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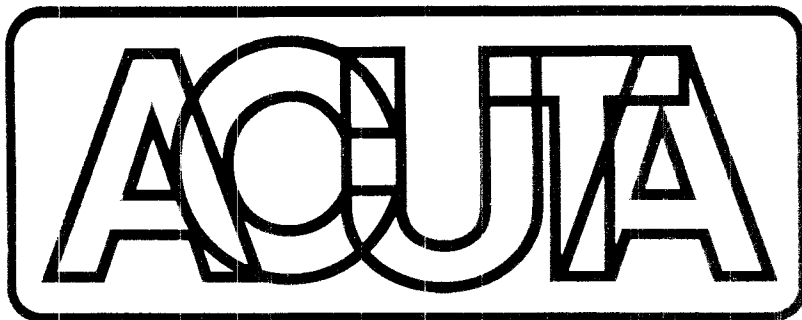Follow this and additional works at: http://digitalcommons.unl.edu/acutanews

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ACUTA NEWS

Association of College & University Telecommunications Administrators Inc.

THE VOICE OF TELECOMMUNICATIONS IN HIGHER EDUCATION

JANUARY 1991

Linking a campus as well as a state

By Jim Sullivan
Wichita State University
Midwest Region

For the past three years, Wichita State University has been installing a campus-wide voice and data infrastructure that is linked to a state-wide network.

The network strategy is based on the AT&T premise distribution standard providing for both low- and high-speed voice and data communications.

The networking infrastructure – ISN (information systems network, SNA (Systems Network Architecture) and T1 (multiple 1.5 megabit state-wide network) – will be the vehicle for moving the campus into a truly distributed

Attendees of the Understanding Telecommunications Workshop held in Ft. Mitchell, KY, Nov. 3-5 included (from left) Sandy Vincel and Mary Lou Emmons of Indiana Univ., Tim Susman and Eileen Joseph, Univ. of Penn., and (back row) Michael Brainer, Washington Univ. in St. Louis, and Joe Pollock, Kent State.

OSP rulemaking starts over with new law

The Federal Communications Commission has proposed and sought comment on new rules and filing requirements concerning operator service providers (OSPs) and call aggregators, in light of the Telephone Consumer Services Improvement Act of 1990, signed into lay by President Bush on Oct. 17.

Specifically, the Commission has:
- Initiated the general rulemaking and monitoring/reporting proceedings required by the new law
- Proposed new rules required by the new law that supersede the rules proposed earlier, and
- Invited additional comments beyond those submitted in response to the FCC's initial proposal.

The FCC also has stated that 1-0-XXX access and payphone compensation issues will be addressed in a separate proceeding, consistent with the new law's provisions.

On June 14, the FCC proposed rules and policies concerning the practices of OSPs, in response to widespread consumer dissatisfaction.

In the Further Notice of Proposed Rulemaking adopted Dec. 13, the Commission noted that the new Operator Services Act addresses many of the same

Retaining call records is essential

By Dave Dibble and Mark Kuchefski
Indiana University-Bloomington
Midwest Region

The risk of losing student services call records probably haunts most telecommunication departments. After all, the calls have been placed and the interexchange carriers will send a bill, but without the records to produce a bill for students, our operations would suffer large financial setbacks. With toll calls on busy nights exceeding a total

of 7,000 and gross annual billings of about $2 million, losses could mount quickly here at Indiana University-Bloomington, if call records were lost.

Designing fault tolerance into this particular area of our telecommunications system has been a critical concern since the beginning of our student services operation.

The faculty, staff and student telephone switching on the Bloomington campus is handled by a Northern Telecom DMS100

ECCI founder cited for business success, public service

Dr. Sherry Manning, founder of a consortium that purchases telecommunications products and services cooperatively for colleges and universities, has been honored by Chivas Regal with one of its six national "Extrapreneur Awards" for 1990.

Manning was cited for her efforts in co-founding a planning commission for the state of Colorado that has brought business leaders together to spur economic development throughout the state.

Described as "a visionary who makes things happen," the 47-year-old businesswoman "has used the same skills and determination that led to her professional success as a leader in innovative public services efforts," the selection committee wrote.

Chivas Regal praised Manning as "one of the nation's leading 'extrapreneurs,' the term it uses to characterize "business leaders who apply high developed business skills to perform imaginative public service endeavors."

Manning, the chair and chief executive officer of the Education Communications Consortia Inc.

Dr. Sherry Manning

(ECCI), which buys telecommunications products and services in bulk for institutions of higher education, was a co-founder in 1986 of Blueprint for Colorado. "No effective vehicle existed for capturing and mobilizing the expertise of the business community for economic development in the state – until the Blueprint for Colorado was established," Chivas Regal pointed out.

In its first year, Blueprint made 38 recommendations regarding the state's environment, health and hospitals, education and economic development. More that 100 legislative actions – based on Blueprint's recommendations –

have been taken, including the legislature's commitment to an additional $100 million for higher education over three years, the state's largest increase in more than 25 years.

With a background in both business and education, Manning recognized that higher education "has just become the single largest industry in America, " Chivas Regal noted. "Seeing the potential of combined buying power, Manning created ECCI, which serves nearly 300 institutions across the United States. This represented the first time the industry had acted in concert nationally to buy selected products and services, according to Chivas Regal.

By pooling their purchasing power, ECCI has created new levels of revenue for colleges, universities and schools while maintaining low long-distance rates for students and faculty, Manning's citation added. "More than $425,000 in new revenues has been created and returned to ECCI members."

ECCI has made available more than $80,000 of free long distance and facsimile services to NACUBO, the National Association of College and University Business Officers, and NAIS, the National Association of Independent Schools, as well as to ACUTA, through the ECCI Message Center. *♪*

AT&T equipment donations to higher ed top $16 million

AT&T donated $16.2 million in computer and networking products last year to 52 colleges and universities, according to a report in the Wall Street Journal.
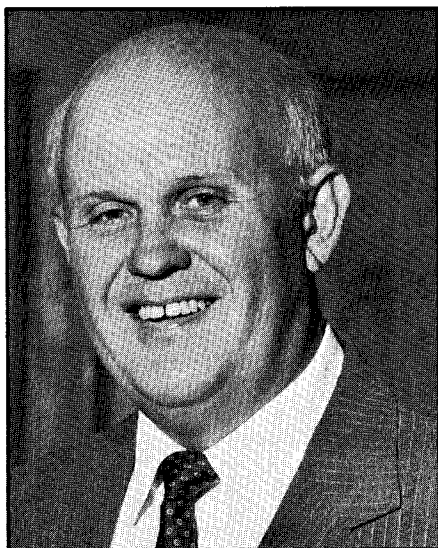
The company's University Equipment Donation Program evaluates projects on the basis of technical feasibility, social value and contribution to existing knowledge that will be made by the project. *♪*

MESSAGE FROM THE PRESIDENT

F. William Orrick,
Washington University
in St. Louis

As I write you this month, I hope many of you are packing for our January Seminar in Ft. Lauderdale. Judging by the number of early registrations, it

The ACUTA workshop – Understanding Telecommunications – will be in San Diego, CA, Feb. 11-13, at the Best Western Hacienda, Old Town. Rooms are $80 a night, plus tax. Seminar registration fee is $150 for individuals representing member institutions and $250 for non-members. The workshop will be held in Manchester, NH, March 18-20, and Atlanta, GA, Oct. 23-25. For information, contact: Lisa McLemore, ACUTA, Lexington Financial Center, Suite 2420, Lexington, KY 40507. Phone (606) 252-2882.

appears that our prediction of a large turnout for Voice Messaging/Voice Response/Touchtone Registration will become a reality. The response from our industry members points toward success as well. We have even picked up a few "first-time" exhibitors from the voice processing arena.

And, the Bahia Mar Resort and Yatching Center, situated with the Atlantic on one side and the Intra-Coastal Waterway on the other, provides a perfect location to get away from the chills of winter to relax and learn about this looming force within our schools and telecom departments.

If you haven't registered in advance, it's never too late to call the ACUTA office. You wouldn't want to miss one of our strongest programs to date.

Looking ahead, don't forget to start making your plans for Hawaii. This program has the potential to be our "eyes" into the future as we examine "Strategic Applications of Telecommunications in Higher Education." A smart move might be to write (or re-write) the strategic plans for our institutions based on the information and evolving tech-

nologies we learn about at the seminar.

Note: Please notice the particulars for the Hawaii Seminar that are unique for that event. Hotel registration cut-off is six weeks prior to the meeting. Also, no reservations via telephone and credit card will be accepted by the hotel. The hotel must receive a check for one night's accommodations to hold a reservation. We have negotiated a special seminar rate of $99 a room per night. Those who register late, however, will be charged the regular rate of $170 per night. So, save some money and register early. And, take advantage of the group air fares – negotiated with Delta Airlines prior to the recent rate increases – by requesting plan code IO-537. Confirm your rate by comparing it with those listed in the November newsletter.

We have planned some outside activities that will give attendees a taste of the native Hawaiian culture as well. Coupled with a powerful program, what we have in store should make for a trip that will be long remembered.

Again, I hope to be greeting you personally at one, or both, of the next seminars. See you then! ♪

BellSouth testing 'pocket phones' at Univ. of Georgia

The University of Georgia in Athens is site for a test of a wireless telephone system by BellSouth and Sony Corp.

According to Robert Bugbee, Budget Director of the university, about 40 of the pocket-sized phone sets have been distributed across campus for the two-month experiment which began in mid-December. Users include faculty and administrators as well as students.

Sony is providing the hardware while BellSouth will be in charge of operation and management. A small grant was awarded to the university for agreeing to help conduct the experiment, Bugbee added.

The digital system will be tested on an unused bandwidth of the cellular-phone spectrum, Bugbee explained. The phones are pocket-sized, cordless sets manufactured by Sony, which is providing the hardware for the experiment. These "micro" phones differ from conventional cellular phones in that they are smaller and rely on low-power base stations instead of powerful radio towers.

BellSouth, which announced an alliance with Sony last fall, has said it plans more tests of personal communications networks. According to the Wall Street Journal, several other such systems are being tested around the country. ♪

Kodak device digitizes X-rays for transmission, storage

A computer that enables radiologists to digitize, store, send and print X-rays and other images was unveiled in late November by Eastman Kodak and Vortech Inc., according to the Wall Street Journal.

The device, which represents Kodak's first marriage of its computing and printing technologies in the medical field, has higher resolution than similar technology already on the market, Dr. Derace Schaffer, a radiologist, told the newspaper.

Competitors in the field, known as picture archiving and communications systems (PACS), include a joint venture of AT&T, Philips Medical Systems, Fuji Photo Film and General Electric.

Kodak and Vortech, however, say their "Ektascan Imagelink" system is cheaper than other systems, which typically cost $1 million each. In contrast, Ektascan Imagelink is compatible with other computers and can be enhanced, for $100,000 to $500,000. With the Ektascan Imagelink system, doctors can digitize images directly into computers without losing definition, the Journal said.

The system also will allow doctors to transmit images to other doctors who can print out their own high-definition copies and then collaborate on interpretations.

The Wall Street Journal also reports that US Sprint has launched a medical imaging transmission service.

Sprint's Healthcare Application Network Delivery service is already being used to test and train medical people in a special hookup linking the University of Kansas Medical Center with Army hopitals. The package of high-speed digital communications lines and multiplexing equipment, can transmit high-quality reproductions of X-rays and other documents.

Such capability, including equipment to transmit medical images, has been available for years, the newspaper pointed out. But Sprint said its new service allows radiologists to transmit medical images from any place in the nation in seconds instead of hours, for the cost of a regular long-distance call.

"This is why we built the digital fiber network," John Haines, Sprint's director of industry marketing said.

For more than a year, AT&T has offered a service, called Healthcare Solutions, that includes high-speed digital lines for transmitting images. But a company spokesman acknowledged that customers must pay extra for digital transmission.

Emory saves money by giving away phone sets

By Marvin Peck
Emory University
Southeast Region

In August 1985, Emory University cut over a Northern Telecom SL-100 with 6,000 lines. This included some 1,800 lines in campus residence halls which were newly equipped with Northern's Unity 1 telephone sets.

The following August, however, we discovered that approximately a third of the 1,800 sets were missing. And approximately another third would not work. We decided then to remove all student sets at the end of Spring Semester 1987.

During that summer, we pulled all student sets to clean and refurbish them. For the Fall 1987 semester, we set up a distribution scheme which made individual students responsible for their sets. And they were obligated to return their phone sets at the end of the school year.

This at least kept sets from disappearing and insured that students had working telephones. But the cost of this service came to $24,931 a year. (Please see breakdown in next column.)

We had no practical way of recovering these costs. In addition, the service was time consuming at an extremely busy period, the start of the new school year. So, we began looking for a more cost-effective way to dispense student telephone sets.

After reviewing several possible options within our department and with the Residence Life staff, we elected to purchase Med Pat phone sets for student use in residence halls. These $8.90 sets are given to each student at the beginning of the school year, and they do not have to be returned. They come with a one-year warranty and have a low failure rate. If a set fails or "breaks," the student returns it for a free replacement. No maintenance visit is needed.

The bottom line is: we are saving $10,531 per year by "giving away" the Med Pat phones instead of maintaining "permanent" phones. ✒

Replace 1,800 mounting cords @ $2 each	$3,600
Replace 450 handset cores @ $2 each	900
Purchase 100 non-repairable sets @$20 each	2,000
Ship sets to manufacturer for warranty repair (One box per week @ $2.50 x 38 weeks)	1,615
Planning and Preparation for Fall distribution (40 hours @ $12/hour)	480
Distribute sets in Fall (144 hours @ $5/hour)	720
Walk-in repair for school year (eight hours per week, 38 weeks @ $8/hr.)	2,432
Plan. and Prep. for Spring collection (40 hours @ $12/hr.)	480
Collecting sets at year end (48 hours @ $8/hr.)	384
Test, clean, refurbish sets during summer (80 hours/week @ $5/hr. X 12 weeks)	4,800
Distribute Summer student sets	160
Collect Summer student sets	160
Replacement of out of warranty sets (360 sets per year @ $20 each)	7,200
	$24,931

Retaining call records

(Continued from page 1)
Supernode. The switch, owned and operated by Indiana Bell, is housed on campus and dedicated to university service. All other components of the telecommunications system are owned and operated by the University. About 9,050 lines serve approximately 12,750 students, including family housing. Another 8,275 lines are used by faculty and staff. A total of 52 T1s provide trunk service for student and administrative clients.

Faculty and staff toll calls are charged to administrative departments, while student calls are billed directly to the individual. Billing for administrative use is performed on the university mainframe, but student bills are prepared off-site by our billing agent. Call records are collected on-site, however, on a Cook Electric Billing Media Converter (BMC). In this operation, both the university and the billing agent need access to the call records.

The BMC connects to a tape port of the DMS and is suitable for collecting call records, storing them with sequence numbers and transmitting them upon password protected access and request. For backup, the local BMC is configured with redundant processors and disk drives. The active processor, which writes to both drives, has 70 Mb disk capacity – equivalent to at least 15 weeks of storage.

Each day, the university polls the BMC at 11 p.m., requesting call records generated since the previous night. Using the sequential data block numbers, the BMC keeps track of which blocks have been polled previously and can deliver either the new ones, or a specified range of previously polled blocks.

We poll the BMC directly from the university's IBM mainframe computer using the TRACS (Teleprocessing Remote Access Control System) software package (by Sterling Software), rather than polling with a microcomputer and uploading the data, as is sometimes done. This eliminates one step and the need for extra equipment.

The data processing staff polls the call records as required by their production schedule. Since the computing center is staffed 24 hours per day, a poll can be initiated there on a simple dial-up basis. This involves less manual intervention than a microcomputer would require.

The daily steps for processing calls on the mainframe include some simple diagnostic checks to verify the completeness of polled call records. Software logic at this level verifies that the first block received is one sequence number greater than the last one received on the previous night. Additionally, it verifies that
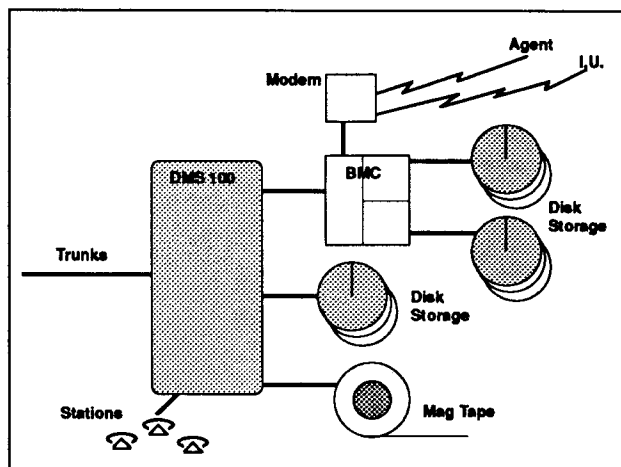
data blocks are not missing in the middle of the sequence. Finally, the report shows the date and time of the last call record downloaded. If the time on the record is close to 11 p.m., then the probability is high that all call records were collected. If the time on the last record was an hour or more before 11 p.m., then call records are presumed to have been lost by the primary collection method and contingency measures are begun immediately.

Our billing agent polls the BMC each day at about 2 a.m., requesting specific blocks following the last one received on the previous night. Simple data consistency checks, similar to the ones conducted by the university, are performed by the billing agent.

In addition to the daily checks to see that data has been properly collected, the status of the BMC is monitored in real time by a hardware alarm system. It can detect and distinguish between power outages, CPU outages, disk failures and out-of-sync conditions. The switching equipment room is staffed during normal business hours and monitored remotely after hours. A hard BMC outage can be detected in a matter of minutes.

At this point, we had addressed normal call processing activity, hardware redundancy and how the loss of data would be detected. With these issues settled, we turned our attention to what could be done when the BMC has failed.

As it turns out, there are features of the DMS100 that fit in well with our BMC remote polling practices. One is the existence of the "Parallel"

ACUTA Calendar

• **Spring Seminar •**
Honolulu, Hawaii
April 5-9, 1991

HOTEL: Hyatt Regency Waikiki

TOPIC: Strategic Telecom Applications in Higher Education

• **20th Annual Conference •**
St. Louis, MO.
July 7-11, 1991

HOTEL: Adams Mark Hotel

TOPIC: Management, Regulatory Issues, Professional Growth, Voice, Data and Video

• **Fall Seminar •**
Denver, CO.
Sept. 15-18, 1991

HOTEL: Hyatt Denver

TOPIC: Student Services

• **Winter Seminar •**
Tucson, AZ.
Jan. 9-11, 1992

HOTEL: The Westin La Paloma

TOPIC: To be announced

Retaining call records

file option. This file can be configured so when call record blocks are written to the BMC, they are simultaneously written to this large "Parallel" (wraparound) file. In our case, the "Parallel" file can accommodate about 30 days worth of call records. The backup procedure operates continually, in parallel with our normal processing.

The DMS100 can copy a Parallel file to tape, so call records can be made available to other systems for call record recovery. However, the file contains more data than needs to be recovered – and there are no simple tools on either the switch or the mainframe for extracting selected portions of the data. Custom software can be considered to simplify this type of recovery. Once the selected portions of the data are identified, the call records can be loaded into the switch and output to the BMC for normal (but delayed) processing.

Besides the ability to make a Parallel file, the DMS100 can also be directed to create primary call record files on disk as opposed to writing them to the BMC. If the BMC fails, we can instruct the switch to create disk files of call records instead of using the BMC. In this event, when the BMC is finally repaired, the switch can be directed to resume recording call records on the BMC. The call record disk files created during the outage would not contain superfluous data – only call records generated during the outage and not yet polled.

The DMS100 has the ability to copy call record files to the BMC, it's own disk file or to a tape drive. Call record files created during a recognized BMC outage can be copied to the BMC, once it is repaired, and ALL records can be polled normally. If the BMC is not repaired before the DMS file fills, then call record files can be copied to tape – without the problem of extra records being included, as in the Parallel file case.

In the event of a lengthy BMC failure it may be necessary to process DMS call record tapes. The format of the individual call records on tape (Parallel file or call record file) are identical to those polled from the BMC. However, for each block of call records from the switch, the BMC adds its sequence number and other header information. These differences between a tape produced directly by the switch and a polled BMC file are small and clearly defined. It would be straightforward to transform the DMS tape file to one needed for input to our billing systems. Under these conditions, timely polling of call records would not be maintained, but all call records could be recovered.

With the availability of these capabilities, our backup plan for a BMC failure became:

1. When a BMC failure is detected, immediately set the switch to record to internal call record files.

2. Notify hardware support and obtain emergency repair parts.

3. If the outage is long, create tapes of call records.

4. Make appropriate repairs to the BMC, test and return it to service.

5. Copy call record files from the DMS to the BMC so they can be polled and processed.

6. Extract call records from the Parallel file if it is cost effective.

A decision must be made about the Parallel file. Unless the BMC failure was detected immediately (unlikely), there will be some call records on the Parallel file that did not get recorded on a call record file. The decision to be made is whether it is worthwhile to copy the Parallel file to tape and extract the calls for the missing interval. This decision would be based on economics, not technical feasibility.

The daily routine is well-tested. The contingency plan was exercised recently to be sure it was adequate. Armed with our step by step documentation, the procedure worked well. Documenting the DMS100 steps for copying the files was very important, as it is not something the switch technicians do very often.

As expected, these exercises pointed out the rough spots in the procedures. In our case, as part of testing the BMC (to see that it was alive again), we discovered that the BMC logs itself off after several minutes of inactivity – and none of the testers knew the password to perform simple status queries!

Overall, once the switch generates the call record, it can successfully write it to the BMC, or we should discover the failure quickly. Hardware redundancy makes failure unlikely. If the BMC fails, however, data is not lost. There are tested procedures to save data so it can be quickly recovered when the BMC is repaired.

Our most vulnerable point would be some human error in switch translations which caused generation of call records to stop. We would discover this by noting a drop in the quantity of records for a day. And if there is a weakness in our configuration, it might be not having redundant polling port capability. This could not be justified from an economic standpoint, however, since we would not lose data, and the likelihood of failure is small.

Now we are looking for a simple method to merge operator-assisted, 900 and calling-plan (such as Pro America) call records into our student services billing process. ♪

Intel chips to bring multi-media to desktop inexpensively

Intel Corp. has announced a set of two computer chips that will allow desktop computers to mix inexpensively such media as television pictures, still photos, animation and stereo sound, according to the Wall Street Journal.

Labeled the i750 video processor, Intel's chip set processes as variety of visual, audio and text signals – a technology often called "multi-media – by squeezing large amounts of computer code to fit into computer memories and over telephone lines, the newspaper report explained.

"The market for multi-media is is in its infancy," the Journal pointed out, "with companies waiting for further development of software and hardware that is expected to bring down the cost of services such as teleconferences and to help PC makers provide machines that can show movies and play music."

Intel said it has already begun shipping samples. The chips contain about 300,000 transistors each and use a process similar to what Intel uses to make its immensely popular 80386 chip, the newspaper added. ♪

OSP rulemaking

(Continued from page 1)

issues that were subjects of the FCC's earlier proposed rules. The Act contains provisions concerning consumer information and notification, a prohibition on blocking 800 and 950 access by aggregators, a prohibition on most call splashing (transferred call is incorrectly billed), and a provision requiring new aggregator equipment to have the ability to process 1-0-XXX calls.

Among the specific requirements of the Act that depart from the FCC's earlier proposed rules are double branding (identification both at the beginning of a call and again before the call is connected) and the posting of the address of the Common Carrier Bureau's Enforcement Division on or near aggregator telephones.

The Act also prohibits operator service providers from charging for most unanswered calls and from placing a higher surcharge on access code calls than on calls using the prescribed OSP. These are topics on which the FCC had not initially proposed rules.

In addition, the Act requires only new aggregator equipment to have the 1-0-XXX access capability. The Commission had originally proposed that both new and existing equipment have this capability.

Further, the Act requires the FCC to establish:
• Minimum standards for OSPs to use in the routing and handling of emergency calls, and
• A policy for requiring OSPs to make public information about recent changes in operator services and choices available to consumers in that market.

The Act also requires operator service providers to file informational tariffs with the FCC by Jan. 15. On Dec. 4, a Public Notice (DA 90-1773) was released establishing procedures for filing these informational tariffs.

The FCC noted that there are several provisions of the Act that are self-executing and that OSPs and aggregators must comply within 90 days of the legislation's enactment.

Among other things, each OSP is required to:
• Identify itself to the consumer at the beginning of each phone call and again before the call is connected, both before the consumer incurs any charge for the call
• Provide information regarding rates and the complaint process
• Not bill for unanswered calls, and
• Not engage in call splashing.

Aggregators must, in addition to other requirements, post specific information on or near their phone sets and not block access to other OSPs by means of 950 or 800 numbers.

In seeking comment on the new proposed rules, the FCC asked that interest parties pay special attention in the comments to provisions that differ significantly from the rules proposed in the initial proposal. The Commission pointed out that parties need not repeat previously submitted comments, because all relevant comments will be given full consideration.

Comments on issues concerning the informational tariffs and the monitoring/reporting proceeding will be filed separately from other comments. ♪

Illicall charges to students below or equal to AT&T rates

Long distance services through *Illicall*, the University of Illinois at Urbana-Champaign student telephone service, are eight percent below AT&T published rates.

Deanie Haldorsen, Management Systems Manager at Urbana-Champaign, prepared a list of the university's phone service charges in response to a request in the ACUTA News for members to share this information.

Dialed Call Rates
• Long Distance – eight percent below AT&T rates
• International rates– same as AT&T rates
• Local directory assistance – $.45
• AT&T directory assistance – $.60
• '900' calls, 15 percent above published rates
• Collect calls, marked up 15 percent (AT&T screening is inacted, but sometimes does not work)

Feature Telephone Rates
• Line rate (included in student housing contract, paid by Housing, $12.93 a month for 12 months)
• Call Transfer, Consultation, 3-Way Conference, Call Hold and Last Number Redial – part of line rate.
• Illipac – $4.50. Features include: Call Waiting ($3), Ring Again ($1), Speed Calling – 10 numbers –

($1). Cost of separately purchased features in parenthesize.

Facsimile
• Sending: Domestic first page – $2, additional pages – $1 each.
• Receiving: First page – $1, additional pages – $.25 each.

Voice Mail
Rate during 1990 Spring was $2.50 a month per student will all residents of a room required to apply. (Mail box includes 10 messages, up to two minutes each with three day retention.)

Service Charges
• Illicall authorization number startup – no charge.
• Telephone set – no charge (included in housing contract).
• Voice Mail adds, moves or changes – $15.
• Illipac adds, moves or changes – $10.
• Disconnect/Reconnect Illicall Charge for non-payment – $20.
• Lost or stolen replacement number – no charge.

Illicall uses MONIES software by Stonehouse and Co. for billing and management. ♪

Linking campus as well as state

computing and telecommunications environment. It will facilitate communication between desktop computers, local area networks (LANs), the central computer systems, metropolitan area networks (MANs), wide area networks (WANs) as well as enhanced video services.

Our original private voice network, KANS-A-N, has undergone a massive update and redesign. The result is a voice/data network also with the capacity to provide for future video needs. It provides the university with both in-state and out-of-state long distance service via a network of digital multiplexed T1 circuits. Each can carry a combination of 24 voice or data (56kb) connections simultaneously. This arrangement currently serves the Kansas Regents Network (KARENET) carrying data traffic between our sister institutions.

Voice System

The heart of Wichita State's present telephone system, installed in June 1987, is an AT&T System 85 Private Branch Exchange (PBX) selected through the state government's competitive bidding process.

The System 85 is feature rich and fully digital. With minimal hardware additions, occasional software updates, proper management and planning, it should provide for the university's needs well into the 21th century.

Voice Network Planning

We have built our network around "remote modules" deployed in strategic campus locations. Connected via fiber optics to the main system, the remote locations serve as satellite wire-distribution centers for adjacent buildings. The satellite centers are essential to provide new buildings with telecommunications and meet the growing demand for digital telephones.

The decision to establish remote modules was based on some inherited circumstances. The existing telephone central processor, copper distribution frame and fiber distribution center is located in the LAS building. The equipment room was too small to house additional facilities or to terminate additional copper cables. Even if the space were available, running copper cable to connect every building to the LAS would not be cost effective. The

cost of constructing tunnel or conduit systems would have to be added to the cost of cable and installation.

The first remote module, installed (late 1989) in the central power plant building, provides telecommunications to the university's Institute for Aviation Research. A migration of service from adjacent buildings to this remote location began last year. This satellite is expected to accommodate any future growth to that sector (southeast) of the campus. It can service several thousand telephones, yet it communicates with its central processor over a single pair of fiber optic cable.

WSU Campus Network Overview
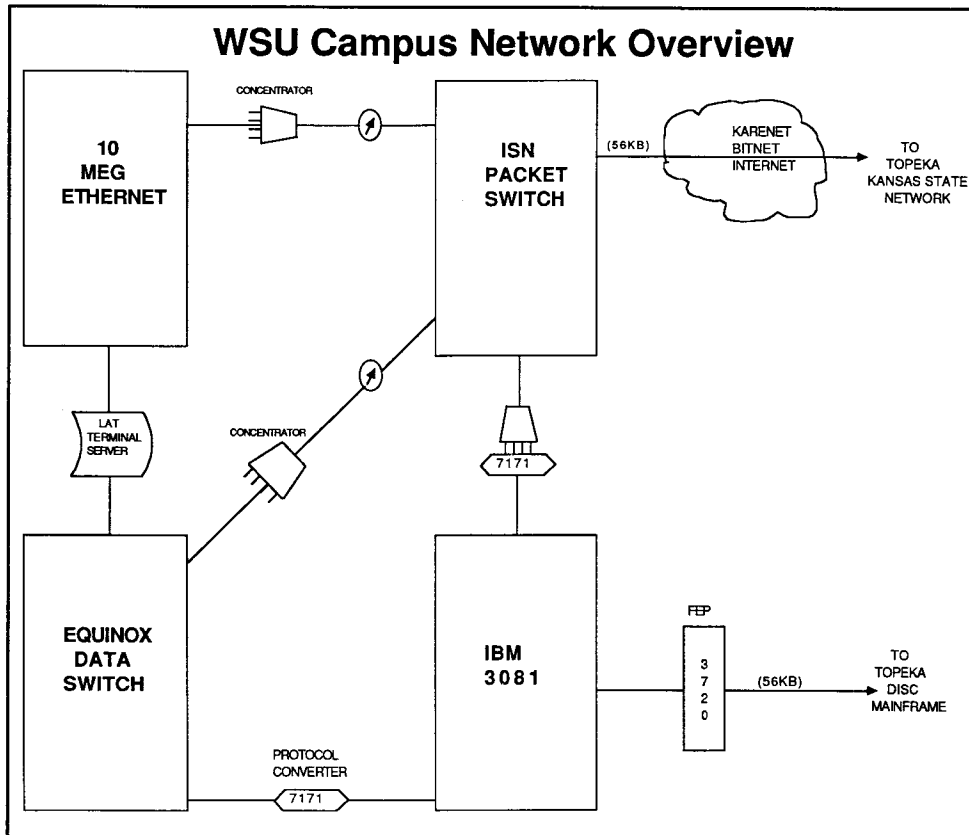
Planning for the next remote module has begun. It should be strategically located on the west side of campus to alleviate existing copper cable inadequacies. The basement of Jardine Hall was the original wire center on campus and has an existing tunnel to some adjacent buildings and could furnish a good option for housing the satellite.

Future remote module requirements will be based on user needs, overall cost effectiveness and campus growth patterns.

Distribution Network

Before the state requested bids on our PBX, a major bid was awarded for a comprehensive re-wiring and re-cabling of the campus. This new Premise Distribution System (PDS) provides both fiber optic and copper distribution cables to most campus buildings. Intra-building distribution also was provided via a single cable composed of four-pair, twisted wire to each telephone outlet.

Distribution Network Planning

On the surface, this all sounds like acceptable progress, and in fact it was at the time. Emerging technology, however, requires a constant re-evaluation of any network. A review of our facilities revealed:

• Copper cable to many buildings was under-sized. The cable sizing was based on the key systems and did not consider either digital sets or data networking needs.

• Fiber placement to each building was limited to six strands. This has not presented an immediate problem in most buildings. If there is a need for data, video and ETHERNET at a fiber-fed building, the combination of the

PARTY LINE

Ruth Michalecki
Director of Telecommunications
University of Nebraska

I recently returned from the National Centrex Users Group Annual Conference in San Diego where the focus was on Centrex service. All of the regional Bell holding companies were present along with several of the independents. Two special sessions were offered in which RBOCs and Independents discussed their present and future Centrex strategies.

US West announced plans to market central office-based ACD, using Northern Telecom's Meridian ACD. They intend to offer ACD services from any of their digital offices, regardless of the switch manufacturer.

Almost all of the telcos plan on offering voice mail/voice processing. Southwestern Bell announced their plans for network improvement to the tune of $100 million. Improvements call for fiber and more digital switching centers through SWB's network. Pacific Bell will offer enhanced Centrex management services, such as feature-specific billing, sometime in 1991. They have filed a tariff for ISDN PRI and will roll out CLASS during the fourth quarter of 1991.

For the most part, the telcos are working aggressively to convert their central offices to digital, using fiber in the networks. And they appeared committed to ISDN, CO-based LANs, SMDs and SONET. Also, most all of them seem committed to eliminating tariffs for their Centrex services. They maintain that stiff regulations under tariffs make telcos less flexible in pricing than PBX vendors. With tariff relief, they say, they can make Centrex as feature-rich as any PBX.

Pat Parker of SWB stated: "If we're going to keep this product leading edge, then we've got to make it feature rich. We've got to have it keep up with technology. Pricing also is critical."

Priorities at Variance

On the other hand, the Centrex users had an opportunity to present their wish-list to the telcos. More user control was at the top of the list. Users want to view their network traffic in real-time; they want the ability to make changes to their networks instantly; they want more sophisticated management products.

Most users were interested in learning what steps their telcos are taking to provide service in case of a disaster. But the listing of priorities by the telcos was almost the inverse of those listed by users.

For example, ISDN was the topic of the hour for telcos. However, Dick Jenifer (immediate past president of NCUG) pointed out that "things like ISDN are a higher priority to service providers than to users."

The annual "Customer Satisfaction Survey," which NCUG conducts of its members, indicated that 39 percent of the members are considering using ISDN as compared to 54 percent in 1989.

While most Centrex users indicated that they are satisfied with the service they now receive, the lack of user control continues to be an issue.

University Emergency Phone

Terminal enclosures from the University of Illinois-Chicago's Emergency Telephone System were on display at NCUG. The equipment for the system, featured in the September issue of Procomm magazine, stands nine feet tall and is around 13 inches around. Mercury vapor lighting from within the column illuminates a 24-foot circle around the unit.

Near the top of the column is a vivid blue light which stays "on" all the time and is easily seen from hundreds of feet away, day or night. When the button is pressed to call for help, a blue strobe light atop the column is activated. It flashes 80 times a minute until reset by a security officer or stopped by a built-in timer. The terminal itself is enclosed and not subject to frozen dial pads, broken handsets or wet speakers. On the front is a large push button labeled "PUSH FOR HELP." The unit itself is called "Code Blue" and is most attractive.

At the University of Illinois-Chicago, the system ties into a computerized dispatch system called "Assist 1," made by Startel. It monitors all emergency phones on campus and provides key information enabling a dispatcher to respond quickly and accurately to any call for help.

Another Successful Workshop

I really enjoyed the "Understanding Telecommunications" workshop at the Cincinnati suburb of Ft. Mitchell, KY, Nov. 3-5. We had good attendance, and I must say that I was impressed by the number of ACUTA members who gave up their weekend to attend the workshop.

The workshop was offered over a weekend in response to requests from members for training classes that their staff people could attend without being away from the office for several days. As we all know only too well, telecom offices at universities usually are not overstaffed. Having one or more staff members out of the office for three or four days in a row can cause problems.

This schedule seemed to work out very well for the attendees as well as myself. I am sure ACUTA would be happy to consider holding a workshop over a weekend in another area, if interest is shown.

It is hard to believe that the holiday season is upon us. It seems like only yesterday when fall semester started. From all of us at the University of Nebraska-Lincoln to all of you: Have a very happy holiday.

See you in Ft. Lauderdale! ♪

Linking campus as well as state

three will exhaust the fiber's capacity.

• The evolving data connectivity requirements call for a minimum of two-pair and in some cases three-pair wires to serve LANs or Information Systems Networks. The telephones require two or three of the four-pair wires. This leaves zero redundancy for maintenance and, even worse, insufficient wiring to meet both voice and data needs at the outlet.

The challenge of hurdling the shortcomings of the fiber distribution can be accomplished through the most efficient use of the scanty fiber optic distribution in place. Strategic deployment of ISN, ETHERNET (10 meg LAN) and synchronous fiber multiplexors is essential.

In light of the evolving fiber technology, substantial deployment of fiber optics to new buildings will be necessary to meet expected usage. At a major California university, all new buildings are connected with 128 strands of fiber. WSU's initial fiber distribution consists of 6 strands to each building.

Intra-building data connectivity to the workstation on twisted pair technology is the campus standard. All new buildings and remodeled areas will have two cables of four-pair wire attached to Voice and Data duplex outlets on opposite walls in each office or work area as a minimum requirement.

Running fiber optics to work stations is not yet cost effective. As the demand for fiber increases, the price should drop enough for it to emerge as the desktop standard.

Data Network

Information System Network (ISN) is a data packet switch which supports the lower speed asynchronous data transmission equipment, such as faculty desktop microcomputers, as well as high-speed optical fiber interfaces to departmental LAN servers. The ISN is a flexible system currently supporting more than 600 end-points (terminals and host connections). It also can bridge ETHERNET and STARLAN networks.

The ISN has an incoming modem pool (300 to 2400 baud) to allow off-campus users to dial in for connection to on-campus resources. Off-campus resources can easily be connected via out-going modem pool (1200 to 2400 baud),

Case studies set for Ft. Lauderdale

Florida State University is one of the few institutions with touchtone registration that allows student also to drop and add courses by phone. Maxwell Carraway, Registrar at FSU, will present a case study of his system at the ACUTA Winter Seminar in Ft. Lauderdale, Jan. 13-16. The FSU system, field tested on 6,000 students, now serves 22,000.

A case study of automated attendant applications at the University of Illinois at Urbana-Champaign will be presented by Cindy Adams, Customer Service Manager, and Glen Whitmer, Asst. Dir. of User Services. An interesting feature of the Urbana-Champaign attendant allows students to access a foreign language learning laboratory.

or the Kansas Regents Network (KARENET). KARENET is a higher-speed (56kb) network linking ISNs at each board of regents school.

Twelve STARLANs (our independent local area networks) are bridged together and connected to the campus mainframe via ISN and SNA gateway. Our STARLANs come in both one- and 10-meg ETHERNET versions. Both interface to ISN over our fiber-optic network.

Campus data networking topology today is based on ETHERNET (10 meg) standard protocol. Using Cabletron "Smart Hubs" connected via fiber, we can monitor the network and isolate faults from a central management position. These Smart Hubs can be equipped with Fiber Data Distributed Interface (FDDI) when a standard has been determined. We will then establish a 100-megabit FDDI backbone across campus with local hubs capable of bridging and linking to the most widely sought LAN protocols, ETHERNET, Token Ring and/or STARLAN.

An EQUINOX data switch helps round out our data networking topology. It has the same capabilities as the ISN and provides for some basic sub-LAN (SwitchLAN) needs such as printer sharing and spooling as well as file sharing. It is especially useful in eliminating buildng and distance boundaries across campus for sub-LAN functions. The EQUINOX system is also connected to our ETHERNET backbone via a plug in the LAT terminal server.

Data Network Planning

Consideration for future backbone technology appears to be centered around fiber optics. Emerging technology will dictate to what extent we can rely on the fiber already in place. Today we can transmit data over multi-mode fiber at 100-meg rates and no doubt higher speeds will be pushed by ever-changing technology.

LANs are dramatically changing the role that traditional telecommunications departments must play in campus networking. Overseeing a distributed PC LAN environment will require management tools to isolate faults and immediately remove them from service problem end-points. The support systems in place, or lack of them, will determine the success of our campus network.

Bringing it All Together

Development of an integrated services digital network (ISDN) was completed in 1990. Previous applications were centered around voice and lower-speed data (56kb). The System 85 PBX on campus is ISDN compatible, enabling us to take advantage of evolving applications in this technology.

Another up-and-coming data technology is based on single-mode fiber Synchronous Optical Network (SONET). This will give users telecommunications access to applications that run at 51.84 Mbps and even as high as 13 gigabits per second. Those applications include FDDI LAN-to-LAN connections, CAD/CAM and supercomputer simulations. The regional Bell operating companies and major technology manufacturers, such as IBM and Northern Telecom are investing heavily in SONET development.

Our goal at Wichita State University's Computing and Telecommunications Center is to take advantage, cost effectively, of emerging technologies providing value-added service to both academic and administrative operations. Campus backbone network, protocols, standards and interfaces must be non-proprietary and as open as possible to allow for a variety of systems and vendor products. Most important of all, our network must be flexible enough to integrate with the future. ✒

*Del Combs,
Executive
Director*

From ACUTA Headquarters

Well, I've kept putting off writing this month's column for several days. In fact, I've gone about as far as I can – halfway around the world, to Singapore, on my vacation.

However, with the fax service and the international date line playing their roles, Bill Robinson will have this in the ACUTA News the day before I write it!

As I sit here early this morning, Dec. 17, waiting for my wake-up call (my biological clock went off several hours ago), I am collecting my thoughts, experiences and actions since leaving Lexington on Dec. 2. I'll share a few of those that may pertain to your visit to Hawaii next April. Even if you'll be unable to get to our Spring Seminar, you might want to read along anyway.

My first stop, Dec. 2, was for two days in Maui (for my vacation). It's a great island that you need at least two days to explore. A "must" is a drive to Hana, the most remote part of the island. It's a full day's drive, even though it's only 50 miles from the airport.

The road is narrow and winding, with about 36 one-lane bridges. High on the side of the maintain, it passes through dense, tropical growth with breath-taking views of the coast line below and its secluded beaches.

Another half-day trip is to the top of the dormant volcano rising 10,000 feet above the towns and resorts at sea level. To give you a perspective, that's about 2,000 feet higher than Pikes Peak towers over Colorado Springs. The trip will take three to four hours, leaving the rest of the day for a drive around the resort areas with their fabulous shops and tropical plants.

With Delta's stop-over at Maui, this may be your best alternative for adding a side trip to another island during your visit.

I got a small, but clean and nice motel room near the airport and a rental car package for two nights and two days for a total of $119. Of course, you can pay lots more for a place to shower, catch a few Zs and park your goodies while you do more shopping and sightseeing.

On to Honolulu and the Hyatt Regency:

You're going to love this place and all the activity going on along Waikiki Beach. A typical ACUTA event is planned for one evening when the attendees will be able to interact with native residents and enjoy a great luau. Time also will be set aside each afternoon for personal networking and beach combing.

I went to the "Garden Island" of Kauai for three more days of vacation. This island is much more secluded, making it a great place to relax.

The highlight of my visit to Kauai was playing golf on a Jack Nicklaus course amidst spectacular views of the mountains, tropical plants, wildlife and more sand traps that you can ever imagine. Of special interest is the magnificent view of a canyon running from one side of the island to the other. Standing along the rim, you can view a distant peak that is the wettest spot on earth. It receives more than 400 inches of rain each year.

Well, I'm sure I've already exceeded my allotted space. My three days in Singapore will need a lot of space. Since I have a 16-and-a-half-hour flight from Hong Kong to San Francisco (Boy, do I dread that!), I'll have enough time to write several articles. I'll start with Singapore and then do Hong Kong, including an interesting conversation I had with a local merchant about home service.

I'll close with my basic impression of Singapore. It could serve as an example for the rest of the world to learn from and as a mold to shape the future. ♪
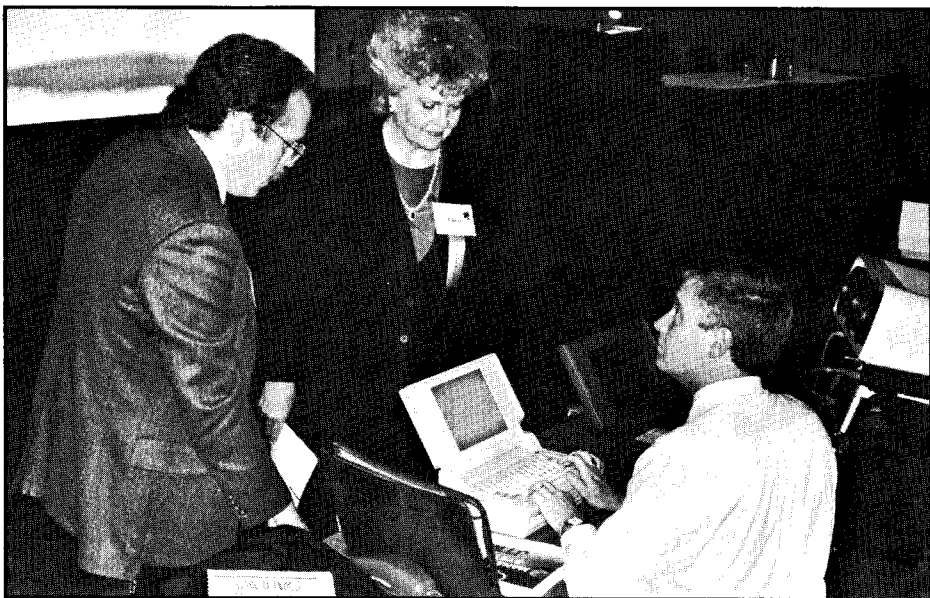
Chris Moore of Oregon State University runs an equipment check with Joe Massey (seated) and Todd Stark, Systems Administrator at OSU, prior to presentation of her case study at the Fall Seminar in Portland, Oregon, on a Telephone Management Information System that serves eight state universities. Massey was a consultant on the project that is characterized by a blend of diversity within unity.

Membership Services Survey drawing good response

By Coley Burton
ACUTA Vice President
Univ. of Missouri System

As I write this, it is late November and returns from the Membership Services Survey are already pouring in. So far I have learned one thing – being a survey tabulator will never be on top of my desired occupation list. Seriously, the information that is coming in will be a great deal of help to the ACUTA Board and Staff in charting ACUTA's future directions.

It will take awhile to digest and analyze all the information. When that has been accomplished, a report will be presented to the Board of Directors, along with courses of action to implement the recommendations.

Some recommendations, such as specific monograph topics can be implemented fairly soon. Other recommendations, such as the development of one or more workshops, will take considerably longer.

When analysis of the survey is complete, the results will be published in the ACUTA News. Of course, when the board has considered and approved courses of actions based on the survey responses, that information also will be announced promptly to the membership.

I want to thank everyone who has taken the time to complete and return the survey. For anyone who hasn't returned their survey, it's never too late. For those folks who indicated an interest in helping with one or more facets of new programs, it will take us a while to get our ducks in a row. But, never fear, we have your names and we will be in touch with you. Several surveys have been returned indicating a willingness to help, but with no name on the survey. If you would like to help with developing a project, please contact a board member or the Lexington office. ✍

Hackers who entered BellSouth computers get jail time

A federal judge in Atlanta handed prison sentences to three young men who had pleaded guilty to gaining access illegally to the computers that run BellSouth's phone network, the Wall Street Journal reported Nov. 19.

Adam E. Grant, 23, and Franklin E. Darden, 24, each were sentenced to 14 months incarceration and ordered to pay restitution of $233,000. Robert J. Riggs, 22, who had a prior computer-fraud conviction, was given a 21 month sentence, in addition to restitution and public service.

U.S. Dist. Judge J.O. Forrester also forbade the three from using computers in their homes for three years. He called their crimes "electronic vandalism."

The defendants were said to be members of a hacker group known as "the Legion of Doom," whose hobby is to explore forbidden recesses of business computers and telephone company switching networks.

BellSouth and other phone companies were on alert the day of the sentencing against threatened retaliation if the defendants were sent to prison.

The newspaper quoted "a law enforcement source" who said an anonymous threat had been issued, apparently by an English-American group that includes former Legion members. The group calls itself 8LGM, for Eight-Legged Groove Machine. ✍

ACUTA welcomes new members

Region 1 – Northeast U.S.
James M. Johnson, Manhattan College
Jacqueline Anne Larsen, SUNY, Binghamton
Scott V. Street, Phillips Academy
Alice Wanderman, New School for Social Research
Roderick G. Wallick, Wheaton College

Region 2 – Southeast U.S.
Gerald D. Ball, Mars Hill College
Dr. Ridley J. Gros, Nicholls State University
James G. Hudson, Furman University
Eleanor Luchenburg, St. Thomas University
Dr. David Okeowo, Alabama State University
Chip Phillips, Ferrum College

Region 3 – Midwest U.S.
Steven J. Eichman, Scared Heart School of Theology
John Gibson, Indiana Bell

Norris J. Johnson, Private Consultant
Paul E. Kelm, NetCom Management Group
Robert J. Norvak Jr., Mohawk Wire and Cable

Region 4 – West U.S.
Joseph Giroux, West Valley-Mission Comm. College Dist.
John E. Hansell, Gavilan College
David Johnston, Santa Rosa Junior College

Region 5 – Canada
Renee Lemieux, Ryerson Polytechnical Inst.

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