



# Nebula FWA505v2

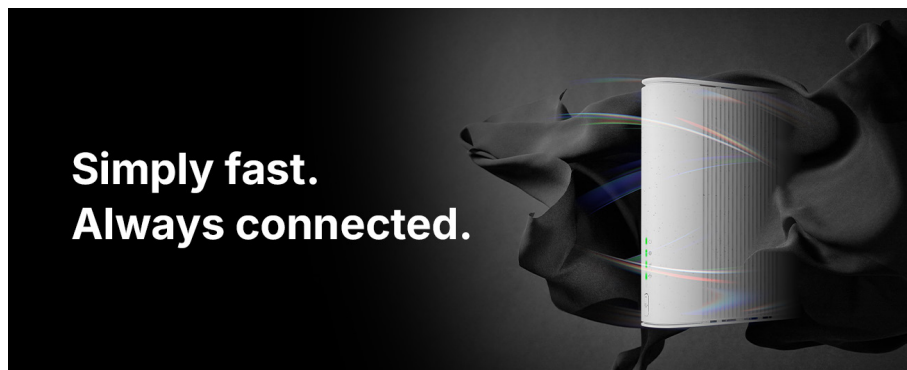
5G AX3000 Indoor Router

## Benefits

### Unlock Multi-gigabit 5G with Intelligent Connectivity

Experience ultra-fast 5G NR speeds of up to 4.67 Gbps. The FWA505v2 combines 5G and WiFi 6 AX3000 technology powered by four high-gain omni-directional antennas to deliver reliable 360-degree signal reception and fiber-class aggregate bandwidth for up to 64 connected devices.

Whether connecting through its versatile gigabit ethernet ports or ultra-fast wireless, users benefit from a smooth, low-latency experience that feels just like fiber.



**Simply fast.  
Always connected.**



5G NR with up to 4.67 Gbps\* download rate



AX3000 WiFi 6 speeds up to 1.6 Gbps\*



2.4/5GHz dual-band concurrent WiFi sharing with up to 64 devices



Nebula cloud app for Zero-touch setup, remote management and monitoring



Features 1 GbE LAN/WAN port and 1 GbE LAN port for wired connectivity



Connect failover between both WAN interfaces

## Built to Reduce Waste, Engineered to Save Energy

The FWA505v2 has been designed with sustainability in mind. Made from 95%\*\* recycled plastic and shipped in halogen-free, VOC-free packaging, the FWA505v2 meets sustainability standards without compromising performance.



## Effortless Setup with Simple Cloud Management

With the FWA505v2 you can achieve instant connectivity with zero wiring by simply inserting a Nano SIM card, eliminating the need for professional IT expertise. Network management is made easy with the Nebula mobile app, offering cloud-based control, remote monitoring and quick setup. Intuitive LED indicators also allow you to easily track device status at a glance.



## Multi-layered Security for Reliable Connectivity

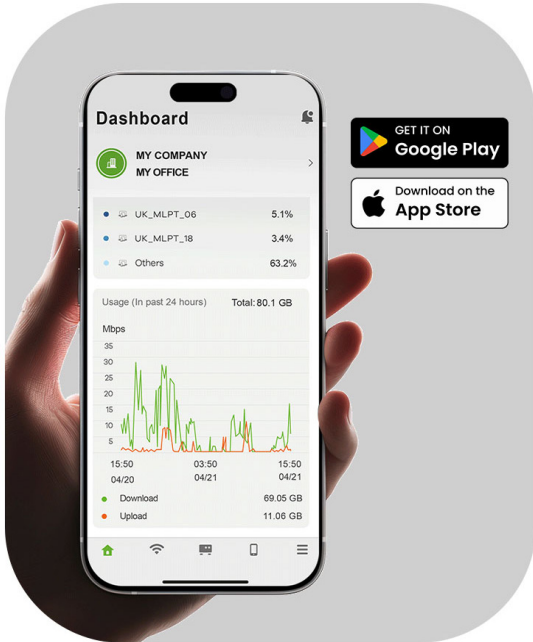
Protect your network with a robust, multi-layered security architecture designed to ensure stable and reliable connectivity. Advanced protection features help defend against common network threats while enabling secure remote access and granular traffic control for better visibility and management.

- SPI (Stateful Packet Inspection) firewall for advanced traffic monitoring
- DoS attack detection to help prevent service disruptions
- LAN-to-WAN application-level firewall for enhanced network protection
- VPN pass-through support for PPTP, IPSec and L2TP secure connections
- MAC, IP and URL filtering for granular access control



## Click. Tap. Done.

Get up and running in minutes with the Nebula mobile app. With just a few simple clicks, our user-friendly step-by-step wizard walks you through the entire installation process, no technical expertise required. Once connected, the intuitive interface gives you complete control, making it easy to adjust settings, monitor performance and manage your network anytime, anywhere.



## A Self-optimizing WiFi Network

Nebula takes the hassle out of wireless network management with smart automation powered by AI. With features like WiFi Aid and Wireless Health, it can continuously monitor WiFi performance from the user's perspective – detecting issues, pinpointing problem areas and even fixing them in real time to create a self-optimizing network that delivers a seamless, reliable and truly exceptional WiFi experience for every user.

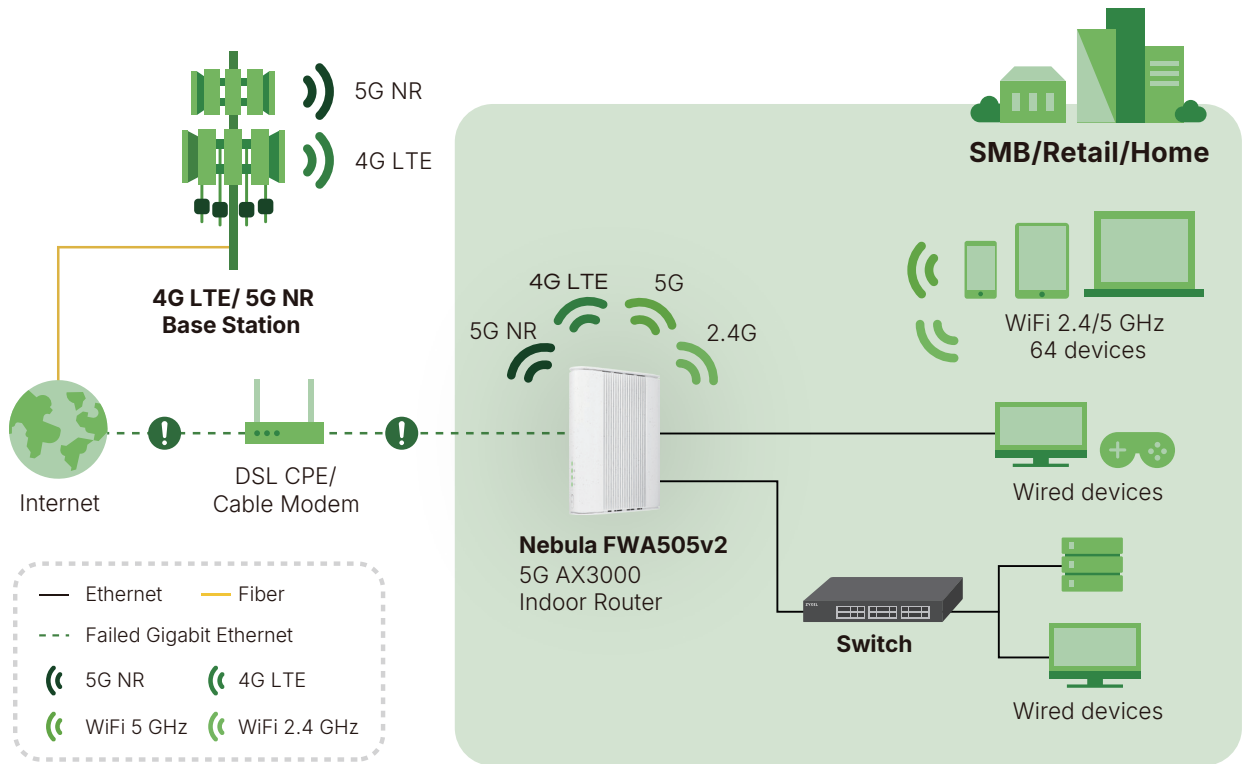


## Powerful, Effortless, Scalable Connectivity

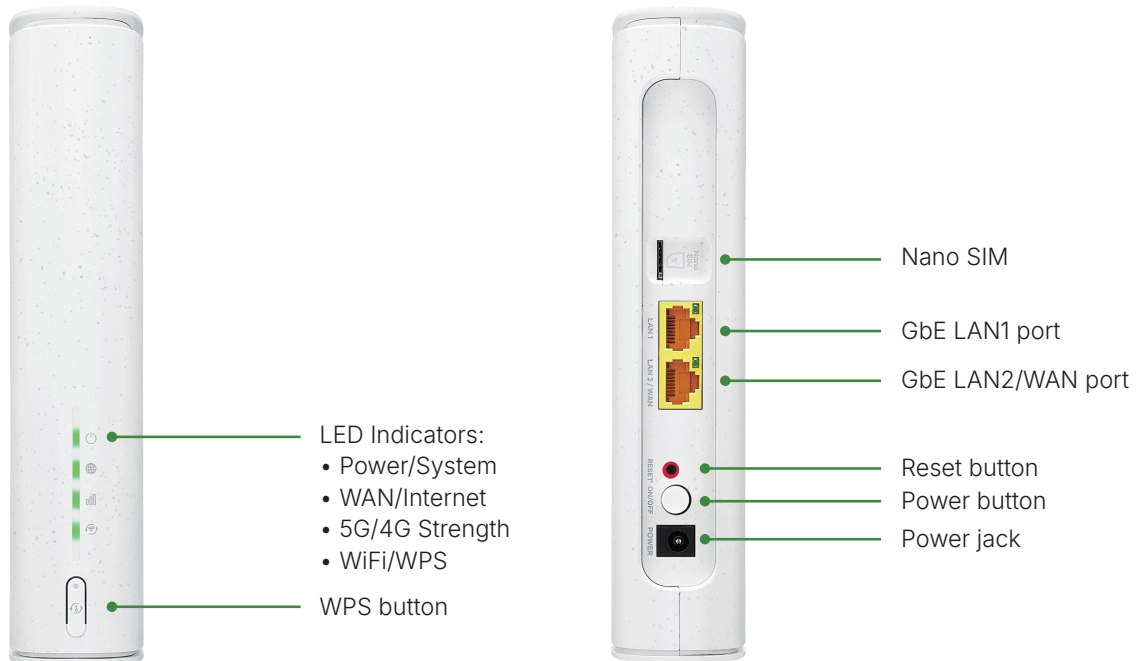
With Nebula, you can manage your entire network – wireless, switching, security and FWA – through a single centralized cloud platform. Deploy and configure devices quickly and remotely, without the need for extra hardware controllers or software. Whether you're managing one site or many, Nebula delivers real-time monitoring, instant alerts and complete network visibility – anytime, anywhere. Scale confidently, simplify operations and stay secure – all through one intuitive platform.



# Application Diagram



# Interface Description



# Specifications

## System specifications

### IP networking

- Supports IPv4/IPv6 dual stack, IPv6 only
- DHCP client/server
- ICMP supported (LAN and/or WAN, disable)
- Virtual Private Network (VPN) pass through (PPTP/IPSec and L2TP pass-through)
- Multiple APN (at least 2 APNs)

### NAT

- Supports NAT/NAPT
- Supports NAT enable/disable
- Supports port forwarding
- Supports DMZ

### Routing

- Support Bridge/Router Mode (ability to perform remote login when bridge mode enabled)
- Support Dynamic DNS for first APN
- Static/dynamic route setting
- Address Resolution Protocol (ARP)

### IP firewall

- Firewall can be enabled or disabled via GUI
- SPI (Stateful Packet Inspection)
- DoS Attack Detection
- Application-Level Firewall (LAN to WAN such as HTTP, Telnet, Ping)
- Filters LAN MAC address (Black/white list)
- Filters LAN IP address
- Filters URL

### Management

- Local/Remote management (HTTP, HTTPS) and firmware upgrade
- Support TR-069/TR-369 remote firmware upgrade
- Support TR-111 STUN for TR-069 management NAT pass through
- Support TR-143 throughput testing (UDP/TCP, DL/UL, http/https)
- S-NSSAI mapping, Slice/Service type (SST)/Slice Differentiator (SD)
- FOTA (Manual /Auto)
- SMS management
- SMS application
- APN management
- PIN/PUK management
- Roaming disable/enable
- Network selection

- Network preference
- Operating frequency band selection
- CLI/SSH (Local and remote SSH access)
- UPNP IGD supporting
- Ethernet over IP (L2 over L3) pass through
- SSH with key access
- Certificate Management
- Web server API to support APPs
- Multiple language support

### WLAN feature

- Multiple SSID/Hide SSID
- Wireless Protection Setup (WPS)
- Wi-Fi Multimedia (WMM) QoS
- Encryption: None, WPA2-Personal, WPA/WPA2
- Authentication: Advanced Encryption Standard (AES), TKIP and AES hybrid encryption algorithm.
- Auto/Fixed Channel Selection
- WLAN Scheduling
- Wi-Fi-enabled devices: up to 64
- Band steering (enable/disable)
- Compliant to EasyMesh R2 standard

## Hardware specifications

### 5G NR interface

- 3GPP Release 15 standard-compliant
- Supports both NSA and SA modes
  - FDD: n1/n3/n7/n8/n20/n28
  - TDD: n38/n40/n41/n75/n76/n77/n78
- Supports DL 4×4 MIMO
- Data rates:
  - 5G SA: DL 4.67 Gbps; UL 1.25 Gbps\*
  - 5G NSA: DL 4.67 Gbps; UL 836 Mbps\*
- Supports DL modulation QPSK, 16-QAM, 64-QAM, and 256-QAM
- Supports UL modulation QPSK, 16-QAM, 64-QAM, and 256-QAM
- Output power:
  - Class 2 (26 +2/-3 dBm) for n41/n77/n78
  - Class 3 (23 ±2.7dBm) for all other 5G NR bands

### 4G LTE interface

- 3GPP Release 16 standard-compliant
- Supports frequencies:
  - FDD: B1/B3/B5/B7/B8/B20/B28/B32
  - TDD: B38/B40/B41/B42/B43

- Supports DL 4×4 MIMO: B1/B3/B5/B7/B8/B20/B28/B38/B40/B41/B42/B43
- Peak data rates:
  - Max. DL 1.6 Gbps/UL 211 Mbps\*
- Supports DL modulation QPSK, 16-QAM, 64-QAM, and 256-QAM
- Supports UL modulation QPSK, 16-QAM, 64-QAM, and 256-QAM
- Output power:
  - Class 3: 23 dBm for all other LTE bands
  - Class 2: 26 dBm for B41

### 5G/4G antennas

- Four embedded omni-directional antennas
- Antenna spec (Peak gain)
  - Low band: < 2 dBi
  - Middle band: < 3 dBi
  - High band: 3 to 5 dBi
  - Ultra-high band: <5 dBi

### WiFi air Interface

- Wireless standard: IEEE 802.11 a/b/g/n/ac/ax
- Wireless speeds:
  - Link rates up to 3,000 Mbps\* for 802.11ax
- Internal WiFi antenna:
  - Dual-band & concurrent 2.4G 2x2 + 5G 3x3 (2ss)
- Wi-Fi antenna gain:
  - ~3.5 dBi for 2.4 GHz
  - ~4.5 dBi for 5 GHz

### Hardware interface

- Two 100/1000 Mbps Ethernet RJ-45 LAN ports, LAN2 can be configured for Ethernet WAN port
- LED indicators:
  - Power/system
  - WAN/Internet
  - 5G/4G LTE strength
  - Wi-Fi/WPS status
- One WPS button
- One 4FF Nano SIM card slot (push-push type)
- One reset button
- One power on/off button
- Power jack

## Power consumption

- < 15 W (peak)

## Physical specifications

- Item dimensions (LxWxH): 149 x 41 x 194 mm (5.87" x 1.61" x 7.64")
- Item weight: 468 g (1.03 lb.)
- Item dimensions (LxWxH): 262 x 58 x 236 mm (10.31" x 2.28" x 9.29")
- Packing weight: 903 g (1.99 lb.)

## Environmental specifications

### Operating environment

- Temperature: -10°C to 40°C (14°F to 104°F)

- Humidity: 0% to 90% RH (non-condensing)

### Storage environment

- Temperature: -30°C to 70°C (-22°F to 158°F)
- Humidity: 0% to 95% (non-condensing)

## Certification

- CE
- UKCA

## Package contents

- Power adaptor, DC 12 V/2 A
- Ethernet cable 2m 8P8C
- Quick Start Guide & User's Guide via QR Code
- Safety warning (CE DoC included)

\* The maximum data rate is a theoretical value. The actual data rates depend on the network environment.

\*\* 5% additives and solvents are necessary to be added to the recycled polymers to achieve the desired technical characteristics of the material.

## Nebula FWA505v2 License Pack



Nebula provides flexible options to meet your needs, offering complimentary, enhanced, and advanced cloud networking solutions. Your chosen plan determines the level of service you receive from Nebula Cloud.

Over-the-air Firmware nagement	Base Pack	Plus Pack	Pro Pack
Unlimited Registration & Central Management (Configuration, Monitoring, Dashboard, Location Map & Floor Plan Visual) of Nebula Devices	•	•	•
Over-the-air Firmware Management	•	•	•
Admin Accounts per Organization (Full Access for Administration Rights)	5	8	No Limit
Advanced Firmware Scheduling (Org/Site/Device)		•	•
Automatic Network Topology (Visual and Actionable)		•	•
Email users and alert Notifications		•	•
Organizational User Audit / Change Logs			•
Backup/Restore Configuration			•
Priority Nebula Support Request (Direct NCC incl. Web Chat)			•

\* Search "Nebula Control Center" ([https://www.zyxel.com/products\\_services/NCC-Nebula Control-Center/subscribe-nebula](https://www.zyxel.com/products_services/NCC-Nebula%20Control-Center/subscribe-nebula)) for more Nebula license plan.

## Nebula Mobile App



## Success Story



For more product information, visit us on the web at [www.zyxel.com](http://www.zyxel.com)

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