10 Gigabit and Beyond

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10 Gigabit Ethernet – a business network for now and what comes next.
The phrase 'data is the new oil' is used often in today's digital world, and rightly so as data is at the heart of business processes.

For businesses to effectively use their data, robust, high performing, efficient networks must to be in place. However, despite the network being a foundational part of any digital process, businesses continue to battle with bottlenecks within their network connections.

Every aspect of the business, from sales and marketing, to service and support, increasingly relies on fast and consistent networks. With businesses going through digital transformation processes, there have never been so many applications dependent on network access, nor so much traffic running through our networks, as there is today. With 90 per cent of the world's data being created in the last two years alone, this pressure on network bandwidth is only set to continue – therefore a reliable, scalable, network is essential for growth.

However, networks are easy to neglect; they are installed, they work, and are often then forgotten. For many businesses, a network assessment is left until it becomes critical, and very little consideration is given to the daily impact on efficient working that poor network performance has.

Often when front-end user facing issues are prioritised, other equipment is upgraded to cope with immediate needs – such as more storage, a desktop refresh, additional workstations, new software or even a new wireless network – and the impact of these new demands on the network are often not assessed, or is at least given low priority. The consequences of this results in lower than expected performance and ROI nullifying the short term investment decision.

What are the benefits of upgrading to 10 Gigabit Ethernet?
The perception that a network upgrade is a costly and intrusive task is dated. The

development of new chipsets has enabled a fresh generation of smart managed Gigabit switches, such as D-Link's DGS-1210 and DXS-1100 series, have shifted 10 Gigabit Ethernet from technology that was only accessible for large enterprise and data centres, to a cost effective performance upgrade and future proofing option for all businesses of all sizes.

Given its roots in large enterprises, many smaller business owners may perceive 10 Gigabit speeds as supplying excessive bandwidth capacity; even considering the now more modest price points of the technology. In reality, however, there are many circumstances where even the smallest enterprises can benefit from a 10 Gigabit network.

Most computers now come with wired Gigabit Ethernet connections and wireless devices, supporting 802.11ac that offer Gigabit plus speeds. When several of these devices simultaneously try to access centralised resources concurrently, such as accessing storage devices, a legacy Gigabit Ethernet link within the network can easily become a bottleneck.

Given the number of applications on the average business network that rely on near constant connectivity, including ERP systems, point of sale systems email and storage - combined with the need to have glitch-free access to cloud based systems – having access to the fastest connection possible, both internally and to the internet gateway, is a huge advantage.

For flexible work environments where fast internal Wi-Fi connections, such as Wave 2 Wireless AC technology, is being considered, an underlining network of at least 10 Gigabit should be part of the implementation plan. Without it, the high speed wireless will be constrained by the low speed legacy Ethernet.

There are alternative technologies, such as 2.5GBase-T and 5G-Base-T, being promoted as alternatives for core network designs but serious consideration needs to be taken before taking this step. The technology which was developed and promoted to enable Wave2 access points to transmit data to the network, with the necessity to have multiple 1GE ports trunked or bonded together, is a natural requirement.

However at the moment, the adoption of 2.5G into access point has been restricted due the

price penalty it inflicts on the device. This has meant installation has been restricted to customers with large budgets and frequent technology refreshes, throwing a question mark about the commercial viability of the technology in anything other than a niche installation.

10 Gigabit also makes it much simpler for businesses to move to virtual networks, an approach that has been unrealistic in the past with low capacity networks. But with the increased bandwidth 10 Gigabit offers, gaining the benefits of network virtualisation, such as reduction in on-site cabling, improved security, and the integration of telecoms and IT networking become a practical option.

Cost, Implementation and Impact

Implementing 10 Gigabit networks requires three main components; 10 Gigabit core switches, access switches and network interface cards for servers and storage devices. Cabling needs consideration too. The 10 Gigabit standard relies heavily on the right cabling in place to support the bandwidth demand, therefore it is critical businesses implement CAT6 cabling to reap the benefits.

Investing in CAT6 cabling future-proofs the network for years to come - bringing better reliability and performance, and the ability to scale up bandwidth with data growth in the future.

The additional marginal cost of CAT6 now will be offset by avoiding the disruption of a forced change to cope with growth later, and ensures full use of 10 Gigabit switch capacity is possible. Using CAT6 also opens up the option of using Power over Ethernet (PoE) which can simplify the installation of many modern networked devices such as IP CCTV systems and Wi-Fi access points.

Using multi technology switches which combine a 10GE Switch with a few 2.5GE ports for connecting to access points will not only make more commercial sense, but also make the design and implementation of the whole network much simpler, since bandwidth is delivered where it is needed at a price that appropriate.

Benefit now, be ready for what is next.

With its reliability and performance capabilities, 10 Gigabit networks can massively benefit businesses; reducing network congestion at busy times, providing increased flexibility for systems and improving productivity of employees.

Migration to 10 Gigabit doesn't need to be done all at once – once the core switches are upgraded to 10 Gigabit, delivering a bottleneck free backbone which can accelerate many network elements, business can gradually migrate key access switches and servers to 10 Gigabit.

A network that 'just works' is no longer enough. Today it must support the growth of the business in the constant evolving technology world, and with 10 Gigabit at the core of business networks this can be done.

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