

## Cambridge Broadband Networks demonstrates 40% microwave backhaul efficiency gain

Packet Microwave Forum, London, UK, 4<sup>th</sup> October 2011: [Cambridge Broadband Networks Limited](#) today released live customer data that clearly demonstrates the efficiencies that intelligent data aggregation technologies can bring to mobile backhaul networks. The data reveals that aggregation can reduce bandwidth requirements by a minimum of 40% whilst delivering an identical service.

Mobile network backhaul connections must have bandwidth at least equivalent to the peak data demand of the relevant cell site to ensure quality of service; however peak demand for data traffic is inherently not correlated amongst cell sites. Statistical multiplexing technologies inherent in multipoint microwave backhaul solutions take advantage of this lack of correlation when they aggregate traffic from multiple cell sites. The 'troughs' of one cell site are filled by the 'peaks' of others, resulting in the total bandwidth requirement being significantly reduced.

Without aggregation, the mean microwave backhaul network efficiency is typically around 25%. This results in 75% of the cost to provision a link (link radio cost and spectrum) not being utilised. This 'white space' is effectively trapped in each link and not available for use.

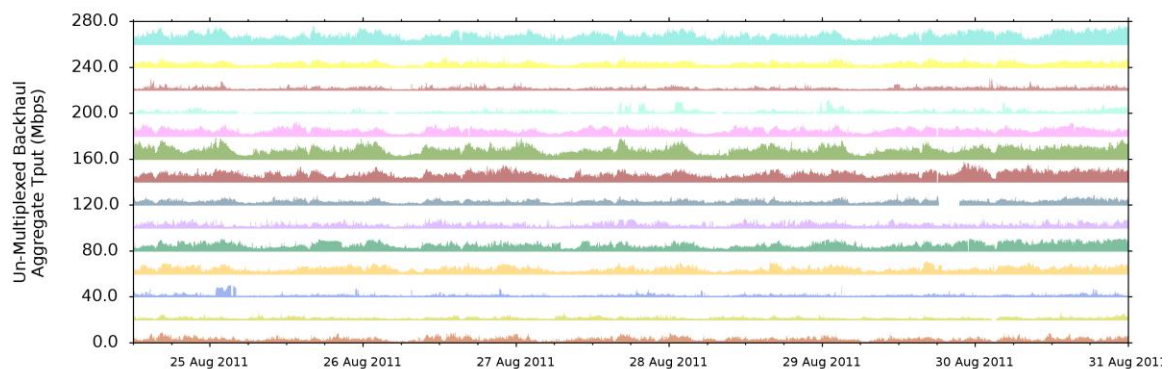
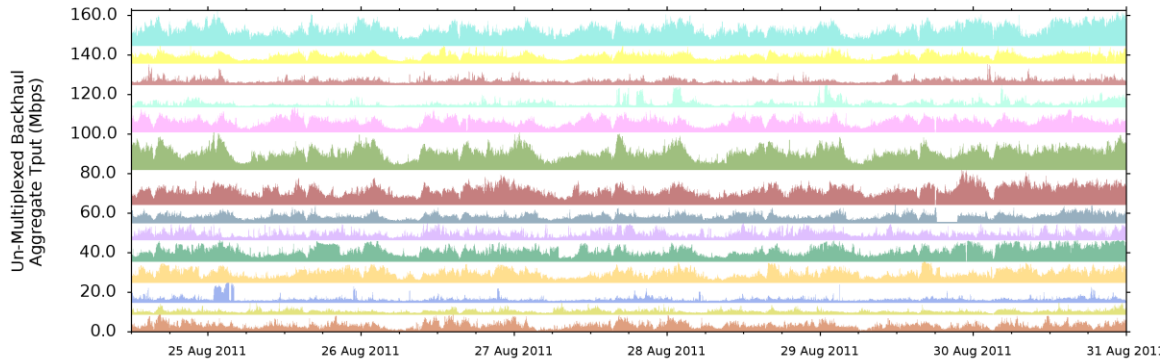
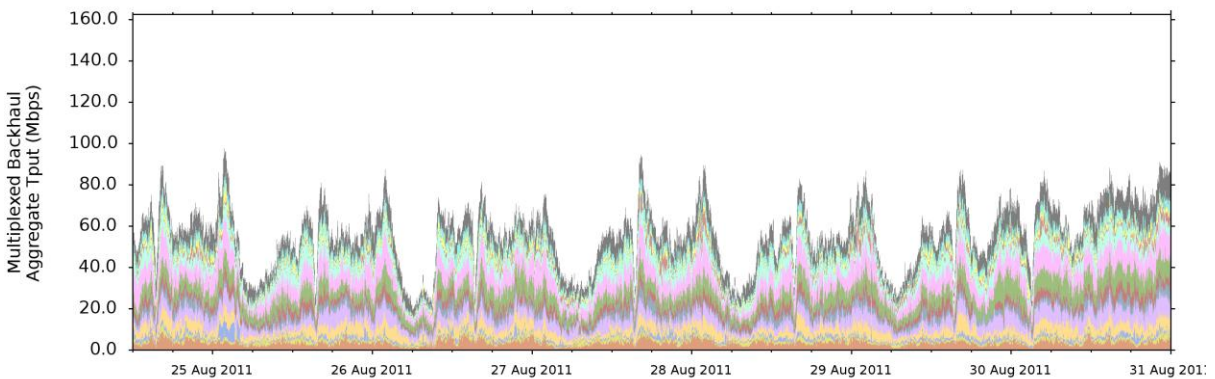


Figure 1: Point-to-point links carrying traffic for 14 sites. 20Mbps is provisioned for each link.



**Figure 2: Point-to-point links carrying traffic for 14 sites. To a granularity of 0.1 Mbps, the peak bandwidth is provisioned for each link. Systems do not allow this level of control over channel bandwidth in practice, but this serves as a theoretical absolute lower bound for the bandwidth required to carry the traffic with point-to-point links.**

Live traffic measurements with Cambridge Broadband Network’s VectaStar multipoint microwave technology shows bandwidth efficiency is increased to 55%.



**Figure 3: VectaStar carries the same traffic. Whitespace at the top of the graph can be released to any site in the sector, to new sites added through network expansion or as part of a small cell rollout**

Unlike traditional point to point microwave systems, multipoint microwave solutions are able to release the additional headroom created by the increased efficiency to any site in the sector on demand – delivering superior customer experience when the customer or site requires additional resources.

Further investigation indicated that a point to point microwave system would require 20.3MHz of spectrum to carry the peak traffic load whereas the VectaStar system was using only 12.1MHz, realising a 40% reduction in spectrum bandwidth. What is more, the benefit increases as the number of sites multiplexed together goes up, giving more opportunities for a peak from one site

to cancel a trough from another. So unlike any other form of microwave backhaul, multipoint microwave becomes more efficient as networks get denser.

In practice the results would be much different with the point to point links likely to be dimensioned at 20 Mbps or more in order to deliver the peak potential of the mobile network. In this case the savings would be greater still.

Commenting on the findings, John Naylor, Head of R&D at Cambridge Broadband Networks, said, "Whilst the demand for mobile data services is increasing exponentially, spectrum is a scarce and finite resource. The data we've released today is hard evidence of the benefits of statistical multiplexing in multipoint microwave. No operator can afford to ignore the potential to reduce bandwidth requirements by 40%. That is particularly applicable as operators transition to LTE and will apply equally in the backhaul of the small cell networks now being investigated around the world."

A full report of the findings will follow in Q4 2011.

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#### **About Cambridge Broadband Networks Limited**

Cambridge Broadband Networks Limited provides telecommunications operators with carrier-class wireless point-to-multipoint transmission equipment. The company's unique approach to backhaul means that its technology provides operators with a highly compelling business case, reducing backhaul costs by up to 60%.

To date, Cambridge Broadband Networks products have been commercially deployed and technically proven in more than 30 countries, and the company continues to expand into new geographical markets as wireless networks become more widespread throughout the world. Privately-held, Cambridge Broadband Networks has headquarters in Cambridge, UK, with offices in Malaysia, Nigeria and South Africa and manufacturing facilities in China.

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