

# SOURCE DATA

THE DATAPOINT SYSTEMS NEWSLETTER

No. 17

February/March 1982

## THE 8800 IN MANUFACTURING SYSTEMS

The 8800 is Datapoint's most powerful processor. It uses a multi-programmable central processor, multiple peripheral processors, and up to a megabyte of main memory with Direct Memory Access (DMA). With an on-line storage capability beginning at 202MB and expanding to one billion bytes, the 8800 can provide the full range of data processing capabilities including communications and spooling.



Manufacturing Systems' 8800 Processor with an 8200 Workstation as system console and 80 CPS printer for hard-copy output of system messages.

Here at Datapoint, the 8800 and the Resource Management System™ (RMS™) are being put to work in the Manufacturing Systems Operation. Manufacturing Systems controls all data processing in the areas of inventory, production, and labor. From the time material is bought, received, or made and until it is shipped, Manufacturing Systems must keep track of it through Inventory Control, Purchasing and Receiving, Work Order Systems, Labor Systems, and Configuration Management.

*continued on page 2*

## Static Buffers Speed RMS DATABUS

If you perform sequential I/O to a text-formatted file, consider specifying DYNAMIC versus STATIC buffering in the file declaration statement.

### What's the Difference?

DYNAMIC buffers are I/O buffers that are allocated from a "virtual" pool. In other words, the amount of dynamic buffer space allocated depends on the amount of memory available at any given time. Generally, the

*continued on page 4*

### *In This Issue*

#### DATA PROCESSING

Static Buffers Speed RMS DATABUS.....	1
The 8800 In Manufacturing Systems.....	1
Those Reader's Comment Forms.....	2
ARC Communications and Emulation Software.....	5
A Typical 3270 Application.....	5

#### OFFICE APPLICATIONS

Documentation Available for the 9611 Printer.....	3
Cut-Sheet Feeder Offered for 9601/9602 Printers... ..	4
Using the 9605 Cut-Sheet Feeder.....	4
Furniture for the Integrated Electronic Office.....	8
Datapoint Printers: A Comparison.....	9
Setting Up Mailing Lists in IEOS.....	10
IEOS Support Now Local.....	11
The 9301 — A New Member of Our Storage Product Family.....	11
Color Business Graphics Question and Answer.....	12
IEOS Recovery Procedures.....	13
IEOS/DOS 1.5 Memory Manager Software.....	14

#### OFFICE COMMUNICATIONS

Call Detail Recorder — The Solution for Telecommunication Management.....	16
--	----

#### OTHER

Federal Datapoint Users Group.....	9
Software Releases.....	17
Datapoint Customer Education schedule for March & April.....	21
SOURCE DATA Advertising.....	22

**The Conversion**

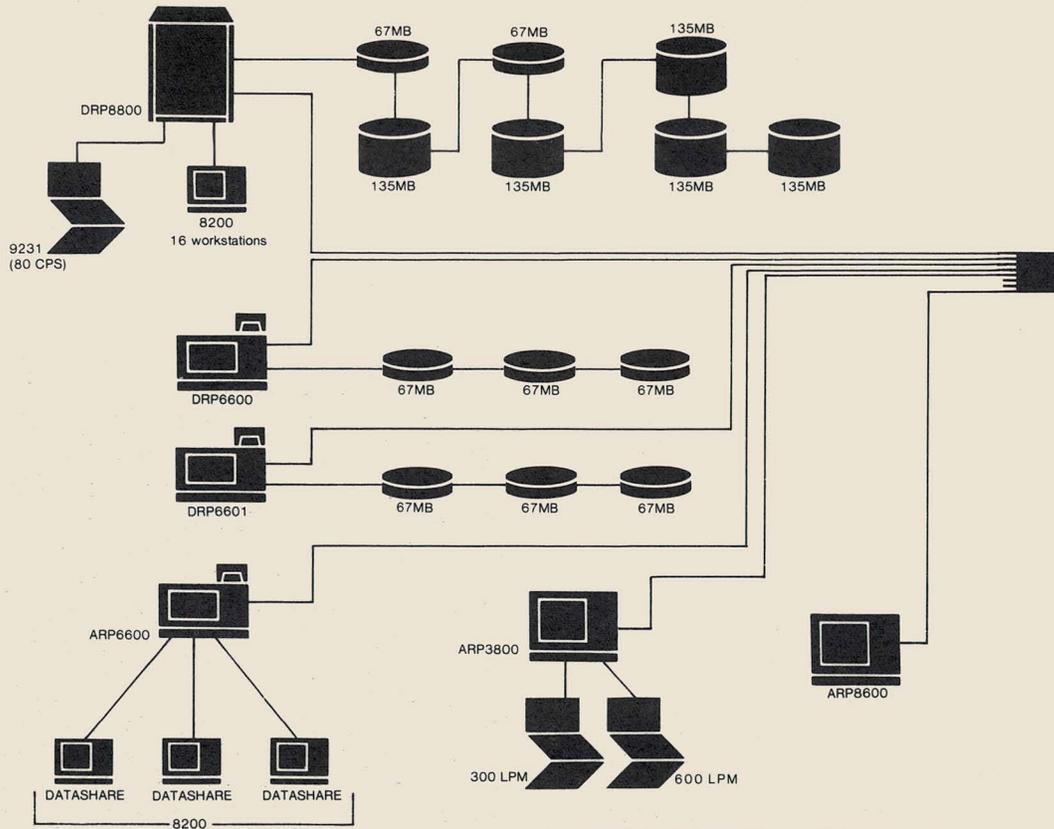
Manufacturing Systems decided to convert to RMS primarily because they had reached the limits of DOS file sizes. Files were growing and were often segmented into multiple parts. The nightly batch run had turned into a two shift job every night, and the entire weekend was consumed to finish it. The 135MB volumes on the 8800 looked attractive, and the prospect of reduced batch run times was enough to convince everyone to start the preliminary conversions.

Manufacturing Systems decided on a phased conversion plan, starting with sections of the total system that could be easily isolated from the rest of the group applications. The first two applications to be converted were a Freight Analysis application and a Receiving Inspection application.

**The New Hardware**

Manufacturing Systems installed an 8840 Data Resource Processor with 896K of memory, 2 Multiple Port Communications Adaptors (MPCAs), two 67/135MB drives, one 135/135MB drive, one 135MB extension, and 2 peripheral processors. Attached to each of the MPCAs are six, full function workstations used for program development by the technical staff. All program compilations are submitted to the Batch Job Facility (BJF) Executor running on an 8600. The BJF Executor uses the memory in the 8600 to perform speedy off-line compilations, the results of which are spooled to a line printer.

The 67MB removable slot is left open (the system is booted from the fixed drive), so that data generated by DOS programs can be placed into the RMS network rapidly by using the DOS/RMS conversion utility GETDOS.



**Manufacturing Systems' 8800-Based RMS/ARC Network**

**Those Reader's Comment Forms**

Inside either the front or back cover of all the user's guides is a postage-paid, self-addressed reader's comment form. If you find an error in any Datapoint documentation, if you have comments on documentation, or if you have suggestions for improvement, please use this form to let us know.

**SOURCE DATA** is a bimonthly educational publication for customers of Datapoint. Editor: Karrie A. Reagan Address all manuscripts, comments, questions, subscription requests, and advertising to:

**SOURCE DATA**  
9725 Datapoint Drive #T41  
San Antonio, Texas 78284  
(512) 699-7059

**Dated Material:** Techniques or facilities described in each issue are accurate as of the publication date; however, the computing industry changes rapidly, so please rely on up-to-date permanent documentation, such as user's guides, for details of software or equipment features.

The "D" logo, Datapoint, Attached Resource Computer, INFOSWITCH, DATABUS, DATAFORM, DATAPOLL, and DATASHARE are trademarks of Datapoint Corporation registered in the U.S. Patent and Trademark Office. ARC, RMS, SHARE, Associative Index Method, Resource Management System, EMS, LDCS, Integrated Electronic Office, and MULTILINK are trademarks of Datapoint Corporation.

### Freight Analysis Conversion

The first application converted was a freight analysis application. The freight department audits freight bills prior to payment and tracks the cost by carrier and by geographic area. The system produces statistical reports with detailed information on the variances of standard cost versus actual cost to help control freight charges on inbound and outbound traffic.

The freight analysis system consists of 12 COBOL programs and several CHAIN files. "Conversion of our DOS COBOL programs to RMS took about three days," said an analyst in Manufacturing Systems. "We then ran in parallel for about three weeks to verify a one for one conversion."

### The Performance

The performance of the on-line inquiry system stayed about the same with RMS, although there was considerably less degradation in response time at the end of the day. The noticeable improvements in performance were realized in the COBOL batch portion of the application. These improvements were due to the inherent speed improvements in RMS COBOL over DOS COBOL and the flexibility of RMS. The daily re-index that was necessary under DOS is now only necessary weekly under RMS. Furthermore, a DATABUS® merge program was eliminated, and the RMS REFORMAT utility was used in its place. The following chart shows some of the timings that were taken.

	DOS (6600) 256K AP	RMS (6600) 256K AP	% change	RMS 8800 896K DRP	% change
DAILY	5 Hrs.	1.25 Hrs.	75%	.5 Hrs.	60%
WEEKLY	19 Hrs.	4 Hrs.	79%	1.67 Hrs.	58%
MONTHLY	20 Hrs.	9 Hrs.	55%	4.65 Hrs.	48%

The improvements in the RMS 8800 run over the RMS 6600 run are even more dramatic than the data indicate, since the 8800 run was done during the day while active program development was occurring. All runs on the 6600 were done when the rest of the system was down at night. However, part of the improvement was due to the fact that the 8800 was running with a local disk, while the 6600 had to run under ARC overhead.

### Receiving Inspection Conversion

A receiving inspection application was also converted to RMS. The receiving inspection system is a quality and reliability system that collects information concerning the number of purchased parts that are received during incoming inspection. The system tracks information by vendor and by part number. The same system monitors vendor reliability and failures by part number.

The input for this application comes from the on-line purchasing and receiving application that is still under DOS. The data is transferred with the GETDOS utility every night to RMS and then is processed using the 8800.

Even with the time spent transferring the files, the savings in processing time are significant. Says the analyst, "Every time we move part of an application to RMS, we free up more system resources and processing time, since RMS makes such efficient use of both."

	6000(DOS) 256K AP	6000(RMS) 256K AP	% change	8800(RMS) 896K DRP	% change
DAILY	4.1 Hrs.	2.57 Hrs.	37%	1.88 Hrs.	26.8%
WEEKLY	16.9 Hrs.	9.83 Hrs.	41.8%	4.77 Hrs.	51.5%
MONTHLY	28.2 Hrs.	15.78 Hrs.	44.9%	7.87 Hrs.	50.1%

### Conclusions

ISAM applications in a high add environment run much better under RMS than under DOS. Also, RMS Batch DATABUS is about 30% faster than DOS Batch DATABUS on equivalent hardware. RMS COBOL, and the RMS utilities (SORT, INDEX, etc.) run 50% to 80% faster than their DOS counterparts. In both the Freight Analysis and Receiving Inspection applications, when COBOL and Utility runs were moved from a 6600 to an 8800, processing times dropped by roughly 50%. Moving an RMS DATABUS batch job from a 6600 to an 8800 improved run times by about 30%.

### Future Plans at Manufacturing Systems

By the end of February, Manufacturing Systems will add two more 8800s to the existing configuration and will be running totally on RMS. This additional processing capacity will help convert the remaining 16 application systems by the end of February. When the analysts complete that conversion, they will have converted about 2,000 programs.

"We're excited about RMS and don't want to go to DOS again, because the system is so dynamic and timings are so much better."

## Documentation Available For The 9611 Printer



Documentation for the 9611 Letter-Quality, 30 CPS Printer is now available. You can place your order for documentation when you place orders for consumables with the Customer Support Center in San Antonio, at one of the following numbers:

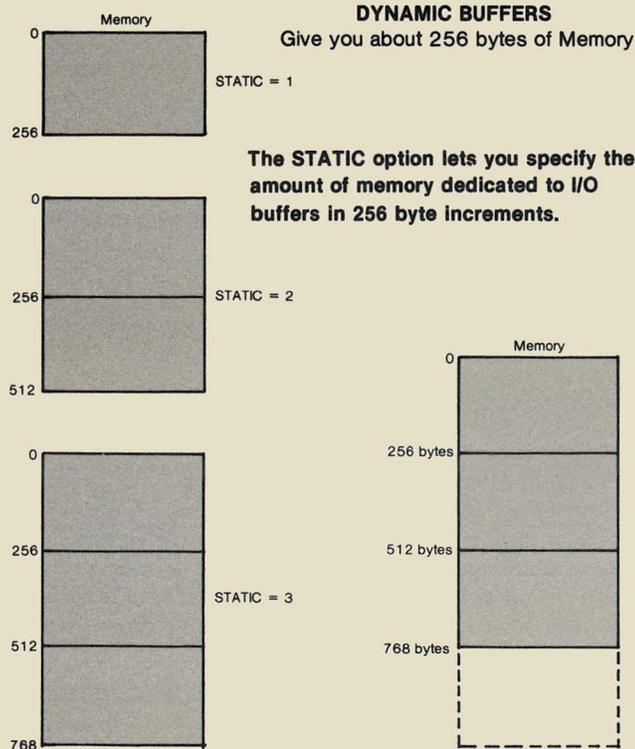
800-531-5770  
800-292-5100 in Texas  
800-531-5642 in Alaska & Hawaii

You can order the following documentation, using the Documentation Numbers in parentheses.

9611 Letter-Quality Printer Flysheet (61069)  
9611 Letter-Quality Printer Product Specification (61155)  
9611 Letter-Quality Printer Operator's Guide (61154)  
0087 Tractor Product Specification (61216) for the 9611 Printer

## Buffers continued from page 1

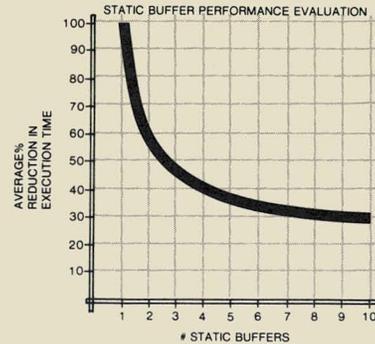
DYNAMIC option will give you about 256 bytes of buffer space. STATIC buffers are I/O buffers that are dedicated to the file in 256-byte increments. Essentially, you can determine the amount of space that you want a file to have available for I/O by using the STATIC buffer option in the file declaration statement.



### The Test

Under DATABUS, there was virtually no difference

between a test run with the DYNAMIC option versus a test run with STATIC = 1. But if STATIC is equal to n, where n ranges from 2 to 10, some dramatic results occur.



This curve represents the average performance increase experienced in running tests on 6600 and 8800 processors with various types of disk. The tests consisted of reading or writing 10,000 records of varying length.

### Cut I/O Time in Half

If you consider the STATIC = 1 time to be the base percentage for performance, the average performance for STATIC = 2 took about 58% of the elapsed time. But if you want to cut the I/O time in half, you probably should use STATIC = 3, since performance at that value was about 47% of the STATIC = 1 time. Additional static buffers appeared to have little impact on the throughput of the tests.

Each STATIC buffer only takes 256 bytes of memory, so you don't really give up much in terms of memory for the vast increase in performance available.

Your results may vary. The actual numbers ranged approximately 10% around the averages. Applications vary, and system load may have an impact on static buffers.

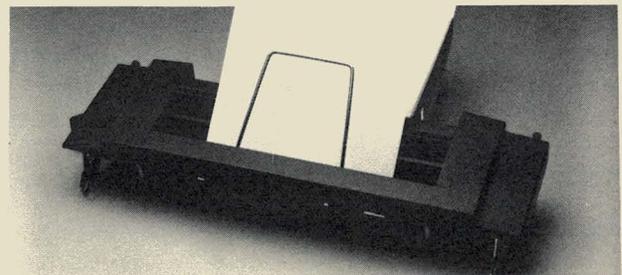
## Cut-Sheet Feeder Offered for 9601/9602 Printers

The Datapoint 9605 Cut-Sheet Feeder attaches to the Datapoint 9601 and 9602 45 CPS Printers. It provides automatic feeding of single standard bond cut-sheet paper. The cut-sheet feeder selects a single sheet from the input hopper and automatically inserts and registers it into the printer. Upon completion of the print cycle, the feeder ejects the sheet into the output hopper. The feeder can be attached and detached by the operator without removing any printer hardware.

### Easy Interface

The cut-sheet feeder/printer interface is clean and simple. The cut-sheet feeder is mechanically connected to the printer by quick release clamps that attach around the platen bearings, so it makes no connections to the paper bail. Electronically, the cut-sheet feeder interfaces via a cable to the printer option board.

The feeder will handle 18-24 pound bond 5.5 to 12.0 inches wide and 5.0 to 14 inches long. Both input and output hoppers will stack approximately 200 sheets of 20 pound bond. The Cut-Sheet Feeder Product Specification, Document No. 61214, contains further information.



## Using the 9605 Cut-Sheet Feeder

Some of you have voiced concern over using 8 1/2 X 11 inch paper landscape fashion on the 9605 Cut-Sheet Feeder. The default left margin is 2.35 inches from the left end of the platen. This allows existing programs to use the cut-sheet feeder with 8.5 inch wide paper centered in the platen. The specifications for the cut-sheet feeder state that the software is responsible for setting the left margin for other paper widths. Until now, there was no software available to override the default left margin.

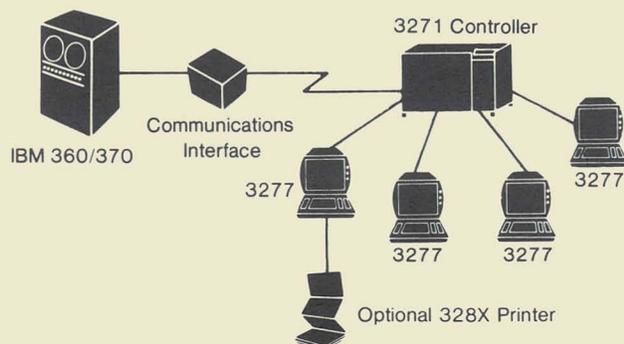
There is now a fix available on the FIX system to override the default left margin. It is in the IOSFORM/LIB.

## ARC Communications and Emulation Software

Datapoint provides emulation of the IBM 3277 terminal under both the Disk Operating System (DOS) and under the Resource Management System (RMS) using software known as the Attached Resource Computer® (ARC™) Communications and Emulation Software package. This package lets any large screen processor, under DOS, or any workstation, under RMS emulate the function of a 3270 terminal while communicating with an IBM mainframe. This article describes the various software components of the ARC Communications and Emulation Software system and suggests some applications of the approach to 3270 emulation provided by the ARC Communications and Emulation Software.

### An Overview of 3270 Processing

The IBM 3270 family of terminals is a collection of hardware that operates with IBM mainframes to allow interactive data entry. The heart of this system is the 3270 terminal, a CRT terminal with an attached keyboard. The screen size varies, with the most popular size being 24 lines by 80 characters (1920 total characters), the same size as the Datapoint 8200 workstation and the 3800 or 8600 series processors. The IBM terminal is not programmable, but it does have certain editing capabilities, and it is equipped with "function keys" to allow the mainframe program to make decisions about processing based upon the "function key" pressed by the operator.



Typical IBM 3270 Configuration

The IBM 3270 system consists of these 3270 terminals and a "cluster controller" device to which the terminals attach. This controller can handle from one to eight interactive terminals on the IBM 3276 and from one to thirty-two interactive terminals on the IBM 3274, with keyboard and CRT. The IBM 3275 and 3276 can be dial-up lines. The controllers available can either attach directly to the mainframe computer via an I/O channel on the mainframe or to a synchronous modem on a leased multipoint or point-to-point communications line. If a communications line is used, the controller can either operate with the Binary Synchronous Communications (BSC) discipline or with the Synchronous Data Line Control (SDLC) discipline using IBM's System Network Architecture (SNA) line control.

## A Typical 3270 Application

With ARC Communications and Emulation Software, the concept of resource sharing, first introduced with Datapoint's Attached Resource Computer (ARC) system, is extended to communications. The resource sharing capability can perform a variety of tasks from the same workstation, enhancing the capabilities of both the mainframe and the ARC system.

In a typical application, an inventory control operator will use the local processing capability of the ARC system for local inventory file loop, updating, and maintenance. You can execute AP3270 to run existing 3270 mainframe applications and then return to local processing by exiting from AP3270. In addition, you can take advantage of new high-level language applications that combine local and central processing power. For example, an inventory application written in COBOL or DATABUS may normally perform local file processing; however, when the desired information is not present in the local database, the program can send an inquiry to the host via the communications processor and report the results of the inquiry to you, without you having to do anything special. Such high-level language programs are also useful for transferring batches of accumulated data to the central files. In effect, the communications processor provides a 3270 facility with the high-level language program replacing the 3270 operator.

Yet, the ARC system gives you the independence of performing local processing and intelligent data entry when the mainframe is not available. Intelligent data entry means that error checking functions are performed within the ARC system rather than by the host. The result is lowered line costs and a reduced mainframe processing load.

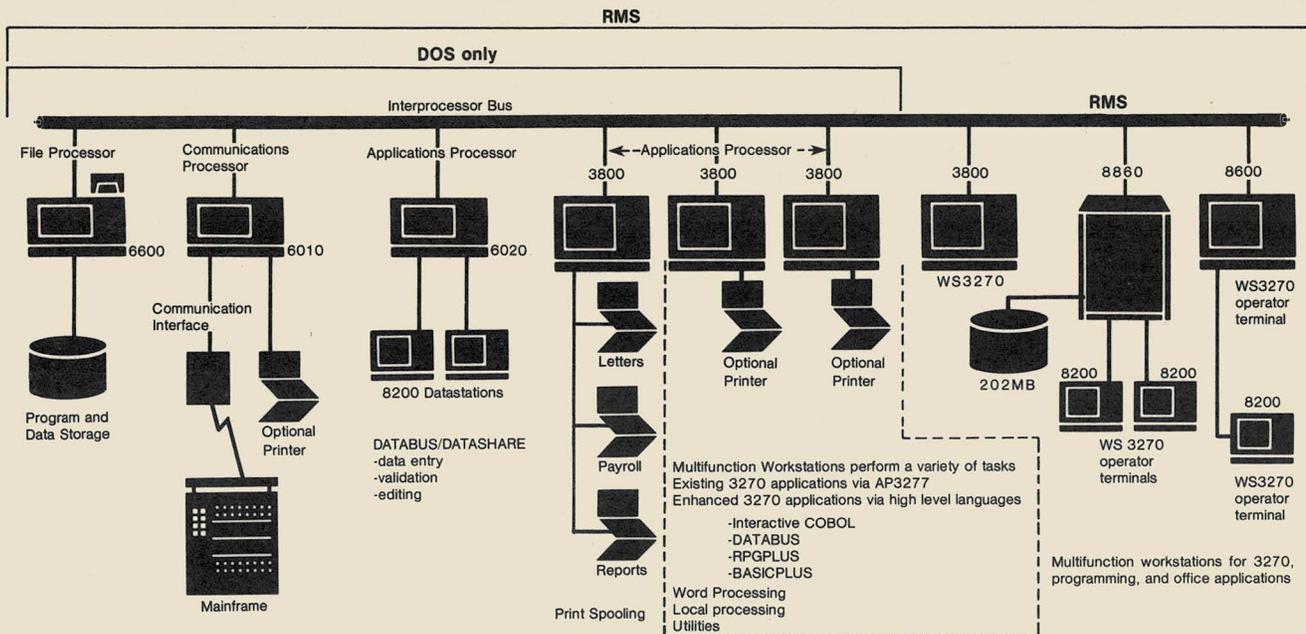
All of the capabilities inherent in the Datapoint ARC system are enhanced with the Communications and Emulation capability. Print spooling, timesharing, telephone communications control, and office functions can be added to the system by simply attaching the proper components.

### An Overview of Datapoint's ARC Communications and Emulation Software System

Datapoint's DOS-based emulation of the 3270 system connects via communications lines only; there is no direct connection to the mainframe. Datapoint's ARC Communications and Emulation Software system provides two programs to act as the "cluster controller" to the mainframe computer. The first, AC3271B, operates on a leased multipoint or point-to-point communications line in BSC mode at speeds up to 9600 baud. The second, ACMLU, operates in SDLC/SNA mode on a leased multipoint communications line at speeds up to 9600 baud. This can also be a dial-up line. Both of these products run under DOS.

In addition to these cluster controller packages, the ARC Communications and Emulation software system provides for emulation of the 3270 terminal via two programs: AP3270 under DOS (on a 3800 or 8600

*continued*



Typical Configuration using ARC Communications and Emulation Software

processor), and WS3270 under RMS (on an 8200 workstation or 3800 or 8600 series processor). The RMS version uses an additional program, DOSPIPE, to communicate between WS3270, the RMS-based cluster controller package, and ACMLU or AC3271B, the DOS-based cluster controller package.

In addition to this emulation provided by AP3270 and WS3270, you may choose to write a program to communicate with the cluster controller and directly with the mainframe computer. This ability to control the 3270 interface via a program you can write is the Datapoint 3270 interface, described in more detail later in this article.

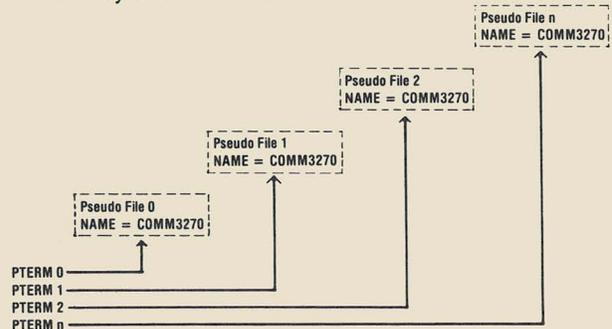
Both cluster controller programs, ACMLU and AC3271B, can support up to thirty-two "3270" terminals, given the appropriate Datapoint hardware. In addition, ACMLU can be configured to support only twenty-six "3270" terminals, providing a combination of batch and interactive terminals in one package on a multipoint communications line. Again, this feature is configurable and is limited to the SNA/SDLC version (ACMLU) by both Datapoint and IBM software. The batch interface is accomplished by a DATABUS program which is released in source form with the ACMLU cluster controller program.

#### Pseudo-volumes, Pseudo-files, and User Programs

The flexibility of the ARC Communications and Emulation software system is accomplished by the "cluster controller" software appearing as file processors to the ARC network. Although both ACMLU and AC3271B are application programs running on an ARC Application Processor, they appear to be ARC File Processors to all other processors on the ARC network. You can define the name of a "volume" when you configure the cluster controller. Since this "volume" doesn't physically exist, it is referred to as a "pseudo-volume."

Since ACMLU or AC3271B appears to all other processors on the ARC network as a File Processor, the interface to the mainframe's 3270 network is accomplished by simply opening, reading, and writing a

"disk file" on the ARC network. The "file" is not really a file at all, but a portion of the memory in the cluster controller program. Each "port" or "3270" that is configured in the cluster controller software is allocated a portion of memory that is used as if it were a sequential disk file. These memory-resident "files" are referred to as "pseudo-files." This provides ready access from all high level languages with techniques that most programmers are already familiar with.



The Pseudo File Concept

The pseudo-files are very rigid in format. Each file consists of exactly nine sectors. The first eight sectors are used to simulate the twenty-four lines of the screen on the "3270 terminal," and the last sector has a special purpose, for communicating between your program (or AP3270 or WS3270) and the cluster controller program itself. Basically, the first three screen lines are contained in sector zero, the next three screen lines are contained in sector one, and so on. The ARC Communication and Emulation software User's Guides provide specific details on the exact format of the pseudo-file and how to use it.

The first step you should take to build a 3270 data entry program is to use the MOUNT command to "mount" the pseudo-volume being simulated by the cluster controller. All you need to do is to supply the NAME, CODEWORD, and VOLUME parameters as required by MOUNT/CMD. You can configure these values in the cluster controller software. Once the

*The Pseudo File in Memory*

Sector 0	Flag Record (6)	Screen Line 1 (80)	Screen Line 2 (80)	Screen Line 3 (80)	FFF00 1 2 3 1 0 5 3
Sector 1	N/A (6) //	Line 4 (80)	Line 5 (80)	Line 6 (80)	FFF00 4 5 6 1 0 5 3
Sector 2	N/A (6) //	Line 7 (80)	Line 8 (80)	Line 9 (80)	FFF00 7 8 9 1 0 5 3
Sector 3	N/A (6) //	Line 10 (80)	Line 11 (80)	Line 12 (80)	FFF00 1 1 1 1 0 0 1 2 5 3
Sector 4	N/A (6) //	Line 13 (80)	Line 14 (80)	Line 15 (80)	FFF00 1 1 1 1 0 3 4 5 5 3
Sector 5	N/A (6) //	Line 16 (80)	Line 17 (80)	Line 18 (80)	FFF00 1 1 1 1 0 6 7 8 5 3
Sector 6	N/A (6) //	Line 19 (80)	Line 20 (80)	Line 21 (80)	FFF00 1 2 2 1 0 9 0 1 5 3
Sector 7	N/A (6) //	Line 22 (80)	Line 23 (80)	Line 24 (80)	FFF00 2 2 2 1 0 2 3 4 5 3
Sector 8 Broadcast Messages	* 00000 Priority Flag	Message Line 1 (80)	Message Line 2 (80)	Message Line 3 (80)	0 0 1 0 5 3

Sector 8 (broadcast messages) is common to all pseudo files.

pseudo-volume is mounted, your program can begin operation by "opening" the pseudo-file and establishing a contact with the mainframe computer via the cluster controller program. One byte in the first (zero) sector is used by the program to tell the cluster controller to transmit data to the mainframe, and another byte is used by the cluster controller program to tell your program that the mainframe has sent something to that terminal's buffer (pseudo-file). To be able to update fields in the screen, you need to be familiar with the screens being sent by the mainframe. By knowing the format of the screens that the mainframe computer is sending, you can write a DATABUS program to access local "real" data files and extract pertinent information and fill in the blanks on the mainframe's screen (in the pseudo-file) so that data can be transmitted to the mainframe by writing the appropriate value into sector zero of the pseudo-file.

For more details on exactly how to write a program to interface to ARC Communication and Emulation software, check the ARC Communication and Emulation software User's Guides, as listed below:

- AC3271B—Document No. 50507 (BSC Cluster Controller)
- AP3270—Document No. 50599 (DOS 3270 Emulation)
- RMS/DOS—Document No. 50650 (3270 and 3270 WS3270 Emulation)

### Explaining the Software

#### AC3271B — ARC Communications and Emulation Software BSC Cluster Controller Emulator

The AC3271B program runs under Datapoint's DOS. It requires a 9481 communications adapter for the communications interface, an appropriate synchronous modem, and a 6000 series processor with RIM. Using a 6010 processor, which has a built-in RIM, AC3271B can support up to eight "3270" ports. The 6020 processor, also with a built-in RIM, or the 6600 processor, with an external RIM device, can support the full range of thirty-two "3270" ports.

#### ACMLU — ARC Communications and Emulation Software SDLC/SNA Cluster Controller Emulator

The ACMLU program also runs under Datapoint's DOS. It requires a 120K 6000 processor with a RIM. In addition, a 9481 communications adapter is required for the communications line interface, along with an appropriate synchronous modem.

As mentioned above, you can configure the ACMLU to operate supporting either twenty-six or thirty-two "3270" ports. You can specify that a "system" printer be attached to the "cluster controller", but this option takes up one of the available "ports."

#### AP3270—DOS 3270 Emulator

The AP3270 program is a DOS application program that allows you complete emulation of a 3270 terminal. It runs only on a 3800 or 8600 processor. The program provides either direct key simulation or "multiple" key simulation of function keys available on an IBM 3270 terminal. High intensity is provided using the "inverse video" mode of display on the CRT screen, and you can use options in the program to use "special" highlighting for certain fields instead of those fields on the screen which are designated to be displayed in "high intensity" mode.

#### WS3270—The RMS 3270 Emulator

The WS3270 program is an RMS application program that can be run on the 3800 processor, the 8600 processor, and any RMS Workstation capable of running IEOS (8200 with version 2.3 PROMs or later). This program uses direct key simulation or multiple key simulation to provide emulation of all function keys available on the 3270 terminal. The light pen and ID card reader special features of the 3270 terminal are not supported by WS3270; no printer support is available with WS3270.

#### DOSPIPE—RMS Interface to ACMLU and AC3271B

Because the WS3270 program operates in RMS and both ACMLU and AC3271B operate in DOS, an intermediate program is needed to interface between them. The intermediary is an RMS program, DOSPIPE, that supplies the interface between any RMS program and the cluster controller software.

Basically, the DOSPIPE program runs as an independent task under RMS. (An independent task runs in the processor, but it doesn't require a workstation for its operation.) DOSPIPE creates RMS "pipes," used by both WS3270 and the programs you write for communications with the cluster controller programs. DOSPIPE uses the RIM device under RMS to send out

*continued*

DOS-format packets over the ARC network directed to the cluster controller program. Each "pipe" is logically directed to a specific pseudo-file on the cluster controller. Because the RMS pipe interface is available to you in both the DATABUS and COBOL languages, you can write programs in either language under RMS; you can write programs in DATABUS or COBOL under DOS, depending on the processor you use.

DOSPIPE must be configured for exactly the number of "ports" it will support. Buffers are allocated at the time that DOSPIPE is invoked. Each pipe interfaces to a single pseudo-file. Because of this design, the cluster controller package must be configured for unique names for each pseudo-file when the RMS interface is used.

### MINIDOS—RMS Simulation of DOS

What happens to the customer who has an RMS-only network and wants to run the ARC Communications and Emulation software? If there is no DOS file processor to boot from, how can we bring up the ACMLU or AC3271B program to begin with? Good questions.

An answer has been provided with the MINIDOS package that consists of two programs, MINIDISK and MINIARC. Together these programs provide a limited emulation of a DOS File Processor under RMS. There are several restrictions noted below.

MINIDISK is a program that can be compared to DOSGEN or PACKGEN. It is used to allocate a single RMS file to be used by the MINIARC program. This single RMS file will be used to store DOS-format disk files. When MINIDISK is run, it must be told how many sectors to allocate to the file specified. The space is allocated and formatted, but nothing is written into the file. That must be done using a real DOS system. Part of the generation process requires that a DOS volume name be specified for the newly allocated file.

MINIARC uses the file created by MINIDISK to hold DOS-format files. MINIARC provides the limited DOS File Processor emulation that allows you to boot DOS and load ACMLU or AC3271B in an RMS-only network. Once the cluster controller package has been loaded, MINIARC can be terminated.

Initially, when MINIARC is brought up, the file is completely empty. MINIDISK has allocated the space but has not written anything to it. At this point, a real DOS File Processor must be available, along with a DOS application processor. Boot the application processor under DOS, and MOUNT the newly created DOS "volume" (the RMS MINIDISK file). Now, under DOS, COPY the SYSTEM0/SYS through SYSTEM7/SYS files, the UTILITY files (such as /SYS, /LNK), and ARC/CMD. Additionally, you would copy AC3271B or ACMLU as well. Once all of these files have been copied to the "DOS volume," MINIARC can simulate a DOS File Processor under RMS. If you have an RMS-only network, then this step of creating the "DOS volume" would need to be done at another site, such as the local Datapoint office.

When MINIARC is run, it is capable of providing a DOS down-line load to any processor on the ARC network. (Even though the network is RMS only, DOS can co-exist with RMS.) Boot the processor to be used as a cluster controller, reply with an asterisk (\*) to the NODE NAME prompt to get the DOS down-line load, and log

on to the "DOS volume" being simulated by MINIARC. You now have a working DOS application processor in an RMS-only network. Any program contained on the "DOS volume" being simulated can be run. Run ACMLU or AC3271B and then bring down the MINIARC program, since it is no longer needed.

### Some Limitations

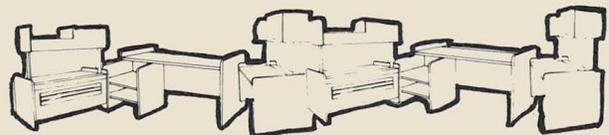
MINIARC doesn't support the following functions that are provided by a physical DOS File Processor:

1. ARCCLOCK/TXT and clock-related functions are not supported.
2. ENQUEUE/DEQUEUE functions are not supported.
3. WRITE/NO VERIFY is not supported.
4. QUEUED WRITES are not supported.

Any DOS program can be stored on the MINIARC "DOS volume" and can be run, since such programs are actually run on a DOS Application Processor "booted" under DOS from the MINIARC "DOS volume". However, if the DOS program being run requires any of the functions listed above, the MINIARC program will not supply them. Running a full DOS system using MINIARC is not advised since the product was not designed to do that. But it will allow you to run communications to emulate the 3270—now!

If you'd like to find out more about the capabilities of Datapoint's 3270 emulation product, please contact your local Datapoint representative.

## Furniture For the Integrated Electronic Office



You may have received a flysheet containing information on Datapoint's new furniture for the Integrated Electronic Office™. The first four products introduced are:

Model Code	Description	Price
0554	Printer Stand, for 30 CPS Printer (9611)	\$250
0582	Workstation Table	595
0583	Peripheral Carrier	275
0584	Riser Shelf	375

### To Order

You can order these products through Customer Service on a Supplies Order Form. This furniture will be shipped and billed separately from any other Datapoint hardware that you may have ordered. You will receive an order acknowledgement when your furniture order is received in San Antonio.

You may place orders for these products by calling one of the following numbers:

- 800/531-5770
- 800/292-5100 in Texas
- 800/531-5642 in Alaska and Hawaii

For further information, please contact your local Datapoint representative.

# Datapoint Printers: A Comparison

With all the different printers available, which one is right for you? If high speed is a deciding factor, Datapoint currently offers two types for you to choose from.

The first, the 9214/9297 Belt Line Printer, has been in the product line for several years. This product is extremely reliable and is ideal for those medium speed/medium duty applications that do not require letter quality print but need relatively fast throughput.

## A New Addition

The second printer is a new Datapoint product that offers a new set of features. Using band technology, the 9257 and 9258 line printers feature operator changeable fonts, operator selectable forms length (6-8 lines per inch), and an acoustic cabinet option.

The table below compares the features of the printers. All prices are in U.S. dollars

	9214/9297 Belt	9257 Band	9258 Band
Price, standing configuration	\$8500	\$10800	\$14500
Price with acoustic cabinet		12450	16150
Rated throughput	230 LPM	300 LPM	600 LPM
\$/LPM	\$37	\$36	\$24
Changeable fonts?	no	yes	yes
Compressed pitch option	no	yes	no
5500 I/O Interface?	yes	yes	yes
Serial Interface?	yes	no	no

Take a look at the chart entitled "Speeds of Datapoint Printers." You can see that as line density exceeds 70 characters per line, the band printers are much faster than the belt printer.



## Federal Datapoint Users Group

The Federal Datapoint Users Group will meet on Thursday, March 18, 1982, to discuss "Application Generators and File Management Packages for Minicomputers." The meeting will be held in the Department of the Interior, Room B-243, 18th and C Streets, N.W., Washington, D.C. This meeting is open to all Federal Datapoint users. For further information, contact the group's president, Dexter Leland, at (703) 860-7211.

## National Infoswitch® Users Group

In New Orleans on April 6-9, the National Infoswitch User's Group will hold its spring conference. Lots of activities are planned, with a number of notable speakers slated to address the assembly. For more information, please contact Bob Hurwitz at (305) 932-5750.

## Users Group News

The response to our request for news from Datapoint Users Groups has been great! If you are part of a users group and would like to let others in your area know about your organization, please send information to SOURCE DATA. We'll be glad to help you blow your horn!



## OFFICE APPLICATIONS

### Setting up Mailing Lists in IEOS

Using the proper format, mailing lists can easily be created and maintained in IEOS. If you use the proper format, you can manipulate the information by sorting in DOS, searching and extracting information, or using the original document, or part of it, for autotyping.

#### Format

First, build a library called MAILLIST with a document called FORMAT using the procedures outlined in the IEOS Simplified User's Guide. Once the primary format is established as document FORMAT, it will become the default format for the library. All documents created in this library will automatically have that same format. Use the following values in your FORMAT document:

Page length	72
Set Tabs	30,60,90
Top Margin	0
Bottom Margin	0
Left Margin	1
Right Margin	120

Press RETURN once and end this document. Now create a document called ADDRESS. Enter each name and address on one line as shown at the bottom of this page. Follow this entry with two blank lines.

#### Printing

To prepare a mailing list for printing, simply change the right margin to 30. The information will shift into position to print on standard six-line labels, 12 labels to a page. Next, put the document into highlight mode and scan it to ensure proper line spacing between addresses. Remember that if you're only one line space off, you'll have to reprint the entire document.

#### Using AIM, SEARCH, and SORT

Maintaining the list in the one-line format will enable you to more effectively use the SEARCH command. When you build the library, you should request an Associative Index Method™ (AIM™) file. If you haven't done this, you can packup your library with the command PACKUP AIM to create an AIM file. With the name and address entered on one line, the entire address will appear on the screen when a search is performed.

As described in SOURCE DATA Issue 15, SEARCH can be used to sort out information using the following commands:

```
SEARCH DOC file name ON TXTFILE=CUTn/WP LINE  
or  
SEARCH DOC file name ON TXTFILE=new name LINE
```

For example, if you had a master mailing list and wanted a list of only those persons working for Southern Telephone, simply enter one of the commands above. When the message "Enter the key:" appears on the screen, type "Southern Telephone". The result will be either a CUT or a TXTFILE containing the addresses of all persons working for the company Southern Telephone, depending on the command line you used.

You can also insert codes for sorting purposes and use the REPLACE command to remove the codes prior to putting the list into printing format. For instance, if you had a master mailing for your company and wanted to code the individuals by job title, you could use a three-character code in columns 26-29. Then, perform a SEARCH and output, for instance, all Senior Sales Representatives (SSR) on the list. To remove the code before printing, simply enter the command REPLACE SSR, press the Insert Key, enter three blank spaces and press the Return Key.

#### Autotyping

Once you have used the SEARCH command to obtain the addresses you need, refer to the instructions in the IEOS Simplified User's Guide on autotyping. With very little modification, the information you have extracted can easily be used as the data file for autotyping because the information is already set up in defined fields.

#### Sorting in DOS

With the address entered on one line, the document can be output on a text file and sorted on any field: name, company name, city, state, or zip code. Sorting by zip code is extremely important when doing large mailings and bulk rate mailings. To sort your document by zip code, output the document on TXTFILE, exit to DOS, and enter the following command:

```
SORT doc name/TXT,CUTn/WP;P114# ,114-119
```

When the SORT is completed, return to IEOS, open library MAILLIST, and create a new document. The new document will automatically have the same format as your FORMAT document. When the Format screen appears, press the Return Key. Next, the top of the first page will appear. Press the Return Key, then press the Command Key and enter the command PLACEn to place the cut you have just created. You will then have the information you want in the same format, with the same spacing as the original document.

Davis Company	Hite, Marvin	3049 Adams #101	Houston	TX	77024
Company Name	Person's Name	Address	City	State	Zip
1-29	30-59	60-89	90-108	109-110	114-119

## The 9301--A New Member of Our Storage Product Family



The 9301 is a new, thin film mass storage disk totally designed and manufactured by Datapoint Corporation to be used with the 8600 processor.

Thin film plating enables the disk unit to store information at a much higher density than most industry disks of this size. Twenty million bytes of data can be stored on its stack of 5 1/4" platters. This coating technique also improves reliability for the system.

### Advanced Cartridge Tape Drive

For backup purposes, the 9301 uses an advanced 1/4" cartridge tape drive. This tape drive can transfer the en-

tire 20MB disk to a single cartridge in less than 15 minutes, allowing the disk to be backed-up or the contents transferred to another 9301 drive. The tape head is made of tough ceramic for durability. The tape drive has a new "signal-seeking" read head developed exclusively by Datapoint that employs an automatic alignment technique that precisely aligns the recording head to each tape. This ensures that a tape made on one system can be read by another.

### Intelligent Controller

The 9301 contains an intelligent controller that provides all data management functions and implements a sophisticated error correction code that will not only detect errors but also correct them without disturbing the user operation. The controller also handles data transfers between the disk and tapes without any involvement by the CPU.

### Attractive Desk-Top Unit

The entire storage subsystem is housed in an attractive desk-top storage cabinet that is the same model as the cabinet for Datapoint's diskette drives. Extension drives may also be added to the 9301 in either 20MB or 40MB extensions for a total of 100MB of storage.

For further information concerning this new product, contact your local Datapoint representative.

## IEOS Support Now Local

All IEOS support is provided for you by your local Datapoint office. If you have any IEOS questions, contact the Datapoint office nearest you instead of calling the toll-free 800 number into San Antonio, which has been discontinued. The local sales offices are listed below.

Arlington, IL	312/956-8050	Knoxville, TN	615/691-0514
Atlanta, GA	404/321-6963	Little Rock, AR	501/225-0374
Bala Cynwyd, PA	215/667-9477	Los Angeles, CA	213/385-0395
Baltimore, MD	301/298-3060	Louisville, KY	502/893-2531
Bellevue, WA	206/455-2044	Memphis, TN	901/761-3080
Birmingham, AL	205/252-0623	Miami, FL	305/621-4335
Birmingham, MI	313/645-1610	Milwaukee, WI	414/453-1425
Burlington, MA	617/273-5040	Minneapolis, MN	612/831-2257
Charlotte, NC	704/527-5300	Nashville, TN	615/361-5981
Chicago, IL	312/977-1470	New Orleans, LA	504/831-8101
Cincinnati, OH	513/984-5057	New York, NY	212/826-9509
Columbus, OH	614/890-7686	Norfolk, VA	804/461-1552
Creve Coeur, MO	314/878-6595	Oakland, CA	415/632-8116
Dallas, TX	214/661-3895	Oklahoma City, OK	405/840-0050
Denver, CO	303/321-8286	Omaha, NE	402/392-1213
Des Moines, IA	515/225-9070	Orange Park, FL	904/264-6935
Des Plaines, IL	312/298-1240	Orlando, FL	305/896-1940
East Hartford, CT	203/289-9364	Phoenix, AZ	602/264-0330
Elmwood Park, NJ	201/794-3570	Pittsburgh, PA	412/788-4440
Farmington Hills, MI	313/855-2900	Pittsford, NY	716/248-2616
Fort Wayne, IN	219/432-4098	Portland, OR	503/644-5575
Ft. Worth, TX	817/284-1355	Raleigh, NC	919/469-3134
Greensboro, NC	919/299-8401	Richmond, VA	804/285-8611
Honolulu, HI	808/537-2977	Sacramento, CA	916/920-8743
Houston, TX	713/680-8800	Salt Lake City, UT	801/262-2975
Independence, OH	216/447-1290	San Antonio, TX	512/734-8982
Indianapolis, IN	317/299-4253	San Francisco, CA	415/398-2888
Irvine, CA	714/752-9073	San Mateo, CA	415/572-1360
Kansas City, MO	913/384-0990	Stamford, CT	203/359-4175
		Tampa, FL	813/879-8216
		Toledo, OH	419/474-5766
		Tulsa, OK	918/644-2295
		Washington, DC	703/841-7600

# Color Business Graphics Question and Answer

Since the ARC Color Business Graphics was announced in November, many of you have voiced questions about using it. This article answers some of the more common questions.

**Q.** Can I have several basic systems (9680) without output equipment and cause the pictures generated to be directed to one station with common hard copy output (9694, 9695, 9696)?

**A.** Yes. Each station is identified uniquely by a sign-on command that is installed at time of initial configuration. The individual "workstations" can be used to develop the pictures or charts, and either the "master station" or "local station" can be directed to OUTPUT each image. This can be directed from the local workstation (associated applications processor) by simply addressing the "master output" station, or at the "master output" station by properly "signing in" and "opening" the desired LIBRARIES.

**Q.** Can the pictures be displayed on an available applications processor?

**A.** No. The pictures are stored in ARC data files that are uniquely structured to be processed by the CBG controller. The interface is specifically established to generate standard red, green, and blue video signals. The video signals describe a matrix of colors to fill the screen, whereas application processors interface via ASCII characters.

**Q.** How does the CBG system integrate into the ARC network scheme?

**A.** The CBG is to be viewed as an addition to the ARC network and also as a self-contained resource. As a self-contained resource, CBG can be used to create images, using DRAW, or to create charts, using CHART. The data used in the CHART phase does not have to be ARC resident, since it can be entered at the keyboard.

**Q.** As an addition to an ARC network, CBG uses the existing storage facilities while allowing you to access current data files to make charts. You can also transmit any image by EMS™, DATAPOLL®, or other communication protocols between existing ARC networks. You can also display or output any image at any location. By adding the 9498 Facsimile Communication Interface (FCI), you can transmit any image within the CBG system in black and white to any standard facsimile machine in the world. Any image received via the FCI can be displayed on the CBG display. With the addition of the new 9660 Laser Printer into the ARC network, any image from the CBG system can be output to this graphics printer. (The software does an automatic conversion from color to black and white similar to US standard color-compatible TV.) This feature allows you to merge word pro-

cessing documents and graphics generated on the CBG.

**Q.** Can a plotter be interfaced to the CBG?

**A.** Currently, the CBG doesn't provide for plotter interface. For business graphics applications requiring paper output, use the 9694 Color Printer. Its speed (2-3 minutes per page) and its ability to fully cover large areas with quality color output can satisfy most of your plotter-type requirements.

**Q.** Can we interface to a large screen projector?

**A.** Yes. The video interface is industry standard RGB RS170. This convention is plug-compatible with several commercially available video projectors. The configuration of the CBG is a parallel cable which originates at the controller, feeds to the monitor, then is available to feed other devices. Just be sure that the overall cable run doesn't exceed 200 feet, the last device must terminate the cable properly (75 OHMS), and the 9696 Large Film Recorder, if used, must be the last device in the chain.

**Q.** Can word processing documents be merged with graphics and printed on the graphics printer?

**A.** No. To merge WP and CBG you must use a laser printer (9660).

**Q.** What kinds of film should I use in the Film Recorder?

**A.** We recommend that you use Kodak's\* ASA 64 Ektachrome\* film, that you can purchase at any film supplier. For the Polaroid\*\*, use Polaroid film number 809 for prints and 891 for overheads. You can order these from your local Polaroid distributor or call the Polaroid number, 1-800-225-1618, for further information.

**Q.** How do I order ribbons for the Color Printer?

**A.** Order ribbons for the Color Printer through Customer Service. Ask for Model Code 80700. These ribbons are available in boxes of 3 sets (12 ribbons).

## When You Use the CBG. . .

As you use the CBG equipment, you will be developing libraries of pictures and tables of special symbols. Other users of the CBG will surely be interested in your applications. Please share this information, as well as any other interesting applications you may devise. Just send your suggestions to SOURCE DATA, Color Business Graphics, in care of the editor.

\* Kodak and Ektachrome are registered trademarks of the Eastman Kodak Company.

\*\* Polaroid is a registered trademark of Polaroid Corporation.

# IEOS Recovery Procedures

Sometimes, because of a power surge or a disk failure, you lose a file while you're using word processing. What follows in this article is a quick reference guide to document recovery in the DOS Integrated Electronic Office System (IEOS).

## RECOVER Command

The RECOVER command allows you to recover libraries, documents, text files, or scratch areas after a system failure or abnormal exit. The RECOVER command does not automatically retrieve whole documents, libraries, or text files. You should only use it if you can't "reclaim" this information in another way, such as RESTORing a previous version or using the file from backup packs. Of course, you won't retain any of the modifications you've made. Make sure you are thoroughly familiar with the command before beginning this procedure.

## DO NOT USE RECOVER:

- \* if a failure occurred during PACKUP. (Use the PACKUP command to continue.)
- \* if the failure occurred while the library was open, but no documents were being edited. (UNLOCK the library.)
- \* if it is not necessary to retain changes made to a document that was being modified at the time of failure. (UNLOCK the library to "reclaim" the "old" document.)
- \* if the failure occurred during PREPARE. Prepared messages cannot be recovered.

In other cases, use the RECOVER command in the format shown below:

```
RECOVER [LIBRARY <library file specification>] or  
[DOCUMENT <document name> or  
STKFILE or TXTFILE <file  
specification>]  
[TO <file specification>] [DIAGNOSE]
```

The default for RECOVER is the editor scratch area for all documents. The default TO <file specification> is RECOVER/TXT.

If you enter the RECOVER command without specifying LIBRARY, DOCUMENT, TXTFILE, or STKFILE, the system will recover the scratch area on libraries designated as SINGLE or the scratch file (called OUT-FILE/WP) on libraries designated as MULTIPLE.

## Just What is a Library Scratch Area?

As you type or scroll forward in a document, the text above and to the left of the cursor is placed into a scratch area (SINGLE libraries) or a scratch file called OUT-FILE/WP (MULTIPLE libraries). As you scroll backward through the document, text crossed by this movement is placed into a work area called STKFILE/WP. When you finish modifying a file, all parts are returned to the library as a valid whole document that includes any changes made as a result of modification.

If a failure occurs so that normal completion did not

take place, the scratch area or file, as well as the STKFILE/WP, may not contain the complete document. In this case, you must reassemble the parts, perhaps having to rekey text where parts are missing.

If you follow the steps listed below, you can assemble the pieces that can be recovered.

## RECOVERing SINGLE Library Documents

If the failure occurred in a SINGLE library, use the steps that follow:

1. If the failure occurred as a result of a "FILE SPACE FULL" error during a modification, you must kill all unnecessary standalone files to free up disk space. DO NOT KILL STKFILE/WP. If the failure occurred because of any other problem, begin with step 2.
2. Keyin RECOVER to recover that portion of the document in the library's scratch area. Once recovered, it becomes a valid document within the library and will be assigned the same name as the document that was being edited. If the edit was a modification, the "original" document becomes inactive.
3. Keyin RESTORE DOCUMENT <document name> to restore the inactive version of the document being modified at the time of failure. If the document was being created, you don't need to use RESTORE. Because RECOVER in step 2 assigned your "original" document name, the system will ask the user for a new document name to assign to the restored document. Answer the question with another name, such as "TEMPRARY."
4. UNLOCK and PACKUP the library that contained the document being edited at the time of failure.
5. Keyin RECOVER STKFILE to CUT1/WP. The STKFILE may contain remnants of a document edited prior to the document in which the failure occurred. This overwrites CUT1/WP if it already exists. (If you did not scroll backward while creating or modifying, you don't need to RECOVER STKFILE; you can skip to step 6B.)
- 6A. Keyin MODIFY DOCUMENT <original document name>. Scroll to the end of the document, then press the enter key to force a new line. With the cursor in that position, press the command key, then keyin PLACE 1 and return. This joins the first recovered part of the document with the last recovered part.
- 6B. Some portions of text may be missing, but might be found in the document called TEMPRARY. Use CUT and PLACE to restore the missing information from TEMPRARY to <original document name>.
7. Carefully modify <original document name> to delete duplicate lines of text, to delete lines of text that were recovered but not wanted, and to rekey missing text. End the modification.
8. Keyin DELETE DOCUMENT TEMPRARY. DO NOT DELETE the original document, since it is now the good document.

*continued*

continued

### RECOVERing a MULTIPLE Library Document

If the failure occurred in a MULTIPLE user library, use the following steps:

1. If the failure occurred as a result of a "FILE SPACE FULL" error during an edit, you must delete all unnecessary standalone files in order to free disk space. DO NOT KILL STKFILE/WP or OUTFILE/WP. If the failure was not due to a "FILE SPACE FULL" error, begin with step 2.
2. UNLOCK the library that contained the document being edited at the time of failure. If the edit was a modification, the original document still exists in the library as <original document name>.
3. Keyin RECOVER TO CUT1/WP to recover any text in the scratch file. OUTFILE/WP may contain remnants of a document edited prior to the document in which the failure occurred. If you notice that the system is recovering text from another document, you can discontinue recovery by using the KBD key. That portion already recovered will still be in CUT1/WP. This will overwrite CUT1/WP if it already exists.
4. Keyin RECOVER STKFILE TO CUT2/WP. STKFILE/WP may contain remnants of a document edited prior to the document in which the failure occurred. This will overwrite CUT2/WP

if it already exists. (If you did not scroll backward while creating or modifying, you don't need to RECOVER STKFILE.)

5. Keyin CREATE DOCUMENT TEMPRARY to create a new document in which all the pieces of the "lost" document may be assembled. Press the command key, then keying PLACE 1 and return. If the STKFILE was recovered in step 4, press the enter key to force a new line, then press the command key, keying PLACE 2, and return. This joins the first recovered part of the document with the last recovered part. Some portions of the text may be missing, but might be found in the original document. Use CUT and PLACE to restore the missing information from the original document to the document called TEMPRARY.
6. Carefully modify TEMPRARY to delete duplicate lines of text, to delete lines of text that were recovered but not wanted, and to rekey missing text. End the modification.
7. Keyin DELETE DOCUMENT <original document name>. DO NOT DELETE the document called TEMPRARY, since it is not the "good" document.
8. The document called TEMPRARY may now be renamed to the original document name by using the command RENAME DOCUMENT TEMPRARY.

## IEOS/DOS 1.5 Memory Manager Software

The newly-released IEOS/DOS Version 1.5 presents memory manager capabilities designed to improve performance on processors with more than 60K memory. The memory manager saves time by loading overlays into memory for retrieval instead of accessing the disk each time additional information is needed. This article will tell you how the memory manager can improve performance, when it works, and where its impact can be anticipated.

### What is an Overlay?

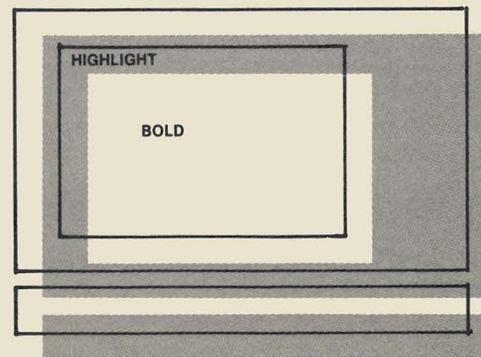
When memory limitations do not allow all of a large program to reside in the memory of a processor, a standard procedure is to segment pieces of code into modules. In IEOS, some kinds of overlays are the program segments used to perform highlighting, underlining, and boldfacing. These overlays are typically read from the disk each time they are needed. When the next overlay is read and used, it "overwrites" the last overlay. If you needed to use the first overlay again, it would have to be reread from disk into memory.

### How Does the Memory Manager Work?

The memory manager reduces the amount of reading and rereading. Essentially, the first time an overlay is used in IEOS 1.5, it is read from disk and then kept resident in the upper memory of the applications processor. This means that the next time the overlay is used, it's loaded directly from upper memory, rather than having to go to the disk again for the overlay.

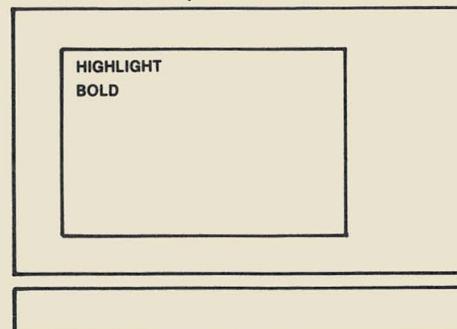
#### WITHOUT MEMORY MANAGER

Each new overlay "overwrites" the one existing in memory



#### WITH MEMORY MANAGER

More than one overlay can reside in processor memory.



With this technique, the memory manager can significantly improve performance in almost any type of configuration, because you're gaining speed from loading overlays from memory rather than going to the disk each time. Its impact may be even greater in the case of a heavily-loaded ARC system, where there has been a lot of disk I/O, or in the case of a diskette system, where disk access time is slower.

### Where Does the Memory Manager Work?

Program overlays are accessed when command functions are initialized and terminated, like when you begin highlighting and when you end it. Accordingly, the memory manager is automatically used whenever commands are issued in the Master Menu and when commands are issued in the Editor. As successive overlays are kept resident, the oldest overlay is "overwritten" to make room for newly-requested overlays. Operations such as reading and writing lines of a document and reformatting on the screen are not impacted by the memory manager.

### Performance in Master Menu Commands

In summarizing the power of the memory manager to enhance performance, we'll look first at some timings done on Master Menu commands.

Similarly, entering a second document to MODIFY took 67% of the time it used to take. DISPLAY was performed under version 1.5 in 33% of the time it took under the previous IEOS release, 1.4.

A broad sampling of such timings on the 3800 indicated that Master Menu operations under 1.5 (once the overlays are first loaded) could be performed in 1/3 to 2/3 of the time that it takes to do the same operations without the memory manager. Similar groups of timings were done on 128K and 256K 8600s, and the results were very positive.

### Performance in the Editor

In any edit session, there is a lot of repetition, since the same overlays may be used more than once. For example, you may enter and exit highlight mode a number of times or repeat operations such as boldfacing, underlining, or deleting.

Now, with 1.5, once a particular overlay is loaded and kept resident in memory, the same overlay can be called into action much more quickly than before.

In an effort to estimate the Memory Manager's overall effect on throughput, we designed a variety of edit sessions, and ran these on 3800s and 8600s -- first without the memory manager, and then with the new IEOS 1.5 memory manager capability.

The content of each edit session of course has a direct impact on the end results. Each edit session was executed with linked Function key definitions, to eliminate operator keyin rate variations. To guide you in your appraisal of the numbers below, here is a summary of each test session.

Test 1 involved a modify of a 10-page collection of letters, with repetitive "finds," block deletes, cuts, places, and highlight entry and exits. Test 2 involved creating a standard business letter, with keyin, macros, cursor movement, an insert, a delete, finds, and highlights. Test 3 involved the same overlays as Test 2, only multiplied by five times in usage. Test 4 had shift/deletes, plenty of

cursor movement, and one major format change. (Since repetitive use of overlays was not involved in this application, you'll note that the 1.5 had little impact.) Test 5 involved plenty of tabs, keyin, finds, and typeovers.

### Memory Manager Timings with Edit Sessions

These timings are in seconds, from begin session to end session, on 3800 processors.

Edit Sessions	3800 w/o MM	3800-128K With MM
Test 1	278.00	144.60
Test 2	65.00	50.90
Test 3	343.10	245.00
Test 4	53.70	50.20
Test 5	206.30	129.60

### Using the Memory Manager with the 8600

A similar exercise was performed on 8600 processors, showing the considerable increase in performance of IEOS 1.5 on that processor. As you remember from issue 15 of SOURCE DATA, the 8600 transfers disk data to and from memory by a direct, high-speed transfer. This makes the timings even more impressive, when you consider that the memory manager improves on these rates.

Edit Sessions	8600 w/o MM	8600-128K With MM	8600-256K With MM
Test A	180.60	70.00	69.70
Test B	37.00	25.00	24.90
Test C	193.10	117.00	116.00
Test D	27.10	21.90	21.20
Test E	113.10	57.00	54.00

In addition to obvious factors such as available processor memory and disk I/O considerations, the sample edit sessions above point out some other factors that influence the memory manager's effect on performance:

- 1) If the application involves extensive repetitive use of overlays, like using highlight mode frequently, then the memory manager's impact is greater. In Test 1, we saw the most dramatic increase in performance (due to repeated use of a number of overlays), whereas Test 4 represents the opposite case.
- 2) Another consideration is whether the point is reached where "least recently used" overlays are "overwritten" to make room in memory for new overlay requests. In the tests performed above, the 128K 8600 had enough "free" memory to keep all the editor overlays loaded. This is why we saw little if any difference in the 128K 8600 and 256K 8600 timings. In extensive operations involving master menu command overlays and editor overlays, the 256K 8600 would compare more favorably in overall throughput, since more of the overlays could be kept resident in memory instead of "overwriting," as is the case with the 128K 8600. A relevant point to make here is that the memory manager's overlay control table can be customized to further address site requirements. In other words, functions can be designated as "keep resident -- do not overwrite."

Your local Datapoint office can provide additional information on customizing the 1.5's Memory Manager for your specific needs.



## OFFICE COMMUNICATIONS

# Call Detail Recorder — The Solution for Telecommunication Management

The Call Detail Recorder (CDR) is an on-site, on-demand telephone call costing and management system. The unit records the details of all calls placed through a key telephone system or Private Branch Exchange (PBX). It calculates the cost, assigns charges to the extensions from where calls were made, and provides reports of all these functions. These reports address call volumes, distribution, cost allocation, and facility use.

Because of the design of the system, reports can be generated at any time, including reports with summary and detailed information. In addition, when the reports are produced, the data can be retained for future processing, such as generating interim reports.

### The Hardware

The standard CDR system uses a Datapoint 1800 processor or 6600 processor with an integrated keyboard, video screen, and input/output control. The CDR also includes disk storage for programs, customer databases, and call history records. Accompanying this is a system printer for the production of the reports. All equipment is designed for desk-top mounting and operates in a normal office environment. Connection to the PBX is via a standard RS232C cable.

The smallest system can store 12,000 call records and can process up to 300 calls per hour. This is expandable to 175,000 call records with an hourly throughput of 3,750 complete call records. With this proven product, reliability and simplicity of use are primary customer oriented features.

### The Software

The CDR consists of a package of high-level computer programs operating in an on-site business computer. A simple cable connection to the data output port of the key telephone system or PBX feeds information about outgoing calls to the CDR. Here the information is formatted by a program module. Once the information is converted to a standard format, the CDR prices the call using tariff tables and allocates the cost of the call to the extension placing the call. The detailed information about each call is written into a call history file. Upon demand, reports can be created to list the details of each call placed from a specific extension or group of extensions.

### The Reports

The CDR generates two types of reports: allocation and resource management reports.

### Allocation

Allocation Reports allow timely management and allocation of operating expenses by the following call breakdown:

**Call Detail by Extension:** The content of the print-out provides all necessary detail to examine the calling activity from each requested extension.

**Call Summary by Cost Center:** Pertinent summary information for every telephone extension in each requested cost center is detailed.

**Call Summary by Department:** Summary information for each cost center in each requested department is tabulated.

**Call Summary by Division:** Summary information for each department in each requested division is given.

**Account Code Detail:** This optional report is produced for a given account, a specified list of accounts, or for all accounts in numerical order.

### Management Reports

Resource Management Reports consist of Circuits and Traffic Reports and Business Analysis reports. The objective of the Circuits and Traffic reports is to match trunking and least costs services to real business demand.

**Traffic Summary by Trunk Level Code:** The traffic load by trunk level code for the reporting period is summarized.

**Traffic Distribution by Time-Of-Day:** This report produces an analysis by dial level code of the outgoing traffic volume load for each 30-minute interval of the day.

Business Analysis reports provide a new business analysis tool to help you determine your markets and evaluate your phone sales activity and profitability.

**Called Number Detail Analysis:** This report is used to determine which extensions have called a given destination number.

**Called Number Summary Analysis:** This report gives insight into the volume of traffic to customer selected destinations, eliminating the requirement for manual toll studies.

**Cost and/or Duration Detail Exception Reporting:** This report shows the detail for calls exceeding specified cost and/or duration parameters.

# Software Program Releases

Illustrated below is a Software Release Form. These forms are issued for every new release of a software product. They are sent to Datapoint branch offices in the Software Operations Newsletter they receive periodically. SOURCE DATA publishes a table of condensed information from releases.

```

DATAPoint COMPUTER SYSTEM DIVISION
PROGRAM RELEASE FORM

NOTE: LICENSE REQUIRED

The software item documented on this form is the property of Datapoint Corporation and may be used or transferred only pursuant to the terms of a license agreement between Datapoint and the user.

SYMBOL/VER. REV: ARCSTAT 4.1
DESCRIPTION: ARC System Statistics
PURPOSE: A - Corrects problems
          C - Adds New Features

RELEASE MEDIA: Cassette
                Single-Sided Double Density Diskette
                Double-Sided Double Density Diskette
TOTAL SECTOR SIZE: 120 Sectors
SOFTWARE CANCELLED BY THIS RELEASE: ARCSTAT 3.2

RELEASE SUPPORT:
Software: DOS 2.7
          DOS 3.2
          ARC 1.7

Hardware: Processor: 1100/1800/3800/5500/8000/8800
          Minimum Size: 32K
          Core: 40K RIM or 8000/3800 Internal RIM
          5500/8000 Partition Supervisor Compatible: No

RELEASE ITEMS: MDUL GUID RELEASE
User's Guide: 50883 97 Pages
Program Media: 40477 1 DMF Cassette
Program Media: 40478 1 SS/DD Diskette
Program Media: 40479 1 DS/DD Diskette

DETAILED DESCRIPTION:
This program enables the ARC user a manner in which he can monitor all ARC releases, system efficiencies, and the time dedicated to various tasks, determine the cause of system failures, and observe other internal counters within the ARC system.
    
```

```

REVISIONS:
1. Supports ARC 1.7
2. Supports the 8000 processor.
3. Always reloads standard character set on exit

PROGRAM FILES RELEASED:
ARCSTAT/DMF ARCSTAT command file
ARCSTAT/RPM Release Form print file

RELEASED BY: _____ DATE: _____
CERTIFIED BY: _____ DATE: _____
APPROVED BY: _____ DATE: _____
    
```

Name/Date	Description	Purpose	Model	Media*
AC3271B 1.4 Released 11 DEC 81	AC3271B is the binary synchronous emulation of the IBM 3271.	Corrects problems Adds new features Cancels ARC3271B 1.3	9817 50506 50507-2	1 DMF Cassette Systems Guide User's Guide
ARCOPY 2.1 Released 11 DEC 81	ARCOPY 2.1 is a DOS file transfer utility that copies files between two different DOS volumes.	Adds new features Cancels ARCOPY 1.3	20553 20754 40434 50396	1 DMF Cassette 1 SS/SS Diskette 1 SS/DD Diskette User's Guide
ARCSTAT 4.1 Released 14 DEC 81	ARCSTAT 4.1 is a program that allows an ARC user to monitor all ARC stations, the system as a whole, and other internal counters in the ARC system.	Corrects problems Adds new features Cancels ARCSTAT 3.2	20527 40478 40479 50383	1 DMF Cassette 1 SS/DD Diskette 1 DS/DD Diskette User's Guide
BASICPLS 2.2 Released 12 JAN 82	BASICPLS 2.2 is the interactive, interpretive processor for the BASIC language available for 5500 and 1550 type processors.	Corrects problems Cancels BASICPLS 2.1	20650 20651 20697 20698 20793 20809 20829 50335	1 SS/SD Diskette (11xx) 1 SS/DD Diskette (18xx) 1 SS/SD Diskette (15xx) 1 DMF Cassette 1 DS/DD Diskette (155x) 1 SS/DD Diskette (155x) 1 DS/DD Diskette (18xx) User's Guide
CBSYS 1.1 Released 5 JAN 82	CBSYS 1.1 is the ANS COBOL compiler to execute programs on the 1800, 3800, 5500, and 5500 processors.	Corrects problems Adds new features Cancels COBOL 3.3	9802 20651 20652 20653 20654 20655 20829 50233	COBOL 3.4 1 SS/DD Diskette 2.5MB Disk 10MB Disk 25MB Disk 60MB Disk DS/DD Diskette User's Guide
CMS/CMIS II 2.2.1 Released 2 DEC 81	CMP/CMIS II is a communications management information system.	Final release	9841 20653 20654 20655 50611 50612 50610 50613 50629	CMP/CMIS II 2.2.1 CMIS 10MB Disk CMIS 25MB Disk CMIS 60MB Disk CMIS User's Guide Guide for TDP TDP Quick Reference EBP Operating Guide IBP Operating Guide

<i>Name/Date</i>	<i>Description</i>	<i>Purpose</i>	<i>Model</i>	<i>Media*</i>
CMP/EBP II 2.2.1 Released 2 DEC 81	CMP/EBP II 2.2.1 is the equipment billing package.	Final release	9843 20653 20654 20655 50611 50613	CMP/EBP II 2.2.1 EPB 10MB Disk EBP 25MB Disk EBP 60MB Disk CMIS User's Guide EBP Operating Guide
CMP/IBP II 2.2.1 Released 2 DEC 81	CMP/IBP II 2.2.1 is the integrated billing package.	Final release	9844 20653 20654 20655 50611 50629	CMP/IBP II 2.2.1 IBP 10MB Disk IBP 25MP Disk IBP 60MB Disk CMIS User's Guide IBP User's Guide
CMP/TDP II 2.2.1 Released 2 DEC 81	CMP/TDP II 2.2.1 is the telephone directory package.	Final release	9842 20653 20654 20655 50610 50611 50612	CMP/TDP II 2.2.1 TDP 10MB Disk TDP 25MB Disk TDP 60MB Disk TDP Quick Reference CMIS User's Guide TDP Operating Guide
DBCMPPLUS 3.3 Released 14 JAN 82	DBCMPPLUS 3.3 is the DATABUS compiler that runs on any Datapoint processor with a 5500 instruction set and at least 28K memory.	Adds new features Cancels DBCMPPLUS 3.2	20458 20459 40331 40481 50321	1 DMF Cassette 1 SS/SD Diskette 1 SS/DD Diskette 1 DS/DD Diskette User's Guide
DIAG1550 1.1 Released 25 NOV 81	DIAG1550 1.1 is the 1500/1550/2150 diagnostic system release.	New release	20697 20793 20809 20827 50647 50374	1 SS/SD Diskette 1 DS/DD Diskette 1 SS/DD Diskette DIAG1550 1.1 User's Guide Ver 1 User's Guide Ver 2
DISK1415 1.2 Released 25 NOV 81	DISK1415 1.2 is a diagnostic program for testing the 1400 Dual Diskette Drive from a 1550/2150 processor.	Corrects problems Cancels DISK1415 1.1	20697 20793 20809 40440 50538	1 SS/SD Diskette 1 DD/DD Diskette 1 SS/DD Diskette DISK1415 1.2 DISK1415 User's Guide
DISK1486 1.1 Released 22 JAN 82	DISK1486 1.1 is a diagnostic program for testing the 1411 Dual Diskette Drive from an 8600.	New software package	20845 50670	1 DMF Cassette User's Guide
DOS.H 2.6.1 Released 25 JAN 82	DOS.H 2.6.1 is a disk operating system for the 1500 series processors.	Corrects problems	40279 40457 40482 50308	1 SS/SD Diskette 1 DS/DD Diskette 1 SS/DD Diskette User's Guide
DS5 3.4 Released 11 JAN 82	DS5 3.4 is the DATABUS interpreter that operates on the 6600, 6000, 5500, 5000, 1170, 1800, or 3800 processors.	Adds new features Cancels DS5 3.3	9812 20650 20651 20698 20829 50450	DS5 3.4 2 SS/SD Diskettes 1 SS/DD Diskette 3 DMF Cassettes 1 DS/DD Diskette User's Guide

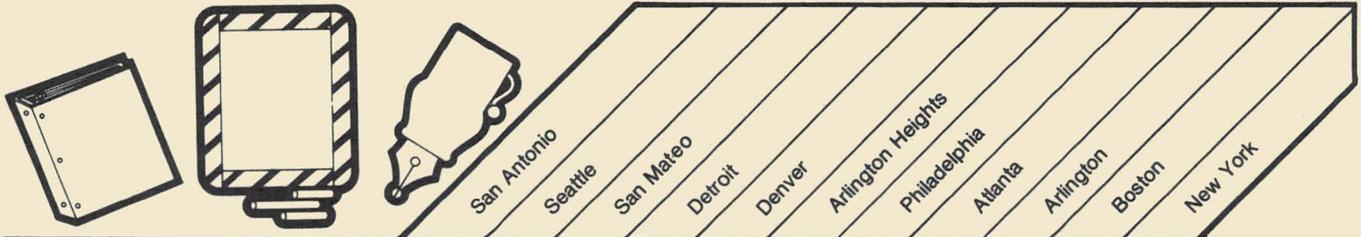
<i>Name/Date</i>	<i>Description</i>	<i>Purpose</i>	<i>Model</i>	<i>Media*</i>
DS6 1.3 Released 14 JAN 82	DS6 1.3 is the DATABUS interpreter that operates on the 6600, 6000, 5500, 5000, 1170, 1800, or 3800 processors.	Adds new features Cancels DS6 1.2	9828 20650 20651 20698 20829 50536	DS6 1.3 2 SS/SD Diskettes 1 SS/DD Diskettes 5 Cassettes 1 DS/DD Diskette User's Guide
FCOPY15 1.1 Released 14 DEC 81	FCOPY15 1.1 allows files to be transferred between single and double density diskettes or between single density diskettes and allows inspection of diskettes.	Adds SS/SD and SS/DD Diskettes to Release Media	20697 20793 20809 40458 50621	1 SS/SD Diskette 1 DS/DD Diskette 1 SS/DD Diskette 1 FCOPY15 1.1 User's Guide
IEOS/MS 1.5.1 Released 29 DEC 81	IEOS/MS 1.5.1 is the message system for for the 3800 and 8600.	Final release Cancels IEOS/MS 1.4.1	9823 20653 20654 20655 50502 50547 50523	IEOS/MS 1.5.1 10MB System Disk 25MB System Disk 60MB System Disk Simplified Guide Supervisor's Guide Message Services Addendum
IEOS/WP 1.5.1 Released 29 DEC 81	IEOS/WP 1.5.1 is the word processor for 3800 and 8600.	Final release Cancels IEOS/WP 1.4.1	9820 20653 20654 20655 50502 50547	IEOS/WP 1.5.1 10MB System Disk 25MB System Disk 60MB System Disk Simplified Guide Supervisor's Guide
LIBSYS22 1.1 Released 25 JAN 82	LIBSYS22 is a multifunction librarian used in the maintenance of library files.	New software package	20846 20847 50678	1 SS/SD Diskette 1 DMF Cassette User's Guide
LINKREL 1.1 Released 17 NOV 81	LINKREL 1.1 is a companion program to SNAP/3 to link relocatable program modules into a relocatable program module.	New software release	20840 20841 40476 40477 50661	1 DMF Cassette 1 SS/SD Diskette 1 SS/DD Diskette 1 DS/DD Diskette User's Guide
MEMTST15 1.1 Released 12 NOV 81	MEMTST15 1.1 is a diagnostic program for testing the memory of 1500, 1550, and 2150 processors.	New software package	20697 20790 20793 50606	1 SS/SD Diskette MEMTST15 1.1 1 DS/DD Diskette MEMTST15 User's Guide
ML3741 1.1 Released 6 JAN 82	MS3741 1.1 is the point-to-point line driver for MULTILINK™, emulating an IBM 3741 in non-transparent binary synchronous mode at speeds up to 4800 baud.	New software package	20837 20838 40472 40473 50659	1 SS/SD Diskette 1 DMF Cassette 1 SS/DD Diskette 1 DS/DD Diskette User's Guide
ML3770 3.1 Released 30 NOV 81	ML3770 is a communications interface for MULTILINK.	Adds new features Cancels ML3770 2.1	20387 20388 40474 50270	1 DMF Cassette 1 SS/SD Diskette 1 SS/DD Diskette User's Guide
MLVIP 2.2 Released 8 JAN 82	MLVIP 2.2 is a communications interface for MULTILINK.	Corrects problems Cancels MLVIP 2.1	20397 50278	1 DMF Cassette User's Guide

<i>Name/Date</i>	<i>Description</i>	<i>Purpose</i>	<i>Model</i>	<i>Media*</i>
MLX25B 1.1 Released 4 JAN 82	MLX25B 1.1 is the multilink X.25 driver for DATASHARE® 6.	New software package	20830 20831 40467 50653	1 DMF Cassette 1 SS/SD Diskette 1 SS/DD Diskette User's Guide
RDLIMIT 1.2 Released 4 DEC 81	RDLIMIT 1.2 is a maintenance aid for performing the 25MB MSS VCO alignment.	Adds new features Cancels RDLIMIT 1.1	20563 50407-1	1 LGO Cassette User's Guide
RPGSYS 1.2 Released 7 JAN 82	RPGSYS 1.2 is a new version of the RPGII system tailored to use the 5500.	Corrects problems Cancels RPGSYS 1.1	9803 20651 20652 20653 20654 20655 20829	RPGSYS 1.2 1 SS/DD Diskette 2.5MB Disk 10MB Disk 25MB Disk 60MB Disk 1 DS/DD Diskette
S1500 3.1 Released 7 JAN 82	S1500 3.1 is the 1500 Software System.	Adds new features Cancels S1500 2.1	40291 40464 40456	5 SS/DD Diskettes 2 SS/DD Diskettes 2 DS/DD Diskettes
S1800 4.1 Released 1 FEB 82	S1800 4.1 is the software system for the 1800.	Adds new features Cancels S1800 3.1	40421 40445	4 SS/DD Diskettes 2 DS/DD Diskettes
SER15 1.3 Released 12 NOV 81	SER15 1.3 is a first-level diagnostic program to test a serial printer connected to a 1500, 1550 or 2150.	Corrects problems Cancels SER15 1.2	20697 20659 20793 50466	1 SS/SD Diskettes SER15 1.3 1 DD/DD Diskette SER15 User's Guide
SHARE™ 5.1.3 Released 24 NOV 81	SHARE 5.1.3 (Micro)	Final release Cancels SHARE 5.1.2 (Micro)	9846 20652 20653 20654 20655	SHARE 5.1.3 2.5MB System Disk 10MB System Disk 25MB System Disk 60MB System Disk
SHARE 5.1.3 Released 24 NOV 81	SHARE 5.1.3 (Host)	Final release Cancels SHARE 5.1.2 (Host)	9846 20652 20653 20654 20655 50618 50619 61051	SHARE 5.1.3 2.5MB System Disk 10MB System Disk 25MB System Disk 60MB System Disk User's Guide Cartridge Tape Quick Reference
TERMEX55 1.1 28 JAN 82	TERMEX55 1.1 exercises terminals and workstations by using multiports driven by a 6600, 5500, 3800, or 1800 processor.	New software package Cancels TSTTUBE55 1.1	20849 40484 40485 50679	DMF Cassette 1 SS/DD Diskette 1 DS/DD Diskette User's Guide
UNSPPOOL 2.1 Released 25 JAN 82	UNSPPOOL 2.1 is the print unspooler for DOS.D/ARC users.	Adds new features	20637 50462	1 DMF Cassette User's Guide

\*Media Charge — \$15.00 for one cassette, diskette, or double density diskette, \$125 for 2.5MB disk, \$180 for 10MB disk, \$385 for 25MB disk, \$505 for 60MB disk

# Datapoint Customer Education Schedule for March & April

Below is the schedule for customer education during the next couple of months. *The Customer Education Course Catalog*, Document No. 60269, contains course descriptions, prerequisites, education center information, and cost. Copies are available at your local Datapoint office. You can enroll for courses or get more information by calling the San Antonio number, (512)699-7039.



Course	Location										
	Starting Dates										
Introduction to Datapoint Programming	3/8 4/5 4/26	4/5	3/22			3/29		3/15 4/26			4/19
Disk Concepts and Operations	3/15 3/29 4/12	3/1 4/26				3/8 4/19			3/8		3/1 4/12
Disk Operating System	3/8 4/12		3/29								
Resource Management System (RMS)	3/8 3/15 3/29	4/12 4/26	3/22			3/1			4/5		4/19
DATASHARE	3/1 3/22 4/12	3/15	3/29 4/19	3/8	4/5	3/22 4/26	3/15 4/19		3/1	3/1 4/5	3/29
Advanced DATASHARE						4/19			3/22 4/19		
Attached Resource Computer (ARC)	3/8 4/5		3/15			3/15					
Word Processing Concepts and Operation	3/1 3/15 3/29		3/8			3/22			3/15 3/29		3/22
Advanced Word Processing Concepts and Operations *	4/19										
Electronic Message System (EMS)	3/22 4/26										
Basic LDCS™	3/8 4/12										
Advanced LCDS	3/15 4/26										
Automatic Call Distributor (ACD)											
Basic Word Processing Concepts and Operations*	4/5 4/26		4/19								
Data Processing LDCS*	4/12								4/26		

\*New Class being given for the first time

# SOURCE DATA Advertising

The advertising listed below is presented without verification or review of any kind by Datapoint Corporation. Datapoint Corporation makes no representation concerning the content of these advertisements or the quality of any product, software, or service offered. Datapoint Corporation reserves the right to reject any advertisement at its sole discretion.

## ADVERTISE IN SOURCE DATA

Two for One Special

If I receive your advertisement for the April/May issue before May, you'll get twice the ad space for the price of one! Just send the regular \$44/block fee, and I'll give you twice as much space!

### DATAPOINT® Accountant II

General Accounting Packages  
1500 — DATASHARE — ARC  
Compatible with DOS and RMS

- Payroll
- General Ledger
- Fixed Assets
- Accounts Payable
- Accounts Receivable
- Inventory
- CPA Time Accounting
- Legal Time Accounting
- Mailing Lists

Proven Accountant II Software — Nationwide References



**CCI Software**

102 E. Main St., Suite 509 • Urbana, IL 61801 • (217) 328-0030

## RMS SOFTWARE

RMS Business Systems Software

available from:

**CUSTOM COMPUTING, INC.**

P.O. BOX 1374  
KILGORE, TEXAS 75662  
214-984-0639

9374 Disk Drive w/Controller

20MB system. Runs DOS.D or RMS with 5500/6600 processor. Under maintenance.

**RANDY INTERNATIONAL LTD.,**  
Mr. Martin Feldman, Hallandale, FL  
(305) 456-6660

Debug your DATABUS program super fast with TRACE. Write or call for our catalog.

Sentient Systems Corporation, 1270 Broadway, Suite 1001 New York, New York 10001 (212) 947-6625

DATAPOINT/IBM Distributed Application Expert  
Ready for Increased Responsibilities  
7 yrs. experience developing all types of systems  
No house to sell — Write for resume

**DATAMAN**  
10019 Wickersham  
Houston, Texas 77042

MSSPLAN "Electronic Spreadsheet" Software tool for plans, budgets, forecasts, and projections. Requires 24 line screen and 132 character printer. DATABUS source code included. License \$250 — Demo diskette \$50

Management System Services  
P.O. Box 171 Bellevue, WA 98009  
(206) 828-3642

Two of Each: 1134 System,  
9232 Printer-80 CPS,  
9402 Comm Adaptor, 1532 System  
Total Price: \$11,000 — All on Maint.

Rutherford, Porter & Associates, Inc.  
12611 Jones Rd, Houston, Texas 77070  
(713) 890-5710

LETTER/DOCUMENT preparation with 1500 EDIT! Justify right margin tool Uses EDIT/DEF to symmetrically right justify every full line of complete file or delete those spaces for further EDIT. Instructions \$25, \$32 with SS/ SD Diskette.

**SCRC INCORPORATED**  
Route 12, Box 20,  
Statesville, NC 28677  
(704) 872-5937

New Program Development Tools Available!

BASICPLS      CALCULAT  
DATABUS ACALLs    RENAME  
ROTATE      SCRAMBLE  
plus  
Macro Expansion System

Many other utilities in addition to choose from! Write us for details and FREE sample programs!



**Great Pyramid Software, Inc.**

7235 Stillbrook San Antonio, TX 78238

free..free..free..free..free..free..  
Date sub-routine listings

MM/DD/YY to Julian, Julian to MM/DD/YY MM/DD/YY or Julian to alpha, e.g., 12NOV82 No. of days between 2 dates. Day name of given date, etc. to introduce you to SHOP SYSTEMS, INC., 704 Blackfoot Ct., Suite 1, San Jose, CA 95123

**SENTIENT SYSTEMS CORPORATION**  
1270 Broadway, Suite 1001  
New York, New York 10001

\* ULTRAGEN  
System Generator

\* TRACE  
Program Debugger

Send for Catalog or Call  
(212) 947-6625





# DATAPPOINT

SOURCE DATA #T41

9725 Datapoint Drive

San Antonio, Texas 78284