

2.5 & 5 Gigabit Ethernet – an Uncertain Prospect

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Data is the lifeblood of the modern enterprise. Now, even the smallest businesses are increasingly creating and moving large amounts of data across their networks. With cloud-hosted applications replacing many on-premises systems, business data is now being squeezed out of local storage and off-site. It may not be happening to all small businesses quite yet, but with this trend and the growth in the number of connected devices it won't be long before network bottlenecks start becoming apparent.

Competition for custom is aggressive in the small business sphere, and a network slowdown, let alone down-time, could be a crucial barrier to keeping a competitive advantage and may cost hard-won customers. Ensuring consistent network performance and eliminating bottlenecks is a worthwhile investment for any business looking to thrive.

Businesses looking to enhance the performance of their network for new applications are finding themselves in a difficult situation, as we're currently in a transitional period between Ethernet standards. The 1GbE is starting to show its age, whilst the next standard, 10GbE, is still seen as too expensive, and its use cases too niche for anyone but the largest businesses to justify an investment. That, however, is rapidly changing.

In response to this perceived need, new Ethernet variants which shirk the customary 10x upgrade step model are being pushed by vendors. These quarter and half-step standards, 2.5 and 5 Gigabit Ethernet, known as multi-gigabit, promise to balance the need for performance versus price for small business owners.

Whilst at first glance there seem to be many benefits to these newer Ethernet upgrades, it's important to look at the longer term value versus the risk of being trapped on a technology side street by moving from 1GbE to 2.5 or 5GbE.

The benefit of the half step

Messaging around the value deployment of 2.5 or 5GbE over 10GbE has, understandably, focused on the benefits.

Chief amongst the arguments for multi-gigabit Ethernet standards is that they are far more affordable than 10GbE. This case ignores the new generation of 10GbE chips, which cost significantly less than those of the previous generation, and make 10Gb switches viable outside of data centres and larger enterprises. However, the real pricing issue for smaller businesses is not the switches themselves, but the cabling.

The majority of installed cabling in businesses is either Cat 5e or Cat 6. The minimum cable type recommended for 10GbE is Cat 6A. The costs to enterprises of installing new cabling can be significant, so many will not have budgeted for such major revisions in the near future. Ultimately, 10GbE just isn't a viable option right now.

Given the number of applications on the average small business network that rely on near constant connectivity, including ERP systems, POS systems, email and storage, it's easy to see why 2.5 or 5GbE could prove a business benefit. As the need to have glitch-free access to cloud based systems as the shift outside the building continues, the fastest connection possible, both internally and to the internet gateway, is a desirable option, even if it's not the top option on the market.

However, there are other approaches. With a 10Gb capable switch working in concert with 802.11ac Wave 2 Wireless, networking throughput can be north of 1 Gbps on Cat 5e or Cat 6 cabling. A significant boost to usable capacity without such a significant investment.

Short-term benefits, long-term problems

So far, multi-gigabit Ethernet could still seem like a reasonable proposition. A smaller, more manageable upfront investment for greater performance to support the increasing number of applications on the average small business network.

However, there are issues surrounding multi-gigabit that make it a shakier investment prospect. There are currently two independent and competing alliances which are producing protocols for 2.5 and 5Gb Ethernet. On the one side is NBASE-T, spearheaded by Cisco, and on the other, MGBASE-T, which sits in Broadcom's corner.

Whilst competition in any market is always welcome, the difficulty resides in the fact that neither alliance has shown signs that the standards they're backing will be interoperable, and neither standard has yet been ratified by the IEEE. Instead, they're hoping that their standard

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will emerge victorious and the other will fade into obscurity. It's the Ethernet equivalent of VHS versus Betamax, with Blu-Ray in the shops with its price dropping.

In real terms this means businesses could quite realistically pick the wrong standard and have their network infrastructure quickly made redundant. Suddenly that small upfront investment needs to be repeated with a far larger one further down the road. That is, if either standard is ratified at all.

Although that may seem an unlikely scenario, it is important to highlight that IEEE certification is not as straightforward a process as signing up for a credit card. The IEEE has to arrange a consensus between a group of 400 participants around the world. These include competing manufacturers who have, in this instance, a vested interest in backing their own standard over the other. For some historical context, it took the IEEE seven years to ratify the 802.11n standard.

Although the ratification of 802.11n is a particularly extreme case, investment in multi-gigabit Ethernet could remain an uncertain prospect for several years, during which time the price of 10GbE chipsets, which is certain to be the prevailing Ethernet standard, will continue to plummet, and many enterprises may be in a better position to upgrade their cabling to take full advantage.

Ultimately, the risk/reward of multi-gigabit Ethernet is skewed on the wrong side. Are you prepared to pay a premium simply to overcome the AP to LAN bottleneck whilst, in the worst case scenario, risking your networked devices becoming interoperable and obsolete in a few years' time? The networking industry may be enthusiastic for 2.5 and 5Gb, but the case for business is still too risky.



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