

# Technical Information

## Category 6a Shielded Solutions vs Unshielded Solutions

We very strongly believe that shielded cabling is the best solution for any 10GbaseT deployment.

There are a number of reasons for this as follows :

- One major limitation of a UTP system is its tolerance to external noise, in particular the 'noise' from other cables, known as alien crosstalk. In addition to providing superior alien crosstalk performance, the shield (when terminated correctly) also provides 'general' immunity to external noise for 10Gbase-T networks.
- Alien crosstalk, if encountered, can reduce the network capability down from the anticipated 10GbaseT to 1000baseT or less. A standard 'permanent link' test cannot identify alien cross talk issues. A standard 'pass' does not cover alien cross talk.
- One of the limiting factors of 10GbaseT is alien cross talk, but there are alien crosstalk mitigation methods which can provide spatial separation between the cables and create a distancing effect between each of the cables.
- Alien crosstalk is dominant between like-coloured pairs when cables with the same basic construction are grouped into a bundle. When bundled, like-coloured pairs, which have the same twist rate couple strongly when they are not separated by a shield. Although Cat6A UTP cables contain design elements that control this type of coupling, they are not as effective as a shield in reducing alien crosstalk.
- Because containment space often comes at such a premium, the tendency is to push fill ratios to the limit. In circumstances when trunkings/trays are filled to capacity, the cable is subject to significant strain, which effects alien crosstalk performance far more for UTP than it does for shielded cabling.
- A 'well known' tester manufacturer indicated that in just a 24 cable bundle, to trouble shoot alien crosstalk for one cable would take about 20 minutes and to troubleshoot all 24 cables would take over three hours and 40 minutes. Those times will only provide a diagnosis. If there are alien crosstalk failures, corrective actions can take far longer. The point is that you are unlikely to have those issues with shielded systems.
- Due to the shield, PoE is also delivered with much more efficiency over these types of cabling systems than UTP.

In summary, Category 6a and 10GbaseT can be delivered over both unshielded and shielded cabling systems. Manufacturers that offer 25 year warranties over UTP systems have to be 100% sure that their customers install and test the cabling systems correctly, taking into account all of the mitigation factors such as cabling bundling etc.

As a lot of 'end users' are still installing Cat 6a for 'the future', issues with regards to alien crosstalk may not become apparent for a number of years (which is why a warranty is so important). Connectix see the requirement for Cat 6a U/UTP as very minimal (as a percentage of the UK market) and as such (taking into account the mitigation required above) do not offer 25 year (or other) performance and application warranties on the Category 6a U/UTP systems even though the product can be supplied. Connectix offer full 25 year (or other) warranties on both Category 6a U/FTP and F/FTP solutions.