Published online on the page: https://journal.orange-institute.org/index.php/cister/index

International Journal CISTER

| ISSN (Online) 2963-2994 |

Orange Institute

Design of wireless access point configuration network using packet trace r 6.2 at smp negeri 5 prabumulih with development method network development life cycle (ndlc)

Dedi Haryanto [a,*], *Rama Kipran* [b]

[a,b] *Muhammadiyah University of Palembang, Palembang, Indonesia*

ARTICLE INFORMATION

Article History:
Received: 11 August 2023
Final Revision: 17 August 2023
Published *Online*: 19 August 2023

KEYWORDS

Computer Networking
NDLC Method
Wireless
Access Point
Local Area Network

CORRESPONDENCE

E-mail: dedi.haryanto@um.palembang.ac.id *

A B S T R A C T

The The development of computer networks is very rapid and popular so that many network connections are currently popular both in the scope of LAN, Wan, Man topology. Computer networks are often used to connect communications in an area of schools, offices, homes, using the existing topology, Commonly used to build a network installation, The method used in designing access points using ndlc network development life cycle the method consists of analysis, design , simulation prototype, implementation in implementing access point design. Wireless is wifi that is connected or connected to a network and is connected and connected to a laptop or cellphone that has wifi on. Access point is a tool or device to receive signals from the client to the server. Local area network is a network cable to share data to provide convenience to employees.

I. Introduction

Currently, the development of computer networks is very rapid and popular so that many network connections are becoming popular both in the scope of LAN, WAN, MAN. Topology.However, the computer network has limitations in one place, so sometimes there is a very wide network or vice versa a very small network in an area, so it requires a tool to regulate data traffic between these networks. Computers equipped with supporting facilities such as a Local Area Network (LAN).

a computer network that connects computers in a limited area such as a residence, school, laboratory, or university campus. In an agency that provides convenience and relief for its employees to carry out internal activities. Sharing data that used to be very inconvenient and time-consuming, now everything is faster and more precise, so that the performance of the employees is increasing and maximizing.

Wireless is the most widely used medium in communication today using electromagnetic wave media to transmit data serves to reach LAN areas that are difficult to reach by cable and also to reach mobile users.[1] The advantage of this technology is to eliminate or choose the use of cables that can be quite annoying and also the complexity of the installation to connect more than two computers at the same time. In wireless communication there is an advantage, namely high mobile litas but also has a weakness, the weakness is the possibility of interference with other wireless connections on other computers. Access Point (AP) is a network device that contains a transciever and antenna for transmitting and receiving signals from and from remote clients.[2]

hrough the Access Point, it can be connected to the internet network through the signal emitted by the antenna. In carrying out activities at SMP Negeri 5 Prabumulih who always use a computer to perform data processing, in the absence of an Access Point installed in it, the use of a computer is very difficult, because the access point has not been installed so that accessing data is very difficult, for example, a network cable. which is easily damaged and the network is difficult to connect. Until now, the design of the

https://doi.org/10.56481/cister.v2i01.162

Access Point installation is still not there. From these problems, it is appropriate to make a network that is made more optimal and efficient.

II. Method

2.1. Data Collection Method

In the discussion of this research methodology there are several data collection techniques that will be discussed in this writing, namely:

a) Observation method This observation was reviewed and the writer immediately went to the field to obtain and collect the required data. Observations were made at SMP Negeri 5 Prabumulih. Direct observation activities at SMP Negeri 5 Prabumulih, activities carried out were to analyze the design of wireless access points.
b) Interviews were conducted by conducting questions and answers with related parties. In the interview there was a new interview instrument, namely a description of the research presented in the form of a list of questions. Interviews were conducted by conducting questions and answers with related parties, with the Principal of SMP Negeri 5 Prabumulih to test the design of the wireless access point.
c) Literature studies, is a technique that is done by studying and collecting information from reference sources of literature books, jumal, and sources directly related to this research topic.

2.2. System Development Methods

In developing the system, the author will use the Network Development Life Cycle (NDCL) method for network design. Access point configuration The method consists of analysis, design, simulation prototype, implementation and. The following are the stages of the NDCL method as follows monitoring can be seen in the image below:

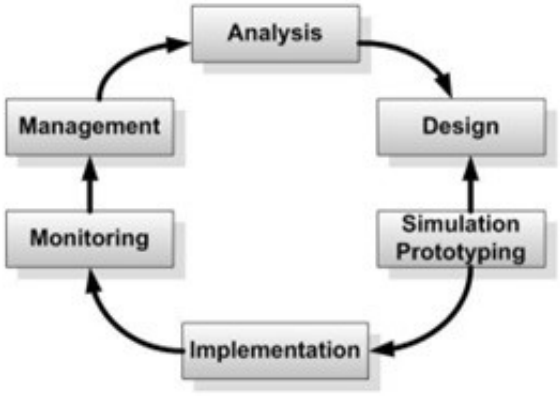

Figure 1. Network Development cycle

The method of developing the access point configuration design used is as follows:

a) Analysis stage, the initial stage is to analyze user needs, analyze device requirements, analyze network needs, place feasibility analysis, network topology analysis
b) Design stage, this stage from the data obtained previously, this design stage the author will make a design drawing of the place to build the access point to be built, data access design and so on.
c) Prototype Simulation Stage, this stage develops a network that will be made in the form of a simulation with the help of GNS3 tools. This is intended to see the performance of the network to be built and become of the network to be built and become presentation material and share with network system development.
d) Implementation stage, this stage will take a little longer. In carrying out the implementation, the author has implemented everything that was planned and designed previously. At this stage it will be seen how the development that will be built will have an influence on the existing design.
e) Monitoring stage, this stage has been implemented. The monitoring stage is an important stage so that the network and communication can run according to the wishes and objectives of the author in the early stages of the analysis.
f) Management stage, this stage is one of the special concerns is the policy issue, namely in terms of activities, maintenance and management is categorized at this stage. Policies need to be created to create and organize so that systems that have been built and run properly can last a long time and the element of reliability is maintained

2.3. Research Framework

In this method, the author provides an overview of the steps that cover from the beginning of the study to the end of the study. so that the research carried out can be carried out in a structured and systematic manner, it is necessary to develop a research framework.

https://doi.org/10.56481/cister.v2i01.162

E-ISSN : 2963-2994

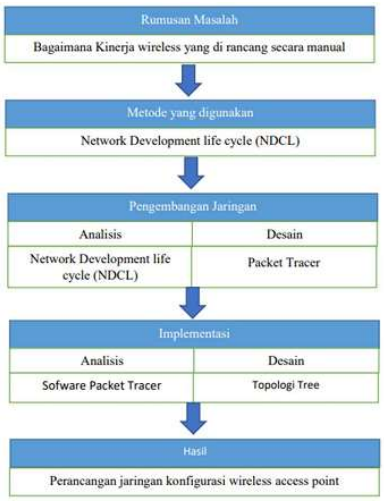

Figure 2. Research Framework

The description of the framework in this research is a detailed series of each framework that has been prepared so that the research carried out can be carried out in a structured and clear manner.

III. Results and Discussion

3.1. Access Point FlowChart

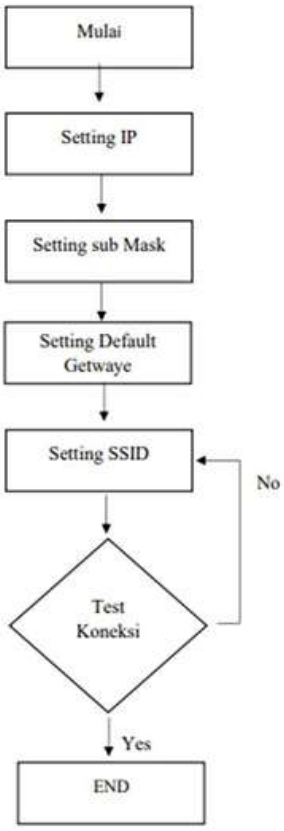

Figure 3. Access Point Flow Chart

In the network process, sketches are also needed in the access point configuration process, including the Ip, Sub Mask, Default Getway and Ssid.

3.2. Access Point Network Configuration Design

in Figure 4 is the design of an access point which uses a tree topology such as a tree and the advantages of the access point being that the access point is connected to a computer or hardware that provides an access point signal. There are 2 ways to configure the access point.

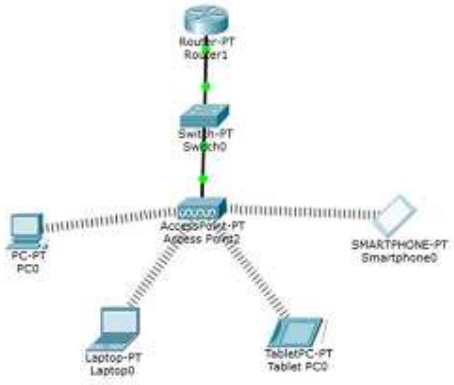

Figure 4. Access Point Network

By adding WRT300N to access point configuration

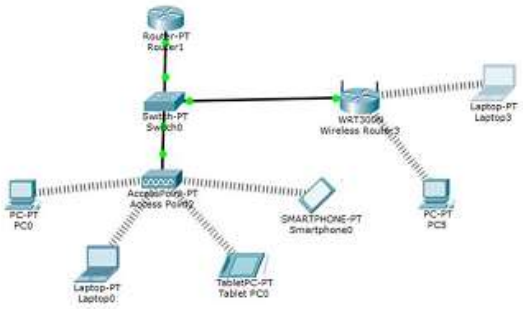

Figure 5. Access Point Network

Access Point Settings

The access point settings depend on the user or the user you want to use, for example setting as shown in Figure 6 it can add the SSID you want to add then select WPA2-PSK to add a password.

https://doi.org/10.56481/cister.v2i01.162
E-ISSN : 2963-2994

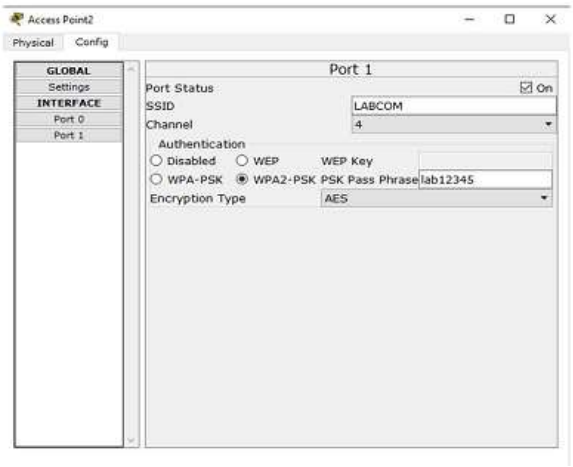

Figure 6. Access Point Settings

Login Access Point

On the simulation login page it will appear as below by entering http://192.168.0.1 on a computer that is already connected to the tp link or access point and entering the username and password then see picture 7.

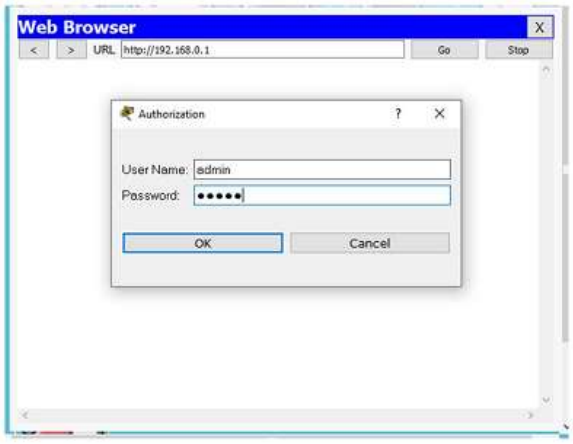

Figure 7. Login Wireless-N BroadBrand

3.3. Router Display

On the display of the wireless-n broadbrand router there is an automatic dhcp configuration and there is also an ip address menu that we enter to login, and there is also a subnet mask and dhcp server and ip address ring or can also be seen in 8.

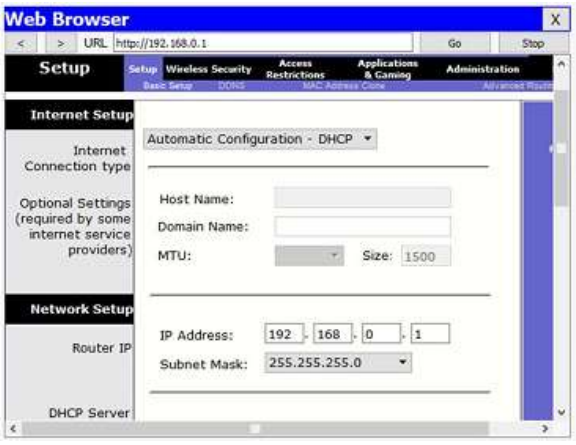

Figure 8. Wireless-N BroadBrand Router Display

3.4. Wireless Settings

Settings Network Name SSID to Lab-School.

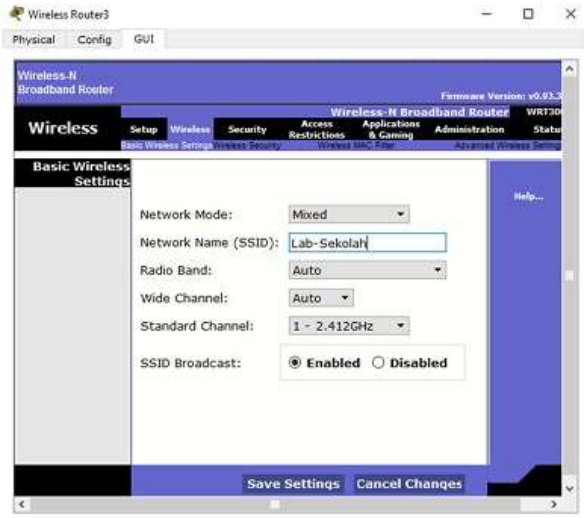

Figure 9. Wireless Settings

3.5. Wireless Security

Then Go to Wireless security then fill in the passphrase section to become admin 123 and don't forget to directly save settings below it can be seen in the image below 3.5.

https://doi.org/10.56481/cister.v2i01.162

E-ISSN : 2963-2994

Figure 10. Wireless Security

3.6. Wireless Connection Wpa-2

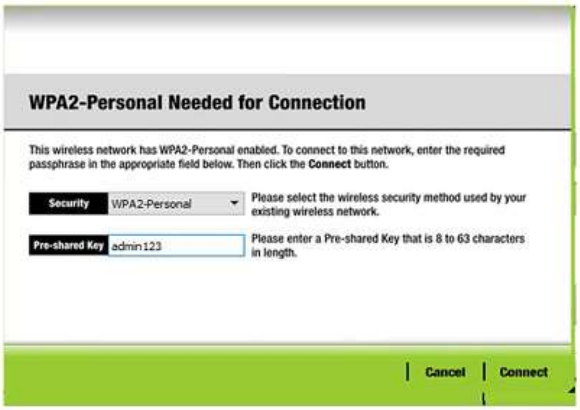

Figure 11. Wireless Connection Wpa-2

3.7. Testing Access Point IP Address

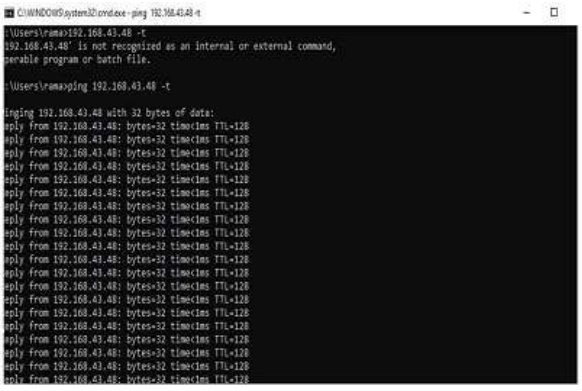

Figure 12. Testing Access Point IP Address

Notes :

Barriers: None

Test Location: SMP Negeri 5 Prabumulih Lab Server Room

Testing Time : 15:00 to 17:15

IV. Conclusion

In the research that has been carried out in the design of the access point configuration at SMP Negeri 5 Prabumulih on Jl. Ppkr No. 173, Muara Dua, Kec. Prabumulih Timur, Prabumulih City, South Sumatra 31114, it can be concluded as follows:

a) Based on the results obtained by designing this access point configuration, it can make it easier to send data and speed up connections.
b) Based on the test results in this design, that the access point acts to connect the local network to a wireless network or also called wireless.
c) Based on the test results, the access point alignment must be calculated properly so that the performance and signal coverage are maximized.

V. Suggestions

Based on the conclusions above, some suggestions for SMP Negeri 5 Prabumulih can be put forward as follows:

a) Keep no more than 40 clients connected in one access point for reasons of maximum performance.
b) If necessary, activate the security feature on the access point to increase network security.
c) Change the default access point configuration such as SSID, IP, address and default password from the beginning so that the security of access to wireless.

References

[1] Irawan, Computer Network for the layman. Palembang: Maxicom, 2013.
[2] Rifai and Sudibyo, "Management of wireless access point on hotspot server using controller access point in system management," p. 30, 2018.
[3] M Jafar Noor yudianto, Computer Networks and Their Definitions. Jakarta, 2013.
[4] Z. R. S. Elsi and J. Jimmie, "Rancang Bangun Absensi Perkulihan Dengan Fingerprint Berbasis Webbase," Jusikom J. Sist. Komput. Musirawas, vol. 5, no. 1, pp. 24–32, May 2020, doi: 10.32767/jusikom.v5i1.769.
[5] Z. R. Saputra, "Perancangan Pengendali Pintu Pagar Dengan Sistem Personal Identification Number," 2018. doi: 10.13140/RG.2.2.11536.46082.
[6] Z. R. S. Elsi, "Simulator Penghitung Jumlah Kendaraan Pada Pintu Masuk Dan Keluar Berbasis

https://doi.org/10.56481/cister.v2i01.162

Arduino," J. Sist. Komput., vol. 2, no. 2, pp. 98–104, 2017, doi: 10.32767/jusikom.v2i2.156.

[7] Z. R. Sapura, "Perancangan Monitoring Suhu Ruangan Menggunakan Arduino Berbasis Android Di PT. Tunggal Idaman Abdi Cabang Palembang," J. Teknol. Inf., vol. 8, no. 2, p. 37, 2016, doi: 10.32767/jti.v8i2.114.

[8] Z. R. saputra Elsi, D. Haryanto, S. Primaini, and Hartini, "Perancangan Alat Deteksi Suhu Tubuh Dengan Sensor Contactless Berbasis Arduino Uno," Jusikom J. Sist. Komput. Musirawas, vol. 6, no. 1, 2021, doi:10.32767/jusikom.v6i1.1243.

https://doi.org/10.56481/cister.v2i01.162

E-ISSN : 2963-2994