![VyOS Networks logo]

**VyOS**
Networks
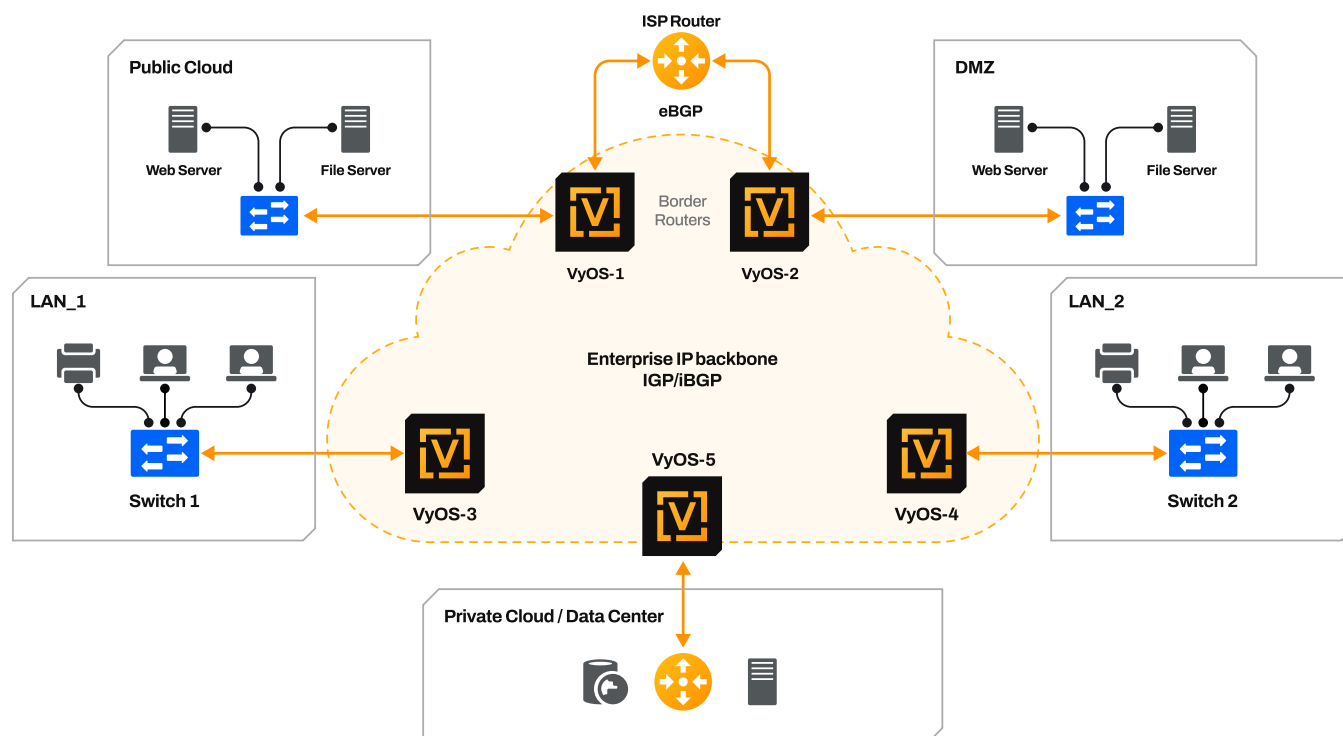
# ENTERPRISE EDGE ROUTER

# Introduction

An **Enterprise Edge Router** serves as the critical connection point between an enterprise network and external networks such as the internet, service providers, hybrid cloud, or other remote branches. As such, it must combine performance, security, and flexibility to meet the demands of modern enterprise IT environments.



Understanding these critical challenges, we suggest VyOS as a solution to satisfy the demands of any type of enterprise network.

## Core Functionalities

- **High Availability (HA):** Support for redundancy protocols (e.g., VRRP, HSRP) to ensure uninterrupted connectivity.

- **Scalability:** Ability to handle growing numbers of users, devices, and services.

- **Performance:** Hardware acceleration, multi-core CPUs, and optimized forwarding paths for high throughput and low latency.

- **Reliability:** Carrier-grade components and software resilience.

- **Flexibility:** Modular design to support various WAN/LAN interfaces and form factors (physical or virtual).

- **Security-Ready:** Integration with firewalls, VPNs, and intrusion prevention systems (IPS).

VyOS can serve as an Enterprise Edge Router, as it supports all the essential features required for this role—offering a flexible and reliable solution to meet the demands of any type of an enterprise network.

VyOS is fully equipped to operate as an Enterprise Edge Router, delivering the critical capabilities needed to handle the complex requirements of modern enterprise networks—regardless of their size or architecture.

## Key Functionalities

- **Routing and Switching:**
  - IPv4 and IPv6 dual stack support
  - Static routing and dynamic routing capabilities
  - Inter-VLAN routing and Layer 3 forwarding

- **WAN Connectivity:**
  - Support for multiple WAN interfaces (Ethernet, LTE, 5G, etc.)
  - Load balancing and failover

- **VPN Services:**
  - Site-to-site and remote access VPN (IPSec, SSL)
  - MPLS VPN (L3VPN), DMVPN, or SD-WAN support

- **Traffic Management:**
  - QoS (Quality of Service) for prioritizing critical applications
  - Traffic shaping and policing

- **Policy Control:**
  - Route maps, prefix lists, filtering, and route redistribution
  - Access control lists (ACLs) for security and traffic filtering

- **Monitoring and Management:**
  - SNMP, NetFlow/sFlow, syslog, REST APIs
  - Centralized management via CLI, GUI, or orchestration tools

An ideal enterprise edge router ensures secure, high-performance, and policy-driven connectivity between internal networks and the outside world—serving as a critical pillar for hybrid cloud access, branch connectivity, and secure internet breakout.

# Key Features

### Traffic Balancing

Splitting and balancing traffic between multiple links optimize not only packet flow, latency and connectivity, but also gives you a fine control over your data flow into external connections. With BGP inside VyOS you can control connectivity to external networks by managing your network visibility, filtering announcements and marking routes with dedicated groups for easier management.

### Portability

If you need an additional router, you can deploy one on almost any device with 64-bit x86 CPU, without having to obtain specific hardware. The productivity and performance of current microprocessors are growing rapidly, leading to constant appearance of new and more powerful devices at lower costs. Thus, such devices become increasingly more available, allowing you to speed up your router with small investments without having to alter the software.

### Dynamic Internal Routing

Border gateway needs not only the ability to peer with autonomous external systems but also effectively route traffic between internal routers. VyOS supports OSPFv2/v, IS-IS as well as MPLS, LDP and segment routing to keep routing ans transport for both IPv4 and IPv6 resources under control.

### Reliable Connectivity

ISPs are transit points for many users' traffic and keeping them online at all times is an absolute top-priority task. Usually, this is done by providing multiple paths to the same resources on the internet that VyOS accomplishes by means of dynamic BGP routing or static load-balancing with automated failover.

### High Availability

Even the most durable routing solutions can't ensure 100% uptime. To avoid troubles with a single point of failure, VyOS provides the ability to build multi-routers topologies with VRRP. You can always be prepared to face an unexpected problem and conduct maintenance in peace.

## Supported Protocols

- ■ **Routing Protocols:**

  - • **OSPF (v2 and v3)** for internal dynamic routing
  - • **BGP (iBGP/eBGP)** for external connectivity and policy control
  - • **EIGRP** (for compatibility with certain networks)
  - • **RIP** (optional, for legacy support)

- ■ **Tunneling and VPN Protocols:**

  - • **IPSec, GRE, L2TP, DMVPN**
  - • **MPLS, LDP,** and **VRF-aware routing**
  - • **OpenVPN, WireGuard** (for modern and lightweight deployments)

- ■ **Multicast and Other Services:**

  - • **PIM, IGMP** for multicast support
  - • **DHCP, NAT, DNS relay**
  - • **IPv6 support:** SLAAC, DHCPv6, Neighbor Discovery

# Why VyOS?

Our key benefits:

### Routing Management

Support for dynamic routing protocols to discover the network, maintain routing tables and calculate the best path for the traffic. Having low levels of routing overhead, using administrator-specified paths and preventing network information leakage are the jobs of static routing.

### Advanced Configurations

Automation with scripting for advanced configurations allows you to actively react to events happening in your network and control your router via external automation tools.

### List of Hardware Vendors

Compatibility with a long list of hardware vendors helps our customers migrate from proprietary hardware or upgrade to higher-performance software, enabling a successful transition to white box networking.

## High-performance Virtual Routing

Ability to run the border router inside a virtual machine on the same hardware with other services.

## Unified Command-line Interface

A unified CLI as in classic hardware routers that help to inspect, backup and manage your infrastructure with ease.

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