

In the future, every pupil could potentially have a tablet PC at their desk and every classroom its own interactive whiteboard. These are just a few of the new technologies that are entering the market now for schools and is set to continue, particularly with the introduction of government funded initiatives such as the Building Schools for the Future (BSF) programme - realised to enhance school buildings and create technologically sophisticated classrooms.

A more proactive mindset towards an establishments' cabling infrastructure therefore needs to take precedence, and hopefully this guide has helped provide a basic understanding of what is required, what to avoid, and the questions that need to be asked when choosing your school's structured cabling system.



#### ADDITIONAL INFORMATION

With over 25 years industry experience, Molex Premise Networks is the longest established cabling manufacturer in the market. Our wide ranging product portfolio offers solutions for all media types, including UTP, FTP, STP and fibre. In addition, we support our cabling systems with a Global 25 Year System Performance, Product and Application Assurance Warranty.

Molex Premise Networks has a wealth of expertise concerning the installation of structured cabling into educational establishments. Its in-house technical team are more than happy to answer any questions ICT managers may have or recommend suitably qualified installers.

For further information, please call 01489 898724 or visit  
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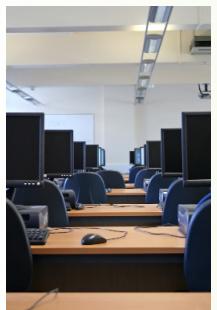
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# Cable Wise

## Guide to Structured Cabling in Schools



## Structured Cabling Systems In Schools

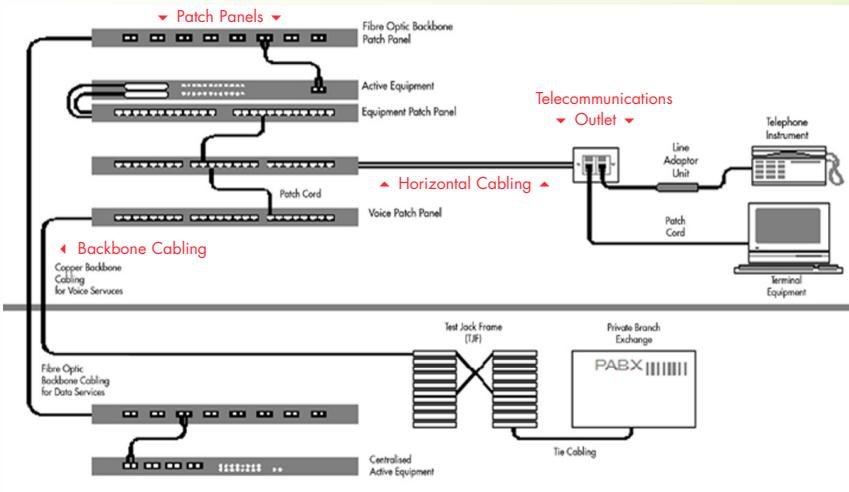


With technology playing an increasingly important role in schools from a teaching and administration perspective, the school's IT network is growing in both importance and size. Underpinning any network is the physical infrastructure and, therefore, many schools find themselves in a position where they need to specify and manage the installation of a structured cabling system.

The aim of this guide is to help the responsible staff in schools to select the optimum cabling solution for their individual needs. It also addresses the need to choose the installation partner carefully to ensure the system is safely and correctly installed by a qualified organisation although the selection of contractors and placement of contracts is often handled by the LEA.

## Specifying a Structured Cabling System

A structured cabling system (SCS) forms the critical foundation of the local area network (LAN) and supports the wide area links into the school such as voice, fax and internet. A typical structured cabling system would look something like the diagram below:



Structured cabling systems are designed to provide a flexible, easily managed and adaptable system for the support of voice and data services and they are in essence simple. However, as with most technologies there is some jargon to overcome and some terminology to understand in order to develop a successful specification.

## *What cabling do I need?*

The first decision that needs to be made is the performance of the "Main" cabling, (also known as "horizontal" cabling - see diagram) this is the part of the system which runs from the distribution panel to the user points. There are four possible "categories" of copper cabling for this portion of the system but in most cases the choice is between the two most commonly used:

**Category 5e** cabling offers a robust, easily installed system which is capable of delivering "Gigabit Ethernet" services (the highest data throughput currently available). Although most schools will currently be running "10/100 Ethernet", Gigabit capability may be required in the near future.

**Category 6** cabling has a nominal bandwidth of 200MHz and therefore offers more "headroom" but is more expensive. Category 6 cables are larger than Category 5e and take up more room in the cable routes; they are also more sensitive to the installation environment.

For most schools, for example, a large Secondary School (NOR 1500), Category 5e is more than able to cover both the current needs and future requirements.

## **Do I need Fibre?**

Fibre cabling is typically used to transmit very much higher bandwidth applications where data needs to travel long distances (greater than 90 metres) and is usually employed to provide a "backbone" to interconnect several other, separated distribution points. Fibre cabling would only be needed in a school network as described or where the cable runs are outside i.e. spread over a large site where several buildings share a common data network.

## **How big does my cabling system need to be?**

Structured cabling systems are sized in terms of a number of "points", a point being an outlet for a phone, screen or other item of equipment. A typical office area might have 4 points; one each for phone and fax, one for the data network and a spare in case of a future requirement, such as the connection of a franking machine. A typical classroom might have 2 (or fewer) points. Each point is either housed in a "Telecommunications Outlet" (similar to an electrical socket) or is contained within a floor box.

Consideration should be given to future network expansion when sizing the cabling system and an allowance made for additional points to cope with technology, such as interactive white boards, wireless access points etc. It is significantly more expensive to retrospectively install additional cabling. An accurate calculation and understanding of the number of points required will also make the task of comparing installation quotations a lot easier.

## Installation, Good Practice

Building regulations do not cover structured cabling systems but there are national standards, which should be quoted in the specification, the two most important being BS EN 50174 and BS 6701.

A qualified network cabling installer should understand these standards and be used to working to meet their requirements when undertaking the installation of the SCS.

Network cabling is not usually considered a "life safety" issue but poor installation practices could jeopardise the safety of staff, pupils and visitors. Stories are told of cabling installations in schools involving copper cables run between classroom windows thereby providing a lightning conductor into each classroom. Standard cables are only designed for indoor use and in this instance would have degraded in performance because of the effects of water.

*When selecting a cabling installer ask the following questions*

**Are they trained and approved by SCS manufacturers or an industry body?**

When implementing the design it is always better to use a fully qualified installer who is approved by the manufacturer. This helps to ensure the quality of installation and makes it possible to take advantage of a manufacturer's warranty, which offers end users the security they need when specifying a cabling system they want to run reliably for years. Many structured cabling manufacturers put their installers through rigorous training before awarding them installer status. Also do not hesitate to check their status with the manufacturer.

In addition, many installers are now accredited to BICSI - Building Industry Consultants International. BICSI is a non-profit organisation whose mission is to enhance the telecommunications industry by providing excellent education, promoting skill sharing, and assessing knowledge with professional registration programmes.

## **Can they provide educational reference sites?**

It is advisable to select an installer that can provide some examples of educational establishments where they have already installed a SCS. This means that they are not only reputable installers but also understand the health & safety implications of working in an environment with children present and should have staff with the relevant CRB background checks.



**What other signs are there to spot a reliable and experienced SCS installer?**

Good quality installers will usually offer a design service and consider the entire network that is to be installed before carrying out any work. This should offer enhanced performance of your network and also ensures that any future moves, adds or changes to the SCS can be implemented efficiently and with minimum hassle.

They also tend to use products from the same manufacturer throughout the SCS - this is to avoid conflict of non-standardised components.

Finally, an experienced installer will be aware of all the industry standards or specifications and should therefore be able to issue the necessary test documentation and "as installed" drawings on completion of the install.