Multi-Segments SD-WAN via Cloud DCs

draft-ietf-rtgwg-multisegment-sdwan-02

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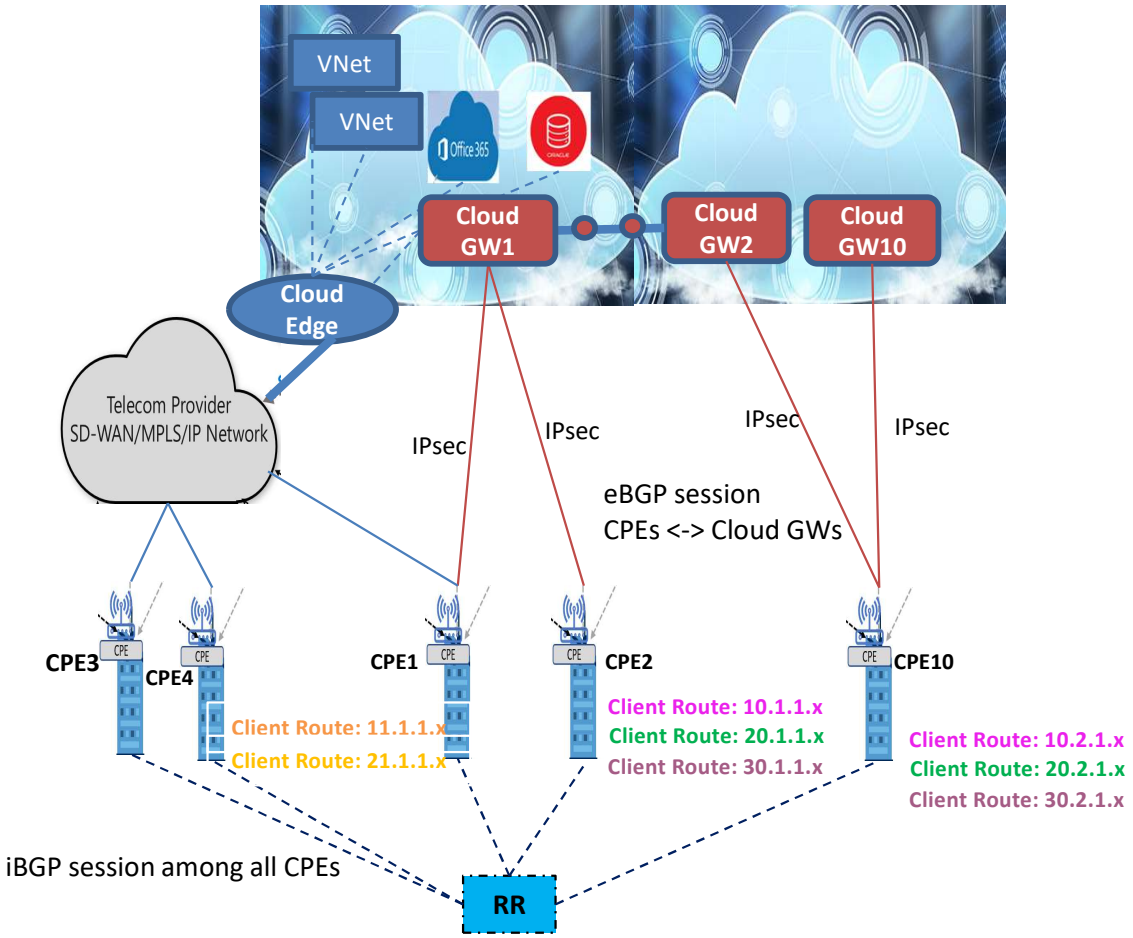
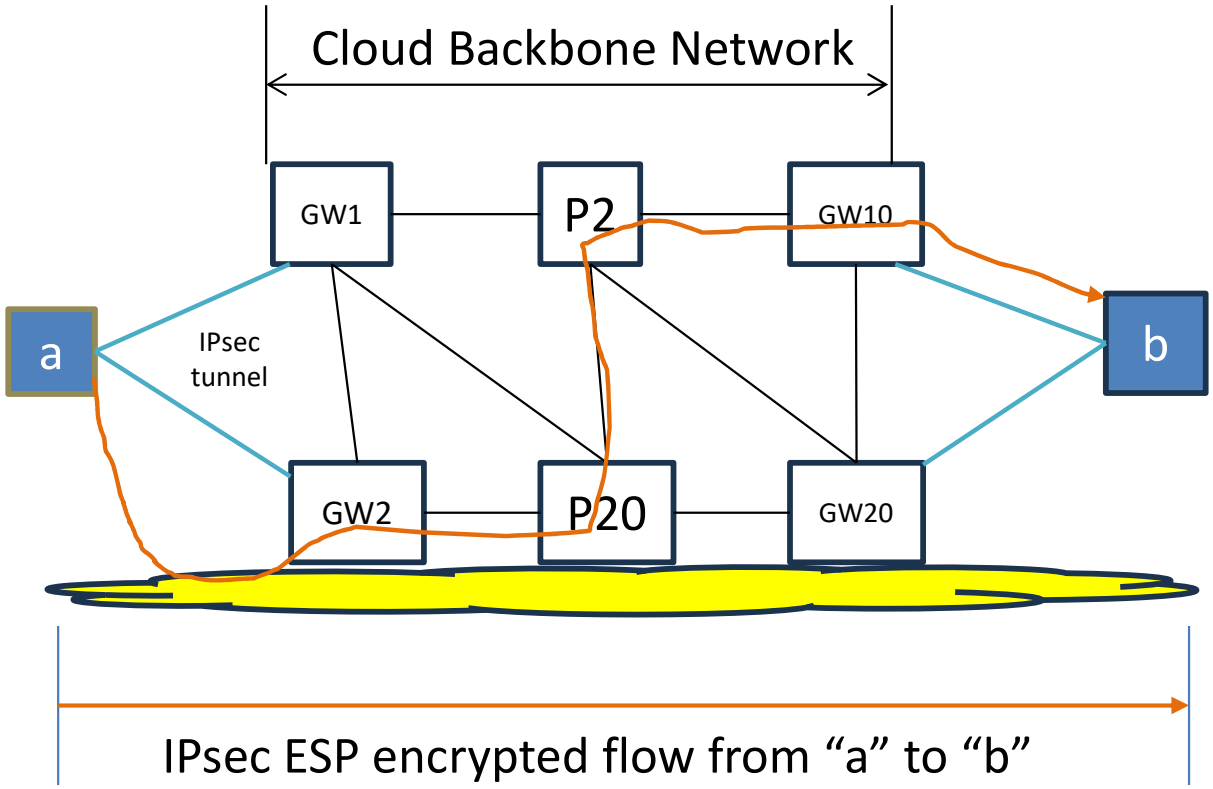
Geographic Faraway Branches Connected via Cloud Backbone



Why?

- The public internet among those branches might have limited bandwidth, unpredictable connection, or be prone to cyber-attacks.
- The network paths from CPEs to the Cloud GW have more reliable connections and are constantly monitored by sophisticated network functions.
- Easier to utilize Cloud-based security functions, such as Firewalls, DDoS, etc., to apply consistent policy enforcement for workloads/services to the Cloud and across the branches.
- Easier to utilize the Cloud-based tools and SaaS to collect and analyze the threat of traffic.
- Utilize the Cloud Backbone to interconnect those branches.

Steering Encrypted Flows through Backbone Network



Goal:

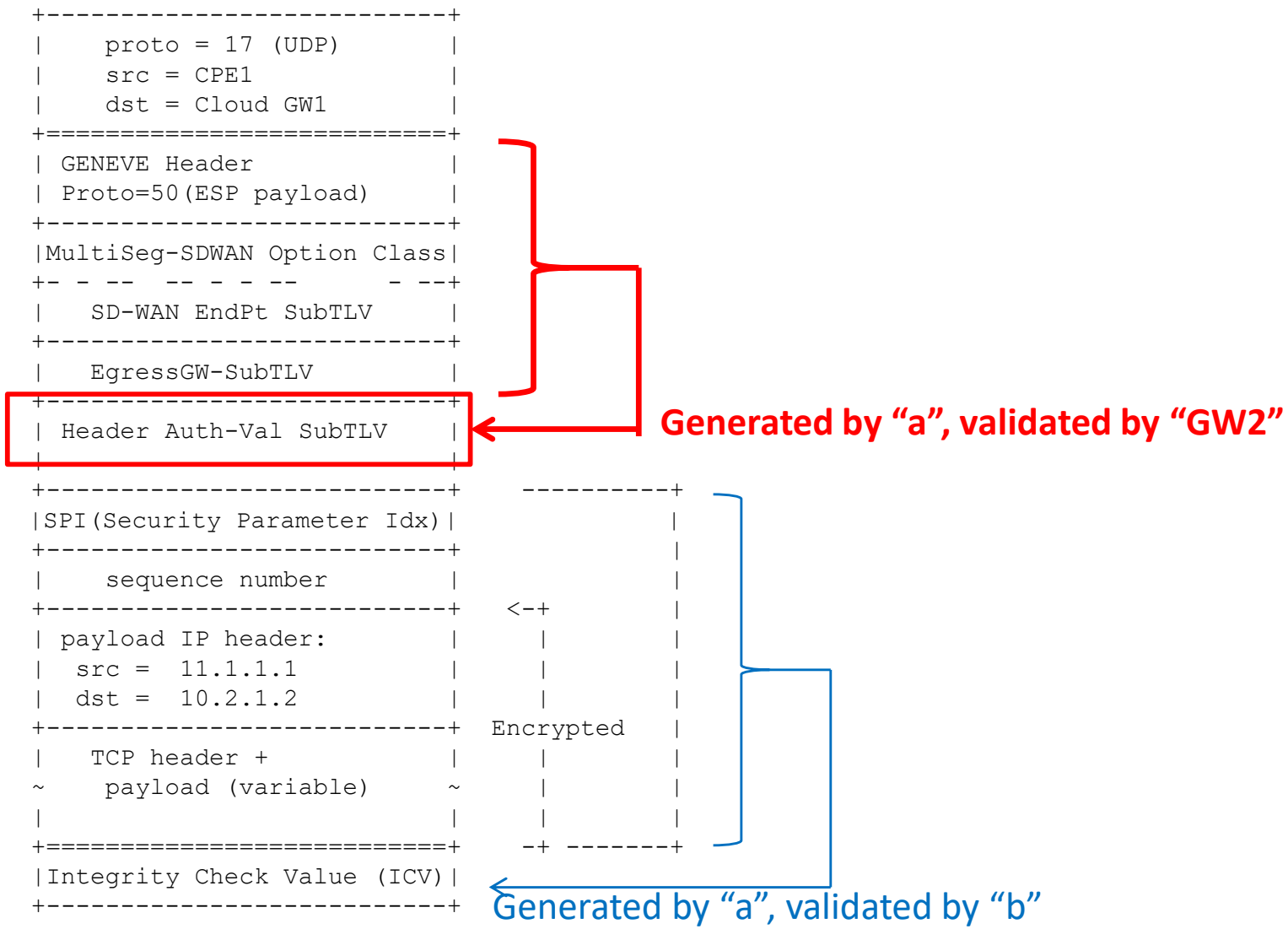
- steer the IPsec encrypted flows from “a” to “b” through GW2-> P20-> GW10, using encapsulation header (e.g., GENEVE)

Environment:

- “a” (CPE) has IPSec SAs to GW1/GW2 for connecting to services hosted in the Cloud.
- “b” (CPE) has IPsec SAs to GW10/GW20 for connecting to services hosted in the Cloud.

Major Components

- GENEVE Multi-Segment SD-WAN Option Class
- SD-WAN Tunnel Endpoint Sub-TLV
- SD-WAN Tunnel Originator Sub-TLV
- Egress GW Sub-TLV
- Include Transit Sub-TLV
- Exclude Transit Sub-TLV
- HMAC-Auth-Val Sub-TLV


proto = 17 (UDP)
src = CPE1
dst = Cloud GW1
GENEVE Header
Proto=50(ESP payload)
MultiSeg-SDWAN Option Class
SD-WAN EndPt SubTLV
EgressGW-SubTLV
Header Auth-Val SubTLV
SPI(Security Parameter Idx)
sequence number
payload IP header:
src = 11.1.1.1
dst = 10.2.1.2
TCP header +
payload (variable)
Integrity Check Value (ICV)
Encrypted
Generated by “a”, validated by “GW2”
Generated by “a”, validated by “b”

Major Changes

- GENEVE Option Class value (x0163) has been assigned to Multi-segment SD-WAN
- Added the description of all the fields in the SubTLVs.
- Revised the illustration of packet format from CPEs to Cloud GW, through Cloud Backbone, and to destination CPEs.
- Moved the illustration to Appendix

Next Step:

- Need GENEVE experts to provide technical review
- Work with authors for draft-boutros-nvo3-ipsec-over-geneve
- Need more reviewers