Network Slicing: An Operator’s perspective

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All the Gs have focused so far on one vertical: The Mobile

- 2G 1990: Mobile Voice
- 3G 2000: Mobile Internet
- 4G 2010: Mobile broadband
- 5G
5G is about empowering the verticals
“One Size fits all” will NOT hold for 5G

2G 1990 Mobile Voice

3G 2000 Mobile Internet

4G 2010 Mobile broadband

5G 2020 Mobile broadband + Many other verticals

*Source: 5GPPP white paper 2016
Why Slicing

- To address the plethora of 5G verticals/use cases one needs tailored architecture
  - Provide more control to verticals

- Provide resource isolation → efficiently address specific requirements the vertical scenario demands.
  - Isolate traffic (Misbehaving sensor in a slice doesn't affect public safety service, MVNO), Different service type (IoT versus eMBB), serve specific business (Volvo versus BMW)

- Provide E2E service
  - Existing mobile networks → monolithic → single network carries out all services
  - Protocols such as DiffServ in IP prioritizing different services. But, the protocols tend to be piecemeal, not E2E

- Enable new architectures, Micro services, +++

- Multi-tenancy support

- New business opportunities
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- **eMBB**:
  - Mobility management
  - Data optimization
  - Charging function
  - Service provider specific video optimization

- **mIoT**:  
  - Charging function
  - Small data optimization
  - Battery conservation
  - Service provider specific network data analytics

- **URLLC**:  
  - D2D function
  - Mobility management
  - Service provider specific authentication

**Orchestration and Management (O&M) of slices**
Slicing is a system concept realized with “appropriate” network functions and corresponding resources to provide required telco service with a dedicated behavior.
Challenges

- Orchestration
- Complexity, How many slices
- Will the Telco’s indeed deploy the <many> slices
- Service integration to slices
  - Standardized interfaces
- Composition of slices
  - Which NFs should be shared and which should be individual to slices
- How to provision UE with a set of slices which are indeed E2E
- What if you move from one slice to another, Who takes care of guaranteeing SLA
- Shall the OSS/BSS be sliced. Separate OSS/BSS for different slices
- Security

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