

Extending wireline revenue streams with FTTx and DAS

Wireline carriers face the challenge of supporting extensive copper and fiber networks in an era of declining wireline revenues. Customers are transitioning to wireless devices and services, and wireless service providers need far more points of presence in order to serve their need for higher data rates and more ubiquitous coverage. Wireline carriers are in an ideal position to provide infrastructure for wireless providers. By incorporating distributed antenna systems (DAS) with their FTTx or PON networks, wireline carriers can host wireless operator traffic and participate in the rapidly growing wireless revenue stream.

Carrier challenges and opportunities

Wireline carriers have invested billions in bringing fiber to the node and fiber to the premises in cities and suburban neighborhoods. But the payback from these investments is being stretched out because of the competitive landscape and convergence of technologies, resulting in subscriber churn to wireless services. One carrier reported wireless subscriber growth of 12% from 2009 to 2010. In the same period, their wireline business realized a subscriber loss of 9.9%.

At the same time, wireless service providers are building out 4G networks to deliver higher data capacity and more reliable services. Because of the need for capacity and high data rate services, cell site coverage continues to shrink. And the only way to deliver high-performing, ubiquitous 4G services is to increase the number of signal sources in the network by 300-500 percent. It isn't practical or cost-effective to add that many macro base stations to the network. Wireless service providers will look for small-cell solutions to fill in gaps in macro coverage and capacity.

DAS is a primary solution for creating small cells. With a DAS, the service provider can extend the wireless signal out from a base station over distances of several miles through a series of distributed antenna systems connected via fiber. For the wireless service provider, however, deploying the fiber to support DAS is tangential to their business. They can speed time to market by using existing fiber assets in the environment and minimize zoning and construction time by deploying smaller cell site solutions that can be blended into the environment by using the public right-of-ways.

Wireline carriers hold the key to this problem. By leveraging their fiber networks to support DAS, wireline carriers can lease capacity on their fiber infrastructure or by acting as a neutral host. This incremental and sustainable revenue stream improves the business model for building out FTTx while addressing the wireless service provider's need to bring service to market quickly, simply, and reliably.

Linking DAS and FTTx

A DAS is an efficient means to distribute RF spectrum from a common RF source, where the BTS signals are connected to a host, which distributes the BTS' signal to multiple remote antenna locations via a fiber network.

Carriers can participate in this model most easily, by offering "a la carte" services to the wireless service provider that either 1) provide access to fiber or offer optical efficiencies and 2) provide leased physical space for the network infrastructure and gear through a lease.

To overlay a DAS on an FTTx network, the wireline carrier can:

- Monetize spare or dark fibers that may be available as reserved for spares or expansion of wireline network.
- Use optical splitters that link the wireless signal from the base station to the FTTx network for distribution to the remote units.
- Offer wavelength services where dark fibers are not available. Use a CWDM or DWDM to split out wavelengths for use in the DAS, minimizing fiber usage.
- Offer a simple, connectorized demarcation point between the networks via an MST solution.
- Speed to market by using existing fiber assets take advantage of zoning approvals already completed.
- Utilize space within a Central Office, basement, an enclosure or hut to house wireless carrier base stations that will provide the signals for the DAS.
- Utilize common backhaul, power and HVAC to minimize cost and environmental impact.

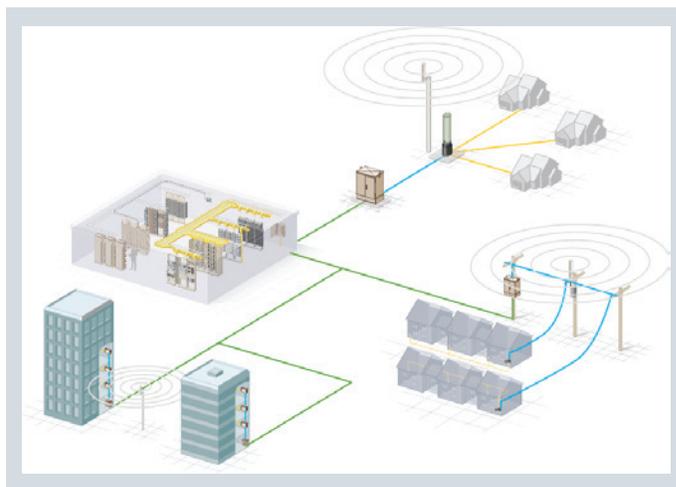


Figure 1: overlay network

Using CommScope's DAS solutions

CommScope's InterReach Spectrum and FlexWave Prism DAS products are ideally suited for DAS overlays in FTTx networks because they provide uniform signal strength and network capacity at every antenna point, regardless of its distance from the signal source. CommScope's DAS solutions support as many as eight



frequencies with a single set of electronics. These capabilities allow wireline carriers to use a single DAS to support multiple wireless service providers.

The FlexWave Prism outdoor DAS provides amplification of up to four distinct frequencies from a single remote unit/antenna location, which makes it easier and more cost-effective to support multiple carriers with one antenna. Prism remotes are available in two, three,

and four-frequency designs so the wireline carrier can optimize the specific remote unit to the demands of the service area.

The InterReach Spectrum DAS allows the service provider to bring macro capacity inside of buildings and large venues.

Using DAS solutions improves wireless coverage and capacity by placing the signal sources in greater proximity to user, resulting in superior voice quality & the ability to offer higher data rate services.

Carrier benefits

By utilizing FTTx networks to overlay a DAS solution, carriers receive several key benefits:

- Maximized usage of the FTTx fiber plant
- Faster payback on FTTx investments
- Participation in the wireless market revenue stream
- The ability to market wireline and wireless services to a common customer base
- Bundled enhanced wireline and wireless service on one bill
- Ability to add a provider without disrupting the community i.e. new construction
- Minimizing time-to-service with easy-to-zone, non-aesthetically disruptive solutions overlaid on the existing infrastructure and real estate.

While the ROI may vary based on the type of fiber network architecture, level of leased services offered (i.e. dark fiber or neutral host) and the number of wireless service providers participating in these leased services, it can be as few as six months.

When used as an overlay in FTTx networks, CommScope's DAS products provide a robust, easily deployable solution for distributing wireless signals in a manner perfectly suited to deliver 3G and 4G services. Wireless service providers can support 2G, 3G, and 4G services over CommScope's DAS. The systems are easily upgraded to support future frequencies within a common hardware platform, making DAS an investment that continues to return revenues for many years.

Everyone communicates. It's the essence of the human experience. *How* we communicate is evolving. Technology is reshaping the way we live, learn and thrive. The epicenter of this transformation is the network—our passion. Our experts are rethinking the purpose, role and usage of networks to help our customers increase bandwidth, expand capacity, enhance efficiency, speed deployment and simplify migration. From remote cell sites to massive sports arenas, from busy airports to state-of-the-art data centers—we provide the essential expertise and vital infrastructure your business needs to succeed. The world's most advanced networks rely on CommScope connectivity.



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