

Typical Campus Network Architectures and Practices

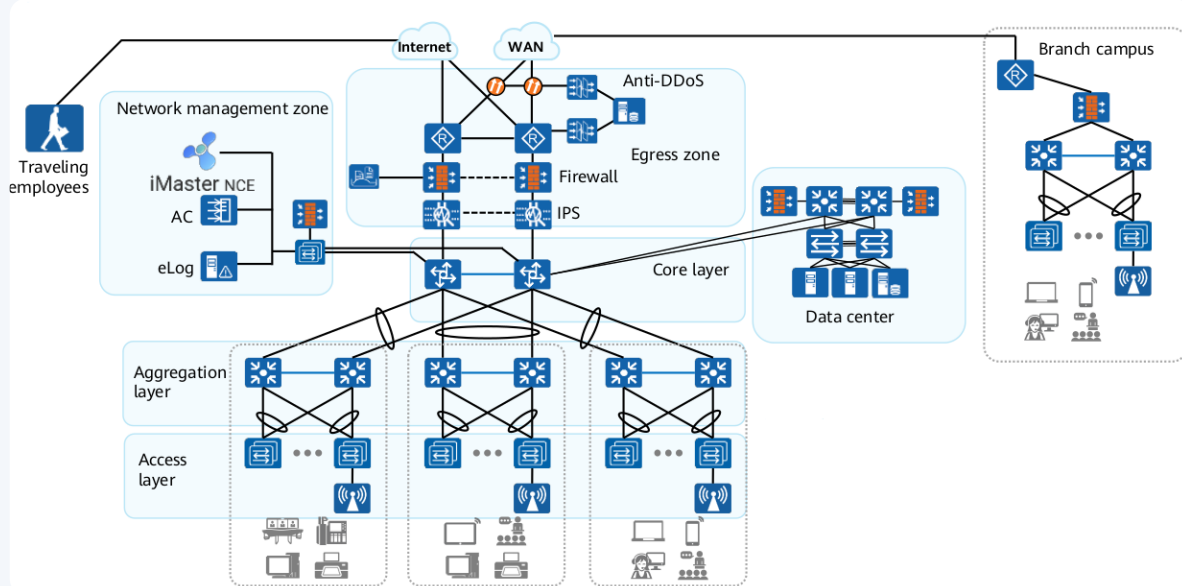
1 Typical Campus Network Architectures and Practices

1.1 Basic Concepts of Campus Networks

1.1.1 Definitions

- **Campus Network:** A collection of interconnected local area networks (LAN) within a limited geographic area, such as a university campus, corporate site, or industrial complex.
- **LAN:** Local Area Network designed to connect computers and other devices within a confined area.
- **MAN:** Metropolitan Area Network connecting multiple LANs over a city-wide geography.

1.1.2 Hierarchical Structure



1.1.2.1 Core Layer

- Backbone of the network.
- High-speed switching.
- Interconnects data centers, management centers, and campus egress points.

1.1.2.2 Aggregation Layer

- Middle layer for data aggregation.
- Provides routing, Quality of Service (QoS), and security functions.

1.1.2.3 Access Layer

- Connects end-users to the network.
- Handles direct communication with devices.

1.1.2.4 Egress Area

- Interface between campus network and external networks.
- Equipped with security devices like IPS and firewalls.

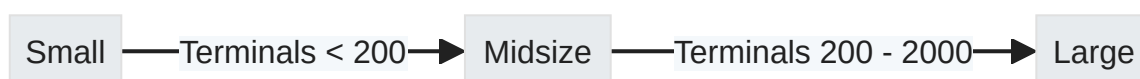
1.1.2.5 Data Center Area

- Hosts servers and applications.
- Provides resources and services to users.

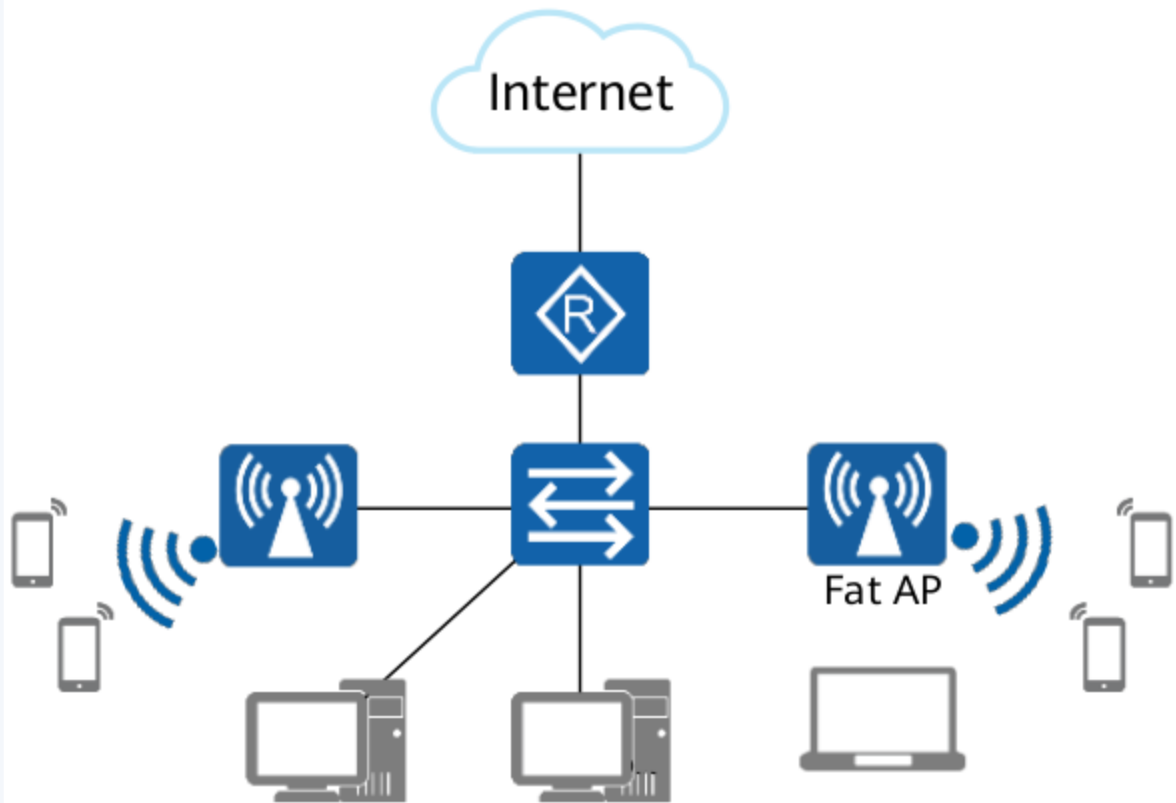
1.1.2.6 Network Management Area

- Contains systems for network oversight (SDN controller, WAC).

1.1.3 Scale Categories



1.1.3.1 Small Campus Networks

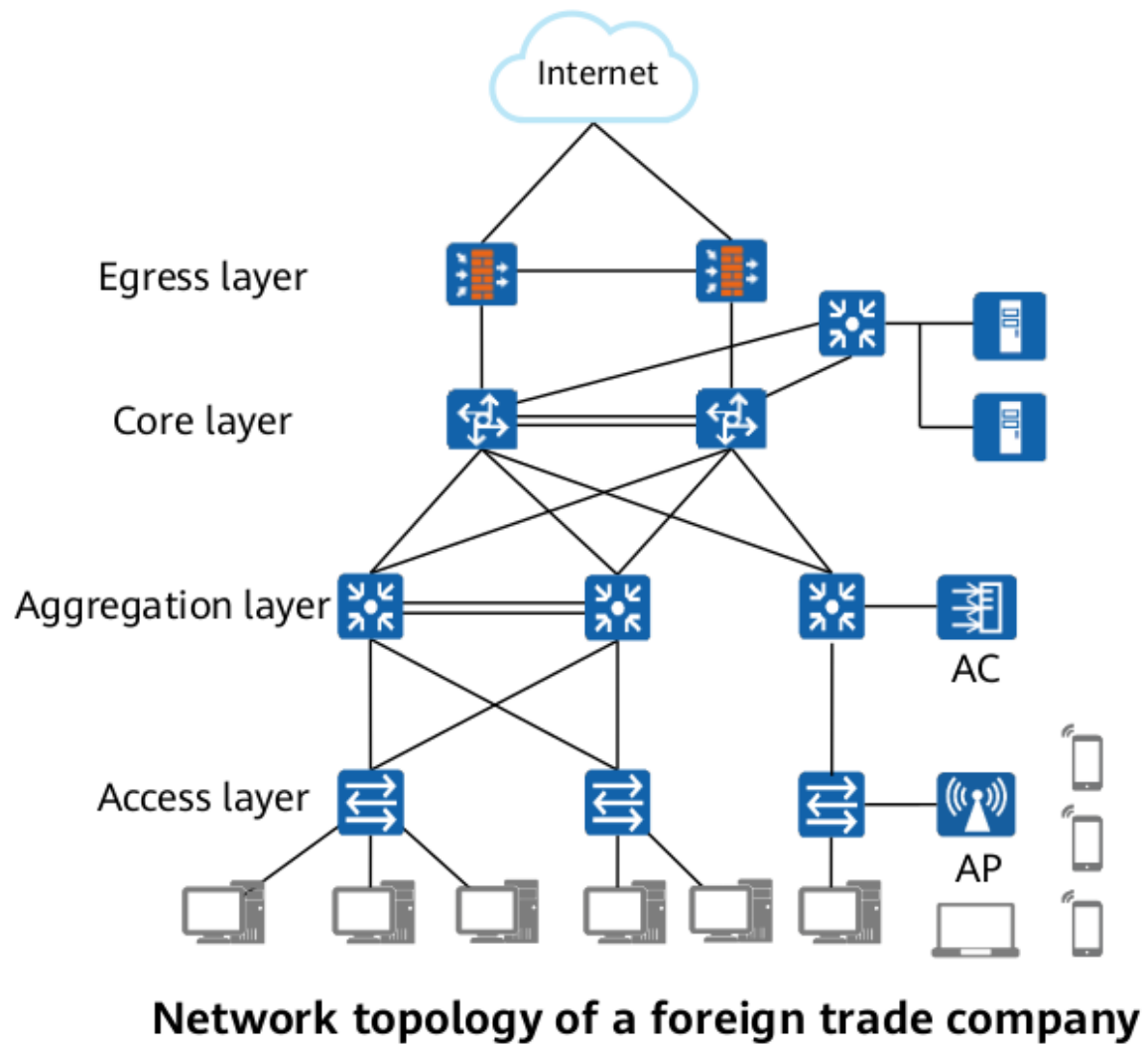


Network topology of a chain cafe

Characteristics:

- Fewer users (several or dozens).
- Single location.
- Simple architecture.

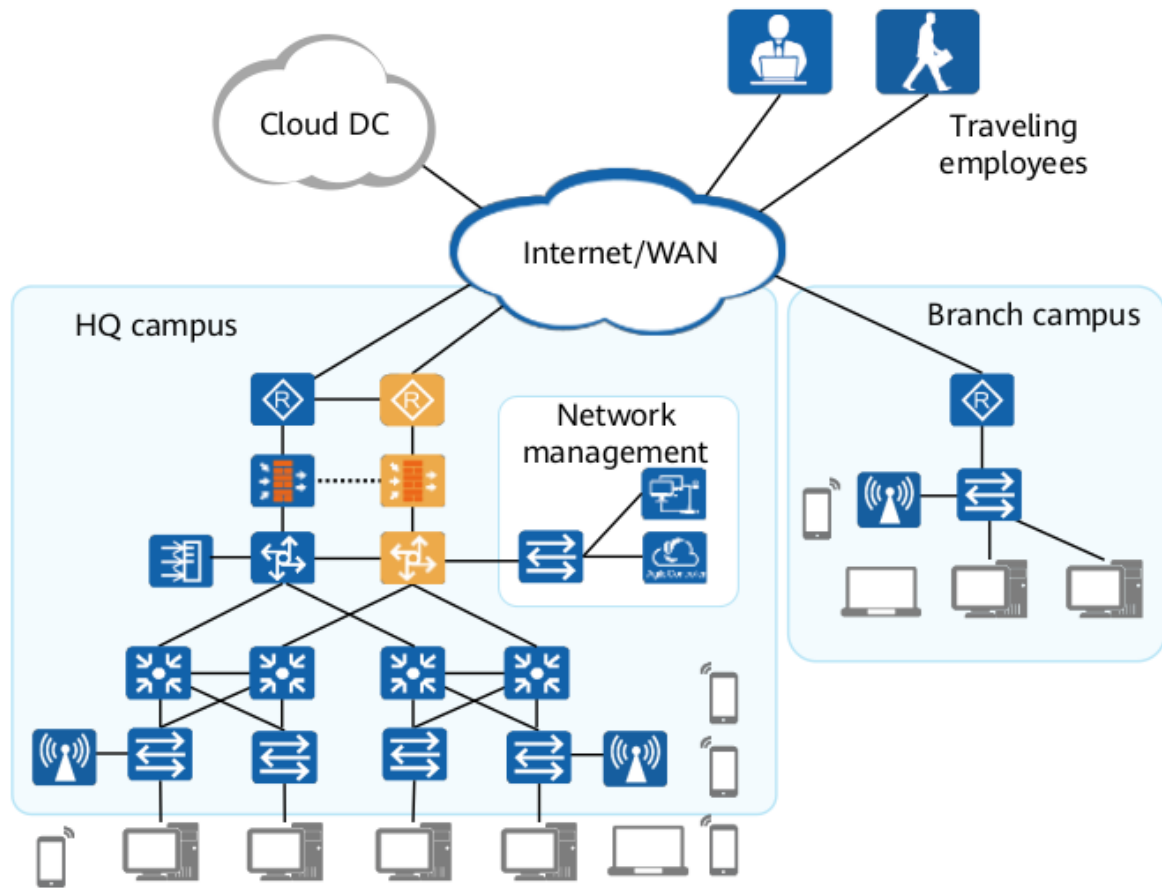
1.1.3.2 Midsize Campus Networks



Characteristics:

- Hundreds to thousands of users.
- Modular design with limited function partitions.
- **Three-layer architecture:** core, aggregation, access.

1.1.3.3 Large Campus Networks

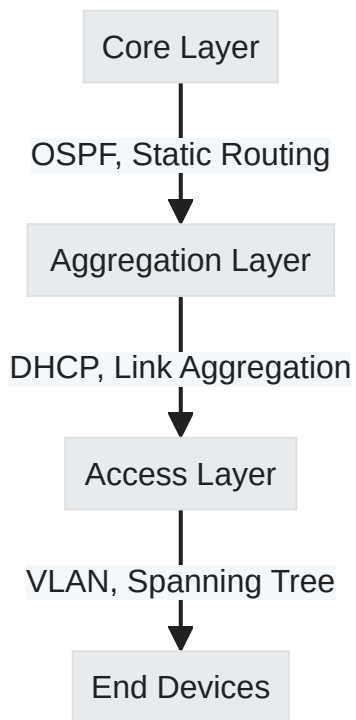


Network topology of a large enterprise

Characteristics:

- Multiple buildings or campuses linked by WANs.
- Supports VPN access for traveling employees.

1.1.4 Key Protocols & Technologies



1.2 Campus Network Project Practice
