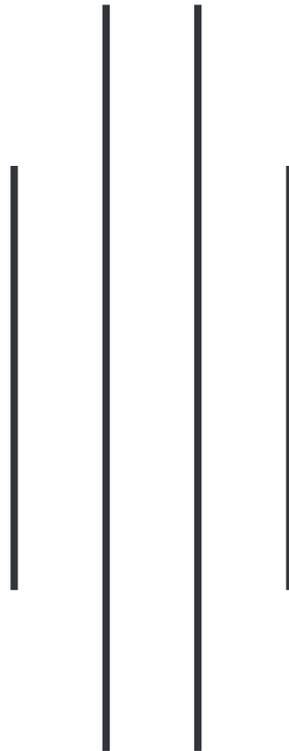**SMK Alhikmah TAnon**

A FINAL ENGLISH AND VOCATIONAL TASK
TEKNIK KOMPUTER DAN JARINGAN [TKJ]

Tahun Ajaran 2023/2024

Disusun oleh:

XII TEKNIK KOMPUTER DAN JARINGAN

NAMA   : SITI MAYSYARAH

KELAS   : XII TEKNIK KOMPUTER DAN JARINGAN

NISN   : 0051230250

A FINAL ENGLISH TASK

Virtual LAN (VLAN) Design To Manage

Inter-Division Networks Using Cisco Packet Tracer

Compiled By :

SITI MAYSYARAH

XII TEKNIK KOMPUTER DAN JARINGAN

SMK ALHIKMAH TANON

TAHUN PELAJARAN 2025/2026

FOREWORD

Praise and gratitude to Almighty God for His grace and blessings, so that this final project entitled **"Virtual LAN (VLAN) Design to Manage Inter-Division Networks Using Cisco Packet Tracer"** can be completed properly.

This final project is prepared as one of the requirements to complete the final assignment and to fulfill the academic requirements of the study program. The purpose of this project is to design and implement a Virtual Local Area Network (VLAN) to manage inter-division network communication efficiently using Cisco Packet Tracer. By applying VLAN technology, network management can be improved in terms of security, performance, and scalability.

During the preparation of this final project, the author received support, guidance, and assistance from various parties. Therefore, the author would like to express sincere gratitude to lecturers, supervisors, colleagues, and all those who contributed directly or indirectly to the completion of this project.

The author realizes that this final project is not free from limitations and shortcomings. Therefore, constructive criticism and suggestions are highly appreciated for future improvement. Hopefully, this final project can provide benefits and add insight for readers, especially in the field of computer networking.

Tanon, January 14,2026
Writer,

SITI MAYSYARAH

VALIDATION

Virtual LAN (VLAN) Design To Manage Inter-Division Networks Using Cisco Packet Tracer

A Final English Task

SITI MAYSYARAH

It has been approved and ratified as one of the requirements for completing the English Final Assignment 12 TKJ :

Guru Mapel   **Guru Kejuruan**

Rika Novia Astuti, S.Pd   **Irwan Muji Handoko**

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CHAPTER I

A. Virtual LAN (VLAN) Design To Manage Inter-Division Networks Using Cisco Packet Tracer

1. Introduction

In modern organizations, network management is essential to support daily operations. As the number of users increases, network traffic becomes more complex. VLAN technology provides an effective solution by grouping users based on their division rather than physical location. This project focuses on designing a VLAN network to manage inter-division communication using Cisco Packet Tracer.

2. Objectives

a) To understand the concept of VLAN

b) To design a VLAN-based network using Cisco Packet Tracer.

c) To manage inter-division communication efficiently.

d) To improve network security and performance

3. Theoretical Background

VLAN is a logical grouping of network devices within the same broadcast domain. VLANs reduce broadcast traffic and enhance security by isolating network segments. Inter-VLAN communication requires a router or Layer 3 switch to allow data exchange between VLANs.

4. Network Design And Implementation

The network design consists of several VLANs representing different divisions such as Administration, Finance, and IT. Each VLAN is configured on a switch and connected to a router for inter-VLAN routing. Cisco Packet Tracer is used to simulate and test the network configuration.

5. Testing And Results

Testing is performed by sending data packets between devices within the same VLAN and different VLAN. The results show that devices in the same VLAN can communicate directly, while devices in different VLANs require routing. The network operates according to the design objectives.

6. **Advantages Of Vlan**

   a) Improves network security

   b) Reduces broadcast traffic

   c) Simplifies network management

   d) Increases network performance

   e) Supports logical grouping of users

7. **Vlan Types**

   a) Default VLAN – VLAN 1, automatically exists on a switch

   b) Data VLAN – Used for user-generated traffic

   c) Management VLAN – Used to manage network devices

   d) Native VLAN – Handles untagged traffic on trunk ports

8. **Conclusion**

   VLAN is an essential technology for managing inter-division networks. By using VLANs, organizations can improve security, performance, and network management efficiency.

B. Explain About Hardware And Software
1. Introdution to VLAN

   Virtual Local Area Network (VLAN) is a network technology that allows a physical network to be divided into multiple logical networks. VLANs are commonly used to separate networks based on departments or divisions within an organization.

   By using VLANs:

   a) Network management becomes easier

   b) Security between divisions is improved

   c) Broadcast traffic is reduced

   In inter-division networks, VLANs allow each division to have its own network while still enabling communication between divisions through Inter-VLAN Routing.

2. Explain About Hardare

a. Switch (Cisco Catalyst 2960)

Function:

a) Connects multiple devices in a local network

b) Manages VLAN configuration

c) Separates network traffic between divisions

Role in VLAN Design:

a) Each switch port can be assigned to a specific VLAN

b) Example:

    i. VLAN 10 → Human Resources (HR)

    ii. VLAN 20 → Finance

    iii. VLAN 30 → IT Department

b. Router (Cisco 1941 / 2811)

Function:

a) Connects different networks

b) Enables communication between VLANs (Inter-VLAN Routing)

Role in VLAN Design:

a) Uses Router-on-a-Stick method

b) One physical interface is divided into multiple sub-interfaces

c) Each sub-interface represents one VLAN

c. End Devices (PC)

Function:

a) Used by employees in each division

b) Acts as network clients

Role in VLAN Design:

a) Each PC belongs to a specific VLAN based on its division

b) Example:

      i.   HR PC → VLAN 10

    ii.   Finance PC → VLAN 20

Network Cables

a) Copper Straight-Through Cable → PC to Switch

b) Trunk Cable → Switch to Router

3. **Explain About Software**

   a. Cisco Packet Tracer

Function:

a) Network simulation software developed by Cisco

b) Used to design, configure, and test VLAN networks

Role in VLAN Design:

a) Simulates switches, routers, and end devices

b) Allows VLAN creation and inter-VLAN communication testing

c) Used to verify network connectivity using ping

   b. Cisco IOS (Internetwork Operating System)

Function Operating system used by Cisco routers and switches

Role in VLAN Design:

a) Provides command-line interface (CLI) for configuring VLANs

b) Enables configuration of trunk ports and inter-VLAN routing

Example Commands:

a) vlan 10

b) switchport mode access

c) encapsulation dot1Q

4. Example Of VLAN Design For Inter-Divion Network

Case Study:

A company has three divisions:

1. HR Department → VLAN 10 → 192.168.10.0/24

2. Finance Department → VLAN 20 → 192.168.20.0/24

3. IT Department → VLAN 30 → 192.168.30.0/24

Each division is separated logically but can communicate with others using inter-VLAN routing.

Example Switch Configuration

vlan 10

name HR

vlan 20

name FINANCE

vlan 30

name IT

interface fa0/1

switchport mode access

switchport access vlan 10

interface fa0/2

switchport mode access

switchport access vlan 20

interface fa0/3

switchport mode access

switchport access vlan 30

Example Router Configuration (Inter-VLAN Routing)

interface fa0/0.10

encapsulation dot1Q 10

ip address 192.168.10.1 255.255.255.0

interface fa0/0.20

encapsulation dot1Q 20

ip address 192.168.20.1 255.255.255.0

interface fa0/0.30

encapsulation dot1Q 30

ip address 192.168.30.1 255.255.255.0

5. **Conclusion**

1. **Hardware** such as switches, routers, PCs, and network cables are essential components in VLAN implementation

2. **Software** such as Cisco Packet Tracer and Cisco IOS are used to simulate and configure VLAN networks

3. VLAN technology helps manage inter-division networks efficiently and securely

4. Inter-VLAN Routing allows communication between different VLANs while maintaining network segmentation

C. English Vocabulary Booklet

1. Switch (Switch)

Meaning   : A network device that connects multiple devices within a local area network (LAN).

Function   : A switch forwards data based on MAC addresses and is used to create and manage VLANs by assigning ports to specific VLANs.

2. Router (router)

Meaning   : A networking device that connects different networks together.

Function   : A router enables communication between different VLANs using inter-VLAN routing.

3. Virtual LAN (Jaringan lokal Virtual)

Meaning   : A logical network created within a physical network.

Function   : VLAN separates network traffic between divisions to improve security and network management.

4. Trunk Port (medan lalu lintas data)

Meaning   : A switch port that carries traffic from multiple VLANs.

Function   : A trunk port allows VLAN information to pass between switches or between a switch and a router.

5. Access Port (Jembatan Koneksi Internet)

Meaning   : A switch port that belongs to only one VLAN.

Function   : An access port connects end devices such as PCs to a specific VLAN.

6. **Inter-VLAN Routing (Pembagian Jaringan)**

   Meaning   : A method used to route traffic between different VLANs.

   Function   : Inter-VLAN routing allows devices in different VLANs to communicate with
                   each other.

7. **Sub-interface (Antarmuka)**

   Meaning   : A logical interface created on a router's physical interface.

   Function   : Sub-interfaces are used in router-on-a-stick configuration to handle traffic
                   from multiple VLANs.

8. **Cisco Packet Tracer (Cisco Paket Tracer)**

   Meaning   : A network simulation software developed by Cisco.

   Function   : Cisco Packet Tracer is used to design, configure, and test VLAN networks
                   virtually.

9. **Cisco IOS (Sistem Operasi Jaringan)**

   Meaning   : The operating system used on Cisco networking devices.

   Function   : Cisco IOS provides the command-line interface to configure VLANs,
                   switches, and routers.

10. **IP Address (ip address)**

    Meaning   : A unique numerical address assigned to a device in a network.

    Function   : An IP address identifies devices and enables communication within and
                   between VLANs.

11. **Default Gateway (gateway)**

    Meaning   : A network device that routes traffic to other networks.

    Function   : The default gateway allows devices in a VLAN to communicate with devices
                   in other VLANs.

12. Broadcast Domain (wilayah Siaran)

Meaning   : A logical area in which broadcast traffic is shared.

Function   : VLANs reduce the size of broadcast domains to improve network

      performance.

13. Network Interface (Jaringan Antarmuka)

Meaning   : A hardware or logical component that connects a device to a network.

Function   : Network interfaces enable data transmission between devices and the

      network.

14. End Device (Perangkat Akhir)

Meaning   : A device used by end users, such as a PC or laptop.

Function   : End devices generate and receive data in a VLAN network.

15. Ethernet Cable (Jenis Kabel)

Meaning   : A physical cable used to connect network devices.

Function   : Ethernet cables transmit data between PCs, switches, and routers.

CHAPTER II

A. Aplication Letter and Curriculum Vite (CV)

The following is an example of making a Aplication Letter and CV

1. Aplication Letter

Tanon, January 26, 2026

To,

      The Manager

      Bilbel Production

      Sragen City

Subject : Job Application

Sir / Madam

It is my humble request that I am Siti and I have come to know through advertisement that many freshers are required for this position. I consider my eligible for this position. I have completed my vocational school from SMK Alhikmah Tanon,

The resume of my educational Qualifications and introduction is attached with this letter. Therefore, it is requested that the above mentioned post appointee should give us a chance for an interview and exam-ination. I will try my best to satisfy you with my hardwork and complete honesty. For this I will always be grateful to you

Sincerely

Siti Maysyarah

2. Curriculum Vite (CV)

CURRICULUM VITE

PERSONAL DATA

Name	: SITI MAYSYARAH
Place and date of birth	: Batam, 20 Oktober 2005
Gender	: Woman
Religion	: Islam
Height	: 170cm
Weight	: 43kg
Address	: Jl, Jenggrik Ganten Kecamatan Kerjo,Kabupaten Karanganyar Jawa Tengah Kode Pos 6681
Phone Number	: 085290271014
Status	: Not married yet
Email	: Sasamaysyarah@icloud.com

EDUCATION DATA

SD   : SD Negri 01 Ganten

SMP   : SMP Swasta An-nur Bululawang Malang

SMK   : SMK Alhihmah Tanon

WORK EXPERIENCE

1. worked in the printing and screen printing sector

2. employees at the restaurant

B. Job Interview Simulation

Manager : Good morning. Please have a seat. Can you introduce yourself?

Applicant : Good morning. Thank you. My name is Siti Maysyarah, and I am a

Multimedia graduate. I am applying for a position at Bilbel Production.

Manager : Why are you interested in working at Bilbel Production?

Applicant : I am interested because Bilbel Production is known for its creative content

and professional video production. I would like to grow and contribute my

skills here.

Manager : What position are you applying for?

Applicant : I am applying for the position of Video Editor and Content Creator.

Manager : Do you have any work experience?

Applicant : Yes, I have internship experience at a local production studio for six months,

working on promotional videos and social media content.

Manager : What software can you use?

Applicant : I can use Adobe Premiere Pro, After Effects, Photoshop, and basic Blender.

Manager : How do you work in a team?

Applicant : I work well in a team, I am open to feedback, and I always try to meet

deadlines.

Manager : What are your strengths?

Applicant : My strengths are creativity, fast learning, and strong responsibility toward

my work.

Manager : What are your weaknesses?

Applicant : Sometimes I focus too much on details, but I am learning to manage my time

better.

Manager : Are you able to work under pressure and tight deadlines?

Applicant : Yes, I am used to working under pressure and managing tight schedules.

Manager   : When can you start working if you are accepted?

Applicant   : I can start working as soon as possible.

Manager   : Thank you for coming today. We will contact you soon.

Applicant   : Thank you very much for the opportunity. I look forward to hearing from

Bilbel Production.

CHAPTER III

A. Receiving a Customer

Client	: Good morning, my internet has been very slow since last night.
Customer Service	: Good morning. I'm sorry to hear that. May I have your name and customer ID, please?
Client	: My name is Siti Maysyarah, and my customer ID is 123456.
Customer Service	: Thank you, Mr. Budi. Please wait a moment while I check your account.
Customer Service	: I can see that there is a temporary network issue in your area.
Client	: I see. That explains why the connection is very slow.
Customer Service	: Yes, it should be back to normal within 1–2 hours. In the meantime, please try restarting your modem.
Client	: Alright, I will do that. I also forgot my account password.
Customer Service	: No problem. I can help you reset your password. Is your email address still active?
Client	: Yes, it is.
Customer Service	: Great. I have sent a password reset link to your email. Please check it.
Client	: I've received it. What should I do next?
Customer Service	: Please click the link and create a new password. Make sure to save it securely.
Client	: Okay, it's done. Thank you for your help.
Customer Service	: You're welcome. If the internet is still slow after restarting the modem, please contact us again.
Client	: Sure. Thank you for the excellent service.
Customer Service	: My pleasure. Have a great day!

B. Giving Instruction to Customer

Customer : Good afternoon, I want to install an internet connection for my home.

Customer Service : Good afternoon. I'd be happy to help. May I know how many people will use the internet at your home?

Customer : There are four people in my house.

Customer Service : Alright. What activities do you usually do online? For example, streaming, gaming, or working from home.

Customer : Mostly streaming videos, online meetings, and some gaming.

Customer Service : I see. For those activities, I recommend a fiber optic internet connection.

Customer : Why fiber optic?

Customer Service : Fiber optic provides faster speed, more stable connection, and is suitable for multiple users at the same time.

Customer : What internet speed do you suggest?

Customer Service : I suggest at least 50–100 Mbps to ensure smooth streaming and online meetings.

Customer : Will that be enough for gaming?

Customer Service : Yes, it will. Fiber optic also has low latency, which is good for online gaming.

Customer : That sounds good. Is it reliable for daily use?

Customer Service : Yes, it is very reliable and rarely experiences interruptions.

Customer : Alright, I think I will choose that package.

Customer Service : Great choice. I will help you with the registration and installation process.

Customer : Thank you for the recommendation.

Customer Service : You're welcome. Please let me know if you need any further assistance.

NAMA   : NAFISHA SULISTIYOWATI

KELAS   : XII TEKNIK KOMPUTER DAN JARINGAN

NISN   : 0077453525

A FINAL ENGLISH TASK

Local Area Network (LAN) Design Simulation For Two Laboratories

With Dynamic Routing Using Cisco Paket Tracer

Nafisha Sulistiyowati

XII Teknik Komputer Dan Jaringan

SMK ALHIKMAH TANON

TAHUN PELAJARAN 2025/2026

FOREWORD

This final project is written to fulfill the requirements of graduation at Vocational High School Smk Alhikmah Tanon. This project was completed as part of the English subject improve the students' skills in using English in daily and professional situations.

The writer would like to express sincere gratitude to the English teacher for the guidance and support during the preparation of this final project. Appreciation is also given to parents and friends for their motivation and encouragement.

The writer realizes that this final project still has limitations. Therefore, constructive suggestions are highly appreciated. Hopefully, this project can be useful for readers.

January 30th 2026

author's name,

Nafisha Sulistiyowati

VALIDATION

Local Area Network (LAN) Design Simulation For Two Laboratories

With Dynamic Routing Using Cisco Paket Tracer

A Final English Task

Nafisha Sulistiyowati

Guru Mapel   **Guru Kejuruan**

Rika Novia Astuti, S.Pd   **Irwan mujihandoko**

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CHAPTER I

A. Local Area Network (LAN) Design Simulation For Two Laboratories With Dynamic Routing Using Cisco Packet Tracer.

1. Project Objective

   To design and simulate a Local Area Network (LAN) connecting two laboratories using *dynamic routing* to ensure efficient communication, scalability, and automatic route updates.

2. Network Requirements

   a. Two laboratories (Lab A and Lab B)
   b. Each lab contains:
      o Multiple PCs
      o One switch
   c. One router per lab
   d. Dynamic routing protocol (e.g. *RIP v2*, *OSPF*, or *EIGRP*)
   e. End-to-end connectivity between labs

3. Network Topology

   Star topology within each lab
   Router-to-router connection between labs

   Lab A PCs → Switch A → Router A ↔ Router B ← Switch B ← Lab B PCs

4. IP Addressing Scheme (Example)

   Lab A

   a. Network: 192.168.1.0 /24
   b. Router A: 192.168.1.1
   c. PCs: 192.168.1.10 – 192.168.1.50

   Lab B

   a. Network: 192.168.2.0 /24
   b. Router B: 192.168.2.1
   c. PCs: 192.168.2.10 – 192.168.2.50
   d. Router-to-Router Link
   e. Network: 10.0.0.0 /30
   f. Router A: 10.0.0.1
   g. Router B: 10.0.0.2

5. Dynamic Routing Configuration (Example: RIP v2)

On Router A:

1. router rip
2. version 2
3. network 192.168.1.0
4. network 10.0.0.0
5. no auto-summary

on router b

1. router rip
2. version 2
3. network 192.168.2.0
4. network 10.0.0.0
5. no auto-summary

6. Simulation & Testing

Use ping between PCs in different labs

Verify routing tables using:

show ip route

7. Advantages of Dynamic Routing
   a. Automatic route updates
   b. Scalable network design
   c. Reduced manual configuration
   d. Fault tolerance

B. Explain About Hardware and Software
Hardware (Computer Hardware)

Hardware is all the parts of a computer that can be seen and touched physically. Hardware is used to process data and support the operation of a computer.

Examples of computer hardware:

1. CPU (Central Processing Unit): the brain of the computer that processes data.

2. Monitor: displays information and results.

3. Keyboard and Mouse: input devices used to enter data and commands.

4. Hard disk / SSD: stores data and programs.

5. Printer: prints documents.

Software (Computer Software)

Software is a set of programs or applications that cannot be touched physically. Software controls the hardware and allows the computer to perform tasks properly.

Examples of computer software:

1. Operating System: Windows, Linux, macOS.

2. Application Software: Microsoft Word, Excel, Photoshop.

3. Utility Software: antivirus, disk cleanup tools.

C. English Vocabulary Booklet
1. Computer = Komputer
Function: The function of a computer is to process data and run applications.
2. Router = Router
Function: The function of a router is to connect different networks and forward data packets.
3. Switch = Switch
Function: The function of a switch is to connect devices within a local area network (LAN).
4. Server = Server
Function: The function of a server is to provide services and resources to client computers.
5. Client = Klien
Function: The function of a client is to request services or data from a server.
6. Cable = Kabel

Function: The function of a cable is to transmit data between network devices.

7. Network Interface Card (NIC) = Kartu Jaringan

Function: The function of a NIC is to connect a computer to a network.

8. Access Point = Titik Akses
Function: The function of an access point is to provide wireless network connectivity.
9. Modem = Modem
Function: The function of a modem is to convert digital signals to analog signals and vice versa.
10. IP Address = Alamat IP

Function: The function of an IP address is to identify a device on a network.

11. Firewall = Firewall

    Function: The function of a firewall is to protect the network from unauthorized access.
12. Protocol = Protokol

    Function: The function of a protocol is to define rules for data communication.

CHAPTER II

A. Aplication Letter and Curriculum Vite (CV)

1. Application Letter

Applicantion Letter

Sragen, January 30th 2026

To:

Bilboard Printing

Jl. Urip Sumoharjo, Sragen Tengah

Dear Sir/Madam,

Based on the information I have received regarding a job vacancy at the Sragen

Sub-District Office, I would like to apply for the position of Technician. I am very

interested in this position because it is in accordance with my educational

background and skills.

Below is my personal information:

Name : Nafisha Sulistiyowati

Place, Date of Birth : Sragen, Nov 6, 2007

Address : Karang Wetan,Jatitengah,Sukodono,Sragen

Education : SMK Alhikmah Tanon

Major : Computer and Network Engineering (TKJ)

I hereby attach the following documents as required:

1. Curriculum Vitae

2. Copy of Diploma

3. Copy of Academic Transcript

4. Copy of Identity Card (ID Card)

5. Recent Photograph

I hope to be given the opportunity to attend an interview so that I can explain further about my abilities and potential. I believe that I can make a positive contribution to the Sragen Bilboard Printing.

Thank you for your attention and consideration.

Sincerely,

Nafisha Sulistiyowati

2. Curriculum Vitae

Name : Nafisha Sulistiyowati

Place, Date of Birth : Sragen, 06 November 2007

Address : Karang Wetan,Jatitengah,Sukodono,Sragen

Phone Number :081298632571

Email : —

Education

Vocational High School (SMK) – Computer and Network Engineering

Skills

Local Area Network (LAN)

Computer Network Installation

Network Simulation using Cisco Packet Tracer

Basic Network Troubleshooting

Experience

Creating LAN network simulations using Cisco Packet Tracer

Basic computer network configuration

Hobbies

Badminton

B. Job Interview Simulation

Manager: Good morning, please have a seat.

Applicant: Good morning, Sir. Thank you.

Manager: Could you introduce yourself?

Applicant: Certainly, Sir. My name is Nafisha Sulistiyowati, and I am a vocational high school (SMK) graduate.

Manager: Why do you want to work at Bilbel Printing?

Applicant: Because Bilbel Printing has a good reputation, and I am interested in working in the printing industry.

Manager: What skills do you have that are relevant to this job?

Applicant: I have basic computer skills and I am used to doing practical work during my studies.

Manager: Do you have any work experience?

Applicant: I do not have formal work experience yet, but I am eager to learn and work hard.

Manager: Can you work well in a team?

Applicant: Yes, Sir. I can work well in a team and follow instructions.

Manager: Are you willing to work overtime when there are many orders?

Applicant: Yes, Sir. I am willing to work overtime if needed.

Manager: What are your strengths?

Applicant: I am disciplined, careful, and a fast learner.

Manager: When can you start working if you are accepted?

Applicant: I can start working as soon as possible.

Manager: Thank you for coming today. We will contact you later.

Applicant: Thank you very much, Sir, for the opportunity.

CHAPTER III

Simulation to Customer

A. Receiving a Customer

Support Officer: Nafisha

Client: Bian

Bian: Good morning. I would like to report a problem with my internet connection. It has been very slow since this morning.

Nafisha: Good morning, Bian. My name is Nafisha from customer support. I will assist you today.

Bian: Thank you. The internet is very slow and it is hard to open websites and applications.

Nafisha: I'm sorry to hear that. Is the problem happening on all devices or only one device?

Bian: It happens on all devices, both my phone and laptop.

Nafisha: I see. Have you tried restarting your modem or router?

Bian: No, I haven't restarted it yet.

Nafisha: Alright. Please turn off the modem for about 30 seconds, then turn it back on. I will wait.

Bian: Okay, I have turned it off and turned it on again.

Nafisha: Thank you. Please wait until the indicator lights are stable. Is the connection better now?

Bian: Yes, it is a bit faster, but I cannot log in to my email account because I forgot my password.

Nafisha: No problem, Bian. I will help you reset your password. Is your email account registered with your phone number?

Bian: Yes, it is registered.

Nafisha: Great. I will send a verification code to your phone. Please tell me the code once you receive it.

Bian: I have received the code. It is 739284.

Nafisha: Thank you. The verification is successful. Please create a new password with at least eight characters, including letters and numbers.

Bian: Alright, I have created a new password.

Nafisha: Please try logging in to your email account again.

Bian: I can log in now, and the internet connection is stable.

Nafisha: I'm glad to hear that. If the internet becomes slow again, please restart the modem first or contact us anytime.

Bian: Thank you very much for your help, Nafisha.

Nafisha: You're welcome, Bian. Thank you for contacting our service. Have a great day.

B. Giving Instruction to Customer

Vica: Good afternoon. I would like to ask about a good internet network to install at home.

Nafisha: Good afternoon, Vica. My name is Nafisha, and I am a customer service officer. I will be happy to assist you.

Vica: Thank you. The internet will be used for online learning, watching movies, and working from home.

Nafisha: I see. How many people and devices will use the internet at your home?

Vica: There will be about four people, using several smartphones and two laptops.

Nafisha: For those needs, I recommend using a fiber optic internet connection because it is faster and more stable.

Vica: What are the advantages of fiber optic internet?

Nafisha: Fiber optic offers high speed, stable connections, and is suitable for multiple devices at the same time.

Vica: What internet speed do you recommend for my home?

Nafisha: I recommend a 50 Mbps package so that streaming, online meetings, and learning activities run smoothly.

Vica: Is the installation process complicated?

Nafisha: Not at all. Our technicians will handle the installation and make sure everything works properly.

Vica: What if there is a network problem in the future?

Nafisha: We provide 24-hour customer service to help you whenever you experience

any issues.

Vica: That sounds good. I am interested in installing the 50 Mbps fiber optic package.

Nafisha: Great, Vica. I will assist you with the registration and schedule the installation.

Vica: Thank you for the clear explanation.

Nafisha: You're welcome, Vica. I hope you enjoy a fast and stable internet connection at home.

NAMA   : NOVITA MEILANA

KELAS   : XII TEKNIK KOMPUTER DAN JARINGAN

NISN   : 0087331033

A FINAL ENGLISH TASK

The use of Cisco Packet Tracer to create a dynamic routing simulation for two laboratories

NOVITA MEILANA

XII TEKNIK KOMPUTER DAN JARINGAN

SMK ALHIKMAH TANON

TAHUN PELAJARAN 2025/2026

FOREWORD

This final project is written to fulfill the requirements of graduation at Vocational High School (SMK) Smk Alhikmah Tanon. This project was completed as part of the English subject to improve the students' skills in using English in daily and professional situations.

The writer would like to express sincere gratitude to the English teacher for the guidance and support during the preparation of this final project. Appreciation is also given to parents and friends for their motivation and encouragement.

The writer realizes that this final project still has limitations. Therefore, constructive suggestions are highly appreciated. Hopefully, this project can be useful for readers.

January 30th 2026

author's name,

Novita Meilana

VALIDATION

The use of Cisco Packet Tracer to create a dynamic routing simulation for two laboratories

A Final English Task

Novita Meilana

Guru Mapel   **Guru Kejuruan**

Rika Novia Astuti, S.Pd   **Irwan Mujihandoko**

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CHAPTER I

A. The Use Of Cisco Packet Tracer To Create a Dynamic Routing Simulation For Two Taboratories

This project involves designing and simulating a Local Area Network (LAN) that connects two computer laboratories using Cisco Packet Tracer. Each laboratory has several computers connected through a switch, and the two labs are interconnected using routers. The routers use dynamic routing, which allows them to automatically exchange routing information and determine the best path for data transmission. This means that if a network route changes or fails, the routers can update routes without manual configuration. The main purpose of this simulation is to ensure that computers in Lab 1 and Lab 2 can communicate efficiently.

By assigning proper IP addresses, configuring router interfaces, and enabling a dynamic routing protocol such as RIP, OSPF, or EIGRP, the network becomes more flexible, scalable, and reliable. Using Cisco Packet Tracer helps users practice real-world networking concepts in a virtual environment, improving skills in network design, configuration, and troubleshooting.

B. Explain About Hardware and Software

Hardware and Software

1. Hardware

   Hardware is the physical part of a computer that we can see and touch. Examples of hardware:

   a. Keyboard

   b. Mouse

   c. Monitor

   d. CPU (Central Processing Unit)

e. Printer

f. Hard disk

Function:

Hardware is used to input, process, store, and output data. Without hardware, a computer cannot exist.

2. Software

Software is a set of programs or instructions that tell the hardware what to do. Software cannot be touched, but it can be seen on the screen. Examples of software:

a. Windows, Linux (Operating System)

b. Microsoft Word, Excel

c. Google Chrome

d. Adobe Photoshop

Function:

Software helps users operate the computer and perform tasks, such as typing documents, browsing the internet, or playing games.

C. **English Vocabulary Booklet**

Vocabulary	Indonesian Meaning	Function (English)
Router	Router	Routes data between networks and connects to the internet
Switch	Switch	Sends data to the corret device within a network
Modem	Modem	Connects a network to an internet service provider (ISP)
Server	Server	Stores and manages data for clients

Hub	Hub	Broadcasts data to all connected devices
Firewall	Firewall	Protects the network from unauthorized access
Access Point	Titik akses	Allow wireless devices to connect to a network
Bridge	Bridge	Reduces network traffic and improves performance
Client	Klien	Accesses data and services on a network
Network Cable	Kabel Jaringan	Connects devices in a wired network

<center>**CHAPTER II**</center>

A. Aplication Letter and Curriculum Vite (CV)

1. Application Letter

<div align="right">Sragen, January 30th , 2026</div>

To:

HR Manager

Sragen religious court

Jl. Dr. Sutomo No. 3A, Sine, Sragen District, Sragen Regency

Dear Sir/Madam,

I am writing to apply for the position of Secretariat Staff Position at your company. I graduated from Smk Al Hikmah Tanon and have skills in Microsoft Office (Word, Excel, PowerPoint),Data entry,Filing and document managemen. Customer service. I am hardworking, responsible, and able to work both independently and in a team.

I believe my abilities and motivation make me a suitable candidate for this position. I am willing to learn and contribute to your company. Thank you for your time and consideration. I look forward to hearing from you.

<div align="right">Sincerely,</div>

<div align="right">Novita meilana</div>

2. Curriculum Vitae

Personal Information

Name: Novita Meilana

Date of Birth: Sragen,may 01, 2008

Address:Sidomulyo, gani sukodono sragen

Phone: 081256208019

Email:novitameilana005@gmail.com

Education

1. SDS TUNAS AGRO (Graduation in 2019)
2. SMPS TASK (Graduation in 2023)
3. SMK AL-HIKMAH TANON (Present / Not Yet Graduation)

Skills

1. Microsoft Office
2. Communication Skills
3. Teamwork
4. Basic Computer Skills

Experience

Completed an internship at the Religious Court in 2025

Hobbies

1. Reading
2. Sports

Declaration

I hereby declare that the information above is true and correct.

B. Job Interview Simulation

Manager: Good morning. Please have a seat.

Novita: Good morning, Sir/Madam. Thank you.

Manager: Can you introduce yourself?

Novita: My name is novita meilana. I am a graduate of Smk Al Hikmah Tanon, and I am applying for the position of [Job Title].

Manager: Why do you want to work at our company?

Novita: I want to work here because your company has a good reputation and I want to grow my career here.

Manager: What are your strengths?

Novita: My strengths are responsibility, teamwork, and good communication skills.

Manager: Do you have any work experience?

Novita: I have internship experience and I have worked on school projects related to this job.

Manager: How do you handle challenges or problems at work?

Novita: I stay calm, analyze the problem, and try to find the best solution.

Manager: Are you able to work in a team?

Novita: Yes, I enjoy working in a team and sharing ideas with others.

Manager: What are your weaknesses?

Novita: Sometimes I am too careful, but I am learning to manage my time better.

Manager: When can you start working?

Novita: I can start working immediately.

Manager: Do you have any questions for us?

Novita: Yes, could you please tell me more about the job responsibilities?

Manager: Thank you for coming to the interview.

Novita: Thank you for your time and opportunity.

CHAPTER III

Simulation to Customer

A. Receiving a Customer

Customer: Good morning. I have a problem with my internet.

You (Customer Service): Good morning. I'm sorry to hear that. What seems to be the problem?

Customer: My internet connection is very slow.

You: I understand. Since when did the problem start?

Customer: It started this morning.

You: Thank you. Have you tried restarting your modem or router?

Customer: Yes, but it is still slow.

You: Alright. I will check your network status. Could you please give me your account number?

Customer: Sure, it is 123456.

You: Thank you. I see there is a temporary network issue in your area. It should be fixed soon.

Customer: Okay, but I also forgot my Wi-Fi password.

You: No problem. I will help you reset your password.

Customer: What should I do?

You: Please open your router settings, then choose "Reset Password" and create a new one.

Customer: Done. It works now.

You: Great! Is there anything else I can help you with?

Customer: No, thank you for your help.

You: You're welcome. Have a nice day!

B. Giving Instruction to Customer

Customer: Good afternoon. I want to install internet at home.

You (Customer Service): Good afternoon. I'd be happy to help. What do you need the internet for?

Customer: I need it for online classes, streaming, and gaming.

You: In that case, I recommend a fiber optic internet connection for faster and more stable speed.

Customer: How fast should the internet be?

You: I suggest at least 50–100 Mbps for smooth streaming and gaming.

Customer: What router should I use?

You: You should use a dual-band router to get better coverage and performance.

Customer: Where should I place the router?

You: Place it in the center of your house to get the best signal in all rooms.

Customer: How many devices can connect at the same time?

You: With this plan, you can connect multiple devices without slowing down the network.

Customer: Is it suitable for a family?

You: Yes, it is perfect for families with many users.

Customer: Thank you for the recommendation.

You: You're welcome. Let me know if you want us to install it.

NAMA   : ZANY RAHMA ALYFIA

KELAS   : XII TEKNIK KOMPUTER DAN JARINGAN

NISN   : 0082625559

A FINAL ENGLISH TASK

Implementation of Cisco Packet Tracer Software for Dynamic Routing Configuration

Zany Rahma Alyfia

XII Teknik Komputer & Jaringan

SMK ALHIKMAH TANON

TAHUN PELAJARAN 2025/2026

FOREWORD

This final project is written to fulfill the requirements of graduation at Vocational High School (SMK Alhikmah Tanon). This project was completed as part of the English subject to improve the students'skills in using English in daily and professional situations.

The writer would like to express sincere gratitude to the English teacher for the guidance and support during the preparation of this final project. Appreciation is also given to parents and friends for their motivation and encouragement.

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January 30th 2026

author's name,

Zany Rahma Alyfia

VALIDATION

Implementation of Cisco Packet Tracer Software for Dynamic Routing Configuration

A Final English Task

Zany Rahma Alyfia

Guru Mapel   **Guru Kejuruan**

Rika Novia Astuti, S.Pd   **Irwan Muji Handoko**

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CHAPTER I

A. Implementation of Cisco Packet Tracer Software for Dynamic Routing Configuration

A Local Area Network (LAN) is a network that connects computers and other devices in a limited area such as a school, office, or laboratory. In this final task, the writer designs and simulates a LAN for two computer laboratories using dynamic routing with Cisco Packet Tracer.

The purpose of this simulation is to create a network that allows communication between two laboratories efficiently and automatically. By using dynamic routing, the network can choose the best path for data transmission without manual configuration. This method is very useful for large networks because it is flexible and easy to manage.

Cisco Packet Tracer is used as a simulation tool because it helps students understand how network devices work, such as routers, switches, and computers. Through this simulation, students can practice designing a real network before implementing it in the real environment.

B. Explain About Hardware and Software

In this LAN simulation, several hardware and software components are used to support the network design. The hardware includes routers, switches, computers (PCs), and network cables. Routers are used to connect different networks and manage data routing between laboratories. Switches function to connect multiple computers within one laboratory. Computers act as end devices used by users to access the network.

Network cables are used to connect all devices physically in the simulation. The software used in this project is Cisco Packet Tracer. Cisco Packet Tracer is a network simulation application that allows users to design, configure, and test network systems virtually. This software is very helpful for learning because it provides a visual and practical understanding of networking concepts without using real hardware.

In addition, the use of proper hardware and software can improve network performance and stability. Choosing the right router and switch helps reduce network problems such as slow connections or data loss. Cisco Packet Tracer also allows users to identify errors and test network configurations safely, making the learning process more effective and efficient.

C. English Vocabulary Booklet

English word	Indonesian Meaning	Function (English)
Router	Router	The function of a router is to connect different networks and route data packets.
Switch	Switch	The function of a switch is to connect multiple devices in one network.
LAN	Jaringan Lokal	The function of LAN is to connect devices in a small area.
IP Address	Alamat IP	The function of an IP address is to identify devices on a network.
Server	Server	The function of a server is to provide services to client computers.
Client	Klien	The function of a client is to access services from a server.
Cable	Kabel	The function of a cable is to transmit data between devices.
Dynamic Routing	Routing Dinamis	The function of dynamic routing is to automatically choose the best path.
Network	Jaringan	The function of a network is to share data and resources.
Packet Tracer	Packet Tracer	The function of Packet Tracer is to simulate and design computers network.

A. Aplication Letter and Curriculum Vite (CV)

1. Applicantion Letter

Applicantion Letter

Sragen, January 30th 2026

To:

The Head of Sragen Sub-District Office

Jl. Jendral Sudirman No. 2, Sragen

Dear Sir/Madam,

Based on the information I have received regarding a job vacancy at the Sragen Sub-District Office, I would like to apply for the position of Technician. I am very interested in this position because it is in accordance with my educational background and skills.

Below is my personal information:

Name : Zany Rahma Alyfia

Place, Date of Birth : Sragen, May 2, 2008

Address : Karakan,Karangudi,Ngrampal,Sragen

Education : SMK Alhikmah Tanon

Major : Computer and Network Engineering (TKJ)

I hereby attach the following documents as required:

1. Curriculum Vitae
2. Copy of Diploma
3. Copy of Academic Transcript
4. Copy of Identity Card (ID Card)
5. Recent Photograph

I hope to be given the opportunity to attend an interview so that I can explain further about my abilities and potential. I believe that I can make a positive contribution to the Sragen Sub-District Office.

Thank you for your attention and consideration.

<div align="right">Sincerely,</div>

<div align="right">Zany Rahma Alyfia</div>

2. Curriculum Vite (CV)

<div align="center">Curriculum Vite (CV)</div>

Personal Data

Name : Zany Rahma Alyfia

Place, Date of Birth : Sragen, May 2, 2008

Gender : Female

Address : Karakan, karangudi, Ngrampal, Sragen

Citizenship : Indonesia

Email : Kheisa722@gmail.com

Educational Background

SD Negeri Karangudi 3 (Graduated in 2019)

SMP Negeri 2 Sukodono (Graduated in 2023)

SMK Al-Hikmah Tanon (Present / Not Yet Graduated)

Skills

Basic Local Area Network (LAN) Configuration

Network Simulation using Cisco Packet Tracer

Computer Hardware Installation and Maintenance

Basic Network Troubleshooting

Microsoft Office (Word, Excel, PowerPoint)

Experience

Network simulation practice using Cisco Packet Tracer

Basic computer and network maintenance practice at school laboratory

Group project on LAN design and network configuration

Personal Strengths

Able to work individually and in a team

Responsible and disciplined

Willing to learn new things

Good communication skills

B. Job Interview Simulation

Manager	: Good morning. Please introduce yourself.
Applicant	: Good morning. My name is Zany Alyfia.
Manager	: What is your educational background?
Applicant	: I am a student of SMK Alhikmah Tanon, majoring in Computer and Network Engineering.
Manager	: What skills do you have?
Applicant	: I have basic skills in LAN configuration and network simulation.
Manager	: Can you work in a team?
Applicant	: Yes, I can work well in a team.
Manager	: Do you have any work experience?
Applicant	: I have experience from school practice and projects.
Manager	: Why do you want to work here?
Applicant	: Because I want to gain experience and improve my skills.
Manager	: Are you willing to learn new things?
Applicant	: Yes, I am willing to learn new things.
Manager	: When can you start working?
Applicant	: I can start anytime.
Manager	: Do you have any questions?
Applicant	: No, thank you.
Manager	: Thank you for coming.
Applicant	: Thank you very much.

CHAPTER III

Simulation to Customer

A. Receiving a Customer

Customer   : Good morning. I have a problem with my internet.

Technician   : Good morning. What seems to be the problem?

Customer   : My internet connection is very slow.

Technician   : I'm sorry to hear that. I will check the network.

Customer   : The Wi-Fi often disconnects.

Technician   : I will check the router and the cable connection.

Customer   : Can you fix it now?

Technician   : Yes, I will restart the router first.

Customer   : Okay.

Technician   : Please wait for a moment.

Customer   : I also forgot my Wi-Fi password.

Technician   : No problem. I can help you reset the password.

Customer   : Thank you.

Technician   : You're welcome. Please try to connect again.

Customer   : The internet is working well now.

Technician   : Great. If you have another problem, please contact us.

B. Giving Instruction to Customer

Customer   : I want to install internet at home.

Technician   : Okay. What do you need the internet for?

Customer   : For studying and watching videos.

Technician   : I recommend using a Wi-Fi network.

Customer   : Why do you recommend Wi-Fi?

Technician   : Because it is easy to use and suitable for home.

Customer   : Is Wi-Fi fast enough?

Technician   : Yes, if you use a good router.

Customer   : What router should I use?

Technician   : You can use a standard home router.

Customer   : Where should I place the router?

Technician   : Place it in the middle of the house.

Customer   : Thank you for the information.

Technician   : You're welcome. I hope it helps you.

NAMA   : JELITA NOPITA SARI

KELAS   : XII TEKNIK KOMPUTER DAN JARINGAN

NISN   : 0081425251

A FINAL ENGLISH TASK

Utilization of Cisco Packet Tracer to Create Dynamic Routing Simulation Between Two Laboratories

JELITA NOPITA SARI

XII TKJ (TEKNIK JARINGAN KOMPUTER)

SMK ALHIKMAH TANON

TAHUN PELAJARAN 2025/2026

FOREWORD

This final project is written to fulfill the requirements of graduation at Vocational High School SMK Al hikmah Tanon. This project was completed as part of the English subject to improve the students' skills in using English in daily and professional situations

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Januari 30th 2026

Jelita Nopita Sari

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VALIDATION

Utilization of Cisco Packet Tracer to Create Dynamic Routing Simulation Between Two Laboratories

A FINAL ENGLISH TASK

Jelita Nopita Sari

Guru Mapel   **Guru Kejuruan**

Rika Novia Astuti, S,Pd   **Irwan mujihandoko**

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CHAPTER I

A. Utilization of Cisco Packet Tracer to Create Dynamic Routing Simulation Between Two Laboratories

Utilization of Cisco Packet Tracer to Create Dynamic Routing Simulation Between Two Laboratories refers to the use of Cisco Packet Tracer as a network simulation and learning tool to design a computer network that connects two laboratories. This software allows users to create network topologies using virtual devices such as routers, switches, and end devices. By using Cisco Packet Tracer, students can visualize network connections and understand basic networking concepts in a simulated environment.

In this simulation, dynamic routing protocols such as RIP, OSPF, or EIGRP are implemented to enable routers to automatically exchange routing information. Dynamic routing helps the network determine the best path for data transmission without manual configuration of routing tables. Through this process, users can observe how data packets travel between the two laboratories and how routing updates occur when network changes happen.

B. Explain About Hardware and Software

1. Hardware

    Router: A router is used to connect different networks and manage data traffic between them. It also supports dynamic routing protocols.

    Switch: A switch connects multiple computers within the same network and forwards data to the correct destination.

    PC (Personal Computer): PCs are end devices used by users to send and receive data.

    UTP Cable: A cable used to connect computers, switches, and routers.

    UTP Cable: A cable used to connect computers, switches, and routers.

2. Software

    Cisco Packet Tracer: A network simulation software used to design, configure, and test computer networks virtually.

    Operating System: Software that manages computer hardware and allows users to run applications

C. English Vocabulary Booklet

English word	Indonesian Meaning	Function (English)
Router	Router	The function of a router is to connect different networks and route data packets.
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Network	Jaringan	The function of a network is to share data and resources.
Packet Tracer	Packet Tracer	The function of Packet Tracer is to simulate and design computers network.

CHAPTER II

A. Aplication Letter and Curriculum Vite (CV)

1. Job Application Letter

Saregn,January 30th 2026

Dear Sir/Madam,

 I am writing to apply for a position at Kantor Kecamatan Sragen. I am a graduate of Smk al-hikmah tanon and have basic computer and administrative skills.I am hardworking, responsible, and willing to learn. I hope to be considered for this position.

Thank you for your time and consideration.

Sincerely,

Jelita Nopita Sari

2. Curriculum vitae

Curriculum Vitae

Personal Information

Name   : Jelita Nopita Sari

Place, Date of Birth   : Sragen, june 16 ,2008

Gender   : Female

Religion   : Islam

Address   : juwok, Sukodono sragen

Phone Number   : 0838-4788-1126

Educational Background

SDN Juwok 2 (Graduation in 2019)

SMPN 1 Sukodono(Graduation in 2023)

SMK Al-hikmah tanon(Present / Not Yet Graduation)

Skills

a. Microsoft Word operation
b. Basic administrative skills
c. Able to work in a team
d. Responsible and disciplined

I hereby declare that all the information above is true and correct.

Sragen, January 23,2026

Jelita Nopita Sari

B. Job Interview Simulation

Manager   : "Good morning. Please have a seat."

Applicant   : "Good morning, Sir. Thank you."

Manager   : "Can you tell me about yourself?"

Applicant   : "My name is Jelita Nopita Sari. I am a fresh graduate and I am interested in this job position."

Manager   : "Why do you want to work in our company?"

Applicant   : "Because your company has a good reputation and I want to gain work experience here."

Manager   : "What skills do you have?"

Applicant   : " I have basic computer skills, good communication skills, and I can work in a team."

Manager   :" Can you work under pressure?"

Applicant   : "Yes, I can. I always try to stay calm and do my best."

Manager   : "Do you have any work experience?"

Applicant   :"I do not have formal work experience, but I have internship experience from school."

Manager   :" What are your strengths?"

Applicant   : "I am honest, responsible, and hardworking."

Manager   : "What are your weaknesses?"

Applicant   : "Sometimes I feel nervous, but I am learning to be more confident."

Manager   : "Are you ready to work full time?"

Applicant   : "Yes, Sir. I am ready to work full time."

Manager   : "Do you have any questions for me?"

Applicant : "Yes, Sir. When can I start working if I am accepted?"

Manager : "We will contact you soon. Thank you for coming."

Applicant : "Thank you very much, Sir."

CHAPTER III

Simulation to Customer

A. Receiving a Customer

Customer : "Good morning. I have a problem with my internet connection."

Staff : "Good morning. I'm sorry to hear that. What seems to be the problem?"

Customer : " My internet is very slow since yesterday."

Staff : " I understand. May I know your customer ID, please?"

Customer : Yes, my customer ID is 123456."

Staff : "Thank you. Let me check your connection."

Customer : " Is there any problem with the network?"

Staff : "There is a small issue in your area, but it is already fixed."

Customer : " My internet is still slow. What should I do?"

Staff : "Please try restarting your modem and router."

Customer : "Okay, I will try that."

Staff : "Also, are you having trouble logging into your account?"

Customer : "Yes, I forgot my password."

Staff : " No problem. I can help you reset your password."

Customer : "Thank you. What should I do?"

Staff : "Please check your email. I have sent a password reset link."

Customer : "I have received it and changed my password."

Staff : " Great. Please try using the internet again."

Customer : " It is faster now. Thank you for your help."

Staff : "You're welcome. Have a nice day."

B. Giving Instruction to Customer

Customer :"Good afternoon. I want to install internet at my home."

Staff :"Good afternoon. I'll be happy to help you."

Customer :"What kind of network is good for home use?"

Staff :"I recommend a fiber optic network because it is fast and stable."

Customer :"Is fiber optic good for online learning and streaming?"

Staff :"Yes, it is very good for online learning, streaming, and gaming."

Customer :" How much speed do you suggest?"

Staff :"I suggest at least 20–30 Mbps for a small family."

Customer :"Where should I place the router?"

Staff :"You should place the router in the center of the house."

Customer :"Should I use Wi-Fi or cable?"

Staff :"Wi-Fi is convenient, but cable is more stable for computers."

Customer :"How can I get a strong signal?"

Staff :" Avoid placing the router near walls or metal objects."

Customer :"Do I need a password for Wi-Fi?"

Staff :"Yes, always use a strong password to keep your network secure."

Customer :"Can you help with the installation?"

Staff :"Yes, our technician can install it for you."

Customer :"Thank you for the information."

Staff :" You're welcome. Please contact us if you need further help."

NAMA   : NILANG EPRILIA IFFED VICHEZA

KELAS   : XII TEKNIK KOMPUTER DAN JARINGAN

NISN   : 0084776755

A FINAL ENGLISH TASK

Comparative Analysis of Wired and Wireless Connections in the Office and Lab Network of SMK Alhikmah Tanon TKJ

NILANG EPRILIA IFFED VICHEZA XII

TEKNIK KOMPUTER & JARINGAN

SMK ALHIKMAH TANON

TAHUN PELAJARAN 2025/2026

FOREWORD

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January 30th 2026

Nilang Eprilia I.

VALIDATION

Comparative Analysis of Wired and Wireless Connections in the Office and Lab Network of SMK Alhikmah Tanon TKJ

A FINAL ENGLISH TASK

Nilang Eprilia Iffed Vicheza

Guru Mapel   **Guru kejuruan**

Rika Novia Astuti, S.Pd   **Irwan Muji Handoko**

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Chapter I

A. Comparative Analysis of Wired and Wireless Connections in the Office and Computer Engineering Lab Networks at SMK AL-HIKMAH TANON.

1. Introduction

The development of information and communication technology has made computer networks a critical infrastructure in educational institutions, including vocational schools. At SMK AL-HIKMAH Tanon, network connectivity supports administrative activities in the office area and practical learning processes in the Computer Engineering Laboratory (Teknik Komputer dan Jaringan/TKJ). Two main types of network connections are commonly implemented: wired (cable-based) and wireless (Wi-Fi-based) networks. This analysis compares both connection types based on performance, reliability, security, scalability, and suitability for their specific environments.

2. Overview of Wired and Wireless Network Connections

1. Wired Network

A wired network uses physical media such as UTP (Unshielded Twisted Pair) cables and switches to connect devices. According to classical network theory, wired connections provide dedicated transmission paths, resulting in stable and predictable data transfer.

2. Wireless Network

Wireless networks rely on radio frequency signals transmitted through access points (APs). Based on IEEE 802.11 standards, wireless connections offer mobility and flexibility but are more susceptible to interference and signal degradation.

3. Comparative Analysis Based on Key Aspects

a. Performance and Speed

In the Computer Engineering Lab at SMK AL-HIKMAH Tanon, wired connections demonstrate higher and more consistent data transfer speeds. This is particularly important for activities such as network simulations, server configuration, and large file transfers. Wireless connections in the office area are generally sufficient for administrative tasks such as data entry,

email communication, and cloud-based applications, although speed may fluctuate depending on the number of connected users.

b. Stability and Reliability

Wired networks provide higher stability because they are not affected by electromagnetic interference or physical obstacles. This makes them ideal for laboratory environments where uninterrupted connectivity is essential for learning outcomes. Wireless networks, while practical, may experience signal loss due to walls, distance from access points, or interference from other devices.

c. Security

From a security perspective, wired networks are inherently more secure since physical access to the network is required. This aligns with network security theory, which emphasizes access control as a fundamental protection mechanism. Wireless networks, although secured through encryption methods such as WPA2 or WPA3, remain more vulnerable to unauthorized access if not properly configured.

d. Scalability and Flexibility

Wireless networks offer superior scalability and flexibility. In the office environment of SMK AL-HIKMAH Tanon, wireless connectivity allows staff and teachers to connect multiple devices without additional cabling. Conversely, expanding a wired network requires additional infrastructure, such as cables and switch ports, which can increase costs and installation time.

e. Cost and Maintenance

Initial installation costs for wired networks are generally higher due to cabling and hardware requirements. However, long-term maintenance tends to be lower because of their durability and stability. Wireless networks are relatively cheaper to deploy initially but may require regular maintenance, such as access point repositioning and configuration updates hardware requirements. However, long-term maintenance tends to be lower because of their durability and stability. Wireless networks are relatively cheaper to

deploy initially but may require regular maintenance, such as access point repositioning and configuration updates.

4. Suitability for Office and Laboratory Environments

In the office network, wireless connections are more suitable due to their mobility, ease of access, and support for multiple user devices. Administrative tasks do not typically require extremely high bandwidth or ultra-low latency, making wireless solutions efficient and practical.In contrast, the Computer Engineering Laboratory network benefits more from wired connections. Practical learning activities demand high performance, low latency, and stable connections to ensure that students can effectively conduct experiments related to networking, server management, and system administration.

5. Conclusion

The comparative analysis shows that both wired and wireless connections play complementary roles in the network infrastructure at SMK AL-HIKMAH Tanon. Wired networks are more appropriate for the Computer Engineering Laboratory due to their superior performance, stability, and security. Meanwhile, wireless networks are better suited for office environments where flexibility, scalability, and ease of use are prioritized. An integrated network design that combines both technologies represents the most effective approach to supporting educational and administrative needs in vocational schools.

B. Explain About Hardware and Software

Hardware refers to the physical components of a computer system that can be seen and touched directly. It includes devices used for input, processing, storage, and output. Examples of hardware are the Central Processing Unit (CPU), monitor, keyboard, mouse, printer, hard disk, and RAM. Hardware provides the physical foundation that allows a computer system to operate.

Software refers to a collection of programs and instructions that control and managehow the hardware works. Software does not have a physical form but plays a critical role in enabling the computer to perform specific tasks. Examples of software include operating systems such as Windows, Linux, and macOS, as well as application software like Microsoft Word, Excel, and web browsers. Software allows users to interact with hardware and use computer functions effectively.

In a computer system, hardware and software work together as an integrated unit. Hardware executes tasks based on instructions provided by software, while software depends on hardware to run. Without software, hardware cannot function meaningfully, and without hardware, software cannot be executed.

C. English Vocabulary Booklet

Router = Router

Function: The function of a router is to connect different networks and direct data packets to the correct destination.

Switch = Switch

Function: The function of a switch is to connect multiple devices within a local network and forward data efficiently.

Modem = Modem

Function: The function of a modem is to convert digital signals into analog signals and vice versa for internet communication.

Network Cable = Kabel Jaringan

Function: The function of a network cable is to transmit data between network devices.

Access Point = Titik Akses

Function: The function of an access point is to provide wireless network access to devices.

Server = Server

Function: The function of a server is to provide services, data, or resources to other computers in a network.

Client = Klien

Function: The function of a client is to request and receive services from a server.

Firewall = Firewall

Function: The function of a firewall is to protect the network by blocking unauthorized access.

IP Address = Alamat IP

Function: The function of an IP address is to identify devices uniquely on a network.

Network Interface Card (NIC) = Kartu Jaringan

Function: The function of a NIC is to connect a computer to a network.

Hub = Hub

Function: The function of a hub is to connect multiple network devices and broadcast data to all ports.

Repeater = Repeater

Function: The function of a repeater is to extend the range of a network signal.

Chapter II

A. Aplication Letter and Curriculum Vite (CV)

Sukodono, January 30th 2026

Dear Sir/Madam,

I would like to apply for a position at the Sukodono District Office. I am a student/graduate of

SMK ALHIKMAH TANON, majoring in TKJ (Teknik Komputer dan Jaringan). I have basic skills in office administration and computer operation such as Microsoft Word and Excel. I am responsible, disciplined, and willing to learn. I hope to be given the opportunity to work and gain experience at your office. Thank you for your attention.

Sincerely,

Nilang Eprilia Iffed .V

CURRICULUM VITAE

        Name   : Nilang Eprilia Iffed Vicheza

        Date of Birth   : Sragen,April 07,2008

        Address   : Jatitengah,Sukodono,Sragen

        Education

        SMK ALHIKMAH TANON – TKJ

        Skills

1. Office Administration
2. Microsoft Word & Excel
3. Data Entry Personal Traits
4. Responsible
5. Disciplined
6. Cooperativ

B. Job Interview Simulation

Manager: Good morning. Please introduce yourself.

Applicant: Good morning, Sir. Thank you for giving me this opportunity. My name is Andi Pratama. I am a graduate of Computer and Network Engineering (TKJ) from SMK Alhikmah Tanon. I am very interested in computer networking.

Manager: I see a project on your resume titled Comparative Analysis of Wired and Wireless Connections. Can you explain it briefly?

Applicant: Yes, Sir. The project compares the performance of wired and wireless networks in the office and laboratory of SMK Alhikmah Tanon, focusing on speed, stability, latency, and efficiency.

Manager: Why did you choose this topic?

Applicant: I chose this topic because both wired and wireless networks are used in my school. I wanted to know which type of network works best for different needs.

Manager: What methods did you use in your analysis?

Applicant: I used bandwidth testing, ping tests, and packet loss analysis. The tests were conducted during peak hours and normal hours.

Manager: What were the main results of your analysis?

Applicant: The results showed that wired networks are more stable and faster for heavy tasks like servers and lab activities, while wireless networks are more flexible and suitable for office mobility.

Manager: How can this analysis be applied in the workplace?

Applicant: It can help companies design efficient network systems, for example using wired connections for servers and wireless connections for employees.

Manager: Do you have experience configuring network devices?

Applicant: Yes, Sir. I have experience configuring routers, switches, access points, and setting IP addresses, as well as making LAN cables.

Manager: What would you do if there was a wireless network problem in the office?

Applicant: First, I would check the access point, signal interference, and the number of connected users, then adjust the channel and security settings if needed.

Manager: In your opinion, what is the main advantage of wireless networks?

Applicant: The main advantage is flexibility and easy installation, especially in dynamic work environments.

Manager: Why should we hire you?

Applicant: Because I have strong basic knowledge, practical experience, and good analytical skills in networking. I am also eager to learn and contribute to the company.

Manager: Thank you. Lastly, what are your expectations if you are accepted?

Applicant: I hope to develop my professional networking skills and contribute to building a reliable and efficient network system for the company.

Chapter III

Simulation to Customer

A. Receiving a Customer

Nilang: Good morning. Welcome to our service desk. How may I help you?
Customer: Good morning. My internet connection is very slow.

Nilang: I'm sorry to hear that. May I know your name, please?

Customer: My name is Andi.

Nilang: Thank you, Mr. Andi. Since when have you experienced this problem?
Customer: Since yesterday evening. I also forgot my Wi-Fi password.

Nilang: I understand. I will check your internet connection first. Please wait a moment. Customer: Okay, thank you.

Nilang: I found the problem. There was a network interruption. I have fixed it now.
Customer: The internet is faster now. Thank you.

Nilang: You're welcome. I will help you reset your Wi-Fi password. Customer: Yes, please.

Nilang: Your new password is ready. Please try to connect again. Customer: It works. Thank you for your help.

Nilang: My pleasure. If you have any other problems, please contact us

B. Giving Instruction to Customer

Customer:Hello, I'm having problems with my internet at home. It's very slow, especially at night.

Agent:Good afternoon. I'm sorry to hear that. May I know how many people are using the internet in your house?

Customer: There are four people. We use it for streaming, online meetings, and gaming.

Agent: I see. In that case, you need a stable and fast connection. What type of internet are you currently using?

Customer:I'm using a basic package with a standard router from my provider.

Agent:That could be the problem. I recommend upgrading to a fiber-optic internet connection because it offers higher speed and better stability.

Customer:What about the router? Does it really matter?

Agent:Yes, it does. For home use, I suggest a dual-band or Wi-Fi 6 router. It can handle multiple devices at the same time without slowing down.

Customer:Where should I place the router at home?

Agent:You should place it in the center of the house, away from walls and electronic devices, so the signal can spread evenly.

Customer:That sounds helpful. Is there anything else I should do?

Agent:You can also use a mesh Wi-Fi system if your house is large. It ensures strong signal coverage in every room.

Customer:Thank you for the advice. I will consider upgrading my network.
Agent:You're welcome. If you need further assistance, feel free to contact us anytime.

NAMA   : EKA YULI ASTUTIK

KELAS   : XII TEKNIK KOMPUTER DAN JARINGAN

NISN   : 0077142632

A FINAL ENGLISH TASK

Local Area Network (LAN) Design Simulation
For Two Laboratories With Dynamic Routing Using Cisco Packet Tracer

EKA YULI ASTUTIK

XII TEKNIK KOMPUTER DAN JARINGAN

SMK ALHIKMAH TANON

TAHUN PELAJARAN 2025/2026

FOREWORD

First of all, praise and gratitude are addressed to God Almighty for His blessings and guidance, which have enabled the writer to complete this report entitled *"Local Area Network (LAN) Design Simulation for Two Laboratories with Dynamic Routing Using Cisco Packet Tracer."*

This report is prepared as part of the learning process in computer networking, focusing on the design and simulation of a Local Area Network (LAN) for two laboratories using dynamic routing techniques. The simulation is implemented using Cisco Packet Tracer in order to provide a clear understanding of network topology design, device configuration, and the operation of dynamic routing in ensuring efficient and reliable data communication.

The writer realizes that this report is not free from limitations and imperfections. Therefore, constructive criticism and suggestions are highly appreciated for the improvement of this work in the future.

Finally, the writer hopes that this report will be useful and provide additional knowledge for readers, especially those who are interested in computer networks and information technology.

January 30th 2026

Penulis,

Eka Yuli Astutik

VALIDATION

Local Area Network (LAN) Design Simulation

For Two Laboratories With Dynamic Routing Using Cisco Packet Tracer

A FINAL ENGLISH TASK

Eka Yuli Astutik

This report entitled "Local Area Network (LAN) Design Simulation for Two Laboratories with Dynamic Routing Using Cisco Packet Tracer" has been prepared and submitted by the author. This report has been examined and approved as one of the requirements to complete the academic assignment in the field of Computer Networking.

Guru Mapel   **Guru Kejuruan**

Rika Novia Astuti, S,Pd   **Irwan muji handoko**

TABLE OF CONTENTS

CHAPTER I

A. Local Area Network (LAN) Design Simulation For Two Laboratories With Dynamic Routing Using Cisco Packet Tracer.

This project focuses on designing and simulating a Local Area Network (LAN) that connects two separate computer laboratories using dynamic routing, implemented and tested with Cisco Packet Tracer.

1. **Network Overview**

The network consists of two laboratories, each with its own LAN segment. Every laboratory contains:

a) Multiple PCs (end devices)

b) One switch to connect devices within the same lab

c) One router to connect the laboratory network to other network

The two routers are interconnected through a point-to-point WAN link, enabling communication between the laboratories.

2. **Network Topolog**

a) Laboratory 1: PCs → Switch → Router 1

b) Laboratory 2: PCs → Switch → Router 2

c) Router 1 ↔ Router 2 (serial or Ethernet connection)

Each laboratory is configured with a different IP subnet to prevent IP address conflicts and to ensure proper routing.

3. **Dynamic Routing**

Dynamic routing allows routers to automatically exchange routing information and determine the best path for data transmission. In this simulation, a dynamic routing protocol such as:

a) RIP (Routing Information Protocol)

b) OSPF (Open Shortest Path First)

Dynamic routing provides several advantages:

a) Automatic route updates

b) Better scalability compared to static routing

c) Reduced manual configuration

4. **IP Addressing**

Each LAN is assigned a unique network address

a) PCs are configured with:

b) IP address

c) Subnet mask

Default gateway (router interface IP)

Router interfaces are assigned appropriate IP addresses for

a) LAN

b) inter-router connections

5. **Simulation in Cisco Packet Tracer**

Cisco Packet Tracer is used to:

a) Design the network topology

b) Configure routers, switches, and end devices

c) Apply dynamic routing protocols

d) Test connectivity using ping and traceroute

Successful communication between PCs in different laboratories confirms that the dynamic routing is functioning correctly.

B. Explain About Hardware and Software
   1. **Hardware Components**

Although the project is implemented as a simulation, the devices used in Cisco Packet Tracer represent real networking hardware commonly found in LAN environments.

a) Personal Computers (PCs)

PCs act as end devices in each laboratory. They are used by users to send and receive data across the network.

Functions:

• Generate and receive network traffic

• Test connectivity using commands such as `ping` and `traceroute`

• Represent user workstations in each laboratory

b) Switches

Each laboratory uses a switch to connect multiple PCs within the same LAN.

Functions:

• Connect devices within a local network

• Forward data frames based on MAC addresses

• Reduce network collisions and improve performance

c) Routers

Each laboratory is connected to a router, which enables communication between different networks.

Functions:

• Connect different LANs

• Route data packets between subnets

• Run dynamic routing protocols such as RIP or OSPF

• Act as the default gateway for PCs

d) Network Cables

Cables are used to connect network devices in the simulation.

Types:

• Straight-through cables (PC to switch, switch to router)

• Serial or Ethernet cables (router to router WAN link)

2. Software Components

a) Cisco Packet Tracer

Cisco Packet Tracer is the main network simulation softwareused in this project.

Functions:

• Design and visualize network topology

• Configure routers, switches, and end devices

• Simulate real networking behavior

• Test network connectivity and routing protocols

b) Operating Systems (Simulated)

Each PC in Packet Tracer uses a simulated operating system that allows basic network configuration.

Functions:

• Configure IP address, subnet mask, and default gateway

• Execute basic network testing commands

c) Dynamic Routing Protocols

Dynamic routing protocols are part of the router's software configuration.

Examples Used:

• RIP (Routing Information Protocol)

• OSPF (Open Shortest Path First)

Functions:

• Automatically exchange routing information between routers

• Adapt to network changes without manual intervention

d) Summary

In this LAN design simulation, hardware components such as PCs, switches, routers, and cables are represented virtually using Cisco Packet Tracer. The software components, including Cisco Packet Tracer itself and dynamic routing protocols like RIP or OSPF, enable the configuration, simulation, and testing of the network.

C. English Vocabulary Booklet

1. Server = Komputer pusat
    Function: The function of a server is to provide data and services to other computers in a network.

2. Client = Komputer pengguna
    Function: The function of a client is to request data or services from a server.

3. Router = Perute
    Function: The function of a router is to connect different networks and direct data traffic.

4. Switch = Sakelar jaringan
    Function: The function of a switch is to connect multiple devices in a local network.

5. Modem = Modem
    Function: The function of a modem is to convert digital signals into analog signals and vice versa.

6. Network Cable = Kabel jaringan
    Function: The function of a network cable is to transmit data between devices.

7. IP Address = Alamat IP
    Function: The function of an IP address is to identify devices in a network.

8. Access Point = Titik akses
    Function: The function of an access point is to provide wireless network access.

9. Firewall = Dinding pengaman
    Function: The function of a firewall is to protect the network from unauthorized access.

CHAPTER II

A. Aplication Letter and Curriculum Vite (CV)
    1. Aplication Letter

Tanon, January 30th 2026

To:
The Hiring Manager
Sragen Religious Court Class IA

Dear Sir/Madam,

Based on the job vacancy information that I have received, I hereby submit my application for a position at the Sragen Religious Court Class IA.

Allow me to introduce myself. My name is Eka Yuli Astutik, a graduate of a Vocational High School majoring in Computer and Network Engineering. I have completed a three-month internship (PKL) at the Sragen Religious Court Class IA, where I gained experience in administrative and secretarial tasks.

I am highly motivated, responsible, and able to work both independently and as part of a team. As consideration, I have attached my Curriculum Vitae (CV) for further review.

I hope to be given the opportunity to take part in the next selection process and to contribute to your institution. Thank you for your time and consideration.

Sincerely,

Eka Yuli Astutik

2. **Curriculum Vite (CV)**

Personal Information

Name : Eka Yuli Astutik
Place, Date of Birth : Sragen, July 16, 2007
Gender : Female
Address : Baleharjo,Sukodono,Sragen
Phone Number : +62 856-0161-8051
Email : ekaylii166@gmail.com

Education
2012 – 2013 : TK Wijaya Kusuma
2014 – 2019 : SD Wijaya Kusuma 2
2020 – 2022 : SMP Wijaya Kusuma
2023 – 2026 : SMK Al-Hikmah Tanon

Internship Experience (PKL)
Sragen Religious Court Class IA
Position : Secretariat Staff
Responsibilities:
- Preparing SPBY documents
- Checking and organizing State-Owned Assets (BMN) data
  Skills
- Microsoft Office (Word, Excel, PowerPoint)

Personal Qualities :
- Responsible
- Disciplined
- Willing to Learn

B. Job Interview Simulation

Manager : Good morning. Please have a seat.
Applicant : Good morning. Thank you.

Manager : You did your internship here before, right?
Applicant : Yes, sir/madam. I did my internship here for three months.

Manager : What were your responsibilities during the internship?
Applicant : I helped with computer installation, network maintenance, and data administration.

Manager : Why do you want to work in this company?
Applicant : Because I am familiar with the work environment and I want to grow with this company.

Manager : What skills did you gain during your internship?
Applicant : I gained skills in teamwork, problem solving, and basic IT support.

Manager : What makes you suitable for this position?
Applicant : I already understand the work system, so I can adapt quickly.

Manager : Can you work full time?
Applicant : Yes, I am ready to work full time.

Manager : How do you handle work pressure?
Applicant : I stay calm and focus on finding solutions.

Manager : Can you work in a team?
Applicant : Yes, I can work well in a team.

Manager : When can you start working?
Applicant : I can start as soon as possible.

Manager : Thank you for coming. We will contact you soon.
Applicant : Thank you very much for the opportunity.

Chapter III

Simulation to Customer

A. Receiving a Customer

1. Customer Service :
   Good morning, welcome to customer service. How may I help you?

2. Client:
   Good morning. I would like to complain about my internet connection. It has been very slow since yesterday.

3. Customer Service :
   We apologize for the inconvenience. May I have your customer number, please?

4. Client:
   Of course. My customer number is 12345678.

5. Customer Service :
   Thank you. I will check your data first. Does the slow internet occur all day?

6. Client:
   Yes, especially at night. Also, I forgot my account password.

7. Customer Service :
   Alright, I will assist you step by step. For the slow internet, please try restarting your modem first.

8. Client:
   I've already tried that, but it's still slow.

9. Customer Service :
   Understood. We will check the network from our system. Meanwhile, for the password reset, I will send a link to your email.

10. Client:
    Alright, I have received the email.

11. Customer Service :
    Please click the link and create a new password. Has it been successful?

12. Client:
    Yes, my password has been successfully reset.

13. Customer Service :
    That's good to hear. For the internet issue, our technician will check it within 1x24

hours.

14. Client:
Alright, thank you for your help.

15. Customer Service :
You're welcome. If you have any other questions, please don't hesitate to contact us. Have a nice day.

B. Giving Instruction to Customer

1. Customer Service :
Good afternoon. How may I help you?
2. Customer:
Good afternoon. I would like to install internet at my home, but I'm not sure which network is the best.
3. Customer Service :
Alright, I'll be happy to assist you. Will the internet be used for work or entertainment?
4. Customer:
For working from home and streaming.
5. Customer Service:
For those needs, we recommend a fiber optic network because it is faster and more stable.
6. Customer:
What are the advantages of fiber optic?
7. Customer Service :
It offers high speed, a more stable connection, and is rarely affected by weather conditions.
8. Customer:
What internet speed would be suitable for my home?
9. Customer Service :
If it is used by 3–5 people, a speed of 30–50 Mbps would be more than sufficient.
10. Customer:
Do I need an additional router?
11. Customer Service :
Yes, we recommend using a dual-band router so the signal can reach all areas of your home evenly.
12. Customer:
Alright, I'm interested. How do I register?
13. Customer Service :
You can register through our application or visit the nearest service office.

14. Customer:

Alright, thank you for the recommendation.

15. Customer Service :

You're welcome. I hope the information is helpful. Have a good afternoon.

NAMA   : DELLA FITRIANA

KELAS   : XII TEKNIK KOMPUTER DAN JARINGAN

NISN   : 0077663704

A FINAL ENGLISH TASK

Pemanfaatan Cisco Packet Tracer untuk simulasi WLAN

pengguna rumahan

Della Fitriana

XII Teknik Komputer & Jaringan

SMK ALHIKMAH TANON

TAHUN PELAJARAN 2025/2026

FOREWORD

This final project report is prepared as a requirement for completing the English subject. The purpose of this report is to present the results of the assignment and to demonstrate the understanding of the material that has been learned. It is hoped that this report can be useful and provide value for readers. The writer is open to suggestions and constructive feedback for further improvement.

January 30th 2026

Writer,

Della Fitriana

VALIDATION

Pemanfaatan Cisco Packet Tracer untuk simulasi WLAN pengguna rumahan

A FINAL ENGLISH TASK

Della Fitriana

Guru Mapel   **Guru Kejuruan**

Rika Novia Astuti, S. pd.   **Irwan Muji Handoko**

TABLE OF CONTENTS

A. Pemanfaatan Cisco Packet Tracer untuk simulasi WLAN pengguna rumahan

1. Basic wireless local area network (wlan) simulation for home users using cisco packet tracer

    Design and simulate a simple home wlan including a wireless router, laptops, smartphones, ip addressing, and internet access.

2. Local area network (lan) design simulation for two laboratories using dynamic routing in cisco packet tracer

    Simulate two computer laboratories connected via routers using dynamic routing protocols such as rip, ospf, or eigrp.

3. Virtual local area network (vlan) design for inter-division network management using cisco packet tracer

    Implement vlans to separate departments, configure trunking, and enable inter-vlan routing for secure and efficient network management.

4. Comparative analysis of wired and wireless network connections in the office and computer engineering laboratory at smk al-hikmah tanon

    Analyze performance, speed, reliability, and security differences between wired and wireless networks through simulation and testing.

B. Explain About Hardware and Software

Hardware and Software are the two main components of a computer system. They work together to make a computer useful.

Hardware

Hardware refers to the physical parts of a computer that you can see and touch.

Examples of Hardware:

1. Input Devices: Keyboard, mouse, scanner, microphone

2. Output Devices: Monitor, printer, speakers

3. Processing Devices: CPU (Central Processing Unit)

4. Storage Devices: Hard disk, SSD, pen drive, CD/DVD

5. Memory: RAM, ROM

Key Points:

1. Hardware cannot work on its own.

2. It needs software instructions to perform tasks.

Software

Software is a set of programs or instructions that tell the computer hardware what to do. Software cannot be seen or touched.

Types of Software:

1. System Software

   1. Controls and manages computer hardware.

   2. Examples: Windows, Linux, macOS, Android

2. Application Software

   1. Helps users perform specific tasks.

   2. Examples: MS Word, Excel, Photoshop, web browsers

3. Utility Software

1. Helps maintain and protect the computer system.

2. Examples: Antivirus, disk cleanup tools

Key Points:

1. Software depends on hardware to run.

2. Without software, hardware is useless.

Difference Between Hardware and Software

Hardware	Software
Physical components	Programs and instructions
Can be touched	Cannot be touched
Wears out over time	Does not wear out
Examples: Keyboard, CPU	Examples: Windows, MS Word

C. English Vocabulary Booklet

1. Router = Router
   Function: Function of router is to connect different networks and direct data packets.

2. Switch = Saklar jaringan
   Function: Function of switch is to connect multiple devices in a local network (LAN).

3. Hub = Penghubung jaringan
   Function: Function of hub is to distribute data to all connected devices.

4. Modem = Modem
   Function: Function of modem is to convert digital signals to analog signals and vice versa.

5. Access Point = Titik akses
   Function: Function of access point is to provide wireless network access.

6. Network Cable = Kabel jaringan

   Function: Function of network cable is to transmit data between network devices.

7. Network Interface Card (NIC) = Kartu jaringan

   Function: Function of NIC is to connect a computer to a network.

8. Server = Server

   Function: Function of server is to provide services and data to other computers.

9. Client = Klien

   Function: Function of client is to request services or data from a server.

10. Firewall = Dinding keamanan jaringan

    Function: Function of firewall is to protect the network from unauthorized access.

CHAPTER II

A. Aplication Letter and Curriculum Vite (CV)

Dear Sir/Madam,

To
The Head of Sukodono District Office
Sukodono

Respectfully,

I, the undersigned, hereby submit an application to conduct an Internship (Practical Work) at the Sukodono District Office.

My personal details are as follows:

Name : Della Fitriana
Place, Date of Birth : Sragen,20 October 2007
Address : Margorejo,Pantirejo,Sukodono,Sragen
School : Smk Al-Hikmah Tanon
Major : Teknik Komputer dan Jaringan
Phone Number : 081575960509

I am currently a student who is required to undertake an Internship (Practical Work) as one of the requirements for graduation. Through this internship, I hope to gain knowledge, work experience, and skills, especially in the field of government administration.

For your consideration, I enclose the following documents:

1. Letter of recommendation from school

2. Copy of student ID card

3. Copy of academic report (if required)

Thus, I submit this application. I sincerely hope that you would be willing to grant me the opportunity to carry out my internship at the Sukodono District Office. Thank you very much for your attention.

Sincerely,

Della Fitriana

CURRICULUM VITAE

Personal Information

Name : Della Fitriana

Place, Date of Birth : Sragen, 20 October 2007

Gender : Female

Address : Margorejo, Pantirejo, Sukodono, Sragen

Phone Number : 081575960509

Email : Dellaafitriana@gmail.com

Educational Background

2015 – 2016

Aisyiyah Kindergarten, Pantirejo

2016 – 2021

MI Muhammadiyah Pantirejo

2021 – 2024

Junior High School 2 Sukodono

2024 – 2026

SMK AL-Hikmah Tanon

Major : Computer and Network Engineering

Skills

1. Basic computer operation (MS Word, Excel, PowerPoint)

2. Basic computer networking

3. Good communication skills

4. Able to work independently and in a team

Experience

1. Internship / Practical Work (PKL)

   Place : Sukodono Sub-District Office

   Position : Public Service, Personnel Administration (Umpeg), and Government Affairs (Kasipem)

Hobbies

1. Reading

2. Learning new technology

Additional Information

1. Honest, disciplined, and responsible

2. Willing to learn and improve skills

B. Job Interview Simulation

Job Interview Dialogue

Manager: Good morning. Please have a seat.
Applicant: Good morning. Thank you, Sir.

Manager: Could you please introduce yourself?
Applicant: My name is Della Fitriana. I am a management graduate and I have experience in administration and leadership.

Manager: Why do you want to apply for a job at Sukodono District?
Applicant: I want to contribute to public services and help improve management performance at Sukodono District.

Manager: Why are you interested in the manager position?
Applicant: Because I have the ability to lead a team, plan work programs, and make responsible decisions.

Manager: What work experience supports this position?
Applicant: I have experience as a team coordinator and I am used to managing administrative tasks and leading a team.

Manager: How do you handle problems within a team?
Applicant: I listen to team members, discuss the problem together, and find the best solution

Manager: In your opinion, what is the main duty of a manager in a district office?
Applicant: The main duty of a manager is to coordinate staff, ensure public services run well, and maintain work discipline.

Manager: Are you ready to take on big responsibilities?
Applicant: Yes, Sir. I am ready to work with full responsibility and professionalism.

Manager: What are your strengths?
Applicant: My strengths are discipline, good communication skills, and the ability to work in a team.

Manager: Do you have any questions for us?

Applicant: Yes, Sir. Could you explain the working system and career development at Sukodono District?

Manager: We prioritize teamwork and public service quality.

Applicant: Thank you very much for the explanation, Sir.

Manager: Thank you for coming. We will contact you soon.

Applicant: Thank you for the opportunity, Sir.

CHAPTER III

Simulation to Customer

A. Receiving a Customer

Formal Dialogue: IT Support Service at Al-Hikmah School

IT Support Officer: Good morning. Welcome to the IT Support Service of Al-Hikmah School. How may I assist you?

Client (Teacher/Staff): Good morning. I would like to report that the internet connection is very slow.

IT Support Officer: Thank you for informing us. We apologize for the inconvenience. Does the slow internet occur on all devices or only on certain computers?

Client: It occurs on most computers in the office.

IT Support Officer: Understood. Could you please check whether the modem and router indicator lights are functioning normally?

Client: Yes, the lights are on, but they keep blinking continuously.

IT Support Officer: Thank you for the information. Kindly try restarting the modem and router by turning them off for approximately one minute, then turning them back on.

Client: I have restarted them. The internet connection is better now, but I forgot the Wi-Fi password.

IT Support Officer: No problem. We will assist you in resetting the Wi-Fi password. Do you currently have access to the router?

Client: Yes, I do.

IT Support Officer: Please open a web browser and log in to the router settings page. After that, go to the Wireless Settings menu to change the password.

Client: The password has been changed successfully, and the internet connection is now stable.

IT Support Officer: Excellent. We are pleased to hear that the issue has been resolved. Please feel free to contact the IT Support team of Al-Hikmah School if you experience any further problems.

Client: Thank you very much for your professional assistance.

IT Support Officer: You are most welcome. Have a productive day.

B. Giving Instruction to Customer

Dialogue: Advising a Customer on a Good Home Internet Network

Customer: Good morning. I would like to ask for advice about a suitable internet network for my home.

Service Officer: Good morning. Certainly, I would be happy to assist you. May I know how the internet will be used at your home?

Customer: It will be used for online learning, streaming videos, and occasional online gaming.

Service Officer: Thank you for the information. Based on your needs, we recommend using a fiber optic internet connection.

Customer: Could you please explain the advantages of a fiber optic network?

Service Officer: Of course. Fiber optic internet offers higher speed, better stability, and more reliable performance compared to other types of connections.

Customer: What internet speed would be appropriate for home use?

Service Officer: For household use, a speed of 20 to 50 Mbps is generally sufficient, especially for multiple devices.

Customer: Do I need any additional equipment to support the connection?

Service Officer: If your house is relatively large, we recommend using a dual-band router or an additional Wi-Fi extender to ensure even signal coverage.

Customer: Thank you for the clear explanation. This information is very helpful.

Service Officer: You are most welcome. Please feel free to contact us if you need further assistance or would like to proceed with the installation.

NAMA   : ANISATUL'AFIFAH

KELAS   : XII TEKNIK KOMPUTER DAN JARINGAN

NISN   : 0092526381

A FINAL ENGLISH TAKS

**LOCAL AREA NETWORK (LAN) DESIGN SIMULATION FOR TWO
LABORATORIES WITH DYNAMIC ROUTING USING CISCO PACKET TRACER**

Anisatul Afifah

XII TEKNIK KOMPUTER DAN JARINGAN

SMK AL HIKMAH TANON

TAHUN PELAJARAN 2025/2026

FORE WORD

This final project is written to fulfill the requirements of graduation at Vocational High School SMK Al Hikmah Tanon. This project was completed as part of the English subject to improve the students' skills in using English in daily and professional situations.

The writer would like to express sincere gratitude to the English teacher for the guidance and support during the preparation of this final project. Appreciation is also given to parents and friends for their motivation and encouragement.

The writer realizes that this final project still has limitations. Therefore, constructive suggestions are highly appreciated. Hopefully, this project can be useful for readers.

January, 30th 2026

Anisatul afifah

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Local Area Network (LAN) Design Simulation for two laboratories with dynamic routing using Cisco Packet Tracer.

A Final English Taks

Anisatul Afifah

Guru Mapel   **Guru Kejuruan**

Rika Novia Astuti, S,Pd.   **Irwan Muji Handoko**

CHAPTER I

A. Local Area Network (LAN) Design Simulation for two laboratories with dynamic routing using Cisco Packet Tracer.

Here are four network devices with their explanations:

1. explanation litle Explanation

   Local Area Network (LAN) Design Simulation for Two Laboratories with Dynamic Routing Using Cisco Packet Tracer This title describes a network simulation project focused on the design and implementation of a Local Area Network (LAN) for two separate laboratories. Each laboratory represents an independent local network that needs to be interconnected to enable communication between them. The term design simulation indicates that the network is not deployed in a real environment, but simulated using Cisco Packet Tracer, a network simulation tool that allows configuration, testing, and analysis of network devices.

2. Definition of LAN

   Local Area Network (LAN) Design Simulation for Two Laboratories with Dynamic Routing Using Cisco Packet Tracer is a project or simulation that designs and connects two local networks (LANs) for two different laboratories, using routers and switches to enable communication between the networks.

3. Purpose of the Two-Laboratory LAN Simulation

   A. Understand LAN Design Concepts

      Students or network learners can learn how to structure a LAN for multiple departments or laboratories, including proper IP addressing, subnetting, and device placement.

   B. Practice Dynamic Routing

      The simulation allows users to implement dynamic routing protocols (OSPF) so that routers can automatically exchange routing information and maintain efficient communication between networks without manual routing configuration.

   C. Develop Troubleshooting Skills

      Users can identify and solve network problems such as misconfigured IP addresses, incorrect gateways, or connectivity issues, which enhances practical networking skills.

D. Test Network Communication

The simulation provides a safe environment to verify that devices in separate networks can communicate, for example by using the ping command between PCs in different laboratories.

E. Prepare for Real-World Implementation

By simulating the network using Cisco Packet Tracer, learners gain experience that can be applied in real-world networking scenarios, reducing errors and improving planning efficiency.

4.   Implementation of Two-Laboratory LAN

Lab 1: 192.168.1.0/24, Gateway 192.168.1.1

Lab 2: 192.168.2.0/24, Gateway 192.168.2.1

Router Serial: 10.10.10.1 ↔ 10.10.10.2 /30

PC Configuration

Set IP, Subnet Mask, and Default Gateway according to the IP table

Router Configuration

Enable LAN and Serial interfaces

Router0: G0/0 → 192.168.1.1, S0/0/0 → 10.10.10.1, clock rate 64000

Router1: G0/0 → 192.168.2.1, S0/0/0 → 10.10.10.2

Dynamic Routing (RIP v2)

Router0:

B. Explain About Hardwere and Sofwere

1. Overview of the LAN Design

The goal is to design and simulate a LAN connecting two laboratories (Lab 1- Each lab has multiple computers connected through a switch, and the two labs are interconnected using routers with a dynamic routing protocol (such as RIP, OSPF) Cisco Packet Tracer is used to simulate the network before real-world deployment.

2. Hardware Components (Simulated Devices)

These are the network devices you place inside Cisco Packet Tracer.

Represent computers in each laboratory Each PC is assigned: IP address, subnet mask. default gateway

3. Software components, cisco Packet Tracer,Network simulation tool by Cisco packet traicer,designing network topology,configuring devices.

4. Working of the LAN Simulation

PCs in each lab communicate via the local switchWhen a PC sends data to th other lab: Data goes to the default gateway (router)

5. Advantages of Using Dynamic Routing

No need to manually configure routes

Automatically adapts to network changes

Reduces configuration errors

Scalable for future expansion

6. Conclusion

The LAN design simulation for two laboratories using Cisco Packet Tracer demonstrates how hardware devices (PCs, switches, routers) and software components (Packet Tracer, Cisco IOS, dynamic routing protocols) work together to create an efficient and scalable network. Dynamic routing ensures reliable communication between laboratories and reflects real-world networking concepts.

C. English Vocabulary Booklet

Here's an even more concise and clear version in English, one line per word for quick understanding:

A. Topology (Topologi)

Meaning: The physical or logical of connected devices in a network.
Function: Defines how computers, switches, and routers are interconnected in the lab design.

B. Router

Meaning: A networking device that forwards data packets between computer networks.
Function: Connects the two different laboratory networks (LANs) and enables communication between them.

C. Switch

Meaning: A networking device that connects devices on a computer network by using packet switching to receive and forward data to the destination device.
Function: Connects multiple computers (end devices) within each laboratory.

D. End Device (Perangkat Akhir)

Meaning: Devices that users interact with, such as PCs, laptops, or servers.

Function: Acts as the source or destination of data packets in the simulation (e.g., computers in the labs).

E. Dynamic Routing (Routing Dinamis)

Meaning: A networking technique where routers automatically learn and maintain routing tables using protocols.

Function: Allows routers to automatically update paths between labs if a link fails, without manual configuration.

CHAPTER II

A. Aplication Letter and curriculum Vite (CV)

1. Aplicantion Letter

<div align="right">January 30th 2026</div>

To:

The Head of Tangen District Office

Jl.Ganefo No. 10,Tangen,Sragen regency.Central java

Dear Sir/Madam,

Based on the job vacancy information I received at the Tangen District office,I whould like to apply for the position of technician.I am very interested in this position because it is accordance with my educational Bacground and skiIIs.

Name : Anisatul Afifah

Place,Date of Birth : Sragen 28 July 2009

Addres : Margorejo,Pantirejo,Sukodono,Sragen

Education : SMK Alhikmah Tanon

Major : Computer and network engineering (TKJ)

I hereby attach the following documents as required

1. Curriculum Vitan
2. Copy of Diploma
3. Copy of Academic. Transcript
4. Copy of Identity Card (ID Card)
5. Recent Photograph

I hope to be given the opportunity to attend an interview so that I can explain contribution to the Stagez Sub-District Office Thank you for your attention and consideration.

2. Curicullum Vite (CV)

Personal Data

Name   : Anisatul Afifah

Place,Date of Birth   : Sragen, 28 July 2009

Addres	: Margorejo,pantirejo,sukodono,sragen
Citizensip	: lndonesia
Religion	: Islam
Major	: Computer and network engineering (TKJ)
Class	: XII Teknik Komputer & Jaringan
Cell phone	: 08**********
Email	: anisatulafifah843@gmail.com

B. Job Interviuw Simulation

English Version

Manager: Good morning,Please introduce myself.

Aplicant: Good morning, My name is Anisatul afifah

Manager: What is your educational bacground?

Aplicant: l am a student of SMK ALHikmah Tanon majoring in computer and network engginering

Manager: What skils do you have?

Aplicant: l have basic skils in LAN configuration ang network simulation

Manager: Can you work in team

Applicant: Yes,l can work well in a team

Manager: why do you want to work here

Aplicant: because l want to improve my skils and gain experience

Manager: Thank you

Aplication: Thank you verry much.

Terjemahan Bahasa Indonesia

Manajer: Selamat pagi. Silakan perkenalkan diri Anda.

Pelamar: Selamat pagi. Nama saya Anisatul Afifah.

Manajer: Apa latar belakang pendidikan Anda?

Pelamar: Saya adalah siswa di SMK Al Hikmah Tanon, jurusan Teknik Komputer dan Jaringan.

Manajer: Keterampilan apa yang Anda miliki?

Pelamar: Saya memiliki keterampilan dasar dalam konfigurasi LAN dan simulasi jaringan.

Manajer: Apakah Anda bisa bekerja dalam tim?

Pelamar: Ya, saya bisa bekerja dengan baik dalam tim.

Manajer: Mengapa Anda ingin bekerja di sini?

Pelamar: Karena saya ingin meningkatkan keterampilan saya dan mendapatkan pengalaman.

Manajer: Terima kasih.

Pelamar: Terima kasih banyak

A. Receiving a Costomer

Dialogue: Handling Slow Internet Complaint (LAN Support):

User: Good morning. Our internet connection is very slow today.

IT Support: Good morning. I'm sorry to hear that. Is the problem happening on all computers?

User: Yes, most of the computers on our local network are affected.

IT Support: Alright. I will check the Local Area Network and the main connection.

User: Could the problem be caused by the cables or the internet provider?

IT Support: It could be either. Let me start by checking the LAN cables and the network switch.

IT Support: I found a loose LAN cable on the main switch.

User: Is that the reason why the internet is slow?

IT Support: Yes, a loose cable can cause network instability and slow internet speed.

IT Support: I have fixed the cable. Please try accessing the internet again.

User: The internet is much faster now. It's working normally.

IT Support: Great. Please let us know if you experience any other network issues.

User: Thank you very much for your help.

IT Support: You're welcome. Have a nice day

B. Giving Instruction to customer

Dialogue: Advising a Good Home LAN Setup:

Customer: Good afternoon. I want to install a good network system for my home.

IT Consultant: Good afternoon. Sure. How many devices will be connected to the network?

Customer: There will be laptops, smartphones, and a smart TV.

IT Consultant: I recommend using a Local Area Network combined with Wi-Fi.

Customer: Why should I use a LAN at home?

IT Consultant: A LAN connection is more stable and faster, especially for PCs and smart TVs.

Customer: What equipment do I need for a home LAN?

IT Consultant:You will need a modem, a router, a small switch, and CAT6 LAN cables.

Customer: Is the installation difficult?

IT Consultant: Not really. The LAN cables can be installed in the main rooms.

Customer: How about network security?

IT Consultant: Use a strong Wi-Fi password and enable the firewall on the router.

Customer: That sounds suitable for my needs.

IT Consultant: We can help you with the installation and configuration if you like.

Customer: Thank you for the advice.

IT Consultant: You're welcome. I hope your home network works smoothly.

NAMA   : DEWI ANJANI

KELAS   : XII TEKNIK KOMPUTER DAN JARINGAN

NISN   : 0072797525

A FINAL ENGLISH TASK

**COMPARATIVE ANALYSIS OF WIRED AND WIRELESS
CONNECTIONS IN THE OFFICE AND COMPUTER ENGINEERING
LAB NETWORK AT SMK ALHIKMAH TANON**

Dewi Anjani

Xll Teknik Komputer Dan Jaringan

SMK ALHIKMAH TANON

TAHUN PELAJARAN 2025/2026

VALIDATION

Comparative analysis of wired and wireless connection in the office and computer engineering lab network at SMK Alhikmah Tanon

A Final English Task

Dewi Anjani

<div>

Guru Mapel   **Guru Kejuruan**

</div>

Rika Novia Astuti, S.Pd.   **Irwan Muji Handoko**

FOREWORD

This final project is written to fulfill the requirements of graduation at Vocational High School SMK Alhikmah Tanon This project was completed as part of the English subject to improve the students' skills in using English in daily and professional situations.

The writer would like to express sincere gratitude to the English teacher for the guidance and support during the preparation of this final project. Appreciation is also given to parents and friends for their motivation and encouragement.

The writer realizes that this final project still has limitations. Therefore, constructive suggestions are highly appreciated. Hopefully, this project can be useful for readers.

January, 30th 2026

Dewi Anjani

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CHAPTER I

A. Comparative analysis of wired and wireless connection in the office and computer engineering lab network at SMK Alhikmah Tanon

1. A reliable computer network is essential to support administrative activities in the office and practical learning in the Computer Engineering (TKJ) laboratory at SMK Alhikmah Tanon. Two main types of network connections are commonly used: wired (cable-based) and wireless (Wi-Fi). Each has distinct characteristics that influence performance, security, cost, and suitability for different environments.

2. Wired Network Connection, Definitiona wired network uses physical cables such as UTP (Unshielded Twisted Pair) with RJ-45 connectors, switches, and routers to connect computers and network devices.

3. Implementation in the Office and TKJ Lab Office computers are usually connected via LAN cables to ensure stable access to administrative systems, printers, and internet services. In the TKJ lab, wired connections are commonly used for: Networking practice (crimping cables, configuring switches/routers) Server–client simulations, High-bandwidth activities such as file sharing and system installation

4. Advantages
   a. High stability and speed (less interference)
   b. Lower latency, suitable for practical networking exercises
   c. Higher security, as physical access is required
   d. Consistent performance for many users simultaneously

   Disadvantages
   a. Limited mobility
   b. Installation and maintenance costs (cables, switches, cable management)
   c. Less flexible when rearranging rooms or devices

5. Wireless Network Connection, Definition A wireless network uses radio waves through access points (APs) or routers to connect devices without physical cables.

6. Implementation in the Office and TKJ Lab, In the office, Wi-Fi is often used by. Teachers and staff using laptops or mobile devices, Guests or temporary users, In

the TKJ lab, wireless networks may support, Learning about wireless configuration and security, Student devices such as laptops or smartphones

7. Advantages

    a. High mobility and flexibility

    b. Easy and faster installation

    c. Supports BYOD (Bring Your Own Device) learning

    d. Reduces cable clutter

Disadvantages

    a. Less stable than wired connections

    b. Susceptible to interference and signal degradatio

    c. Lower security if not properly configured

    d. Performance decreases as the number of users increases

B. Explain About Hardware and Software

Wired Network Hardware

1. Core components: ethernet cables (Cat5e, Cat6, Cat6a), network switches, routers with ethernet port, network interface cards (NICs) in devices, patch panels, and wall outlests.

2. Office Use: Typically uses Cat5e/Cat6 cables connected to managed switches for stable connectivity to desktops, printers, and servers. Hardware is fixed and requires physical installation.

3. Computer Engineering Lab Use: May use higher-grade Cat6a cables for high-bandwidth devices like workstations, test equipment, and servers handling large datasets. Hardware is more robust to support lab-specific tools.

4. Key Traits: Higher upfront installation cost due to cabling and infrastructure; longer lifespan (5-10 years); less prone to physical interference but vulnerable to cable damage or disconnections.

Wireless Network Hardware

1. Core Components: Wireless access points (WAPs), wireless routers, Wi-Fi adapters (built-in or external), antennas, and power over Ethernet (PoE) injectors for WAPs.

2. Office Use: Uses dual-band (2.4GHz/5GHz) or tri-band WAPs placed strategically to cover work areas. Supports laptops, smartphones, and mobile printers.

3. Computer Engineering Lab Use: May require enterprise-grade WAPs with multiple input/output (MIMO) technology to handle simultaneous connections from lab devices, tablets, and portable test tools. Some labs use industrial-grade WAPs for better interference resistance.

4. Key Traits: Lower upfront installation cost (no extensive cabling); requires regular maintenance (firmware updates, antenna adjustment); lifespan of 3-5 years due to evolving Wi-Fi standards.

Software Comparison: Wired vs. Wireless Connections

Wired Network Software

1. Configuration Tools: Switch management software (e.g., Cisco IOS, HP ProCurve Manager), IP address management (IPAM) systems, and network monitoring tools (e.g., Wireshark, Nagios).

2. Office Use: Configured for static IP addressing on servers/printers and dynamic DHCP for desktops. Software focuses on traffic prioritization for business applications (e.g., email, CRM).

3. Computer Engineering Lab Use: May use specialized software for network testing and simulation (e.g., Packet Tracer, GNS3) integrated with wired infrastructure. Supports quality of service (QoS) for real. time data transfer between test devices.

4. Key Traits: Easier to secure with firewalls and access control lists (ACLs); less software overhead for data transmission; stable performance with minimal latency.

Wireless Network Software

1. Configuration Tools: Wireless LAN controllers (WLCs), Wi-Fi management platforms (e.g., UniFi Network Application), and security software for encryption (WPA3

2. ffice Use: Configured for DHCP with SSID segmentation (guest vs. internal networks). Software manages signal strength, channel allocation, and user access controls

3. Computer Engineering Lab Use: Uses software for spectrum analysis (e.g., AirMagnet) to avoid interference from lab equipment. Supports mobility management for devices moving within the lab.

4. Key Traits: Requires more frequent software updates to address security vulnerabilities; additional overhead for encryption and signal management; may need adjustments to mitigate interference.

Overall Comparative analysis

NO	ASPECT	WIRED CONNECTIONS	WIRELESS CONNECTIONS
1	Performance	Hight speed, low latency, stable, bandwith	Variable speed, higher latency, bandwitch shared among users
2	Security	More secure (physical access control, less interference)	Vulnerable to eavesdropping (requires storng encryption)
3	Mobility	No mobility – devices are fixed	High mobility – supports portable devices
4	Cost	Higher upfront (cabling, infrastructure), lower maintenance	Lower upfront, higher maintenance (upgrades,interference management)
5	Lab sultability	Ideal for high-bandwidth test equipment and servers	Good for portable tools and mobile testing, but needs careful setup to avoid interfecence
6	Office sultability	Best for desktops, printers, and critical systems	Convenient for laptops, smartphones, and collaborative spaces

C. English Vocabulary Booklet
1. Computer = Komputer

   Function: The function of a computer is to process and store data.

2. Server = Server

   Function: The function of a server is to provide data and services to other computers.

3. Router = Router

Function: The function of a router is to connect different networks and direct data traffic.

4. Switch = Switch

    Function: The function of a switch is to connect devices in the same network.

5. Modem = Modem

    Function: The function of a modem is to connect a network to the internet.

6. Network Cable = Kabel Jaringan

    Function: The function of a network cable is to transmit data between devices.

7. Wireless Access Point = Titik Akses Nirkabel

    Function: The function of a wireless access point is to provide Wi-Fi connection.

8. IP Address = Alamat IP

    Function: The function of an IP address is to identify a device on a network.

9. Firewall = Firewall

    Function: The function of a firewall is to protect the network from unauthorized access.

10. Network Interface Card (NIC) = Kartu Jaringan

    Function: The function of a NIC is to connect a computer to a network.

CHAPTER ll

A. Aplication Letter and Curriculum Vite (CV)

   1. Application Letter For Practical Work (PKL)

January, 30th 2026

To:

The Head of Tanon Sub-District Office

Tanon

Dear Sir/Madam,

Respectfully,

In accordance with the Practical Work Program (Praktek Kerja Lapangan / PKL), which is a compulsory part of the academic curriculum, I hereby submit an application to conduct my practical work at the Tanon Sub-District Office.

My name is Dewi Anjani, and I am a student at SMK Alhikmah Tanon, majoring in Computer and Network Engineering. I hope to gain hands-on work experience, expand my knowledge, and develop skills related to public administration and government service.

I plan to undertake my internship from (August 1, 2025) to (November 1, 2025). For your consideration, I have attached a letter of recommendation from my school along with other supporting documents.

I would be very grateful if you would give me the opportunity to do my internship at the Tanon District Office. Thank you for your time and attention. I look forward to hearing from you soon. Yours faithfully,

Name　　　　　: Dewi Anjani

Date of birth　 : 4 November 2007

School me　　 : SMK AL HIKMAH TANON

B. Curriculum cv

PERSONAL DATA

Name   : Dewi Anjani

Date of birth   : Sragen, 04 November 2007

Gender   : Girl

Religion   : Islam

Address   : Jl. Pantirejo, Sukodono, Sragen

Cell phone   : 08***********

Status   : Belum Nikah

e-mail   : dewianjani397@gmail.com

EDUCATION DATA

Elementary School   : State Elementary School 066652 Medan

Junior High School   : Nahdlatul Ulama Private Middle School in Medan

Vocational School   : Al Hikmah Tanon Vocational School

FORMAL

2015 – 2020   : Elementary School

2020 – 2023   : Junior High School

2023 – 2026   : Vocational School

WORK EXPERIENCE

1. Print ID card
2. serving KK updates
3. provide marriage dispensation
4. serving event agendas

C. Job Interview Simulation

Manager:

Good morning. Please introduce yourself.

Applicant:

Good morning, Sir. Thank you for the opportunity. My name is Dewi anjani. I graduated with a degree in Management and have two years of experience in administration and operations.

Manager:

Why are you interested in applying to our company?

Applicant:

I am interested in this company because it has a strong reputation and continues to grow. I believe the company's vision aligns with my desire to develop my skills and contribute professionally.

Manager:

What work experience do you have that is relevant to this position?

Applicant:

In my previous job, I handled administrative data, prepared monthly reports, and assisted with coordination between departments. This experience helped me become more organized and responsible.

Manager:

What are your strengths?

Applicant:

My strengths are discipline, fast learning, and the ability to work both independently and in a team. I can also work well under pressure.

Manager:

What about your weaknesses?

Applicant:

Sometimes I focus too much on details, but I am learning how to manage my priorities better to stay efficient.

Manager:

If you are accepted, what contribution can you make to this company?

Applicant:

I would like to help improve work efficiency, especially in administration and operations, and contribute ideas that support company growth.

Manager:

When can you start working?

Applicant:

If I am given the opportunity, I can start working within two weeks.

Manager:

Thank you for your time. We will contact you soon.

Applicant:

Thank you very much for the interview, Sir. I look forward to hearing from you.

CHAPTER III

A. Receiving a Customer

Customer Service: Good afternoon. Thank you for contacting customer support. How may I help you today?

Customer: Good afternoon. My internet has been very slow since this morning.

Customer Service: I'm sorry to hear that. I apologize for the inconvenience. May I have your customer ID, please?

Customer: Sure, my customer ID is 12345678.

Customer Service: Thank you. After checking your account, the connection is active, but the slow speed may be caused by an account or security issue.

Customer: Oh, I see. What should I do?

Customer Service: I recommend resetting your WiFi password to secure your connection and improve performance.

Customer: Okay. How do I reset the password?

Customer Service: Please open your browser and access the modem settings page. Log in as admin, then go to Wireless Settings and change your WiFi password.

Customer: Alright, I have changed the password.

Customer Service: Great. Please restart your modem and reconnect your devices using the new password.

Customer: I've restarted it. The internet is much faster now.

Customer Service: That's good to hear. Is there anything else I can assist you with today?

Customer: No, that's all. Thank you for your help.

Customer Service: You're welcome. Have a great day!

B. Giving Instructiuon to Customer

Customer Service: Good morning. Thank you for contacting our service. How can I help you today?

Customer: Good morning. I want to install an internet connection at home, but I'm not sure which one is good.

Customer Service: I'd be happy to help. May I know how many people will use the internet at your home?

Customer: There are four people in my family.

Customer Service: Thank you. For four users, I recommend a fiber optic internet connection because it is fast and stable.

Customer: Is fiber optic suitable for online work and streaming?

Customer Service: Yes, it is very suitable. Fiber optic provides high speed and a stable connection for work, video calls, and streaming.

Customer: What speed do you suggest?

Customer Service: I suggest at least 50–100 Mbps for smooth usage at home.

Customer: Do I need a special router?

Customer Service: Yes, I recommend using a dual-band router to get better coverage and performance.

Customer: Where should I place the router?

Customer Service: Please place the router in the center of your house, away from thick walls and electronic devices.

Customer: Alright, that sounds good. Thank you for the advice.

Customer Service: You're welcome. If you need installation assistance, please feel free to contact us.

NAMA   : FINA ALFIYATUN FAUZAH

KELAS   : XII TEKNIK KOMPUTER DAN JARINGAN

NISN   : 0081253567

A FINAL ENGLISH TASK

VIRTUAL LAN (VLAN) DESIGN TO MANAGE INTER-DIVISION

NETWOKS USING CISCO PACKET TRACER

Fina Alfiyatun Fauzah

XII Teknik Komputer & Jaringan

SMK ALHIKMAH TANON

TAHUN PELAJARAN 2025/2026

FOREWORD

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January 30th 2026

writer,

Fina Alfiyatun Fauzah

VALIDATION

VIRTUAL LAN (VLAN) DESIGN TO MANAGE INTER-DIVISION NETWORKS USING CISCO PACKET TRACER

A FINAL ENGLISH TASK

Fina Alfiyatun Fauzah

Guru Mapel   **Guru Kejuruan**

Rika Novia Astuti, S.Pd.   **Irwan Muji Handoko**

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CHAPTER I

A. Virtual LAN (VLAN) Design to manage Inter-Division Networks using Cisco Packet Tracer

Virtual Local Area Network (VLAN) is a logical grouping of devices within a network, regardless of their physical location. VLANs are used to divide a large network into smaller, more manageable segments. This improves network performance, enhances security, and simplifies network management.

1. Introduction to VLAN

Virtual Local Area Network (VLAN) is a logical grouping of devices within a network that allows network segmentation without considering physical location. VLANs are used to improve network performance, security, and management by separating devices into different broadcast domains.

2. Purpose of VLAN in Inter-Division Networks

In an organization with multiple divisions (such as HR, Finance, IT, and Marketing), VLANs help isolate network traffic between divisions. This prevents unnecessary broadcast traffic and enhances data security between departments.

3. VLAN Design Concept

    a. VLAN design involves assigning each division to a specific VLAN ID. For example:

    b. VLAN 10: Human Resources

    c. VLAN 20: Finance

    d. VLAN 30: IT

    e. VLAN 40: Marketing

Each VLAN acts as a separate network even though all devices are connected to the same switch infrastructure.

4.   Inter-VLAN Communication

By default, devices in different VLANs cannot communicate with each other. To enable communication between divisions, Inter-VLAN Routing is required. This can be implemented using:

* A router-on-a-stick configuration, or

* A Layer 3 switch

5.   Implementation Using Cisco Packet Tracer

Cisco Packet Tracer is a network simulation tool used to design and test VLAN configurations. In Packet Tracer, VLAN implementation includes:

a. Creating VLANs on the switch

b. Assigning switch ports to specific VLANs

c. Configuring trunk ports between switches or between switch and router

d. Setting up Inter-VLAN routing

6.   Advantages of VLAN Design

The advantages of using VLANs in inter-division networks include:

7.   Improved network performance

a.   Enhanced security between departments

b.   Easier network management

c. Reduced broadcast traffic

7. Conclusion

VLAN design is an effective solution for managing inter-division networks in an organization. By implementing VLANs and Inter-VLAN routing using Cisco Packet Tracer, network administrators can create a secure, efficient, and well-structured network

B. Explain About Hardware and Software

In Cisco Packet Tracer, hardware (port-based) VLAN design is the most practical and widely used method for managing inter-division networks. Software VLANs offer greater flexibility but are more complex and mostly conceptual in Packet Tracer simulations. Combining VLANs with inter-VLAN routing ensures secure yet efficient communication between departments.

Feature	Hardware VLAN	Software VLAN
VLAN Assignment	Physical port	MAC/IP/Protocol
Flexibility	Low	High
Security	High	Medium
Packet Tracer Support	Yes	Limited
Best For	Small networks	Large enterprises

C. English Vocabulary Booklet

1. Router = Perangkat manajemen jaringan

Function: The function of a router is to connect different networks and manage data traffic.

2. Modem = Perangkat Penghubung internet

Function: The function of a modem is to connect a computer network to the internet.

3. Switch = Perangkat penghubung komputer

Function: The function of a switch is to connect multiple devices in one network.

4. Hub = Pembagi Jaringan

 Function: The function of a hub is to send data to all connected devices.

5. Server = Komputer penyedia layanan

Function: The function of a server is to provide data and services to clients.

6. Client = Pengguna Komputer

Function: The function of a client is to request data from a server.

7. Network Cable = Kabel jaringan

Function: The function of a network cable is to transmit data between devices.

8 Access Point = titik akses WI-FI

Function: The function of an access point is to provide wireless internet access.

9. IP Address = Alamat perangkat jaringan

Function: The function of an IP address is to identify devices on a network.

10. Firewall = Keamanan jaringan

Function: The function of a firewall is to protect the network from unauthorized access.

11. LAN (Local Area Network) = Jaringan lokal

Function: The function of LAN is to connect computers in a small area

12. WAN (Wide Area Network) = Jaringan luas

Function: The function of WAN is to connect networks over long distances.

CHAPTER II

A. Aplication Letter and Curriculum Vite (CV)

January, 30th   2026

To:

The Head of Tanon Sub-District Office

Tanon

Dear Sir/Madam,

Respectfully,

In accordance with the Practical Work Program (Praktek Kerja Lapangan / PKL), which is a compulsory part of the academic curriculum, I hereby submit an application to conduct my practical work at the Tanon Sub-District Office.

My name is Fina Alfiyatun Fauzah, and I am a student at SMK Alhikmah Tanon, majoring in Computer and Network Engineering. I hope to gain hands-on work experience, expand my knowledge, and develop skills related to public administration and government service.

I plan to undertake my internship from (August 1, 2025) to (November 1, 2025). For your consideration, I have attached a letter of recommendation from my school along with other supporting documents.

I would be very grateful if you would give me the opportunity to do my internship at the Tanon District Office. Thank you for your time and attention. I look forward to hearing from you soon. Yours faithfully,

Name   : Fina Alfiyatun Fauzah

Date of birth   : 12 Juni 2008

School me   : SMK Alhikmah Tanon

For you consideration, I enclose the following documents:

1. Latter of recommendation from school

2. Copy of student ID card

3. Copy of academic report (if required)

Sincerely,

Fina Alfiyatun Fauzah

Curriculum vitae

Personal Data

Nama Lengkap : Fina Alfiyatun Fauzah

Tempat, Tanggal Lahir : Sragen, 12 Juni 2008

Jenis Kelamin : Perempuan

Alamat : Margorejo, Pantirejo, Sukodono, Sragen

No. HP : 0812 2677 2498

Email : itssmeepinaa@gmail.com

B. Job Interview Simulation

District Office Head: Good morning. Please introduce yourself.
PKL Applicant: Good morning, Sir/Madam. My name is Fina Alfiyatun Fauzah. I am a student of a vocational high school majoring in Computer and Network Engineering (TKJ).

District Office Head: Which school are you from?
PKL Applicant: I am from SMK Alhikmah Tanon.

District Office Head: What is your purpose in applying for an internship (PKL) at this district office?
PKL Applicant: I want to gain work experience, especially in the field of government administration.

District Office Head: What do you know about the district office?
PKL Applicant: The district office serves the community in administrative matters such as correspondence, population data, and other public services.

District Office Head: What skills do you have to support your internship activities?
PKL Applicant: I can operate a computer, use Microsoft Word and Excel, and I am accustomed to typing letters.

District Office Head: Can you work with discipline and follow the rules?

PKL Applicant: Yes, I am ready to follow all applicable rules.

District Office Head: What will you do if you are given a task you have never done before?

PKL Applicant: I will try to learn and ask my supervisor so that I can do it well.

District Office Head: Are you able to work in a team?

PKL Applicant: Yes, I enjoy working in a team and helping my coworkers.

District Office Head: How long will you carry out the internship?

PKL Applicant: The internship will be carried out for three months according to school regulations.

District Office Head: Are you ready to maintain good behavior and politeness during the internship?

PKL Applicant: Yes, I am ready to be polite, responsible, and to maintain the good name of my school.

District Office Head: All right, thank you. We will consider your application.

PKL Applicant: Thank you very much for the opportunity, Sir/Madam.

CHAPTER III

A. Receiving a Customer

Customer: Good morning, my internet connection has been very slow since last night.

Agent: Good morning. I'm sorry to hear that. I'll be happy to help you.

Customer: It usually works fine, but now it's hard to browse or stream.

Agent: I understand. Could you please check if the modem lights are on normally?

Customer: Yes, the power light is on, but the internet light keeps blinking.

Agent: Thank you. Please try restarting your modem by turning it off for 30 seconds, then turning it back on.

Customer: Okay, I've restarted it. The connection is a bit better, but still slow.

Agent: I see. According to our system, there is a minor network issue in your area, and our team is working on it.

Customer: Alright. By the way, I forgot my account password. Can you help me reset it?

Agent: Of course. Is your registered email address still active?

Customer: Yes, it is.

Agent: Great. I've sent a password reset link to your email. Please follow the instructions provided.

Customer: I've received the email and successfully reset my password.

Agent: You're welcome. Please contact us again if you need further assistance. Have a nice day.

B. Giving Instruction to Customer

Customer: Good morning. Excuse me, are you working here?

Intern: Good morning. Yes, I am an intern here. How can I help you?

Customer: I would like to ask about making a family card.

Intern: Sure. Do you already have the required documents?

Customer: I have my ID card and marriage certificate. Is that enough?

Intern: Yes, that is enough. Please fill out this form first.

Customer: Okay. Where should I submit the form after I finish?

Intern: You can submit it at the administration counter over there.

Customer: How long does the process usually take?

Intern: It usually takes about three to five working days.

Customer: Alright. Thank you for your help.

Intern: You're welcome. Have a nice day.

NAMA   : INTAN APRILIANA

KELAS   : XII TEKNIK KOMPUTER DAN JARINGAN

NISN   : 0088811854

A FINAL ENGLISH TAKS

**COMRATIVE ANALYSIS OF WIRED AND WIRELESS
CONNECTIONS IN THE OFFICE AND COMPUTER ENGINEERING
LAB NETWORK AT SMK ALHIKMAH TANON**

Intan Apriliana

XII Teknik Komputer dan Jaringan

SMK ALHIKMAH TANON

TAHUN PELAJARAN 2025/2026

FOREWORD

This final project is written to fulfill the requirements of graduation at Vocational High School SMK Alhikmah Tanon. This project was completed as part of the English subject to improve the students' skills in using English in daily and professional situations.

The writer would like to express sincere gratitude to the English teacher for the guidance and support during the preparation of this final project. Appreciation is also given to parents and friends for their motivation and encouragement.

The writer realizes that this final project still has limitations. Therefore, constructive suggestions are highly appreciated. Hopefully, this project can be useful for readers.

January, 30th 2026
Writer,

Intan Apriliana

VALIDATION

COMRATIVE ANALYSIS OF WIRED AND WIRELESS CONNECTIONS

IN THE OFFICE AND COMPUTER ENGINEERING

LAB NETWORK AT SMK ALHIKMAH TANON

A Final English Taks

Intan Apriliana

Guru Mapel   **Guru Kejuruan**

Rika Novia Astuti, S.Pd   **Irwan Muji Handoko**

TABLE OF CONTENTS

CHAPTER 1

A. Comparative Analysis of Wired and Wireless Connections in the Office and Computer Engineering Lab Network at SMK Alhikmah Tanon

1. wired network is a computer network that uses physical cables to connect devices such as computers, switches, and routers. This type of network is known for its high speed and stable connection.

2. A computer network plays an important role in supporting administrative activities in the office and practical learning in the Computer Engineering (TKJ) laboratory at SMK Alhikmah Tanon. A stable and efficient network ensures smooth communication, data access, and the use of digital learning resources. The two main types of network connections used in this environment are wired (LAN) and wireless (WLAN) connections. Each type has different characteristics that affect performance, security, cost, and suitability.

   a. Cable Network Type

      1. Ethernet Uses LAN cables (UTP/STP) and is the most commonly used.

      2. Fiber Optic Uses fiber cables with very high data transmission speed.

      3. Coaxial Cable An older type of cable, now rarely used.

   b. Wireless Network Type

      1. Wi-Fi (Wireless Fidelity) Commonly used in offices and schools.

      2. Bluetooth Used for short-range device connections.

      3. Mobile Network (4G/5G) Uses cellular networks for internet access.

   c. Weaknesses of Wired Networks

      1. Complex installation and higher cost

      2. Less flexible due to cable usage

      3. Difficult to relocate when room layout changes

   d. Weaknesses of Wireless Networks

      1. Less stable connection compared to wired networks

      2. Susceptible to interference

      3. More vulnerable to security threats if not properly configured

B. Explin about hardwere and software

Hardware is the physical part of a computer system that can be seen and touched. Hardware is used to input, process, store, and output data.

a. Computer

b. Keyboard

c. Mouse

d. Monitor

e. Router

f. Network Cable

Software is a set of programs or instructions that tell the hardware what to do. Software cannot be touched physically.

1. Windows

2. Linux

3. Microsoft Word

4. Google Chrome

5. Network configuration software

Vocabulary Related to Computer Network Components

No	Vocabulary	Arti	Function (Fungsi)
1.	Computer	Komputer	Function is to process data.Fungsinya untuk memproses data.
2.	Router	Router	Function is to connect networks.Fungsinya menghubungkan jaringan.
3.	Switch	Switch	Function is to connect devices in a LAN. Fungsinya menghubungkan perangkat dalam LAN.
4.	LAN Cable	Kabel LAN	Function is to transmit data. Fungsinya mengirim data.
5.	Server	Server	Function is to provide services and data. Fungsinya menyediakan layanan dan data.

6.	Wi-Fi	Wi-Fi	Provides wireless internet access. (Menyediakan akses internet nirkabel)
7.	Client	Klien	Requests data from server. (Meminta data dari server)
8.	IP Address	Alamat IP	Identifies a device on a network. (Mengidentifikasi perangkat dalam jaringan)
9.	Modem	Modem	Connects computer to the internet. (Menghubungkan komputer ke internet)
10.	File	Dokumen	Function of file is to save data. (Fungsi file adalah menyimpan data)

A. Aplication latter and curriculum vite (cv)

1. Application letter for practical work (pkl)

<div align="right">January,30th 2026</div>

To:

the Head of the Tangen District Office

Jl. Ganefo No 10 Tangen, Sragen Regency

Dear Sir/Madam,

I am writing to apply for an internship (Work Practice/PKL) at the District Office. I am a student at SMK Alhikmah Tanon, majoring in Computer and Network Engineering. This internship program is a mandatory requirement of my school. I hope to gain practical experience, particularly in office administration and computer operation. I have basic skills in Microsoft Word, Microsoft Excel, and computer networking. I am disciplined, responsible, and willing to learn.

I hope my application will be considered. Thank you very much for your time and attention.

Name	: Intan Apriliana
Place, Date of Birth	: Sragen, 09 April 2008
Address	: Srawung, srawung, Gesi, Sragen
Education	: SMK Alhikmah Tanon
Email	: IntanApriliana2008@gmail.com

2. **Curriculum Vitae**

   Personal data :

Name	: Intan Apriliana
Place and date of birth	: Sragen, April 09th 2008
School	: SMK Alhikmah Tanon
Majoring	: Teknik Komputer dan Jaringan

Citizenship   : Indonesia
Religion   : Islam
Marrital status   : Single
Address   : Jl. Srawung,Srawung,Gesi, Sragen
Phone Number   : 08**********
E-mail   : IntanApriliana2008@gmail.com

Formal Education :

2014 - 2015   : Srawung Kindergarten 1
2015 - 2020   : Srawung 1 State Elementary School
2020 - 2023   : Sjarbini islamic junior high school
2023 - 2026   : Alhikmah tanon vocational school

B. Job interview simulation

Manager   : Good morning. Please introduce yourself.

Applicant : Good morning. My name is Intan Apriliana. I am a student of SMK Alhikmah Tanon, majoring in Computer and Network Engineering.

Manager   : Why do you apply for an internship at this office?

Applicant : I want to gain practical experience in office administration and public service.

Manager   : Is this internship required by your school?

Applicant : Yes, this internship is a compulsory program from my school.

Manager   : What skills do you have?

Applicant : I have basic skills in computer operation, Microsoft Word, and Microsoft Excel.

Manager   : Do you have any experience related to office work?

Applicant : I have experience practicing in my school computer laboratory and helping with document filing.

Manager   : What are your strengths?

Applicant : I am disciplined, responsible, and willing to learn.

Manager   : What are your weaknesses?

Applicant : Sometimes I feel nervous, but I try to improve myself.

Manager   : Can you work in a team?

Applicant : Yes, I can work in a team and also independently.

Manager   : Are you ready to follow office rules and working hours?

Applicant : Yes, I am ready to follow all rules and working hours.

Manager   : Do you have any questions for us?

Applicant : Yes, I would like to ask about my duties and the internship schedule.

CHAPTER III

simulation to customer

A. Receiving a customer

Officer : Good morning. Welcome. How can I help you today?.

Customer : Good morning. I have a problem with the internet connection. It is very slow.

Officer : I'm sorry to hear that. Are you using a wired or wireless connection?

Customer : I am using a wireless connection.

Officer : Thank you for the information. I will check the network and the bandwidth.

Customer : Alright. I also forgot my account password and cannot log in.

Officer : No problem. I will help you reset your password. Please tell me your username.

Customer : My username is user_lab02.

Officer : Your password has been successfully reset. Please log in using the new password and change it immediately.

Customer : Thank you very much. The internet is faster now and I can log in successfully.

B. Giving instruction to customer

Officer : Good morning. I am the network officer. May I check your home internet?

Customer : Good morning. Yes, please. The internet is not very stable.

Officer : I suggest installing the router in the middle of the house.

Customer : Why is the middle of the house better?

Officer : Because it helps the signal reach all rooms evenly.

Customer : My house has many walls. Is that a problem?

Officer : Yes, thick walls can block the Wi-Fi signal.

Customer : What can I do to improve the signal?

Officer : You can add a Wi-Fi extender or use better quality cables.

Customer : Thank you, Officer. Your advice is very helpful.

NAMA   : VERLYANA PUTRI PUSPA CINDRA

KELAS   : XII TEKNIK KOMPUTER DAN JARINGAN

NISN   : 0061399524

A FINAL ENGLISH TASK

BASIC WIRELESS LOCAL AREA NETWORK (WLAN) SIMUILATION FOR HOME USERS USING CISCO PACKET TRACER

Verlyana Putri Puspa Cindra

XII computer network Engineering

SMK ALHIKMAH TANON

TAHUN PELAJARAN 2025/2026

FOREWORD

This work was prepared as part of an academic requirement and aims to provide insight and understanding of the discussed topic. The completion of this work would not have been possible without the support and assistance of many people.

The author would like to express sincere gratitude to all those who have contributed their guidance, suggestions, and encouragement throughout the process. Special appreciation is given to the supervisor/lecturer for valuable advice and constructive feedback.

Despite the efforts made, the author realizes that this work is not free from limitations and imperfections. Therefore, any constructive criticism and suggestions are highly appreciated for future improvement.

Finally, it is hoped that this work will be useful and provide benefits for readers and future studies.

January 30th 2026
Writer,

Verlyana Putri Puspa. C.

VALIDATION

BASIC WIRELESS LOCAL AREA NETWORK (WLAN) SIMUILATION

FOR

HOME USERS USING CISCO PACKET TRACER

A FINAL ENGLISH

TASK

Verlyana Putri Puspa. C.

Guru Mapel   **Guru Kejuruan**

Rika Novia Astuti. S,Pd   **Irwan Muji Handoko**

TABLE OF CONTENTS

CHAPTER 1

A. Explain About Basic Wireless Local Area Network (Wlan) Simuilation For Home Users Using Cisco Packet Tracer

1. Introduction to WLAN

A Wireless Local Area Network (WLAN) is a local network that allows devices to connect and communicate wirelessly using radio waves instead of physical cables.

A Wireless Local Area Network (WLAN) is a type of local area network that allows devices to connect and communicate with each other wirelessly using radio waves instead of physical cables. WLAN is commonly used in homes, offices, schools, and public areas to provide network and internet access to devices such as laptops, smartphones, tablets, and computers within a limited geographical area.

For home users, WLAN is commonly used for:

a. Internet access

b. File sharing

c. Online communication and streaming

2. Cisco Packet Tracer

Cisco Packet Tracer is a network simulation tool developed by Cisco. It allows users to:

a. Design network topologies

b. Configure network devices

c. Simulate wired and wireless connections

d. Practice networking concepts without real hardware

B. Review about hardware and software

a. Hardware review

Hardware refers to the physical parts of a computer that you can see and touch.

Examples

a. CPU (Processor)

b. Keyboard and Mouse

c. Monitor

d. Hard Disk / SSD

       e. Printer

       f. Motherboard

       g. RAM

b. Software review

Software refers to programs or applications that control and manage hardware operations. Software cannot be physically touched, but it is essential for operating computers and network systems.

Examples of network software include:

Operating System (Windows, Linux): Controls and manages computer operations.

Cisco Packet Tracer: Used to design and simulate computer networks.

Winbox: An application used to configure MikroTik routers.

Web Browser: Used to access the internet.

Network Configuration Tools: Used to configure IP addresses, routing, and network security.

Software functions as an instruction system that enables hardware to operate

according to user commands and network requirements.

C. English Vocabulary Booklet

This section contains vocabulary related to computer network components. Each vocabulary is written with its meaning and function in English.

1. File (Dokumen)

Meaning: A document or data stored on a computer.

Function: A file is used to save data and information.

2. Router (Pengarah Jaringan)

Meaning: A networking device that connects different networks.

Function: A router directs data packets between networks.

3. Switch (Pengalih Jaringan)

Meaning: A device used to connect multiple devices in a local network.

Function: A switch forwards data to the correct destination device.

4. Access Point (Pemancar WIFI)

Meaning: A device that provides wireless network access.

Function: An access point allows devices to connect to a network using WiFi.

5. Server (Komputer Layanan)

   Meaning: A computer that provides services to other computers.

   Function: A server manages data and resources for clients.

6. Client (Perangkat Pengguna)

   Meaning: A computer or device that requests services from a server.

   Function: A client accesses data and services from the server.

7. IP Address (Alamat Jaringan)

   Meaning: A unique numerical address assigned to a device on a network.

   Function: An IP address identifies devices in a network.

8. LAN (Jaringan Lokal)

   Meaning: A network that covers a small geographical area.

   Function: LAN connects devices within a limited area such as an office or school.

9. Bandwidth (Kecepatan data)

   Meaning: The maximum data transfer rate of a network.

   Function: Bandwidth determines how fast data can be transmitted.

10. Firewall (Penyaring Jaringan)

    Meaning: A security system that monitors and controls network traffic.

    Function: A firewall protects a network from unauthorized access.

CHAPTER II

A. Aplication Letter and Curiculum Vite (CV)

1. Aplication Letter

Tanon, January 15th 2026

To
The Principal of
SMK Al-Hikmah Tanon
Jl. Raya Tanon-Sukodono Km.5, Bedono, Pengkol Tanon, Sragen, Jawa Tengah.

Dear Manager,

I would like to apply for Praktik Kerja Industri (Prakerin) as one of the requirements of the learning program at SMK Al-Hikmah Tanon, especially for students of Computer and Network Engineering (TKJ).

I am a student of SMK Al-Hikmah Tanon majoring in Computer and Network Engineering. Through this Prakerin program, I hope to gain real work experience, improve my skills, and apply the knowledge I have learned at school, especially in computer networking and information technology.

I am ready to follow all rules and regulations during the Prakerin program and willing to work responsibly, discipline, and honestly. I hope to be given the opportunity to participate in this program.

Thank you for your attention. I look forward to your positive response.

Sincerely,

Verlyana Putri Puspa Cindra

2. Curiculum Vite

Personal Information

Name	: Verlyana Putri Puspa Cindra
Place, Date of Birth	: Sragen, July 11th 2006
Gender	: Female
Address	: Nambangan, Srawung, Gesi, Sragen
Phone Number	: 0821-3475-8198
Email	: verlyanaputri77@gmail.com

Education Background

SMK Al-Hikmah Tanon

Major : Computer and Network Engineering (TKJ)

Skills

a. Basic computer networking (LAN & WLAN)

b. Router and network configuration

c. IP Addressing and subnetting

d. Cisco Packet Tracer

e. MikroTik basic configuration

f. Microsoft Word, Excel, and PowerPoint

g. Basic English communication

Experience

a. Network simulation practice using Cisco Packet Tracer

b. Computer and network troubleshooting practice at school

Personal Qualities

a. Responsible

b. Honest

c. Hardworking

d. Able to work in a team

e. Willing to learn

Declaration

I hereby declare that the information stated above is true and correct.

B. Job Interview Simulation (Prakerin)

1. Interview Simulation

a. Interviewer (Teacher / Supervisor): Good morning. Please introduce yourself.
Applicant (Student): Good morning. My name is Verlyana Putri Puspa Cindra. I am a student of SMK Al-Hikmah Tanon, majoring in Computer and Network Engineering.

b. Interviewer: Why do you want to join the Prakerin program?
Applicant: I want to join the Prakerin program to gain real work experience and improve my skills in computer networking.

c. Interviewer: What skills do you have related to your major?
Applicant: I have basic knowledge of LAN, WLAN, IP addressing, and network simulation using Cisco Packet Tracer.

d. Interviewer: Do you have experience in configuring networks?
Applicant: Yes, I have practiced basic router configuration and network troubleshooting at school.

e. Interviewer: Can you work in a team?
Applicant: Yes, I can work well in a team and also independently.

f. Interviewer: How do you handle problems or difficulties at work?
Applicant: I try to stay calm, analyze the problem, and ask for guidance if needed.

g. Interviewer: Are you willing to follow rules and discipline?
Applicant: Yes, I am willing to follow all rules and be disciplined.

h. Interviewer: What do you expect from this Prakerin program?
Applicant: I expect to gain new knowledge, experience, and improve my skills.

i. Interviewer: When can you start the Prakerin?
Applicant: I am ready to start according to the school schedule.

j. Interviewer: Thank you for your answers.
Applicant: Thank you very much for the opportunity

CHAPTER III

Simulation To Customer

A. Receiving A Customer

a. **Customer:** Good morning. My internet connection is very slow.

   Staff: Good morning. I'm sorry to hear that. I will help you check the problem.

b. **Customer:** I cannot open websites properly.

   Staff: I understand. May I know when the problem started?

c. **Customer:** It started last night.

   Staff: Thank you for the information. Please try to restart your modem and router.

d. **Customer:** I have restarted it, but it is still slow.

   Staff: Alright. I will check the network settings and signal strength.

e. **Customer:** Okay.

   Staff: The signal looks weak. Please move closer to the router.

f. **Customer:** The internet is better now, but I forgot my Wi-Fi password.

   Staff: No problem. I will help you reset your Wi-Fi password.

g. **Customer:** Thank you.

   Staff: You're welcome. Please connect again using the new password.

h. **Customer:** It works well now.

   Staff: I'm glad to hear that. If you have any other problems, please contact us.

B. Giving Instruction to Customer

a. **Customer:** I want to install a network at my home.

   Staff: Sure. How many devices will be connected?

b. **Customer:** About five devices.

   Staff: I recommend using a wireless router with good coverage.

c. **Customer:** What internet speed is suitable?

   Staff: At least 20 Mbps is enough for daily use.

d. **Customer:** Where should I place the router?

   Staff: Please place the router in the middle of the house.

e. **Customer:** Should I use wired or wireless connection?

   Staff: Wireless is practical, but wired connection is more stable.

f. **Customer:** What about security?

   Staff: Use a strong Wi-Fi password and WPA2 security.

g. **Customer:** Thank you for the advice.

   Staff: You're welcome. Please contact us if you need help with installation.

NAMA : ZALIKA AFARIN PRIHUTAMI

KELAS : XII TEKNIK KOMPUTER DAN JARINGAN

NISN : 0077142147

A FINAL ENGLISH TASK

VIRTUAL LAN (VLAN) DESIGN TO MANAGE INTER-DIVISION NETWORK USING CISCO PACKET TRACER

Zalika Afarin Prihutami

XII Teknik Komputer dan Jaringan

SMK ALHIKMAH TANON

TAHUN PELAJARAN 2025/2026

FOREWORD

Praise be to Allah SWT who has given us the ease so that we can complete this paper on time. Without His help, we certainly would not be able to complete this paper well. May blessings and peace be poured out abundantly upon our beloved Prophet Muhammad SAW, whose intercession we await in the hereafter.

The author expresses gratitude to Allah SWT for the abundance of His blessings of health, both in the form of physical and mental health, so that the author is able to complete the writing of the paper as a final assignment for the Information Systems Engineering course entitled "Visual LAN (VLAN) Design to manage inter-Division Network using Cisco Packet Tracer".

January, 30th 2026

Zalika Afarin Prihutami

VALIDATION

VIRTUAL LAN(VLAN) DESIGN TO MANAGE INTER-DIVISION

NETWORK USING CISCO PACKET TRACER

A FINAL ENGLISH TASK

Zalika Afarin Prihutami

GURU MAPEL   **GURU KEJURUAN**

Rika Novia Astuti, S.Pd.   **Irwan Muji Handoko**

TABLE OF CONTENTS

Chapter I

A. VIRTUAL LAN (VLAN) DESIGN TO MANAGE INTER-DIVISION NETWORK USING CISCO PACKET TRACER

1. Defision VLAN

    A VLAN is a method for creating logically isolated network segments from the same physical network, grouping devices by function or department (e.g., HR, IT) regardless of their physical location. This allows administrators to create "virtual networks" to manage data traffic more efficiently, similar to having multiple physical switches but with less cost and complexity

2. Function VLAN

    Enhanced Security: Isolates traffic between departments so sensitive data is not easily accessible by other departments; only devices within the same VLAN can communicate. Flexibility and Scalability: Allows adding or moving devices to different network segments without changing the physical cabling configuration; simply configure the VLANs on the switch.

B. Explain About Hardware and Software

1. Defision hardware

    Hardware is the physical components of a computer that can be seen and touched, and functions to receive input, process data, produce output, and store data so that the computer can work, such as the CPU, RAM, monitor, keyboard, and mouse. Its main function is to carry out instructions from software to carry out computing tasks, making it the physical backbone of a computer system.

2. Defision software

    Software is a collection of instructions, programs, and digital data that directs a computer to perform specific tasks; its function is vital for operating hardware, bridging user commands to the machine, managing computer resources

3. Managemen VLAN

VLAN Management with Cisco is the process of planning, configuring, administering, and monitoring VLANs (Virtual Local Area Networks) on Cisco network devices (such as switches and routers) to ensure that the network is well-structured, secure, and efficient.

C. English vocabulary booklet

1. Router : Arti: Perangkat yang menghubungkan dua atau lebih jaringan yang berbeda (biasanya jaringan lokal ke internet). Fungsi: Mengarahkan lalu lintas data antar jaringan dan menentukan jalur terbaik untuk mengirim data.

   Meaning: A device that connects two or more different networks (usually a local network to the internet). Function: Directs *data* traffic between networks and determines the best path for sending data.

2. Switch : Arti: Perangkat penghubung terpusat dalam jaringan area lokal (LAN). Fungsi: Menghubungkan berbagai perangkat (komputer, printer, server) dalam satu jaringan dan hanya mengirimkan data ke perangkat tujuan tertentu.

   Meaning: A centralized connecting device in a local area network (LAN). Function: Connects various devices (computers, printers, servers) in one network and sends data only to specific destination devices.

3. Access Point : Arti: Perangkat yang memungkinkan perangkat nirkabel untuk terhubung ke jaringan berkabel menggunakan Wi-Fi. Fungsi: Memancarkan sinyal nirkabel sehingga perangkat seperti laptop atau ponsel pintar dapat terhubung ke jaringan lokal tanpa kabel.

   Meaning: A device that allows wireless devices to connect to a wired network using Wi-Fi. Function: Transmits wireless signals so that devices such as laptops or smartphones can connect to a local network without cables.

4. Network Interface Card (NIC) : Arti: Kartu sirkuit atau chip yang terpasang di komputer. Fungsi: Memungkinkan komputer untuk berkomunikasi melalui jaringan kabel (Ethernet) atau nirkabel (Wi-Fi).

   Meaning: A circuit card or chip installed in a computer. Function: Allows computers to communicate via wired (Ethernet) or wireless (Wi-Fi) networks.

5. Modem (Modulator-Demodulator) : Arti: Perangkat koneksi jaringan yang paling sederhana dan paling "pasif".Fungsi: Menerima data dari satu port dan mendistribusikannya ke semua port lain yang terhubung tanpa memfilter tujuan tertentu.

   Meaning: The simplest and most "passive" network connection device. Function: Receives data from one *port* and distributes it to all other connected ports without filtering specific destinations.

6. Server : Arti: Komputer berperforma tinggi yang menyediakan layanan atau sumber daya. Fungsi: Mengelola sumber daya jaringan, menyimpan data terpusat, dan melayani permintaan dari komputer klien.

   Meaning: A high-powered computer that provides services or resources. Function: Manage network resources, store centralized data, and serve requests from client *computers* .

7. Ethernet Cable : Arti: Media transmisi fisik berupa kabel (biasanya tipe Cat5e atau Cat6). Fungsi: Menghubungkan perangkat jaringan secara fisik untuk mengirimkan data melalui koneksi kabel.

   Meaning: Physical transmission media in the form of cables (usually Cat5e oCat6 type). Function: Physically connects network devices to transmit data via a cable connection.

8. Firewall : Arti: Sistem keamanan jaringan (dapat berupa perangkat keras atau perangkat lunak). Fungsi: Menyaring lalu lintas data masuk dan keluar

Chapter II

A. Aplication Letter and Curriculum Vite (CV)

1. Aplication Letter

January, 30 th,2026

Dear Hiring Manager,

I am writing to apply for the position of [manager] at [disekolah], as advertised. I recently graduated from [Your School/University Name] with a major in [Your Major].

During my studies, I completed an internship (industrial work practice/PKL) at [SMK ALHIKMAH TANON] for [duration, e.g. three months]. During this internship, I gained practical experience in [mention relevant tasks or skills, e.g. administrative work, data entry, customer service, technical support, etc.]. This experience helped me develop my professional skills, responsibility, and ability to work both independently and in a team.

I am a motivated, detail-oriented, and fast learner. I am confident that my educational background and internship experience would allow me to contribute positively to your company.

Please find my CV and supporting documents attached for your consideration. I would welcome the opportunity to discuss my application further. Thank you for your time and consideration.

2. Curriculum vite

Name   : Zalika Afarin Prihutami

Place/Date   : Sragen, 08.Desember .2007

Gender   : Girl

School   : SMK AL HIKMAH TANON

Religion   : Islam

B. Job Interview Simulation

Interviewer (HR): Good morning, please sit down. Could you tell me a little about yourself?

Applicant (Me): Good morning, ma'am. Thank you. My name is Andi, a graduate of Administrative Management from University X. I have a six-month internship in an administrative position, where I learned to manage documents and operate MS Office.

HR: Okay, what do you know about our company?

Applicant (Me): This company is a leader in technology distribution, known for its innovative work culture. I am very enthusiastic about the company's continued growth.

HR: Why are you interested in applying for this administrative staff position?

Applicant (Me): I have high accuracy and strong organizational skills. I feel this position is a good fit for my background and passion for managing office operations efficiently.

HR: What are your greatest strengths?

Applicant (Me): My main strengths are time management and accuracy. I am able to multitask without compromising the accuracy of my work.

HR: So, what are your weaknesses?

Applicant (Me): Sometimes I focus too much on details, which can take a long time. However, I overcome this by using checklists and the Pomodoro method to maintain focus and time efficiency.

HR: How do you work under pressure?

Applicant (Me): I prioritize tasks based on deadlines. If work piles up, I stay calm, focus on one task until it's completed, and take short breaks to refresh my mind.

HR: Why should we hire you for this company?

Applicant (Me): I have a combination of experience, technical skills, and high dedication.

I'm confident I can contribute positively to expediting administrative processes within this team.

HR: Are you willing to be assigned anywhere or work overtime?

Applicant (Me): Yes, I am willing and flexible to meet the company's operational needs, especially if it helps achieve team targets.

HR: What are your salary expectations?

Applicant (Me): Based on my research and experience, I'm proposing a range of IDR X - IDR Y, but I'm open to discussing this within company policy.

HR: Okay, thank you, Andi. Do you have any questions?

Applicant (Me): Thank you very much, ma'am. I would like to ask, how is the performance appraisal process for administrative staff in this company?

Chapter III

A. Receiving a Customer

1. CS: "Good morning, welcome to fast internet customer service. My name is andi. How can I help you?"

2. Client: "Morning, sir. I'm zalika. My home internet is very slow today, I can barely even use it for video calls."

3. CS: "Sorry for the inconvenience, zalika. Could you please provide me with your customer number or registered number?"

4. Client: "Yes, it's 12345678. Please check it right away, sir, as my work is being delayed."

5. CS: "Okay, Mr. Budi. I'll check it out. ... Currently, maintenance is being detected in your area, but it should be back to normal. Have you tried restarting your modem?"

6. Client: "I've restarted it, but it's still slow. One more thing, sir, I forgot my password to log in to the Mandiri app, so I can't check my quota."

7. CS: "Okay, let's solve these two problems. First, I'll help you file a network repair report for your slow internet connection, sir."

8. Client: "Okay, please prioritize this. Then, what about my app password?"

9. CS: "For the password, I'll send a password reset link to your registered email. Is the email still active?"

10. Client: "My email is still active. I'll check... Oh yes, the link has been entered."

11. CS: "Please click the link and create a new password. Has the change been successful, Mr. Budi?"

12. Client: "Hold on... Okay, it's entered. You've successfully changed your password now."

13. CS: "Thank God. Regarding the slow connection, the technical team will follow up within the next three hours. Is there anything else I can help you with?"

14. Client: "That's all, sir. Thank you for your help."

15. CS: "You're welcome, Mr. Budi. Once again, I apologize for the inconvenience. Good morning."

B. Giving Instruction to Customer

1. B: Hello, I need to upgrade my home internet, but I'm not sure which plan is best.

2. A: Welcome, sir. I suggest you go with our Fiber Optic 100 Mbps package for a fast and stable connection.

3. B: 100 Mbps? Is that enough for streaming and working from home?

4. A: Yes, definitely. It handles multiple devices at once without lagging.

5. B: What about the modem? My old one is very slow.

6. A: I highly recommend using our dual-band Wi-Fi 6 router to maximize speed.

7. B: How can I make sure the internet reaches all rooms in my house?

8. A: You should place the router in a central, open location, not inside a cabinet.

9. B: What if my house is too big for one router?

10. A: I suggest setting up a Mesh Wi-Fi system to eliminate dead zones.

11. B: That sounds expensive. Any other tip?

12. A: For fixed devices like smart TVs or laptops, you should use an Ethernet cable for a more stable, faster connection.

13. B: That makes sense. What about security?

14. A: You must change the default router password to a complex one, and keep the firmware updated.

15. B: Okay. One last thing, I have too many devices connected at once.

16. A: In that case, you should check for background downloads on your devices that might consume bandwidth.

17. B: Alright, that seems like a solid plan. Thank you for the advice

NAMA   : AHMAD MARZUKI

KELAS   : XII TEKNIK KOMPUTER DAN JARINGAN

NISN   : 0085424049

A FINAL ENGLISH TASK

Comparative Analysis of Wired and Wireless Connections in the Office and Lab Network of SMK Alhikmah Tanon TKJ

AHMAD MARZUKI

XII TEKNIK KOMPUTER DAN JARINGAN

SMK ALHIKMAH TANON

TAHUN PELAJARAN 2025/2026

FOREWORD

Praise be to Allah SWT, who has bestowed His grace and guidance, so that the author was able to complete the report entitled "Comparative Analysis of Wired and Wireless Connections in the Office and Lab Network of SMK Alhikmah Tanon TKJ" properly and on time.

This report was prepared as part of the learning activities in the Computer and Network Engineering (TKJ) competency program, with the aim of enhancing knowledge and understanding of the comparison between the use of wired (cable) and wireless (wireless) networks in office and school laboratory environments. Through this report, it is expected that readers can understand the advantages, disadvantages, and appropriate applications of each type of network according to their needs.

The author realizes that in the preparation of this report there are still limitations and shortcomings, both in terms of writing and discussion of the material. Therefore, constructive criticism and suggestions are highly expected for the improvement of this report in the future.

Finally, the author would like to express sincere gratitude to all parties who have contributed to the completion of this report, especially the supervising teacher and colleagues who have provided support and input. Hopefully, this report will be beneficial for the author and readers in general.

Tanon, January 30th 2026
Author's name,

Ahmad marzuki.

VALIDATION

Comparative Analysis of Wired and Wireless Connections in the Office and Lab

Network of SMK Alhikmah Tanon TKJ

A FINAL ENGLISH TASK

Ahmad marzuki

Guru Mapel   Guru Kejuruan

Rika Novia Astuti, S,Pd   Irwan Muji Handoko.

TABLE OF CONTENTS

CHAPTER I

A. Comparative Analysis of Wired and Wireless Connections in the Office and Lab Network of SMK Alhikmah Tanon TKJ

The title obtained for this report is "Comparative Analysis of Wired and Wireless Connections in the Office and Lab Network of SMK Alhikmah Tanon TKJ." This title focuses on comparing wired and wireless network usage in the office and laboratory, especially in the Computer and Network Engineering (TKJ) department.

B. Explain About Hardware and Software

1. Network Hardware

Hardware refers to physical devices used to build a computer network. The hardware used at SMK Alhikmah Tanon includes:

1. Router: Connects the local network to the internet.
2. Switch: Connects multiple computers in a wired network.
3. Access Point: Provides wireless (Wi-Fi) network access.
4. LAN Cable (UTP): Data transmission medium for wired networks.
5. Computers and Laptops: End-user devices.

2. Network Software

Network software is used to manage and control network systems, including:

1. Operating Systems (Windows/Linux)
2. Network Drivers
3. Network Monitoring Software
4. Web Browsers (Chrome, Edge, etc.)

C. English Vocabulary Booklet

1. Jaringan (Network): a group of connected computers that can communicate and share data.

2. Koneksi Kabel (Wired Connection): a type of network connection that uses cables to transfer data.

3. Koneksi Nirkabel (Wireless Connection): a network connection that works without using any cables.

4. Perute (Router): a device that forwards data packets between different networks.

5. Sakelar Jaringan (Switch): a device that connects several devices within a Local Area Network (LAN).

6. Titik Akses (Access Point): a device that provides Wi-Fi access for wireless devices.

7. Lebar Pita (Bandwidth): the maximum amount of data that can be transmitted over a network in a certain time.

8. Keterlambatan (Latency): the delay in data transmission.

9. Peladen (Server): a computer that provides services or resources to other computers.

10. Klien (Client): a computer that accesses services from a server.

11. Alamat IP (IP Address): a unique number that identifies a device on a network.

12. Jaringan Area Lokal (Local Area Network / LAN): a network that covers a small area such as a school or office.

13. Jaringan Area Luas (Wide Area Network / WAN): a network that covers a large geographical area.

14. Dinding Api (Firewall): a security system that protects a network from unauthorized access.

15. Modem (Modulator Demodulator): a device that connects a local network to the internet.

CHAPTER II

A. Aplication Letter and Curriculum Vite (CV)
   1. **Aplication Letter**

<div align="center">Application for Network Technician Internship</div>

Gesi, January 30th 2026

To:

HR Manager

Tech Network Solution

Tanon

Dear Sir/Madam,

I would like to apply for an internship position as a Network Technician in your company. My name is Yoga Pratama, I am 16 years old, and I am a student of SMK Alhikmah Tanon majoring in Computer and Network Engineering (Teknik Komputer dan Jaringan / TKJ).

I have basic knowledge of computer networks such as LAN, router configuration, switch, access point, and network troubleshooting. I am eager to learn, disciplined, and able to work both individually and in a team.

I hope I can be given the opportunity to do an internship in your company to improve my skills and gain real work experience.

Thank you for your attention. I look forward to your reply.

Sincerely,

Ahmad marzuki

2. Curriculum Vitae (CV)

CURRICULUM VITAE

Name : Ahmad marzuki

Age : 17 years old

Address : Balak,Blangu,Gesi

School : SMK Alhikmah Tanon

Major : Computer and Network Engineering (TKJ)

Class : XII TKJ

Skills:

Basic Computer Networking

Installing LAN Cables

Router and Access Point Configuration

Vollyball

Languages:

Indonesian (Active)

English (Basic)

Career Objective:

To become a professional Network Technician and gain experience in the field of computer networking.

B. Job Interview Simulation

Manager: Good morning. Please introduce yourself.

Applicant: Good morning, Sir. My name is Ahmad marzuki. I am 17 years old and I live in Gesi.

Manager: What school are you from?

Applicant: I am from SMK Alhikmah Tanon, majoring in Computer and Network Engineering.

Manager: Why do you want to apply for this job?

Applicant: Because I am interested in computer networks and I want to gain real work experience.

Manager: What skills do you have?

Applicant: I can install LAN cables, configure routers, and fix basic network problems.

Manager: Can you work in a team?

Applicant: Yes, Sir. I can work well in a team and also independently.

Manager: Are you familiar with wireless networks?

Applicant: Yes, I understand access points, Wi-Fi configuration, and troubleshooting.

Manager: What will you do if the internet is slow?

Applicant: I will check the cable, router, bandwidth usage, and restart the device if needed.

Manager: Are you ready to learn new things?

Applicant: Yes, I am very eager to learn and improve my skills.

Manager: When can you start?

Applicant: I can start anytime, Sir.

Manager: Thank you. We will contact you later.

Applicant: Thank you very much, Sir.

CHAPTER III

A. Receiving a Customer

Customer: Good morning, my internet is very slow today.

Technician (You): Good morning, Sir. I will help you. Since when has it been slow?

Customer: Since last night.

Technician: Have you tried restarting the modem and router?

Customer: Not yet.

Technician: Please try to restart them first.

Customer: Okay, I have restarted them, but it is still slow.

Technician: I will check your network status and bandwidth usage.

Customer: Thank you.

Technician: The connection is normal, but your Wi-Fi password may need to be reset for security.

Customer: Yes, I forgot my password.

Technician: I will help you reset it now.

Customer: What should I do?

Technician: Please open the router settings and create a new password.

Customer: Okay, I have changed it.

Technician: Please reconnect your device using the new password.

Customer: Done. The internet is faster now.

Technician: Great. Is there anything else I can help you with?

Customer: No, thank you very much.

Technician: You're welcome. Have a nice day.

B. Giving Instruction to Customer

Customer: I want to install a good internet network at home. What do you suggest?

Technician: For home use, I suggest using a fiber optic internet connection.

Customer: Why fiber optic?

Technician: Because it is fast, stable, and suitable for online learning and streaming.

Customer: What device should I use?

Technician: You need a modem and a wireless router.

Customer: How about the Wi-Fi coverage?

Technician: Use a dual-band router and place it in the middle of the house.

Customer: What if the signal is weak in some rooms?

Technician: You can add a Wi-Fi extender or access point.

Customer: Is wired connection also needed?

Technician: Yes, for PCs and gaming, a LAN cable is more stable.

Customer: What speed is good for a family?

Technician: At least 30–50 Mbps for daily activities.

Customer: How about security?

Technician: Use a strong Wi-Fi password and enable firewall on the router.

Customer: Thank you for the advice.

Technician: You're welcome. I hope your home network will work well.

NAMA   : HANIF DI FALAH

KELAS   : XII TEKNIK KOMPUTER DAN JARINGAN

NISN   : 3073468765

A FINAL ENGLISH TASK

Local Area Network (LAN) Design Simulation for two laboratories with dynamic routing using Cisco Packet Tracer.

HANIF DI FALAH

XII TEKNIK KOMPUTER DAN JARINGAN

SMK ALHIKMAH TANON

TAHUN PELAJARAN 2025/2026

FOREWORD

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January 30th 2026

Penulis,

Hanif di falah

VALIDATION

Local Area Network (LAN) Design Simulation for two laboratories with dynamic routing using Cisco Packet Tracer.

A FINAL ENGLISH TASK

Hanif di falah

Guru Mapel   **Guru Kejuruan**

Rika Novia Astuti, S,Pd   **Irwan Muji Handoko.**

TABLE OF CONTENTS

Chapter I

A. Local Area Network (LAN) Design Simulation for two laboratories with dynamic routing using Cisco Packet Tracer

A simulation of designing a Local Area Network (LAN) for two laboratories that are interconnected using dynamic routing, created and tested using Cisco Packet Tracer software.

Explanation of each part:

1. **Local Area Network (LAN)**

   A LAN is a computer network that covers a limited area such as a building, school, office, or laboratory. It allows devices like computers, printers, and servers to communicate and share resources.

2. **Design**

   Design refers to planning the network structure, including:

   a) Network topology

   b) Placement of network devices (PCs, switches, routers)

   c) IP addressing

   d) Network connectivity

3. **Simulation**

   Simulation means testing the network design in a virtual environment before implementing it in real hardware. This helps reduce errors and ensures the network works properly.

4. **For Two Laboratories**

   This indicates that there are two separate LANs, for example:

   a) Laboratory 1

   b) Laboratory 2

   These two networks are connected so they can communicate with each other.

5. **Dynamic Routing**

Dynamic routing allows routers to automatically select the best path for data transmission using routing protocols such as:

a) RIP

b) OSPF

c) EIGRP

It adapts automatically to network changes.

6. **Using Cisco Packet Tracer**

Cisco Packet Tracer is a network simulation tool developed by Cisco that is used to:

a) Design and configure network topologies

b) Simulate network traffic

c) Test connectivity and routing

B. Explain About Hardware and Software

Hardware and software are two main components that support the operation of a computer network system.

1. **Hardware**

Hardware refers to all physical devices that can be seen and touched. In a Local Area Network (LAN), hardware components play an important role in connecting and transmitting data between computers. Examples of network hardware include:

- Router: A device that connects different networks and determines the best path for data transmission.
- Switch: A device used to connect multiple computers within the same network and forward data to the correct destination.
- Access Point: A device that provides wireless network access for users.
- Network Interface Card (NIC): A component that allows a computer to connect to a network.
- Cables (UTP/Fiber Optic): Media used to transmit data signals between devices.
- PC and Server: End devices used to send, receive, and process data.

These hardware components work together to form a functional network infrastructure.

2. **Software**

Software refers to programs and operating systems that control how hardware works and how data is managed in a network. In a network simulation using Cisco P acket Tracer, software components include:

- Operating System (OS): Such as Windows or Linux, which manages computer resources and network communication.
- Network Operating System (NOS): Software that manages network services and security.
- Cisco IOS (Internetwork Operating System): The operating system used in Cisco routers and switches to configure and control network devices.
- Cisco Packet Tracer: A simulation software used to design, configure, and test network topologies virtually.
- Routing Protocol Software (RIP, OSPF): Programs that enable routers to exchange routing information dynamically.

In conclusion, hardware provides the physical structure of the network, while software controls, manages, and optimizes the communication process between n e t w o r k devices. Both are essential to build and operate a LAN with dynamic routing successfully.

C. English Vocabulary Booklet

1. **Router**
   Meaning: A device that forwards data packets between computer networks.
   Function: Connects different networks and directs data to the correct destination.

2. **Switch**
   Meaning: A device that connects multiple devices within a local network.
   Function: Sends data only to the device that needs it, making the network faster.

3. **Hub**
   Meaning: A basic networking device that connects several computers.
   Function: Broadcasts data to all connected devices.

4. **Modem**
   Meaning: A device that converts digital data to analog signals and vice versa.
   Function: Connects a computer or network to the Internet.

5. **Network Interface Card (NIC)**
   Meaning: A hardware component that allows a computer to connect to a network.
   Function: Sends and receives data over the network.

6. **Access Point**
   Meaning: A device that allows wireless devices to connect to a wired network.
   Function: Provides Wi-Fi connection.

7. **Server**
   Meaning: A computer that provides services to other computers on a network.
   Function: Stores data and manages network resources.

8. **Client**
   Meaning: A computer that requests services from a server.
   Function: Uses network services such as files, printers, or internet.

9. **Firewall**
   Meaning: A security system that controls incoming and outgoing network traffic.
   Function: Protects the network from unauthorized access.

10. **Ethernet Cable**
    Meaning: A cable used to connect devices in a local area network.
    Function: Transmits data between computers and network devices.

1. Router Artinya: Sebuah perangkat yang meneruskan paket data antar jaringan komputer. Fungsi: Menghubungkan jaringan yang berbeda dan mengarahkan data ke tujuan yang benar.

2. Beralih Artinya: Perangkat yang menghubungkan beberapa perangkat dalam jaringan lokal. Fungsi: Mengirim data hanya ke perangkat yang membutuhkannya, membuat jaringan lebih cepat.

3. Pusat Artinya: Perangkat jaringan dasar yang menghubungkan beberapa komputer. Fungsi: Menyiarkan data ke semua perangkat yang terhubung.

4. Modem Artinya: Sebuah perangkat yang mengubah data digital menjadi sinyal analog dan sebaliknya. Fungsi: Menghubungkan komputer atau jaringan ke Internet.

5. Kartu Antarmuka Jaringan (NIC) Arti: Komponen perangkat keras yang memungkinkan komputer terhubung ke jaringan. Fungsi: Mengirim dan menerima data melalui jaringan.

6. Titik Akses Artinya: Perangkat yang memungkinkan perangkat nirkabel terhubung ke jaringan kabel. Fungsi: Menyediakan koneksi Wi-Fi.

7. Pelayan Arti: Sebuah komputer yang menyediakan layanan ke komputer lain di jaringan. Fungsi: Menyimpan data dan mengelola sumber daya jaringan.

8. Klien Arti: Sebuah komputer yang meminta layanan dari server. Fungsi: Menggunakan layanan jaringan seperti file, printer, atau internet.

9. Firewall Artinya: Sistem keamanan yang mengontrol lalu lintas jaringan yang masuk dan keluar. Fungsi: Melindungi jaringan dari akses yang tidak sah.

10.Kabel Ethernet Arti: Kabel yang digunakan untuk menghubungkan perangkat di jaringan area lokal. Fungsi: Mengirimkan data antara komputer dan perangkat jaringan

Chapter II

A. Aplication Letter and Curriculum Vite (CV)

Tanon, January 30th 2026

To:
HR Department
 CV.y&h
Newung,Sambirejo,RT3,Sukodono,Sragen

Subject: Application for Network Technician / IT Support Position

Dear Sir/Madam,

My name is Hanif di falah, a recent graduate of SMK Al-Hikmah Tanon, majoring in Computer and Network Engineering (TKJ). I am writing to express my interest in joining your company as a Network Technician / IT Support. During my studies, I have gained practical skills in:

- Installation and configuration of computer networks (LAN/WAN)
- Operating and troubleshooting network devices such as Routers, Switches, and Access Points
- Computer maintenance and troubleshooting
- Network simulation using Cisco Packet Tracer

I am a responsible, disciplined, and fast-learning individual with strong teamwork skills. I am confident that my skills and enthusiasm will allow me to contribute positively to your company. For your consideration, I have attached the following documents:

1. Copy of SMK Al-Hikmah Tanon Diploma
2. Copy of SKHUN
3. Copy of Identity Card (KTP)
4. Recent Photograph
5. Supporting Certificates (if available)

Thank you very much for your time and consideration. I look forward to the opportunity to discuss my application further.

Hanif di falah
Personal Data

Name : Hanif di falah

Place, Date of Birth :
sragen, April 21, 2007

Gender : MALE

Address :
sambirejo,newung,RT3,
newung,
sukodono,sragen

No. Phone :
082137154802

Email:
hanifdifalah400@gmail.com

Education

2014 – 2019 : MIN 3
SRAGEN

2020 – 2022 : AN-NUR
JUNIOR HIGH
SCHOOL

2023 - 2026 : SMK AL-
Hikmah Tanon

PKL Experience

– install wifi

– setting the router

B. Job Interview Simulation

Manager: Good morning. Please have a seat.

Applicant: Good morning, thank you for the opportunity.

Manager: Can you tell me a little about yourself?

Applicant: Certainly. My name is Hanif Di Falah. I recently graduated with a degree in Information Technology, and I am very interested in working in this company.

Manager: Why do you want to apply for a job in our company?

Applicant: I admire your company's innovation and strong reputation. I believe my skills and passion can contribute to your team.

Manager: What position are you applying for?

Applicant: I am applying for the position of Network Administrator.

Manager: What skills do you have that are suitable for this position?

Applicant: I have skills in LAN configuration, routing, network troubleshooting, and I am familiar with Cisco Packet Tracer.

Manager: Do you have any work experience?

Applicant: I do not have full-time experience yet, but I have completed internships and several networking projects during my studies.

Manager: How do you handle problems at work?

Applicant: I try to stay calm, analyze the problem carefully, and find the best solution. If needed, I am not afraid to ask for help or advice.

Manager: Are you able to work in a team?

Applicant: Yes, I enjoy teamwork. I believe good communication is the key to success in a team.

Manager: What are your strengths and weaknesses?

Applicant: My strength is my willingness to learn new things quickly. My weakness is that I sometimes focus too much on details, but I am learning to manage my time better.

Manager: When can you start working if you are accepted?

Applicant: I can start working within two weeks.

Manager: Do you have any questions for me?

Applicant: Yes, could you tell me more about the training program for new employees?

Manager: Of course. We provide training during the first three months.

Applicant: That sounds great. Thank you very much.

Manager: Thank you for coming. We will contact you soon.

Applicant: Thank you for your time. Have a nice day.

Chapter III

Simulation to Customer

A. Receiving a Customer

    Customer Service: Good morning. Welcome to customer service. How can I help you today?

    Customer: Good morning. My internet connection is very slow.

    Customer Service: I'm sorry to hear that. Since when has the internet been slow?

    Customer: Since this morning.

    Customer Service: Does the problem happen on all devices?

    Customer: Yes, both my laptop and smartphone are slow.

    Customer Service: Thank you for the information. Have you tried restarting your modem?

    Customer: Yes, I have, but it's still slow.

    Customer Service: Alright, I will check the connection from our system. Is there anything else I can help you with?

    Customer: Yes, I forgot my account password and I can't log in.

    Customer Service: No problem. I can help you reset your password. Are you still using your registered email address?

    Customer: Yes, I am.

    Customer Service: I have sent a password reset link to your email. Please check it.

    Customer: Okay, I've received the email.

    Customer Service: Please click the link and create a new password.

    Customer: Done. I can log in now.

    Customer Service: Great. Regarding the slow internet, there is a minor network issue in your area, and our team is working on it.

    Customer: I see. When will it be fixed?

Customer Service: It should be back to normal within 1–2 hours.

Customer: Alright, thank you for your help.

Customer Service: You're welcome. Please contact us again if you need further assistance. Have a nice day.

Customer: You too. Thank you.

B. Giving Instruction to Customer

Customer Service: Good afternoon. How can I help you today?

Customer: Good afternoon. I want to install a good internet network for my house.

Customer Service: Of course. May I know how big your house is?

Customer: It has two floors with five rooms.

Customer Service: Thank you. I recommend using a fiber optic internet connection for better speed and stability.

Customer: That sounds good. What speed do you suggest?

Customer Service: For a house with several users, I suggest at least 50 to 100 Mbps.

Customer: Will that be enough for online meetings and streaming?

Customer Service: Yes, it will be more than enough for video calls, streaming, and gaming.

Customer: What about the Wi-Fi coverage?

Customer Service: I recommend using a dual-band router or a mesh Wi-Fi system to cover all rooms evenly.

Customer: Is a mesh Wi-Fi system better?

Customer Service: Yes, especially for a two-story house. It provides stronger and more stable signals.

Customer: Do I need any additional devices?

Customer Service: You may need additional access points or mesh nodes for better coverage.

Customer: Alright. Is the installation difficult?

Customer Service: No, our technician will handle the installation and configuration for you.

Customer: That's great. Thank you for the advice.

Customer Service: You're welcome. Please let us know when you're ready to install the service.

Customer: I will. Have a nice day.

NAMA   : DIPRA PUTRA NUR PRATAMA

KELAS   : XII TEKNIK KOMPUTER DAN JARINGAN

NISN   : 3084315955

A FINAL ENGLIS TASK

VIRTUAL LAN (VLAN) DESIGN TO MANAGE INTER-DIVISION

NETWORKS USING CISCO PACKET TRACER

DIPRA PUTRA NUR PRATAMA

XII TEKNIK KOMPUTER & JARINGAN

SMK ALHIKMAH TANON

TAHUN PELAJARAN 2025/2026

FOREWORD

Praise be to God Almighty for His grace and blessings, which have enabled the completion of this report entitled *"Virtual LAN (VLAN) Design to Manage Inter-Division Networks Using Cisco Packet Tracer."* This report is prepared as a form of documentation and learning related to computer network design, particularly the implementation of Virtual Local Area Networks (VLANs) to manage inter-division communication in an effective and structured manner.

The VLAN design aims to improve network efficiency, simplify network management, and enhance data security by segmenting the network based on organizational divisions. Cisco Packet Tracer is used as a simulation tool to support the understanding of VLAN concepts and their implementation before being applied to real network environments.

The author realizes that this report still has limitations and shortcomings. Therefore, constructive criticism and suggestions are highly appreciated for future improvements. It is hoped that this report will provide benefits and additional insights for readers, especially in the field of computer networking.

Tanon,   january 30th 2026

Writer,

Dipra Putra Nur P.

VALIDATON

Virtual LAN (VLAN) Design to manage Inter-Division Networks using Cisco Packet Tracer

A FINAL ENGLIS TASK

Dipra Putra Nur Pratama

Guru Mapel   Wali Kejuruan

Rika Novia Astuti S.Pd   **Irwan Muji Handoko**

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CHAPTER I

A. Virtual LAN (VLAN) Design to manage Inter-Division Networks using Cisco Packet Tracer

1. **Local Area Network (LAN) Design Simulation for Two Laboratories with Dynamic Routing Using Cisco Packet Tracer**

   This simulation demonstrates a LAN design connecting two laboratories using dynamic routing to ensure efficient and automatic data transmission. Cisco Packet Tracer is used to configure and test the network.

2. **Virtual LAN (VLAN) Design to Manage Inter-Division Networks Using Cisco Packet Tracer**

   This design focuses on using VLAN technology to separate inter-division networks logically. The implementation helps improve network performance, security, and management efficiency.

3. **Basic Wireless Local Area Network (WLAN) Simulation for Home User Using Cisco Packet Tracer**

   This simulation presents a basic WLAN setup for home users, including wireless configuration and security settings, using Cisco Packet Tracer.

4. **Comparative Analysis of Wired and Wireless Connections in the Office and Computer Engineering Lab Networks at SMK AL-HIKMAH**

   This analysis compares wired and wireless networks based on performance, stability, and security to determine their suitability in office and laboratory environments.

B. Explain About Hardware and Software

Hardware is the physical components of a computer system that can be seen and touched. Hardware is used to support input, processing, and output activities in computer and network systems.

Examples of hardware include:

1. Computer / PC

2. Router

3. Switch

4. Network Cable (UTP)

5. Access Point

6. Printer

Without hardware, computers and networks cannot operate because hardware is the main component of a computer system.

Software is a collection of programs or instructions that tell the hardware how to work. Software cannot be physically touched, but it is very important for operating computer and network systems.

Examples of software include:

1. Operating System (Windows, Linux)

2. Cisco Packet Tracer

3. Network Configuration Software

4. Antivirus

Hardware and software are closely related and cannot be separated. Hardware needs software to function, and software needs hardware to run.

C. English Vocabulary Booklet

(Writing vocabulary related to computer network components along with their meanings and functions in English)

1. Router = Network device

   Function: A router is used to connect different networks and forward data packets between them.

2. Switch = Network device

   Function: A switch is used to connect multiple devices within a Local Area Network (LAN).

3. Access Point = Wireless network device

   Function: An access point is used to provide wireless network access to devices.

4. LAN (Local Area Network) = Local network

   Function: A LAN is used to connect computers within a limited area such as an office or laboratory.

5. WLAN (Wireless Local Area Network) = Wireless local network

   Function: A WLAN allows devices to connect to a network without using cables.

6. IP Address = Network address

   Function: An IP address is used to identify devices on a network.

7. Network Cable (UTP) = Network cable

   Function: A network cable is used to transmit data between network devices.

8. Server = Server computer

   Function: A server is used to provide services and resources to other computers on the network.

9. Client = User computer

   Function: A client is used to access services provided by the server.

10. Firewall = Network security system

    Function: A firewall is used to protect the network from unauthorized access.

CHAPTER II

A. Aplication Letter and Curriculum Vite (CV)

   1. Aplication Letter

Sragen, January 30th 2026

Dear Hiring Manager,

    I am writing to apply for the position of Technician at Brifanet. I learned about this job opportunity through a friend and believe that my qualifications and skills are well suited for this position.

    I am a graduate of SMK Al Hikmah Tanon, majoring in Computer and Network Engineering (TKJ), and I have experience from an internship (Practical Work / PKL) at an internet service provider company. I am highly motivated, responsible, and able to work effectively both independently and as part of a team. I am confident that my skills and abilities would allow me to contribute positively to your company.

    Enclosed with this letter are my curriculum vitae and other supporting documents for your review. I would appreciate the opportunity to further discuss how my background and skills align with your company's needs.

Thank you for your time and consideration. I look forward to hearing from you.

Sincerely,

Dipra Putra Nur Pratama

2. **Curriculum vite (CV)**

   Personal Information

   Full Name : Dipra Putra Nur Pratama
   Date of Birth : Sragen, 16 Mei 2008
   Gender : Male
   Address : Kadisono rt28, Trombol, Mondokan, Sragen
   Phone Number : 085860518072
   Email : dipraputra@gmail.com
   Education : Smk Al Hikmah Tanon
   Skills : Fishing

B. Job Interview Simulation

   Manager: Good morning. Please introduce yourself.
   Dipra: Good morning. My name is Dipra Putra Nur Pratama. I am a graduate of SMK Al Hikmah Tanon, and I am interested in applying for a position at Brifanet as a network technician.

   Manager: What do you know about Brifanet?
   Dipra: Brifanet is an internet service provider that focuses on stable connections and customer service, especially in local areas. I am interested in Brifanet because it plays an important role in supporting the community's internet needs.

   Manager: Why do you want to work for an internet service provider?
   Dipra: Because I am interested in computer networking and want to develop my skills in installation, configuration, and network maintenance.

   Manager: What skills do you have that are relevant to this position?
   Dipra: I have basic knowledge of computer networking, cable installation, and network simulation using Cisco Packet Tracer. I am also accustomed to field work and eager to learn new things.

Manager: Are you ready to work in the field and handle customer complaints?

Dipra: Yes, I am. I understand that customer service is very important, and I will always try to be professional and solution-oriented.

Manager: What would you do if you faced an urgent network problem?

Dipra: I would perform an initial check, identify the source of the problem, and immediately carry out repairs or report it to my supervisor if necessary.

Manager: Are you able to work in a team?

Dipra: Yes, I am. I am used to working with others and believe that teamwork is essential in technical work.

Manager: What are your strengths compared to other applicants?

Dipra: I have strong motivation to learn, discipline, and a strong sense of responsibility for the tasks assigned to me.

Manager: When can you start working if you are accepted?

Dipra: I am ready to start as soon as possible according to the company's policy.

Manager: Thank you, Dipra. We will contact you again.

Dipra: Thank you for the opportunity. I hope to be able to join Brifanet.

CHAPTER III

Simulation to Coustmer

A. Receiving a Customer

(Handling slow internet complaint & helping reset password)

Customer: Good morning, I want to report a problem with my internet.

Staff: Good morning. I'm sorry to hear that. What seems to be the problem?

Customer: My internet connection has been very slow since last night.

Staff: I understand. May I know when the problem started exactly?

Customer: It started around 10 PM yesterday.

Staff: Thank you. Have you tried restarting your modem or router?

Customer: Yes, I already restarted it, but it's still slow.

Staff: Alright, I will check your connection from our system.

Customer: Okay, please help me.

Staff: I see that your connection is stable now, but there was an overload earlier.

Customer: I see. Also, I forgot my Wi-Fi password.

Staff: No problem. I can help you reset the password.

Customer: That would be great.

Staff: Please log in to your router settings, and I will guide you step by step.

Customer: Alright, I'm ready.

Staff: Perfect. Let me know once the new password is saved.

B. Giving Instruction to Customer

(Giving advice about a good home network installation)

Customer: Hello, I want to install a network at home.

Staff: Hello! I'd be happy to help. How big is your house?

Customer: It has two floors and five rooms.

Staff: For that size, I recommend using a wireless router with strong coverage.

Customer: What type of router should I use?

Staff: You should use a dual-band or mesh Wi-Fi system.

Customer: Why is that better?

Staff: It provides better signal stability and wider coverage.

Customer: Should I use cables as well?

Staff: Yes, using LAN cables for fixed devices like PCs is highly recommended.

Customer: Where should I place the router?

Staff: Place it in the center of the house, away from thick walls.

Customer: Do I need extra devices?

Staff: If the signal is weak upstairs, you can add a Wi-Fi extender.

Customer: That sounds good. Thank you for the advice.

Staff: You're welcome. Let me know if you need help with the installation.

NAMA   : GILANG ROMADHON

KELAS   : XII TEKNIK KOMPUTER DAN JARINGAN

NISN   : 3089131161

A. FINAL ENGLIS TASK
Virtual LAN (VLAN) Design to manage Inter-Division Network
using Cisco Packet Tracer

GILANG ROMADHON

XII KEJURUAN KOMPUTER & JARINGAN

SMK ALHIKMAH TANON

TAHUN PELAJARAN 2025/2026

FOREWORD

Praise and gratitude are given to Almighty God for His blessings, mercy, and health, so that the writer is able to complete this final assignment properly and on time. This final assignment is prepared as one of the requirements before taking the **Competency Skill Test (UKK)** at Vocational High School.

The preparation of this final assignment aims to train responsibility and discipline, as well as to improve the writer's abilities, especially in learning English. In addition, this assignment is expected to broaden the writer's knowledge and provide useful information for the readers related to the discussed topic.

During the process of completing this final assignment, the writer received a lot of guidance, support, and assistance from many parties. Therefore, the writer would like to express sincere gratitude to the English teacher for the guidance, advice, and motivation given. The writer also thanks parents, family, and friends who always provided prayers, encouragement, and support.

The writer realizes that this final assignment still has limitations and shortcomings. Therefore, constructive criticism and suggestions are highly appreciated for future improvement.

Finally, the writer hopes that this final assignment will be useful for the writer in particular and for the readers in general.

Tanon, 30th January 2026
Penulis

GILANG ROMADHON

VALIDATION

Virtual LAN (VLAN) Design to manage Inter-Division Networks using Cisco Packet Tracer

A FINAL ENGLISH TASK

GILANG ROMADHON

Guru Mapel   Wali Kejuruan

Rika Novia Astuti, S,Pd   Irwan Muji Handoko

CHAPTER I

A. Virtual LAN (VLAN) Design to manage Inter-Division Networks using Cisco Packet Tracer

1. Local Area Network (LAN) Design Simulation For Two Laboratories With Dynamic Routing Using Cisco Packet Tracer.

   Topology: 2 routers, 2 switches, 4 PCs.

   Subnets: Lab1 (192.168.10.0/24), Lab2 (192.168.20.0/24), serial link 10.0.0.0/30.

   Routing protocol: RIP version 2. Result:

   Successful ping between PCs in different labs.

2. Virtual LAN (VLAN) Design to manage Inter-Division Networks Using Cisco Packet Tracer.

   Topology: 1 switch, 1 router (router-on-a-stick), 6 PCs.

   VLANs: VLAN 10 (Administration – 192.168.10.0/24), VLAN 20 (Engineering – 192.168.20.0/24).

   Configuration: Trunk port to router, subinterfaces with dot1Q encapsulation.

   Result: Broadcast traffic isolated per VLAN; inter-VLAN communication successful via router.

3. Basic Wireless Local Area Network (WLAN) Simulation for Home User Using Cisco Packet Tracer

   Topology: 1 wireless router, 3 laptops, 1 printer.

   Configuration: SSID "HomeWiFi", WPA2-PSK security, automatic DHCP pool.

   Result: All wireless devices connect successfully and can communicate with each other.

4. Comparative Analysis of Wired and Wireless Connections in the Office and Computer Engineering Lab Networks at SMK AL-HIKMAH TANON.

Wired connections offer high speed (up to 1 Gbps), excellent stability, and better security, but low mobility. They are best for the Computer Engineering Lab where fast, reliable data transfer is needed for practical work and exams.

Wireless connections provide high mobility and convenience, but lower speed (up to ~300 Mbps), more interference, and require strong encryption for security. They are ideal for the office, teacher rooms, and areas needing flexibility.

B. Explain About Hardware and Software

Hardware refers to the physical components of a computer and network system that can be touched, forming the tangible infrastructure of a network. Examples of hardware in computer networking include:

1. **Router**: A device that connects local networks (LAN) to other networks (such as the internet) and directs data traffic between them.

2. **Switch**: A device that connects multiple devices within a single local network and forwards data only to the intended recipient based on MAC addresses.

3. **Hub**: A simple device that connects multiple devices but broadcasts data to all ports (less efficient than a switch).

4. **Access Point (AP)**: A device that enables wireless devices to connect to a wired network, creating a WLAN.

5. **Cable**: The transmission medium, such as UTP cable (for Ethernet) or fiber optic cable for high-speed connections.

6. **NIC (Network Interface Card)**: The network card installed in a computer to connect it to a network, either wired or wireless.

Software consists of intangible programs or instructions that run on hardware to manage, control, and process data. In the context of networking:

1. **Operating System (OS)**: Such as Windows, Linux, or Cisco IOS on routers/switches, which manages resources and network communication.

2. **Network Protocol**: Rules for data communication, such as TCP/IP, HTTP, and FTP.

3. **Firewall Software**: Protects the network by filtering incoming and outgoing traffic.

4. **DHCP Server Software**: Automatically assigns IP addresses to devices on the network.

5. **Packet Tracer**: Simulation software used to design and test networks virtually.

Hardware provides the physical "body," while software serves as the "brain" or instructions that make the network function effectively

C. English Vocabulary Booklet

Here are at least 10 important English vocabulary terms related to computer networking, including their Indonesian translations and brief functions:

1. **Router** = Perute Function: Directs data packets between different networks and connects a LAN to the internet.

2. **Switch** = Saklar Jaringan Function: Connects devices within a LAN and forwards data only to the intended recipient.

3. **Hub** = Pusat Hubung Function: Connects multiple devices but broadcasts data to all connected ports (less efficient).

4. **Access Point** = Titik Akses Function: Enables wireless devices to connect to a wired network, forming a WLAN.

5. **Cable** = Kabel Function: Physical medium used to transmit data (e.g., Ethernet cable for wired connections).

6. **NIC (Network Interface Card)** = Kartu Antarmuka Jaringan Function: Allows a computer to connect to a network (wired or wireless).

7. **Firewall** = Dinding Api Function: Monitors and controls network traffic to enhance security.

8. **Protocol** = Protokol Function: A set of rules governing data communication (e.g., TCP/IP, HTTP).

9. **IP Address** = Alamat IP Function: A unique identifier assigned to devices on a network for sending and receiving data.

10. **DHCP** = Dynamic Host Configuration Protocol Function: Automatically assigns IP addresses to devices on a network

CHAPTER II

A. Aplication Letter and Curriculum Vite (CV)

  1. Aplication Letter

Sragen, January 30th 2026

To: HRD Manager PT. Solusi Jaringan Nusantara Surakarta

Subject: Application for Junior Network Technician Position

Dear Sir/Madam,

I am applying for the Gilang Romadon position announced on Instagram @solusijaringannusantara on January 18, 2026.

I am a 2025 graduate of SMK Alhikmah Tanon, majoring in Teknik Komputer dan Jaringan (TKJ). I hold an MTCNA certificate and completed a 4-month internship at IndiHome, where I handled WiFi installations, troubleshooting, and basic Mikrotik & Access Point setups.

I am interested in your company because of its focus on WiFi networks and local ISP services. I am ready for shift work, travel for site visits, and I have my own motorcycle with a valid SIM C license.

Thank you for your consideration. I look forward to the opportunity to join your team.

Sincerely,

Gilang Romadhon

2. **Curriculum Vite (CV)**

Gilang Romadhon

Sragen, 12 Juni 2008

Phone: 0812-2678-8923

Email:langgg.tkj07@gmail.com

Education

SD MI Muhammadiyah Graduated 2020

SMPN 2 Tanon Graduated 2023

SMK Al Hikmah Tanon Computer & Network Engineering (2023–present)

Skills

Operating computers

Microsoft Office

Basic computer networking

Teamwork

Experience

PKL at RUNNET

Participated in village community activities gotong royong.

Hobbies

Fishing

Watching tech tutorials

Playing soccer

B. Job Interview Simulation

1. Manager: Good morning, Gilang. Please sit down. Introduce yourself briefly.

   Gilang: Good morning, Sir. I'm Gilang, TKJ graduate 2025 from SMK Negeri 2 Surakarta. I have MTCNA certificate and internship at IndiHome. Thank you.

2. Manager: Why do you want the Junior Network Technician job here?

   Gilang: Your company focuses on WiFi and network projects. I want to improve my Mikrotik and troubleshooting skills.

3. Manager: What was your main task during the IndiHome internship?

   Gilang: I installed WiFi for customers, fixed slow connections, and set up Access Points with basic Mikrotik config.

4. Manager: If a customer says their WiFi is slow, what do you check first?

   Gilang: I ask about connected devices, run a speed test from the modem, check channel interference, then try changing channel or splitting 2.4/5 GHz bands.

5. Manager: Are you okay with shift work or traveling for site jobs?

   Gilang: Yes, Sir. I'm ready for shifts and site work. I have my own motorcycle and SIM C.

6. Manager: What is your biggest strength?

   Gilang: I'm careful with configurations, learn quickly, and stay calm when fixing network problems.

7. Manager: What would you do if you make a mistake and the network goes down?

   Gilang: I tell my supervisor immediately, try to rollback or fix it fast, and note the cause to avoid it next time.

8. Manager: Do you have any questions for us?

   Gilang: Yes, Sir. Is there training for new employees?

9. Manager: Yes, we provide training and support for certifications.

10. Gilang: Thank you, Sir. That sounds great. I hope I.

CHAPTER III

A. Receiving Customer

1. **Gilang**: Good afternoon, Mrs. Ani. This is Gilang from support. What's the problem?

   Mrs. Ani: Afternoon. My internet is very slow. YouTube won't load.

2. **Gilang**: How long has it been slow? What package speed?

   Mrs. Ani: One week now. 100 Mbps package.

3. **Gilang**: Please do a speed test first. Open speedtest.net. What's the result?

   Mrs. Ani: Download only 10 Mbps.

4. **Gilang**: How many devices are connected to WiFi right now?

   Mrs. Ani: 5 phones and 1 laptop.

5. **Gilang**: Maybe too many devices. Turn off WiFi on all devices, then turn on one by one and test again.

   Mrs. Ani: Already tried. Still slow.

6. **Gilang**: Do you remember the WiFi password? If forgotten, we can reset the modem.

   Mrs. Ani: I forgot it.

7. **Gilang**: Press the reset button on the back of the modem for 10 seconds with a toothpick.

   Mrs. Ani: Done. The modem is restarting.

8. **Gilang**: After it restarts, the default WiFi name is "RUNNET". Password is on the modem sticker. Connect to it.

   Mrs. Ani: Already connected.

9. **Gilang**: Open browser, go to 192.168.100.1. Login with admin/admin. Change password in WLAN menu.

   Mrs. Ani: Done. New password "Ani123456".

10. **Gilang**: Connect all devices to the new WiFi and test speed again.

    Mrs. Ani: Now it's fast! Thank you so much

B. Giving Instruction to Customer

1. Gilang: Good morning, Mr. Budi. I'm Gilang. Surveying for home WiFi. How many floors?

   Mr. Budi: Morning. 2 floors.

2. Gilang: How many devices usually connect?

   Mr. Budi: 6 phones, 2 laptops, TV, and CCTV.

3. Gilang: For 2 floors, I recommend mesh WiFi so signal is strong everywhere.

   Mr. Budi: What is mesh?

4. Gilang: Several routers connect together. No signal drop. Example: TP-Link Deco.

   Mr. Budi: Better than normal router?

5. Gilang: Yes, normal router weak on upper floor. Mesh covers whole house.

   Mr. Budi: How many units needed?

6. Gilang: At least 2–3 units. One near modem, one upstairs.

   Mr. Budi: Is 2 enough?

7. Gilang: Yes, if placed well. One in living room, one in upstairs bedroom.

   Mr. Budi: How to make it secure?

8. Gilang: Use strong password (long, mix letters-numbers). Change WiFi name, not default.

Mr. Budi: Okay.

9. Gilang: Don't put modem near microwave or in closed place.

    Mr. Budi: Unders

10. Gilang: Use 5 GHz for fast devices (phones/laptops), 2.4 GHz for far devices (CCTV). I'll set it up later.

    Mr. Budi: Thanks for the advice. I'll go with mesh.

NAMA   : YOGA PRATAMA

KELAS   : XII TEKNIK KOMPUTER DAN JARINGAN

NISN   : 0060711941

A FINAL ENGLISH TASK

Comparative Analysis of Wired and Wireless Connections in the Office and Lab Network of SMK Alhikmah Tanon TKJ

YOGA PRATAMA

XII TEKNIK KOMPUTER DAN JARINGAN

SMK ALHIKMAH TANON

TAHUN PELAJARAN 2025/2026

FOREWORD

Praise be to Allah SWT, who has bestowed His grace and guidance, so that the author was able to complete the report entitled "Comparative Analysis of Wired and Wireless Connections in the Office and Lab Network of SMK Alhikmah Tanon TKJ" properly and on time.

This report was prepared as part of the learning activities in the Computer and Network Engineering (TKJ) competency program, with the aim of enhancing knowledge and understanding of the comparison between the use of wired (cable) and wireless (wireless) networks in office and school laboratory environments. Through this report, it is expected that readers can understand the advantages, disadvantages, and appropriate applications of each type of network according to their needs.

The author realizes that in the preparation of this report there are still limitations and shortcomings, both in terms of writing and discussion of the material. Therefore, constructive criticism and suggestions are highly expected for the improvement of this report in the future.

Finally, the author would like to express sincere gratitude to all parties who have contributed to the completion of this report, especially the supervising teacher and colleagues who have provided support and input. Hopefully, this report will be beneficial for the author and readers in general.

Tanon, January 30th 2026
Author's name,

Yoga Pratama.

VALIDATION

Comparative Analysis of Wired and Wireless Connections in the Office and Lab

Network of SMK Alhikmah Tanon TKJ

A FINAL ENGLISH TASK

Yoga Pratama

Guru Mapel   Guru Kejuruan

Rika Novia Astuti, S,Pd   Irwan Muji Handoko.

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CHAPTER I

A. Comparative Analysis of Wired and Wireless Connections in the Office and Lab Network of SMK Alhikmah Tanon TKJ

The title obtained for this report is "Comparative Analysis of Wired and Wireless Connections in the Office and Lab Network of SMK Alhikmah Tanon TKJ." This title focuses on comparing wired and wireless network usage in the office and laboratory, especially in the Computer and Network Engineering (TKJ) department.

B. Explain About Hardware and Software

1. Network Hardware

   Hardware refers to physical devices used to build a computer network. The hardware used at SMK Alhikmah Tanon includes:

   1. Router: Connects the local network to the internet.
   2. Switch: Connects multiple computers in a wired network.
   3. Access Point: Provides wireless (Wi-Fi) network access.
   4. LAN Cable (UTP): Data transmission medium for wired networks.
   5. Computers and Laptops: End-user devices.

2. Network Software

   Network software is used to manage and control network systems, including:

   1. Operating Systems (Windows/Linux)
   2. Network Drivers
   3. Network Monitoring Software
   4. Web Browsers (Chrome, Edge, etc.)

C. English Vocabulary Booklet

1. Jaringan (Network): a group of connected computers that can communicate and share data.

2. Koneksi Kabel (Wired Connection): a type of network connection that uses cables to transfer data.

3. Koneksi Nirkabel (Wireless Connection): a network connection that works without using any cables.

4. Perute (Router): a device that forwards data packets between different networks.

5. Sakelar Jaringan (Switch): a device that connects several devices within a Local Area Network (LAN).

6. Titik Akses (Access Point): a device that provides Wi-Fi access for wireless devices.

7. Lebar Pita (Bandwidth): the maximum amount of data that can be transmitted over a network in a certain time.

8. Keterlambatan (Latency): the delay in data transmission.

9. Peladen (Server): a computer that provides services or resources to other computers.

10. Klien (Client): a computer that accesses services from a server.

11. Alamat IP (IP Address): a unique number that identifies a device on a network.

12. Jaringan Area Lokal (Local Area Network / LAN): a network that covers a small area such as a school or office.

13. Jaringan Area Luas (Wide Area Network / WAN): a network that covers a large geographical area.

14. Dinding Api (Firewall): a security system that protects a network from unauthorized access.

15. Modem (Modulator Demodulator): a device that connects a local network to the internet.

<div align="center">

CHAPTER II

</div>

A. Aplication Letter and Curriculum Vite (CV)
  1. **Aplication Letter**

<div align="center">

Application for Network Technician Internship

</div>

Grumbul, January 30th 2026

To:

HR Manager

Tech Network Solution

Tanon

Dear Sir/Madam,

I would like to apply for an internship position as a Network Technician in your company. My name is Yoga Pratama, I am 16 years old, and I am a student of SMK Alhikmah Tanon majoring in Computer and Network Engineering (Teknik Komputer dan Jaringan / TKJ).

I have basic knowledge of computer networks such as LAN, router configuration, switch, access point, and network troubleshooting. I am eager to learn, disciplined, and able to work both individually and in a team.

I hope I can be given the opportunity to do an internship in your company to improve my skills and gain real work experience.

Thank you for your attention. I look forward to your reply.

<div style="margin-left: 60%;">

Sincerely,

Yoga Pratama

</div>

2. Curriculum Vitae (CV)

CURRICULUM VITAE

Name : Yoga Pratama

Age : 16 years old

Address : Grumbul, Pengkol,Tanon

School : SMK Alhikmah Tanon

Major : Computer and Network Engineering (TKJ)

Class : XII TKJ

Skills:

Basic Computer Networking

Installing LAN Cables

Router and Access Point Configuration

Vollyball

Football

Languages:

Indonesian (Active)

English (Basic)

Career Objective:

To become a professional Network Technician and gain experience in the field of computer networking.

B. Job Interview Simulation

Manager: Good morning. Please introduce yourself.

Applicant: Good morning, Sir. My name is Yoga Pratama. I am 16 years old and I live in Grumbul.

Manager: What school are you from?

Applicant: I am from SMK Alhikmah Tanon, majoring in Computer and Network Engineering.

Manager: Why do you want to apply for this job?

Applicant: Because I am interested in computer networks and I want to gain real work experience.

Manager: What skills do you have?

Applicant: I can install LAN cables, configure routers, and fix basic network problems.

Manager: Can you work in a team?

Applicant: Yes, Sir. I can work well in a team and also independently.

Manager: Are you familiar with wireless networks?

Applicant: Yes, I understand access points, Wi-Fi configuration, and troubleshooting.

Manager: What will you do if the internet is slow?

Applicant: I will check the cable, router, bandwidth usage, and restart the device if needed.

Manager: Are you ready to learn new things?

Applicant: Yes, I am very eager to learn and improve my skills.

Manager: When can you start?

Applicant: I can start anytime, Sir.

Manager: Thank you. We will contact you later.

Applicant: Thank you very much, Sir.

CHAPTER III

A. Receiving a Customer

Customer: Good morning, my internet is very slow today.

Technician (You): Good morning, Sir. I will help you. Since when has it been slow?

Customer: Since last night.

Technician: Have you tried restarting the modem and router?

Customer: Not yet.

Technician: Please try to restart them first.

Customer: Okay, I have restarted them, but it is still slow.

Technician: I will check your network status and bandwidth usage.

Customer: Thank you.

Technician: The connection is normal, but your Wi-Fi password may need to be reset for security.

Customer: Yes, I forgot my password.

Technician: I will help you reset it now.

Customer: What should I do?

Technician: Please open the router settings and create a new password.

Customer: Okay, I have changed it.

Technician: Please reconnect your device using the new password.

Customer: Done. The internet is faster now.

Technician: Great. Is there anything else I can help you with?

Customer: No, thank you very much.

Technician: You're welcome. Have a nice day.

B. Giving Instruction to Customer

Customer: I want to install a good internet network at home. What do you suggest?

Technician: For home use, I suggest using a fiber optic internet connection.

Customer: Why fiber optic?

Technician: Because it is fast, stable, and suitable for online learning and streaming.

Customer: What device should I use?

Technician: You need a modem and a wireless router.

Customer: How about the Wi-Fi coverage?

Technician: Use a dual-band router and place it in the middle of the house.

Customer: What if the signal is weak in some rooms?

Technician: You can add a Wi-Fi extender or access point.

Customer: Is wired connection also needed?

Technician: Yes, for PCs and gaming, a LAN cable is more stable.

Customer: What speed is good for a family?

Technician: At least 30–50 Mbps for daily activities.

Customer: How about security?

Technician: Use a strong Wi-Fi password and enable firewall on the router.

Customer: Thank you for the advice.

Technician: You're welcome. I hope your home network will work well.

NAMA   : MUHAMMAD ZAKI FADHLURROHMAN

KELAS   : XII TEKNIK KOMPUTER DAN JARINGAN

NISN   : 0081064145

A FINAL ENGLISH TASK

Virtual LAN (VLAN) Design to manage Inter-Division Networks using Cisco Packet Tracer.

Muhammad Zaki Fadhlurrohman

XII Teknik Komputer & Jaringan

SMK ALHIKMAH TANON

TAHUN PELAJARAN 2025/2026

FOREWORD

This final project is written to fulfill the requirements of graduation at Vocational High School (SMK) [School Name]. This project was completed as part of the English subject to improve the students skills in using English in daily and professional situations.

The writer would like to express sincere gratitude to the English teacher for the guidance and support during the preparation of this final project. Appreciation is also given to parents and friends for their motivation and encouragement.

The writer realizes that this final project still has limitations. Therefore, constructive suggestions are highly appreciated. Hopefully, this project can be useful for readers.

Tanon, January 30th 2026

Author's name,

Muhammad Zaki F.

VALIDATION

Virtual LAN (VLAN) Design to manage Inter-Division Networks using Cisco Packet Tracer.

A FINAL ENGLISH TASK

Muhammad Zaki Fadhlurrohman

Guru Mapel   **Guru Kejuruan**

Rika Novia Astuti, S.Pd   **Irwan Muji Handoko**

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CHAPTER I

A. Local Area Network (LAN) Design Simulation For Two Laboratories With Dynamic Routing Using Cisco Packet Tracer.

This project discusses the design and simulation of a Local Area Network (LAN) for two computer laboratories using Cisco Packet Tracer. Each laboratory has several computers that are connected through a switch, and both laboratories are interconnected using routers.

Dynamic routing is applied to allow the routers to automatically exchange routing information, so data can be delivered efficiently between the two laboratories. This design helps ensure reliable communication, easy network management, and scalability if the network needs to be expanded in the future.

Cisco Packet Tracer is used as a simulation tool to design, configure, and test the network before real implementation. Through this simulation, network performance and connectivity between the two laboratories can be analyzed effectively.

B. Explain About Hardware and Software

1. Hardware

Hardware is the physical equipment used to build a computer network.

In a LAN network, hardware is needed to connect computers so they can communicate and share data.

Examples of LAN hardware:

Computer (PC)

Switch

Router

UTP Cable

Network Interface Card (NIC)

2. Software

Software is a program or application that helps hardware work properly.

In networking, software is used to configure, manage, and monitor the network.

Examples of LAN software:

Cisco Packet Tracer

Operating System (Windows, Linux)

Network Configuration Software

C. English Vocabulary Booklet

1. Computer = Komputer

   Function: A device used to process and store data.

2. Switch = Saklar jaringan

   Function: Connects multiple devices in a LAN.

3. Router = Router

   Function: Connects different networks and directs data traffic.

4. LAN (Local Area Network) = Jaringan area lokal

   Function: Connects computers in a small area such as a school or office.

5. UTP Cable = Kabel UTP

   Function: Used to connect network devices.

6. IP Address = Alamat IP

   Function: Identifies devices in a network.

7. Server = Server

   Function: Provides services and data to client computers.

8. Client = Klien

   Function: Receives services from a server.

9. Network Interface Card (NIC) = Kartu jaringan

Function: Connects a computer to a network.

10. Cisco Packet Tracer = Aplikasi simulasi jaringan

Function: Used to design and simulate computer networks.

CHAPTER II

A. Aplication Letter and Curriculum Vite (CV)

   1. Application Letter

Sragen, January 30th 2026

Dear Hiring Manager,

I am writing this letter to apply for the position of Network Technician in your company. I am a student of Computer and Network Engineering. I have basic skills in Local Area Network (LAN), network configuration, and Cisco Packet Tracer.

I am able to work in a team, responsible, and willing to learn new things. I hope I can contribute to your company.

Thank you for your attention.

Sincerely,

Muhammad Zaki Fadhlurrohman

   2. Curriculum Vitae

Name : Muhammad Zaki Fadhlurrohman

Place, Date of Birth : Tangerang, 28 January 2008

Address : Cangakan,Bendo,Sukodono,Sragen

Phone Number :085894568532

Email : —

Education

   Vocational High School (SMK) – Computer and Network Engineering

Skills

   Local Area Network (LAN)

   Computer Network Installation

   Network Simulation using Cisco Packet Tracer

   Basic Network Troubleshooting

Experience

   Creating LAN network simulations using Cisco Packet Tracer

   Basic computer network configuration

Hobbies

   Football

   Vollyball

B. Job Interview Simulation

1. Manager: Good morning.

   Applicant: Good morning, sir.

2. Manager: Can you introduce yourself?

   Applicant: My name is Muhammad Zaki Fadhlurrohman. I am a student of Computer and Network Engineering.

3. Manager: What do you know about LAN?

   Applicant: LAN is a network that connects computers in a small area.

4. Manager: Do you have experience in networking?

   Applicant: Yes, I have experience using Cisco Packet Tracer.

5. Manager: Can you work in a team?

   Applicant: Yes, I can work well in a team.

6. Manager: What are your skills?

   Applicant: Network installation and basic troubleshooting.

7. Manager: Why do you want to work here?

   Applicant: Because I want to improve my networking skills.

8. Manager: Are you willing to learn new things?

   Applicant: Yes, I am.

9. Manager: When can you start working?

   Applicant: I can start anytime.

10. Manager: Thank you.

    Applicant: Thank you very much, sir.

CHAPTER III
Simulation to Customer

A. Receiving a Customer

1. Customer: Good morning.

   Technician: Good morning. How can I help you today?

2. Customer: My internet connection is very slow.

   Technician: I'm sorry to hear that. I will check your network.

3. Customer: Thank you.

   Technician: You're welcome. Please wait a moment.

4. Technician: I found a problem with your router connection.

   Customer: What should I do?

5. Technician: I will restart the router to fix the problem.

   Customer: Okay, please do it.

6. Technician: Your router has been restarted.

   Customer: The internet is better now.

7. Customer: I also forgot my WiFi password.

   Technician: No problem, I can help you reset it.

8. Technician: I have reset your WiFi password.

   Customer: Thank you very much.

9. Technician: Please try to connect again.

   Customer: It works well now.

10. Technician: Is there anything else I can help you with?

    Customer: No, that's all. Thank you.

B. Giving Instruction to Customer

1. Customer: What kind of network is good for home use?

   Technician: A combination of LAN and WiFi is very good for home.

2. Customer: Why should I use LAN?

   Technician: LAN provides a stable and fast internet connection.

3. Customer: What device do I need?

   Technician: You need a router, switch, and UTP cable.

4. Customer: Is WiFi also important?

   Technician: Yes, WiFi is useful for mobile devices.

5. Customer: Where should I place the router?

   Technician: Place it in the middle of the house.

6. Customer: What cable is recommended?

   Technician: I recommend using UTP cable.

7. Customer: Is it difficult to install the network?

   Technician: No, it is easy to install.

8. Customer: Can you help with the installation?

   Technician: Yes, I can help you.

9. Customer: Thank you for the advice.

   Technician: You're welcome.

10. Customer: I will use your recommendation.

    Technician: Thank you. I'm happy to help.

NAMA   : MUHAMMAD IKHSAN DWI PRAYOGA

KELAS   : XII TEKNIK KOMPUTER DAN JARINGAN

NISN   : 0081718139

A FINAL ENGLISH TASK

**Comparative Analysis of Wired and Wireless Connections in the Office and
Computer Engineering Lab Networks at SMK Alhikmah Tanon**

Muhammad Ikhsan Dwi Prayoga

Teknik Komputer & Jaringan

SMK ALHIKMAH TANON

TAHUN PELAJARAN 2025/2026

FOREWORD

Praise be to God Almighty for His grace and blessings, which have enabled the author to complete this report entitled "Comparative Analysis of Wired and Wireless Connections in the Office and Computer Engineering Lab Networks at SMK Alhikmah Tanon" successfully. This report was prepared as part of the learning activities and to fulfill an assignment in the field of computer networking.

The purpose of this report is to analyze and compare the use of wired and wireless network connections implemented in the office network and the Computer Engineering Laboratory at SMK Alhikmah Tanon, in order to provide an overview of the advantages, disadvantages, and effectiveness of each type of connection.

The author realizes that this report could not have been completed without the assistance and guidance of various parties. Therefore, the author would like to express sincere gratitude to **Mrs. Rika**, as the supervising teacher, for her guidance, support, and encouragement throughout the preparation of this report. Appreciation is also extended to all parties who have provided direct or indirect assistance.

The author is aware that this report still has limitations and shortcomings. Therefore, constructive criticism and suggestions are highly expected for the improvement of this report in the future. Hopefully, this report can be useful and provide additional insight for readers, especially in the field of computer networking.

Tanon, January 30th 2026

Author's name,

M. Ikhsan Dwi Prayoga

VALIDATION

Comparative Analysis of Wired and Wireless Connections in the Office and Computer Engineering Lab Networks at SMK Alhikmah Tanon

A FINAL ENGLISH TASK

Muhammad Ikhsan Dwi Prayoga

Guru Mapel   **Guru Kejuruan**

Rika Novia Astuti, S.Pd   **Irwan Muji Handoko**

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CHAPTER I

A. Comparative Analysis of Wired and Wireless Connections in the Office and Computer Engineering Lab Networks at SMK AL-HIKMAH TANON.

The rapid development of information and communication technology, especially in the field of computer networks, has become a cornerstone of modern activities. Almost all administrative activities and learning processes in schools utilize computer networks and the internet as primary supporting tools. Therefore, the availability of a stable, secure, and efficient network is a critical need for educational institutions.

SMK AL-HIKMAH TANON, as a vocational school, has office facilities and Computer Engineering Laboratories that heavily rely on computer networks. In this environment, two types of networks are used: wired networks and wireless networks. Each of these network types has its own characteristics, advantages, and disadvantages.

Wired networks are commonly implemented for stationary computers in offices and laboratories because they are considered more stable. Meanwhile, wireless networks are used to support user mobility, such as teachers, staff, and students using laptops or smartphones. Therefore, a comparative analysis between wired and wireless networks is needed to determine the most suitable network type to support activities in the school environment.

B. Explain About Hardware and Software

1. Hardware

Hardware refers to all physical devices that can be seen and touched directly, functioning to support computer network systems. In the office and Computer Engineering Laboratory networks at SMK AL-HIKMAH TANON, hardware plays a crucial role in the process of sending and receiving data.

Examples of network hardware used include computers (PCs), servers, switches, routers, access points, UTP cables, RJ-45 connectors, and other supporting devices. This hardware serves as a connecting medium between devices to enable effective communication and data sharing.

2. Software

Software is intangible software that functions to regulate, control, and operate computer systems and networks. Software is essential so that hardware can work according to its functions.

Examples of software used in networks include operating systems (Windows or Linux), network management applications, router and access point configuration software, as well as applications supporting learning and administration. Software assists in network management, data security, and ensuring that network connections run smoothly and stably.

C. English Vocabulary Booklet (Computer Network Components)

Below is a list of English vocabulary related to computer network components, along with their meanings and functions:

Router = (Perute jaringan) Network routing device
Function: The function of a router is to connect different networks and direct data packets to their destination.

Switch = (Sakelar jaringan) Network connecting device
Function: The function of a switch is to connect multiple devices within a local area network (LAN).

Access Point = (Titik akses) Wireless network access point
Function: The function of an access point is to provide wireless network access to devices.

Server = (Peladen) Central service computer
Function: The function of a server is to provide data and services to other computers (clients).

Client = (Klien) User computer
Function: The function of a client is to request data or services from a server.

Network Cable = (Kabel jaringan) Network cable
Function: The function of a network cable is to transmit data between network devices.

IP Address =(Alamat IP) Network identity address
Function: The function of an IP address is to identify a device on a network.

Firewall =(Tembok api) Network security system
Function: The function of a firewall is to protect the network from unauthorized access.

Bandwidth =(Lebar pita) Network speed capacity
Function: The function of bandwidth is to determine the maximum data transfer speed of a network.

Modem = Internet connection device
Function: The function of a modem is to convert digital data into signals for internet communication.

CHAPTER II

A. Aplication Letter and Curriculum Vite (CV)
  1. Application Letter

Sragen, January 30th 2026

Dear Hiring Manager,

I am writing this letter to apply for the position of Network Technician in your company. I am a student of Computer and Network Engineering. I have basic skills in Local Area Network (LAN), network configuration, and Cisco Packet Tracer.

I am able to work in a team, responsible, and willing to learn new things. I hope I can contribute to your company.

Thank you for your attention.

Sincerely,

Muhammad Ikhsan Dwi Prayoga

2. **Curriculum Vitae (CV)**

   Name : Muhammad Ikhsan Dwi Prayoga

   Date of Birth : 29 Maret 2008

   Address : Grumbul, Pengkol, Tanon, Sragen

   Phone Number :085700234845

   Email :

   Education

   SMK – Computer and Network Engineering

   Skills

   Local Area Network (LAN)

   Network Installation

   Cisco Packet Tracer

   Basic Troubleshooting

   Experience

   Network simulation using Cisco Packet Tracer

   Hobby

   Vollyball,fishing,football

   Learning computer networks

B. **Job Interview Simulation**

   Manager: Good morning.

   Applicant: Good morning, sir.

   Manager: Can you introduce yourself?

   Applicant: My name is Muhammad Ikhsan Dwi Prayoga. I am a student of Computer and Network Engineering.

Manager: What do you know about LAN?

Applicant: LAN is a network that connects computers in a small area.

Manager: Do you have experience in networking?

Applicant: Yes, I have experience using Cisco Packet Tracer.

Manager: Can you work in a team?

Applicant: Yes, I can work well in a team.

Manager: What are your skills?

Applicant: Network installation and basic troubleshooting.

Manager: Why do you want to work here?

Applicant: Because I want to improve my networking skills.

Manager: Are you willing to learn new things?

Applicant: Yes, I am.

Manager: When can you start working?

Applicant: I can start anytime.

Manager: Thank you.

Applicant: Thank you very much, sir

CHAPTER III
Simulation to Customer

A. Receiving a Customer

Customer Service:
Good morning. Welcome to our customer service. How may I help you?

Customer:
Good morning. I want to complain about my internet connection. It has been very slow since last night.

Customer Service:
I'm sorry to hear that. May I have your name and customer ID, please?

Customer:
My name is Andi Pratama, and my customer ID is 12345678.

Customer Service:
Thank you, Mr. Andi. I will check your account. Could you please tell me the status of the modem lights?

Customer:
The light is green, but the internet is still slow.

Customer Service:
Alright. Have you tried restarting the modem?

Customer:
Yes, I have, but it didn't help much.

Customer Service:
I understand. I will check the connection from our system. Is there any other problem I can help you with?

Customer:
Yes, I forgot my account password and I can't log in.

Customer Service:
No problem. I can help you reset your password. Could you please confirm your registered email address?

Customer:
My email is andi@email.com.

Customer Service:
Thank you. I have sent a password reset link to your email. Please check it.

Customer:
Alright, I've received it. Thank you for your help.

Customer Service:
You're welcome, Mr. Andi. Our technical team will follow up on the slow internet issue within 24 hours. Is there anything else I can assist you with?

Customer:
No, that's all. Thank you.

Customer Service:
Thank you for contacting us. Have a nice day.

B. Giving Instruction to Customer

Customer Service:
Good afternoon. How may I help you today?

Customer:
Good afternoon. I want to install internet at my house, but I'm not sure which network is good.

Customer Service:
I understand. I'll be happy to give you some recommendations. May I know how many people will use the internet at home?

Customer:
There are four people in my family.

Customer Service:
Alright. What activities do you usually do online? For example, streaming, online meetings, or gaming?

Customer:
We usually stream videos, attend online classes, and work from home.

Customer Service:
In that case, I recommend a fiber optic internet connection because it is faster and more stable.

Customer:
What speed do you suggest for those activities?

Customer Service:
I suggest at least 50–100 Mbps to ensure a smooth connection for all users.

Customer:
That sounds good. Is fiber optic suitable for a house?

Customer Service:
Yes, it is very suitable. It provides strong and stable connectivity, especially for multiple devices.

Customer:
Do you have any advice on the modem or router placement?

Customer Service:
Yes. Please place the router in the center of the house and avoid putting it near walls or electronic devices.

Customer:
Alright. How about security?

Customer Service:
Make sure to use a strong Wi-Fi password and update it regularly to keep your network secure.

Customer:
Thank you for the instructions. That's very helpful.

Customer Service:
You're welcome. If you need help with installation, please contact us anytime.

NAMA   : MUHAMMAD FATHAN

KELAS   : XII TEKNIK KOMPUTER DAN JARINGAN

NISN   : 0088267849

A. FINAL ENGLISH TESK

Basic Wireless Local Area Network (WLAN) Simulation for Home Users using Cisco Packet Tracer.

MUHAMMAD FATHAN ARDIANSYAH

XII TEKNIK KOMPUTER & JARINGAN

SMK ALHIKMAH TANON

TAHUN PELAJARAN 2025/2026

FOREWORD

All praise and thanks are due to Allah SWT, who has granted His mercy and guidance so that this report could be completed successfully.

This report was prepared as a practical assignment for the Computer Networks subject in class XII of the Computer Engineering and Networking program at SMK Al-Hikmah Tanon. It discusses the simulation of a Basic Wireless Local Area Network (WLAN) for home users using Cisco Packet Tracer.

The author hopes that this report will be useful in enhancing understanding of simple wireless networks and how to simulate them. The experience of creating this simulation has been quite helpful in grasping the real-world concepts of WLAN.

The author realizes that this report still has many shortcomings. Therefore, constructive criticism and suggestions are greatly welcomed to help improve it.

Tanon , January 30th 2026.

Writer,

Muhammad Fathan A.

VALIDATION

Basic Wireless Local Area Network (WLAN) Simulation for Home Users using Cisco Packet Tracer.

A FINAL ENGLISH TASK

Muhammad Fathan Ardiansyah

Guru Mapel   **Wali Kejuruan**

Rika Novia Astuti, S,Pd   **Irwan Muji Handoko**

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CHAPTER 1

A. (Basic Wireless Local Area Network (WLAN) Simulation for Home User Using Cisco Packet Tracer)

> This is designed for beginners (home user scenario), suitable for high school/early college students or self-learners. The goal is to build a simple home Wi-Fi network, connect wired + wireless devices, configure basic settings, and test connectivity.

B. Explain About Hardware and Software

Hardware and Software are the two main components that make up any computer system (or electronic devices like smartphones, tablets, etc.). They work together — one cannot function properly without the other.

C. English Vocabulary Booklet

a. **Router** = Router Function: A device that connects multiple networks (like your home network to the Internet) and directs data packets to the correct destination using IP addresses.

b. **Switch** = Saklar jaringan / Switch Function: A device that connects devices within the same local network (LAN) and forwards data only to the intended recipient by learning MAC addresses (smarter than a hub).

c. **Hub** = Hub Function: A basic device that connects multiple devices in a network and broadcasts data to all connected devices (not efficient, mostly replaced by switches).

d. **Modem** = Modem Function: A device that converts digital data from your computer into a form that can travel over telephone lines, cable, or fiber (used to connect to the Internet from your ISP).

e. **Access Point** (or Wi-Fi Access Point) = Titik akses (Wi-Fi) Function: A device that creates a wireless network (WLAN) so devices like phones and laptops can connect to the network without cables.

f. **Network Interface Card** (NIC) = Kartu antarmuka jaringan Function: A hardware

component (usually built-in or added) that allows a computer to connect to a network, either wired (Ethernet) or wireless (Wi-Fi).

g. **Repeater** = Pengulang sinyal Function: A device that receives a weak network signal, amplifies it, and retransmits it to extend the range of the network.

CHAPTER II

A. Aplication Letter and Curriculum Vite (CV)

A. Application Letter (Cover Letter)

Sragen,January 30th ,
2026

Hiring Manager [Jaya Internet] [Jl. Gatot Subroto. Sragen]

Dear Hiring Manager,

I am applying for the Junior Network Engineer / IT Support position at your company. I recently graduated from [SMK ALHIKMAH TANON] with a degree/diploma in Teknik Komputer dan Jaringan.

In my studies, I learned networking basics using Cisco Packet Tracer. I built simple home wireless networks (WLAN), configured routers, set up Wi-Fi security (WPA2), and tested connections with ping. I also studied computer hardware (CPU, RAM, SSD) and software (Windows, drivers). These skills make me ready to help with network setup, troubleshooting, and support.

I am excited to join your team and learn more about real-world networking. Thank you for reading my application. I have attached my CV. Please contact me at shibakaja@email.com for an interview.

Sincerely, Muhammad Fathan Ardiansyah

B.Curiculum Vite (CV)

Name : Muhammad Fathan Ardiansyah

Place & Date of Birth : Sragen, 18 December 2008

WA : 0812-2678-XXXX

Email : shibakaja@gmail.com

Education

SMK Al Hikmah Tanon Computer & Network Engineering (2023–present)

SMP Negri 1 Gesi Graduated 2023

SDN Pilangsari 2 Graduated 2020

Skills

Operating computers

Microsoft Office

Basic computer networking

Teamwork

Experience

PKL at Kecamatan Gesi

Participated in village community activities (gotong royong)

B. Job Interview Simulation

Hrd: Good morning. Please introduce yourself.
Mr.Ironi: Good morning. My name is Arga Priyana. I am a vocational school graduate and I am applying for this position.

Hrd: Why do you want to work at our company?
Mr.Ironi: Because your company has a good reputation and matches my skills and interests.

Hrd: What are your strengths?
Mr.Ironi: I am disciplined, responsible, and able to work well with computers.

Hrd: Do you have any work or internship experience?
Mr.Ironi: Yes, I had an internship for three months as an administrative staff.

Hrd: Can you work in a team?
Mr.Ironi: Yes, I can work well in a team and accept feedback from others.

Hrd: How do you handle difficult tasks?

Mr.Ironi: I try my best to solve them and ask for help if needed.

Hrd: Can you work under pressure?

Mr.Ironi: Yes, I can manage my time well and stay calm under pressure.

Hrd: What is your goal if you are accepted here?

Mr.Ironi: I want to gain experience and grow with the company.

Hrd: When can you start working?

Mr.Ironi: I can start as soon as possible.

Hrd: Thank you for coming today. We will contact you soon.

Mr.Ironi: Thank you very much for the opportunity.

CHAPTER III
Simulation to Customer

A. **Receiving a Customer**

Customer Service: Good morning. Welcome to our service center. How can I help you?

Mr.Ironi: Good morning. My internet connection is very slow.

Customer Service: I'm sorry to hear that. Since when has the internet been slow?

Mr.Ironi: Since yesterday evening.

Customer Service: Thank you for the information. May I know your customer ID?

Mr.Ironi: Yes, my customer ID is 123456.

Customer Service: Thank you. I will check your connection status.

Mr.Ironi: Okay.

Customer Service: I see the connection is active, but there is a problem with your account.

Mr.Ironi: Oh, I see. What should I do?

Customer Service: I suggest you reset your password first.

Mr.Ironi: I forgot my password. Can you help me reset it?

Customer Service: Of course. Please follow these steps on your device.

Mr.Ironi: Alright, I am following the steps.

Customer Service: Your password has been successfully reset. Please try to reconnect.

Mr.Ironi: Yes, the internet is faster now.

Customer Service: Is there anything else I can help you with?

Mr.Ironi: No, that's all. Thank you for your help.

Customer Service: You're welcome. Have a nice day.

Mr.Ironi: You too.

B. **Giving Instruction to Customer**

Technician: Good afternoon, how can I help you?

Mr. Ironi: Good afternoon. I want to install an internet connection at home.

Technician: Sure. How many floors does your house have?

Mr. Ironi: It has two floors.

Technician: What do you usually use the internet for?

Mr. Ironi: Online classes, video calls, and streaming.

Technician: I recommend a fiber optic internet connection because it is fast and stable.

Mr. Ironi: What internet speed do you suggest?

Technician: At least 30–50 Mbps for smooth usage on multiple devices.

Mr. Ironi: Do I need a special router?

Technician: Yes, a dual-band router is better for stronger and more stable WiFi.

Mr. Ironi: How can I get good signal on the second floor?

Technician: You can use a WiFi extender or a mesh WiFi system.

Mr. Ironi: That sounds good. Thank you for the advice.

Technician: You're welcome. I'm happy to help..