

The Strand 430 range of consoles incorporate PC technology - the 430 is based on a 486 processor, and the 530 and 550 have Pentium 90 processors. This technology offers several advantages, one of which being the ability to 'network'. Networking is common practice where a group of PCs are used in a single office location. It enables all PCs to work with each other, sharing files, database information and peripherals such as printers and modems.

In the world of entertainment lighting, there has been a move to expand the capability of memory controls, over the years, to include ever higher levels of interactivity and use of remote controls, VDU displays, printers, remote editing; and high-capability peripheral devices such as digital dimmers have created a need to expand the lighting systems' networking capabilities.

With PC technology, the initial problems of networking have been solved, and have matured to the point where most new PCs offer the facility as standard, and the cost of networking components are low.

Strand has decided to adopt the world-wide PC networking solution of Ethernet as the communication system for its ShowNet™ network system. Ethernet is simply a wiring convention, and an interface specification for transmitting packets of data. The cabling methods, although specialised, are well understood by specialist companies, test equipment is readily available to check the entire network, and connection methods and standard socket boxes are readily available. Thus we are inventing nothing new - we are adopting existing practice and knowledge.

Ethernet describes the communication system. What ShowNet networking offers is the ability for a console or consoles to communicate between themselves, to share facilities such as printers, incorporate remote console and VDU displays for the production desk, and to connect to peripheral devices such as additional dimmers and DMX devices. Many of these features have been in use for many years, but they previously required specialist wiring for each facility; three coax cables for each remote monitor, additional cables for handheld remote controls, special cable sets for each remote console position, DMX cables and connections for dimmers and scrollers and so on. What Ethernet offers is a high bandwidth, high speed data route which can accommodate several screens of VDU displays, many DMX lines, interactive controls, printer data etc, through a single cable. So Strand's ShowNet is a means not only to simplify and tidy up an installation, but also to create an integrated control system.

To access specific data available at any point in the ShowNet system, a device is required to interpret all the data and select exactly what is required. This requires a 'node' and

the SN100 is Strand's first product of this type. The SN100 is a computer in a box, that can tap into ShowNet and offer a variety of connections wherever the node is connected. VDUs and DMX signals are just two types of signals that may be distributed around an installation of this type.

An added feature of the SN100 is its ability to convert DMX signals to run via Ethernet. This requires two SN100s, one at each end of the Ethernet cable, but no console is involved, and this offers a sophisticated DMX distribution system at a reasonable cost.

ANNOUNCING THE STRAND SN100

The Strand SN100 is a microprocessor device for providing access, at a remote location, to signals present at a Strand 430, 530 or 550 console operating Networker™ software. SN100 is a

installations will be equipped with Ethernet as a matter of course. Smaller venues will use ShowNet™ for distributing data to a stalls position, whereas large installations will use a comprehensive wiring system to accommodate scroller and automated lighting positions, and additional dimmer connection points.

Although there have been many computer connection schemes developed, Ethernet has become the industry standard, and a direct affect of this has been the growth in equipment designed for Ethernet, and the inevitable reduction in prices in a market-led environment.

The first two buzz words you need to know are "10 base 2" and "10 base T". These refer to the elements of the network cabling.

10Base2 refers to 10MHz (data transmission rate per second) Baseband (the bandwidth of the signal) 2 (two wires). The cable used

is relatively cheap coax cable, terminated in BNC connectors. The different parts of the system are all connected to a single cable, which is called the 'backbone'.

This is a very simple, and cheap installation system, and it has advantages for basic installations (such as a console to production desk cable run only). However, the disadvantages

for a larger installation are that if the cable is damaged or disconnected at any time, the remaining part of the network will fail. The "T" connection has to be made to the rear of the peripheral, and is therefore cumbersome, and terminators are needed at each end of the line.

10BaseT also refers to 10MHz (data transmission rate per second) Baseband (the bandwidth of the signal), but the wiring is Twisted pair telephone cable. The cabling system is based on a star network linking each computer to a central "Hub". Hubs are positioned around the building where convenient for the 'home run' of cable to a wall socket. Hubs are linked together usually by a 10Base2 backbone, and each different part of the system is connected together via a single cable, in a star formation around an Ethernet hub. Although this is more complex, and involves additional hardware hubs than the 10Base2 scheme, it has advantages for larger

installations where Ethernet is used as the connection system between the console and remote dimmers, scrollers, the production desk, automated luminaire positions and so on. This is the suggested solution for most users, and the particular advantages are that if any 10BaseT cable is damaged or disconnected at any time, the remaining part of the network will continue unaffected. The connection to each peripheral is made using a telephone type cable, which is light weight, and easy to use. The connection uses a telephone type (RJ45) plug.

The examples shown describe how the majority of office computer networks are created. The number of hubs is determined by the particular geography of the site, and the requirements for individual outlet points. Ethernet hubs of different capacities are available, and the decisions surrounding the best configuration for any application is one of the reasons why specialist contractors should be employed to install the system.

ETHERNET & SHOWNET™

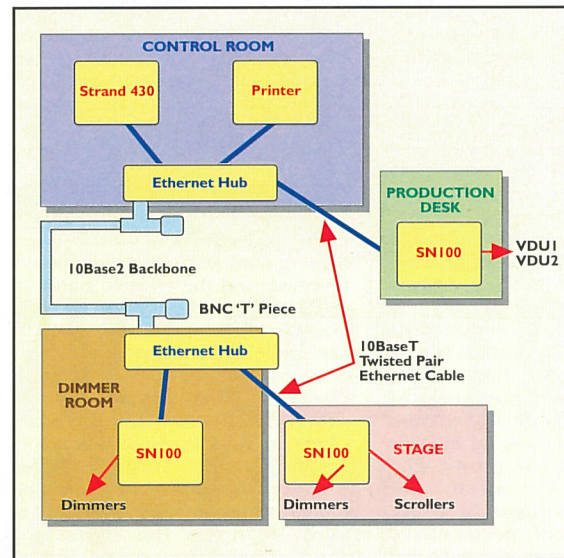
When you have described a typical office installation you can develop the idea into the theatre or TV studio environment. In place of the office computers, servers, printers and modems, there will be lighting consoles, hand held remotes, remote VDUs and printers.

Remember, this is still at an early stage of development, not in terms of our technical R&D, as the technology is tried and tested, but in terms of user requirement and application in the entertainment lighting field.

In a typical lighting control application, the SN100 is used in the same way as any other Ethernet-compatible peripheral device. Its purpose is to provide an interface between discrete signals in the real world, and the compressed, high bandwidth data provided by the Ethernet cable.

In future, the use of the Ethernet system will encompass many other applications such as full tracking backup, and so even if the venue hasn't an immediate requirement for an Ethernet installation, one should be considered to take advantage of anticipated uses in future.

It is commonly asked whether a PC network (e.g. Novell) can be connected to Strand's ShowNet to share common resources such as printers? As a general rule, the answer is no. When a PC network is operating, there are times when some software will reserve the entire capacity for a particular task (e.g. printing). This will have the effect of halting the communication for the lighting part of the system, resulting in very slow response. Under certain circumstances, the two networks may be linked, and this is done by ensuring the connection points of each network are separated on different hubs, with the systems connected together through 'gateways'.



WHAT IS NETWORKING?

multipurpose Ethernet node which offers connections for DMX signals, and up to two VGA monitors. SN100 may be permanently installed by wall-mounting using the bracket supplied, or simply connected temporarily to any Ethernet output where access to specific signals is needed. SN100 operating software is supplied with Networker™ application software, and is installed via the floppy disk drive of the SN100.

Looking into the future, the SN100 is already equipped with a 3.5" disk drive, a keyboard port, MIDI connections, RS485 and RS232 ports, two slider faders, and four selection keys, to provide complete access at a remote point for many other features currently available at the console, or anticipated in the near future, while leaving sufficient flexibility for the unknown.

Each Strand 430, 530 and 550 installation will in future include a form of Ethernet installation. All new