

EMERGING TECHNOLOGY ON NETWORK INFRASTRUCTURE

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At home

-The idea of a wireless router has become a basic necessity for modern society.

Every middle-class home has a form of wireless connection; the importance of an internet connection has risen to the point of need rather than want.

·Unifi

Enterprise network

-Big enterprises have additional hardware to ensure the capability of strong wireless internet.

·Wi-Fi (used by end-users, wirelessly) & IoT devices (lights, locks etc., through their own Protocol) -> Access point -> Switches (connect all types of equipment, a hub) -> More cables leading to the core switch called Datacenter (datacentres not limited to switches, they have servers, firewall etc.) -> Cloud

·Every faculty (If Uni) will have access point -> Switches



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IT

Info

There are multiple variations when talking about the devices used to ensure the stability and strength of network infrastructure

- Wi-Fi: increasing from 3.3 trillion USD to 4.9 USD trillion in 2025
 - Wifi 6 (11 ax), latest technology.
 - OFDMA & MU-MIMO: Increases network capacity (how wifi transmits data). Allows communication with more than 1 user.
 - Increases device battery life (power efficiency)
 - Long OFDM symbol: less interference, increased performance.
 - 1024-QAM: 10 bit compared to 8
 - Nowadays WiFi access point allows more than just Wifi, eg: bluetooth, Zigbee like a Smartphone. (Enterprise Grid Access Point)
- Multi Gigabit Technology: needed due to increasing WiFi speeds, IoT devices & usage of Cloud or streaming
 - 2.5 GbE vs 1GbE: Fix bottlenecks, from Access Point to Switch.
 - In a bigger market, it can be 5GbE
- Unified Network Management: before we had a centralised all access point (WLAN) using controller AND a network management system
 - Now uses Network Controller, a 2 in 1.
- Cloud Analytics:
 - Provides an automated, self optimizing and healing network environment.
- IoT: reduce costs, enhance experience, efficient & productivity.
 - Challenges:
 - Connectivity
 - Security
 - Compatibility

REFLECTIONS

Society has advanced in its search for modernisation that technology has reached new heights every second. Network Infrastructure is proof of that growth. The ability to connect in digitalisation has become a necessity for humankind, whether in development or connectivity. The importance of the internet has allowed to further find knowledge in the area to ensure continuous expansion. We as scholars must also continue to dive into the world of IoT and Internet so that we can help society in our bloom for a better tomorrow.

