

5x9 vBNG System

Virtual Form Broadband Edge



Manage your network production with efficiency & simplicity

What makes 5x9 vBNG stand out?

5x9 vBNG is a turnkey broadband edge solution based on a virtual form factor. Developed from scratch and highly optimized, it enables operators to seamlessly move their BNG from dedicated hardware to a smart VNF with maximal efficiency and flexibility.

Product Overview

5x9 vBNG consists of three elements: Virtual BBRAS Controller (vBC), Virtual BBRAS Forwarder (vBF), Virtual DashBoard (vDB). What makes 5x9 vBNG special is its simple design, a unique vDB component that fully automates system provisioning and takes care of all intelligent system tasks like control plane handling, subscriber IP management, routing, workload distribution, redundancy, scalability and elasticity, minimizing the effort to keep everything up and running.

Innovative 5x9 System Features

Automatic Scalability

Tailor thresholds to your capacities, and 5x9 vBNG handles the rest. When your traffic or user number hits your threshold, a new forwarder gets automatically into action

Automated Forwarding Plane Elasticity

Our forwarders automatically configure themselves according to any parameter you outlined during the system setup.

Open/Closed for Business

Dynamically shut down a forwarder, without compromising user sessions, and have fun upgrading and tinkering with the system

Smart Stop

Disconnect all your users from a forwarder and distribute them efficiently and equally to other instances.

Adaptive PADO Delay

5x9 vBNG monitors various parameters and balances the delay between forwarders to ensure the least loaded forwarder gets to the user first.

PPPoE Session Affinity

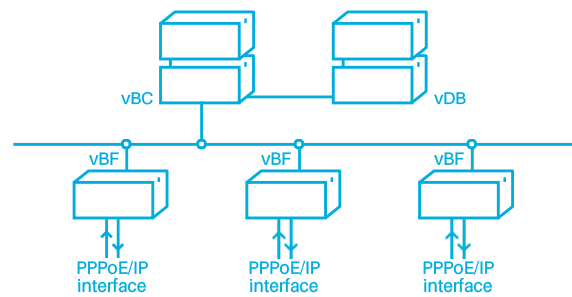
Control the session affinity of each forwarder and stick any session right where you want it.

Automated forwarding plane IP addressing

IP addresses are distributed economically to functioning vBF instances, avoiding IP waste.

Need something customized?

5x9 vBNG was developed from scratch and completely in-house, allowing us to tailor its features to every client's needs.



Key Takeaways

- Fast and easy broadband edge deployment and production.
- Simplified system design that ensures performance, stability, and fast feature delivery.
- Includes provisioning, management, redundancy, scalability, and elasticity tools.
- Effortless everyday system operation and automated workload distribution.
- Compatibility with all major virtualization platforms
- Up to 800 Gbps per mid-range x86 COTS node for 500 bytes packet size
- Clearly visible CapEx and OpEx savings with subscriber-based licensing and SLA policies.

Available Form Factors

OneVM

All components in a single virtual machine, suitable for up to 30.000 Subscribers and 300 Gbps of traffic

OneAppliance

All components in a single appliance, suitable for up to 150.000 Subscribers and 800 Gbps of traffic

Distributed System

All components distributed over one or more Datacenters, suitable for millions of subscribers and terabits of traffic

Technical specifications

This is what 5X9 vBNG is made of, plain and simple. We're constantly working to make your experience even better. If you have any questions regarding our specs or some future feature, send us a line at info@5x9networks.com.

Protocols

- PPPoE (RFC 1332, 1334, 1661, 2516, 5072)
- Ethernet
- 802.1q
- 802.1ad (QinQ)
- LACP (IEEE 802.3ad)
- MPLS (RFC 3031)
- EVPN (RFC 7209), MPLS-based (RFC 7432) and VxLAN-based (RFC 8365)
- L2TP LAC (RFC 2661)

Subscriber Management

- RADIUS authentication and accounting (RFC 2865, 2866)
- PAP/CHAP (RFC 1334, RFC 1994)
- v4 and v6 PPPoE termination (single and dual stack)
- v4 and v6 IPoE termination (single and dual stack)
- IPv4 support (RFC 791, 1812)
- IPv6 support (RFC 2460, 8200)
- PPPoE Intermediate Agent string
- Session rate limit
- MRU (Max Receive Unit)
- Local and Radius IP address assignment
- Framed-IP and Framed-Route via Radius (RFC 2865)
- Session timeout
- CoA (RFC 3576) for ACL, QoS and disconnect
- hQoS (multi-level, 8 classes, policing and shaping, classification and marking), multiple scheduling algorithms (RFC 2697, 2698, 4115)
- L3VPN (RFC 4364)
- 6PE (RFC 4798)
- 6VPE (RFC 4659)
- CGN (Carrier Grade NAT) with support for ICMP, FTP, SIP and PPTP ALGs

IP Routing

- RIP v1, v2 (RFC 1058, 2080, 2082, 2453)
- OSPF v2, v3 (RFC 2328, 2370, 5340)
- OSPF segment routing (RFC 8665)
- IS-IS (ISO 10589:2002, RFC 1195, 5308)
- IS-IS segment routing (RFC 8667)
- BGP (RFC 1771, 1965, 1997, 1998, 2439, 2545, 2976, 2842, 2858, 2918, 3065, 3107, 3682, 3765, 4271, 4360, 4364, 4456, 4486, 4659, 4684, 4760, 4893, 5004, 5082, 5291, 5492, 5575, 5925, 6286, 6608, 6810, 6811, 6938, 7196, 7300, 7313, 7606, 7607, 7611, 7911, 7999, 8092, 8195, 8203, 8212, 8277, 8654, 9003, 9072)
- LDP (RFC 5036, 5561, 6720, 7552)
- BFD (RFC 5880, 5881, 5883)
- ECMP
- Path MTU Discovery (RFC 1191)

Security

- uRFP (Unicast Reverse Path Forwarding)
- DAD (Duplicate Address Detection)
- ACL (Access List)

Management

- Zero-touch provisioning via vDashBoard (vDB)
- User statistics
- System element statistics
- System statistics
- NTP (RFC 5905)
- Lawful Intercept
- SNMPv1/v2/v3
- SNMP traps
- TACACS+ for vDB authentication and accounting
- ISSU (In Service Software Upgrade)
- REST
- NetConf/Yang

Innovative 5x9 System Features:

- vBF adaptive PADO delay
- vBF adaptive DHCP offer delay
- vBF open for new PPPoE/IPoE sessions
- Max subscribers per vBF
- Multiple vBF L2 and L3 interfaces
- Smart vBF stop
- Automated forwarding plane elasticity
- Automated forwarding plane IP addressing
- PPPoE/IPoE session to vBF instance affinity

Simplify your maintenance, diagnostics, and life with 5x9 Networks. Get in touch and see how.