Introduction to Networking

This section covers the basics of networking, focusing on two key models that describe how data moves across networks:

- **TCP/IP Network Model**: A four-layer model that includes the Link, Internet, Transport, and Application layers. It's widely used in real-world networking and is more streamlined compared to the OSI model.
- **OSI Reference Model**: A seven-layer model that provides a more detailed framework for understanding network interactions, including the Physical, Data Link, Network, Transport, Session, Presentation, and Application layers.

IPv4 Addressing and Subnetting/Summarization

- **IPv4 Addressing**: Understanding the 32-bit address format used to identify devices on a network.
- **Subnetting**: Dividing a larger network into smaller, manageable sub-networks to improve efficiency and security.
- **Summarization**: Combining multiple smaller networks into a single address to simplify routing.

Static Routing

- **Static Routing**: Manually configuring the routing table to determine the path data takes through the network. This method is simple and useful for small, stable networks.

General Switching

This section covers fundamental concepts in switching, which is essential for efficient data flow within local networks:

- **VLAN (Virtual Local Area Network)**: Creating logical segmentations within a physical network to improve security and reduce broadcast traffic.
- **Trunk/Access Interfaces**: Understanding the difference between trunk ports, which carry traffic for multiple VLANs, and access ports, which connect to end devices within a single VLAN.

Layer 2 & 3 Dataflows

- **Layer 2 Dataflow**: Deals with data transfer within the same network segment, using MAC addresses for communication.
- **Layer 3 Dataflow**: Handles data transfer between different network segments or IP subnets, using IP addresses for routing the data.

This phase provides a solid foundation in networking principles, essential for understanding more advanced concepts in subsequent phases.