (PC) 25 pcs b. Switch 1 pcs
5.	Multimedia Laboratory	Personal Computer (PC) Pentium4 20 pcs	a. Personal Computer (PC) 25 pcs b. Switch 1 pcs
6.	Network Laboratory	-	a. Personal Computer (PC) 25 pcs b. Switch 1 pcs
7.	Language laboratory	-	a. Personal Computer (PC) 25 pcs b. Switch 1 pcs

8.	Civil Engineering Laboratory	-	a. Personal Computer (PC) 1 pcs b. Access Point 1 pcs
9.	BAAK & LPPM Room	Access Point 1 pcs	Personal Computer (PC) 2 pcs
10.	Secretariat Room & CTC	Access Point 1 pcs	Personal Computer (PC) 3 pcs
11.	LPM Room	Access Point 1 pcs	Personal Computer (PC) 1 pcs
12.	Study & Teaching Program Room	*a.* Access Point 1 pcs *b.* Personal Komputer (PC) 4 pcs	Personal Computer (PC) 1 pcs
13.	Student Hotspot	-	a. MikroTik 2 pcs b. Switch 1 pcs c. Access Point 12 pcs

3. Design

This stage involves making a design or blueprint of the computer network infrastructure expected to be able to connect all the buildings or rooms in the Pagaralam College of Technology. Judging from the geographic location of the Pagaralam College of Technology which is quite extensive, the use of the old topology, star topology, is still suitable or appropriate for the computer network to be built. In making a computer network blueprint at the Pagaralam College of Technology, researchers combined the two media used: computer networks using cable media and computer networks using wireless, in connecting or integrating all buildings or rooms at the Pagaralam College of Technology.

a. Server room design

The computer network equipment in the server room is a modem, switch, server, and CCR1036-12G-4S (v2) routerboard one of whose advantages is having 12 Gigabit Ethernet ports. (Figure 6.)

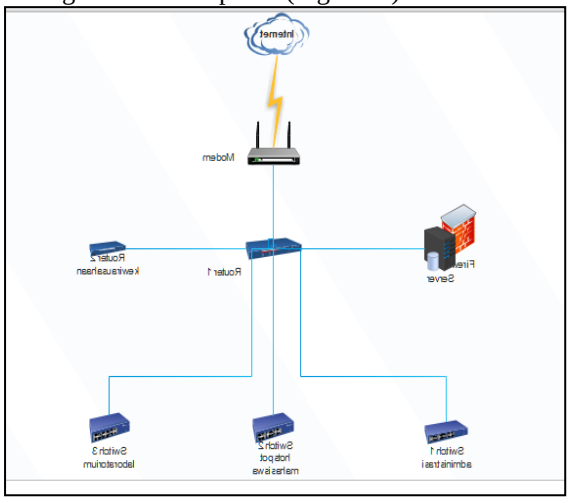

Figure 6. Server room design

a. Administrative design

The devices used in campus administration in each room have similarities. There are personal computers (PCs), printers, and, access points that are used as signal transmitters for other devices in the room such as laptops and cellphones. (Figure 7.)

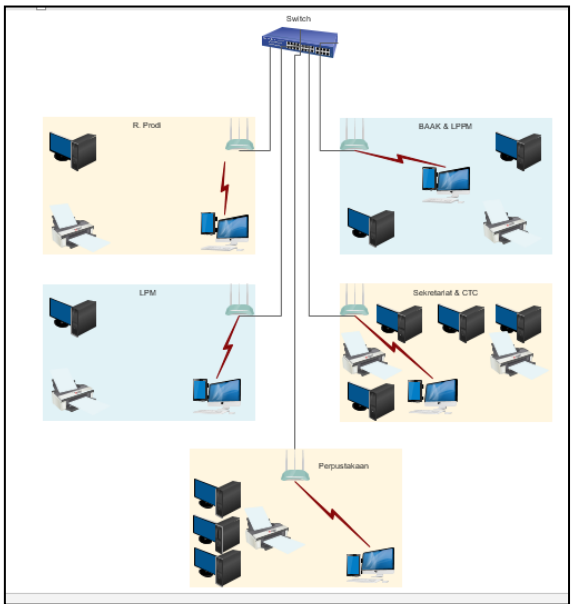

Figure 7. Administrative design

b. Laboratory Desain

The computers in the laboratory have pretty good specifications, Intel core i7, 8GB RAM, 1 T hard drive, which has 25 computers per laboratory, with the following design. (Figure 8.)

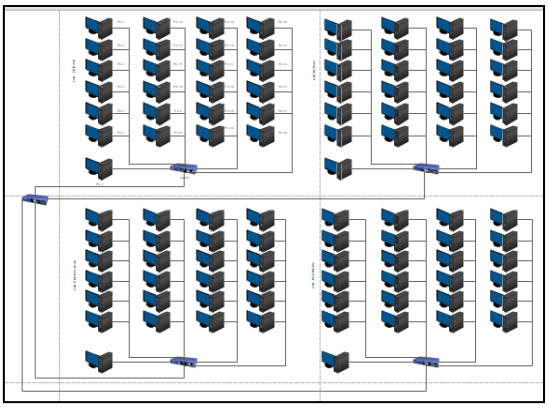

Figure 8. Laboratory design

c. Student hotspot design

The design of student hotspots is made to accommodate or fulfill student needs regarding internet connections, so that access points are placed in various strategic places or spaces. The network design for student hotspots consists of one mikrotik groove router as a device transmitting a remote signal connected to a student hotspot switch located in the

server room, one proxy router as a device used to receive signals sent by mikrotik groove, one switch , and thirteen access points. (Figure 9.)

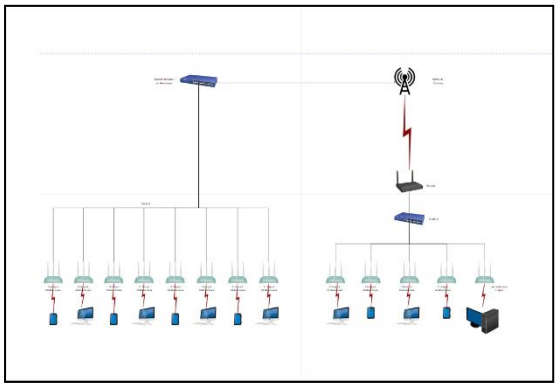

Figure 9. Design of a student hotspot

d. Blueprint of computer networks at Pagaralam College of Technology

The design made includes the addition of several devices placed in strategic locations to meet the need for good internet services with the installation of eleven access points to meet student hotspots, so that all places in the campus environment can receive a good internet network. previously there are places that had not received internet network service, (Figure 10.) as well as the addition of ten personal computers (PCs) with good specifications in the administration section to improve the performance of staff or employees in operating the system or application used, where previously there was only the administration department. 5 PCs. There is an increase in device specifications, such as the router on the server that previously used the Mikrotik RB941 routerboard, replaced with the Mikrotik Routerboard CCR1036-12G-4S (v2), which has 12 Gigabit Ethernet LAN ports, making it easier to manage users and bandwidth, replacing existing PCs. in a laboratory where the previous specifications of Intel Pentium4 2GB RAM are replaced with Intel Core i7 8GB RAM. In each classroom and laboratory there is an infocus, as a device used as a medium in the digital teaching process. Traditional lectures still use whiteboards and markers in delivering material, but by utilizing an in-focus learning process, you can use interactive learning media or content that is more interesting and easily understood by students.

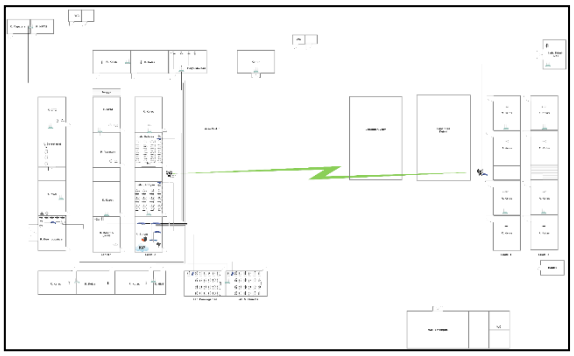

Figure 10. Blueprint computer network

4.2.2. Providing Good Internet Access

In a digital campus all activities are manifested in digital form by using an information system or applications made, so that good internet access is needed and there is no downtime. Therefore, Pagaralam College of Technology is committed to continuing to optimize internet connections by increasing the amount of bandwidth that was previously only 100 Mbps to 500 Mbps. With the added bandwidth capacity, it is hoped that it will facilitate and optimize users in using or utilizing the computer network at the Pagaralam College of Technology, during download or upload.

4.2.3. Optimizing Information Systems

At the Pagaralam College of Technology, there are various information systems (Table 6.) used to support higher education activities. In realizing a good digital campus, the use of information systems or applications needs to be optimized again because in a digital campus all activities are realized in digital form. The information systems or applications used at the Pagaralam College of Technology are:

Table 6. List of information systems

No	Division	System/ application used
1.	BAAK	www.siakad.sttpagaralam.ac.id
2.	Study program	www.proditi.sttpagaralam.ac.id, www.prodits.sttpagaralam.ac.id and www.sista.sttpagaralam.ac.id
3.	LPPM	www.ejournal.lppmsttpagaralam.ac.id
4.	Library	www.elibrary.sttpagaralam.ac.id
5.	Teaching	www.spada.sttpagaralam.ac.id
6.	Staffing	www.simpeg.sttpagaralam.ac.id
7.	Equipment and Inventory	www.simaset.sttpagaralam.ac.id
8.	Career and Training Center (CTC)	www.ctc.sttpagaralam.ac.id
9.	Student Affairs	www.siakad.sttpagaralam.ac.id
10.	Quality Assurance Agency (QAA)	www.lpm.sttpagaralam.ac.id

4.2.4. Provides Learning Content

In supporting the learning process on a digital campus, a device or media is needed to make it easier for students to absorb or understand learning material taught by lecturers in the distance learning process or

e-learning carried out on a digital campus, namely using learning content in the form of power point materials, creative videos or learning animations, so that the learning process will be more interesting and help lecturers in delivering learning materials so that students don't get bored in the learning process. E-leraning is a learning concept utilizing information systems in the implementation of learning. [19]

In making a computer network blueprint, the infrastructure of the Pagaralam College of Technology used uses a lot of Mikrotik as a network device used. Mikrotik router is an operating system that can be used as a router on a reliable computer network because the Mikrotik includes a complete range of features for computer networks [20]. Mikrotik can also be used to manage or manage bandwidth and manage users. In addition, Mikrotik is easy to use by anyone and has a price that is not too expensive but has many functions and benefits in computer networks.

From the design or blueprint of the computer network made and the strategy carried out (Table 7), Pagaralam College of Technology is ready to realize or accommodate a digital campus in accordance with the objectives of the research carried out. This can be seen from the computer network infrastructure created and the addition of bandwidth in fulfilling good internet services or access on campus, so that employees or staff, lecturers and students can easily access various existing systems or applications to support activities in campus digitization, as well as for support the distance learning process assisted by the existence of learning content making the teaching and learning process more interesting.

Table 7. Implementation of the strategy

No	Indicator	Before	After
1.	Good quality computer network infrastructure	-	√
2.	Good internet access	-	√
3.	Optimal use of information systems or applications	-	√
4.	The use of content or learning media and the teaching and learning process	√	√

V. CONCLUSION

5.1. Conclusion

From the results of the research done, conclusions can be drawn:

This research produces a new or reliable computer network design or blueprint to realize campus digitization.

Accomodating the digital campus at the Pagaralam College of Technology uses a strategy by realizing or establishing a good quality computer network infrastructure, good internet access, optimizing integrated systems or applications, and using content or learning media in the distance learning process to make it easier for students to doing learning activities can be anytime and anywhere.

There are many advantages to using a digital campus. There are fast feedback, good communication tools, tracking evaluation, and skills development.

5.2. Suggestion

To improve the performance or quality of computer networks at the Pagaralam College of Technology, the design or blueprint of this research is expected to be implemented in the development of existing computer networks so that the digitization process on campus can run well as expected, to create or accommodate a digital campus.

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