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Network  
your home

## Installing a small structured cabling system

Many people would like to take advantage of the benefits offered by a structured cabling solution in their home, but are unsure exactly what they will need. The following document will explain how to install a simple structured cabling solution for 4 telephones and 4 or more internet points in a domestic environment. The second part of the document will explain how to distribute television over your structured cabling system.

As with any project, proper planning and checking before starting work will make the job easier and more straight forward. The easiest path to run wires and keep them out of sight will also dictate how and where the cables are run. Where the telephone line or lines come into the house will be a main point of focus because this will provide the connection for a Broadband service from an ISP. Hiding the equipment under the stairs or even putting equipment in the attic are all possibilities to make the wiring process easier and the installation neater and less obtrusive. Ideally all the cables would be buried into the walls rather than run round skirting boards or in trunking.

The network will start out from a central point which will have a switch or patch panel to make the connections. A router and its connection also need to come to this point. The connection and functions of these components is described below.

### The Router

The router is the heart of a data network and allows your computers to connect to the outside world via the internet. When you order your ADSL or cable line it will probably come with a modem or modem/router. Specify that you need a router built into your modem rather than just a modem. An ADSL or cable router will usually include a small switch that will provide connectivity for up to four computers while a modem on it's own will only allow you to connect a single computer to the internet. The router should also include a basic firewall to provide some protection for your home network.

*Black Box recommends the following ADSL router: ADSL2+ 4-port Security Gateway over POTS.*



662H-D1

### The Telephone Splitter and ADSL Filter

Most phone lines are provided as a single two wire connection on a BT6L (standard telephone) socket. If you have an ADSL service it will be on the same line but you will need an ADSL filter on the line. This splits the single line into a voice connection and a data connection. To ensure there is no interference between the voice and data services an ADSL filter should be plugged in to every telephone extension that has a device attached to it. The ADSL modem or router is usually provided with one or two filters.

Black Box can supply additional units. *Our part code is: Z-420UK.*



Z-420UK

### The Switch

It is the Ethernet Switch that will connect all your devices such as PCs to the network and to the outside world via the Router. As described above, the Router may also include a switch and offer multiple port connections. If your router does not include enough data ports for all your computers you can purchase a separate network switch to add more ports. This will need to be connected to a free port on your router using a crossover patch cord, or using a straight patch cord if you have an MDI-X (crossover) port on the switch. It is a good idea to put your network switch in an out of the way location, like the basement or under stairs cupboard to protect them and hide them from view.



LBS205XAE

For an economical desktop switch choose our pure networking range: *Pure Networking 10/100 Ethernet Switches*

For a rackmountable switch choose a 16 port or 24 port switch from the following range:

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## The Patch Panel

Even for small installations using a patch panel will simplify your wiring and keep everything organised. It will also eliminate the need to put RJ45 connectors onto cables which can be difficult to do if you have no previous experience of making up cables. It also means you will not need to purchase a special crimp tool to do this. Place your patch panel in the same location as your network switch. This will be the termination point for all the cables you run in your house.

Choose a patch panel to match the cable type you are using (e.g. CAT5e) and choose a model with enough outlets to accommodate all your cabling. If you will have 4 outlets in each of 4 rooms you will need a minimum of 16 ports on your patch panel. A patch panel has punch down connections at the rear to connect your long, permanent cable runs to, and RJ45 sockets at the front to allow you to easily connect any of these cable runs to your active equipment. You will need to use a punch down tool to make the connections at the rear. It is important that you follow the colour coding on the patch panel punch down port when you connect the 8 wires in your cable.



JPM113A-R5

## Patch Cables

The connection from the patch panel to the switch is made by simply connecting the RJ45 ports of each by wires called Patch Cables or Patch Cords. Black Box supplies these in a variety of lengths and standard colours in both CAT5e and CAT6 standards.



JPM113A-R5

## Housing for the panel and switch

Home networks do not normally need anything as big and costly as a cabinet or rack, however, it is a good idea to have some sort of housing for your patch panel and switch to keep them looking tidy and to keep the cables organised and out of harms way. A good, economical solution is a simple 19 inch bracket. This can be hung on the wall in a basement or under-stairs cupboard and used to mount your patch panel and switch.



RMU032-02

## The Wiring

You will need to order enough bulk cable to connect between each outlet in each room and your patch panel, and then between your patch panel and switch or router if this is located in a different place to the patch panel. Connections between the wall outlets and the patch panel should be in solid core cable. The individual wires of stranded cable are not suitable for this type of connector as they can work loose or individual strands can be cut through. For long cable runs you will need bulk, solid core CAT5e or CAT6 cable. This is sold in 305m easy pull dispenser boxes. CAT5e cable is suitable for running gigabit Ethernet and is easier to install and less expensive than CAT6. It often makes sense to install more cable and more wall modules than you need at present to future proof your network.

## The Outlets

You will need a CAT5e (or CAT6) module for each CAT5e (or CAT6) cable being installed. You will also need a faceplate to mount the modules in and a back box on which to mount the faceplate. The Black Box faceplates employ the same screws and screw spacing as UK mains wiring, so any standard electrical back box may be used if the Black Box versions are not suitable. The depth is required is 28mm minimum. Mounting screws are included with the faceplates. The faceplates are available in two sizes. The Faceplate Double takes two modules and is the same size (86mm x 86mm) as a single gang UK mains outlet faceplate. The Faceplate Quad takes up to four modules and is the same size (86mm x 146mm) as a UK double gang or twin outlet mains faceplate. If mounting fewer modules than the faceplate can hold then use the quarter blanks to fill the remaining space. Two quarter blanks are needed to fill the space of one module. Use the single gang back box with faceplate double and the quad gang back box with the faceplate quad.



PLASTICS

## The Tools

In addition to the punch down tools for your patch panel and modules (FT024-ECO-BUN) there are other tools that you are likely to need. A stripper specifically designed for infrastructure cabling is not expensive and will make the job a lot easier. *Hand Stripper • Multi-Strip* A basic cable tester will also potentially save a lot of time troubleshooting your active connections later on. *Multi Quick Checkr*



FT230A

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