LocalNet™

**Broadband
Network
Technology**

sytek

Linking today with tomorrow.

As a manager with responsibility for data communications decisions, you are faced with three key issues when you evaluate a local area network. The first is growth. Your network must have the capacity to handle your current needs, plus whatever the future may bring—including video and voice transmission, links to other local networks, and gateways to long-distance networks.

The second issue you must face is your sizable investment in existing equipment. The network you select must be compatible with *all* of it.
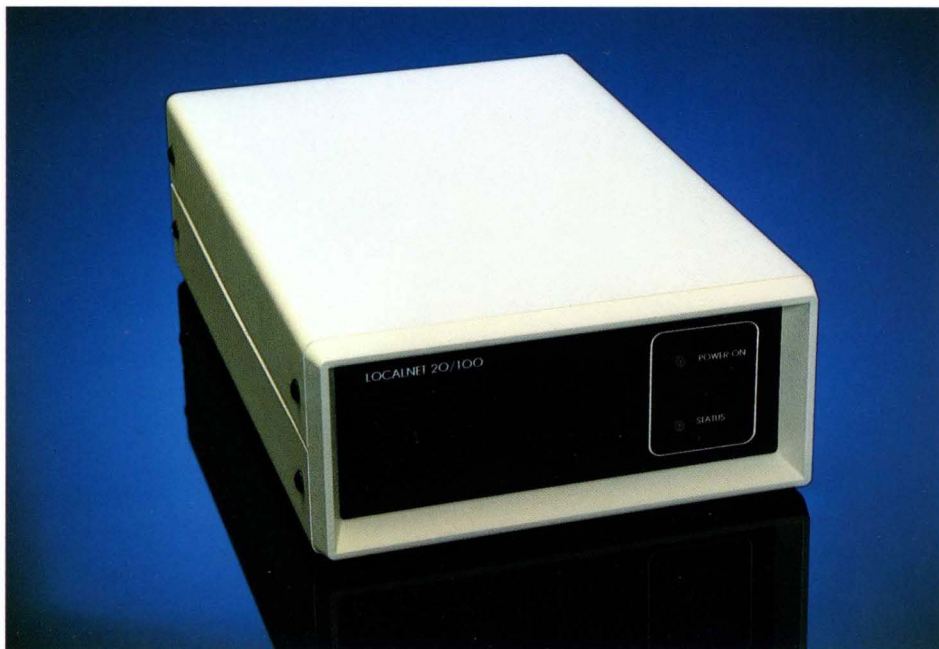
The third issue is the certainty of change. Your network must be able to accommodate whatever the future may bring—whether it be new vendors, new transmission standards, or even new information technologies.

In addition to these fundamental issues, there are other very important considerations—the physical means by which information is transmitted, for example. Systems which use telephone cable or point-to-point coaxial cable can create wiring nightmares that become an enormous barrier to growth—and sometimes actually make growth impossible.

Cost control is another consideration. For some network technologies, the incremental cost of expansion is very high. With leased lines, for example, you have no way to avoid costly rate increases, or even predict them!

A PCU associated with each LocalNet node handles all intelligent data communications functions.

LocalNet is totally vendor-independent, so all the devices you own can communicate with one another.

The LocalNet™ Solution

The Broadband Approach. With Local-Net™, Sytek has created a technology that resolves all these issues, and provides you with a spectrum of cost-effective data communication services—for today *and* tomorrow.

LocalNet is a broadband local area network that can simultaneously accommodate communication between over 20,000 separate user devices (computers, terminals, digital sensors, etc.), all on a single coaxial cable of the type used by the cable television (CATV) industry. Moreover, when LocalNet is operating at its maximum (25.4 Mb/sec), *74% of the cable's capacity is still available for other services, such as video and voice.*

The LocalNet transmission technique is compatible with midsplit, subsplit and dual cable installations; and you can locate nodes anywhere within a radius of 50 kilometers.

LocalNet is totally vendor-independent, which means that *all* the computers, terminals or other devices you now own can communicate with each other; it also means you have complete freedom to select new vendors and new equipment in the future.

LocalNet supports a broad spectrum of devices with widely varying data rates, from low-speed terminals with serial interfaces (synchronous or asynchronous) to high-speed host computers with parallel interfaces.

Practical Considerations. LocalNet makes planning the distribution of data in a building, college campus, or industrial complex as straightforward as planning the distribution of electricity. Since the coaxial taps into the network are industry-standard and inexpensive, they can be pre-installed to accommodate whatever requirements the future may bring.

Once in place, LocalNet is physically rugged and reliable. Since it uses standard CATV hardware, LocalNet provides proven reliability—and its topology is such that damage to one outlet or cable has no effect on the rest of the network.

Technology

Distributed Intelligence. In LocalNet, the intelligence resides within the network. A Packet Communication Unit (PCU) is associated with each user device or group of devices. The PCU "packetizes" digital input from a user device, and converts it to analog (radio frequency) output for the network. It also handles all intelligent data communications functions, such as network access, formatting, addressing,

and error checking. Since network control or management by a central computer is not required, LocalNet can be implemented without diminishing the capacity of existing computers.
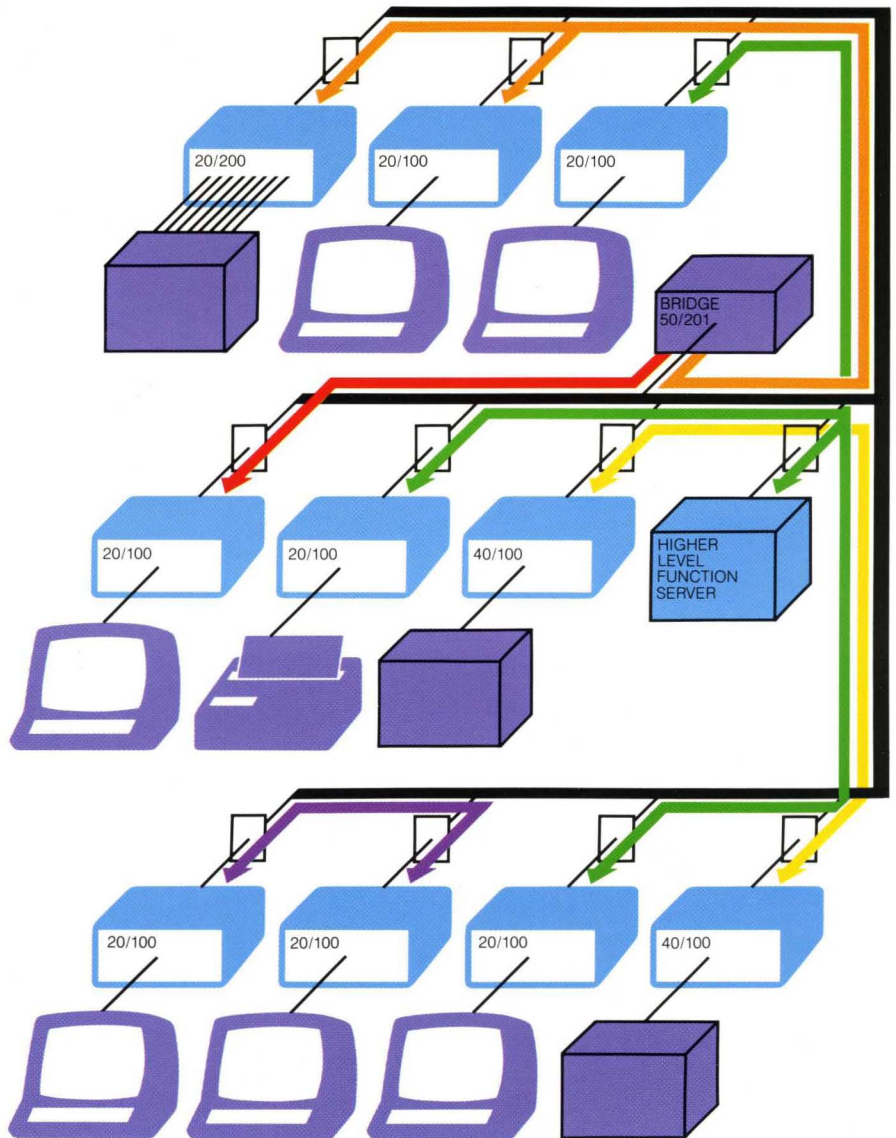
LocalNet PCUs provide a broad range of user services and functions, such as protocol translation and virtual terminal support. LocalNet PCUs implement the upper six layers of the Open Systems Interconnection Reference Model, currently being standardized by the International Standards Organization (ISO). This architectural layering provides for ease of expansion, ease of support, and the standardization of external interfaces.

The primary techniques used by LocalNet to support multiple data streams on a single CATV cable are packet switching, CSMA/CD (Carrier Sense Multiple Access with Collision Detection) and FDM (Frequency Division Multiplexing).

Packet switching allows many PCUs to exist on the same cable, and only consume bandwidth while actually sending data. CSMA/CD is a "listen while talk" contention management technique which allows multiple nodes to efficiently share one frequency channel. FDM permits multiple frequencies on the same cable.

The Products. LocalNet products are divided into three families: The LocalNet 20 family provides economical low speed (128 kb/sec) networking for devices with serial interfaces, both synchronous and asynchronous. The LocalNet 40 family is designed for relatively high speed (2Mb/sec) devices with parallel interfaces.

LocalNet 50 products implement optional higher level functions such as access control, monitoring, failure isolation, and security. LocalNet 50 products also handle inter-network linking functions and long-distance gateways. Products from all three families can co-reside on the same cable, along with a broad spectrum of other services.

The Company

About Sytek. Sytek offers a wide variety of network-related services, including the specification of local area networks, system architecture design, and prime contracting for turnkey local area network installations. In essence, Sytek's level of involvement can vary according to your individual requirements.

Sytek is affiliated with General Instrument Corporation, the world's largest supplier of CATV equipment. Sytek's

With LocalNet, multiple nodes share one frequency channel, and multiple channels share the same coaxial cable. A bridge permits interchannel communication.

LocalNet products are serviced at over 250 locations nationwide through General Instrument's Data System Group.

Towards an Intelligent Networking Environment. LocalNet can become the foundation for a total intelligent networking environment, which includes such functions as data communications, security, energy management, voice, and telecommunications, as well as video. With LocalNet, you can plan for installation of equipment that hasn't been dreamed of today. No other local area network gives you more freedom in managing today, and preparing for tomorrow.