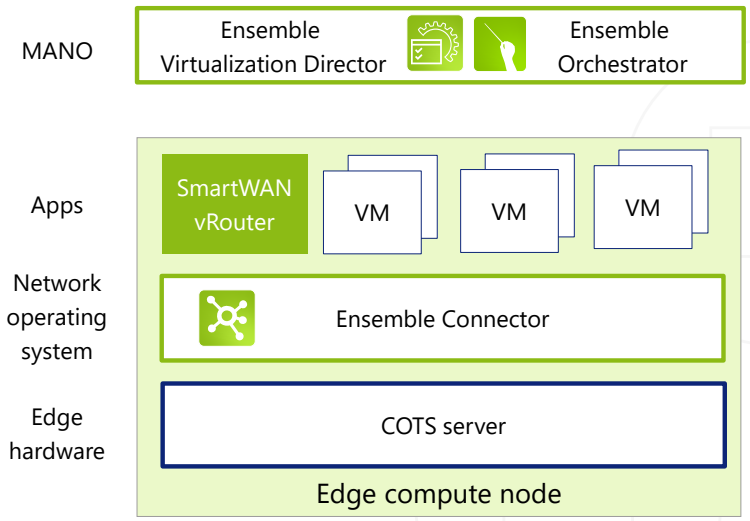
Ensemble SmartWAN

High-performance networking built into the leading NFV/uCPE platform

Secure networking is critical to deploying enterprise applications, whether at the edge or in the cloud. Maybe it's remote access for employees. Perhaps it's access to private cloud applications. Or transient connectivity between branch sites. Whatever the application, it needs to be driven by secure connectivity. ADVA's SmartWAN addresses these challenges with an efficient, simple, and cost-effective alternative to today's router appliances. SmartWAN provides a cloud-native and future-proof platform for innovation that runs on COTS servers and enables your communications strategy.

Enterprises and service providers build secure networks today using approaches like router appliances with IPsec. But there are drawbacks to this method. Routers are closed, proprietary and limited in functionality. And the high cost extends both to the licensed software as well as the platform on which it runs. Using routing appliances is device-centric and locks enterprises into a single-vendor solution. But there is a better way: SmartWAN for secure high-performance networking. With SmartWAN, you can build private networks that provide secure access using IPsec tunnels – all managed by a simple controller that speeds deployment.



Your benefits

- **Built on Ensemble Connector**
  Ensemble Connector is the industry's leading network operating system for NFV and uCPE and includes zero-touch provisioning (ZTP).
- **High throughput on low-cost hardware**
  Support for Intel QuickAssist Technology® (QAT) on COTS servers, which means high-speed encrypted packet processing on low-cost servers.
- **Lightweight and low-cost routing**
  Ensemble SmartWAN provides the needed features and performance without the bloat that would require a more expensive hardware platform.
- **No hardware vendor lock-in**
  Choose your own third-party hardware, from low-cost Intel Atom®-based devices all the way up to multi-socket Intel® Xeon® blade servers.
- **Efficient orchestration**
  The Ensemble MANO solution provides open and extensible management that speeds deployment and eases management of virtualized services.
- **Complete routing stack**
  With dual stack IPv4/v6 forwarding, IPsec tunnels with IP passthrough, bidirectional forwarding detection (BFD), BGP, OSPF, NHRP and others.

High-level specifications

Encapsulations

- GRE, mGRE
- VLAN (802.1Q, QinQ), VXLAN
- LAG (802.3ad, LACP)
- Ethernet bridge
- PPPoE
- IKE/IPsec

Network protocols

- BGP4, BGP4+, BGP RPKI, BGP multi-path (ECMP)
- OSPFv2, OSPFv3
- RIPv1, RIPv2, RIPng
- Policy base routing (PBR)
- MPLS, BGP L3VPN
- BFD

Ensemble integrations

- Installs in Ensemble Connector
- Ensemble Virtualization Director ZTP, licensing and Day-N service templates
- Application health monitor
- Console access via Ensemble Virtualization Director

Data path

- DPDK and SR-IOV
- Intel QuickAssist Technology® (QAT)
- Policing and priority rate profiles
- Packet capture

Zero-touch provisioning

- Activates via licensing as part of Ensemble ZTP in Day-0 / Day-1
- Activates without orchestration
- Deploy as virtual appliance or with orchestrated service chain

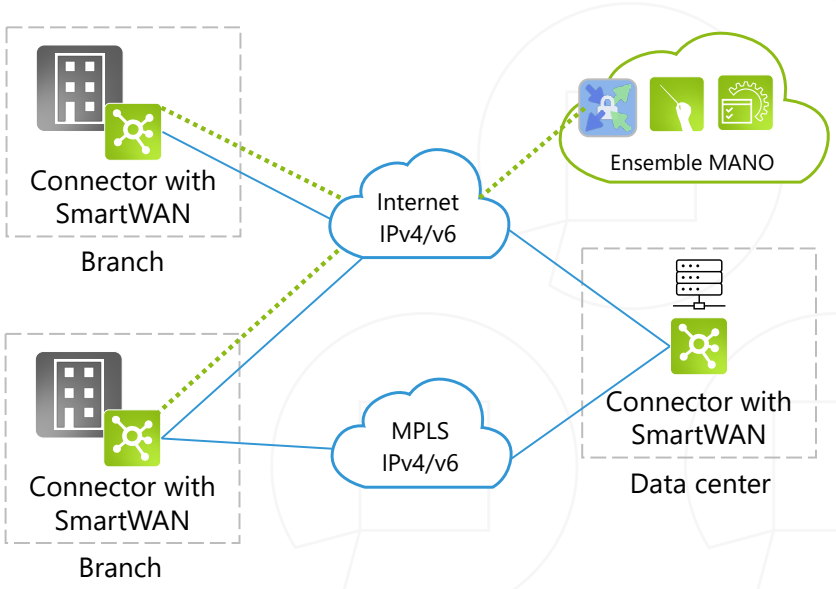
Required resources

- Cores: Two minimum - one for control, one for data plane
- Memory: 2 GBytes minimum
- Disk: 20 GBytes minimum

Applications in your network

High-performance secure routing

- Secure network access with performance and cost that beat traditional routing appliances
- Future-proof platform with VNF hosting that addresses today's requirements and provides a path to tomorrow's applications
- Virtual routing function (VRF) forwarding models support address space overlapping and enable Ensemble Connector support of multi-tenancy use cases
- Built on Ensemble Connector that enables uCPE deployments on white box or COTS platforms, including direct shipment of unconfigured devices to customers



IP networking
- IPv4 and IPv6
- IPv6 auto-configuration
- Multi-tenancy (VRF)
- IPv4 and IPv6 tunneling and filtering
- Network address translation
- Multi-cast

Routing
- BGP4, BGP4+, BGP RPKI, BGP multi-path (ECMP)
- OSPFv2, OSPFv3
- RIPv1, RIPv2, RIPng
- Static routes & path monitoring
- Policy base routing (PBR)
- MPLS, BGP L3VPN
- BFD
- NHRP
- VXLAN EVPN

QOS
- Rate limiting per Interface
- Rate limiting per VRF
- Class-based QoS
- Classification: ToS/IP/DSCP/CoS
- Shaping and policing
- Scheduling: PQ, PB-DWRR

Accelerations
- DPDK, SR-IOV
- Intel® Quick Assist Technology (QAT)

L2 and encapsulations
- GRE, mGRE
- VLAN (802.1Q, QinQ),VXLAN
- LAG (802.3ad, LACP)
- Ethernet bridge
- PPPoE

High availability
- IKE/IPsec synchronization
- VRRPv2 (IPv4/IPv6), VRRPv3 (IPv6)

VPN IPsec
- IKE v1/v2 pre-shared keys or X509 certificates
- MOBIKE
- Encryptions: 3DES, AES-CBC/GCM (128, 192, 256)
- Hash: MD-5, SHA-1, SHA-2 (256, 384, 512) AES-XCBC (128)
- Key management: RSA, DH MODP groups 1 (768 bits), 2 (1024 bits), 5 (1536 bits) and 14 (2048 bits), DH PFS
- EAP/Radius, EAP-MSCHAPv2
- Extended sequence numbers (ESN), large anti-replay windows
- High performance (AES-NI, QAT)
- Tunnel, transport or BEET mode
- Static and dynamic VTI
- Dynamic multi-point VPN
- OpenVPN

Management and monitoring
- SSHv2, CLI
- NETCONF / YANG, SNMP
- KPIs / telemetry (YANG -based)
- RBAC with AAA
- Syslog
- 802.1ab LLDP
- sFlow

Scale

• VRs	32
• Routes	1,000,000
• Neighbors	100,000
• PBR rules	4,096
• Netfilter rules	10,000
• Netfilter conntracks	262,144
• Netfilter ebtables	10,000
• Netfilter ipset	64 ipsets per VR 2048 entries per ipset
• VXLAN interfaces	512
• IPsec tunnels	Controlled by licensing up to 100,000