

Visions of the Future

Broadband technology, finance and market structure are all in flux. Where does that leave your business plan? Beware!

By Steven S. Ross / *Broadband Communities*

Interest rates are low, capital is available and take rates are up. It is little wonder that network builders are on track to pass a record 5 million premises with fiber in 2018.

Major carriers should spend around \$70 billion on network deployments next year. Tier 3 carriers, governments, companies deploying for their own purposes, co-ops and others should add another \$20 billion. Spending on dedicated set-top boxes should decline, but the functionality of wireless and wired gateways is increasing, and customers are buying more media players at retail.

Fiber already serves the majority of cellular towers and maybe of rooftop cell sites as well, just as 5G begins to roll out. Put it all together, and some sectors of the industry face big changes – maybe bigger than has been expected.

In a departure from recent history, those changes do not stem from federal or state initiatives. The Rural Utilities Service, for instance, may have some new money, but only about \$50 million. Those funds will build a few rural systems, but they are a rounding error in total industry spending.

MAINTENANCE

Network operators increasingly outsource maintenance for customer installs and fixes as well as for their networks. Here's what companies that perform maintenance of inside and outside plant should expect:

- Fiber counts will grow, in part because software-defined access (SDA) will be able to automatically shift bandwidth wherever it is needed. With SDA, the same fiber trunk could serve a stadium on game days and factories or commercial space the rest of the week. Look for more deployments of NG-PON2 and similar technologies that allow automatic shifting of transmission over multiple wavelengths.
- Outside-plant splice counts may decline in a few years, despite the rise in cable count, because more drops will be wireless – either 5G or Wi-Fi.
- Fiber network routes will become longer. There will be a huge broadband bump from self-driving vehicles (morning rush-hour demand for vehicles may be triple today's peak-hour residential use), so new fiber routes will tend to

follow roads rather than head directly overland. Look for roadside 5G deployments with fiber backhaul.

- The equipment in fiber hubs will become even more diverse because the number of carriers using each fiber route will be greater and because not all fiber will be dedicated to passive optical networks.
- More electronics in the field means more live electrical wires (5G, G.fast, DOCSIS and edge-of-network control for SDA all demand electric power). That requires more employee training, longer service windows and even higher workers' comp and liability insurance costs.

There has been almost no public discussion about how to fund connections to driverless vehicles. For safety's sake, almost every vehicle will have to be able to access roadside microcells even if the vehicle owner has not paid to do so. That's similar to 911 service now, but the overall cost goes up for the Gbps data transfer rates envisioned.

I believe this all will lead to a slow breakup of national carrier networks. Carriers will probably keep their trunks. But metro rings, laterals, and even local points of presence on the trunks should tend to more regional ownership of outside plant. Why would multiple carriers each want 5G microcells? Why (absent federal pre-emption) would localities permit it?

Add that to the likely desire of most local deployers to avoid the low-margin business of selling dark fiber to national carriers for cellular backhaul, and you see regional network operators selling to all comers. This trend is already beginning as national carriers sell lower-density, more remote network assets to the growing ranks of Tier 2 carriers such as Frontier. The nationals have already sold their cell towers. Will selling cell sites on the towers help carriers maximize spectrum usage and lower maintenance costs?

This could lead to ownership boundaries that are not necessarily congruent to obvious service-area boundaries for third-party vendors and thus the need for even more exact record-keeping. So pay attention. Carriers and others need to watch the trends among their customers and the evolving technologies and fit the little puzzle pieces – the seemingly little changes – together as they happen. ❖

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