Towards Deep Programmable Slicing

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What is a Slice?
SDN & Virtualization vs Slicing

Different Slicing Models & Approaches

Mode 0: VIM-independent
[Infra Slice aaS] [Bare-metal Slice]

Mode 1: VIM-dependent
[Platform Slice aaS]

Mode 2: MANO-based
[NFV aaS]

Mode 3: Service-based
[Service Slice aaS]

Types of Slices and Control Responsibilities

Source: A Network Service Provider Perspective on Network Slicing. Luis M. Contreras and Diego R. López. IEEE Softwarization, January 2018
Slicing under massive any resource multi-tenancy (gone wild) … or when sharing economy meets cloud network slicing

Source: http://www.h2020-necos.eu/ 
Source (image “sharing economy”): https://www.kreezalid.com/blog/78403-what-is-sharing-economy
Deep Slicing: Concept and Challenging Trade-offs

Towards Deep Slices

Fragmented Standardization

Business & Technological challenges
From infrastructure sharing to any-layer any-resource sharing (from PHY to APP)

Deep
End-to-End, Multi-Domain (tech + admin)
Tenant Choice & Control
Isolation
Scalable

any resource, any function anywhere
Network programmability? By who?
Technical Expertise + Single Throat to Choke

Players with sufficient SW Eng. + Network Eng. & in-house Devops (NoOps?)

- Intent-based (languages + APIs)
- Design + Run-time (NS)DKs
- ML/AI assistance
- Automation of Test + Benchmarking (pre-deployment + day0 & day-2 ops)

The long tail of players (e.g. smaller SPs, ISPs, enterprises, campus, governments, etc.)
Fluid Networking @ run-time

Customer Premises
BS MEC - Access Cloud Edge - PoP DC
Cloud DCs Core

SW

HW