

Evolutionary In Design

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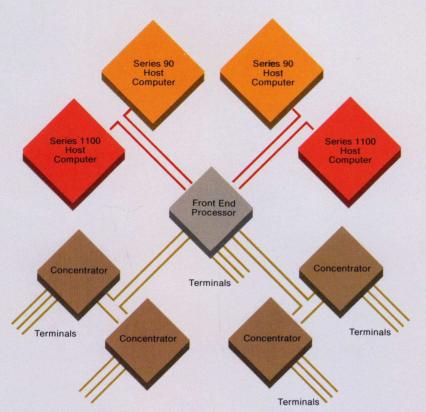
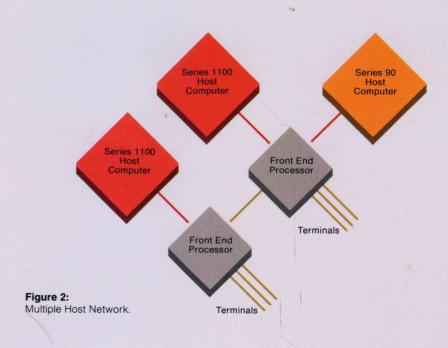


Figure 1: Centralized Processing Network.



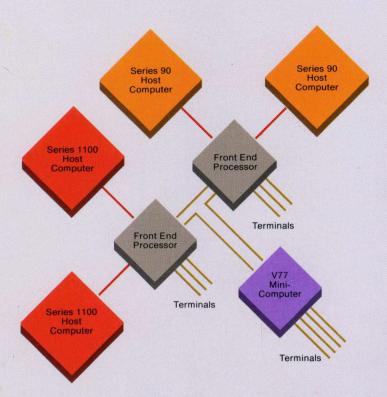
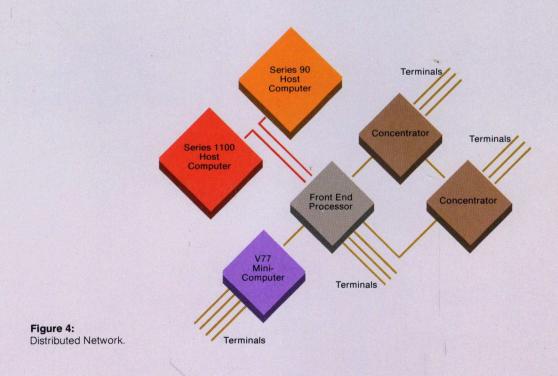


Figure 3:
Distributed Processing Network.





Data communications, network applications, and your needs . . .

You know that data communications over network lines and through network processing systems has become an ever more important fact of your business life.

So now you want to approach data communications in a businesslike way—to make it more efficient, more effective, more versatile, less expensive.

The trouble is, your data communications facilities probably grew without a plan, because the technology and the demand grew so rapidly.

Suddenly, network communications systems have become larger, more complex, functionally more demanding, and more expensive.

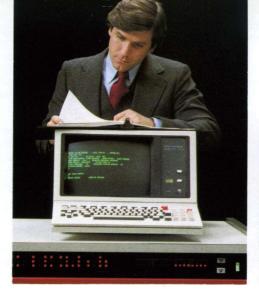
Host processor mainframes are becoming overloaded by the increasing swing to real-time applications and distributed processing. Computer terminals are becoming the new key to information-handling efficiency and success.

But how do you put it all together? How do you take a businesslike approach to a complex opportunity? How do you *use* the new technology to *control* the new technology? To satisfy this need, Sperry Univac now offers its Distributed Communications Processors, the DCP/40 and the DCP/20, coupled with the Telcon Communications Software System.

This total communications system gives you the benefits of an exact plan, comprehensive software, and versatile hardware that in combination will give you all the distributed processing power, network functions and flexibility you need to support an extensive communications environment.

With it, you can reduce operating expenses, improve performance, increase reliability and availability, and lower your overall communications costs.







The combination that works for you . . .

Coupling the SPERRY UNIVAC DCP/40, or the DCP/20 and the SPERRY UNIVAC Telcon system gives you a uniquely advantageous way to control your data communications activities by using the latest technological advances.

First of all, the Distributed Communications Processors can remove the burden of data communications network processing from your host processor, thus freeing it for other business and making it more efficient.

Network control and network management functions become centered in the Telcon software— where they belong— while specialized components in the DCP/20 or the DCP/40 are totally dedicated to the secure communication of data between users, and designed to meet the specific requirements of a data communications network.

Complementing that, the Telcon network software provides you with assured control within your data communications network, thus making your network independent of a host processor.

And since Telcon is modular, your Distributed Communications Processor can function as an intelligent remote concentrator, a nodal processor, or a front-end processor, as you require.

Telcon gives you a comprehensive choice of distributed communications capabilities to satisfy all of your data communications needs.

With either the DCP/40 or the DCP/20, and Telcon, you get a total—and totally dedicated—data communications system. Moreover, it is designed to grow with you as your needs grow.

From your-present communications system, you can advance to the most advanced system you require, in the path that suits your long-range plans.

Telcon allows you to extend and reconfigure your network as a distributed communications system in a highly cost-effective manner. And the Distributed Communications Processors can grow along with you.



The Distributed Communications Processors Story . . .

The DCP/20 and DCP/40 are members of an entirely new family of communications processors designed for network processing and management tasks—and they are versatile.

This family, developed under the SPERRY UNIVAC Communications Processor Architecture, can satisfy a broad range of network applications. High throughput rates and the ability to handle a large number of communications lines makes the DCP/40 extremely well suited for demanding network configurations. The DCP/20, on the other hand, gives you a cost-effective solution for smaller network systems.

The use of the Communications
Processor Architecture in the family
provides broad functionality, secure
operation and high systems
performance. The architecture takes
maximum advantage of large-scale
integration and highly advanced
microprocessor technology.

Increased performance is achieved in the DCP/20 and /40 through advanced components and the functional distribution of tasks among the various microprogrammed elements in the system. Security and integrity are enhanced by a number of protective mechanisms which control access to programs and data and provide privileged modes of operation.

Sophisticated error-detection and correction features in the hardware contribute to system reliability.

State-of-the-art hardware technology used in the DCP/20 and DCP/40 has much in common with the highly successful SPERRY UNIVAC 1100/80 and 1100/60 systems. Emitter-coupled logic (ECL), multilayer packaging and the use of multiple microprocessors assures you of an efficient, compact, highly reliable hardware structure.

The Communications Processor Architecture provides for two primary logical processing elements. The communications processor element performs network control and general message-processing functions; the port processing element—a dramatic addition to the communications processor—is dedicated to input/output processing.

The basic DCP/20 processor performs both communications-processor and port-processor functions within the same physical unit. You can also add two processors dedicated to the port-processing function.

The DCP/40 achieves its high performance by using a separate processor for the communications-processor function, in addition to its ability to handle a maximum of 16 input/output processors dedicated to the port-processing function.

Performance is achieved in three principal ways. First, the architecture provides for a multitude of parallel operations. Each I/O activity is a process in its own right, so that





processing is performed concurrently on all active communications lines.

Second, there's pipeline processing. Communications data is processed at each module of the DCP/20 and DCP/40. For example, as the data enters the DCP, it is processed by a microprocessor at the line module. Next it is processed by a port processor executing on an input/output processor. Once the data has entered storage, further processing takes place in the communications processor.

Third, the architecture of the DCP/20 and DCP/40 is storage-centered and relies on table and queue control structures. This also provides increased performance. The need for interrupts is minimized throughout the design of the hardware and software. In previous architectures the communications processor had to be interrupted many times during the input of a message. Each interrupt required a significant amount of processing. Now each port processor can totally handle the line discipline and protocol of a particular communications line. The port processor may, for example, request retransmission of a message that was received in error, with no need to interrupt the communications processor.

Communications is an extremely diverse environment and the need for anstrumentation is critical. Therefore,

the architecture and the hardware of the DCP/20 and /40 have built-in instrumentation capabilities. The datagathering capability of the instrumentation features automatic recording of internal events to provide security, program debugging and system-wide analysis. You can easily retrieve information concerning line errors, message transmissions, buffer usage and other program and communications events. Instrumentation data is collected by the hardware using microprogram logic. Analysis and processing is performed by software.

The I/O architecture of the DCP/20 and DCP/40 is designed to achieve maximum commonality. As a result. one I/O processor is able to multiplex a full range of I/O devices. Any I/O processor can connect to communications line modules. peripheral line modules and hostchannel interface line modules. All DCP processing components are designed to meet your demands for security and privacy in the handling of computer data. Protective mechanisms that provide for system data integrity and safeguard it from unauthorized access include:

- storage protection to control access rights to local storage
- levels of privilege to reserve instructions to executive software
- architecture designs to confine and isolate programs and data within protected environments
- error-recovery procedures to identify breaches of security and to protect data from inadvertent alteration

During design, extensive attention was paid to system availability, reliability, and maintainability (ARM). Duplicate arithmetic logic units and parity-checking circuitry in the DCP/40 communication processor assures you of accurate operation. Erroneous microinstructions are automatically repeated and a hardware interrupt is generated in those instances where the error is not recoverable.

Just as the processor has extensive hardware for ARM, so does the storage module. Each 32-bit data word has 7 check bits associated with it to provide for single-error correction/double-error detection.

All of the data paths within the storage modules have byte parity. In addition to the normal read and write modes, there are diagnostic modes that allow a processor attached to a storage module to perform diagnostic routines on a particular storage module. Each module has its own error log for recording corrected single errors and detected double bit errors.





The Telcon story . . .

SPERRY UNIVAC Telcon is a diskbased software system designed to work with the DCP/40 and DCP/20 to give you the widest possible variety of data-communication network capabilities. It gives you the benefits of simplified design and implementation, improved system performance, enhanced reliability and availability, and reduced communication costs.

Telcon is an essential ingredient to your total system approach to distributed communications. It is developed under the successful SPERRY UNIVAC Distributed Communications Architecture and gives you single-source software for all network processors. Since it allows you to logically separate your network from your host processor or terminal components, Telcon may be adopted with little or no need for user conversion. You get a single network structure for all Sperry Univac systems, and you can implement a network without modifying your host processor. That's simplicity.

You get improved system performance with Telcon in a number of ways.
First, it lets you distribute processing

functions, separating communications and applications for maximum efficiency. Second, since Telcon helps you off load your host processor mainframe, you save both memory space and time. You also get the benefits of reduced needs for error processing and lower requirements for data formatting and preprocessing.

Since a Telcon network is hostindependent, it enhances the reliability and availability of your datacommunications system. Redundant configurations, plus redundant and alternate circuits and improved link controls also contribute to reliability and availability. Diagnostic aids help you keep your network operating at full potential, while fail-soft and recovery techniques minimize the impact of any possible failures. Maintenance by the worldwide Sperry Univac team is also a significant contributor to your successful Telcon system network.





To reduce your communications costs. Telcon offers a number of advantages. Remote concentration through Telcon reduces the number of circuits you need keep in operation. You get greater circuit efficiency by the use of UDLC and the ability to multiplex varied data types on the same circuit. Since with Telcon and the Distributed Communications Processors your preprocessing and physical handling can be performed by remote concentration, you'll experience less overall need for data transmission—and that means lower costs.

Telcon, which gives you all these benefits, is indeed a comprehensive data communications system. It satisfies a wide variety of network needs from the simple to the complex, and it provides support for multiple applications. With Telcon, you can consolidate multiple networks into a single, cost effective system.

With Telcon, you get common, standardized network support for Sperry Univac mainframes, plus the ability to interconnect directly with Series 90 and 1100 systems. Communications links can be established with SPERRY UNIVAC systems, and non-Sperry Univac mainframes can be readily connected via 'adapt' software.

Sperry Univac terminals are supported by Telcon in an 'off-the-shelf' manner, and non-Sperry Univac equipment can be interconnected via 'adapt' interface structures.

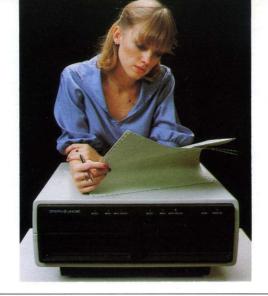
Telcon supports interactive, transaction and remote batch transfers. All data is processed concurrently and interleaved on UDLC circuits between nodes. In a multinode environment, any terminal has access to any host in the network, with Telcon. And a terminal can be easily switched between applications and operational nodes—which lets you consolidate many networks into a single virtual network.

The Telcon executive operating system—which provides the operational environment for the message-processing system—includes the basic executive, hardware

interface modules, input-output control, file management and load and recovery routines. System loading can be performed from the host mainframe, mass-storage peripherals or another communications processor.

Telcon gives you a comprehensive network management system that provides either centralized or distributed control and monitoring facilities. It includes mechanisms to maintain, control, monitor and protect the network. It also allows your network administrator to dynamically modify the network configuration. And it controls the establishment of communications sessions, access to the system, and the allocation and use of network resources.





Peripherals for growth . . .

To enhance your DCP/40, DCP/20 and Telcon data communications network, Sperry Univac offers a number of peripherals that can help your system grow in size and flexibility.

For instance, a SPERRY UNIVAC display terminal can serve as a local operator's console on your DCP/40 or DCP/20. And the console can be equipped with an auxiliary interface, so you can add such devices as a SPERRY UNIVAC hardcopy printer.

Three mass-storage subsystems are also offered for use with your Distributed Communications Processors and Telcon network.

There is a flexible disk (DCP/20 only) desk-top unit which can be used locally to load either diagnostics or the operating system. It can also be used for error-logging or additional storage. Each flexible disk has a 1M-byte capacity. The system is front-loading, has a transfer rate of 31.25K bytes per second, and a 390-millisecond average access time.

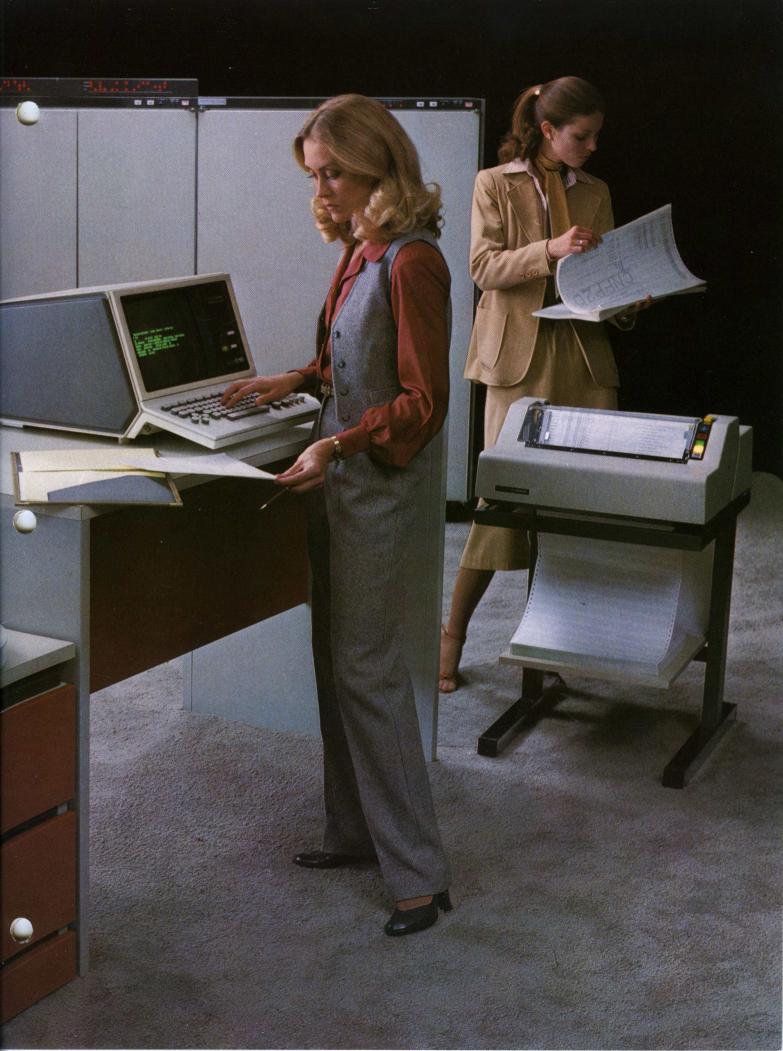
A cartridge disk subsystem is also offered. It is top-loading, has a 10-megabyte capacity, a 2.5 megabit transfer rate and a 50-millisecond average access time. It can be used for data storage in random or sequential formats. And a dual interface option lets you access data via two separate channels.

A separately housed magnetic tape subsystem is available for data storage. Each subsystem can include two tape drives. Each drive features 9-track recording, 10½-inch maximum reel size and automatic threading. Storage rates are 20K bytes per second NRZI at 800 bits per inch, or 40K bytes per second phase-encoded at 1600 bits per inch.

Two separate subsystems have been developed to enhance the operation of the DCP's in a Network environment.

The Remote Control Module provides control for the unattended operation of up to four DCP's. Control, via serial communications, is provided for power, system loading and start/stop operations.

The Line Switch Module provides the capability to switch communications lines and peripheral subsystems between DCP's. The Line Switch Module will, under manual or program control, allow a Network to be reconfigured to assure maximum up-time and reliable operation.





The total data communications network system for you . . .

The SPERRY UNIVAC DCP/40 and DCP/20 processors, together with comprehensive Telcon software, give you the total data communications system you need to approach your data-communication management opportunities in a businesslike manner.

With them you can *use* the latest technological advances to *control* the latest technological advances.

The total system lets you off-load your mainframe computer for greater efficiency and effectiveness in data communications.

They give you a complete choice of distributed communications capabilities to satisfy your present needs and your plans for future growth.

They let you advance from a simple to a complex network as you require, along the path that suits your longrange needs.

Their modularity, multiple-processing capability and configuration flexibility allow you to plan your expansion with confidence.

Single-source software and common hardware let you employ the same hardware as a front-end processor, remote concentrator or network processor. That's versatility.

And the DCP/40 and the DCP/20, together with the Telcon network combination can support a wide variety of configurations, from the basic star configuration through multiple hosts, ring networks with alternate routing facilities, and fully distributed network which include multiple hosts and remote network concentrators.

To get control of your data communication activities now—to make them more effective, more efficient and less costly—we suggest the SPERRY UNIVAC DCP/40 or the DCP/20 and Telcon network system, now.

We suggest that it will meet your future needs, as well.

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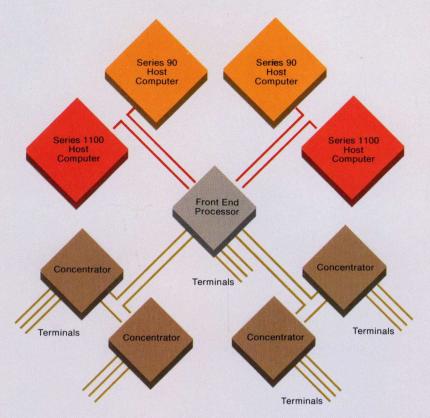
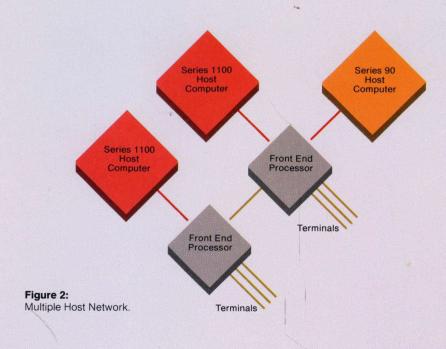


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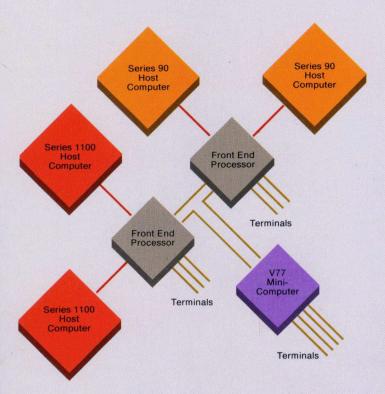
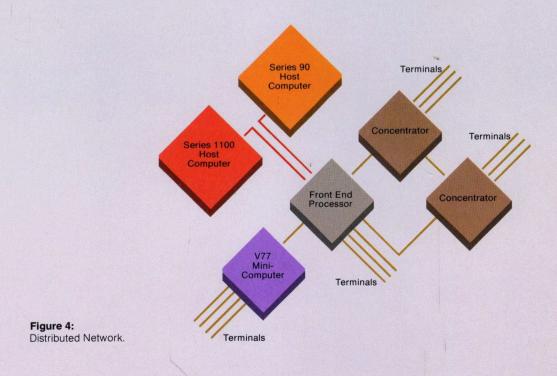


Figure 3: Distributed Processing Network.



SPERRY LINIVAC

The computer people who listen