

SMALL CELL, PASSIVE & ACTIVE DAS

What are SMALL CELLS DAS:

- Metrocells, Femtocells, Cell Spots & Network Extenders
- "Small Cells" are a class of devices that act as mini cell towers. Different carriers have different names for these devices: AT&T calls them *Metrocells*, Verizon calls them *Enterprise LTE Network Extenders*, while T-Mobile calls them *Cellspots*.
- No matter what they're called, the technology is the same. Unlike an Active or Passive Distributed Antenna System (DAS), Small Cells don't require a signal source to connect back to the macro cell network. Instead, they generate their own cellular signals and communicate back to the service provider over a broadband internet connection.



Cell Tower

Coverage area: 1-2 km
Capacity: Thousands of users



Enterprise Small Cell

Coverage area: 15k to 100k sq ft
Capacity: Hundreds of users

Advantages of a Small Cell coverage solution:

- 1. Fast deployments**
 - Small cells can be brought online quickly thanks to streamlined provisioning in coordination with carriers.
- 2. No donor signal required**
 - Unlike with a [Passive DAS](#) system, Small Cells work even if you have no outdoor signal at all.
- 3. Easily upgradable**
 - As Small Cell technology and the underlying cellular technology advances it's easy to upgrade your hardware and stay ahead of the latest changes.



What is Passive DAS?

- Passive Distributed Antenna Systems (DAS) amplify signal from a "donor" location—usually on the roof of the building—and rebroadcast the signal inside the building. The donor signal is amplified by a bi-directional repeater, which is connected to a network of passive components, including coaxial cable, splitters, couplers, and antennas.

Advantages of a Passive DAS solution.

1. No carrier approval required

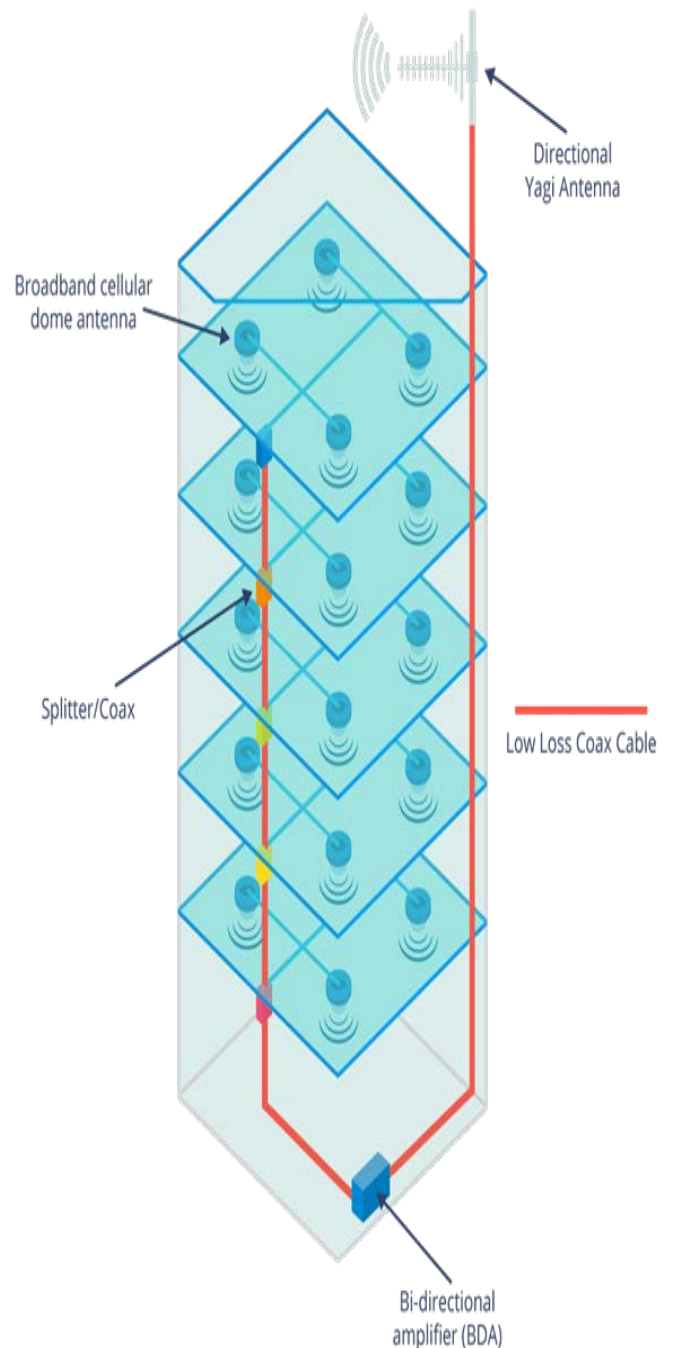
- Because passive DAS is typically rebroadcasting the macro network's signal, there is less need for carrier approval and coordination. In fact, if the amplifier systems are classified as "consumer" boosters by the FCC, they can be installed without any pre-approval or coordination with carriers.

2. Fast deployments

- Since carrier approval is often not required, a Passive DAS system can be designed and implemented very quickly—we've gone from initial contact to full implementation in as little as 5 days.

3. Works with all carriers

- Passive Distributed Antenna Systems are typically able to amplify signals from all carriers in a given area without needing any extra equipment. The donor antennas and amplifiers filter and amplify signal for every cellular carrier licensed in a particular area as long as there is sufficient signal where the donor antenna is installed.



What is an Active DAS?

- Active Distributed Antenna Systems use fiber optic cable to distribute signal between a centralized signal source and “remote nodes” placed around a building. The signal source is typically a “head-end” that combines signals from multiple carriers, which each need to provide their own signal source to the system, typically via their own fiber backhaul.
- When large capacity is needed, like in a football stadium, airport, High-Rise office building an active DAS system is typically used. A state of the art active system can cover virtually any size of building and up to any capacity. Some of the most ambitious active DAS systems have been designed to cope with the load of over 70,000 Superbowl attendees, or the 2.47 million sq. ft. of coverage for 170,000 convention attendees.
- Coordination and approvals with carriers are required as well any local requirements. **Gives the optimum service as it actually turns building in to a “cell site”.**

