

# SOURCE DATA

THE DATAPOINT SYSTEMS NEWSLETTER

No. 19

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## New Features in RMS 1.9

Datapoint's Resource Management System™ (RMS™) release 1.9 has features that will enable you to expand the capacity of your RMS network. They fall in three general areas: Communications, COBOL, and RPG.

### Communications Enhancements

A number of important new features are available in RMS communications with release 1.9. The RMS/DOS 3270 emulator (WS3270) may be executed on a 3800 processor console, an 8600 processor console, an 8200 workstation (with 2.3 PROMs), or an 8220 workstation. You can order the 3270 keycap kit using Model Code 5273.

Communication from the WS3270 workstation is accomplished through the use of the program DOSPIPE. DOSPIPE provides an interface via the ARCNET™ to the DOS ARCGATE™ processor, and it may be executed on any RMS processor to handle multiple WS3270 programs. With WS3270, you can access interactive applications on an IBM host computer from your local Datapoint® RMS system. This means that your local Datapoint system and an IBM mainframe can work effectively together to meet any processing need. Additionally, your local Datapoint user-driven program can access and exchange information with the host computer from the same device on which you now perform other local data processing tasks. Also included in the DOSPIPE program is the capability of accessing the IBM host computer from DATABUS® and COBOL programs.

The full range of communications protocols can now be used from your 8600 processors. This includes the User Communications Facility (UCF) and the Communications Facility (COMMFAC), which together provide 2780/3780 emulation, HASP emulation, and the Datapoint synchronous DATAPOLL® Master.

HASP emulation has also been added to the family of protocols usable with the 8800 processors.

*Continued on page 4*

## Software Releases

As you'll notice, there is no table of Software Releases in this issue of SOURCE DATA. Rather, all the software releases have been bound and have become part of SOURCE DATA. They will be released in this manner, on a bi-monthly basis, as part of SOURCE DATA.

## RMS: Solving Tomorrow's Problems Today

When choosing an information management system, the systems analyst's major concern is finding a system that can grow in predictable, cost-effective increments as the business grows. That explains why Consolidated Management Services (CMS), a division of Holt Leasing, ordered their first 1500 processor in September of 1979. Today, CMS' configurations use all types of Datapoint equipment to provide processing capabilities for account, payroll, and data management services using its newest Datapoint addition, the 8800 processor running the Resource Management System (RMS) operating system, at its headquarters in Stockton, California.

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### About the Company

Holt Leasing formed CMS as a separate entity ten years ago to service the data processing, finance, and administrative needs of the various Holt operating companies. CMS' immediate needs were met by an IBM System 3. However, future growth required a system that could be expanded easily without major conversion costs. Mitch Allee, Vice President of Finance for CMS, says "We looked at all the mini manufacturers — DEC, Hewlett Packard, Datapoint — at what they had to offer, their strengths, and their weaknesses and identified those factors with our own needs. We also looked at quality, service, product technology, and future plans. Datapoint came out at the top of the list and is proceeding in the direction we want to go."



### Start Small and Grow

In September of 1979, the company bought a single 1500 with single-sided diskette storage for program development to generate applications for specific markets. Using Datapoint's Disk Operating System (DOS), Ralph DeLano, Manager of Software Development for CMS, developed a system for financial and administrative functions for dentists. "Within two months, we had to add a second pair of drives to handle the development. By January of 1980, we decided to buy a refurbished 4640 system (6600 processor and MPCA) with 50MB of storage to run DATASHARE®. We wanted to convert some applications from IBM to our DATASHARE system so they'd run faster, and we were going to run straight DATASHARE on it," said DeLano. At the same time, CMS ordered a 4630 system (DATASHARE system processor, 120K; dual disk and controller, 20MB). "We connected the two systems into an Attached Resource Computer® (ARC™)," said DeLano. "And ARC, as you

know, has a natural tendency to grow." Soon, CMS placed an order for four 3800 processors to be used for word processing and program development. The original one-processor system had become an entire ARC within less than a year, filling the needs for general ledger, accounting, development, and word processing. CMS also began marketing Datapoint equipment, as a representative of Datapoint, with some of the applications software that had been developed, including a dentist's package and the software developed for its own data processing, financial, and administrative needs.

### On To RMS

As CMS continued to grow, the company's leadership started looking at Datapoint's new operating system, the Resource Management System, as a way to expand operations while protecting its initial financial investment in Datapoint equipment. "The thing that caused us to start looking at RMS was the increased file size that it offers, the needs that we had, and the throughput," says Mitch Allee. Because of the company's growth, Allee and DeLano wanted to develop a new system for general ledger, accounting, and payroll. "The more we designed, the less it looked like DOS would be able to handle it. The design was getting too complex, and the file sizes we needed were unsupportable under DOS," recounts DeLano. That was in November of 1980, the month when the new 8800 processor was announced. "We went to the announcement and saw the new product running RMS. We had enough confidence in Datapoint to know it would fill our needs, so we placed an order the next week. We believed that RMS would be faster, that it would support larger files, that it would give us resource independence and things like this. And it does, in effect, do just that," he says.

Another reason RMS attracted the attention of CMS' management was the security it provides to all levels of users. "We had problems in the posting area because we couldn't lock records in the old DOS system without allowing only one person to post at a time. That created a bottleneck. Now, we're able to have multiple activities occurring simultaneously with a higher degree of security," says Allee. By using RMS to work around this bottleneck, CMS was able to reduce staff and cut costs by 25% in this area of its operations alone.

Today, the data center at CMS operates 24 hours a day, 7 days a week. Daily, more than 50,000 transactions are processed for the leasing companies using a Datapoint 8800/RMS/ARC network. As shown in the configuration below, the 8800 controls processing for the general ledger portion of the applications CMS has developed. In addition to this, it provides power for development. All other applications are driven on the ARC with a variety of Datapoint hardware under the RMS operating system, including accounts receivable, accounts payable, inventory control, payroll, and further system development for use by CMS.

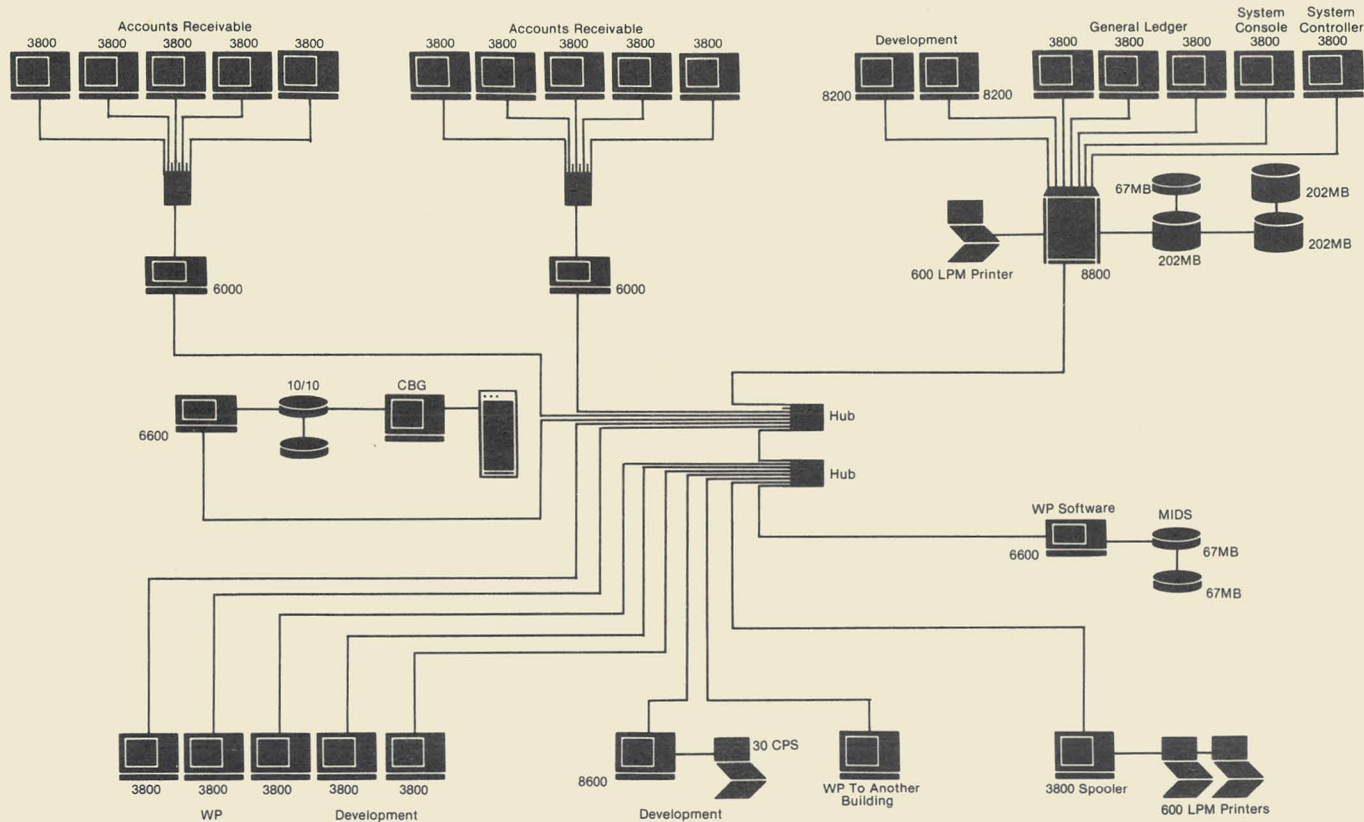
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*The Datapoint System at CMS*

### Applications Development For Profit

CMS has used the applications it has developed with Datapoint equipment to increase its own profits. Presently, CMS is providing a processing package for automobile dealerships. Holt Motors is the first installation of a new system CMS designed to provide all types of processing capabilities, from office applications and dispersed data processing to actual inventory control. One application in particular shows the difference information management can make in keeping customers happy. Mitch Allee recounts the usual paper push that occurs in the dealership's offices: "To service a customer's request, you've got to go and pull service files and extract telephone numbers and access the master file — all in one place. From a dealership's standpoint, there is nothing but paper: DMV registration, keeping track of inventories and parts, and taking care of follow-up calls. Those dealerships have a need to do all those things without all the hassle." CMS has found that a dispersed data processing package with office application and processing capabilities can handle all the necessary paper a dealership encounters.

In addition, CMS has also found that the same system can meet the needs of other kinds of management. "Our system is one of a modular approach. The whole system is composed of modules, or files, built around the fact that the employee master file has all the goodies in it, and we write the transaction into the system for billing purposes. At the same time, we categorize the process for labor efficiency reporting. For example, a module is made up of three parts: clerical staff, sales staff, and mechanics. All information is routed into the system in terms of which module it is in. Say that module one is for all the mechanics. You can control

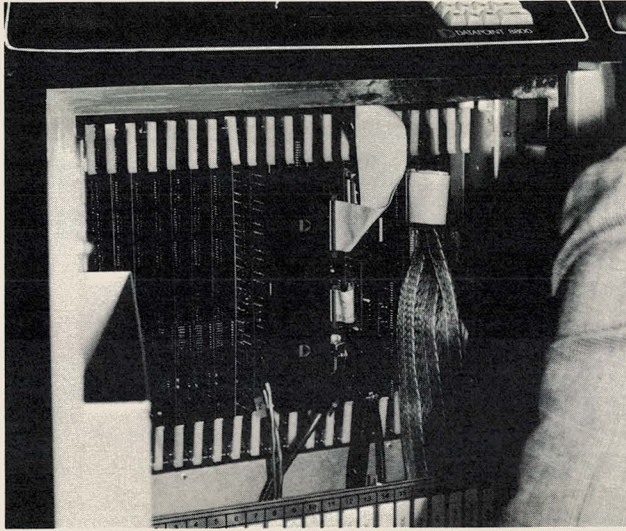
the work by requiring that a valid work order be entered into the system before a mechanic can input any information concerning that job. That stops anyone from working on jobs that aren't approved," Allee says.

From this point, an automobile dealership can expand the system to encompass almost any detail required, even improving customer relations. "We want to be able, when a customer drives in the door, for example, to allow the service manager to make a good impression," says Allee. "Take a situation where he doesn't remember the person's name. With cursory indexing, he can enter any amount of information that he knows, such as the license plate number of the car, and, in a matter of seconds, see the entire service record for that person's vehicle. This makes for a better job managing both employees and customers."

### Using All Parts of the System

CMS uses this philosophy when it comes to developing innovative ways to increase processing capabilities. The company found that Datapoint equipment and software solves very real problems. "We have a lot of warranty problems and product improvements with the equipment that is leased," says Allee, "and our company is responsible for making sure all these things are kept up with. In the past, the improvements, which must be implemented to keep the warranty on the equipment up to date, come in the form of a bulletin. We found that we had no easy way to retrieve all the product improvements or recalls for a certain product or to make sure the right person received that information." When CMS started using the Integrated Electronic Office™, the Associative Index Method™ (AIM)™ provided the answer. "I started playing with it from a WP





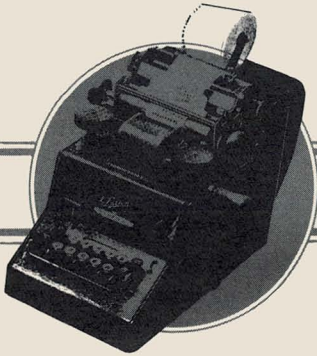
Inside the 8800

standpoint," recalls Allee, "and I found it very interesting. Let's say I needed all the product improvements for a Ford Pinto. If I keyed in SEARCH using the keyword Pinto, I found I could retrieve all the information I wanted. I could

get a list, use the AUTOTYPE command, and print a letter to the person who's leasing it, telling him that he has a certain amount of time to include these things or his warranty is invalidated. It's just explosive for us," he says.

### Ready for the Future

Today, with a configuration that includes the 8800, RMS, and Integrated Electronic Office (with word processing capabilities and Electronic Message Service), CMS remains dedicated to the philosophy of continued, incremental growth for systems and applications development. The company's continuing investment in Datapoint equipment has paid off financially and technologically. That first 1500 is still in service at CMS, providing applications support for other diskette-based systems in the field. "We think Datapoint is unique in the marketplace," says Mitch Allee. "We've basically hitched our star to Datapoint's, because we think Datapoint provides a cost-effective solution. I don't think the competitors are quite as cost-effective, and they really don't cover the gamut of all the products we seek. Datapoint's the only one who's defined products or who has products on the drawing boards that really get to our number one objective: solutions to our problems."



## DATA PROCESSING

New Features — continued from page 1

### COBOL Enhanced

RMS COBOL has been enhanced to ANSI standard Low-Intermediate. The primary difference this makes to you is that the DELETE verb is now supported.

Additionally, a new feature is available for execution on 8600 and 8800 processors: COBOL Large Program Support (LPS). Programs compiled on 3800, 6600, 8600, or 8800 series processors can now have up to 1 MB of executable code. When executed, additional memory is automatically paged in 4K segments to handle large programs without program segmentation. Programs that are currently segmented do not require any source code changes to use the LPS feature; recompilation is all that is necessary. (Note: The 3800 and 6600 processors can compile, but not execute, COBOL LPS.)

### RPG Now Faster

RPG and RMS 1.9 run considerably faster than prior versions. In addition, more user data area is now available.

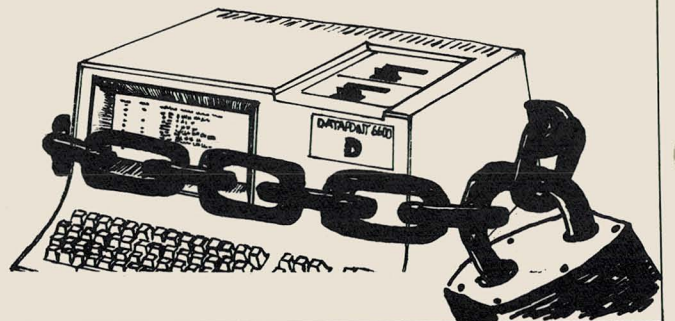
### Other New Features

RMS 1.9 also includes a number of enhancements and error corrections. When you order this update, you will receive one copy of any documentation updates relating to software for which you are paying maintenance. If you have not responded to the official notification and ordered this update, please do so now.

## Security for Your DOS ARC System

Remember when the DOS ARC system you manage was new and the biggest problem was getting people to use it? If your system is typical, then you are now confronted with some serious security issues that were not there at first, like how to protect the library the Personnel Director uses. This article will give you some things to look at and think about in addressing this problem.

Security is a difficult problem in any computer system. It is accepted among people who deal with top secret systems that there is no way to completely safeguard any system at the present time. However there are techniques, such as those available on your ARC system, that will make it difficult enough that someone interested in breaking into your system will find some other way (such as bribing an employee).





### ARCID and the Main Subdirectory

If you have not done so already, study the ARC User's Guide about the ARCID/CMD and the MAIN subdirectory. MAIN is used to hide files that you do not want people to see from the attached processors (APs), such as the ARCCODE/TXT password file. ARCID/CMD is the command that you use at the file processor (FP) to modify the password file. Because of this, the FP should be placed behind a locked door. Otherwise, anyone with five minutes to spare and access to ARCID/CMD can find out all he or she would ever need to know about the passwords in your system.

Did you know that you can set up read-only passwords? This is documented in the current ARC release form under changes for version 1.7. If everyone has to mount a particular volume just to access a command such as IEOS/CMD, then they do not need to write to that volume and should be given a read-only password. ARCID/CMD cannot be used from an AP, but there is no reason that it should be left in SYSTEM subdirectory for devious people to play with.

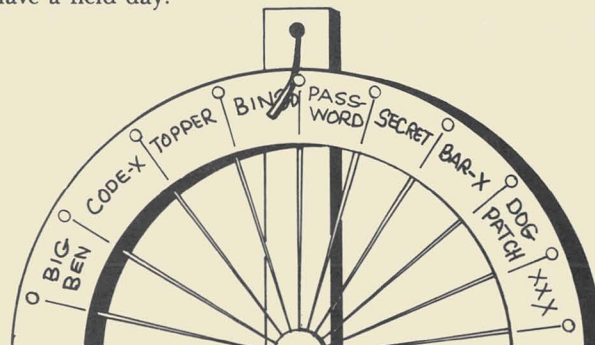
### Utility Commands To Protect A Volume

The next area to examine is the other utility commands available to all users. FILES and CAT both permit someone at an AP to see all the file names on any volume they are mounted on. If this is not acceptable, then these utilities should be removed from UTILITY/SYS on that volume. ENCODE and DECODE are utilities that permit a file to be scrambled by a password, thus protecting it from anyone who does not have the key. Since you cannot use an encoded file until you decode it, this is only of use for archive material, but it is a powerful tool.

### Disabling Volume Mounts

The release form for ARC version 1.7 lists another new security feature. At the FP console, you can disable mounts to a certain volume. If you have a confidential library on one volume and no one else on that volume, then you can prevent anyone from accessing it until you re-enable that capability. In general, you should organize your volumes so that sensitive material is on a volume not shared with any other applications. A determined thief could bypass the

security that prevents access to files in another subdirectory on the same volume, but to access files on a volume that he or she is unable to mount is several degrees more difficult. While we are at it, where are your backup disks? Someone who has access to them can take them to another system and have a field day.



There is a much larger question to consider than just what you do with your ARC system when security is being discussed. Do your users write the name, password, and volume on the front of their terminal so they will not forget it? It would not take much effort to break into a system like that. Is there a master log of passwords, and who has access to it? That should be under lock and key. How often are all the passwords changed? This should be done on a regular schedule whether there is any indication of a security breach or not.

The more you know about your system, the sooner you will notice when something suspicious happens. Perhaps you use ARCSTAT, a program that tells you which processors are active at any given time. When you use ARCSTAT to watch what is happening on your system, be sure you know which machine corresponds to each of the IPB addresses listed so you can be positive of any suspicious behavior by personnel.

### For Top Security, Try RMS

Finally, if security is an extremely important consideration in your application, then you should be looking at RMS, which has a very complete set of tools to permit you complete control of all access to your system.

## DATABUS Programming Tricks

I would like to discuss a peculiarity of DATABUS arithmetic which caused a bit of confusion for me recently while I was writing an application program. I was attempting to take advantage of a property of integer division (an ordinary feature in most languages) in order to give a simple and powerful solution to a programming problem which I faced. The integer division computation, "A/B" (A divided by B) where A and B are positive integers and the quotient's fractional part is truncated, forms the basis for some interesting programming techniques, a couple of which I'll describe a little later. Once I cleared up the confusion, the solution to the problem fell into place.

### The User's Guide Says . . .

The question was whether or not integer division is even available in DATABUS! According to my DATABUS Compiler User's Guide, the category of instructions which

operates on numeric values (FORM variables or numeric constants) — which includes the instructions ADD, SUB, MULT, MOVE (numeric) and of course, DIV — treat the destination value (the value that is stored in the destination variable by the instruction) in a special way. The user's guide states that if the allotted precision of the fractional part of the destination variable is less than the precision of the destination value, then the value is handled according to the familiar rounding rule (that is, if the leftmost digit to be lost by truncation is "5" or greater, then the next digit to the left is rounded up by one).

What role would the rounding rule play when I attempted to divide two integers and get an integer result? For instance, computations such as "9/3" would cause no problem since the result is an integer to begin with, and no loss of precision is involved. But what would happen with "5/3"? Here, the result, "1 and 2/3" or "1.666666 . . ."



## Programming continued

could not be stored precisely, regardless of the number of digits I allotted after the decimal point in the destination FORM variable. Some trailing digits would be lost, either through rounding (to 1.666667, for instance) or through truncation (to 1.666666). But the user's guide made it clear that rounding would be performed.

### But What If I Need Truncation?

However, if I wanted to perform integer division (where the source and destination values were integers — no fractional parts) I needed truncation, not rounding. If I computed "5/3" and stored the result in an integer FORM variable, I should get the value "2" because of rounding instead of the desired value, "1". As it turns out, a particular form of the DIV instruction saves the day.

### The Division Instruction

It just so happens that the kind of source value used with division determines whether rounding or truncation will be applied to the result. Let's look at the DATABUS division instruction syntax. Two forms are allowed:

```
DIV{IDE}      nlit, dnvar
DIV{IDE}      snvar, dnvar
```

where "nlit" is a numeric literal, and "snvar" and "dnvar" are the source numeric variable and the destination numeric variable, respectively.

Here is the important point that I discovered: if the source value (variable or literal) is an integer, then truncation is applied to the resulting quotient!

Some examples:

```
DESTVAR FORM      3
MOVE              "5", DESTVAR
DIV               "3", DESTVAR
```

This instruction gives a result of "1" in DESTVAR.

```
MOVE              "5", DESTVAR
DIV               "3.0", DESTVAR
```

This instruction gives a result of "2" in DESTVAR!

The presence of a decimal point in the source value causes rounding to take place regardless of whether the source value is an integer. The result is the same if a FORM variable is substituted for the source value, as follows:

```
SRCVAR1  FORM      3
SRCVAR2  FORM      3.1
DESTVAR   FORM      3
MOVE     "5", DESTVAR
MOVE     "3", SRCVAR1
DIV      SRCVAR1, DESTVAR
```

This gives a result of "1" in DESTVAR.

```
MOVE     "5", DESTVAR
MOVE     "3.0", SRCVAR2
DIV      SRCVAR2, DESTVAR!
```

This gives a result of "2" in DESTVAR.

## The True Test

Now that we've determined how to perform integer division, how can we put it to work? In the following examples, it will be necessary to compute the remainder, R, of A/B. The remainder may be calculated like this:

$$R = A \text{ minus } (A/B) \text{ times } B$$

In DATABUS, R is computed as follows:

```
A  FORM  "5"      .the dividend variable
B  FORM  "3"      .the divisor variable
R  FORM   3       .the remainder variable

MOVE  A,R
DIV   B,R        .compute quotient, 5/3
MULT  B,R
SUB   A,R
MULT  "1",R     .remainder, 2, is now in R
```

Suppose we have some small (but perhaps variable) number, N, of data fields that we wish to display on the screen (say, less than 100 fields). But suppose the number of fields is large enough that we need to organize the screen into a table of rows and columns of fields in order to fit all of them onto a single screen. Also suppose that we are given the number of the next field to be displayed in the FORM variable, FIELDNUM (0 = 1st field number, 1 = 2nd, . . . , N-1 = Nth field number). Remember, FIELDNUM is a pointer or index to a given data field.

Divide the desired number of screen columns into FIELDNUM. This gives you the correct row for the current field, and the correct column is the remainder of this quotient.

Next multiply the column value by the desired screen column width (say, 15 for a 12 character data field), and add a positive offset to both the row and new column values to locate the table entry at the appropriate screen position. You now have the correct row and column values to be used in a DISPLAY instruction.

### Other Ways To Use It

Integer division with remainder is also useful in performing radix or base conversion. Divide a FORM variable by the selected conversion base, B, and the remainder gives the rightmost digit of the value in base B. Successive division of the resulting quotient by base B until it becomes zero gives the rest of the base B digits of the new number (working from right to left).

Let's use base conversion to create an eight-character filename which is guaranteed to be unique each time it is created in a standalone system. To guarantee uniqueness, we want the filename to be dependent on the following parameters: current (julian) day, current time (in seconds), and DATASHARE port number. The day and port number are readily available through the DATABUS CLOCK instruction. The current time is available in HH:MM:SS format, but you can easily convert it to the actual number of seconds which have elapsed. Call these three parameters, DAY, SECS, and PORT. Next make the following computation:

$$X = ((\text{PORT minus } 1) \text{ times } 367 \text{ plus } \text{DAY}) \text{ times } 86400 \text{ plus } \text{SECS}$$



The value X is then a unique combination of our three parameters. A change in any or all parameters results in a change in the value of X. Assuming a port value of less than 48, the value X requires up to nine decimal places. Now, we convert X to a base-34 value by dividing X by 34 and saving the remainder and quotient. The resulting quotient is again divided by 34 and the remainder is again saved; a total of six divisions are necessary to completely convert X to base-34.

The six remainder values will give the base-34 digits of our original value, X. We must now assign unique characters to each base-34 value. The digits "1" through "9" and letters "A" through "Z" (omitting the letter "0") can now be assigned to each possible base-34 value, since there are 34 of them. (The digit "0" and letter, "0", are easily confused by a user, and are omitted from our choice of characters).

Now it is easy to build the string of six base-34 digits in a DIM field. Use the remainder value plus one to position the form pointer of a DIM variable containing our 34 characters. The formpointed character is then CMOVED to our field. This process is repeated six times, once per remainder value. The resultant six-character string is the value, X, in base-34.

This string can be combined with two extra characters of your choice plus a suitable file extension, to give you a filename which is completely unique for any given year.

#### Base-10 Vs. Base-34

The point of converting a base-10 value to base-34 is the reduction in storage required to contain the information. Even greater reduction can be achieved by increasing the target base to encompass all printable ASCII characters (base-96). Large amounts of data compression via base conversion would be prohibitively slow in DATABUS, but a conversion routine could be coded in assembly language and linked to DATASHARE with the ACALL instruction.

Still other applications for integer division exist. Alternative solutions to programming problems which avoid its use are possible, but integer division often allows a simple and elegant approach to be taken.

SOURCE DATA thanks reader John Zuckerman for this article. If you're interested in having a programming application you've written published in SOURCE DATA, please send it in care of the editor.

## The Channel Adapter — A Link Between IBM and Datapoint

The Channel Adapter is a hardware device from Datapoint that connects Datapoint equipment to an IBM mainframe. Let's take a few moments to get acquainted with this device.

#### Hardware and Software Involved

The Channel Adapter attaches transparently on the byte multiplexer channel of an IBM mainframe (a 360, 370, 3033 and the like). So much for the hardware. Let's get to the part that makes the channel adapter an attractive product for any IBM mainframe user — the software.

There are four Datapoint software products for the channel adapter available under DOS: DCIOV1, CHIOUR, MLCI, and DASP. The software allows the channel adapter to perform the functions of an IBM 1052 console, 1403 printer, 2540 card reader, or 2540 card punch. The software products typically operate in a standalone or ARC environment, allowing you to configure many different solutions depending on your requirements.

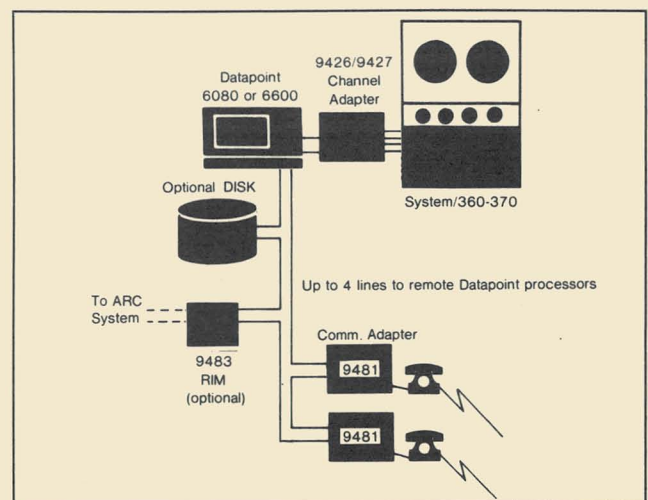
#### DCIOV1

DCIOV1, the Direct Channel Interface Option (User's Guide: Document No. 50379) allows mainframe programs to access the disk files on the Datapoint system by using up to 8 pairs of psuedo devices. The first device of the pair is a disk file representing a card reader; the second device of the pair is a disk file representing either a card punch or a printer.

The DCIOV1 program is controlled by the mainframe program sending "control" records to DCIOV1. These control records instruct DCIOV1 to "OPEN" disk files, "READ" data from the file or "WRITE" records to the

file, and then "CLOSE" the file. So if a mainframe program wished to read records from the Datapoint system, the application programmer would:

- a. Open the card reader and printer in his application program.
- b. Write a "control" record to the printer instructing DCIOV1 to "OPEN" a specific Datapoint disk file.
- c. Write a "control" record to the printer instructing DCIOV1 to "READ" from the opened file.
- d. Read records from the card reader until the end of file (EOF) is reached.
- e. Write a "control" record to the printer instructing DCIOV1 to "CLOSE" the opened file.
- f. Continue processing as required.



*DCIOV1 connects to the IBM Mainframe byte Multiplexer channel*



### *Channel Adapter continued from page 7*

Records can be read or written on the Datapoint system either sequentially or randomly. The user's guide contains sample COBOL programs that illustrate how easy programming a mainframe using DCIOV1 can be.

#### **Where to Use DCIOV1**

Where would you use DCIOV1? One instance would be where the Datapoint system is handling data entry and batch processing done on the IBM system at night. The data transfer capability of DCIOV1 is much faster than using data communications or magnetic tape, so it would be an ideal replacement. Just remember that the mainframe is in charge. This software product allows the IBM system manager to have control of the data flow, sometimes a requirement for any attachment to an IBM system.

#### **CHIOUR**

CHIOUR, the Channel Input-Output Unit Record Utility (User's Guide: Document No. 50367) is a product that allows the Datapoint system to "control" the operation of the mainframe. The Datapoint system does not run the IBM machine; you, operating the Datapoint equipment, can control the flow of jobs from the Datapoint system to the IBM system. CHIOUR allows the Datapoint system to emulate up to 16 unit record devices. Any combination of readers, punches and printers can be configured, but only one console is supported.

If the IBM system has been generated with an alternate console, the CHIOUR console can provide that support. As the Datapoint operator, you can assign the various IBM devices to disk files or directly to a printer if one is available. Another good feature is the ability to provide a "hot-reader" capability if the IBM system allows for it. Then you can queue jobs up in the reader, and the IBM system will pick them up and execute them as the resources become available.

#### **Where to Use CHIOUR**

Where to use this product is not as obvious as DCIOV1. It might be used so that the IBM systems manager can keep all of the JCL on the Datapoint system and submit jobs through the CHIOUR console or hot-reader. By using CHIOUR, the Datapoint system could hold the print output from the IBM system on disk and print it out on the local printer when it is free. Just keep in mind the main difference between DCIOV1 and CHIOUR: in CHIOUR the Datapoint operator must handle IBM devices to Datapoint file assignments.

#### **MLCI**

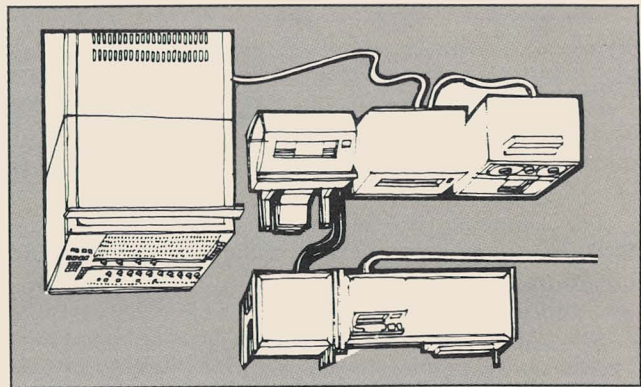
As the name implies, MULTILINK™ Channel Interface (MLCI) is a module that is linked into a DATASHARE interpreter and that allows a DATABUS program to communicate with an application program on the IBM mainframe. The mainframe program will read from its card reader, which is really the Datapoint channel adapter, process the record(s) and print the results on its printer, which is again the channel adapter.

The MLCI module is intelligent enough to route the records from the requesting DATABUS program into the mainframe and back to the requesting program. Multiple DATABUS programs from the DATASHARE system can request records and MLCI will make sure the correct responses get to the correct ports. Or all of the responses can be routed to a specific port if required by the systems designers.

#### **Where to Use MLCI**

Where would you apply this package? A small mainframe user that has a keypunch corps wants to replace the keypunches with intelligent data entry on-line for field/record verification but does not necessarily want on-line update. The only viable IBM option is to install a teleprocessing monitor system such as BTAM/VTAM or others and buy/lease a communications adapter and smart tubes such as the 3270 subsystem. This can get expensive.

Then they have to hire a programmer that knows CICS or one of the other interactive interfaces and start writing programs. This can get time consuming. By this time they may even have lost sight of the main objective, intelligent data entry. The channel adapter with MLCI can allow them to get approximately the same solution with much lower cost. They need only write one mainframe program in COBOL which can run in a batch partition to handle the validation requests from the DATASHARE system and to place the batch records on the IBM disk for processing. The rest of the on-line development is done in DATABUS and executed under DATASHARE for a much more economical result. The user now has a manageable project and happy users.



*DASP, CHIOUR, AND MLCI attach directly to the byte multiplexer channel of the IBM system*

#### **DASP**

DASP™, the Datapoint Attached Support Processor, is the "Cadillac" of the channel adapter products. MLCI, CHIOUR and DCIOV1 can handle requirements for interfacing local Datapoint equipment with the IBM mainframe in both batch and interactive capacities. DASP goes one step further. It will allow the Datapoint system to perform remote RJE capabilities into the IBM mainframe without the expensive equipment typically necessary on the IBM mainframe itself. Here is an overview of some of the major features.

DASP communicates job streams and data files to the mainframe and distributes the results back to the requesting dispersed processing site. The dispersed site uses a Datapoint program called RUP, the Remote User Program. The remote user gathers his batches together and communicates them to DASP via MTERUP, MLRUP or RUP15 depending on the system configuration at the remote site.

When processing is completed at the mainframe and returned to DASP, DASP can automatically dial the RUP sites if they are so equipped and send the results to them. If the automatic dialing is not available, DASP will wait until the RUP calls in again to send the results back. DASP will also multileave with the RUP program so that traffic goes both ways simultaneously during the



communication session. A job sent in by one RUP can also be routed to another by DASP, and DASP can be used as a switch to send information from one RUP to another without using the mainframe. The transmission of information from DASP to RUP can also be controlled by date and time if the user wishes.

#### Where to Use DASP

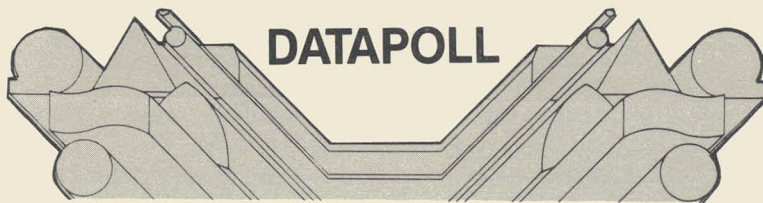
Operationally, DASP gives the system administrator lots of capabilities. It will handle up to four leased or switched, autodial or manual telephone lines with an aggregate baud rate of 9600. It will handle up to 254 different RUP sites. All jobs are spooled to disk both to and from the mainframe so that only complete job streams are submitted or returned.

The DASP console can also act as an alternate system console for the IBM system if it is needed. The queues of jobs waiting and processed can be reviewed by the system administrator for appropriate action.

Another interesting feature is that DASP will automatically route output from a mainframe job to various RUPs without a request from the RUP for the batch to be run. For instance a month end trial balance report could be distributed automatically from the mainframe by having the appropriate header records placed on the mainframe output by the mainframe program.

The capabilities of DASP are tremendous. It will operate under any spooling system available on the IBM system including DOS-POWER, OS-HASP, OS-ASP, the JES or RES options under VS or VM. It will also operate without any mainframe spooling system at all. You can even use it for a Datapoint to Datapoint batch communications switch without a channel adapter.

If you have questions regarding any of these devices, please contact your local Datapoint representative for details.



## — The Answer to Your Communications Problems

Data communication is essential to effective business processing since it eliminates costly, time-consuming transport of data and its manual operation, like having to send daily reports through the mail for subsequent home office key entry. The traditional difficulty dispersed data processing users face in communicating data between central and remote systems has stemmed from the fact that writing communications programs is one of the most difficult tasks a programmer faces in system development. In addition to the technical aspects of writing communications programs, the programmer is also confronted with system considerations such as error checking and file compatibility.

Datapoint has solved these problems with DATAPOLL, a series of programs designed for collecting and distributing files in a dispersed data processing network. The DATAPOLL Master, the controlling program, is an interprocessor communications protocol, or communications "language," that transfers data from one Datapoint processor to another over switched or dedicated telecommunications lines.

#### For Example . . .

Suppose you have several branch offices using DOS DATASHARE for data entry during the day. At night, you want to collect the data from the branch offices, get it on magnetic tape, process the magnetic tapes on a mainframe, and then distribute reports back to the branch offices. DATAPOLL is the answer to your problem.

All you have to do is supply the phone numbers and the files you want transferred and DATAPOLL will automatically dial the branch offices and collect the data on a magnetic tape. Later when the reports have been generated, DATAPOLL will automatically dial the branch offices and distribute the reports. You can send the reports directly to the printer at the branch or to a disk so the reports can be printed at a later time. The software takes care of any differences in storage media compatibility.

#### The DATAPOLL Protocol: How It Works

The DATAPOLL Master program, the controlling program running on the Master processor, allows the system to communicate with one or more attended or unattended remote Datapoint processors running the DATAPOLL Slave program. DATAPOLL supports file-to-file transfers in either direction (either to or from the Master), controlled by the Master processor. Communications are via a half-duplex communications line running synchronously at rates ranging from 2000 to 4800 bits per second (bps) or a full-duplex line running asynchronously at 1200 bps on the main, or data, channel and at 150 bps on the reverse, or communications, channel. (Channels are the links used for communications. A telephone line can be considered a channel. And since DATAPOLL runs with either full or half-duplex operations, the same channel can be used for the main and reverse channels.) All operations are controlled from the Master station.

Synchronous DATAPOLL is a half-duplex protocol using binary synchronous framing characters and a 16-bit cyclic redundancy check (CRC) error validation. It is designed to allow communications between a master station and a slave station. The master station transmits polling commands to control the operation of the slave station.

Asynchronous DATAPOLL is a full-duplex protocol with binary synchronous framing characters. The master and slave stations communicate over the main channel at 1200 bps and on the reverse channel at 150 bps. The main channel is used for transmitting data, and the reverse channel is used for acknowledgement of the data blocks. Only one station at a time may transmit on the main channel. The master station determines the slave station that uses the main channel and controls that station through transmission of polling commands.

Each communications exchange between the master and the slave is called a message, formatted as either a data



*Continued*

message or control message. The message formats are the same for synchronous and asynchronous protocols with one exception: the beginning start-of-text (STX) character and terminating end-of-text (ETX) character in the synchronous protocol are prefixed by a data link escape (DLE) character that provides additional line control for the synchronous protocol.

**Data Message Format**

Each data block is transmitted between the master and slave stations using the following message format:

Character	Definition
DLE	(Synchronous protocol only)
NUL	(Asynchronous protocol only)
STX	The Start of Message Text
Block number	The block number
Character	
count	Character count from 1 to 127 characters
text	Text, containing from 1 to 127 characters
DLE	(synchronous protocol only)
ETX	End-of-text character
CRC	16-bit cyclic redundancy check (CRC) character
CRC	

**Control Message Format**

Control messages are transmitted in response to data blocks and command control messages. In asynchronous DATAPOLL, these messages are usually transmitted on the reverse channel. The format for control messages is:

Character	Definition
DLE	(Synchronous protocol only)
NUL	Null character
STX	Start of message text character
MSG1	Message control character
MSG2	Message control character
DLE	(synchronous protocol only)
ETX	End-of-text character
CRC	16-bit cyclic redundancy check (CRC) character
CRC	

**Synchronous DATAPOLL Dialogues**

The following dialogue illustrates the transmission of data from the master to the slave using synchronous DATAPOLL. In this "conversation" between the two stations, the following "language" is used: enquiry (ENQ), wait for acknowledgement (WABT), acknowledgement (ACK), and end of transmission (EOT). This can help you see just how the data is sent across the communications line to another station.

Master	Slave	Explanation
ENQ Q	----▶ WABT	Poll command to create RUNITI
	◀---- WABT	Unit 1 being opened
ENQ Q	----▶	Poll command to create RUNITI
	◀---- ACK ACK	Unit 1 is opened
Block 0	----▶	Data block containing filenames
ENQ	----▶	Request for ACK
	◀---- WABT	Data block is being verified
ENQ	----▶	Request for ACK
	◀---- ACK0	Data block 0 received correctly
EOT C	----▶	End of file, prepare to receive next polling command
	◀---- ACK ACK	Ready to receive
ENQ O	----▶	Reset master clock
ENQ O	----▶	Reset master clock
	----▶ ACK ACK	Master clock reset
ENQ C	----▶	Rewind, receive data to unit 1
	◀---- WABT	Unit 1 being opened
ENQ C	----▶	Rewind, receive data to unit 1
	◀---- ACK ACK	Unit 1 is opened
Block 0	----▶	Data block 0
Block 1	----▶	Data block 1
Block 2	----▶	Data block 2
Block 3	----▶	Data block 3
Block 4	----▶	Data block 4
Block 5	----▶	Data block 5
Block 6	----▶	Data block 6
ENQ	----▶	Request for ACK
	◀---- WABT	Blocks not verified yet
ENQ	----▶	Request for ACK
	◀---- ACK 6	Acknowledges blocks 0 through 6
Block 7	----▶	Data block 7
Block 0	----▶	Data block 0
Block 1	----▶	Data block 1
ENQ	----▶	Request for ACK
	◀---- ACK 1	Acknowledges blocks 7, 0, and 1
EOT A	----▶	End of transmission, hang up
	◀---- ACK ACK	Acknowledge command and disconnect



## How One Company Uses DATAPOLL

DATAPOLL can provide an unattended network control system that allows communication to a mainframe (through the use of a magnetic tape being dumped to the mainframe), concurrent job processing, data processing, and word processing.

Terminix International Inc., headquartered in Memphis, Tennessee, uses DOS DATAPOLL to transmit accounting data from the branch offices to the home office IBM 4341 mainframe, by using magnetic tape, for processing. At the home office, a 6600 processor with 20MB disk storage and 300 LPM printer is configured specifically for communications purposes. With Datapoint's DATAPOLL communications software package and CHAINPLS, Terminix developed a program they call AUTOPOLL, which permits unattended communications.

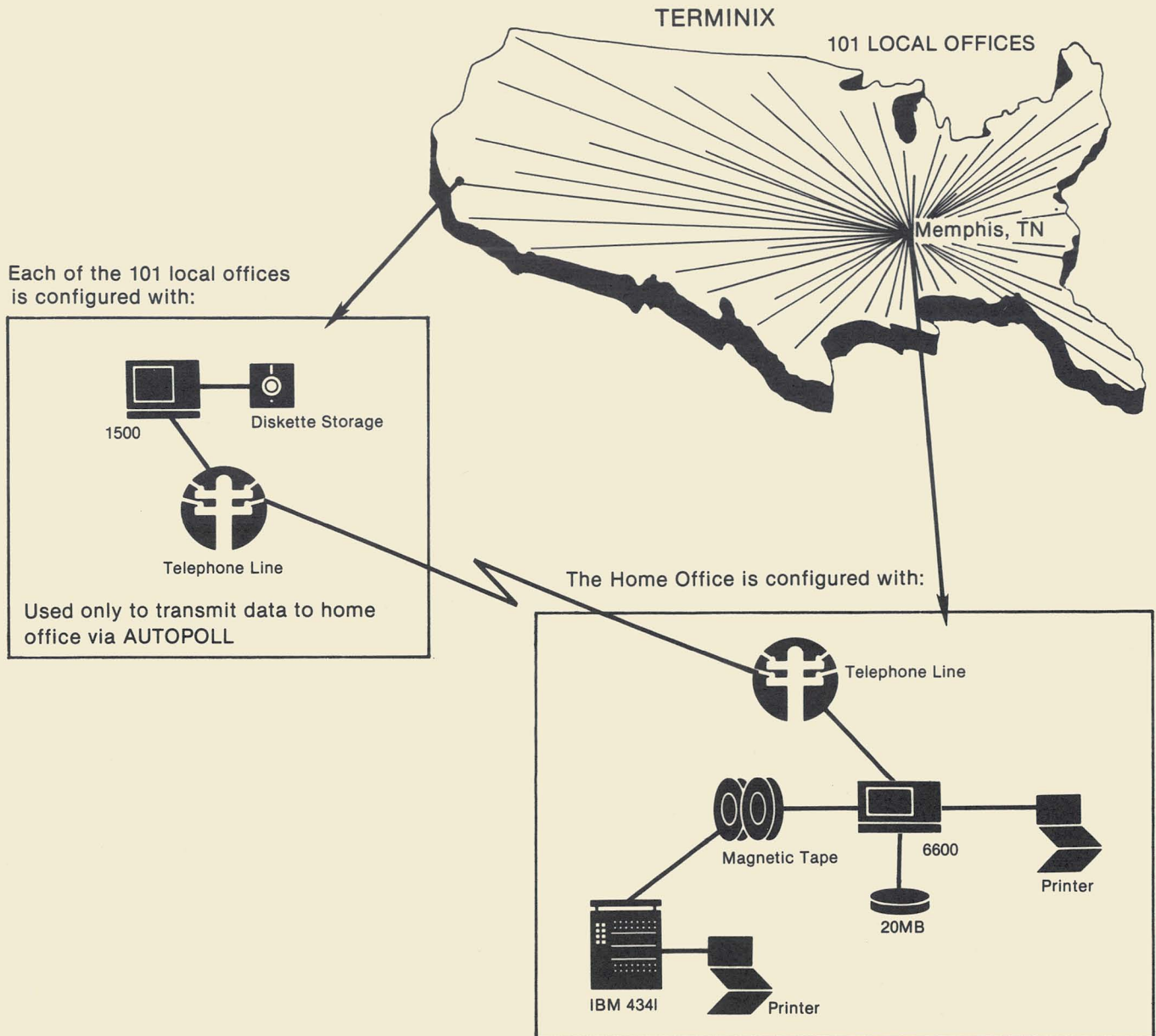
AUTOPOLL, running on the 6600 processor, begins an automatic polling cycle at the end of each business day. The series of events begins with each remote 1500 with

diskette storage being called by DATAPOLL. If the first attempt at a connection fails, AUTOPOLL commands that the number be redialed until a connection is made. If after nine attempts the telephone link is still not operable, AUTOPOLL begins the process for the next branch office processor.

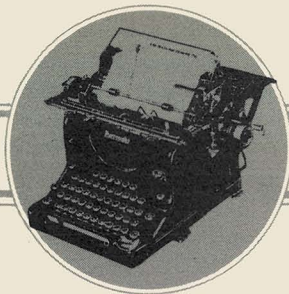
The next day, a printout at the home office details any problems that AUTOPOLL encountered during the night. The report lists the percentage of times each number had to be tried and retried before a connection was made.

The bookkeeping and accounting staff at the home office then has access to the reports sent in overnight by the branch offices, and billing can begin.

This application shows one way to use DATAPOLL to solve a potentially serious communications gap. For further information concerning the many other uses for DATAPOLL, contact your local Datapoint representative.







## OFFICE APPLICATIONS

### Using the Font Option on the 160 CPS Printer

How many times have you lugged around bulky reports on 14" wide paper? You can now print the same report on 8-1/2" width paper using your 9621/9622 160 CPS Matrix Printer. You can condense the characters to 16.5 characters per inch. You can even select either 6 or 8 lines per inch.

The expanded/compressed font option can be installed on your 9621 or 9622 printer. This option includes the necessary hardware to upgrade the printer. Via software commands, you can use all 42 different font options. The following samples show the difference in character size.

THIS IS 2.5 CPI AT 3 LINES PER INCH:

!"#\$%&'()\* =Cqwertyuiop  
1+\* )zxcvbnm<>?12345678  
UIOP\^ASDFGHJKL;:1ZXC

THIS IS 10 CPI AT 1.5 LINES PER INCH:

!"#\$%&'()\* =Cqwertyuiop@!^asfghjkl+\*zxcvbnm<>?1234567890- \_[QWERTYUIOP\^ASDFGHJKL;:1ZXC

THIS IS 5 CPI AT 1.5 LINES PER INCH:

!"#\$%&'()\* =Cqwertyuiop@!^asfghjkl+\*zxcvbnm  
UIOP\^ASDFGHJKL;:1ZXCVBNM,./^

You can accent a heading on a report.

# PERSONNEL REPORT

Or use it for labels.

DATAPOINT CORPORATION  
9725 DATAPOINT DRIVE  
SAN ANTONIO, TEXAS 78228

The variety of ways the expanded/compressed font option can be used is limited only by your imagination.

To use the expanded font, a DATABUS instruction must send the appropriate octal characters and decimal values to the printer. For example, the following DATABUS instruction will set the print at 6 lines per inch and 16.5 characters per inch.

PRINT 033,0133,"240;87",040,0107

The values 033 (the escape character), 0133 (the left bracket), 040 (space), and 0107 (the character G) remain constant and provide the code that the printer reads to perform the instruction. The number 240 is the vertical value (lines per inch). This number is calculated by dividing the number of lines per inch you want into 1440 (in this case, 1440 divided by 6 = 240). The number 87 is the horizontal value (characters per inch). This number is calculated by dividing the number of characters per inch you want into 1440.

The vertical values are limited to:

- 180 — 8 lines per inch (single height characters)
- 240 — 6 lines per inch (single height characters)
- 360 — 4 lines per inch (double height characters)
- 480 — 3 lines per inch (double height characters)
- 720 — 2 lines per inch (quadruple height characters)
- 960 — 1.5 lines per inch (quadruple height characters)
- 1440 — 1 line per inch (octal height characters)
- 1920 — .75 lines per inch (octal height characters)

Horizontal values are limited to:

- 87 — 16.5 characters per inch
- 144 — 10.0 characters per inch (default value)
- 174 — 8.25 characters per inch
- 288 — 5.00 characters per inch (quadruple-dot density)
- 1152 — 1.25 characters per inch (octal-dot density)

For further information, please contact your local Datapoint representative.



# Automatic Archiving — CHAIN is the Answer

There's a solution to the problem of archiving that gives you the ability to archive documents, packup libraries, and even create a report of those documents archived without operator intervention.

CHAIN is the answer to the problem. A single CHAIN file can be written to provide the logic for archiving. A scenario for the archive operation is as follows:

1. A list of information is gathered about the libraries to be archived. This includes the names of the libraries and the volume ID, subdirectory, and the password required for access. Also the same access information is needed for the archive volume(s). You can gather this information on a small form with the following headings:

```
----- ORIGINAL ----- ARCHIVE -----
LIBRARY  VOLID  SUBDIR  CODEWORD  VOLID  SUBDIR  CODEWORD
```

2. When you have gathered this information, put it in a data file with the following format:

FIELD NAME	COLUMN
LIBRARY NAME	1-10
ORIGINAL VOLID	11-20
ORIGINAL SUBDIR.	21-30
ORIGINAL CODEWORD	31-40
ARCHIVE VOLID	41-50
ARCHIVE SUBDIR.	51-60
ARCHIVE CODEWORD	61-70

You can create the file using word processing or the data processing editor. Since the access information is in this file, it would be a good idea to "hide" it from just anybody. If you use word processing, adjust your right and left margins to 1 and 80 and your top and bottom margins to 0 L 0, so no extra records are placed in the text file, except at the end.

3. Now comes the good part. Someone gets to write a CHAIN program that performs the following steps:

- A. Read the data file produced in step 2 above and create another CHAIN that mounts the specific volumes, checks to see if the libraries are on the volumes and if they are, catalogs the original libraries to a disk file. When the creation of the CHAIN file is complete, the original CHAIN must then execute the new CHAIN.
- B. After the execution of the second CHAIN is complete, re-enter the first CHAIN. At this time the first CHAIN needs to call another CHAIN that reads the original data file from step 2, opens the catalog files from step 3.A and creates another CHAIN file that does the actual archiving. After completion of the third CHAIN, the first CHAIN must then call the CHAIN completed in this step so that it can do the actual archiving. It is a good idea to create the CHAIN file so that it opens the original library, unlocks it, archives to the archive

library, and then does a packup of the original library. The CHAIN called in this step should also prepare a report on a disk file that describes all of the files that are archived on this pass.

- C. The original CHAIN will be re-entered on completion of the last step. The CHAIN should then be complete.
4. Print out the listing from step 3.B and distribute the archive reports to the appropriate library managers.

This method has been successful in applications where 15 libraries are managed and documents that are at least 2 months old are archived. The CHAIN file may be modified to use other retention factors or to simply delete old documents.

For your convenience, sample CHAIN files for this application are provided below for both DOS and RMS. Just make the changes for your specific needs. For further information, please contact your local Datapoint representative.

*You will probably have to modify these CHAIN files for your specific application. They were written especially for one application and may not fit your exact needs. Datapoint cannot assume responsibility for any losses caused by these CHAIN files, since they are meant as samples only.*

## DOS IEOS Archive Chain

```

/* THIS IS A CHAIN FILE WHICH AUTOMATICALLY ARCHIVES
/* WORD PROCESSING DOCUMENTS FROM ACTIVE LIBRARIES TO
/* ARCHIVE LIBRARIES IF THE DOCUMENTS HAVE NOT BEEN USED
/* FOR TWO MONTHS.
/*
/* THE ORIGINAL AND ARCHIVE LIBRARIES MUST HAVE THE SAME NAMES
/* AND, MORE IMPORTANT THAN THAT, DOCUMENTS IN THE ORIGINAL LIBRARY
/* MUST NOT HAVE THE SAME NAME AS DOCUMENTS THAT CAN BE IN THE
/* ARCHIVE LIBRARY BECAUSE THIS CHAIN FILE DOES NOT ALLOW FOR
/* OVERWRITING EXISTING DOCUMENTS IN THE ARCHIVE LIBRARY.
/*
/* THE FIRST SECTION OF THIS CHAIN WILL READ A TEXT FILE
/* THAT CONTAINS THE INFORMATION NECESSARY TO CATALOG THE
/* CONTENTS OF A WORD PROCESSING LIBRARY TO A TEXT FILE.
/* AFTER THE CATALOGS HAVE BEEN PERFORMED, THE SECOND PHASE
/* OF THIS CHAIN WILL READ THROUGH THE CATALOG FILES SELECTING
/* THOSE DOCUMENTS THAT ARE TO BE ARCHIVED AND GENERATE THE
/* APPROPRIATE IEOS COMMANDS TO PERFORM THE ARCHIVING.
/*
/* .. SET UP MONTH AND DAY TABLES
/*
// ASSIGN MONS=" JANFEBMARAPR MAYJUNJULAU GSEP OCTNOVDEC "
// ASSIGN YEARVAL=" 8081828384858687888990"
// ASSIGN MONVAL=" 1 2 3 4 5 6 7 8 9101112"
// ASSIGN DAYVAL=" 1 2 3 4 5 6 7 8 91011121 31 41 5161718192021 2223 32 425"
// ASSIGN DAYVAL=DAYVAL "262728293031"
/*
/* .. CHECK FOR PHASE 1 OR PHASE 2 OF THE CHAIN
/*
// IF PHASE2
/*
/* .. THIS IS PHASE 1 OF THE CHAIN.
/*
/* READ THROUGH THE CONTROL FILE AND GENERATE THE IEOS
/* AND RMS INSTRUCTIONS TO LOCATE THE LIBRARIES AND PERFORM
/* THE CATALOG LONGFORM ON A TEXT FILE.
/*
// OPEN FILE1, ("ARCHFILE/TXT")
// READ FILE1,DATALINE
// WHILE DATALINE
// ASSIGN DATALINE=DATALINE "$"
// ASSIGN L=DATALINE^1:((DATALINE[" "]^1)-1)
// ASSIGN LB=DATALINE^1:((DATALINE[" "]^1)-1) "/LIB"
// ASSIGN OV=DATALINE^1:((OV[" "]^1)-1)
// ASSIGN OS=DATALINE^2:1:0)
// ASSIGN OS=OS^1:((OS[" "]^1)-1)
// ASSIGN OC=DATALINE^3:1:0)
// ASSIGN OC=OC^1:((OC[" "]^1)-1)
// ASSIGN AV=DATALINE^4:1:0)
// ASSIGN AV=AV^1:((AV[" "]^1)-1)
// ASSIGN AS=DATALINE^5:1:0)
// ASSIGN AS=AS^1:((AS[" "]^1)-1)
// ASSIGN AC=DATALINE^6:1:0)
// ASSIGN AC=AC^1:((AC[" "]^1)-1)
//

```



```

/& .. I HAVE NOW READ A RECORD FROM THE ARCHIVE CONTROL FILE AND
/& HAVE PLACED THE INFORMATION IN THE APPROPRIATE CHAIN VARIABLES.
/& MY NEXT STEP IS TO GENERATE THE RMS/IEOS COMMANDS TO CREATE MY
/& MOUNT STATEMENTS, GAIN ACCESS TO THE ORIGINAL
/& LIBRARY AND PERFORM THE CATALOG FUNCTION.
/&
MOUNT #OV#, :D20;N=#OS#,C=#OC#
MOUNT #AV#, :D21;N=#AS#,C=#AC#
IEOS
OPEN LIB #LIB#:D20
CAT LONG ON TXTFILE=#L#/CAT:DO
EXIT
MOUNT ,:D20
MOUNT ,:D21
/&
/& .. I HAVE DONE THE CATALOG AND CLEANED UP THE ENVIRONMENTS.
/& NOW I WILL READ THE NEXT RECORD FROM THE ARCHIVE CONTROL FILE.
/&
/&
// READ FILE1,DATALINE
// END
/&
/& .. I HAVE REACHED END OF FILE ON THE CONTROL FILE SO I WILL NOW
/& CALL THIS CHAIN AGAIN SETTING THE PHASE2 FLAG.
/&
/&
CHAIN ARCHIVE,PHASE2
// XIF
/&
/& .. THIS IS NOW PHASE 2 WHERE I WILL ACTUALLY PERFORM THE ARCHIVE.
/& NOW I AM LOCATING THE CORRECT ARCHIVE DATE WHICH IS TWO MONTHS
/& PRIOR TO TODAY'S DATE.
/&
/&
// IF PHASE2
// OPEN FILE,("ARCCLOCK")
// READ FILE,DATIN
// CLOSE FILE
// ASSIGN NOWYEAR = 0
// ASSIGN NOWMON = 0
// ASSIGN NOWDAY = 0
// ASSIGN LASTYEAR = 0
// ASSIGN LASTMON = 0
// ASSIGN LASTDAY = 0
// ASSIGN NOWYEAR = (YEARVAL{(DATEIN(2:2))}
// ASSIGN NOWYEAR = NOWYEAR / 2 + 80
// ASSIGN NOWMON = (MONVAL{(DATEIN(5:2))}
// ASSIGN NOWMON = NOWMON / 2 + 1
// ASSIGN NOWDAY = (DAYVAL{(DATEIN(8:2))}
// ASSIGN NOWDAY = NOWDAY / 2 + 1
// KEYIN "#NOWDAY# #NOWMON# #NOWYEAR#"
/&
/& .. IF YOU WANT TO ARCHIVE BASED ON OTHER THAN TWO MONTHS RETENTION,
/& CHANGE THE 2 ON THE FOLLOWING LINE TO THE NUMBER OF MONTHS YOU
/& REQUIRE.
/&
// ASSIGN NOWMON = NOWMON - 2
// KEYIN "#NOWMON#"
// IF NOWMON < 1
// ASSIGN NOWMON = NOWMON + 12
// ASSIGN NOWYEAR = NOWYEAR - 1
// XIF
// KEYIN "ARCHIVING MEMBERS OLDER THAN #NOWMON#/#NOWDAY#/#NOWYEAR#"
/&
/& .. NOW I AM OPENING THE CONTROL FILE AGAIN ALONG WITH THE LOG FILE
/&
/&
// OPEN FILE2,("ARCHFILE/TXT")
// OPEN FILE3,("ARCHLOG/LOG")
// READ FILE2,DATALINE
// WHILE DATALINE
// ASSIGN DATALINE=DATALINE "$"
// ASSIGN L=DATALINE(1:((DATALINE(" ") -1))
// ASSIGN LIB=DATALINE(1:((DATALINE(" ") -1)) "/LIB#"
// ASSIGN OV=DATALINE(11:10)
// ASSIGN OS=OS(1:((OS(" ") -1))
// ASSIGN OS=DATALINE(21:10)
// ASSIGN OS=OS(1:((OS(" ") -1))
// ASSIGN OC=DATALINE(31:10)
// ASSIGN OC=OC(1:((OC(" ") -1))
// ASSIGN AV=DATALINE(41:10)
// ASSIGN AV=AV(1:((AV(" ") -1))
// ASSIGN AS=DATALINE(51:10)
// ASSIGN AS=AS(1:((AS(" ") -1))
// ASSIGN AC=DATALINE(61:10)
// ASSIGN AC=AC(1:((AC(" ") -1))
/&
/& .. SET UP THE MOUNTS TO GET TO THE LIBRARIES
/&
MOUNT #OV#, :D20;N=#OS#,C=#OC#
MOUNT #AV#, :D21;N=#AS#,C=#AC#
/&
/&
/& .. GET READY TO WRITE INFORMATION TO THE LOG FILE.
/& THEN READ THROUGH THE CATALOG TEXT FILE TO FIND
/& THE DOCUMENTS TO BE ARCHIVED.
/&
/&
// KEYIN "SEARCHING FOR #L#/CAT"
// IF FFILE(#L#/CAT")
// WRITE FILE3,"1"
// WRITE FILE3," "
// WRITE FILE3," "
// WRITE FILE3," "
// WRITE FILE3," "
// WRITE FILE3," LOG FOR ARCHIVING OF LIBRARY #LIB#"
// WRITE FILE3," "
// WRITE FILE3," "
/&
/&
/& .. GENERATE INFORMATION TO DELETE THE CATALOG FILE
/& AND OPEN AND UNLOCK THE LIBRARIES INVOLVED.
/&
/&
KILL #L#/CAT:DO
Y
IEOS
OPEN LIB #LIB#:D21
UTIL UNLOCK
Y
UNLOCK LIB #LIB#:D20
Y
IEOS

```

```

/&
/& .. READ THROUGH THE CATALOG FILE AND SELECT DOCUMENTS TO ARCHIVE
/&
/&
// OPEN FILE1,("#L#/CAT")
// READ FILE1,RECORD
// READ FILE1,RECORD
// READ FILE1,RECORD
// READ FILE1,RECORD
// READ FILE1,RECORD
// READ FILE1,RECORD
// READ FILE1,RECORD
// WHILE RECORD
// ASSIGN LEN = RECORD [{" "
// ASSIGN DOCNAME = RECORD(1:LEN)
// ASSIGN LOC = RECORD [ "uses "
// ASSIGN LOC = LOC + 5
// ASSIGN SIZE = RECORD(LOC:3)
// READ FILE1,RECORD
/&
/&
/& .. GET THE DATE CREATED TO USE FOR ARCHIVING
/&
/&
// ASSIGN CREATE = RECORD(16:9)
// ASSIGN ALPHAMON = RECORD(16:3)
// ASSIGN LASTMON = MONS [ ALPHAMON
// ASSIGN LASTMON = (LASTMON/3) + 1
// ASSIGN LASTDAY = (DAYVAL{(RECORD(20:2))}
// ASSIGN LASTDAY = LASTDAY / 2 + 1
// ASSIGN LASTYEAR = (YEARVAL{(RECORD(23:2))}
// ASSIGN LASTYEAR = LASTYEAR / 2 + 80
// READ FILE1,RECORD
/&
/& .. CHECK TO SEE IF THE DOCUMENT HAS BEEN MODIFIED.
/&
/& IF IT HAS USE THE MODIFIED DATE FOR ARCHIVING.
/&
// ASSIGN GOTYA = RECORD [ "Never"
// IF GOTYA = 0
// ASSIGN MODIFIED = RECORD(16:9)
// ASSIGN ALPHAMON = RECORD(16:3)
// ASSIGN LASTMON = MONS [ ALPHAMON
// ASSIGN LASTMON = (LASTMON/3) + 1
// ASSIGN LASTDAY = (DAYVAL{(RECORD(20:2))}
// ASSIGN LASTDAY = LASTDAY / 2 + 1
// ASSIGN LASTYEAR = (YEARVAL{(RECORD(23:2))}
// ASSIGN LASTYEAR = LASTYEAR / 2 + 80
// ELSE
// ASSIGN MODIFIED = "NO"
// XIF
/&
/& .. GET THE DESCRIPTION.
/&
// READ FILE1,RECORD
// ASSIGN DESCR = RECORD
// READ FILE1,RECORD
// READ FILE1,RECORD
/&
/& .. CHECK TO SEE IF THIS DOCUMENT IS TO BE ARCHIVED.
/&
// SET SELECT = FALSE
// SET SELECT = LASTYEAR < NOWYEAR
// IF ~ SELECT
// SET SELECT = (LASTYEAR = NOWYEAR) & (LASTMON < NOWMON)
// XIF
// IF SELECT
FILE D #DOCNAME# IN #LIB#:D21
// KEYIN "SELECTED #DOCNAME#"
// ASSIGN SHORTDE=DESCR(1:40)
/&
/& .. WRITE ARCHIVE INFORMATION TO LOG FILE
/&
// WRITE FILE3," #DOCNAME# #SHORTDE#"
// WRITE FILE3," CREATED #CREATE#"
// WRITE FILE3," MODIFIED #MODIFIED#"
// WRITE FILE3," "
// END
// CLOSE FILE1
/&
/& .. PACK UP THE LIBRARY
/&
PACKUP
EXIT
// XIF
MOUNT ,:D20
MOUNT ,:D21
// READ FILE2,DATALINE
// END
/&
/& .. CLOSE THE CONTROL FILE
/&
// CLOSE FILE3
// XIF

```

#### RMS IEOS Archive Chain

```

/& THIS IS A CHAIN FILE WHICH AUTOMATICALLY ARCHIVES
/& WORD PROCESSING DOCUMENTS FROM ACTIVE LIBRARIES TO
/& ARCHIVE LIBRARIES IF THE DOCUMENTS HAVE NOT BEEN USED
/& FOR TWO MONTHS.
/&
/&
/& THE ORIGINAL AND ARCHIVE LIBRARIES MUST HAVE THE SAME NAMES
/& AND, MORE IMPORTANT THAN THAT, DOCUMENTS IN THE ORIGINAL LIBRARY
/& MUST NOT HAVE THE SAME NAME AS DOCUMENTS THAT CAN BE IN THE
/& ARCHIVE LIBRARY BECAUSE THIS CHAIN FILE DOES NOT ALLOW FOR
/& OVERWRITING EXISTING DOCUMENTS IN THE ARCHIVE LIBRARY.
/&
/&
/& THE FIRST SECTION OF THIS CHAIN WILL READ A TEXT FILE
/& THAT CONTAINS THE INFORMATION NECESSARY TO CATALOG THE
/& CONTENTS OF A WORD PROCESSING LIBRARY TO A TEXT FILE.
/& AFTER THE CATALOGS HAVE BEEN PERFORMED, THE SECOND PHASE
/& OF THIS CHAIN WILL READ THROUGH THE CATALOG FILES SELECTING
/& THOSE DOCUMENTS THAT ARE TO BE ARCHIVED AND GENERATE THE
/& APPROPRIATE IEOS COMMANDS TO PERFORM THE ARCHIVING.
/&
/& .. SET UP MONTH AND DAY TABLES
// ASSIGN MONS="JANFEBMARAPRMAJUNJULAUGSEPOCTNOVDEC"
// ASSIGN YEARVAL="8081828384858687888990"
// ASSIGN MONVAL="010203040506070809101112"
// ASSIGN DAYVAL="01020304050607080910111213141516171819202122232425"
// ASSIGN DAYVAL=DAYVAL "262728293031"
/&
/&
/& .. CHECK FOR PHASE 1 OR PHASE 2 OF THE CHAIN
/&
// IF ~ PHASE2
/&
/&
/& .. THIS IS PHASE 1 OF THE CHAIN.
/&

```







## Band Printer Now Has Serial Interface



The 9257/9258 band printers are now available in serial as well as parallel versions. The feature is offered at no-cost as a factory-installed option only.

This option gives the band printers compatibility with the serial printer port on the 8600. Under RMS, it allows interface to an MPCA on an 8600 or 8800 processor. The serial interface offers the same degree of IEOS compatibility as the current parallel band printers.

For further information, please contact your local Datapoint representative.

## Local IEOS Support Numbers

In the February/March issue, the article "IEOS Support Now Local" listed the local sales offices numbers. Unfortunately, some errors were made in that list. The "corrected" list was run in the April/May issue. We still didn't get all of them correct! The correct numbers for the two offices below are listed.

Indianapolis, IN (317) 872-4253  
Dallas, TX (214) 661-5536

We apologize for any problems these errors may have caused.

## Customer Education Classes

To enroll in any class given by Customer Education, please call (512) 341-3268.

Classes are subject to cancellation if minimum enrollment (6 students) is not met. You will be notified no later than 10 calendar days prior to the class start date.

If you have a need for a class beyond those listed on the schedule provided, please call the number above.

## Guides Now Available

An update of a quick reference guide and a new simplified user's guide are now available. The *Quick Reference Guide for Processors and Peripherals*, Document No. 60311, has been updated and may be ordered through Software Services. A new simplified user's guide, the *Multiplan Simplified User's Guide*, Document No. 50697, is also available through Software Services. For further information regarding ordering of these guides, please contact your local Datapoint office.

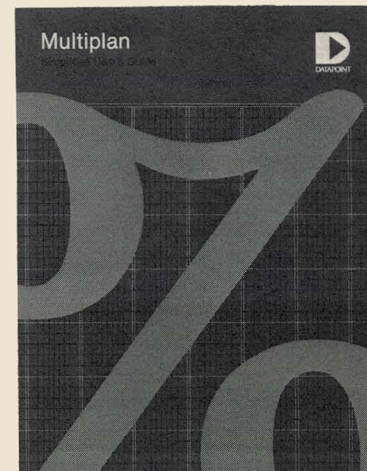


Processors and Peripherals

QUICK REFERENCE  
GUIDE

Document No. 60311

May 1981







## OFFICE COMMUNICATIONS

### Managing Your Phone System Economically

Three of the most unmanageable problems facing the telecommunications manager of a West Coast energy management firm have fallen under the disciplined control provided by Datapoint's Communications Management Information System (CMIS) and Call Detail Recorder (CDR).

A single DATASHARE system now lets the corporation's telecommunications manager charge each department for its share of the large long distance bill that the business generates every month. Through the same system, the manager can give the PBX operators an accurate and easily-updatable employee locator. He can even produce the corporation's telephone directory quickly and economically.

#### Using DATASHARE with CMIS and CDR

The system uses a Datapoint 6600 Processor that provides the call recording and costing, directory assistance, and printed directory production through the time-sharing capabilities of DATASHARE. A communications link to the company's PBX telephone system keeps a record of every call generated in the telephone system. Each call is assigned an accurate cost based upon the number dialed and the type of facility used. The records of these calls are stored on disk and are then used to generate reports to allocate the charges back to the extensions placing the calls.

This system's structure is built around Datapoint's widely-successful dispersed data processing concept, providing maximum control over processing information and retrieving data that is accessed most frequently. The telecommunications manager can maintain the information he needs for accurate management of the telephone system through the regular cost allocation reports as well as through occasional special reports, such as a month-to-date analysis of a particular trunk type. He can also retrieve information under his own timetable, without having to depend on the corporation's typically heavily loaded and tightly-scheduled data processing department.

#### Easy Access and Updating With No Headaches

The information the manager receives includes the names and telephone extensions of the company's employees. Each PBX operator gains rapid access to this information for connecting callers to the right parties by using a Datapoint 8200 Workstation to display the name, number and other perti-

nent information about the employee. The efficiency of this system, using the Telephone Directory Package of CMIS, is a welcome contrast to the previous method they used — the tab rack. In tab racks, name-strips holding the information for every employee had to be retyped each time a change was made. Then each new strip had to be inserted into the right rack. Because of this procedure, new employees were often "lost" for several weeks. Now, the entire updating process consists of entering current information at one workstation making all information immediately available to all users on the system.

#### A Quick Telephone Directory

The same up-to-date information is available in printed form through the various directory formats that are part of the Telephone Directory Package. Each user can create individual formats, selecting any of the information contained in the employee records to be a part of the corporate directory. The same system printer used for the CDR reports is used for producing camera-ready copy for the printed directory.

For further information concerning any of Datapoint's Communications Management Products, please contact your local Datapoint office.





## Users Group News



### Southern California Datapoint Users Group Reunites

The Southern California Datapoint Users Group (SCDUG) is rapidly reestablishing itself as a large and active force. Steve Schultz, the group's president says, "We average about 35 members per meeting. The meetings, held about every six weeks at different places in the Los Angeles basin, feature pertinent speakers or a presentation about some aspect of Datapoint.

"Participating actively in the users group can add greatly to your performance," says Schultz. "Knowing just one other member operating in an environment like yours or with your configuration could save you hours of waiting for a solution and free up a Datapoint engineer at the same time."

SCDUG publishes a newsletter that is mailed to members before each meeting. The newsletter, which contains articles dealing with such items as Datapoint systems, "fixes," and bugs, also has an advertising section.

Yearly dues for membership are as follows:

Organizations (w/1 personal membership)	\$25.00
Organizations (each additional membership)	10.00
Personal Membership	15.00
Student Membership	5.00

If you are interested in joining SCDUG, you may write to the president, Steve Schultz, at the following address or call him at the number listed below.

SCDUG  
c/o Stephen Schultz  
547 El Encino  
Diamond Bar, CA 91765  
(714) 732-2416

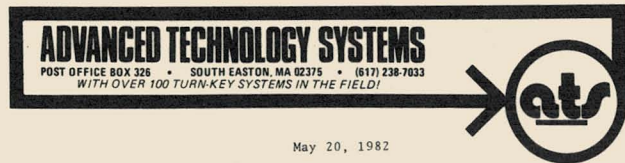


### Michigan Users Group to Meet

The Michigan Datapoint Users Group will hold its next meeting on September 14, at 3:00 p.m., at the Stephenson Club in Madison Heights. The users group is trying to form a word-processing subgroup and will discuss this topic at the meeting.

If you're interested in being part of the group or the subgroup, please contact Mr. Thomas Kelly, a director of the group, at the following address:

Michigan Datapoint Users Group  
7410 Anthony  
Dearborn, Michigan 48126  
(313) 584-7963



May 20, 1982

Users Group  
Source Data  
9725 Datapoint Drive, #T41  
San Antonio, Texas 78230

Attention: Karrie Reagan, Editor

Dear Karrie:

Since we first became Datapoint Reps (about 6 months ago), I have been trying to get information on a local or national users group. I am very interested in participating in/contributing to a users group, and I am pleased to learn you are the person to let know about this.

Please send me any information you have on a users group, particularly a local group. If there is none in my immediate area I would appreciate learning about others interested in forming such a group.

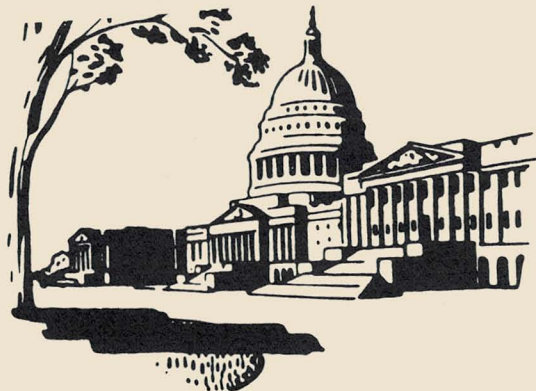
Thanks for the help.

Sincerely,

*Thomas G. McGinty*  
Thomas G. McGinty  
Vice President  
Systems and Software Analysis

TGM:ATds

*This is one of many letters I've received regarding user's groups. Please call or write if you're interested in becoming part of a user's group in your area. —Ed.*



### Federal Datapoint Users Group Quarterly Meeting

The Federal Datapoint Users Group, whose membership represents over 10 federal agencies and departments, is alive and growing in the Washington, D.C. and the Baltimore, MD area. The group will hold its quarterly meeting on September 23. Attendance is free, but advance registration is required. For further information, please write:

Federal Datapoint Users Group  
Mail Stop 206  
Room 1B411  
12201 Sunrise Valley Drive  
Reston, VA 22092



# Customer Education Schedule for August, September, and October

Below is the schedule for Customer Education classes during August, September, and October. *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. Enrollment for courses is handled by the Customer Education Center; general questions about courses may be directed to the Center by calling (512) 341-3268.

Course	Location										
	Starting Dates										
	San Antonio	San Mateo	Chicago	Washington D.C.	Boston	New York	San Antonio	San Mateo	Chicago	Washington D.C.	
Introduction to Datapoint Programming	8/16 9/20 10/18		8/23 10/4		9/13 10/25		8/2 10/4		8/16		8/23 9/20 10/25
Disk Concepts and Operations	8/2 9/13 10/11		8/16 9/27		8/23 9/27		8/30		9/20		8/2 9/11
Disk Operating System	8/16 9/20 10/18		9/13		8/2						8/9 9/27
Resource Management System	8/23 9/13 10/11		9/20 10/18		8/16 10/4		9/13		9/27		8/30 10/4
RMS Advanced Word Processing			10/4		8/30						9/20
DATASHARE	8/9 8/30 10/4		8/2 9/13 10/18		8/30 10/11		10/11		8/30 10/4		8/9 9/13 10/18
Advanced DATASHARE	8/23 10/11										8/30
Attached Resource Computer (ARC)	8/16 9/27 10/25										8/23
Basic Word Processing Concepts and Operations (DOS)	8/9 8/30 9/20 10/11		8/23 10/11		8/9 10/11		8/23 10/18		8/23 10/11		8/16 9/13 10/18
Advance Word Processing Concepts and Operations (DOS)	8/23 10/25								9/13		
Electronic Message System (EMS™)	9/27										
Basic LDCS™	8/30 10/18										
Advanced LCDS	9/27										
Automatic Call Distributor (ACD)	8/2 9/13										
DOS SNAP	8/23										



# 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.

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*Compatible with DOS and RMS*

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- Legal Time Accounting
- Fixed Assets
- Inventory
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 (201) 947-6100

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 Courthouse  
 Liberty, MO 64068  
 ATTN: Steve Lucas  
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 P.O. Box 3251  
 Logan, Utah 84321  
 (801) 753-4590

**TERM/CMD — Routes DOS through the multiport to a 3600 or 8200. Handles all DOS functions except EDIT. \$195**

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 Logan, Utah 84321  
 (801) 753-4590

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 Virginia Beach, VA 23451  
 ATTN: A. V. Wilkins  
 (804) 422-1407

**SYSTEM ANALYST/PROGRAMMER**  
 Proficient with Datapoint equipment, seeking professional employment in one of the Sunbelt states or New York. Hourly wages preferred.  
 Excellent references.  
 Please call (216) 762-7086

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 1-9483 RIM \$1300

**Call or Write:**

Sheffield Steel Corporation  
 ATTN: Steve Johnson  
 P.O. Box 218  
 Sand Springs, OK 74063

**We Know Datapoint — All Languages** If you need assistance in an application or would like a system developed, write:

**System Design Research**  
 P.O. Box 40536  
 San Antonio, Texas 78229

**\*\* Datapoint Multiplan on 8200 \*\***

We provide overlays that allow Datapoint's Multiplan Software to be executed from an 8200. Runs faster than on 3800! \$495

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Mail List for Multiline Reps

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 6960 Aragon Circle, Suite 6  
 Buena Park, CA 90620  
 (714) 994-4852

**DATABUS TO COBOL Program Converter**

**Converts your DATABUS source code to COBOL source code.**

available from:  
**CUSTOM COMPUTING, INC.**  
 P. O. Box 1374  
 KILGORE, TEXAS 75662  
 214-984-0639



# NO MORE ROLLOUTS!



## KENNEWICK INDUSTRIAL

\*Data Processing Division\*  
ANNOUNCING T.E.A.M.

\*\*Time Efficient Association Method\*\*

(ROLLOUT) = (LOST TIME) = (LOST DOLLARS)

Simultaneous DATASHARE/DOS without DATASHARE Interruption. Thoroughly tested under DS6/DOS.D beta-side environment and large standalone systems (in excess of 20 on-line terminals). You do not have to put up with ROLLOUTs anymore. Utilize all DOS utilities (UPS compatible) while DATASHARE is up and running.

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**ATTN: D.M. Bernard**  
**113 E. Columbia Dr.**  
**Kennewick, WA 99336**  
**(509) 582-5156**

GSCRIBE — DATASHARE Text Processing  
Similar to DSCRIBE, Cassette or 1 diskette  
and user's guide — \$100. Source code is  
available.

**GRAPHIC DATA  
SYSTEMS, INC.**  
P.O. Box 4074  
Winston Salem, NC 27105

#### FOR IMMEDIATE RELEASE

Access Data Products, Inc. and Wolf Data Services, Inc. are pleased to announce a joint marketing agreement: Access Data will market all of Wolf Data's general application and specialized software packages in New York, New Jersey, Connecticut, and Florida. For further information, call or write:

**Access Data Products, Inc.**  
237 West Lincoln Avenue  
Mount Vernon, New York 10550  
(914) 667-4852  
or  
**Access Data South**  
75 West Colonial Drive  
Orlando, Florida 32801  
(305) 422-7793

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Information Solutions  
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#### ON-LINE ACCOUNTING SYSTEMS, INC.

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PERT/CPM Pipeline & Bulk Terminal  
Accounting. All ANSI COBOL. Standards  
Available. Special Rep program. Call  
Package Sales at (713) 529-9813.

**MSSPLAN Planning System**  
DATABUS/DATASHARE compatible  
"spreadsheet" tool for financial models,  
forecasts, and projections. Enhanced  
version features "moveable window" screen  
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License: \$250.

**Management System Services**  
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Bellevue, WA 98009  
(206) 828-3642

#### FOR SALE

2 25MB Drives & Controller under  
maintenance, in good condition  
8 25MB disk packs (used) CALL:

**Illinois Collection Service**  
Oak Lawn, Illinois  
(312) 857-7600

**PROBLEMS WITH SOURCE DATA?**  
Call Karrie at (512) 699-7059.

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\$100,000 to \$150,000

Software Revenue Per Installation

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Instead of:  
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You Can Produce:

**NINE HUNDRED TWELVE  
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Simply INCLUDE our sub-routine in your  
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**DATAREX, Pharmacy System Software Package**  
Includes: 3rd party processing, accts. rec., price  
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Proven application software with national exposure designed for the construction industry or any company involved in project management (estimating, budgeting, scheduling, actual costs, projected costs/profits, completely integrated accounting package). We currently have 16 installations and wish to expand by adding end users and wholesaling to Datapoint marketing organizations.

Systems consultation/analysis also available from four Masters-level analysts.

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Atlanta, Georgia 30338

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increase your earnings by 5-20K part-time?  
Interested? For details, send your name  
and address to:

**FAST Software**  
P.O. Box 885  
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#### SLIDERULE

Easy to use DATABUS routines to solve the common higher math functions, including trig., log., square roots, etc. Can be used as inclusion files or bloked into your applications. Can be supplied on cassette or diskette. Price: \$200, including source files and user's guide. Call or write:

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800 Dutch Square Boulevard  
Suite 137B Dutch Plaza  
Columbia, South Carolina 29210  
(803) 798-5094

#### CANDETRM DATAPOINT — BURROUGHS FILE TRANSFER INTERFACE

DATABUS accesses BURROUGHS CANDE; works with a supplied COBOL program to transfer files to/from DATAPOINT & BURROUGHS. No record length restrictions. DATABUS on cassette or diskette. COBOL on 9-track tape. \$500 for source files, user's guide. Call or write:

**INFOTRAN Corporation**  
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Suite 137B Dutch Plaza  
Columbia, South Carolina 29210  
(803) 798-5094

## DOS-RMS

### DOS-RMS Business Systems Software

available from:

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**DATABUS/DATASHARE Word Processor**  
Timeshare word processing and other programs. Many new features added to the "Advanced Editor." Send for free command list or \$3.00 for manual handling. Saratoga Computer Systems, 1175 Saratoga Ave. Suite 11, San Jose, CA 95129.

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All rights with purchase. General accounting, proff. time accounting, and order entry systems. Source, user's guides, and systems documentation. Contact:

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#### DATAPOINT SYSTEM FOR SALE

1100 Diskette system, 2 disk drives, and 9251 Servo printer (30 CPS). Under maintenance. Contact:

**James Tanner**  
6619 Spring Garden Drive  
San Antonio, Texas 78249  
(512) 699-9285

## Want To Be Part of a Datapoint User Group?



If you'd like to be part of a Datapoint user group but don't know of one in your area, please call or send me your name, address, and phone number. I've received numerous calls in the past month from people all over the United States who are interested in becoming part of or starting a users group. New groups will be meeting soon, so please call or write if you're interested.

#### USER GROUP

c/o Karrie Reagan, Editor  
**SOURCE DATA**  
9725 Datapoint Drive #T41  
San Antonio, Texas 78284  
(512) 699-7059









# DATAPPOINT

SOURCE DATA #T41  
9725 Datapoint Drive  
San Antonio, Texas 78284

