Ethernet Backhaul: Mobile Operator Strategies & Market Opportunities

EXECUTIVE SUMMARY

One of the biggest challenges now facing mobile network operators is the decoupling of operating costs and revenues as they transition from networks built primarily for voice traffic to a network supporting increasingly large volumes of data and ultimately video traffic. The conventional, voice-centric cellular network model is based on a linear relationship between cost and revenue in the backhaul network. To add new subscribers, or to support increased voice traffic volumes, network operators have added more time-division multiplexing (TDM) backhaul capacity at the cell site – typically by deploying more T1/E1 circuits supplied by a local exchange carrier (LEC), by installing point-to-point microwave links, or in some cases by deploying Sonet/SDH transport rings to connect cell sites. Whatever the approach, the incremental backhaul cost has invariably been more than offset by the additional revenue, resulting in a positive impact on the bottom line.

But that predictable relationship between cost and revenue does not hold for mobile broadband services. High-Speed Packet Access (HSPA) and CDMA 1x Evolution-Data Optimized (EV-DO) devices now on the market support peak download rates of several Mbit/s, which has led to a significant increase in traffic volumes. However, the revenue per bit that mobile network operators can extract from data services is significantly lower than that for voice services. This change in revenue expectations is forcing mobile operators to focus on reducing the cost per bit of transporting data traffic over the backhaul network and into the core network.

Excerpt 1: The Coupling of Traffic & Revenue

Source: Heavy Reading
Ethernet Backhaul: Mobile Operator Strategies & Market Opportunities addresses the transition from TDM-based to Ethernet-based backhaul by analyzing the variety of approaches and timeframes in which that transition can be implemented across multiple points in the network, depending on the mobile operator's current installed base. Based on direct interviews with more than 25 fixed and mobile network operators over the last 12 months, the report details how mobile operators currently view the opportunity presented by Ethernet backhaul and how they see the readiness of available infrastructure equipment and their own business processes for making this transition. It also details the plans of leading wireline operators such as BT and Verizon to roll out wholesale Ethernet services optimized for mobile backhaul as an alternative to T1/E1 circuits.

The report presents and analyzes results of a new Heavy Reading survey of backhaul equipment vendors carried out during the first quarter of 2007 to depict the dynamic repositioning of large and small equipment vendors for supporting Ethernet in the mobile backhaul network. It provides an aggregate perspective on vendor roadmaps for upgrading existing products with Ethernet features as well as bringing to market native carrier Ethernet switch/router (CESR) equipment that is being targeted for the backhaul sector.

Excerpt 2: Forecast for Global CESR Market Applications

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Source: Heavy Reading

Detailed hardware and software feature roadmaps, and carrier perspectives on those roadmaps, are also provided for a variety of product types. In total, 23 different suppliers of backhaul technologies are profiled and analyzed in this report.

Ethernet Backhaul: Mobile Operator Strategies & Market Opportunities assesses product and technology positioning for a wide range of backhaul equipment types, including:

- Radio access network (RAN) nodes
- Point-to-point microwave systems
- Ethernet access devices
- Pseudowire access gateways
- Multiservice provisioning platforms (MSPPs) and packet transport systems
- Multiservice switches (MSSs)
- Multiservice routers (MSRs)
- Carrier Ethernet switch/routers (CESRs)
Included in this report are in-depth profiles of backhaul strategies developed by three major wireline operators – BT, Telenor, and Verizon – all of which are in the business of delivering wholesale backhaul capacity to mobile operators. The report details these carriers' plans for developing Ethernet services to align with the stringent backhaul requirements of mobile networks, including an early look at future pricing models for Ethernet services delivered to mobile operators and how these models will contrast with those in current TDM environments. The report also outlines Ethernet's overall value proposition – both at the cell site and between the metro and the core of the backhaul network – as foreseen by these wholesale operators, in terms of the cost savings and efficiency improvements they expect to deliver.

Report Scope & Structure

Ethernet Backhaul: Mobile Operator Strategies & Market Opportunities is structured as follows:

Section I is an introduction to the report, with complete report key findings.

Section II explains the underlying drivers for Ethernet backhaul and why mobile operators need a better backhaul topology than the legacy TDM approach. It also provides a definition of "Ethernet backhaul" relative to other related terms, such as "IP RAN".

Section III defines mobile operators' requirements for Ethernet backhaul, including broadband throughput at the cell site, the importance of volume in delivery of Ethernet service capabilities by third-party wireline wholesalers, and key capabilities such as synchronization over packet and pseudowires.

Section IV provides examples of live Ethernet backhaul deployments around the world and commentary on the readiness of most mobile operators to deploy Ethernet in their backhaul networks. It also sets out Heavy Reading's view of how rapidly and according to which models the market will migrate from TDM to Ethernet.

Section V profiles the carrier-grade Ethernet services optimized for mobile backhaul that BT, Telenor, and Verizon plan to roll out over the next 12 to 18 months to provide lower-cost, more flexible backhaul services to mobile operators in the U.K., Norway, and the U.S. respectively.

Section VI summarizes the Ethernet migration paths and competitive dynamics in the equipment vendor market for a number of key mobile backhaul products: RAN nodes; point-to-point microwave networks; Ethernet access devices (circuit- and copper-bonding devices and pseudowire access gateways); multiservice provisioning platforms (MSPPs); multiservice switches (MSSs); multiservice routers (MSRs); and carrier Ethernet switch/routers (CESRs).

Section VII presents the business-case findings and conclusions arrived at by Orange UK in 2006, when it considered the pros and cons of investing in further backhaul traffic aggregation capacity via the use of MSPP, MSS, or MSR products.

Section VIII supplies in-depth profiles of the leading incumbent and specialist vendors supplying networking equipment for mobile backhaul, focusing on the Ethernet-oriented features that they currently support or are planned in vendor roadmaps over the next 18 months.

Ethernet Backhaul: Mobile Operator Strategies & Market Opportunities is essential reading for a wide range of industry participants, including the following:

- **Ethernet backhaul technology suppliers**: How will the ongoing shifts in mobile operator backhaul deployment strategies affect your business? What is the most likely time-frame for the transition from TDM to Ethernet backhaul? In which regions will the move to Ethernet backhaul be most aggressive, and which types of operators are likely to lead that drive? Where are the emerging opportunities to increase market share? Are your...
products and marketing messages in line with network operator plans and expectations? Are there significant gaps in your product line coverage that need to be addressed to meet future demand for Ethernet backhaul solutions?

- **Other wireless equipment suppliers**: Will demand for your products be affected by new deployment plans for Ethernet backhaul technologies? Which technologies are emerging as the most likely winners for tomorrow's wireless backhaul networks? Is your company positioned to take advantage of those anticipated changes?

- **Mobile network operators**: How do your plans for Ethernet backhaul deployment compare with those of your competitors? Will your transition strategy deliver the best cost and performance options for your network, or are there other alternatives that will deliver greater efficiency? Which technology suppliers are best positioned to meet your Ethernet backhaul requirements?

- **Providers of wireline wholesale services**: How are key competitors approaching the emerging market for Ethernet backhaul services? What is the likely market timing for commercial viability, and does your long-term plan put your company in position to capitalize on growing demand for Ethernet backhaul services? How strong is demand for Ethernet backhaul likely to be?

- **Investors**: Which technologies are emerging as the winning solutions for Ethernet backhaul, and which companies are the leading providers of those solutions? How will the transition from TDM to Ethernet affect profitability for the wireless service sector in the coming months and years?

*Ethernet Backhaul: Mobile Operator Strategies & Market Opportunities* is published in PDF format.