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QoS Models and their Contributions for Business Traffic in Academic Infrastructure

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Introduction

Some Facts

Traditional Infrastructure

Best Effort Model

02

Towards Convergence

The Need of QoS

03

QoS Models

IntServ, DiffServ, Hybrid

04

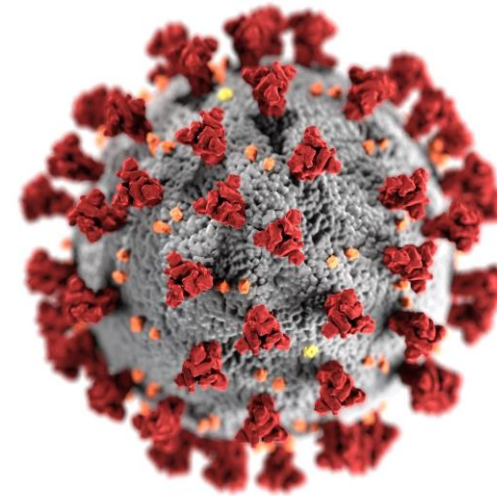
Conclusion

Convergence is a Necessity

05

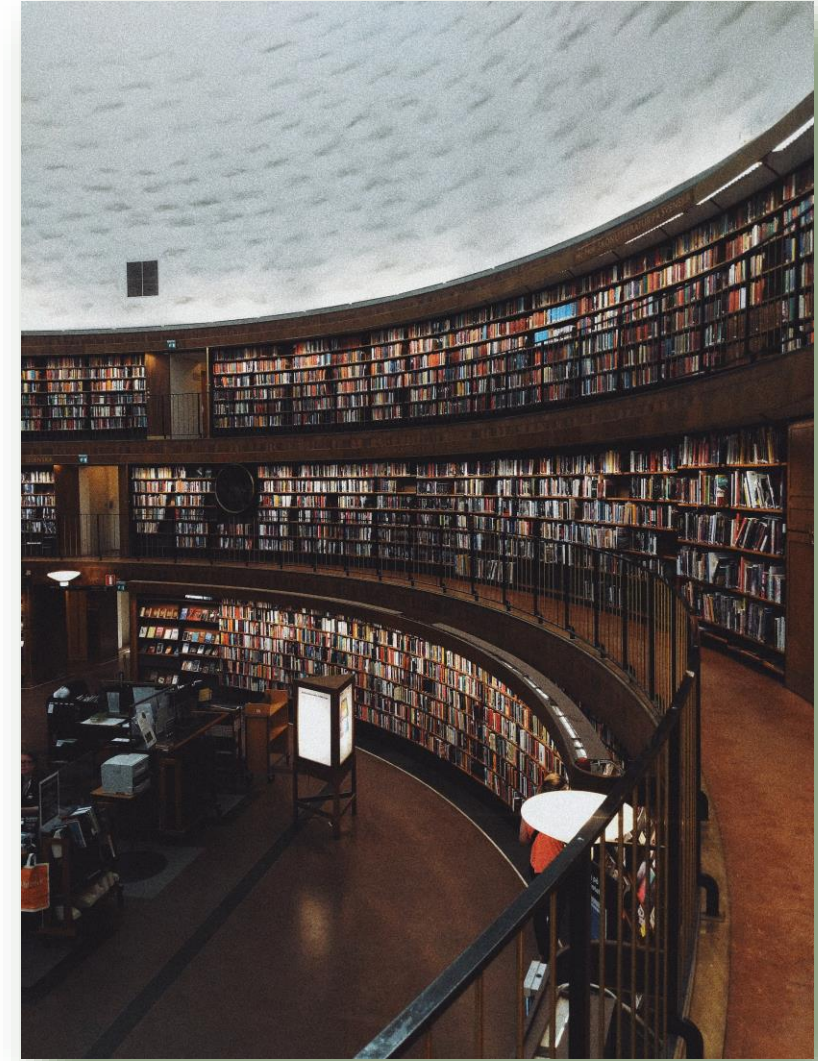
Introduction

- Optimal usage of I&T is a must
- Role of I&T
 1. Support
 2. Factory
 3. Turnaround
 4. Strategic



Introduction

- **Universities are not exceptions**
 - Dependent on I&T for their growth and probably their survival.
 - Value creation to their stakeholders
- **Research and education is key to improving national competitiveness.**
- **NREN strengthen communication and collaboration**
 - Providing an optimal Quality of service level to each services and application.



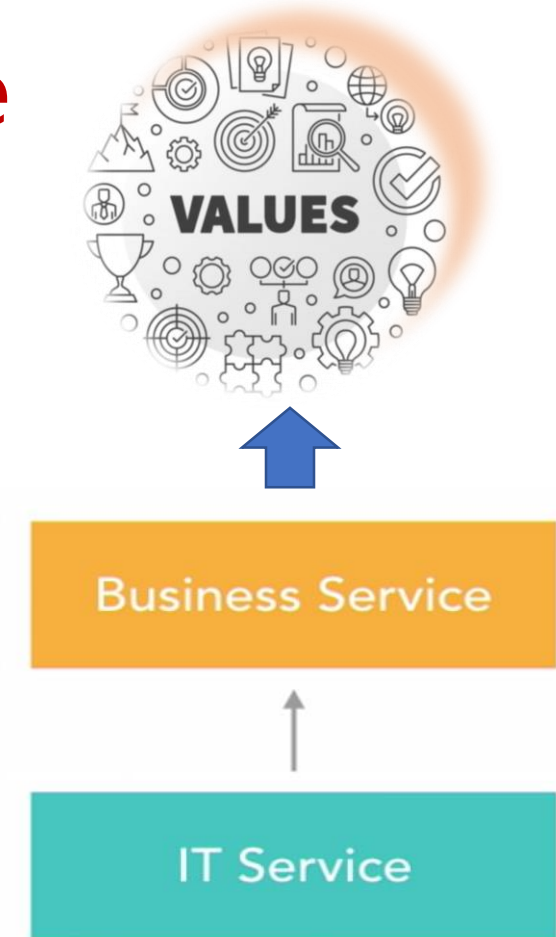
Traditional Infrastructure

- **Best Effort model**
 - Simple
 - Uniform
 - Monopolization
- **Over-provisioning**
 - Easy to implement
 - Not scalable over time
 - **CAPEX**



Traditional Infrastructure

- Towards Multiservices Infrastructure
- Intra- and inter-university
 - Teaching
 - Research
 - Innovation
 - administrative activities



Towards Convergence

- Intra- and inter-university

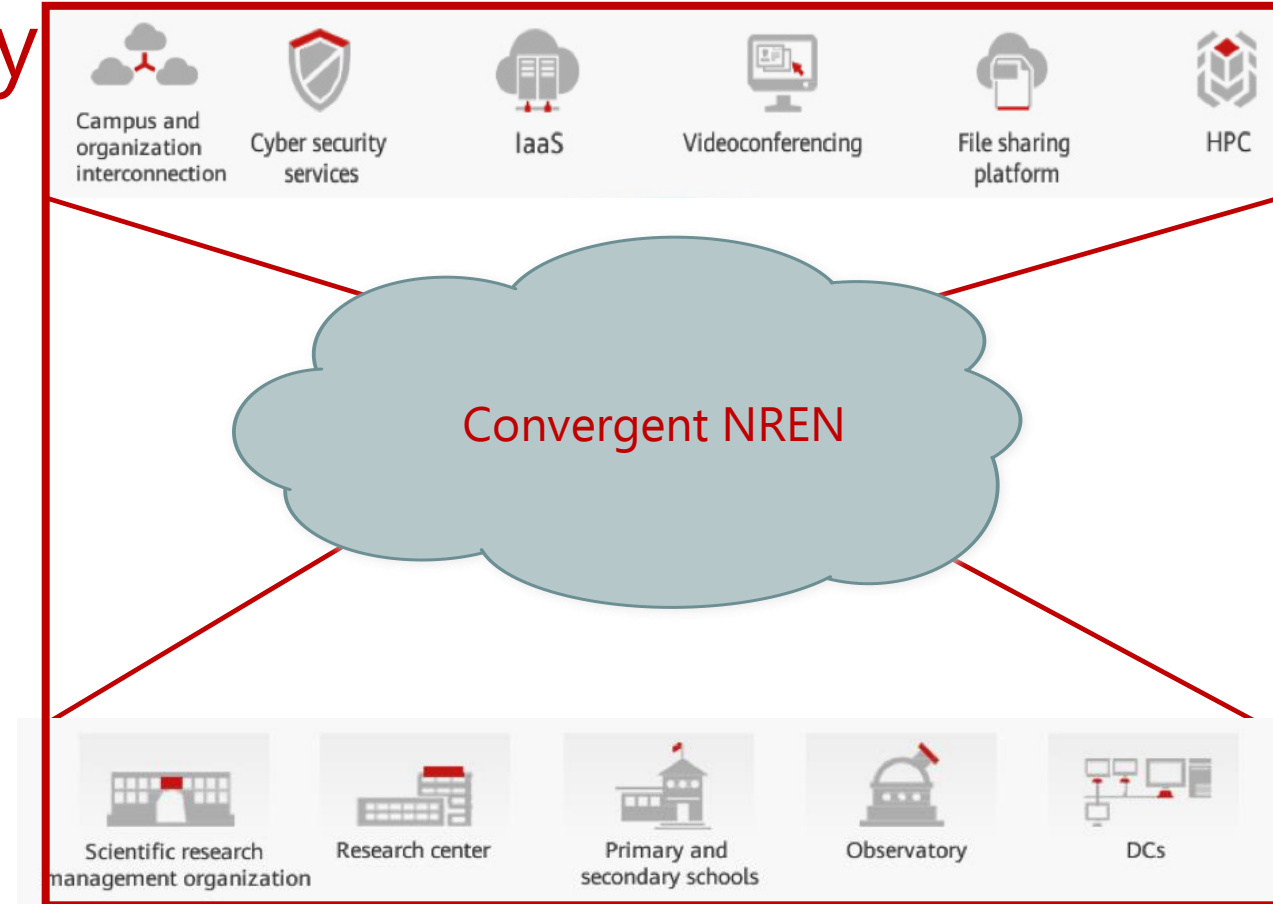
- Teaching
- Research
- Innovation
- administrative activities

- Access Layer

- Application Layer

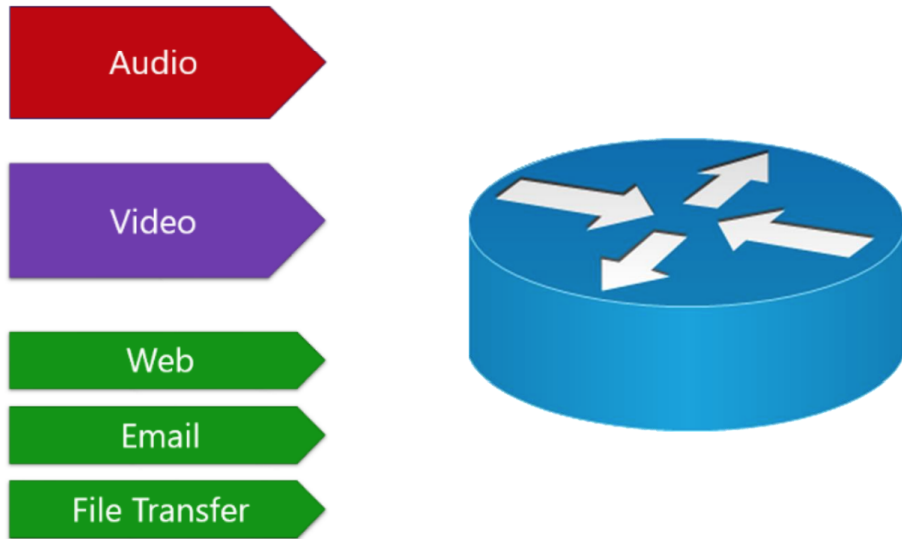
- Need of

- QoS, Security,....



Convergent NREN

Towards Convergence



- QoS Metrics
 - Bandwidth
 - Delay
 - Jitter
 - Loss

QoS Models

1. IntServ
2. DiffServ
3. Hybrid



QoS Models

1. IntServ

- Explicit resource reservation per flow via RSVP
- IntServ capable routers

2. DiffServ

- Soft QoS model
- Class Based
- Per Hop Behaviors/Class
- DSCPs/PHB

3. Hybrid

QoS Models: DiffServ Vs IntServ

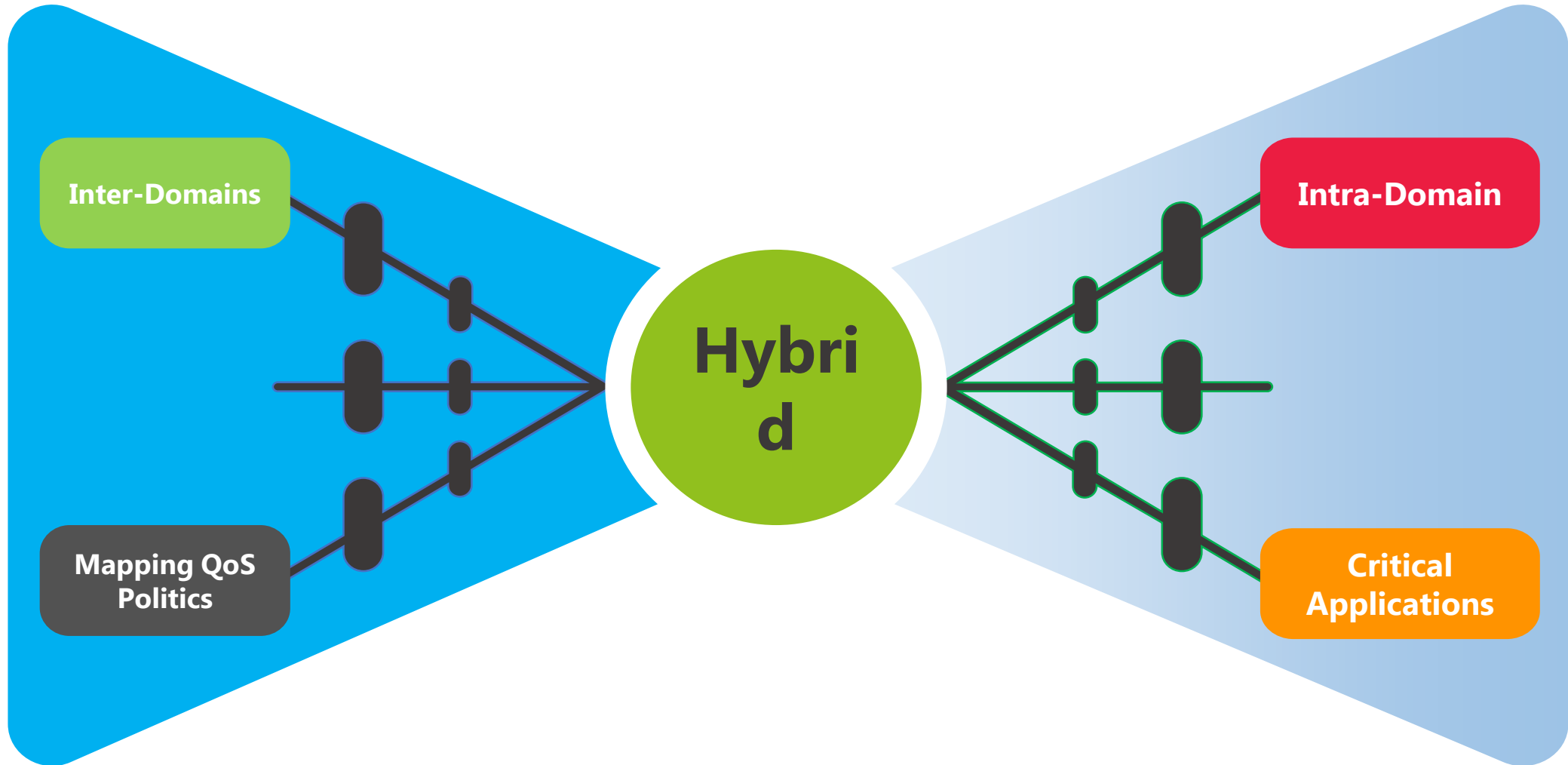
1. IntServ

- Good solution for managing flows in small networks.
- Difficult to implement
- Poor scalability.
- Very difficult to implement.

2. DiffServ

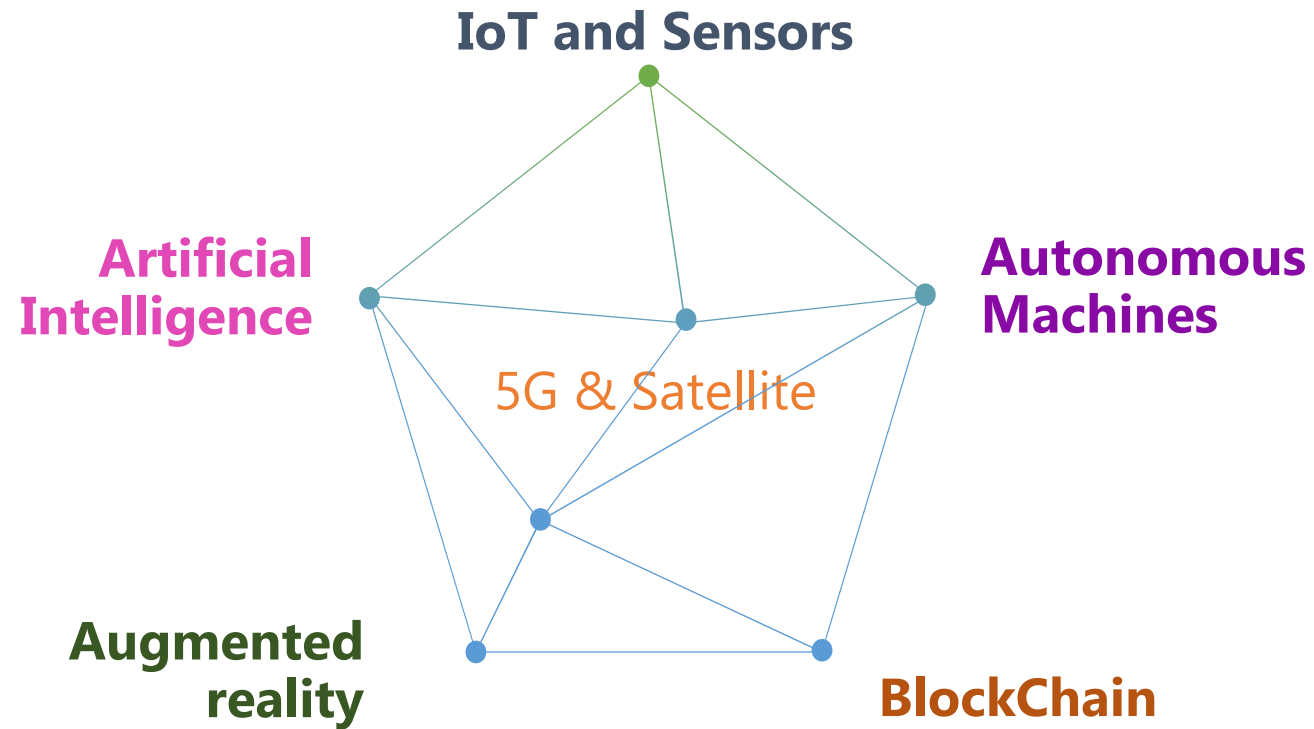
- Highly scalable QoS mechanism.
- Doable in term of configuration, operation and maintenance.
- Inter-domains Coordination
- Number of service class

QoS Models: DiffServ & IntServ

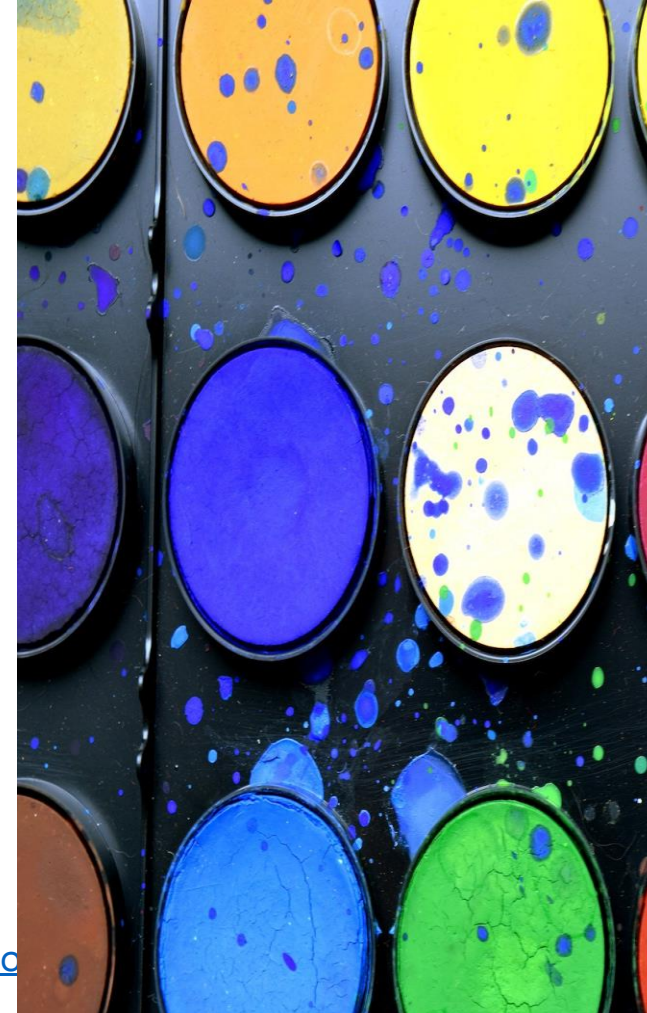


- **Prerequisites**
 - **Services Catalog**
 - Service
 - SLA
 - **QoS policy**
 - Design
 - Mapping SLA-PHBs
 - DSCP values adoption
 - Mapping DSCPs-PHBs
 - QoS Implementation
 - Identification, Classification & Marking
 - Traffic control
 - Congestion avoidance
 - Packet scheduling

Conclusion



Digital Transformation
Steve Brown



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Thank you

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