Motivation for Management of Network Slicing and IETF work from Operator's View Point

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22nd March 2018

Questions and Objectives from ADs/Chairs

I. Clarify the problem space
II. What is the problem space?/ In particular, it is the focus of the problem: *the* thing that you want to achieve in an operational network.
III. What are operators relevant COMS Use Cases? What group of problems are important from operators viewpoints?
IV. What impact would be produced by NS solutions from operators viewpoints?

Agenda

- Background & Motivation for Network Slicing
- Expectation for IETF
- Issues and Challenges on Network Slicing
- COMS Work Scope
- Conclusion

Background and Motivation (1/2)

- IoT devices or OTT services are exponentially diversifying

  ⇒ Adapting networks to them, in short, “**service-oriented**” and “**management-oriented**” network operation, would be urgently required

- Prospect to expand business opportunities with communication services

  ⇒ Enables other industrial companies to use networks as a part of their own services

  Examples: connected car with high reliable network, online game with ultra-low latency, video streaming with guaranteed bandwidth

Background and Motivation (2/2)

- High-level requirements for network slicing from an operator's viewpoint:
  - ✓ Guaranteeing service level from end to end across multiple (administrative) domains
  - ✓ Flexible customizability
  - ✓ Automation of network operation
    - ✓ Automated life-cycle management of network slicing (Deploy, Change, Delete)
    - ✓ Optimization resources (Auto-scaling/migration)
    - ✓ Auto-healing
  - ✓ Efficient Interplay between Management and Data Planes

Other Requirements for Network Slicing

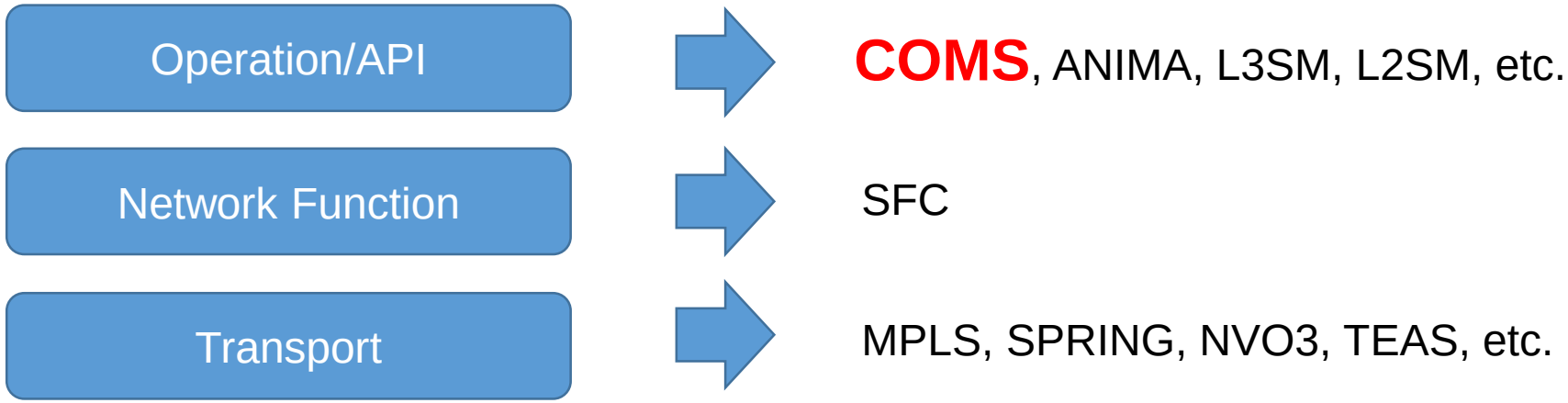
- High-Scalability
  - Separating to 100~ slices (the order will vary depending on the use cases)
  - Handling million ordered customers
- High-Reliability
  - Immediate fault detection
  - Redundant mechanisms
  - Isolation
- Standards and Open Source
  - Network Slicing with cross-domain by using open network configuration model design
- Inexpensive and prompt service/network deployment
  - Utilization of virtualizing technologies (SDN and NFV)
  - Harmonizing hardware and software appliances

Expectation for IETF

- Operators need practical (workable) solutions
- For network slicing, considering of whole network system architecture would be mandatory

  ⇒ Some existing IETF technologies would be usable

  ⇒ COMS will cover gaps within existing management technologies in terms of network slicing



<Consideration areas and relevant WGs>

Issues and Challenges for Network Slicing

- Deploying and providing of E2E networks which satisfy requirements of each service (bandwidth, latency, service functions)

  ⇒ Operation across heterogeneous domains and stitching domains

  Relevant drafts:

  - ✓ draft-geng-coms-problem-statement-03
  - ✓ draft-defoy-coms-subnet-interconnection-03

- Ensuring high compatibility with existing networks

  ⇒ Overlay architecture, Slice Gateway solution

  Relevant draft:

  - ✓ draft-homma-coms-slice-gateway-01

- Realizing tenant-friendly network control

  ⇒ Abstraction of configuration, definition of API to external, etc.

COMS Work Scope

- Realizing operation framework in consideration of concrete management and controlling data plane;

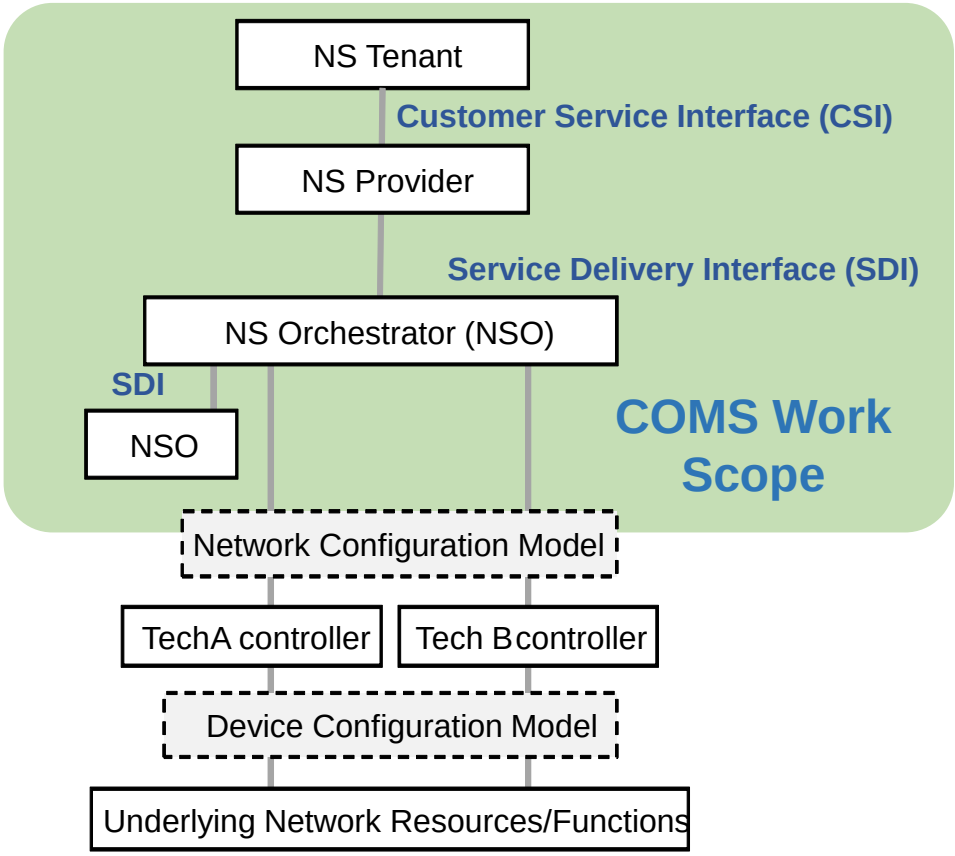
  COMS Deliverables:

  ✓ Information/data modeling

  ✓ Interfaces for Interworking and Stitching

  ✓ Clarification of data plane functionalities and how to configure them

- Basically refers existing data plane technologies (avoid reinventing the wheel) and expand existing technologies if needed



<COMS Architecture>

Conclusion

- Expecting realization of E2E network slices and creation of new business model with them as a network operator.

- Practical and workable group of solutions are needed and IETF is an appropriate and unique SDO place for creating it.