



## WBE660S

### BE22000 (WiFi 7) Triple-Radio Unified Pro Access Point

With its revolutionary technology breakthroughs, WiFi 7 (802.11be) will be the fastest WiFi ever, unleashing unprecedented speeds to provide more enjoyable online experiences in the digital world. Featuring the Qualcomm quad-core CPU and a solid, durable hardware build, the WBE660S delivers lightning-fast WiFi 7 speeds up to 22 Gbps and significant increased capacity. Paired with Zyxel Nebula's comprehensive range of management and security advancements, it ensures high connectivity and reliability for demanding enterprise-grade connectivity.

Adhering to the 'RF First' design, the WBE660S incorporates unique smart antenna technology to effectively mitigate co-channel interference and dynamically adapt antenna patterns, enhancing WiFi performance and coverage. Additionally, the advanced RF filter eliminates interference between the 5 GHz and 6 GHz bands, while the built-in 4G/5G interference filter promotes seamless coexistence with 4G/5G cellular networks, minimizing interference. Together, these features ensure a reliable and uninterrupted WiFi experience.

High-density locations, including office spaces, schools, and public transportation hubs, can benefit from using the WBE660S access point to alleviate WiFi overcrowding, reduce congestion, and provide cybersecurity protection. Similarly, high-bandwidth applications such as video streaming, broadcasting, online gaming, and VR/AR can also take advantage of its incredible speeds, ensuring a seamless experience devoid of any latency.



BE22000 (4x4 in 2.4 GHz, 4x4 in 5 GHz, 4x4 in 6 GHz) tri-radio access point provides lightning-fast speeds up to 22 Gbps and lower latency for real-time responsiveness



The 1x 10GbE uplink port unlocks WiFi 7 speeds and enables true 10GbE super broadband



Smart antenna is the proven technology that can mitigate interference and boost WiFi 7 performance



Advanced Cellular Coexistence minimizes interferences from 4G/5G cellular networks



Can be powered by PoE bt (PoE++) or USB Type C charger (45 W) to offer flexible powering options



NebulaFlex Pro allows users to switch between standalone, on-premises controller, or intuitive Nebula cloud managed modes as needed

Furthermore, given the substantial advancements in WiFi 7's lightning-fast speeds and low-latency transmission, the WBE660S emerges as a viable alternative to wired networks like Ethernet. It can serve as the backbone for home, office, and industrial networks. This WiFi technology offers a quicker, more efficient, and cost-saving deployment, eliminating the need for cables and providing enhanced mobility for network users.

## Benefits

### Bringing next generation WiFi within reach

WiFi 7, also known as IEEE 802.11be, represents the next evolution in WiFi standards, supporting all three frequency bands – 2.4 GHz, 5 GHz, and 6 GHz. With its revolutionary technological advancements, it promises to redefine the concept of speed, delivering unprecedented rates to elevate online experiences in the digital realm.

Coupled with Zyxel's comprehensive range of management and security innovations, the WBE660S ensures the utmost connectivity and reliability for demanding enterprise-grade connectivity.

### MLO: Transforming WiFi 7 for unprecedented connectivity

Fundamentally, one of the most pioneering advancements of WiFi 7 is the introduction of MLO (Multiple Link Operation). MLO represents a WiFi technology that empowers devices linked to a WiFi access point (AP) to concurrently transmit and/or receive data through various frequency bands and channels. This entails simultaneous connections across the 2.4 GHz, 5 GHz, and 6 GHz bands, a capability absent in earlier WiFi generations where devices were restricted to a solitary WiFi band connection.

The result is a significant amplification in data throughput, a reduction in latency, and an enhancement in reliability. These outcomes undeniably enhance the user experience and unveil novel opportunities for emerging applications such as VR/AR, online gaming, remote office setups, and cloud computing.

The WBE660S with NebulaFlex Pro provides users with complete flexibility to switch between standalone, on-premises controller, or the intuitive Nebula cloud-managed modes as needed. It comes bundled with a 1-year Nebula Professional Pack license, eliminating upfront licensing costs when transitioning to full-featured cloud management.

### 4G/5G cellular network coexistence

With the exponential growth of mobile devices on wireless networks, users are beginning to experience degraded performance, such as ping drops and high latency. Users have to limit their use of mobile devices to maintain a smooth working wireless service. Therefore, to facilitate the coexistence of 4G/5G cellular networks and minimize interference from 4G/5G antennas or signal boosters, the WBE660S is equipped with built-in 4G/5G interference filters. As a result, the presence of visible or concealed 4G/5G indoor antennas in the environment is no longer a concern when installing APs.

### NebulaFlex Pro – simply manage it your way!

The NebulaFlex Pro provides extended flexibility, allowing users to easily switch among standalone, on-premises controller or our intuitive NCC (Nebula Control Center) modes any time according to your needs without additional cost while protecting wireless technology investments. The privilege of one-year professional pack you can get once upon registration on Nebula includes WiFi Aid, wireless health, site-wide topology, 365-day statistics on the devices and clients monitoring along with more upcoming advanced features on NCC and its App.

### Nebula, The Intelligent Cloud Management

Nebula offers comprehensive monitoring and reporting capabilities, including real-time notifications for critical events via the mobile app. With Nebula, you can enjoy a streamlined experience for network installation and management, without the need for an additional cost for software or hardware controllers.

#### • Automated WLAN management & optimization

With features like WiFi Aid and Wireless health, Nebula enables automated wireless network management and optimization, ensuring the best possible WiFi user experience.

#### • Enhanced privacy & security

A range of security add-on features like CDR, Secure WiFi, CNP, DPPSK, and advanced authentication methods work together to create a robust and protected environment for your network.

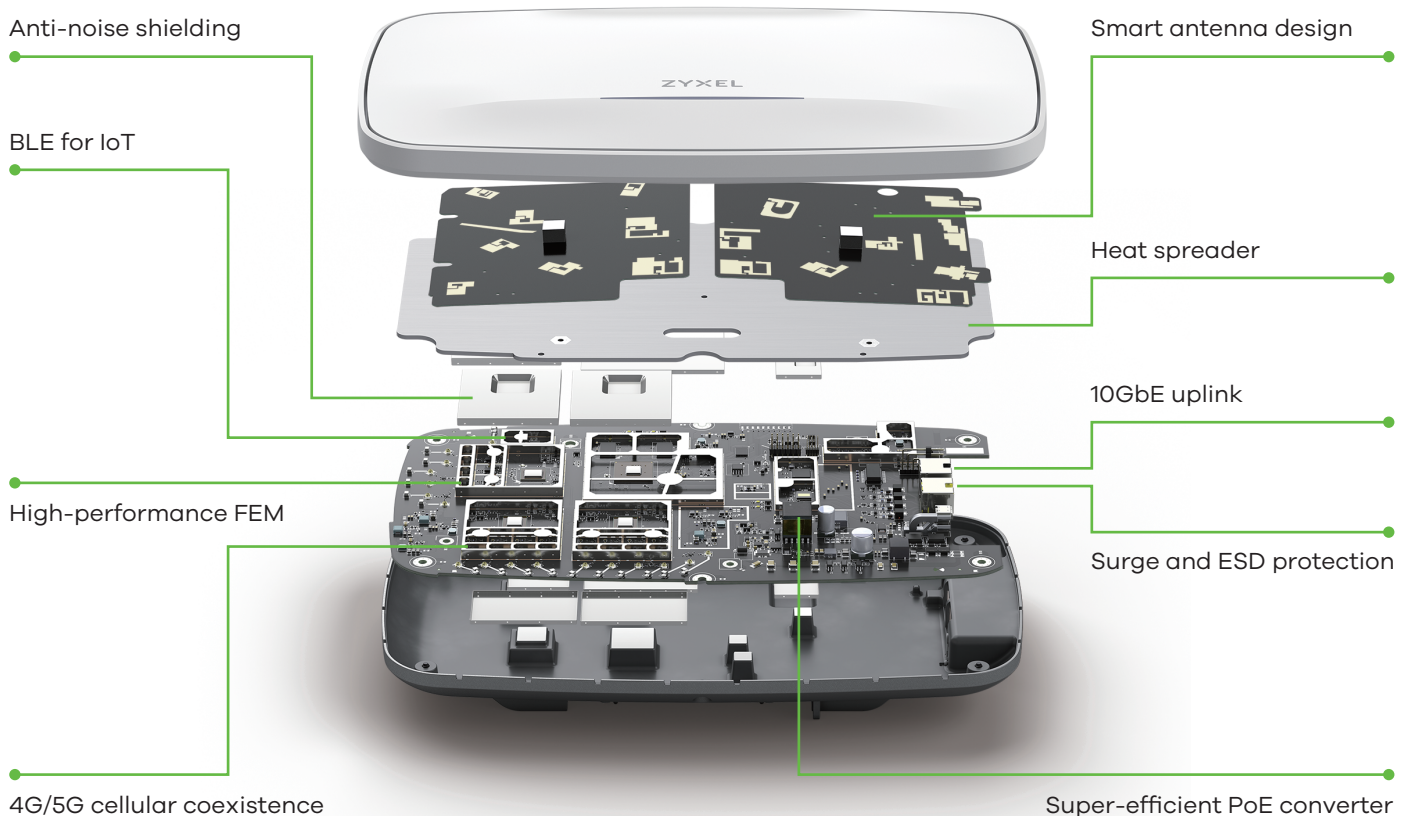
## Optimized wireless experience with advanced features

The WBE660S ensures an optimized wireless experience for users with a range of wireless features such as Dynamic Channel Selection (DCS), Load Balancing and Smart Client Steering. DCS minimizes the interference of co-channel and overlapping channels. Load Balancing enables administrators to set limits on the number of clients associated with each AP. Furthermore, Smart Client Steering features with Band Select, Signal Threshold and Band Balancing combine to deliver stable, reliable wireless connections. Band Select and Signal Threshold monitor the capabilities of each wireless client and steer them to the less-congested band and AP with better signals. Band Balancing detects dual-radio and triple-radio clients and distributes clients across 2.4 GHz, 5 GHz, and 6 GHz bands on AP. All of these deliver a smooth, consistent and uninterrupted wireless experience to its users.

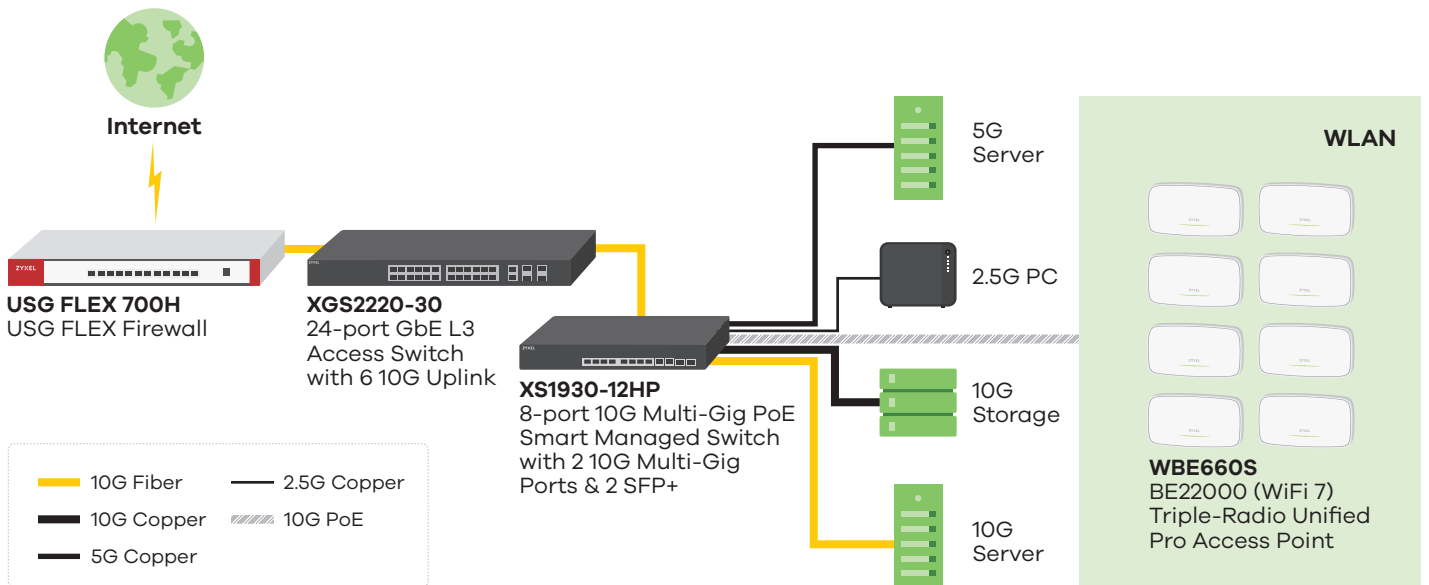
## BLE beacon integrated and IOT ready

The Zyxel WBE660S is an efficient WLAN solution for high-density deployments and it gives customers a BLE beacon-enabled network. It cooperates with third-party beacon management platforms to boost user engagement, especially for retailers who want to improve the in-store experience. And Target Wake Time (TWT) is another feature that particularly important for the IoT. TWT enables devices to schedule when to wake up and send or receive data that effectively increase device sleep time and significantly conserve battery life.

## Powerful Hardware Design



# Network Application



# Specifications

**Model** **WBE660S**

**Product name** BE22000 (WiFi 7) Triple-Radio Unified Pro Access Point



**Wireless**

|  |                                       |  |
|--|---------------------------------------|--|
| <b>Standard</b>                                  | IEEE 802.11 be/ax/ac/n/g/b/a          |  |
| <b>MIMO</b>                                      | MU-MIMO                               |  |
| <b>Wireless speed</b>                            | <b>2.4 GHz</b>                        | 1376 Mbps  |
|  | <b>5 GHz</b>                          | 8646 Mbps  |
|  | <b>6 GHz</b>                          | 11530 Mbps   |
| <b>Frequency band</b>                            | <b>2.4 GHz</b>                        | USA (FCC): 2.412 to 2.462 GHz<br>Europe (ETSI): 2.412 to 2.472 GHz                                     |
|  | <b>5 GHz</b>                          | USA (FCC): 5.15 to 5.35 GHz; 5.470 to 5.850 GHz<br>Europe (ETSI): 5.15 to 5.35 GHz; 5.470 to 5.725 GHz |
|  | <b>6 GHz</b>                          | USA (FCC): 5.925 to 6.425 GHz; 6.525 to 7.125 GHz<br>Europe (ETSI): 5.925 to 6.425 GHz                 |
| <b>Bandwidth</b>                                 | 20-, 40-, 80-, 160-, 240- and 320-MHz |  |
| <b>Conducted typical transmit output power*1</b> | <b>US (2.4 GHz/5 GHz/6 GHz)</b>       | 29/28/23 dBm   |
|  | <b>EU (2.4 GHz/5 GHz/6 GHz)</b>       | 19/25/22 dBm   |

**RF Design**

|                                    |                                    |                 |
|------------------------------------|------------------------------------|-----------------|
| <b>Antenna type</b>                | Smart antenna                      |                 |
| <b>Antenna gain</b>                | <b>2.4 GHz</b>                     | 3 dBi, 4x4: 4SS |
|                                    | <b>5 GHz</b>                       | 5 dBi, 4x4: 4SS |
|                                    | <b>6 GHz</b>                       | 5 dBi, 4x4: 4SS |
| <b>Minimum receive sensitivity</b> | Min. Rx sensitivity up to -104 dBm |                 |

|                                      |   |  |
|--------------------------------------|---|--|
| <b>Model</b>                         | <b>WBE660S</b>  |  |
| <b>WLAN Feature</b>                  |   |  |
| <b>Band steering</b>                 | Yes   |  |
| <b>WDS/Mesh*2</b>                    | Yes   |  |
| <b>Fast roaming</b>                  | Pre-authentication, PMK caching and 802.11r/k/v   |  |
| <b>DCS</b>                           | Yes   |  |
| <b>Load balancing</b>                | Yes   |  |
| <b>Advanced cellular coexistence</b> | Yes   |  |
| <b>Security</b>                      |   |  |
| <b>Encryption</b>                    | WEP/WPA/WPA2/WPA3   |  |
| <b>Authentication</b>                | IEEE 802.1X/RADIUS authentication   |  |
| <b>Access management</b>             | L2-isolation/MAC filtering/Rogue AP detection   |  |
| <b>Networking</b>                    |   |  |
| <b>IPv6</b>                          | Yes   |  |
| <b>VLANs</b>                         | Yes   |  |
| <b>WMM</b>                           | Yes   |  |
| <b>U-APSD</b>                        | Yes   |  |
| <b>Management</b>                    |   |  |
| <b>Operating mode</b>                | Nebula Cloud managed/controller-managed/standalone  |  |
| <b>ZON Utility</b>                   | <ul style="list-style-type: none"> <li>• Discovery of Zyxel switches, APs and gateways</li> <li>• Centralized and batch configurations <ul style="list-style-type: none"> <li>▪ IP configuration</li> <li>▪ IP renew</li> <li>▪ Device reboot</li> <li>▪ Device locating</li> <li>▪ Web GUI access</li> <li>▪ Firmware upgrade</li> <li>▪ Password configuration</li> </ul> </li> </ul> |  |
| <b>Web UI/CLI</b>                    | Yes   |  |
| <b>SNMP</b>                          | Yes   |  |
| <b>Physical Specifications</b>       |   |  |
| <b>Item</b>                          | <b>Dimensions (WxDxH)(mm/in.)</b>   | 310 x 178 x 56/12.205 x 7.01 x 2.205   |
|                                      | <b>Weight (g/lb.)</b>   | 1412/3.11                              |
| <b>Packing</b>                       | <b>Dimensions (WxDxH)(mm/in.)</b>   | 377 x 231 x 93/14.84 x 9.09 x 3.66     |
|                                      | <b>Weight (g/lb.)</b>   | 2040/4.497                             |
| <b>Included accessories</b>          | <ul style="list-style-type: none"> <li>• Mount plate</li> <li>• Mounting screws</li> </ul>  |  |
| <b>MTBF (hr)</b>                     | 242,749   |  |
| <b>Physical Interfaces</b>           |   |  |
| <b>Ethernet port</b>                 | <ul style="list-style-type: none"> <li>• 1 x 1/2.5/5/10 Gbps LAN</li> <li>• 1 x 1 Gbps LAN</li> </ul>   |  |
| <b>Power</b>                         | <ul style="list-style-type: none"> <li>• PoE (802.3)bt: power draw 41 W</li> <li>• DC input: USB PD 15 VDC 3 A (Type C)</li> </ul>  |  |
| <b>PoE modes</b>                     | <b>IEEE 802.3af</b>   | Not supported                          |
|                                      | <b>IEEE 802.3at</b>   | 2.4 GHz 2T4R; 5 GHz 2T4R; 6 GHz 2T4R*3 |
|                                      | <b>IEEE 802.3bt</b>   | Unrestricted                           |
| <b>Environmental Specifications</b>  |   |  |
| <b>Operating</b>                     | <b>Temperature</b>  | 0°C to 45°C/32°F to 113°F              |
|                                      | <b>Humidity</b>   | 10% to 90% (non-condensing)            |
| <b>Storage</b>                       | <b>Temperature</b>  | -40°C to 70°C/-40°F to 158°F           |
|                                      | <b>Humidity</b>   | 10% to 90% (non-condensing)            |
| <b>Certifications</b>                |   |  |
| <b>Radio</b>                         | FCC Part 15C, FCC Part 15E, ETSI EN 300 328, EN 301 893, LP0002   |  |
| <b>EMC</b>                           | FCC Part 15B, EN 301 489-1, EN 301 489-17, EN55022, EN55024, EN61000-3-2/-3, EN60601-1-2, BSMI CNS13438   |  |
| <b>Safety</b>                        | Safety EN 60950-1, IEC 60950-1, BSMI CNS14336-1   |  |

\*1: Maximum transmit power is limited by local regulatory settings.

\*2: WDS, ZyMesh, Smart Mesh and Industry's Open Mesh, Easy Mesh are different mesh systems that do not work with one another.


\*3: WBE660S with 2T4R configuration can run with All Zyxel PoE+ switch models without any problem. If WBE660S works with other PoE+ switch brands, please make sure TX Power is under 15 dBm and the uplink speed is lower than 2.5GbE.

## Recommended Accessories

### Mounting Accessory

|                      |   |
|----------------------|---|
| <b>Model</b>         | <b>ACCESSORY-ZZ0105F</b>  |
| <b>Product photo</b> |  |
| <b>Description</b>   | BAR ceiling clips for ceiling mount Zyxel AP (5 sets)                             |

### PoE Injector

|                      |   |
|----------------------|---|
| <b>Model</b>         | <b>PoE12-60W</b>  |
| <b>Product photo</b> |    |
| <b>Description</b>   | <ul style="list-style-type: none"><li>• RJ-45 (Data) input: 1</li><li>• RJ-45 (Data + Power) output: 1</li><li>• Data rate: 100 Mbps and 1/2.5/5 Gbps</li><li>• PoE standard: PoE, PoE+, PoE++</li><li>• Total PoE budget: 60 watts</li></ul> |

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

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