



Cloud computing and its relation to SDN and NFV

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Clarification of basic terms: NFV, SDN and Cloud Computing

Cloud computing, NFV, and SDN are enablers of virtual programmable infrastructures and networks

Network Functions Virtualization*

- Use of IT virtualization technology
- Network Functions running on standard IT hardware
- Higher degree of automation and flexibility

Cloud Computing

- Automated, programmable, SW-defined datacenter
- Virtualized compute & storage
- Elasticity & business agility
- IaaS, PaaS and SaaS*

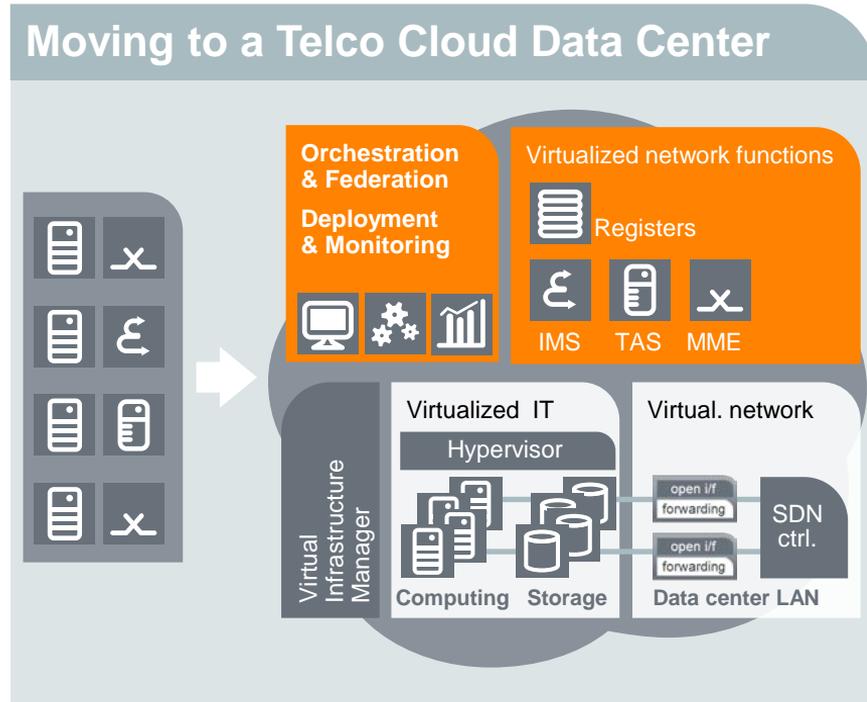
Software Defined Networking

- Separation of control and user data
- Centralized control
- Programmable and open API
- Network abstraction

*) IaaS, PaaS and SaaS: Infrastructure-, Platform- and Software-as-a-Service; NFV- ref. to ETSI ISG NFV

SDN and NFV in a Cloud Data Center

Already there today



Benefits

- Standardized software-defined runtime environment decoupled from underlying HW
- Dynamic load adjustment
- Automated service deployment
- Flexible service innovation

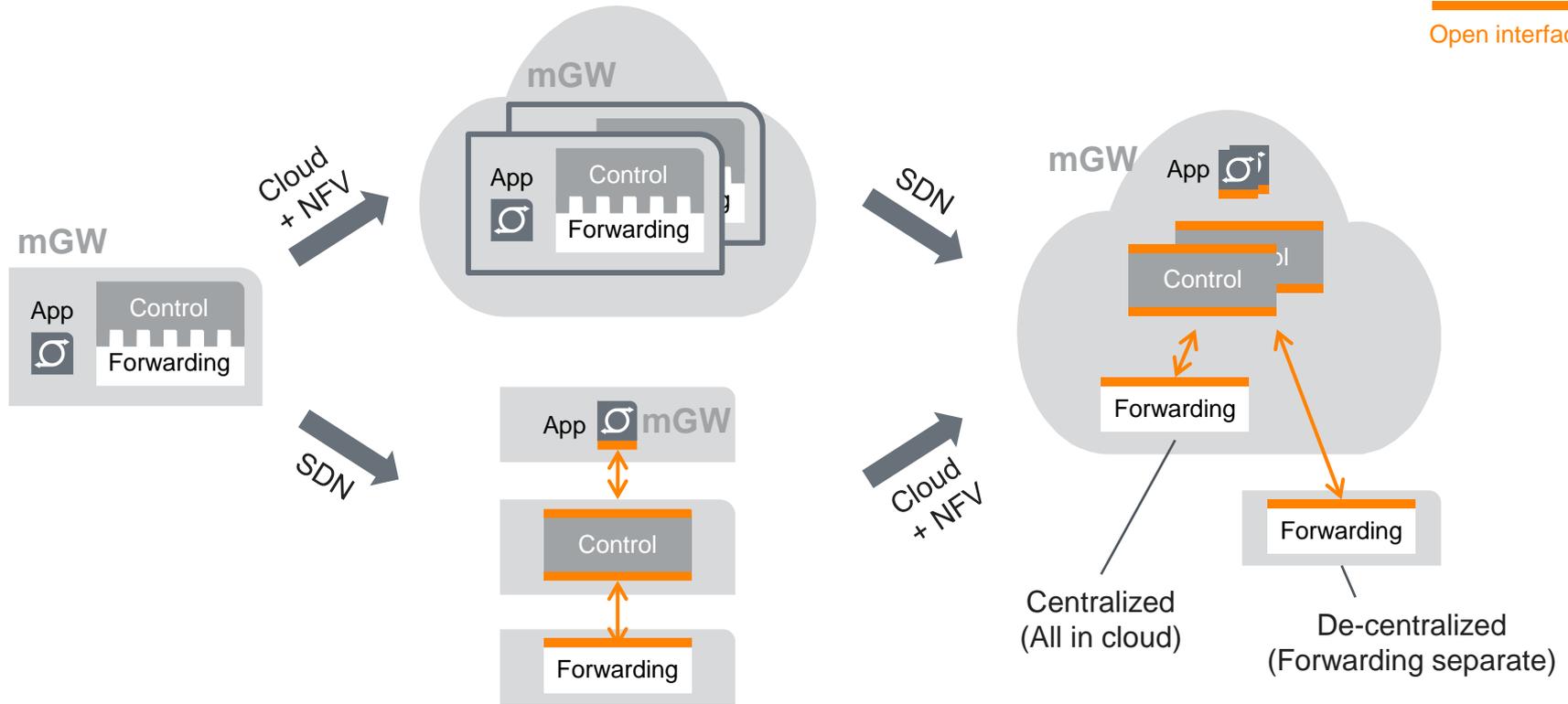
Success factors

- Clear separation of orchestration and IT infrastructure via cloud APIs
- New operational processes and skill sets

Cloud, SDN and NFV applied to mobile gateways

Full flexibility in deploying functionality

Open interface



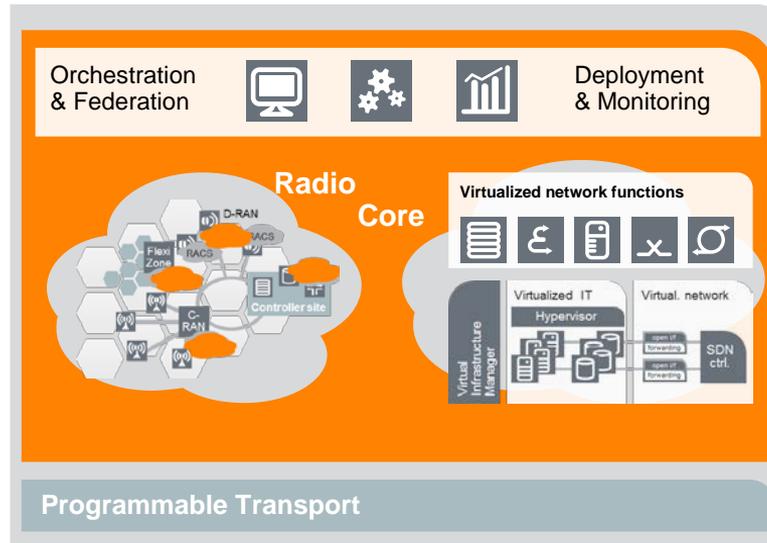
Cloud computing, NFV, and SDN are complementing each other forming a powerful triple with future upside potential

On-demand resources

- Pooling
- Elasticity

Experience

- Decentralization when needed
- Quality guarantee



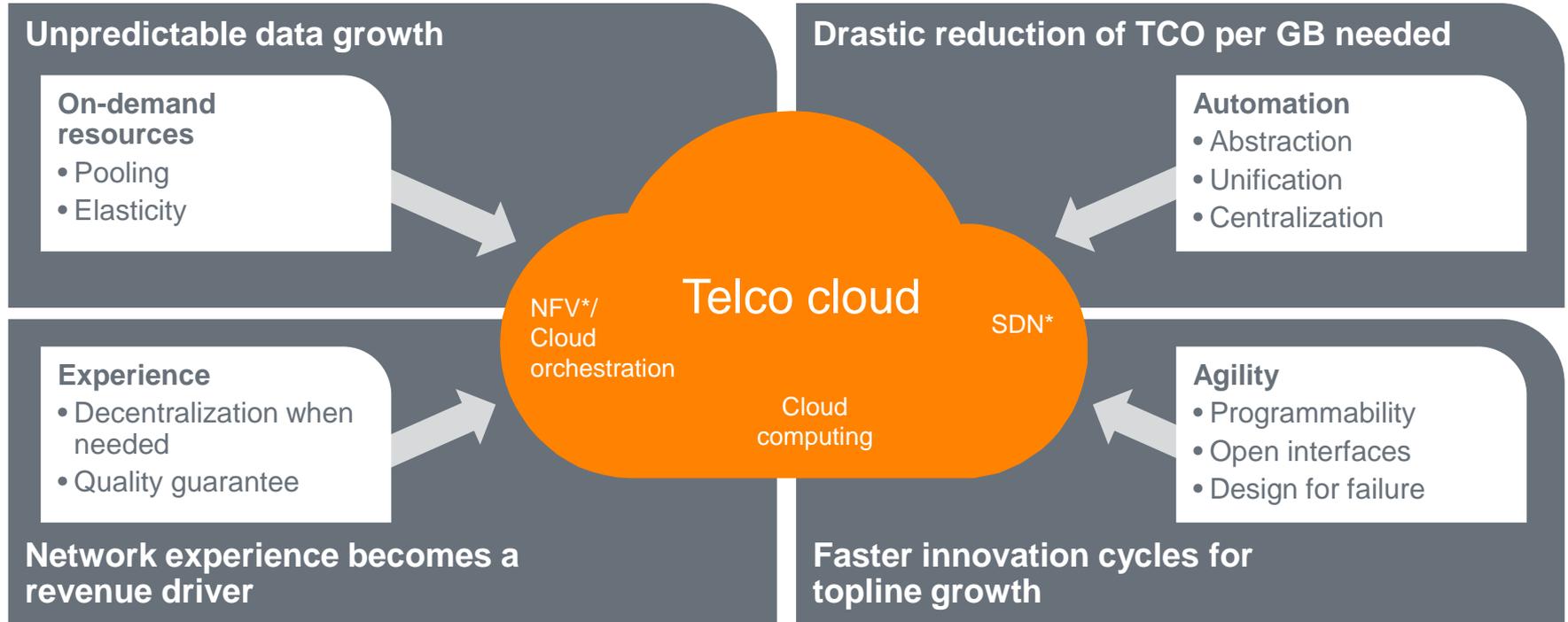
Automation

- Abstraction
- Unification
- Concentration

Agility

- Programmability
- Open interfaces
- Design for failure

An agile, programmable network infrastructure is needed to survive Cloud Computing, SDN, and NFV are key technologies in this development



*) NFV: Network Function Virtualization; SDN: Software-Defined Networking

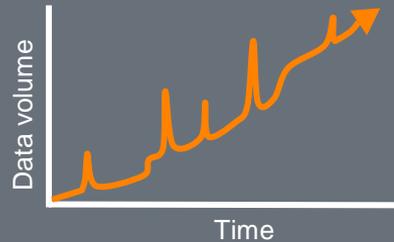


Thank you

Requirements towards the network constantly change

Cloud, SDN, and NFV are a powerful triple to meet these requirements

Unpredictable data growth



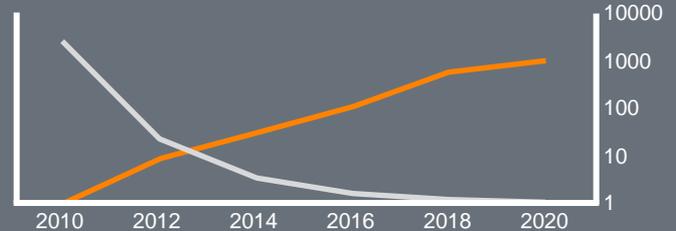
Drivers:

- 3D & HD video
- Video integrated everywhere
- Connected objects

Drastic reduction of TCO per GB needed

TCO/GByte

Capacity



- Network experience becomes a revenue driver
- “Real time” customer experience insight & action

Deliver best user experience

Time from code to production launch

Traditional approach

Cloud approach

Faster innovation cycles for topline growth