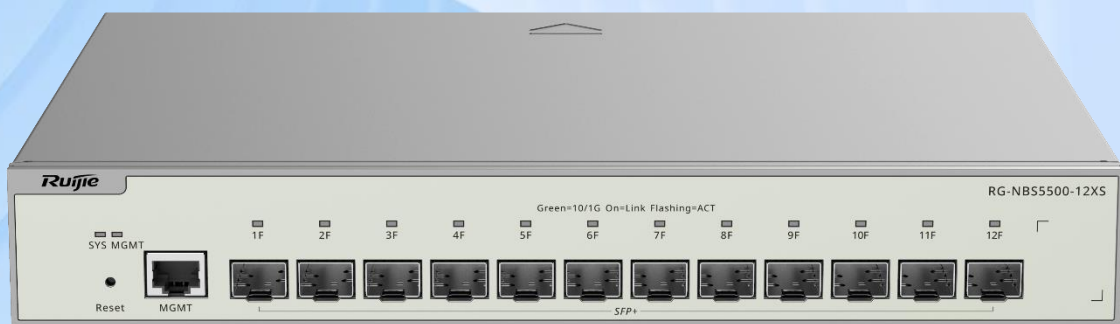# RG-NBS5500-12XS

12-Port Full 10G SFP+ Layer 3 Cloud Managed Switch

01 Product Overview

The RG-NBS5500-12XS switch is a high-performance, high-capacity Ethernet switch launched by Ruijie Networks, featuring an enhanced MAC table size, faster hardware processing speeds, and a user-friendly experience.

With 12 x 10G SFP+ ports, this switch delivers high-density, high-performance connectivity suitable for both access and aggregation purposes.

The RG-NBS5500-12XS switch offers exceptional value for small to medium-sized networks, providing high performance and comprehensive end-to-end service quality for high-throughput Wi-Fi 7 access points (APs). Additionally, it features flexible security settings to meet the demands for speed, security, and intelligence.

This switch is ideal as the central network core for small to medium-sized enterprises in campus or office environments.

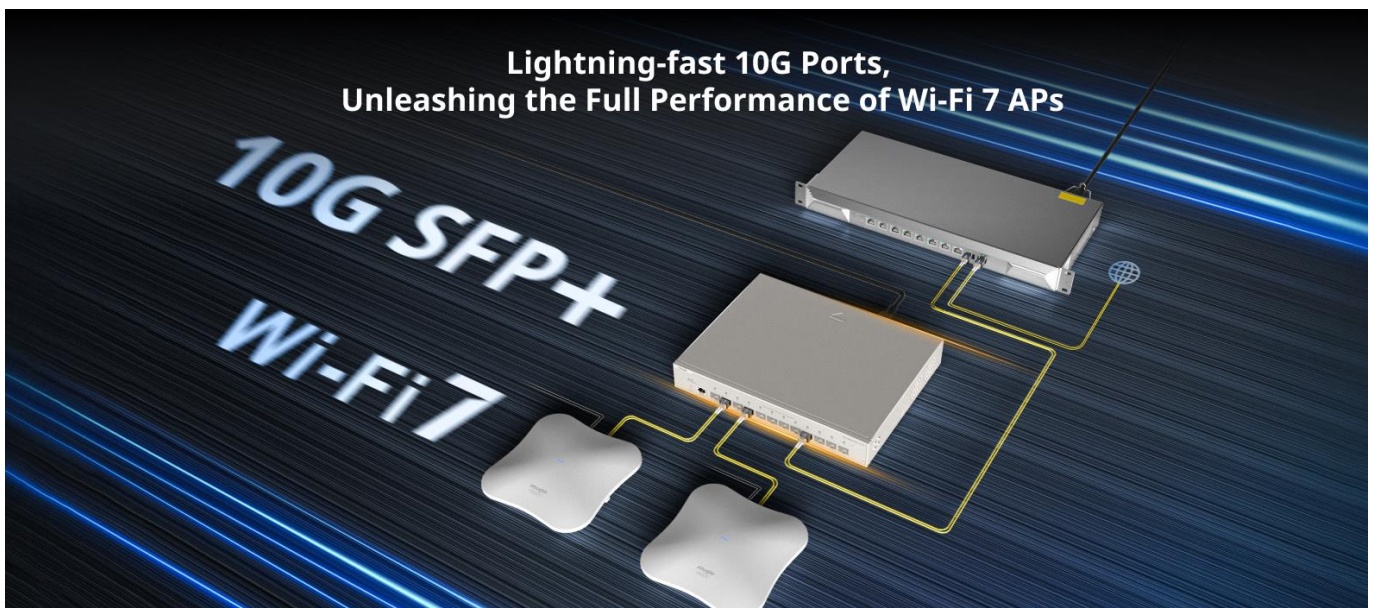# 02 Product Appearance

Front View of the RG-NBS5500-12XS

Left View of the RG-NBS5500-12XS
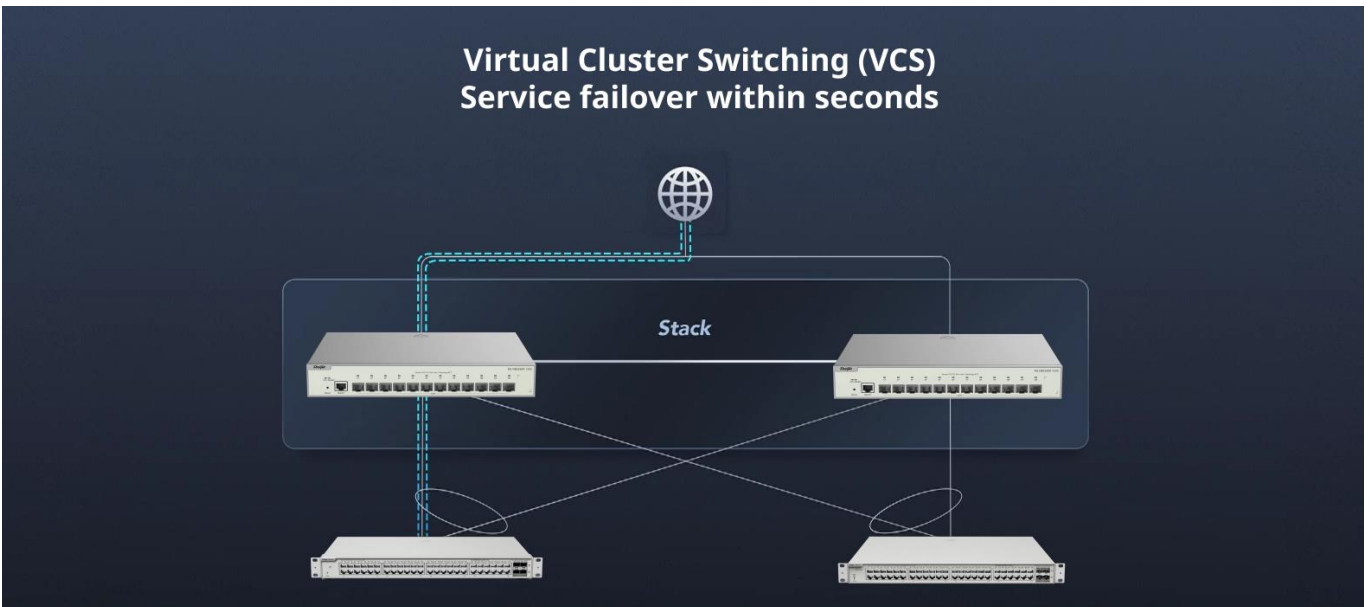

Right View of the RG-NBS5500-12XS

03 Product Highlights

- 12-port full-10G SPF+ Layer 3 managed switch
- Lightning-fast 10G ports, unleashing the full potential of Wi-Fi 7 APs
- Easy configuration with the MGMT port
- Rich Layer 3 features: VCS, static routing, RIP, OSPF, DHCP server, and so on
- Multiple security policies protect your network
- Easy cloud management anytime, anywhere

Easy Configuration with the MGMT Port

**Virtual Cluster Switching (VCS)
Service failover within seconds**

Stack

**CPP Protects the CPU from Attacks,
Ensuring CPU Performance and Stability**

CPP

CPU

CPU Protection Policy

Enterprise-grade Quality Ensures High Performance

Link Aggregation   IGMP Snooping   VLAN

04   Product Features

Easy Configuration with the MGMT Port

The MGMT port is dedicated for switch management. Network administrators can configure, monitor, and troubleshoot the switch through the MGMT port.

Rich Layer 3 Features

Static routing:

Static routing involves the manual configuration of routes by network administrators, who enter each routing entry into the router to establish the data packet forwarding path.

Routing Information Protocol (RIP):

RIP is a distance-vector routing protocol used to dynamically exchange routing information on small and medium-sized networks.

RIP Next Generation (RIPng):

RIPng is an extension of RIP, and is designed to support IPv6 networks.

Open Shortest Path First Version 2 (OSPFv2):

OSPFv2 is a link-state routing protocol for IPv4 networks.

OSPFv3 expands on OSPF to support IPv6 networks.

DHCP server:

A DHCP server is a network service that dynamically assigns IP addresses and other network configuration parameters to devices on a network.

VCS

Virtual Cluster Switching (VCS) is an advanced network architecture designed to achieve cluster management of multiple physical switches through virtualization technology, providing an efficient, flexible, and reliable networking solution.

Cluster management:

Multiple physical switches are integrated into one logical unit, simplifying network management and configuration.

High availability:

Redundancy and failover are incorporated to ensure continuous network availability in case of a failure.

Flexible scalability:

Users can quickly add or remove switches as needed, enabling quick adaptation to changes in network size.

Load balancing:

Network traffic are automatically distributed to enhance resource utilization and optimize overall performance.

Enterprise-grade Quality Ensures High Performance

Spanning Tree Protocol (STP):

STP prevents broadcast storms caused by loops and provides link redundancy, aiming to eliminate loops on Ethernet networks. It establishes a loop-free logical topology by selecting a primary path while blocking redundant paths.

Rapid Spanning Tree Protocol (RSTP):

RSTP, as an enhanced version of STP, enables faster convergence to meet the demands of modern networks.

Rapid Link Detection Protocol (RLDP):

RLDP is designed to detect link failures and report Ethernet link issues.

Internet Group Management Protocol (IGMP):

IGMP manages the membership between hosts and multicast groups, allowing hosts to join or leave a multicast group.

IGMP snooping:

IGMP snooping is a feature of network switches that allows them to monitor IGMP traffic, optimizing the forwarding of multicast traffic.

Voice VLAN:

Voice VLAN is a dedicated virtual local area network (VLAN) designed for voice traffic. It separates voice data from regular data traffic, prioritizes voice transmission, and enhances the quality of voice calls.

Multiple Security Policies Protect Your Network

DHCP snooping:

DHCP snooping is a network security feature that protects against Dynamic Host Configuration Protocol (DHCP) attacks by ensuring that only trusted DHCP servers can assign IP addresses to devices on the network. In large enterprise environments, DHCP Snooping effectively prevents internal attacks and enhances network stability and security.

Access Control List (ACL):

An ACL controls data traffic passing through a switch. It filters data packets based on user configurations, thereby enhancing both network security and performance.

IEEE 802.1X:

 IEEE 802.1X is a network access control standard used for identity authentication on both wired and wireless networks. It uses port-based access control to ensure that only authenticated devices can access the network.

IP-MAC binding:

 IP-MAC binding is a security technology that associates a specified source IP address and source MAC address with a switch port to prevent IP address spoofing and MAC address forgery. Packets can pass through the port only when they match the bound source IP address and MAC address.

ARP anti-spoofing:

ARP anti-spoofing is used to prevent ARP spoofing attacks. ARP spoofing occurs when an attacker sends forged ARP messages to intercept, modify, or disrupt network traffic. ARP anti-spoofing methods include: (1) Static ARP entries: ARP entries are manually configured to prevent dynamic updates and ensure consistency; and (2) ARP monitoring tools: Tools are used to monitor ARP traffic in real time, enabling the detection of abnormal activities.

IP source guard:

IP source guard is a security feature that prevents IP address spoofing attacks. It checks the source IP address of a data packet against the bound source MAC address and port to ensure that only valid IP addresses can send data packets through the switch. If the IP address does not match, the switch discards the data packet.

CPU Protection Policy (CPP):

In a network environment, many malicious attacks are often carried out by forging numerous management and protocol packets. When a switch becomes overwhelmed with attack packets, it is unable to process normal management and protocol packets. This can significantly impact the switch's security and the overall stability of the network.

The CPP function of Ruijie switches offer effective protection against malicious network attacks by identifying and filtering out attack packets, mitigating the impact of attack packets on the switch, and ensuring that packets in different priority queues are handled properly. Additionally, the CPP offers flexible packet policy configuration, allowing network administrators to optimize settings for specific network environments, thereby enhancing both switch security and network stability.

Easy Management

Self-Organizing Network (SON):

SON is an automated network management technology designed to simplify and optimize the deployment, configuration, management, and maintenance of wireless communication networks. SON allows networks to dynamically adapt to actual demands through automated configuration and self-optimization, enhancing both efficiency and user experience.

Management via web interface:

Network devices and services can be configured, monitored, and managed conveniently on a web user interface (UI). It allows network administrators to easily access and manage network resources, whether on a LAN or over the Internet.

Easy cloud management anytime, anywhere

Management via Ruijie Reyee App

SNMP:

Simple Network Management Protocol (SNMP) is a protocol used for managing network devices. It operates on a client/server model that allows for remote monitoring and control of these devices.

SNMP consists of a management station and agents. The management station communicates with the agents using the SNMP protocol to retrieve information such as device status, configuration, and performance data. It can also configure and manage the devices.

SNMP can be used to manage a variety of network devices, including routers, switches, servers, and firewalls. Users can manage user accounts through the SNMP configuration interface and monitor and control devices using third-party software.

05 Product Specifications

Hardware Specifications

Hardware Specifications	RG-NBS5500-12XS
Number of 10 Gbps Optical Ports (SFP+)	12
Number of Fans	2
Power Supply Options	Single fixed power supply
Number of Management Ports	1 x 10/100/1000BASE-T MGMT port
Forwarding Rate	178.56 Mpps
Switching Capacity	240 Gbps
MAC Address Table Size	32000
ARP Table Size	2000
IPv4 Hardware Routing Table Size (Host Routing)	12000
Static IPv4 Routing Table Size	500
IPv6 Hardware Routing Table Size (Required to Learn All Routes Under the Full Mesh Testing Model)	500
Static IPv6 Routing Table Size	500
Number of ACEs	Inbound: 1900 Outbound: 0
Number of VCS Members	2
Max. Members per LAG	8
Max. Number of LAGs	64
Dimensions (W x D x H)	300 mm x 232 mm x 44 mm (11.81 in. x 9.13 in. x 1.73 in.)
Net Weight	2.26 kg (4.98 lbs)
Gross Weight	3.04 kg (6.70 lbs)
Power Supply	Rated voltage range: 100–240 V AC Maximum voltage range: 90–264 V AC Frequency: 50/60 Hz Rated current: 2 A
Power Consumption	44 W

Hardware Specifications	RG-NBS5500-12XS
Airflow	Left to right
Operating Temperature	0°C to 50°C (32°F to 122°F)
Storage Temperature	–40°C to +70°C (–40°F to +158°F)
Operating Humidity	10% to 90% RH (non-condensing)
Storage Humidity	5% to 95% RH (non-condensing)
Port Surge Protection	Common mode: 6 kV
Power Supply Surge Protection	Common mode: 6 kV Differential mode: 6 kV
Certification	CE; FCC; IC; CTUVUS

Software Specifications

Software Specifications		RG-NBS5500-12XS
Ethernet Switching	Jumbo Frame	9216 Bytes (Per-port MTU)
	VLAN	802.1Q VLAN
		Port-based VLAN
		Voice VLAN
	STP	STP (IEEE 802.1D)
		RSTP (IEEE 802.1W)
	LLDP	LLDP
		LLDP-MED
IP Service	ARP	ARP
	DHCP	DHCP Relay
		DHCP Snooping
		DHCP Server
		DHCP Client

Software Specifications		RG-NBS5500-12XS
IP Routing	**Static Routing**	Static Routing
	RIP	RIP
		RIPng
	OSPF	OSPFv2
		OSPFv3
Multicast	**IGMP**	IGMP Snooping
		IGMPv1 Snooping
		IGMPv2 Snooping
		IGMPv3 Snooping (Basic)
		MVR Mode (MVR receiver ports can only be access ports.)
		IGMP Filtering
		IGMP Fast Leave
	PIM	PIM-SM
ACL and QoS	**ACL**	IP Standard ACL
		MAC Extended ACL
		IP Extended ACL
		IPv6 ACL
	QoS	Port-Level Rate Limiting (Ingress/Egress)
Security	**802.1X**	IEEE 802.1X Authentication
		Port-based Authentication
		MAC-based Authentication
		Global IEEE 802.1X Authentication Control
		Force Authorized

Software Specifications		RG-NBS5500-12XS
Security	**802.1X**	Force Unauthorized
		Port-based Single-Host Mode
		PEAP Authentication for Windows 7/8/10/11 Clients
		PEAP Authentication for macOS Clients
		PEAP Authentication for Linux OS Clients
	Management via Web Interface	Web Authentication
		HTTP
		HTTPS
	IP-MAC-Port Binding	IP-MAC-Port Binding
	ARP Anti-Spoofing	ARP Anti-Spoofing
	IP Source Guard	IP Source Guard
	CPU Protection Policy (CPP)	Hardware CPP
Reliability	**RLDP**	RLDP
	Smart Temperature Control	Fan Speed Auto-Adjustment
Device virtualization	**Virtual Cluster Switching (VCS)**	Support Inter-Chassis Hot Standby
		Configuring 10G Ports for VCLS
		Dual-Active Detection (DAD)
		Cross-device Link Aggregation for Load Balancing
NMS and maintenance	**SPAN**	SPAN
	NTP	NTP Client
	SNMP	SNMP v1
		SNMP v2c

Software Specifications		RG-NBS5500-12XS
NMS and maintenance	**SNMP**	SNMP v3
	MQTT	MQTT
	Self-Organizing Network	Self-Organizing Network
	Network Management	Management via Ruijie Cloud
	Ruijie Cloud	View Device Details on Ruijie Cloud

06 Compliance

Model	NBS5500-12XS
Safety	EN 62368-1:2014 IEC 62368-1:2018 UL 62368-1:2019 CSA C22.2 No 62368-1:19
Emissions	FCC CFR 47 Part 15 Class A EN 55032 Class A EN 300386 Class A ICES-003 Class A
Immunity	
EMC	EN 55035 EN 300386
ESD	IEC 61000-4-2
Radiated	IEC 61000-4-3
EFT/Burst	IEC 61000-4-4
Surge	IEC 61000-4-5
Conducted	IEC 61000-4-6
Voltage Dips and Short Interruptions	IEC 61000-4-11
Harmonics	IEC 61000-3-2
Flicker	IEC 61000-3-3

07 Ordering Information

Model	Description
RG-NBS5500-12XS	12 x 1G/10G SFP+ ports; 1 x fixed 10/100/1000BASE-T MGMT port
Mini-GBIC-GT	1000BASE-GT mini GBIC transceiver
MINI-GBIC-SX-MM850	1000BASE-SX, SFP transceiver, SM (850 nm, 500 m, LC)
MINI-GBIC-LX-SM1310	1000BASE-LX, SFP transceiver, SM (1310 nm, 10 km, LC)
MINI-GBIC-LH40-SM1310	1000BASE-LH, SFP transceiver, SM (1310 nm, 40 km, LC)
MINI-GBIC-ZX80-SM1550	1000BASE-ZX80, SFP transceiver, SM (1550 nm, 80 km, LC)
GE-SFP-LX20-SM1310-BIDI	SFP BiDi transceiver—Tx1310/Rx1550, 20 km, LC
GE-SFP-LX20-SM1550-BIDI	SFP BiDi transceiver—Tx1550/Rx1310, 20 km, LC
GE-SFP-LH40-SM1310-BIDI	SFP BiDi transceiver—Tx1310/Rx1550, 40 km, LC
GE-SFP-LH40-SM1550-BIDI	SFP BiDi transceiver—Tx1550/Rx1310, 40 km, LC
XG-SFP-SR-MM850	10G SFP+ transceiver with LC connector, max. distance: 300 m
XG-SFP-LR-SM1310	10G SFP+ transceiver with LC connector, max. distance: 10 km
XG-SFP-ER-SM1550	10G SFP+ transceiver with LC connector, max. distance: 40 km

08   Package Content

Item	Quantity
RG-NBS5500-12XS switch	1
Rack-mount brackets	2
M3 x 6 mm Phillips countersunk screws	8
User Manual	1
Rubber pads	4
Warranty Card	1
Power cord	1
Yellow/green ground wire	1
Power cord retention clip	1

09   Warranty

For more information about warranty terms and period, contact your local sales agency.

- **Warranty terms:** https://www.ruijienetworks.com/support/servicepolicy
- **Warranty period:** https://www.ruijienetworks.com/support/servicepolicy/Service-Support-Summary/

Note: The warranty terms are subject to the terms of different countries and distributors.

10   More Information

To learn more about the product, please visit our website or contact your local sales representative.
https://reyee.ruijie.com/en-global/products/sme/switches/rg-nbs5500-12xs/

Ruijie Networks Co., Ltd.

For more information, visit www.ruijienetworks.com or call 86-400-620-8818.