GMPLS UNI

Best Current Practices

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Changes from .00

• Comments addressed:
  – References to existing RFCs
  – BCP language
  – Generalized from the network layering point of view
    (client is not necessarily IP/MPLS, network is not necessarily WDM)

• Sections added:
  – MELGs
  – Path computation aspects
  – L1VPNs
  – Use cases
Use Cases

• IP/MPLS layer recovery scheme (e.g. FRR) based on TE links supported by GMPLS UNI LSPs

• IP/MPLS Offloading with UNI automation
  – IP/MPLS TE links supported by GMPLS UNI LSPs are added/removed dynamically based on user traffic volume/demand
MELGs

- Describe mutually exclusive relationship between two or more Virtual TE Links (links cannot be used concurrently)
- This relationship is stronger than fate sharing (described via SRLGs)
- Meaningful only for Virtual TE Links
- Requires a new Sub-TLV to be advertised within TE Link TLV
- Virtual TE Link state (committed vs. non-committed) needs to be advertised
Path Computation aspects

• Client path computation function can and should make use of Virtual TE Links advertised by the network:
  - end-to-end paths could be computed, using any path computation criterions and subject to any constraints;
  - SRLGs, MELGs, switching limitations should be considered as constraints
• Centralized concurrent computation of paths for a set of source/destination pairs is recommended (better use of SRLG and MELG information)
• It is recommended to avoid path computations performed by the network on behalf of clients (better to rely on end-to-end paths computed by clients)
L1VPN aspects

Client TEDB

VPN-IDs 1, 2

VPN-ID 1

VPN-ID 2

VPN-ID 3

VPN-IDs 2, 3

= server-layer

= client-layer
L1VPN aspects

• RFC4208 states that GMPS UNI allows for L1VPNs

• Virtual TE Link model makes L1VPN application a matter of policy:
  – Any access and/or Virtual TE link could be configured with 0, 1 or more VPN IDs
  – VPN IDs are advertised within the TE Link TLV (a new sub-TLV is required)
  – Network is responsible for proper filtering of the TE Link advertisements, so that the information pertinent to VPN X is leaked only to the clients that are members of VPN X
  – Client path computation computes end-to-end paths only within VPNs the client is member of

• This approach achieves the following:
  – Provides to the clients VPN specific view of the network;
  – Partitions network resources between VPNs;
  – Provides automatic VPN member auto-discovery;
  – Scopes path computations (and thus connectivity) to members of the same VPN
Next steps

• Documents for MELG and VPNID sub-TLV definitions and processing rules
• Multi-domain GMPLS-UNI ?
• More use cases
• Working Group status ?
Thank you