

The Future DAS: Smaller, Simpler, Speedier

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Sleek, efficient and easy to use. Buzzwords, to be sure, but ones which accurately describe what a distributed antenna system (DAS) will undoubtedly look like in the very near future. That's because, with an increasing reliance on data-hungry mobile applications, enterprise demand for in-building networks will compel DAS to become less complex and more IT friendly.

Today's DAS solutions are powerful, scalable and highly effective at delivering pervasive wireless coverage and providing necessary capacity indoors and across large areas, particularly to expansive or fortified places that cannot be covered by the macro network. They are also very specialized systems requiring specific expertise and a substantial investment in money and man-hours to deploy. Fortunately, this level of complexity is changing. On the RF source front, we are already witnessing the initial adoption of small cell technology - compact access points which complement DAS installations but are cheaper for wireless operators to fund.

The desire for smaller, more intuitive and capable systems is driving DAS' next phase.

The Rise of DAS Leads to Changes

DAS is gaining in popularity in large part because of increased smartphone and tablet use. Today, more people are consuming more wireless data than ever before, across more networks (including Wi-Fi, 3G, HSPA+ and 4G LTE) and carriers. A recent report by GigaOM reveals current upload speeds from LTE-enabled devices across the nation's largest wireless networks averaging around 8 Mbps and download speeds reaching 17.4 Mbps. As impressive as these speeds are, they are expected to continue to climb, perhaps eventually reaching 100 Mbps across smartphones, tablets and other mobile devices.

The growing demand for data provided at faster speeds and higher volumes has fostered an increasing need to support multi-service, multi-operator, high-capacity broadband data within the enterprise. Businesses are seeking solutions to help deliver consistent wireless coverage throughout their facilities so employees can be more productive and guests - particularly in hotels, airports and other public venues - have a more enjoyable experience. This push for pervasive coverage is spurring DAS adoption.

DAS Downsizing

As the need for DAS increases, so does the need for the systems to become more efficient, intuitive and manageable. In the near future, we'll begin to see smaller solutions. Just like the smartphones and tablets they enable, these smaller

solutions will also be more powerful than their larger predecessors.

In other words, the need for DAS is growing, but before this growth accelerates, the DAS equipment will inevitably downsize. Today, supporting multiple operators along with all of their services, including voice and high-capacity broadband data, can require significant equipment and infrastructure in telecommunications/network closets. But space is often limited. This has led DAS vendors to consider new ways to support the growing need for added capacity and support other enterprise services while reducing the overall hardware footprint. As a result, DAS is becoming increasingly compact – but also more capable and intuitive.

Plug-and-Play DAS

Although large-scale DAS deployments are multiplying, the future of DAS lies in simplicity.

In the near future, most buildings, particularly large structures, will need DAS. As this need grows, it will be necessary to simplify DAS and make it easier to install. Since most IT administrators are familiar with WLANs, it should be the goal of the DAS provider to supply equipment that offers the same ease of installation. As such, we will begin to see DAS take on the features of self-organizing networks (SON), which are easy to plan, manage and configure. As this progression commences, DAS will become operable with macro networks' SON algorithm for self-organizing, self-healing and self-commissioning. After all, network administrators already have enough on their plate and will naturally gravitate toward something that makes their lives easier. This turn toward simplicity is already happening. DAS that plug directly into WLAN/LANs to deliver in-building cellular services over existing CAT 5/6 cables are available today.

More capable DAS

The need for greater capacity and bandwidth also impacts DAS cabling. Current solutions mostly use a combination of single mode fiber in the backbone and coax in the horizontal, but as broadband data usage grows, it signals a move toward all-fiber solutions, from the headend equipment interfacing with signal source all the way to interior antennas.

In the next few years, the value of optical fiber will rise significantly. Fiber adoption in DAS networks offers the enterprise the same benefits it currently enjoys in both LAN and data centers. Fiber provides the ability to transmit larger amounts of data, faster and further. With fiber all the way to the active antenna, there are no losses from coaxial cable, resulting in a more efficient and manageable system. By 2013, LTE will be the cellular standard as more and more users consume massive amounts of data. DAS needs to connect into the best possible medium to transport this data, and that will be fiber, which offers faster speeds and increased capacity over larger areas and longer distances.

At What Cost?

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The investment in fiber over copper is, at least to this point, somewhat more expensive, but the cost per service over fiber will eventually be much smaller and more cost-effective as capacity increases. Today, the cost of a DAS is calculated in dollars per square foot, but as data consumption increases, operators will likely begin measuring DAS cost by dollars per Mbps. Fiber can support much greater data capacity and, thus, should be considered more cost-effective. Regardless, to expand beyond the current market for DAS and ensure its viability for smaller businesses, providers are going to need to keep prices attractive without cutting corners.

The future of DAS is not bigger and more complex; it is smaller, simpler, speedier, and more capable. If DAS providers can master all of those while still offering a powerful solution, organizations of all sizes will be able to take advantage of the many benefits that multi-operator, multi-technology, extendable, fiber-based DAS has to offer.

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