1380 TAKE OFF

Memorex 1380 Communications Processor Newsletter

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THE CUSTOMER SPEAKS:

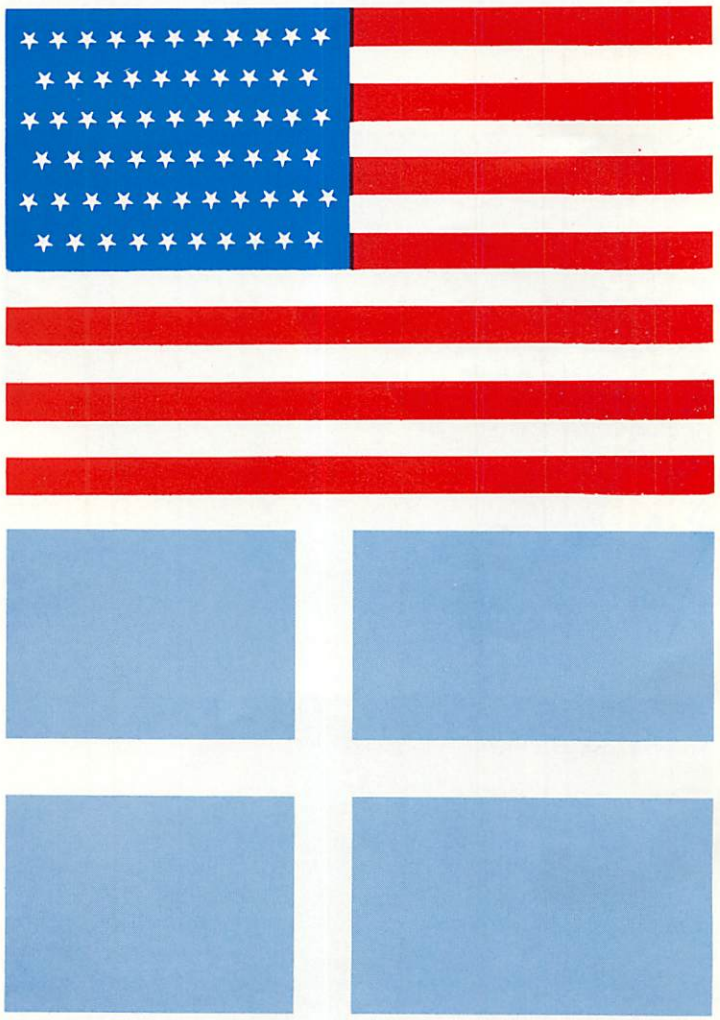
A Simple Swedish Solution

A Memorex 1380 at the Post Office in Sweden acts as a message switcher between the terminals of the Post Girot system and a corresponding computer configuration of the commercial PK Banken. The 1380 driving the Post Girot terminal system is linked by means of two binary synchronous lines to a Series 1 machine which front ends the PK Banken network. The software, which is based on standard NCS 2.6.1, has been specially developed on an RPQ basis through Memorex Europe.

The overall system is quite sophisticated since each terminal network consists of several sets of line concentrators to which the actual terminal links are attached.

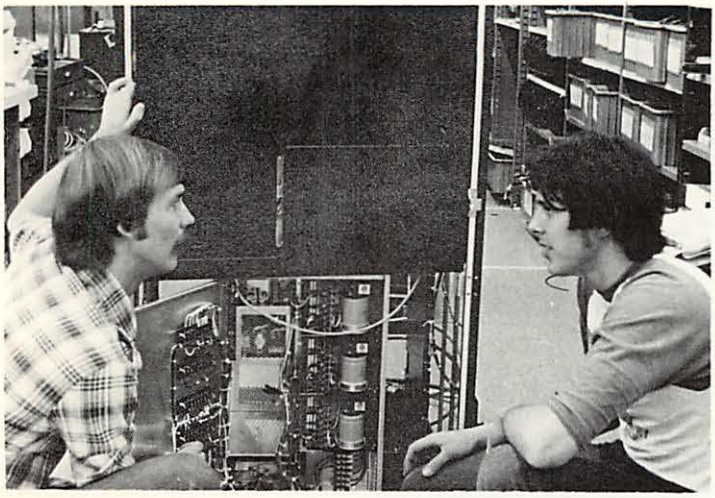
The concentrators are themselves software driven devices, emulating IBM 3271 controllers. One of the most significant features of the special Memorex 1380 software is its failsoft capability. Even if the Post Girot host machine is down, messages can still be switched between the terminal network and the link to the PK Banken. In other words a Post Girot terminal can still communicate with the PK Banken even if the Post Girot computer itself is out of action. A further failsoft capability is provided in the binary synchronous links between the two networks. If either of the two lines goes down, the software automatically routes all cross-traffic to the remaining line.

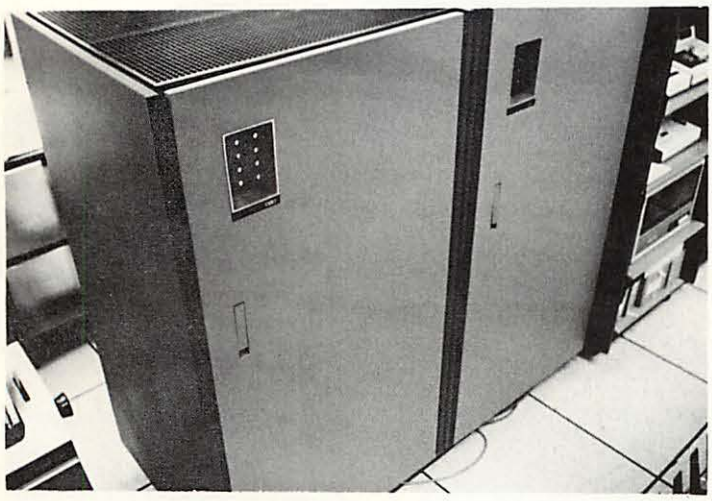
This installation provides an excellent example of the 1380's ability to handle special and sophisticated customer requirements. The software produced for Memorex Europe in the UK was ready a week ahead of its six month schedule and documentation - apart from a few refinements - was produced in the first four weeks.

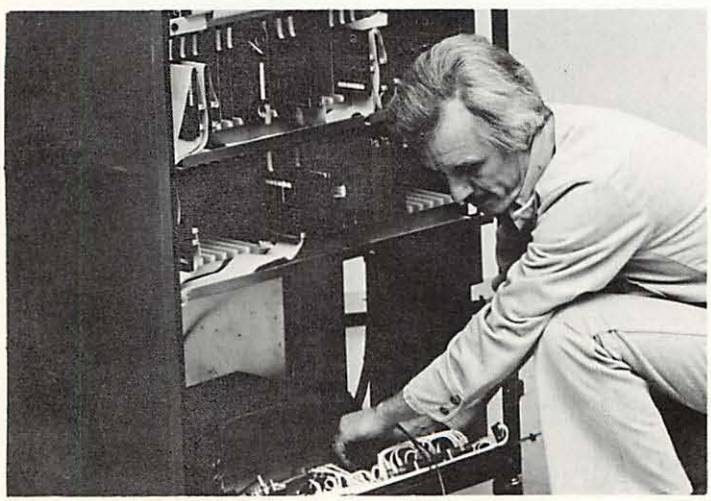


Memorex 1380's have been installed in Europe since 1976 and there are now nearly 40 of them with 30 customers. They are installed in Scandinavia, France, Italy, Spain, Germany, the Low Countries and the UK, and are spread over a wide range of industrial and commercial sectors together with education, public utilities and government.

Another case of the Memorex 1380 solving Europe's data communications problems.







TCU Engineering - Field Support Group

Since the introduction of the 1380 controller in 1976, the Memorex Communications Group has established a headquarters support staff. Based in Cupertino, California, the Communications Field Support Group is responsible for the highest level of technical support for Memorex communications software and hardware products.

The Field Support Group maintains contact with branch offices and customers throughout the world. Their purpose is to anticipate and quickly resolve communications systems problems.

The Communications Field Support Group is alerted immediately when a customer's problems become urgent. This customer is then intensely monitored as a "Critical Account" until they are satisfied with their programs and/or equipment. Former "Critical Accounts" have included some of the largest government and commercial communications networks in the world. Usually, the problems encountered involve such complex situations as multiple equipment vendors, a variety of communications telephone lines, and exacting customer performance requirements. To resolve a customer's problem, the Field Support Group may provide 24 hr/day, 7 days/week telephone coverage, on-line duplication of the customer network for problem simulation, or ultimately, on-site support.

A testimonial to the effectiveness of the Communications Field Support Group:

In 1979, no customer monitored as a "Critical Account" cancelled his 1380 lease agreement. In 1980, we intend to continue this outstanding record.

An Answer to a Network Expansion Problem

To help you better evaluate and implement your communications network, we've included the following article, written by Richard O. Bezek, of American Electric Power Service Corporation, Canton, Ohio, for Data Communications *magazine, September 1979 issue. The article is not reprinted in its entirety; only the basic concepts of the article are included.*

The production and delivery of electric power requires reliable communications for one company, which has learned to cope with ever-expanding configuration problems.

As the number of private data communications networks increases, so does the complexity of the networks themselves. The addition of computers and terminals, higher line speeds, greater message loads, and enhanced data service makes a network more vulnerable to a failure—which has become increasingly more expensive to endure. Here is how American Electric Power Service Corp. approached the problem.

AEP's network spans approximately 102,000 voice-channel miles. The data transmission rates over it range from 7.5 bit/s for telemetered instrument data to 230.4 kbit/s for AEP-wide customer billing. And the utility's network services are to be expanded even further in the immediate future.

Recognizing the critical need to maximize the availability of all lines in the network, AEP will conduct communications analysis for network fault diagnosis at four major sites. Such analysis is essential to managing any private data communications network.

American Electric Power needs a reliable network to support its System Operation Department (SOD), whose functions include the following:

- Assignment of electric loads to power stations for the most economic utilization of available electricity-generation capacity.

- Coordination of the purchase and sale of electric power for AEP as well as the transmission of power through the AEP grid to satisfy the needs of other utilities during various high-demand periods.

- Coordination of the AEP bulk transmission system to take proper action in the event of circuit outages or significant changes in demand.

- Supervision of the U.S. power frequency time standard through a link to the National Bureau of Standards' universal time standard in Boulder, Colorado.

The AEP data files in New York today include two types of information:

(1) Telemetered data collected from generating stations and transmission lines interconnected with neighboring utilities. This data-collection operation was originally configured around an IBM 1710 computer (now an IBM 1800) under SOD control.

(2) Transmission data from a 765 and a 345 kilovolt power distribution grid. This information is sent from within the seven-state data communications network to Canton over separate microwave links.

The latter, known as the data acquisition system (DAS), currently consists of 47 strategically located data-collection stations. Data is gathered at a rate of 1800 bit/s throughout the DAS by Hewlett-Packard 2116B computers located at the three major operating companies' headquarters. The data is transferred from the HP mainframes to the IBM 1800, located in Canton, over the AEP microwave network at a rate of 50 kbit/s. The data-collection process is accomplished once every second. This network is used to drive the SOD display board and local CRT monitors for the 765/345 kilovolt power distribution network.

Selected data from the telemetry and the DAS networks is transmitted to New York from Canton at the rate of 7200 bit/s to update the data files. Power company billing is based on the low-speed telemetered data. Power-grid status is based on information from the DAS network. This data is made available to the operating companies through CRT terminals remotely connected to the New York computer.

Expansion of terminal types and locations

Of the 20 Telpak lines used for data transmission to New York, 17 are dedicated for service to remote job entry (RJE) workstations, and three support CRT terminal installations. Both types of terminals are mainly used to access engineering programs and the power company's database in New York. The RJE terminals within AEP are workstations consisting of two to five types of I/O devices connected through Data 100 controllers. These workstations are located at generating plants, mine offices, and operating company main offices.

Nineteen CRT stations at various office locations provide access to data about the power distribution network. These stations, all under control of GTE 7800 Series controllers (some equipped with printers), also provide access to the power company engineering programs in batch or timesharing modes. The RJE and CRT stations are augmented by eight dial-in computer ports. These ports are accessed from field locations making use of a combination of microwave and Telpak circuits to the New York computer.

The computer configuration now consists of an IBM System/370 Model 165 II in New York and System/360 Model 65 and System/370 Model 158 in Canton. IBM System/360 Model 40 computers in Fort Wayne and Roanoke are used for local processing and support the high-speed customer-billing application.

Canton and concentration

The growth and demand for both computing power and communications capacity are leading to a major change in the AEP data communications network. Two IBM 3033 mainframes have been ordered to act as a central computer complex (CCC) in the AEP setup and take over the bulk of data processing. The CCC will be located in Canton. Use of the New York-based IBM System/370 Model 165 II will be discontinued upon full operation of the CCC, scheduled for January 1, 1980. Security is the main reason for moving the central computer complex to Canton.

In addition to the relocation and upgrade, a conversion is being made from dedicated to shared data transmission lines between the four major data centers. This network will be similar to those being offered by common carriers. American Electric Power, in conjunction with Memorex Corp., has developed a private packet-switched network. Portions of the network are now operational over Telpak and microwave links between New York, Canton, and Fort Wayne. Network statistics are being collected and evaluated in preparation for full packet-network implementation.

The result of the expected AEP network configuration is shown in Figure 1. Three 9600 bit/s links will join the CCC in Canton with each of the satellite computing centers. The microwave links and leased lines from the satellite centers to remote terminals will range from 1200 to 9600 bit/s. The three data links to New York will include two Telpak channels and an additional one provided by MCI.

The ultimate design of the data communications network is directed toward upgrading the 9600 bit/s concentrator lines to two 56 kbit/s ones, and using them to transmit both the concentrated data and the 230.4 kbit/s wideband data. The inclusion of the wideband data in the two lower-speed (56 kbit/s) links will be possible because of data compression techniques already developed and tested. Higher transmission rates to New York will be required as the new central computer complex in Canton keeps pace with the New York location's projected data processing work load.

The operation of the concentration network will be transparent to a terminal. This environment will make the terminal user's job a lot easier. Messages transmitted from a remote job entry location will be routed by the front-end processor to the appropriate host for processing. This will permit access of common application programs and databases, providing additional network-wide economies.

In addition, substantially more efficient use of data communications facilities will be obtained in the new network. This efficiency will be primarily derived as the front-end processors maximize line utilization and route messages between terminals and computers. Dedicated data communications lines will only be required from the remote terminals to the nearest node in the American Electric Power network.

To provide the same throughput to end terminals 95 percent of the time, a reduction factor of three can be made in the number of dedicated communications lines required between front-end processor locations. This reduction is due, in part, to the statistical nature of terminal usage. Through the use of a data concentration network, valuable channels on the AEP microwave network will be preserved.

The AEP Schematic

Configuration for the 1980s.
(see figure one, following page)

Three 9600 bit/s microwave and leased-line links are connecting the Canton computing center with satellite facilities.

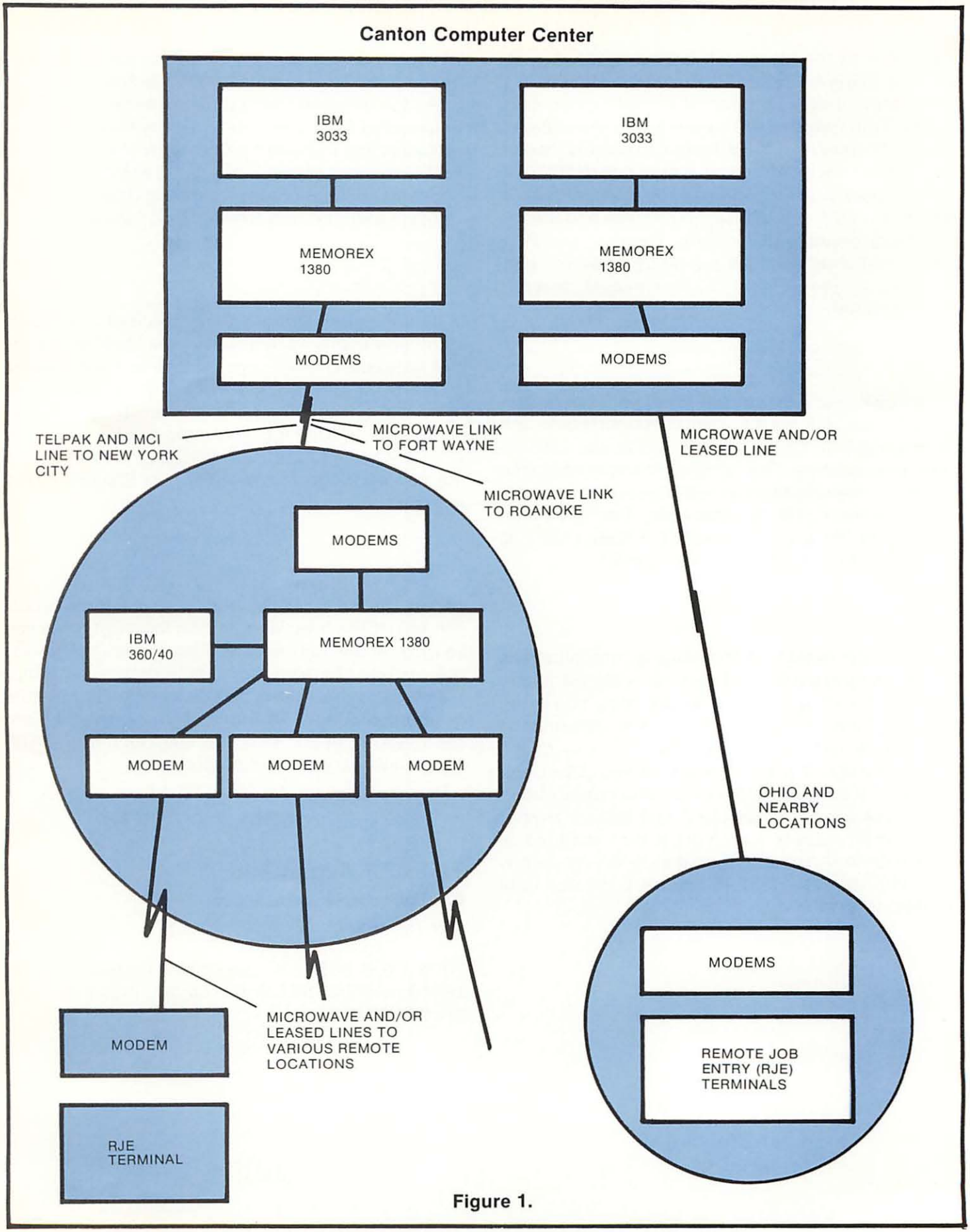
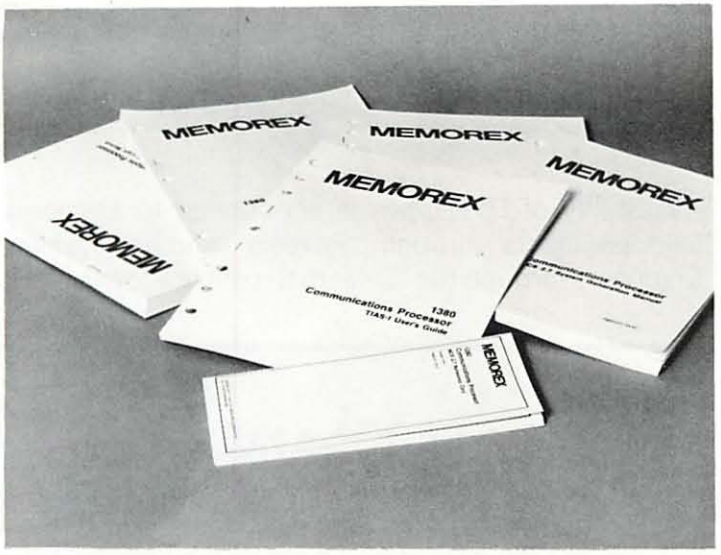

Canton Computer Center
IBM 3033
IBM 3033
MEMOREX 1380
MEMOREX 1380
MODEMS
MODEMS
TELPAK AND MCI LINE TO NEW YORK CITY
MICROWAVE LINK TO FORT WAYNE
MICROWAVE LINK TO ROANOKE
MICROWAVE AND/OR LEASED LINE
MODEMS
IBM 360/40
MEMOREX 1380
MODEM
MODEM
MODEM
OHIO AND NEARBY LOCATIONS
MODEMS
REMOTE JOB ENTRY (RJE) TERMINALS
MICROWAVE AND/OR LEASED LINES TO VARIOUS REMOTE LOCATIONS
MODEM
RJE TERMINAL

Figure 1.



Where's That Manual?

Memorex provides complete documentation support for the 1380. Look over the following list of publications we offer. If any of the manuals would make your job easier, call your local sales representative and give him the publication number and title.

STANDARD INFORMATION

TITLE	PUBLICATION NO.
1380 Product Description Manual	1380-00-03
1380 Introduction Manual	1380-03-03
1380 Program Support Service	1380-06-03
1380 Configuration Control Manual	1380-25-02
1380 Diagnostic Reference Manual	1380-50-04
TIAS I	
TIAS I User's Guide	1380-TI.02-02
NCS TIAS I User's Card	1380-TI.70-02
2.6	
Operator's Guide	1380-.02-02
1380 System Generation Manual	1380-S.04-05
NCS 2.6 Program Logic Manual	1380-S(26).07-00
1380 FE Handbook	1380-.30-04
Reference Card	1380-.70-03
2.7	
1380 Operator Guide (NCS 2.7)	1380-S(27).02-00
1380 System General Manual (NCS 2.7)	1380-S(27).04-01
1380 Control Block Handbook	1380-S(27).32-01

Common Questions About The 1380

Over the past few years we have found that many 1380 customers ask similar questions about many of the 1380s applications. We hope some of the following questions and answers will be helpful to you.

Q. What functions are supported with the 1380's emulation product that are not supported on the 3705?

A. The 1380's Network Control System (NCS) supports a greater number of high speed synchronous lines, multiple local and remote operator consoles, standalone diagnostics, and host independent operations (e.g., message broadcasting and terminal routing).

Q. Does Memorex have a networking package for the 1380?

A. Yes, the BSC Packet Switching Network, which is a program RPQ. It supports both host attached and stand alone 1380 systems.

Q. Can system generation parameters be changed without doing another system generation on the host?

A. Yes. Most of the significant networking parameters can be changed through a local or remote operator console.

The Memorex APAR PTF Procedures

In order to control and report software status in an organized manner, APAR and PTF procedures have been established.

The APAR procedure (Authorized Program Analysis Report) is used to report all Memorex Communications Group software problems. APARs are created and submitted from the field for two basic error types, namely program logic errors and documentation errors. Documentation errors may include information which led to the incorrect use of the Memorex product, or they may involve missing or incorrect messages, and so on.

In response to APARs, the Memorex Communications Group distributes PTF (Program Temporary Fix) tapes. These are sent, on a quarterly basis, to the Memorex Field Engineering software support representative. Additionally, maintenance releases of the affected software products are periodically created, announced and, on request, shipped.

PTFs resulting from APARs are tested at Communications Group Headquarters in Cupertino, California, or, if the problem cannot be adequately reproduced, at the original customer site.

Availability of PTF tapes is announced to Memorex field engineers through "Reveals" and to Systems Engineers through the "System Excellence" newsletter.

"PAY IT AGAIN SAM"!

$25 Reward

Would you like to share a story about how you have been using your 1380? Do you have any 1380 stories you think would be beneficial to others? **Memorex Communications Group** will award $25 to the author of any article published in this newsletter. All 1380 users, Memorex field engineers, systems engineers and sales representatives are invited to participate.

MEMOREX