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Microwave backhaul and the future of 4G

April 7, 2010 — 10:11am ET | By [Emmy Johnson](#)

Numerous media outlets (including [FierceWireless](#)) have been reporting about extreme wireless data traffic growth, the smackdown of 4G data coverage between operators and network outages due to underestimated data traffic capacities. In fact, recently, Clearwire reported that its average users consume 7 GB of data per month. It's all a sign of the times, and it's making backhaul the oldest "sexiest part" of the network.



Emmy Johnson

Backhaul has always been critical to the cellular network, but now with the variable data traffic patterns, the requirements of backhaul transport are becoming more complex and backhaul vendors are stepping up to meet the need. Although fiber and T1s have long dominated backhaul transport, a large opportunity exists for microwave radio vendors in the North American market. Increasing 4G cell sites, shrinking cell sizes and a shift from TDM to Ethernet, all give way to a broader competitive landscape. Alcatel-Lucent and Aviat have dominated in North America; jointly owning the majority of the market. However, with the emergence of Clearwire and its aggressive buildout of 4G, the competitive landscape shifted in fourth quarter 2009, and Dragonwave landed the No. 1 spot among microwave vendors, with a solid 35 percent share of the market (according to Sky Light Research's fourth quarter 2009 Market Share Report).

Other vendors see this potential and are vying for a piece of the American pie as well. The traditional vendors: Adtran, Alcatel-Lucent, Aviat, Ceragon, MNI, NEC and Proxim have long-standing

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relationships with customers, that they won't let fall to the wayside easily. However, with a shift in technology comes an opportunity for a change in market share. Players such as Dragonwave, Ericsson, Exalt, Huawei, Nera, NSN and Trango each have a chance for a greater piece of the pie as new technology requirements arise. The newcomers to the North American market have a varying arsenal of products, which makes each of them a very different competitor. For example, Ericsson is a traditional leader in the global microwave radio space, but has had little share in North America until this year (again according to Sky Light's research). Trango, on the other hand, is a small player, that has traditionally focused on unlicensed bridges, and has just recently reinvented itself to be more competitive in the point-to-point carrier market. Despite their various backgrounds, the common thread among the vendors is that they either have had relatively little share in North America or have just started shipping to the region.

The increased competition made for an interesting CTIA Wireless 2010 conference, which featured several microwave radio announcements. Among those announcing new microwave products at CTIA were Nera, Ceragon, Ericsson, Exalt and Trango.

Nera introduced a new ANSI radio and its formal entrance into the North American microwave space. Nera is among the top three trunk players globally, according to Sky Light's research, and hopes to leverage this expertise to get a bite of America's market. Nera is approaching the market with their new XPAND IP suite of radios. The native Ethernet radio can support up to eight 400 Mbps Ethernet links that can be integrated for a total throughput of 1.6 Gbps. The radio also supports OC-3 SONET links and T1 connections. This radio complements Nera's existing portfolio of Evolution TDM/Ethernet radios. Nera has been a traditional microwave vendor for years and is especially strong in EMEA and Latin America.

Ceragon, who has been a solid player in North America, introduced two new compact radios that can be used in all indoor or all outdoor configurations. The FibeAir IP-10 All-Indoor Compact radio has an all indoor configuration that carries Ethernet traffic up to 370 Mbps per carrier and up to 740 Mbps using XPIC. For TDM traffic, it carries up to 84 x DS-1, 6 x DS-3, or 2 x OC-3. The FibeAir Outdoor Enclosure is an all outdoor radio that is ultra compact and can be pole mounted, saving space in the base station enclosure or central office.

Exalt is a relatively new player to the microwave market and started its foray into the market with a suite of unlicensed carrier class radios. It has added licensed radios to that portfolio and just recently introduced a new ANSI compact radio that can be pole mounted for a zero footprint. The new ExtendAir supports a mix of TDM and Ethernet, natively.

Trango's new split mount radio is an addition to its TrangoLINK GigaPlus family. The radio boasts full duplex native Ethernet capacity up to 375 Mbps, among other features.

Ericsson announced its entrance into the millimeter wave space, with a radio in the 60 - 90 GHz frequency that can transport 2.5 Gbps of capacity. This space has been mostly dominated by players such as BridgeWave and E-Band. Alcatel-Lucent has been selling radios in this space for over a year, via its partnership with BridgeWave. In addition, NSN recently announced, that it too, will also be entering the millimeter wave space. These radios are becoming critical in the 4G network to transport 1 Gbps + data at very short distances.

Aviat continued to promote its enhancements made public at the 2010 Mobile World Congress trade show in February in Barcelona, Spain. Aviat has included cell site gateway functionality in its Eclipse Packet Node wireless backhaul solution. Meanwhile, Dragonwave also continued to promote its Horizon suite of radios with new customer wins. The Horizon radios provide packet performance with capacity of up to 2 Gbps.

Alcatel Lucent just announced three enhancements for its packet radio--the MPR 9500, targeted at North America. First, the radio now includes 10.5 and 11 GHz frequency bands. Second, higher transmit power options are available at 6 GHz allowing for smaller antennas or longer path distances. Lastly, the new all-indoor design provides a trunk architecture which means no tower climbs.

Although the microwave radio market may appear "new" to the American scene, it has been around for more than 40 years and is fraught with established players. Yet, given this, the market is seeing new life as new technology requirements remold this mature market into one with new opportunities and a projected 10 percent growth over the next several years according to SLR forecast reports.

Emmy Johnson is Founder and Principal Analyst of Sky Light Research (SLR). For the last 10 years, SLR's quarterly market share reports for the global microwave equipment market has become an industry standard with a broad range of customers.

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Posted by **John Stover** | *April 8, 2010 - 10:06pm*

Your information about Ericsson is interesting, but I would take issue with your comment about E-Band being one of the dominant players in the 60-90 GHz frequency range. Historically, this market has been dominated by BridgeWave, Gigabeam and Loea, the latter two having contributed mightily toward establishment of the 71-86 GHz (known as "E-band") radio standard. However, it is important not to ignore the lesser-known players in the market. For example, my company imports E-band gigabit and 350 Mb links from ELVA-1 Ltd. in Russia. ELVA-1's QPSK modulation is unique in the E-band radio link industry, and it provides the end-user with greater power density for a more robust signal under adverse conditions. Their millimeter-wave gigabit Ethernet radio links can be co-located and bonded together to provide a total link capacity of 10 Gbps. ELVA-1 radios received FCC equipment authorization for US sales in September 2006.

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