September 25 - 27, 2018
Amsterdam, The Netherlands

EUROPE

OPEN NETWORKING //
Integrate, Automate, Accelerate
Open Source Possibility for 5G Edge Computing Deployment

OpenStack NFV, Openshift edge container engine and Ceph data lake

(http://sched.co/Gk1r)

Hyde Sugiyama, Red Hat Japan
Ignacio Verona, Red Hat EMEA
<table>
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<th>Presence</th>
<th>Future</th>
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<tr>
<td>Computing resource</td>
<td>Virtualization</td>
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<tr>
<td>Computing architecture</td>
<td>Cloud native Kubernetes (or Hybrid…)</td>
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<td>Data management</td>
<td>Centralization</td>
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5G Cloud Native, CUPS, Multislice

Technology innovation
Shifting to new

3G TDM+GPRS (Circuit Switching +Packet Switching)

4G All IP packet

5G Multiaccess Edge Computing

Cloud Native, CUPS, Multislice

Virtualization

3G

Data management

5G Heterogeneous Computing (CPU, GPU and FPGA)

http://bit.ly/1BOIEuC
• Core to Edge
• B2B2X at Carrier Edge DC
• Practical Examples
• Summary
With software defined Multi access Edge Computing (MEC) and 5G/vRAN, you can intelligently distribute functions and services to the edge. Common infrastructure is an imperative!

Services & Cloud Distributed to the Edge
Core Data Centers
Inter-Generational Radio Sites
Central Office & POPs
Remote Site
VCO
5G 5G 4G 4G

VNF + CNF
VNF + CNF

Common NFVI Layer (VMs & Containers)
Common Automation Engine
Common Feedback Loop/RT Messaging

5G
4G

Remote Site
VCO

vIMS
vOSS/cBSS
vEPC

AI & Analytics

5G
4G
Bump-in-the-wire model
Steering users traffic at S1-U
in access/pre-aggregation network

Distributed S/P-GW at Edge site that can provide clear demarcation to user packets

SDN-enabled virtual EPC gateway at Edge site.... Distribute S/P-GW (4G)
NTT NT Lab (B2B2X PoC)

Main players (Middle B) who drives biz in each industry

NTT group & Cloud partners

Disaggregated networks

Application centric networks

Edge Data Center/Central Office

Central Data Center

Town/City

Arban City

Regional Area

WiFi

Edge

Broadband access

4/5G vRAN

CORE

Geo replication

RED HAT QUAY

DevOps at Central DC cloud

Agile deployment at any Telco Edge cloud for middle B

NEXT STEP B2B2X platform
Practical Examples

- Face Recognition, security apps
- Connected Car MEC video processing
- CDN
- Blockchain as a Service
- IIoT Intelligent Edge
What do 5G&MEC mean for a CSP?

**Better Connectivity**

- Increased Bandwidth
- Decreased Latency
- Proximity Services (MEC)

Management Challenges
What do 5G & MEC mean for a CSP?

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- Increased Bandwidth
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- Proximity Services (MEC)

New Use Cases
- Innovative Revenue Streams
- New competitors (C-SP)
- Need for Agility

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Explosion of Data
- Storage requirements
- Data privacy
- New Revenue Streams (again!)

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Analytics
- AI/ML
- Flexible Big Data platforms
• Cloud Native and Carrier infrastructure environment for 5G
  – Kubernetes ... fast becoming de-facto master
  – VNF workload and Container workload will co-exist
  – Heterogeneous computing ... CPU based, GPU based and FPGA based
• Need to develop Edge and Core de-centralization architecture
  – Container registry for Geo replication from Central DC to Edge DC
  – Ceph data lake
• Telco Edge needs access technologies(VNFs, etc) on OpenStack NFV platform for bringing user traffic into cloud native apps in Kubernetes
• Openshift meets B2B2X
Q & A

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Another session by Ignacio Verona
Telcos New Edge: Blockchain Technology Applied
Wednesday, September 26 at 14:10
http://sched.co/Fnsd
THANK YOU

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