SP-140351

NFV: KDDI's view on 3GPP activities

3GPP TSG SA#64
Sophia-Antipolis, France, 16-18 Jun 2014
Agenda Item: 5
Source: KDDI Corporation

Agenda

- Introduction: A day in 2020…
- Standardization in 3GPP in Rel.13 timeframe
- Work in 3GPP(SA5/SA2)
- Summary

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A day in 2020…

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x1000 Traffic growth

x100 Device connectivity

Over **10Gbps** peak rate

Less than **1ms** latency

Source: Radio Policy Vision Meeting at Ministry of Internal Affairs and Communications in Japan, June 9, 2014

4K movie file may be uploaded from each seat at 2020 Olympic Games in Tokyo

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Looking ahead to 2020…

- **Not only RAN but also CN enhancement is necessary**
  - Significant traffic volume
  - Variety of traffic pattern – mass signalling
- **To cope with drastic environmental change, 3GPP has to complete near-term goal of standardization based on the NFV framework by Rel.14!!**
  - Expected product release based on Rel.14: 2019 or later
  - Target of long-term goal of standardization: Rel.15

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Key Issues

- **SA5: Study standardization of I/F(s) between NFV MANO and 3GPP Management reference model**
  - Fully agree with starting SA5 study
  - To achieve automatic provisioning and dynamic configuration change in a multiple vendors environment
- **SA1: No need to change existing requirements**
- **SA2: Study whether architectural change is needed from several aspects (e.g., signalling reduction, reliable operation)**

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3GPP to go

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SA5 scope

Define I/Fs for an open environment to enable:

☐ Automated Provisioning and Configuration

- Not only well defined I/F between OSS/BSS and NFV MANO but also well defined I/F between NFV MANO and VNF to enable effective provisioning

☐ Automated Scaling and Healing

- To achieve alarm correlation and root cause analysis even if the network has been virtualized
- These efforts enable reliable automatic scaling/healing

☐ Working time scale

- To complete study in Rel.13
- To complete specification in Rel.14

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SA2 scope

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Pursue near-term and long-term goals for system enhancement by NFV

- **Near-term goal: study and specify 3GPP network enhancements based on the NFV framework**
  - Study system impacts on, and possible system enhancements to, the existing EPC
  - Specify architectural enhancements with minimum architectural impact, e.g., state exchange reduction
- **Long-term goal: maximize the benefits of "cloud technology", which may include revolutionary approaches**
  - Study and specify revolutionary enhancements without excluding architectural change
  - Signalling reduction from current information flows
  - More distributed, flatter architecture to better steer ever-increasing traffic and devices
  - NFV framework can conceal a leap caused by architectural change – backward compatibility can be ensured
- **Working time scale**
  - Near-term: complete study in Rel.13, complete normative work in Rel.14
  - Long-term: start discussion in Rel.14 and substantially complete in Rel.15

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Summary

- Core network enhancements based on NFV framework has to be achieved in Rel.14 as a near-term goal
- SA5 scope: achieve reliable automatic provisioning and dynamic configuration change
- SA2 scope: pursue significant gains in simplicity, reliability and scalability with virtualization of 3GPP network based on NFV framework
- 3GPP should not hesitate to study the possibility of future revolutionary architectural change

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Designing The Future

KDDI

Backup

SA5 Scope [Detail]

- **ETSI NFV MANO WG introduces Lifecycle Management as a new management aspect, which includes operations such as,** *1
  - Instantiate VNF (Provisioning and Configuration)
  - Scale VNF (Grow or Reduce the capacity of VNF)
  - Update/Upgrade VNF (Support VNF software/configuration change)
  - Terminate VNF (Release VNF-associated resource)
- **By this Lifecycle Management, 3GPP network operators will obtain quick compatibility to new business requirements**
- **ETSI NFV MANO WG says fault and performance management is needed in the NFV framework***2
  - Alarm correlation and root-cause analysis is needed in the NFV framework to determine the reason for faults conditions and the impact of fault conditions in the virtualized network
  - Once correlated and analyzed, the necessary correlative actions such as scaling/healing will be triggered
- **By achieving fault and performance management, 3GPP network operators will obtain resilient service infrastructure**

*1 Source: ETSI NFV MANO GS v0.5.0 section 4.3

*2 Source: ETSI NFV MANO GS v0.5.0 section 4.5.1

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