President’s Message
—John W. Sleasman, Case Western Reserve

In the late winter doldrums, I confess that I am not enthusiastic about writing another column on the current state of telecommunications. So rather than write about something specific, I will wax poetic - or something that passes for a facsimile - and become pensive ly philosophical. you can entitle this column "The Hunting of the Snark" or "You Can't Go Home Again" depending on your literary bent (I provide clarification upon request).

Once there were no choices, a simpler time, when you took a PBX or Centrex from one company, migrated to newer equipment when it was deemed feasible by that company, and generally accepted, without significant hassle, whatever changes came along. There are those of us who remember 507 PBXs, the ones with the keys, the improvements of 608 boards that rang the extension without hitting a ring key, Centrex with direct inward dialing and station identification of long distance calls as major improvements. Then there was NATS, and something called Telepak.

I don’t intend to become nostalgic - I would not personally nor professionally go back to the days of measured improvements and lack of choice. Whenever a single vendor controls the market, and can release technology as necessary to retain an installed base and guarantee profitability, the customers will suffer from their inability to meet their needs in a timely and effective fashion.

But there was something to be said for the paternalism of the era. Changes were made based upon criteria of improved service at greater economy but always with greater benefit and minimal upheaval to the user. That is something that I believe too often has been ignored by both vendors and managers in recent years. In the rush to digital, to electronic, to features, we have not considered the poor faculty member or secretary at the end of the line that has to confront the system. About four years ago, there was a great buzzword in office furniture, "ergonomic," which meant that the chairs and desks were contoured to fit the people. I think a little more contouring of our phone systems could be in order. I am not suggesting that we should not expand our horizons more than we wanted us to do in the 1960’s. I am suggesting that we need to give more care to user training, to easy mnemonic assignments of codes, to custom raceplates with dialing reminders, to whatever. That’s often the unfunded and unthought consideration in a system change.

Change is a continuing process: management’s role is to assist in the adaption to that change.

PARTY LINE
—Ruth Michalecki, Nebraska

What a beautiful time of the year in Lincoln. Our trees are coming alive, the early flowers are all blooming and the yards have turned green overnight. For those of you living in climates where you enjoy these things year around, you can’t possibly imagine the thrill of watching mother nature wake up.

I attended the ACM/SIGUCCS Computer Management Symposium held in St. Louis last week. It was well worth my time, as panel discussions centered around such things as super computers, networking, personal computers, and library networks. I had no idea just how big some of the library networks are and the management problems associated with them. In some universities, management control of the libraries have been placed in the MIS area, while in others control has been retained by the Dean/Director of Libraries. The control issue is assuming a more significant role as libraries are fast becoming an information data base instead of a specific place. I found the discussion very interesting!

Steven Jobs (formerly of Apple), was a luncheon speaker. I absolutely can’t get over how very young he looks (and is). He was speaking about his new organization called NEXT. It is a product (computer and software) designed only for the university and college market. He is working with a number of institutions to develop new and/or expand existing software for use as an instructional tool. This highly sophisticated software requires great speed and large memory capacity in a workstation. His major thrust is to develop a personal workstation that will cost somewhere in the range of $2-3K but with the capabilities (speed and capacity) of those costing over $20,000 today. He said that full utilization of computers in higher education as teaching tools will not happen until both sophisticated, interactive software, combined with more efficient workstations are available at affordable costs. He defined affordable costs being in the $2-3K range, so students could afford to buy them. His enthusiasm was contagious—I found it very easy to believe he will accomplish his goal. By the way, in reference to the name of his new organization, "NEXT", he said patents were pending on "FINALLY" and "LAST".

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Did you read where Illinois Bell will be providing integrated voice/data network to the University of Illinois, utilizing Northern Telecom’s DMS-100 switch located in Illinois Bell central offices? The project has four main components and involves both Illinois Bell and its wholly-owned equipment subsidiary, Illinois Bell Communications. First part is a ten-year contract for the BOC’s Integrated Information Network (Digital CENTREX). Second part is a university-owned fiber network installed on two main
PARTY LINE, Continued:

...campaigns. Third part is four (4) Northern Telecom SL-1 PBX's and the fourth component is a service contract with Illinois Bell Communications as project manager and overall coordinator for installation of the entire project.

Cut-over date is December, 1986 for the campus at Urbana and in March, 1987 for the Chicago campus. System will total more than 30,000 lines, with 18,500 at Champaign-Urbana, 10,500 at Chicago and 100 each at Peoria and Rockford. The EMS-100 will be installed in the Bell CO in Chicago. Peoria and Rockford will have SL-1's installed at each campus. Two SL's will be installed on the Champaign-Urbana campus, one of which will support the on-campus airport and the campus hotel facilities which is housed in the student union building.

Illinois Bell will bring their service to the network interface for an on-campus voice and data communications distribution system. A broadband coax system will be used for low-speed data; an energy management system; low-speed telemetry type applications; some 9600 baud administrative applications and for the educational television system between two of the campuses.

Fiber Optics will support a 10 Mbps network for computer-to-computer networking. Integrated voice/data, switched at 56 Kbps on the main campus and between the Urbana and Chicago campuses, will be handled through the DMS-100, connected by T-1 facilities.

Administrative phones will have all the newest features—button activated. Multi-line sets will have advanced intercom capabilities, enhanced features and be modular for easy moves to different locations. Student phones will be provided all the latest features. Data jacks will be installed in each student room to provide phone access to research and administrative computers, library data-bases, and eventually on an on-line phone directory.

John McManus, Assistant Vice President of Telecommunications at the University of Illinois, projects a $20M savings over the next decade, and they will own both the equipment and distribution system. The system will be financed over a 10-year period, with funds to repay the financing obtained from charges to users of the system. User charges should rise at a much slower rate than in the past, according to McManus. Illinois Bell said the value of the contract breaks down to about $14.5 million for the service contract, $10 million for installation of fiber and copper cable systems, and $5 million for the CPE. We will try to keep track of this interesting project and report progress from time to time....

And everytime I think of a tremendous switch installation, I can't help but think of ACUTA member Len Tate at Northwestern University. I was talking to Len a few weeks ago, and he reported they were up and running full bore now, with most of the glitches ironed out. You will recall, Northwestern installed two Northern Telecom SL switches to handle both campuses. They used a fiber network and microwave, bypassing the local circuit to connect their Evanston and Chicago campuses. When I saw Len in Canada last July, he said the single biggest and on-going problem was training the users, and I would agree with him. User training is a difficult one to handle in the university environment simply because it is so hard to get everyone involved.

Mike Grunder and his staff at Yale are involved right up to their eyebrows with their switch installation activity. As you know, Mike is installing inside/outside plant, using existing plant where possible and pulling new where necessary. His approach to plant was innovative and saved a significant bundle of money for Yale. Mike plans on writing a series of articles for ACUTA News, talking about the Yale project, staffing requirements and development, etc. In addition, the ACUTA Spring Seminar, March-1987 will be in New Haven and will feature the Yale Telecommunications Project.

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In the February issue of On Communications, in the Pro & Con column, there is an interesting article entitled "Should Users Keep Network Control In-House". If you haven't read this article, you should do so. We will try to get permission to reprint it next month in ACUTA News. It is an excellent pro & con discussion on Premise Switches versus CENTREX, or carrier-based services. At the request of Shared Tenant Services News, I wrote an article on CENTREX viability for universities; it is printed in this issue of ACUTA News. The article is based on my personal opinion, which is highly impacted by the excellent services provided to us by our local operating company. If you have thoughts on this subject (either pro or con), and are willing to share them, please send them to me and we will put them in the newsletter....

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Looking forward to seeing all of you in Seattle on the 20th of April. What an informative seminar this promises to be! I recently had the opportunity to hear Dick Kuehn on the subject of telecom management. He was speaking to our state users group in Omaha, Nebraska. Believe me— if you haven't heard Dick before and you plan to attend the Spring Seminar, you have a real treat coming......

Remember, the 15th Annual ACUTA Conference will be held at the beautiful Omni Hotel in Norfolk, Virginia. Dates are June 28th thru July 3rd. This program is shaping up to be no less than sensational. Be sure you put this one on your calendar and start making plans now to attend what promises to be our biggest and best-ever annual conference. As Dick Kuehn says, "what you don't know can hurt you". This program will help close the gap.....

See you in Seattle and in Norfolk!  

"I can't remember if Ma Bell owns the smoke, and AT&T owns the fire, or if it's the other way around."
CENTREX-----HOW VIABLE TODAY? TOMORROW?  

...Ruth Michalecki

CENTREX----a name certain to stir up a storm of very strong opinions in any gathering of telecom administrators. You can be certain to hear all the reasons why you should replace CENTREX with a premise switch, and you can be certain to hear all the reasons why you shouldn't replace CENTREX. I believe both sides have merit.

In attempting to analyze the reason for such strong feelings about CENTREX, both pro and con, several factors, in my opinion, will influence your perception of CENTREX as a viable service offering, and some have nothing to do with technology. The priority will be different for each individual case, but in the final analysis, your experiences, I believe, in the following areas will affect your ultimate decision to retain CENTREX or replace it with a premise switch.

1) Relationship With Local Telco: What is your relationship with the local operating company? Have they, over the years, provided good service, been responsive to your needs and went out of their way to help you solve communications problems? Have they made any attempt to retain some continuity in account representatives, or has your account rep changed frequently and you discovered the change when you called for assistance?

Prior to divestiture/deregulation, did your local company offer innovative solutions, look at services and/or equipment outside the tariff environment to meet your needs, or did they refuse to help and used "not tariffed" as an excuse? A few years ago, I asked ACURA members who were either in the process of planning to buy their own switch or had just completed a premise switch installation, why they had decided to go that route. The overwhelming reason was dissatisfaction with their present situation, and that included frustration with the lack of response from their local operating company, anger at the poor quality of service, and resentment at what they perceived as being taken for granted. They couldn't wait until they could break away from the telco. I believe your past experiences with the local operating company will play a key role in your desire to continue using Central Office Services.

2) View Of Top Administration: How does your top administration view the telecommunications operation? And equally important, what are the politics of the situation? Is the relationship between the local operating company and your organization an important one for both? If so, this will certainly impact a decision to retain central office services. A smart telecommunications manager will analyze this relationship and test the waters carefully before they attempt to initiate politically unpopular changes.

This is particularly true when working in state institutions, universities, etc. I do not mean to imply this is all bad—in fact, it can often work to your advantage in negotiating for services and attractive rates. It is simply a fact-of-life a manager can't overlook or ignore.

3) Staffing Potential: What is your current staffing level? What are your chances of getting additional staff, especially at the technical level you will need? Becoming your own telephone company means just that. You are now responsible for all the services that were taken for granted from the telco. Regardless of the level of service provided by the local telco, they were responsible for the service, and were easy to dump the problem and blame on when things didn't go right. Being your own telephone company, transfers the responsibility and blame to you—and believe me, when you lose your dial tone during a busy period, you will gain instant visibility! In the university community, the problem of personnel staffing is a common one. Most state universities have experienced drastic budget cuts in the past few years and it is very difficult to add even one additional staff member, let alone the numbers and technical level needed. Although, we do have many very successful university owned and operated telecommunication systems with highly trained staff sufficient to do the job, all too often the reverse is true. I won't identify the university, but it is a state institution with a 10,000 line switch. They have a telecom manager, part-time secretary, one billing assistant and three telephone operators. The only staffing changes made by the university when they purchased their own premise switch was to add a manager and convert the chief operator to a billing position. This operation has to depend almost totally on contract maintenance and service—transferring their dependence from the local telco to a vendor of telecom maintenance. Of all the problems I hear about in our industry, the single biggest problem and complaint has to be in the service and maintenance areas, with ever-growing costs for services combined with the lack of vendor support and responsiveness. After the contract has been signed, signed and delivered. Universities are especially vulnerable in this area due to their staffing problems.

4) Central Office Technology Status: What type of central office is your serving vehicle? Is it electronic with stored program control or is it one of the older central offices not scheduled to be updated for several years? This can make a dramatic difference on your decision to retain CENTREX or to replace with a premise switch. Start a discussion with your local telco, find out what their plans are for your central office—how do they propose to provide you with the latest technology in central office services. Several universities and organizations I know of have been served remotely from a different central office capable of providing the latest telecom technology, at no additional expense to the university. Many factors enter the decision making process. The above are only a few that either consciously or sub-consciously have an influence on the decision maker. In addition, I believe the ultimate survival of CENTREX will depend on factors the operating companies can either control or greatly influence. The local operating companies have come a long ways in the past year—they still have a long way to go!

Telecon A Resource, Not a Utility!  

Since I have been Telecommunications Director at the University of Nebraska for many years, I would like to discuss this issue as it relates to a state institution, although it could equally apply to any large non-profit organization.

Telecommunications needs to be viewed as a valuable resource, both by the local operating company and by the university. All too often both parties still regard telecommunications as a utility. If we are to accomplish objectives for both entities (the university and local operating company), a different perception is necessary. Let me give you a few examples of what I mean.

We are considering a new long-term contract for CENTREX service. We are now being served by GTE/AS #2EX, fully electronic stored program control switch providing CENTREX service to us. It has been a good switch with only a very few minor glitches (no major failures) over the past nine years. It is analog and we are having difficulties getting software support
CENTREX, Continued:

from AE when we want to change or upgrade some part of the system. The switch replacement being proposed by our local operating company is a major central office digital switches, fully featured, etc. However, the initial discussion covered replacing the switch that provides our basic service, and estimating cost was based only on replacement of what we are using at the present time. We are not interested in only subscribing to a different dial tone—the one we have now is very satisfactory. We do not want our operating company to view a new system as a utility contract, providing a new box from which we subscribe to basic service plus a few features, and then have to negotiate a per function rate every time we want to take advantage of the many features and advanced capabilities of a new system. The biggest single advantage a premise switch offers over CENTREX service is the ability to utilize the complete switch with all of its capabilities. If the local operating company will view the new system as a valuable resource to our institution, allowing us to utilize any or all of the capabilities of the switch, then we are interested. This will obviously require some innovative and imaginative planning; new costing methods; new and different concepts of service; different approaches to shared uses of the central office switch. It can no longer be priced on the per line, per feature service, along with all the per 1/4 mileage costs and everything else formerly associated with a tariffed utility. If CENTREX is to be the driving force of telecommunications on the campus, then we need to be able to use the entire engine—and not be nickled and dimed to death on a line-by-line basis. This technology is simply too important to the university today and in the future to be thought of as a utility!

One of the more valuable resources to universities today has to be the inside/outside plant. A great deal of thought and careful analysis will be required before committing the control of this resource to a third-party. Most CENTREX contracts today are long-term commitments, taking us almost to the year 2000. I must admit that is a little scary and has added to my decision making process. At the very least, I believe universities need to control the conduit system and that control should be in the Office of Telecommunications.

Successful Relationships With Local Telco:

The University of Missouri at Columbia recently signed a long-term contract with GTE for a combination of CENTREX and premises equipment. This contract was the result of innovative thinking and a willingness on the part of the university and the local operating company to form a partnership that ended up in a mutually beneficial solution for both. The university has full use of a digital central office based switch, with premises nodes joined by a fiber backbone. Because they are using CENTREX, they avoided central office trunk charges a premise switch would incur. And since the university had helped to design the central office and their campus, they also have avoided the CALC charges. The long-term relationship between the University of Missouri at Columbia and GTE-Midwest was positive, and that was a big asset to both during their negotiations.

The University of Nebraska-Lincoln and the Lincoln Telephone Company has also enjoyed a long-term positive relationship that has resulted in many unique services provided to the university. We share their local automated directory assistance system; we are a user of their local long distance system; their local's central office trunk resources can also help during peak relocation and/or building projects. Certainly you are billed for these services, but only for the time you need them—nor year around.

CENTREX—A Viable Competitor:

There was a time everyone thought CENTREX was dead, and at that time the statement was a truism, with ever increasing rates, poor service and no enhancements. CENTREX providers and users of today could easily relate to Mark Twain when he said: "The reports of my death are greatly exaggerated."

I believe the technological development of the central office network will overtake and pass the development

(Continued on page 8)
CONSULTANT'S CORNER

Richard A. Kuehn

What You Don't Know Can Hurt You

We have now passed the two-year mark since divestiture and we have endured three years of deregulation. But the process of taking the entire telephone industry and shaking it by its heels is not over. Recent FCC decisions regarding Computer II and its moves to install a new regime--Computer III--are bringing about the recombination of AT&T Communications and AT&T Information Systems. This in turn, will stimulate yet another round of developing appropriate management strategies in anticipation of new sales approaches, products and services.

But somewhere, in distant memory, I seem to remember hearing that the beneficiaries of all this change in the structure of the telephone industry were to be the users---through lower cost communications and better equipment.

The reality is that while some have benefited, it has come at the expense of many.

The Emperor Is Not Wearing Any Clothes

In my travels around the country I come into contact with all sorts of users and a similarly wide variety of vendors. With very few exceptions, I have found that both sides of the buyer-vendor relationship were woefully unprepared to deal with all of the technological and service developments occurring in the new environment.

Let me illustrate my point with a few examples. In my BCR column of May, 1984 I discussed a study of the comparative costs---actual operating costs--of AT&T and Specialized Resale Carriers. I pointed out that the carriers' published cost per hour will be impacted by such factors as call destination, call length and time of day.

That study also found that users were being billed for connect time on calls that had not been completed. In the absence of answer, or network supervision, each OCC uses its own parameters for timing and billing calls.

Recently, a representative of a resale carrier mentioned in that article contacted me to inquire why the study had found that the apparent call holding times were longer on their system. When I told him about network supervision, he assured me that the problem had been corrected, and to prove his point he said, "While I am new with the company, our switch is right down the hall from my desk and we have someone supervising it 24 hours a day."

Other examples reinforce the point---vendors who provide proposals where only one node of a switching system is capable of data integration thereby restricting future flexibility; vendors bidding and installing systems that are incapable of meeting specified traffic capacities; and, the all-time classic: the vendor who bids a telephone system with no hand set and line cords and expected an add-on to the contract if they were to be provided.

But the problem is not one-sided. Users also frequently show an absence of common sense that is frightening. Only two months ago I was asked to review a 3,000 line phone system which, over a seventeen month period, had a documented 8,000 service calls. My assignment: to determine whether the manufacturer was right in asserting that the 8,000 service calls did not represent an "excessive quantity" of service troubles.

While the obvious solution is for both vendors and users to find experienced people to fill their staffs, those men and women are in short supply. A resultant everyone is scurrying around throwing manpower into the breach, relying on "OT" and hoping that while the staff gains hands-on experience no catastrophe will occur.

Give Your Staff a Fighting Chance

The simple truth is that if enthusiastic but unknowledgeable individuals are going to be placed in positions of telecom responsibility--either for selecting and managing communications equipment and services or selling them--management has an obligation to provide them with the tools that are necessary to handle those tasks. Knowledge is the most fundamental tool that can be provided.

During the past few years I have been asked to prepare telecom department budgets and I have placed major emphasis on training and self-education. Every staff professional should attend some seminar and/or trade show quarterly if they are to remain aware of the rapid changes taking place in the industry. The department budget must provide the necessary funds to support that educational effort.

Another important arena for gaining extremely useful day-to-day knowledge is participation in the user groups that have emerged. These communities of interest provide for the sharing of both positive and negative experiences regarding specific equipment and services and they have also become a forum where the vendors describe the enhancements or modifications that will be forthcoming.

If a user organization is going to undertake service as an in-house function, it is not enough to send the technical staff to the manufacturer's training school on a one-shot basis. Budgets should include funds for annual refresher courses so the service technician can learn the nuances and additional capabilities of the equipment.

On a day-to-day basis, self-education will involve subscribing to, and then actually reading, the various trade periodicals and newsletters that cover the industry. I subscribe to all the free, controlled circulation publications and I also spend, literally, thousands of dollars a year for periodicals and reference services. (If you don't believe me, ask my accountant!) Departmental budgets must provide for on-going self-education in this way.

There is no substitute for the knowledge that experience provides. But experience takes time, and it cannot be rushed. Since the world in general, and the telecom world in particular, is far from perfect, it is often necessary to compensate for the lack of experience by finding intelligent and enthusiastic people, and then training them and managing them effectively. It doesn't do any good to bemoan the absence of trained personnel if you and your staff are not taking advantage of those training and self-education opportunities that do exist. To ignore the time and budget requirements involved with training is to confirm the truth in Pogo's famous line: We have met the enemy, and they is us!

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ACCUNET Switched 56 is providing switched digital transmission now

Warren R. Moe, Leslie E. Morton, and Gerd W. Printz

Business customers now have available a pay-as-you-use 56-kilobit-per-second switched digital transmission service. It uses the flexibility of the ATT Communications 4ESS switch to route information where it is needed on all-digital facilities.

Until now, business customers could only send data from one terminal to another over ATT's switched network using modems at speeds of up to 9.6 kilobits per second, or over a dedicated digital data system (DDS) circuit at speeds of up to 56 kilobits per second.

Since its inception in 1974, DDS has met most high-speed data transmission needs. A DDS circuit, however, has an inherent limitation for customers requiring a flexible interaction among computer and terminal locations. High-speed data can only be sent between the end points of the DDS circuit. If a user wants to send data to some other location, another DDS circuit has to be added since DDS is a dedicated, not a switched, service.

Also, with DDS, a customer pays a flat monthly charge regardless of how often the line is used. Therefore, many locations that might desire 56-kilobit-per-second transmission don't have enough traffic to make DDS economically attractive.

The answer to this situation is ATT's ACCUNET Switched 56. This is a new, high-speed digital service being offered by ATT Communications which allows customers to send 56 kilobits per second over dial-up connections on a digital switched network. The key to Switched 56 is flexibility. With this service, 56-kilobit-per-second transmission can now be set up similar to a regular telephone call. And like long distance telephone service, the customer pays a fixed monthly access charge, and is then billed based on the time the service is used and the distance involved.

Switched 56 uses the same switch as the existing ATT Communications public telephone network, and became available in May 1986. Deployment plans call for interconnecting 34 serving offices by the end of this year, and 80 cities by the end of 1987. Switched 56 is easy to use, and is expected to expand the market for high-speed digital applications.

Among the numerous applications for high-speed digital transmission which ACCUNET Switched 56 will support are the following:

Computer-to-computer bulk data transfer--Files can be transferred efficiently from a host computer to another host, or from a remote job site to a host for processing. Since the service is switched, a customer can easily add locations as needs evolve.

Secure voice and data--Digital encryption is easier to implement and cheaper than traditional analog encryption methods. Encryption is done by the customer's own equipment, and the encrypted signal can then be sent using the Switched 56 service.

High-speed interactive terminals--Files can be sent from a host to a remote terminal for processing, and then sent back to the host. Data processing as well as graphics applications like computer-aided design (CAD) can be handled efficiently with Switched 56.

High-speed facsimile--New high-speed facsimile terminals are capable of sending information at 56 kilobits per second from one location to another. Thus, a page can be transmitted in six to ten seconds. This is considerably faster than current facsimile technology, which can transmit a page in as little as one minute.

Freeze-frame and full-motion video--Customer equipment now exists which can capture freeze-frame video images, compress them, and then transmit them at 56 kilobits per second. Customer equipment also is available which can compress full motion video signals for transmission at 56 kilobits per second over the network.
ACCUNET, continued

Network optimization--A company could design a cost-effective network that could consist of a core of private lines, such as DDS, and use Switched 56 services to economically handle smaller locations, peak loads, and serve as a backup.

High-fidelity music or speech--Coders have been developed that digitize and compress a music signal, which can then be distributed using this service. High-fidelity speech coders are under consideration which would operate at 56 kilobits per second.

Teleconferencing--Switched 56 lines can be used to transfer view-graphs, slides, and documents from one teleconferencing site to another.

Customers' equipment

ATT Communications is constrained by Federal Communications Commission (FCC) rules from providing terminals for its services, including Switched 56. Therefore, to encourage terminal manufacturers to build equipment for new services ATT Communications has organized a market development organization, supported by ATT Bell Laboratories, that defines and publishes the network interface for a new service in advance of the service date. It then identifies vendors interested in building equipment that meets that interface. For Switched 56 Service, as well as many other new services, ATT Bell Laboratories maintains a test laboratory to verify the compatibility of a vendor's equipment with the network.

Interface equipment for ACCUNET Switched 56 must:

- Terminate the access line on the customer's premises.
- Originate and terminate Switched 56 calls, and
- Match the application terminal interface.

To date, several digital private branch exchanges (PBXs) and multiplexers have been verified to be compatible with DDS (1.544-megabits-per-second) access to ACCUNET Switched 56, including ATT Information Systems System 75. In addition, several manufacturers are modifying DDS terminal equipment to meet the network interface.

Special access hardware

The tariff recently approved by the FCC for ACCUNET Switched 56 provides for inter-LATA service from one ATT serving office to another. Access to an ATT Communications serving office can be obtained using ATT Communications digital private line tariffs for DDS and ACCUNET T1.5. ATT Communications, in turn, orders the digital access from the local telecommunications company. In this way, ATT serves as the single point of contact for the customer in ordering Switched 56 service. Because these private access lines are special services, not switched by the local telecommunications company, this type of access is referred to as special access.

The types of special access are available for ACCUNET Switched 56, depending upon the amount of traffic originating at a customer's location. For customers with only a few high-speed terminals per location, access to an ATT Communications serving office will use standard 56-kilobit-per-second DDS lines. Locations with a larger volume of traffic can use an ACCUNET T1.5 (Terrestrial 1.5 megabit-per-second, or DS1, rate) link. There is a potential savings for business customers here, since the DS1 link could be used to access other ATT Communications voice and data services as well.

ACCUNET Switched 56 is a premises-to-premises service, and although access and transport are covered by different tariffs, ATT Communications is assuming responsibility for assuring the maintenance of the access link, as well as the interoffice switching and transmission facilities. To accomplish this, the ATT Communications Switched 56 Service Control Center (556SOC) in Chicago has been established to provide a single point that customers can contact for trouble reporting and maintenance testing. The 556SOC will localize the trouble, and refer it to the ATT or local telecommunications organization for repair if a network problem is found, and follow through to make sure the problem is corrected.

In addition to special access, switched access is expected to be available from the local telecommunications companies, using, for example, ATT.
ACCUNET, Continued:

Technologies Circuit Switched Digital Capability (CSDC) on 1AESS switches. With CSDC switched access, a customer could enter the Switched 56 network by obtaining a 56-kilobit-per-second access line to a 1AESS office for local switched digital transmission.

To comply with recent rulings from the FCC, ATT Technologies has provided licensing, arrangements and components to manufacturers of customer premises equipment, to ensure terminal interface equipment will be available for CSDC.

Telecommunications companies could offer CSDC as a local intrawA service, and could offer access to ACCUNET Switched 56 Service. CSDS thus could provide businesses with even more flexibility in using high-speed digital services.

Switching the service

ACCUNET Switched 56 is served by ATT Communications 4ESS offices. Because the 4ESS switch was designed as a toll switch, it had to be modified to accept Switched 56 customer access lines and allow calls to be set up over them. These modifications are included in the 4ESS software/generic, which also provides the capability to make billing records for these calls.

Access trunks for Switched 56 enter the 4ESS switch, which collects address signaling and provides on-and off-hook supervision. Initially, ACCUNET Switched 56 customers will signal via digital-pulse. With the deployment of the 4E10 generic in 1986, touchtone signaling will be available.

If a customer's access is by 56-kilobit-per-second DDS lines, the access line is terminated on a Channel Service Unit (CSU) at the service office. The CSU provides loopbacks for maintenance testing.

From the CSU, the DDS channel is multiplexed up to a DS1 rate at a D4 channel bank, where the robbed-bit signaling information used by the 4ESS switch is converted into DDS Data and Control modes which are used to indicate on- and off-hook over DDS lines. A new D4 channel unit, modified from an existing DDS unit, has been developed for this purpose. A more economical version of this channel unit that includes the CSU function will be available in early 1986.

Long-haul digital network

ACCUNET Switched 56 calls must be routed over end-to-end digital facilities. To guarantee this, a separate routing domain was created in the 4ESS switch, which also ensures that voice telephone traffic will not interfere with Switched 56 traffic, and that ACCUNET Switched 56 will use terrestrial digital facilities.

ACCUNET Switches 56 uses a special numbering plan. Customers will dial ATT's 700 special access code followed by 56X-XXXX. Once inside the Switched 56 network, this number is sent through the Network Control Point, which returns a routing number that identifies the terminating switching office and the trunk from the terminating switch to the far-end customer. This numbering plan allows efficient use of the routing and number translation power of the ATT Communications network.

Evolution to ISDN

It is now possible for a customer to integrate voice and data, dedicated services, and switched services on the same DS1 link. The serving office can separate switched services from private line services. In integrated access, one of the services that can be accessed is ACCUNET Switched 56 Service.

ACCUNET Switched 56 service is an orderly step in the evolution toward future services that will be provided by the Integrated Services Digital Network (ISDN). ISDN will provide out-of-band message-oriented signaling between the network and the customer's equipment.

Just as ATT's DDS provided business customers an economical way to transmit digital information by using the digital facilities offered by ATT Communications, Switched 56 combines digital facilities with switching capabilities to provide increased flexibility for business customers. As public-switched digital service offerings become available through the local telecommunications companies, the combined flexibility of Switched 56 and these local digital services will spur the demand for more ISDN services.

The above article was reprinted from September, 1985, issue of RECORD--ATT Bell Laboratories.

CENTREX. Continued from page 4:

of customer premise equipment network within the next two years. Digital CENTREX in a software defined network will offer a large customer all the features and goods of a premise switch, plus a lot more such as: easier connectivity to ISDN; shared packet switching affording universities the ability to serve their outstate areas more efficiently; modern pooling; providing greater distance capability at cost-effective pricing by extending copper wire cost-barriers past the one mile limit; redundancy: power and environmental factors telco problems, not customers; automated service and maintenance systems; insured compatibility with future developments; guaranteed protection against obsolescence, etc. Universal terminals will permit simultaneous data, voice and, in the future, video communications over a single central office line. Certainly there are more economies in sharing a single large facility and the manpower to manage it, than for everyone to do their own thing. Central offices are capable of providing a variety of services upon demand and be responsible for their connectivity.

But probably the single most important factor of all—telecommunications is a service business, not an equipment/hardware business. When the local operating company remember what business they are in, provide excellent service at comparable prices, clean up some of the regulatory issues and work at establishing good customer relationships, CENTREX will truly be a viable and highly competitive offering once again.

(Note: The preceding article was written for publication in the April, 1986 issue of Shared Tenant Services News by your editor. The thoughts expressed are my own and certainly reflect my perception of telco services, which in turn have been influenced and shaped by the long-time excellent relationship my institution has enjoyed with the Lincoln Telephone Company.)

15th Annual ACUFD Conference - June 29-July 3, Norfolk, VA at the Omni Hotel, situated at waterside. Norfolk is rich in colonial history, colorful boutiques, delightful restaurants on one of the nation's oldest harvests.