

The Micro Times



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Data Communications at EDC

by Bob Van Den Oever

My thanks to Terry Bobbie for the information he provided for this article and his patience in explaining it to a novice in the communications world.

Over the last several years EDC has experienced an explosive growth in data communications activities. These activities include employees dialing in from home to do work, those that gather data from or send data to remote computers, and those that dial into remote computers from EDC and actually do their work.

EDC computers are also (or soon will be) part of several nation-wide networks. Our computers can be used by these networks to pass communications around the nation even when EDC is neither the originator nor the destination.

Given the amount of activity in this area, we thought it was a good time to discuss some of the avenues available for communications between EDC and the outside world. We will concentrate on three methods:

- HYPERbus
- Rolm CBX
- GEONET

This discussion will be strictly an overview as the topic is too complex and our space too short to get into heavy details. PC's are not specifically mentioned in this article; however, it is because of them that communications has become an increasingly more important aspect of computing.

HYPERbus

The HYPERbus network is probably the network most familiar to EDC employees. Most computer users at EDC have, at one time or another, used HYPERbus. To facilitate communications with destinations or origins outside EDC, the HYPERbus network has been configured with four modems (three of which are available for general use). All of the modems have auto-sense capabilities so they can match their speed (2400, 1200, or 300 bps) with the calling or answering modem's speed. These modems are Bell 212A equivalent and can be software configured to use MNP error correction. They also support both Racal-Vadic and Hayes command sets. The working characteristics of the modems are no parity, 8 data bits, 1 start and 1 stop bit.

The HYPERbus modems actually connect HYPERbus to the Rolm CBX so that connections can then be made through the public telephone system. When using the HYPERbus modems to dial out of EDC, you must first dial BIU 75 which will rotor among the general use modems. To dial in to EDC, call 594-6891. There are call forwarding numbers in both Brandon and Dell Rapids that automatically forward to 594-6891. The number in Brandon is 582-2350 and in Dells it's 428-5153.

The primary use of the HYPERbus modems is for local type calls, though they certainly aren't limited to local use. Most users who use their PC's to dial in to EDC and work during off hours will dial in to the HYPERbus modems. However, HYPERbus is also

used to call the AFO and to dial in to the DORRAN Altos' at other NCIC sites. The benefit of HYPERbus over the Rolm system is that HYPERbus allows all users to share a limited number of modems, rather than requiring each user to have their own.

If you need help using the HYPERbus modem system, such as the dial out command syntax or the attention sequence to get the HYPERbus dial prompt, contact Terry Bobbie of EES (6807), Tony Butzer of the Systems Group (6836), or the Micro Support Group, room 519.

Rolm CBX

As previously mentioned, the HYPERbus modems go through the Rolm CBX to connect to the public telephone system. The Rolm CBX itself also contains built-in mechanisms to allow EDC personnel to make digital connections into and out of the building.

One of these mechanisms is an analogue type wall connector. Rolm allows for direct connection of modems to its system by using wall connections that are explicitly marked as analogue.

Unmarked wall jacks cannot be used for connecting modems to the phone system. Once your modem is connected to an analogue jack, the Rolm system simply becomes a pass through mechanism just as it was for the HYPERbus modems. To use this system, each user must have their own modem and a nearby analogue phone jack. The analogue jacks are spread throughout the building; there should be at least one in every section. Outside users can call into a machine plugged to an analogue jack by directly dialing the phone number for that jack. Though the number of people who use their own modems and an analogue phone jack is relatively small,

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REMINDER

During the Lotus classes there will be no micros available for checkout.

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these people tend to be rather heavy users spending lots of time using the system.

As the Rolm CBX is used as a pass through mechanism, it can capture statistics regarding the use of analogue jacks as well as the HYPERbus modems. Statistics include such things as when calls are made, their duration, and the number called.

The system just described might be characterized as the passive Rolm system. Rolm has another mechanism

also dial into the Rolm hardware by calling 594-6529. The interactive software will then lead them through the sequence needed to make their connection. The active Rolm system provides connections to HYPERbus, the AOM Altos, GEONET, and the data phones connected to the system.

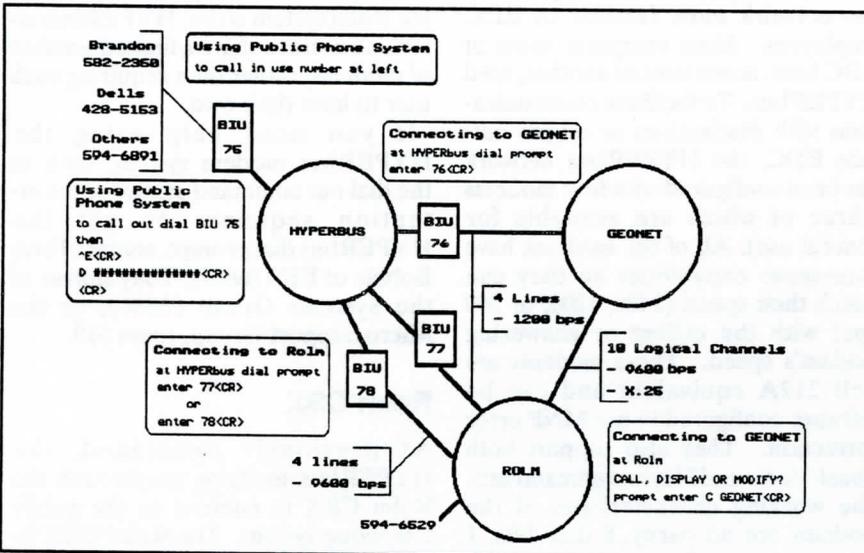
The primary purpose of the active Rolm system is to provide data communications to devices which do not support modems. A prime example of this are the CPT word processors, a number of which use data phones and

HYPERbus and GEONET, while the Rolm to GEONET connection speed is 9600 bps and uses the X.25 protocol. (Note, however, that the HYPERbus to Rolm connection through BIU 77 is only 1200 bps.) To use the interactive GEONET function, you must have a GEONET id and password. You will be prompted for these once the initial connection is made. This same prompt also requires you to input the name/number of the host you wish to connect to. Once this connection is made, you are logged onto your target machine and can operate just as if you were signed onto that machine locally.

If you wish to ease your sign-on burdens, you can connect to GEONET through the Rolm system by using HYPERbus BIU 77 or 78. This connection provides access to a set of predetermined GEONET connections that allow you to use GEONET without the use of user ids, host name/numbers, or passwords. If you make regular calls (at least three per week) to a GEONET host using X.25, you can request through Terry Bobbie that the Rolm CBX be programmed to automate the connections with GEONET. From that point on, dialing your selected GEONET host will require nothing more than entering the command *call myhost* to the Rolm software after dialing BIU 77 or 78.

The transparent method of using GEONET involves using a command on your local computer that automates the GEONET interface and performs some type of command, e.g., file transfer. This command will automatically connect to the desired host using the intelligence of X.25 and your local

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THREE EDC NETWORKS SHOWING INTERCONNECTIVITY

that might be described as an active system. To use this system, the user must have a Rolm data phone. These are phones that look like standard desk set phones but have a built-in RS-232 connector. Data phones connect to the standard digital wall jacks, not the analogue jacks. Any device with an RS-232 port can be connected to a data phone. For the data phones to work, the Rolm system must be programmed to know that a data phone exists at a given number. The characteristics (parity, data bits, start and stop bit) of the connection are hard coded into the Rolm system also.

Data phones work because the Rolm system has built-in modem-like hardware and controlling software. Once the Rolm system has been programmed, a call out through the RS-232 port will be routed to the built-in hardware and software. The software interactively leads the user through the steps needed to make the connection. Those outside EDC can

the active Rolm system to communicate. As noted earlier, if you need more information or help in using the Rolm data communications system call Terry Bobbie or the Micro Support Group.

GEONET

The third method of making connections into and out of the building is through the GEONET network. GEONET is a private subset of the TYMNET packet switched public network, dedicated to U. S. Geological Survey needs. GEONET also provides two connection options: interactive and transparent, though the *smarts* available can vary, depending on how you approach the system.

To use the interactive mode, you can use either HYPERbus (dial 76) or the Rolm system (call 594-6529 or use HYPERbus BIU 77 or 78). The direct HYPERBUS connection (76) will give you a 1200 bps speed between

Calendar of Events

This month's calendar consists only of Lotus 123 classes. Due to scheduling conflicts and personnel being involved with the Lotus classes, there will be no noontime seminars by the Micro Support Group this month.

Events being planned for future months include a micro network class and WordPerfect version 5.0 classes. Noontime seminars being kicked around include desktop publishing, business graphics, CAD, communications, public domain software and others.

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computer's communication facility e.g., DECNET, perform the file transfer, and disconnect. This method frees the user from needing to know any of the details involved; though, it does require some pre-planning to get this set up. This method only exists on VAX-A and soon to be available on the Prime. Contact Terry or the Systems Group for more details on this method.

The GEONET parameters are 8 bits and no parity. The major benefit of GEONET is its higher speed capabilities and a lower connection

cost. It also provides for automatic error correction and can even route your call around bad lines. Like the Rolm system, GEONET has its own hardware and software engine here at EDC; no outside public phone lines are needed. GEONET even allows you (if your access privileges allow) to gain access to the public TYMNET system and all the hosts and modems that system has access to, including overseas hosts. In many cases it is worth investigating using GEONET/TYMNET rather than FTS or other long distance phone systems. If you think you would

like to use GEONET but need some help contact Terry, Tony, or the Micro Support Group.

While I realize this has not provided enough information to allow you to make connections in and out of EDC or even covered all the options, I do hope it has provided you some perspective on the capabilities that are at your disposal. Data communications into and out of EDC are becoming indispensable tools in our quest to improve the products and services we provide. Perhaps they can help you in your job as well.

Random Notes of Interest

Kermit Transfers with the VAX's

For those of you that have experienced incorrectly transferred files between your PC and a VAX using kermit, the problem should be fixed. A new version of kermit has been installed on both VAX-A and VAX-B. If you still experience a problem contact Tom Bodoh of the System's Group (6830) with specifics.

WordPerfect Version 5.0

For those of you wondering what to do to upgrade your copy of WordPerfect to version 5.0, don't worry, we have submitted a blanket upgrade request for every copy presently in the building. If anybody is thinking of getting an additional copy, the building is standardizing on version 5.0. There are also two copies of version 5.0 in our software checkout pool.

Proportional Printing on the Dataproducts LZR1230

If you have not been able to get the proportional font on the Dataproducts LZR1230 laser printer to work, it isn't your fault. It seems their Dutch 10 definition is not standard. The Micro Support Group has developed a printer definition for WordPerfect 4.2 and for PC-Write. It seems WordPerfect didn't believe us when we called and told them of this problem with the Dataproducts printer because version 5.0 has the same problem. Not to worry, we have developed a printer definition for version 5.0 also.

Discounts on Micro's to EDC Employees from Compar

Under this employee purchase program, employees will be purchasing products directly from Compar, Inc. The products available are: Zenith Data Systems, Toshiba America, and NEC Home Electronics along with all accessories.

After a purchase decision is reached, the employee will be asked to send their order to Compar with a Certified Check or Money Order made out to Compar, Inc., for the full amount of the order including shipping charges. It will also be necessary at that time to prove that the individual ordering the product is a USGS-EDC employee by attaching a photocopy of an identification card. Under this purchase program, employees are able to purchase one computer per year.

A list of the items available for purchase under this program is available from the Micro Support Group. The discount is 35% off the Retail Price listed.

This month's issue was published using Xerox Desktop Publishing Series: Ventura Publisher Edition and printed on the Dataproducts LZR 1230 laser printer. As you can see it is a very powerful desktop publishing package. It should be noted that this package is by no means for the casual user. Having recently received this package, this issue is by no means showing off the total potential of this package. One of the nice features of this package is that it handles graphics and word processor files directly, no conversion is needed. This issue used WordPerfect version 4.2 and PC-Paintbrush files. The package itself has some word processing and graphics capabilities but in general you need to use your own favorite. A noontime seminar on desktop publishing is planned for the future and will explain the features of this package at that time. NO . . . 'MICRO' is not spelled incorrectly on the header. The 'c' and 'r' look alot alike in Olde English.



OF INTEREST FROM THE USERS

USAID - Famine Early Warning System

by Tom Loveland

The International Projects Section has been helping several U.S. Agency for International Development (USAID) programs for the past two years use geographic information systems and remote sensing technologies. PC's have become a useful and necessary tool in many of our projects.

Perhaps the most unique use of PC's in our work is in the development of geographic data bases for the USAID Famine Early Warning System (FEWS). FEWS is a program designed to help the most famine prone countries in Africa target areas that may potentially have food shortage problems. This targeting is done by FEWS staff using PC's. FEWS attempts to carry out all responsibilities using PC-compatible microcomputers with common hardware configurations and software that can survive in Africa. EROS, particularly because of the contribution of Mike Wehde, has been a major contributor of PC data bases needed for FEWS country assessments. We have prepared three types of data bases for FEWS: vegetation index (greenness) images transformed from AVHRR data, historical (1981-1987) vegetation index statistics, and administrative boundary line files (country, provincial, and district boundaries). The EDC VAX computers with LAS and ARC/Info software are used in the initial preparation of the data. However, the data files are ultimately transferred to PC's for refinement and shipment to FEWS staff in Washington, D.C. and Africa.

The most common tools used in FEWS for analyzing geographic data

are Lotus 1-2-3, ATLAS*Graphics, and IDA. ATLAS*Graphics is a map graphics package developed by STSC, Inc. It is easy to use and offers impressive capabilities for displaying, customizing, and plotting map information. Most FEWS data are statistical summaries (population data, agricultural production, etc.) representing country administrative subdivisions. ATLAS is well suited to display this type of data. The map files that are used in ATLAS can be in latitude/longitude or digitizer coordinates. With this flexibility, data files digitized by packages such as ARC/Info can be imported for use in ATLAS. We have downloaded ARC/Info political boundary files for most FEWS countries to PC's for use in ATLAS. ATLAS has its own simple spreadsheet for organizing or manipulating map attributes. Several formats of attribute data can be imported - Lotus spreadsheets are the easiest. Map layout and legend building using ATLAS is simple and interactive. Multiple map themes can be overlaid to simulate the map overlay process available in more sophisticated GIS. While ATLAS is not a true GIS, it offers enough map display and analysis capabilities to permit many of the FEWS food assessment tasks.

We have also created statistical data bases containing historical vegetation index statistics summaries that can be used for quick assessments of the relative vegetation conditions. We create the statistics files within LAS on the VAX using the ATLAS boundary files and AVHRR images produced by NASA Goddard. The files are then downloaded to PC's and organized into country-specific Lotus spreadsheets. The Lotus files are arranged so that graphs representing each province's seasonal vegetation conditions for 1981-1987 can be quickly created and interpreted to determine the relative status of vegetation development. The

Lotus files also are keyed to the ATLAS*Graphics boundary files and can be imported and displayed with ATLAS.

The third data bases we have prepared for FEWS are AVHRR-based vegetation index files produced as part of our locust habitat mapping project. We are downloading the LAS files to our PC's and reformatting the images on the PC's to work within a simple PC image display package called Image Display and Analysis (IDA). IDA is in the public domain and was written for FEWS by Price, Williams, and Associates of Silver Spring, Maryland. It has a simple user interface based on Lotus-like menus. IDA can perform several simple image analysis tasks including computing maximum, minimum, average, and total data values between two or more images. It uses a slick process for selecting color and data ranges for displaying image data. The histogram of the scene is displayed and the cursor is moved to points along the histogram's axis with the activated color assigned to the identified data range. Because IDA was designed for use with EGA graphics, each image can be displayed with up to 16 colors. ATLAS boundary files can be displayed within IDA to provide a frame of reference. While IDA is by no means a sophisticated image processing system, it is a useful PC tool that is easy to use and does not require unique hardware.

FEWS plans to eventually increase its computing power by moving to PC-ARC for full-featured GIS capabilities. For now, they have shown that much can be done with simple, low-cost software packages and standard hardware configurations. The FEWS PC's have survived for two years in some of the more harsh African conditions. If anyone is interested in trying either ATLAS*Graphics, IDA, or the PC spatial data bases we have provided to FEWS, stop by.