

SOURCE DATA

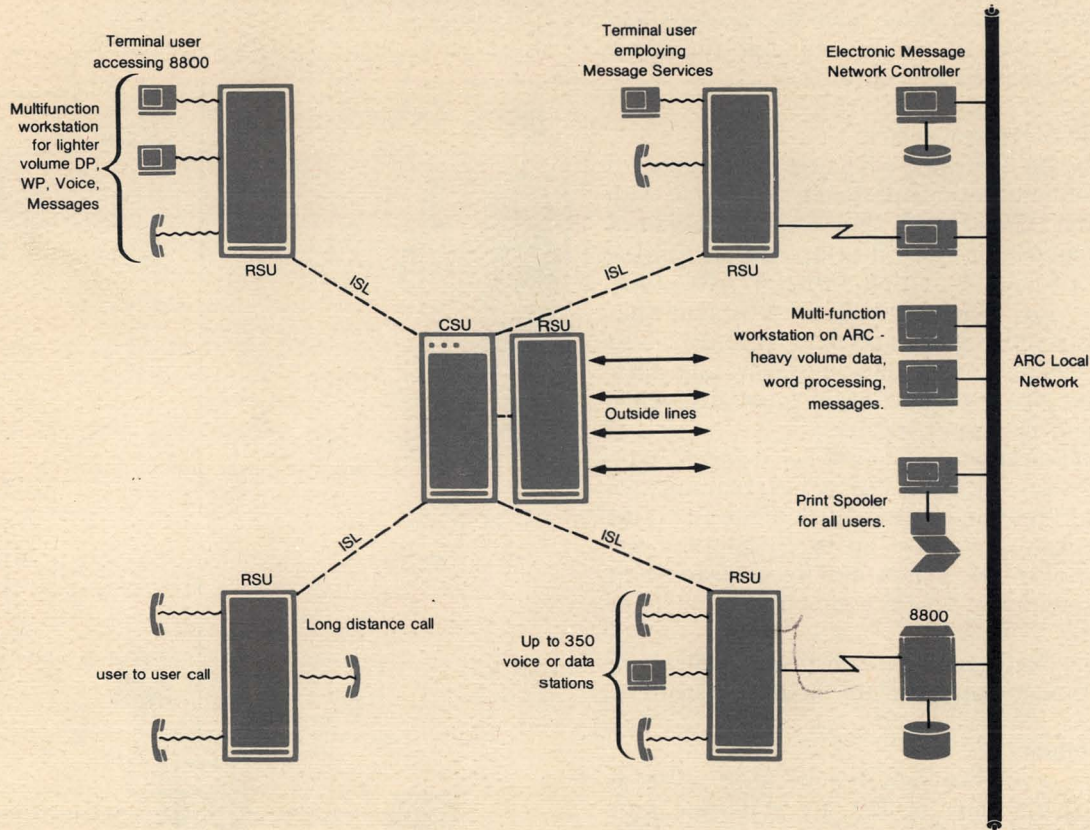
THE DATAPOINT SYSTEMS NEWSLETTER

No. 12

April/May 1981

CONNECTIONS

the Information Switching Exchange



CONNECTIONS - that's an important theme in this issue. Datapoint® has announced two major new products: ISX™ - the Information Switching Exchange (presented below) and KSX™ - the Key Switching Exchange (presented in an article on page 4).

The ISX Information Switching Exchange is the "supercontroller" of the eighties. It can become the hub of the Integrated Electronic Office™ providing the connection between telephones, data terminals, word

processors and other digital business machines. The ISX transcends the PBX category because it can simultaneously switch voice, data, text, and messages over conventional twisted pair building wiring. Because Datapoint has applied computing power to telecommunications, it accomplishes technically and functionally much more than a conventional PBX.

An overview of the system reveals features consistent with Datapoint's development philosophy.



VOICE COMMUNICATIONS

Dispersed architecture

Access to public or private carriers, interface to telephones and terminals is through Remote Switching Units (RSUs). Access to remote data bases or ARC™ networks and between RSUs is handled by a Central Switching Unit (CSU). The RSUs can be dispersed at locations where they are needed (in the same room as the CSU, in several areas of an office complex, or across town).

Flexible expansion

From 100 to 20,000 ports can be accommodated by the ISX in any combination of trunks, telephones, workstations, and business machines. Generous computing power, data base memory storage and sophisticated software allow you to add functional capabilities or more ports as needed.

Integration and functional power

The Information Switching Exchange is a member of a family of communications products that began with Datapoint's INFOSWITCH® line. Experience gained in that voice communications development and in the development of data handling through ARC local networks has now been applied to a system that simultaneously handles voice and data, connects word processing, telephones, electronic messages, and ARC network computing power into a fully integrated whole for the management of your business.

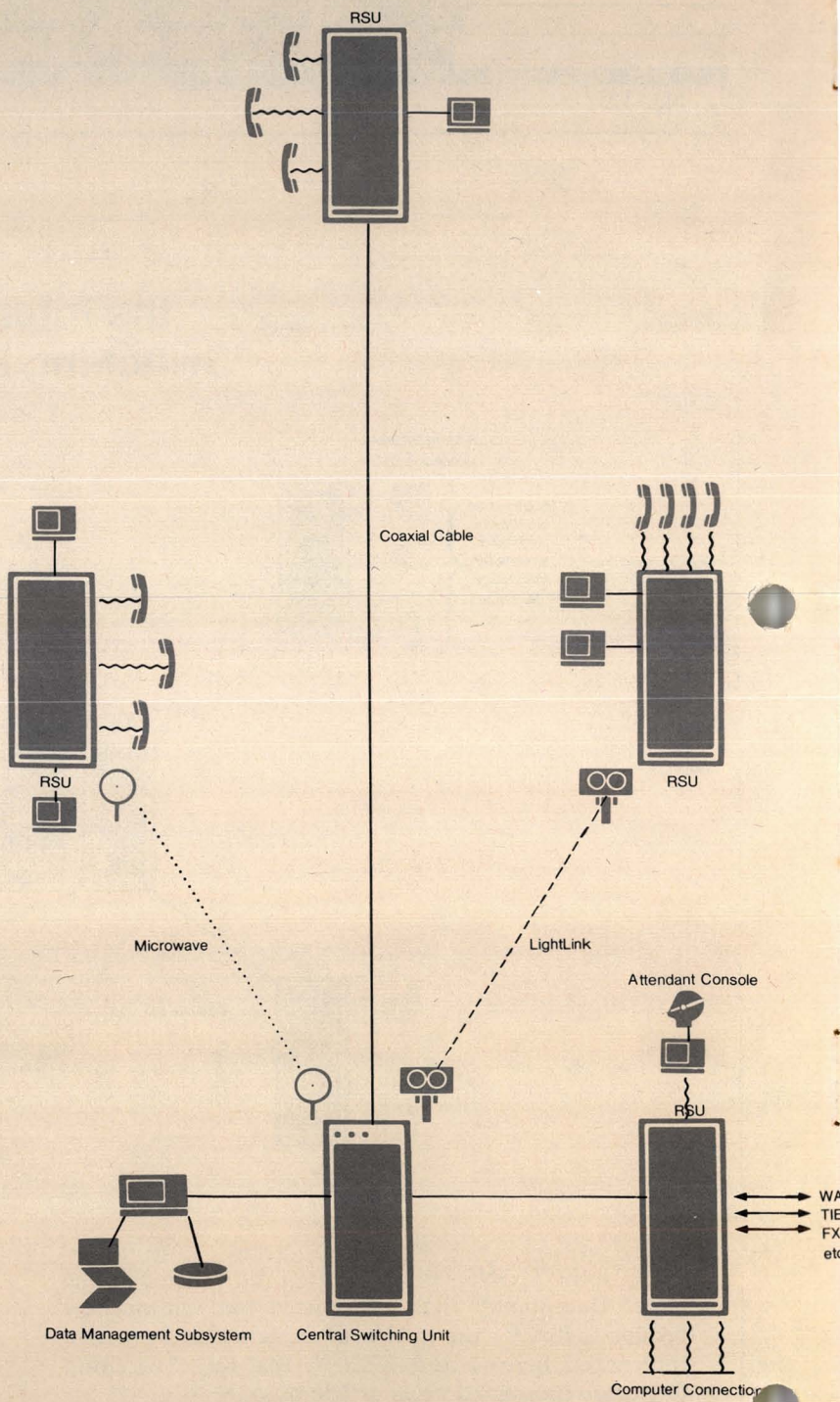
Voice communication is handled as digitized data from Datapoint-provided or other industry-compatible single-line, multi-button, or rotary dial phone sets. Text and data are moved at rates up to 56 kilo-bits-per-second via intelligent or non-intelligent Datapoint equipment or any other RS-232 compatible terminal or processor.

The telephone features offer sophisticated but easy to learn and use functions not available in other systems.

Reliability, economy

The critical reliability required of such a "connections" system is met in ISX by elaborate self-diagnostics, built-in redundancy, and Datapoint's service support. In fact, ISX notifies the national service center when a problem occurs and identifies the problem so an informed service representative can be dispatched. Coupled with that is the economy of a system that uses standard telephone wiring connections and least-cost call routing.

To take care of many administrative chores and to let you manage your connections, a Data Management Subsystem gives you control over the system and provides reports on system use and costs.



Elements of the ISX

Datapoint Telephones

INFOSET™ I and INFOSET II are new Datapoint telephone products that let you make full use of the sophisticated station features of the ISX.



INFOSET I is the basic, single-line telephone with the most commonly used call handling features - connect, pickup, transfer, conference, and hold - on single-button feature keys. Other features available with ISX can be accessed by dialing a feature access code. Automatic dialing of up to 19 numbers and automatic redialing are also available.

ARC and ISX

The ISX can work with the coaxial-based ARC local network to give you the power, flexibility and cost effectiveness you need. Whether your demands emphasize heavy data processing or extensive voice, word processing, and electronic message management, you can build an Integrated Electronic Office system from either direction and rely on connections being available to facilitate your growth.

A brochure, The Datapoint ISX, Information Switching Exchange, Document No. 61070, describes the system. The very first shipments of the ISX are scheduled for December 1981. Keep in touch with your local Datapoint office (or contact Product Marketing in San Antonio, 512-699-5191) for further information about availability, costs, etc.



INFOSET II is the multi-line phone with 16 programmable keys for single-button line and feature selection. Selectable features include such things as automatic call back, call forwarding, call privacy, paging access, directed call pickup, leave message, and timed reminder. A built-in speaker gives you hands-free operation and a 24-character alphanumeric display presents status, call, or directory information.

The attendant console for the ISX is a Datapoint 8200 workstation with special function keys, headset connection, and a push-button dialing keypad. In addition to giving the operator control over calls, directory assistance and station status information are available.

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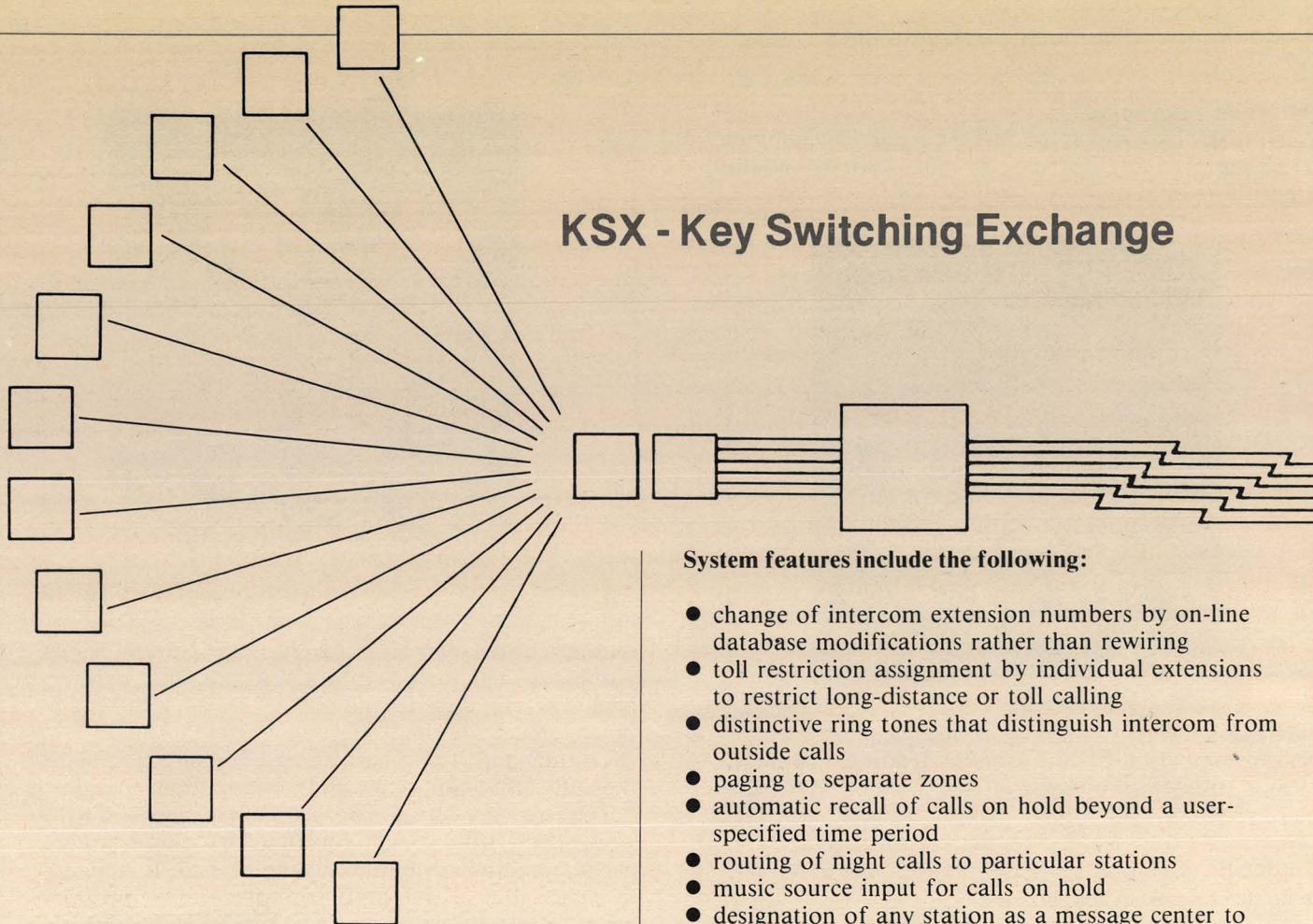
Dated Material: Techniques or facilities described in each issue are accurate as of the publication date; however, computing changes rapidly so please rely on up-to-date permanent documentation such as user's guides for details of software or equipment features.

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Contributors:

Thanks to field person Gayle Joseph for contributing to this issue.

KSX - Key Switching Exchange

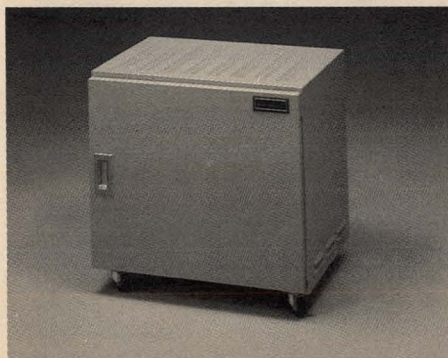


System features include the following:

- change of intercom extension numbers by on-line database modifications rather than rewiring
- toll restriction assignment by individual extensions to restrict long-distance or toll calling
- distinctive ring tones that distinguish intercom from outside calls
- paging to separate zones
- automatic recall of calls on hold beyond a user-specified time period
- routing of night calls to particular stations
- music source input for calls on hold
- designation of any station as a message center to receive calls that have been on hold beyond a designated time
- call queuing for busy lines or extensions and automatic recall when they become free
- privacy for conversations on an outside line
- station message detail output and an optional Call Detail Recorder package to allow printing of call usage and accounting reports
- an option for up to four separate 3-way conference calls

The Key Switching Exchange, KSX, is Datapoint's telephone system offering sophisticated features for handling the communications needs of a small business or branch office. Capable of handling from 8 to 128 phones, the KSX couples economy with growth potential.

The Key Switching Exchange is composed of three elements:



- Key Service Unit - the controller of the KSX, interfaces between outside lines and user telephones and stores system parameters

- KEYSET™/24 - a multifunction telephone with a standard 12-key dial pad, four special function keys, and 24 line keys



- Optional Direct Station Selection/Busy Lamp Field (DSS/BLF) console that can monitor up to 60 stations per console. In addition to indicating the status of all stations, it streamlines the transfer of incoming calls.

The KEYSET/24 is a multifunction key telephone capable of providing several station features to augment normal telephone operation.

Four function keys provide one-key operation of holding or transferring calls to another station, setting up conference calls, and turning the speakerphone on and off.

Other station features include two-digit speed dialing for frequently used numbers, user-controlled voice and ring tone levels, and call splitting which automatically holds an intercom call while you pick up an outside call.

The KEYSET/24 units connect to the Key Service Unit through uniform 3-pair wiring. The KSU can support up to 128 stations (80 KEYSET/24s and 48 single-line sets) and connects to any type of loop-start line facility such as local business, foreign exchange, WATS lines, private ring down circuits and off-premise

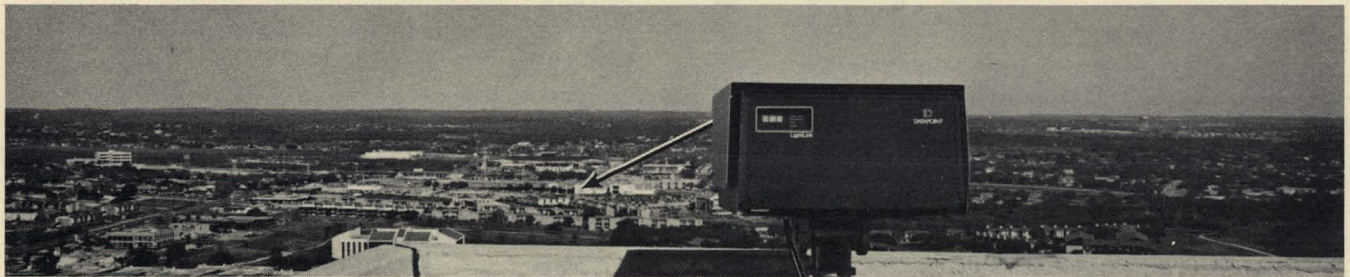
extensions in contrast to the trunk connections typical of PBXs, thus providing a more economical approach to telecommunications.

Maintenance of the KSX is handled with an approach that is unique in Datapoint's service network. The KSX system is supported by a Remote Maintenance Center staffed by trained customer service technicians who perform routine maintenance and trouble-shooting. Initial system parameters are entered onsite through a Datapoint terminal and subsequent updates can be performed the same way by the user. Optionally, database updates can be performed remotely from the maintenance center.

The KSX can communicate directly with the ISX Information Switching Exchange through off-premise extensions so a branch office with KSX for example might connect to headquarters with ISX.

The KSX system is available now. A brochure, The Datapoint KSX, Key Switching Exchange, Document No. 61071, describes the system. Contact your local Datapoint representative for more information.

LightLink - An Applications Story



Datapoint's LightLink™ has a demanding, yet satisfied user right here in San Antonio -- Datapoint's own Marketing Systems office.

Marketing Systems has been using LightLink units to transmit data between the 8400 Building and the 9502 Building. The department has 102 processors in the 8400 Building, handling the company's order entry, accounts receivable, and billing systems. The department has a dozen processors in the 9502 Building handling order shipment coordination.

Layout

Processors in the two buildings operate as if they were on the same ARC network -- which they are, except that a gap of eight-tenths of a mile between the two systems is spanned by a pair of LightLink full duplex transceivers. The LightLink transceiver connected to the 8400 Building is atop the 10-story Turtle Creek Tower, while the unit connected to the 9502 Building is on the roof of the 9725 Assembly Building.

Good Results

"We used to use dedicated phone lines, but Lightlink is so much faster -- 2.5 million bits per second as opposed to 1200 baud," noted Don Titus, Director of Marketing Systems.

"The LightLink transceivers have allowed us to expand, and greatly increase our computing power and level of

service." The LightLink units were turned on December 5, and in mid-January Titus reported that the only problems encountered had been on mornings when heavy fog filled the valley between Turtle Creek Tower and the 9725 Building. (The valley contains a creek, a pond and a golf course.) But at worst, the connection had been re-established by 10 a.m.

The units are operated 12 to 18 hours per day, five days a week. During their first month of operation the LightLink system operated in a variety of weather conditions with outside temperatures ranging from 25 to 90 degrees (remember, this is in South Texas) with no negative effects on the LightLink units. Humidity was also no problem, as built-in heaters prevent condensation from forming on the lenses.

Technical Notes

LightLink transceivers use low-level noncoherent near-infrared light to transmit data at the same rate as an ARC interprocessor bus, and they can be connected directly to an ARC bus. Alan Malinger, Director of the Transmission Systems Development Center of the Office Systems Group, explained that the light emitted by a LightLink amounts to only four milliwatts, and looking into the beam is not harmful. And unlike microwaves, no licensing is required.

ARC users, see the ARC User Survey in this issue.

used before and also takes care of maintaining or inserting basic IEOS format controls as necessary in stand-alone text or print files.

The FILE command will actually move a document from the currently open library to another designated library such as one called ARCHIVE. The document is deleted from the original library after the move is complete.

The RENAME command replaces the NAME command and represents a refinement of terminology and efficiency as it allows you to rename and redescribe an existing document.

RESTORE is a powerful new feature that allows you to go back and retrieve old versions of documents. Between PACKUPS, all creations and modifications are stored as "new" documents at the end of the library, hence, the "old" inactive versions of modified documents are still there. RESTORE lets you choose among the existing inactive versions of a document and then either restore it in place of the current one or give it a new name.

OUTPUT SERVICES

In the area of Output, a refinement in terminology has again made use of the system more straightforward and efficient. The PRINT command now really means you get a printed copy and you have an option to specify the number of copies you want. The DISPLAY command is used if you want screen display. If you want a DOS text file (/TXT without IEOS formatting), use the OUTPUT command (rather than the old PRINT ON TXTFILE).

You can direct AUTOTYPE to any output device, use multiple data files, specify a multiple line record and indicate the position of the VARIABLE within that record.

UTILITY MENU

The Utility Menu (invoked by the UTILITY command under Other Services) has been added to give you

access to "maintenance" or "housekeeping" commands and programs from within IEOS. Some of the utilities are similar to those within DOS or ARC like CAT, FREE, KILL, LIST, MOUNT; others are new and unique to IEOS. One of the IEOS-unique commands is RECOVER to provide recovery for libraries, documents, text files or scratch areas after a system failure, abnormal end or other unexpected happening.

The DELETE command is another Library utility. By invoking the UTILITY menu and using the DELETE LIBRARY command, you avoid the procedure of having to return to DOS and use the DOS command, KILL, to erase an entire library.

OTHER SERVICES

The EXIT command simply replaces the DOS command and is a more accurate term for leaving IEOS.

BULLETIN has been added to allow you to prepare and display a general IEOS system message.

HELP allows you to get detailed explanations of commands and their options.

To conclude the summary of IEOS 1.3 features and changes, here is one last item. To terminate editing of a document, either command END or command ABORT must be specified. However, to either of those commands you can append any other IEOS command to save extra waiting and keying time.

For example:

```
end print copies 2
abort modify document x
end utility
```

Release of IEOS 1.3 is expected in the next couple of months. Watch for more details in the next issue. A new brochure is available for The Integrated Electronic Office, Document No. 61072.

A Happy Ending for Widows and Orphans

Finally, a way to get around those unwanted widows in word processing! For those of you who are not familiar with the terminology, a widow is the first line of a paragraph that appears as a "dangling" last line of text at the bottom of a page. This can be quite a nuisance but it can be easily solved by using a Function Key. The following example illustrates a sample solution.

In your Primary Format, define an F-key as follows:

Using F1 as an example,

F1Cn p 4NnF1

F1 = pressing the F1 key initiates function

C = Command key

n p 4 = new page 4

N = return to close the new page command

n = shift return for new paragraph

F1 = pressing the F1 key closes the function

As you type in or edit your document, you would invoke the function F1 at the end of every paragraph. The conditional new page command assures that in-

formation begins on a new page if the number of lines left on a page is less than the specified number (in the example, 4 lines - 2 blank lines and 2 lines for text). The function then positions you at the beginning of a new paragraph.

If you use the function on every paragraph in your document, you will be assured of widows not occurring even as your document undergoes revision. The method will even take care of most orphans. (An orphan is the last line of a paragraph that appears on the top of the next page.)

This example is just a helpful hint. You may use it as is if it fits your format or change it if your format, style or conventions differ.

See the Word Processing Simplified User's Guide, Document 50502, for a basic introduction to function keys. If you have special ways you have used them, let us know. We would like to share them with other readers. Use the Reader Reply Form at the back of this issue!



DATA PROCESSING

1550 the Biggest Small System Yet

A new member of Datapoint's 1500 family has arrived - the new 1550 system. The 1500 series began in October 1977 and has been constantly improved since then; the 1550 is the biggest improvement yet.

Speed

The base processor in the 1500 is the Z80. The processor in the new 1550 is the newer Z80A with approximately twice the speed of the original. It is safe to say that, as a result, the 1550 is significantly faster than the 1500.

You will see significant improvements in processor-bound functions such as DATASHARE™, communications, and facets of IEOS. I/O-bound functions will still be controlled by the relative speed of the particular I/O device involved - like diskettes. A faster processor can't make the diskette drive run any faster. Systems configured with the 9320 drive will most likely experience more dramatic improvements than diskette systems.

Storage

The 1550 can be configured with not only twice but, optionally, four times the diskette storage of the 1500. It uses a double-density diskette drive that is available in either a single or double-sided version, offering a choice of 1MB or 2MB of storage.

Extensions

The 1550 allows not one, but three extension drives to be added to the original system. That's a total of 8MB of diskette storage on a processor that is significantly faster than the 1500. The base system is two times the storage of the 1500 and maximum storage is eight times that of the maximum 1500 storage. In addition, the 1550 can utilize the 1542 and 1543 drives that are currently on the 1500. That gives you the option of configuring the system with either .5MB, 1MB or 2MB of storage.

Software

Under the DOS operating system, the 1550 supports Datapoint's DATABUS™ business programming language as well as FORTRAN and BASICPLUS. The 1550 can be used for personal computing, word processing, and electronic messages.

Interactive communications with IBM mainframes can be accomplished with Datapoint's EM3270 software package.

The 1550 can also use a commercially available operating system which will allow you to take advantage

of many existing business and engineering applications. (See the article on CP/M in this issue.)

Options

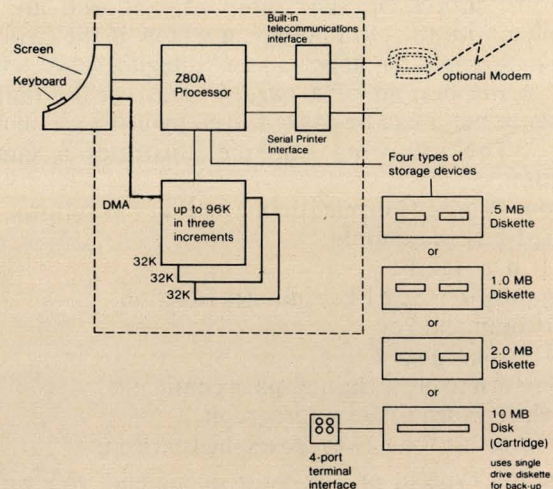
The basic 1550 consists of 32K of memory which can be increased to 64K or 96K with the addition of optional memory boards. Diskette storage can be .5MB or 1MB or 2MB or you have the option of using a 9310/9320 10MB cartridge drive. The communications adapter and printer ports are the same as the 1500 system.

Impact

The 1550 is not replacing the 1500 in the product line. The 1500 is still an active and viable product that offers the lowest cost system available. The 1550 offers increased performance and can offer greater diskette storage at an additional cost over the 1500.

All software that currently runs on the 1500 will run on the 1550. Both machines run the same version operating system and other software. That allows you to mix the two systems in networks. You could install 1500s in locations requiring only .5MB of storage and 32K of memory and 1550s in locations requiring 2MB of storage and 64K of memory. The same applications software runs on both of the systems and the same basic user operating instructions apply to both. You can take advantage of the additional memory (of the 96K version) by programming in Assembler.

The final decision is yours as to which of these systems (or some combination) is the correct choice for your needs.



1550 System Architecture

CP/M* an Alternate Operating System for the 1550

**Lifeboat Associates, a New York software company, develops and markets systems and applications software. This article is based on material supplied by Lifeboat Associates.*

WHAT IS CP/M?

In the early days of personal computing, toggling switches and watching blinking lights constituted the only means of data handling available to enthusiasts. As microcomputers and peripherals proliferated, users expected to be able to obtain high-quality software to run on their systems.

However, because hardware and software were not standardized, proven software that large computers had been using for years and software written specifically for, say, 8080-based computers (the largest population in use) had to be adapted to accommodate a multitude of incompatible systems. This state of affairs inhibited the development of good software. What was needed was a quasi-universal software interface that would allow applications to run on any 8080/Z-80 machine. CP/M (*a trademark of Digital Research which developed and owns CP/M) is filling the bill.

Interfaces computer with software

CP/M is an operating system, a layer of software that masks the hardware and makes it "impersonate" a computer defined by CP/M itself. Once CP/M is loaded on a system, the details of the hardware become irrelevant to the user who deals only with CP/M. A program need only be designed to run under CP/M, not with any particular hardware configuration. That is one of the main reasons for the growing popularity of CP/M.

Features

CP/M consists of a monitor control program plus some utility packages, principally a text editor, an assembler and a debugger. Together, these programs comprise a complete and independent software development package that enables the user to create, edit, debug, assemble and run programs using one to four disk/diskette drives.

Technical Details

The heart of CP/M is the Functional Disk Operating System which relieves the user of all housekeeping tasks, creating and manipulating files and coordinating communication between peripherals. The FDOS acts as a supervisor for other programs, whether they are CP/M utilities or application programs.

The FDOS can be further divided into the Basic Input/Output System which provides machine level language interfacing to the I/O devices, and the Basic Disk Operating System which provides disk and file management.

The Console Command Processor is the user interface for the rest of CP/M. It executes its own set of commands, such as DIR to list the file names on a

diskette or ERA to erase a file. The memory used by CCP is released when a program such as a BASIC interpreter is loaded.

The Transient Program Area is the section where a program is loaded for execution. For example, when "BASIC" is typed into the CCP, the binary command file BASIC.COM is loaded and execution is transferred to the start of the BASIC program. CP/M's transient commands reside on the CP/M disk, ready to be loaded by the Console Command Processor.

CP/M Commands

CP/M transient commands include ASM to load the assembler, ED to load the text editor, DDT to load the CP/M debugger, SUBMIT to submit a file of commands for file processing, etc. The user can also create transient commands.

History of CP/M

In 1973 when the 8080 microprocessor was introduced, Gary Kildall of Digital Research designed a PL/M cross-compiler to generate code for the new device. He separately designed an 8080 operating system, CP/M (Control Program/ Microprocessors) version 1.0. In 1976, when another company asked him to implement CP/M on its 8080-based computer, Digital Research redesigned CP/M to be transportable to different machines with standard 8-inch diskettes. CP/M became a popular system for microcomputer users who owned 8-inch disk drives, and it was possible for users with dissimilar hardware to swap disks and programs.

In 1977, Larry Alkoff of Lifeboat Associates configured CP/M to work with a mini-floppy disk system. The enthusiastic response led Lifeboat to offer CP/M for almost every other mini-floppy and floppy disk system.

CP/M Today

Today, CP/M is available for almost every 8080 and Z-80 disk system sold (that number is in the hundreds of thousands).

The popularity of CP/M has mushroomed. It is inexpensive compared to software for large computers, and it provides a machine-independent environment for the wider world of software. With CP/M, a particular brand of BASIC interpreter will run the identical application program on a wide range of different systems. CP/M is spartan in its use of memory space, and is also forgiving, making it difficult for the user to destroy his program inadvertently.

continued...

CP/M ON THE 1550

Lifeboat Associates now markets a CP/M disk operating system for use with Datapoint's new 1550 processor (see article on page 8). Information is given below for obtaining CP/M.

CONTACT: Customer Service Department
Lifeboat Associates
1651 Third Ave.
New York, NY 10028
(212) 860-0300
TELEX: 640693

ORDERING INFORMATION:

Datapoint 1550		Lifeboat Associates		
Diskette config.	Memory size	Part No.	Price*	Format
Single-side DDD	64K	CPM101	\$350	AA
Single-side DDD	96K	CPM102	\$350	AA
Single-side DDD plus 9310/9320	96K	CPM103	\$800	AA
Double-side DDD	64K	CPM104	\$350	AB
Double-side DDD	96K	CPM105	\$350	AB
Double-side DDD plus 9310/9320	96K	CPM106	\$800	AB

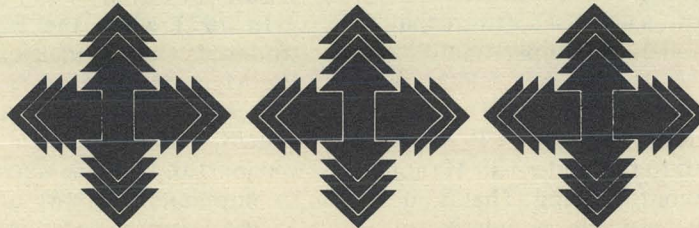
*Price includes an end-user license.

Lifeboat Associates also has a catalog describing about 160 programs available from them that are compatible with Datapoint's 1550 processor running with CP/M. Contact them for a copy.

(NOTE: CP/M software is a product of Lifeboat Associates, not Datapoint. Thus, Datapoint does not support it. CP/M is an alternative to DOS as an operating system for the 1550.)

A look through a consumer minicomputer magazine such as BYTE shows that a large portion of the software ads are offerings for CP/M systems. These include many reasonably priced accounting and business application packages, used by small businesses that don't have the time or money for in-house programming. Thus the addition of CP/M makes the 1550 an extremely versatile small computer for business.

Resource Management System™ Update



The second major release of the Resource Management System - RMS™ 1.2 - is now available. The highlights of RMS 1.2 include the addition of ANSI '74 interactive COBOL, ARC local networking, File Management System (FMS), and sophisticated disk error logging and reporting (ERRLOG).

RMS/COBOL provides interactive COBOL from 8200 workstations.

RMS local networking through ARC is now fully supported for 5500, 6600, 6000, and 3800 processor types in an ARC configuration. Remember that DOS and RMS can cohabit the same physical ARC coax, so the 3800 gives you access to the best of both operating system capabilities.

File Management System (FMS) streamlines disk resource sharing in RMS. By running FMS, a processor buffers frequently-accessed disk sectors in memory for fast retrieval. This technique is similar to that used by DOS ARC file processor software, but FMS may be used whenever disk file sharing will be extensive. Even a standalone processor may benefit by running FMS due to the multitasking of RMS, especially if ISAM applications are involved.

ERRLOG is activated when a disk-supporting processor is initialized, and is used to record disk controller problems and parity errors encountered

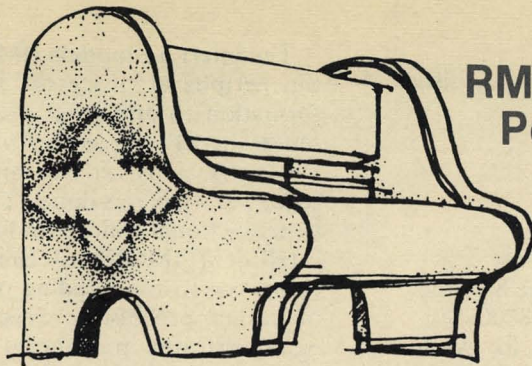
during processing. A companion program, ERRRPT, allows the user to retrieve and display those statistics.

CORRECTION/UPDATE ON SOFTWARE MODEL CODES:

Unfortunately, the Software Releases on page 3 of SOURCE DATA issue #11 contained some erroneous information. (Pages 17 and 21 also refer to RMS releases.) Please regard the following as the current correct status of RMS 1.2:

Model	Description
9830	RMS Nuclei and utilities
9831	RMS DATABUS
9832	RMS DATASHARE
9835	RMS Nuclei and utilities plus RMS DATASHARE; includes RMS User's Guide Volumes I-IV (includes CHAIN) and RMS DATABUS User's Guide and RMS DATASHARE User's Guide
9836	RMS COBOL (not 9827 as previously reported)

Note that model 9835 is the only one that includes documentation. All documentation desired with 9830, 9831, 9832 or 9836 software must be explicitly ordered.



RMS Performance Tested

The RMS Support Group has established a set of standardized test packages to:

- provide performance information
- locate performance bottlenecks and identify areas for improvement
- provide a baseline against which to compare future releases

The test packages simulate normal application activities on the Resource Management System. The tests are being run in a staged manner on various hardware configurations with different combinations of software as products approach release. The test packages are initially being run on both the latest release level of DOS software and on RMS 1.1.

Benchmarks

The first benchmark results are available for the "batch" test package run in a standalone, 6600 environment under DOS and RMS. This package was designed to be typical of the type of non-interactive processing done in a user application and was comprised of the following:

- Inquiry and update programs which perform both ISAM and sequential I/O.
- A report program which performs sequential I/O.
- Execution of the COPY, INDEX, and SORT utilities.

The application programs were implemented in both DATABUS and COBOL to permit performance comparison of the two languages.

The tests for both DOS and RMS were run on the same system, a 6600 with 128K bytes of memory and 9390 disk drives. The DOS software used was DOS.D

2.6.1, FASTSORT 3.1 (for the SORT and the INDEX), DBCMPLUS 3.1, and DS6 1.1. The RMS software used was all at the 1.1 release level. The DATABUS interpreter was used for the testing of RMS, rather than DATASHARE since the programs were run one at a time. Since there is no DATABUS interpreter for DOS, DATASHARE 6 was configured to run only one port, on the console. ROLLOUT, the CLOCK verb and the ISAM routines were included in the configuration; all other options were excluded.

Results

COBOL 20% FASTER

The COBOL compiler was 20% faster under RMS than under DOS. The LINK, however, takes a good bit longer under RMS. COBOL execution speeds are faster under RMS. The programs doing ISAM I/O are 20-30% faster than DOS, while the program doing only sequential I/O is 51% faster. In summary, once a COBOL program is developed, you will see significant savings in run time throughout the program's production lifetime.

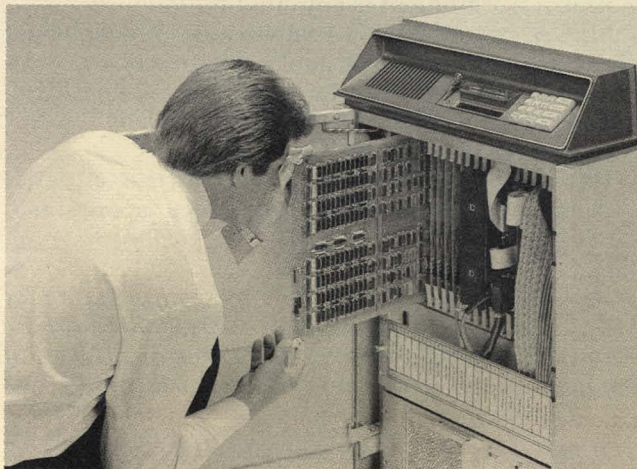
DATABUS 21% FASTER

DATABUS compilers are 21% faster under RMS. DATABUS programs doing ISAM I/O execute slower on RMS than DS6 under DOS; however, those doing sequential I/O only are 54% faster.

I/O ROUTINES FASTER

The heavy I/O utilities are between 30% and 40% faster under RMS.

Testing of RMS multitasking and ARC systems is underway and will be reported in future issues.



Behind the Door of the 8800 Processor

The 8800 processor was introduced to you last issue with terms like "multiprocessor architecture", "multiprogrammable", and "modular flexibility". In this and future articles, we will take you behind the scenes to examine some of those characteristics and how they work in practice. Our hope is that you will be a bit more comfortable in your understanding of the product and what it offers for your business information needs.

continued...

continued...

The key **MULTIPROCESSOR** elements in an 8800 are:

- memory with error checking
- central processor
- direct memory access
- peripheral processor(s)
- interface module(s)

Let's look at each of these elements and see how they contribute to the power and versatility of the 8800.

A unique aspect of the 8800 memory is its "error checking and correction" ability. That feature performs a verification of everything written to memory. If a memory error is detected, that portion of memory is segregated from further use by the system. Another important aspect is the ease with which you can add incremental memory.

The **central processor (CP)** is the main element of any computer whose function is to drive all components of the computer. All user requests are initially handled by the CP and it in turn allocates memory for user programs and establishes necessary links between memory and all peripheral devices.

Direct Memory Access (DMA) allows peripheral devices such as disks and multi-port communications adapters to interface directly with memory without having to be processed by the central processor. This provides improved CP and device throughput because it allows direct memory access from peripherals thus skipping the step from CP to memory. DMA is a technique built into the 8800 hardware and does not exist in 6600 processors. It is an industry-wide technique common to the "big" machines but not usually found in smaller ones.

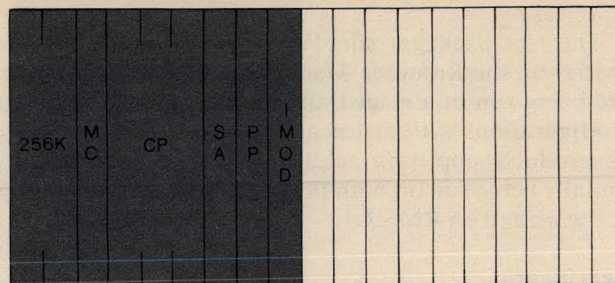
If the task involves program work such as COBOL or DATASHARE, the CP initially handles all requests for tasks to be accomplished. Frequently, tasks need to talk to an input/output (I/O) device like a disk or a printer. Those requests are immediately forwarded to a **peripheral processor (PP)** whose job is to manage the handling of such things as I/O requests, interface with other resources, data communications, etc. (The peripheral processor is another new architectural feature in the 8800 not present in earlier processors like the 6600.) Thus, the peripheral processor offloads all those functions from the central processor so the CP can concentrate on program functions. That leaves the CP anxious to perform more tasks and thus do more work for you. There can be multiple peripheral processors if circumstances demand.

In handling its input/output oriented tasks, the peripheral processor interacts with:

- 1) the CP to receive requests and to let the CP know when the request has been filled (the PP "interrupts" the CP to indicate it has accomplished a request);
- 2) memory, for example to store information retrieved from a disk;
- 3) an interface module for communications with a resource (a disk, a printer, a terminal).

The **interface module (IMOD)** is the channel used by the peripheral processor to "fetch and carry" information to and from disks and other devices. In a sense, the PP acts to the IMOD like the CP acts to the PP - a task is set out and the doer interrupts the requester when it is done. The interface module is not a new functional concept in Datapoint processing but the intelligent IMODs of the 8800 are "calculators" compared to the "adding machine" device controllers of earlier processors. Several interface modules can work off one peripheral processor so again, the multiprocessing feature is carried throughout the 8800.

Let's go back and look at the elements of the 8800 in a slightly different way. The elements are comprised of modules from which you choose the set that meets your needs - more memory modules give you greater number of workstations, more IMODs may be needed to gain additional capabilities, etc. First, look at the basic set:



Nine slots of an available 20 are occupied by the basic card set for the 8800

- One memory module - the minimum 256K configuration is composed of two "cards"; memory can be increased in 128K increments to one megabyte
- One memory controller module - just one handles minimum to maximum memory
- One central processor module - actually three "cards" that comprise the one CP module
- One system adapter module - provides a system console interface to allow you to use an 8200 as the system console for initialization, then use it as a workstation after RMS software is up and running
- One peripheral processor module - additional PPs could increase performance if needed in certain configurations.
- One I/O-Tape Interface module - to handle peripheral devices (see below)

Your 8800 processor can be tailored to your system needs by the addition of more memory, multiple PPs, or various interface modules limited only by your wise choice in filling the 20 available slots. As a final part of this article, let's take a look at the list of IMODs:

RIM - resource interface module to talk to any resource in an ARC network

MPCA - multi-port communications adapter as a communications link for terminals in a DATASHARE system or workstations in any other system

MFCA - multifunction communications adapter for data communications with nonlocal resources

DISK - for disk interface, in a standalone configuration or when the 8800 acts as a data resource processor (DRP) in an ARC network

I/O-TAPE - for interface to any peripheral device such as 9-track magnetic tape, cartridge tape, printer, card reader, etc.

Next time, we will delve into the meaning of MULTITASKING as reflected in 8800 architecture. Use the Reader Reply Form that you will find on the back of this issue to help us determine future article content.

Customer Service Announces New Coverage

Customer Service Division has announced several coverage improvements:

- Reduced rates for service coverage beyond the basic service period.
- A new coverage plan for INFOSWITCH customers.
- Holiday coverage.

The INFOSWITCH plan allows customers to schedule routine system upgrades after normal business hours without having to pay a heavy overtime charge for availability of Customer Service Representatives.

The chart below provides details of the coverage options.

Coverage Plan	Service	Extended Coverage Premium		
		Mon-Fri	Mon-Sat	Mon-Sun
BASIC SERVICE PERIOD	Coverage during any continuous 9-hour period between 7 AM and 6 PM.	—	15%	35%
16 HOUR	Coverage during any continuous 16-hour period between 7 AM and 1 AM.	15%	30%	50%
24 HOUR	Round the clock coverage.	35%	50%	70%
INFOSWITCH	On-call service during the Basic Service Period. Plus a four hour period following the Basic Service Period for preventive maintenance and non-emergency service. This plan is available on all types of equipment.	12%	27%	47%
ALTERNATE SHIFT	Coverage during any continuous 8 hour period outside, but continuous to, the Basic Service Period.	10%	25%	45%
HOLIDAY	Extends the Customer's usual coverage to include Datapoint Holidays which are otherwise excluded.	5%	5%	5%

To Compute Charges:

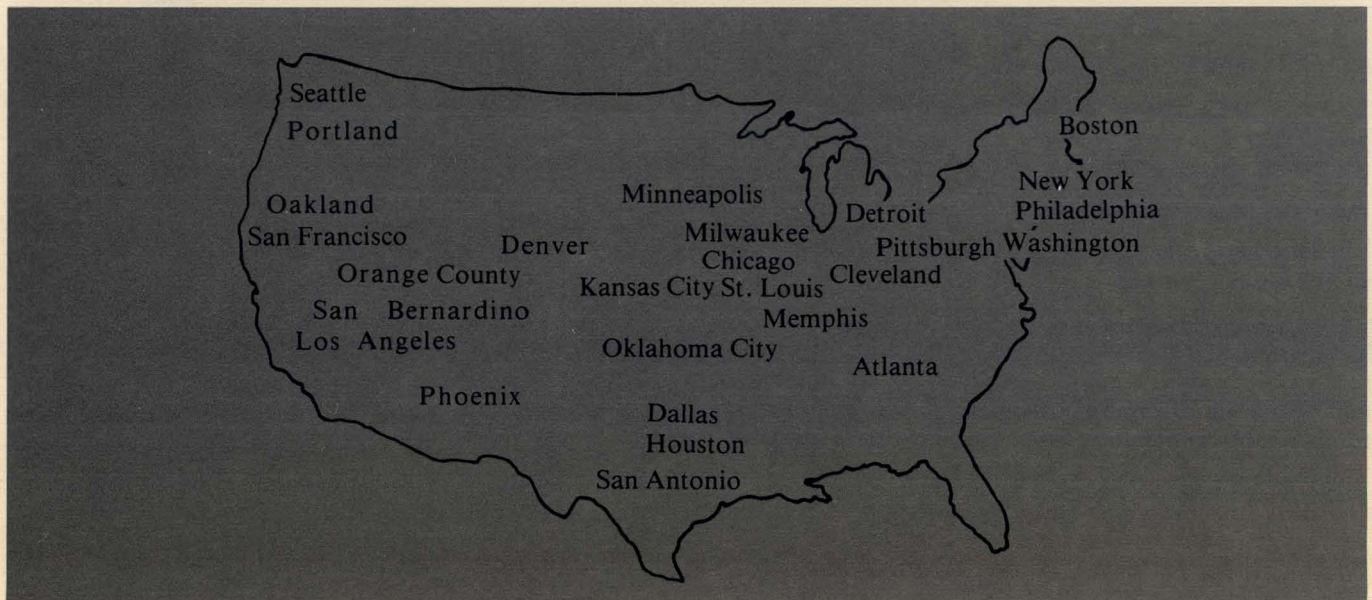
Multiply your monthly maintenance charge by the Extended Coverage Premium. For instance, if your current monthly maintenance charge is \$100 and you elect INFOSWITCH Plan Coverage, Monday through Friday, your Extended Coverage Premium is \$12 and your total maintenance bill is \$112.

To Arrange Coverage:

Call your local marketing representative or call Customer Service Contract Administration at (512) 699-5550.

Availability:

The plans are available in the following cities:



Datapoint Customer Education Schedule May/June 1981

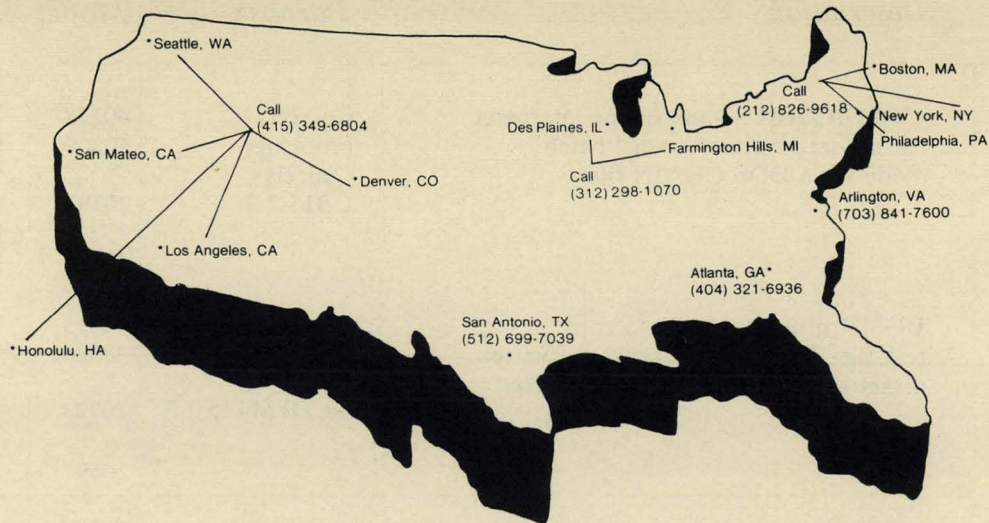
Below is the schedule for customer education during the next couple of months. **The Customer Education Course Catalog**, Document No. 60269, contains course descriptions, prerequisites, education center information and cost. Copies are available at your local

Datapoint office. Enrollment for courses is handled by the regional education centers as indicated on the accompanying map. General questions about courses may be directed to the San Antonio Education Center.

Course	Starting Dates											
	San Antonio	Philadelphia	Seattle	San Mateo	Los Angeles	Denver	Farmington Hills	Des Plaines	Atlanta	Arlington	Boston	New York
Introduction to Datapoint Programming	5/18 6/15 7/27		5/11	6/1 7/27		6/15		6/8 7/6	6/8	6/1 7/13		5/4 6/15 7/13
Disk Concepts and Operations	5/4 6/1 7/6 5/18 6/8 7/20 6/22			5/4 6/22				5/18 6/1 6/8		5/4 6/22		6/8 6/22 7/20
Disk Operating System	6/1 7/6											7/13
Resource Management System (RMS)	5/18 6/15 7/6 7/27			5/18								6/8 7/6
DATASHARE	5/4 6/1 7/6 5/11 6/8 7/20 5/18 6/15 7/20 6/22 7/27	6/22 7/27	7/13	6/8 7/6	5/18 7/20		6/8 7/20	5/11 6/15 7/13 7/27	5/11 7/6	6/15 7/20	5/18 7/6	5/11 6/1 6/22 7/27
Advanced DATASHARE	5/11 6/22 7/27							5/4				7/27
Attached Resource Computer (ARC)	5/11 6/15 7/13							7/20				6/15
Word Processing Concepts and Operation	5/4 6/1 7/6 5/18 6/8 7/13 6/15 7/20 6/22 7/27			5/11 6/15 7/13				6/22		5/11 6/8 7/6 7/27		5/4 5/18 6/1 7/20
Electronic Message System (EMS)	6/8 7/13											
Basic LDCS - Version 4	5/11 7/27											
Advanced LDCS	6/22											
Automatic Call Distributor (ACD)	6/1 7/6											
SNAP 3 Assembler												5/11

For details on Datapoint Customer Education, see their Course Catalog, Document No. 60269. To enroll, call the education center numbers indicated on the accompanying map.

DATAPOINT CUSTOMER EDUCATION CENTERS



OOPS: Errors Unearthed

ISSUE 10

Thanks to a probing reader and a helpful field person, we uncovered an error in the DATABUS/DATASHARE Optimization Techniques in Issue 10.

On page 6, top of the right hand column, advice is given to use KEYIN edit checks such as *SF, *DF... That should read "...KEYIN edit checks such as *ZF, *DE,..."

ISSUE 11

In Issue 11 on page 6 in the "DOS from a Distance" article, the second paragraph contains a reference to Datapoint's 9478/9479 modem. On page 10 in the "Message Services" article, under Hardware Requirements, the 9478/9479 is again referenced. Please strike those references; the 9478/9479 is not compatible with either of those configurations.

On pages 3, 17, and 21 of Issue 11, RMS software release model codes are in error. Please see the "Resource Management System Update" article in this issue for clarification.

Software Program Releases

<i>Name/Date</i>	<i>Description</i>	<i>Purpose</i>	<i>Model</i>	<i>Media*</i>
DBCMP15 2.4 Released 27 Feb 81	1500 DATABUS compiler with significant performance improvement.	Corrects problems Cancels DBCMP15 2.3	40273	Software User's Guide \$10.00 Double-sided DDD Diskette
			50302	
			20793	
			20697	
DBML15 1.3 Released 18 Mar 81	DATABUS interpreter for the 1500 with ACALL and MULTILINK verbs enabled.	Corrects problems Cancels DBML15 1.2	20633	Software User's Guide \$1.50 Double-sided DDD Diskette
			50460	
			20793	
			20697	

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

<i>Name/Date</i>	<i>Description</i>	<i>Purpose</i>	<i>Model</i>	<i>Media*</i>
DB15 2.4 Released 27 Feb 81	1500 DATABUS stand-alone interpreter for use interactively or in "batch" mode via a DOS CHAIN file.	Corrects problems Cancels DB15 2.3	40278 50309 20793 20697	Software User's Guide \$1.50 Double-sided DDD Diskette
DCDFMT15 1.4 Released 27 Feb 81	DOS.H utility for 1500 to copy text files between Datapoint formatted diskettes and IBM compatible diskettes.	Adds new features Cancels DCDFMT15 1.3	40295 50328 20793 20697	Software User's Guide \$1.50 Double-sided DDD Diskette
DOS.H 2.6 Released 27 Feb 81	1500 Disk operating system enhanced to support double density diskette operation on 1401/1403/1404.	Adds new features Cancels DOS.H 2.5.1 and DOS.H 2.5.2	50308 40279 40457	User's Guide \$25.00 Diskette Double-sided DDD
DPS15M 4.1 Released 05 Mar 81	1500 DATAPOLL [®] synchronous disk master program now includes security password feature, increased throughput during transmission.	Adds new features Cancels DPS15M 3.5	40272 50301 50203 20793 20697	Software User's Guide \$2.50 System's Guide \$2.50 Double-sided DDD Diskette
DPS15S 4.1 Released 27 Feb 81	1500 DATAPOLL synchronous disk spooling program now includes security password feature, increased throughput.	Adds new features Cancels DPS15S 3.5	40271 50300 50203 20793 20697	Software User's Guide \$1.50 System's Guide \$2.50 Double-sided DDD Diskette
FCOPY15 1.1 Released 16 Mar 81	Allows file transfer between single and double density diskettes or between single density diskettes and allows inspection of directory on single density diskettes on 32K 1550s using the 14xx series diskette controller.	New software package	50621 40458	User's Guide \$1.50 Double-sided DDD
FORT55 1.1 Released 24 Mar 81	FORTTRAN compiler for 5500.	New software package	9838 50526	Software: 3 DMF Cassettes 2 Diskettes 1 DDD User's Guide \$10.00
MLTC3500 3.2 Released 05 Mar 81	MULTILINK [™] line handler supports Burroughs standard poll/select line protocol.	Corrects problems Cancels MLTC3500 2.1	50281 20400 20402 40432	User's Guide \$2.50 DMF Cassette Diskette DDD

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

<i>Name/Date</i>	<i>Description</i>	<i>Purpose</i>	<i>Model</i>	<i>Media*</i>
MLVIP 2.1 Released 23 Mar 81	Honeywell VIP MULTILINK interface in DATASHARE. Additions include new options added to MAKEVIP/CHN NAKRX, RETRIES, SYNCNT file. Changes made to CONTROL option.	Adds new features Corrects problems Cancels MLVIP 1.1	50278	User's Guide
			20397	\$1.50 DMF Cassette
ML15TTY 1.3 Released 18 Mar 81	Teletypewriter line handler for DBML15. Now will initialize on 14xx drives. Requires DBML15 1.3.	Adds new features Cancels ML15TTY 1.2	20744	Software
			50513	User's Guide
			20793	\$4.00 Double-sided DDD Diskette
MTERUP 1.3 Released 10 Mar 81	Remote User Program package for MTE55/REL.	Corrects problems Cancels MTERUP 1.2	20697	
			50435	User's Guide
			20589	\$2.00 DMF Cassette
RPGSYS 1.1 Released 03 Feb 81	Datapoint relocatable RPGPLUS is a new version of the RPGII system tailored to use the features of the 5500 processor. Programs will compile and execute significantly faster than under RPGII.	Corrects problems Cancels RPGPLUS 1.4	20590	Diskette
			40455	DDD
			9803	Software
			50325	User's Guide
			20652	\$25.00 2.5MB Disk (DOS.E)
			20653	10MB Disk (DOS.D)
			20654	25MB Disk (DOS.D)
20655	60MB Disk (DOS.D)			
RUP15 1.1 Released 04 Mar 81	Remote user program emulator for 1500 communications with DASP™ system. Can also communicate with another Datapoint processor running one of the RUP packages.	New software package	20651	1 DDD (DOS.G)
			20793	1 Double-sided DDD (DOS.G)
			20800	Software
UNITRM15 1.5 Released 04 Mar 81	1500 universal terminal emulator handles full duplex communications in a teletype discipline or half duplex communications over 202-type modem. Reassembled to work with new TASKCOMM in DOS 2.6 and permit execution with all versions of DOS.H 2.4.2 or later.	Corrects problems Cancels UNITRM15 1.4	50620	User's Guide
			20793	\$4.00 Double-sided DDD Diskette
			20697	

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

System Releases

<i>Name/Date</i>	<i>Description</i>	<i>Purpose</i>	<i>Model</i>	<i>Media*</i>
S1800 3.1 Released 30 Jan 81	1800 software system	Adds new features Cancels S1800 2.2	40421 40445	4 DDD 2 Double-sided DDD

Diagnostic Program Releases

<i>Name/Date</i>	<i>Description</i>	<i>Purpose</i>	<i>Model</i>	<i>Media*</i>
TEST1800 1.4 Released 4 Feb 81	1800/3800 processor instruction set test; faster than TST1800	Corrects problems Cancels TEST1800 1.3	50391-01 20537 40357	User's Guide \$1.00 1 DMF Cassette 1 DDD
TST1800 1.4 Released 04 Feb 81	1800/3800 processor test	Corrects problems Cancels TST1800 1.3	50384-01 20529 40350	User's Guide \$1.00 1 DMF Cassette 1 DDD

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



The letter and survey below were sent to Datapoint ARC users. If you have not had a chance to respond, take this opportunity to complete the survey and simply remove this page and return it to the address printed on the back.

For a brief introduction to LightLink capabilities, see the article in this issue. If you would like more product literature or a personal response to questions, be sure to include your name, address and phone number.

Dear ARC User: Datapoint's LightLink is a unique device which allows remoting of elements of your ARC Data Processing system and/or Electronic Mail System. The problem of attaching users who are located in nearby buildings is solved. To help provide a better understanding of your specific needs, I'd like to request that you respond to the attached survey and return it. Datapoint appreciates your time and knows that we can better serve your needs with this information.

If you have questions requiring further information or clarification, please feel free to contact your local Datapoint Marketing representative.

Again, thank you for your time and input.

Sincerely,

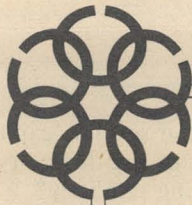
ALAN MALINGER
Director, Transmission Systems
Office Systems Group

ARC USER SURVEY

1. Do you have potential users in nearby buildings (up to one mile)? YES NO
2. If yes, how many remote locations fall in this category? _____
3. Do you service remote locations by:
 - a) separate ARC systems YES NO
 - b) disk pack transfer (physical) YES NO
 - c) telephone lines YES NO
 - d) other (please specify) _____
4. If you currently use communications facilities for connection of nearby locations, please estimate the monthly cost for the lines, modems, and communication adapters.
\$0-\$500 \$500-\$1000 \$1000-\$2000 \$2000 plus
5. Would a common ARC network be beneficial to your operation? YES NO
6. Have your growth/expansion plans been hindered because of the difficulty in attaching Data Processing remotely? YES NO
7. Any other questions or concerns . . .
For LightLink product literature or a personal response to questions, please supply your name, address, and phone number.
Name _____
Company _____
Address _____
City, State, ZIP _____
Phone () _____



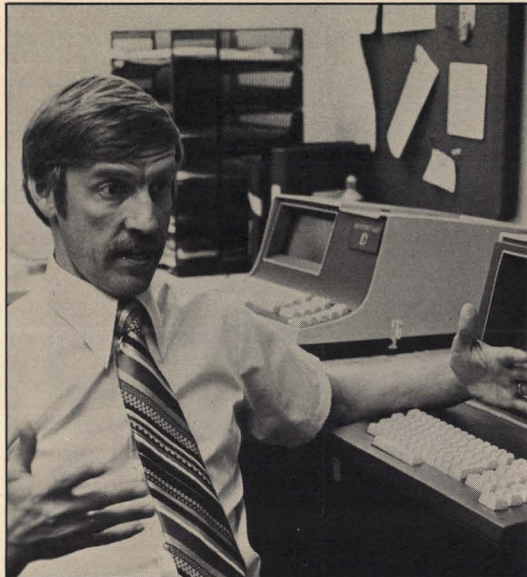
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Ads for publication in issue number 13 - June/July 1981 must be received by June 1.

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