Use cases for operating networks in the overlay model context

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The draft would like to...

• ...define use cases for operating overlay networks

• ...define a set of assumptions to be used as the basis for the design of use cases

• ...trigger discussion on which ones are needed and which ones are not
Terminology – Applies to all UCs

1. Local trigger vs remote signaling

Remote signaling (e.g. NMS on R1 plus RSVP-TE)

Local trigger (e.g. NMS)
• 2. Administrative boundary vs Administrative and technological boundary
Terminology – Applies to all UCs

• 3. Technology transition on edge node vs Technology transition on core node
Use cases

• UC 1 – Provisioning
  Requirement: The network operator must be able to setup an unprotected end to end service between two client layer nodes.

• UC 2 - Provisioning with optimization
  Requirement: The network operator must be able to setup a service expressing which parameter must be optimized when computing the path. The server domain should tell the client domain what prevented a requested to be satisfied. Subsequent actions (e.g., use a different interface, relax constraints, send an alarm to the client domain's CEO...) are up to the client domain.

• UC 3 - Provisioning with constraints
  Requirement: The network operator must be able to setup a service imposing upper/lower bounds for a set of parameters during the path computation.
Use cases

• **UC 4 – Provisioning with diversity**
  Requirement: The N.O. must be able to setup a service in the server layer in diversity with respect to server layer resources or not sharing the same fate with other server layer services.

• **UC 5 – Remote dual homing**
  Requirement: The N.O. must be able to setup a plurality of services not necessarily between the same pair of edge nodes.

• **UC 6 – Re-optimization**
  Requirement: The network operator must be able to setup a service so that the overall cost of the network is minimized and not the cost of a single service.

(*) – No text yet or questioning on usefulness
Use cases

• UC 7 – Query
  Requirement: The server network must be able to tell the network operator the actual parameters characterizing an existing service.

• UC 8 – Availability Check
  Requirement: The network operator must be able to check if in the server layer there are enough resources to setup a service with given parameters.

• UC 9 – P2MP services
  Requirement: If allowed by the technology, the network operator must be able to setup a P2MP service with given parameters.

• UC 10 – Privacy
  Requirement: The network operator must be able to provision different groups of users with independent addressing spaces.

(*) – No text yet or questioning on usefulness
Use cases

• **UC 12 – Stacking of overlay interfaces**
  Requirement: The network operator must be able manage a network with an arbitrarily high number of administrative boundaries (i.e., >2).

• **UC 13 – Resiliency parameters**
  Requirement: The network operator must be able to request an LSP in the server layer with resilience parameters. E.g., 1+1 protection and restoration.
  Moreover, it must be possible for the operator to change the resilience level after the path is established in the network.

• **UC 14 – Inquiry (to be added)**
  Requirement: Client layer must be able to inquire server layer if a given service can be re-optimized.
Next Step

– Consolidate agreed use cases
– Discard not relevant ones
– Keep alignment with draft-farrel-interconnected-te-info
Service between C2 and C3 needs to be created. The operator decides that C2-S1 and S3-C3 will be used. The server layer computes and creates the server domain LSP between S1 and S3 with constraints.
The abstract links (abstract topology) are computed a priori by the server domain (e.g. planning) and advertised with related TE info to the edge nodes. Edge nodes do a 3 hop (or more) path computation (e.g. service between C2 and C3 is computed along path C2-S1-S3-C3)
Appendix

- Colored overlay

Assumption: Path computation performed in the server layer

Feasibility: e.g. OSNR
Compatibility: e.g. modulation format
Availability: e.g. Lambda 1-3-7