SUMMARY REPORT – GNS3 NETWORK SIMULATION ASSIGNMENT

Objective

The objective of this lab assignment was to install GNS3 on Ubuntu, create basic switch-based network topologies, perform IP addressing, test connectivity using ping, and finally upload the results to a public GitHub repository.

Part A – Environment Setup

GNS3 was installed successfully on the Ubuntu system. Once the application GNS3 was started, the status of the Local Server/GNS3 VM then showed in green, indicating that the application was running as intended. The GNS3 Dashboard was screenshot as proof of successful installation.

Part B – Network Topologies

1.Simple LAN Topology

The first topology consisted of two PCs connected through one switch. Both PCs were configured with IP addresses belonging to the same subnet, for instance 192.168.10.x. Following configuration, a ping test was performed from one PC to the other. Ping responses

were reached successfully, indicating proper communication over the LAN.

2. Star Topology

The second topology used one central switch that was connected to four PCs. All PCs were placed in the same subnet; for example, 10.1.1.x. Each PC was able to communicate with all the others through the switch. Ping tests, such as from PC1 to PC2, PC3, and PC4, showed successful connectivity, proving that the star topology was working properly.

3. Multi-Switch Mesh Topology

The third topology was a mesh created with three switches connected in a circular manner: SW1 to SW2, SW2 to SW3, and SW3 back to SW1. To each switch, one PC was attached. All the PCs were assigned IP addresses from the same subnet-for example, 10.1.1.1, 10.1.1.2, and 10.1.1.3. From all the PCs, ping tests were performed, and each PC was able to reach all the others through the interconnected switches. This confirmed end-to-end communication over the mesh network.

Conclusion

The assignment helped in understanding the basic concepts of network simulation with GNS3. It covered the installation of the tool, building different switch-based topologies such as LAN, Star, and Multi-Switch Mesh, assigning IP addresses, and testing the reachability between devices. This lab exercise enhanced practical knowledge of Layer 2 networking and provided an opportunity to understand how GNS3 can be used for real-world network design.