Software Defined Edge WAN (SDEWAN)

Overview and Roadmap
Srinivasa Addepalli
Contact: Srinivasa.r.addepalli@intel.com
Agenda

- Background
- Needs
- SD-EWAN overview
- Current status and roadmap
Traditional SDWAN

To Connect multiple office security over public WAN links.

- Multiple WAN Links
- WAN traffic management
- Stateful inspection firewall
- Source and Destination NAT
- Ipsec based security
Enterprise Edge sites are like any private office
But.. With some unique challenges

➢ Edges are resource constrained
➢ Edges are cost sensitive
➢ Edges may not get either static or dynamic public IP addresses
➢ Edge POD Subnet & Cluster subnet could be overlapping with other Edges
➢ Edge applications & K8s API server is expected to reachable from outside (inbound connections)
➢ WAN links to Edges are bandwidth constrained and susceptible to simple DDOS attacks from Internet
SD-EWAN (Edge first SDWAN)

Requirements

**Legacy functionality of SDWAN**
- Multiple WAN link support
- WAN traffic management
- SNAT and DNAT
- Firewall
- IPsec
- Traffic Shaping

**Edge first functionality**
- **Edge Overlays and Overlay IPs**: Inbound connection support even with no public IP address
- **Cloud Native**: SDEWAN as CNFs, K8s CRs for configuration
- **Traffic Sanitization via traffic Hubs**: To avoid simple DDOS attacks
- **Higher Automation**: Automation of overlays, Automation of policies to support dynamic apps
- **Democratization & Cost**: Open source based
- **Acceleration and Security**: Key Security, Crypto and other acceleration for edges

Software Defined Edge WAN
Secure WAN Hub Controller
- Cluster Mgr
- Cluster Group Mgr
- App connectivity mgr
- EWAN Config Mgr
- Visualization

Secure WAN Traffic Hub
- Anti DDOS
- EWAN config Agent
- SD-EWAN CNF

SD-EWAN Solution

- OpenWrt user space packages
- Cloud Native
- Zero touch automation
- Solution to all Edge challenges identified
- Centralized controller for configuration
- Traffic Hub for sanitization
- Optimization with Intel IA accelerators and HW RoT.

- No changes to applications
- Supporting both green field and brownfield requirements
- Work with third party SD-WAN VNFs (future)
SD-EWAN Current Status and Roadmap
(Subject to resources availability from Intel & community)

**Q2, 2020 (Planned and Resourced)**
- Containerization of OpenWrt
- RESTful API
- Cloud Native configuration via K8s CRs for MWAN3, Firewall, SNAT/DNAT and Ipsec
- Optimization with Intel IA accelerators (QAT, AES-NI)
- A platform feature of ICN

**Q4, 2020**
- Cloud Native configuration for Traffic Control
- Centralized Management for automation (Overlay IP address Management, Restful API)
- Traffic Hub Controller
- Acceleration for private key operations

**Yet to planned**
- IPv6 support
- Robustness
- Integration controllers with EMCO for supporting dynamic application deployment
- Certificate private key confidentiality via HW root-of-trust
- Making it Smart-NIC/OVS ready
- Third party security tools in Traffic Hub