BGP-SPF for Multi-segment SDWAN

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SDWAN

- IPSec tunnels added to existing VPN path
- BGP as the control plane to distribute the Port attribute, IPSec SA
  - Simplify peer authentication
  - Scalable IPSec tunnel management
- Details can be found in:
  - draft-ietf-bess-bgp-sdwan-usage-14
  - draft-ietf-idr-sdwan-edge-discovery-10
Multi-segment SDWAN

- Tunnel over public internet connection suffers bad quality, SD-WAN pop gateway is deployed to establish multi-segment tunnel to improve the quality. Multiple local optimal tunnel is stitched together.
- CPE and GW network are under different administrative control
- The gateway forms an overlay network. Between each GW, the link can be:
  - SD-WAN Tunnel over Internet/MPLS, see draft-ietf-idr-sdwan-edge-discovery-10
  - SD-WAN over Cloud Backbone, see draft-dmk-rtgwg-multisegment-sdwan-00
  - Direct link
Find a ‘shortest’ overlay path

• Multiple overlay paths between CPE
• Need to find best overlay path
• BGP-LS-SPF can be used to
  • Direct link discovery
  • Collect topology information for BE
  • Collect link SLA for TE
Usage of BGP-LS-SPF for SD-WAN

• For SDWAN tunnel: BGP-LS-SPF relationship is established between GW and RR to collect the topology information.

• For Direct link: BGP-LS-SPF relationship is established
  • Between GWs: link discovery
  • Between GW and RR: topology collection

• Node NLRI: Autonomous System + BGP-LS ID

• LINK NLRI: WAN port IP addresses

• LINK attribute: SLA
Comments and suggestion?