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Why choose Cat5E, Cat6 or Cat6A?

Category 5 was first published as a standard in 1995. It appeared in:

• ANSI/TIA/EIA-568-A

• EN 50173

• ISO 11801

Note that in the American standard (TIA) the term 'Category' refers to the individual product performance (cables and connectors etc.) and the overall channel performance. For example Category 5 defines a range of electrical performances up to 100 MHz.

In the European standard, EN 50173 and the international ISO standard, 'Category' only refers to a product performance. The overall link and channel performance is rated by 'Class'. So for example a Cat 5 cable terminated with Cat 5 connecting hardware would give a Class D channel and link performance.

The original Category 5 standard was suitable for LAN transmission standards up to 155 Mb/s, including all the various forms of fast Ethernet up to 100 Mb/s. When gigabit Ethernet was introduced in 1998 (1000BASE-T) it was discovered that the original Cat 5 specification wasn't good enough to guarantee error-free performance.
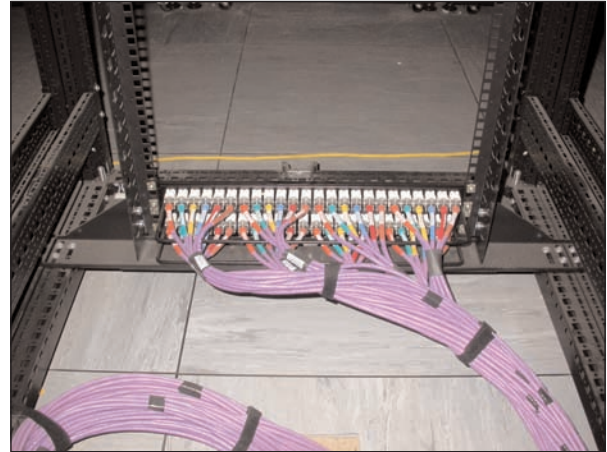
Connectix Cat6 keystone modular jacks installed into high density panels. This panel is positioned in the bottom of a new server rack in a London data centre.

Extra technical requirements were added to the original Cat 5 specification, such as Return Loss, Delay, Delay Skew and Power Sum Crosstalk measurements to ensure reliable operation of gigabit Ethernet.

The improved range of parameters became known as enhanced Category 5 or Cat5e. Note that Cat5e is still a 100 MHz channel, but with a tighter electrical specification.

In 1999/2000 all the standards were updated to take into account the new Cat 5 requirements.

Until September 2002 the relevant standards were:

• ANSI/TIA/EIA-568-A Addendum 5, this was in turn replaced by ANSI/TIA/EIA-568-B in summer 2001
• EN 50173 Amendment 1 2000
• ISO 11801 Edition 1.2

After September 2002 the relevant standards were:
• ANSI/TIA/EIA-568-B
• EN 50173 2nd Edition
• ISO 11801 2nd Edition

The expression 'Cat5e' was only ever meant to be marketing 'shorthand' to differentiate it from 'old' Cat 5.

The old Cat 5 standards are now obsolete and nobody (in theory) makes these products anymore. This means that the term 'Cat5e' will gradually fall out of use because today's standard products all meet the latest Category 5 /Class D specifications and are, by default, Cat5e.

All Connectix Cat 5 products, cables and connectors, exceed all of the latest Category 5/Class D standards.

Category 6/Class E was introduced in the summer of 2002. Cat 6 requires the same electrical parameters as Cat5e but with a required performance up to 250 MHz. Cat 6 is defined in the following standards:
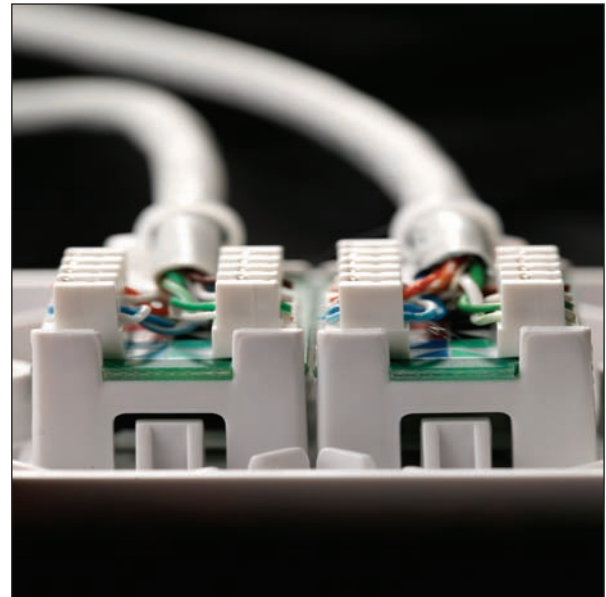
Connectix low profile Cat5e faceplate.

• ANSI/TIA/EIA-568-B2-1
• EN 50173 2nd Edition
• ISO 11801 2nd Edition

Category 6/Class E will offer LAN data rates up to 10 Gb/s, but over a limited distance, and also gives a superior video transmission performance.

Category 6A will be finalised at the end of 2007 and will offer a system performance of 500 MHz and is designed to go hand in hand with the new ten gigabit Ethernet standard, 10GBASE-T. It is an ideal data centre technology.

Users should ask themselves the question: "Am I happy with the LAN technology of today?" If the answer is 'yes' then that customer will find Cat5e adequate for their needs.

But we know that LAN technology changes significantly on about a two year cycle, so if the user wants a cabling system that will see them through the foreseeable future, encompass the next generation of LAN technology, all without recabling their building, then Category 6 would be the technology for them.
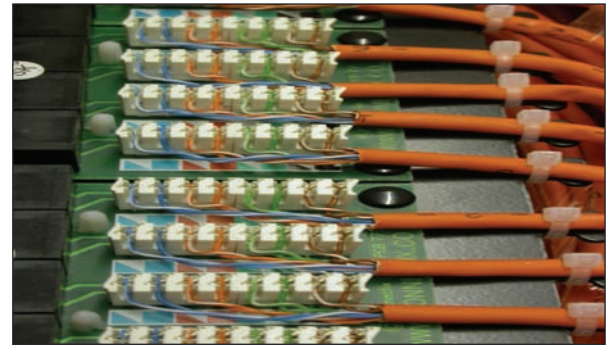
Connectix pre-terminated 2020 patch panel.

TIA 942 and EN 50173-5, the data centre standards, require that Cat 6A is the minimum performance for data centres and computer rooms.

All Connectix Cat6 products exceed all of the Category 6/Class E standards and Connectix Net10G exceeds the proposed Cat6A standards.

Technology	Bandwidth offered	Standard	Max speed	Typical LAN protocol	Distance limitations
Old Cat 5	100 MHz	obsolete	100 Mb/s	100BASE-TX	100 m
Cat5e	100 MHz	2002 standard	1000 Mb/s	1000BASE-T	100 m
Cat 6	250 MHz	2002 standard	10,000 Mb/s	10GBASE-T 1000BASE-T Fibre Channel	Limited to 37 m for 10GBASE-T. Otherwise 100 m
Cat6A	500 MHz	2008 standard	10,0.0 Mb/s	10GBASE-T Fibre Channel	100 m

Table 1: Categories and Standards