

ACTN Use-cases for Packet Transport Networks

draft-cheng-actn-ptn-requirements-00

IETF 90th , July 20 – July 25, 2014

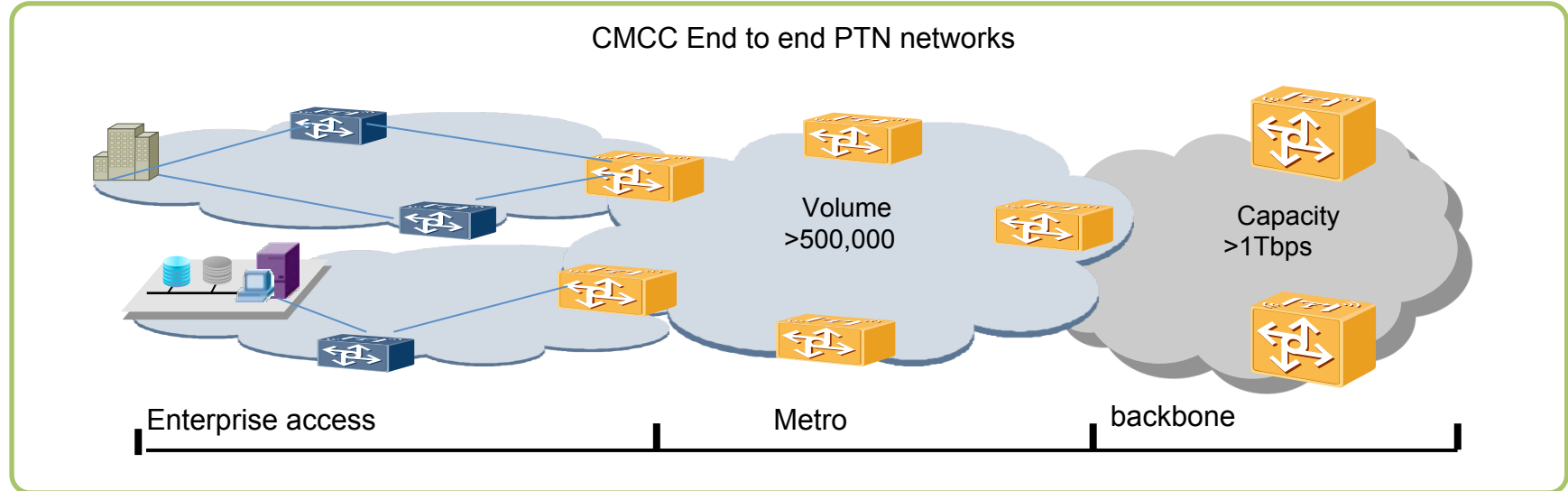
Weiqiang Cheng (CMCC)

Yunbin Xu, Guoying Zhang (CATR)

Scope

- CMCC PTN network overview
- Services requirements for PTN
- Networks Requirements for PTN
- Overview of Virtual Network Operations for Packet transport networks

CMCC PTN network overview



Data Plane-Configurable :

- ✓ MPLS-TP: Labels of PW and LSP distributed statically
- ✓ L3 VPN: L3 Tunnels in core layer for LTE X2 configured statically
- ✓ Protection: configuration statically

Management Plane-Centralized :

- ✓ centralized NMS server and manually configuration

Need Control Plane - faster provisioning and operational tools for end-to-end connectivity

- ✓ Separated from data Plane

PTN is able to evolve to ACTN in nature

Services requirements

1. Fast Provisioning

- Apply service in carrier office
- Provisioning period >1month
- Apply service through PAD/Phone
- Provisioning period mins~days

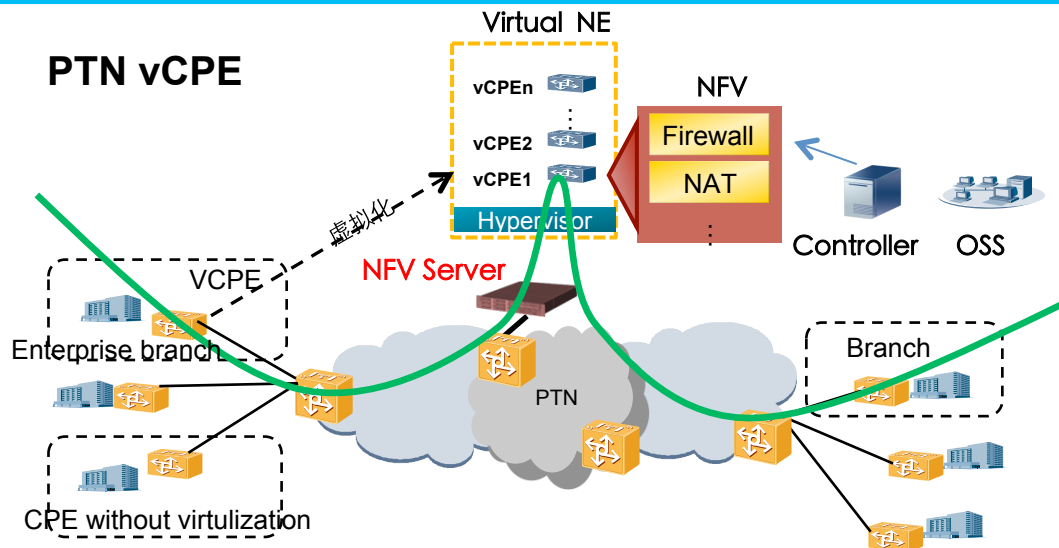


2. Operation optimization

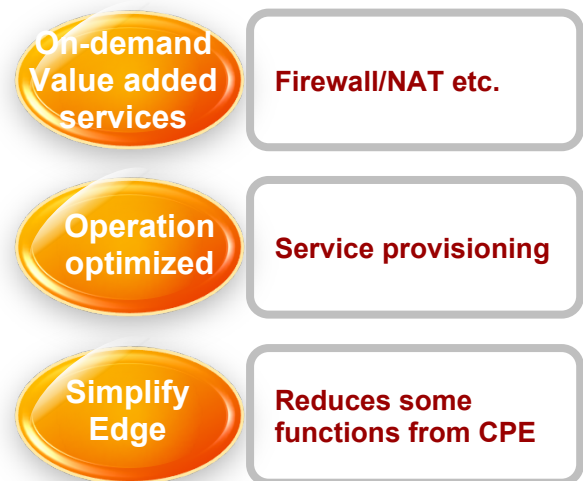
- Manual operation process
- Show service status to Operator
- Intelligent operation system
- Show service status to users/operator



3. Added value IT services

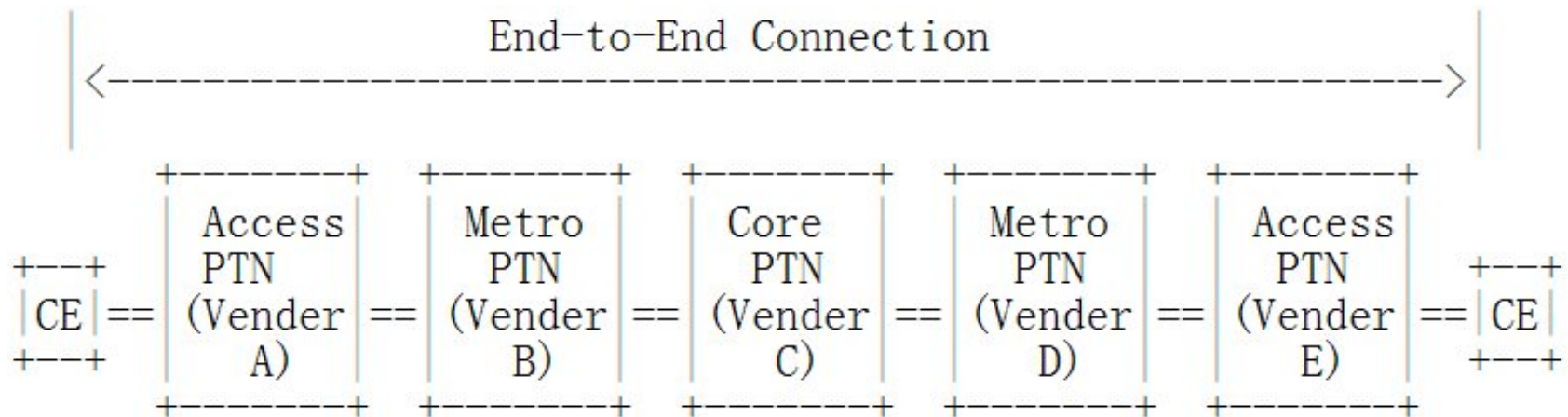


What benefits?



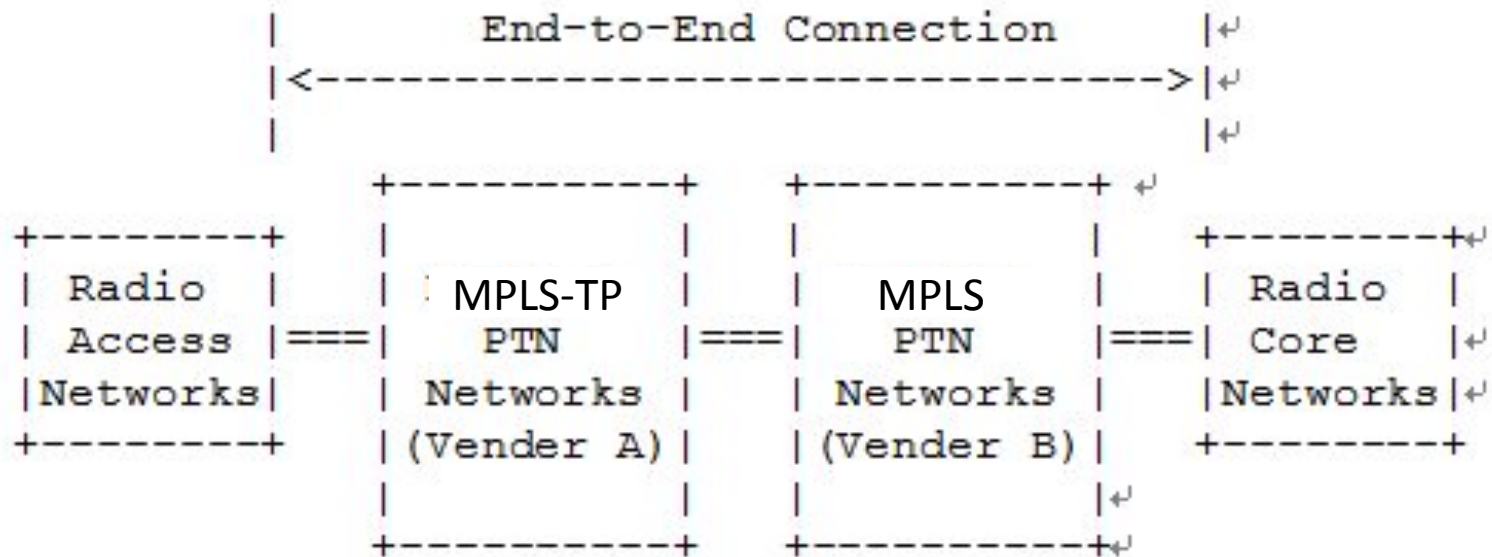
Network requirements: Multi-domain end to end control

- The operators had built a large scale of packet transport networks and divided them into different areas such as access, metro and backbone networks, each area has their own management systems.
- Separated operation in different domains makes the provisioning slow and operation efficiency low.



Network requirements: Multi-Layer resources coordination

- LTE backhauling requires the PTN to realize L3 network function. This function requires the management systems operate in different layers of networks, and leads to separate and fragmented network configuration
- Operators want to obtain the flow information and realize the load balancing within PTN networks



Network requirements: Migration from network management systems

Super Controller compatibility

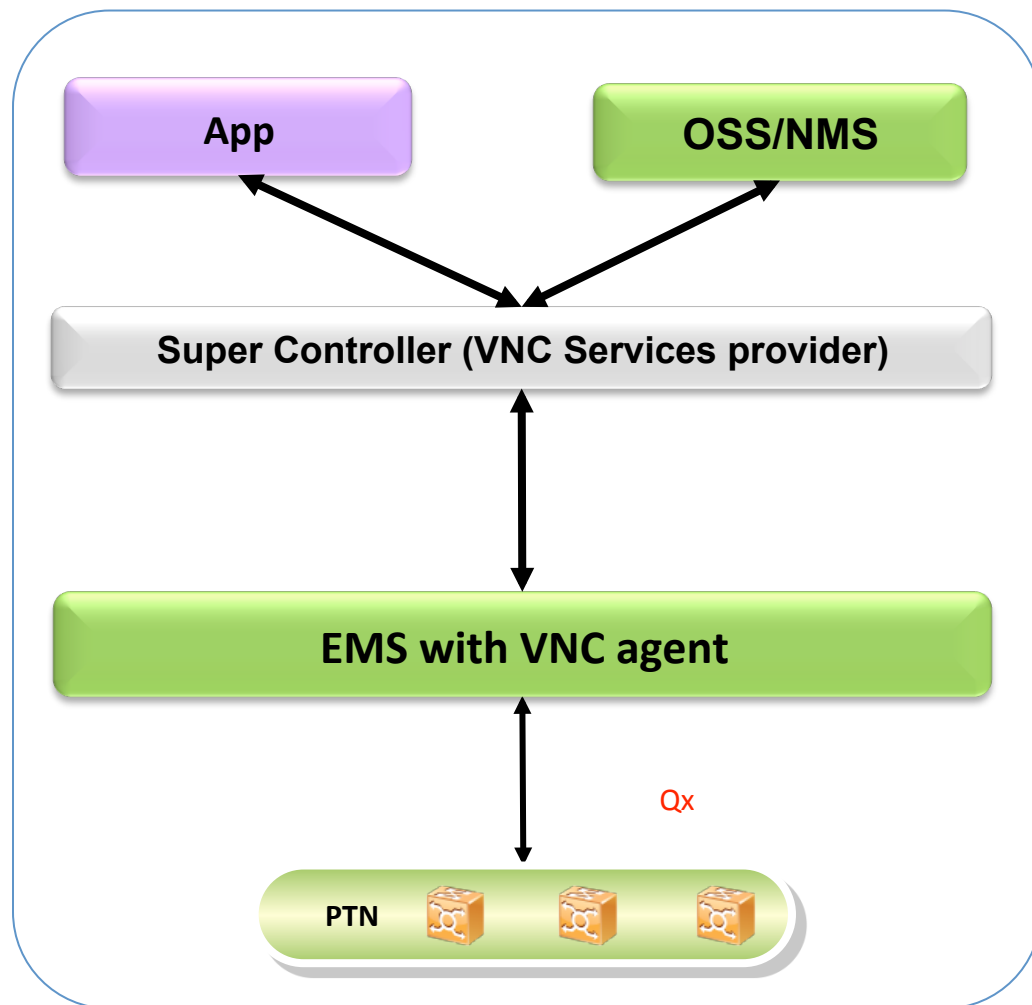
- Interface Compatible with legacy EMS/OSS interface
- VNC Services provider

EMS evolution

- ACTN extension
- VNC agency

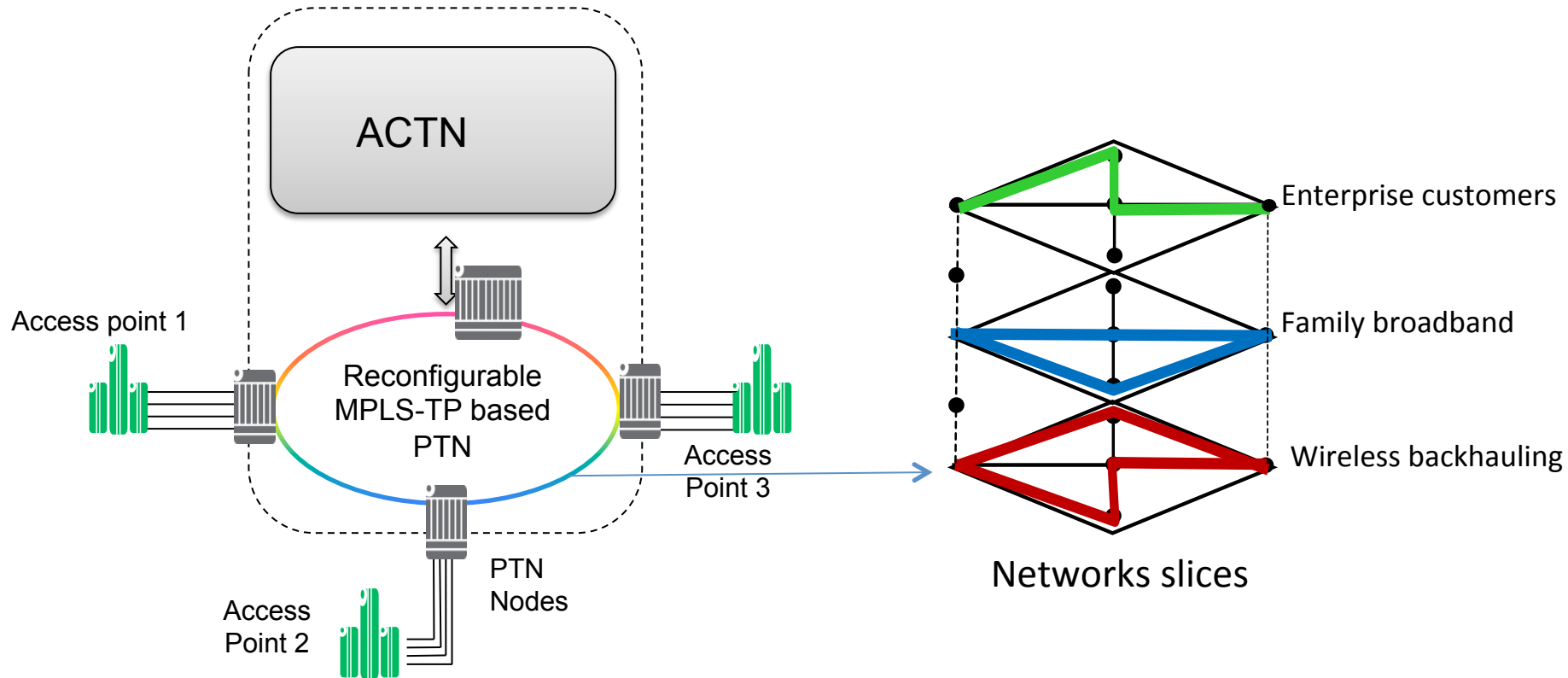
Forwarding layer

- Keep the legacy PTN box

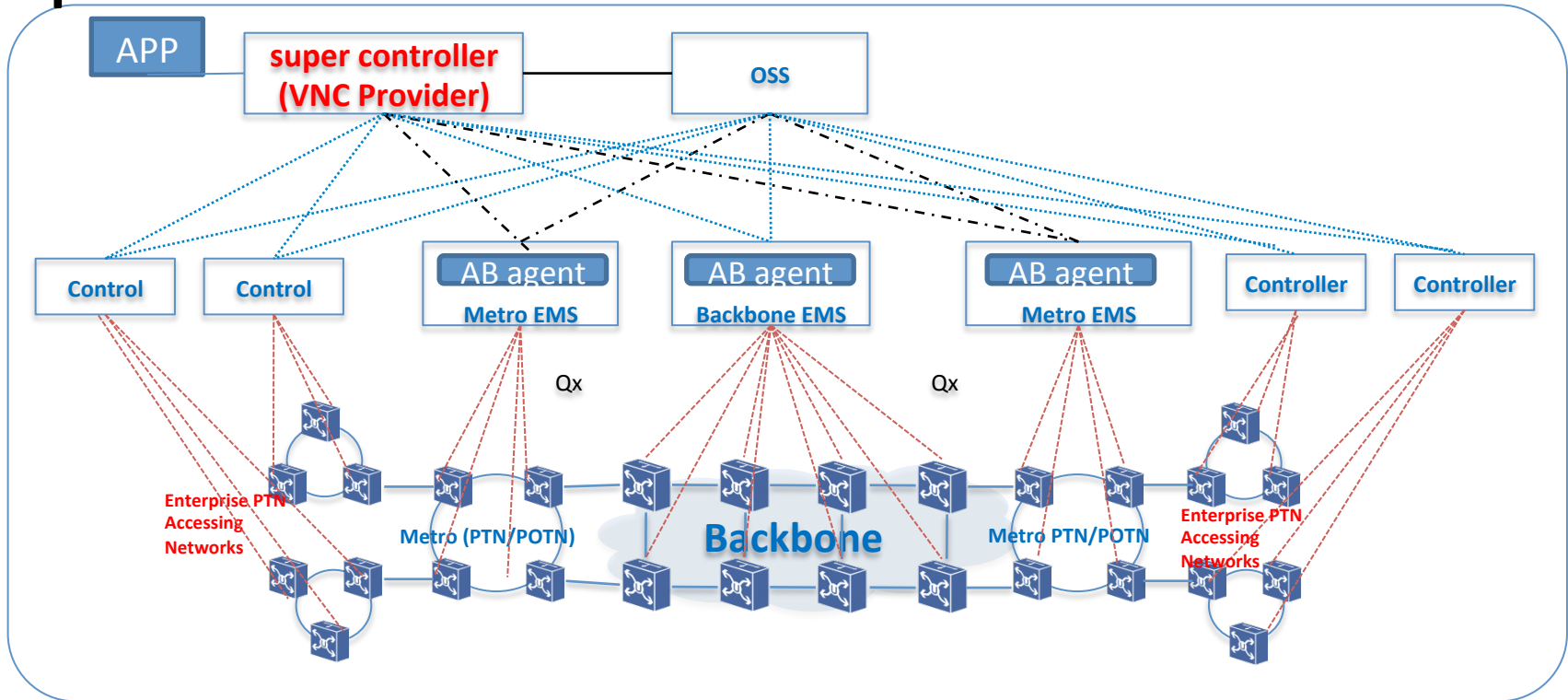


In order to realize end-to-end service provision, the ACTN architecture [ACTN-FWK] should consider the migration from traditional network management systems.

Network requirements: Multi-user Network Slices



End to END Virtual Networks Operations



- Super Controller (VNC Service Provider) provide centralized network control of enterprise access network、 metro network、 backbone enterprise network
- The traditional networks can be considered as a virtual network for VNC service provider, which can be realized by network management systems providing an abstract (AB) agent for VNC

ACTN Use-case for Mobile Virtual Network Operation for Multiple Domains in a Single Operator Network

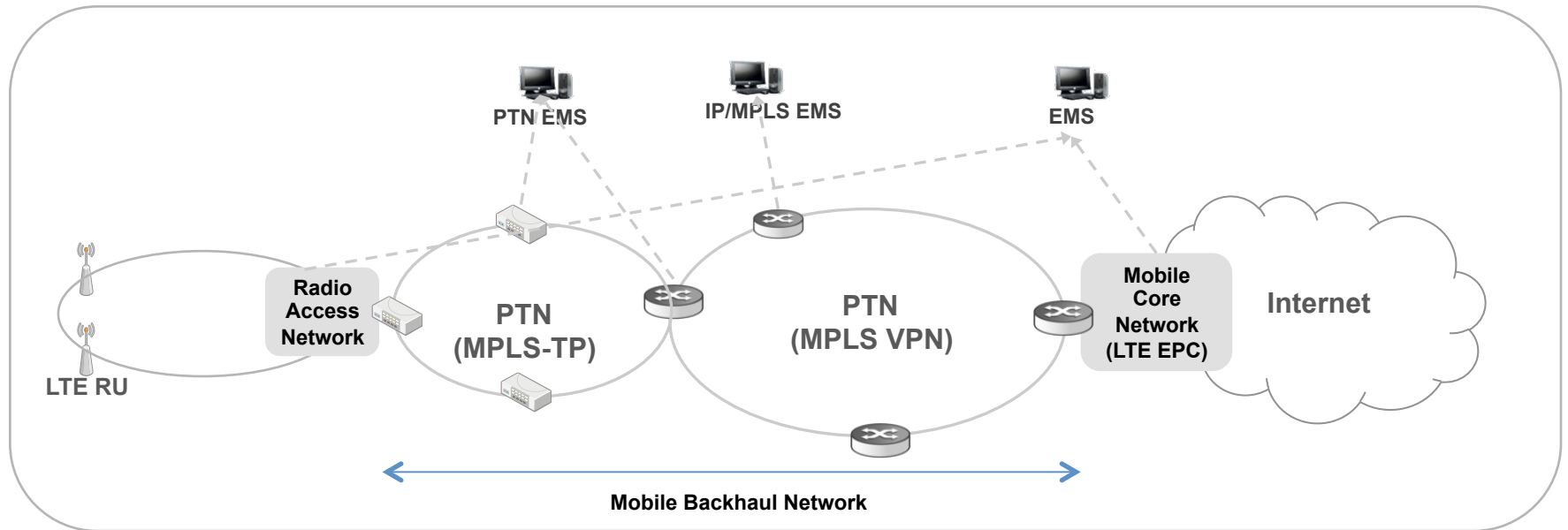
draft-shin-actn-mvno-multi-domain-00

July 24, 2014

IETF 90 – Toronto

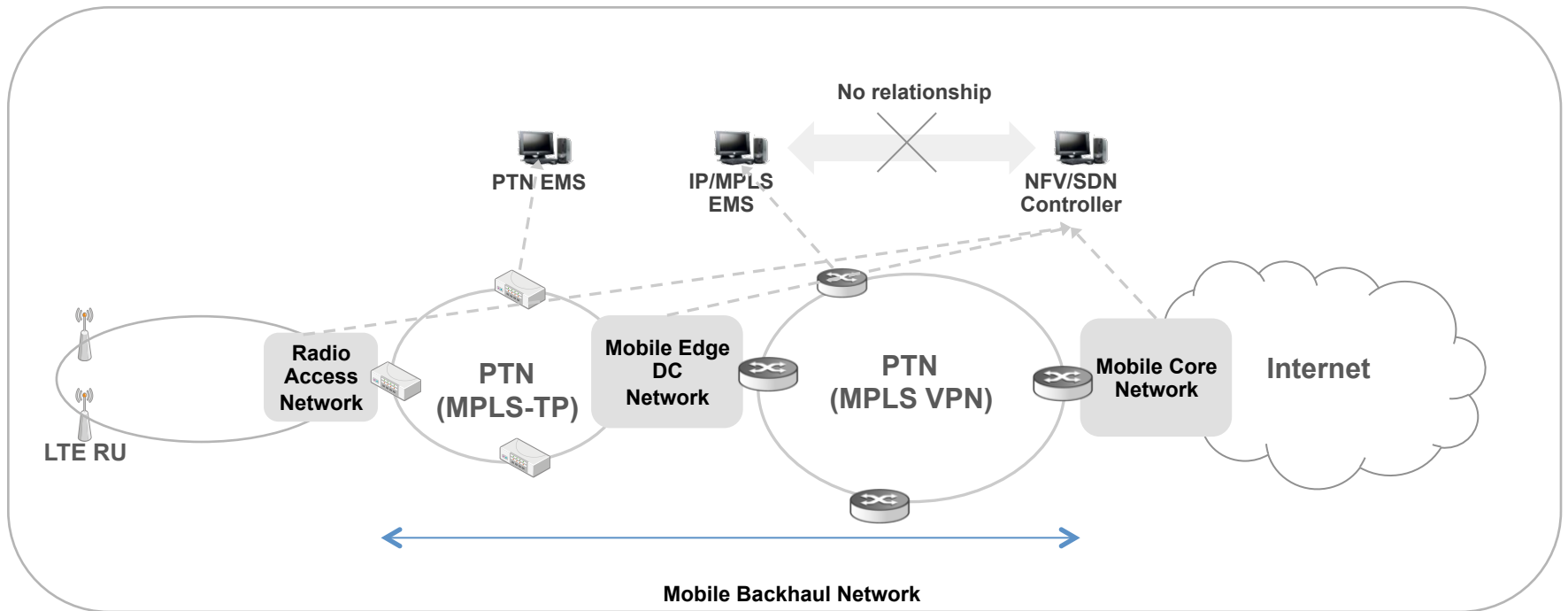
Jongyoon Shin, Rod Hwang, Jongmin Lee (SK Telecom)

SKT 4G Mobile network overview



- Domain-specific control
- Separation of domain operation

Pre-5G Mobile network overview

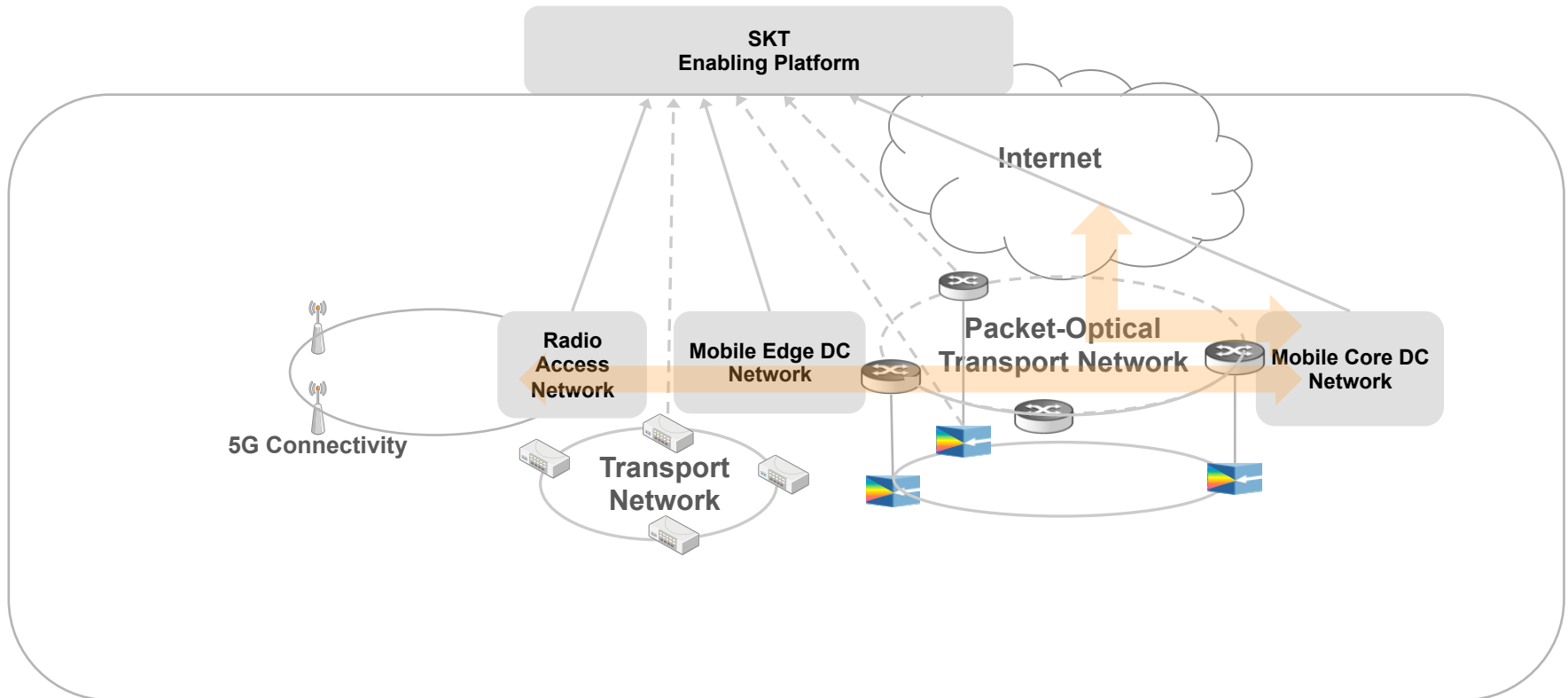


- Similar issue as previous slide with more complexity in control and operation

SKT 5G Mobile network Strategy

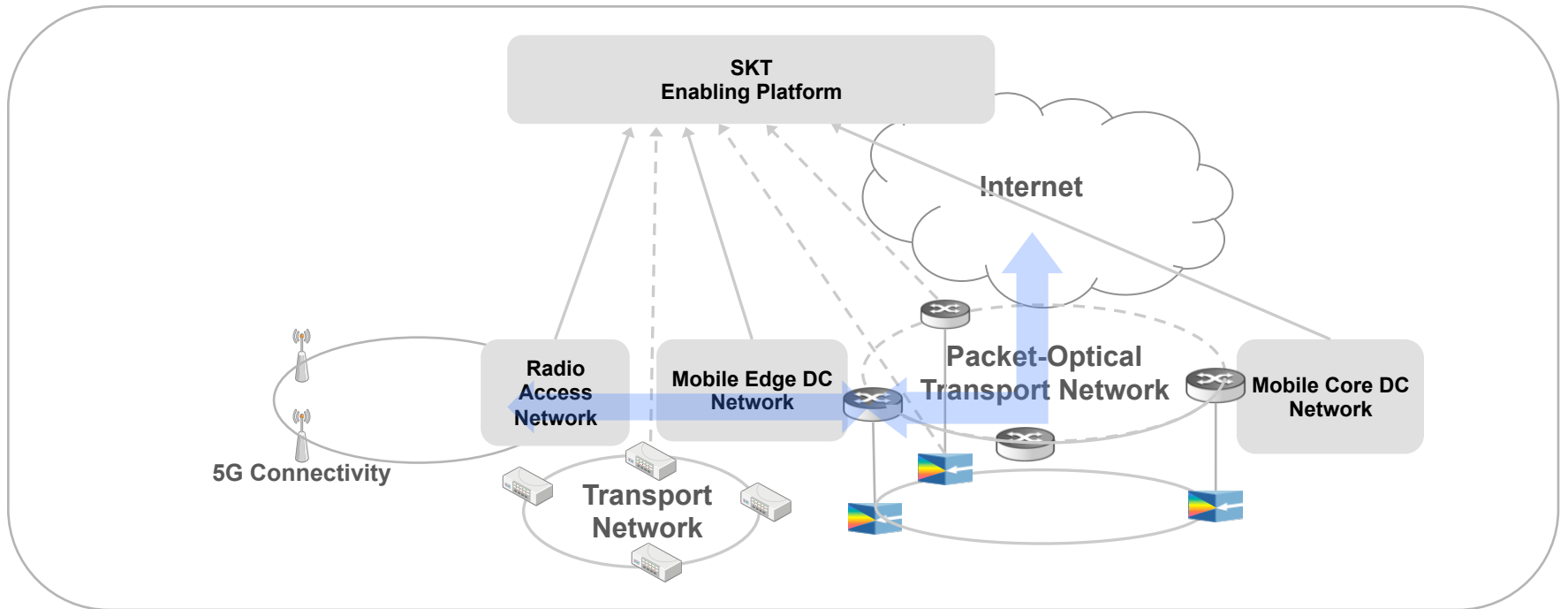
Enabling Platform is the virtualized network architecture with centralized control for value creating network

- Need a global abstract view
- Need an operational simplicity



Local Breakout

5G data offloading to reduce congestion/load on core and to provide cost effective solutions



Virtual Network Operations for Mobile Operator's Networks

- **SKT Enabling Platform (MVNO Coordinator) is a centralized control for value creating network**
- **Need a standard API/protocols from each Domain Control of various kinds to SKT Enabling Platform (MVNO Coordinator) to facilitate dynamic connectivity requirements.**
 - **Need a common network resource abstraction model**
 - **Need a unified control scheme to interface various technology/data plane/management plane/vendor domains that operates on a virtual level.**

Thank you!