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Choose your Future!

With more cabling standards coming up to cater to the growing demands in ITS speed, enterprises are pressed to choose the right solutions

Enterprises of all sizes are facing data explosion and the phenomenon will further grow exponentially owing to the need for using numerous data intensive applications for enterprise business operations. Particularly SMEs witness more data explosion as they are investing a lot on data storage and management applications like ERP and business intelligence. Stiff competition in the market and the global economic recession have forced enterprises to reduce or optimize the cost of their operations by deploying more IT and communication applications like email, VoIP, etc, leading to tremendous data explosion in these enterprises. The deployment of IT applications such as ERP and CRM have ensured that enterprises of all sizes have to continuously monitor and upscale storage capacity to meet the continuously increasing storage requirements. According to a recent NetApp-Nielsen study, IT applications cause 43% data growth, and emails contribute to about 19% data growth.

The avalanche of data due to mass IT adoption by enterprises is a threat to the enterprise IT infrastructure. This is why enterprises need to recognize the importance of choosing the right cabling solutions in tune with the kind of requirements they have for their information transport system.

As predicted in the beginning of 2009, the economic slowdown that started in the US affected structured cabling markets worldwide leading to a reduction in the market size of every industry. Structured cabling business in India also experienced a decline of 22-25%. The worst affected market segment remained IT, ITeS and BPO segments, especially the multinational entities.

Technology Today & Tomorrow

The structured cabling market in India is rapidly growing every year and similarly there will be shift in cabling media or technology for enterprises. The current shift is on Cat5e to Cat6/Cat6A and on fiber OM3 and laser Grade SM fibers for terabit connectivity. The copper medium has seen a definite shift from 100 Mbs transmission to 1 Gbs and now 10 Gbs. The current market is focusing more on Cat6 and Cat6A on copper and in fiber the focus is more on a single mode with 10 Gbps capability on cabling.

The current applications require more bandwidth, secured connectivity, and high speed data rate. The acceptance of fiber optic connectivity is also increasing due to these applications and more bandwith requirement. Now installers do not have the mental block on fiber termination techniques, and most of them have proper tools and equipments to do the termination accurately with minimal loss. Fear psychosis, a mental block for sure, has definitely died down about complex fiber installations. The successful pilot run of FTTH by service providers would enable huge speed in triple play services. The fiber installation as well as ease of installation is increasing tremendously.

There are few technological developments the structured cabling industry has witnessed in copper medium. As TIA 568C.2 now stands ratified, use of UTP medium and 8 Pin connecting hardware is here to stay, and the industry needs to make efforts in improving hardware performance in this area. CIOs now look for physical security on the cabling system in data centers. They also look for pre-terminated cabling solutions, as this minimizes the amount of time an installer requires,

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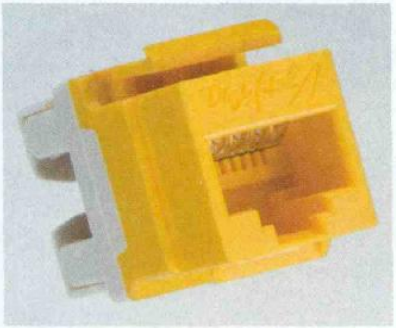
TIPS FOR CIOs

- Cabling system should support minimum Gbpsabit throughput and future applications. Vendor should offer performance warranty
- Cabling system should be zero bit error free performance
- Cabling system should be installed by a trained person
- Cabling should be done as per the EIA/TIA guidelines



thus reduces the chances of errors. Fiber optics is gaining increased acceptance due to pre-polished connectors and pre-terminated fiber. MPO fiber plug-and-play connection systems also decreases the complexity of installing fiber cabling and the risk of error.

To meet the growing requirements, standard companies have introduced new cabling product/technology to support the growing new technology active products. The main factor for the growth of structured cabling is to meet the international standards and the business competition prevailing in the market.

While much of the trends continued as last year, one significant change that is noticed in India now is the move toward converged networks. We can see this trend in new township networks, where enterprises as well as telecom networks are getting intertwined to offer the best converged network solutions to end customers. FTTH will also play a significant role in converged technologies.

The requirements of most enterprise customers are based on global standards, with no significant difference between developed and emerging countries. This is clear from requirements submitted by many multinational customers, with presence in India. The mission critical processes of large enterprises distributed globally require similar and standardized infrastructure at all facilities across varied countries and cities.

A general trend not only among multinational corporations, but also with others, is visibly towards achieving four important goals: to enhance their infrastructure for greater performance and reliability; reduce costs while getting better return on investment; drive the green initiative through virtualization and consolidation; and invest in intelligence that provides vision and knowledge to control the infrastructure.

Increasingly, businesses in India are realizing that the competition for global customers require them to implement the best-in-class infrastructure. The vision for infrastructure is changing, and companies are asking not what the neighbor across the street is doing, but what can be done to ensure global customers do not see another part of the world that is providing competitive offers.

Control and agility within data infrastructure are terms that are often difficult to reconcile. As businesses seeks to gain control of their IT environments they move to institute process and restrictions on changes and upgrades to the infrastructure. Control is necessary to ensure high standards of reliability and compliance to security and governance requirements. These objectives can squarely oppose the business needs to be agile and responsive to changes in customer requirements or market opportunities. IT tools such as help desk software are used to provide automated control capabilities. Automation enables the control side and reduces costs associated with these controls. The physical infrastructure has often not been included in the scope of the help desk, and therefore still lacks the necessary degree of control.

Despite the recession, there has been considerable increase in demand for 10G, especially with the availability of several equipments supporting 10G

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Many customers are deploying intelligent infrastructure solutions to bring the physical infrastructure into compliance with their business objectives. IIS extend control and security systems to cover the physical voice, data, and security networks. Automation capabilities provide compliance, audit, and security services for physical network elements. The expert system also guides service deployment and maintains the CDB automatically. Designing and provisioning the physical network can be done by members of the regular support system. The result is lower operational costs, increased control and agility. It is not a surprise that there is a growing trend to implement intelligent network management for cabling systems. Data center managers are adopting this approach. IIS can be a key differentiator for DC operations.

Betting Big on 10Gig

The current status of 10 Gbps cabling market is that of a maturing market compared to what it was a few years back. What's driving the growth is the need to manage the ever increasing information. Companies are investing in SANs and fiber channel over Ethernet (FCoE) and these in turn are driving the growth for 10 Gbps. However, 10 Gbps isn't a new technology; it has been around for sometime. If earlier we were seeing applications for data center connectivity and backbone cabling; today after standards ratification, we are seeing applications in the horizontal cabling also. Today, 10 Gbps is becoming a major requirement in enterprises, disaster recovery centers, R&D institutes, server farms and data centers. This indicates that

the market is maturing. With regards to the market size, approximately 2% of the market is for 10 Gbps cabling out of the total structured cabling market.

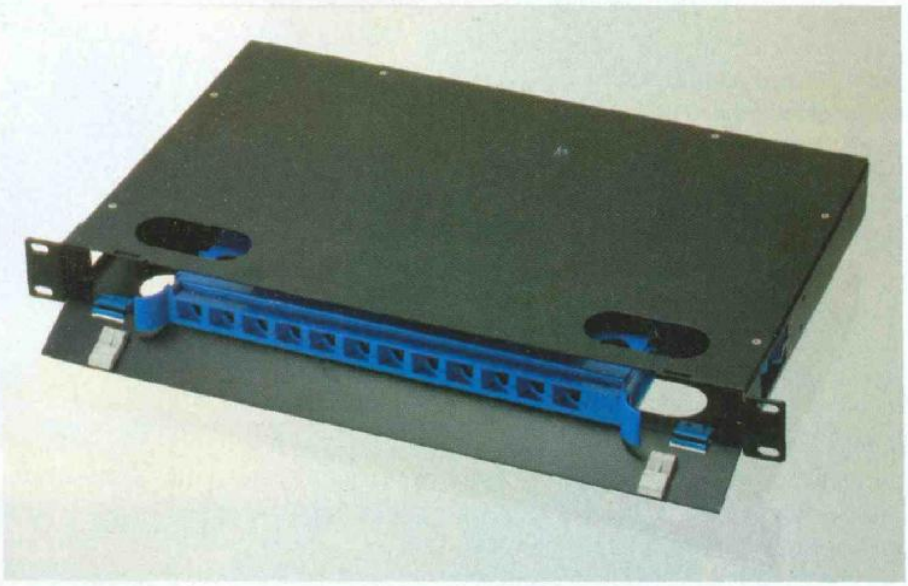
With regard to the technologies, what's clear is that the current Cat 6 cables will not be able to handle these speeds and as such there will be a shift towards Cat6A and fiber channel cabling solutions. Fiber will be a great driver for 10 Gbps and the accent will be on single mode fiber with 'Zero Water Peak'.

10 Gbps can be a good option for affordable broadband for high bandwidth requirements. Media, entertainment, banking and insurance will be some of the key sectors looking at 10 Gbps. 10 Gbps over copper will also find acceptance in server farms. ADC KRONE was one of the earliest vendors to deploy 10 Gbps over copper cabling.

The 10 Gbps market in India is still primarily limited to backbone especially in data center environments. There is no significant change on this front since last year. Fiber and Cat6A (FTP & STP) take about 50-50 share in the data center installations in the country. It is especially so in segments like data centers, test labs, etc. Mainly fiber is in use, Cat6A according to EIA/TIA is used. Cat6As which as per ISO/IEC is better than EIA/TIA and is yet to catch the market. This is due to the fact that there are very few manufacturers in the market with this product.

10 Gbps installations have now become more available and affordable. Enterprises with both copper as well as fiber opt for 10 Gbps, depending upon exact applications. Within copper, due to ease of installation as well as lower costs, UTP still remains the first choice.

With the advent of 10GBASE-T for 100 meter links of twisted pair copper cabling, 10 Gigabit Ethernet is moving into the market to provide simple, cost-effective, standards based products for enterprise and data center networks. 10 Gbps Ethernet on copper enables higher port density. 10GBASE-T will also support the plug-and-play simplicity of RJ-45 interconnects and twisted pair copper cabling. A primary goal of the IEEE 802.3 Ethernet standards process is to enable robust, cost-effective technologies that can be used to build real economic solutions for today's data center and enterprise networks. 10GBASE-T was developed to support a standard reach of 100 meters on Category 6A cabling and 55-100 meters on Category 6 cabling. In fact, the IEEE 802.3an 10GBASE-T Standard mandates that all 10GBASE-T PHYs reach 100 meters in order to be compliant.



The market for 10 Gbpsabit cabling got off to a slow start, but now corporate customers are looking for more speed on their networks, the technology seems to be hitting its stride. Few applications currently require the full bandwidth provided by 10 Gigabit Ethernet. But demand is picking up amid sharp price cuts fueled by new designs and higher density products. In addition, a new standard to run 10 Gigabit Ethernet over copper cable could help reduce costs and spur adoption

Despite the recession, there has been considerable increase in demand for 10G, especially across data centers. The adoption has gained momentum with the availability of several equipments supporting 10G, and the ratification of standards for 10G over UTP. According to the new Global Data Center Survey commissioned by CommScope, with contributing sponsors Brocade, Eaton and Intel, almost a third (32%) of all organizations surveyed worldwide are planning or building new data centers, while more than four out of five (83%) existing data centers continue to receive investments for infrastructure and technology projects. Globally, more than half (54%) of the organizations installing new copper cabling would invest in Category 6A 10 Gbps solutions.

The acceptance of fiber optic connectivity is also increasing due to these applications and more bandwith requirement

10 Gig Adoption

As of now 10 Gbps is still priced on the higher side and most customers are bidding their time. However, things are bound to change and soon the industry will see more aggressive price points being put forward. Undoubtedly this will lead to investment in 10 Gbps.

If we look at adoption in enterprises, the Indian market is clearly lagging behind the US and European markets. However, interestingly, most Indian customers, though being a bit late on 10 Gbps, are actually demanding the most advanced features in 10 Gbps! 10G installations have become common in India for backbone installation in campus networks and also in the DC, especially in telecom, B&F, and ISP. Currently 15% adoption has happened

for 10 Gbps, and the expected increase is 12-15% in FY 2009-10 (Jan-Dec 2010).

While with few verticals like IT/ITeS, data centers 10G is a de facto requirement, others are also opening up. Last year we must have had about 15% of the entire copper installation base catering to 10G services while amongst fiber physical layer, it can be over 70% 10G ready.

The growth of wireline over the last decade or so has not only been stagnant but also negative, completely shrouded under the resounding growth of wireless. Rapid growth of India's economy in the recent years and the dependence of key industries on fast connections and high bandwidth has given rise to an emerging nascent market for broadband equipments which may achieve higher growth rates within a couple of years.

The other scenario for wireline expansion is where operators run fiber to a kerb or a building, and runs copper in the last few hundred meters for subscribers. In either scenario, reliable connectivity infrastructure is an important component of performance and customer experience. Some infrastructure companies operate both in copper and fiber connectivity, including advanced technologies like FTTx.

With increased data sizes and IP convergence, enterprises will witness a sustained demand for bandwidth. As enterprises rely on technology for business transactions, we will see 10 Gbps being an integral part of backbone and server farm requirements besides forming an integral part of high performance networks. As mentioned before, the price points have to be more aggressive to usher in investments.

Moving forward the 10G installation would become a default for backbone and DC connectivity. 10 Gbps adoption is expected to reach 50% of all installations in India by end of 2014. This roughly translates into a growth of approximately 80% y-o-y. The keyword here is the ITS industry which will remain future proof; hence while end use may still be gasping at 1,000 Mbps at the most, it is expected that 30-40% of ITS investments in next four years, asking for 10Gpbas ready solutions.

A large portion of the broadband subscriber growth that has happened in recent times has been primarily on copper. But the issue with copper is that it is limited, and the quality of the best existing copper is not adequate to handle subscribers. With a huge untapped market to be addressed, operators are looking at deploying broadband wireless access technologies like WiMax. Not only are these technologies quick to roll out, but are also ideal to cater to the Indian market since they are end-to-end, based on IP and are spectral efficient supporting features like SOFDMA, Multiple Input Multiple Output (MIMO), beam forming using smart antenna technologies, etc.

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The Next Level

While most data center backbones are being designed on 10G solutions, talks are already on for evolution of this technology to 40G or even 100G. The guidelines for migrating data centers from 10-Gbpsabit Ethernet to 40G and 100G Ethernet data rates will be developed by standard bodies. These guidelines are required as the data center environment requires solutions that enable a smooth migration to 40/100-GbE. There are many ways of achieving this. One way would be to use laser-optimized 50 µm multimode fiber (OM3), multi-fiber optical (MPO/MTP) connectivity and parallel optic transmission. The areas of implementation include all Ethernet spaces within data center, including network interfaces between core routers and distribution switches, from the distribution switches to the edge switches, then from the edge switches into the server.

The 40g/100G standard was expected to be published by mid of 2010, but this is now delayed and expected only by the beginning of 2011. Draft 2.0 is technically complete, where technical specifications could still be modified as the discussion goes on. Now the concentration is more on fiber solution for the 40/100G and the current situation indicates interface to be MPO, because of the parallel transmission needed.

The Daft Specs for 40G as well as 100G have been available. The specs when ratified would make a huge difference in the available speeds. All the major ITS

players are gearing up for their offerings. In case of 10G, initially there would be a much less demand, however everyone will wait and watch. The standards are recommending both copper as well as fiber media.

40/100 Gbps standard is necessary to support increased transmission rates as enterprises manage ever-increasing amounts of information. Any environment which requires high bandwidth and the need to support high transmission rates can benefit from 40/100 Gbps standards.

The market drivers for 40/100G have been Internet exchanges, ISP backbones, content providers, data centers, high performance computing and video-on-demand delivery. Internet and data center users always demand higher bandwidth to carry voice, data, and especially video. Because of that demand, today's 10 Gbps optical and electrical links are running out of capacity. Data centers and core networks need faster links. Hence, in order to meet the growing demand of bandwidth 40/100 Gbps standard is required. With bandwidth hogging applications on the rise, such as cloud computing, IPTV, video-on-demand, etc, most telcos around the world are starting to upgrade their backbone to 40G and some have even begun testing 100G.

There are already companies that are using 40 Gbps or 100Gb/s, however the Ethernet equivalent covered by this standard will start being adopted rather rapidly for certain applications. Widespread adoption of the Ethernet transmission at those speeds will depend on customer needs and product availability. As companies move to 10GbE in their horizontal data center applications (for instance switch to server), 40 and 100GbE will be used for backbone (switch to core switch, and storage to storage) applications first. Some companies will move to 40GbE for switch to server more rapidly than others. This could include cloud computing providers, video distribution, research facilities, and in some cases finance, where algorithmic trading and modeling applications are used.

In an environment that requires constant monitoring of MACs, failsafe security, etc, intelligent infrastructure management solution is the key for success

40/100G is sure to be adopted very quickly once network switches supporting these speeds become available going by the ever increasing demand for bandwidth. However, going by the past trends, we will see a lot of customers looking at making sure that their network infrastructure is capable of supporting these speeds. We will probably see a lot of alert customers looking at single mode fiber and other physical media that can support 40/100G as their preferred solution.

Passive components installation should start picking up in the 2011-2012 once the ratification of the standard happens. Today, products are available from Tyco Electronics which can support 40/100G on fiber (OM4 & OS2) including the pre-terminated fiber option called as 'MPOptimate' in both MM/SM which is capable of supporting today's and tomorrow's any kind of DC design. Copper on 40G will be available only on shielded solution, and Tyco has launched Cat7A which are capable of supporting 40G systems. Connection to the active device might take a bit longer time.

Choosing it Right

As structured cabling solution is the backbone of any enterprise network, choosing the right solution, and planning and designing their networks are crucial for CIOs to build a healthy network system in the first stage itself. The planning should be in such a way that enterprises should be able to support three generations of active network infrastructure in the future. Because once they install the cabling solution it cannot be replaced at will as the entire infrastructure system would be disturbed.

Choosing the right cabling solution means choosing the right future for enterprise businesses. Enterprise CIOs/CTOs should carefully consider many factors while choosing, installing, and maintaining the right cabling solutions. The three basic guiding rules for enterprise CIOs are future proof investment, scalability, and security. The SCS installation should support speed needs for at least the next six years. Moreover, installation architecture has to support scalability and data needs to travel secured and relatively unaffected, due to increasing EMI noises.

In today's scenario where enterprises are still price sensitive, it is important to keep in mind that, while constituting only 5% of the total network cost, structured cabling is the basic requirement of the network. Once installed the cabling infrastructure is expected to last for many years and unlike the active components this can not be changed at will.

The most important consideration of course would be the application that would run on the network. For high speed and bandwidth intensive applications, 10G solutions on copper or fiber are recommended. If the requirement is for 7x24x365 availability, failsafe reliability and continuous monitoring and fast installation etc, then data center solutions with plug-and-play factory pre-terminated and pre-tested structured cabling products like MPOs and MRJ21 are best options. The environment that requires constant monitoring of MACs, failsafe security, etc, intelligent infrastructure management solution is the key for success. Industrial environments require special cabling based on industrial Ethernet standards. Etherseal products are available for these applications.

While going for a solution depending upon their requirements, CIOs need to keep in mind ISO/IEC standard compliant products, source of manufacturing, trained and certified system integrators, flexibility, innovation and planning of the design, good documentation, and proper labeling system.

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