



Easy Breezy Indoor Connectivity

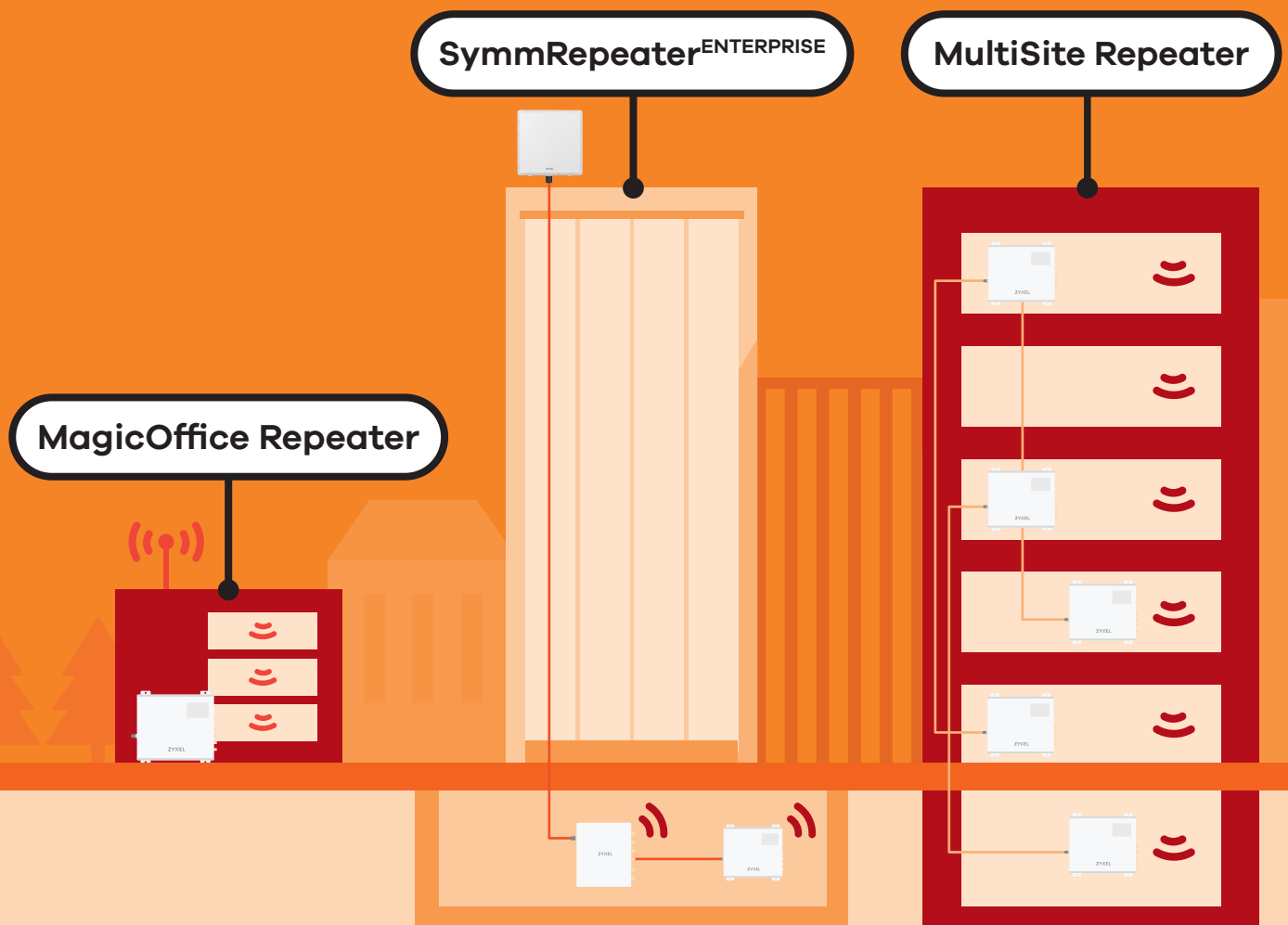
Cellular Without Boundaries

In-Building Coverage
Solution Brief

We satisfy all your mobile needs

We live in an age of round-the-clock mobile connectivity. Cell phones were made to travel, yet 80% of all mobile traffic are generated indoors. As such, ensuring ubiquitous, uninterrupted indoor connectivity has become a major operator priority. It's a real challenge, as complications abound, and even simple factors like indoor user movement can lead to dropped signals and disconnections. To overcome these, various In-Building Solutions (IBS) were found. Chief among these are Distributed Antenna Systems (DAS) and Repeaters.

To date, IBS providers have mostly focused on large-scale public sites—stadiums, civic venues, airports, etc.—that come with copious public funding. Many tried to serve smaller sites, of course, with scaled down versions of existing solutions, but they could not overcome the inherent complexity and high cost. So such attempts invariably came to dead ends, and smaller building with smaller budgets remain left out.

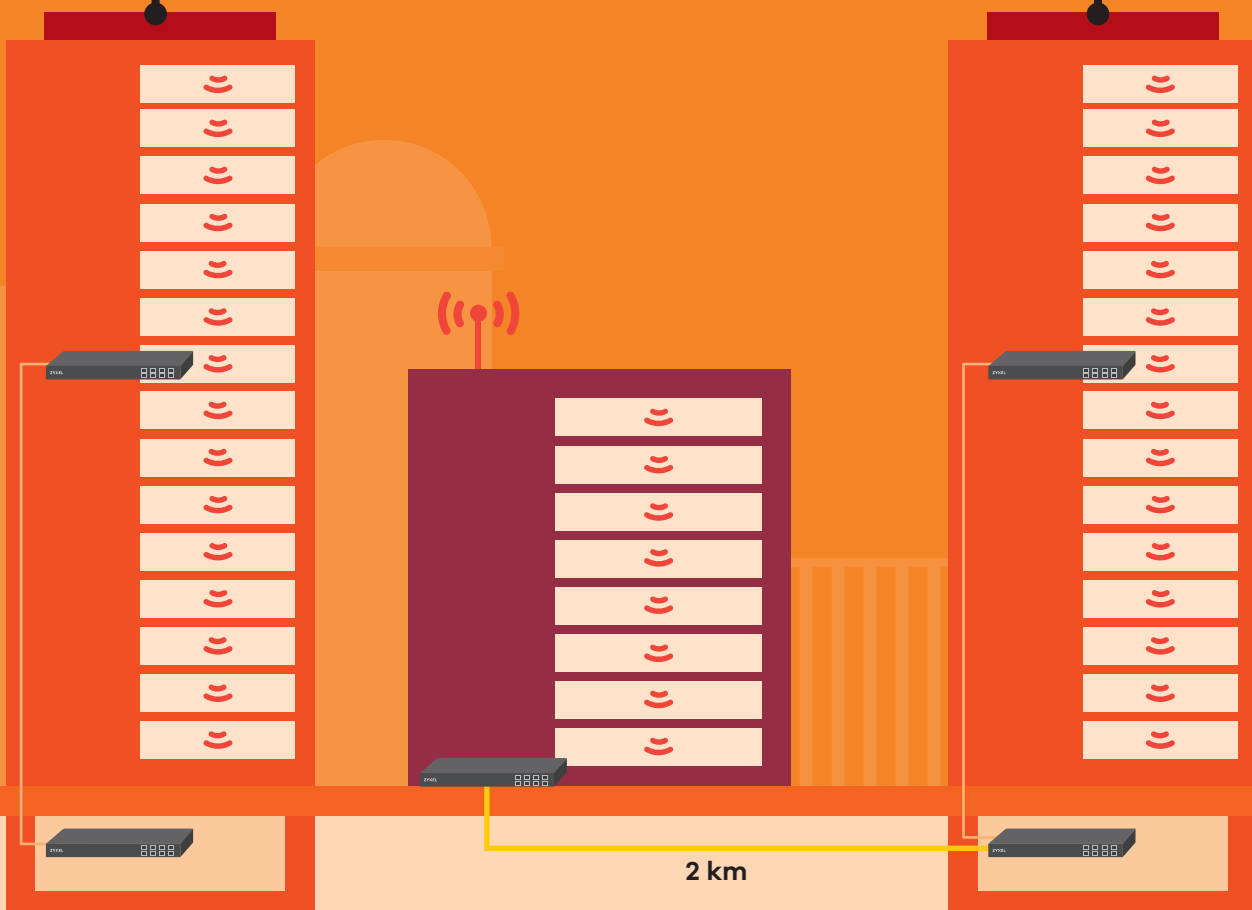




Comprehensive In-Building Coverage Solutions

ZoneDAS + Extender

ZoneDAS One + Expander



ZoneDAS: the easy way in

Drawing on its near 30 years of expertise in the networking industry, Zyxel created a revolutionary product that, for the first time, offers simplicity, capability, and affordability to owners, operators, and neutral hosts in need of providing indoor connectivity: ZoneDAS.

Flexible, scalable, and easily deployable, this Ethernet cable based high-performance Active DAS (Distributed Antenna System) is the best solution for multi-carriers co-location scenarios covering medium to large sites and buildings.

Traditional Passive DAS vs. Zyxel's ZoneDAS Series

	Traditional Passive DAS	Zyxel's ZoneDAS Series
LTE and 5G-NR Performance	Low Performance, No Flexibility <ul style="list-style-type: none">• 2G, 3G, and poor 4G LTE performance• No MIMO support except through investing in and deploying additional DAS systems	High Performance, High Flexibility <ul style="list-style-type: none">• ZoneDAS series include ZoneDAS family and ZoneDAS One family, both are active DAS solutions and technology independent for 2G, 3G, 4G, 5G-NR or NB-IoT.• ZoneDAS family system bandwidth is up to 80 MHz for 2G, 3G, 4G, or 5G-NR FDD system performance.• ZoneDAS One family system bandwidth is up to 400 MHz download in 5G-NR TDD mode, ideal for multi-carriers co-location scenarios for 2G, 3G, 4G, or 5G-NR FDD/TDD, NB-IoT deployment.• Hybrid signal source support e.g., Micro BTS, Remote Radio Head (RRH) and/or off-air repeater for multi-carriers co-location.• Easily upgrades to MIMO service through RF module addition
CAPEX	Very Expensive <ul style="list-style-type: none">• Requires high quality components that come with premium pricing• Can take a month to deploy• Requires professional engineers• Requires high-powered input from <i>expensive</i> high-power base stations	Very Affordable <ul style="list-style-type: none">• Budget-friendly devices and standardized Ethernet cables (CAT5e for ZoneDAS family & CAT7 for ZoneDAS One family)• 15-30 times faster deployment• Easy deployment, with no need for licensed personnel• Works great with low-powered input from <i>inexpensive</i> low-power base stations
Indoor Coverage Planning	Complex <ul style="list-style-type: none">• Requires intertwined, complex link budgets to match outputs with pathways and signal loss• Must carefully consider signal interference and performance	Simple <ul style="list-style-type: none">• Power levels are software-adjustable for every RU, every antenna• Signal optimization can be done locally or through EMS and SNMPv3• Plug-and-play flexible installation, simply identify the location that requires indoor cellular coverage improvement
Maintenance and Management	On-site	On-site or through EMS remote control

Quicker, Easier, Shatters the Cost Barrier

Traditional DAS is costly beyond reach

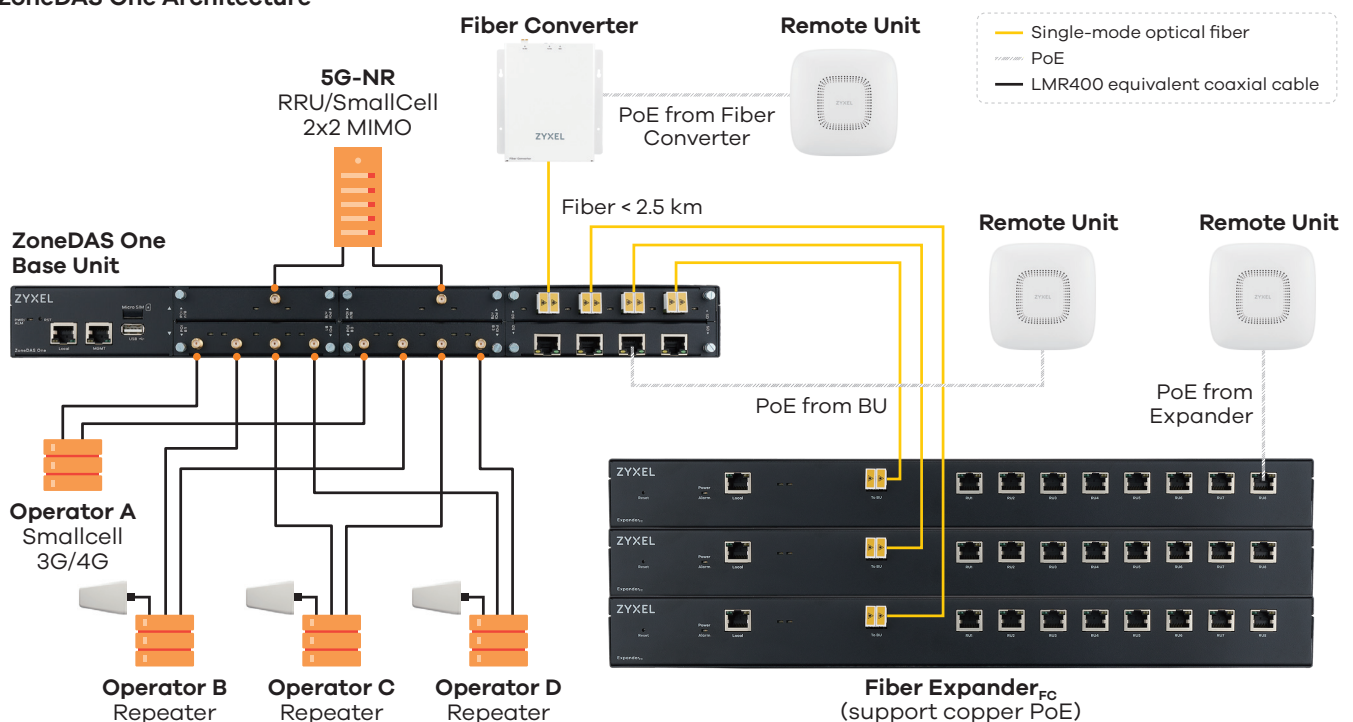
DAS solutions have always been prohibitively complicated—and prohibitively expensive. Traditional passive DAS involves coaxial cable networks that form a complex web of RF feeders and devices, such as combiners and splitters, and must be meticulously calculated and installed by RF experts. These result in lengthy construction times and high installation costs. In fact, for traditional DAS, engineering alone can amount to 60~70% of the total cost.

Problems don't stop there. Because extensive cabling and passive components substantially weaken signal strength, premium components and high-power base stations must be used to minimize the effect—at high costs. The money adds up, and small/medium budgets are simply not enough.

Zyxel ZoneDAS series significantly reduces deployment cycle and costs

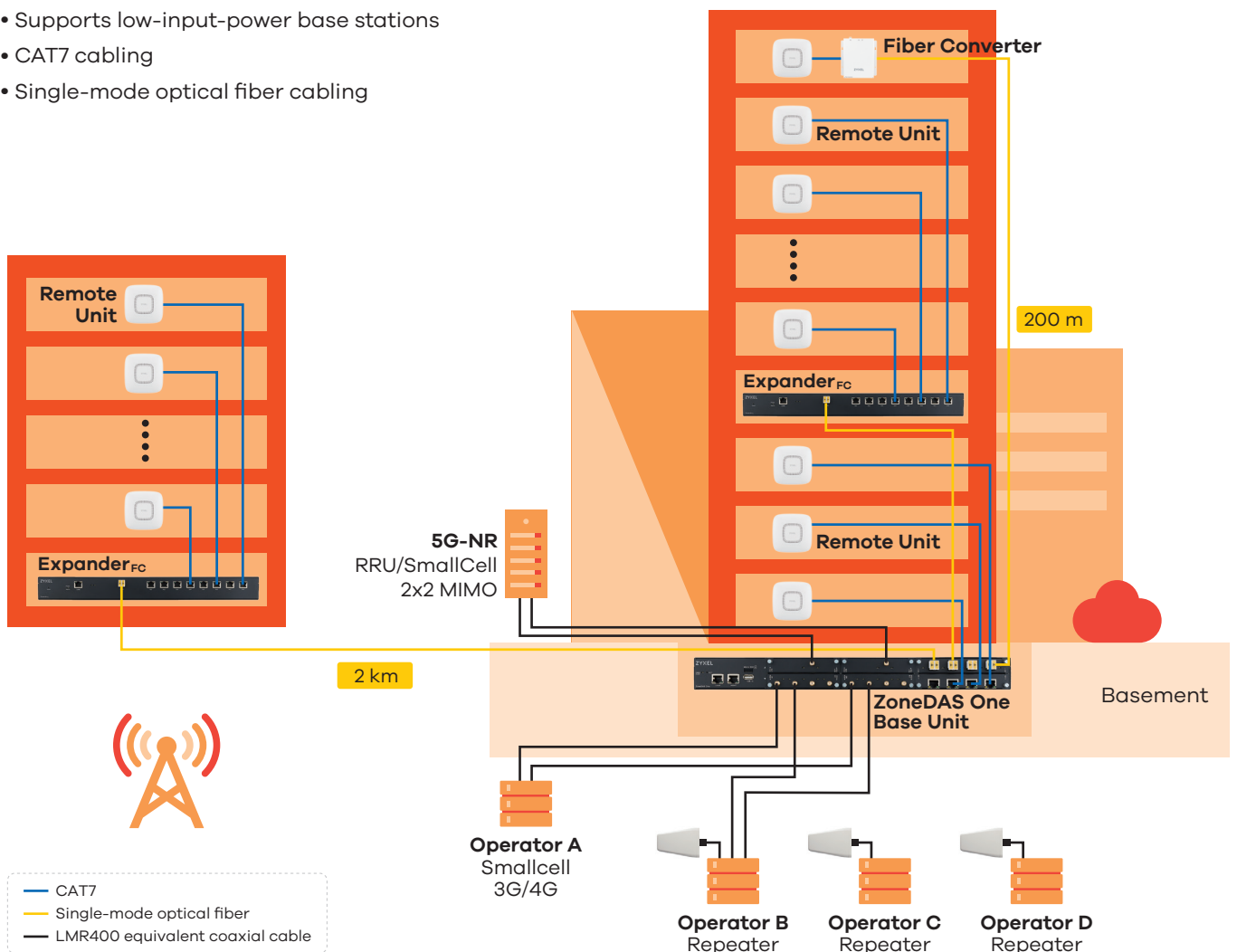
ZoneDAS series totally changes the economic equation of DAS deployment—and revolutionizes everything else along the way! Eschewing costly yet unwieldy coaxial cabling, ZoneDAS series is the product of cutting-edge technology that enables the deployment of easy-to-use Ethernet cabling. These inexpensive twisted-pair cables can be installed by networking novices, saving the cost of hiring licensed electricians—a necessity in traditional DAS deployment. Using CAT5e or CAT7 also allows ZoneDAS or ZoneDAS One family to power the entire system using just one power supply, via PoE. These features significantly shorten project deployment cycle and greatly simplify management. As tested, ZoneDAS or ZoneDAS One family can be installed 15 to 30 times faster than traditional DAS! So whereas cable routing and device installation typically take a month, Zyxel ZoneDAS series can be installed in just one day!

ZoneDAS One Architecture



In-Building Cellular ZoneDAS One family

- Supports low-input-power base stations
- CAT7 cabling
- Single-mode optical fiber cabling



Low-power base station compatibility further cuts costs

Unlike traditional DAS products, ZoneDAS series works with low-power base stations and accepts weak small cell signals of 10 ~ 250 mW. This negates the need to purchase high-power base stations and helps system integrators lower their deployment CAPEX.

In addition, because it boosts signals right at the antennas, it delivers the highest signal strengths and best possible signal-to-noise ratios, downlink and up. This exceptional sensitivity also allows it to provide a wider coverage range and much improved data speeds.

Flexible and Adaptable

The problem with providing coverage indoors is that radio signals often weaken significantly as they pass through building material, leading to all levels of signal degradation. Traditional passive DAS installations resolve this using passive antennas and coaxial cables, which distribute the source signals. But such connections are fixed and, once deployed, are susceptible to signal degradation when there are changes in building layout. Furthermore, making upgrades to technologies such as MIMO LTE or 5G-NR for higher data speed would often require reconstruction—a significant investment due to such systems' inherent complexity and cost.

Simple Changes and Upgrades with Modular Design

ZoneDAS series solves this no-win situation. Featuring a fully modular architecture and an active antenna system, it easily adds support for MIMO, additional carriers, or future technologies through simple module additions or swaps. Furthermore, as ZoneDAS series uses easy-to-deploy Ethernet cables for its active antenna connections, one can relocate its antennas at any time—without the usual complications. All the parameters, from output power to antenna configuration, can be configured on the fly—even remotely, such as from a central management site. ZoneDAS and ZoneDAS One family represent the ultimate in scalability and upgradability among DAS systems today.

Optimal Coverage Supreme Voice & Data Quality

RF coverage scenarios are as diverse as building layouts and architecture. The countless ways in which people carve office buildings, shopping malls, and other venues into smaller spaces also create infinite variations in RF availability. Construction materials used in walls and insulation in buildings such as metal, low-emissivity (low-E) glass, concrete, and energy-efficient materials can slow or stop cellular signal penetration, poor indoor cellular connectivity becomes a very common problem.

Though a base transceiver station (BTS), it can transmit at higher power e.g., 50 - 60 W, the limitation still resides in a cellular phone which transmits at a max power of 2 W only. ZoneDAS and ZoneDAS One family are both analog-based active DAS systems, their system architecture are flexible. They can be either two-tier when Remote Units connect to Base Unit directly, or 3 tier when Base Unit and Extender/Expander are used together for Remote Unit connection. This means that Remote Units can be deployed very close to mobile devices and continue to provide seamless connectivity to meet the high demand for voice and data.

Simple Maintenance and Management

Traditional DAS products do not offer end-to-end monitoring and management abilities. Signals just pass through RF cables quietly and building owners don't know about any issues until users complain.

ZoneDAS series, on the other hand, is optimized for easy remote management using standard protocols like

EMS and SNMPv3. Remote management even extends to its finer controls, such as independent power level adjustment for each and every RF module.

With its support for end-to-end system monitoring and management, IT staff can manage everything from RF source to antenna point via EMS and SNMPv3, and solve problems before users even feel them.

Signal Source Independent

Business models for in-building cellular services typically rely on carrier, neutral-host, or the resident enterprise to pay for DAS. Since Base Transceiver Stations (BTS) are the only wired signal sources and must be carrier-provided, compatibility with various BTS systems becomes key when adopting DAS. Zyxel's ZoneDAS One, ZoneDAS and SlimDAS are BTS source independent and accept the low 0 to 24 dBm input power range provided by macro, micro, and picocell stations. They also offer versatile input combinations such as 2 x MIMO, 4 x SISO,

and 1 x MIMO + 2 x SISO, across 2G, 3G, 4G LTE and 5G NR FDD communication system, using RF signals from multiple signal sources. They can even use off-air signals to support any operator that cannot bring a BTS nearby, via a SymmRepeater. With such simplicity and versatility, Zyxel's ZoneDAS series solution helps operators refocus on upgrading systems and expanding device capacity, both essential to investing right and achieving higher ROIs.

Scale-up through ZoneDAS Extender or ZoneDAS One Expander

ZoneDAS Base Unit Plus Extenders

The strong arm of the ZoneDAS family, the Extender expands ZoneDAS coverage to a maximum of 160,000 square meters—or 1.7 million square feet! Along the way, it also extends the maximum distance between ZoneDAS and its active antennas to 200 meters—all with CAT5e cabling! While ZoneDAS connects up to 8 remote units (RUs), each Extender connects as an RU and adds 8 additional RU ports, expanding capacity to 64 remote units! This enables ZoneDAS to cover dozens of stories, providing indoor coverage for all but the largest buildings. Of course, all this is tamed with remote management and real-time reporting.

ZoneDAS One Base Unit Plus Expanders

The flexible expander options of ZoneDAS One family fulfill versatile deployment scenarios with CAT7 or single-mode optical fiber cabling. ZoneDAS One Base Unit, together with the expanders, supports up to a maximum of 160,000 square meters (1.7 million square feet). When using the Expander CC with CAT7 cabling, the distance between ZoneDAS One Base Unit and its active antennas is up to 200 meters. If using the Expander FC with single-mode optical fiber, the distance can be up to 2 km, which is ideal for the long distance project deployment e.g., where two buildings locate remotely with longer distance more than 100 meters.



ZoneDAS Line Extender Takes Things Further

Sometimes 100 meters just aren't enough, so in addition to expanding coverage, the Extender also extends the maximum distance between ZoneDAS and its active antennas to 200 meters. It does this by necessitating 2 CAT5e cables—one from BU to Extender, one from Extender to RU. But what if even 200 meters isn't enough? Or what if one doesn't need more RU connections and just wants the extra distance? Introducing the new Line Extender! This small, discreet

device takes just a minute to setup and doubles the length of any ZoneDAS connection, be it BU to RU, BU to Extender, or Extender to RU! Like the Extender before it, the Line Extender does this by attaching itself to the end of a connection and opening a port for a subsequent connection. Imagine the possibilities: with a BU—LE—Extender—LE—RU setup, a ZoneDAS or SlimDAS BU can now support active antennas up to 400 meters away! Almost enough to service the Burj Khalifa.

ZoneDAS One Fiber Converter Perfectly Carries Cellular Signal and Power Source

When a Remote Unit connects to ZoneDAS One Base Unit's fiber port directly, a Fiber Converter is required to carry the cellular signal on a fiber plus electric power, then feeding the signal and electric power to a Remote Unit via PoE.

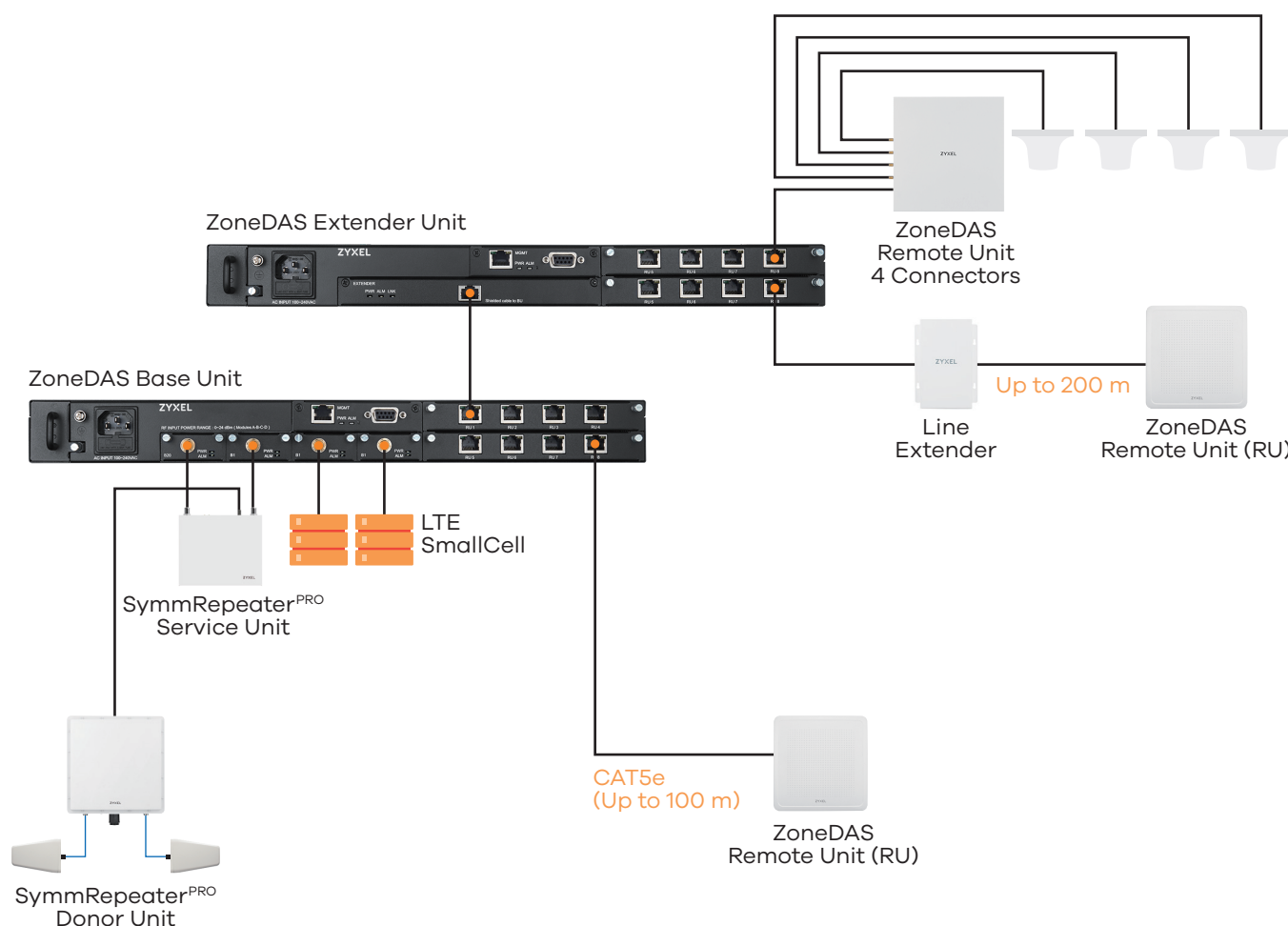
ZoneDAS One Fiber Converter loosens the restriction for system integrators to look for or identify power source nearby a Remote Unit. Simply connect with a CAT7 cable as the last wiring plus PoE technology, which makes ZoneDAS One Remote Unit easy installation a breeze.



Get Off-Air Signal Source for ZoneDAS Series

While ZoneDAS series is great at bringing wired BTS signal to all corners of a building with total fidelity, things look different when there's no wire from the BTS. Such scenarios do exist, such as when the building is too far from the grid, or when operators ask much for dedicated connections. In such cases, capturing signal off-air becomes the practical solution, and ZoneDAS series can do this, through the SymmRepeater^{PRO} for ZoneDAS family. Its two-level

signal amplification enables ZoneDAS to receive 1 bar donor signal in suburban or countryside area. It supports dual band, making it the perfect solution to "that missing BTS connection". It also connects to two RF slots, so each ZoneDAS family can have up to 2 sets of SymmRepeater^{PRO} for 4 off-air bands. Best of all, ZoneDAS family can support both BTS and off-air signal source, making the solution outstanding compared to other active DAS solutions on the market.



Repeaters: the next generation

Why Repeaters?

In much of the world, smartphones are now an indispensable part of life. And as more people rely on constant connectivity, it becomes increasingly essential for operators to offer ubiquitous indoor coverage. However, it is infeasible for an operator to install a traditional DAS solution wherever the signal is weak, so operators only invest in such solutions when there is high user density. For areas of lower user density, such as suburban areas and small office buildings, it makes practical sense to simply bring in mobile signal from the outside. For such applications, one solution stands as the quickest, easiest, and most cost-effective: the repeater.

A Poor Full-Bar Connection?

Sometimes, when a computer connects to the Internet through WiFi and the connection shows full bars, the Internet is still slow. This is often because the WiFi router itself has a slow Internet connection. Likewise, when one is inside a building and one's cell phone shows full bars, one can still drop calls. This is because the phone is actually connected to the operator through a repeater, and the repeater itself is broadcasting poor quality signal.

When a repeater receives an mobile signal, it will always rebroadcast a stronger but poorer quality signal. How much poorer depends on the repeater—and how far the signal has to travel from the antenna to the repeater. Long cable lengths between antenna and repeater can significantly weaken signals before they even reach

Can Repeaters Support 5G NR* ?

Traditional repeaters face a common challenge: because they rely on off-air signals to support locations where signals are often already weak, and because off-air signals are often lacking in signal quality, it is difficult for repeaters to support 4G or 5G NR data communication. But while 3G and 4G are equally adept at handling basic communications—talk, text, and modest Internet access—high speed Internet is only accessible through 4G or 5G NR. Though most traditional repeaters can boost 3G signals for basic tasks, these repeaters' inability to support 4G/5G NR cripples many of the Internet activities like Facebook, YouTube, and other media streaming services. All because these repeaters can't support up to 256 QAM signal quality for 5G NR high speed communication.

the repeater, reducing the signal-to-noise ratio (SNR) to a point where the repeater just amplifies a whole lot of noise along with the signal. It's like turning up the volume on a faded radio station.

This cable length issue is the problem that has limited traditional repeaters for so many years. This is why repeaters can never reach into lower basements, into deep buildings, into central courtyards, or to stories that are more than a few floors away from the donor antenna. There was just no way.

*: 5G New Radio (NR) is the latest generation of cellular networks. Both TDD and FDD communication system are utilized in 5G NR. In general, FDD is considered better for coverage, while TDD is better for capacity due to higher frequency lower coverage. Many mobile carriers are now planning to leverage the existing FDD frequency band such as 700 MHz, 900 MHz, 2100 MHz or 2600 MHz for 5G NR service to consumers.

Now There is a Way! Loaded with Features

Zyxel's innovative SymmRepeater towers above its peers and solves major issues that have stumped traditional repeaters for years. With its unique, dual-device symmetric architecture and cutting-edge patented technology, SymmRepeater achieves high-performance, high-throughput, and full compliance with 4G LTE and 5G NR in FDD communication.

It's all about the architecture. Reinventing the repeater, SymmRepeater sidesteps noise by amplifying signal before it travels through cable. Only SymmRepeater is capable of this, as it alone has an active antenna/repeater device at both broadcasting and reception ends. This innovative approach results in far cleaner signals, up to twice the operating range, and up to 4 times the coverage!

SymmRepeater's dual-symmetric architecture further allows it to guarantee end-to-end performance. Whereas traditional repeaters only operate within single-device confines and have no control over signal degradation during cable travel, SymmRepeater takes full control: antenna to antenna, end to end. This guarantees signal quality like no other can.

Another benefit exclusive to SymmRepeater is its amazing reach! Whereas traditional repeaters fail beyond 50 meters of cable travel, SymmRepeater has an amazing 400 meter reach—with no drop in signal quality! At last, one can bring service to deep underground levels, deeply recessed buildings, and even central courtyards blocked by tall structures!

Naturally Network Friendly, Automatically Echo Free

One final issue with cell phone repeaters is how they can seriously obstruct nearby base stations. Non-compliant repeaters often over-amplify their signals. This drowns out other signals and generates echoes. Both are serious issues that can force nearby stations to slow communications to a halt! Much has been done to treat these problems, including echo cancellation and manual calibration, but problems are mostly just reduced, not resolved. As a result, operators prohibit consumers from installing and operating any non-compliant repeaters at all.

Fortunately, SymmRepeater has it covered. Whereas traditional repeaters are stuck with short cables and the resulting echoes, SymmRepeater makes echoing irrelevant with its 400 meter reach! At closer distances, patented technology scales back signal strength automatically for maximum safe coverage. SymmRepeater also monitors base station input-power constantly, adjusting output power as necessary. Everything happens without interfering the networks, everything operates at peak efficiency—automatically, echo free.

Works Great with the Family

Repeaters are often good enough alone. After all, if there is a wired BTS connection, DAS will do. But if a building is too large for a repeater to cover, yet too far for an operator to care, it'll need functionality from both DAS and Repeater! That's why Zyxel created everything to work as a family. ZoneDAS and SlimDAS (its little sister)

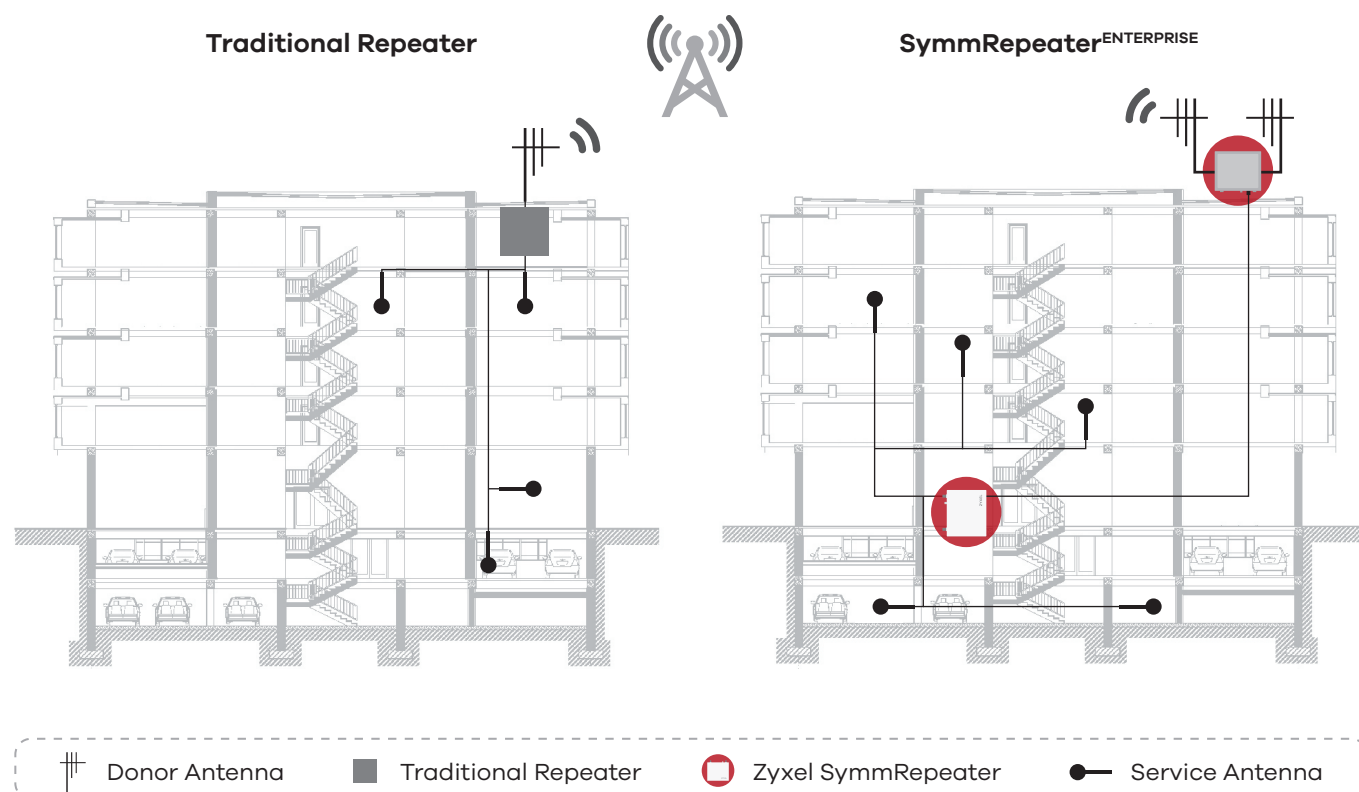
are designed to accept signal input from all Zyxel Repeaters in the absence of—or in combination with—a wired BTS connection. So if an operator provides a wired connection to a building but another does not, a single ZoneDAS or SlimDAS system will still keep everyone covered! That's family at work!



Traditional Repeater vs. SymmRepeater

Traditional repeaters cannot service areas located far from windows, as their single-device designs do not allow signal travel beyond 50 meters of total cable. In contrast, SymmRepeater's dual-symmetric design

guarantees end-to-end signal quality between its two devices, gives up to 400 meters of additional reach, and brings signal deep into the building—right where they're needed most.



SymmRepeater^{ENTERPRISE}

SymmRepeater may be the best there is at bringing off-air signal from one location to another, outside to inside, or one floor to the other, but not all businesses feature open-concept office spaces, and many may have smaller spaces that also require 3G/4G/5G NR FDD service. This is where SymmRepeater^{ENTERPRISE} comes in. An easy to set up, easily expandable version of the standard SymmRepeater, SymmRepeater^{ENTERPRISE} is specifically designed for SMBs. Building on SymmRepeater's dual-symmetric architecture, which transmits signals from Donor to Service over up to 400 meters, it features 4 Service outputs that each

transmit 17 dBm dual-band signals, enabling support for up to 4 passive antennas that can each cover 35x35 meters from up to 50 meters away, starting at the Service Unit. This makes it the ideal solution for companies with sectorized work spaces or multiple small rooms. Got more rooms than that? No problem! The SymmRepeater^{ENTERPRISE} also features two Expansion Ports, each of which can connect to a MultiSite Repeater that has exactly the same output connections as an SymmRepeater^{ENTERPRISE}, for a total of 8 or even 12 coverage areas! Now that's convenience!



SymmRepeater^{PRO}

Like SymmRepeater^{ENTERPRISE}, the new SymmRepeater^{PRO} starts with SymmRepeater's super high 100 dB gain, dual bands, digital channelization, and incredible 400 meter signal delivery distance (Service ↔ Donor). Also like the SymmRepeater^{ENTERPRISE}, it is designed to be a signal provider for passive DAS. But unlike other SymmRepeaters, this one is called "Pro." Why? Because it's designed to be professionally installed, and because of its wonderful flexibility. Whereas the Enterprise has four 17 dBm outputs that each provides a coverage area, the Pro features two 23 dBm output that can support

a whole series of passive antennas, the structure of which can be freely designed. With SymmRepeater^{PRO}, Donor signal from the ground floor can service the 30th or 40th floor, outside signal can be positioned atop elevator shafts and provide service inside elevators, off-air signal can reach deep underground, be it basement level 15 or a wine storage tunnel, and even urban perimeter signal can service wilderness areas on the other side of the hill. If other SymmRepeaters don't seem to match your scenario, this is where you should look.



MultiSite Repeater

The MultiSite Repeater is unique among Zyxel's repeater lineup. As the name implies, the MultiSite (MS) Repeater is meant for multi-site coverage, where a "site" refers to a coverage area or a cluster of closely situated coverage areas. To service one site, the MS Repeater would extend a single cable to an off-air signal source and receive up to 3 bands of signals via antennas, then have up to four 14 dBm tri-band outputs that each services a 35x35 m area up to 50 meters away. That's a total of 3,600 square meters, covered. To service a second site, a second MS Repeater would connect its input port to the first MS Repeater's Expansion Port. The first MS Repeater will provide the second with a clear tri-band signal from donor antenna up to 50 meters away, and the latter can use it to cover its own zone through either

a LMR400/CFD400 equivalent coaxial cable up to 150 meters. A third site can be covered in the same way, via the second Expansion Port on the first MS Repeater.

Unlike SymmRepeaters, the MultiSite Repeater's 75 dB gain is just great but not amazing. Neither will it transport signal up to 400 meters away. However, it supports 3 bands, can digitally channelize each of its bands, and provides a cost-efficient, highly expandable alternative for covering locations that are not that far from the off-air signal source. The MultiSite Repeater works great alone and is a perfect complement to the SymmRepeater^{ENTERPRISE}, for donor signal challenging areas.



MagicOffice Repeater

MagicOffice Repeater is a quad-band repeater perfect for improving cellular coverage in smaller offices and commercial venues. It excels in this role through its ability to connect to 4 bands simultaneously and cover up to 900 m² of floor space. The MagicOffice Repeater provides one to four 10 dBm quad-band outputs, each servicing a 15 x 15 m² area. Be it shops, warehouses, or smaller offices, MagicOffice Repeater means great, reliable coverage.

Stemming from Zyxel's patented Echo-Avoidance Technology, the MagicOffice Repeater automatically

detects echoes and reduces the power output accordingly, plus its rich repeater features include real-time isolation detection, downlink sleep, and uplink mute functionalities. Together, these innovations enable MagicOffice Repeater to extend mobile network signals perfectly. Interference free for carrier's mobile networks.

MagicOffice Repeater has intuitive notification LEDs that enables worry-free rapid installation with soft coaxial cables for system integrators, meanwhile it guarantees outstanding voice and data quality for business venue owners.



Comprehensive product family

Scalability, flexibility, and deployability—all are features hardwired into Zyxel's IBS family. Not only does this product series cover everything from short to very tall buildings, it also supports floors of all sizes easily,

from 10,000 m² to 20,000 m² to even 160,000 m². Highly versatile and efficient, the Zyxel IBS family brings “back to life” countless previously unserviceable buildings—and ensures both profit and deployability.

ZoneDAS One is Perfect for Neutral Host or Multi-carriers Co-location Needs

5G-NR is essential for next generation mobile experiences. With up to twenty-fold bandwidth compared to 4G, 5G-NR also fuels neutral host or multi-carriers co-location development. Stemmed from Zyxel's Ethernet Active DAS technology, ZoneDAS One supports up to 320MHz downlink in FDD mode and 400MHz downlink in 5G-NR TDD mode, making it a perfect solution for neutral host or multi-carriers co-location scenarios.

ZoneDAS One Base Unit together with 8 Expanders can support up to 64 Remote Units, which can cover up to 160,000 M2 floor space. With CAT7 and single-mode optical fiber cabling support, ZoneDAS One family can propagate cellular signal from one building to another remote one without problem. ZoneDAS One family is the perfect in-building cellular solution for complex buildings/offices, stadiums, or shopping malls.

ZoneDAS is Great for Middleprise Needs

With cutting edge technology that enables the use of CAT5e cables for transferring multiple RF signals, ZoneDAS is the affordable premium DAS for today's needs. It features 4 RF slots and up to 80 MHz system bandwidth with 4 channels/bands allowing support for single or dual carriers scenarios. ZoneDAS Base Unit controls up to 8 remote units (RUs) natively. With each RU capable of covering 50 m x 50 m (2500 m²) and a 100 m reach from the ZoneDAS base unit to each RU, one ZoneDAS system can easily cover 8 floors and 20,000 m², which represents most small to medium sized buildings. In addition, ZoneDAS features quick, easy deployment, excellent signal quality, remote management, unrivalled scalability, and much, much more. ZoneDAS is your ticket to ubiquitous coverage for office buildings, apartment/condos, factories, hospitals, and more.

SlimDAS is Best for Smaller Needs

The little sister in the ZoneDAS family, SlimDAS has less ports and a slimmer profile for slimmer budgets and slimmer needs. Designed to be everything ZoneDAS is, but downsized, SlimDAS offers the same great performance, same great feature set, and same great upgradability. SlimDAS features 2 RF slots and up to 40 MHz system bandwidth to support 1 or 2 channels/bands. It also controls up to 4 remote units (RUs) natively. By itself, one SlimDAS can easily cover 4 floors and 10,000 m², making SlimDAS the best budget-conscious choice for small buildings. With Extenders, it can cover 8 times the area, up to 80,000 m² — or 860,000 square feet!

The Extender or Expander Makes ZoneDAS Series Bigger

The strong arm of the ZoneDAS series, the ZoneDAS Extender or ZoneDAS One Expander extends ZoneDAS series coverage to a maximum of 160,000 square meters—or 1.7 million square feet! Along the way, it also extends the maximum distance between ZoneDAS series and its active antennas to 200 meters—with just CAT5e or CAT7 cabling! Whereas the Base Unit connects up to 8 remote units (RUs), each Extender connects as an RU and adds 8 additional RU's, expanding capacity to 64 remote units! This extends ZoneDAS series coverage to tens of floors, providing indoor coverage for all but the largest buildings. Of course, all this is tamed with remote management and real-time reporting.

SymmRepeater Goes Where Operators Don't

The long ranger in the ZoneDAS series, this amazing little product solves all the usual repeater shortcomings and enables superior off-air operation for the entire ZoneDAS series! With a multi-device symmetrical architecture that gives each antenna its own local amplifier, SymmRepeater achieves outstanding signal quality that maintains signal quality, 400 meters into (or under) the building, guaranteed! In addition, it offers dual band, echo free operation, with 2 times the range and 4 times the coverage at both ends. It's only available here at Zyxel. There's nowhere else.

MultiSite Repeater is Perfect for Multi-floor Buildings

MultiSite Repeater is outstanding at its extendable capability for multi-floor residential and commercial buildings. Expand up to 7 nodes in 3 tier architecture, MultiSite Repeater extends cellular signal into deep dead zone areas up to 300 meters away in the building. For outdoor donor signal challenged areas, MultiSite Repeater is able to work with SymmRepeater^{ENTERPRISE} to deliver superior voice and data quality. MultiSite Repeater is the perfect answer to solve poor mobile signal quality and coverage issues. Better customer service quality, higher productivity, more revenue!

MagicOffice Repeater Eliminates Poor Signals

MagicOffice Repeater is a quad-band repeater and supports coverage space of up to 900 square meters. It is the best solution to extend mobile signal into small offices, café, bars, restaurants or shops. MagicOffice Repeater has intuitive LED signal indicator that enables worry-free rapid installation with soft coaxial cables for system integrators, along with guaranteed outstanding voice and data quality for business venue owners.

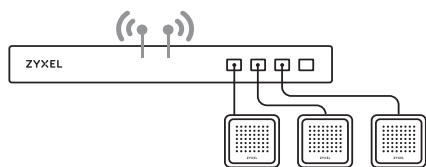
Production selection

 <p>40,000 m²</p>	<ul style="list-style-type: none"> • ZoneDAS One Family <ul style="list-style-type: none"> - System bandwidth up to 400 MHz Download in 5G-NR TDD mode - Up to 64 Remote Units  <ul style="list-style-type: none"> • ZoneDAS Family <ul style="list-style-type: none"> - System bandwidth up to 80 MHz - Up to 64 Remote Units 	 	<ul style="list-style-type: none"> • Convention Centers • Shopping Malls/Plazas • Complex Buildings/Office • Stadiums • College Campuses
 <p>10,000 m²</p>	<ul style="list-style-type: none"> • MultiSite Repeater Cascaded up to 7 nodes  <ul style="list-style-type: none"> • SymmRepeater^{ENTERPRISE} + MultiSite Repeater Up to 6 nodes 	 	<ul style="list-style-type: none"> • Hospitals • Basements • Hotels, Resorts • Warehouses • Apartments High-Rises • Factories
 <p>2,500 m²</p>	<ul style="list-style-type: none"> • MagicOffice Repeater 		<ul style="list-style-type: none"> • Small Shops • Small Offices
 <p>Special Forces</p>	<ul style="list-style-type: none"> • SymmRepeater^{PRO} • SymmRepeater^{ENTERPRISE} 		<ul style="list-style-type: none"> • Elevators • High Floor Areas • Tunnels

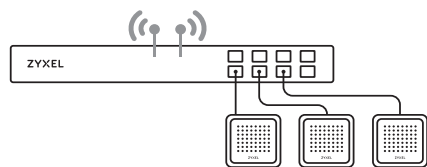
Specifications

Building scale

Product	SlimDAS	ZoneDAS
Modes	BTS/Off-Air (Mixable)	BTS/Off-Air (Mixable)
Building scale	2,500 ~ 10,000 m ²	2,500 ~ 20,000 m ²
Number of bands	Up to 2	Up to 4
Supported systems	2G, 3G, 4G, 5G FDD	2G, 3G, 4G, 5G FDD
System total bandwidth (MHz)	40	80
BTS RF input power range (mW)	0 ~ 250	0 ~ 250
Max number of Remote Units	4	8
FDD bands	B1/B2/B3/B4/B5/B7/B8/B12/B13/ B17/B20/B28	B1/B2/B3/B4/B5/B7/B8/B12/ B13/B17/B20/B28
TDD bands	B38/B39/B40/B41 (BTS mode only)	B38/B39/B40/B41 (BTS mode only)
Application Scenarios		

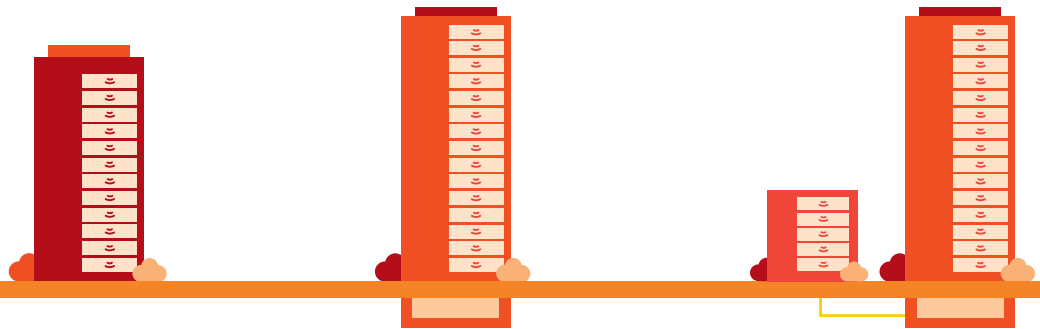


5,000 ~ 10,000 m² floor space
For SMB/residential buildings that require 2 to 4 signal coverage areas, optionally with off-air signal sources.



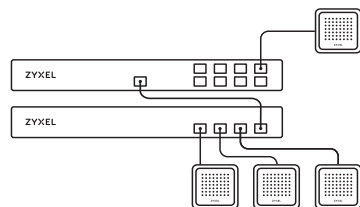
10,000 ~ 20,000 m² floor space
For SMB buildings that require 5 to 8 signal coverage areas, optional with off-air signal sources.

Building scale



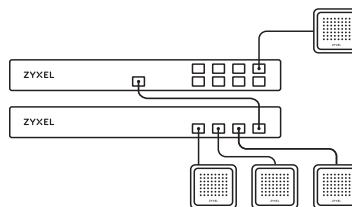
Product	SlimDAS + Extender	ZoneDAS + Extender	ZoneDAS One + Expander
Modes	BTS/Off-Air (Mixable)	BTS/Off-Air (Mixable)	BTS/Off-Air (Mixable)
Building scale	50 m x 50 m x 32	50 m x 50 m x 64	50 m x 50 m x 64
Number of bands	Up to 2	Up to 4	Up to 4
Supported systems	2G, 3G, 4G, 5G FDD	2G, 3G, 4G, 5G FDD	2G, 3G, 4G, 5G FDD/TDD
System total bandwidth (MHz)	40	80	320 MHz DL/250MHz UL (FDD mode); 400MHz DL/280 MHz UL (5G-NR TDD)
BTS RF input power range (mW)	0 ~ 250	0 ~ 250	0 ~ 250
Max number of Remote Units	32	64	64
Max number of Extenders	4	8	8
FDD bands	B1/B2/B3/B4/B5/B7/B8/B12/ B13/B17/B20/B28	B1/B2/B3/B4/B5/B7/B8/B12/ B13/B17/B20/B28	B1/B2/B3/B4/B5/B7/B8/B12/ B13/B17/B20/B28/N78
TDD bands	B38/B39/B40/B41 (BTS mode only)	B38/B39/B40/B41 (BTS mode only)	B38/B39/B40/B41 (BTS mode only)

Application Scenarios



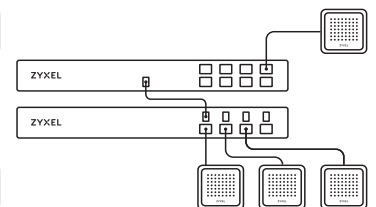
10,000 ~ 80,000 m²
floor space

For residential/commercial buildings that require more than 4 signal coverage areas.



20,000 ~ 160,000 m²
floor space

For commercial/industrial buildings that require more than 8 signal coverage areas.



20,000 ~ 160,000 m²
floor space

Support copper and optical fiber interfaces for large convention centers, complex buildings/offices or shopping malls that requires multi-carriers co-location or neutral host deployment.

Building scale



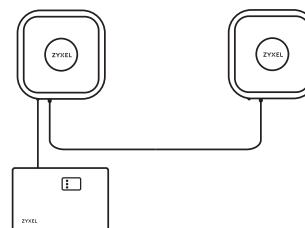
Product	SymmRepeater ^{PRO}	SymmRepeater ^{ENTERPRISE}
Modes	Off-air mode	Off-air mode
Max. coverage space	2,500 m ²	> 3,600 m ²
Numbers of bands	2 (selectable)	2 (selectable)
Support systems	2G, 3G, 4G, 5G FDD	2G, 3G, 4G, 5G FDD
System total bandwidth (MHz)	Up to full-bandwidth relay	Up to full-bandwidth relay
Operator Service Specific (Channelized)	Yes	Yes
Cascade	No	Yes (connect to MultiSite Repeater)
Number of donor antenna ports	2	2
Number of service antenna ports	2	4
Number of expansion ports	No	2
FDD bands	B1/B2/B3/B4/B5/B7/B8/B12/ B13/B17/B20/B28	B1/B2/B3/B4/B5/B7/B8/B12/ B13/B17/B20/B28

Application Scenarios



2,500 m² floor space

SymmRepeater^{PRO} is built for mini Passive DAS design for professional IBS system integrators. It is a perfect solution for high-rise building floor, elevator or tunnel scenarios that are very far from the signal source. Or camping grounds, towns/villages at mountains wish to improve signal coverage.



> 3,600 m² floor space

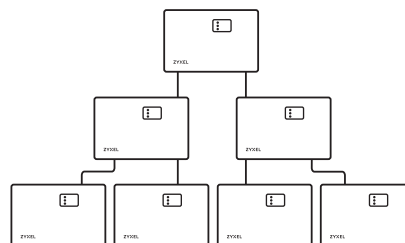
SymmRepeater^{ENTERPRISE} is installer-friendly for IT-based system integrators. It is an ideal solution for elevators, tunnels, or residential buildings that require off-air signal coverage reaching into higher floors, lower basements, or inner areas. Together with MultiSite Repeater for expansion, it extends 1-bar donor signal to multi-floor scenarios where outdoor cellular signal is difficult to reach.

Building scale



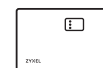
Product	MultiSite Repeater	MagicOffice Repeater
Modes	Off-air mode	Off-air mode
Max. coverage space	> 3,600 m ² x 7	900 m ²
Numbers of bands	3 (selectable)	4 (fixed)
Support systems	2G, 3G, 4G, 5G FDD	2G, 3G, 4G, 5G FDD
System total bandwidth (MHz)	Up to full-bandwidth relay	Up to full-bandwidth relay
Operator Service Specific (Channelized)	Yes	Yes
Cascade	Yes (up to 7 MultiSites. If working with SymmRepeater Enterprise, up to 6 MultiSites)	No
Number of donor antenna ports	1	1
Number of service antenna ports	4	4
Number of expansion ports	2	No
FDD bands	B1/B2/B3/B4/B5/B7/B8/B12/B13/B17/B20/B28	B1/B3/B8/B20 or B1/B3/B8/B28

Application Scenarios



3,600 m² x 7 floor space

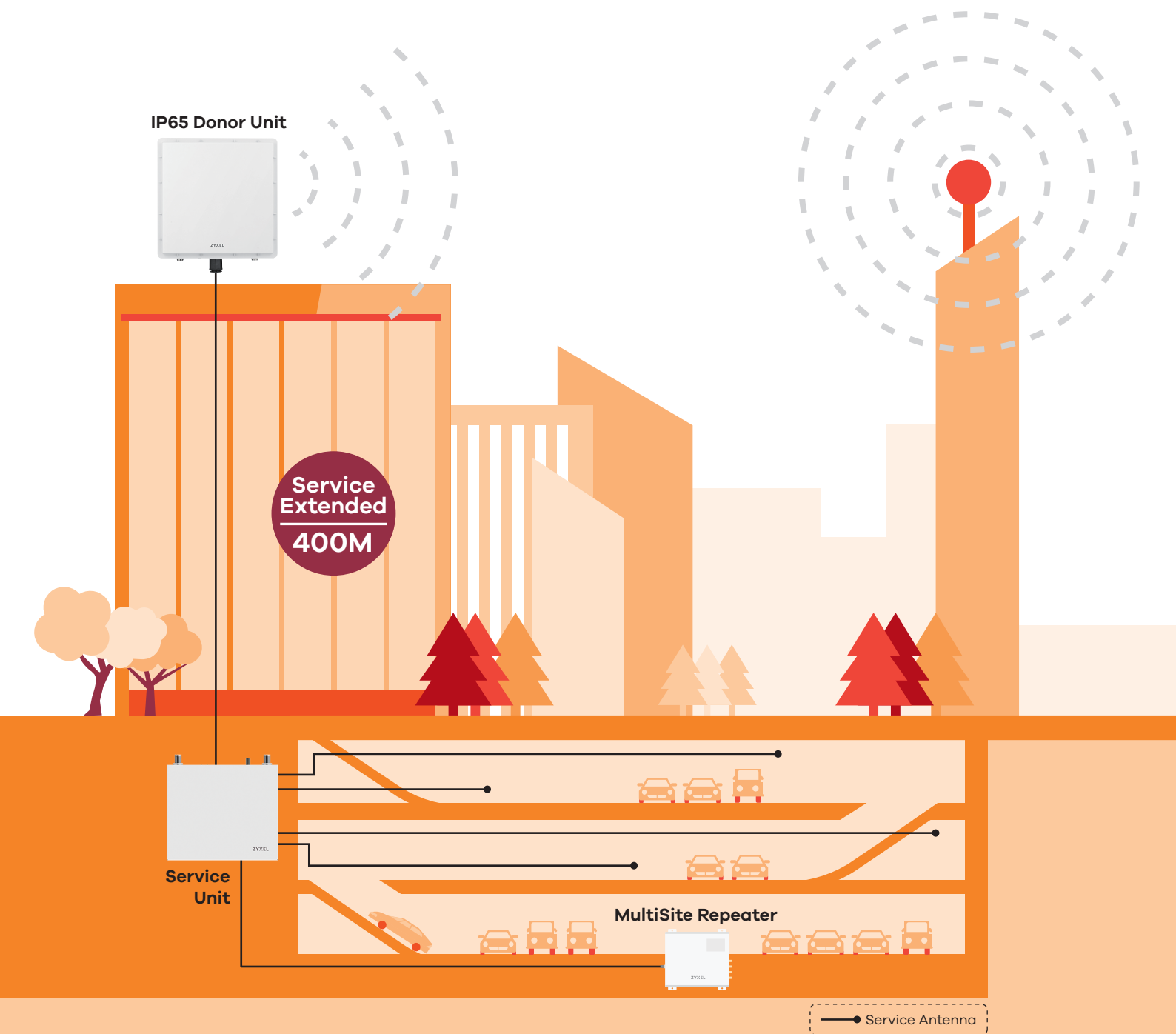
For multi-floor scenarios, MultiSite Repeater features with 3 bands support and built-in 2 expansion ports capable of cascading up to 7 nodes, ideal for multi-floor deployment, e.g. shopping malls, residential buildings, multi-floors offices/basements, hospitalities and warehouses.



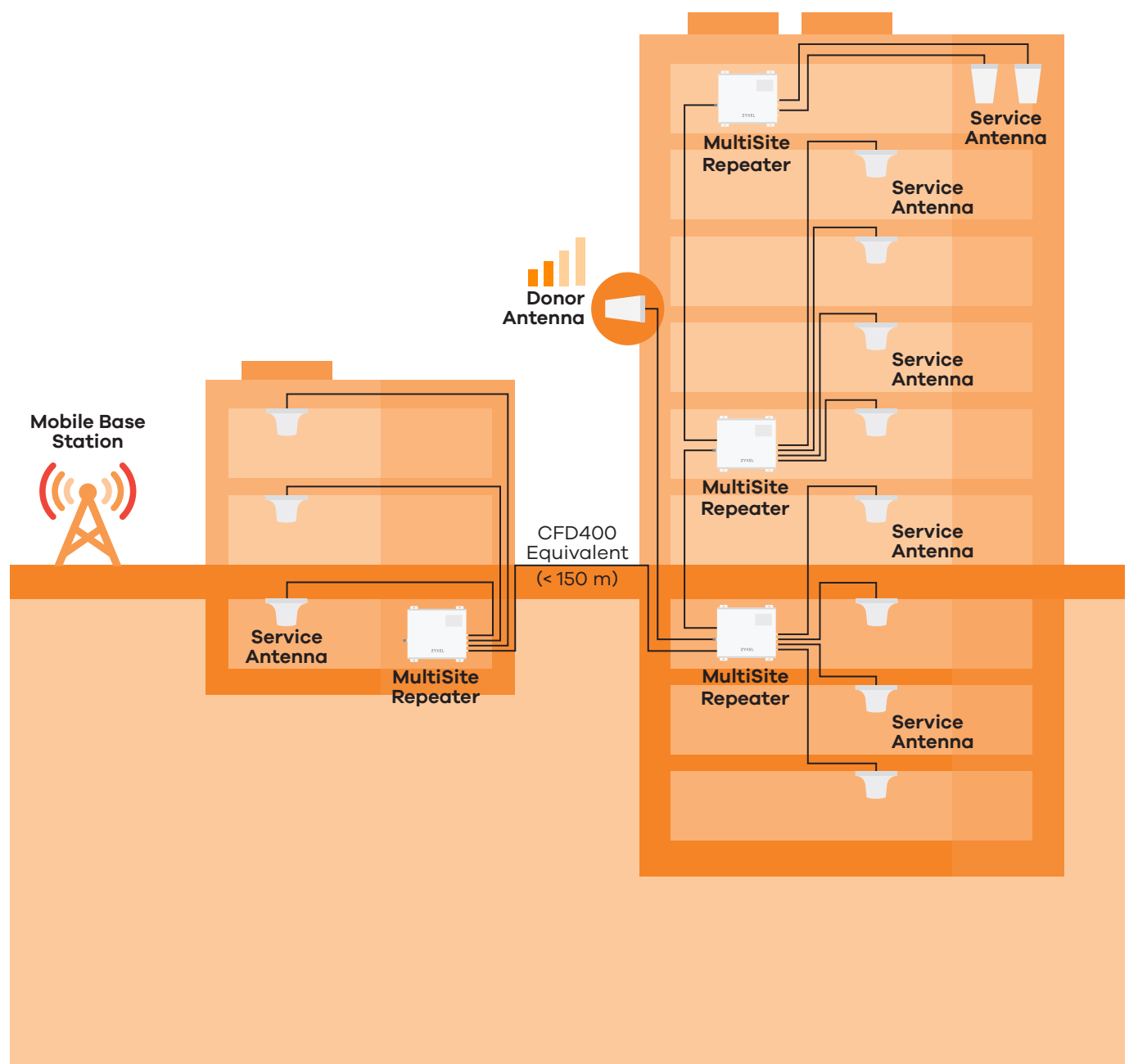
Up to 900 m² floor space

MagicOffice Repeater is a quad-band repeater, ideal for small offices, bars, restaurants, or shops requiring improved indoor cellular coverage.

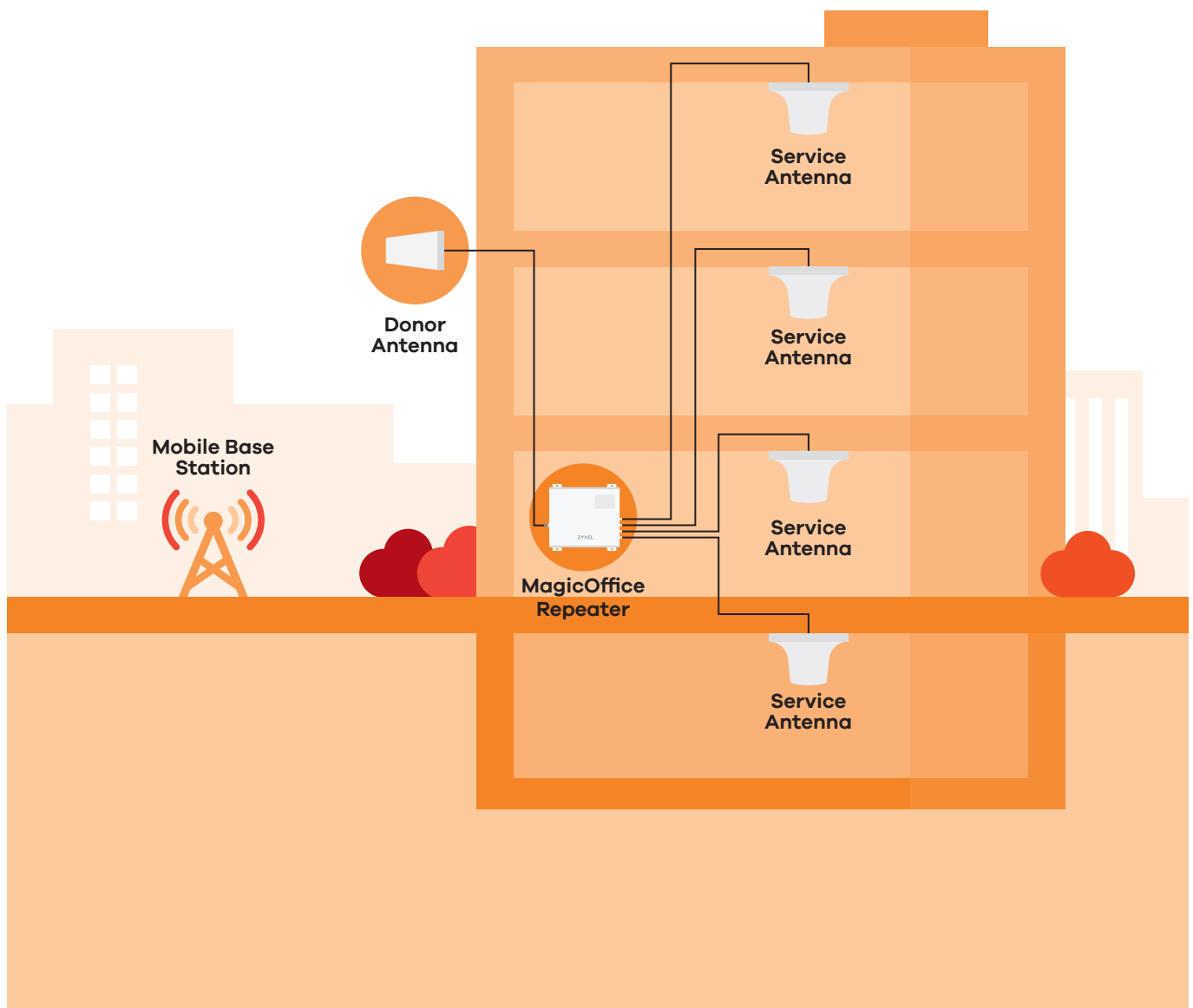
SymmRepeater^{ENTERPRISE} Application Scenario



MultiSite Repeater Application Scenario



MagicOffice Repeater Application Scenario





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For more product information, visit us on the web at www.zyxel.com

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