



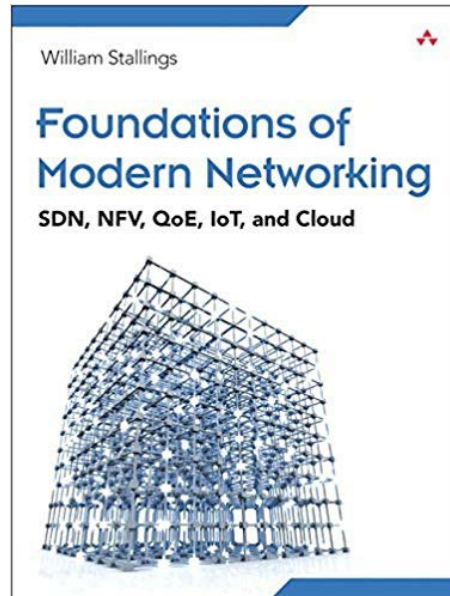
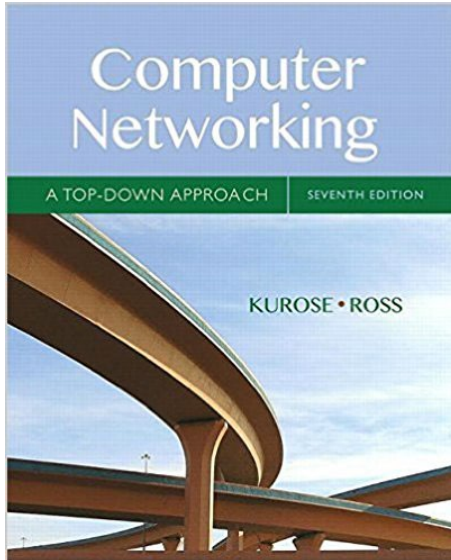
EE 542 Computer Networks

EE542 Syllabus

- Layered Architecture of Computer Networks by catalogue description
 - Application Layer
 - Transport Layer
 - Network Layer
 - Data link Layer
- Contemporary Topics
 - Network Architectures for Multimedia
 - Software Defined Networks (SDN)
 - 5G Core Networks
 - Networks for Cloud Computing and Data Centers
 - Resource Management
 - Network Virtualization



Reference Material



Foundations of
Modern Networking
SDN, NFV, QoE, IoT, and
Cloud
William Stallings
Addison-Wesley
Professional 2015

Computer
Networking: A Top
Down Approach
7th edition
Jim Kurose, Keith Ross
Addison-Wesley
March 2016

- Selected papers for reference and review
- Lecture Note Slides

Copy right notice: Lecture Note Slides are compiled from the teaching material of these books, previous lecture notes of EE542 and additional resources. Part of the slides are entirely created by Ece Schmidt.

Grading

- Midterm(s): 30%
- Paper review and presentation: 10%
- Final: 40%
- Class Project: 20%
- Guideline documents are posted on odtuclass about the paper review, presentation and project.

Paper Review

- We learn about contemporary research about a topic covered in the lectures
- I post the papers, you can suggest your own
- You will fill and submit the paper review form
- Short presentation



Class Project

- Track 1: The research paper that you reviewed
- Track 2: Your thesis or other work you do in your professional environment. We need to discuss how to proceed if you choose this.
- Motivation, previous literature, your contribution, evaluations and results
- We can submit to some conference 😊

Similar Classes

- <https://computer-networks.github.io/15-744-sp23/>
- <http://web.stanford.edu/class/cs244/>
- <https://courses.engr.illinois.edu/cs538/sp2021/>
- <https://faculty.cc.gatech.edu/~lingliu/courses/cs6675/20Spring/cs6675.html>



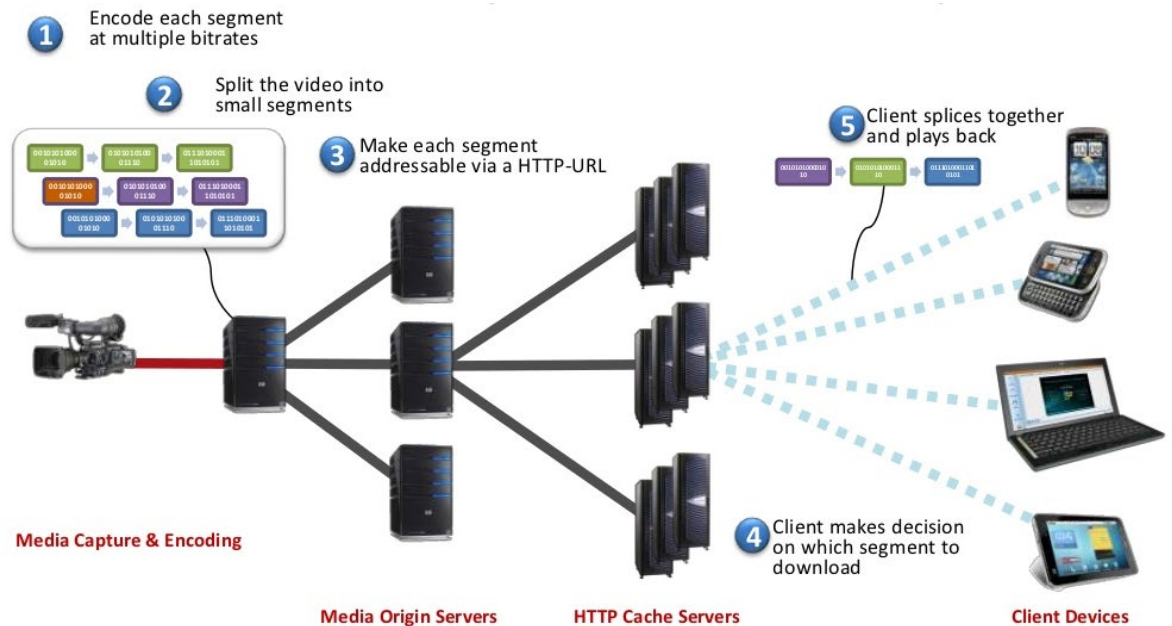
Overview of Research Topics

- Network Architectures for Multimedia
- Software Defined Networks (SDN)
- 5G Core Networks
- Networks for Cloud Computing and Data Centers
- Resource Management
- Network Virtualization

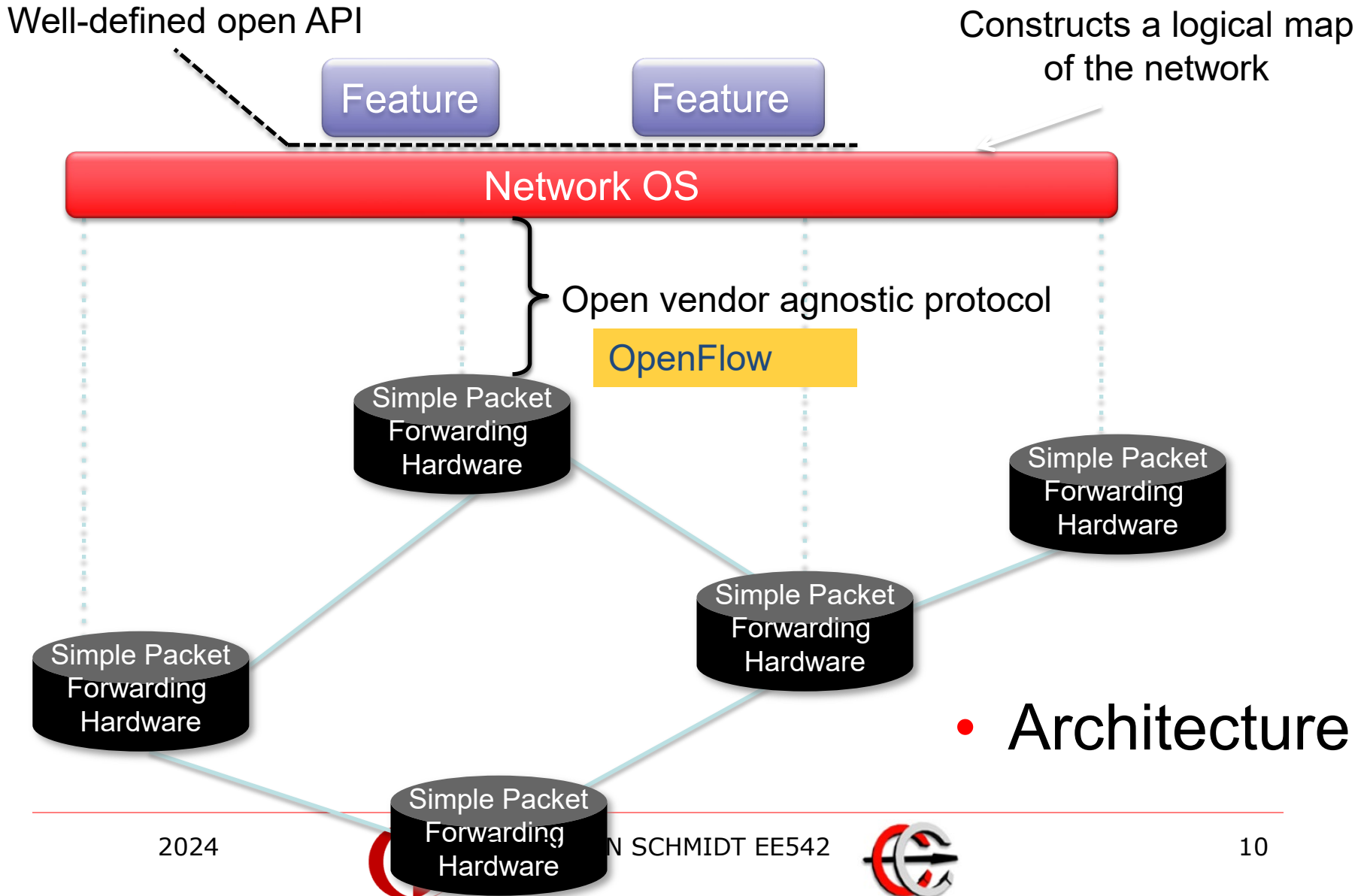
Network architectures for Multimedia Delivery

- Requirements:
 - Smooth/continuous playback
 - Startup
 - Throughput
 - Multiple classes of applications with different requirements

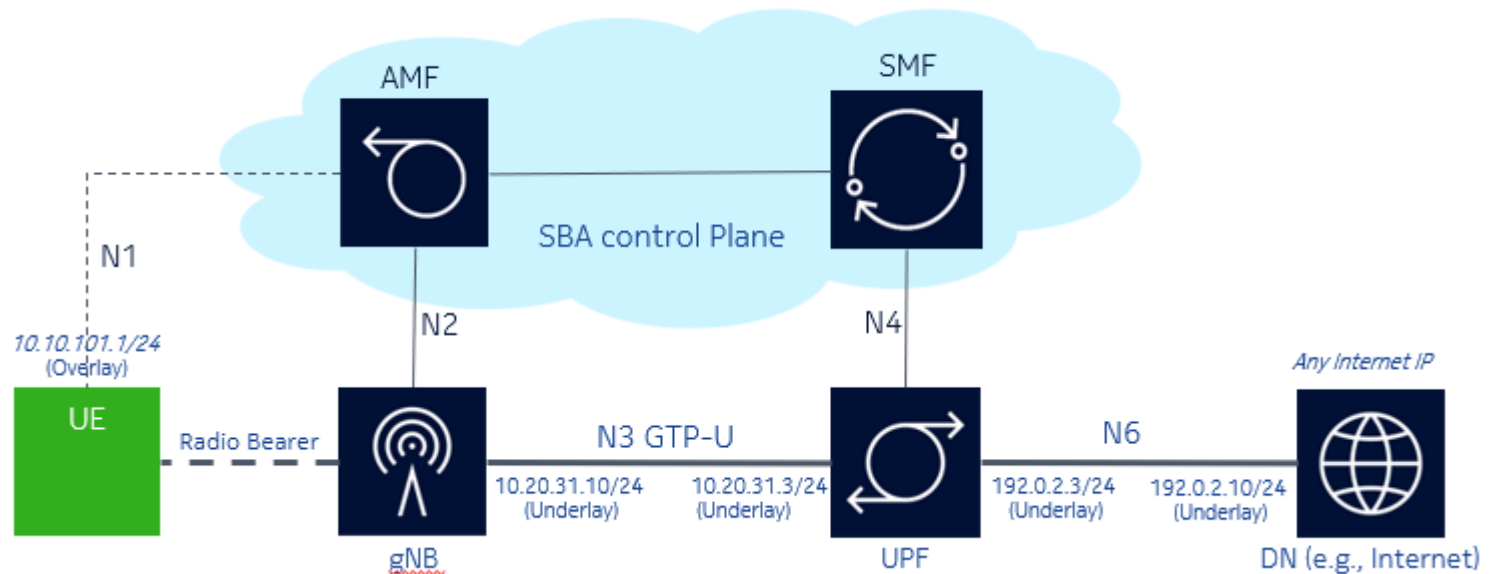
- Tools: **Scalable Video Coding and HTTP Adaptive streaming**



Software Defined Networks



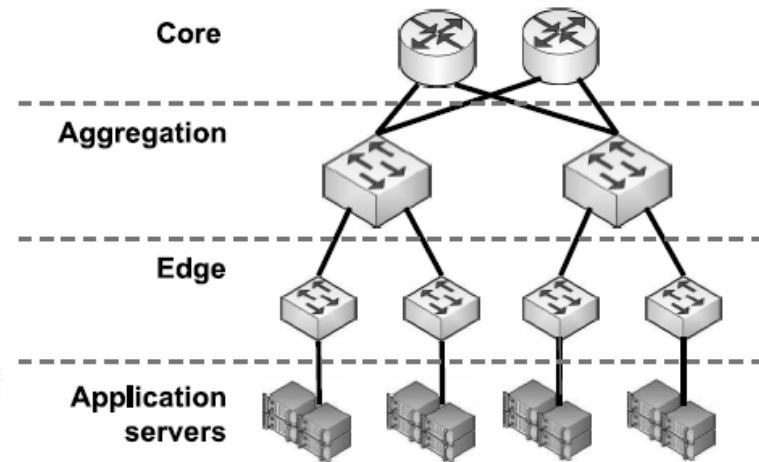
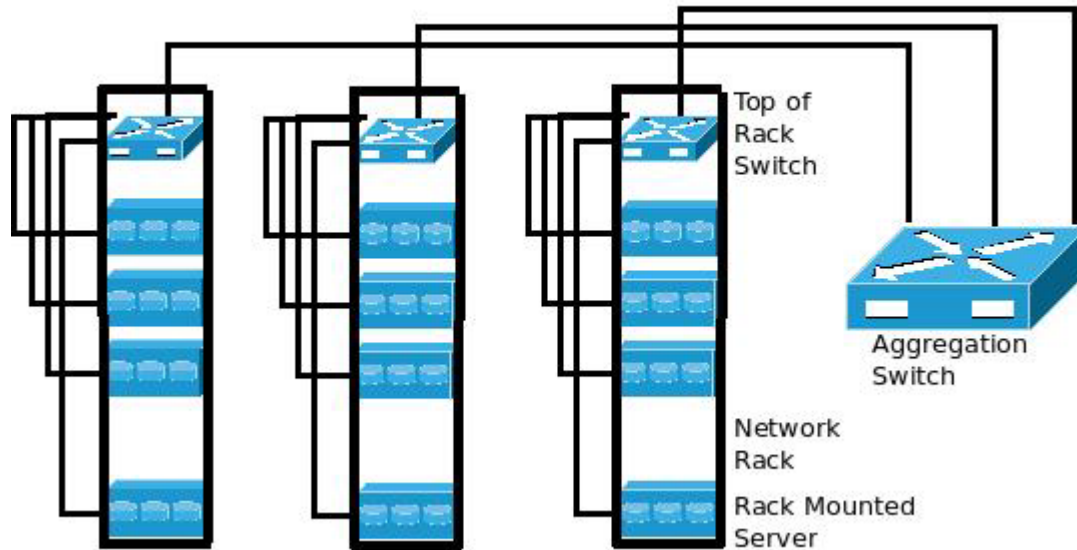
5G Core Networks



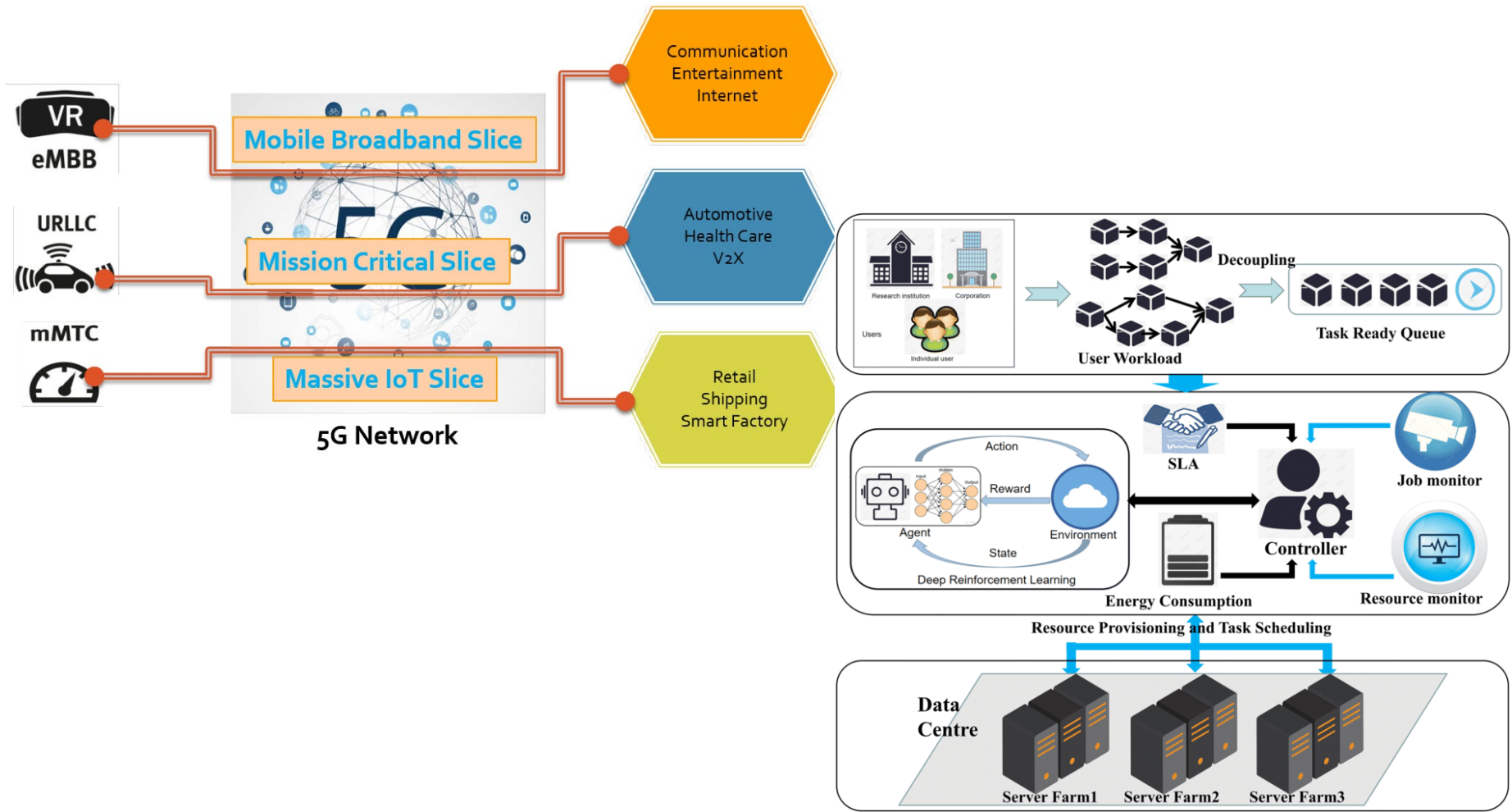
Data Centers

- Architectural

Top-Of-Rack (TOR) - Network Connectivity Architecture

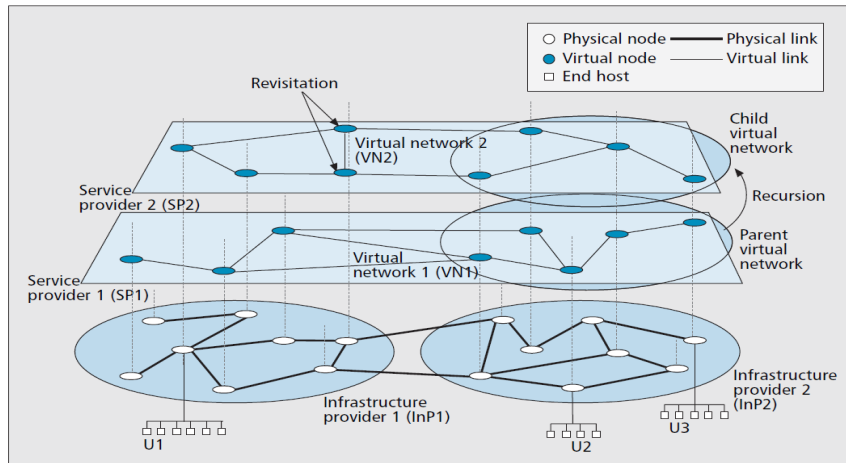


Resource Management

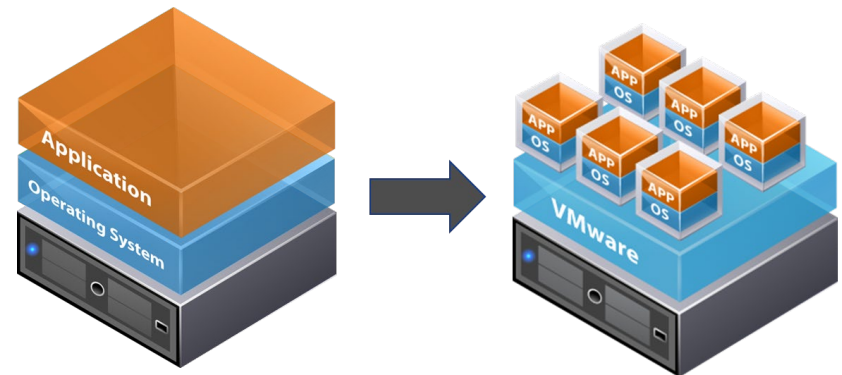


Virtualization

- Architectural



- Practical Application

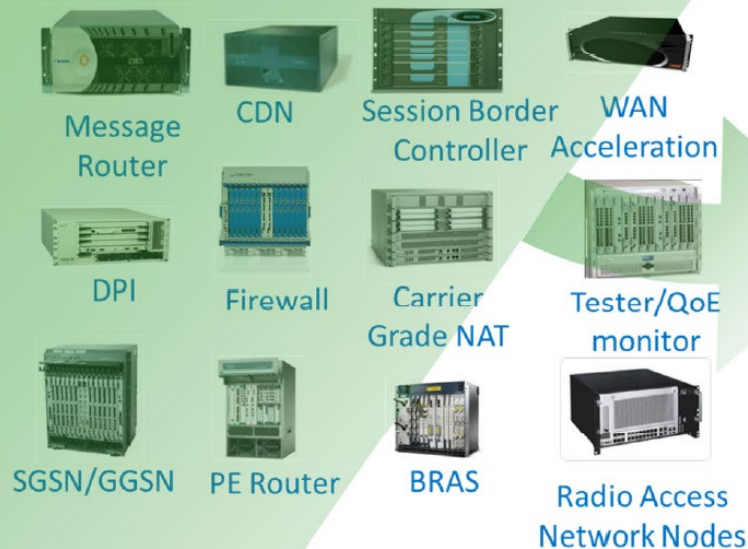


Traditional Architecture

Virtual Architecture

Network Function Virtualization

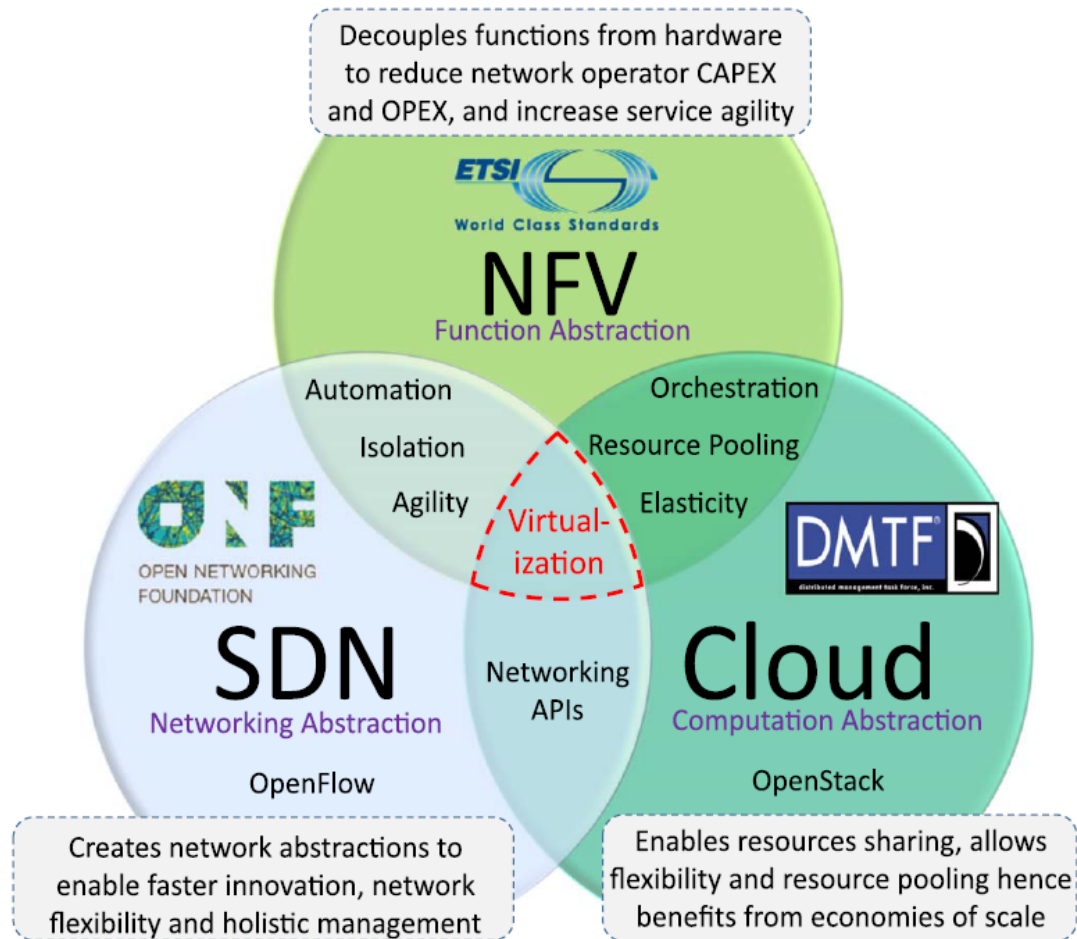
Classical Network Appliance Approach



- Fragmented non-commodity hardware.
- Physical install per appliance per site.
- Hardware development large barrier to entry for new vendors, constraining innovation & competition.



All Related





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