VIVEKANANDA INSTITUTE OF TECHNOLOGY

DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

Internship Seminar(15CS84)
On
CCNA ROUTING AND SWITCHING

Internship Carried out at
Karnataka German Technical Training Institute(KGTTI)

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ABOUT THE INSTITUTE

- Karnataka German Multi Skill Development Centre (KGMSDC), a Society promoted by Government of India and Government of Karnataka with technical support of German International Services (GIZ-IS) has set up Karnataka German Technical Training Institute (KGTTI) having centres at Bengaluru and Gulbarga. The society was headed by the Chief Secretary of the Karnataka State.
- To develop KGMSDCs as world class training centres that offer specialized skills training programs in alignment with the Industry requirements in Karnataka and beyond.
- KGMSDCs will generate high quality skilled manpower in close association with the industry, while operating with operational flexibility and striving financial self-sustainability

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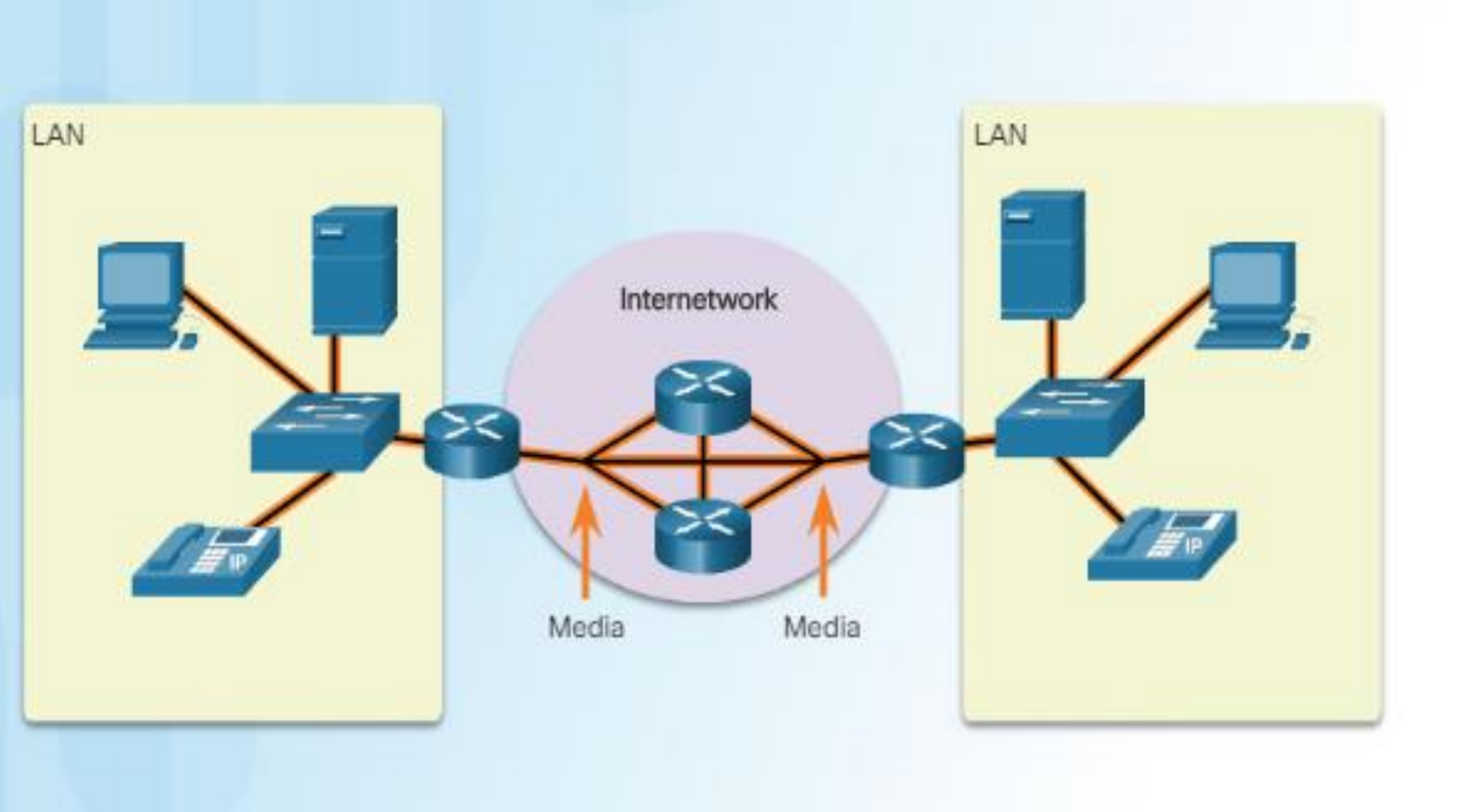
Overview of CCNA Routing and Switching

- Cisco Certified Network Associate (CCNA) Routing and Switching.
- It is a certifications program for entry-level network engineers.
- CCNA Routing and Switching is for:
  - Network Specialists
  - Network Administrators, and
  - Network Support Engineers with 0-3 years of experience.
- The CCNA Routing and Switching validates:
  - The ability to install
  - Configure
  - Operate and troubleshoot medium-size routed and switched networks.

Introduction

- What is
  - Network?
  - Internet?
  - Routing?
  - Switching?
- Different forms of communication:
  - Texting
  - Social Media
  - Blogs
  - Wikis
  - Podcasting etc..
- Categories of network components
  - Devices
  - Media
  - Services

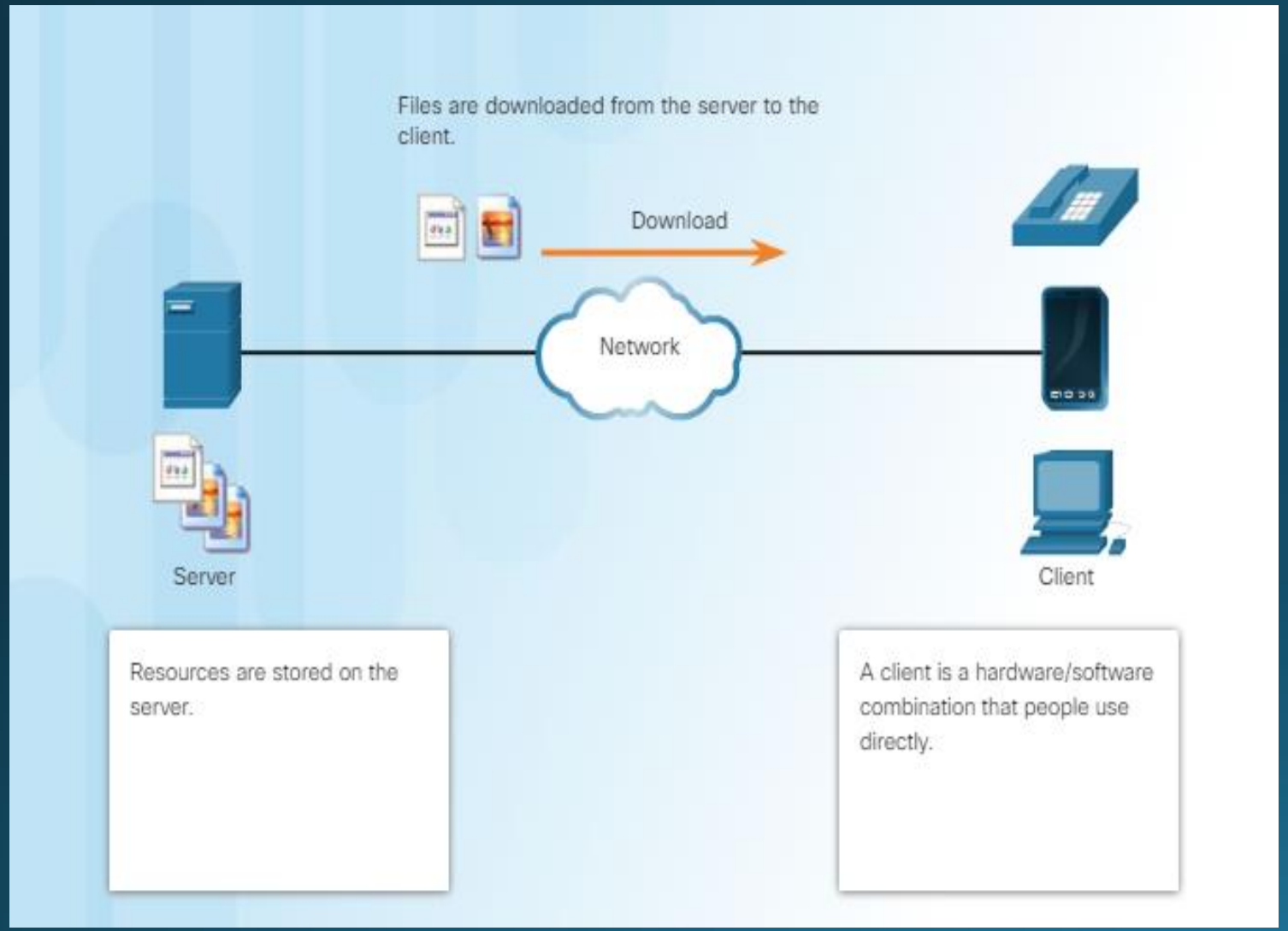
Components of Network-Media



Three types of Media to interconnect devices:

- Metallic wires within cables.
- Glass or plastic fibers.
- Wireless transmission.

Client Server Model



- Device requesting the information is called a client.
- Device responding to the request is called a server.
- Client and server processes are considered to be in the application layer.

HTTP and HTTPS

- HTTP is a request/response protocol.
- The three common message types are:
  - GET: A client (web browser) sends the GET message to the web server to request HTML pages.
  - POST: Uploads data files to the web server such as form data.
  - PUT: Uploads resources or content to the web server such as an image.
- For secure communication across the Internet, (HTTPS) protocol is used.
- Data stream is encrypted with Secure Socket Layer (SSL) before being transported across the network.

TCP Protocol

Features:

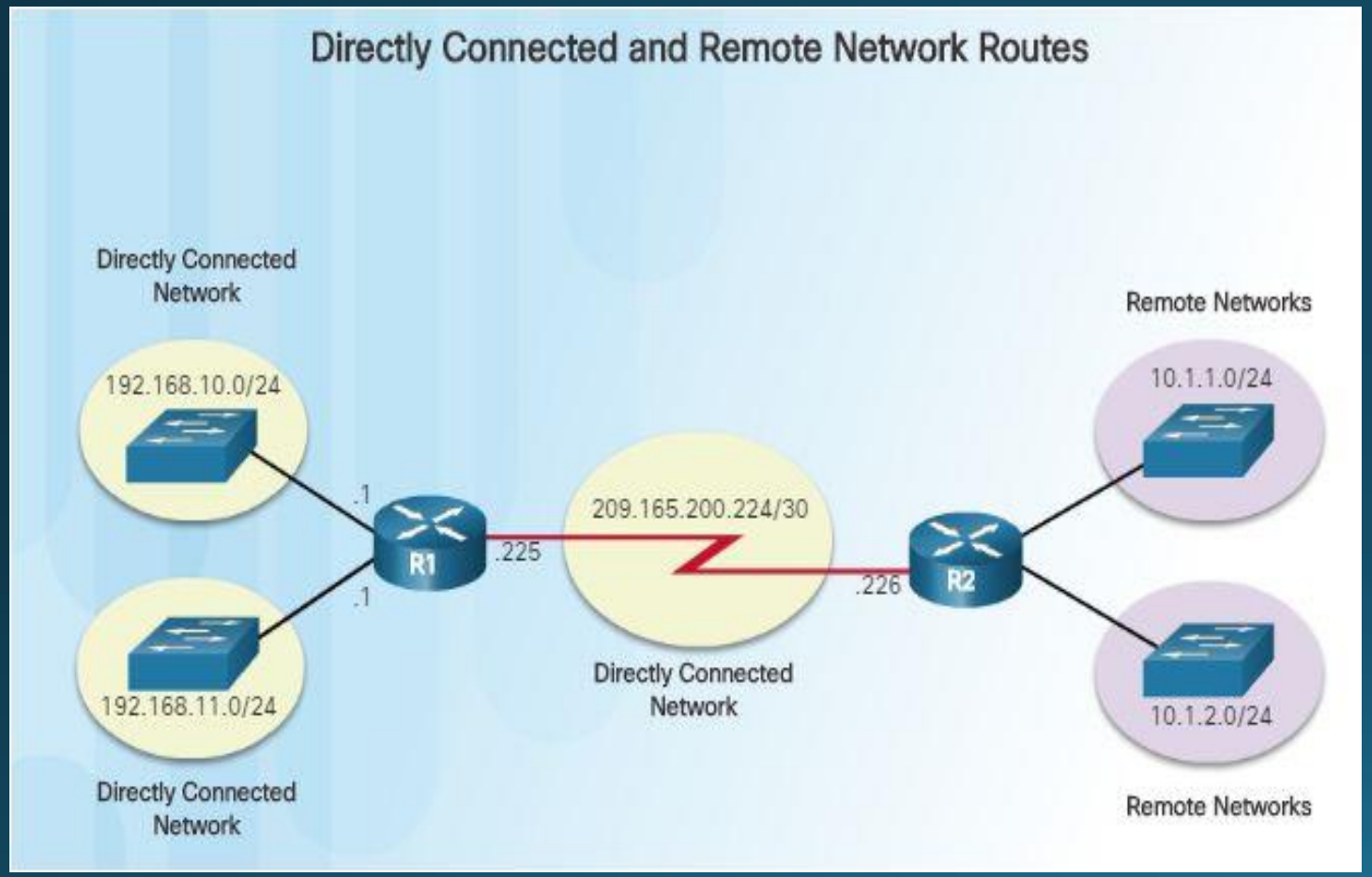
- Establishing a session.
- Reliable Delivery.
- Same- order delivery.
- Flow control.
- Uses Three - way Handshake Analysis.

UDP Protocol

Features:

- UDP is considered a best-effort transport protocol.
- Lightweight transport protocol
- UDP is a simple protocol

Routing Table



The routing table stores information about:

- Directly connected Routes: These routes come from the active router interfaces.

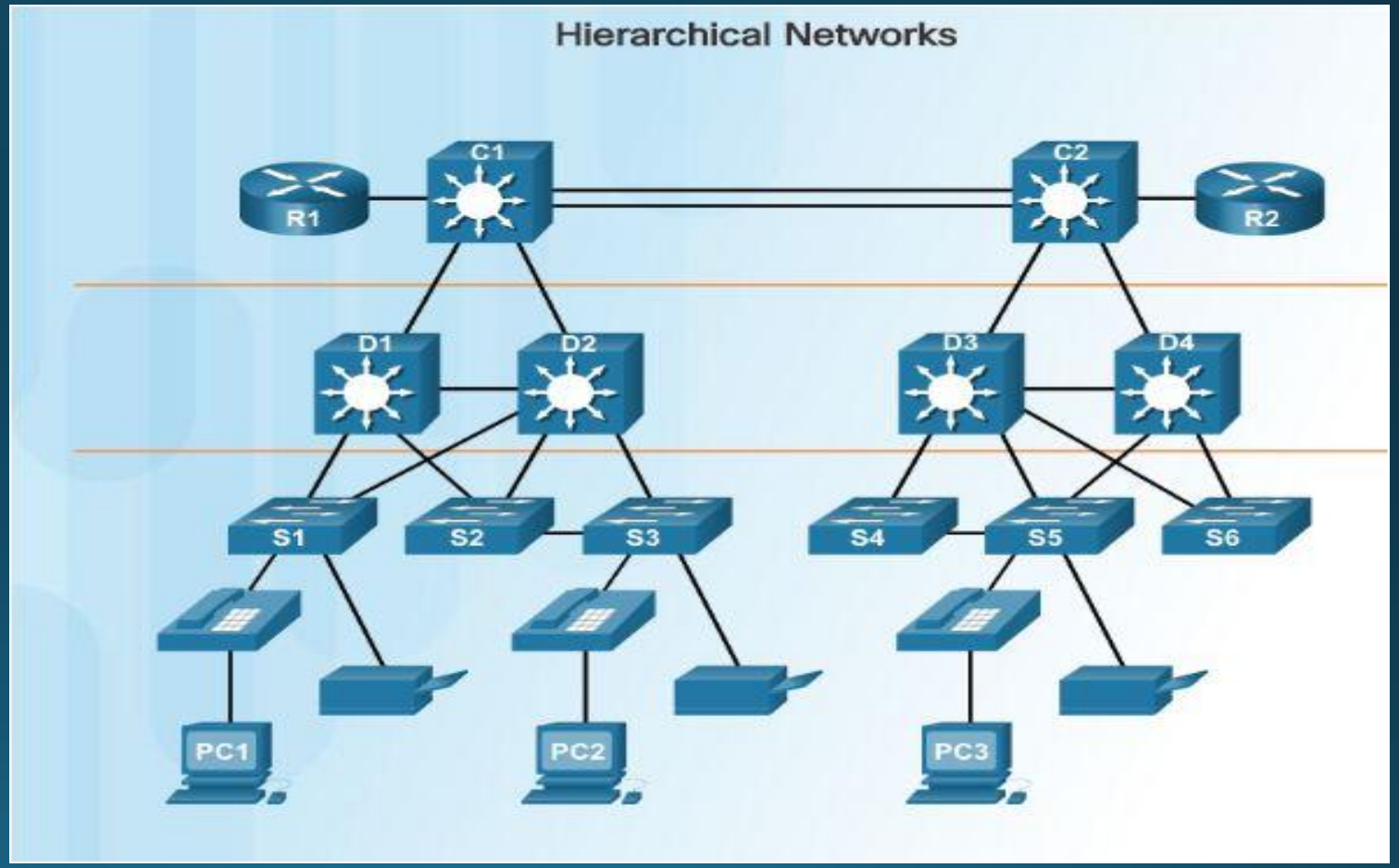
- Remote Routes: These are remote networks connected to other routers

Types Of Routing

- Static Routing:
  - Static routes are manually configured.
  - They define an explicit path between two networking devices
- Dynamic Routing:
  - Allows the routers to automatically learn about the networks from other routers.
  - Its protocols are used by routers to share information about the reachability and status of remote networks.

Switched Network

- LAN switches provide the connection point for end users into the enterprise network.
- Switched LAN features:
  - Allows more flexibility
  - Traffic management
  - Quality of service
  - Additional security
  - Support for wireless networking and connectivity.

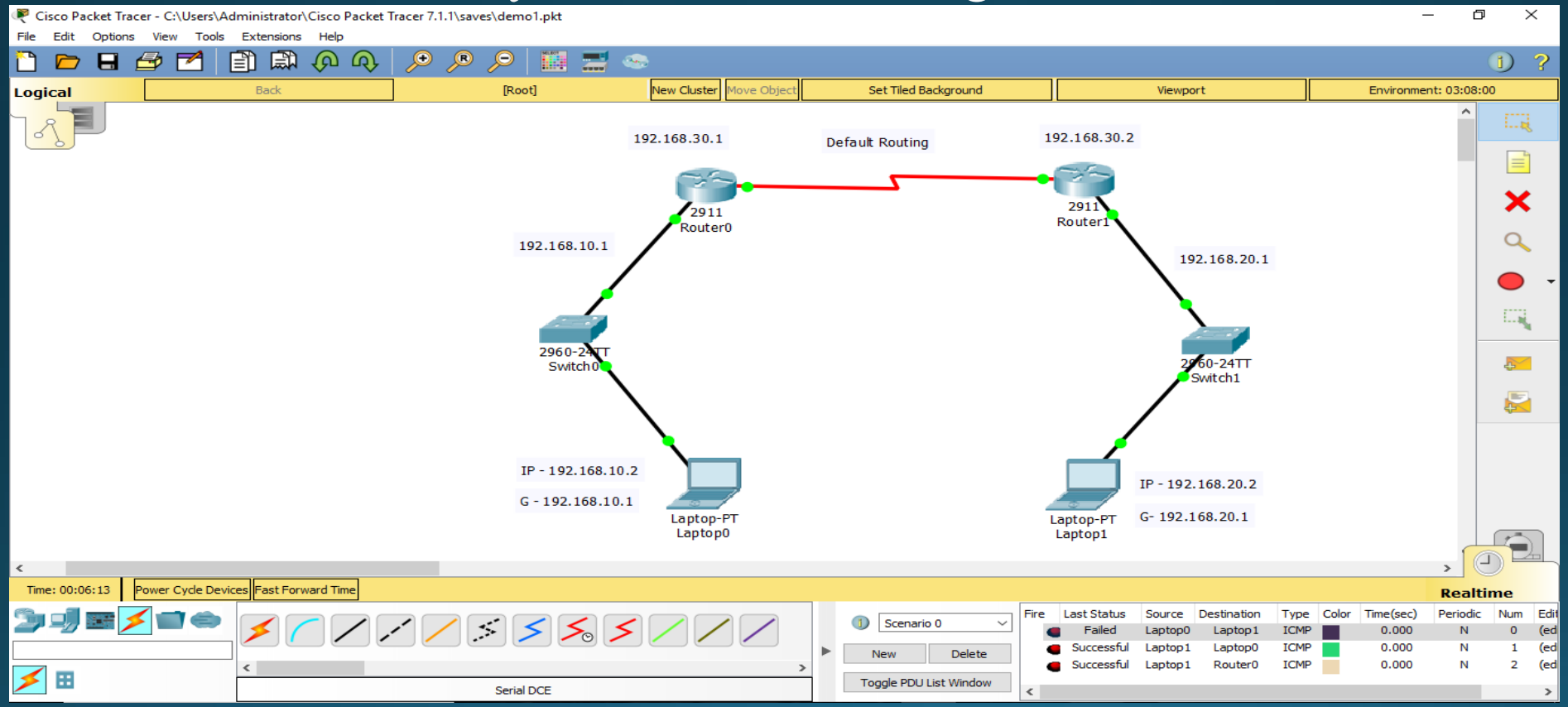


Cisco Routers

- **Branch Routers**
- **Network Edge Routers**
- **Service Provider Routers**

Snapshots

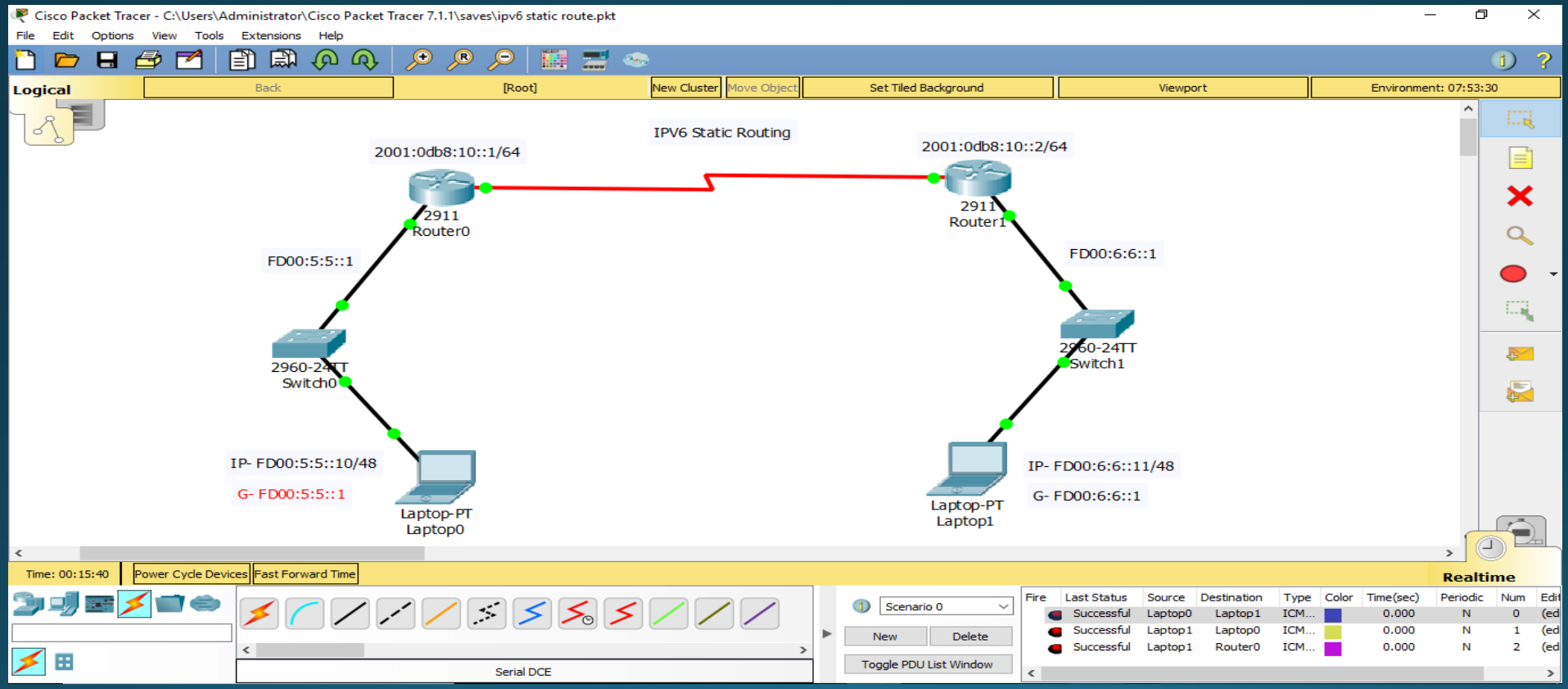
- Default route which is also known as the gateway of last resort, whose destination address does not match any route in the routing table.



Default Routing

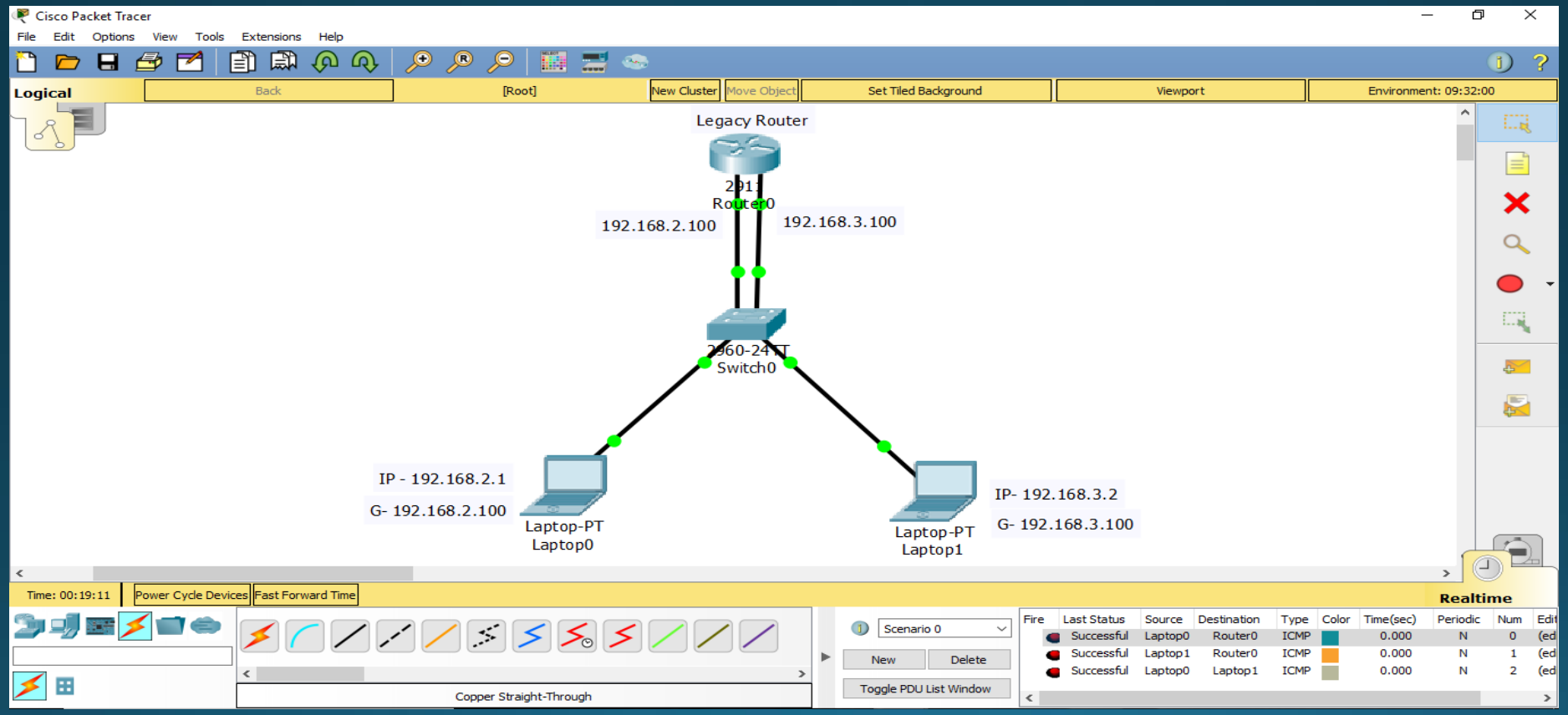
IPV6 Static Routing

- IPv6 Static Routing feature provides static routing for IPv6. Static routes are manually configured and define an explicit path between two networking devices.



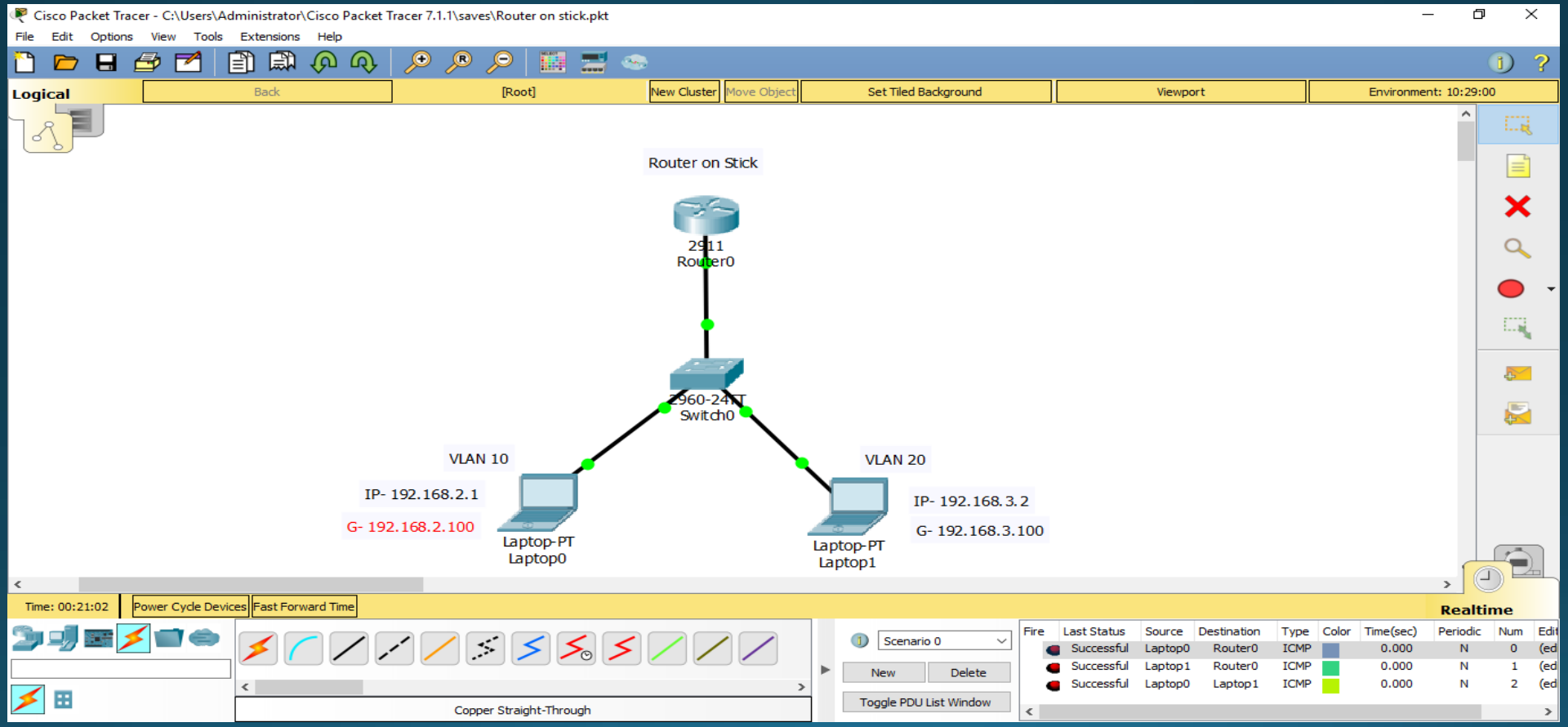
Legacy Router

- In legacy approach, inter-VLAN routing is performed by connecting different physical router interfaces to different physical switch ports.



Router on stick

- Router and switch connected using one Ethernet link configured as an 802.1q trunk link.



Conclusion

- In conclusion, it has been a reality fulfilling internship experience here at KGTTI not only gaining practical knowledge and real-life experience of branding and dealing with real clients, have also managed to develop relationships with my colleagues and honed my social skills.
- It also helps that my supervisor seldom directs me or oversees my work after the few days, learning to deal with other colleagues and clients by myself, and I am not protected or shielded from the reality of the working world
- I believe that the knowledge and experience gained through this time at KGTTI would come in handy and be able to put to good use upon my graduation, as it has opened up another possible carrier route for me.

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Thank You