U.S. Front/Backhaul Forecast, 2014 – 2019: *Connecting the RAN to Everything Else*

Market Study
First Quarter 2016

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Abstract

As mobile operators have deployed LTE over the past few years, so the need for reliable, scalable and cost effective fronthaul and backhaul has increased. The high-bandwidth demands of LTE, and now LTE-Advanced, have driven the mobile industry to predominantly use fiber for the important connections from the cells to the rest of the network. And with 5G networks starting to be implemented toward the end of the decade, the demands on backhaul will increase yet again.

While the macrocells have been upgraded (and will continue to be), small cells and heterogeneous networks are a common topic of discussion in the wireless and mobile industry. Because small cell deployments can and will vary so greatly in location, no single backhaul solution is best for them. While fiber has been the preferred solution for small cells to date, wireless backhaul solutions offer many advantages.

The main advantages for wired backhaul, fiber in particular, are: high throughput, low latency and substantial throughput scaling over time. But there are two significant challenges with fiber: it is not always where it is needed and it is relatively expensive to deploy. However, once fiber is in place, the incremental cost of adding new capacity is relatively low. On the other hand, the main advantages for wireless backhaul, as compared to fiber, are: lower cost, faster (and easier) deployment and sufficiently scalable throughput (depending on the use case and technology chosen).

This market study discusses the wireless and wired front/backhaul technologies available and the main market drivers for each type of backhaul to support macrocells and small cells. It also presents *iG*R's U.S. forecast for wired and wireless front/backhaul to support the radio access network (RAN) over the next five years.

Key questions addressed in this study:

- What is the anticipated growth of front/backhaul in the U.S. through 2019?
- What is the difference between fronthaul and backhaul?
- How is the type of front/backhaul split between fiber, wireless and copper?
- What is the forecast for backhaul to support outdoor small cell deployments?
- What are the major concerns of the mobile operators with regard to each type of backhaul and how can these concerns be addressed?
- What is the role for wired and wireless front/backhaul in small cell architectures?

- How is wired and wireless front/backhaul deployed?
- How do PTP, PMP, NLOS, millimeter wave and traditional microwave solutions differ?
- How do fiber (point to point and passive), VDSL2 and coaxial (hybrid fiber coax) differ?
- How does wireless backhaul compare to fiber backhaul?

This report is recommended for:

- Mobile operators, particularly those servicing the U.S. market
- Mobile backhaul providers, including telcos and cable MSOs
- Wired and wireless backhaul vendors and solution providers
- Mobile OEMs, particularly those servicing the U.S. market
- Wired and wireless infrastructure vendors, particularly those servicing the U.S. market
- Financial and investment analysts.