Briefing of the recent SD-WAN and Network to Cloud DCs initiatives in IETF
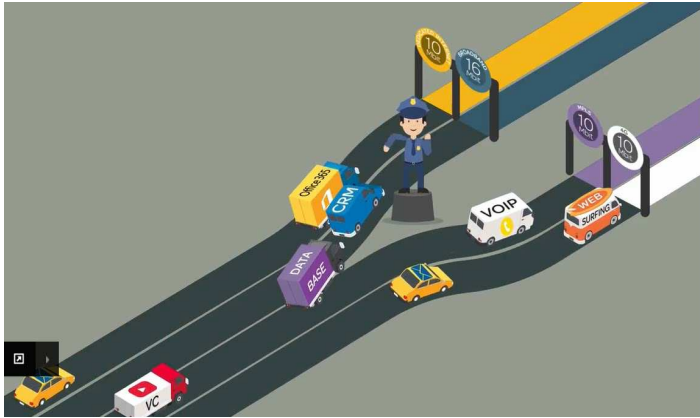
Linda.Dunbar@Huawei.com
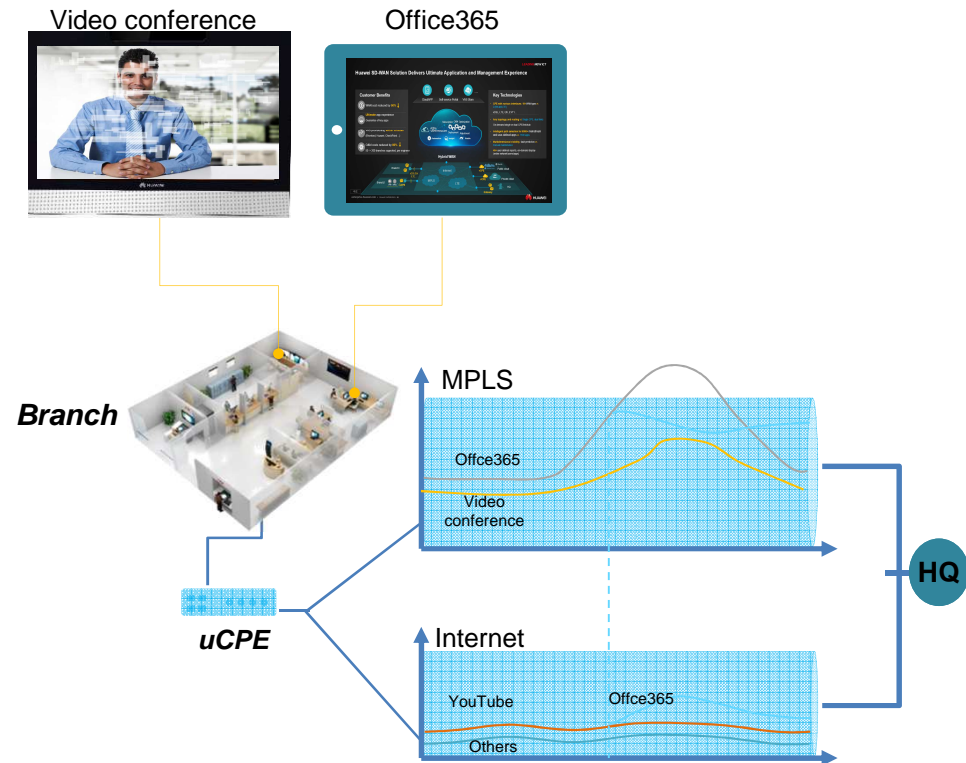
IETF 104 March 2019
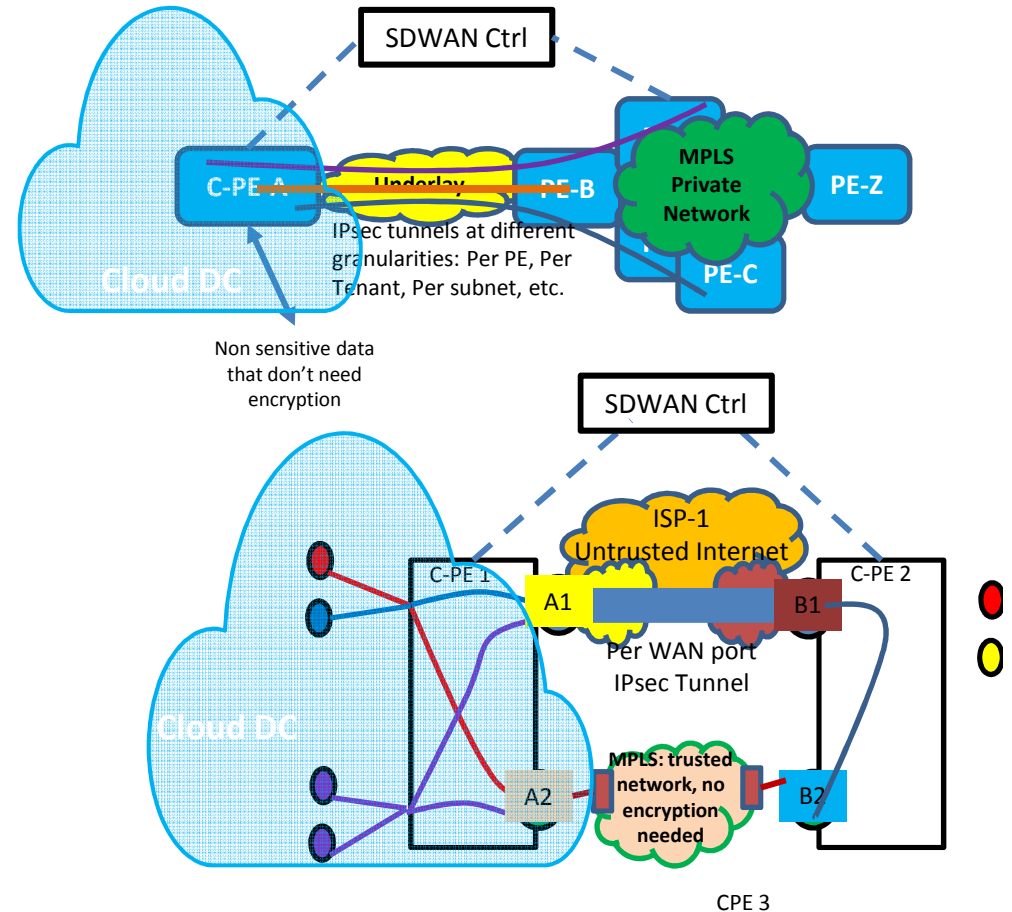
Bird's Eye View of SDWAN

Application-based traffic steering

- Different routing policies are implemented for different applications, ensuring excellent service experience of enterprise applications.

- Access the cloud locally: local breakout, improving cloud access experience for enterprises
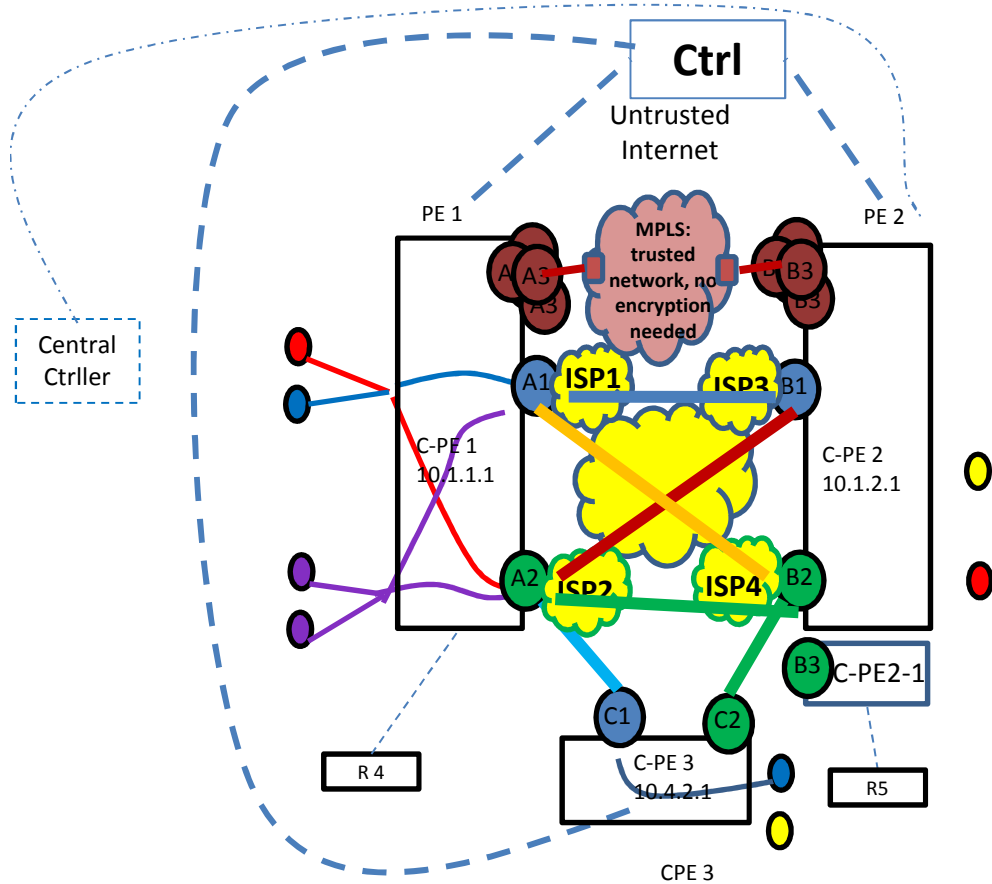
SD-WAN: Peer the onion

- **Homogeneous SD-WAN:**
  - edge encrypting all sensitive traffic to other edge nodes, regardless if the underlay is private or public.
  - Typical deployment scenarios:
  - A small branch office connecting to its HQ offices via Internet..
  - A store in a shopping mall needs to securely connect to its Apps in Cloud DC via Internet.

- **SD-WAN over Hybrid Networks**
  - Key difference from Homogeneous SD-WAN:
    - Traffic over Private VPN networks (e.g. MPLS) can go natively without encryption to achieve better performance, and traffic over internet are carried by IPsec tunnels.
  - User specified policy governs a flow:
    - only going over private network without encryption (for better performance),
    - going over any networks as long as its packets are encrypted when go over public networks, or
    - not needing encryption at all.

Three different Tiers of SD-WAN Control Plane

Ctrl

Untrusted Internet

Central Ctrller

PE 1

PE 2

MPLS: trusted network, no encryption needed

A A3
A3

B3
B3

A1 ISP1

ISP3 B1

C-PE 1
10.1.1.1

C-PE 2
10.1.2.1

A2 ISP2

ISP4 B2

B3 C-PE2-1

C1 C2

R 4

C-PE 3
10.4.2.1

R5

CPE 3

1. **End Node Registration:**
   SD-WAN node's private address and WAN Ports/Addresses registration to the SD-WAN Controller.
   It is for informing the SD-WAN controller and potential peers of the underlay networks to which the CPE is connected.
2. **Controller facilitated IPsec SA association establishment among WAN Ports**
3. **Attached routes distribution using BGP RR:**
   - **EVPN**
   - **IPVPN**
   - **Or something else**

Activities in IETF

➢ Routing Area:
  ▪ RTGwg:
    Problem Statement & Gap Analysis for SD-WANOverlay Control Plane
    https://datatracker.ietf.org/doc/draft-ietf-rtgwg-net2cloud-problem-statement/
    https://datatracker.ietf.org/doc/draft-ietf-rtgwg-net2cloud-gap-analysis/

  ▪ IDR WG
    draft-dunbar-idr-sdwan-port-safi-00

  ▪ BESS WG:
    draft-sajassi-bess-secure-evpn-01
    draft-rosen-bess-secure-l3vpn-00

➢ Security Area
  ▪ I2NSF WG:
    SDN controller managed IPsec keys: draft-ietf-i2nsf-sdn-ipsec-flow-protection-03
  ▪ IPsecme WG:
    draft-carrel-ipsecme-controller-ike-01

➢ Ops Area:
  ▪ Opsawg:
    SD-WAN service data models: https://datatracker.ietf.org/doc/draft-sun-opsawg-sdwan-service-model/

Questions?

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