



Cross-domain network slicing and orchestration

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Why do we need network slicing?

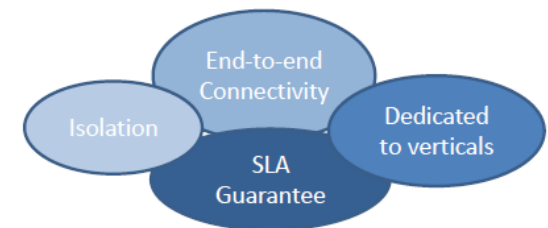
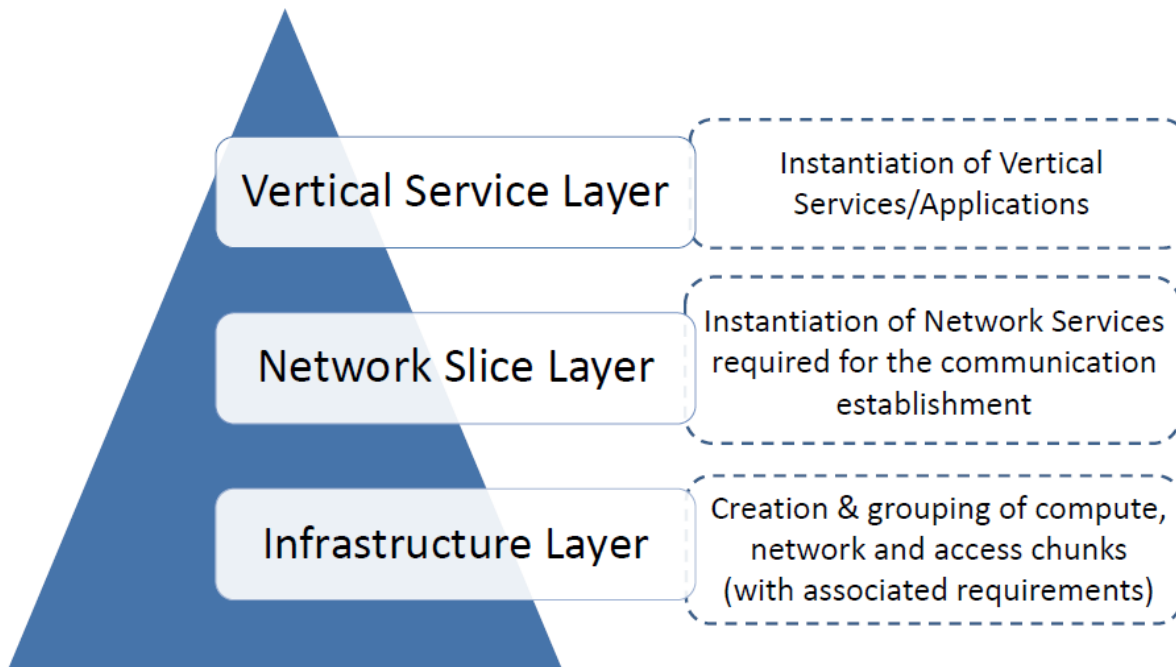
- Slices are isolated network partitions with certain network performance and latency characteristics
 - Differentiated slice-based services on a per-use-case basis
- Cross-domain network slicing spans RAN, edge, transport & core
 - A multi-layer architecture with open APIs provides necessary abstraction at the intra-domain and cross-domain levels

i2CAT's approach to network slicing: requirements

A slice manager in the compute, network and access network domains, allowing operators to seamlessly control and orchestrate services for different verticals:

- Dynamic provisioning and instantiation of end-to-end network slices that include computing and networking resources.
- Interaction with different edge VIM technologies for better support of multi-tenancy and multi-tier infrastructures.
- Seamless and dynamic service provisioning at the network level through automated processes.

I2CAT's-Pledger's Slicing & Orchestration Engine (SOE): conceptual overview



Management of slice lifecycle: slice creation

- SOE is responsible for the E2E slice's lifecycle management for each infrastructure user (i.e., tenant):
 - Slice creation (creation and grouping of resource partitions/chunks)
[INFRASTRUCTURE Level]
 - Slice activation (network services deployment for the slice establishment)
[NETWORK SLICE Level]
- On the infrastructure level, each slice is given by a specific SLA related to the QoS policy:
 - Compute chunks (CPU + RAM + storage resources, VIM and NFVO level)
 - Network chunks (isolated networking tenants, i.e., the network interfaces of the compute resources)
 - Access chunks (subset of wireless interfaces/cells).

Management of shared resources

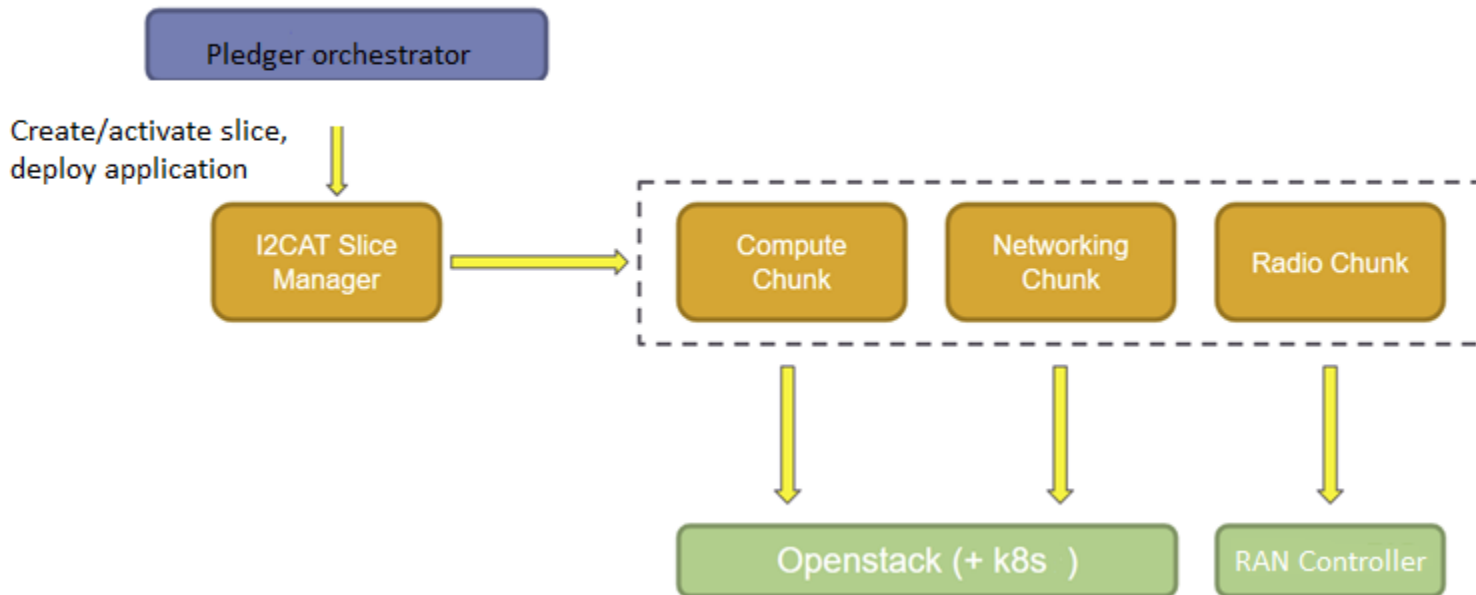
- Registration, retrieval and deletion of partitionable infrastructure resources:
 - Compute resources
 - Network resources
 - Access network resources

Management of resource partitioning

- Compute chunks
 - Based on tenants at the virtual infrastructure manager and NFV orchestrator
- Network chunks
 - Isolated networking among tenants
- Access network chunks
 - Subset of wireless interfaces and sets

Management of slice lifecycle: slice activation

- During the slice activation, the core and RAN network slice subnets are automatically deployed and configured, in case of selecting a slice that includes mobile connectivity.
- Service application deployment on the created slice [VERTICAL SERVICE Level]
- SOE takes care of the DNS and DHCP configuration within a slice in such a manner that the VNFs (i.e., the vertical services) are reachable inside the network slice.

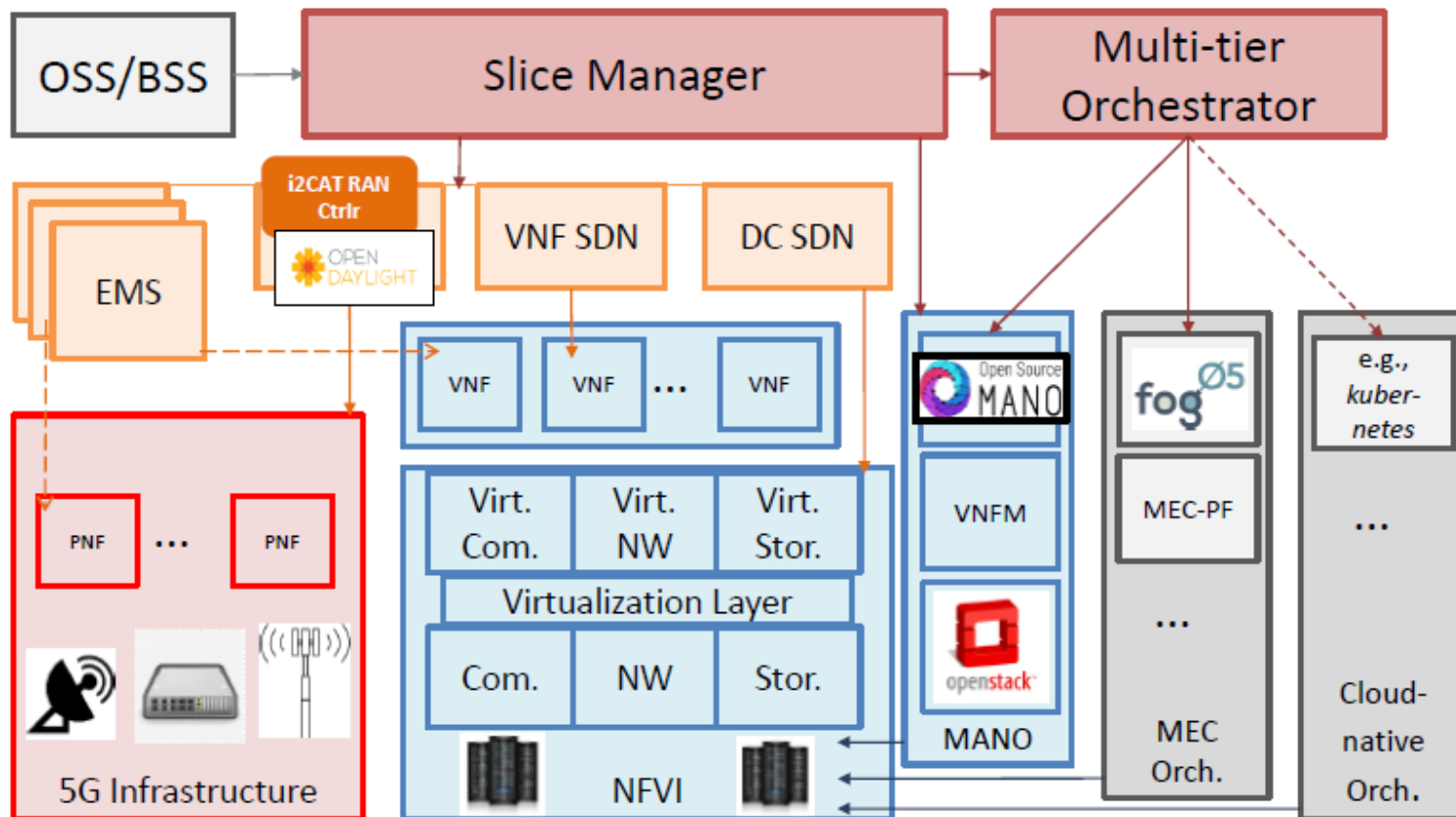


Trigger instantiation of vertical services on slices

- Includes supporting actions such as DNS provisioning
- Uses vertical service descriptors from the NFV orchestrator catalogue

From the outside:

- An intelligent “glue” of slicing-related solutions



Thank you!



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