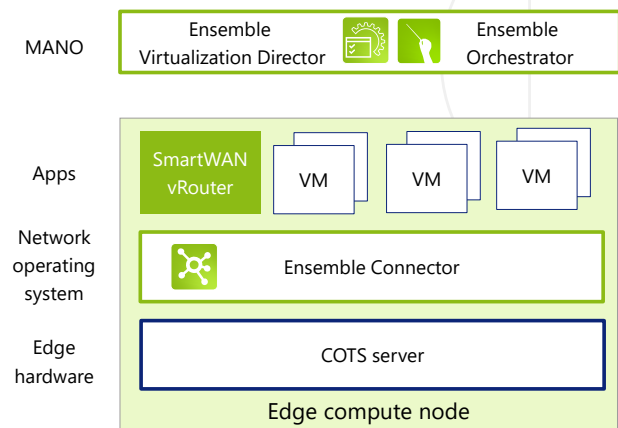


Ensemble Connector

High-performance edge cloud networking and hosting

Communications service providers (CSPs), managed service providers (MSPs), and enterprises know that supporting applications at the network edge is key to enabling service revenue growth and operational agility. The challenge is to provide an open and powerful platform that can host bare metal application, cloud native functions (CNFs) and virtual network functions (VNFs) across various deployment configurations.

CSPs, MSPs, and enterprises are looking to diversify their vendor ecosystem and offer value added services, all while maintaining ease of deployment and management of their end-customer solutions. To deliver on this requirement, CSPs, MSPs and enterprises need a solution that scales from small to larger applications and which supports a variety of networking models. They need an enablement platform that provides high-throughput data path performance and flexible hosting. They need a solution that solves their Open Stack operational concerns and makes OpenStack easily deployable outside of the data center. Moreover, they need a solution that operates on a wide range of commercial off-the-shelf (COTS) platforms, protecting their software investment and unlocking the networking functions from proprietary hardware. They need Ensemble Connector. Ensemble Connector enables CSPs, MSPs, and enterprises to provide the virtual networking and application hosting functionality at the customer premises and telco edge.



Your benefits

- ✓ **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
- ✓ **No orchestration vendor lock-in**
 Connector embedded cloud places a self-contained cloud instance on the compute node, providing an open, standard interface with third-party orchestration platforms
- ✓ **Superior virtual switching**
 Fast and efficient and consistent DPDK-enabled switching at layer 2 and layer3. Multi-queue virtio support to enable maximum VNF throughput performance. Native support for Ethernet and wireless interfaces
- ✓ **Zero touch provisioning (ZTP)**
 With Ensemble Connector, CSPs, MSPs, or enterprises can ship an unconfigured server to a customer site and then provision it securely without the need for an onsite technician
- ✓ **Networking accelerations**
 Ensemble Connector provides a variety of advanced networking including SmartWAN encrypted VPNs, SR-IOV, and PCI passthrough Intel®, providing access from your applications to QuickAssist Technology (Intel® QAT), Graphical Processing Units (GPU) and many other hardware accelerations
- ✓ **Sophisticated management**
 Built-in monitoring features provide insight into the performance of the platform, hosted applications and communications network.
- ✓ **Advanced resilience**
 The Ensemble system provides for backup of configuration to accelerate disaster recovery and minimize downtime
- ✓ **Security and encryption**
 Connector offers protection at multiple levels: commissioning, virtualization, management, user connections and user data

High-level specifications

Network services

- Virtual routing and forwarding (VRFs)
- MEF CE 2.0 compliant E-Line, E-LAN, E-Tree services
- Network address translation (NAT)
- Port address translation (PAT)
- Innovative IP passthrough
- DHCP client and DHCP server

Protocols

- Border gateway protocol (BGP)
- L2/L3 VPN on MPLS
- 802.3ah link OAM
- Y.1731 SOAM
- 802.1ax link aggregation
- RFC 2473 IPv6 encapsulation
- REST, CLI SNMP, and HTTPS

Data path

- DPDK acceleration libraries and drivers, plus SR-IOV and PCI passthrough
- Eight class of service queues
- Policing and priority rate profiles
- Packet capture
- Ingress matching rules on L2/L3 criteria

Cloud services

- OpenStack embedded cloud with full compute and controller services and APIs: Glance, Swift, Keystone, Nova, etc.
- KVM/QEMU hypervisor environment
- Local orchestration through OpenStack Horizon GUI

Zero touch provisioning

- Flexible ZTP tool set with:
- Secure tunnel interop with third-party security gateways
 - Auto port detection
 - Two-factor authentication
 - VLAN-based search algorithms
 - Customer splash screens
 - Software upgrade / reversion

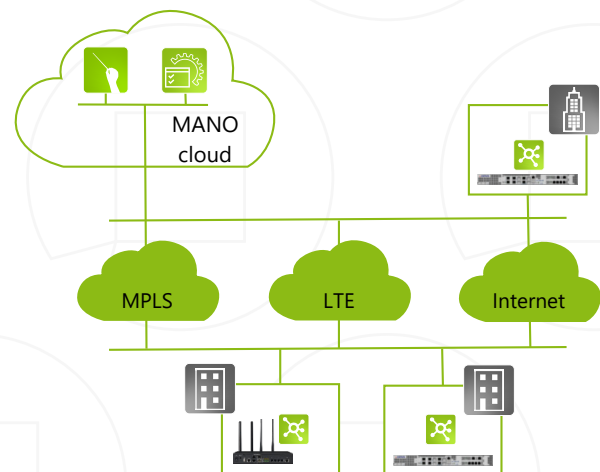
Security and encryption

- TACACS+, RADIUS authentication
- IPSec with IKEv2 tunneling
- AES encryption (256bit)
- Flexible data encryption at Layers 2, 3 or 4 with optional use of Intel® QuickAssist Technology (Intel® QAT)
- SSH key-based login options
- Role-based access (RBAC)
- Auto-lockout

Applications in your network

High-performance network functions virtualization infrastructure (NFVI)

- Encapsulation and routing protocols enable Ensemble Connector to build both overlay networks and VPNs through the legacy underlay network
- Ensemble Connector can establish overlay tunnels on existing IP backbones to tunnel Layer 2 and Layer 3 services with encapsulation
- Ensemble Connector creates a hosting environment and provides the services for connecting VNFs or end user applications to the network or to other VNFs
- Virtual routing function (VRF) forwarding models support address space overlapping and enable Ensemble Connector support of multi-tenancy use cases
- Ensemble Connector enables uCPE deployments on COTS platforms, including direct shipment of unconfigured devices to customers
- Software encryption with optional hardware acceleration enables secure connectivity between the customer site and the public cloud



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Product specifications are subject to change without notice or obligation.

