



N453

DMS

(Disc Monitor System)

FEATURES

- **Multiple Foreground Processing Concurrent with Background**
- **Flexible Structure of Hardware/Software Priorities**
- **Extensive Interactive Editing Capabilities**
- **File Management and System Accounting**

PRODUCT BULLETIN

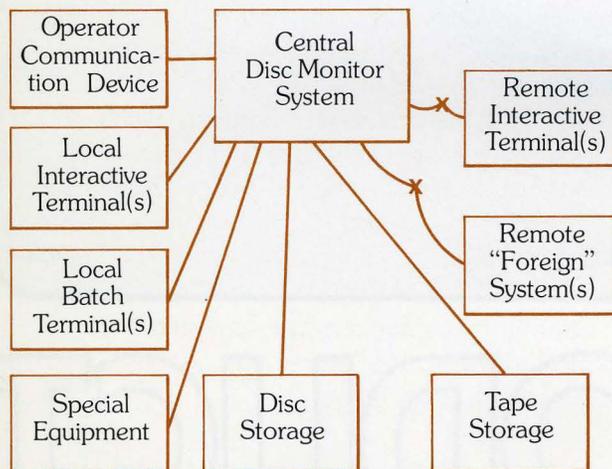


HARRIS
COMMUNICATIONS AND
INFORMATION HANDLING

DISC MONITOR SYSTEM

DMS is a field-proven operating system that has the hardware and software integrated to form an efficient, economical structure that provides foreground real-time responses to external stimuli concurrent with queued background batch processing. Real-time events are handled by a mix of software and hardware, rather than depending solely on either element to provide optimum response. DMS provides the necessary management functions to respond to the changing external environment—without undue system overhead. The methods of program initiation, dynamic control of software and hardware priority levels, and extensive operator control provide a high level of foreground and background activity management.

DMS is expandable from a minimal batch configuration to a large-scale system that supports spooled I/O, remote and local interactive terminals, dynamic memory allocation, timer-scheduled programs and dynamic file creation. The system can be expanded further to support Remote Job Entry terminal emulation to a “foreign” system (e.g., CDC, IBM, Univac, etc.)



EXAMPLE DMS CONFIGURATION

PROGRAM PROTECTION

With the Program Restrict/Instruction Trap option, there are two execution modes under DMS: the privileged mode and the restricted mode. Only privileged programs, either in foreground or background, are permitted to use I/O and interrupt control instructions. The DMS hardware/software prohibits restricted user programs from altering or executing any memory outside of their own

upper and lower memory limits. This provides maximum protection for the system as well as other user programs.

SYSTEM ACCOUNTING

In spooled DMS systems, system accounting may also be provided. Accounting information on all CPU and peripheral usage is accumulated and periodically stored in a disc accounting file. An Accounting Utility program is provided for listing accounting and billing information according to User Account, etc. Accounting files may also be accessed by “qualified” user programs for special report processing.

FILE MANAGEMENT AND SECURITY

DMS supports multiple discs, as required, for a given system application. A master disc directory on the “system pack” contains entries for all files in the system. Optionally, directory entries for disc areas requiring rapid access may be made core-resident.

Files may be created and deleted under program control, via job control statements, or through the Interactive Editor (ACRONIM). DMS file security in non-accounting systems is maintained through the use of a four-character password. All references to files with passwords must supply the correct password. In accounting systems, in addition to the use of passwords, each file has associated with it the user number of the file creator. The creator may allow any combination of read, write and delete access for others who know the password.

SPOOLING

In spooled systems, DMS provides input and output spooling for local and remote terminals. Spooling may be job stream input/output or data requested by active programs. Spool files are dynamically created and deleted—with output device allocation being explicit or by default.

INTER-PROGRAM COMMUNICATIONS

DMS provides several methods of passing data from one program to another:

- Program Switch Word present in every active program.
- System Common.
- Initiation parameter passed to a program being initiated.

CHAINING CAPABILITY

Both foreground and background programs can be segmented and overlaid in order to efficiently utilize memory. This permits the execution of programs larger than available core.

AUTOMATIC BACKGROUND CHECKPOINTING

The background memory area is available to large non-resident foreground programs when they become active. The background task is saved on disc until memory becomes available; then the background task is automatically reloaded and execution is resumed from the interrupt. The size of the background area may be altered by operator control.

RE-ENTRANT FOREGROUND CAPABILITY

DMS permits foreground processors to be re-entrant, allowing concurrent execution by multiple users.

SUPPORT SERVICES

DMS provides a variety of support services:

- Logical I/O and dynamic device assignment at execution time.
- Conditional WAIT and operator HOLD.
- Dynamic core allocation.
- Disc area allocation and maintenance.
- System information such as date, time and program initiation.
- Number conversion.

REMOTE JOB ENTRY SUBSYSTEM

Remote Job Entry (RJE), as an optional subsystem of DMS, provides remote terminal emulation to other computer systems. RJE consists of a communications handler and an appropriate protocol interpreter for each terminal emulation, and a remote job spooler for queueing RJE requests from DMS terminals. Most RJE terminals require operator interaction. The DMS RJE subsystem performs most of the operator actions; yet it allows the user at a DMS terminal to transfer normal status requests to the remote site and receive responses at the user's terminal.

The user may either spool a remote job from a spooled input device (such as a card reader) or generate an RJE file and initiate it

from an interactive terminal. An output response from a remote job may be spooled automatically to the users terminal, to a specified list device or retained on a permanent user disc file. Output response may also initiate another user job or program for processing the response data.

LANGUAGES

DMS supports five languages: the Harris Macro Assembler and industry standard versions of FORTRAN IV, BASIC, SNOBOL 4 and RPG II. The Harris FORTRAN compiler contains several powerful extensions: Asynchronous I/O; Free-Format I/O; In-Line and Free-Format Assembly code; Indexed Sequential File handling; Implied Do Lists in DATA statements; Encode-Decode; Random-access I/O; quoted Hollerith constants in DATA and arithmetic statements; and extended subscript expression. BASIC also contains several extensions, including character variables and extended logical operations.

ACRONIM

The Harris Alpha-numeric Re-entrant On-Line Interactive Manager (ACRONIM) is an interactive editor that supports multi-terminal operation and has a command repertoire that includes disc file manipulation, line editing, character editing, copying, device manipulation and general control functions. ACRONIM consists of twelve sub-processors, each of which is re-entrant.

OTHER PROCESSORS

In addition to the five languages and the interactive editor, the following processors are also supported by DMS:

- Sort/Merge.
- Diagnostic FORTRAN Compiler (FORGO).
- Indexed Sequential Package.
- Cross Reference.
- DEBUG.
- Trace.
- Utility Package.

MAJOR DMS CHARACTERISTICS

INTER-ACTIVE TERMINAL CONTROL

- File Editing
- Processing (BASIC, FORTRAN, etc.)
- Batch Job Initiation
- Real-Time Program Initiation
- Remote Job Entry

BATCH PROCESSING

- Background job processing runs at the lowest priority level
- Jobs spooled and queued on a priority basis
- Input, output spooling is provided to and from terminals and local lines

REAL-TIME EXECUTION

- Program initiation on external interrupt
- Direct I/O Communications
- Periodic Initiation
- Conditional Wait
- Inter-Program Communications

Specifications subject to change without written notice.

HARRIS



COMMUNICATIONS AND
INFORMATION HANDLING

HARRIS CORPORATION

Computer Systems Division

1200 Gateway Drive, Fort Lauderdale, Florida 33309 305/974-1700

United States Offices CALIFORNIA Santa Clara, Newport Beach • FLORIDA Fort Lauderdale • ILLINOIS Oak Brook • MASSACHUSETTS Waltham • MISSOURI Saint Louis • NEW YORK Huntington • OHIO Cleveland • PENNSYLVANIA King of Prussia • TEXAS Dallas • WASHINGTON, D.C. Rockville, Maryland. *International Offices* BELGIUM Techmation S.A.R.F., Brussels • FRANCE Techmation S.A., Paris, Luynes Aix en Provence, Lyon, Mulhouse, Toulouse • NETHERLANDS Techmation N.V., Schiphol-Oost • UNITED KINGDOM Techmation Ltd., Edgware, Middlesex, Cheadle Hulme, Cheshire, Scotland, Tullis, Aberdeen • WEST GERMANY Techmation G.M.B.H., Dusseldorf, Munchen.