



NPTEL ONLINE CERTIFICATION COURSES

COMMUNICATIONS NETWORK

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Module 01: Communication Networks basics

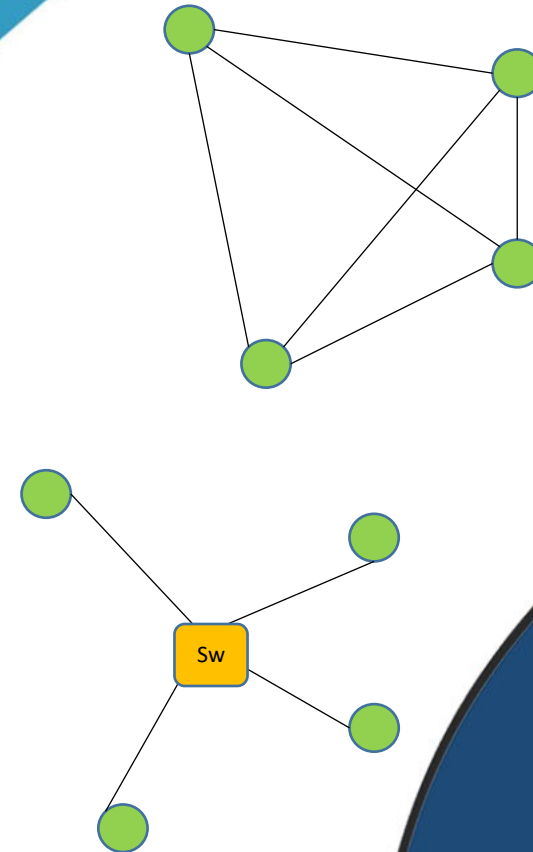
Lecture 01 : Introduction to communication Networks

Why Communication Networks?



Point to Point Communication

$\frac{N_c 2}{2}$ Combination
Scalability Issue
Wastage of resources

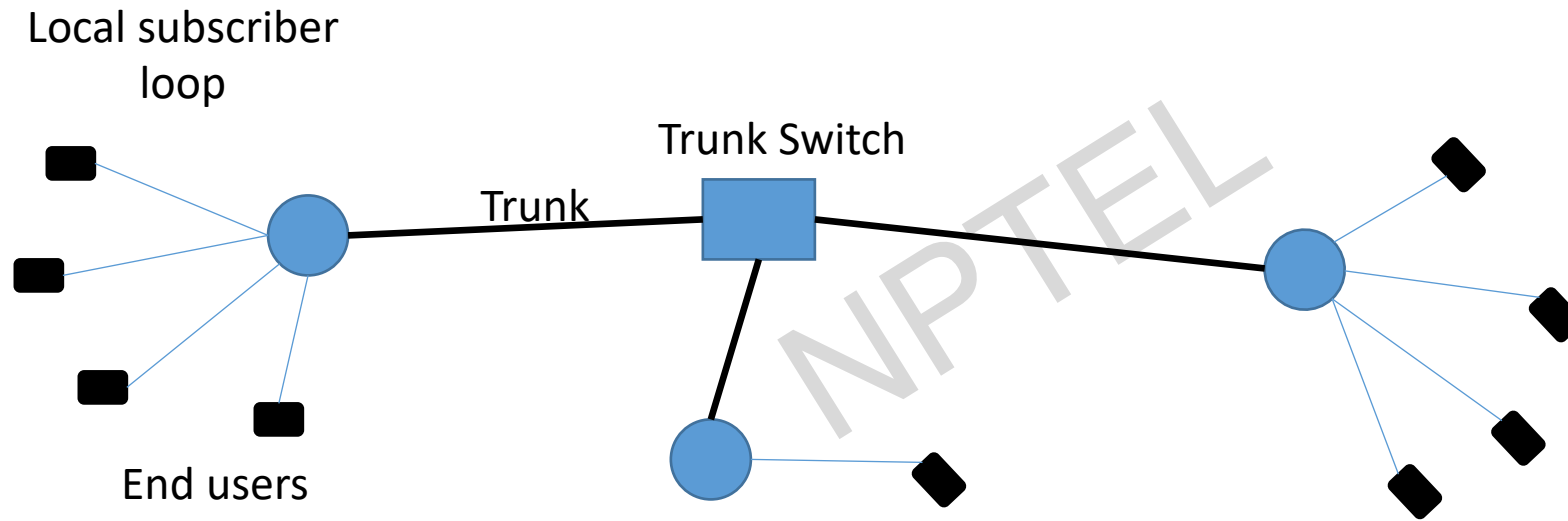


Circuit switched network

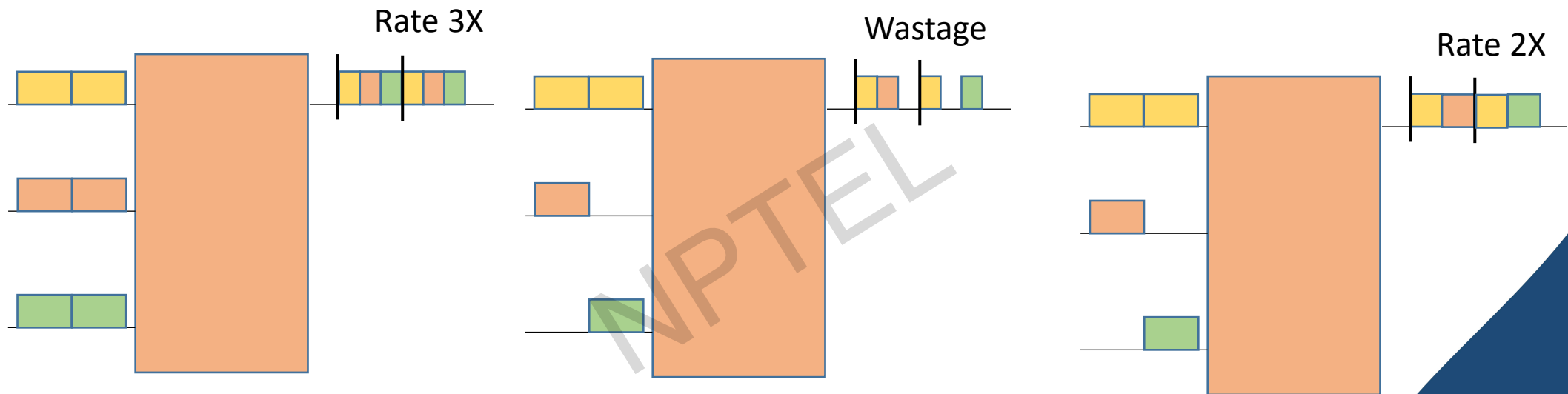
TDM Multiplexing

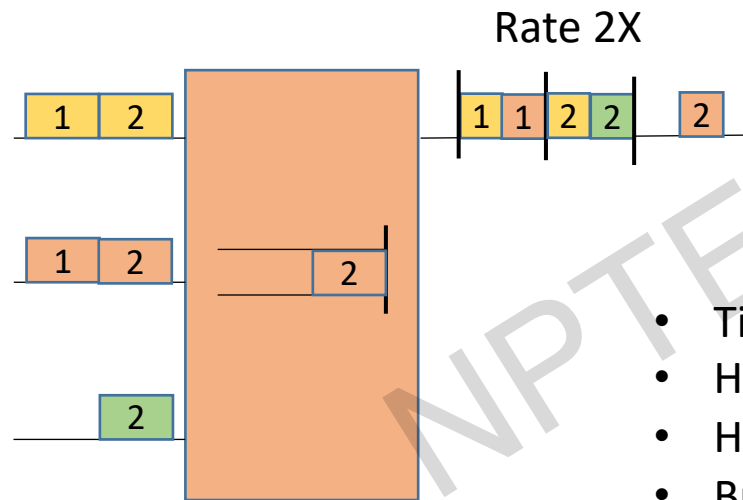
Time and space switching

Automated switching - Strowger



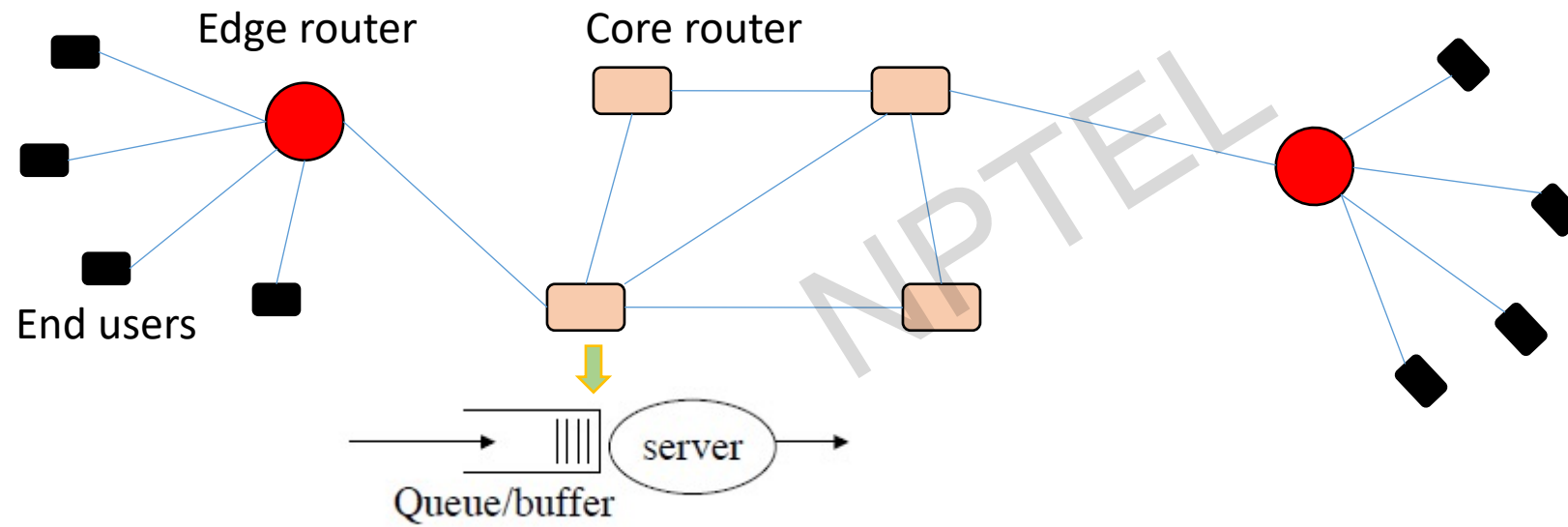
Multiplexing – TDM Vs. Statistical



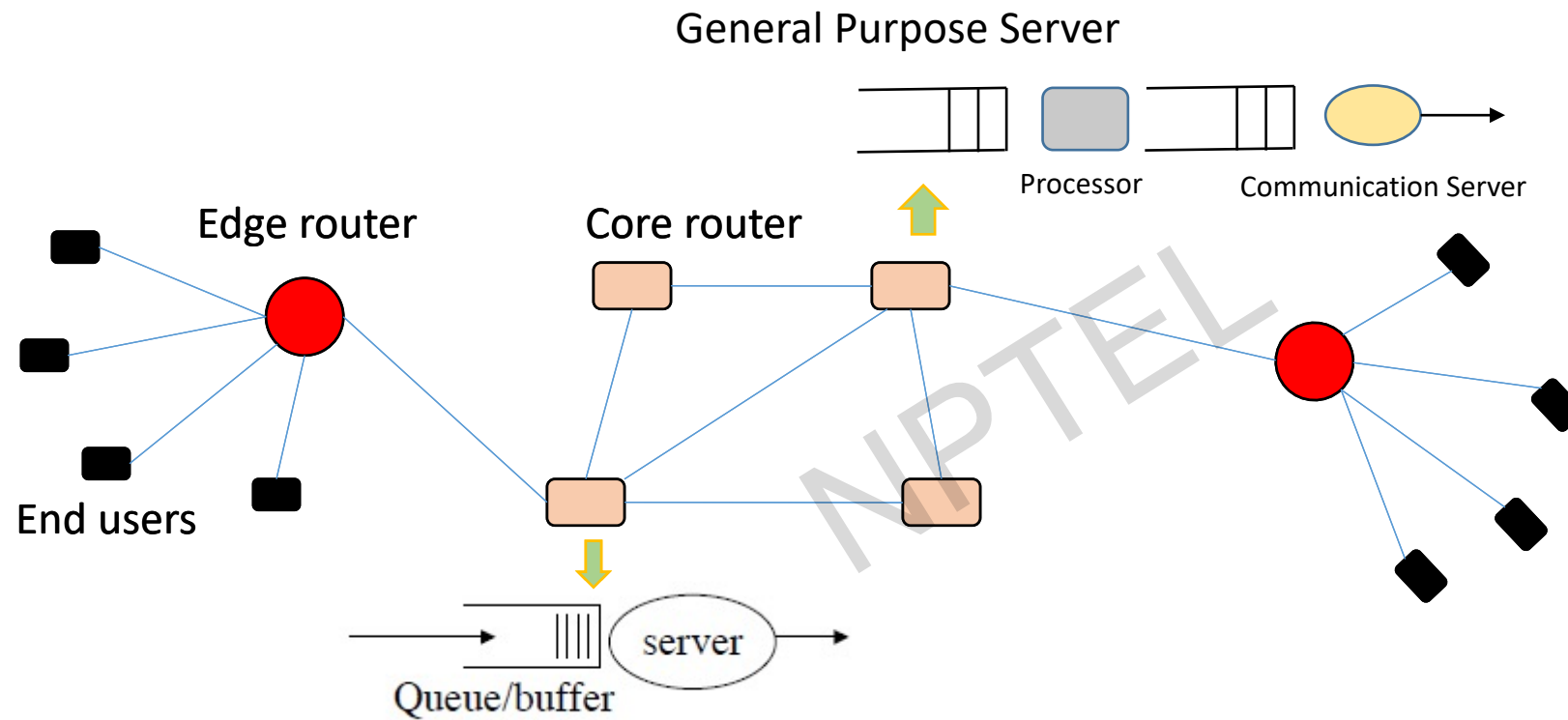


- Time slots are no longer the address
- Header needs to be added
- Hop by hop switching or routing
- Buffering required in intermediate nodes
- Queuing delays

Packet switched network
Statistical Multiplexing
Introduction of Buffer



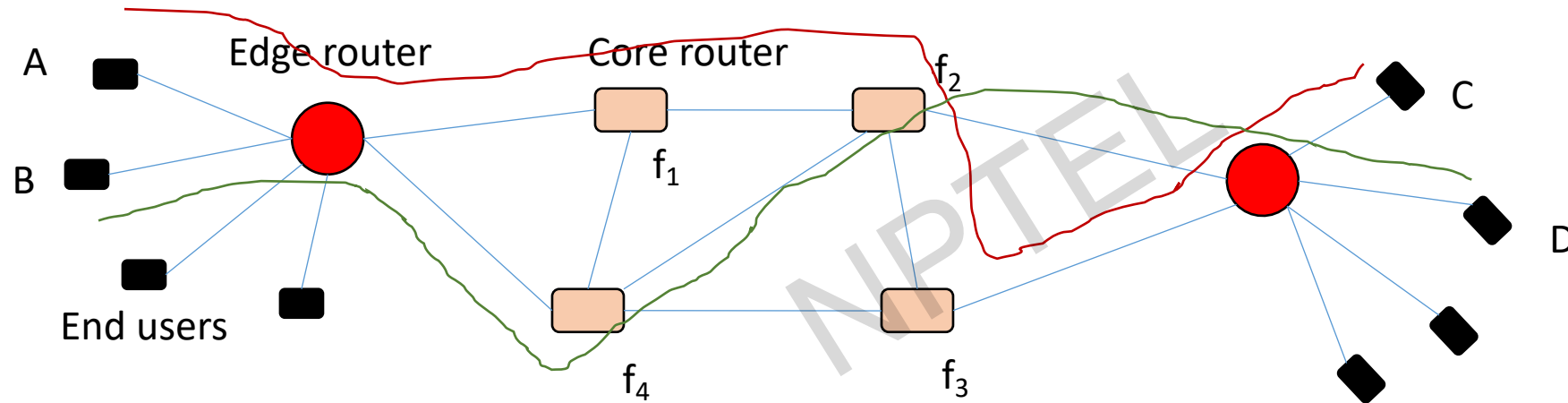
Network Function Virtualization (NFV)



Network maintenance and upgradation is easy

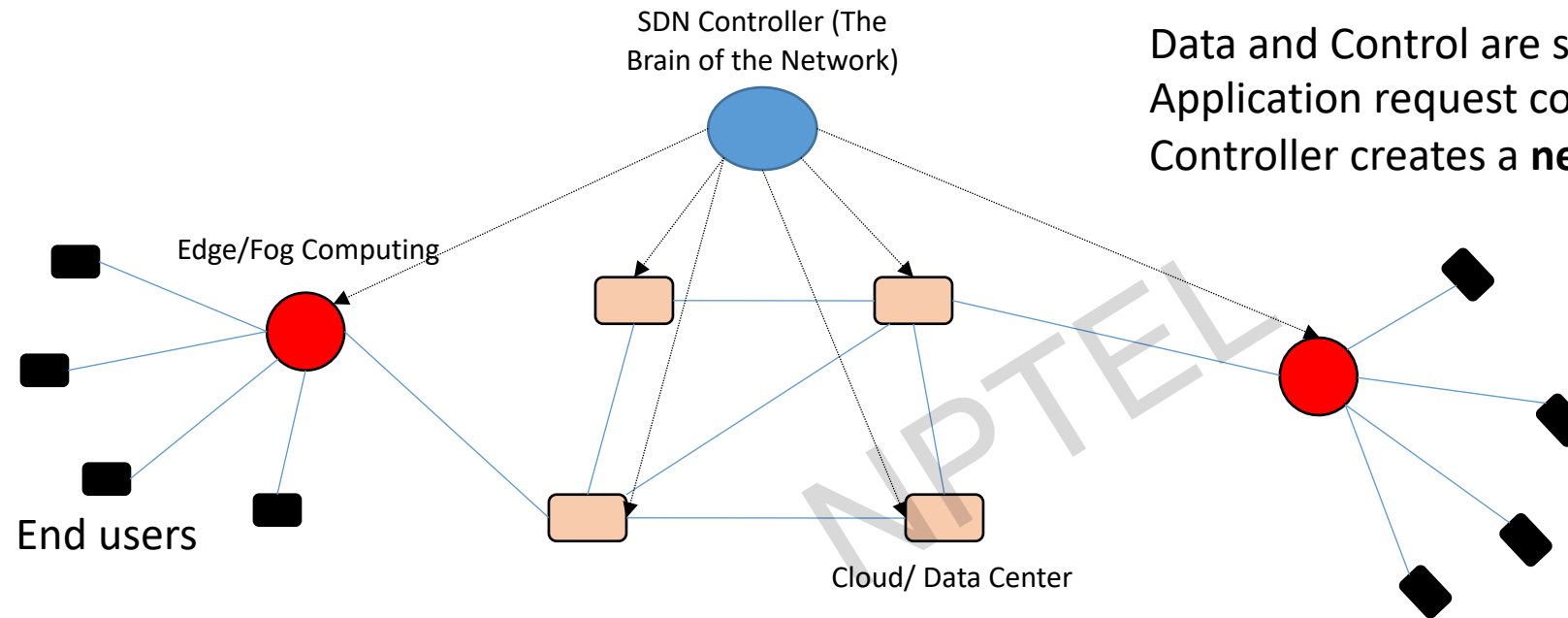
Network Function Virtualization (NFV)

Task 1: (A-C) f_1, f_2, f_3
Task 2: (B-D) f_4, f_2



Routing traffic according to processing requirement and its order
New network design paradigm: Network function placement

Cognitive Network: Software Defined Network (SDN)



Data and Control are separated
Application request controller for connections
Controller creates a **network slice** through the network

Virtual Circuit Switching
QoE aware Application Oriented Networking

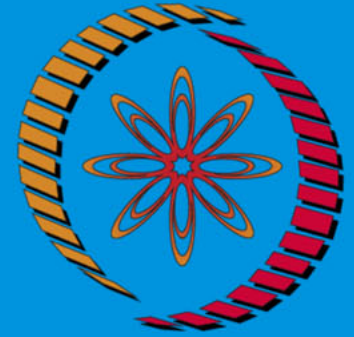
Conclusion

- Circuit switched network vs. Packet switched network
- TDM Multiplexing vs. Statistical Multiplexing

References

Book: Digital Telephony – J. Bellamy

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**THANK
YOU !**