What is a DAS System? Distributed Antenna System Solutions

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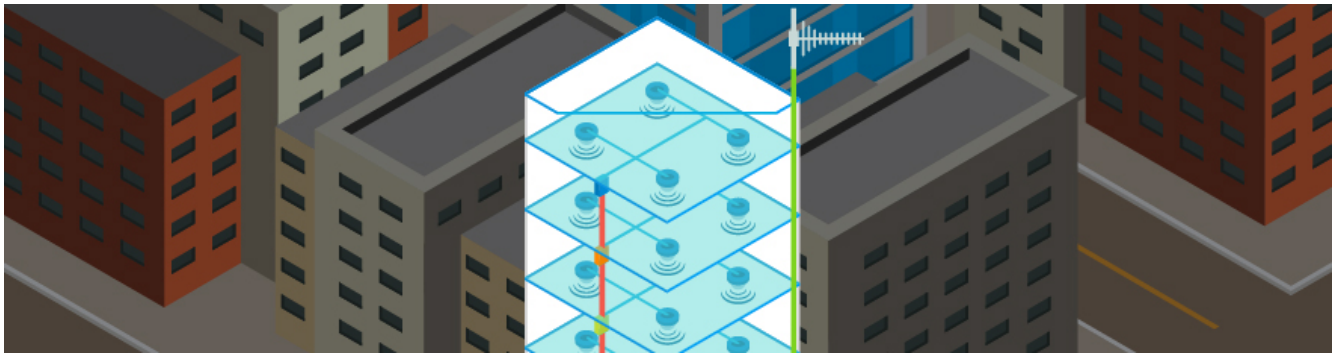
A distributed antenna system is a network type in which an array of separate radio heads is used to provide wireless connectivity to nearby mobile users. These radio heads are connected to a central hub that houses base stations from cellular carriers, and it is these base stations that power the radio heads.



Simply put, a DAS network is equivalent to a traditional cell tower (it can also be thought of as a "giant" **small cell**, depending on how you choose to look at it), and is capable of providing internet access to thousands of customers from different wireless carriers.

However, there are some important differences between distributed antenna systems, traditional cell towers, and other network technologies like small cells that developers need to be aware of, as knowing these differences will help them understand which network solution is right for them.

Why Choose Distributed Antenna Systems?

It's no secret that the world's dependency on mobile connectivity is increasing, and with it, there's a growing need for faster and more reliable high-speed networks.

In the past, cellular connectivity was expanded with the construction of new cell towers(macrocells), but as our cities become more congested with office buildings, shopping centers, sports stadiums, etc., traditional cell towers are no longer the preferred solution.

Indeed, traditional cell towers are expensive, require an inordinate amount of space, and are not as efficient at delivering wireless connectivity to mobile customers.

As it turns out, Distributed Antenna Systems excel in all of these areas.

antenna being no bigger than that of a small backpack or duffle bag.

Because of this size difference, network developers are able to deploy DAS networks in a wider variety of locations (provided there is space for the central hub), like sport stadiums and multi-tenant office buildings.

In fact, sports stadiums are one of the more popular locations for DAS networks, with companies like Telcos and many others making great efforts to ensure that patrons are able to text, make phone calls, and use social media while watching their favorite sports teams.

To achieve the same level of connectivity with traditional cell towers, you would not only need multiple towers to support the thousands of fans in attendance, but the towers themselves would have to be relatively close to the stadium to ensure that the connection is reliable and fast.

Given that many sports stadiums are surrounded by parking lots, businesses, hotels, highways, etc., it's easy to see where traditional towers fall short.

And while small cells are an option for sports stadiums looking to densify cellular availability, DAS networks still come out on top in terms of efficiency and carrier support.

Both small cells and distributed antenna systems provide high-speed internet access, but unlike small cells, the antennas of a DAS network don't need direct access to backhaul; instead, only the head-end of the DAS network needs to be connected to the underlying fiber.

Additionally, DAS networks are built with multi-carrier support in mind, which means that if a cellular carrier wants to expand connectivity for customers visiting the stadium, they merely have to install their own base station at the central hubs.

Small cells (for the time being) typically only support a single carrier at a time, which can prove problematic, especially since small cells require both dedicated **backhaul** and power.

However, this isn't to say that distributed antenna systems are the perfect solution; indeed, DAS networks do come with their own drawbacks.

Disadvantages of DAS Networks

Although DAS networks have a lot to offer, they still come with some important drawbacks.

First, there's the issue of cost.

For smaller indoor and outdoor areas that receive a few hundred mobile users at a time, small cells still make the most sense, especially since small cells require very little maintenance or oversight to operate.

Second, while it's true that the radio heads of a DAS network don't need to be connected to their own backhaul, DAS architecture mandates that they still need to be connected to the central hub (through fiber), which can prove more troublesome then one might think.

Even though most buildings are built with cable management in mind, these existing conduits are often unsuitable for fiber optics, meaning that walls, stairwells, and even rooftops will have to be drilled to create fiber pathways.

This type of construction isn't usually a big deal, but in rare cases, these modifications can cause serious harm to a building's structural integrity, which is a risk that other network types don't carry.

Finally, DAS networks suffer from issues of upgradeability.

When new technology becomes available, it is more difficult to upgrade a DAS network, as the process usually involves swapping out base stations or making physical modifications to the radio head. While swapping **base stations** isn't typically a huge deal, making physical modifications to a few hundred radio heads that are part of the array can be both time consuming and expensive.

The Future of DAS Technology

As distributed antenna systems and small cells evolve, the scenarios in which they can be implemented will begin to overlap with greater regularity.

For example, a big advantage of distributed antenna systems is their built-in support for multiple carriers; however, small cells, like the ones being developed by ip.access , will soon have multi-carrier support, which will make it easier for developers to utilize small cells in locations like sport stadiums and airports.

As this technology matures and becomes main stream, it is likely that we'll see more small cell implementations in locations where DAS networks once reigned supreme.

However, this doesn't mean that DAS networks will be phased out. On the contrary, DAS equipment and network technology are also evolving in important ways, one of which being its ability to be implemented in smaller indoor and outdoor locations typically reserved for small cell networks.

Indeed, by using a series of repeaters and signal amplifiers, DAS networks are able to amplify an existing cellular signal and distribute it amongst the network's radio heads, providing nearby mobile users with

While traditional cell towers may seem like they're headed for extinction, macrosites like traditional cell towers still have a role to play, especially in rural areas where land is still readily available.

1. **https://www.news.com.au/technology/telcos-offer-coverage-boost-for-sports-fans-at-aussie-stadiums/news-story/6d1c30c019159587e3b407b3346af833**
2. **https://www.rcrwireless.com/20170531/business/neutral-host-multi-carrier-small-cell-tag17**

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