



## Virtual CGNAT

### Key features

- ▶ **30M Connections**  
(Concurrent connection per 32G RAM)
- ▶ **Linear Scalability**  
(over 400Gbps throughput per single instance)
- ▶ **35Gbps per CPU core**  
(IMIX traffic)

### Benefits

- ▶ High Performance
- ▶ Support for NAT44, NAT64 and DNS64
- ▶ High scalability to address rapid growth in the number of subscribers and devices
- ▶ Native support for physical and virtual deployments (PNF, VNF, CNF)
- ▶ Rich features: including Endpoint-independent Mapping (EIM), Endpoint-independent Filtering (EIF), port preservation, hair-pinning and address pooling for a seamless user experience across a NAT environment.

## Virtualized Carrier-Grade Network Address Translation Router (vCGNAT)

The adoption of Service Defined Networks drives the need for virtualized network functions to provide flexible and scalable networking capabilities. The 6WIND vCGNAT solution along with the other 6WIND VSR solutions is designed to provide high performance and scalable networking functions delivering routing, and large-scale NAT capabilities.

6WIND vCGNAT is a high-performance, software-based solution for a large-scale transparent network addresses and protocols translations. It is deployed in bare metal, in virtual machines or in containers on commercial-off-the-shelf (COTS) servers in private and public clouds.

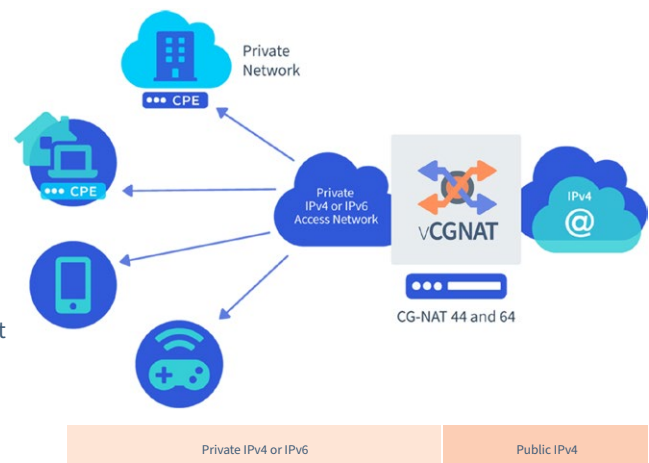
6WIND vCGNAT enables a smooth transition to IPv6 and allows service providers to efficiently extend their IPv4 networks.

6WIND vCGNAT aggregates multiple millions of concurrent connections and scales the bandwidth performance from 1G to over 400G.

6WIND vCGNAT works on standard x86 and ARM servers to provide flexibility and cost-efficiency for small and large deployments.

The 6WIND vCGNAT allows sharing small pools of public addresses among multiple end-sites and end-users, thus helps greatly expand the capacity of existing networks with a limited extra investment.

It enables Internet and telecom Service Providers overcome the exhaustion of public IPv4 addresses by leveraging IPv4 to IPv4 (NAT44) or IPv6 to IPv4 (NAT64) translations to optimize the private networks usage and sustain a rapid growth in the number of subscribers and devices.



## Specification

### IP Networking:

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

### Routing:

- ▶ BGP4, BGP4+, BGP RPKI
- ▶ IS-IS, OSPFv2, OSPFv3
- ▶ RIPv1, RIPv2, RIPv3
- ▶ Static routes & path monitoring
- ▶ BGP multi-path (ECMP)
- ▶ Policy base routing (PBR)
- ▶ BGP L3VPN, BGP-LU
- ▶ Bidirectional Forwarding Detection (BFD)

### 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

### Security:

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

### CGNAT Support:

- ▶ NAT44, NAT64
- ▶ Static NAT
- ▶ Port Assignment
  - Deterministic
  - Random or Parity
  - Port Block Allocation (PBA) or detailed logging per session
  - Per user/CPE session limiter
- ▶ Mapping and filtering
  - Endpoint-independent mapping and filtering
  - Address and port dependent mapping and filtering
- ▶ Hairpinning
- ▶ IP Pool Management
  - Dynamic IP pool resizing
  - Paired pooling
- ▶ Logging
  - Port batching
  - Advanced logging features
  - Syslog
- ▶ ALG Support
  - ICMP, FTP, TFTP, RTSP, PPTP, SIP, H323, DNS over UDP

### High Availability:

- ▶ 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