

The Mobile Traffic Deluge

**& the Implications for the
Communications Industry**

2011

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EXECUTIVE SUMMARY

Purpose of the Study

This study analyzes and projects the growth of Mobile Data Demand.

While there has been considerable discussion and forecasting indicating that demand growth over the next five years will be very large, we were not satisfied that the methodologies of consensus type forecasts were sound or well-explained.

Correcting Errors in Consensus Mobile Data Forecasts

In particular, we were troubled by the assumption by some forecasters, including prominently the widely-cited Cisco “Visual Networking Index” (VNI), that data demand growth for the Mobile Internet would parallel the pattern of growth experienced in the late 1990s by the original Internet.

We developed an original methodology for analyzing Mobile Data Demand growth – from the bottom-up.

This bottom-up approach is based upon analyzing the future traffic flows through individual Cell Sites.

This methodology takes into account the unique combination of factors that are propelling demand growth at an unprogrammed rate. These factors, discussed in the later sections of the Study, include:

- Proliferation of new mobile device types
- Proliferation of mobile data, imaging, and video-based apps
- Changing user behavior; expanding use of apps requiring greater bandwidth
- Sharply declining cost curves
- Evolution of networks to unprecedented mobile broadband capabilities
- Growth in the number of multi-device subscribers
- Increased number of users substituting wireless for fixed access

Key Conclusions

1. Consensus forecasting of the growth of mobile data demand, as illustrated, for example, in Cisco’s VNI projection, severely understates the likely growth of demand to 2015 that is revealed by our bottom-up approach to studying demand.

2. We project, based on an analysis of device and apps growth and a bottom-up examination of the impact on cell site traffic and RAN (radio access network) and Backhaul requirements, about a ten-fold greater potential increase in mobile data traffic by 2015, compared with the Cisco VNI projections.
3. A cell site-based, bottom-up study of traffic growth is uniquely revealing for the future of mobile communications from a true strategic perspective. It is like taking an x-ray that reveals swollen organs and a dangerous metamorphosis taking place deep within the body of the mobile industry.
4. Tellabs has recently raised the specter of the mobile carrier industry entering an era of loss-making in the very near future. Our bottom-up study reveals an even more serious issue, which is the Sustainability of the Industry's Business Model.
5. The Carrier Model has been failing in the area of Value Creation for at least the past decade. Now it stands under challenge from a vast and growing number of companies – particularly in the Device and Applications worlds – that are mammoth creators of value, that are poised for extremely rapid growth and that cannot afford to let the Carriers stand in their way.
6. The consensus under-forecasting may be creating a false sense of stability regarding the future of the Carriers and masking how a severe conflict with the interests of the Device and Apps providers is likely to develop.

The Demand FUNNEL: Calibrating the Rate of Change

We introduce a crucial graphic concept for the future of mobile data – THE DEMAND FUNNEL. This concept illustrates the overwhelming issue facing the entire mobile data/mobile Internet ecosystem, including not only mobile carriers, but also:

- Device Providers
- Apps Providers
- Equipment Companies
- Software Companies
- Component Suppliers
- Device Distributors
- Apps Distributors

In addition, for all parties, regulatory issues such as spectrum policy, broadband policy, net neutrality and others will be motivated and fought based on interests that are highlighted by THE DEMAND FUNNEL.

The following figure illustrates the DEMAND FUNNEL.

Figure 1: The Demand FUNNEL

[The Demand FUNNEL illustration is a proprietary, copyrighted product and it is not shown in the Executive Summary; it is provided in purchased copies of the Study. Detailed description of the FUNNEL is omitted from the Executive Summary; it is provided in purchased copies of the Study.]

Unlike some periods of accelerating growth, e.g., the Internet in the 1990s, the information on the chart illustrates the key issue facing the mobile data ecosystem.

There are multi-levels of change occurring, all of which tend to sharply increase demand and the combination of which, at this point, is not understood. In other words, how does one predict the network assets needed when it is not known how the network will be used? (In a later section we describe why the current issue facing the mobile data ecosystem is quite different from and far more urgent and complex than the issues raised by the explosive growth of the fixed Internet in the 1990s.)

The widening and flattening out of the funnel as we head from 2010 to 2015 graphically presents issues facing individual segments of the mobile data ecosystem.

- How do carrier networks keep up with demand?
- How do device makers address the reality that their cycle for new devices is about two to three years while the network planning cycle is eight-to-ten years?
- How do apps providers address the fact that the networks could be unsuited to apps that are already possible and others that are in the offing in the next five years?
- Can the ecosystem any longer afford the managed network duopoly of AT&T and Verizon?

These are only a few of the issues that the ecosystem members must address to protect their vital interests, since mobile data offers perhaps the largest engine of potential growth of the information industry for the coming five years and beyond.

In the following chapters of this study, we present:

1. The Dynamics of the Mobile Internet and the “shocks” that have occurred, 2008-2010.
2. Analysis of the defects of consensus forecasting, highlighting the Cisco VNI study.
3. Analysis and forecasts of the factors underlying demand growth.
4. Our Bottom-up demand forecasting model methodology and data.
5. Our projection of the Bottom-up results across the U.S. national mobile market.
6. Our conclusions and outlook.