Advanced Wireless Networking Term Project

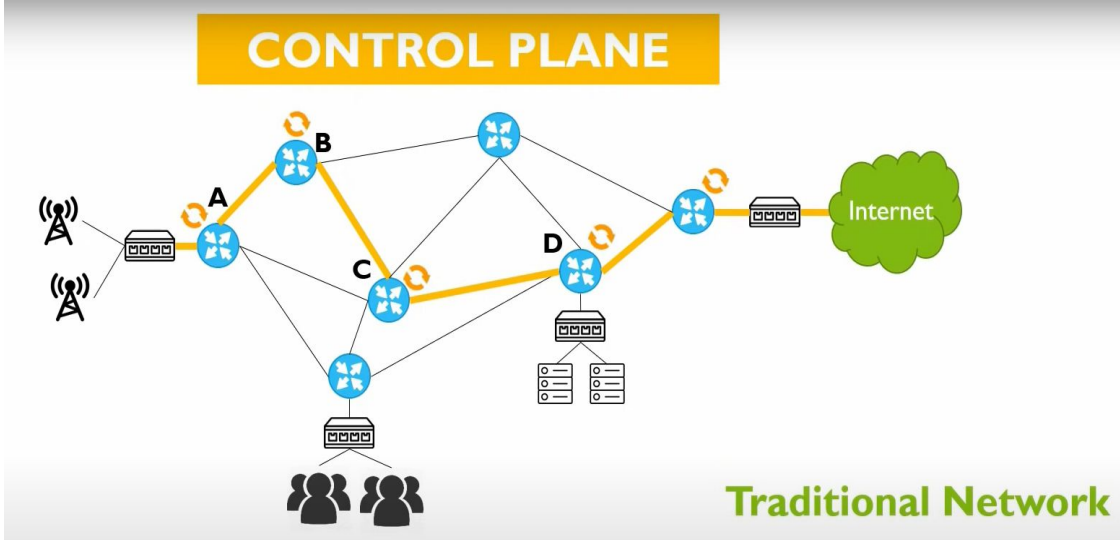
r11922202 資工所 游凱雯

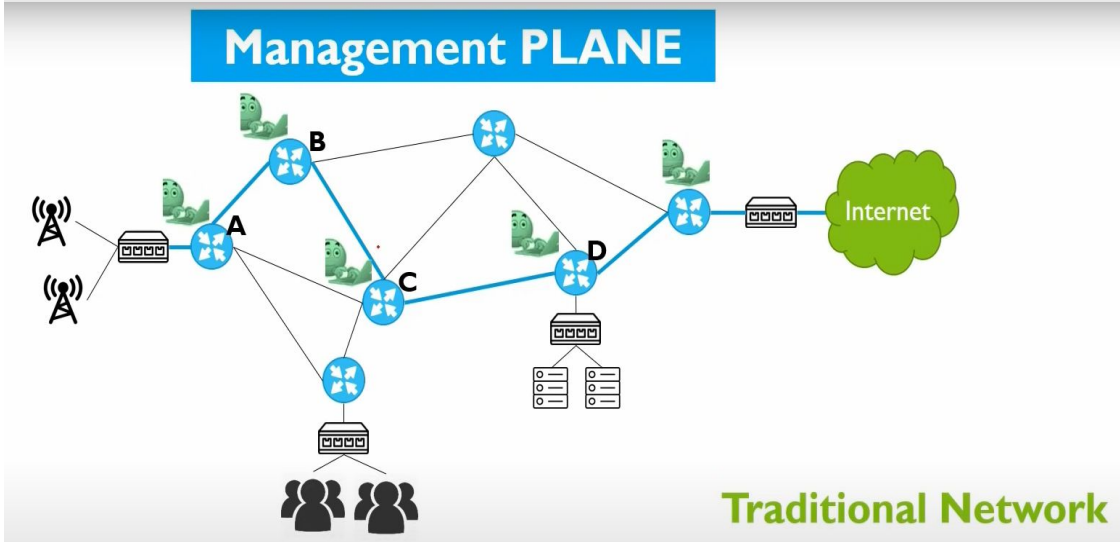
Outline

- Overall Concept
  - SDN
    - Probs in Traditional Network
    - What is SDN
  - NFV
    - Probs in Traditional Network
    - What is NFV
  - SDN vs. NFV
  - Core Network
  - Relation between SDN, NFV, and Core Network
- Topic Introduction
- Reference

Overall Concept - SDN Probs in Traditional Network

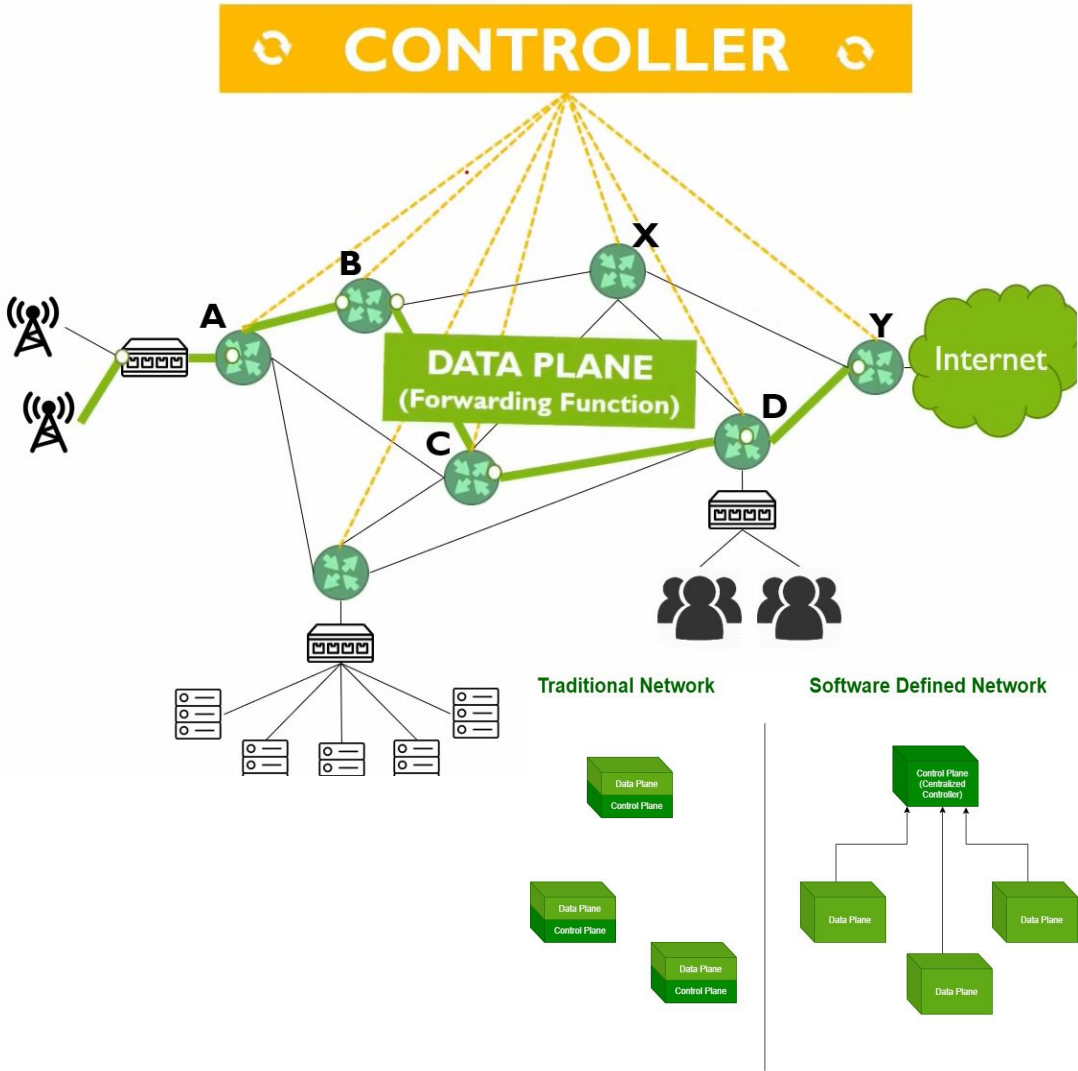
- Control plane
  - ➔ Individual brain
  - ➔ Routing performance
  - ➔ Holistic decision
- Management plane
  - ➔ Individual setting
  - ➔ Tedious and prone to error
  - ➔ Centralized management





Overall Concept - SDN
What is SDN?

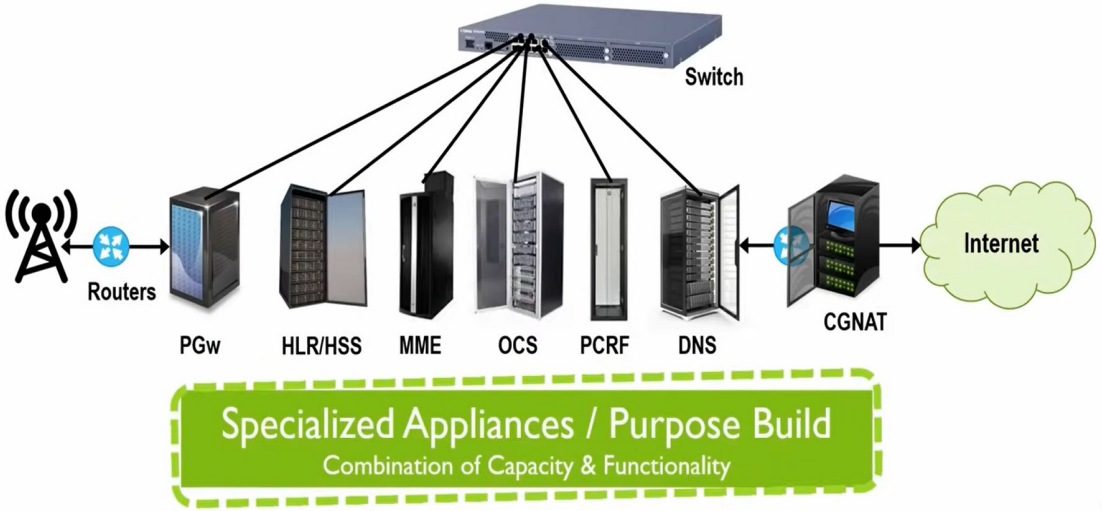
- Make networking & IP routing flexible
- Decoupling control & data plane
- Having a central view of resources
- Programmable network, centrally managed,agile for any need

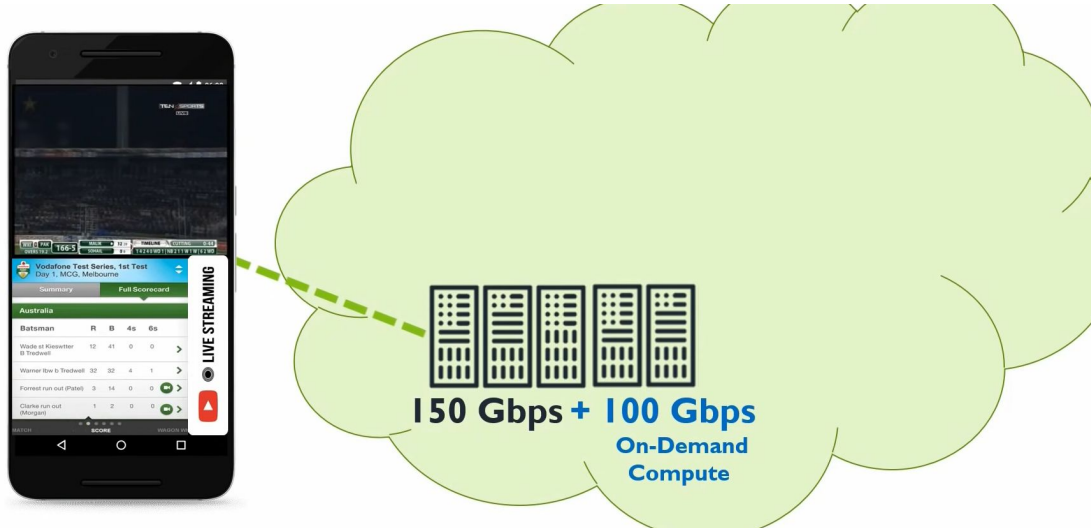


Overall Concept - NFV
Probs in Traditional Network

- Flexibility Prob.
  - ➔ Technological updates
  - ➔ Hardware bind specific function
  - ➔ Additional cost

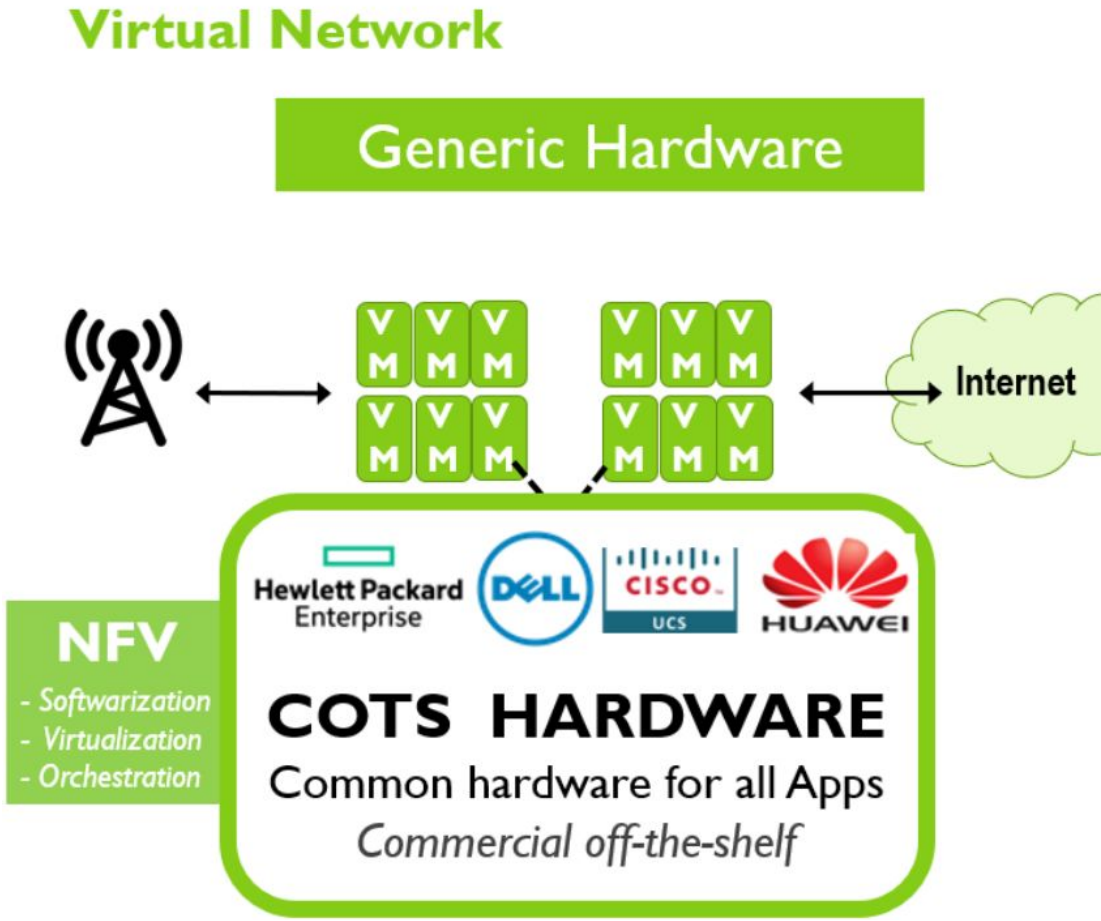
- Scalability Prob.
  - ➔ Dynamic traffic
  - ➔ Hardware bind static capacity
  - ➔ Not meet actual usage





Overall Concept - NFV
What is NFV?

- Softwarization
  - Generic hardware
  - App running on software
- Virtualization
  - Separation of network function and capacity
  - VM are building blocks
- Orchestration
  - Easy capacity scale up and down

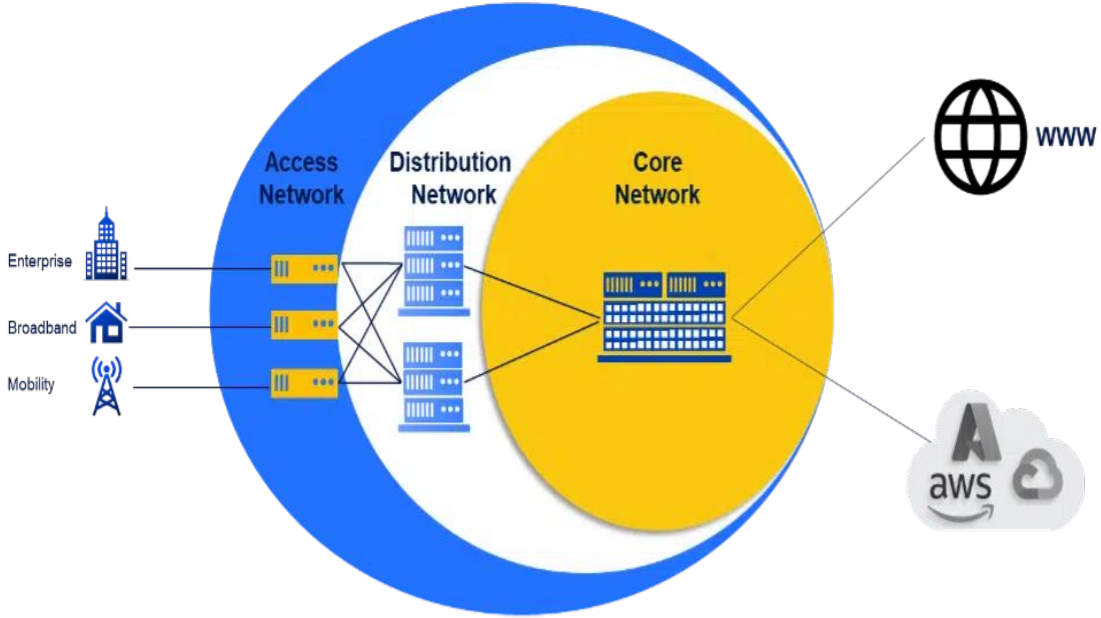


Overall Concept - SDN vs. NFV

	SDN	NFV
Concept	Network abstraction	
Customer benefit or end user benefit	Drives down complexity and cost and increases agility.	
Strategy	Splits the control and data forwarding planes	Replaces hardware network devices with software
Where the applications will run?	Applications run on industry standard servers or switches	Applications run on industry standard servers
Initial applications	Cloud orchestration and networking	Routers, firewalls, gateways, CDN, WAN accelerators, SLA assurance
Life example	Road transportation	Buildings

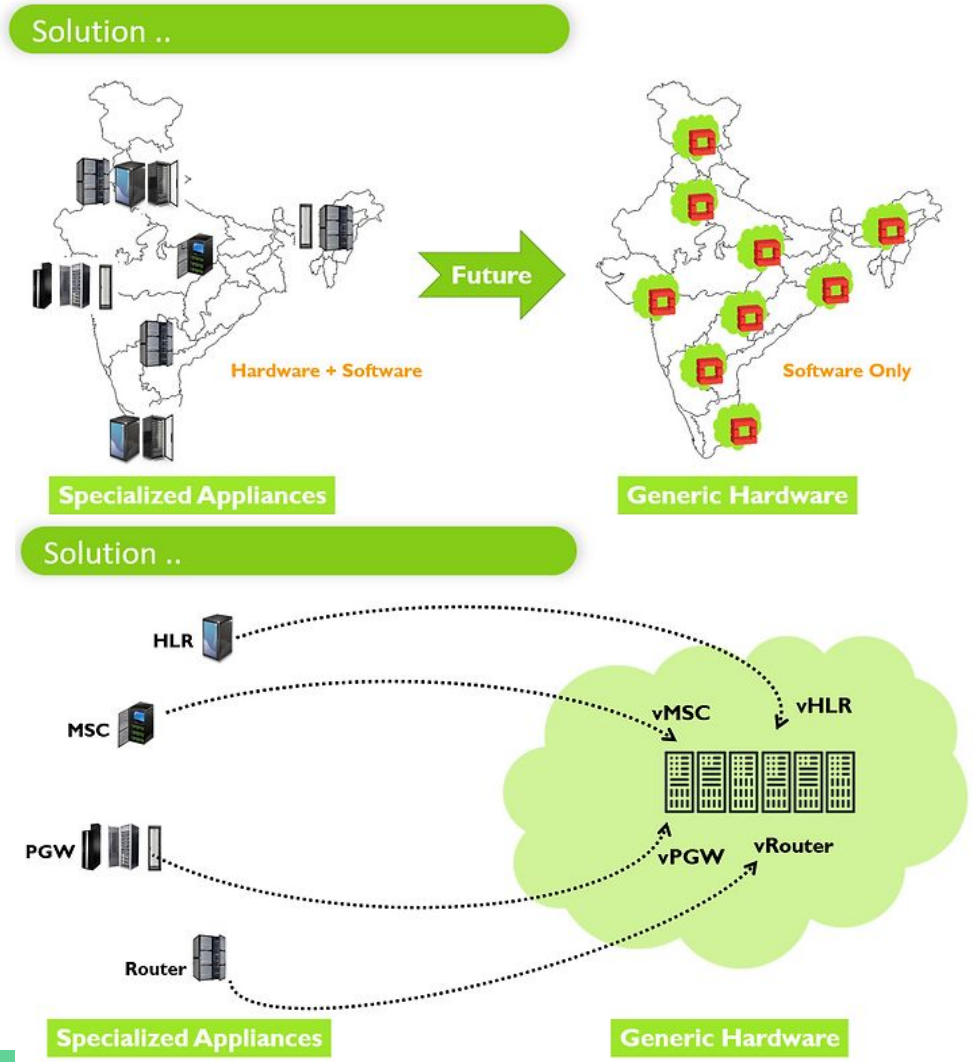
Overall Concept - Core Network

- The Three Layers of Network Architecture
- What is a Core Network?
- What Makes Up a Core Network?



Overall Concept - Relation between SDN, NFV, and Core Network

- Automated management
- Centralized control scattered elements
- Threats Posed by Network Infrastructure Diversity
- Reduces downtime and mean time to repair



Topic Introduction

- Research Topic

  Dynamic Adaptive Scaling Strategy for NFV Routers on Kubernetes

- Introduction

  Router ➔ Dynamic traffic and Function update ➔ NFV router ➔ Scaling strategy

- Problem Statement
  - Input: Network traffic
  - Output: Number of nodes
  - Objective: Minimize cost
  - Constraint: latency < latency threshold

Reference

1. https://drivenets.com/resources/education-center/what-is-a-core-network/
2. https://www.telecomtutorial.info/blog/categories/telco-cloud-series
3. https://www.rfwireless-world.com/Terminology/difference-between-SDN-and-NFV.html

Thanks