

# Companies plug into Cat 7 standard

As Category 7 is being written into cabling standards, the RJ interface faces its biggest challenge from Siemon's TERA interface – which has been set as the 'fallback' Cat 7 standard should Alcatel's hybrid RJ-45 connector somehow fall by the wayside as the preferred choice of interface. **Ry Crozier** talks to The Siemon Company account manager **Jenny Malin** about the introduction of Cat 7 and why companies are looking at Cat 7 deployments rather than fibre.

At 250MHz, Category 6 is generally considered to represent the highest bandwidth capable of being supported by unshielded twisted-pair (UTP) cables.

So the question of getting more bandwidth to the desktop is answered by one of either two cabling types: fibre optics or the introduction of Category 7.

## Cost-effective Cat 7 cables

"The Siemon TERA system is a screened copper (ScTP) solution which has the same design principles as UTP – 100m channel or 90m link," Malin said.

"Fibre systems can run much further which is an obvious advantage over any copper solution."

"In a lot of cases we wouldn't necessarily recommend running TERA instead of fibre, but it can certainly complement the whole range," Malin said.

That said, Cat 7 has several clear advantages over fibre optics, including cost effectiveness and increased flexibility.

An early cost study conducted by Siemon showed that when the complete cost of a LAN installation is considered, Cat 7 as a high-bandwidth solution costs less than half that of a multimode fibre installation.

The study compared a 24 channel Cat 7 installation to a 62.5/125 multimode fibre system and found that while the installed cost of the two systems is comparable, the active equipment for a fibre LAN is approximately six times the cost of copper equipment.

"Active equipment for fibre is very expensive," Malin continued.

"As with fibre, the TERA system delivers high bandwidth (600MHz) but the active equipment for the copper solution is much less costly."

The cost-effectiveness argument is also supported by the ability of Cat 7 to support multiple applications over one cable.

Malin said that a single TERA outlet is capable of connecting up to four different network devices with completely different signal profiles simultaneously.

For that same level of functionality using a traditional RJ-style interface rather than TERA the user would need four separate RJ outlets, according to Malin.

"Category 7 cable is of a different construction than category 5e or 6 cables – there is an overall braid and all four pairs are individually wrapped in foil," Malin continued.

"This full shielded construction virtually eliminates crosstalk between all pairs up to 600MHz".

"The shielded system also allows you to split the pairs at the work area, eliminating the need to waste up to 75% of the cable as with UTP," Malin explained.

Malin said the cost effectiveness comes in when the TERA system is utilised to its full potential because less componentry is needed.

"Instead of having two or three UTP outlets, which is a typical scenario with commercial structured cabling systems, installing one TERA outlet effectively

allows you to support one computer (two pairs), one fax (one pair) and a telephone (one pair)," Malin said.

"Depending on how the TERA system is configured, four different applications can run on one cable simultaneously."

## Interface wars

Of course that is the beginning of one of the issues at the heart of Cat 7's introduction – can a traditional RJ-style connector meet Cat 7 requirements of up to 600MHz?

The ISO/IEC group working on the standard obviously has confidence in the capability of the RJ, promoting Alcatel's hybrid RJ-45 connector as the preferred choice of interface. Siemon's TERA design has been listed as the 'back-up'.

While the question remains as to whether

TERA will be called out for telecommunications outlet connections in Cat 7, the interface remains on track to become an IEC standard which can be referenced by other standards in the future, according to Siemon engineering vice president John Siemon.

Traditionally, the connecting hardware interface at the work area has been defined as an 8-position modular or RJ-style interface.

"By shedding the constraints of the RJ interface, we effectively pressed the reset button on twisted-pair connector design," Siemon said in a recent Cat 7 update.

"This move allowed us to ignore the inherent performance limitations of an interface that was designed decades ago for frequencies below 1MHz."

"Instead, we set out to achieve optimum performance and reliability beyond 1.2GHz in a size that fits within the same space as an RJ outlet," Siemon said.

In the event that Alcatel's RJ design is not validated for Cat 7 specifications, the Siemon TERA will be selected as the standard's specified work area interface.

But Siemon points more to a place and time beyond RJ as when TERA will achieve industry standardisation.

"It is just a question of time before telecommunications applications force advances in structured cabling to go beyond traditional RJ-style connections," Siemon continued.

"Naturally, this change will not take place overnight, but the availability of a market-proven IEC interface can only help facilitate continued advancement of balanced cabling beyond the limitations of older technologies."

Siemon indicates that while it would be preferable to complete work on Cat 7 specifications before starting new projects like Cat 8, there will be continued pressure over the next 18-24 months to achieve a truly 'generic' infrastructure.

"If and when these proposals [Cat 8] are accepted, the TERA interface, which already supports the proposed 'next generation' numbers up to 1.2GHz, will be the logical choice," Siemon added.

## On the home front

If all this talk of standards – past, present and future – is leading to any particular point, it's local deployments of Cat 7 that brings the technology back down to earth.

According to Malin, Siemon has already achieved installations in Sydney, mainly based on the system's immunity to electro magnetic interference (EMI).

"This means you can have the TERA system running in environments that typically wouldn't be suitable to run UTP because the fully shielded design assures maximum reliability by providing immunity to EMI," Malin said.

One installation in Sydney involved a printing firm that had existing active equipment to support the unshielded twisted pair (UTP) or copper system.



Siemon's Jenny Malin said that Cat 7 has aroused a high level of interest across a range of industries due to its performance benefits and its EMI.

"Being a manufacturing firm, their equipment generated a lot of EMI so they decided to go for the TERA shielded system, which proved to be more cost effective than even a Category 6 system – which is what they were looking at initially," Malin continued.

"Cat 7 is also suitable for areas which have high RF or even just for typical commercial work environments."

A second installation was in Sydney's CBD.

"This client used TERA because they wanted a shielded solution to future-proof their system, and because TERA is such a high bandwidth solution they are doing just that," Malin said.

Because it is capable of such high-bandwidth, Cat 7 will also support audio-visual applications such as television and other media-based environments.

Malin said that Cat 7 has aroused a high level of interest across a range of industries due to its performance benefits as well as its EMI and added security capabilities that a shielded system offers.

"On a one-to-one outlet comparison TERA is much more expensive, but that's not the way we would recommend it to be designed," Malin continued.

"Typically we would recommend TERA be used to its full potential, which means splitting the pairs at the work area."

"Potentially, three Category 5e outlets at the work area can be replaced with one TERA outlet, so the cost-effectiveness is huge," Malin added.

More information: <http://www.siemon.com>

Referenced Cat 7 update by John Siemon: [http://www.cabletesting.com/news\\_issues.html](http://www.cabletesting.com/news_issues.html)



Siemon's TERA design has been set as the fallback Cat 7 standard.