Localized U.S. Bandwidth Demand Forecast, 2011-2016

Market Study
1Q 2012

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Published 1Q 2012
Version 1.0
Report Number: 01Q2012-04

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Abstract

It is no secret that mobile/cellular data usage will greatly increase over the next few years, driven by ongoing LTE rollouts and the increasing adoption of smartphones, tablets and other data devices. To address this increase in bandwidth capacity, the industry is rapidly moving toward small cell architectures. But a number of major questions remain unanswered:

- When during the day will be the peak bandwidth demand?
- Where will small cells be needed, given that people move during the typical day?
- How much bandwidth must these small cells deliver?

This study answers these questions in detail and presents a model of a typical U.S. city.

With mobile device ownership and mobile data consumption on the rise, demand on the wireless networks in all areas, but especially in densely packed geographic areas, is starting to create issues for wireless operators. In fact, *iG*R's model indicates that in 2011 in a typical U.S. city, there is approximately 4.52 GB/day/KM^2 in mobile bandwidth demand that the cellular data network cannot meet. Furthermore, come 2016, our model suggests that this un-met demand will rise to 72 GB/day/KM^2. Note that our model assumes the availability of LTE to U.S. operators.

Such circumstances are likely to create new challenges for operators. LTE and/or LTE Advanced combined with changes in antenna and network design, may be able to handle the average level of user traffic, but *iG*R's research suggests a use case for a different approach to network architecture. In short, the heterogeneous network (or het-net). In this report, *iG*R thus further describes the impact of growing data demand on dense cellular network areas and possible opportunities to address that demand with het-nets.

Key Questions Addressed:

- How much cellular data will be consumed in the U.S. through 2016?
- How is cellular data consumed in the U.S., on average?
- How do U.S. users differ in their bandwidth consumption?
- How U.S. users compare in bandwidth demand across various major cities?
- How much of that bandwidth used during given time periods is in excess of what a carrier's macro cellular data network is able to deliver (on average)?

- How much bandwidth might an operator have to deliver per kilometer squared (KM^2) per day to fulfill the bandwidth demand that their macro network cannot deliver?
- What are small cells? When is it useful to deploy them?
- What is a Heterogeneous Network (het-net)?

This report is recommended for:

- Cellular carriers, particularly those servicing the U.S. market
- Mobile OEMs, particularly those servicing the U.S. market
- Wireless infrastructure vendors, particularly those servicing the U.S. market
- Government utility organizations (Federal, State and Local)
- Urban planners
- Financial and investment analysts.