DC aware TE topology model

draft-llc-teas-dc-aware-topo-model-03

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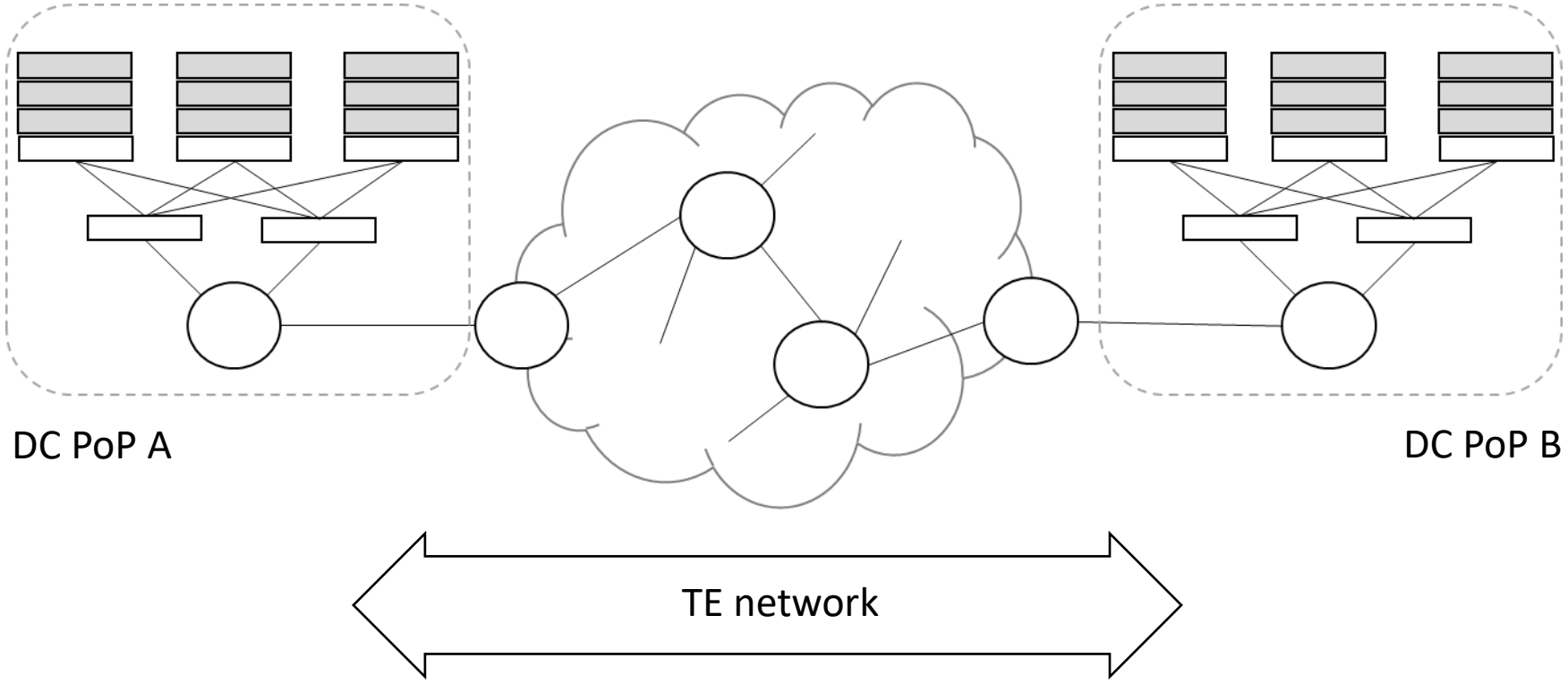
Problem statement

- Wide deployment of computing facilities across service provider's Networks, in the form of DC PoPs (as edge and/or central cloud)
- Interesting **to have joint topological view of both networking and computing resources** available to assist on **TE decisions that could require combined awareness of network and compute domains**
- Similar approach as the one followed in *draft-ietf-teas-sf-aware-topo-model* but concentrated on available DC resources instead of functions



- DC PoPs described in terms of resource capabilities such as CPU, memory, storage, etc
- Alternatively, they could be described in terms of resource bundles (quotas, flavors)

Flavor	vCPU	RAM	Storage	Bandwidth
.tiny	1	512 MB	1 GB	1 Gbps
.small	1	2 GB	20 GB	1 Gbps
.medium	2	4 GB	40 GB	1 Gbps
.large	4	8 GB	80 GB	1 Gbps
.2xlarge	8	16 GB	160 GB	1 Gbps
.4xlarge	16	32 GB	320 GB	1 Gbps
.8xlarge	32	64 GB	640 GB	1 Gbps

draft-llc-teas-dc-aware-topo-model

- Attempt to provide a model for characterizing the compute domain information per DC PoP, integrated with the topological information of the network
- Modelling of resources and quotas
- Modelling of cloud assets (e.g., compute node)
- Cloud managers (Kubernetes, OpenStack) as means for collecting compute node information (via APIs)
- Updates are needed for draft refreshing (e.g., orientation towards K8s, inclusion of other assets, etc), which will be implemented after IETF 121

```
module: ietf-dcpop-dc
   +--rw dcpop
     +--rw dc* [id]
     |  +-- comp_node* [id]
     |  |  +--rw hypervisor* [id]
     |  |  |  +--rw ram
     |  |  |  |  +--rw total?   uint32
     |  |  |  |  +--rw used?    uint32
     |  |  |  |  +--rw free?    uint32
     |  |  |  +--rw disk
     |  |  |  |  +--rw total?   uint32
     |  |  |  |  +--rw used?    uint32
     |  |  |  |  +--rw free?    uint32
     |  |  |  +--rw vcpu
     |  |  |  |  +--rw total?   uint16
     |  |  |  |  +--rw used?    uint16
     |  |  |  |  +--rw free?    uint16
     |  |  |  +--rw instance*   -> /dcpop/dc/comp_node/instance/id
     |  |  |  +--rw id         string
     |  |  |  +--rw name?      string
     |  |  +--rw instance* [id]
     |  |  |  +--rw flavor
     |  |  |  |  +--rw disk?    uint32
     |  |  |  |  +--rw ram?     uint32
     |  |  |  |  +--rw vcpus?   uint16
     |  |  |  |  +--rw bandwidth?    string
     |  |  |  |  +--rw id?      string
     |  |  |  |  +--rw name?    string
     |  |  |  +--rw image
     |  |  |  |  +--rw checksum    string
     |  |  |  |  +--rw size       uint32
     |  |  |  |  +--rw format
     |  |  |  |  |  +--rw container?   enumeration
     |  |  |  |  |  +--rw disk?       enumeration
     |  |  |  |  +--rw id?        string
     |  |  |  |  +--rw name?      String
     ....
     ....
```

Need for the model

- Means for an optimal orchestration in the telecom-cloud network operation
- Facilitator of interoperability through proper resource abstraction
- Enabler seamless integration of cloud and network services
- Allows the exposure of combined network-cloud information
- Permits a more efficient dynamic resource allocation cross-domain (i.e., for cloud and network)