Telcon Distributed Communications Processor/20

The SPERRY Distributed Communications Processor/20 (DCP/20) is a versatile and cost-effective system designed to satisfy an extensive range of data communications needs without complicating the day-to-day processing of host processors.

It is the intermediate level member of the DCP family.

The DCP/20 is based on a unified family of hardware and software that uses the same Communications Processor Architecture (CPA) and Telcon communications software available with the DCP/10A, DCP/10 and DCP/40.

The DCP/20 is a modular hardware system that can be tailored to meet the needs of a broad range of users. It can operate as a front-end processor for SPERRY Series 1100 and Series 90 virtual host processors; function as a low-cost network processor and remote concentrator; and simultaneously support transaction processing, timesharing, remote job entry and distributed processing applications.

The Telcon system's extensive communications capabilities include efficient interfaces to both circuit (X.21) and packet (X.25) public data networks.

The processor is based on advanced multiple microprocessor and large scale integration technologies. It incorporates highly advanced techniques for accurate, secure transmission of all data.

Memory for the DCP/20 is an integrated circuit with an error correcting storage system that can be expanded from the minimum 512K bytes in 512K-byte increments to 2.0M bytes.

If your plans include data processing within a telecommunications environment, the SPERRY Telcon system is for you. Contact your local Sperry office for further details.

SPERRY

More About the DCP/20

The DCP/20 provides network control, handling a wide range of data transmission rates and multiple terminal types. It can be tailored to fit your data processing and data transmission needs. And it is modular, able to grow as your needs dictate.

The DCP/20 hardware consists of four main components: a communications processor; I/O processors; local storage; and communications line modules.

Available peripherals include mass storage disk subsystems, including the 8409 disk subsystem, flexible diskette subsystems, and magnetic tape subsystems. Host interface modules are also available.

The DCP/20 accommodates asynchronous, synchronous and wideband transmissions at speeds up to 64KB per second. It provides support for the Universal Data Link Control procedure as well as a full range of character-oriented communications protocols.

Telcon network control software resides in all DCP/20 front end, network and remote processors, performing routing and processing within the network. This includes: host interface; network management interface; internetwork control; statistics; line termination and handling; error control; on-line diagnostics; status monitoring; command processing; system synchronization and others.

The DCP/20 is controlled in two ways:

- by microinstructions that operate at a high-speed cycle time of 80 nanoseconds (ns).
- by a repertoire of programming instructions executed in local storage.

There are approximately 370 programming instructions for general message processing as well as a full range of input/output activities, including:

- Reception and transmission of data
- Polling and calling for data from remote terminals
- Allocating buffers for temporary storage of input and output messages
- Checking messages for errors and requesting retransmission when necessary
- Reporting operational status of the communications lines
- Maintaining traffic and error statistics.

Distributed Communications Processor/20

PHYSICAL CHARACTERISTICS

Width: 36 inches (91 cm)
Height: 38 inches (97 cm)
Depth: 30 inches (76 cm)
Weight: 433 lbs. (196.4 kg)

POWER REQUIREMENTS

Nominal voltages: 200, 208, 220, 230, 240 volts
Nominal frequency: 50 or 60 Hz
Phase: Single phase—2 wire plus safety ground
Power: 1.6 kva—Approximate power consumption for each cabinet.

ENVIRONMENTAL CHARACTERISTICS

Nominal working range:
Temperature: 50°F—93°F
10°C—32°C
Humidity: 20% to 80%

The Processor and Storage

The processor and expansion I/O processors are microprogrammable devices that have direct access to local storage. Specific program tasks are accomplished by software routines executed within microprocessor-based arithmetic logic units and registers.

A maximum DCP/20 can include a processor and two expansion input/output processors. The processor performs both generalized communications processing as well as input/output processing functions. The expansion I/O processors are identical to the DCP/20 processor, except they perform input/output functions only.

The processor and each expansion I/O processor provide programmed control for up to 16 data paths. These may be a combination of serial lines to remote equipment, channels to peripheral devices and channel connections to on-site Series 1100 and Series 90 virtual host processors.

Processor

FUNCTIONAL CHARACTERISTICS

Maximum Configuration: 1 processor and 2 expansion I/O processors
Instruction Repertoire: 285 communications instructions
Input/output instructions: 83
Microprogrammed: 16-bit microinstruction
Microcycle time: 80ns
General registers: 32
Input/output ports: 16 ports/processor (maximum 48) for full/half duplex serial or parallel line modules per processor.

Storage

FUNCTIONAL CHARACTERISTICS

Capacity: up to 2.0M bytes in 512K-byte increments.
Integrity: all single bit errors are corrected and all double bit errors are detected. All errors are automatically logged.
Word length: 32 bits plus 4 parity bits at the interface; 32 bits plus 7 error correcting bits internally.
Speed: read cycle = 400ns full word write cycle = 450ns

Data Security Design

The DCP/20 processing components are designed to meet the demand for security and privacy in electronic data handling.

A wide range of protective mechanisms at both the software and hardware levels safeguard the DCP/20 data from error, unwarranted intrusion and inadvertent modification. These mechanisms include privileged instructions, virtual addressing techniques and a number of advanced methods designed in the DCP/20

The protective mechanisms used by the DCP/20 include:

- Byte parity checking on data buses and internal registers
- Error logging of microcontroller failures and errors
- Storage protection to control access rights to local storage
- Levels of privilege to reserve instructions in executive software
- Architectural designs that confine and isolate programs and data within protected environments
- Error detection and recovery procedures to protect data from inadvertent alteration
- Autorecovery and autorestart procedures for recovery from power interrupts or other system failures

The DCP/20 is dedicated at all levels to preserving privacy and security for electronic data transfer.

Communications Line Modules

Microprogrammable line modules operate the 16 communications ports of the input/output processor. Each port requires one line module, capable of handling full-duplex or half-duplex communications. All communication line modules terminate one line per port except the multi-line asynchronous line module that multiplexes four circuits onto one port.

In addition to providing a hardware interface, a line module performs communications functions for each line in a system.

Line module functions include:

- Character assembly/ disassembly
- Character parity and block check sequence generation and checking
- Data buffering
- Control character recognition
- Line timing and asynchronous clocking
- Automatic data rate detection

FUNCTIONAL CHARACTERSTICS

Electrical Interfaces

The following electrical interfaces are supported for line speeds up to 64K bps:

- RS232C (V.24, V.28)
- V.35
- Auto Dial (US RS366)
- Auto Dial (Japan NTT)
- RS449
- Bell 303
- X.21

Parallel Line Modules

These modules provide the hardware interface between peripheral subsystems or host processors and the DCP/20. Four parallel modules are provided:

- The host byte channel module, which interfaces to a SPERRY host computer through the direct byte channel
- The host word channel module, which provides full duplex, 32-bit interface to a SPERRY Series 1100 host word channel.
- The 16-bit peripheral line module, which has a 16-bit interface to a peripheral subsystem. It operates in either 8- or 16-bit mode.
- The byte I/F line module, which provides an 8-bit interface to a flexible disk and the T8409 disk subsystem.

8409 Disk Subsystem

This subsystem is a freestanding, medium performance mass storage device offered for those communications environments where extensive capability is required. It can be used as storage for Telcon system files, network data base files and distributed data processing applications.

The disk subsystem can be ordered with one or two disk drive assemblies. Each supports up to 23.8 megabytes of storage.

PHYSICAL CHARACTERISTICS

Height: 31 inches (79 cm)
Width: 23 inches (58 cm)
Depth: 29 inches (74 cm)
Weight (with two drives): 256 lbs (71 kg)

Capacity per unit: 4.75, 14.25 or 23.8 MB
Speed: 3600 RPM
Transfer rate: 5 megabits per second

Access time

Track to track: 12ms
Average stroke: 45ms
Average latency: 8.3ms

Flexible Disk Subsystem

The SPERRY Flexible Disk Subsystem is a low-cost mass storage peripheral that is available for use on the DCP/20. It is a cost-effective storage device for those systems not requiring the high-performance cartridge disk subsystem. It provides storage for the Telcon software, including the operating system and diagnostic programs. It also provides storage for logging network operation statistics as well as for configuration files.

The basic configuration of the flexible disk subsystem contains one disk drive and can be expanded to contain two in the same unit.

PHYSICAL CHARACTERISTICS

Width: 20 inches (51 cm)
Height: 9 inches (23 cm)
Depth: 17 inches (43 cm)
Weight: 45 to 60 lbs (20 to 27 kg), depending on the number of drives

FUNCTIONAL CHARACTERISTICS

The following applies to a single drive.

Storage available: 1 megabyte
Number of tracks: 77 data tracks

Access time
Track to track seek time: 3 ms
Head load time: 70 ms
Head load and seek time: can overlap with setting time at 50 ms
Average latency: 88.33 ms
Flexible disk rotational speed: 360 RPM

Transfer rate
31.25 KB/sec.

POWER REQUIREMENTS

Nominal voltage: 100, 120, 200, 240 volts
Nominal frequency: 50 and 60 Hz

Remote Control Module

The remote control module provides the means to control the DCP/20 in an unattended, remote environment. It provides control of power, system program load and start/stop operations for as many as *four* processors. Control commands are transmitted to the remote control module via serial communications circuits.

Line Switch Module

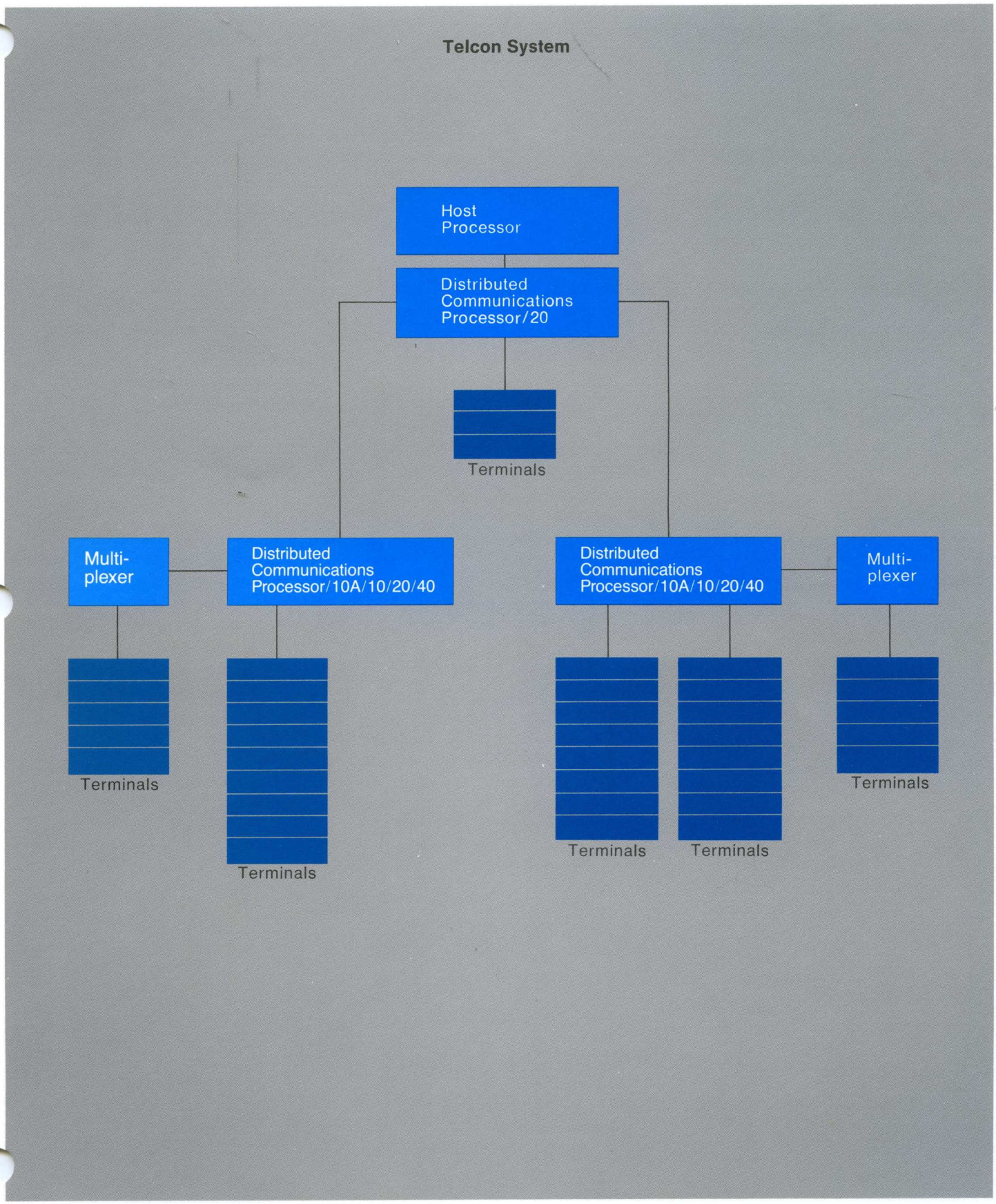
The line switch module is designed to support unattended operation of the communications subsystem. It permits switching communications lines and peripherals subsystems between DCP/20s. Switching control may be affected in three ways: manually; under remote program control; and under local program control. Under the control of the Telcon software, the line switch module enhances the operation of redundant configurations in both local and unattended modes.

Summary

The SPERRY Telcon software and DCP/20 system are a software/hardware combination that easily handle the diverse needs of today's network users. It provides a modular architecture that protects the investment of the long-term user. This product incorporates constantly improving technology and permits development expansion free from constraints on growth and utilization.

This product was designed and developed in compliance with the SPERRY Distributed Communications Architecture.

For today's telecommunications market, the DCP/20 offers significant price/performance, technological superiority and ease of migration.


Telcon System
Host Processor
Distributed Communications Processor/20
Terminals
Multi-plexer
Distributed Communications Processor/10A/10/20/40
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Multi-plexer
Terminals
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