

## Can Vectoring & Bonding Help Solve Telco Data Centre Bottlenecks?

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*Whenever vectoring is mentioned, it is almost invariably linked to FTTx. However, vectoring can also help open new revenue streams for telecoms providers by linking data centres to the outside world. How does this work?*

The demand for faster networks has never been greater than today. To accommodate this - at least to some extent - more and more operators are adopting vectoring and bonding. Vectoring is a crosstalk-cancellation technology, whereby an out-of-phase signal of the estimated crosstalk is applied on each line in a cable, effectively making it disappear. This allows each individual line to operate at peak performance levels, unaffected by adjacent cables or bundles. The end result is a higher degree of reliability and signal quality.

Bonding refers to the use of multiple copper pairs to increase bandwidth, either bridging greater distances at a specific bit rate, or increasing the attainable bit rate. This is generally used for residential deployments, but increasing the number of pairs can make it useful for business applications too.

Both methods may result in a significant increase in bandwidth. These technologies help boost 'last mile' copper network capacity from the last distribution point to the end user - albeit over relatively short distances. Vectoring is generally seen as a way to save money on the last mile of FTTx rollouts and leveraging legacy copper infrastructure. By laying fibre up to a point as close as possible to the network termination, up to 100 Mb/s can be offered. From here, existing copper networks can take over. In these instances, vectoring and bonding has repeatedly proven itself to be a fine, albeit temporary, solution.

### Changing Role of the Telco Data Centre

How does this translate to the data centre environment? Many telco companies also operate their own data centres, where they aggregate immense amounts of data. When we examine their infrastructure, we may conclude that most of these data centres are currently in need of future-proofing. Furthermore, developments such as the rise of 'big data' and customer demand for new information and entertainment services are changing the role of data centres. These are demanding a huge boost in the capacity of the (fibre) backhaul network and this will continue to grow exponentially.

Until recently, some 80% of data centre traffic was generated by people using a desktop or laptop computer to access server-hosted applications over the internet or intranet. However, we're now seeing a massive increase in mobile apps and cloud computing. As a result, there is an upsurge in traffic between servers. As data volumes continue to grow, there is a realistic possibility this will result in bottlenecks and compromised service levels. One of the main drivers of greater data transmission requirements are television services (Interactive TV, VOD, Video Conferencing, etc). 8K television, for example, requires approximately 350 Mbps.

The telecom industry is being pushed towards digital content markets as a result of several factors. For example, because of rapidly evolving mobile data technologies, Web 2.0 technologies, social networking and a growing market for streaming and on-demand broadband video content.

## **The Link Between Vectoring and the Data Centre**

Vectoring can't play a role in helping to link data centres together, or joining servers within the data centre. However, for telcos, data centres with powerful content delivery networks are becoming increasingly vital. Vectoring enables the customer to receive HD Video On Demand services. As telcos aren't eager to leave this market share entirely to dedicated companies such as Netflix, they need to invest in DC infrastructure so they may also provide these services. Providing new services, which are enabled by high speed residential internet connection (with vectoring being the simplest to deploy), will allow telcos to tap into new revenue streams. Of course, there are some practical and technical considerations that must be taken into account, such as ensuring the right quality of service policies and traffic scheduling.

## **Vital Enabling Technology**

As data volumes in and between data centres grow, driven by changing user behaviours and the arrival of 10G, for example, integrating legacy networks may relieve some of the load. Vectoring & bonding can help realise this, forming a link between data centre infrastructure and outside fibre networks natural. However, just like with FTTx, this is a temporary solution, with full-fibre networks as the end goal.

The competitive environment for telecom providers is rapidly changing. As a result, network operators are exploring new business models outside of voice and data delivery. The deployment of vectoring can enable telcos to provide new services, such as video-on-demand to take a significantly larger section of the value chain. Previously, telco's data centres mainly provided internet connectivity to their customers. Now, however, they are expected to offer new on-demand services, too. Vectoring allows the fast deployment of high speed residential internet. Although the end goal is still end-to-end full fibre, vectoring is currently acting as an enabling technology which allows telcos to offer new, strategically vital services.