High-Performance Chinese OEM 4-Port Router NAT Translation Table Capacity Limits - Official Technical Overview & Hardware Datasheet

HIGH-PERFORMANCE CHINESE OEM 4-PORT ROUTER

NAT TRANSLATION TABLE CAPACITY LIMITS

OFFICIAL TECHNICAL OVERVIEW & HARDWARE DATASHEET

EXECUTIVE SUMMARY

This document provides a comprehensive technical overview and hardware datasheet for the High-Performance Chinese OEM 4-Port Router, with a specific focus on its Network Address Translation (NAT) translation table capacity limits and overall forwarding performance. Designed for small-to-medium enterprise (SME) branch deployments, managed service provider (MSP) customer premises equipment (CPE), and campus edge routing applications, this platform delivers carrier-grade reliability and advanced Layer 3 feature sets at a cost-optimized total cost of ownership (TCO).

The router's core network processor integrates a hardware-accelerated NAT engine capable of supporting up to 32,000 concurrent NAT translation entries, with a sustained session establishment rate of 12,500 new sessions per second (NPS). This capacity ensures seamless operation in high-density user environments, making it ideal for broadband aggregation and secure enterprise

WAN edge connectivity.



HARDWARE ARCHITECTURE & SILICON

The platform is built around a proprietary multicore MIPS-based network processor (NPU) operating at 1.2 GHz, coupled with 2 GB of DDR4 system memory dedicated to session state and routing table storage. The 4-port design provides versatile connectivity options, including 4 x 10/100/1000BASE-T copper RJ45 interfaces and 2 x SFP fiber uplink slots, enabling flexible WAN/LAN segmentation.

The NAT translation table is stored in a dedicated high-speed TCAM (Ternary Content Addressable Memory) for sub-microsecond lookup latency, complemented by a 512 MB SRAM buffer for dynamic session aging and timer

management. A hardware-based hash engine accelerates NAT table lookups, achieving line-rate performance across all four ports simultaneously.

KEY FEATURES & ROUTING LOGIC

- NAT Capacity & Performance: Supports up to 32,000 concurrent NAT sessions (including both source and destination NAT), with a session establishment rate of 12,500 NPS. The table aging mechanism supports configurable timeouts (default 300 seconds for TCP, 120 seconds for UDP) to optimize memory utilization.

- Advanced NAT Modes: Full Cone, Restricted Cone, Port Restricted Cone, and Symmetric NAT modes are fully supported, ensuring compatibility with demanding VoIP, video conferencing, and gaming applications.

- Routing & Forwarding: Static routing, RIPv1/v2, OSPFv2, and BGP-4 are supported for dynamic route exchange. The router achieves a maximum forwarding rate of 1.5 Mpps (million packets per second) for 64-byte frames, with a non-blocking switching fabric capacity of 8 Gbps.

- Security & ACL: Integrated stateful firewall with zone-based policies, hardware-accelerated ACLs (up to 512 access control entries), and IPsec VPN

termination support (up to 100 concurrent tunnels) for secure site-to-site connectivity.

- Management & OAM: CLI, SNMPv3, Web GUI, and RADIUS/TACACS+ authentication for secure administrative access. Full support for NetFlow/sFlow for traffic accounting and network monitoring.

COMPLIANCE & STANDARDS

The router adheres to international telecom and networking standards, ensuring seamless interoperability in multi-vendor environments. Key certifications include CE, FCC Part 15 Class A, RoHS, and REACH compliance for environmental safety. The platform also complies with IEEE 802.3, 802.1Q (VLAN), 802.1p (QoS), and 802.3ad (Link Aggregation) standards, as well as RFC 1631 (NAT), RFC 2663 (NAT Terminology), and RFC 3022 (Traditional NAT).

TECHNICAL SPECIFICATIONS

- Processor: MIPS 64-bit multicore NPU, 1.2 GHz.
- System Memory: 2 GB DDR4, onboard.
- Packet Buffer: 512 MB SRAM.
- NAT Table: TCAM-accelerated, 32,000 entry capacity.

- Fixed Ports: 4 x RJ45 10/100/1000BASE-T (auto-MDI/X).

- Uplink Interfaces: 2 x SFP (1 Gbps) combo ports (shared with RJ45 slots).

- Console Port: 1 x RJ45 serial (RS-232).

- USB Port: 1 x USB 2.0 for configuration backup/firmware upgrade.

- Switching Capacity: 8 Gbps.

- Forwarding Rate: 1.5 Mpps (64-byte frames).

- NAT Session Rate: 12,500 new sessions per second.

- Jumbo Frame Support: Up to 9216 bytes.

- VLANs: 4094 active.

- ACL Entries: 512 hardware-accelerated rules.

- IPsec VPN Tunnels: 100 concurrent tunnels (AES-128/256, 3DES).

- MTBF: > 150,000 hours at 25°C ambient.

Parameter	**Specification**
Form Factor	Desktop / 1RU Rack-mountable (with optional kit)
Switching Capacity	8 Gbps (non-blocking)
Power Supply	External 12V DC, 2A (redundant optional)
NAT Session Capacity	32,000 concurrent entries
Session Establishment Rate	12,500 sessions per second
Forwarding Rate (64-byte)	1.5 Mpps

Operating Temperature	0°C to 50°C (32°F to 122°F)
Storage Temperature	-20°C to 70°C (-4°F to 158°F)
Humidity (non-condensing)	10% to 90%
Dimensions (W x D x H)	280 mm x 180 mm x 44 mm
Weight	1.2 kg (unit only)

ORDERING SKU INFORMATION

- Model: RTR-4P-NAT-G2

- Description: 4-Port Gigabit Router, 2 x SFP Uplinks, NAT/HW Acceleration.

- Power Adapter: External 12V DC, 2A (included).

- Optional Accessories: Rack-mount kit (RMK-1U), SFP optical transceivers (1G-SX/LX).

