9-1987

ACUTA eNews September & October 1987, Vol. 16, No. 9 & 10

ACUTA NEWS

Association of College & University Telecommunication Administrators

THE VOICE OF TELECOMMUNICATIONS IN HIGHER EDUCATION

VOLUME 16, NUMBER 9 SEPTEMBER, OCTOBER, 1987 RUTH A. MICHALECKI, EDITOR

211 Nebraska Hall, University of Nebraska, Lincoln, NE 68588 • Telephone (402) 472-2000

Back to the Future: The Power of 1A2

- - - Lee Goeller

Features, Features everywhere but 1A2 will do.

I must have received ten calls in the last two or three months asking for the minimum feature list a PBX must have to be competitive. Not one of the callers asked what features would be needed to blow the competition away . . . just what are the minimum features a PBX needs to get by. Unfortunately, this is not an unreasonable attitude, considering the vast feature lists of established PBXs, and the importance of initial cost to many who evaluate proposals.

But as the sophisticated know by now, lengthy feature lists tend to be paper tigers. Few people know how to use more than two or three features and, of those, even fewer actually use them. So if we were to talk about the best of all possible worlds, how should we approach features to make a PBX valuable to the customer? Different kinds of features need different approaches, but the approach I have worked out for station features seems to be headed in the right direction. It is based on the following general idea:

If you have to train the station user, the system is designed WRONG.

I can already hear the shrieks of dismay: "Training is one of the most important aspects of putting in a new PBX. . . You have to train the users to make full use of the incredible sophistication in their telephone system. . . Without training, anarchy will reign!"

I have very little sympathy for such attitudes. To me, the purpose of a sophisticated system is to make sophisticated users unnecessary. To suggest what can be done, consider hunting. When my line is busy, an incoming call goes to my secretary, automatically. Neither of us have to do anything; it just happens. At a more sophisticated level, we have automatic route selection; the user dials 9 plus the outside number. The PBX, if set up properly, decides whether that particular person can make the call at all, and if so, what facilities he or she is permitted to use. Then it places the call. The user need know nothing about networking, WATS lines or choosing the right access code for the proper facility and desired destination. The user just dials 9.

Most of the station users working for my clients are *not* professional telephone callers. They are office workers, sales people, administrators, accountants, engineers, managers and executives. Their purpose is to do whatever they are hired to do. The purpose of the telephone system is to help them do it--as unobtrusively as possible. They should not have to have detailed instructions on how to use their phones, just as they no longer need detailed instructions on how to make long distance calls if the system has ARS.

PARTY LINE

—Ruth Michalecki, Nebraska

This has been one busy, exciting and most challenging month for our department. In addition to such minor things like moving telephones for about 50% of our faculty about 2 or 3 days prior to start of the fall semester; getting 7500 students signed up for long distance service; wiring and installing telephones in a new and very large animal science complex; getting our super computer network, (MIDNET), operational; attending some Northern Telecom Training Schools on the DMS-100, and keeping up with our day-to-day tasks; we had the unique opportunity/challenge of hosting Willie Nelson's Farm Aid III Program! This was sandwiched between back-to-back nationally televised football games from our stadium.

Our department was really busy with the Farm Aid Program. We had to set-up a national press room, a general production office, a ticket sales operation and a general information facility for callers. All of this was prior to the actual production, which was on September 19th. Nebraska hosted UCLA on Saturday, September 12th, and Farm Aid was allowed to move into the stadium on Monday, September 14th, about noon. We had to install over 150 telephone lines, provide 3 large key systems, install lines for a Wang Computer Network and bulletin board covering the various production trailers, press rooms, host booths and stage. The television production group had several dedicated ring-down circuits and satellite connections.

All of this service was installed inside the stadium complex in places never designed to accommodate telephones. One of the more interesting locations was for two numbers in a semi-truck parked in a street that had been closed to traffic. This truck provided food for the Farm Aid crew and the volunteers helping with the program.

The stadium floor was covered with plastic, plywood and a special covering designed to prevent damage to the astroturf. The stage was erected covering the entire north end of the stadium. The football team used the indoor field part of the time for practice since during this time, we had several nice rain storms. About 4pm on Friday night, September 18th, we had to move part of the press operation to the indoor field, providing 30 telephones and computer access lines.

And, on top of all that, following the program, we had to remove everything, restore some things to their original status (such as the athletic press box lines at the stadium) and get it all completed by noon on Monday, September 21st.

Farm Aid III was a big success. It played to a sell-out crowd (about 70,000), went on for over 10 hours with 35 top musical groups here. The crowd was well behaved, not a single serious problem.

The farm aid people were great to work with, especially the crew from Dick Clark Productions. They were very professional and easy to work with. It was great to be part

Continued Page 5:

But how can a PBX with a thousand features possibly be easy to use? There is a simple approach: If its electronic telephone sets work like the 1A2 key set of yesterday, you are home free. The 1A2 key system evolved over 30 years to meet the needs of station users; study its design and operation and you'll see what users have voted for with their dollars for decades. Indeed, the number of 1A2s still in use behind PBXs and, to an even greater extent, Centrex, shows that it has to be doing something right. In particular, 1A2 gives users access to several lines rather than one, and that is the secret of its power.

Station Features

Between 1975 and 1980, the makers of electronic PBXs, completely unable to compete with existing electromechanical systems on the basis of price, started developing features to make their systems seem like more for the money. The features were mostly based on inexpensive memory in their control computers. Then, as a result of this profusion of features, they offered the customer the opportunity to get rid of "all that expensive 1A2 key equipment," replacing multi-button sets with single-line (residential) telephones.

In the worst of such systems, the customer had to learn to differentiate between a great variety of call progress tones to figure out what the system was doing, and then had to remember dozens of "feature codes," keyed into the system after a "hook flash," to tell it what to do. In short, the user had to become a telegraph operator to make a phone call. And he or she couldn't do it without extensive training . . . and retraining . . . and retraining.

The logical way to correct this problem, now embraced by most PBX manufacturers, is to provide proprietary telephones which look sort of like 1A2 key sets, and *sometimes* behave like them. But all too often, they retain flash and feature code thinking. That is, they emphasize single button activation of single-line features rather than the multi-line access that came naturally with 1A2.

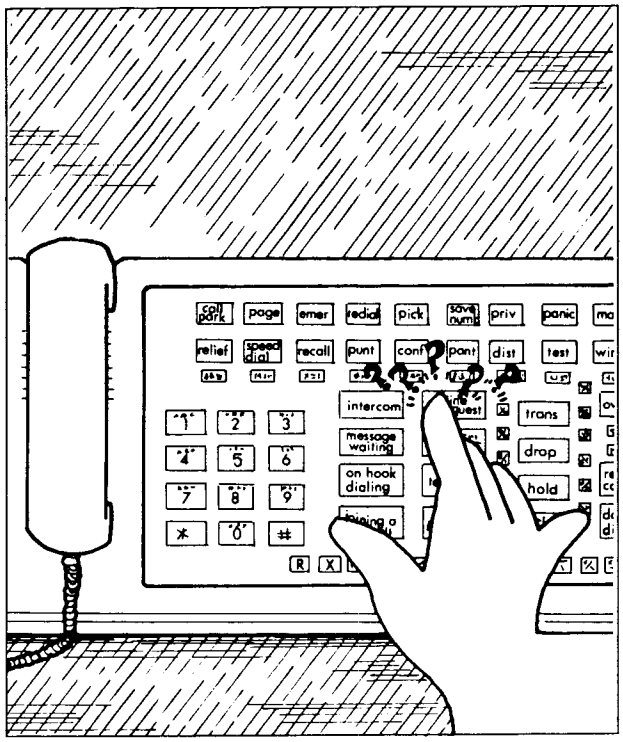
Such phones have sometimes backfired on PBX manufacturers because the continuing decline of computer and memory costs has made it easy for independent manufacturers to add inexpensive repertory dialers to conventional phones. When these dialers are programmed to send a hook flash, detect dial tone, and then send a one, two or three digit feature code, they do just what the proprietary sets do, often at half the price. The repertory dial approach is not a bad one. In many instances, it is all that is needed. But there are a good many places where it works no better than the conventional single-line set it was designed to replace.

Northern Telecom pioneered a suitable solution with the original SL-1 set in 1975, which could duplicate the functions of a 1A2 while using more appropriate modern technology. AT&T followed shortly thereafter with electronic sets for its Dimension family, and Fujitsu (then American Telecom) made a line card to support an electronic key set from ITT. Most other electronic sets of that period, including the Rolm ETS 100, which could pick up three lines, put more emphasis on single button activation of single-line features. It was not until the 1980s that electronic sets designed to work with parent PBXs emulating the multi-line approach of 1A2s became generally available. Then, curiously, the ROLMphone series moved more toward multi-line pickup, while AT&T's electronic sets for its digital PBXs took a strong turn toward buttons primarily for feature activation on a single line.

1A2 Scenarios

Let's consider an example of 1A2 operation. Suppose the boss is talking on line one and the secretary is on line two. A third call comes in on line three. The secretary puts line two on hold with the HOLD button, selects line three by depressing its button (or key, in telephone terminology), and greets the new caller. The call is for the boss. The secretary puts line three on hold, gets on the intercom, and signals the boss, who hears a distinctive beep. The boss can now put line one on hold to answer the intercom, get the appropriate information from the secretary, and return to line one or take the new call on line three, simply by pushing the appropriate button. Just try to do that with a single-line 2500 type set! Or, for that matter, with some of the feature-activating proprietary sets currently available.

To make things easy for the station user, 1A2 buttons are illuminated; the status of the lines is known instantly by just looking. If the line lamp is off, the line is idle. On steady, in use. Flashing one way, on hold; and flashing another way, ringing. All this sounds complicated when you read it, but most people can handle it, almost intuitively, without any training at all. To maintain that level of non-training is our basic objective with new station sets and features.



The above scenario is usually referred to as "boss -secretary."

Let's look at a couple of others: "principal and assistants," and what AT&T calls "car parts," but which is actually much more general. In "car parts," we have one phone at the parts desk in an auto agency, and several other phones back in the parts room and perhaps out on the service floor. When somebody calls in for a part, the clerk answers and, after learning what part is needed, puts the calling line on hold. The line starts to blink at its appearance on all the phones. The clerk goes back to find out if the desired part is in its bin, and then picks up on the nearest phone by simply depressing the flashing button of the held line and reports to the caller.

This approach can also be used in any small group where all the line numbers have their own buttons on each phone. Suppose, for instance, I am deeply into zip terms and practice MBWA (management by walking around). How does my secretary, or the receptionist, or whoever answers calls find me? Maybe by paging. The answerer puts the call on hold and calls me over the paging system. "Mr. Goeller, pick up line 14." Then I, wherever I am, go to a phone, push the button for line 14 (which is blinking suitably as a clue), and greet the caller. Notice how much easier this is than having the call "parked" on a parking orbit by the original answerer, and then having me pick up a phone, get dial tone, dial the pick-up code (assuming I remember it), and then the parking orbit number.

Parking orbits are often hard to identify when parking the fourth or fifth call.

With "principal and assistants," we have several assistants in a bullpen area with a boss nearby in a private office. The assistants each have their own extension, and those extensions may or may not be in hunt, depending on circumstances. But all the assistants' extensions appear on all phones, as in "car parts" above, so that anybody can answer for anybody else, and know exactly which phone is ringing and then answered. The boss, of course, can pick up all the assistants' lines, but will probably have a private line, or a boss-secretary pair to which the assistants cannot connect by a simple button push. The idea here is that the assistants usually deal with the incoming calls but, when they get in over their heads, they use the intercom to call the boss who bridges on to help out. Note that "bridging on" in 1A2 simply involves pushing down the assistant's extension button and joining the conversation. This, of course, is a conference call, and was the most common way of making conference connections (we even do it at home, when the kids pick up on the bedroom phone while we use the one downstairs to talk to Grandma).

Of course, *some* of the above operations can, indeed, be done with single line phones, switch-hook flashes, and magic numbers and the repertory dial phones that simplify such operations. For instance, my secretary can put the incoming call on hold or park, somehow identify the parking orbit, and call me. A call-waiting beep bursts in on my existing conversation; after flashing my switch hook to put my existing call on hold while getting information from my secretary, I may possibly be able to retrieve the new call with some variation of directed call pick-up, assuming the status of my original call permits. But this requires both me and my secretary to be trained to use the system, retrained when we forget, and trained again when we go to another office where a different system is used. Much harder than pushing down the blinking button. I had a friend who, during the course of a year, smashed three 2500 sets in frustration when his office's key system was replaced with a small PBX,

In 1A2 key systems, each line had a physical appearance on each phone that could pick it up. Thus you actually did the switching in the set when you picked up a line. The set had a 25 pair cable (or larger) connecting it back to the key control equipment to accommodate each line's talk and control paths. In new electronic systems, one has a single talk-path and a separate control path between the PBX line card and the proprietary set. All switching is done by the PBX switching matrix. This makes office wiring much easier (the number of pairs in the cable does not depend on the number of lines you want to pick up), and it offers new opportunities, but it also produces a whole new set of problems.

Problems Emulating 1A2

Let's consider some of the problems first. With 1A2 control equipment for each line was called a KTU (i.e., key telephone unit) and several KTUs would be located in a KSU (key service unit). In many instances, the KSU would be near its telephone sets; thus the multi-pair wiring would go from the KSU to the sets, but only a single pair would be needed from a KTU to the PBX or central office. Earlier electronic sets attempting to emulate 1A2 typically used 2, 3 or 4 pair cable rather than the older 25 pair cable or larger. This "skinny cable" has led IBM, AT&T, Northern Telecom, and others to offer standardized wiring plans, typically based on four pairs, although newer electronic sets seldom need more than one pair plus, perhaps, a pair for power. Four pairs seems like a lot less wire than is found in a 25 pair cable; and it is, from set to key closet where the KSU used to live. But from key closet to PBX, the same four pairs have to be extended instead of one, requiring much larger riser cables than before. You win some, you lose some.

Another problem concerns the number of matrix ports. With 1A2 (or, for that matter, 2500-type sets), one PBX or CO matrix port could support several "bridged" telephones. With 1A2, it was not unusual to have, say, three lines coming into the KSU, and five or more sets picking up the three lines. Because each set could access each line for both oncoming and outgoing calls, and the lines could be put in hunt, the users were often better served than they would have been with five lines going to five single line sets.

With the new electronic phones, it is not possible to have two sets bridged onto one PBX matrix port. There has to be a one-to-one match between set and port. Thus an inventory to prepare for an upgrade to a new system has to count sets, not ports on the existing matrix. Typically, the new system will have to have 20 percent more matrix ports for exactly the same service. A lot of people are still getting bopped with this one.

The numbering plan and inventory control also need attention. With 1A2, there was no problem in having more sets than lines (as suggested above), or more lines than sets (as when someone has two or more lines but only one phone). It was usual for each set to be identified with one specific extension number until the numbers were used up, and additional sets to be called "A Stations," and listed with one of the extensions followed by a letter designation. Thus three phones might be named 236, 237 and 238 after their extension numbers, while two additional sets, picking up the same lines, might be called 236A and 237A. In this way, specific phones could be matched against equipment listings.

With new electronic sets, the numbering plan becomes trickier. Although there has to be a pairing between set and port, there is not necessarily a relationship between port and extension number, or between set button and extension number. Because stored program systems can (and usually do) make a line-number to equipment -number translation, any extension number can (usually) be assigned to any port. But support the same extension is picked up on several sets. Then what? Our line/equipment translation is no longer one to one. How do we relate button, set, matrix port and extension number? All this has to be done in software, but different manufacturers do it differently. The most common approach is to define a "prime line" on each set, preserving the one to one match. Handling numbers without a set of their own is sometimes difficult; in earlier versions of the NEAX2400, it was not possible to have an extension number without giving it a physical port on the matrix.

Opportunities with Electronic Sets

Because electronic sets usually have a single talk path and a signaling path, you do not mean quite what you used to when you say you are answering a call on line 243. What you mean is that the switching matrix will connect a call that thinks it wants extension 243 to your talk path when you pick up the phone. The control path is used to blink the lamp associated with the button labeled 243 on your set (and maybe on some other sets via their control paths). Ringing, either sent down your talk path or triggered from your set by another message on the signaling path, is announcing the presence of the incoming call. How it works, of course is less important than the fact that you answer the call just as with 1A2.

On an outgoing call, you use the signaling path (usually) to tell the PBX who you are calling, and the PBX connects your talk path through the matrix appropriately. Your matrix port is all the system needs to know; it really does not care which "extension number" you use. You may care if you want the call billed to your prime line, but that is accounting, not switching. If your secretary gets the other party on the line and then you pick up (a very rude practice), simpler billing may be assured if the appearance of your prime line on your secretary's set was used to initiate the call. It is also easier for you to take over the call by pushing the button on your set rather than having the call transferred to you from the

secretarial line. In either case, the switching matrix connection will be changed from the secretarial phone to yours, but the 1A2 approach works without training.

With all this flexibility, made possible by computer (stored program) control, other things can happen that are not like 1A2 but are equally easy to use. With Northern Telecom's Meridan SL-1, for instance, you can have one line "appear" on several sets but not return busy tone until all sets are busy with different calls to that number. That is, all sets receive an incoming call indication on the button associated with the particular extension number, but as soon as one answers and the call is switched to its talk path, the lamps on the remaining sets go out and these sets are available for a new call. This contrasts sharply with the traditional approach that has the lamp lit at all appearances of a line to show that the line is busy. But the "line" isn't busy; we just have to understand what we mean by "line" in this case. We have an opportunity here that did not exist with older systems: in effect, we have a miniature call distributor. This approach does not work well for call screening by a secretary, but it does what it is supposed to do just fine.

We can also have several appearances of the prime line on a given set, letting the user handle several calls at once on a single "extension number." If you have three different buttons labeled 243, you can use the button positions, along with the lamp at each button, to identify specific calls. This eliminates the need for hunting; it is a variation of call waiting that gives you visual cues to help understand what is going on. This approach, pioneered by Plessey and AT&T's Horizon, is also used ;on AT&T's current digital systems. Note that System 25 does not offer hunting except for conventional single-line phones.

But now we have a new problem How does your secretary answer the second call coming in when you are tied up on the first? Here we have as many answers as we have system designers. The hard line approach says you answer your own calls. Period. Or maybe use call forward on no answer to some other line. However, the possibility of *either* answering your own calls *or* sending them to "coverage" is also possible, a variation of call forwarding all calls, but you have to push the "send all calls" button when you do not plan to answer. In any case, you do not have the convenience of call screening typical of 1A2. In some systems, the call is gone from your phone and is not necessarily identified as yours to the secretary.

AT&T's System 75 originally only permitted a prime line (with several appearances) on its electronic sets. To add the "bridging" feature demanded by customers, AT&T chose to give all the principal's prime line appearances buttons on the secretary's set so that a call coming in on extension 243, middle button, could be identified at both. A somewhat different approach, used by Hitachi, has four buttons used a "talk lines" associated with each set. Single buttons are associated with the set's prime line and the prime lines of other set to be covered. Normally your own prime line is selected, letting you handle four simultaneous calls. However, if another line is seen by its lamping to need attention, its prime line button is pushed to replace your prime line's appearances on your talk lines.

As we get further and further from basic 1A2, we can explore new ideas. Buttons on other sets can be programmed as "call forwarding targets" and/or as indicators for directed call pick-up. In either case, such buttons are identified with the prime line on somebody else's set, and lamping gives you a clue as to what is happening. With call forwarding, the other phone has to send calls to you, while with directed pick-up, you push the button to select the ringing "line." You can't tell the difference between this operation and depressing the button on 1A2. . . until you try to announce the call to the called party and get that person to pick up. Once the call is on your phone, in a number of systems it is no longer on the phone originally called. Repertory dialing, where a button on your phone can be used to signal the system to ring some other phone and then set up the connection, looks like a good possibility for the intercom operation. But the far end needs a distinctive ring and some means of responding to an intercom call vs. regular call after putting an existing call on hold.

Repertory dialing is also useful for selecting particular trunk groups; for instance, you might have specific buttons for the FX groups to New York and Chicago, and local. Lamping would tell you if at least one trunk in the group is free, and pushing the button would give you a trunk in that group. Similarly, group pick-up for a given group of extensions can appear on a particular button; lamping can tell if any station in the group is ringing unanswered, and pushing the button can cause the switch to connect it to your talk-path. Although not quite 1A2, these techniques need little training. However, the problem is not answering a call for somebody else, but screening the call and announcing it privately to the called party, or putting it on hold and picking it up yourself at another phone. These are the things 1A2 did best, but are also the main thing that more "modern" approaches do not do well at all.

Because anything made of plastic has to be cast in molds that get more and more expensive as the number of parts increases, it is often desirable, for economic reasons, to minimize the number of buttons on a set. One way to do this is to use a liquid crystal display (LCD) capable of showing 40 or more alphanumeric characters. Such displays can tell you the name and extension number of the person calling you on an inside call, identifying your secretary, for instance, who may be screening an outside call for you. Or, with group pick-up, you will see the name and number of the phone you are answering. With such a display, the system can also tell you that the number you just called is forwarding to another number, or has "do not disturb" in effect. Such displays are helpful, and can often let you get away with fewer buttons on your phone. They also do two other things: they let you handle messaging and they provide feature prompts.

A number of systems now have a variety of "canned messages" such as "do not disturb," "out to lunch," "back at 3 p.m.," "please call me," etc., which can be displayed to others. It is even possible to make up your own messages, but entering them with a regular pushbutton pad tends to be tedious. Feature prompts, on the other hand, eliminate the need for much training, and make it possible to use some of the features normally ignored. The Mitel Superset 4 is particularly good at this; using software defined buttons, which are labeled in the display area by the system program, a variety of helps are made available in almost all circumstances. The Telenova set not only offers helps for its PBX but also can be arranged to do the same thing for connected systems, such as voice mail.

Testing for 1A2 Capabilities

It is hard to get a straight answer to the question: Can your electronic phones emulate 1A2 key operation? Most vendors say they can, and many of them actually believe it. But the chances are quite good that they do not know what you mean, and you may not find out what they mean until after cutover. So how can you test?

The first thing is to be sure one set can pick up several different lines, each with its own button, and a line can appear on several different sets, any of which can originate or terminate calls using that particular line identity. It should be possible to originate or answer a call on one set and pick it up or bridge (conference) to it at another without going through the transfer procedure. An intercom function should be available to permit separate signaling and then conversation in connection with call screening. Both personal (where a single button selects the intercom channel and alerts the other party) and dial intercom (where the channel is selected and the signaling pad used to designate the party to alert) are

Continued Page 6:

PARTY LINE, Continued:

of this exciting event, but my office hopes it doesn't happen again, for a while anyway!

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

I had the unique privilege of speaking to the ATMS Conference in Atlanta, Georgia last week. ATMS is the Association of Telemessaging Suppliers. I was asked to speak on Voice Messaging/Voice Mail applications at the University of Nebraska. I said it was unique because included in the program was Dr. Norman Vincent Peale and Harry Newton. They were both terrific.

When I saw they were both on the program as highlight session speakers, I wondered for a moment what qualities these two gentlemen have in common. After hearing both of them, it was fairly obvious. They both have a keen sense of humor and Harry Newton is living proof of Dr. Peale's belief that the power of positive thinking is the key to success. I wish I had the energy (or just a small portion) that Harry Newton appears to have.

Harry discussed briefly the dilemma created for Telcos' by the authorized rate of return. If the Telcos' are innovative with their service offerings and are successful, they lose all their rewards because they have exceeded the authorized rate of return and the PUC reduces their rates.

He feels that before the Telcos' will start offering all the really neat things the new technologies can deliver, we will need new regulation that encourages innovation. . . if any of you subscribe to **TELECONNECT** or **CO**, watch for stories on this problem.

If anyone doubts voice messaging is a hot item, they should have seen the number of manufacturers exhibiting systems at the ATMS Conference. I believe I counted at least 19 or 20 different vendors, ranging from very small to very large. Gordon Matthews from VMX discussed the competitive edge of voice messaging technology. It was an interesting seminar.

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

In the September, '87 issue of **CO**, Richard Ferris, former CEO of United Airlines listed the 5 key lessons United learned from deregulation. As I read them, I thought at least one or two of the five could just as easily apply to our business.

1. Learn to change the way we think: certain ways of managing become so ingrained that we don't even want to consider doing things differently. But a new environment and a changing world demand new thinking by you and by your managers. Clear thinking was, and still is, the toughest lesson of deregulation. Regulated thinking prefers a paternalistic orientation, but market thinking prefers results orientation. When it comes to decision making, regulated thinking becomes concerned with the process, such as forms and procedures. Market thinking becomes with the results.

2. Know and be responsive to your customers.

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

Some of you recently received a letter signed by Peter Ginter from the University of Alabama and by me. We are asking you to participate in a very important survey on current usage and future trends in telecommunications and computer technology at colleges and universities. Your perception is very important to this study. ACUTA will receive a copy of the survey results which we will share with our members.

Please do me a personal favor and take time to answer the questions and return the survey. I realize how very busy we are, but it is important. Thanks a lot!

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

Southern Bell provides 24-hour convenience centers (like automated teller machines) on college campuses to make it easier for students to order telephone service from Southern Bell. Students tell the machines their name, give a date to start service, choose a long distance company and then are given a phone number. All they need to bring to the machine is a pencil. Apparently they were installed at the University of North Carolina and maybe Steve Harward will tell us if they worked and how the students accepted them.

And I read where Bell South had developed a virtual second and third line service for residential customers, which they call ringmaster. This allows customers to have up to two numbers associated with their line, each with a distinctive ring.

It gives you the advantages of having more than one line without the expense. The service is aimed at doctors, lawyers and other professionals who regularly receive business or emergency calls at home. It lets them identify those calls by their ring. Roommates can list both names in the directory and answer their own calls. Latchkey children and babysitters can know before answering whether a call is from the parents.

The service also offers a distinctive call waiting tone for each line and call forwarding customers can designate which number is to be forwarded.

One additional ringmaster number costs $3.95 per month for residence customers and $6.95 for business customers. Mountain Bell offers a similar service called Teen Link, that provides a package of local services plus a second line (not virtual) at a 20% discount rate.

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

Hope to see some of you in New Orleans at the ACUTA Fall Seminar. Promises to be a good one!

And I am closing party line for this issue with a quote from Henry Kissinger: "There cannot be a crisis next week. My schedule is already full . . . . . "

POTPOURRI

—Connie Gentry, Emory University

The Minneapolis conference was wonderful! I don't know how Mal Reader keeps puting together such great programs, year after year. This was my first annual conference in four years and I kept telling everyone it was like being at a family reunion. I really do view ACUTA as a family, an extended professional family, and one I'm very proud to be a part of. (pardon my dangling participle!) I wish I had a nickel for every time I've called an ACUTA colleague with, "how do you handle this?," or "what do you do about that?." or "this place is driving me CRAZY!! and I'm on the verge of mutiny!," and always come away with helpful information, not to mention the assurance that I'm not alone and I will survive whatever crisis I'm having. We all need that kind of support from time to time and I've never known a group of people more generous with it than ACUTA people.

We turned up our Sprint Ultra WATS service several weeks ago and I am very happy to say that transmission quality has been excellent. We are so pleased with the service that we've ordered another T-1, and a good thing, too, since the students got back we're averaging 275 hours a day on Sprint, overflowing 25--30 hours onto banded WATS (which we very wisely kept active just in case we had problems with the Sprint circuits.) Once the new T-1 is active we'll probably disconnect the banded WATS or most of them, anyway.

We just got the word that the American Cancer Society will be moving its national headquarters about a mile up the road from us. My operations manager is foaming at the mouth hoping that we will be able to provide their telecom services through our switch. I'm more excited that Emory has committed to building a 300 room hotel and conference center as part of the package that convinced the ACS to move here, and that means we'll have an outstanding opportunity to create a teleconferencing facility. We're going to start lobbying for it immediately. Now you know that I have visions of a sleek, sophisticated, one-of-a-kind technological marvel of a teleconferencing facility, but my 18 years in a University environment have made me just enough of a cynic to think what I'll probably wind up with is a speakerphone and a slide projector! So much for sleek and sophisticated.

One of our major projects this year is to develope a comprehensive telecommunications disaster plan. (There are some people on our campus who would say it's too late!) In any case, we don't have a decent telecom disaster plan, and since we have a medical center, that scares the Hell out of me! If any of you do have such a plan in use, I would appreciate whatever you can share with me. If I get enough responses I'll ask Ruth if we can do an in-depth article on the subject for ACUTA News. If I don't get any responses you may see an article on "How to Develope a Comprehensive Telecommunications Disaster Plan Without Any Help From Your Respected, Trusted and Admired ACUTA Colleagues Who Were Too "Preoccupied" To Pick Up a Telephone and Share Their Wealth of Information On the Subject!" Remember, I don't get mad . . . I get even!

Speaking of revenge . . . we have a very large, busy hospital department whose manager has requested the installation of more lines and more equipment so that "callers will never get a busy signal." After carefully observing and evaluating the department we "gently" suggested to the manager that more lines and equipment were not necessary, that better utilization of personnel and closer supervision would probably solve the problem. The response we got was, in essence, to mind our own business; the manager knew how to manage and we should just install the equipment requested . . period! Needless to say, that raised my blood pressure about 70 points, but I managed to bite my tongue before saying anything I would regret. So now, I face this terrible "moral" dilemma.

The little devil on one shoulder says, "Give 'em what they want. It means $800 a month more revenue even though you know it won't solve the problem." The little angel on the other shoulder says, "Now, Connie, don't be tacky. You know more equipment is not what they need. Do the right thing. All this egotistic, ignorant, supercilious turkey needs is a little guidance." Tha devil's ahead on points right now, but I'll let you know what happens.

See you next month . . . .

BACK TO THE FUTURE, Continued:

appropriate in differing situations; programming an electronic set to do either should not be too hard. A "HOLD" button should be available for use with any call on any line appearance. Lamping should make clear the status of each call on each button. Try out the phones in a working system, emphasizing in particular the boss-secretary pattern, and you can probably tell if the system works like 1A2 or has been so improved and modernized that user training is essential before calls can be made.

Of course, there is no reason to limit a modern telephone to 1A2 emulation. Directed and group pickup and repertory dialing, along with messaging, calling party, directory and other displays are all easily added. But these are features that should be available in addition to, rather than instead of, what the customer is already used to.

Remember, the whole idea is to eliminate the need for training. Not just initial training at cutover of your new system, but refresher courses for long-time employees and special sessions for each new hire. Even if the vendor offers to do the training for free, the time the trainees have to take away from their regular jobs is expensive. Station users should not have to have a PhD (Phone Dialer) diploma hanging on the wall before they can be trusted to make a business call. Organizing systems for this objective should be a major strategy of those other PhDs, the Phone Designers, looking for a minimum feature set.

Lee Goeller is president of Communication Resources, a Haddonfield, NJ, consulting firm, and applies his expertise in switching systems as author of the "BCR Manuel of PBXs." He is a member of BCR Board of Contributors and spent 16 years at Bell Labs and RCA. This article appeared in Business Communications Review, July-August, 1987 issue.

"Computers doing this, computers doing that . . . Bet they'll never replace the good old-fashioned console attendant!"

EQUAL ACCESS REACHES 84% OF AMERICA

ADJUNCTS AND NEW SWITCHES VIE FOR THE REST

by Sanford Bingham

The conversion to Equal Access is nearly complete. Last year the Regional Bell Operating Companies predicted by the end of 1987 they would convert 84% of their total lines. The latest figures at the FCC show the RBOCs are on or slightly ahead of schedule.

Equal Access was one of the stipulations of the 1983 Consent Decree which divested the RBOCs from AT&T. It requires the BOCs to upgrade their central offices to provide all long distance companies with exchange facilities that are equal in type, quality and price to that provided to AT&T. The decree forces the BOCs to either upgrade or replace almost all of their switches.

Under a timetable set out in the Decree the RBOCs were to begin converting COs by September 1, 1984, and be one -third finished by September, 1985.

And if any long distance carrier requested conversion of a "conforming" end office, the RBOCs had to begin work by September 1, 1986. Conforming end offices are those with equipment that can be cost-effectively upgraded. Offices with archaic equipment are called "non-conforming" and given case by case exceptions to the Equal Access order.

According to Barry Grossman, Chief of the Communications and Finance Section of the Antitrust Division of the Department of Justice, this last deadline was "extended" when MCI made "a large number of requests for end office conversion" in February of 1986. The BOCs claimed that there was not enough time before the deadline and proposed their own schedule, effectively demanding an extension.

The issue is now "before the court," according to Grossman, who added that the DOJ "told the court that given the large size of the request any conversion within 24 months would be prima facie reasonable." Hence the March, 1988, "deadline."

There are other issues that might come before the court, according to Grossman. One of these is whether "alternative technologies" like Equal Access adjunct equipment fulfill the mandate to provide access equal in type, quality and price. "It could happen," said Grossman, "that a BOC says 'I'm going to meet my obligation by using an adjunct,' and then the interexchange carrier says no, 'that stuff is crap,' and goes to court." This has not yet happened, he added.

How Equal Access Is Provided

Equal Access is Feature Group D service. Feature Group D abbreviates the dialing pattern which is now required in non-Equal Access offices to reach carriers other than AT&T, who are known as Feature Group B carriers.

Without Equal Access, customers making interLATA calls with a Feature Group B carrier are required to dial a 950 -XXXX code and a Personal Identification Number (PIN). The code gives the caller access to the carrier's switch, which uses the PIN for billing. Customers must "presubscribe" to a carrier, using ballots sent out by the RBOC.

The Feature Group B/950-XXXX dialing pattern, then, allows direct access to a carrier's point of presence, or switch, within the local area. For areas in which the interexchange carrier doesn't have a point of presence, customers use the 10XXX code, which directs the call to the nearest point of presence through the local telco's network.

10XXX dialing is used in areas with 1+ dialing capabilities -- Feature Groups C and D. Feature Group D switches automatically dial the 10XXX digits for the presubscribed carrier, and the customer can access other carriers by dialing the appropriate 10XXX digits. This is a service provided by the local carrier, for which the customer pays Access Charges.

Calls placed with AT&T Communications do not require the access code because they use CO facilities that were in place at the time of divestiture.

Equal Access adjuncts perform the functions of Group D switches. They analyze incoming calls by origin and destination and then use an internal data base to route the call to the customers presubscribed carrier.

The problem facing telcos is that older mechanical and electromechanical switches simply cannot handle the 20 or 50 digits required to give 1+ Equal Access. In order to provide Equal Access, those COs have to either be replaced with new digital switches or upgraded with adjuncts.

The added problem is that new switches are expensive. And adjuncts, which generally run less than 10% of the cost of a new switch, do not work in all cases.

An example of a switch rejecting an adjunct ended this July in Katy, TX, when Fort Bend Telephone cutover a new Stromberg-Carlson Digital Central Office switch. The company had originally hoped to upgrade its electromechanical switches -- four Stromberg-Carlsons and four NECs -- with adjunct equipment provided by NEC and Network Access Corporation, Richardson, TX. The attempt failed when NEC and NAC were unable to provide sufficiently reliable service from the old switches. Fort Bend then decided to replace the old switches with a new DCO tandem switch.

According to NAC spokesperson Dennis Kehlman, "NEC and NAC were working together on that office. The bottom line was that the NEC equipment was removed. When it was removed, we were removed."

Usually, though, adjunct equipment performs reliably and economically. Pacific Bell has begun installation of roughly $15 million worth of NAC system CONTAC (Central Office Network Access) adjuncts which will provide Feature Group D access to over 1 million subscribers in California. All the COs are #5 crossbar.

In another deal, US West has agreed to use the NAC System Contac to provide Feature Group D to 300 COs in its region. Unlike the PacBell conversion, which is end office by end office -- each CO will have its own adjunct -- US West is using a centralized conversion "whereby a number of central offices share the use of each System CONTAC," Kehlman said

The suppliers of adjunct systems are NAC, which is "the leader in terms of Equal Access adjunct equipment," according to Kehlman, and Digitech of Huntsville, AL, which makes a similar product called the Equal Access System (E-A-S). Until recently, TeleSciences CO Systems, Moorestown, NJ, made an adjunct called the XMX-6002.

According to Rich Kraus, national sales manager of TeleSciences CO systems, development of the XMX-6002 has been discontinued "until a market potential is analyzed." The system was specifically designed for #5 crossbar switches, and "there may yet be some interest in it," he said.

ACUTA wishes to "Thank" Publishers: Harry Newton & Gerry Friesen for above article which appeared in **CO**, The Magazine For Telephone Company Management, September, 1987 issue.

AN EQUAL ACCESS GLOSSARY

Allocation: Assignment of a long distance carrier to those customers who do not choose one during the presubscription process.

Ballot: The process by which a customer chooses a long distance carrier.

BTN: Billing telephone number.

CABS: Carrier Access Billing System. Used for billing long distance customers. Also used to bill end users for specific access services such as special access.

Cluster: Consolidation of Equal Access cutovers in major cities.

CRIS: Customer Record Information System. A billing system for end users of local exchange services.

Earning Telephone Number: Any telephone number assigned to a customer.

EASD: Equal Access Service Date. The date of conversion to Equal Access.

Equal Access: The Consent Decree mandated process for providing facilities equal kin type, quality and price for all interexchange customers. Allows customer to place long distance calls (interLATA) with the carrier of their choice by dialing "1," (in some areas) the area code and the seven -digit telephone number.

Feature Group A: Class of service that provides line side, seven-digit local telephone number on FX, MTS/WATS type of service.

Feature Group B: Class of service that provides access to long distance carriers by using a 950-XXXX access code to identify the carrier being used by the customer. Used in non-Equal Access COs.

Feature Group C: Class of service that provides MTS/WATS access for AT&T Communications only before Feature Group D is available.

Feature Group D: Class of service providing long distance carriers with automatic number identification, answer supervision and the same quality of service as AT&T Communications. Equal Access COs provide Feature Group D to all long distance carriers who want to subscribe.

IC: Interexchange carrier, i.e. long distance carrier.

LATA: Local Access Transport Area. The geographical area within which a local telephone company offers telecommunications services.

Presubscription: The process where customers choose a long distance carrier, usually by ballot.

A FEW CHUCKLES FROM THE CHRONICLE OF HIGHER EDUCATION, AUGUST 12, 1987

MARGINALIA

Picture caption in the Nebraska City (NE) News-Press:

AFGHANISTAN TALK . . . Thomas E. Gouttierre, director of the Center for Afghanistan Studies [at the University of Nebraska at Omaha], speaks about the Soviet Union's invasion of the Nebraska City Rotary Club."

It's near the top on every Russian hit list.

* * *

Among the services listed in the "Plant Operations Users Guide" at California State University at Hayward is "Fabrication, installation, and repair of teaching aides."

* * *

Albion College has received a letter of recommendation containing this high praise: " . . . He was able to convey ideas, illicit assistance, and offer suggestions."

* * *

It's come to this (from an announcement issued by the Center for Microcomputer Systems Management at the University of Oklahoma):

"The evaluation of faculty performance for (1) annual merit raises (2) tenure decisions and (3) promotions decisions is an important and necessary function of the fundamental academic units of a college or university. This seminar will give instruction on the Analytic Hierarchy Process (AHP) and its application to the faculty evaluation problem with hands on experience in the use of the personal computer program Expert Choice which enables the routine application of the AHP to complex decision making environments."

* * *

According to a call for papers, the theme of the American Technical Education Association's 1988 national conference will be "Technical Education: America's Greatest Offense."

* * *

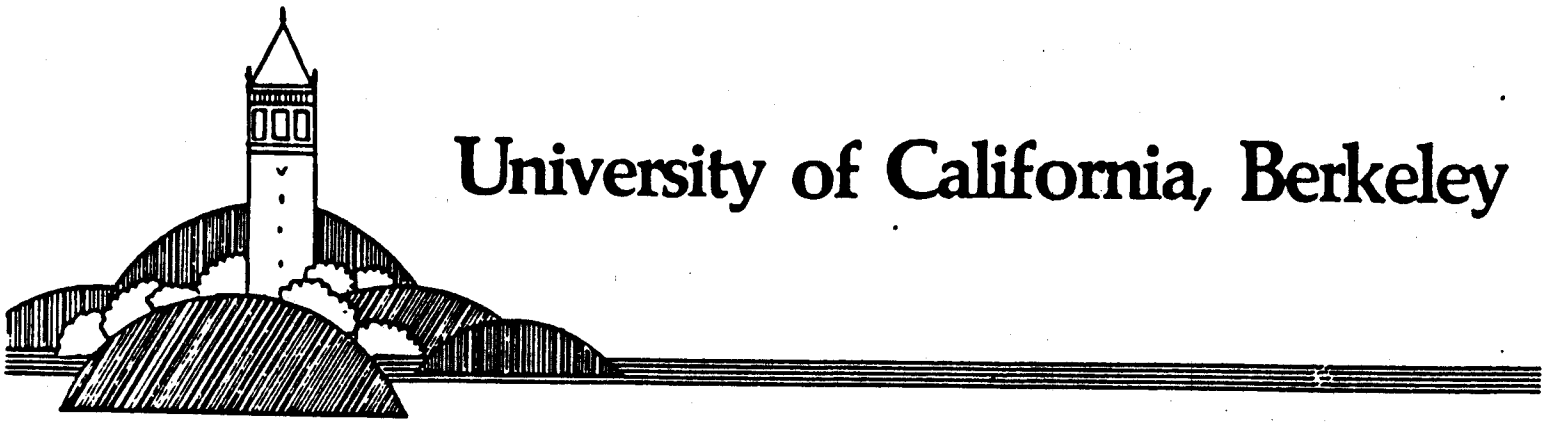
A conference of university librarians from the United States and the Caribbean featured a session described as a "closed meeting librarians and archivists of the English-speaking Caribbean; observers welcome."

* * *

From a flyer advertising the 1987 football program at California Polytechnic State University at San Luis Obispo:

"Senior wide receiver Lance Martin had a record-setting year last fall, catching 41 passes for 715 yards. Other key targets for Sullivan will be returners Claude Joseph and Heath Owens with 28 and 20 catches respectfully."

Respectfully but not meekly, we hope.



University of California, Berkeley

COMMUNICATION AND TRANSPORTATION SERVICES

ASSOCIATE DIRECTOR — COMMUNICATION SERVICES

RESPONSIBILITIES

The Associate Director for Communication Services has broad and comprehensive responsibility and accountability for 3 major service units: Telecommunications, Mail and Reprographic Services, including a $16 million annual operating budget and 108 FTE. Position supports the Director by identifying, developing and implementing long-range programs, plans and policies. Position provides broad and general leadership and direction to unit operational managers who carry major responsibility for daily operations and short-range planning. In administering programs having significant campus impact, position advises and provides leadership and technical coordinative assistance to campus and community. Specific functions include: long-range (3, 5, 10 year) planning, organizational and policy development, and directing and controlling unit activities. Position is expected to approach and develop creative and innovative programs and plans designed to address the rapidly changing field of communications.

QUALIFICATIONS

Successful candidate will possess substantive and progressively responsible management-level experience of a large/complex university or public institutional communications organization, with at least 5 years of experience and a BA in a related field (e.g., Business Administration, telecommunications, mail or reprographic services), or an equivalent combination of directly related education and experience. Proven successful experience in strategic fiscal, organizational and policy planning. Experience in organizational and policy development and implementation. Proven successful experience in developing/controlling unit activities and large, complex budgets. Commitment to Affirmative Action. Political acumen including proven successful experience working with diverse publics to achieve organizational plans and programs. Technical expertise and ability to keep abreast of advances in the field of communications. Strong written and oral communication skills.

SALARY

Commensurate with experience.

SEND RESUME AND SALARY HISTORY BY FRIDAY, OCTOBER 30, 1987 TO:

Personnel Office
Associate Director — Communication Services
c/o Mr. Frank Mah
University of California, Berkeley
2539 Channing Way
Berkeley, California 94720

AFFIRMATIVE ACTION / EQUAL OPPORTUNITY EMPLOYER