6WIND
Virtualized Networking Software

vPE

Virtual Provider Edge Router (vPE)

The 6WIND vPE solution is a virtualized network function (VNF) serving as an Edge Router. It is designed and optimized to deliver high performance and scalability with optimized resource usage.

The legacy and traditional way to deploy a CSP network edge relies on physical routers. While this deployment seems to be efficient for centralized service delivery, it is expensive and not optimized for low-bandwidth applications, and could be seen as an artificial barrier for a CSP to enter new markets and services.

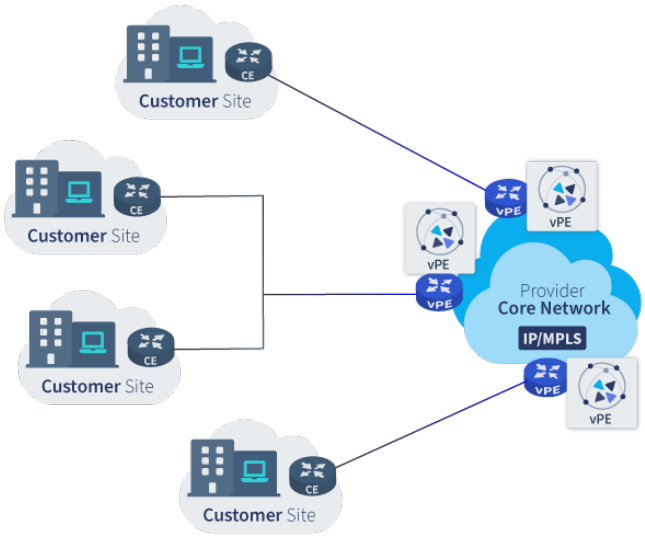
The 6WIND vPE meets a wide variety of market requirements by delivering all the traditional provider edge services, such as IP/MPLS, virtual private networks (VPN) services, Layer 2 and Layer 3 routing, encapsulation protocols – including IPsec, Segment Routing (SR), Ethernet VPN, VxLAN, etc.

The 6WIND vPE solution brings a major advantage in the communication service provider edge network by enabling easy and rapid bandwidth and services scale up.

Communication Service Providers (CSPs) can leverage the 6WIND Virtual Provider Edge solution (vPE) for agile service introduction, distributed edge architectures, and to meet specific service requirements associated with low-risk expansion into new markets and geographies.

Benefits

- High performance and scalable IP/MPLS edge network
- Deployed as PNF, VNF or CNF on x86 and ARM COTS servers
- Extended multi-tenancy support for optimized deployments
- Optimized resource usage for minimal hardware requirements
- Low TCO
- High available Carrier Ethernet, IP VPN and internet services over IP/MPLS infrastructures
- Provides scalable and high-performance routing and Layer3 IPsec VPN connectivity



Specification

IP Networking:

- IPv4 and IPv6
- IPv6 auto-configuration
- Multitenancy (VRF)
- IPv4/IPv6 tunneling
- IPv4/IPv6 filtering
- Network address translation
- multicast (PIM/IGMP)

Routing:

- BGP4, BGP4+, BGP RPKI
- IS-IS, OSPFv2, OSPFv3
- RIPv1, RIPv2, RIPng
- Static routes & path monitoring
- BGP multi-path (ECMP)
- Policy base routing (PBR)
- MPLS
- BGP L3VPN, BGP-LU
- Bidirectional Forwarding Detection (BFD)
- NHRP
- VXLAN EVPN
- Segment Routing, ISIS-SR, SR-TE
- SRv6*, SRv6-TE*

Quality of Service:

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

Management / Monitoring:

- SSHv2
- CLI, NETCONF/YANG
- SNMP
- KPIs/telemetry (YANG-based)
- RBAC with AAA
- Syslog
- 802.1ab LLDP
- sFlow
- IPFIX, Netflow v9

L2 and Encapsulations:

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

IP Services:

- DHCP server / client / relay
- DNS client / proxy
- NTP
- TWAMP

Security:

- ACLs (stateless & stateful)
- uRPF
- CP protection
- BGP FlowSpec (IPv4, IPv6)
- Zone-Based Firewall*

VPN IPsec:

- IKE v1/v2 pre-shared keys or X509 certificates
- MOBIKE
- Encryptions:
  - 3DES, AES-CBC/GCM (128, 192, 256)
- Hash:
  - MD5, 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

High Availability:

- IKE/IPsec synchronization
- VRRPv2 (IPv4/IPv6)
- VRRPv3 (IPv6)

System Requirements

Processor:

- Single or multi-sockets Intel® Xeon® and Atom® processor
- Arm based processors (Ampere Altra, Graviton2)

CPU/vCPU cores

- 2 minimum (one for control, one for data plane)

Memory:

- 2GB minimum

NICs:

- Intel: 1G, 10G, 40G, 100G (E810)
- Mellanox: 10G, 25G, 40G, 50G, 100G: CX4, CX5, CX6
- Broadcom NetExtreme E-Series

I/O virtualization:

- virtIO (Linux KVM)
- SR-IOV
- PCI passthrough
- VMXNET3 (VMware ESXi)
- ENA

Supported Hypervisors

- KVM (RH, Ubuntu, CentOS)
- VMware ESXi (6.5+)
- Microsoft Hyper-V

Public Clouds Support

- Amazon Web Services
- Microsoft Azure
- Google Cloud Platform

Deployments

- Bare metal, virtual machines, containers (Kubernetes/Docker)
- Installation: PXE, USB, ISO, QCOW2, OVA
- Update / rollback support
- Provisioning: cloud-init, Ansible, ZTP
- Licensing: Online licensing system for feature and capacity enablement

*Roadmap item