ACUTA eNews May 1985, Vol. 14, No. 5

Follow this and additional works at: http://digitalcommons.unl.edu/acutanews

Part of the Higher Education Commons, and the Operations Research, Systems Engineering and Industrial Engineering Commons

http://digitalcommons.unl.edu/acutanews/352

This Article is brought to you for free and open access by the ACUTA: Association for College and University Technology Advancement at DigitalCommons@University of Nebraska - Lincoln. It has been accepted for inclusion in ACUTA Newsletters by an authorized administrator of DigitalCommons@University of Nebraska - Lincoln.
Bell Atlantic Boasts: 1st With Centrex Data

By JONATHAN WEBER

NEW YORK—Bell Atlantic Corp., taking the lead in the race to make Centrex a viable competitor with PBXs, last week disclosed to MIS Week details of what is believed to be the first commercial implementation of a central office-based local area network.

The new system provides simultaneous voice and data transmission on existing Centrex systems without the need for any additional wiring, and currently supports asynchronous data at speeds up to 19.2 kilobits per second as well as T-1 connections to host computers. It is up and running in field trials at Virginia Polytechnic Institute in Blacksburg, VA., and at West Chester University in West Chester, Pa., using the Datakit local area network from ATT Technologies.

The Bell Atlantic project—and a similar one at Ameritech that has not yet been implemented—light amid mounting evidence that the post-divestiture Centrex resurgence has been more powerful than anticipated.

Moreover, it confirms the intention of some RBOCs to push ahead with their own Centrex enhancements on IA-ESS analog central offices rather than waiting for the Generic 9 software upgrade from ATT, which is expected late this year.

The introduction of data services—as well as sophisticated customer-controlled administrative features and new pricing packages—also demonstrates a determination to provide interim support for existing Centrex customers in advance of the widespread deployment of digital Centrex and the implementation of integrated services digital network (ISDN) Centrex beginning in 1986 or 1987.

Ameritech is also providing stopgap data solutions on Centrex through a marketing agreement with David Systems Inc., a Sunnyvale, Calif., firm that produces a premises-based switching system designed to give Centrex and analog PBXs heavy data capabilities. David Systems this week will announce a partnership with local area network vendor 3Com Inc. of Mountain View, Calif., to provide additional resource-sharing services on David-enhanced Centrex installation.

In another Centrex development last week, Nynex Corp., chairman D.C. Staley announced at the company’s annual meeting in New York a series of new digital services including a digital Centrex offering.

In addition, the company said it would introduce enhancements for existing Centrex customers, but indicated that data capabilities would not be available until the release of Generic 9. A central office generic is a software program that controls the switch, and new generics are released by vendors on a regular basis to support new features.
He said the service would certainly be offered by the end of this year. He described it as "a transition mechanism" and said Centrex in general was "sort of a model of where we're going. We're taking the power of a network facility and tailoring it to customer needs—they can avail themselves of additional functionality without incurring complete changes." 

Neither Huitema nor Lakin of Bell Atlantic, however, could offer specific details on how the data-over-voice offerings would fit into ISDN. "The answer to that is up in the air," Lakin said. The LAN "could be an adjunct system, but there's a variety of ways to do it. These decisions can't be made until we see what ISDN looks like. We want to offer a broad range of choices."

Centrex migration strategies, indeed, are complicated by an abundance of choices that the two major switch vendors are rushing to make available. The deployment of digital central offices has led BellSouth and Nynex to pursue a digital Centrex offering, but the initial feature set on the ATT 5ESS will not be available until next month, with the more sophisticated features scheduled for later in the year.

Northern Telecom will introduce its advanced features set for the DMS switches in early 1986. And the Generic 9 software for the IA-ESS—the switch that provides the great majority of all Centrex services today—will provide much-desired features, such as city-wide Centrex, as well as the data-over-voice capability—but not late this year or early 1986.

Despite the multiplicity of new developments, however, Centrex is still playing catch-up in the market for sophisticated large users. "Centrex has some fundamental problems," said Gerald Mayfield, an analyst with the DMF Group in Ann Arbor, Mich. "especially price stability and the much enhanced functionality out of the PBX."

The price stability question was addressed aggressively by Ameritech, which has achieved rate restructuring in its five operating territories. The new offerings, which vary somewhat from state to state, in general call for absorption of the S2 customer access line charge (CALC), long-term fixed-price contract options, and varying rates depending on the distance between the customer and the central office and on the line size.

Bell Atlantic has similar tariffs either approved or pending in its territories, and a spokeswoman said the new rates—which include a repackage of the features—average 25 to 45 percent below the old rates.

Northwestern Bell, meanwhile, has gone even further with the actual detariffing of Centrex in Iowa and Nebraska. New York Telephone last week filed new tariffs based on a "tapered" schedule that gives discounts to larger users. Nearly all the other BOCs plan to file new Centrex tariffs in the near future, according to an informal survey.

The rate changes have been vehemently opposed by the North American Telecommunications Association, the customer premises equipment (CPE) trade group which maintains that the BOCs are pricing Centrex below cost by subsidizing it with basic local exchange service revenue.

Al Kramer, a NATA attorney, conceded that the group had had little success fighting Centrex so far, but held out some hope that public utility commissions were beginning to see the light. The new prices "have been very damaging to the CPE industry, but there simply are not the resources to contest every hearing," Kramer said.

He pointed to a recent ruling by the Indiana PUC, which approved Centrex rate changes but at the same time called for additional cost data. The BOCs have changed the way they prepare Centrex tariffs, Kramer said,
CENTREX DATA (CONTINUED):

using different cost elements, and the commissions are just beginning to realize "if it's the same service, you have to do the same cost analysis."

But it is not only the rates that NATA opposes: the group also maintains that many of the planned Centrex upgrades are enhanced services which, under the Computer Inquiry II regulations, can be offered only through fully separated subsidiaries. "They have brought in a regulated service into the PUC's unregulated CPE market, and the threat of cross-subsidies exists. We intend to bring that issue before the commission within the next several months," Kramer said.

Many of the enhancements to which NATA objects have already been brought on board by the BOCs, including message desk services, customer-controlled station rearrangement, real-time access to station message detail recording, and other system administration and control features.

The provision of these upgrades has become a competitive business. ATT Technologies is plugging the Advanced Communications Package (ACP)--a 3B processor located on the customer premise or in the central office--while several BOCs, including Southwestern Bell, are developing their own systems in conjunction with Telcordia.

In addition, American Telecorp, a privately held software company in Redwood City, Calif., has sold its Cenpac system to Pacific Northwest Bell, Mountain Bell and Wisconsin Bell, and other independent vendors are also in the market.

An additional ambiguity in the provision of administrative features is that many telcos would like to provide them out of central office-based processors, but it is not clear whether that would be legal under Computer II.

The role of customer premise equipment in general is another Centrex issue that has not yet stabilized. Products such as the David Systems switch and a recently introduced data-over-voice system from General Datacomm can work behind Centrex to provide many additional features, and the ISDN Centrex of the future will almost certainly include sophisticated CPE.

There is also an abundance of companies--including such newcomers to the market as Teledex and IPC Communications--selling electronic key sets to work behind Centrex, and the telcos must coordinate the market of the Centrex service itself and the CPE to go with it without violating the FCC's structural separation rules.

And the sales effort itself is complicated by the fact that some of the BOCs--including Ameritech, US West, Nynex and BellSouth--are selling the service through their unregulated CPE arms, thus requiring them to allow interconnect contractors to serve as agents. In general, according to sources, the agents are focused on the smaller accounts.

Both the telcos and many interconnects, however, are said to be unhappy with the agency requirements, and the broad relaxation of Computer II sought by the telcos could change the structure of Centrex sales.

The above article, Bell Atlantic Boasts: 1st With Centrex Data, was reprinted from MTS Week, May 8, 1985 issue, pages 1, 31, 51.

PARTY LINE

......Ruth Michalecki

You could describe the ICA Conference in Dallas, Texas in many ways: Stupendous, tremendous, fantastic exhibit area, BIG--really BIG, but very tiring and confusing. The Loews Anatole Hotel was so big, I entered the wrong door when I got there and spent about thirty minutes trying to find the registration desk. I had a message one day to check with the messenger for a letter/package. When I finally found the message center, I was told there was no package for me and that I should check with the message center for the 'Atrium' section, which was a least a football field distance across the lobby from the 'Future' section where my room was located. It would have paid me to check in at one day earlier than necessary to learn my way about the hotel. I believe the "last straw" point was reached by me when I tried to find the room where the CENTREX session was being held. It took me the better part of thirty minutes to locate the room, arriving at least twenty minutes late for the start of the session and passing the same people over and over again who were also looking for one of the many session rooms.

However, even with those obstacles, the hotel was beautiful and the ICA members are well on their way to make me feel welcome. It was great to run into our own Norm Sefton the very first night. Norm asked several of the ICA members to let me join their group and introduced me to various people. It helped, believe me. I saw Lem Tate from Northwestern University, our friends from the University of Oklahoma, Pat Tobias from Chicago University and many others, far to numerous to mention. Really enjoyed seeing and chatting to many of our industry members of ACUTA.

What a treat to see Harry Newton and to reminiscence about the infamous ice-water incident at our annual conference in Berkeley a few years ago. This was where Russ Cobb had a whole pitcher of ice water spilled on him when Harry accidentally tipped over a chair, the chair hitting the pitcher and the water ending up on poor Russ. Chris Matera, quite naturally, due to some fast footwork, managed to avoid the fast freeze Russ received. I have never laughed so hard at anything in my life--what a good sport Russ was. Guess what, I laughed just as hard again when sharing these memories with Harry at the ICA Exhibit hall. He said hello to all his friends in ACUTA and I'm here to tell you he is as energetic as ever. What an interesting, exciting person and so up on this industry. We must have him on the agenda of a future conference. As always, he was willing to let me reprint articles of interest to our members from his TELECONNECT magazine. Believe me, I appreciate his cooperation since the articles are very good in content plus interesting to read.

Words simply cannot describe the ICA Exhibit Hall. They had over 300 exhibitors, filling over 1500 exhibit spaces and using some 6500 exhibit personnel. Many new products were announced at the conference. I guess the nearest I can come to telling you what it was like, is to compare it to a large state fair, where you walk all day and stop to listen to the pitches from the vendors, receiving all sorts of gifts, watching the magic act at the Contel Booth, and wondering if your feet will survive the day and be willing/able to try it on the next day. I felt they could have added at least another half day or more to the exhibits. They were really worthwhile.

But the sessions that were most impressive to me at the ICA Conference were both general sessions. The first featured Alvin Toffler, author of Future Shock, The Adaptive Corporation, and others. Mr. Toffler philosophically discussed the concept of a changing society. He said we are not only witnessing a transformation of the relationships between the various
segments of our economy, but many of our biggest corporations are in the throes of reorganization which implies revolutionary changes in their communications systems. Mr. Toffler said that although he was far from an expert in telecom, he could see that these changes were taking place at a phenomenal pace. His book "The Adaptive Corporation" touches on the telecommunications revolution where he discusses a meeting in 1968 with ATT top management when he was commissioned to study the Bell System and to help them arrive at language thinking of what their mission should be in the future. Several years later, in 1972, his report recommended the split-up of ATT.

Mr. Toffler said: "I believe that ATT had to break up because there were structural and technological problems at work that were irresistible. ATT didn't have the incentive or capability of keeping up with the demand of communications. I believe the trauma that ATT is going through is a very small detail on a much larger canvas. We are, in fact, watching traumatic changes in many companies. I believe that what we're witnessing, historically, is the decline of the industrial mass society, and that this is in truth a revolution that will alter not just our companies, our products and our careers, but the relationship of home to work, power relationships in the workplace and in politics, structurally cultural, ideological concepts of democracy and more. All of these will be affected, and it is as part of this larger upheaval that we're witnessing the massive change in the relationship of information and communications to human society.

No one knows the future, but certain things seem likely, and one of them is that by the year 2000, there will be fierce battles over the dissemination and control of information in the workplace and in our political lives. And no job will become more politicized than that of the information manager, the MIS manager, the MIS manager and the telecommunications-system designer and operator...To understand why and understand this role, we need a larger systemic view of the society that we're operating in. We need to be able to interrelate telecommunications to a whole lot of other things going on around us in our society".

Mr. Toffler, in describing what he views as the breakup of the industrial age of the world, said he believes that what is occurring is one of the biggest turning points in history—that of a mass revolution. "Today, I believe that what's hitting us is not just the telecommunications revolution, but also many other political, economic, cultural, psychological, and value revolution all happening at once," he said. Toffler thinks that the accepted methods of handling information and communications are obsolete, and he went on to state that the old ways of thinking are hopelessly inadequate, given the whole new infosphere that is being created.

"We are also moving toward the development of cultural technologies. These new cultural technologies are going to affect every thing we do, from our sensory modes. When we move toward low-cost speech operation or when we can talk to a machine and it can type, what does this do to secretarial work, executive functions, employment, and more deeply, what does it do to literacy and the effect of literacy in society? What does it do to the relation between the senses? The economy? Will the MIS systems of tomorrow convey speech inflection, gesture, and emotion in addition to alphaneumeric and today's graphics? And there's the whole race for artificial intelligence; expert systems and machines that can learn and then communicate with one another. Of course, there is a point where we can learn a little bit, when they can communicate with one another, it seems to me that what you're doing is beginning to develop an inter-machine culture, something that never existed before. And now take all these forces at work bubbling up in telecommunications and bring them together with other potent technical developments...the impacts are likely to be explosive."

He included several of his deep concerns about the state of communications and how it affects anyone using it.

He said, "Models, if they involve human beings, are inherently soft, no matter how hard they look on the surface. We've got to recognize that, and those who can't shed the old ways of thinking...are going to find themselves semi-helpless as time goes by. Those who rely on closed-end menus to do their thinking for them may become the mindless dromes of tomorrow. If all I had to choose from on a menu were A, B, or C, does that encourage me to anticipate the unexpected, the new? Does that simply groove my mind? I'd like to see menus pop up on the screen that say "A, B, C, and other", which suggests to me that I should be thinking outside of the frame instead of conventionally, within the frame."

Another expressed concern was that of privacy, or lack thereof. He said, "At the end of 1983 there were 103,000 automatic teller machines in the world. The number is expected to double by 1990. The use of information-carrying cards that is so prevalent is a serious threat to privacy. Does the spread of this new information and communication system increases decentralization, and does the creation of open communication systems point in a healthier direction, or are we unleashing an Orwellian horror on the world?"

Stupidity was his last expressed concern, as he questions the types of communications being used with all the incredible technical channels that has been created. "I'm not speaking about the general level of stupidity in any company and any society in which even the most advanced technologies often serve the most idiotic purposes, but I'm talking about something deeper that has to do with communications systems we're developing and that we are so proud of, and how they carry mostly denotative symbols stripped of most connotation. Communications cannot be stripped of connotation. Can corporations live without connotation? I don't think they can. He was also concerned about the polarization of information in the world, saying "There are 600 million telephones in the world, and 450 million of these are in just nine nations. This might be the biggest barrier in the world today."

Following his prepared talk, Mrs. Toffler joined him on the platform and the two of them answered questions from the floor. The session was outstanding!

* * * * * * * * * * * * * *

The second session that interested me was the High Tech Panel with Dr. Charles Baker from SMU, Dr. Arnot Pendias and Dr. Alfred Boschulte, both from Bell Labs. My notes are not so good from this session—as usual, I get interested in what is being said and I forget to take notes. I also forgot my handy tape recorder. But I will share some of the thoughts expressed during the session. I believe one of my first impressions of Dr. Pendias was his humor and down-to-earth approach, especially since he is a world-renowned scientist. In answer to a question on the top transmission rate for copper twisted pair, he stated that 1 or 2 megabits for 1 or 2 miles is a law of nature for copper twisted pair. Not all circuits will perform at the same speeds due to human or physical error, for instance, you might not able to get 50 feet if the twisted pair lies across an arc welder. He said we no longer confront physical barriers, we can easily connect two computers with wire but that doesn't guarantee they will talk together, even if they are from the same manufacturer.

(PARTY LINE continued on page 8)
Calling your telephone operator for assistance or information can quickly bloat your monthly bill.

Information, pretty please?

By Anne McGrath

Divestiture has given residential phone customers a couple of options that might lower their monthly bills. Buying phones instead of leasing them and signing up with a non-ATT carrier for long-distance service are two. But take another look at your local Bell company bill: You could be missing the simplest way to lower your residential phone bill. Don’t call the operator for information or assistance. In many cases it is the most expensive call you can make.

In New York City, for example, local directory assistance—simply getting a number—costs 40 cents a shot after the first two requests each month. That’s five times the price of a Manhattan metropolitan area residential call.

Southern Bell allows North Carolina customers five free calls a month and then charges 50 cents each. On the other hand, in Massachusetts and most of Connecticut you can dial information to your heart’s content and never pay a cent. New Jersey Bell customers can make 25 directory assistance calls before they are charged, and then the rate is 10 cents a call.

But even in an area where local information charges are reasonable, or nonexistent, beware of long-distance information calls. They are never free.

Since divestiture, ATT has assumed responsibility for in-state long-distance calls between local Bell company service areas. If you dial 655-1212 for help in another service area within your state, or if you use ATT to get a number in another state, your local bill will reflect those charges, too. ATT’s in-state charges, regulated by the state public utility commissions, will vary. Its interstate charge of 50 cents a call (after two calls) was imposed for the first time last May. (If you use MCI or SBC for long-distance service, you can get directory assistance for 45 cents a call.)

You can cut these costs appreciably by requesting two numbers per call (although not always; New York Telephone, for example, charges 40 cents per request) and by keeping regularly used phone directories at each extension. If you call a distant city frequently, order its phone book from your local company. Contact a friend who has moved recently by calling his old number first; most likely you will hear a recording of the new number.

Check your phone company’s person-to-person charges too. They can be even more surprising. A New York Telephone customer who makes a person-to-person call to someone in the same service area pays $3.44—on top of the cost of the call. If he places that call between New York Telephone service areas—from New York City, say, to Buffalo—ATT handles it for $3.75. A Bell customer in West Virginia pays $4. Yet Mountain Bell customers in Colorado pay no surcharge for person-to-person calls.

It also makes sense to keep collect and third-party billing charges to a minimum. Whenever possible, use your charge card. An Illinois Bell customer who charges a call to a third number pays $1.90 for the service, against 35 cents with his charge card.

What can you do to save on coin phone calls? Alas, not much, as the utilities have fixed surcharges. In Texas, Southwestern Telco adds a $1.10 surcharge to its rate. If you call an Albany, N.Y. number from a pay phone in Syracuse, ATT tacks on a 50-cent charge. As for local calls: If you live in a 25-cent pay-phone state—such as New York, Arizona, Kentucky, Ohio—you will just have to grin and bear it. (Ironically, however, directory assistance from pay phones is free.)

If you live in Connecticut, Tennessee or Massachusetts, enjoy those 10-cent calls. Their days are numbered.

This article is in March 11, 1985 issue of FORBES, page 182.
Phone Phreaks
---Rosalee Grable

They call themselves Phone Phreaks. For an evening's entertainment they might call up twenty friends on a conference line and try to get through to David Letterman in New York.

Armed with a black-market program for their Commodore 64's, teenagers wander with impunity through the entire North American telephone network from Alaska to Jamaica.

They are illegally teleconferencing, breaking into one of the expensive lines established to handle calls linking up to 100 people, usually businessmen, simultaneously.

The price for a three hour, fifteen person, coast to coast conference call was estimated by ATT's teleconferencing department supervisor at $932.08. But phreakers, by bypassing the billing system, set-up their own conference calls for free.

The telephone companies treat Phone Phreaking as interstate toll-fraud, and it is punishable by five years in prison and a tenth thousand dollar fine. Such punishment cannot, of course, be meted out to minors, and the kids know it and are taking advantage of that fact.

The kids who originate the calls (and take the risk of being caught) become Robin Hood style heroes to their friends. They adopt distinctive nicknames or "handles". Sometimes they try out new personalities to match their handles. Soon they all have a network of friends from coast to coast, and phreaking becomes a compulsive and dangerous hobby.

The program they use is called TelePhreak. This computerization of the infamous "Blue Box" puts out tones to fool the phone company switching mechanisms into making long distance calls for free. Blue boxes have been around for twenty-five years, and telephone security men have become experts in their detection.

Available since last March, TelePhreak was computerized by a hacker known as "The Kernal." It makes use of the sophisticated sound chip built into the Commodore 64. The program includes sounds which can be recorded on a tape recorder and played into a payphone to simulate the sound of quarters dropping into the coin slot. An expanded version called SuperPhreak even includes tones to call restricted military exchanges.

The programs are copied and passed among friends, or obtained via computer underground bulletin boards. Nobody knows for sure how many copies of the program may be circulating.

COMPUTERPEOPLE was given estimates between 20 and 20,000 copies in existence. At first the program passed among college students, but the severe penalties for being caught have made phreaking almost exclusively a pastime for the very young.

The traditional blue boxes had one advantage over the telephreak programs today's teenagers use: they were portable devices to be used from pay-phones, so blue boxes at least represented a challenge to the detective skills of the phone company. Today's programs are tied to a home computer, making them sitting ducks for detection.

ATT national headquarters in New Jersey has a 26 member security staff. About 250 additional ATT security personnel work under contract for the various phone companies that used to be part of ATT. Each phone company also has its own security staff. They all zealously monitor their lines. Teenagers caught face loss of their phone lines, confiscation of their computers, probation, a juvenile crime record, and in some cases, a mammoth phone bill for their parents.

Phreakers have no chance of avoiding eventual detection. None at all. Every call, no matter how it is placed, leaves an "audit trail." Once the phone company's sophisticated computers detect a difference between telephone usage and billing, the security department follows the audit trail. Sometimes this takes a lot of time and manpower, but the phone companies have plenty of both.

A lot of teenagers turned to using stolen M.C.I. codes in their quest for a "safe" way to enter the phone system. Every large metropolitan telephone company installed "blue-box detectors" to trace the distinctive 2600 hertz tone the telephreak program gives out. Whiz kids with extraordinary grasp of technical principles (or inside information from somebody at the phone company) figured out how to subvert the detectors, but the less gifted, with an auto-dial modem, turned to stealing codes.

An auto-dial modem can dial phone numbers in extremely quick succession. Phreakers use them to scan alternative long distance carriers like Sprint and M.C.I. for valid personal identification numbers. This is called "doing codes." The modem is used to dial thousands of potential code numbers. Once a valid number is found, it can be used to run up astronomical bills on the unsuspecting person's account. Such numbers find their way to underground bulletin boards where they may be used hundreds of times before the authorized customer gets his bill.

The major alternative long distance services have installed detectors on their lines to signal auto-dial mods scanning for codes, but a dozen smaller, less well known services are still open prey. The alternative carriers are all very closed-mouthed about their problems with phreakers, partly because they don't want to scare customers, and partly because they think writing about the abuse will encourage it.

Teenagers in Arlington Heights, Buffalo Grove and Rolling Meadows were arrested for teleconferencing in late January. The mother of one young phreker complained to her local police department about the several hundred dollar phone bill she had received, sparking the investigation. Usually phone-phreaking leaves no trace on the parents' bill unless they are breaking the line via long-distance directory assistance to toll local blue-box detectors.

One fifteen year old was arrested for breaking into the Illinois Bell computer at O'Hare Airport. He bragged on a conference line that he did $100,000 worth of damage by deleting the files that made connections with a satellite, and he made his "handle" come up when anybody tried to log-on to the system. Whether this was true or not, all the fifteen year old girls on the line were truly impressed, and when you are fifteen, impressing girls is what really matters.

When they were interviewed by police, one boy estimated he had cost the phony company a million dollars. The other two guessed in the $500,000 range. In the case of the Buffalo Grove youth, $51,000 worth of conference line charges and another $100,000 to reprogram a vandalized computer.

Most of the suburbs have parental-responsibility laws that hold parents liable for any damages done by their children. Even in areas without such laws, ATT can file civil suit to recover damages from the parents. Parents of the Rolling Meadows youth may be held responsible for more than $100,000 in fine charges and other damages.
Phone Phreaks (CONTINUED):

The security department at Illinois Bell is still investigating cases of toll fraud in the Chicago area. COMPUTERPEOPLE learned that more arrests are expected early in March. Illinois Bell is presently following up on every case they have discovered where billing and usage don't match. More arrests will be announced periodically for the foreseeable future.

The security men can afford to take their time to build an air-tight case. When they have enough evidence on a youth tapping in on the lines or misusing the system, they bring the information to the local police department, who handle the matter criminally from that point forward.

Telephone security departments are not constrained by the same "etiquette" expected of law enforcement agencies. They can tap any line they suspect of fraud. Since they own the lines they are not required to get a court order to do surveillance.

None of the phreakers COMPUTERPEOPLE talked to know that every call they made was leaving an audit trail that could be traced. They figured that since they were only using empty lines and as long as they didn't leave billing traces or set off blue-box detectors, it wouldn't matter, and they were safe.

To avoid blue-box detectors, phreakers often place their calls by calling a long-distance directory assistance station where no blue-box detectors are on the line. Long-distance directory assistance calls do show up on phone bills, and an unusual number of such calls is one indication of phone-phreak activity.

Another favorite method of getting into the lines is to use an 800 number linked to a private company's switching network. 800 calls cost more than a dollar each to the company receiving them, and if a third party switching network should become a magnet for phreakers because of substandard equipment or maintenance, the company can be held responsible.

One insurance company in upstate New York was the launching point for hundreds of phreaker calls daily until the line suddenly stopped working. A group of phreakers called COMPUTERPEOPLE's office the day after the number stopped working, on the theory that might be their last conference call ever.

They had kept the conference line open for 36 hours by taking turns controlling the conference and staying up all night to man their line. They were despondent because their only "safe" access to the system was gone, which probably meant they were found out and would soon be arrested.

"I just wish that when they first found out I was doing this they would of told my folks instead of doing surveillance until they can arrest me. I figure I'm already caught now, so why stop," one boy said. "If they are going to arrest us anyway, we are going to enjoy it as long as we can."

COMPUTERPEOPLE was introduced to the world of phreaks and hackers over Christmas vacation when a teenager with a shy voice and respectful manner called our office to say he heard about our upcoming publication. After talking a while with our General Manager, he said, "Say hi. everybody." Suddenly a chorus of twenty teenagers said hello. After that conversation, Ron came out of his office wearing a look of stunned disbelief, said and thought about it awhile, and said, "It's a really funny feeling to be talking to what you think is one person, then suddenly there are twenty teenagers on the line."

The next time they called there were four or five boys on the line who all seemed bright and eager to show off their knowledge, and three or four girls who kept interrupting the kid in control to get him to add their girlfriends. "They're not really hackers," one boy assured me. "They're just girls."

"Phreaks aren't out to hurt anybody, though there are a lot of jerks on the phones. It's mostly to see if you can get away with it, to see if you can do it, for the fun. You're not dealing with a very powerful person, you're dealing with lots of people with little bits of information. And they can do a lot."

We don't really harass people on these calls. We just use them to get together. We couldn't afford this if we had to pay for it," one boy began.

"Yeah, and it's so much fun! I don't think they do anything to the people who are called, because we're not doing anything but picking up the phone and talking. If I thought I was doing something illegal, like I was the one making the calls, then I wouldn't do it."

"The first time I ever got on this, I was so confused because there were so many people! A lot of times we'll call people and they won't believe it's a conference. They'll think everybody is just over at your house."

"It's really easier to talk if you don't know the people. We get together to exchange information or idle facts, but other than that we don't really know each other."

"We've had people on in Hawaii and Alaska and California. You get onto an ATT system called the loop. It's where a lot of operators operate from. If you have a computer with a proper sound chip you can simulate the tone the operators use, there's a computer on the line every second you talk. Sometimes you receive an operator switching back and forth on your line. What you do is you call an operator, and your computer will just shut down her station, and then you're the operator."

"I am still under age," said the kid in control, "but I know a lot of people who are 19 or 20 who still do this. It is worth the risk. The chances of getting caught are pretty slim. There are a few select people, mostly in California, who used to work for the telephone company. They know how to set up these conferences so they can't be traced."

"Something happened to one of my friends, and they arrested him," said another boy. "He called me up on a conference about three months ago, and there were a lot of other hackers and phreaks in the line from like the University of Illinois, Western, and stuff, and they stopped doing it but he learned and he taught me. Then he got caught. They had quite a dossier on him. Even the smallest detail from a year and a half ago, they had on record. So I am almost positive my phone line is tapped."

"They arrested him for breaking into a computer at O'Hare airport. His parents refer to it as 'his troubles with the phone company.' He was using illegal M.C.I. and Sprint codes to call long distance free, and his phone bill with those was like $180,000 for M.C.I. and $10,000 for Sprint. He is only fifteen, so all they could do is take away his phone line and confiscate his computer."

"I know people who break into people's computers, but I have never because that's one of the most illegal things you can do, and I don't want to get caught. I don't like to take chances. If someone has done something to hurt me, I will strike back."
"I am deep enough in this already. I'm a pretty good boy. I have almost never done codes. With a 2400 baud autodial modem you can dial numbers in unhumanly fast succession. If you get about 5000 numbers done in a night, you'll probably get five or six valid codes you can use to call people. But if you get caught by M.C.I. or Sprint they can really make it rough on you."

"A lot of people are literally scared to death of these computers. If they knew what we could do to like M.C.I. or Sprint, they would really be scared. We can't get all the numbers, we can't even get ten percent of the numbers, but there are people every month who are getting like $5000 phone bills. They can't change the system, because they have multi-million dollar computers, and it would cost millions more to change. They're not going to say goodbye to the whole system because hackers can use it."

"There are ways to encrypt your system against entering but you need very long passw0ords, or tracers on the line. There's a computer algorithm they're developing right now so every person has his own typing personality. You may hit the Q faster than the W or something so instead of logging on you just type a simple sentence and that identifies you."

Phone Phreaks is reprinted from COMPUTERPEOPLE Monthly: March, 1985 issue, pages 5, 6, 7, 8.

POTPOURRI

—Connie Gentry, Emory University

I have finally figured out how installing a new phone system is going to make me rich and famous: I'm going to write a book, maybe several books. Possible titles might be: Everything You Should Know About Installing Your Own Telephone System Which Won't Make a Bit of Difference Because Things Will Inevitably Get Screwed Up Anyway, or perhaps, A Guide to the Use of Non-Prescription Medication During Installation of Your New Phone System (Or Is Maalox Really Better Than Tums and How Do They React With Escrobine, another might be, I'm O.K. You're O.K. But Your Phone System is Sociopathic. I think I may have a whole new career ahead of me!

Actually, our SL-100 installation is going very well, all things considered. We've had some major problems with the sub-contractor Northwire for outside plant work but, to northern Telecom's credit, our cut date has not slipped. I suppose these kind of problems crop up with any project of this size, but that doesn't help my ulcer! I won't go into gory detail about the problems we've had with this sub-contractor because I don't want to elevate my blood pressure nor do I want to write anything that might be construed as libelous, but I'll be glad to talk to anyone who may want to know more about the situation.

On a more positive note, we are getting great support from Southern Bell Advanced Systems and Northern Telecom. Yes, I know it's their job to support their customers, but you and I know that there's varying degrees and kinds of support one can get from one's vendors; ours, fortunately, has been of the most constructive and helpful kind.

See you next month....

WORDS OF WISDOM:
"Anyone expecting to soar with the eagles in the morning shouldn't hoot with the owls at night...."

---Telephony, October 8, 1984

PARTY LINE CONTINUED FROM PAGE 4:

In response to a question about fiber optics capacity, he said that singlenode fiber has the higher capacity, but asked if the capacity was truly needed. He said it was most important to realistically identify capacity need and went on to say that the thing that is carried for the most part on any communications channel is SILENCE. He likened Packet Technology to the railroads, saying not everyone needs private higher capacity, but if you need to send a packet of data to a distant city, you could share the parts of the switches, the same as if you had to send freight cargo to a distant city. You wouldn't buy your own railroad to ship your cargo, instead you would lease a freight car from an existing railroad already going to the distant city and once the cargo arrived at its destination, the freight car with your cargo would be switched off, ready for you to pick it up. He said that packet switching through the operating companies can give you the appearance of leased circuits with the advantage of paying for them only when you are using them. "User-defined" Networks should be built as piece networks, but designed to be tied together if and when need is determined—using standard network protocols. I loved his definitions of affluence and poor times. Sign of Affluence = you want control. Sign of Poor Times = you are grateful to vendor for providing network and control.

Dr Boschulte made the strong statement that everyone will be in the Packet business. Said it was time to get away from the "technocracy" of ISDN and get to a bottom line business case—the realities of ISDN, it must pay for itself. Telecom managers must be acute observers of trends and know what are true trends. In his opinion, the local loop is the key to the future. In an experiment, Pac-Bell put 32 voice and 5 data channels on one twisted pair. The local exchange is fast putting in fiber here at 56K they must continue doing so to remain competitive. In answer to a question, he stated the FCC cannot insert an artificial boundary to prevent artificially that which is reasonable and possible technically. European telcos have no such boundaries. He stated that only a handful of customers today require speeds 9600; users need control and users must be involved in defining and developing standards.

It was a real treat to listen to three outstanding experts, discuss technology in a practical and realistic manner. If I had known in advance that this very famous scientist would have made the statement about speeds over 9600, I would have thought about taking some of our so-called data speed experts with me....

Not much time left before we are in Banff Springs. If you plan on attending this outstanding conference, you should be registered by now. Don't put it off, get your registration form in the mail today and call Mal Reader and let him know you are coming.

A reminder for those who are already registered: The ACUTA Banquet will be a medieval banquet this year, set in the times of King Arthur and Camelot. Join in the fun by bringing a costume that fits the era. Most cities have costume shops that rent costumes at fairly reasonable rates—check with them or if you know someone handy with a needle, get them busy. It will be loads of fun, and you will enjoy it more if you are a part of the party....Do you realize I will be addressed that evening and John Sleasman will take over as President. Both John and Mal assure me it will be a bloodless experience! Another ACUTA first.
1985
Spring Seminar
Automated
Traffic
Engineering

THE FOLLOWING PHOTOS WERE TAKEN DURING THE SPRING SEMINAR IN DALLAS, TEXAS, COURTESY OF BEVERLY WINDSOR, UNIVERSITY OF MISSOURI IN COLUMBIA, MISSOURI.

YOUR EDITOR WISHES TO THANK BEVERLY FOR THE PHOTOS AND ALSO TO CONGRATULATE HER. BEVERLY LEFT COLUMBIA FOR THE SEMINAR AS BEVERLY WINDSOR AND RETURNED TO COLUMBIA AS BEVERLY BLACKWELL. BILL AND BEVERLY WERE MARRIED IN ARKANSAS ENROUTE HOME FROM DALLAS. CONGRATS BEV!

* * * * * * *