6WIND
Virtualized Networking Software

vBNG

Virtual Broadband Network Gateway (vBNG)

The ever-increasing demand for higher throughput and cost-effective EDGE services has been driving Communication Service Providers (CSPs) to test their financial boundaries for quite some time now. This coupled with the need to efficiently use their existing transmission networks while increasing their edge service delivery performance, has been very challenging.

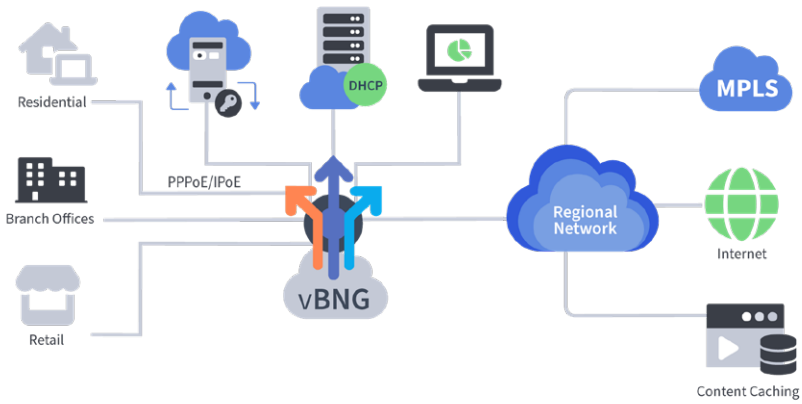
With consumer data traffic foreseen to increase 25% YoY, along with the growing demand for AR/VR and AI applications, future-proof networking edge solutions must pave the path to solve data compound annual growth rate (CAGR) challenges in a profitable, cost-effective and highly-scalable manner. Pushing the boundaries of increased performance requirements necessitates a state-of-the-art innovative technology to be deployed in a holistic and seamless manner.

The 6WIND Virtual Broadband Network Gateway (vBNG), also known as broadband remote access server (BRAS) is a subscriber aware operating system that provides highly scalable subscriber management, multi-million session management and cutting-edge network services features and functionalities. It allows efficient and optimized compute resource utilization, intelligent packet and flow distribution, highly scalable control and data planes, hierarchical quality of service and cloud-native readiness.

The 6WIND vBNG meets a wide variety of market requirements by delivering all the traditional edge aggregation services, such as PPPoE, IPoE, IP/MPLS VPN Services, Segment Routing, Layer 2 and Layer 3 routing, encapsulation protocols – including Ethernet VPN, VxLAN, and much more. The vBNG solution brings a major advantage to the CSP edge network by enabling efficient bandwidth and services scale up, while leveraging agile service introduction, distributed edge architectures, and meeting specific service requirements associated with low-risk expansion into new markets and geographies.

Benefits

- High performance and scalable PPPoE / IPoE Gateway
- Deployed as PNF, VNF or CNF on x86 standard 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
- Scalable and high-performance routing and Subscriber Session Management



Specification

IP Networking:

- Dual Stack IPv4 and IPv6
- IPv6 auto-configuration
- Multitenancy (VRF/L3VRF)
- IPv4/IPv6 tunneling
- IPv4/IPv6 filtering
- Network address translation
- multicast (PIM-SM/SSM/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
- Segment Routing (SR)

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

IP Services:

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

L2 and Encapsulations:

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

Security:

- ACLs (stateless & stateful)
- uRPF
- CP protection
- BGP FlowSpec (IPv4, IPv6)

Management / Monitoring:

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

Subscriber Management:

- PPPoE/IPoE Support
- Compliance to Broadband Forum Technical Reports:
  TR-101, TR-146, TR-177, TR-178, TR-203, TR-300, TR-345, TR-459 (459.2 / 459.3)***
- Radius Authentication
- Subscriber Identification
- Dynamic Policy Management
- DHCP/DHCPv6 Support
- Per-subscriber policing, classification, queueing

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