



Nexans extends copper's lifeline with the introduction of its LANmark-7A supporting 40 Gigabit Ethernet

Paris, October 2nd, 2008 - With the launch of their new LANmark-7A GG45 copper cabling solution for 40 Gigabit Ethernet applications, Nexans is now testing the limits of frequency ranges up to 1000MHz. This revolutionises the thinking about the longevity of copper in the network cabling world and allows network designers and managers a richer diversity of choices of cabling systems.

Demands for more bandwidth have been increasing rapidly in recent years. This demand is particularly enhanced by the rapid growth in the numbers of data centers and server farms internationally. The demand is accelerated even faster as the technology that supports the data centers and server farms is evolving, placing increasing demands on yet more bandwidth. And this evolution in technology is nowhere near its peak yet.

One major contributing factor is found in Video on Demand (VoD). This is technology that requires substantial centralised storage capacity for video material and its delivery on demand to a vast variety of users over broadband networks; often referred to as video streaming. VoD is growing in the world of communication, media management, social networking, the corporate sector and government. Experts agree that VoD will radically alter private television consumption as well as the use of media in business and society all over the world. It changes the way communication is conducted between organisations and all their stakeholders, both internal and external, and its application in central archiving is growing at an even faster rate.

To accommodate the higher bandwidths, developers have to contend with at least two other challenges. The increase in electronic interfaces to provide higher bandwidth also increase both power consumption and heat generation in the system, both of which impact negatively on the user's carbon footprint. With their LANmark-7A GG45 copper cabling solution, Nexans have addressed these challenges effectively.

Why 40G Ethernet?

The facts above clearly seem to call for an immediate move to much faster protocols. The progressive growth from fast Ethernet to Gigabit Ethernet and recently 10G seems to suggest that a next milestone should again increase the speed tenfold to make 100G the next target. The fact of the matter, however, is that such a solution would be financially premature and prohibitively expensive. Because of the costs of electronics for 100G ethernet volume deployment in servers is not expected within the next 10 years.

This market is already attractive enough to suggest that 40G Ethernet should be introduced to "cannibalize" on 10G by replacing four 10G ports with one 40G port. This will certainly be a much more affordable medium term solution and can serve as the bridge to span the gap from 1G to 100G Ethernet.

The standard for 40G has been outlined and it is now up to producers to develop the solutions. The need for 40G is particularly clear: It will serve any user who requires more than 10G but not as much as 100G yet; and this is a much larger market than the 100G one. It is

also much easier to manage the single 40G port than four 10G ports. 40G Ethernet could relieve the 10G bottleneck and already start paving the way for 100G Ethernet. Nexans, with their LANmark-7A, have introduced the first product to the market to address the 40G challenge head on.

Why copper?

Nexans has always served the 10G market admirably with their LANmark solutions, and the introduction of LANmark-7A now targets the imminent 40G Ethernet sector of the market. With all the focus having shifted to fibre optics as demand for more bandwidth has increased over recent years, a 40G Ethernet copper solution may come as a surprise to many network specialists.

The fact of the matter, however, is that copper will be a substantially cheaper option if cabling technology can address the technical challenges to support the high speed signals with fully shielded components at no significant risk of high levels of alien crosstalk. Such a solution would be a cost effective alternative to fibre optics for the foreseeable future.

The active components in fibre optic ports are significantly more expensive than copper ports with a substantial cost difference per port. This was the main reason for the accelerated development of the 10GBaseT standard with 10G Ethernet. A similar difference is expected for 40G.

It was always believed that copper was not suited to transfer even 10G over long distances and general applications were restricted to short lengths. Independent testing by the American Penn State University has, however, established a maximum transfer capacity of over 50 Gigabit over 100m based on the electrical parameters of the new LANmark-7A system from Nexans.

This has placed the application of 40G cabling over 100m beyond doubt.

GG45 – the new Category 7A solution from Nexans

Nexans' new LANmark-7A GG45 12C solution aims at all Cat 7A applications, from the current 10G up to future 40 Gigabit Ethernet applications. The new GG45 connector is designed to accommodate the well known RJ45 patch cords with a maximum Cat 6A performance of 500MHz, as well as the new GG45 patch cords that provide 1000MHz of bandwidth. Unlike other Category 7/7A systems, its backward compatibility is particularly popular with users. Existing applications of up to 10 Gigabit Ethernet can be run on RJ45 patch cords, saving the need to convert to expensive hybrid patch cables. When future need arises to change to 40 Gigabit Ethernet, all that will be required will be to exchange the patch cables. This expense will be incurred when the need arises, avoiding unnecessary financial investments that don't immediately contribute to the bottom-line; serving the solid principles of Just in Time.

To accommodate the backward compatibility posed several challenges to the technical developers at Nexans who were working on the LANmark-7A GG45 system. The main challenge was to support these high speed signals by providing fully shielded components. Shielding and backwards RJ45 compatibility became increasingly difficult as bandwidth increased.

The designers overcame the hurdles admirably and enabled Nexans to launch the LANmark-7A GG45 system which is forward ready for future 40G Ethernet applications developed by IEEE802.3. It is also fully backward compatible, and offers twice the bandwidth at half the crosstalk of Cat 6A.

A Greener Future for IT?

In 2007 the IEEE 802.3az, supported by US Federal Executive Order 13423 and the US Green Building Council identified Energy Efficient Ethernet as a priority project. This was, amongst others, prompted by the fact that the IT sector emits a considerable amount of CO₂.

A large percentage of the processing power of active components for 10G ethernet is spent for noise cancellation; representing about 40% of the energy consumption. If active components were developed that were geared towards Energy Efficient Ethernet, the potential savings would be significant. LANmark-7A does not only support high bandwidth, it also meets the conditions that Energy Efficient Ethernet will require from cabling systems. Nexans have, with their LANmark-7A, taken a huge stride towards a greener future for its users.

If such active components could be used instead of current versions, energy consumption would not only drop, but heat build-up - a major issue in data centres - would decrease considerably as well. And this is within the grasp of technology already!

About Nexans

With energy as the basis of its development, Nexans, the worldwide leader in the cable industry, offers an extensive range of cables and cabling systems. The Group is a global player in the infrastructure, industry, building and Local Area Network markets. Nexans addresses a series of market segments from energy, transport and telecom networks to shipbuilding, oil and gas, nuclear power, automotive, electronics, aeronautics, handling and automation.

With an industrial presence in more than 30 countries and commercial activities worldwide, Nexans employs 22,000 people and had sales in 2007 of 7.4 billion euros. Nexans is listed on Euronext Paris, compartment A. More information on <http://www.nexans.com/>

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