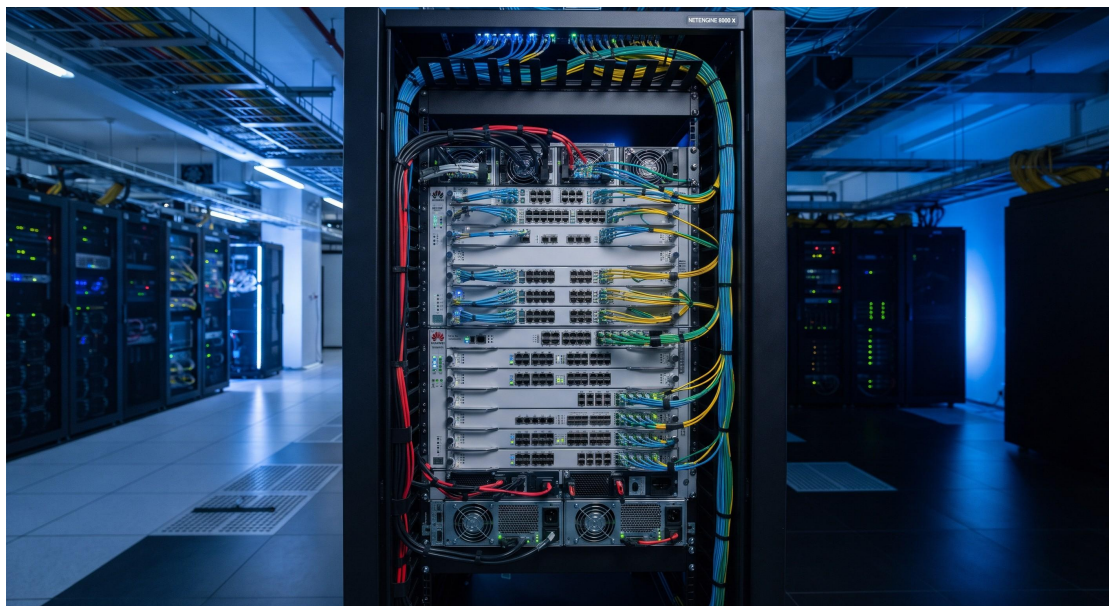


High-Density Core Routing Capabilities Blueprint: Huawei NetEngine 8000 X Series Core Router BGP Routing Table Capacity

PLATFORM ROLE IN ISP

The Huawei NetEngine 8000 X Series (comprising the X4, X8, and X16 models) is purpose-built to serve as the intelligent metro core and aggregation anchor for carrier-grade ISP infrastructures. In the context of cloud and AI-era traffic growth, the platform addresses the stringent requirements of full-table BGP peering, route reflection, and international gateway deployments. The X Series provides a scalable, high-density routing foundation that ensures the control plane can accommodate the exponential growth of global routing tables without compromising forwarding performance or service availability .



NON-BLOCKING SWITCHING ARCHITECTURE

The NetEngine 8000 X Series employs a sophisticated orthogonal hardware architecture designed to eliminate midplane bottlenecks. With slot capacities scaling from 1T to 19.2T per slot, the platform provides the raw bandwidth necessary to support high-density line cards, including 800GE and 400GE interfaces. This non-blocking design ensures that BGP route processing and forwarding are never constrained by internal fabric limitations. The separation of the control plane (responsible for BGP route calculation and table maintenance) from the data plane (forwarding engine) allows the router to maintain protocol stability and fast convergence even under heavy route churn conditions .

TRAFFIC MANAGEMENT

The platform supports advanced traffic engineering and route policy enforcement mechanisms essential for managing large-scale BGP tables. Key capabilities include comprehensive support for BGP-4, BGP4+, and a wide array of attributes such as communities, extended communities, and route reflectors. The system enables granular control over route selection and propagation through sophisticated policy routing and filtering. Furthermore, the integration of Segment Routing (SRv6 and SR-MPLS) and EVPN allows for optimized traffic steering across the core, reducing the reliance on complex overlay protocols

while maintaining high availability through TI-LFA and Anycast FRR mechanisms .

PERFORMANCE PARAMETERS

The BGP routing table capacity of the NetEngine 8000 X Series is engineered to meet the demands of modern core routing. The platform supports massive routing scale, with the control plane designed to handle millions of IPv4 and IPv6 routes, as well as large-scale VPN and EVPN instances. The device demonstrates robust protocol resource management, capable of supporting a significant number of BGP peer sessions and maintaining route table stability. The hardware is optimized for fast BGP convergence, ensuring that topology changes are propagated rapidly across the network, minimizing service disruption .

Parameter	Specification
Product Series	NetEngine 8000 X4 / X8 / X16
Slot Capacity	1T to 19.2T per slot
BGP Protocol Support	BGP-4, BGP4+, IPv6, VPNv4, VPNv6, EVPN
Maximum BGP Routes (Theoretical)	Up to 4,294,967,295 per address family (software limit)

Routing Protocols	BGP, OSPF, OSPFv3, IS-IS, IS-ISv6, RIP, RIPng
High Availability	TI-LFA, Anycast FRR, BFD, SBFD, NSR
Power Supply	Redundant AC/DC configurations
Operating Temperature	0°C to 45°C

CARRIER COMPLIANCE

The NetEngine 8000 X Series adheres to rigorous industry standards for carrier-grade equipment. It supports essential networking protocols and management frameworks including SNMP, Telemetry, and NETCONF/YANG for automated provisioning and monitoring. The platform complies with relevant safety, EMC, and environmental regulations required for deployment in central office and data center environments. Additionally, it supports comprehensive OAM mechanisms such as BFD, SBFD, and TWAMP to ensure SLA assurance and rapid fault detection in high-capacity BGP peering scenarios .

ARCHITECTURE DIAGRAM

The following schematic illustrates the logical separation of control plane BGP processing and the high-capacity forwarding fabric, highlighting the data paths

for ingress and egress traffic across the line processing units.

