

All About Integrating Micros in the Mainframe Environment

In the past two years, software vendors have been busy trying to come up with the best product to link the relative newcomer to the industry, the microcomputer, with the almighty mainframe. We have seen some new products introduced, heard a lot of announcements of intent to introduce, and heard so many rumors that one begins to wonder what really exists on the market today. Most mainframe and micro software vendors are anxious to move the micro into the mainstream of corporate information processing. In this report, we will try to present a clear picture of what exists today in the area of linking micros and mainframes.

The Involvement of MIS

Corporate management today views the data processing department as an asset rather than a liability, thus becoming more involved in its functions. Many corporations now have an MIS (Management Information Systems) group which is the one group within the organization with all of the attributes necessary to ensure successful microcomputer implementation.

MIS has a knowledge of the future plans of the corporation and the direction in which it is going. This knowledge will be very important in choosing micros which are versatile enough to adapt to changes in the organization. MIS has an in-depth knowledge of both hardware and software which comes from years of experience with large computer systems. Even though the capabilities of microcomputer hardware and software are quite different from those of mainframes, the expertise MIS has gained in the development of applications for larger systems will prove to be very valuable in the microcomputer evaluation process. MIS also has a very detailed knowledge of data base systems and how they function; this knowledge is necessary in order to guarantee the most efficient use of information. MIS can help the microcomputer user to access the appropriate information in corporate data bases. The knowledge MIS has in the area of communications cannot be overlooked when implementing a large number of microcomputers in

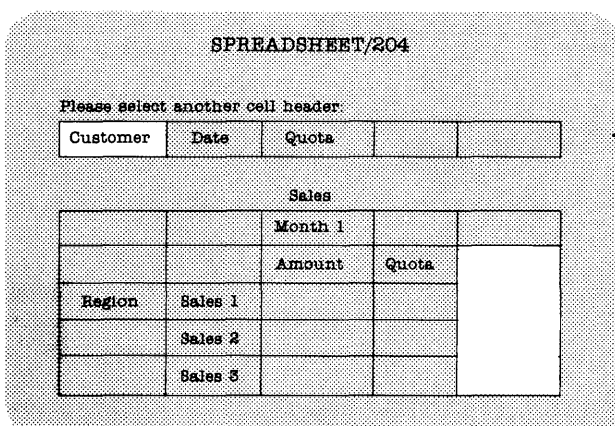
The vast number of microcomputers that have arrived on the scene in many corporations has given rise to the need to link them with the mainframe. MIS must take an active role in corporate micro implementation for it to be successful. In this report, we will discuss the participation of MIS and present, in handy comparison charts, 102 currently available micro-to-mainframe links from 72 vendors.

an organization. The microcomputer user may want to communicate with the corporate mainframe and with other microcomputers; MIS's knowledge of compatibility among systems will be essential in making this connection possible. Dealing with vendors can sometimes be a very frustrating experience for the prospective buyer. MIS has had plenty of experience in negotiating with vendors before purchasing large computer systems. This experience will be extremely valuable in choosing the right microcomputer applications software and hardware packages. There will be many more vendors to look at when evaluating microcomputer hardware and software than there were in the mainframe evaluation process; however, in the long run, the time invested in this evaluation process will be well spent.

MIS should look at the use of micros as an opportunity to increase their value to the corporation. The use of technology in the corporation must be controlled and the MIS director is the ideal person to establish this control. MIS has the expertise to choose the most cost-effective equipment and to make sure that the software functions optimally. We cannot emphasize strongly enough the importance of early MIS involvement in the implementation of micros in the corporate environment.

The Evaluation Process

The first step in the microcomputer evaluation process is identifying the microcomputer user within the corporation. ➤



Industry experts agree that *Spreadsheet/204* from Computer Corporation of America (CCA) provides an easy-to-use interface for selecting mainframe data. The user positions the cursor over an empty Lotus 1-2-3 spreadsheet and the desired column and row headings from the mainframe data base will be filled in.

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▷ MIS can circulate surveys and conduct interviews with the prospective end users; or, under the direction of MIS, a key individual from each of the end user departments can be appointed to a task force to do this. A survey will be the first step in determining the overall need for microcomputers. The interviews will help MIS to determine whether the applications of interest are best suited on a microcomputer or a mainframe.

Those opposing the proliferation of microcomputers in a corporate environment argue that they are used by their owners only a small amount of the time. This leads to the conclusion that corporations are wasting resources through the use of micros. What is important is not whether the machine is being used 24 hours a day, but how it improves productivity. The expense of a hardware and software package is minute compared with the expense of managers and professionals today. If the micro is used for an hour a day to accomplish what would have taken a full day without it, then resources certainly have not been wasted.

If a micro is operating as a standalone unit, it is functioning totally independently of any other computer system. An ideal use for microcomputers operating as standalone units is a project that can be divided by geographic location (i.e., branch offices or distributed departments) or by time (i.e., processing in stages). The smaller machines work well for data that is stored and processed locally, for instance, in retail stores or on production lines. Personal data such as telephone directories may also be stored locally. Micros offer the option to use relatively inexpensive packaged applications that would be much more difficult to write for the mainframe. The mainframe, however, is more appropriately used for applications involving shared resources, centralized data, and the need for more powerful software. The mainframe should also be used when I/O volumes are high and there is a need for faster response times.

In many cases, the micro is a sufficient tool in the beginning of a project; as the need to acquire more data arises, however, the user must access a larger database, such as that on a mainframe. Micros and mainframes can be used in harmony when real figures are to be combined with projected figures or when centralized data is to be combined with data from remote locations.

Software Selection

It is not usually application software that sells hardware; however, in the microcomputer industry, it does. When acquiring a large number of microcomputers for a corporation, the MIS director should consider those packages that are easy to use by nontechnical personnel; this software should not require a programmer/analyst to operate it.

Application software should be purchased from a vendor with a proven track record. An end user within the corporation might buy a software package from a vendor who promises that an enhancement to his application package will be available in the future. MIS professionals have experience in investigating promises such as these and,

through contract negotiations, are able to guarantee what function will actually be delivered and when. A reputable vendor will stand behind his product if problems are encountered in running the software. Occasionally a user will experience problems in running a package that are a result of bad software released from the vendor. MIS is experienced in obtaining agreements from the vendor in the area of software support.

One of the most significant weaknesses of microcomputer application packages is the lack of adequate documentation. During the process of identifying the micro user, MIS should have established the average level of experience of this user. This will be important to know in choosing a package which will provide the appropriate amount of instructional detail necessary for the typical user. A high degree of user-friendliness in the software package, however, will lessen the need for in-depth documentation.

The following is a list of the typical applications packages used by different departments within the corporation.

- Spreadsheet analysis—This type of package enables non-technical users to program financial forecasts and budgets. Interfaces are frequently provided to graphics processors to produce pie and bar charts. It can be very useful in doing small modeling tasks.
- Financial Modeling—These packages are used for complex models with large data files; access to a mainframe data base may be required. They are usually more expensive than the spreadsheet packages.
- Word Processing—This package usually includes most of the features available on word processing systems. Report preparation and text editing can be valuable features.
- Data Base Systems—This software provides the user with a relational view of the data. This sort of file management allows the user to concentrate on the application rather than on managing the data.
- Graphics Systems—These packages offer colorful data presentation capabilities.

Two decades ago, mainframe software was developed in-house by the data processing department and little planning was done beyond its initial function. These programs were very expensive to develop and maintain. As a result of tremendous backlogs in the data processing department, there became a demand for packaged software which could be developed to meet the needs of many different organizations. These packages were eventually integrated to communicate with each other.

Some of the software written for micros is done without a systems development plan. Many micro software packages perform different functions that cannot communicate with each other. The prospective software buyer should look for those packages which are integrated, such as a spreadsheet package that has a graphics tool. ▷

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▷ Cobol program generators are available for use on micros today. Ryan-McFarland Corporation offers an RM/Cobol package which allows the user to offload Cobol development projects from the host to the micro. This portable software package was designed for use on the IBM System/370, 4300, and 30XX series mainframes running under the VM/CMS operating system. The source code which is developed on the mainframe can remain there and only the object code may be downloaded to the micro. On the other hand, the same source code can be developed on the micro. An RM/Cobol program, no matter where it is developed, requires an average of only seven bytes of memory per source code line which greatly reduces storage requirements, making program development on a micro more feasible.

Hardware Selection

An important factor in the evaluation of microcomputer hardware and software is that of compatibility. Incompatible hardware increases the potential for waste and duplication.

The type of operating software used on a micro can be the key element in determining the usefulness of that kind of hardware in an organization. There are basically two types of operating systems: proprietary and generic. Proprietary operating systems will function on only one vendor's equipment while generic operating systems will function on a number of different vendors' equipment. Therefore, hardware that supports generic operating systems like CP/M, MS/DOS, and Unix, which will allow the same application software to run on different vendors' products, should be considered very seriously before a large volume microcomputer purchase.

When acquiring a large number of microcomputers for a corporation, the number of different vendors' machines purchased should be kept to a maximum of three. This may not seem important until the corporation becomes interested in connecting micros with the corporate minicomputer or mainframe. Protocols used on micros can vary; the use of standard protocols will facilitate the connection of micros and other computers. Detailed information on the products available to link micros and mainframes is provided later in this report.

In addition, large corporate purchases will be far less expensive than ad hoc purchases on a per-system basis. When one vendor is being considered for a large microcomputer purchase, volume discounts should be negotiated for. Another reason for choosing micros from just a few vendors is to provide backup from micro to micro. If one micro is inoperable, the user can easily take data stored, for instance, on a floppy disk, move to another micro, and continue to process.

An area that should be agreed upon before purchasing any microcomputer is vendor support for hardware maintenance. MIS is accustomed to dealing with vendors who sell or give support and service along with the mainframes they



IBM provides an alternative to sophisticated software links with its 3270 Personal Computer. It acts as both a personal computer and a 3270 terminal, displaying both types of data simultaneously through windows.

install. Support and service of micros should be negotiated for at the time of the purchase of the equipment. Vendors or distributors will probably be more inclined to provide on-site service for a large installation of their equipment. The vendor should provide a "loaner" machine in the case that the equipment has failed and must be taken elsewhere for repair. MIS has the expertise in negotiating in areas such as support and service and should use this expertise in obtaining a clear commitment from the vendor as to exactly what type of microcomputer hardware maintenance will be provided.

The Information Center

The information center is a department that must be set up under the direction of MIS whose purpose is to provide education, training, and support to end-user personnel. End users are trained by the information center staff to access data and generate reports. The information center provides members from any department in the company with the opportunity to walk in and ask for assistance concerning information-related problems with the mainframe or microcomputers.

Typically, the documentation provided with the purchase of microcomputer software will be in the form of self-paced instruction. The information center staff should be knowledgeable about the different application packages purchased, after having been involved in their selection; they should be supportive of end users in using these instructional materials. The information center staff should serve as internal consultants to the corporation.

Traditionally, MIS has been faced with a huge applications backlog. The information center can provide an effective method of getting rid of this backlog by making the end-user more self-sufficient; a fourth-generation language can be used by the end-user as a tool for general problem solving and a financial analysis package can be used for budgeting and financial planning.

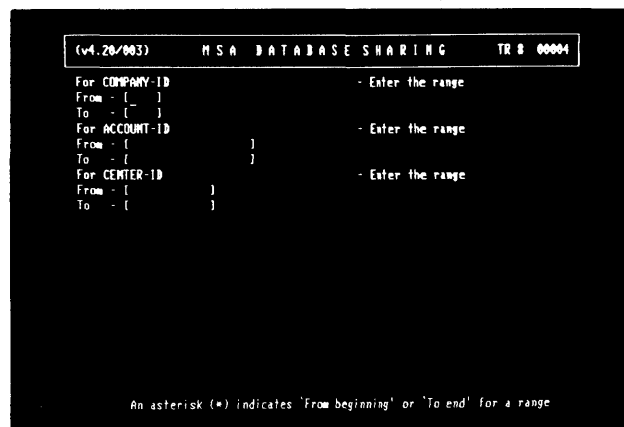
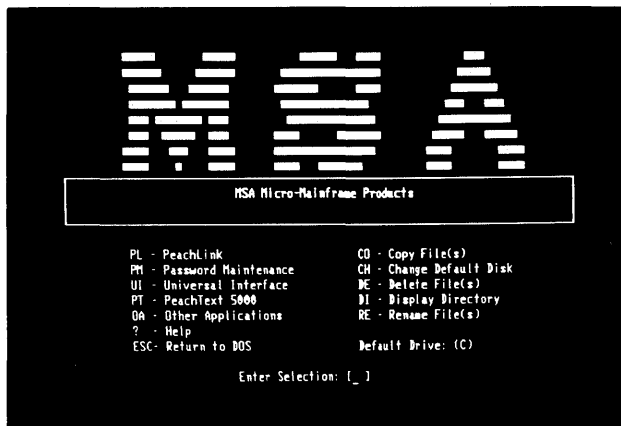
If technical software support has been obtained from the vendor, it may not always be the kind of support that a less ▷

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▷ experienced micro user would require; the end user might not even know what questions to ask. To avoid the frustration that would be caused by the end user receiving technical jargon from the vendor, the information center staff should act as a liaison between the two.

Data communications can present a real problem for the nontechnical end user. The information center staff can provide the help necessary for the user to communicate with the outside through their knowledge of the corporate network. This will be necessary to configure the hardware and software required.

Data base problems may also arise and can be solved by the information center staff. The end user will need to know what data is available on the mainframe, where it is located, how to get to it, and how to interpret it. When micros are used as front-end or back-end processors for existing mainframe applications, the information center staff can enhance the mainframe systems accordingly.



Peachlink from Management Science America (MSA) allows communication between IBM and IBM-compatible PCs and mainframes. In the first screen above, selection of "OA" provides the user with access to Lotus 1-2-3, Peachtree software, and other popular micro packages. The data base sharing facility, shown in the second screen above, allows the user to select the range of data to be transferred, depending upon the mainframe data dictionary.

The information center staff can determine the future requirements for micro/mainframe connections and offer a large number of related services that will be of tremendous value to end-users.

The Micro/Mainframe Connection

The mainframe computer with its processing power and ability to accommodate large data bases is a very important resource to the microcomputer user today. The micro user is finding out the value of tying micro work into existing data processing resources.

Software to link micros and mainframes is being offered by software suppliers, service bureaus, and hardware vendors. Their products have been described as being "quick" and "sophisticated," but the competition is getting stiffer every day. The integration of micros in the corporate environment has become so popular that these "link" suppliers realize that their product might very well determine their future place in the industry.

Distributed data processing was implemented in the past to reallocate a set amount of applications programs and usually resulted in the off-loading of mainframe tasks. With the connection of micros and mainframes, the total amount of applications processing will be expanded and should provide some relief for current applications backlogs.

To present a clearer picture of how the micro/mainframe link fits into the corporate environment, the following is a list of the major needs of the end user:

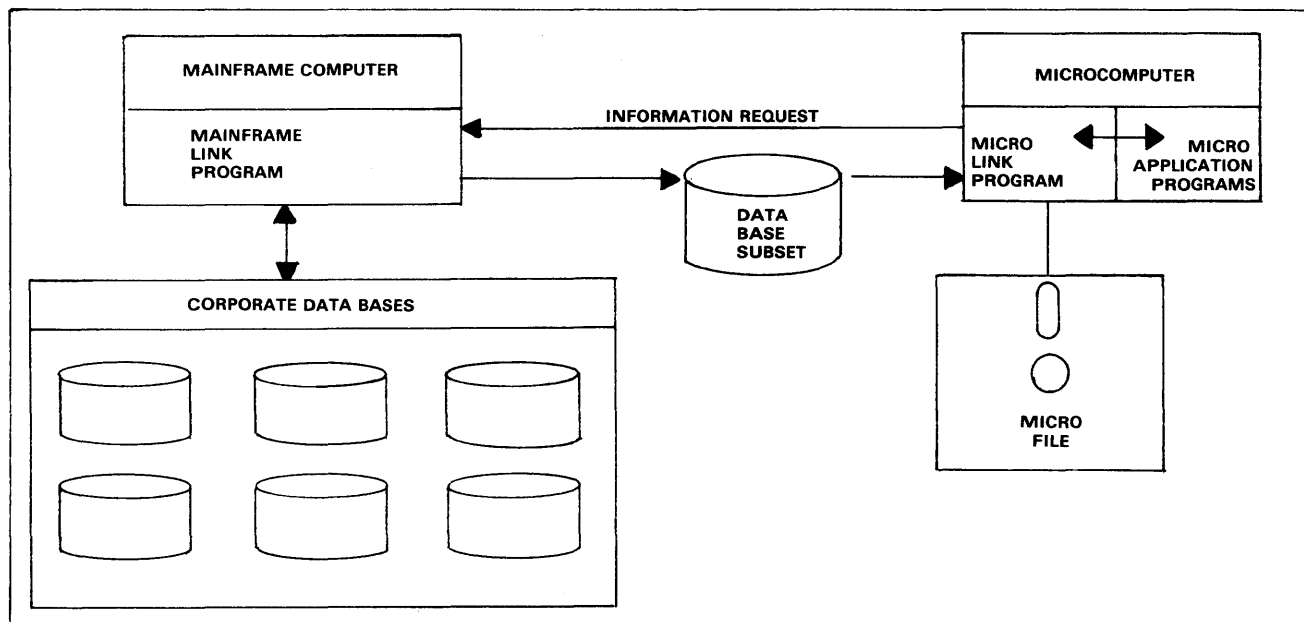
- Data Base Access—To access information which is stored in a corporate data base.
- Distributed Files—Data base extracts which the user maintains in private storage on a microcomputer for personal computations; optimally, these extracts will periodically be updated as changes are made to the corporate data base.
- Corporate Consolidation—To feed their data into a corporate pool of data for consolidation.
- Backups—To ensure backup of important data; optimally, these backups are done automatically along with mainframe corporate data.
- Access to Mainframe Peripherals—The ability to use line printers, laser printers, tape drives, and the mainframe hard disks.
- Distributed Processing—Simultaneous mainframe processing of some of the micro functions that cannot physically fit on the micro.

Connecting Micros and Mainframes

Recently there has become a tremendous need on the part of the microcomputer user for information stored on the



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This is an illustration of a method of micro/mainframe interaction. The micro acts as an intelligent terminal that can process and store downloaded information locally.

▷ mainframe. As more and more micros creep into corporations, users are looking for more valuable data with which to arm their spreadsheets. With the growing number of software and hardware products to link the micro and mainframe, it becomes increasingly difficult to make the right choice.

The most primitive, but the most common, means of physically connecting the two machines is through asynchronous terminal emulation software. Using asynchronous transmission, groups of bits are transmitted through a modem connected to ordinary dial-up telephone lines, with an arbitrary length of time between them. Each group of bits has a character of information which is preceded by a start bit and followed by at least one stop bit. Though it is simple and inexpensive, asynchronous communications is very slow—usually only 300 to 1200 bits per second.

Synchronous communications is generally used with mainframe systems as it requires sophisticated software. Synchronous transmission moves characters tightly and orderly. The timing of characters at the beginning of each data message allows encoding and decoding. The transmission rate is much faster, usually 9600 bits per second.

Either of two modes, half-duplex or full-duplex, is used with each of the above transmission methods. Half-duplex permits communication in only one direction at a time, while full-duplex allows both machines to transmit and receive at the same time. The American National Standard Code for Information Interchange (ASCII) is a widely accepted format for the translation of characters into binary code. ASCII is used by almost all micros that communicate; however, not all mainframes use ASCII. Some mainframes, IBM's for instance, use Extended Binary Coded

Decimal Information Code (EBCDIC). One of the systems must translate one of the codes if an ASCII machine is communicating with an EBCDIC-speaking machine.

There are three types of communications software packages available for connecting micros and mainframes. For terminal emulation, protocol conversion is required. Protocol converters are external or internal devices. The external devices resemble a box connected to the terminal. The internal type is a plug-in expansion card with a coaxial interface for local connection to a 3270 controller and micro software such as IRMA from Digital Communications Associates (DCA).

The first, and simplest, method of communicating is "dumb" terminal emulation. This type of connection allows the micro to act as a terminal on-line to the mainframe only. The micro, in this case, is not capable of downloading any data, doing any local processing, or storing. The user can only look at information on the display screen or print it.

The second type of connection is that which allows the micro to function intelligently. Through file-transfer, the micro receives data from the mainframe and can manipulate it to fit into micro software packages such as VisiCalc and Lotus 1-2-3. Searching through whole files or chunks of data, however, can be a very cumbersome task when downloading mainframe information.

The third type of connection is one which offers more capability to the micro user. Data can be *selectively* acquired from the mainframe data base and manipulated and transferred back. This type of integrated connection can provide the micro user with the power of the mainframe in ▷

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▷ processing data generated on the micro in more complex financial models on the mainframe. Storage is possible at the local level on floppy disks, or in the mainframe data base for access by others in the department.

Potential Obstacles

The communications software available varies a great deal. Many packages will work with only one operating system and some will work with only one micro or modem.

Many mainframe programs have been designed for technical users. The best mainframe data base management and decision support systems for the purpose of connecting micros are those which are linked to report generators or data query programs. Extracts of mainframe data bases can be obtained according to user specifications; however, the ideal solution is to establish communication between the mainframe's report generators or query programs and application packages used on the micro.

The differences in coding mentioned earlier, when two machines are communicating, can create a need for conversion software. Some vendors, however, provide products which convert the data generated by their own mainframe programs into a format that can be used with popular microcomputer software packages.

Problems may develop if more than one mainframe is to be used, also. There may be a difference in error-checking protocols. For instance, even when ASCII is used by both machines, some characters may not be shared. Difficulties may arise in text files, program code generation, and file printing.

One last word of caution—beware of products that claim that the mainframe data can be used with any package on the micro that reads Data Interchange Format (DIF). Visi-Calc is the only package that can use DIF without any additional instructions to define relationships between data fields.

Security

For years, data processing departments have been coming up with ways to ensure the security of data stored on the mainframe. Now, microcomputers are becoming capable of transferring company-sensitive data to local storage devices such as floppy disks. The micro user must realize the vulnerability of such storage media and be conscious of the sensitivity that some of the downloaded data carries with it.

As mentioned earlier, some communications software packages allow the user to upload data from the microcomputer to the mainframe. There is a difference between "uploading" and "updating." For many reasons, it may not be in the corporation's best interest to give the micro user the ability to change the corporate data base. Micro users may be encouraged, however, to store data generated on the micro in separate files on the mainframe to avoid the vulnerability problems of local storage on floppy disks.

A Link in Use

Recently, a firm with branch offices in the Midwest converted from IBM terminals and printers to IBM Personal Computers and a micro-to-mainframe link software package. The conversion came about because the firm's employees had been restricted by the limited functionality of the terminals they were using which lacked decision support capabilities for word processing, accounting, marketing, and financial modeling and spreadsheet functions.

The firm was looking for a system that would allow micros to tap into the mainframe data base, provide decision support capabilities, and allow access to outside resources such as on-line data bases. The choices were narrowed to terminal emulators because they included products that could be incorporated into the existing network to access applications and data bases already in use.

The firm selected the IBM Personal Computer XT as the micro base and an SNA/3270 micro-to-mainframe software package with a communications adapter. The system now allows communications with the IBM host in an SNA/SDLC environment via leased and dial-up lines.

The communications adapter is a dual-channel circuit card that plugs into the micro's expansion slot for network communications using SDLC and bisynchronous or asynchronous protocols. A 10-foot shielded adapter cable connects the communications adapter to a modem or modem eliminator.

The SNA/3270 software provides access to data on the mainframe including the capability to review policies for status and payment verification and request quotes on-line. Multiple operations take place, such as maintaining an interactive session with the host while printing documents simultaneously. Data is downloaded from the mainframe to the micro's disk storage. Other functions this system provides include multiple print support, host-initiated printing capabilities, and accessing a local application while maintaining a host session.

This is an example of a micro/mainframe link that greatly enhanced the communications of a typical data processing installation.

Future Trends

It is obvious that technological advances have led to the microcomputer performing the functions of the mainframes of 10 years ago. Increases in main memory, storage capabilities, and processing power prove this to be true.

Micro/mainframe integration may, in the future, be seen in more micro versions of mainframe software packages. With this compatibility, programs and data developed for one machine can be run on the other, avoiding complicated protocol converters and file reformatters.

We expect to see micro/mainframe link packages become more user-friendly in the future. As we have seen the

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➤ procedures for operating computer equipment become much more elementary with the advent of the microcomputer, we will probably see communications follow the same pattern.

The Comparison Charts

The comparison charts at the end of this report present the key characteristics of 102 packages that allow microcomputers to communicate with a host mainframe or minicomputer. The information contained in these charts was supplied by the vendors during May and June 1984. Their cooperation with the Datapro editorial staff is greatly appreciated.

Datapro sent requests for information to over 125 North American vendors known or believed to be in the micro-to-mainframe/minicomputer link business. Each mailed request was followed up by at least three telephone calls. We feel that the responses provide an in-depth overview of today's micro-to-mainframe/minicomputer market.

The comparison columns include detailed specifications of over 100 micro-to-mainframe products. When broken down by product type, they include the following:

Product type	% of responses
Plug-in converters plus software	39%
Low-end software (less than \$5,000)	21%
High-end software (most over \$10,000)	13%
Low-end software that requires the user to purchase a conversion device or card	12%
High-end software that requires the user to purchase a conversion card/device	8%
Standalone converters plus software	7%

Almost two-thirds of the products require either a plug-in or standalone conversion device. Ninety percent of the products included in the charts are for enabling microcomputers to link to IBM networks. Of course, almost all of the products can run on the IBM PC. Most of the products for the PC can also run on PC compatibles that accept IBM slotware.

The absence of any specific company from our charts means that the company failed to respond to our information requests, was unknown to us, or has discontinued marketing micro-to-mainframe/minicomputer links.

The following is a brief description of the comparison chart entries in the order in which they appear in the charts.

Vendor/Product

Listed at the top of each column is the vendor and the product name. As a policy, we include only those vendors that either manufacture the micro-to-mainframe hardware

or publish the appropriate software; distributors have been excluded. Several vendors have more than one product listed. For information on how to contact these vendors, refer to the vendor list immediately preceding the comparison columns.

Package

In order to classify the *types* of micro-to-mainframe/minicomputer links currently available, we've asked the vendor to describe what is included in the product package. We've identified three basic types: software only, plug-in conversion card plus software, and standalone converter plus software. Excluded from this survey is a fourth type, standalone converter only, since even though this permits a microcomputer with terminal emulation software to communicate with a host, it is mainly used to allow inexpensive ASCII display terminals to be employed in synchronous networks. For more information on standalone converters, see *Datapro Reports on Data Communications*.

Software only. Many of the packages included in the charts are software only. The majority of these are the highly customized, expensive links offered by a few vendors such as Comshare and Cullinet. Most of the less expensive software packages work in conjunction with a user-supplied plug-in conversion card.

Plug-in conversion card plus software. Almost one-half of the products listed comprise an IBM bus-compatible expansion card and diskette software. This type of package was popularized by such vendors as DCA (Irma series) and Techland (Blue Lynx). The expansion card industry is one of the fastest growing in microcomputers; the ability to fuse an increasing number of functions onto a single card is having a dramatic effect on the micro-to-mainframe market. For example, Attachmate Corp. includes up to 256KB RAM on its card, freeing up system RAM; other vendors' cards incorporate such features as onboard microprocessors and printer ports.

Standalone converter plus software. A third type of product bundles a standalone converter with PC software. These converters require their own power supply and are not as transparent as expansion cards. However, they do have their advantages. Unlike plug-in cards that are restricted to a certain PC bus, they are able to work with a variety of microcomputers, i.e., any with serial input/output ports. Also, many of these standalone converters are manufactured with several serial ports, for the connection of several PCs or printers. Some of these are manufactured by traditional standalone protocol converter vendors, e.g., Datastream.

Converters supported. Several of the software products included in the charts require a plug-in or standalone converter offered by another vendor. If so, we've listed the converters that the package requires or supports. In most instances, information on the particular third-party converter required, e.g., DCA's Irma or AST's PCOX, can be found under the appropriate vendor listing in the charts. Sometimes the software vendor acts as a distributor for the



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▷ third-party converter; if so, it is desirable to get both the software and hardware from a single source, in order to establish a single contact for telephone support and maintenance.

System Requirements

Host systems supported. Most of the products included in the charts are for use with IBM mainframes, e.g., the 30XX or 43XX series. Some work with any host that recognizes IBM 3270 or 3780 workstations. A few enable a microcomputer to link with a minicomputer, e.g., the IBM S/34.

Host operating systems supported. We've listed any vendor-supplied information about the host operating system environment.

Host end programming. Some of the products require host end programming. Most of the time this is simply a magnetic tape software load. Sometimes the host programmer must execute a special batch program or configurator to enable efficient interaction with the connected microcomputer.

Microcomputers supported. Nearly all of the products work with the IBM PC or the hard disk PC XT. However, several are also able to work with IBM slot-compatible systems such as the Compaq or Columbia.

Microcomputer operating systems supported. Of course, MS-DOS and PC-DOS are the most popular operating systems for micro-to-mainframe software. Most of the products in the charts support Version 2.0 or higher, because hard disk support is essential when attempting to download mainframe-size files. Other operating systems also appear, including CP/M and Unix.

Microcomputer system memory requirement. We've listed the amount of microcomputer system memory (RAM) required to run the software, in bytes.

Media. Most of the PC programs are provided on 5¼-inch diskettes. If applicable, the package may include software resident on magnetic tape for loading at the host end.

Program Functions

Asynchronous terminals emulated. Some of the programs enable a microcomputer to emulate an asynchronous terminal. Besides TTY emulation, some other common asynchronous terminals emulated include the IBM 3101, the DEC VT100 series, and the Data General Dasher series.

Synchronous terminals emulated. Nearly every package included in the charts provides some sort of synchronous terminal emulation. This is, of course, the primary reason for linking microcomputers to hosts in the first place—so that PCs can access the host database in an IBM synchronous networking environment. The most popular sync terminals emulated are the IBM 3278 and 3279, followed by the 3276 and 3274 control units. Other sync terminals emulated include the IBM 2780/3780 remote batch terminals and the Burroughs MT series.

Host data download capability. For most micro-to-mainframe applications, the ability to download data from the host database into the microcomputer's mass storage device is essential. The reason for this is simple: if data cannot be downloaded, it cannot be manipulated locally, e.g., run through spreadsheets or other PC business applications programs.

Download functions. We've divided each product's host data download capability into the following functions: the ability to capture a screenful of data at a time, the ability to capture an entire host file to diskette, and/or the ability to capture specific items from the host file, often in the form of a query. The ability to query a host database will become very important as the micro-to-mainframe market matures; it is especially important when considering the size of mainframe files. One product that enables the user to structure a query is Ashton-Tate's dBase Answer, which stores downloaded information on the microcomputer's hard disk in dBase file format.

Host database update capability. Several products enable the microcomputer user to actually update the host database. This can, of course, be a dangerous practice; however, some software allows for the definition of levels of host access for each user.

File formatting capability. After the data is downloaded from the mainframe to the microcomputer, it is desirable to have those files formatted in such a manner that they can be used with popular business applications software packages.

Applications supported. One of the most useful types of file formatting is the Data Interchange Format (DIF). The DIF format was created by Software Arts, the software vendor that created the popular VisiCalc spreadsheet; VisiCalc was later marketed by VisiCorp; it is now marketed by both companies. This file format has gained in popularity to the point where it has become an industry standard, in that the majority of all business microcomputer software is compatible with it; even other major microcomputer spreadsheet software vendors, such as the Lotus Development Corporation, build DIF file compatibility into their programs. One of the major reasons it is so popular is because it is a version of an ASCII file format, which is a format that any computer can understand; this makes the DIF format more flexible and it is therefore easier to write DIF compatibility into programs. Another format that is gaining in importance is the Comma Separated Value (CSV) format employed by database management software packages such as Ashton-Tate's dBase series. We've listed any relevant vendor-supplied information on their product's file formatting capability.

Optional file formatting software. Some vendors offer file formatting software as an option; if so, we've listed all available software options.

Other download/upload functions. Several packages include upload/download functions not described above. Examples include the ability to transfer binary as well as ▷

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▷ text files, built-in error checking during transmission, and automatic ASCII-to-EBCDIC code translation.

Ability to upload data for processing. Many products have the ability to upload data from the microcomputer to the host, to use the strength of the host processor.

Ability to download files for local processing. Due to the cost associated with tying up the host and, in many cases, the inaccessibility of the host for nonpriority projects, it is often very desirable to be able to download data onto the microcomputer's disk for processing.

Security features. Security is a critical issue when a microcomputer user is permitted to access a corporate database. A tremendous amount of effort is involved in the entry and organization of data in any system, but this effort can be exerted in vain if there is not an appreciable level of data security. For this reason, it is desirable for a program to control access through the use of passwords and other levels of security, e.g., the ability to define user profiles. Another security measure available with some programs is an audit trail capability, which maintains a user access log.

Other program functions. Several of the products included are unique in some way. Other program functions may include the ability to define host logon sequences, data compression capability, the ability to generate host programs off-line, the ability to address an attached PC printer as a separate logical unit, etc.

Screen Functions

Terminal functions supported. Most of the products attempt to duplicate the functions of the emulated terminal. This is most useful if the microcomputer is replacing an existing terminal, e.g., an IBM 3278, because it eliminates having to retrain the operator. Terminal functions include editing, scrolling, function keys, visual attributes, and windowing.

On-screen help. Several programs provide some form of on-screen help to the user. Help functions range from simple prompts to lengthy descriptions of program functions and commands. Some programs allow for the creation of user-defined help menus, which is most useful for customized applications.

Status line. A variety of status line functions may be incorporated into the program. Many programs attempt to duplicate the 3270 status line. Status indicators include session progress, time-of-connect, file size, transmission block count, etc.

Communications

Local/remote connection to host or controller. All of the products enable a microcomputer to link to a host. Different interconnect methods are employed, depending on the product. For example, most of the products with plug-in conversion cards facilitate local connection to an IBM

controller, using a coaxial interface. Some permit remote connection to the host via a synchronous modem. Others permit either local connection to the host via a modem eliminator or remote connection to the host via a long-haul modem. The way a product enables the microcomputer to connect to the host is a very important consideration for a would-be buyer.

Interface provided. As mentioned, most products that require a plug-in conversion card have a coaxial interface. Some of the products use an asynchronous input/output port, such as the IBM Asynchronous Adapter.

Other communications. When provided by the vendor, we've listed other communications capabilities such as the maximum transmission speed, built-in modem eliminator capability, on-line diagnostics, etc.

Pricing and Availability

One-time license or purchase price, basic package. This is the retail charge for the product. The license refers to the fine print of the software agreement which tells you that you do not actually purchase the program outright, but perpetually lease it and must respect the vendor's copyright.

Additional software support charges. Some products are available with software modules that provide extended capabilities, e.g., file formatting or extended 3270 support. We've listed the price for each module.

Charges for support services. Most vendors provide product support for a limited time period, e.g., one year after the date of purchase. Some vendors provide unlimited free support to their customers; others charge a fee.

Date of first delivery. We have provided the date of first delivery to indicate how long the package has been on the market.

Lead time on orders. This indicates the amount of time a user must wait for delivery after receipt of order (ARO). If the term "stock" appears for this entry, the package is available from the vendor immediately.

Number installed to date. The number installed to date may help you to discern the magnitude of the market, but does not always reveal the relative merits of a micro-to-mainframe link. Some recently announced products have very powerful capabilities, but a modest installed base. Large installed bases may simply reflect effective marketing or a once-useful but now outdated product.

Comments. Try as we might, when compiling a study of this sort, we sometimes come across products whose basic characteristics are not completely covered by the categories we've delineated. The comments help to amplify preceding data or to explain key elements of a product that may have been overlooked in the formal chart entries.

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▷ VENDORS

Listed below, for your convenience, are the full names, addresses, and telephone numbers of the 72 vendors whose products are included in the comparison charts that follow.

ABM Computer Systems, 3 Whatney Drive, Irvine, CA 92714. Telephone (714) 859-6531.

Applied Data Research, Route 206 and Orchard Road, CN-8, Princeton, NJ 08540. Telephone (201) 874-9000.

Applied Information Systems, Inc., 500 Eastowne Drive, Suite 207, Chapel Hill, NC 27514. Telephone (919) 942-7801 or (800) 334-5510.

Applied MicroSystems, Inc., P.O. Box 832, Roswell, GA 30077. Telephone (404) 475-0832.

Artificial Intelligence Corporation, 100 Fifth Avenue, Waltham, MA 02254. Telephone (617) 890-8400.

Ashton-Tate, 10150 West Jefferson Boulevard, Culver City, CA 90230. Telephone (213) 204-5570.

ASK Computer Systems, Inc., 730 Distel Drive, Los Altos, CA 94022. Telephone (415) 969-4442.

AST Research Inc., 2121 Alton Avenue, Irvine, CA 92714. Telephone (714) 863-1333.

Attachmate Corporation, 3241 118th S.E., Bellevue, WA 98005. Telephone (206) 644-4010.

Barr Systems, Inc., 2500 Blue Ridge Road, Suite 315, Raleigh, NC 27607. Telephone (919) 782-4462.

CAP Gemini Software Products, Inc., 2350 Valley View, Suite 420, Dallas, TX 75234. Telephone (214) 247-5454.

Cincom Systems, Inc., 2300 Montana Avenue, Cincinnati, OH 45211. Telephone (513) 662-2300.

Communications Research Group, 8939 Jefferson Highway, Baton Rouge, LA 70809. Telephone (504) 923-0888.

Computer Corporation of America (CCA), Four Cambridge Center, Cambridge, MA 02142. Telephone (617) 492-8860.

Computer Marketing Associates, 1535 Killearn Center Boulevard, Tallahassee, FL 32308. Telephone (904) 893-7113.

Comshare, Inc., 3001 South State Street, P.O. Box 1588, Ann Arbor, MI 48106. Telephone (313) 994-4800.

Cullinet Software, Inc., 400 Blue Hill Drive, Westwood, MA 02090. Telephone (617) 329-7700.

CXI, Inc., 3606 W. Bayshore Road, Palo Alto, CA 94303-4229. Telephone (415) 424-0700.

The Datalex Company, 650 Fifth Street, San Francisco, CA 94107. Telephone (415) 541-0780.

Datastream Communications, Inc., 2520 Mission College Boulevard, Santa Clara, CA 95050. Telephone (408) 986-8022.

DecisionLink (a division of Lagunal Laboratories), 1300 Normandy Place, Santa Ana, CA 92705. Telephone (714) 835-9100.

Digital Communications Associates, Inc. (DCA), 303 Technology Park, Norcross, GA 30092. Telephone (404) 448-1400.

Diversified Data Resources, Inc., 25 Mitchell Boulevard, Suite 7, San Rafael, CA 94903. Telephone (415) 499-8870.

Evaluation & Planning Systems (EPS), One Industrial Drive, Windham, NH 03087. Telephone (603) 898-1800.

Execucom Systems Corporation, 3410 Far West Boulevard, Austin, TX 78731. Telephone (512) 346-4980.

Forte Data Systems, Inc., 2205 Fortune Drive, San Jose, CA 95131. Telephone (408) 945-9111.

Gateway Microsystems Incorporated, 9501 Capital of Texas Highway, Austin, TX 78759. Telephone (512) 345-7791.

Icot Corporation, 830 Maude Avenue, Mountain View, CA 94039. Telephone (415) 964-4635.

IDE Associates, 7 Oak Park Drive, Bedford, MA 01730. Telephone (617) 275-4430.

InfoCenter Software, Inc., 171 Main Street, New Paltz, NY 12561. Telephone (914) 255-8925.

Informatics General Corporation, 21031 Ventura Boulevard, Woodland Hills, CA 91364. Telephone (818) 887-9040.

Information Technologies, Inc., 7850 East Evans Road, Scottsdale, AZ 85260. Telephone (602) 998-1033.

Information Builders, Inc., 1250 Broadway, New York, NY 10023. Telephone (212) 736-4433.

Intel Corporation, 12675 Research Boulevard, P.O. Box 9968, Austin, TX 78766. Telephone (512) 258-5171.

Intelligent Technologies International Corporation, 151 University Avenue, Palo Alto, CA 94301. Telephone (415) 328-2411.

Intercomputer Communications Corporation, 3195 Linwood Avenue, Cincinnati, OH 45208. Telephone (513) 321-3179.

International Business Machines Corporation (IBM), Old Orchard Road, Armonk, NY 10504. Contact your local IBM representative.



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- ▷ **IPT Corporation**, 1096 East Meadow Circle, Palo Alto, CA 94303. Telephone (415) 494-7500.
- Local Data, Inc.**, 2701 Toledo Street, Torrance, CA 90503. Telephone (213) 320-7126.
- Mackensen Distributed Systems**, 3323 Pearl Street, Santa Monica, CA 90405. Telephone (213) 452-5520.
- Management Decision Systems, Inc.**, 200 Fifth Avenue, Waltham, MA 02254. Telephone (617) 890-1100.
- Management Science America, Inc.**, 3445 Peachtree Road N.E., Atlanta, GA 30326. Telephone (404) 239-2000.
- MasterLink, Inc.**, 82 Mitchell Boulevard, San Rafael, CA 94303. Telephone (415) 499-8466.
- Mathematica Products Group, Inc.**, P.O. Box 2392, Princeton, NJ 08540. Telephone (609) 799-2600.
- McCormack & Dodge Corporation**, 1225 Worcester Road, Natick, MA 01701. Telephone (617) 655-8200.
- The Mega Group**, 17701 Mitchell Avenue North, Irvine, CA 92714. Telephone (714) 474-0800.
- Micro Tempus Inc.**, 440 Dorchester Boulevard West, Suite 300, Montreal, Quebec, H2Z 1V7, Canada. Telephone (514) 397-9512.
- MicroFrame, Inc.**, 205 Livingston Avenue, New Brunswick, NJ 08901. Telephone (201) 828-4499.
- Microlog, Inc.**, 222 Route 59, Suffern, NY 10901. Telephone (914) 368-0353.
- Midwest Data Source, Inc.**, 1010 Nimitz Road, Cincinnati, OH 45230. Telephone (513) 231-2023.
- National Product Marketing, Inc.**, Two Northside 75, Suite 234, Atlanta, GA 30318. Telephone (404) 351-2902.
- On-Line Business Systems, Inc.**, 115 Sansome Street, San Francisco, CA 94104. Telephone (415) 391-9555.
- On-Line Software International Inc.**, Fort Lee Executive Park, Two Executive Drive, Fort Lee, NJ 07024. Telephone (201) 592-0009.
- Package Solutions, Inc.**, 1 Huntington Quadrangle, Suite 2C10, Melville, NY 11747. Telephone (516) 752-1640.
- Pathway Design, Inc.**, 177 Worcester Street, Wellesley, MA 02181. Telephone (617) 237-7722.
- Performance Software, Inc.**, 1009 Sycamore Square, Midlothian, VA 23113. Telephone (804) 794-1012.
- Persoft, Inc.**, 2740 Ski Lane, Madison, WI 53713. Telephone (608) 273-6000.
- Personal Computer Gateway Inc.**, 22 Daniel Road, Fairfield, NJ 07006. Telephone (201) 882-0750.
- Personal Systems Technology, Inc., Persyst Products**, 15801 Rockfield Boulevard, Suite A, Irvine, CA 92714. Telephone (714) 859-8871.
- Phone 1, Inc. (CLEO Software division)**, 461 North Mulford Road, Rockford, IL 61107. Telephone (815) 397-8110.
- Quadram Corporation**, 4355 International Boulevard, Norcross, GA 30093. Telephone (404) 932-6666.
- Ryan-McFarland Corporation**, 609 Deep Valley Drive, Rolling Hills Estates, CA 90274. Telephone (213) 541-4828.
- Simware Inc.**, 969 Bronson Avenue, Ottawa, Ontario, K1S 4G8 Canada. Telephone (613) 235-6736.
- SIS-Sundata**, 1285 Drummer Lane, Wayne, PA 19087. Telephone (215) 341-8700.
- Software AG Systems, Inc.**, 11800 Sunrise Valley Drive, Reston, VA 22091. Telephone (703) 860-5050.
- Software Dynamics, Inc.**, P.O. Box 247, Dunedin, FL 34296-0247. Telephone (813) 733-8784.
- Software International Corporation (subsidiary of General Electric Software Products Company)**, One Tech Drive, Andover, MA 01810. Telephone (617) 685-1400.
- Sterling Software Marketing, Inc.**, 1007 Seventh Street, Suite 500, Sacramento, CA 95814. Telephone (916) 441-7234 or (800) 824-8512.
- Systar Corporation**, 1762 Technology Drive, San Jose, CA 95110. Telephone (408) 280-7066.
- Techland Systems Inc.**, 25 Waterside Plaza, New York, NY 10010. Telephone (212) 684-7788.
- Tominy, Inc.**, 4221 Malsbary Road, Building #1, Cincinnati, OH 45242. Telephone (513) 984-6605.
- VM Personal Computing, Inc.**, 475 Fifth Avenue, New York, NY 10017. Telephone (212) 697-4747.
- Winterhalter, Inc.**, 3853 Research Park Drive, P.O. Box 2180, Ann Arbor, MI 48106. Telephone (313) 662-2002 or (800) 321-7785. □

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VENDOR/PRODUCT	ABM Computer Systems 3270 Intelligent Comm. Processor (ICP)	ABM Computer Systems SC-5251	Applied Data Research PC Datacom
PACKAGE	Plug-in conversion card plus software	Plug-in conversion card plus software	Software only
Converters supported	No additional converter required	No additional converter required	DCA Irma card (sync) or Hayes compatible modem (async)
SYSTEM REQUIREMENTS			
Host systems supported	IBM 30XX, 43XX, 370	IBM S/34, S/36, S/38	IBM 43XX, 81XX
Host operating systems supported	Most VM/CMS, MVS, OS/VS1, OS/VS2, others	All standard S/34, S/36, and S/38 operating systems	OS, DOS
Host end programming	None required	None required	None required
Microcomputers supported	IBM PC, PC XT, compatibles	IBM PC, PC XT, and compatibles	IBM PC
Microcomputer operating systems supported	PC-DOS, MS-DOS	PC-DOS, MS-DOS	PC-DOS 1.1, 2.0
Microcomputer system memory requirement	64K bytes	64K bytes	128K bytes
Media	5¼-inch diskette	5¼-inch diskette	5¼-inch diskette
PROGRAM FUNCTIONS			
Asynchronous terminals emulated	None	None	TTY
Synchronous terminals emulated	IBM 3274/3276 with attached 3278/3279-2A displays, 3287 ptr.	IBM 5251 Model 12	IBM 3278 Model 2
Host data download capability	Yes	Yes	Yes
Download functions	Capture screenful of data, capture an entire host file to diskette	Capture screenful of host data, capture entire host file to diskette	Capture screenful of data, capture entire host file, capture specific items from host file
Host database update capability	Provides 3278/3279A terminal functions	Yes, through file transfer	No
File formatting capability	No	No	Yes
Applications supported	None	None	DIF, CSV (comma separated value) files
Optional file formatting software	None available	None available	No
Other download/upload functions	Automatic ASCII/EBCDIC conversion	Automatic ASCII/EBCDIC conversion	Upload mainframe query
Ability to upload data for processing	Yes	Yes	—
Ability to download files for local processing	Yes	Yes	No
Security features	Can be added through ABM user interface	No	Password
Other program functions	Most generated printing, cluster controller functionality, and PC-DOS execution can be simultaneous	—	—
SCREEN FUNCTIONS			
Terminal functions supported	Full erase and edit functions, visual attributes, function keys, user written 3270 extensions	Full erase and edit functions, visual attributes, scrolling, function keys	Visual attributes, function keys
On-screen help	Menu driven configurator	—	None
Status line	3270-type status line	Standard 5251-12 status line	File transmission count
COMMUNICATIONS			
Local/remote connection to host or controller	Remote connect to host 370X FEP or non-IBM host supporting 3270	Remote to S/34, S/36, or S/38	Local connect to 3270 controller using the Irma card
Interface provided	Synchronous modem interface	Synchronous modem interface	Coaxial via Irma card
Other communications	Single plug-in board provides cluster support for up to 13 PCs	—	—
PRICING AND AVAILABILITY			
One-time license or purchase price, basic package	\$1,295 (single PC); \$1,990 (1-4 PCs); \$2,685 (up to 13 PCs)	\$895	\$495/PC; mainframe software costs between \$9,000-\$13,000
Additional software support charges	\$145 for TSO or CMS file transfer program (requires host end loading)	File transfer programs (require host end loading): S/34—\$495; S/36—\$695; S/38—\$895	—
Charges for support services	—	—	—
Date of first delivery	7/83	—	12/83
Lead time on orders	Stock	Stock	—
Number installed to date	—	—	—
COMMENTS	User developed PC programs can be interfaced to ABM PS-3270 comm. subsystem, and user can execute PC applications while exchanging data with the host computer		

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VENDOR/PRODUCT	Applied Data Research PC/PTE	Applied Data Research PC eMail	Applied Data Research PC Empire
PACKAGE	Software only	Software only	Software only
Converters supported	DCA Irma card (sync) or Hayes compatible modem (async)	DCA Irma card (sync) or Hayes compatible modem (async)	DCA Irma card (sync) or Hayes compatible modem (async)
SYSTEM REQUIREMENTS			
Host systems supported	IBM 43XX, 30XX	IBM 43XX, 8XXX	IBM 370, 43XX, 30XX
Host operating systems supported	OS, DOS, DOS/VSE	OS, DOS, CICS, Vollie, Roscoe	OS VM
Host end programming Microcomputers supported	Req. ADRS/Roscoe or ADR/Vollie IBM PC, PC XT	Host software loading IBM PC, PC XT	None required IBM PC
Microcomputer operating systems supported	PC-DOS 1.1, 2.0	PC-DOS 1.1, 2.0	PC-DOS
Microcomputer system memory requirement	256K bytes	128K bytes	128K bytes
Media	5¼-inch diskette	5¼-inch diskette, mag tape	5¼-inch diskette
PROGRAM FUNCTIONS			
Asynchronous terminals emulated	—	—	None
Synchronous terminals emulated	IBM 3270	—	None
Host data download capability	Yes	Yes	Yes
Download functions	Capture an entire host file to diskette	Directory (in/out box, folders, etc.), message, network segment	Report data after running an ADR/Empire model
Host database update capability	No	Yes (eMail libraries)	Yes (Empire models)
File formatting capability Applications supported	No —	Yes Data from WP document file converted to ADR/eMail format	Yes Spreadsheets converted to ADR/Empire model, data, and control files
Optional file formatting software	—	No	No
Other download/upload functions	—	Messages and updated directories loaded to mainframe	Upload to locally created and edited ADR/Empire files to MF
Ability to upload data for processing	Yes	Yes	—
Ability to download files for local processing	Yes	Yes (directories)	No
Security features	Local security via ADR PC/sign-on, remote via ADR/Roscoe, ADR/Vollie	Password, internally encrypted to protect data	TSO password, VM password, ADR/Roscoe password
Other program functions	File upload/download editing	—	—
SCREEN FUNCTIONS			
Terminal functions supported	Full erase and editing functions, visual attributes, windows, scrolling, function keys	Visual attributes, scrolling	Visual attributes, scrolling
On-screen help	Yes	Help menus	Help menus
Status line	Yes	User location in system, scroll lock, shift, caps, alt, etc.	Location of user in system, diagnostics
COMMUNICATIONS			
Local/remote connection to host or controller	Local connect to 3270 controller using the Irma card, async remote	Local connect to 3270 controller using the Irma card	Local connect to 3270 controller using the Irma card, adapter
Interface provided	Coaxial (Irma) or async (adapter)	Coaxial (Irma), async (adapter)	Coaxial (Irma), async (adapter)
Other communications	—	—	—
PRICING AND AVAILABILITY			
One-time license or purchase price, basic package	Contact vendor for pricing	Contact vendor for pricing	Contact vendor for pricing
Additional software support charges	—	—	—
Charges for support services	—	—	—
Date of first delivery	3rd quarter 1984	3rd quarter 1984	3rd quarter 1984
Lead time on orders	—	—	—
Number installed to date	New product	New product	New product
COMMENTS			

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VENDOR/PRODUCT	Applied Information Systems BURCOM	Applied MicroSystems PC-PROFS	Artificial Intelligence Corp. Intellect
PACKAGE	Software only	Software only	Software only
Converters supported	No converter required	None required	—
SYSTEM REQUIREMENTS			
Host systems supported	All Burroughs host systems	Any host supporting VM	IBM 4300, 303X, 308X, compatible systems
Host operating systems supported	All Burroughs OS	VM/370—CMS	VM, TSO
Host end programming	None required	None required	None required
Microcomputers supported	DEC Professional 300; also, see Comments below	IBM PC, PC XT, Compaq, other compatibles	IBM PC, PC XT
Microcomputer operating systems supported	POS, Micro RSX, Micro RSTS, Micro VMS	PC-DOS 1.1, 2.0, 2.1	PC-DOS, Concurrent CP/M
Microcomputer system memory requirement	3K bytes	256K bytes	256K bytes
Media	5¼-inch diskette	5¼-inch diskette	5¼-inch diskette
PROGRAM FUNCTIONS			
Asynchronous terminals emulated	Burroughs MT983/MT993	TTY	TTY
Synchronous terminals emulated	Burroughs MT983/993	None	IBM 3278
Host data download capability	Yes	Yes	Yes
Download functions	Capture entire host file to diskette	Capture an entire host file to diskette, capture specific items from host files	Capture entire host file to diskette, capture specific items from host file
Host database update capability	No	PROFS—Professional Office System	No
File formatting capability	No	Yes	Yes
Applications supported	—	Standard and custom document formats are supported	Spreadsheet, graphics (DIF, ASCII)
Optional file formatting software	None	None	No
Other download/upload functions	—	—	—
Ability to upload data for processing	Yes	Yes	No
Ability to download files for local processing	Yes	Yes	No
Security features	None	Auto log-on to host, multiple port search for avail. host line	—
Other program functions	—	Integral full screen text editor	—
SCREEN FUNCTIONS			
Terminal functions supported	Full erase and editing functions, visual attributes, scrolling, function keys	Full erase and editing, visual attributes, scrolling, function keys	Windows under Concurrent CP/M
On-screen help	Help menus	Help menus, tutorial diskette	Tutorials, on-line help
Status line	—	Yes—send, receive, alarm, caps lock, echo, comm. settings	None
COMMUNICATIONS			
Local/remote connection to host or controller	Local or remote connect to host or controller	Remote to host	Local connect to 3274, remote via 1200/300 bps modem
Interface provided	Async/sync, dependent on TDI	Requires async adapter	Via interface adapters
Other communications	—	Requires Hayes compatible modem	Directory for dialing remote mainframe
PRICING AND AVAILABILITY			
One-time license or purchase price, basic package	\$695-\$1,995	\$295	\$17,500; includes communications link plus 10 PC diskettes
Additional software support charges	—	Two corporate license plans available; contact vendor	\$250 per additional PC diskette
Charges for support services	Varies with support level	Free telephone support	Basic support included
Date of first delivery	New product	11/83	9/84 projected
Lead time on orders	Two weeks	Two days	—
Number installed to date	New product	—	—
COMMENTS	Versions of BURCOM are also available for the DEC Micro-11 and Micro-VAX	Icon based; totally automatic connection to PROFS host; allows host text files to be downloaded or uploaded to PC; supports data pacing and XMODEM file transfer verification; selective retrieval of PROFS correspondence	Natural language user interface to mainframe database

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VENDOR/PRODUCT	Ashton-Tate dBASE-Answer	ASK Computer Systems MANMAN Information Systems	AST Research AST-5251
PACKAGE	Software only	Software only	Plug-in conversion card plus software
Converters supported	DCA Irma required for sync operation	—	No additional converter required
SYSTEM REQUIREMENTS			
Host systems supported	IBM 43XX and larger	Hewlett-Packard 3000 Series, DEC VAX 750, 780	IBM S/34, S/36, S/38
Host operating systems supported	All IBM mainframe OS	Hewlett-Packard MPE, DEC MVS	All S/34/36/38 operating systems with remote support
Host end programming	Host software ANSWER/DB required	None required	None required
Microcomputers supported	IBM PC, PC XT, compatibles	Hewlett-Packard HP 150, HP 120, HP 125; IBM PC	IBM PC, PC XT
Microcomputer operating systems supported	MS-DOS 2.0	MS-DOS, CP/M	PC-DOS 1.1, 2.0
Microcomputer system memory requirement	256K bytes	64K bytes	64K bytes (1.1), 128K bytes (2.0)
Media	5¼-inch diskette	3½-inch diskette, 5¼-inch diskette, hard disk	5¼-inch diskette
PROGRAM FUNCTIONS			
Asynchronous terminals emulated	None	HP 26XX (Hewlett-Packard version) DEC VT100, VT220 (DEC version)	None
Synchronous terminals emulated	IBM 3278, 3279 with Irma card	None	IBM 5251 Model 12
Host data download capability	Yes	Yes	Yes
Download functions	Ability to query mainframe databases, by establishing a query set-up on the micro	Capture screenful of data at a time, capture an entire host file to diskette	Capture an entire host file to diskette
Host database update capability	No	Yes	Yes; host dependent
File formatting capability	Yes	Yes	No
Applications supported	Downloaded information is stored in dBase II/III/Framework files	DIF file formatting using MANMAN/General Ledger for downloading to a micro for spreadsheeting	—
Optional file formatting software	No	No	No
Other download/upload functions	—	—	Capture host print files for disk transfer
Ability to upload data for processing	Yes	Yes, for MANMAN/General Ledger using PLANMAN	Yes
Ability to download files for local processing	Yes	Yes, for MANMAN/General Ledger using PLANMAN	Not in a single session
Security features	Passwords, defined levels of access for each user	Password	Defined by host system
Other program functions	Access to multiple mainframe databases, with the ability to extract certain information	—	Ability to create keystroke files for automatic/unattended operation
SCREEN FUNCTIONS			
Terminal functions supported	Full erase and editing functions via the Irma card	Full erase and editing functions, visual attributes, windows, scrolling, function keys	Full erase and editing functions, visual attributes, scrolling, function keys, other 5251 funct.
On-screen help	Guidance through query set-ups	Help menus	Host defined
Status line	3270 status line	—	Session status (host defined) and diagnostics
COMMUNICATIONS			
Local/remote connection to host or controller	Local connect to 3270 control unit	Provided with hardware	Local or remote connection to the S/34, S/36, S/38
Interface provided	Coaxial via the Irma card	—	Synchronous modem interface
Other communications	Transparent communications; automatic disconnect	—	Local hardware/modem diagnostics, built-in modem eliminator cap.
PRICING AND AVAILABILITY			
One-time license or purchase price, basic package	\$45,000; includes 1 mainframe program, 50 PC program diskettes	Contact vendor for pricing	\$790
Additional software support charges	—	—	Host software for file transfers—price dependent on host system
Charges for support services	Included	—	None
Date of first delivery	7/84	—	—
Lead time on orders	—	Variable; depends on hardware	Stock
Number installed to date	New product	600	—
COMMENTS	ANSWER/DB mainframe software developed by Informatics	General ledger data can be downloaded, analyzed, and manipulated using a spreadsheet package; the resultant data can be uploaded to the MANMAN/General Ledger database	Supports an attached parallel printer as an IBM 5256 Logical Unit

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VENDOR/PRODUCT	AST Research AST-BSC	AST Research AST-SNA	AST Research AST-PCOX
PACKAGE	Plug-in conversion card plus software	Plug-in conversion card plus software	Plug-in conversion card plus software
Converters supported	No additional converter required	No additional converter required	No additional converter required
SYSTEM REQUIREMENTS			
Host systems supported	IBM 43XX, 303X, 370, 8100	IBM 43XX, 303X, 370, 8100	All IBM hosts that support 3274/3276 Control Units via category A interfacing
Host operating systems supported	See Comments below	See Comments below	All 3270 operating systems; TSO, VM/CMS for file transfer
Host end programming	None required	None required	None required
Microcomputers supported	IBM PC, PC XT	IBM PC, PC XT	IBM PC, PC XT
Microcomputer operating systems supported	PC-DOS 1.1, 2.0	PC-DOS 1.1, 2.0	PC-DOS 1.1, 2.0
Microcomputer system memory requirement	128K bytes	128K bytes	64K bytes, 128K bytes (transfers)
Media	5¼-inch diskette	5¼-inch diskette	5¼-inch diskette
PROGRAM FUNCTIONS			
Asynchronous terminals emulated	None	None	None
Synchronous terminals emulated	IBM 3278 Model 2, 3279 Model 2A, and 3274/3276 Control Units	IBM 3278 Model 2, 3279 Model 2A, 3274/3276 Control Units	IBM 3278 Models 2, 3, and 4; 3279 Models 2A and 3A
Host data download capability	Yes	Yes	Yes
Download functions	Capture screenful of data at a time	Capture screenful of data at a time	Capture screenful of data at a time, capture an entire host file to diskette
Host database update capability	Yes; host dependent	Yes, host defined	Yes, host dependent
File formatting capability	No	No	No
Applications supported	—	—	—
Optional file formatting software	No	No	No
Other download/upload functions	Optional IBM 2770 RJE support to be available	Optional IBM 3770 RJE support	—
Ability to upload data for processing	Yes, with 2770 option	Yes, with 3770 option	Yes
Ability to download files for local processing	Not in a single session	Not in a single session	Yes
Security features	Host defined	Host defined	Defined by host system
Other program functions	Supports attached printer as a separate IBM LU	Supports attached printer as a separate 3287 Logical Unit	Documented interface to emulation software
SCREEN FUNCTIONS			
Terminal functions supported	Full erase and editing functions, visual attributes, scrolling, function keys	Full erase and editing functions, visual attributes, scrolling, function keys	Full erase and editing functions, visual attributes, scrolling, function keys, Model 3,4 support
On-screen help	Host defined	Host defined	Host defined
Status line	Session status	Session Status	Session status
COMMUNICATIONS			
Local/remote connection to host or controller	Remote connection to a 370X/3725 controller	Remote connect to an IBM 370X/3725 controller	Local connect to an IBM 3274/3276 Control Unit
Interface provided	Synchronous modem interface	Synchronous modem interface	Coaxial
Other communications	Local diagnostics; built-in modem eliminator capability	Local diagnostics; built-in modem eliminator capability	Local hardware/interface diagnostics
PRICING AND AVAILABILITY			
One-time license or purchase price, basic package	\$695	\$895	\$1,145
Additional software support charges	—	—	None
Charges for support services	None	None	No charge
Date of first delivery	Beta product	—	—
Lead time on orders	—	Stock	Stock
Number installed to date	—	—	—
COMMENTS	Host operating systems: CICS/VS, IMS/VS, JES 2 & 3, POWER/VS, RES, TCAM, VTAM, NCCF, TSO, NOSP, VSPC, 8100PX	Host operating systems: CICS/VS, IMS/VS, KES 2 & 3, POWER/VS, RES, TCAM, VTAM, NCCF, NOSP, VSPC, 8100PX	

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VENDOR/PRODUCT	AST Research AST-3780	Attachmate Corp. Attachmate-3270 Coaxial Interface	Barr Systems, Inc. Barr/Hasp
PACKAGE	Plug-in conversion card plus software	Plug-in conversion card plus software	Plug-in conversion card plus software
Converters supported	No additional converter required	No additional converter required	No additional converter required
SYSTEM REQUIREMENTS			
Host systems supported	IBM 370, 43XX, 30XX, S/34, and others; DEC; Wang; Honeywell	IBM 360/70, 30XX, 4300, 4700	MVS/JES, VM/RSCS, Hamlet, HASP+ on the VAX, OS/MVT-HASP, OS/VS1-RES
Host operating systems supported	Any OS supporting BSC RJE	VM/CMS; TSO mainframe/PC—ORMS DOS	DOS 1.1, DOS 2.0, DOS 2.1
Host end programming	None required	None required	No
Microcomputers supported	IBM PC, PC XT	IBM PC, PC XT, compatibles	IBM/PC, IBM/XT, IBM/PC portable, Compaq and other compatibles
Microcomputer operating systems supported	PC-DOS 1.1, 2.0	PC-DOS, MS-DOS	PC-DOS, MS-DOS
Microcomputer system memory requirement	64K bytes (1.1), 128K bytes (2.0)	None; uses on-board RAM	128K
Media	5¼-inch diskette	5¼-inch diskette	5¼-inch diskette
PROGRAM FUNCTIONS			
Asynchronous terminals emulated	None	None	—
Synchronous terminals emulated	IBM 2780, 3780, 2770, 3741	IBM 3278/3279/3178 (coaxial 2A terminals), and 3287-2A printers	IBM 3777-2, multileaving workstation, HASP on the IBM 360/20
Host data download capability	Yes	Yes	Yes
Download functions	Capture an entire host file to diskette; RJE workstation—bidirectional file transfers	Capture screenful of host data, entire host files, specific items from host files	Capture an entire host file to diskette
Host database update capability	—	All 3270 update capabilities	Not applicable
File formatting capability	No	Yes	Not applicable
Applications supported	—	General file formatting	—
Optional file formatting software	No	No	Not applicable
Other download/upload functions	Selectable ASCII/EBCDIC translation; supports binary data	—	Prints beyond 1600 lines per minute
Ability to upload data for processing	Yes	Yes	Yes
Ability to download files for local processing	Not in a single session	Yes	Yes
Security features	Defined by host system	Two levels of mainframe access security, including a key lock	Not applicable
Other program functions	See Comments below	3270 printer sharing, 3270 printer capture/printer emulation	Ability to generate host programs off-line, user definable function keys, user can oversee job status
SCREEN FUNCTIONS			
Terminal functions supported	Scrolling	Full erase and editing, visual attributes, scrolling, windows, function keys	Line/char. insert/delete, visual attributes, windows, scrolling, function keys
On-screen help	Menus	Help menus	Help menus
Status line	Line/session status	Status line for time of day, row, line, communications status	Device status, communications activity trace
COMMUNICATIONS			
Local/remote connection to host or controller	Remote connection to host	Local to IBM 3274/3276	Bisync to MVS/JES, VM/RSCS
Interface provided	Synchronous modem interface	Coaxial 2A	Synchronous modem interface
Other communications	Local hardware/modem diagnostics; modem eliminator capability	—	Send while receiving, multiple printers, console support
PRICING AND AVAILABILITY			
One-time license or purchase price, basic package	\$895	Variable—\$910-\$1,308, depending on options; quantity discounts	\$890
Additional software support charges	None	Printer sharing, \$149; 3270 printer capture/emulation, \$186; see Comments for other software	None
Charges for support services	No charge	Second year warranty, \$60	—
Date of first delivery	—	3/84	8/83
Lead time on orders	Stock	Two weeks	In stock
Number installed to date	—	Over 2000	180
COMMENTS	Two modes of operation: 1) Interactive—menu driven; 2) Unattended—from user-created command file; documented interface to emulated protocol	Interface card contains one or two coaxial inputs, plus 64KB or 256KB of on-board RAM. Add'l. software: concurrent windows, \$249; DFT host windows, \$249; extended 3270 functions, \$249	

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VENDOR/PRODUCT	Cap Gemini Software Products MultiPro	Cincom Systems PC Contact	Communications Research Group Blocked Asynchronous File Transfer (BLAST)
PACKAGE	Software only	Software only	Software only
Converters supported	Local Data Datalynx, Interlynx	—	The BLAST Box from Anderson-Jacobson
SYSTEM REQUIREMENTS			
Host systems supported	IBM 4300, 303X, 308X	IBM 370	IBM 4321 and up; Univac 1100, NCR Tower, DEC VAX, DG MV Series, HP 3000, Wang VS, and others
Host operating systems supported	VM, MVS	MVS, OS, VS1, DOS/VSE, VM	VM/CMS, MVS/TSO, VMS, Unix, AOS MPE, MPOS, RSTS, RT-11, & others
Host end programming	Via host software modules	Yes	For error-free file transfer
Microcomputers supported	IBM PC, PC XT	IBM PC	IBM, Apple, Compaq, TeleVideo, TI, Zenith, H-P, DEC, Kaypro, Altos, Radio Shack, Seiko, others
Microcomputer operating systems supported	MS-DOS	PC-DOS 2.0	MS-DOS, PC-DOS, CP/M-80/-86, CCP/M-86, Unix, MP/M-80/-86
Microcomputer system memory requirement	320K bytes	128K bytes	64K—256K bytes, depending on OS
Media	5¼-inch diskette	5¼-inch diskette	5¼-inch diskette, 8-inch diskette, 3½-inch diskette, mag tape
PROGRAM FUNCTIONS			
Asynchronous terminals emulated	DEC VT100	—	TTY, DEC VT100, DG Dasher 200
Synchronous terminals emulated	IBM 3278 Model 2	IBM 3278	None
Host data download capability	Yes	Yes	Yes
Download functions	Capture an entire host file to diskette	Capture screenful of data, entire host file to diskette, specific items from host files	Capture screenful of data, an entire host file to diskette, capture specific items from host
Host database update capability	Yes, the mainframe-resident project library may be updated	Yes—TOTAL, DL1, TIS, VSAM	Yes
File formatting capability	Yes	ASCII and DIF file formatting	No
Applications supported	Application software development by DP professionals	—	—
Optional file formatting software	No	Yes; contact vendor	ASCII/ EBCDIC conversion as needed; internal text represent.
Other download/upload functions	Ability to update host-resident files using local screen editor	—	Error-free file transfer
Ability to upload data for processing	Yes	Yes	Yes
Ability to download files for local processing	Yes	Yes	Yes
Security features	Defined levels of access: none, read only, read/update	Complete security & accounting facility using in-place systems	Password
Other program functions	Audit trail (update history of project library); includes a session keystroke file	—	Ability to manage local & remote files including get file names, delete, copy, type, print, etc.
SCREEN FUNCTIONS			
Terminal functions supported	Full erase and editing functions, windows, scrolling, cut and paste between windows, function keys	Full erase, editing, windows, visual attributes, scrolling, function keys, application devel.	Full erase and editing functions, visual attributes, windows, function keys, scrolling
On-screen help	Help menus, command prompt line	Complete help	Help menus
Status line	—	Yes	Percent completion, modem status, line quality
COMMUNICATIONS			
Local/remote connection to host or controller	Local or remote to 4300, 303X, 308X	—	Local or remote connect to host or controller
Interface provided	Coaxial or RS-232-C	Via communications adapters	Asynchronous via any method
Other communications	—	—	Supports X.3, X.28, X.29 network handshaking for packet networks
PRICING AND AVAILABILITY			
One-time license or purchase price, basic package	Purchase: \$24,000 for mainframe software and \$1,900/workstation	Host—\$10,000 to \$30,000; PC—\$500	Versions range from \$250 (PCs) to \$895 (minis) to \$895/up (MFs)
Additional software support charges	—	MANTIS: \$15,000 to \$55,000	None
Charges for support services	Included	15% of purchase price	None
Date of first delivery	2/84	7/84	12/80
Lead time on orders	Two months	Two weeks	Two to thirty days
Number installed to date	4	—	Over 15,000
COMMENTS	Supports all phases of the application software development process, from conception phase, through analysis, design, programming, documentation, and maintenance		Several versions available, all with the same user interface; a hardware independent and link independent product; contact vendor for demonstration versions

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VENDOR/PRODUCT	Computer Corporation of America (CCA) PC/204	Computer Marketing Associates (CMA) HASTE	Comshare Inc. Microseek Plus
PACKAGE	Software only	Software only	Software only
Converters supported	No converter required	—	DCA Irma conversion card required
SYSTEM REQUIREMENTS			
Host systems supported	IBM 370, 30XX, 43XX	Any minicomputer or mainframe running the HASP protocol as either a host or remote	IBM Model 30XX, 43XX, or equivalent series
Host operating systems supported	DOS/VS, VSE, OS/VS, VM/CMS	IBM OS/VS, RSCS under VM/370, HASP under CDC NOS 2.0, Tandem	VM/CMS, MVS/TSO
Host end programming	Data dictionary view definition	None required	Yes; software loading required
Microcomputers supported	IBM PC, PC XT, & compatibles	Compaq, Compupro, Fujitsu, Kaypro, IBM, Sanyo, Xerox, Zenith	IBM PC, PC XT
Microcomputer operating systems supported	PC-DOS, MS-DOS 2.0, 2.1	CP/M-80, CP/M-86, MS-DOS, PC-DOS	PC-DOS
Microcomputer system memory requirement	256K bytes	48KB (CP/M-80), 52KB (other OS)	128K bytes
Media	5¼-inch diskette, hard disk	5¼-inch diskette	5¼-inch diskette, magnetic tape
PROGRAM FUNCTIONS			
Asynchronous terminals emulated	—	None	IBM 3101
Synchronous terminals emulated	IBM 3278/3279	IBM 3777-2 or other HASP or MRJE workstations	IBM 3278 Model 2 via Irma card
Host data download capability	Yes	Yes	Yes
Download functions	Specific items are selected from user view in dict., qualified, sorted, & aggregated on mainframe	Capture an entire host file to diskette	Capture an entire host file to diskette
Host database update capability	No	—	Yes, through product's sequence file capability
File formatting capability	Yes	No	No
Applications supported	Data Interchange Format files are downloaded to PC & avail. to any pkg. capable of reading DIF files	—	—
Optional file formatting software	No	Not currently	No
Other download/upload functions	—	Upload complete files with error checking, binary file transfer	Numerous flat file format manipulations
Ability to upload data for processing	No	Yes	Yes
Ability to download files for local processing	No	Yes	Yes
Security features	Views secured by user ID in addition to 7 levels of mainfr. sec.	Password hiding, password protection on built-in text editor	Only those provided by the site
Other program functions	Customizable menus for PC, communication scripting	Menu of local disk commands, I/O redirection, physical card reader support	Auto dial, automated job processing ability, sequence file processing capability
SCREEN FUNCTIONS			
Terminal functions supported	Windows, scrolling	—	Using system editor: full erase and editing functions, scrolling, function keys
On-screen help	Auto. menu, tutorial windows	In-context help menus available	Help menus
Status line	Communication progress line (send, receive, etc.)	Session progress—active/inactive, file transfer, print error, etc.	Byte counts of file transfer progress, comm. status, others
COMMUNICATIONS			
Local/remote connection to host or controller	Remote thru dial-up port (local thru 3705, 3276, planned 1985)	Local or remote to any system using the HASP protocol	Local connect to 3274, local or remote via dial-up network
Interface provided	Telephone conn. (coax plan 1985)	Via interface adapter	Serial or coaxial via Irma
Other communications	Async communication thru special CRC block mode protocol	—	Supports auto dial modems
PRICING AND AVAILABILITY			
One-time license or purchase price, basic package	\$17,500—mainframe & 10 PC; discounted for additional PCs	\$750	\$7,000
Additional software support charges	12% per annum of license fee for maintenance	—	Additional copies of micro software \$200; discounts available for multiple copies
Charges for support services	—	None	\$50-\$150/hour
Date of first delivery	7/84	1/83	New product
Lead time on orders	2 weeks	Immediate delivery (most orders)	Stock
Number installed to date	4	500	New product
COMMENTS		Designed for ease of use for novice users; does not allow BDOS errors (not ready errors under MS-DOS)	

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VENDOR/PRODUCT	Comshare Inc. Distributed System W	Cullinet Software Information Database	CXI, Inc. Connectware 3278/79 PC Coaxial Connection
PACKAGE	Software only	Software only	Plug-in conversion card plus software
Converters supported	DCA Irma conversion card required	No additional converter required	No additional converter required
SYSTEM REQUIREMENTS			
Host systems supported	IBM Model 30XX, 43XX, or equivalent series	IBM 360/370, 30XX, 43XX, or plug compatible mainframe	IBM 30XX, 4300
Host operating systems supported	VM/CMS, MVS/TSO	OSMFT, OSMVT, OSVS1, OSVS2 (MVS), DOS/VS, DOS/VSE	All operating systems supported; file transfer with TSO, CMS
Host end programming	Yes; software loading required	None required	None required
Microcomputers supported	IBM PC, PC XT	IBM PC	IBM PC, Eagle PC, Columbia PC, Compaq Portables, ITT XTRA, Corona PC, Direct PC
Microcomputer operating systems supported	PC-DOS	PC-DOS 2.0	MS-DOS, PC-DOS, all versions
Microcomputer system memory requirement	256K bytes	256K bytes plus .5MB hard disk	192K bytes
Media	5¼-inch diskette, magnetic tape	5¼-inch diskette	5¼-inch diskette
PROGRAM FUNCTIONS			
Asynchronous terminals emulated	TTY	None	None
Synchronous terminals emulated	IBM 3278/3279 via IRMA card	IBM 327X	IBM 3278, 3279 coaxial terminals
Host data download capability	Yes	Yes	Yes
Download functions	Capture screenful of data or entire host file to diskette, capture specific items from files	Capture screenful of data at a time, capture specific items from host file	Capture screenful of data at a time, capture an entire host file to diskette
Host database update capability	Yes, System W database applications	Yes, all applications	Only when used with 3rd party package, e.g. from Micro Tempus
File formatting capability	Yes	Yes	None
Applications supported	System W database application spreadsheets plus any component of the model structure	DIF file formatting	—
Optional file formatting software	No	None	None
Other download/upload functions	Any file can be transferred	Download summarized information, broadcast electronic mail	Compressed text file transfer, binary file transfer
Ability to upload data for processing	Yes	Yes	Yes
Ability to download files for local processing	Yes	Yes	Yes
Security features	Only those provided by the site	Defined levels of access for each user	None; function of host
Other program functions	Can switch to communicate with VM/CMS, MVS/TSO and Comshare timesharing network	—	File transfer capability in interactive or batch mode; able to run DCA Irma Basic programs
SCREEN FUNCTIONS			
Terminal functions supported	Using system editor: full erase and edit, scroll, function keys, full-screen query, model specs.	Full erase and editing functions, visual attributes, scrolling, function keys	Full erase and editing functions, visual attributes, scrolling, windows, function keys
On-screen help	Help menus	Menus (menu driven system)	For install, transfer functions
Status line	Byte counts of file transfer progress, comm. status, others	—	3278-type status line
COMMUNICATIONS			
Local/remote connection to host or controller	Local connect to 3274, local or remote connect via dial-up net	3270 connect functions	Local to 327X controller, local to 4321/4331/4361 adapter
Interface provided	Serial or coaxial via Irma card	Sync modem interface with adapter	Coaxial
Other communications	—	—	—
PRICING AND AVAILABILITY			
One-time license or purchase price, basic package	\$80,000	\$75,000	\$1,145
Additional software support charges	Datman System W DBMS—\$30,000; builder's pack for production systems—\$20,000; see Comments	—	None
Charges for support services	\$50-\$150/hour	—	Toll-free telephone support
Date of first delivery	3/83	1/84	6/83
Lead time on orders	Stock	—	Stock
Number installed to date	77	20	Over 10,000
COMMENTS	Additional software: filepower for updating System W database with foreign data—\$5,000; graphics—\$5,000; forecasting—\$3,000	Captured data can be manipulated using spreadsheet, modeling, and graphics software products; utilities are provided to feed the Information Database from various databases and files, including IMS and VSAM	Full int'l. keyboard mapping; supports 3274s configured for other languages; Screen Control Applic. Function Interface incl. 40 function calls for transfers, other functions

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VENDOR/PRODUCT	Datalex Passport	Datastream Execulink 3270	DecisionLink DecisionLink/34
PACKAGE	Software only	Software only	Standalone converter plus software
Converters supported	—	Datastream 874 SNA cluster controller	Converter included
SYSTEM REQUIREMENTS			
Host systems supported	IBM 30XX, 43XX, Series 1, DEC VAX, DEC 10, DEC 20, HP 3000, Prime	All IBM mainframes	IBM S/34, S/36 (4th quarter 1984), S/38 (1st quarter 1985)
Host operating systems supported	IBM MVS/TSO, VM/CMS, Series 1 EDX, RPS; DEC VAX VMS; HP MPE	Any IBM host running TSO or CMS	—
Host end programming	Yes; host software loading	None required	Yes; host software loading
Microcomputers supported	IBM PC, PC XT, compatibles; Wang Professional; TI Professional, DEC Rainbow, Sage	IBM PC	IBM PC, PC XT, compatibles
Microcomputer operating systems supported	PC-DOS, MS-DOS, p-System	MS-DOS	PC-DOS, MS-DOS, CP/M-86
Microcomputer system memory requirement	128K bytes	—	128K bytes
Media	5¼-inch diskette	5¼-inch diskette	5¼-inch diskette (PC), 8-inch diskette (host); also download
PROGRAM FUNCTIONS			
Asynchronous terminals emulated	DEC VT100, IBM 3101	TTY	None
Synchronous terminals emulated	None	IBM 3278 Model 2	None
Host data download capability	Yes	Yes, capture an entire host file to diskette	Yes
Download functions	Capture entire host file to diskette	—	Capture entire host file to disk or diskette, capture specific items from host file
Host database update capability	No	Yes (CMS, TSO)	Yes; user can update library members—source and procedure
File formatting capability	No	None	Yes
Applications supported	General purpose data file transfers	No	Spreadsheets (WKS, DIF), database mgmt. (DBS), variable length fields, fixed length fields
Optional file formatting software	No	No	Approx. 80% of PC applications program formats available
Other download/upload functions	Bidirectional data file transfer with error detect/retransmit	—	User can extract data for message services, print spooling, etc.
Ability to upload data for processing	Yes	Yes	Yes
Ability to download files for local processing	Yes	Yes	Yes; uploaded data appended in transaction file for later merge
Security features	Password security for access	Defined levels of access, integral file name lockout	File and/or field lockout thru user ID, password, defined access
Other program functions	ASCII or binary data transfers; blank compression; configuration file definitions for diff. hosts	Programmable "soft" keyboard, 3287 printer capability, menu driven setup and operation	Ability to edit host programs off line using PC editor, off-line data entry for later upload
SCREEN FUNCTIONS			
Terminal functions supported	IBM 3101 and DEC VT100 terminal functions	IBM 3278 screen functions	Function keys for selecting data passed down from the host from PC menus
On-screen help	None	Help menus	None
Status line	Session characteristics, file transfer progress	Yes, record count	Record count, elapsed time of transmission
COMMUNICATIONS			
Local/remote connection to host or controller	Local or remote connection to host up to 9600 bps	Direct connect or dial up to Datastream 874	Local or remote connection of DecisionLink controller to S/34
Interface provided	Asynchronous modem interface	RS-232-C serial interface	Async modem interface
Other communications	Exec files for saving regularly performed operations	—	Requires single dedicated line between controllers
PRICING AND AVAILABILITY			
One-time license or purchase price, basic package	\$260 for PC software; \$2,000 for host software; vol. discounts	\$195	\$3,900 (1 PC); \$6,900 (4 PCs); \$7,900 (8 PCs); \$9,900 (16 PCs)
Additional software support charges	—	None	Print spooling, image files, and message processing—\$950
Charges for support services	\$45 per year maintenance	None	One-year of support included
Date of first delivery	1979	5/84	1/84
Lead time on orders	Two weeks	None	One week
Number installed to date	Over 5000	New product	7
COMMENTS	Passport supports error-free data file transfers using an error detection and retransmission protocol; requires low-cost async modems; supports multiple hosts, personal computers; operation up to 9600 bps		Supports all four data types on host: alphanumeric, packed, zoned decimal, binary; data can be downloaded to PC in particular formats, e.g. WKS (Lotus 1-2-3), DIF, variable length fields, DBS, etc.

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VENDOR/PRODUCT	Digital Communications Assoc. (DCA) Irma	Digital Communications Assoc. (DCA) Irmalette	Diversified Data Resources (DDR) Hydra II
PACKAGE	Plug-in conversion card plus software	Plug-in conversion card plus software	Standalone converter plus software
Converters supported	No additional converter required	DCA Irmaline	Hydra II from JDS Microcomputing
SYSTEM REQUIREMENTS			
Host systems supported	IBM 43XX and larger	IBM 43XX and larger	IBM 360, 370, 43XX, 303X
Host operating systems supported	All IBM mainframe OS	All IBM mainframe OS	OS/VS1, OS/MVS, DOS, VM operating systems
Host end programming	None required	None required	Utilities for device definition
Microcomputers supported	IBM PC, PC XT, compatibles with Intel 8086/8088 processors	IBM PC, PC XT, compatibles with Intel 8086/8088 processors	Most personal computers, including Apple, IBM, Kaypro, Radio Shack
Microcomputer operating systems supported	PC-DOS/MS-DOS 1.1, 2.0, 2.1	PC-DOS, MS-DOS	MS-DOS, PC-DOS, others
Microcomputer system memory requirement	96KB (emul.); 128KB (transfers)	96KB (emul.), 128KB (transfers)	—
Media	5¼-inch diskette	5¼-inch diskette	5¼-inch diskette, magnetic tape for host end
PROGRAM FUNCTIONS			
Asynchronous terminals emulated	None	None	None
Synchronous terminals emulated	IBM 3278, 3279	IBM 3278	IBM 3278, 3279
Host data download capability	Yes	Yes	Yes (VSAM, SAM, ISAM)
Download functions	Capture screenful of data at a time, capture an entire host file to diskette	Capture screenful of data at a time, capture entire host file to diskette	Capture screenful of data at a time, capture an entire host file to diskette
Host database update capability	Yes	Yes	Yes (VSAM, SAM)
File formatting capability	No	No	No
Applications supported	—	—	—
Optional file formatting software	None	No	None
Other download/upload functions	User developed	User developed	—
Ability to upload data for processing	Yes	Yes	Yes
Ability to download files for local processing	Yes	Yes	Yes
Security features	Same as 3278/3279	Same as 3278; also, can use Irmaline password system	Security log-on to Hydra II through modem; positive log-off
Other program functions	Supports APL programming; GENX system configurator included, for selecting system options	GENX system configuration routine for emulator program allows user to select supported options	—
SCREEN FUNCTIONS			
Terminal functions supported	Full erase and editing functions, visual attributes, scrolling, function keys	Full erase and editing functions, visual attributes, scrolling, function keys	Full erase and editing functions, visual attributes, scrolling, function keys
On-screen help	None	None	—
Status line	Same as 3278/3279	Same as 3278	Yes
COMMUNICATIONS			
Local/remote connection to host or controller	Local connect to 3270 controller	Remote to modem or local to Irmaline converter	Local or remote connection to host
Interface provided	Coaxial	RS-232-C	Asynchronous RS-232-C
Other communications	—	—	—
PRICING AND AVAILABILITY			
One-time license or purchase price, basic package	\$1,195	\$325	\$6,900 (8-port Hydra II); \$9,900 (16-port Hydra II)
Additional software support charges	None	None	Upload/download host software—\$3,000; IBM PC software—\$240/PC
Charges for support services	Various plans; contact DCA	Various plans; contact DCA	10% of purchase price per year
Date of first delivery	12/82	New product	6/82
Lead time on orders	Thirty days	—	Thirty to sixty days
Number installed to date	40,000	New product	175
COMMENTS	Simple solution for PCs located at controller sites; no add'l. modems, telco lines, or 3705 ports required; provides file transfer utilities under VM/CMS and MVS/TSO	Irmalette, when used with stand-alone Irmaline (\$1,295) offers remote PCs the same functionality that DCA's Irma offers local PCs; Irmalette's data rates for communications with Irmaline range from 110 to 19.2K bps	

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VENDOR/PRODUCT	Evaluation & Planning Systems MicroFCS	Execucom Systems Corp. IFPS/Personal	Forte Data Systems PC 3278/79 Emulation Adapter Board
PACKAGE	Software only	Software only	Plug-in conversion card plus software
Converters supported	No additional converter required	No additional converter required	No additional converter required
SYSTEM REQUIREMENTS			
Host systems supported	IBM mainframes	Burroughs 5900, 6800, 6900, 7700, 7800; CDC Cyber, 6000; DEC 10/20, VAX systems; see Comments below	Any IBM host that supports the IBM 3274/3276 and any applications supporting IBM 3278s
Host operating systems supported	—	Several operating systems for the hosts supported	Any IBM OS; file transfer supported on MVS/TSO, VM/CMS, CICS
Host end programming	None required	None required	For file transfer, via Fortenet
Microcomputers supported	IBM PC, PC XT	IBM PC, PC XT; Compaq; TI Pro; Victor 9000 (HP, Apple, DEC, and Wang versions 3rd qtr. 1984)	IBM PC, PC XT, and compatibles, incl. Corona, Columbia, Compaq, ITT; Wang, TI through OEMs
Microcomputer operating systems supported	PC-DOS, MS-DOS	PC-DOS 2.0, MS-DOS 2.0	MS-DOS, PC-DOS, PC/IX, QNX
Microcomputer system memory requirement	192K bytes	512K bytes	64K bytes (128KB recommended)
Media	5¼-inch diskette	5¼-inch diskette	5¼-inch diskette
PROGRAM FUNCTIONS			
Asynchronous terminals emulated	TTY	DEC VT100	None
Synchronous terminals emulated	None	—	IBM 3278 Models 2, 3, 4; 3279 Models 2A, 2B, 3A, 3B
Host data download capability	Yes	Yes	Yes
Download functions	Capture an entire host file to diskette, capture specific items from host file	Capture an entire host file to diskette, capture specific items from host files	Capture screenful of data at a time (standard package); capture entire host file to diskette opt.
Host database update capability	Yes	Yes, updating of models and data files	Yes, using Fortenet (CMS/TSO/CICS files)
File formatting capability	No	Yes	No
Applications supported	—	File format is standard; IFPS flat file conversion to DIF and SYLK to be released July 1984	ASCII file formatting only
Optional file formatting software	No	—	CICS with Fortenet
Other download/upload functions	Yes	Complete character recognition error checking	—
Ability to upload data for processing	Yes	Yes	Yes
Ability to download files for local processing	Yes	Yes	Through user application only
Security features	Not applicable	—	Provided by mainframe applications
Other program functions	—	—	—
SCREEN FUNCTIONS			
Terminal functions supported	Scrolling, function keys	Full erase and editing functions, visual attributes, scrolling, windows, function keys	Full erase and editing functions, visual attributes, scrolling, function keys
On-screen help	Help menus	Menus, on-line tutorial	Selection menus for emulator
Status line	Yes	—	3278/3279 status line functions, model emulated, cursor line ind.
COMMUNICATIONS			
Local/remote connection to host or controller	Not applicable	Local or remote connect—IBM CMS and TSO, DEC 10/20, HP3000	Local connect to IBM 3274/3276 controller
Interface provided	Sync modem interface via adapter	Via asynchronous adapter	Coaxial
Other communications	—	Can also connect to Honeywell GCOS and Burroughs systems	—
PRICING AND AVAILABILITY			
One-time license or purchase price, basic package	\$2,000; quantity discounts available	\$1,500; multiple copy discounts available	\$1,195
Additional software support charges	—	Annual product upgrades \$150	CMS Fortenet—\$1,000/CPU; TSO Fortenet—\$1,000/CPU; CICS Fortenet—\$15,000/CPU
Charges for support services	\$90/hour	Free telephone hotline	No charge
Date of first delivery	2/83	11/83	3/84
Lead time on orders	One month	One week	One week
Number installed to date	200	2,000	—
COMMENTS	Incorporates the same syntax and several features of the FCS-EPS decision support system; incorporates the same syntax and several of the features of the FCS-EPS product (screen formatting, structured programming)	Additional hosts supported: various Honeywell systems; IBM 370, 303X, 43XX; Prime 2250-9950; Univac 1100; Wang VS; Data General MV 4000, 6000, 8000, 10000; Interactive Financial Planning System	

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VENDOR/PRODUCT	Gateway Microsystems MicroGate 2780/3780	Gateway Microsystems MicroGate II	Gateway Microsystems MicroGate 742
PACKAGE	Plug-in conversion card plus software	Plug-in conversion card plus software	Software only
Converters supported	No additional converter required	No additional converter required	No converter required
SYSTEM REQUIREMENTS			
Host systems supported	Any host supporting IBM 2780/3780 bisync communications	Any host supporting bisync communications	Texas Instruments Model 700 Term. Billing Sys., Model 704/1 Term. Polling Sys., TPS emulator on host
Host operating systems supported	No special requirements	No special requirements	—
Host end programming	No	No	No
Microcomputers supported	IBM PC & PC XT, Compaq, Columbia MPC	IBM PC & PC XT, Compaq, Columbia MPC	IBM PC & PC XT, Compaq, Columbia MPC
Microcomputer operating systems supported	MS-DOS, PC-DOS (1.1, 2.0, 2.1)	MS-DOS, PC-DOS (1.1, 2.0, 2.1)	MS-DOS, PC-DOS (1.1, 2.0, 2.1)
Microcomputer system memory requirement	128K	64K	64K
Media	5¼-inch diskette	—	5¼-inch diskette
PROGRAM FUNCTIONS			
Asynchronous terminals emulated	—	—	Texas Instruments Model 742 block mode protocol
Synchronous terminals emulated	IBM 2780/3780	Underlying subsystem provides Bi-sync comm.; terminal left to user	—
Host data download capability	Yes	Yes	Yes
Download functions	Capture screenful of data, capture entire host file to diskette, capture to diskette/prtr./console	Application dependent	Capture screenful of data, capture entire host file to diskette, capture to diskette/prtr./console
Host database update capability	Yes, under host control	Application dependent	No
File formatting capability	No	Yes	No
Applications supported	—	Application dependent	—
Optional file formatting software	No	Application dependent	No
Other download/upload functions	EBCDIC transparency; interactive & batch operation	Application dependent; EBCDIC transparency	—
Ability to upload data for processing	Yes	Application dependent	Yes
Ability to download files for local processing	Yes	Application dependent	Yes
Security features	Hard copy/diskette log of comm. session	Application dependent	Hard copy/diskette log of polling session
Other program functions	Interactive operation; batch command file operation; remote (host generated) command operation	Application dependent	—
SCREEN FUNCTIONS			
Terminal functions supported	—	Application dependent	—
On-screen help	Two-level help screens on-line	Application dependent	None
Status line	Session statistics, record counters	Application dependent	I/O file status; record counters
COMMUNICATIONS			
Local/remote connection to host or controller	Remote via modem; local via modem eliminator	Remote via modem; local via modem eliminator	Remote via async modems; back-to-back with null modem cable
Interface provided	RS-232-C modem interface	RS-232-C modem interface	RS-232-C modem interface
Other communications	Supports both synchronous & asynchronous operation	Supports both synchronous & asynchronous operation	—
PRICING AND AVAILABILITY			
One-time license or purchase price, basic package	\$895; 30% discount at qty. 50+	\$895; 30% discount at qty. 50+	\$395
Additional software support charges	None	None	None
Charges for support services	None	None	None
Date of first delivery	4/83	6/83	New product
Lead time on orders	14 days ARO	14 days ARO	14 days ARO
Number installed to date	50+	50+	New product
COMMENTS		Automatic ASCII/EBCDIC translation; transmission of ASCII data (in binary data mode)	Texas Instruments Model 742 terminal emulator

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VENDOR/PRODUCT	Gateway Microsystems MicroGate 6530	Gateway Microsystems MicroGate 940	ICOT Corp. Virtual Terminal System (VTS)
PACKAGE	Plug-in conversion card plus software	Software only	Standalone converter plus software
Converters supported	No additional converter required	No converter required	No additional converter required
SYSTEM REQUIREMENTS			
Host systems supported	Tandem NonStop, NonStop II, NonStop TXP	Texas Instruments DS990, Business Systems Series minicomputers	IBM 43XX, 360, 370, 303X, 308X
Host operating systems supported	Guardian	DX 10 (3.5 or later), DNOS (1.0 or later)	Any OS supporting 327X terminals
Host end programming	Install host software from tape	No	None required
Microcomputers supported	IBM PC & PC XT, Compaq & Compaq Plus	IBM PC & PC XT, Compaq, Texas Instruments Professional	IBM PC, compatibles
Microcomputer operating systems supported	PC-DOS 1.1, 2.0, 2.1	PC/MS-DOS 1.1, 1.2, 2.0, 2.1	PC-DOS, MS-DOS
Microcomputer system memory requirement	128K (monochrome/color display)	64K	128K bytes
Media	5¼-inch diskette, magnetic tape	5¼-inch diskette	5¼-inch diskette
PROGRAM FUNCTIONS			
Asynchronous terminals emulated	Tandem 6520/6530 multi-page terminal, TTY	Texas Instruments 940/931, TTY	IBM 3101, DEC VT100, others
Synchronous terminals emulated	—	—	IBM 327X, 328X
Host data download capability	Yes	Yes	Yes
Download functions	Capture entire host file to diskette, transfer binary & ASCII files using prop. Flash protocol	Capture entire host file to diskette, transfer binary & ASCII files using file trans. protocol	Capture screenful of data at a time, capture entire host file to diskette, capture specific items
Host database update capability	Yes	Yes	Yes, through interactive terminal function
File formatting capability	Yes	No	No
Applications supported	Transfer PC text files directly to host edit files	—	—
Optional file formatting software	Upload PC print files to spooler, download host list files to prtr.	Yes, download host listing files to PC printer	—
Other download/upload functions	Interactive & batch file transfers	Interactive & batch file transfers	Predefined session commands for use with TSO, CMS, etc.
Ability to upload data for processing	Yes	Yes	Yes
Ability to download files for local processing	Yes	Yes	Yes
Security features	Subject to Tandem system security passwords, access, audit trail	User IDs, passwords, user privilege levels	Access security provided by VTS
Other program functions	Create host source prog. locally; upl. for compilation, bind, test; downl. listing & results to print	Create source programs locally; upl. for compilation, link, test; downl. listings for local print	—
SCREEN FUNCTIONS			
Terminal functions supported	Full erase & edit functions, visual attributes, scroll, function keys, 16 pages of display memory	Full erase & editing functions, visual attributes, scrolling, function keys, 911 graphics emul.	Editing
On-screen help	Std. host software help features	Std. host software help functions	Help menus
Status line	Terminal operating mode; block, conversational, file trans. modes	—	327X status line
COMMUNICATIONS			
Local/remote connection to host or controller	Local & remote connections; local current loop operation at 19.2K	Local & remote; local operation at up to 19.2K bps	Local or remote connect to host via standalone converter
Interface provided	RS-232-C, 20 mA current loop	RS-232-C	RS-232-C
Other communications	Supports interactive auto-dial features of modems	Attached printer support (serial or parallel)	—
PRICING AND AVAILABILITY			
One-time license or purchase price, basic package	\$895/PC hardware & software	\$195/PC software	Contact vendor for pricing
Additional software support charges	\$2,500/host file trans. software	\$295/host software	None
Charges for support services	None	None	None
Date of first delivery	4/84	2/84	New product
Lead time on orders	14 days ARO	14 days ARO	—
Number installed to date	New product	25	New product
COMMENTS	Features interactive configuration utility; quantity discounts available	Features interactive configuration utility; replay file feature allows frequently used text to be sent without retyping (auto-dial commands, log-ons)	—

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VENDOR/PRODUCT	IDE Associates IDEAComm 3278	InfoCenter Software iLINK	Informatics General Corp. VisiAnswer
PACKAGE	Plug-in converter plus software	Software only, residing on both host & micro	Software only
Converters supported	No additional converter required	No converter required	DCA Irma
SYSTEM REQUIREMENTS			
Host systems supported	IBM 360, 370, 303X, 308X, 43XX, System/3, 8100	IBM 370, 43XX, 30XX	IBM 4331 or larger host systems
Host operating systems supported	All OS that communicate with cluster controllers	VM/CMS, future release on MVS/TSO	OS or DOS, CICS or IMS/DC
Host end programming	None required	No	None required
Microcomputers supported	IBM PC, PC XT	IBM PC, PC XT, 3270-PC, PCjr, & compatibles	IBM PC, PC XT
Microcomputer operating systems supported	PC-DOS 2.0	MS-DOS, PC-DOS	MS-DOS
Microcomputer system memory requirement	128K bytes	128K bytes	256K bytes
Media	5¼-inch diskette	5¼-inch diskette (micro), magnetic tape (host)	5¼-inch diskette
PROGRAM FUNCTIONS			
Asynchronous terminals emulated	None	Will operate with any terminal emul. pkg. w/file transfer cap.	IBM 2740
Synchronous terminals emulated	IBM 3278, 3279	Will operate with any terminal emul. pkg. w/file transfer cap.	IBM 3278 via DCA Irma card
Host data download capability	Yes	Yes	Yes
Download functions	Capture screenful of data at a time, capture an entire host file to diskette	Download/upload & crossload supp. Select options of host database system used to capture file	Capture an entire host file to diskette, capture specific items from host file
Host database update capability	Yes: CMS—XEDIT files to/from PC; CICS—VSAM files to 1-2-3, dBasell	Yes; Focus, Ramis, SAS, ADRll, APLDI, FPS	No
File formatting capability	No	Yes	Yes
Applications supported	—	Host: any pkg. running under VM/ CMS that can access CMS files Micro: DIF & CSV-comp. spreadsheet	VisiCalc formatting
Optional file formatting software	Yes	Future releases for additional host database systems planned	None
Other download/upload functions	User programmable capability	Electronic note pad, partial source file extraction	—
Ability to upload data for processing	Yes	Yes	Function of the Irma card
Ability to download files for local processing	Yes	Yes	—
Security features	Automatic log-off	MIS defined; password terminal access based	—
Other program functions	Key redefinition, independent addressing of PC printer, loadable emulation software	Supports both on-line & batch processing; automatically generates extract/import programs	—
SCREEN FUNCTIONS			
Terminal functions supported	Full erase and editing functions, visual attributes, scrolling, windows, function keys, etc.	All screen functions supported by terminal emulation/communication package are supported	Full erase and editing functions, visual attributes, function keys
On-screen help	Help for all commands	On-line help, view files for tran	Yes
Status line	3278 status line functions	Based on terminal emulation/communication package	Yes
COMMUNICATIONS			
Local/remote connection to host or controller	Local connect to 3274 or 3276 controllers	Based on user emulation/communication environment	Local or remote connection to the host
Interface provided	Coaxial	Based on user environment	Via Irma card or async adapter
Other communications	Data rate of 2.5M bps	Based on user environment	—
PRICING AND AVAILABILITY			
One-time license or purchase price, basic package	\$995; includes hardware and software	Mainframe for VM: \$5,000 Product bridges: \$2,000	See Comments
Additional software support charges	None	For PC-DOS: \$450	—
Charges for support services	—	15% of list price (after 90 days)	Free telephone support
Date of first delivery	—	4/84	2/84
Lead time on orders	Stock	—	Three weeks
Number installed to date	—	1	15 mainframe sites
COMMENTS	On-board controller requires no intervention by the PC's 8088; emulates both IBM BSC and SNA/SDLC protocols; software allows user definition of PC keyboard; permits separate host addressing of PC's printer	Crossload is between multiple host database systems; crossload between multiple micro packages is also supported.	Pricing: mainframe software—\$15,000 lease, \$45,000 purchase; PC software—\$500/PC

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VENDOR/PRODUCT	Information Builders Inc. FOCTALK	Information Builders, Inc. Focus and PC/Focus	Information Technologies Linkup
PACKAGE	Software only	Software only	Plug-in conversion card plus software
Converters supported	DCA Irma, Forte, CXI, AST	No converter required	No additional converter required
SYSTEM REQUIREMENTS			
Host systems supported	IBM or plug-compatible mainframes	IBM 370/43XX/30XX or plug compatible processors	Several vendor's mainframes
Host operating systems supported	VM CMS, MVS TSO	VM/CMS or MVS with TSO/CICS/IMS-DC	—
Host end programming	Requires Focus mainframe product	No	None required
Microcomputers supported	IBM PC, TI Professional, Wang Professional	IBM PC, Wang Professional, TI Professional	IBM PC, compatibles
Microcomputer operating systems supported	PC-DOS, MS-DOS	MS-DOS	PC-DOS
Microcomputer system memory requirement	256K bytes	512K, 5 MB hard disk	128K bytes
Media	5¼-inch diskette	5¼-inch diskette	5¼-inch diskette
PROGRAM FUNCTIONS			
Asynchronous terminals emulated	None	IBM 3270 type terminals	TTY, DEC VT100
Synchronous terminals emulated	None	IBM 3278/79 emulation via IRMA card	IBM 3276 Model 2, IBM 3780 RJE
Host data download capability	Yes	Yes	Yes
Download functions	Capture an entire host file to diskette, capture specific items from host database	Capture screenful of data at a time, capture an entire host file to diskette	Capture screenful of data at a time, capture an entire host file to diskette
Host database update capability	Through mainframe Focus product, any VSAM, ISAM, etc. files	Yes, update capability for mainframe Focus files	No
File formatting capability	Yes	Yes	No
Applications supported	ASCII, DIF, Lotus	Report writing, graphics, stats, financial modeling, full screen data entry	—
Optional file formatting software	No	Yes	Yes
Other download/upload functions	TableTalk, window driven method of constructing host queries	—	—
Ability to upload data for processing	Yes	Yes	Yes
Ability to download files for local processing	Yes	Yes	Yes
Security features	Provides by mainframe Focus; five levels of security access	Data protection at file, segment, field, and 'value within field'	Password control
Other program functions	—	Data encryption, relational plus facilities allowing dynamic file joining of up to 16 files	—
SCREEN FUNCTIONS			
Terminal functions supported	FOCTALK includes TED, a full-screen editor that duplicates IBM's XEDIT under CMS	Full erase functions, line/char. insert/delete, visual attributes, windows, scrolling, function keys	Editing, scrolling, function keys (depends on emulator option)
On-screen help	User definable help menus	Comprehensive help menu screen	—
Status line	Byte count, records transmitted	Link communications program menus include: system type comm. para.	—
COMMUNICATIONS			
Local/remote connection to host or controller	Function of converter card installed	Asynchronous or bisynchronous communications via the Irma card	Remote connect to host
Interface provided	—	Coaxial and bisynchronous modem	Synchronous modem interface
Other communications	—	—	56K bps file transfer capability
PRICING AND AVAILABILITY			
One-time license or purchase price, basic package	FOCTALK—\$450 per PC; quantity discounts (over 75, \$275 each)	Focus—\$66,000 PC/Focus—\$1,695	\$625 to \$1,175, depending on emulator option
Additional software support charges	Mainframe Focus database management software required	None for PC/Focus	—
Charges for support services	Included	PC/Focus-EMS contract—\$275/year	—
Date of first delivery	1/83	1975—mainframe Focus, 1983—PC/Focus—7 days, PC/Focus—3-5 days	8/83
Lead time on orders	Two weeks	1000	Two weeks
Number installed to date	3500		Over 200
COMMENTS	FOCTALK requires Information Builders' mainframe FOCUS product; FOCTALK used to be part of the PC/Focus product		

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VENDOR/PRODUCT	Intel Database Information System (iDIS)	Intelligent Technologies SNA Exchange	Intelligent Technologies PC Exchange
PACKAGE	A fully integrated, multi-user micro system Converter included	Plug-in conversion card plus software No additional converter required	Plug-in conversion card plus software No additional converter required
Converters supported			
SYSTEM REQUIREMENTS			
Host systems supported	IBM 370, 43XX, & 308X; Control Data, Sperry, & others	IBM 370, 303X, 43XX, & CPMs	Digital Equipment Corp. (DEC)
Host operating systems supported	IBM MVS, DOS, CMS; extensions of CDC NOS & NOS/BE; Sperry Exec.	SNA	DEC
Host end programming	Generation of flat files	No	No
Microcomputers supported	IBM PC & compatibles; Apple IIe & Macintosh planned	IBM PC, PC XT, & compatibles	IBM PC, PC XT, & compatibles
Microcomputer operating systems supported	MS-DOS, Apple DOS	MS-DOS, PC-DOS	MS-DOS, PC-DOS
Microcomputer system memory requirement	PC & compatible—128K; Apple—64K	192K	256K
Media	5¼-inch diskette	5¼-inch diskette	5¼-inch diskette
PROGRAM FUNCTIONS			
Asynchronous terminals emulated	DEC VT100, Liberty 100, TeleVideo 950, Zentec Cobra, Wyse 50/100/300	—	DEC VT100 & VT52
Synchronous terminals emulated	IBM 3278	IBM 3278 & 3279	—
Host data download capability	Yes	Yes	No
Download functions	Full download/upload functions are managed for user via iDIS menu screens	—	—
Host database update capability	Yes	Yes	No
File formatting capability	Yes	Yes	Yes
Applications supported	DIF, SYLK, CSV supported for VisiCalc, dBasell, Lotus 1-2-3, Multiplan	—	—
Optional file formatting software	Yes	Yes	Yes
Other download/upload functions	—	—	—
Ability to upload data for processing	Yes	Yes	Yes
Ability to download files for local processing	Yes	Yes	Yes
Security features	User IDs; passwords; table file locking; read/write/execute prot.	Password levels	Password levels
Other program functions	Supports four local editors for host & job submission; spreadsheet modeling w/database files	—	—
SCREEN FUNCTIONS			
Terminal functions supported	Full edit & erase functions, visual attributes, windows, scrolling, function keys, others	All 3270 screen functions	All DEC VT100 screen functions
On-screen help	Menus, help files, tutorials	Help menu	Help menu
Status line	Varies by function	Yes	Yes
COMMUNICATIONS			
Local/remote connection to host or controller	Remote to IBM, CDC, Sperry hosts; local to any RS-232-C async conn.	Local & remote dial-up	Local & remote dial-up
Interface provided	Synchronous modem interface	Synchronous modem	Asynchronous modem
Other communications	HASP, 2780/3780, 3270 BSC, TTY passthrough, SNA planned	—	—
PRICING AND AVAILABILITY			
One-time license or purchase price, basic package	Hardware/software—\$10,000 \$20,000; software—\$1,500-\$7,500	\$895	\$795
Additional software support charges	iPLAN—\$295; iWORD—\$395; iMenu—\$900; DBMS, Xenix included in base system	None	None
Charges for support services	\$200-\$3,000/yr. (varies by config)	None	None
Date of first delivery	7/83	2/84	12/83
Lead time on orders	Stock to 90 days ARO	1 week	1 week
Number installed to date	Over 100	—	—
COMMENTS	iDIS is a complete microsystem residing between PCs & mainframes. It is a department- or group-level computer providing a Data Pipeline gateway & network for local PCs.	Multisession capability allows for concurrent connection to 4 mainframe sessions.	Electronic mail; telephone management system.

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VENDOR/PRODUCT	Intelligent Technologies PC Exchange w/SNA	Intercomputer Communications Intercom Series	IBM Personal Computer 3278/3279 Emulation
PACKAGE	Plug-in conversion card plus software	Plug-in conversion card plus software, software only	Plug-in conversion card plus software
Converters supported	No additional converter required	Hardware is required for direct connect or synchronous comm.	No additional converter required
SYSTEM REQUIREMENTS			
Host systems supported	DEC & IBM	All Burroughs systems; Sperry	IBM 370, 30XX, 43XX
Host operating systems supported	DEC & SNA	CMS, SMCS, Gemcos, Mapper	MVS/TSO or VM/SP 2.1
Host end programming	No	No, host software loading	None required
Microcomputers supported	IBM PC, PC XT, & compatibles	IBM PC & compatibles, Burroughs ET2000 & B20, Wang	IBM PC, PC XT
Microcomputer operating systems supported	MS-DOS, PC-DOS	MS-DOS, B-TOS	PC-DOS 1.1, 2.0
Microcomputer system memory requirement	256K	128K	128K bytes
Media	5¼-inch diskette	5¼-inch diskette, magnetic tape, 8-inch diskette	5¼-inch diskette, mag tape
PROGRAM FUNCTIONS			
Asynchronous terminals emulated	DEC VT100 & DEC VT52	Burroughs TD 830 & MT 983, Sperry UTS 20 & UTS 40	—
Synchronous terminals emulated	IBM 3278 & 3279	Burroughs TD 830 & MT 983, Sperry UTS 20 & UTS 40	IBM 3278-2, 3279 2A/S2A
Host data download capability	Yes	Yes	Yes
Download functions	—	Capture screenful of data, capture entire host file to diskette, capt. spec. items from host file	Capture screenful of data, capture entire host file
Host database update capability	Yes	No	—
File formatting capability	Yes	Yes	None
Applications supported	—	Spreadsheets, data bases, word processing	—
Optional file formatting software	Yes	Yes, Loadcalc	—
Other download/upload functions	—	Data base extraction	File transfer with 3270-PC File Transfer Program
Ability to upload data for processing	Yes	Yes	Yes
Ability to download files for local processing	Yes	Yes	Yes
Security features	Password levels	Config. prog. secured, data base extraction prog. secured fld. lvl	—
Other program functions	—	—	Users can alternate between concurrent PC and 3270 sessions, screen print function
SCREEN FUNCTIONS			
Terminal functions supported	DEC VT100 & IBM 3270 functions	Full erase & edit functions, visual attributes, scrolling, function keys	Most 3270 screen functions
On-screen help	Help menus	Yes	Help menus
Status line	Yes	System & error messages, row, column, page	25th status line
COMMUNICATIONS			
Local/remote connection to host or controller	Local & remote dial-up	Local & remote, all connections supported	Local connect to IBM 3274, 4321, 4331
Interface provided	Modem	DB-25	Coaxial
Other communications	—	Daisy-chaining, all connections supported	—
PRICING AND AVAILABILITY			
One-time license or purchase price, basic package	\$1,295	\$200	Emulation control program—\$235; 3278/79 emulation adapter—\$905
Additional software support charges	None	None	Mainframe 3270-PC File Transfer Program—\$600 (VM/SP 2.1 or MVS/TSO versions)
Charges for support services	None	None	—
Date of first delivery	2/84	8/83	1/84
Lead time on orders	One week	10 days	—
Number installed to date	—	1500	—
COMMENTS			

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VENDOR/PRODUCT	IBM Personal Computer 5250 Emulation	IPT BLAST	Local Data Inc. FileLynx/3278 and FileLynx/5251
PACKAGE	Plug-in conversion card plus software	Software only	Standalone converter plus software
Converters supported	No additional converter required	No converter required	Local Data DataLynx/3274, InterLynx/3278, DataLynx/5251
SYSTEM REQUIREMENTS			
Host systems supported	IBM S/34, S/36, S/38	Data General, Digital Equipment (DEC)	IBM 43XX, S/34, S/36, S/38
Host operating systems supported	SSP	DEC (VMS, RSX11M, & RSTS), all DG	DOS/VSE, OS/VS1, OS/MVS
Host end programming	None required	None required	None required
Microcomputers supported	IBM PC XT	Altos, Apple, Compaq, DG, DEC, Eagle, HP, IBM, Intel, Kaypro, North Star, TeleVideo, Zenith, CP/M, CP/M-86, MS-DOS, PC-DOS	IBM PC, Columbia, Compaq
Microcomputer operating systems supported	PC-DOS 1.1, 2.0		PC-DOS, MS-DOS
Microcomputer system memory requirement	64K bytes	64K bytes	128K bytes
Media	5¼-inch diskette	5¼-inch diskettes, 800 or 1600 bpi magnetic tape	5¼-inch diskette
PROGRAM FUNCTIONS			
Asynchronous terminals emulated	—	Data General D200, DEC VT100	Lear Siegler ADM 3A, TeleVideo 925
Synchronous terminals emulated	IBM 5251-11, 5291, 5292	—	IBM 3278, 5251
Host data download capability	Yes	Yes	Yes
Download functions	Capture screenful of data, capture entire host file	Capture entire host file to diskette, capture specific items from host file	Capture screenful of data or entire host file, capture 3287/5256 print output to disk
Host database update capability	—	Yes	Provided by customer; CMS/SPF supported
File formatting capability	None	No	Yes
Applications supported	—	—	Hex data conversion utility permits transfer of packed data such as object code, spreadsheet data
Optional file formatting software	—	No	No
Other download/upload functions	—	—	Ability to window upload/download to limit the no. of lines
Ability to upload data for processing	Yes	Yes, command processing at host	Yes
Ability to download files for local processing	Yes	Yes	Yes
Security features	—	Audit trail	Password protection
Other program functions	—	—	—
SCREEN FUNCTIONS			
Terminal functions supported	All 5250 terminal functions	Full erase functions, cursor position	Full erase and editing functions, visual attributes, scrolling, function keys
On-screen help	Help menus	—	Help menus
Status line	25th status line	—	25th status line
COMMUNICATIONS			
Local/remote connection to host or controller	Local via coax, remote via IBM 5251-12	—	Local or remote connect to standalone converter
Interface provided	Coaxial	RS-232-C	Via asynchronous adapter
Other communications	—	—	Auto dial of Hayes compatible modems and modem cards
PRICING AND AVAILABILITY			
One-time license or purchase price, basic package	\$164—5250 Emulation Program \$600—Emulation Adapter	\$200-\$2,000 (depending on CPU model—contact vendor)	PC software—\$200; converter—\$500-\$1,395 per PC
Additional software support charges	—	—	Additional PC licenses—\$100; unlimited site charge—\$1,000
Charges for support services	—	Available at extra charge	Approx. 10% of purchase price/yr.
Date of first delivery	10/83	1982	9/82
Lead time on orders	—	3 days	45 days
Number installed to date	—	Approximately 10,000	Over 3000
COMMENTS			

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VENDOR/PRODUCT	Mackensen Distributed Systems File Transfer System	Management Decision Systems Express-mate	Management Science America PeachPak II w/PeachLink
PACKAGE	Software only	Software only	Software only
Converters supported	DCA Irma Decision Support Interface, other 3270 adapters	No converter required	DCA Irma (direct), modem & protocol converter sup. 3101 (dialup)
SYSTEM REQUIREMENTS			
Host systems supported	IBM S/370 & 4300	IBM 30XX & 43XX, Prime	IBM 370, 303X, 308X, 43XX
Host operating systems supported	OS/VS2 TSO, VM/370 CMS	VM/CMS, PRIMOS	OS & DOS
Host end programming	Host software optional	Host software provided	No, host software prov. by MSA
Microcomputers supported	IBM PC & compatibles	IBM PC & compatibles	IBM PC, PC XT, & compatibles
Microcomputer operating systems supported	PC-DOS 2.0, 2.1	MS-DOS	MS-DOS (1.1, 2.0 & above)
Microcomputer system memory requirement	96K bytes	192K bytes	192K bytes
Media	5¼-inch diskette	5¼-inch diskette	5¼-inch diskette (micro software) magnetic tape (mainfr. software)
PROGRAM FUNCTIONS			
Asynchronous terminals emulated	—	DEC VT100, Tektronix 4014	IBM 3101 (3270 functionality provided) IBM 3278 & 3279
Synchronous terminals emulated	—	—	—
Host data download capability	Yes	Yes	Yes
Download functions	Capture entire host file to diskette or hard disk	Capture an entire host file to diskette, capture specific items from host file	Capture screenful of data, capture specific items from host file data selectivity & key range spc.
Host database update capability	Yes	Yes, Express database	Yes, most MSA financial mfg. & payroll/personnel
File formatting capability	Yes	Yes	Yes
Applications supported	Translation of ASCII format effectors (FF, HT, etc.) for print files	For Lotus 1-2-3, dBase II, DIF, Multiplan	Native formats, plus DIF Lotus 1-2-3, dBase II, VisiCalc, PeachCalc, PeachText, Bus. Graph. DIF
Optional file formatting software	From third party	—	—
Other download/upload functions	Text/binary	—	Yes, Interface from MSA mainframe acctg. pack., offline data capt.
Ability to upload data for processing	Yes	Yes	Yes
Ability to download files for local processing	Yes	Yes	Yes
Security features	Supports password protected host files	Full field/record level security when used with Express on mainfr.	Micro based (limits access to feat.) & mainframe based security
Other program functions	Ability to send command lines to host, thereby enhancing the unattended/batch mode of operation	Local editing, scrolling, recall commands sent to host, command files for login, mainfr. graphics	Distributed accounting features, telecommunications feature (comm. w/subscriber news services)
SCREEN FUNCTIONS			
Terminal functions supported	—	Scrolling & editing of terminal sessions	Full erase & edit functions, visual attr., windows, scroll, function keys (all 3270 term. func.)
On-screen help	Prompts & messages	Help windows, tutorial on disket.	Help menus & tutorials
Status line	Cont. file transfer status update & number of records transferred	None	Session progress, file size, etc.
COMMUNICATIONS			
Local/remote connection to host or controller	3270 type comm. adapters: coax to controller, cluster emulator	Direct async. connection, acoustic modems, intelligent modems	IBM 3274/3276 (local & remote), remote S/1 & protocol converter
Interface provided	—	—	Coax (IrmaBoard); modem (S/1)
Other communications	—	—	Telecommunications feature (sub. news services i.e. Dow Jones)
PRICING AND AVAILABILITY			
One-time license or purchase price, basic package	\$295 per micro	\$450	Contact vendor
Additional software support charges	None	None	—
Charges for support services	None	None	—
Date of first delivery	10/83	1/84	—
Lead time on orders	1 week	Immediate	Contact vendor
Number installed to date	500	500	—
COMMENTS	Menu-driven interface; remembers file transfer parameters previously entered	Volume discounts available	—

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VENDOR/PRODUCT	MasterLink Handshake Plus	Mathematica Products Group RAMlink	McCormack & Dodge Interactive PC Link
PACKAGE	Software only	Software only	Plug-in conversion card plus software
Converters supported	No additional converter required	No converter required	No additional converter required
SYSTEM REQUIREMENTS			
Host systems supported	All Burroughs hosts, including B7900/6900, B4800, B1900, B90	IBM 370, 30XX, 43XX, and PCMs (plug-compatible mainframes)	IBM 43XX & 308X
Host operating systems supported	All Burroughs OS	IBM DOS/VSE, OS/VS1, MVS, VM/CMS and VP/CSS	OS & DOS
Host end programming	Host Cobol program compile, load	Prerequisite software: RAMIS II	PC Link mainframe software req.
Microcomputers supported	IBM PC/XT & compatibles, Victor 9000, DEC Rainbow, Burroughs B20, Hewlett-Packard 150	IBM PC & PC XT; provides access from a PC or ASCII terminal linking to host system with mainframe	IBM PC & PC XT
Microcomputer operating systems supported	MS-DOS	PC-DOS 2.0	DOS 2.0 or 2.1
Microcomputer system memory requirement	128K-256K bytes	256K bytes	256K bytes
Media	5 1/4-inch diskette, mag tape	5 1/4-inch diskette	5 1/2-inch diskette (micro); magnetic tape (mainframe)
PROGRAM FUNCTIONS			
Asynchronous terminals emulated	Data General, Hazeltine, Dataspeed 40, 40/2	A variety of ASCII terminals w/ 80-column screen width or more	—
Synchronous terminals emulated	Burroughs MT983, TD830	IBM 3278-type terminals	IBM 3278 & 3279
Host data download capability	—	Yes	Yes
Download functions	—	Capture entire host file to diskette, capture specific items from host file	Capture specific items from host file; 3 methods of download are avail.: selective, chain, direct
Host database update capability	No	Uploads data between mainf. RAMIS II & diskettes or hard disks	Real-time update to production files; budgeting & data entry
File formatting capability	Yes	Yes	Yes
Applications supported	DIF, CSV (comma separated value)	Automatically formats data for most popular PC pkgs., from spreadsheets to word processors	Lotus 1-2-3 provides information management, spreadsheet, & graphics
Optional file formatting software	—	Through DIF to 1-2-3, etc.	Templates for Lotus spreadsheets are avail. for acctg. functions
Other download/upload functions	Parameter file definitions, binary XFER w/compression	Automatic reformatting of micro data sent to mainframe	Reformat, manipulate, & summarize mainframe data before downl.
Ability to upload data for processing	Yes	Yes	Yes
Ability to download files for local processing	Yes	Yes	Yes
Security features	Audit trail	Password security from database to field level; audit trail log	Security can be defined for each user (record/field level); audit
Other program functions	Utility record builder program included, for building a data dictionary	Automatic logon menu, single key-stroke commands	—
SCREEN FUNCTIONS			
Terminal functions supported	Full erase and editing functions, visual attributes, windows, scrolling, function keys	Erase & edit functions, visual attributes, window, scroll, function keys, data entry, split scrn	Full erase & edit functions; visual attributes; scroll; function keys; all functions of term. emul
On-screen help	Tree structure help menus	Full-screen menus	On-line for every screen/field
Status line	Status line	Prompts user for output	—
COMMUNICATIONS			
Local/remote connection to host or controller	Local (TDI) or remote connect to host	Async. thru modem to host; bisync supp. for IRMA board to IBM 3274	Local to IBM 3274/3276 (remote available 7/84)
Interface provided	Via async or sync adapters	—	Coaxial cable required
Other communications	—	Screen refresh compares next screen to previous screen	—
PRICING AND AVAILABILITY			
One-time license or purchase price, basic package	\$295/PC	\$4,500-\$9,000 (based on performance level rating of CPU)	\$25,000 (mainframe software); \$1,700 per PC (micro package)
Additional software support charges	None	—	\$2,200 (micro package w/real-time update); \$750 (upgrade package for real-time update)
Charges for support services	90 days free; service contract	—	15% of mainfr., 10% of micro/yr.
Date of first delivery	5/84	New product	11/83
Lead time on orders	Stock	—	2 weeks from contract approval
Number installed to date	Over 500 host installations	New product	60 sites; 280 links
COMMENTS			
	Interaction patterned after Lotus 1-2-3; provides for the definition of host control file for sign-on/off, single key file transfers	With RAMlink, a single command added to a RAMIS II request downloads data from mainframe RAMIS II to micro diskettes or hard disks; volume discounts available month-to-month charge is 4% of 1-time fee; + \$185/diskette per PC	PC Link permits user-specified calculations to be performed on mainframe data before downloads begin

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VENDOR/PRODUCT	The Mega Group MegaCalc	The Mega Group MegaLink/3270	Micro Tempus Inc. Tempus-Link/Tempus-Data
PACKAGE	Software only	Software only	Software
Converters supported	No converter required	No converter required	DCA Irma, Forte, AST, IDE-3278, protocol converters in 3101 emul.
SYSTEM REQUIREMENTS			
Host systems supported	IBM 370, 43XX, 30XX, & PCM (plug-compatible mainframes)	IBM 370, 43XX, 30XX, & PCM (plug-compatible mainframes)	IBM 370 type system, IBM 43XX and larger, and IBM PCMs
Host operating systems supported	OS, MVS/TSO, VM/CMS, CICS, MULTICS	VM/CMS, MVS/TSO, CICS	DOS/VSE, VS1, MVS, VM, TP monitor supported are: CICS, TSO and CMS
Host end programming	No	Software program for mainframe	Yes
Microcomputers supported	IBM PC, Apple II, Osborne, etc.	IBM PC, PC XT, & compatibles	IBM PC, PC XT, PCjr, 3270-PC, & compatibles
Microcomputer operating systems supported	MS-DOS, Apple DOS	PC-DOS	PC-DOS
Microcomputer system memory requirement	64K bytes	128K bytes	4K bytes
Media	—	5¼-inch diskette, 1600 or 6250 bpi tape	5¼-inch diskette
PROGRAM FUNCTIONS			
Asynchronous terminals emulated	Any IBM 3101 emulator	—	IBM 3101, currently developing DEC VT100 version
Synchronous terminals emulated	All IBM 3270 emulators	IBM 3279 including 7-color support	IBM 3278/79
Host data download capability	Yes	Yes	Yes
Download functions	Capture an entire host file to diskette	—	Capture an entire host file to diskette(Tempus-Link), capture specific items from host(T-Data)
Host database update capability	Yes, can be updated from database & saved as Lotus, VisiCalc, etc.	Yes, any SPF or application program supported	Yes, when using Tempus-Link access method
File formatting capability	Yes	Yes	—
Applications supported	Lotus 1-2-3, VisiCalc, SuperCalc, Multiplan, others	All mainframe applications supported	—
Optional file formatting software	No	Yes—MegaCalc & MegaFile	—
Other download/upload functions	Entire spreadsheets, including logic (formulas)	Yes	—
Ability to upload data for processing	Yes	Yes	Yes
Ability to download files for local processing	Yes	Yes	Yes
Security features	Existing mainframe security	Full mainframe security supported	Virtual diskettes at the Host can be protected through passwords
Other program functions	—	—	—
SCREEN FUNCTIONS			
Terminal functions supported	Full erase & editing functions, visual attributes, windows, scrolling, function keys	All IBM 3278 & 3279 functions; full 3270 keyboard emulation	All functions that apply to PC-DOS apply to Tempus-Link
On-screen help	Help menus, tutorials, ref. cards	Help menus	Super-Copy
Status line	All status line functions supported	All status line functions supported	—
COMMUNICATIONS			
Local/remote connection to host or controller	Remote (async) or via controller	Async modems of any type are supported	Both remote and local are supported using IBM 3274/3276
Interface provided	No	None required	None
Other communications	No	—	—
PRICING AND AVAILABILITY			
One-time license or purchase price, basic package	\$15,000	\$7,500	\$4,750
Additional software support charges	MegaGraph: \$4,000; MegaFile: \$4,000	—	API-10%, HAPI-20%, Tempus-Data-65%
Charges for support services	Included	Included	15% after first year
Date of first delivery	4/83	New product	9/83
Lead time on orders	One week	10 days	Immediate availability
Number installed to date	175	New product	300
COMMENTS	MegaCalc is a full function spreadsheet for IBM mainframes; included are all utilities necessary to upload/download entire micro spreadsheet models, including logic, structure, & cables		

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VENDOR/PRODUCT	MicroFrame, Inc. BiSync 4	Microlog, Inc. Babytalk	Midwest Data Source, Inc. Burple
PACKAGE	Standalone converter plus software	Plug-in conversion card plus software	Plug-in conversion card plus software
Converters supported	—	—	No additional converter required
SYSTEM REQUIREMENTS			
Host systems supported	Any host supporting 3270 bisync or 2780/3780 protocols	IBM 360, 370, 43XX	Any Burroughs mainframe from B90 to B7900
Host operating systems supported	Any operating system supporting 3270 bisync or 2780/3780	Bisync 3270, Bisync HASP, ASCII TTY, 3270 SNA	NDL
Host end programming	No	No	No
Microcomputers supported	Tandy TRS-80 Model 4	IBM PC, XT most PC compatibles including Texas Instruments Professional	Apple II, II+, IIe, III
Microcomputer operating systems supported	TRSDOS 6.0, NEWDOS 80	PC-DOS, MS-DOS	Apple DOS, Apple SOS
Microcomputer system memory requirement	48K bytes	64K bytes	48K bytes
Media	5¼-inch diskette	5¼-inch diskette	5¼-inch diskette
PROGRAM FUNCTIONS			
Asynchronous terminals emulated	—	TeleVideo 950, DEC VT100, Hazeltine 1500, IBM 3101	Any Burroughs terminal
Synchronous terminals emulated	3277 model 2, 3274 controller	IBM 3270, 3780 (5251 currently being implemented)	Any Burroughs terminal
Host data download capability	Yes	Yes	—
Download functions	Capture screenful of data at a time, capture an entire host file to diskette	Capture screenful of data at a time, capture an entire host file to diskette	—
Host database update capability	No	No	Not included in package
File formatting capability	No	No	Yes
Applications supported	—	—	Spreadsheets
Optional file formatting software	No	No	Yes
Other download/upload functions	—	File uploading and downloading supported	—
Ability to upload data for processing	Yes	Yes	Yes
Ability to download files for local processing	Yes	Yes	Yes
Security features	No	—	Audit trail on file upload/download
Other program functions	Communications diagnostic display SLS allows clustering of BiSync4/Mod4 pairs on a single line	Supports background operations since the board is an intelligent device	User has the ability to write micro programs which will communicate with the mainframe
SCREEN FUNCTIONS			
Terminal functions supported	Line/char. insert/delete, visual attributes, function keys	Full erase functions, line/char. insert/delete, visual attributes, windows, scrolling, color or B&W	Full erase functions, line/char. insert/delete, scrolling, function keys
On-screen help	Menus	Help menus	Menus for installation
Status line	No	Being implemented	Operator messages, screen page no., forms mode, Xmit-Rcv-local
COMMUNICATIONS			
Local/remote connection to host or controller	Remote to host, no controller needed (see SLS above)	Remote	Local and remote connect
Interface provided	Synchronous modem interface	Synchronous modem interface	Asynchronous or synchronous
Other communications	—	Onboard Bell 103, 202, V.21, V.23	Speed to 38.4K bps
PRICING AND AVAILABILITY			
One-time license or purchase price, basic package	\$700	\$895 with modem, \$695 w/o modem	\$695 for emulation, \$700 for file transfer
Additional software support charges	None	Bisync 3270-\$499, 3780-\$499, HASP—\$499	—
Charges for support services	None	Not applicable	Included in base price
Date of first delivery	4/82	6/83	4/83
Lead time on orders	Stock	In stock	1 week
Number installed to date	—	—	200
COMMENTS	A new data security system, Data Lock & Key, is available from MicroFrame for protecting micro-to-mainframe dial-up links		

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VENDOR/PRODUCT	Midwest Data Source, Inc. Intercom	National Product Marketing PC/COM	On-Line Business Systems, Inc. OBS FTP
PACKAGE	Software only (async), conversion card plus software (sync)	Software only	Software only
Converters supported	No additional converter required	ICA, Irma, Avatar PA-1000	—
SYSTEM REQUIREMENTS			
Host systems supported	Any Burroughs mainframe from B90 to B7900	IBM 43XX, 30XX	IBM 370, 30XX, 43XX
Host operating systems supported	NDL	TSO/CMS, CICS	VM/CMS, MVS/TSO
Host end programming	No	Yes, host software loading	Host software loading
Microcomputers supported	IBM PC, Columbia, Compaq, Eagle, Corona, Wang PC	IBM PC, compatibles	IBM PC, IBM XT, Apple II, CP/M systems
Microcomputer operating systems supported	MS-DOS	PC-DOS, all versions	PC-DOS 1.1, PC-DOS 2.0, Apple DOS, CP/M-80
Microcomputer system memory requirement	64K bytes	192K bytes	IBM-64KB, Apple-16KB, CP/M-16KB
Media	5¼-inch diskette	5¼-inch diskette, mag tape	5¼-inch diskette for micro, mag tape for host
PROGRAM FUNCTIONS			
Asynchronous terminals emulated	Any Burroughs terminal	None	TTY emulation
Synchronous terminals emulated	Any Burroughs terminal	Function of converter	Not applicable
Host data download capability	Yes	Yes	Yes
Download functions	Capture an entire host file to diskette	Capture screenful of data at a time, capture an entire host file to diskette	Capture an entire host file to diskette, text or binary, 16-bit CRC error checking
Host database update capability	Not included in package	Yes	No
File formatting capability	Yes	Yes	Yes
Applications supported	Spreadsheets	DIF	At host: standard TSO and VM/CMS file format; at micro: standard file format
Optional file formatting software	Yes	None	No
Other download/upload functions	Bidirectional file transfer optional	Bidirectional, text/binary transfers	Selection of host file attributes on uploads; toggle into host ed.
Ability to upload data for processing	Yes	Yes	Yes
Ability to download files for local processing	Yes	Yes	Yes
Security features	Password	Function	Can prompt for host password during auto log-on
Other program functions	Ability for user to write programs for the micro which include communications routines	Auto-command option	Complete help facility, list micro files, display directories
SCREEN FUNCTIONS			
Terminal functions supported	Full erase functions, line/char. insert/delete, visual attributes, scrolling, function keys	Full erase functions, line/char. insert/delete, visual attributes, scrolling, functions key, Irma	Scrolling, function keys, (not an editor)
On-screen help	Menus for installation, Help scr.	Menu-driven	On-line help function
Status line	Operator messages, screen page no., forms mode, Xmit-Rcv-Local	—	2 session progress: record count, log of transmission
COMMUNICATIONS			
Local/remote connection to host or controller	Local and remote connect	Depends on converter	Async communications up to 9600 bps
Interface provided	Async, sync, TDI direct connect	Coax (Irma), RS-232-C (Avatar)	Via async adapter
Other communications	Speed to 38.4 K bps	—	Auto dial, auto log-on, batch job transfer available, 16-bit CRC
PRICING AND AVAILABILITY			
One-time license or purchase price, basic package	See Comments	\$400 (mainframe) \$395 (each PC)	\$4,000
Additional software support charges	—	CICS version \$2,000 (MF side)	Additional micro licences at \$50 each
Charges for support services	Included in base price	Toll-free support	First year free
Date of first delivery	7/83 (emulation)	—	8/83
Lead time on orders	1 week	Stock	One week
Number installed to date	1500	600	30
COMMENTS	Software only for async operation—\$200; hardware and software for sync operation—\$465		

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VENDOR/PRODUCT	On-line Software International Omnilink	On-Line Software International DB/LINK	Package Solutions Bicomm 3270/Bicomm 3780
PACKAGE	Software only	Software only	Software only, or conversion card plus software No additional converter required
Converters supported	DCA Irma, AST PCOX, IBM BSC/SDLC, async adapters	IBM 5251 or 5250 emulator	
SYSTEM REQUIREMENTS			
Host systems supported	43XX, 370, 30XX	IBM System/34, System/36	IBM S/34, S/36, S/38, Series/1, 360, 370, & 4300; DEC 20, PDP-10/11, & VAX; Burroughs; Wang Most IBM OS; 4 options: spooler, HASP, POWER, RES
Host operating systems supported	Any operating system that supports CICS/VS	SSP	
Host end programming	No	Yes	
Microcomputers supported	IBM PC, PC XT, 3270 PC, XT/370, COMPAQ, and additional plug compatibles	IBM PC, PC XT, any PC compatibles	IBM PC XT, Columbia, Compaq, DEC Rainbow, Corona, Eagle, HP 150, Sperry, Hyperion, Victor, others
Microcomputer operating systems supported	PC-DOS 2.0 and up	PC-DOS 2.0	MS-DOS
Microcomputer system memory requirement	256K bytes	192K bytes	64K bytes
Media	5¼-inch diskette for micro; Mag tape for mainframe	8" diskette for host, 5¼-inch diskette for micro	5¼-inch diskette
PROGRAM FUNCTIONS			
Asynchronous terminals emulated	IBM 3101	Not applicable	—
Synchronous terminals emulated	3278/79 via coax connection to 327X controllers	Not applicable	Bicomm 3270: 3275/76/77/78 Bicomm 3780: 2770/80, 3741/80
Host data download capability	Yes	Yes	Yes
Download functions	Capture a screenful of data at a time, capture an entire host file to diskette	Capture an entire host file to diskette, capture specific items from host file	Capture entire host file to diskette
Host database update capability	No direct update prov. Uploaded data placed in holding area	No	Yes
File formatting capability	Yes	Yes	No
Applications supported	Spreadsheets, databases, word processing	With the Reformatter module of the OMNIMICRO product	—
Optional file formatting software	Yes	No	No
Other download/upload functions	Routing of PC files to other PCs via mainframe	Users can select, compute and sort information, secure data	—
Ability to upload data for processing	Yes	No	Yes
Ability to download files for local processing	Yes	Yes	Yes
Security features	10 levels of security assigned to users and to fields	Through ExecuTrieve's data dictionary, 10 levels of security	—
Other program functions	CRC16 error checking on async communications, restart/recovery procedures	Automatically generates a data entry screen for use at the PC; a data dictionary is generated	—
SCREEN FUNCTIONS			
Terminal functions supported	Full erase functions, line/char. insert/delete, visual attributes, windows, function keys	Full erase functions, line/char. insert/delete, visual attributes, scrolling, function key, CAM acc.	All 3270 screen functions supported
On-screen help	Help menus and tutorials	Help screen	Help line; menu-driven programs
Status line	3278 Status line maintained when interacting with host	None	Yes
COMMUNICATIONS			
Local/remote connection to host or controller	Local and remote host connections supported	No	Local & remote connection to host
Interface provided	Coax, sync modem, async modem	Not applicable	Synchronous modem
Other communications		Not applicable	—
PRICING AND AVAILABILITY			
One-time license or purchase price, basic package	Mainframe software—\$28,000	\$3,500	3270: \$895; \$450 w/o conv. card 3780: \$895; \$395 w/o conv. card
Additional software support charges	None	Free for first year, then available on a subscription basis	None
Charges for support services	Included in maintenance		None
Date of first delivery	11/83	3/84	—
Lead time on orders	2 days	1 week	48 hours
Number installed to date	40	10	—
COMMENTS	Optional upgrade modules avail.: Omnilink Electronic Mail-This component is a comprehensive, electronic messaging filing system that connects hardware devices and distributes info. throughout a CICS network		

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VENDOR/PRODUCT	Pathway Design Pathway SNA 3270/3770, BSC 3270/3780 Emulator Packages	Performance Software MasterLink	Performance Software MasterLink/1100
PACKAGE	Plug-in conversion card plus software	Software only	Software only
Converters supported	No additional converters required	DCA Irma, Persyst, AST, others	Computer Logics
SYSTEM REQUIREMENTS			
Host systems supported	43XX, 303X, 308X, SNA or BSC networks	IBM 370, 4300, 30XX	Univac 1100
Host operating systems supported	IBM OS for above systems	DOS/VSE, MVS	DEMAND
Host end programming	No	Host software loading	Host software loading
Microcomputers supported	IBM PC & all compatibles, Wang PC, Charles River Data Systems and UNIX-based configurations	IBM PC, compatibles	IBM PC, compatibles
Microcomputer operating systems supported	PC-DOS, MS-DOS, Unix	MS-DOS, PC-DOS, all versions	PC-DOS, MS-DOS, all versions
Microcomputer system memory requirement	128K bytes (IBM PC, compatibles)	128K bytes	128K bytes
Media	5¼-inch diskette	5¼-inch diskette, magnetic tape	5¼-inch diskette, magnetic tape
PROGRAM FUNCTIONS			
Asynchronous terminals emulated	—	Function of the conversion card installed	Function of the conversion card
Synchronous terminals emulated	IBM 3270 devices, including 3278, 3279	Function of the conversion card	Function of the conversion card
Host data download capability	Yes	Yes	Yes
Download functions	Capture screenful of data at a time, capture an entire host file to diskette	Capture screenful of data at a time, capture entire host file, capture specific items	Capture screenful of data at a time, capture entire host files, capture specific items
Host database update capability	No	Yes, anything downloaded; direct access to VSAM files	Yes, anything downloaded
File formatting capability	No	Yes	Yes
Applications supported		Spreadsheets, others	Spreadsheets, others
Optional file formatting software	No	No	No
Other download/upload functions		—	—
Ability to upload data for processing	Yes - 3270/3780/3770	Yes	Yes
Ability to download files for local processing	Yes - 3270/3780/3770	Yes	Yes
Security features	—	Defined levels of access (user profiles); by files, fields	Defined levels of access
Other program functions	Pathway products feature user programmable exit & "hot key" support, multi-user support	Ability to download host programs and generate or modify them locally	—
SCREEN FUNCTIONS			
Terminal functions supported	Full erase functions, line/char. insert/delete, visual attributes scrolling, function keys	Function of the conversion card installed	Function of conversion card installed
On-screen help	Fully functional on-screen help	On-line access to help menus	On-line access to help menus
Status line	Clock, full 3270 status, communications session status	—	—
COMMUNICATIONS			
Local/remote connection to host or controller	Remote connect to host or controller	Function of converter card	Function of converter installed
Interface provided	Synchronous modem	—	—
Other communications	Transmission speeds to 19.2K bps on SNA/BSC, multi-drop line	—	—
PRICING AND AVAILABILITY			
One-time license or purchase price, basic package	\$595—software emulator license; \$295—plug-in conversion card	One PC—\$2,500; unlimited license—\$15,000	One PC—\$2,500; unlimited license—\$25,000
Additional software support charges	None	—	—
Charges for support services	Free software support	One year of support included	One year of support included
Date of first delivery	10/83	5/84	1/84
Lead time on orders	3 days	Stock	Stock
Number installed to date	1000	—	—
COMMENTS		File transfer utility; data dictionary based on the mainframe provides for user profile by file name for ease of retrieval	See MasterLink Comments

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VENDOR/PRODUCT	Persoft, Inc. SmarTerm 125	Persoft, Inc. SmarTerm 100	Persoft, Inc. SmarTerm 400
PACKAGE	Software only	Software only	Software only
Converters supported	Not applicable	Not applicable	Not applicable
SYSTEM REQUIREMENTS			
Host systems supported	Any system recognizing the DEC VT 100/101/102/52 terminals	Any host recognizing the DEC VT series terminals	Any host recognizing the Data General Dasher Series terminals
Host operating systems supported	See above	See above	See above
Host end programming Microcomputers supported	Yes IBM PC, PC XT, compatibles	Yes, for proprietary XFER IBM PC, PC XT, compatibles	Yes IBM PC, PC XT, compatibles
Microcomputer operating systems supported	PC-DOS 2.0 and 2.1	PC-DOS, all versions	PC-DOS, all versions
Microcomputer system memory requirement	256K bytes	128K bytes	128K bytes
Media	5¼-inch diskette	5¼-inch diskette	5¼-inch diskette
PROGRAM FUNCTIONS			
Asynchronous terminals emulated	VT125, VT100, VT101, VT102, VT52	VT100, VT101, VT102, VT52	DG Dasher 100, 200 or 400
Synchronous terminals emulated	None	None	None
Host data download capability	Yes	Yes	Yes
Download functions	Capture screenful of data at a time, capture an entire host file to diskette	Capture screenful of data at a time, capture an entire host file to diskette	Capture screenful of data at a time, capture an entire host file to diskette
Host database update capability	Yes, terminal using SmarTerm 125 can update a host database	Yes	Yes
File formatting capability Applications supported	None —	None —	None —
Optional file formatting software	None	None	None
Other download/upload functions	—	XMODEM protocol & proprietary 'error-free' protocol	XMODEM protocol & proprietary 'error free' protocol
Ability to upload data for processing	Yes	Yes	Yes
Ability to download files for local processing	Yes	Yes	Yes
Security features	None	None	None
Other program functions	Full support of DEC ReGIS; split-screen capability with bi-directional scrolling	Printer pass-thru mode, fast or slow scrolling with adjustable tasks, start-up command file	Multiple display windows with bi-directional vertical scrolling and selective window erasing
SCREEN FUNCTIONS			
Terminal functions supported	Full erase functions, line/char. insert/delete, visual attrib., scrolling, function keys	Full erase functions, line/char. insert/delete, visual attributes, scrolling, function keys	Full erase functions, line/char. insert/delete, visual attributes, scrolling, function keys
On-screen help	Help menus	Help menus	Help menus
Status line	Indicates ReGIS active/inactive, data capture mode, caps lock	Data capture mode, caps lock on/off, debug trace, no scroll	—
COMMUNICATIONS			
Local/remote connection to host or controller	Local, direct, or remote connect to host	Local, direct or remote connect to host	Local, direct, or remote connect to host
Interface provided	Asynchronous RS-232-C	Asynchronous RS-232-C	Asynchronous RS-232-C
Other communications	Communications up to 9600 bps	Communications up to 9600 bps	Communications up to 9600 bps
PRICING AND AVAILABILITY			
One-time license or purchase price, basic package	\$295	\$149	\$149
Additional software support charges	Not applicable	Not applicable	Not applicable
Charges for support services	None	None	None
Date of first delivery	9/84	10/82	5/83
Lead time on orders	—	In stock	Stock
Number installed to date	—	5000	600
COMMENTS			SmarTerm 400 is an enhanced version of TE400-FT product; XMODEM protocol and European character display are new features

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VENDOR/PRODUCT	Personal Computer Gateway Data Pouch	Personal Systems Technology (Persyst) PC/HASP	Personal Systems Technology (Persyst) PC/3780
PACKAGE	Turnkey package, including hardware and software	Plug-in conversion card plus software	Plug-in conversion card plus software
Converters supported	Not applicable	No additional converter required	No additional converter required
SYSTEM REQUIREMENTS			
Host systems supported	Supports IBM 3780/2780 BSC network hosts	Any host that supports the IBM defined 360/20 HASP workstation, including JES2/JES3	Any host that supports the IBM 3780/2780 RJE workstation
Host operating systems supported	Variable—dependent upon connection requirements	See above	See above
Host end programming	None required	None required	None required
Microcomputers supported	IBM, Apple, DEC, Wang, Eagle, Kaypro, Leading Edge, Osborne, TI	IBM PC, PC XT, Compaq, Columbia	IBM PC, PC XT, Compaq, Columbia
Microcomputer operating systems supported	MS-DOS, PC-DOS, CP/M, Unix	PC-DOS 1.1, 2.0	PC-DOS 1.1, 2.0
Microcomputer system memory requirement	64KB with CP/M, 128KB all others	64KB (IBM PC); 128KB (others)	64KB (IBM PC); 128KB (others)
Media	20MB, 80MB, 212MB hard disk	5¼-inch diskette	5¼-inch diskette
PROGRAM FUNCTIONS			
Asynchronous terminals emulated	Not applicable	—	—
Synchronous terminals emulated	IBM 2780 and/or 3780 RJE	Emulates an IBM 360/20 Mod 5 mainframe as multileaving RJE	Emulates an IBM 2780/3780 RJE workstation
Host data download capability	Yes	Yes	Yes
Download functions	Capture an entire host file to diskette	Capture entire file to disk, capture multiple host files to disk	Capture entire file to disk, capture multiple host files to disk, batch file transfer
Host database update capability	No, only downline loading to Data Pouch at present	Yes	Yes
File formatting capability	Not applicable	—	—
Applications supported	—	—	—
Optional file formatting software	Not applicable	—	—
Other download/upload functions	None	Automatic EBCDIC/ASCII conversion, unattended operation	Automatic EBCDIC/ASCII conversion, unattended operation
Ability to upload data for processing	Yes	Yes	Yes
Ability to download files for local processing	Yes	Yes	Yes
Security features	Sign-on code, E-mail password intelligent protocol	Defined by host	Defined by host
Other program functions	Not applicable	Systems message logging, ability to print files offline (600 cps); punch file to text file converter	Systems message logging, ability to print files offline (600 cps); punch file to text file converter
SCREEN FUNCTIONS			
Terminal functions supported	Visual attributes, scrolling	All HASP workstation functions	All 2780/3780 workstation functions
On-screen help	Completely menu driven	Yes	Yes
Status line	Clock, file size, remaining disk space available	Yes	Yes
COMMUNICATIONS			
Local/remote connection to host or controller	Via direct cable connection at 9600 bps or DDD at 1200 bps	Local or remote connection to host	Local or remote connection to host to 9600 bps
Interface provided	Compatible with Hayes & Ven-Tel	Sync modem or modem eliminator	Sync modem or modem eliminator
Other communications	Autobaud detect, CRC error checking	Cards with multiple serial and printer I/F are available	Cards with multiple serial and printer I/F are available
PRICING AND AVAILABILITY			
One-time license or purchase price, basic package	Contact vendor	\$1,690; includes DCP/88-2 card (2 RS-232-C), RJE software	\$1,290; includes DCP/88-2 card (2 RS-232-C), 3780 software
Additional software support charges	None	—	—
Charges for support services	Based upon type of service req.	None	None
Date of first delivery	4/84	4th quarter 1983	2nd quarter 1983
Lead time on orders	30-45 days	—	—
Number installed to date	15	—	—
COMMENTS		Up to seven multileaved input and seven output streams can be supported concurrently; up to six reader streams and six print/punch streams can be initiated; Centronics, Dataproduct parallel printers supported	Multiple DOS files can be sent as one disk file, with data files maintained separately from JCL files; automatic data receive capability; more than one remote configuration can be defined, saved on disk

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VENDOR/PRODUCT	Personal Systems Technology (Persyst) Coax/3278	Personal Systems Technology (Persyst) PC/3270	Phone 1, CLEO Software Division CLEO-3270 & CLEO-SNA
PACKAGE	Plug-in conversion card plus software	Plug-in conversion card plus software	Plug-in conversion card plus software
Converters supported	No additional converter required	No additional converter required	No converter required; many computers require software only
SYSTEM REQUIREMENTS			
Host systems supported	Any host that supports the IBM 3274/3276 Cluster Controllers	Any host that supports the IBM 3274 BSC, SDLC controllers	Any host supporting IBM 3276-2 or 3276-12 remote cluster controllers
Host operating systems supported	See above	See above	—
Host end programming	None required	None required	No
Microcomputers supported	IBM PC, PC XT, Compaq, Columbia, DEC Rainbow, TI Professional	IBM PC, PC XT, Compaq, Columbia	IBM PC, Altos 586/986, Hewlett-Packard HP 150, Tandy 2000, TeleVideo TS-1603, Zenith Z-100
Microcomputer operating systems supported	PC-DOS 1.1, 2.0	PC-DOS 1.1, 2.0	MS-DOS, CP/M, Unix, Xenix
Microcomputer system memory requirement	64KB (IBM PC); 128KB (others)	128K bytes	128K-256K (dep. on installation)
Media	5¼-inch diskette	5¼-inch diskette	5¼-inch or 3½-inch diskette (dep. on computer)
PROGRAM FUNCTIONS			
Asynchronous terminals emulated	—	—	DEC VT100, Wyse
Synchronous terminals emulated	IBM 3278-2, 3279-2A	IBM 3274, with support for IBM 3278-2 & 3279 S2A/S2B terminals	IBM 3278, 3279, & printer support
Host data download capability	Yes	Yes	Yes
Download functions	Capture entire host file to disk, capture screenful of data to disk	Capture screenful of data to disk, capture entire host file	User may customize CLEO-3270 to a limited extent for file upload capability
Host database update capability	Yes	Yes	No
File formatting capability	—	—	No
Applications supported	—	—	—
Optional file formatting software	—	—	No
Other download/upload functions	Automatic EBCDIC/ASCII conversion, unattended operation	128 character FIFO printer buffer	Some user customization available
Ability to upload data for processing	Yes	Yes	Some user customization available
Ability to download files for local processing	Yes	Yes	User may access program to write download/upload capability
Security features	Defined by host	Defined by host	—
Other program functions	Supports typewriter and data entry keyboards; menu driven configurator	Support for up to four devices, including printers and PCs	—
SCREEN FUNCTIONS			
Terminal functions supported	All 3278/3279 functions, including function keys	All 3274 functions, including function keys	Full erase & edit functions, visual attributes, function keys; all features of IBM 3276-2/-12
On-screen help	User defined help menus	User defined help menus	—
Status line	25th status line	25th status line	25th line status
COMMUNICATIONS			
Local/remote connection to host or controller	Local connection to IBM 3274 or 3276 controller	Remote connection to 370X or host	Remote IBM 3276-2 or 3276-12 cluster emulation
Interface provided	Coaxial	Sync modem or modem eliminator	Synchronous modem required
Other communications	—	Communications up to 9600 bps	Some versions include serial line monitor to view protocol
PRICING AND AVAILABILITY			
One-time license or purchase price, basic package	—	\$1,290; includes PC/3270 software, DCP/88 card	\$500-\$980 (license)
Additional software support charges	—	—	—
Charges for support services	None	None	Telephone support
Date of first delivery	1/84	5/83 (BSC); 9/83 (SDLC)	1980
Lead time on orders	—	—	1 week or less
Number installed to date	—	—	33,000 licenses
COMMENTS	Users can switch from native PC operation to 3270 operation and back again without logging off and on with the host (3270 screen resumes where the user left off)		Some Unix versions may support up to 32 users depending on asynchronous port availability

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VENDOR/PRODUCT	Phone 1, CLEO Software Division CLEO-3780	Quadram Quad 3278	Simware Inc. Sim3278
PACKAGE	Software only, or software plus communications card No converter required	Plug-in conversion card plus software IBM 3274/3276 controllers	Software only —
Converters supported			
SYSTEM REQUIREMENTS			
Host systems supported	Any mainframe supporting IBM 3780 protocol	IBM 370, 43XX	IBM 370 or equivalent host
Host operating systems supported	—	ACP; DOS/VSE; MUS/XA; MUS/SP; OS/VS1; SSX; VSE; VM/SP; CICS; TSO For file transfer (avail. 4Q 84)	VM or MVS/VTAM
Host end programming	No	IBM PC & compatibles	None required
Microcomputers supported	IBM PC, Altos 586/986, Hewlett-Packard HP 150, Seiko 8600, Tandy 2000, TeleVideo 1603, Zenith Z100		IBM PC and plug compatibles
Microcomputer operating systems supported	MS-DOS, CP/M, Unix, Xenix, MP/M	MS DOS	MS—DOS
Microcomputer system memory requirement	128K bytes	64K (1.1 DOS); 128K (2.0 DOS)	128K bytes
Media	5¼-inch or 3½-inch diskette	5¼-inch diskette	5¼-inch diskette
PROGRAM FUNCTIONS			
Asynchronous terminals emulated	—	—	None
Synchronous terminals emulated	IBM 3780	IBM 3278/3279 (BSC & SNA/SDLC)	IBM 3278 Mooel 2
Host data download capability	Yes	Yes	Yes
Download functions	Remote job entry emulation may transfer files between microcomputer & mainframe	Capture screenful of data at a time	Capture an entire host file to diskette
Host database update capability	Not available in most cases	Yes	Not applicable
File formatting capability	Not available in most cases	—	Yes
Applications supported	—	—	DOS supported programs
Optional file formatting software	No	—	No
Other download/upload functions	Standard 3780 features (transparent/non-transparent files)	—	File protection, error detection and correction
Ability to upload data for processing	Yes	—	—
Ability to download files for local processing	Possible, but not usual application	—	—
Security features	Serial line monitor to view line protocol	—	Security exit
Other program functions	—	—	—
SCREEN FUNCTIONS			
Terminal functions supported	—	Full erase & edit features, visual attributes, scroll, function keys	Full erase functions, line/char. insert/delete, visual attributes, function keys
On-screen help	Help menu	None	Help menus
Status line	Interactive status descriptions	3270 status line (25th)	—
COMMUNICATIONS			
Local/remote connection to host or controller	Remote to mainframe or micro supporting IBM 3780 protocol	Local to 3274, remote to 3274 to mainframe	Remote connect to host
Interface provided	Synchronous modem required	Coaxial RG 62 A/U	Via asynchronous adapter
Other communications	—	—	Dial-up manager
PRICING AND AVAILABILITY			
One-time license or purchase price, basic package	\$500-\$750 license	\$1,195; cabling kit—\$95	SimPC—\$175/PC, A2PL2 (older version—\$750/CPU)
Additional software support charges	\$250—Programmer's Option (allows user to customize)	—	Not applicable
Charges for support services	Telephone support	—	First year free, then 15%/yr.
Date of first delivery	1/83	5/84	4/82
Lead time on orders	1 week or less	7 days	One week
Number installed to date	3000 licensed units	—	Over 2000, both versions
COMMENTS		Quad 3278 has features which allow the user to toggle between a PC/MS-DOS environment & the terminal emulation modes.	

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VENDOR/PRODUCT	Sis Sundata PC-Plus	Software AG Natural/Connection	Software Dynamics, Inc. SDI3780/2780/2770
PACKAGE	SNA/SDLC or 2780/3780 card, software, and modem	Software only	Software only
Converters supported	No additional converter required	No converter required	—
SYSTEM REQUIREMENTS			
Host systems supported	IBM 30XX running MVS with JES-2	IBM & compatible mainframes	Any that support IBM 3780/2780/2770
Host operating systems supported	MVS	OS, DOS, VS, MVS	Same as above
Host end programming	Host DBMS or host software	Natural on host initiate up/down.	None required
Microcomputers supported	IBM PC XT and compatibles	IBM PC family & operationally-compatible micros	IBM PC, PC XT
Microcomputer operating systems supported	PC-DOS, MS-DOS	PC-DOS, MS-DOS	PC-DOS 1.0 thru 2.0
Microcomputer system memory requirement	256K bytes	192K bytes	DOS 1.0, 1.1—64KB, 2.0—128KB
Media	5¼-inch diskette, hard disk	5¼-inch diskette (PC); magnetic tape (host)	5¼-inch diskette
PROGRAM FUNCTIONS			
Asynchronous terminals emulated	—	—	—
Synchronous terminals emulated	IBM 2780/3780, 3777	IBM 3278/3279	IBM binary synchronous terminals 3780/2780/2770
Host data download capability	Yes	Yes	Yes
Download functions	Capture specific items from host file	Capture specific items from host file	Capture an entire host file to diskette
Host database update capability	Yes, off-line formatted screen entry	Yes, under control of Natural program	Yes, batch transfer of disk/diskette files to host
File formatting capability	Yes	Yes	None
Applications supported	Data supplied via download is formatted for data management system supplied with PC-Plus	Virtually all commercially available PC software; formats are: DOSASCII, DIF, Basic, Multiplan	—
Optional file formatting software	User exit instructions supplied	All self-contained	No
Other download/upload functions	—	Down./up. Natural source progs.; download reports, data definition	Batch transmit/receive/query from keyboard
Ability to upload data for processing	Yes	Under control of Natural program	Yes
Ability to download files for local processing	Yes	Under control of Natural program	Yes
Security features	'Keydisk' feature allows limitation of data access	Integrated with Natural Security System & security feat. of ADABAS	Up to 15 graphic characters may be sent or checked for security
Other program functions	—	—	Transmit file or multiple files with concatenation, transmit an entire disk as a data file
SCREEN FUNCTIONS			
Terminal functions supported	Only data item/record selection and updating	Full erase & edit functions, function keys, full screen Natural editor	Batch file data is scrolled as transmitted/received unless operator turns off scrolling
On-screen help	Tutorials	On-screen help, standal. tutorial	—
Status line	—	Data transfer in progress, data comm. status, # records transfer	Four screen lines always show last four status messages
COMMUNICATIONS			
Local/remote connection to host or controller	Local or remote connect	Async w/std. async port, direct or ext.; synch local coax w/Irma	May be connected locally or remotely via RS-232-C interface
Interface provided	Modem interface (2400 bps)	Coax (sync)/direct or dial (asyn)	Via IBM BSC adapter
Other communications	—	Automatic, transparent error detection & correction for async	Point-to-point dial or leased multipoint communications
PRICING AND AVAILABILITY			
One-time license or purchase price, basic package	\$3,500 (1 PC); \$2,000 (2-5 PCs); \$1,800 (over 6 PCs)	\$15,000-\$25,000 depending on host OS; \$250-\$1,000/PC (dep. on qty.)	\$375
Additional software support charges	Custom tailoring of system available	—	—
Charges for support services	—	None for first year	Support included
Date of first delivery	4/84	4/84 (7/84 in volume)	5/83
Lead time on orders	30 days	30 days or less (typical)	Immediate
Number installed to date	2	5 sites; 20 sites once volume shipments begin	200
COMMENTS			Double buffering and overlapping line activity with disk/diskette activity makes package extremely efficient with regards to line use; designed so that systems programmer can configure batch command file

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VENDOR/PRODUCT	Software International Smart Link	Sterling Software Marketing PC-Tracs	Systar Corporation ELF System (Electronic Mail)
PACKAGE	Software only	Plug-in conversion card plus software	Software only
Converters supported	Requires the DCA IRMA decision support interface	No additional converter required	—
SYSTEM REQUIREMENTS			
Host systems supported	IBM 360/370, 3030, 3032, 3033, (30XX), 4300, plug compatible mainframes	IBM mainframes & minicomputers (any Bisync mainframe supporting 2780/3780 RJE operation)	IBM Series/1
Host operating systems supported	DOS, DOS/VS/VSE, OS, OS/VS, MVS under CICS	Any system that supports IBM RJE	Runs under Systar's CMX/OSI proprietary operating system
Host end programming	No	No	None required
Microcomputers supported	IBM PC or IBM PC XT	IBM PC & PC-board compatibles	IBM PC, Compaq, Apple
Microcomputer operating systems supported	PC-DOS 2.0, 2.1	MS-DOS, PC-DOS (all versions)	MS-DOS
Microcomputer system memory requirement	256K bytes	64K bytes	128K bytes
Media	5¼-inch diskette	5¼-inch diskette	5¼-inch diskette, hard disk
PROGRAM FUNCTIONS			
Asynchronous terminals emulated	—	—	IBM 3101 (block and character mode)
Synchronous terminals emulated	IBM 3278, 3279	IBM 2780/3780	IBM 327X terminals
Host data download capability	Yes	Yes	—
Download functions	Capture specific items from host file	Transfers files in either direction	—
Host database update capability	Yes, update budget information in the general ledger	No	—
File formatting capability	Yes	Yes	None
Applications supported	Formatting to DIF format and/or sequential/line file; supports Lotus 1-2-3, VisiCalc, dBase II	EBCDIC to ASCII	—
Optional file formatting software	Yes	No	No
Other download/upload functions	Download specific selective data & upload specific selective data	—	Auto-dial, auto-transmission, and auto-retrieval
Ability to upload data for processing	Yes	Yes	—
Ability to download files for local processing	Yes	Yes	—
Security features	Integrated w/financial package	Sign-on, remote & system IDs	Password and user ID
Other program functions	Help screens, menu driven	—	—
SCREEN FUNCTIONS			
Terminal functions supported	Full erase functions, line/char. insert/delete, visual attributes, windows, scrolling, function keys	IBM 2780/3780 functions plus additional functions	Scrolling, function keys
On-screen help	Help menus	No	Help menus
Status line	Communications status, external error messages	No	—
COMMUNICATIONS			
Local/remote connection to host or controller	Local to host, local to controller	Local & remote dial-up	Local and remote connection to host
Interface provided	Coaxial	Synchronous modem	Async modem, TTY direct connect
Other communications	—	—	Support for X.25 async, Telex, RCA, Western Union networks
PRICING AND AVAILABILITY			
One-time license or purchase price, basic package	\$2,995	\$950 (quantity discounts available)	Contact vendor for pricing
Additional software support charges	—	None	Telex, Gateway 34/36/38, Gateway 370, 5256 printer emulation, Rolm CBX auto-call
Charges for support services	—	None; toll-free telephone support	Maintenance charges
Date of first delivery	5/84	1983	1979
Lead time on orders	Two weeks	24 hours	30 days
Number installed to date	5	—	—
COMMENTS			Systar supplies the Series/1 and assists in the selection of PCs and communications facilities

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VENDOR/PRODUCT	Techland Systems, Inc. Blue Lynx	Tominy, Inc. Data Base-Plus	VM Personal Computing Relay/Please/PC3270
PACKAGE	Plug-in conversion card plus software	Software only	Software only
Converters supported	No additional converter required	—	No converter required
SYSTEM REQUIREMENTS			
Host systems supported	IBM S/34, S/36, S/38, 308X, 43XX, all 360s and 370s	IBM Series/1, System/34, System/36—mainframe CICS	IBM 370/158, 3033, 3083, 43XX, & PCMs
Host operating systems supported	TSO, IMS, CICS, CMS	IBM CICS, IBM System 34/36-SSP IBM Series/1-EDX	VM/CMS (Please), VM/SP (PC3270)
Host end programming	No	Host task under control of CICS	Please (upl./downl.), PC3270
Microcomputers supported	IBM PC, PC XT, compatibles	IBM PC/XT, Altos 8600/586, Onyx	IBM PC & PC XT, Columbia, Compaq, Corona, Wang PC
Microcomputer operating systems supported	MS-DOS, PC-DOS	PC-DOS, Xenix, Unix	PC-DOS, MS-DOS
Microcomputer system memory requirement	96K bytes	128K bytes	128K bytes
Media	5¼-inch diskette	5¼-inch diskette	5¼-inch diskette
PROGRAM FUNCTIONS			
Asynchronous terminals emulated	—	—	DEC VT100 & VT52, TTY, Telex, async. IBM 3277/3278 (PC3270)
Synchronous terminals emulated	IBM 3276/3278/3279, 5251 Model 12, 5292	—	IBM 3270/3278 (async. emulation)
Host data download capability	Yes	Yes	With Please
Download functions	Capture an entire host file to diskette, emulator transfer utility	Capture an entire host file to diskette, capture specific items from host file	Downloads any kind of VM/CMS file to Relay on IBM or Wang PC, error free; asynchronous only
Host database update capability	Yes, as terminal indicated	Yes, under control of Data Base-Plus within CICS environment	Yes
File formatting capability	None	Yes	No
Applications supported	—	Full function data base management capabilities	—
Optional file formatting software	None	Yes	No
Other download/upload functions	—	Automatic ASCII/EBCDIC translation	Allow/suppress EBCDIC-ASCII conversion, compression
Ability to upload data for processing	Yes	Yes	Yes
Ability to download files for local processing	Yes	Yes	Yes
Security features	—	Field security provided for query/report writer users.	Various levels/types of passwords for Relay PC-to-PC communications
Other program functions	—	Full application screen and report generation capabilities available	Full-screen editor to create or revise files on PC; can be used during upload/download
SCREEN FUNCTIONS			
Terminal functions supported	Full screen emulation	Full erase functions, visual attributes, function keys	Full erase & edit functions, visual attributes, scrolling, function keys
On-screen help	—	Function of individual appl. sys.	Context-sensitive Help
Status line	Full status line function	Date, time, interrupt key	Date, time, event messages, prompts, toggle key status
COMMUNICATIONS			
Local/remote connection to host or controller	Remote to S/34, S/36, S/38, 308X, 43XX	Entirely dependant on processor operating system capabilities	Direct or local connection, remote asynchronous dial-up
Interface provided	Synchronous modem interface	—	Asynchronous modem
Other communications	—	—	Proprietary protocol to detect & fix errors transparent to user
PRICING AND AVAILABILITY			
One-time license or purchase price, basic package	\$690	\$39,000 (MF); \$19,500 (Series/1, S/34, S/36); \$5,850 (PC)	Relay:\$149/PC; Please: \$2,495; PC3270: \$6,995
Additional software support charges	Emulator Transfer Utility (ETU): S/38—\$800; S/34/36—\$500	—	None
Charges for support services	None	15% of purchase price/year	None
Date of first delivery	11/82	1/83	4/83 (Relay)
Lead time on orders	2 days	—	1 week
Number installed to date	6000	1000	5000 (Relay)
COMMENTS			Relay: async. communications pkg. for IBM PC; transfers files error free in both directions; Please runs simultaneously with PC3270, allowing IBM 3270 terminal emulation

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VENDOR/PRODUCT	Winterhalter Inc. Datatalker II	Winterhalter Inc. Datatalker/PC	Winterhalter Inc. Datatalker/PC+
PACKAGE	Standalone converter plus software	Plug-in conversion card plus software	Plug-in conversion card plus software
Converters supported	No additional converter required	No additional converter required	No additional converter required
SYSTEM REQUIREMENTS			
Host systems supported	Any host that supports 3780 or 3270 BSC/SDLC workstations	Any host that supports 3780 or 3270 BSC or SDLC workstations	Any host that supports 3780 or 3270 BSC or SDLC workstations
Host operating systems supported	See above	See above	See above
Host end programming	None required	None required	None required
Microcomputers supported	All major microcomputer models equipped with a serial port	IBM PC, PC XT, compatibles	IBM PC, PC XT, compatibles
Microcomputer operating systems supported	CP/M-86, Turbo DOS, Unix, MS-DOS, PC-DOS	PC-DOS, MS-DOS, CP/M-86	PC-DOS, MS-DOS, CP/M-86, Concurrent CP/M-86
Microcomputer system memory requirement	64K bytes	128K bytes	64K bytes
Media	5¼-inch, 8-inch diskettes	5¼-inch, 8-inch diskette	5¼-inch, 8-inch diskette
PROGRAM FUNCTIONS			
Asynchronous terminals emulated	None	None	None
Synchronous terminals emulated	IBM 3274, 3271, 3275, 3276, 3780, 2780, 3741, 2968, 2770-BSC/SDLC	IBM 3274, 3271, 3275, 3276, 3780, 2780, 3741, 2968, 2770-BSC/SDLC	IBM 3274, 3271, 3275, 3276, 3780, 2780, 3741, 2968, 2770-BSC/SDLC
Host data download capability	Yes	Yes	Yes
Download functions	Capture screenful of data at a time, capture an entire host file, capture specific items	Capture screenful of data at a time, capture an entire host file to diskette, capture items	Capture screenful of data at a time, capture an entire host file to diskette, capture items
Host database update capability	Yes	Yes	Yes
File formatting capability	No	No	No
Applications supported	—	—	—
Optional file formatting software	ASCII-to-Lotus file formatting to be available 4th qtr. 1984	ASCII-to-Lotus file formatting to be available 4th qtr. 1984	ASCII-to-Lotus file formatting to be available 4th qtr. 1984
Other download/upload functions	ASCII/EBCDIC translation, record blocking/unblocking	ASCII/EBCDIC translation, record blocking/unblocking	ASCII/EBCDIC translation, record blocking/unblocking
Ability to upload data for processing	Yes	Yes	Yes
Ability to download files for local processing	Yes	Yes	Yes
Security features	Function of the host system	Function of the host system	Function of the host system
Other program functions	Binary file transfer capability	Binary file transfer capability	Binary file transfer capability
SCREEN FUNCTIONS			
Terminal functions supported	Full erase and edit functions, visual attributes	Full erase and edit functions, visual attributes	Full erase and edit functions, visual attributes
On-screen help	Menu-driven functions	Menu driven functions	Menu driven functions
Status line	Yes	Yes	Yes
COMMUNICATIONS			
Local/remote connection to host or controller	Remote connection to host or controller	Remote connection to host or controller	Remote connection to host or controller
Interface provided	Four serial ports included	Two serial ports included	Two serial ports included
Other communications	On-line diagnostics	On-line diagnostics	On-line diagnostics
PRICING AND AVAILABILITY			
One-time license or purchase price, basic package	\$995	\$695	\$895
Additional software support charges	—	—	—
Charges for support services	None	None	None
Date of first delivery	6/83	1/84	1/84
Lead time on orders	24 hours	24 hours	24 hours
Number installed to date	500	Over 500	Over 500
COMMENTS	Z80A based; four serial devices, e.g. printers and other PCs, can be connected; 30 day money back guarantee/1 year warranty; communications test center to verify operation on-line	30 day money back guarantee/1 year warranty; Winterhalter maintains an on-line communications test center	Z80A based; 30-day money back guarantee/1 year warranty; Winterhalter maintains an on-line communications test center