SIMATS ENGINEERING

Saveetha Institute of Medical and Technical Sciences
Chennai- 602105

Student Name: B. Santhosh Kumar **Reg. No.:192511053**

Course Code: CSA0764 **Slot: A**

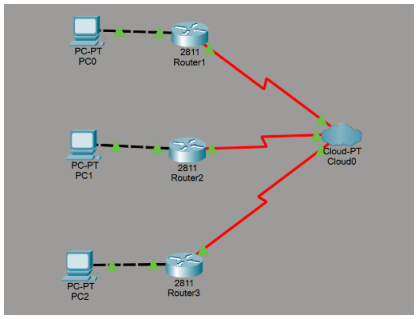
Course Name: Computer Networks for Game Server

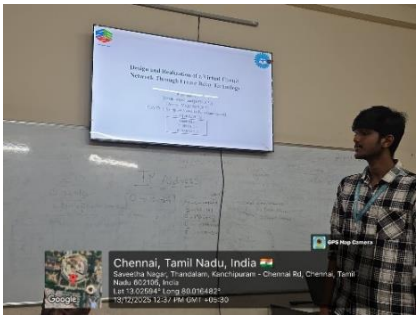
Course Faculty: Dr SENTHIL K

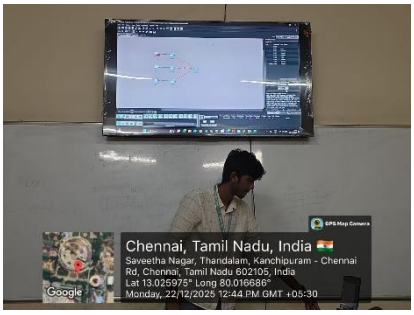
Dr RAJARAM P

Project Title: Design and Realization of a Virtual Circuit Network Through Frame Relay Technology

Module Photographs:







Project Description:

The project **"Design and Implementation of a Frame Relay Virtual Circuit Network"** focuses on designing and configuring a wide area network (WAN) using **Frame Relay technology** to enable efficient communication between multiple routers through virtual circuits. Frame Relay is a packet-switched WAN protocol that uses **Data Link Connection Identifiers (DLCIs)** to establish logical connections between devices over a shared network infrastructure. In this project, routers are interconnected through a **Frame Relay cloud**, where DLCIs are assigned to define virtual circuits between router pairs. Serial interfaces on the routers are configured with Frame Relay encapsulation and appropriate DLCI mappings, allowing reliable data transmission without the need for dedicated physical links. A structured **IP addressing scheme** is implemented for serial interfaces and LAN interfaces to ensure clear identification and seamless routing. The network design also integrates **local area networks (LANs)** at each router, enabling end-to-end communication between connected PCs. Configuration and implementation are verified using standard Frame Relay monitoring commands such as show frame-relay pvc and show frame-relay map, along with router-to-router and PC-to-PC ping tests to confirm link status, LMI operation, and overall connectivity. This project demonstrates the practical working of **virtual circuits, DLCI-based communication, and WAN configuration concepts**, highlighting how Frame Relay efficiently utilizes bandwidth while maintaining logical separation of data paths. The implementation provides valu4able insight into legacy WAN technologies that form the foundation for modern networking concepts such as MPLS and VPNs, making it both educationally significant and technically relevant.

Student Signature **Guide Signature**