ZYXEL COMMUNICATIONS

Wi-Fi 7 is Here

Elevating the Subscriber Experience with Next-Gen Connectivity

Wi-Fi Evolution Timeline

Each generation solved a new challenge — from faster speeds to smarter connectivity.

	Wi-Fi 5	Wi-Fi 6	Wi-Fi 6E	Wi-Fi 7
Launch date	2014	2019	2021	2024
IEEE standard	802.11 ac	802.11 ax	802.11 ax	802.11 be
Max. data rate	3.5 Gbps	9.6 Gbps	9.6 Gbps	46 Gbps
Band plan	5 GHz	2.4/5 GHz	6 GHz	2.4/5/6 GHz
Channel size	Up to 160 MHz (Mostly 80 MHz)	Up to 160 MHz	Up to 160 MHz	Up to 320 MHz
Modulation	256-QAM	1024-QAM	1024-QAM	4096-QAM
OFDMA	N/A	Supported	Supported	Supported
MIMO MU-MIMO	Up to 8x8 DL only	Up to 8x8 DL/UL	Up to 8x8 DL/UL	Up to 16x16 DL/UL

Why Wi-Fi Keeps Evolving

Wi-Fi keeps evolving to keep up with the increasing demand for faster speeds, better performance, and improved security in a world with more connected devices.

- Increased Speed and Capacity
- Improved Security
- Increased Range
- Increased Efficiency
- Increased Reliability

Real-World Deployments

Proven Results from the Field

Problem
Homes with 20+ connected devices experience congestion, slowdowns, and frequent support calls.

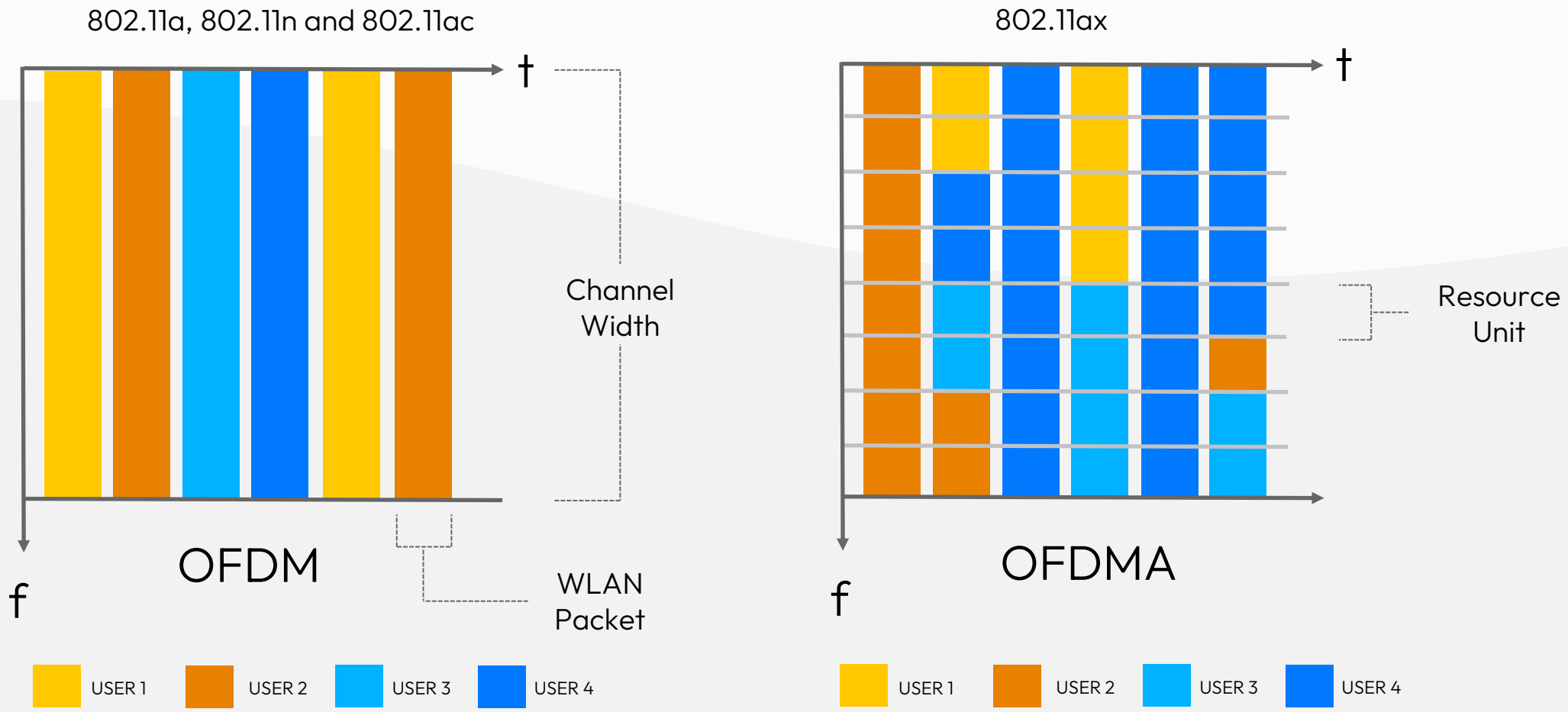
Solution
Zyxel WiFi 6 Gateways are designed to handle modern home demands using advanced technology.

Independent Kyrio testing confirmed, the “Zyxel EX5512 delivers carrier-grade WiFi 6 performance — consistent throughput, robust coverage, and proven stability for real-world subscriber environments.”

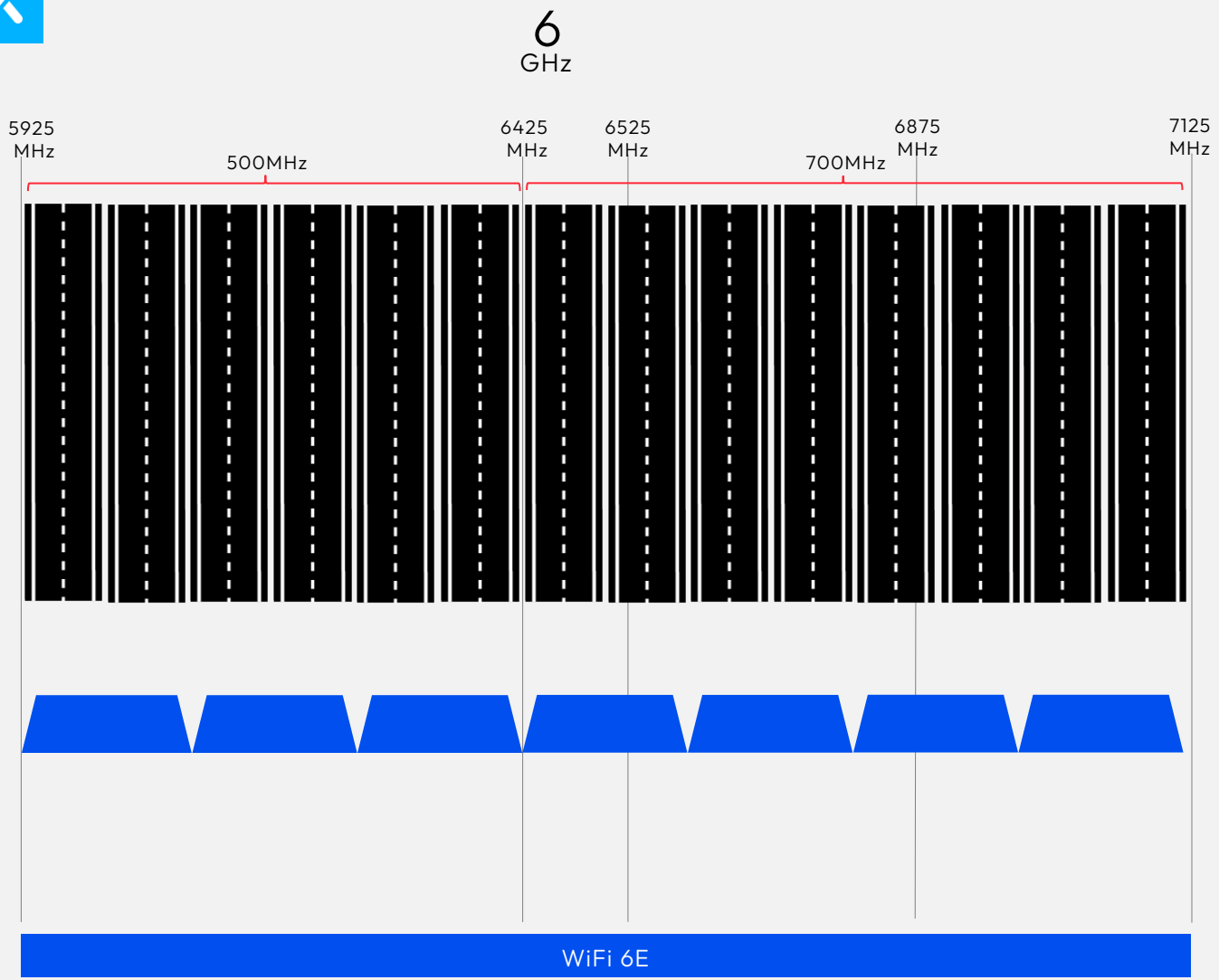
Wi-Fi 6: Efficiency and Performance

Introduced OFDMA + MU-MIMO for multi-device handling

With OFDMA + MU-MIMO, your Wi-Fi is smarter and faster at serving lots of devices at once, with less waiting, smoother streaming, and faster downloads



Zyxel's Wi-Fi 6 delivers faster, smoother, and more reliable internet performance— with up to **75% less lag** and the capacity to **seamlessly support up to 8 devices at once**.



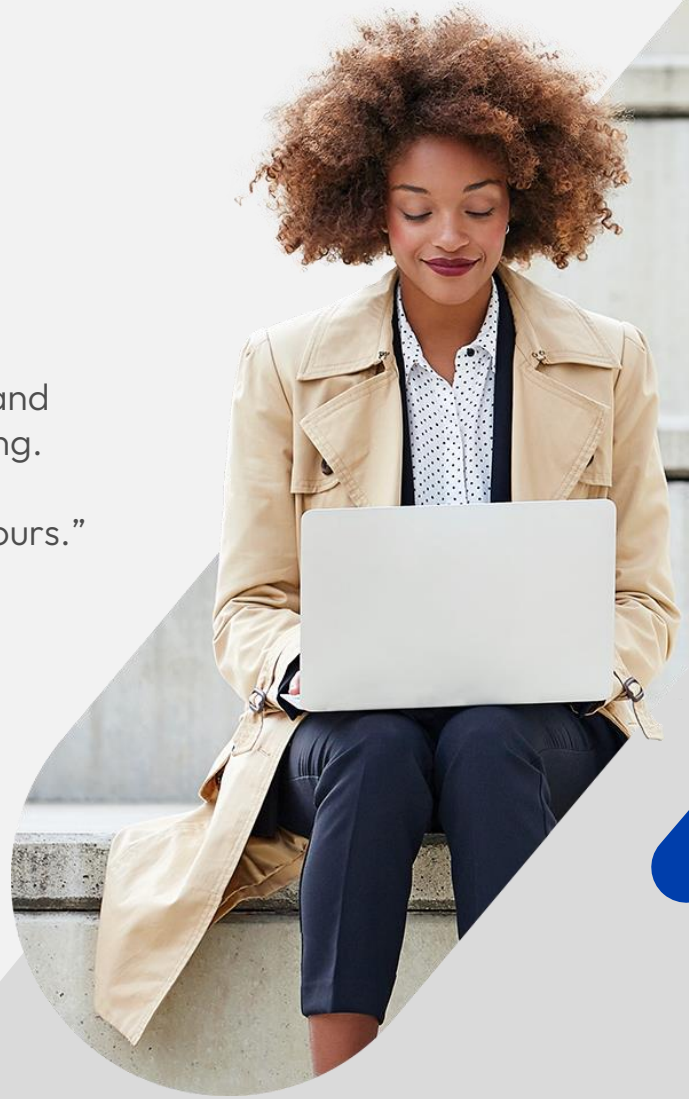
Wi-Fi 6E: New Spectrum, New Possibilities

- Added the 6 GHz band — more lanes, less congestion
- Reduced interference
- Prepared networks for high-bandwidth, low-latency use cases

In dense or interference-heavy environments, Wi-Fi 6E delivered around 20-30% better throughput in suburban homes and up to 50% better in dense apartment buildings compared to Wi-Fi 6.

Real-World Deployments

Proven Results from the Field



Problem

5 GHz congestion and interference are common in apartments and dense neighborhoods, leading to frequent dropouts and buffering. This results in more customer complaints and support tickets as subscribers experience inconsistent performance during peak hours.”

Solution

Zyxel WiFi 6E Gateways unlock the new 6 GHz band, offering cleaner spectrum and next-level performance:

- More lanes, less traffic → Higher throughput and lower latency
- Ideal for high-density environments (MDUs, condos, neighborhoods)
- Enables premium multi-gig service plans with fewer complaints

Because of less interference and cleaner spectrum in the 6 GHz band, Wi-Fi 6E shows lower latency compared to older bands.

Wi-Fi 6	GAIN	Wi-Fi 6E
Throughput	+150%	2 Gbps Throughput
800 Mbps 20 ms	<60%	<8 ms Latency 8 ms
Latency 20 ms	<60% Latency	**Latency** Low
Interference High	Cleaner Spectrum	+100% Interference Low
Available Spectrum 600 MHz		Available Spectrum 11,200 MHz

Wi-Fi & Managing Your Subscribers

EasyMesh Compliance

EasyMesh standards-compliant devices provide the following benefits:

- Easy setup with automatic device on-boarding and configuration
- Seamless roaming of clients to the best connection with band steering and client steering
- Self-optimization of the WiFi network to ensure optimum performance

Remote Management – Flexible by Design

TR-069/TR-369/TR-181, OpenSync, prplOS

- Zero-touch provisioning
- Remote diagnostics & firmware updates
- Reduced truck rolls & OPEX
- Multi-vendor interoperability

Adopting open and modern remote management standards = Faster innovation, lower OPEX, and improved customer experience.

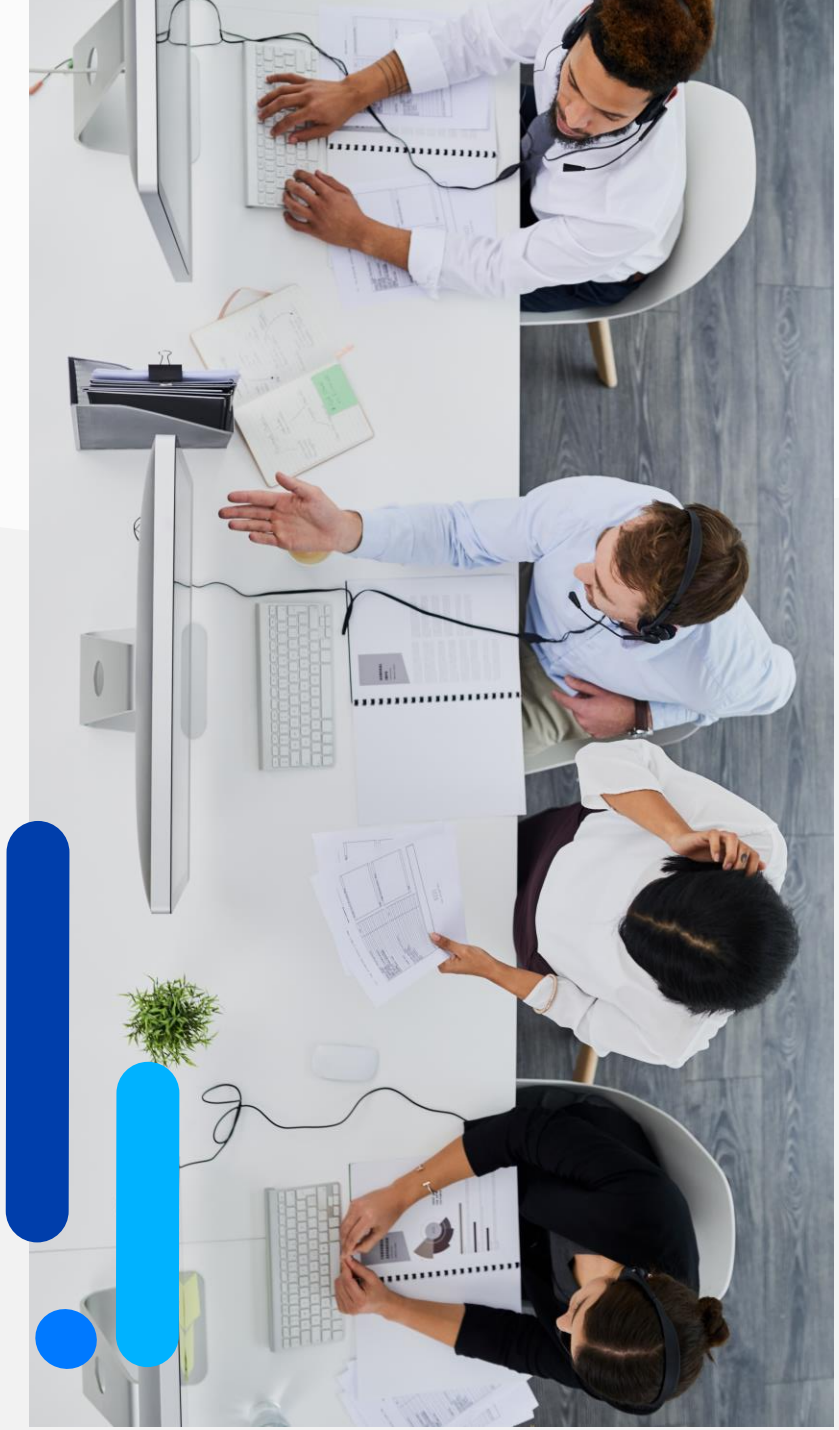
Zyxel + Plume

Open Platforms Powering the Future of Managed Broadband Services
Leveraging prplOS and OpenSync for scalable, cloud-managed broadband services.

Benefits for Service Providers

- **Interoperability:** Mix-and-match vendors with open standards
- **Speed to Market:** Rapid deployment of new services via the cloud
- **Reduced OPEX:** Simplified management, remote updates, analytics-driven support
- **Future-Proof:** Cloud extensibility and evolving open standards
- **Customer Experience:** Better Wi-Fi, smarter homes, less churn

OpenSync® prpl



Wi-Fi 7 Solutions

- Super-wide 320 MHz channel
- Advanced 4096-QAM
- Multi-Link Operation (MLO)
- Multi-RU Puncturing

Wi-Fi 7 brings you...

4.8x faster data rate

Increase the maximum data throughput up to 46 Gbps.

5x network capacity

Expanded by a combination of 320 MHz channels and MLO.

100x ultra-low latency

Low latency means more responsive online gaming, more immersive AR/VR and video streaming.

WiFi 7 Portfolio

Tri-Band Wireless BE19000 10G Ethernet VoIP Gateway with SFP+
EE6601

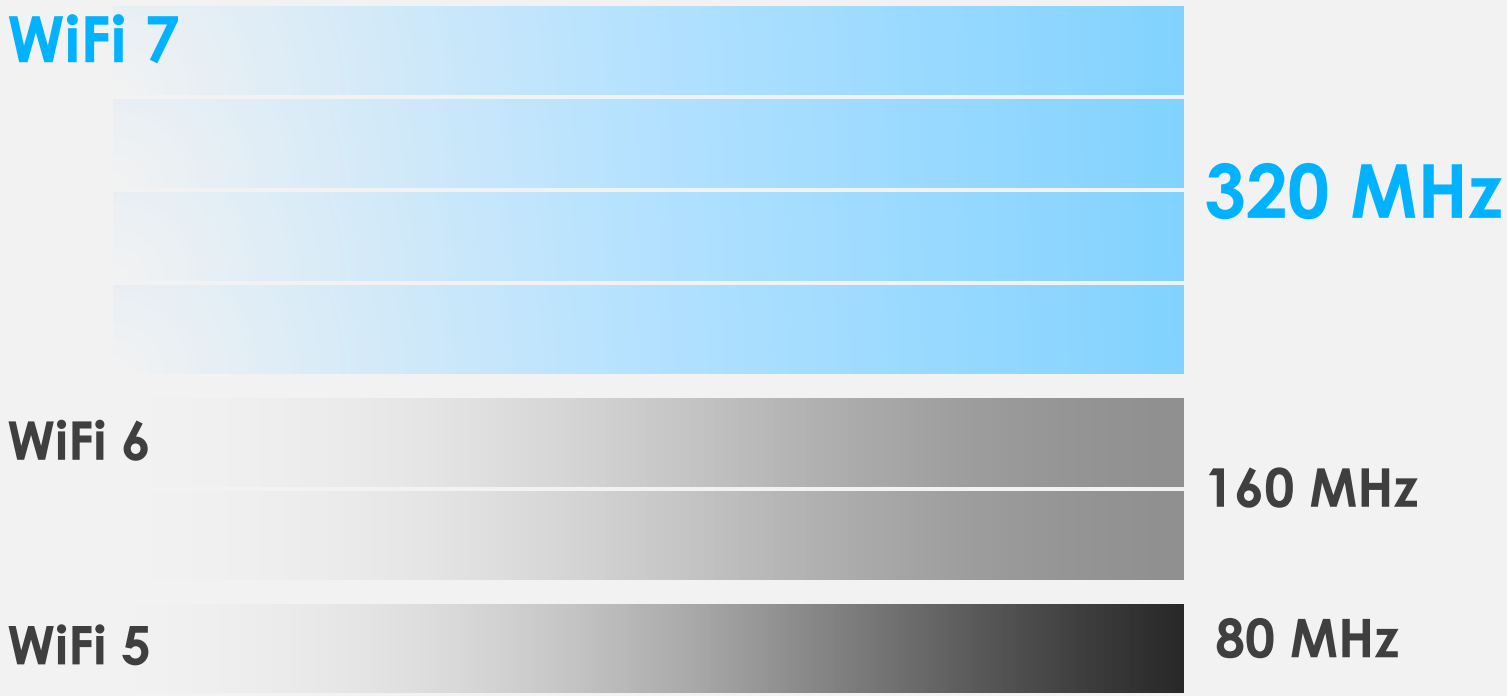
Tri-Band Wireless BE18000 10G Ethernet Gateway
EE6510

Tri-Band Wireless BE18000 2.5G Ethernet Gateway
EE4410

Dual-Band Wireless BE7200 2.5G Ethernet Gateway
EE3300

Super-wide 320 MHz channel

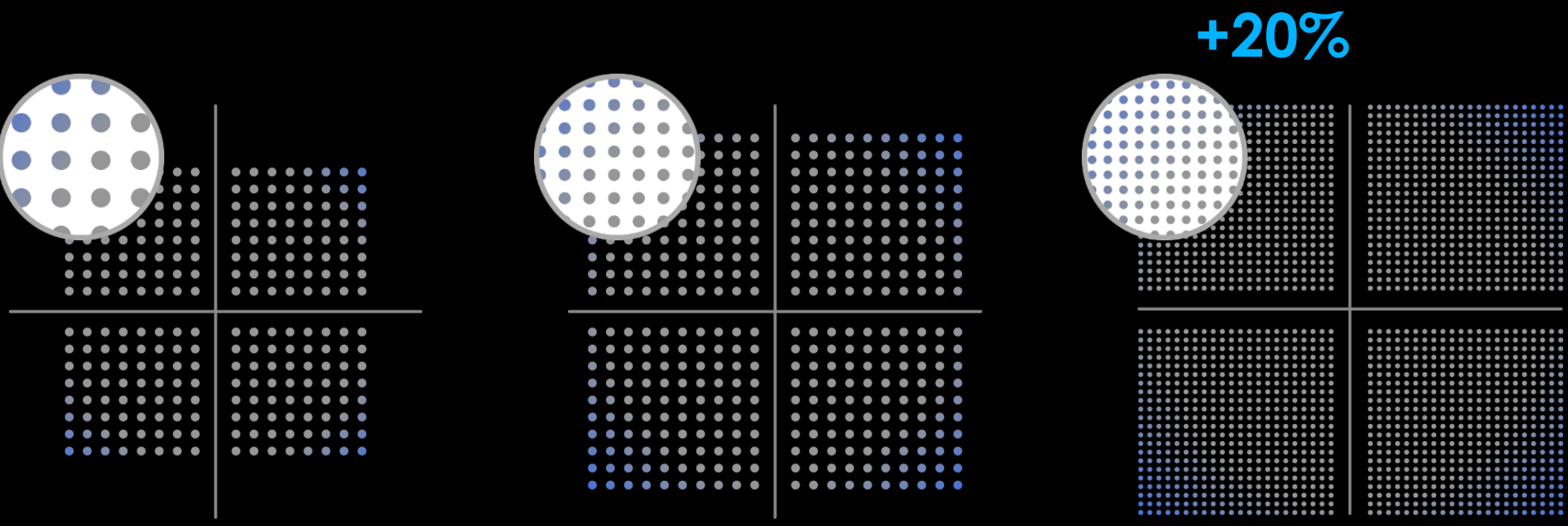
WiFi 7 supports three 320 MHz channels on the dedicated 6GHz band* that deliver massive throughput with maximum peak rates of over 40 Gbps.



*Due to regulatory restrictions, the 6 GHz band is only available in some regions/countries.

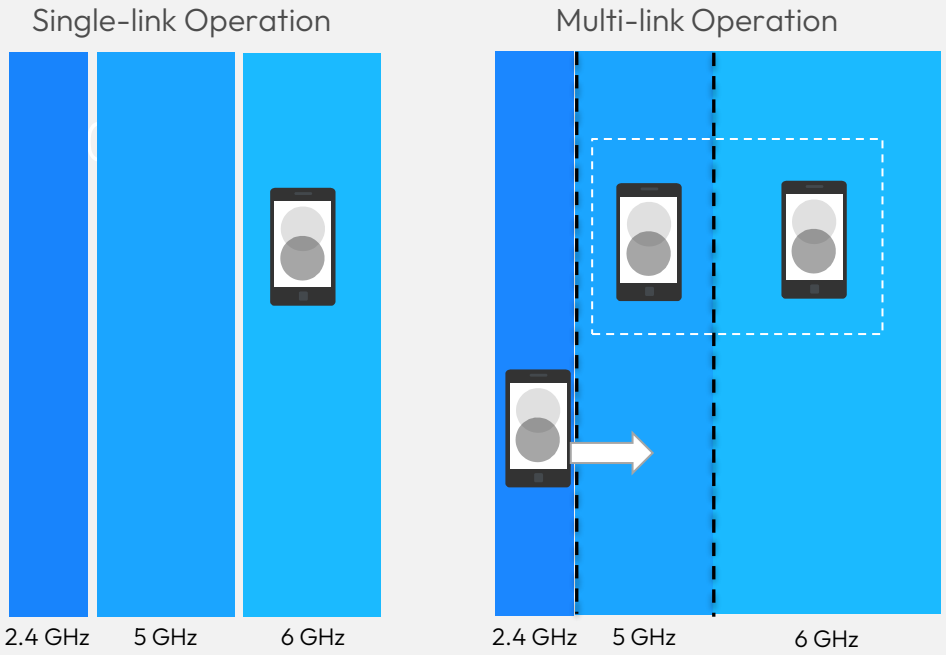
Advanced 4096-QAM

WiFi 7 supports advanced 4096-QAM (Quadrature Amplitude Modulation), which increases throughput by 20% compared with WiFi 6.



* QAM (Quadrature Amplitude Modulation)

What is Multi-Link Operation (MLO)?



Multi-Link Operation is a defining feature of WiFi 7. While previous generations transmitted on one frequency at a time, MLO allows devices to establish and maintain simultaneous connections across multiple frequency bands, for both dual-band and tri-band.

MLO enables:

- Multi-band communications
  Data flows in parallel across bands for higher throughput
- Built-in reliability
  Automatic failover keeps connections stable even if a band is interrupted

MLO for Dual-band vs. Tri-band

For Service Providers choosing which bands to adopt, it's important to understand which features are present in different devices and the specific use cases for each router.

Feature	Dual-band (2.4GHz + 5GHz)	Tri-band (2.4GHz + 5GHz + 6GHz)
Number of links with MLO	2	3
Throughput potential, including LAN	Up to +-6Gbps	Up to 10Gbps+ (thanks to the 6GHz frequency band)
Latency performance	Improved by switching traffic across 2 bands	Even lower latency, traffic can be dynamically distributed across 3 bands
Reliability	Good reliability, thanks to the 2.4GHz fallback	Highest reliability, with redundancy across 3 links
Interference	2.4GHz and 5GHz are often crowded	6GHz is much cleaner with less interference

What’s right for you?

In both cases, MLO is a tool for service providers to enhance customer experiences, reduce churn and differentiate themselves from competition in an ever-growing home connectivity market.

Dual-band Wi-Fi 7

Dual-band Wi-Fi 7 routers equipped with MLO are a cost-effective yet powerful solution for users with limited connection speeds or less concurrent device demands. They offer significant performance gains over legacy Wi-Fi generations, as the LAN transfer rates improvement, without including unneeded premium features.

Tri-band Wi-Fi 7

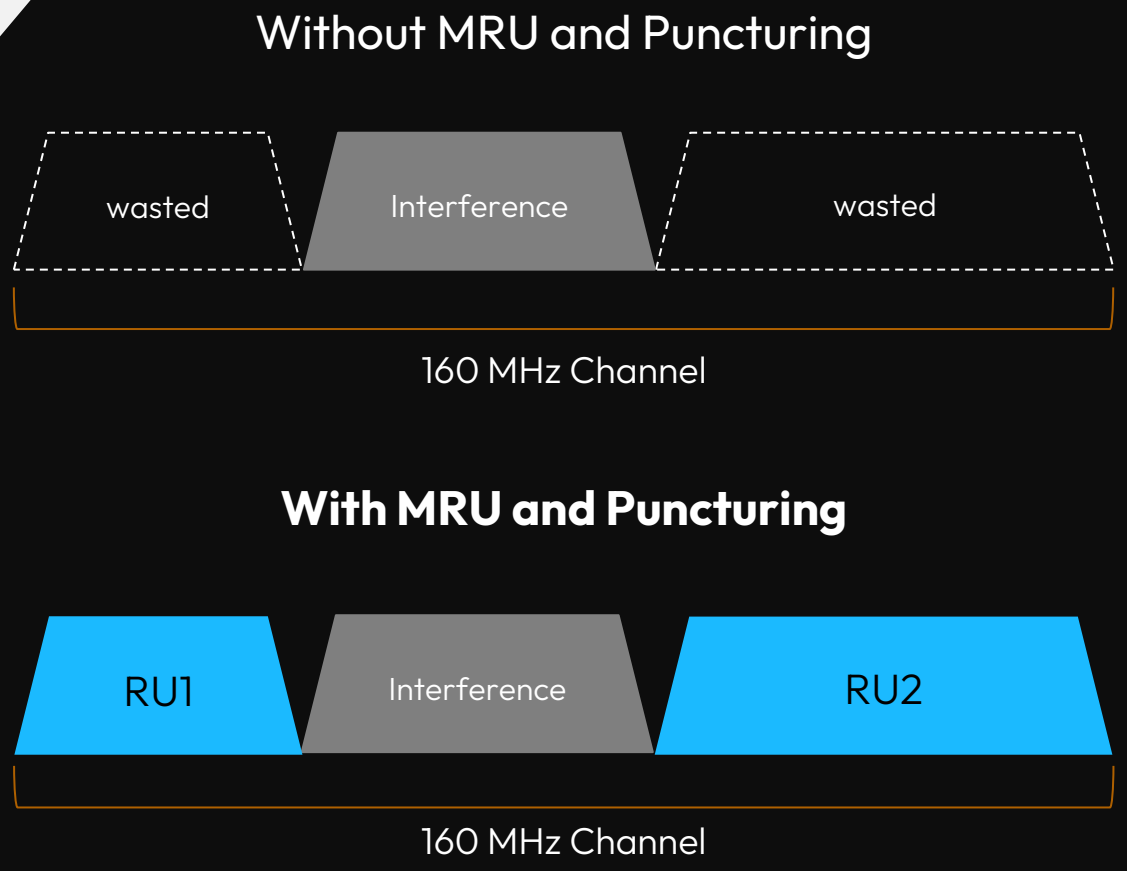
Tri-band Wi-Fi 7 routers, also equipped with MLO, are a strategic asset for service providers allowing for premium plans, supporting power users and heavily connected environments. Even in low-speed connection scenarios, tri-band significantly improves LAN transfer rates using all three frequency bands and device concurrency.

MRU Puncturing

Avoid using a part of the spectrum containing interfering signals

Increase transmission efficiency
MRU allows multiple resource units to be assigned to each user and multiple users can transmit data simultaneously.

Puncturing permits the whole channel bandwidth to be utilized even when there is interference.



Real-World Deployments

Proven Results from the Field

Problem

Today's bandwidth-intensive applications are pushing WiFi 6/6E to their limits. 8K streaming, cloud gaming, and AR/VR demand higher throughput and lower latency than current networks can sustain.
Next-gen entertainment and immersive apps are outpacing current WiFi capabilities.

Solution

Zyxel WiFi 7 Gateways deliver next-level performance for tomorrow's connected homes. **With Multi-Link Operation** and **320 MHz channels**, they provide ultra-low latency and multi-gig speeds. The **tri-band design** ensures stable, interference-free connections—built to support premium, future-ready service plans.

Wi-Fi 7

Designed for What's Next

Multi-Link Operation (MLO): Multiple bands = better speed and stability

- Homes now run on dozens of connected devices.
- Real-time applications like cloud gaming and AR/VR demand consistent performance.
- Wi-Fi 7 brings intelligence, reliability, and speed to handle it all

Why It Matters for Service Providers

- Deliver premium Wi-Fi experiences — fewer complaints, better retention
- Stay ahead as Wi-Fi 7 devices reach consumers
- Simplify remote troubleshooting and management

Future-proof your network and strengthen customer loyalty.

Consistent coverage and reliability

Each Wi-Fi generation brings measurable customer and business value– from efficiency and reliability to next generation experiences and new revenue opportunities. Zyxel enables service providers to evolve seamlessly at every stage.

Introducing Zyxel Nebula

Intelligent Cloud Networking Made Simple

Nebula is a cloud-based management platform allowing users to monitor and configure cloud enabled devices such as switches, access points, and firewalls.

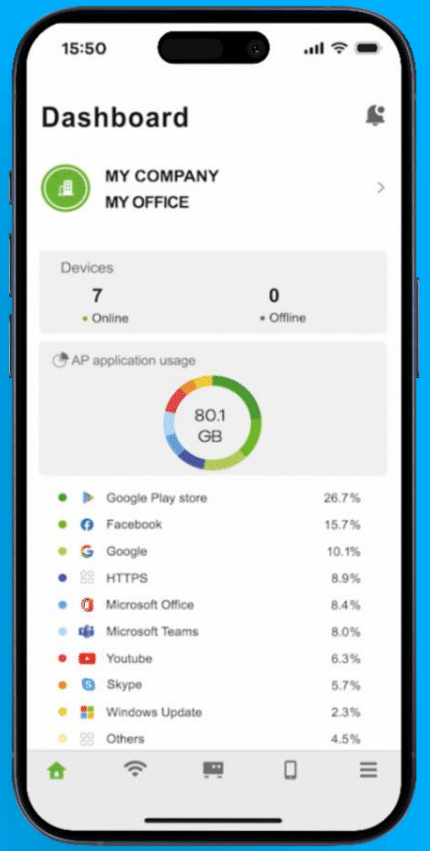
All of your devices can be seen and reached from a single management interface, giving you secure and instant access to your network.

The nebula platform is designed to deliver secure networking at scale from automating deployments to simplifying day to day operations to all your clients through a single pane of glass. Our platform today serves over a million devices with customers supporting thousands of organizations, sites and devices.

click. tap. done.
... running in minutes.

hello nebula.

With a few simple clicks! Your devices will be up and running in minutes. This can be done via mobile app or via the nebula control panel.



Built with MSPs, ISPs & global IT in mind.

Built and designed to support network installs of all sizes from 1-2 people offices all the way to MSPs, ISP or any global IT teams. Nebula has been designed to deliver powerful management structure streamlines operations like never before.

Effortlessly automate deployments, template and sync settings at the MSP level, and take full control of team access, all from a single, pane of glass.

- MSP, Team, Org, Site and Device Management
- Hassle free, auto-deployment - Pre-configure devices(still in box)
- Cloud backup/restore switch configurations
- Clone switches, sites and configurations
- Create templates and Profiles to speed up delivery at scale

Key Takeaways

- Wi-Fi 6 brought efficiency and performance
- Wi-Fi 6E expanded capacity with new spectrum
- Wi-Fi 7 delivers intelligent, adaptive connectivity

Zyxel helps you stay ahead with powerful Wi-Fi 7 and Nebula solutions.

ZYXEL
COMMUNICATIONS

Questions?