

BGP-SPF for Multi-segment SDWAN

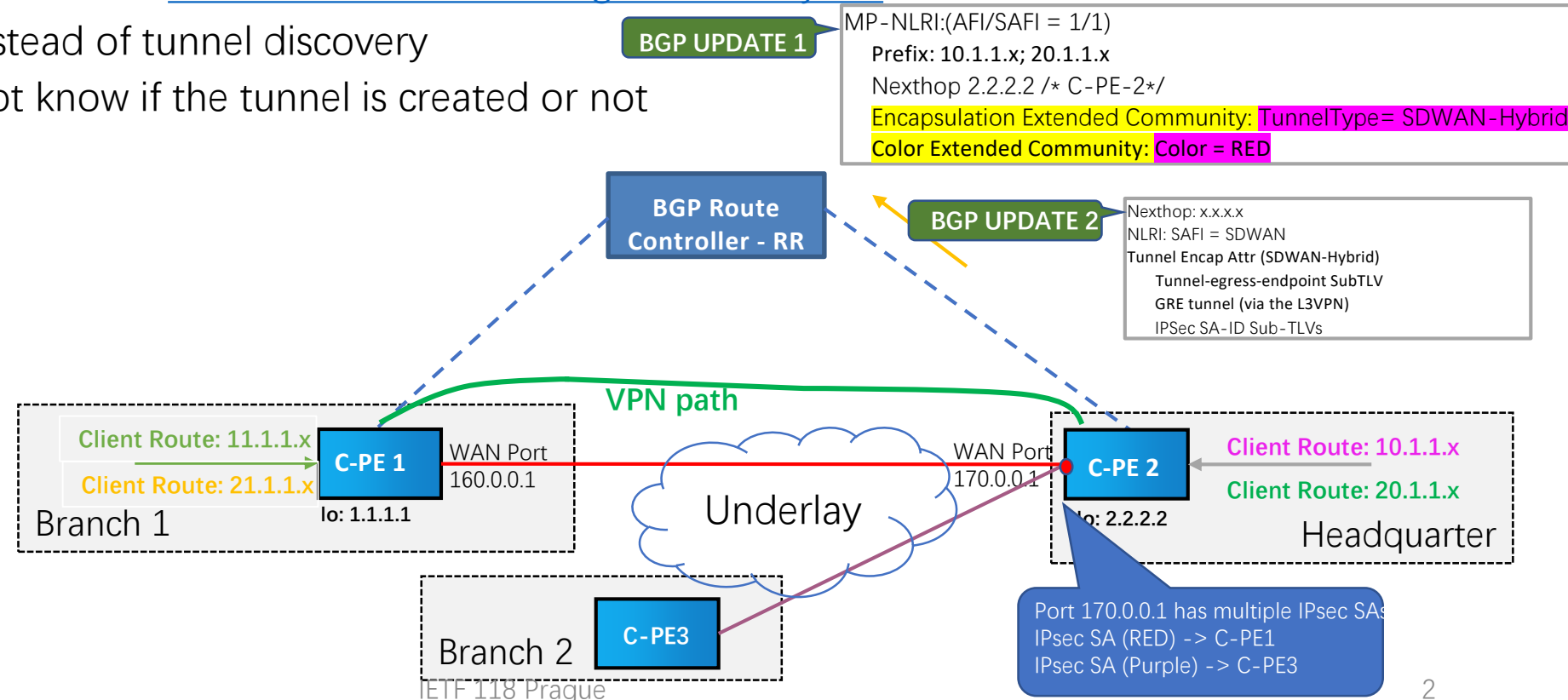
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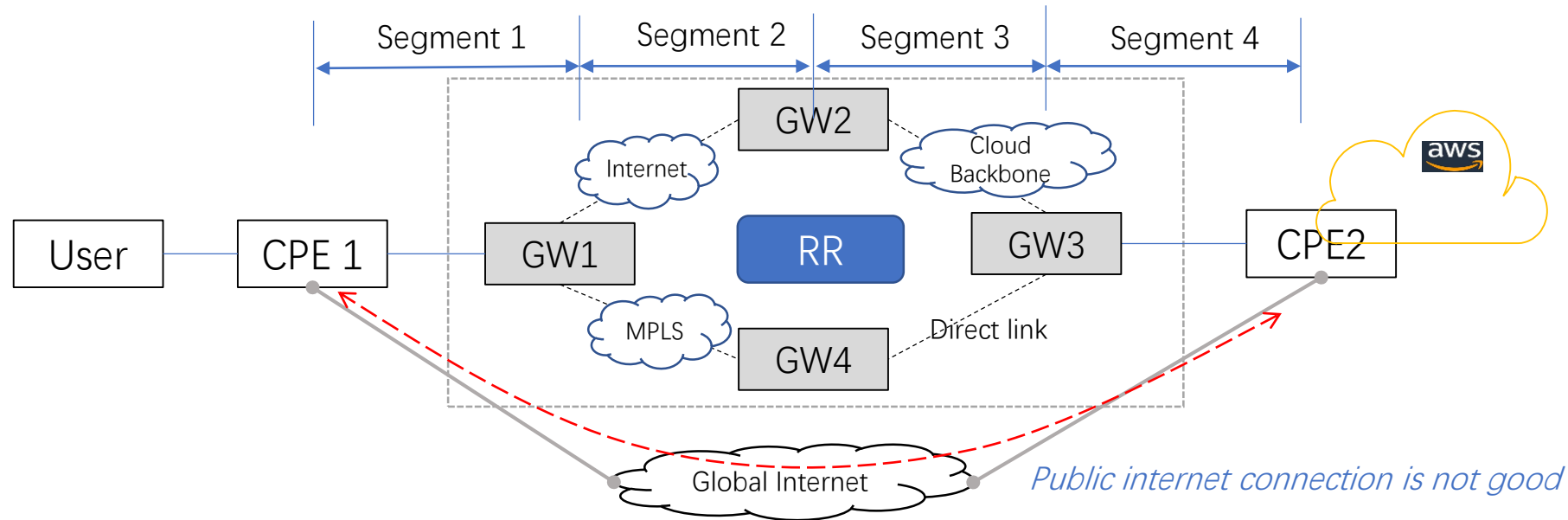
IETF 118

Recap: SDWAN

- IPsec tunnels added to existing VPN path
- BGP as the control plane to distribute the Port attribute, IPsec SA
- Details can be found in: [draft-ietf-idr-sdwan-edge-discovery-10](https://datatracker.ietf.org/draft-ietf-idr-sdwan-edge-discovery-10)
 - Edge discovery instead of tunnel discovery
 - Controller does not know if the tunnel is created or not



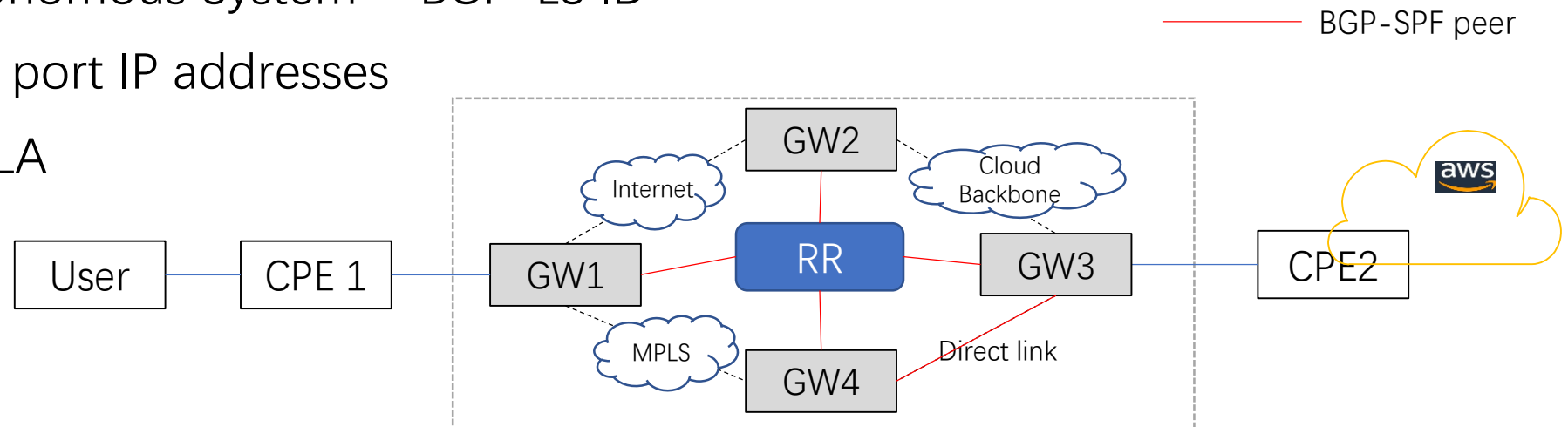
Multi-segment SDWAN



- 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.
- The gateway forms an overlay network. The link of each segment 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: No need for SDWAN tunnel

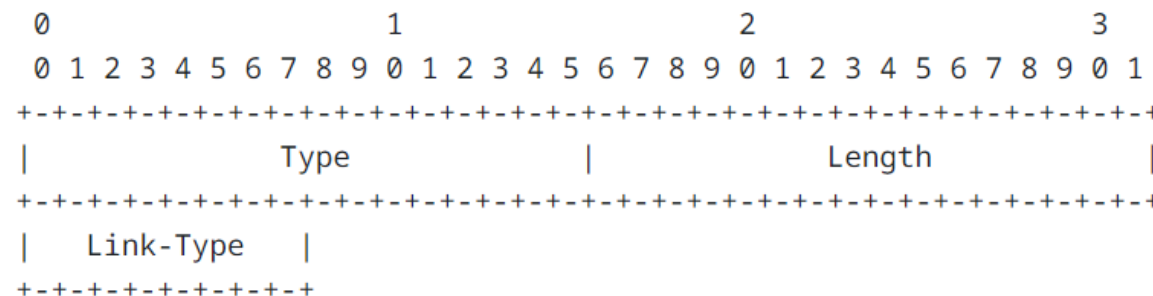
Usage of BGP SPF for SD-WAN

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



Update: Extension of BGP LS to collect link-type

- When calculate “best” overlay path, different customer requires different type of link:
 - FinTech customer(Bank): Extremely secure link only. Exclude Internet/LTE path. Include MPLS/Physical link.
 - Highest quality link: Only use physical link.
 - Low cost mode: Use LTE only as backup
- Proposal: new Link Attribute TLV



Type Number	Link type
0	Reserved
1	Physical/Direct Link/Dedicated Line
2	Internet
3	MPLS
4	LTE
5	Cloud Backbone

Summary and what's next

- BGP SPF to collect SDWAN link topology
- Extension to BGP LS link attribute to carry the link type
- Informational to standard track.
- Comments and suggestion?