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## ACUTA eNews February 1987, Vol. 16, No. 2

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"ACUTA eNews February 1987, Vol. 16, No. 2" (1987). *ACUTA Newsletters*. 320.  
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# Association of College & University Telecommunication Administrators

VOLUME 16, NUMBER 2

FEBRUARY, 1987

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## President's Message

—John R. Curry,  
Thomas Jefferson University

Our seminar held on January 18 - 21 in San Antonio was attended by ninety plus people. I believe the speaker, Mr. Jerry McDowell, did a good job of covering all of the techniques, strategies and problems associated with the installation of local area networks. Cathy Cruger, Georgia Institute of Technology, has written an excellent summary of the seminar in this issue of the newsletter. Our Spring workshop will be held at Yale University in New Haven, Connecticut March 29 - April 1. The subject will be "Planning and Implementing a replacement Telecommunications System" or the Yale saga from beginning to end complete with the joys, rewards, failures and frustrations inherent in such a paramount project. Mike Grunder and his staff will make all the presentations and promise to tell it like it was (and probably still is). This should be a great meeting for anyone who is looking down the same barrel that Yale did some four years ago.

Within the next several weeks, all members will receive forms to verify or correct the information we need to issue a new membership directory. Your cooperation in completing and returning the forms in a timely fashion will be greatly appreciated.

### Our Future Events

#### 1987

Spring Seminar	New Haven, CT
Mar 29 - Apr 1	
Annual Conference	Minneapolis, MN
July 26 - 30	
Fall Seminar	New Orleans, LA
Oct 4 - 7	

#### 1988

Winter Seminar	Tucson, AZ
Jan 10 - 13	
Spring Seminar	Charleston, SC
Mar 20 - 23	
Annual Conference	San Diego, CA
July 17 - 21	
Fall Seminar	Columbus, OH
Oct 2 - 5	

#### 1989

Winter Seminar	Palm Springs, CA
Jan 15 - 18	
Spring Seminar	Memphis, TN
Apr 2 - 5	
Annual Conference	Philadelphia, PA
July 16 - 20	

## ACUTA WINTER SEMINAR LOCAL AREA NETWORKS

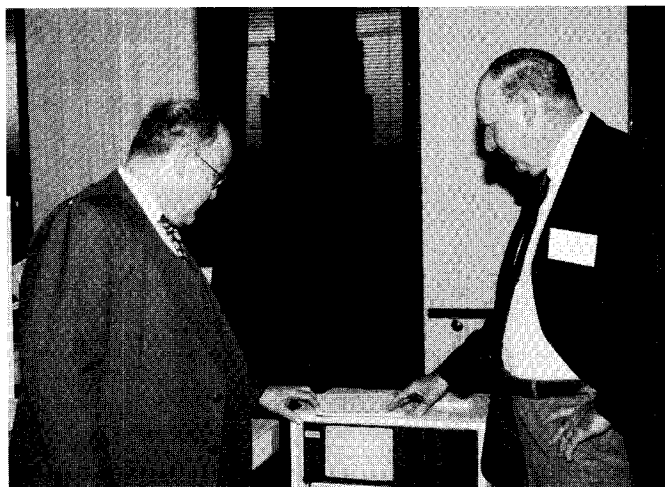
—Cathy Cruger,  
Georgia Institute of Technology

A LAN is a network of terminals and hosts that are closely located. The definition sounds easy enough but those who attended the Winter Seminar in San Antonio last month learned that there is much more involved in the defining and understanding of Local Area Networks. The seminar, presented by Jerry McDowell of Vanguard and Business Communications Review, proved to be a true learning experience (and at times an eye-opener!) for the more than 90 participants.

On day one, Jerry identified a key fact which would serve as the nucleus to the audiences' understanding of LAN's. This key fact states that a local area network is simply a "highway" which transports information from one point to another and that the design, selection, implementation and management of that highway system is dependent on the current and future applications of the user community. In essence, network planners must identify the strengths and weaknesses of current application projects and forecast future projects in order to best evaluate available network options. Jerry suggests that the only resource for this information is the user and that the information can best be obtained through user surveys and interviews.

Participants gained a valuable understanding of the options involved in LAN design including the various topologies, access methods and transmission mediums as well as the associated advantages and disadvantages of each. The analogy of the highway, in itself, stresses the importance of the transmission medium and in fact, often dictates what the topology and access method will

Continued, page 2



Lem Tate and Jack Curry at San Antonio Seminar.

WINTER SEMINAR, Continued:

be. The strategies for the transmission medium (or cable plant) include: that which is specified and/or provided by the LAN vendor; off-the-shelf systems such as the approach by IBM or AT&T; or the re-use of existing cable. Regardless of the choice, the cable plant should be designed to meet at least 80% of the user applications, whether they are office automation, distributed data processing or voice related. In addition, the cable plant should allow for "transparent moves" - changes that can be managed from one location.

Jerry stressed the importance of recognizing the network as a resource to be managed rather than an expense to be curtailed, and the need for incorporating management controls into the design of the network. He defined network management as, "the complete, organized control of the motion of data through a network, which results in the highest percentage of utilization, reliability, and availability with the least amount of internal delay and cost to the user." To further define this subject, three control levels were identified: the functional level which establishes network priorities and restrictions; the interface level which provides for network diagnostics; and the circuit level which emphasizes the performance quality of the network. To accomplish this one must carefully evaluate the management tools provided by the LAN vendor and provide alternatives for those which do not exist. Administrative control is also an important part to the management of the network. In this area the emphasis was placed on the importance of thorough network documentation (what's where, why and how is it put together); detailed operational procedures (who does what when and how do they do it); and a training program to ensure that employees know the network system. Network planners must provide for the ability to detect, isolate and recover from problems interfering with the performance of the network on both an operational and administrative level. There are four safe assumptions to make when designing the network management plan: the network will never get smaller, the network will never get slower, the network will never get cheaper and the networks will never stay the same. Plan for that.

A case study, describing both the planning and implementation of the Carnegie-Mellon "Andrew Network" and the "Metropolitan Network Project" (MNP), was presented by Bob Cape. A contract with IBM, negotiated in 1982, formed the foundation for the Andrew Network - a complete installation of the IBM Cabling System in all campus buildings and fiber between buildings. Needless to say the planning involved in a project of this magnitude was astronomical and Bob had the stories to prove it. (Asbestos became known as the "A" word!) By March of this year, the seven million dollar Andrew Network will be complete. In the meantime, the Metropolitan Network Project, which provides network access to the private homes of faculty and staff, is off and running. Subscribers to the MNP purchase a DOVE (data over voice modem) from the University bookstore and pay a one-time installation charge and a flat monthly usage fee to the University. A matching DOVE is then installed in Bell of Pennsylvania's central office and ties to a subscribers with 9600 bps service into University's computing resources. Bob's advice to those involved in a campus-wide project of any size is to, "inform everyone and surprise no one." The audience nodded in agreement to that!


Beyond the sessions, the vendor exhibit area offered an opportunity for participants to explore available network systems, software and services. The vendors themselves also contributed valuable information to the open discussion sessions and we would like to extend a special thanks to them, to Del Combs for bringing them

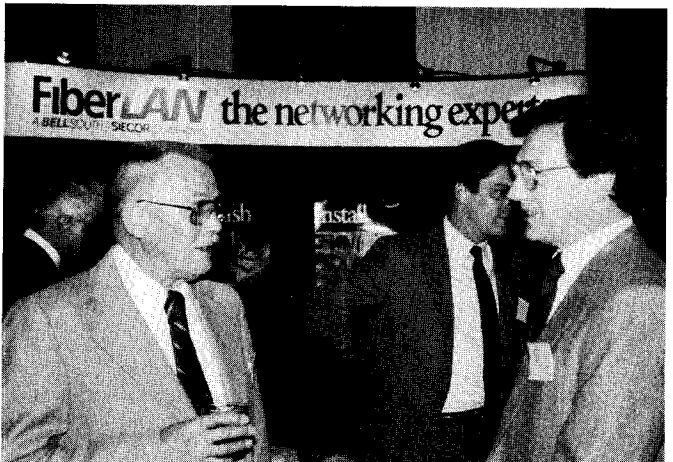
to us and as always, to the sponsors of the conference.

Sponsors: Stonehouse Inc.  
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Universal Communications Systems  
Teleplus Software

Exhibitors: Stonehouse, Inc.  
Fiberlan  
GTE  
Fibercom  
Sytek

Throughout the meeting rooms, at meals and coffee breaks, and of course in the hospitality suite, there was LAN conversations to be heard. But it didn't stop there. The city of San Antonio offered a wide variety of excellent restaurants and cafes (some a bit more conducive to shop-talk than others!) and the weekend long Country Western Music festival only added to the enjoyment. (I've never seen so many cowboys or heard so many YaHoos in one place!)

Not enough can be said about the timeliness of this seminar's topic. As telecommunication people, we will (if we have not already) become involved in the planning and possible implementation of a LAN on our campus. Those who attended this conference realize the importance of that role and the need to determine current applications, choose a network that best meets those needs, and incorporate management controls into the initial design of the network. 



## PARTY LINE

—Ruth Michalecki, Nebraska

Last month's "Party Line" brought some interesting letters and phone calls and though I won't go into all of them, one deserves an apology from me.

I wrote about the exciting things happening at Miami of Ohio with their new switch installation and since I was taking my information from an article in one of the trade journals, I went on to quote a statement from the article credited to a "University Spokeswoman", that Miami of Ohio was the first University to provide long distance services to the students. I stated that on behalf of myself and many other ACUTA members, I took exception to that statement, since many of us are and have been involved in this area for a long time. Well, I should have done what all good journalists should, and checked the source before printing that statement. I had a letter from Tom Walsh, Telecom Manager at Miami University in Ohio, telling me and all ACUTA members that they are well aware that many other universities have indeed been providing student services for a long time and if I would give him the name of the 'University Spokeswoman', he would make her aware of the fact.

Needless to say, I don't have a name and I do apologize for reprinting the article.

I have heard that adversity is a door to opportunity, and in this case, it is true. Tom did promise to put together an article on what they did and why they did it for ACUTA News, and I will hold him to that promise. Let's hope the dust settles on their activity real quick so we can benefit from their experiences. Thanks Tom for the kind words about ACUTA News, really warms my heart.

\* \* \* \* \*

I was in North Carolina this week visiting Northern Telecom, IBM, and two of our ACUTA members. Steve Harward spent a couple of hours with me discussing what they are doing and giving me a quick tour of the University of North Carolina. Quite a building boom in progress on Steve's campus. They are in the midst of a telecommunications study and have been for a while. I saw the new Computer Science Building being constructed and it would make our faculty green with envy. Steve said they installed a fully integrated voice/data switch (InteCom), and wiring plan to accommodate mega bit speeds, work stations in every office and lab, etc. The switch and wiring plant will actually be a living lab for the faculty & students in Computer Science. Anyone knowing Steve knows I wouldn't get a tour of UNC without seeing their champion basketball team. We were politely asked to leave however because the team was having a closed practice. UNC is a beautiful and growing campus.

\* \* \* \* \*

Couldn't get so close to DUKE and not visit Jim Dronsfield and Norm Sefton. Norm was out with the flu bug that day, but Jim picked me up at Northern Telecom and took me to lunch at the new Sheraton in Research Triangle Park. Then we went to DUKE and said hello to the telecom staff. They are busy getting things ready for the big task ahead of them; installing the AT&T #5ESS Central Office Switch with cutover planned for July, 1988. None too soon either according to Jim, since they are fast running out of line capacity. They have added several new buildings, are building enormous additions to their hospital facilities and have acquired several properties located just off-campus. One busy place! I am always impressed with the DUKE campus and the lovely old buildings, the new buildings that somehow seem to fit and all the busy activity going on.

My thanks to both Steve and Jim for taking time from their busy schedules to spend a few hours with me.

The trip to Northern Telecom was fascinating and I plan to write an article on my day at Northern in a future issue. IBM presented an Executive Briefing to the University of Nebraska covering IBM's future directions in telecommunications. It was an excellent presentation and was most helpful.

\* \* \* \* \*

I understand reservations are coming in fast and furious for the Spring Seminar at YALE. Get yours in now, if you plan to attend---it promises to be a real winner! No theoretical or conceptual presentations, but real experiences told by the staff in the trenches, so to speak.

\* \* \* \* \*

Received my last issue of **COMMUNICATION AGE** a few week ago, and I am sorry to see it end. Right from the very beginning, they made an honest effort to include input from their readers. The ACUTA President was asked to serve on their Editorial Advisory Board. Many of the issues featured articles about universities and about some of our members. Jan Drummond (Editor), attended the ACUTA Annual Conferences and always gave us coverage in the magazine. We will miss **COMMUNICATION AGE** and everyone associated with it. We hope Jan keeps in touch.

\* \* \* \* \*

I am getting excited about MIDNET, the super computer network I am trying to get off the ground. Thanks in no small part to the ferocity and dedication of Sandy Ellsworth of AT&T (she refuses to take no for an answer), I believe we are going to get this network off and running. As you know, I have encountered stumbling blocks every step of the way trying to get DS-0 (56K) facilities connecting 11 universities located in the midwestern states to the super computer at the University of Illinois in Champagne-Urbana. Fiber facilities are available at every location, but due to a whole range of regulatory problems and/or management and fiscal problems, it has been difficult to get connected. Sandy has helped me fight this battle by escalating the problem in her top management and stirring up a great deal of interest in AT&T for our project. THANKS SANDY!

\* \* \* \* \*

The December, 1986 issue of **CO**, Switching, Transmission and Network Services Magazine, published by Harry Newton, has several outstanding articles on T-1, describing what it is and a round-up of T-1 equipment & manufacturers. If you don't get **CO**, it's free to university telecommunications directors and managers. Write to: Dawn Huy, **CO** Magazine; 12 West 21 Street, New York, NY 10010 or call 800-LIBRARY. We will try to get permission to reprint the T-1 article in new month's issue of ACUTA News. Thanks Harry for another very helpful magazine.

\* \* \* \* \*

That's all for this month. Don't forget to get your reservations in for the Spring Seminar---you don't want to miss this one, especially if you are involved in switch/cable plant acquisition plans. ☺

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### ANNOUNCEMENT

**New Exchange for The University of Iowa, Iowa City, Iowa.**

**335 is the new exchange activated in the 319 area code.**

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# Cable carnage: coaxial battered

—Richard A. Cerny

Communications managers are faced with an unenviable challenge: They must build one cabling network that can meet today's communications needs but has the capacity to meet the unknowns of tomorrow's needs.

Their task is to take a couple of types of cable and use them to support all the current and planned communications on a campus or within a building. Fiber optics is the central element of these cabling schemes, primarily because it is the most economical way to transmit voice, data and video universally.

The capacity for additional cabling is finite. Conduits clogged with abandoned hybrid cables prevent easy network expansion and growth as well as flexible migration of terminals and personnel. The coming generations of data hardware and networks require that managers plan for the future.

The solution is to map out a strategy for communications cabling as if it were a utility, like water or power, because it is a large fixed corporate asset.

A structured cabling system is simply a predefined approach to cabling. One popular approach uses optical fiber for the high-speed backbone trunk and twisted-pair wire for local distribution.

Industry giants AT&T and IBM have introduced their own structured cabling systems. Both companies eliminate the use of coaxial cabling in favor of fiber and low-cost twisted pair, which is increasingly used for short-distance wideband applications.

While AT&T, in its Premises Distribution System, extols the virtues of fiber optics and unshielded twisted-pair cables, IBM's Cabling System claims that the correct choice is among fiber optics, unshielded twisted pair and shielded twisted pair.

Digital Equipment Corp. still advocates coaxial cable along with fiber and wire in its DecConnect. And other systems, like The Trellis from Trellis Communications Corp., extend the concepts of AT&T and IBM by implementing fiber-optics and twisted-pair highways with preplanned intersections.

## Standards for fiber sizes

There are currently two types of fiber promoted for the cabling systems, and both are defined by the diameter of the optical cores. AT&T supports the smaller, but more easily installed, fiber --- 62.5 micrometers, or microns, core diameter. IBM supports the larger, higher coupling efficiency fiber --- 100 microns core diameter.

Clearly, AT&T is winning the battle with old-fashioned economics. A campus network that uses \$100,000 worth of 62.5-micron fiber would have to use about \$250,000 worth of 100-micron fiber to do the same job. It takes that much more glass processing to make the "fat fiber," with nothing to gain.

From all indications, the AT&T approach will predominate, and the IBM 100-micron fiber will slowly die out. The 100-micron fiber is a fine product, but it's expensive, so nobody is buying it.

With so many fiber cabling options to choose from, it's difficult to figure out what to do. Who wants to prewire a building with a cable that's going to be obsolete next year? The best strategy, however, for developing a fiber-based structured cabling system is to create a master plan first and then to build the system in pieces as needed.

Luckily, setting up a structured cabling system isn't an all-or-nothing proposition. Users have the choice of inching into it, building the network on a pay-as-you-go basis.

## Designing the fiber network

Managers can design most of the network themselves by determining the data flows they want to handle and by figuring out what kind of growth, equipment changes and migration will come up in the future. Beyond that, it takes the hand of a systems integrator. He helps design or customize the network and matches the right electronics and electro-optics on the market to use with it.

In the electronics subsystem area, there are dozens of excellent small manufacturers, each of which is a specialist in one type of communications interface. Similarly, there are more than 100 U. S. manufacturers in fiber optics, according to Kessler Marketing, Inc., a fiber-optic industry market research company in Newport, R. I.

It's difficult to figure out which vendor does what, because so many try to manufacture the whole spectrum of interfaces. The systems design integrator is responsible for selecting the best, most economical cable components and subsystems mix to meet a particular company's requirements.

Include both fiber and wire cabling in the master plan. When implementing the network make it pay for itself in real applications.

If there is already phone wire running into the offices, use it. Add fiber optics where there's a need, such as replacing bulky coaxial bundles in that next big IBM or Wang Laboratories, Inc. move with a small multifiber cable. Start the fiber-optic backbone by creating a section of fiber trunk that can later be expanded economically with no further construction cost.

That's where intersections enter the picture. They are the high-traffic cross-points where the fiber backbone can be accessed, using fiber-optic patch panels as intersections in closets or equipment rooms at each building or floor. New connector technology allows users to design a fiber cable network that has multiple, inline cross-connects, much like the wire punch-down blocks used for telephones.

At some of these intersection locations, there may be a future need to spur off a fiber cable into the building or floor to access new equipment and connect it with another location off another intersection. When that time comes, the only new cabling to be done is the spur or lateral cable.

Although future backbones will likely be configured as high-speed rings, most of today's topologies are wired as stars for both backbones and distribution. Star wiring, as used in fiber-optic Ethernets and IBM's Token-Ring Network, is an ideal configuration for both fiber and wire cables in a structured network because of its greater flexibility and lower maintenance.

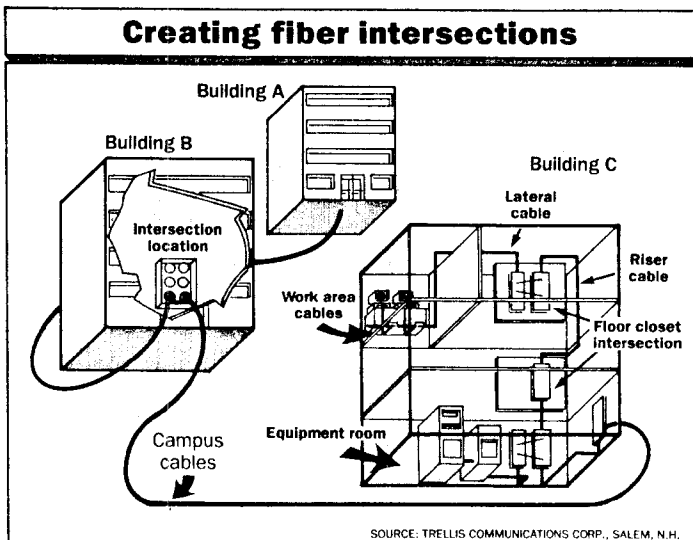
Review routing on a continual basis. Find the most efficient and most reliable routes between locations. Think in terms of star wiring with interconnected major hubs for both fiber-optic and wire cabling. Anticipate creating dual, reverse redundant rings for the backbone by simple patch panel administration. In conjunction with upcoming high-speed local-area networks, network management software will dynamically reconfigure the ring routing to loop back over a second, reversed direction fiber in the event of a fiber break or transceiver malfunction.

Voila. The network backbone is complete. The upfront cost is minimized because the IBM or Wang move paid for much of the cost.

## Cable carnage, Continued:

In the old days of fiber optics, this backbone segment would have been just another point-to-point installation, dedicated to this one application. Today, that would be just as sinful as running new coaxial cable every time a terminal is added or moved. Now, with new interconnect hardware and a little planning, communications managers can piece together a transparent network as if it were made of Tinker Toys.

Just about anything can run on the fiber trunk. It depends on what type of converters, or "boxes," are hung on the network. Within the next couple of years, most computer and terminal equipment manufacturers will offer fiber-optic I/Os. For now, these converters are offered as separate systems, in the form of fiber-optic modems or multiplexers.



SOURCE: TRELLIS COMMUNICATIONS CORP., SALEM, N.H.

### The basics of fiber hardware

There are three elements to a fiber-optic system: the transmitter, the receiver and the cable that connects them. Essentially, the transmitter is a modulated-voltage-to-modulated-light converter, while the receiver reconverts modulated light to modulated electrical voltage. Part of the box manufacturer's expertise depends on its optical expertise, and part depends on its electrical data interface expertise.

Keep abreast of new, compatible add-on developments in the fiber local-area network business. Watch the progress of new standards, like the 100M bit/sec Fiber Distributed Data Interface token-ring standard that should bear fruit in the next year or two. These are the developments that will allow networks to operate at increasingly faster speeds and will keep freeing up more fiber to use in other applications.

Unlike the long-haul intercity fiber-optics industry, where every interface is T-Carrier, building and campus communications is currently an amalgam of protocols and niches. So far, AT&T and IBM are in the lead.

But even though AT&T and IBM support the more common interfaces in IBM 3270, Token-Ring and asynchronous RS-232, they aren't in a position to service many of the other interface applications, such as Wang CPU-to-peripheral links. That's where outside services are required to help customize a standard network.

So, what's the method to expand the system and transmit different signals on the same fiber cable? One way is through ordinary electrical multiplexing. Not with analog, broadband radio frequency techniques, but with digital time division multiplexing (such as a point-to-point RS-232-C configuration), or with remote switching (such as Wang or IBM half-duplex clusters).

Another way is by using fiber as the backbone for a local net. By using traditional digital multiplexing, any fiber pair can be continually upgraded to higher transmission rates.

The simplest way to expand is to use Space Division Multiplexing, which entails no multiplexing at all -- kind of like the term Dutch treat. It means to put plenty of fibers in the cable and use each fiber for a different, parallel high-speed channel. One fiber pair can be used for IBM 3270, another for Ethernet, another for multiple T-1 lines and so on. There is no cross talk between fibers, so they all act like dedicated cables, but along a coordinated, planned route.

This way, one cable carries many independent channels, like a broadband system, but by choosing the physical fiber paths in the cable rather than tuning into frequency bands. In a structured network, this is easily accomplished at appropriate intersection locations by reconfiguring connector paths in the patch panel.

### The dark side: building in extra capacity

It certainly costs more to install extra "dark," or unused, fibers at the beginning. But it's worth it. The big cost is construction -- the cost of having a crew of installers tear up the place, disrupt operations and charge by the hour or the cable-foot. If it's planned right, it will be the last time the construction crew sees that particular part of the building. Compared with installation cost and inconvenience, the price for a few extra fibers -- about 15 cents per fiber-foot -- is nothing. It isn't even necessary to put connectors on the ends of the dark fibers until it's time to use them.

Aggressively speculate on increasing the number of fibers in the cable to save future labor costs. Don't speculate on implementing legs that aren't needed yet.

The local electrical or data communications contractor can install and maintain the network, if he's certified. If he's not, tell him to get on the stick and get trained. The hardware is getting sufficiently user-friendly and field-installable so that, with proper training and a simple tool kit, a contractor can become certified to install and maintain fiber-optic networks. It isn't practical to fly in a specialist when someone accidentally cuts through the cable.

Documentation is essential; it will make or break the network. Appoint a central authority to manage the fiber-optic cable medium, even if it is only one person. Make all changes in structure, routing configuration and use of the fiber network with the knowledge of this central authority. Have this person or group be responsible for keeping current records, making repairs and route changes, providing periodic testing and other maintenance and informing all potential users of the latest technology changes that will enhance use of the network.

Test the cabling system on a periodic basis, either annually or semiannually, to make sure all fibers and interconnects function as expected. Make sure all fibers are being used where the documentation claims they are.

The strategy for fiber-optic and wire networks is no different than it would be for wire alone, if that were possible. That strategy is planning and discipline. Have a master plan, build by it -- if only a leg at a time -- and control it. Document it, test it and use it to its fullest.

ACUTA wishes to thank NETWORK WORLD for the above article, which appeared in January, 1987 issue. Richard A. Cerny is president of Trellis Communications Corp., a systems integration firm specializing in fiber-optic-based networks, in Salem, N. H.

# Confusion abounds

—Robert S. Brady

One's perception of Integrated Services Digital Network services is strongly flavored by one's position in the industry as a potential seller or buyer. The sellers, primarily the local and interexchange carriers, are pushing the glories of ISDN, while potential buyers are sitting back and asking questions such as "What will it do for me?" and "How much will it cost?" The industry is fortunate that there are active discussions between users and vendors.

Nevertheless, a gap remains in each group's understanding of the other's position.

There are many reasons for this poor communication, including:

- An unclear time frame for ISDN service availability;
- A lack of carrier credibility;
- A lack of clear understanding by users of the architecture's potential and the cost-effectiveness of the service.

Few telecommunications managers are knowledgeable about ISDN. In a field research effort with over 200 Fortune 1,000 companies, Quantum Consultants, Inc. interviewed managers with private network responsibility and found that only 14% considered themselves "very familiar" with ISDN, while 33% considered themselves "somewhat familiar." These results are not surprising.

One reason for users' lack of familiarity with ISDN is that ISDN services, although much touted in the technical and trade press, are still a long way off. In general, they will not be available before 1990. Not only must the local exchange carriers roll out their single switching node version of ISDN, they must also grow their isolated island services into a network, using, for example, the CCITT-specified ISDN Signaling System #7 protocol.

Many of the Bell operating companies do not expect to have intra-local access and transport area and inter-LATA services available before 1988. Southern Bell Telephone and Telegraph Co., for example, has a well-conceived plan and will roll out its ISDN single switching node Centrex services in March 1988. Besides planning their own implementations, local exchange carriers are also working with interexchange carriers, such as AT&T, to provide end-to-end ISDN services.

Users are somewhat skeptical of carrier promises of ISDN benefits because of the local and interexchange carriers' track records in introducing new services are less than credible. Two examples highlight this problem. First, virtual private networks have failed to attract the revenue base upon which their tariffs were developed. Many factors have caused a less than enthusiastic response from users. In part, their response is attributable to the cost of migrating from existing private network services, a knee-jerk reaction against usage-sensitive services, high tariffs and the telecommunications managers' perceived loss of network control.

The second example involves the packet-switched digital services offered by some local exchange companies. Once again, carriers have overestimated market demand for a service. Besides tariffs that are too high, applications that fit the user's business requirements remain to be identified and understood.

There is hard evidence, however, that carriers are recognizing the importance of listening to their

principal customers; for example, users are showing a renewed interest in Centrex services. In part, this change is due to the substantial cuts in tariffs (at times over 50%) and the richness of functions that are now offered with the services.

Two more points that illustrate the poor communication between buyers and sellers of communications products and services are network management and control. The features of virtual private networks and Centrex that offer telecommunications managers enhanced network management and control are becoming more and more attractive. Research performed by Quantum shows that the telecommunications manager sees ISDN as a means to increase control of his network. Forty-three percent of telecommunications managers with private network responsibility who are familiar with ISDN expect it to give them an increased ability to control their networks. It has yet to be determined whether control and management features offered by local and interexchange carriers on the public switched network are better than can be cost-effectively provided by the user's internal resources over leased lines and private networks. This question is not trivial, and several major corporations are investigating using public switched network services and value-added networks to replace or supplement existing data networks.

Historically, carriers have not provided the level of control and management sought by large, sophisticated users. Nevertheless, it appears that with ISDN and its precursors, such as virtual private networks and advanced Centrex, the local and interexchange carriers are beginning to recognize the competitive advantage of providing users with the ability to control and manage their networks and circuits.

Of course, opportunities exist for customer premises equipment vendors to develop products that will give cost-effective control and management of networks to the user's internal communications group. The question is what those products should be, and which group or groups in a company should manage networks in the ISDN world.

ISDN technology, standards and a vendor push for ISDN, coupled with the current economic and regulatory environment, have given rise to a unique set of circumstances. Carriers and customer premises equipment vendors have the opportunity to capitalize on the ever-increasing demand for the electronic transport of information. How effectively they do so remains to be seen. It is apparent, however, that a considerable amount of effort must be devoted to informing and educating users, in addition to more fully identifying and understanding the applications for which ISDN will be suitable.

The above article is from NETWORK WORLD, January 5, 1987 issue. Robert S. Brady is vice-president of Quantum Consultants, Inc., an information technology consulting firm and subsidiary of The Quantum Group International in New York.

## Ruling Says Phone Service Not Subject To Excise Tax

IRS Private Letter Ruling 8644041 states that a private educational organization that provides local telephone service to its students as part of their room and board fee and separately charges them for long distance usage, is not subject to excise tax and the students' fees are not subject to the tax.

The school can file a claim for refund of the taxes that it previously collected and paid. A copy of the ruling, not citable as precedent, is available from the NACUBO Tax Information Clearinghouse.

The above ruling notice appeared in NACUBO Business Officer, January, 1987 issue.

# U.S. Asking Room for 'Baby Bells' To Grow

— Reginald Stuart

Five years ago, in a move that was both surprising and tentative the Justice Department and the American Telephone and Telegraph Company settled on a way to break up the Bell System's decades-old monopoly of the nation's telephone business. Now the Reagan Administration is offering proposals that would create a handful of miniature A. T. & T.'s.

The Justice Department made sweeping recommendations last week to lift restrictions imposed by the court-supervised agreement, under which Bell Telephone local service companies were grouped into seven regional companies and barred from making telephone equipment or selling nearly all kinds of long distance service.

Now the Justice Department proposes allowing the seven Baby Bells, as they are called, to go after Ma Bell and its competitors. In a 200-page brief, the department asked the Federal District Court that has been overseeing the consent decree to free A. T. & T.'s offspring to make telephone equipment and offer long distance anywhere outside their own service territories. The department also recommended that the Bell companies be free to sell information services ranging from call answering and message storage to electronic classified ads.

The Justice Department proposals represent the Administration's first major assessment of three years of divestiture. In the consent decree A. T. & T. was allowed to keep its lucrative long distance and telephone equipment manufacturing operations as well as its prestigious Bell Labs research facilities. The local service subsidiaries, when spun off, took the profitable yellow pages business with them and were, in addition, allowed to pursue non-telecommunication ventures.

Charles F. Rule, the acting Assistant Attorney General in charge of the antitrust division, argues last week that keeping the restrictions on the Bell companies could inhibit competition. Lifting them, he asserted, could mean lower prices for long distance and information services prices and a greater selection of telephone equipment.

## The Battle Ahead

The Justice Department proposals, which were laced with references to free markets and world competition, will be the centerpiece of the nation's telecommunications policy debate for the rest of the year in the courts and Congress and before state utility regulators. Some battle lines have already been drawn.

Senator Howard M. Metzenbaum, Democrat of Ohio and chairman of the Senate antitrust subcommittee, criticized the recommendations as laying the foundation for renewed market concentration by squeezing out marginal competitors. But Representative John D. Dingell, Democrat of Michigan and chairman of the House Committee of Energy and Commerce, hailed the proposals. Keeping the restrictions "would merely reward a few powerful, vested economic interests," he maintained.

A. T. & T. and its smaller competitors in the long distance and equipment manufacturing businesses cried foul play at the prospect of further disruption and competition. The American Newspaper Publishers Association, which had fought hard to insure that the original breakup agreement kept the local phone companies out of information services, particularly electronic publishing, is also marshaling its forces.

Judge Harold H. Greene, who has been overseeing the A. T. & T. case, is certain to hear from all of these parties as he weighs the proposals.

In the event Judge Greene retains many of the restrictions, a full-blown lobbying battle in Congress can be expected, along with an attempt by Senate Republicans for the second consecutive year to enact legislation that would transfer jurisdiction over the A. T. & T. case from the court to the Federal Communications Commission.

The judicial and political debate aside, some realities of the marketplace may make the Justice Department recommendations less of a bonanza than some might think for the Baby Bells.

Proponents of dropping the long-distance restrictions contend that only the well-endowed Bell companies can give A. T. & T. a strong run for its money and consumers more price cuts. But they also concede that there is a glut of long distance capacity and that without authority to offer service in their home territories, the Bell companies would have to make huge and risky investments in new systems or buy up existing competitors of A. T. & T.

"It does bring on the syndrome of the airlines," said Richard Toole, a telecommunications analyst for Merrill Lynch, Pierce, Fenner & Smith. "Many companies crisscross routes."

The Bell companies would also face an uphill battle in manufacturing. As in long distance, competition is already intense, with A. T. & T. battling several formidable foreign contenders.

Despite the Justice Department's arguments that allowing the Bell companies to go into manufacturing could help the nation's trade balance, there is no assurance that they would not make their products abroad. That fact has reportedly stirred concern in the Commerce Department about an end to manufacturing restrictions.

This article appeared in THE NEW YORK TIMES, Sunday, February 8, 1987.

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## FROM REGION VI

Several new telecommunications vendors have surfaced in Canada since interconnect, companies such as Rolm. A spin-off of interconnect is the establishment of user groups.

1. One such user group was formed by three ACUTA members. It is the Canadian Rolm Users Group, CRUG, and was established by Mr. Al Smith, York University, Toronto, Ontario; Mr. Terry Cleland, McMaster University, Hamilton, Ontario; and Mr. Garry Tatum, Region 6 Director of ACUTA, University of Guelph, Guelph, Ontario. (These three Universities represent over 12,000 lines.)

At a two day inaugural meeting of CRUG, held in Toronto on November 19-21, 1986, there were over 120 delegates from almost every province. Rolm Canada were very co-operative, and not only had some of their own people participate, but arranged for Rolm Corporation to provide speakers from their corporate offices and Rawleigh, North Carolina, headquarters.

The meeting provided a base for a very positive future for this Rolm Users Group in Canada.

2. Also, several Ontario universities and colleges are interested in establishing a Provincial Telecom Association of Colleges and Universities. I have recommended the 40 some institutions join ACUTA, perhaps establishing a local chapter.

Garry N. Tatum  
University of Guelph  
Guelph, Ontario, Canada N1G 2W1

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# Experts Say Competition Would Stir Innovation

— Calvin Sims

By loosening restrictions on the seven regional telephone companies known as Baby Bells, industry analysts believe that last week's Justice Department proposal would encourage the development of exotic communications technologies, providing customers with a variety of new services.

Cheaper, more efficient long-distance networks and other technological developments have already resulted from the breakup in 1984 of the American Telephone & Telegraph Company. Experts predict that increasing competition in the already frenetic telecommunications marketplace would accelerate the trend.

The Justice Department proposed that Ma Bell's offspring, which are now mostly limited to providing regional telephone service, be allowed to manufacture and market telephone equipment, sell information services and offer limited long distance service. Thus seven formidable forces would be added to those already vying for customers by continually upping the state of the art.

"If there were still a monopoly, A. T. & T. would slow down the development and deployment of these technologies to its advantage," said Kenneth Bosomworth, president of International Resource Development, a market research and consulting firm in Norwalk, Conn. "With competition it can't, and the public can expect to get full benefit of a competitive marketplace."

Since A. T. & T.'s divestiture, both long distance carriers and local telephone companies have increased efforts to modernize their networks by replacing old-fashioned analog equipment, in which signals are transmitted in the form of distortion-prone electromagnetic waves, with digital systems, which send information more precisely in a computer language of "ones" and "zeroes." This binary code also allows the use of high-speed, high-capacity computerized switching systems to route calls rapidly to their proper destinations. In place of copper wire, the most modern networks use more efficient optical fibers to carry information in the form of laser beams instead of electricity. One pair of fibers, which are made of hair-thin strands of glass, can simultaneously transmit 8,000 telephone conversations or channels of electronic data such as financial information.

Analysts estimate that largely because of these technologies, the cost of high-capacity digital services has dropped 35 percent since 1984. As a result, telephone companies can offer high-speed voice, video and data transmission at lower rates.

## Identifying Callers

Further advances in fiber-optic technology have allowed companies to expand the capacity of their networks by improving transmitting equipment instead of laying more cable. By next year, phone companies expect to be able to transmit 16,000 conversations down the same line.

New telephone technologies are also beginning to give consumers more control over who they allow to electronically enter their homes. Some communities, for example, are already experimenting with systems that allow a customer to see on a digital display the phone number from which a call is coming. Some customers can program their phones to reject calls from certain numbers and to identify frequent callers by assigning each a distinctive ring.

Other services that have been proposed include electronic burglar alarms, classified advertisements, travel reservation services and electronic banking and shipping -- all using the telephone. Like airlines, the phone companies may offer different classes of telephone service: economy class for chit-chat or first class high-fidelity service for important business conversations.

The advent of such technologies raises crucial questions about their use in American society, said Kenneth Zita, an analyst with Tetra International, a communications consulting firm. The futuristic integrated voice-data deskset would probably be mostly of use to corporate officers, business professionals and writers. But even so, Mr. Zita asked, "How would you feel if the person you called could find out where you lived, how many children you have and the color of your eyes before he picked up the receiver?"


## Business Gets Long-Distance Break

Overall, the average cost of placing a long-distance call has declined about 30 percent since the breakup of the American Telephone & Telegraph Company in 1984, according to the Federal Communications Commission. But businesses have benefited more from the decline than individual consumers have, though consumers are also paying less for long-distance calls.

Industry analysts said most of the reduction came from ending the old system under which higher A. T. & T. long-distance rates were used to subsidize the local service the company used to provide. To make up for the loss, the regional telephone companies that split from A. T. & T. now add a long-distance access fee to customers' local bills. But analysts also attribute the decline to rising demand, increased competition and a recent F. C. C. requirement that A. T. & T. lower its rates, which resulted in an average 11 percent reduction earlier this year.

"That's how the industry works these days, responding partly to regulation and partly to competition," said George A. Christie, chief economist for the McGraw-Hill Information Systems Company.

To remain competitive, discount carriers such as U S Sprint and MCI have consistently undercut A. T. & T., which still controls about 80 percent of the market. Competing with A. T. & T., however, has proved a growing strain on the carriers, which are also making large investments to modernize their networks. No long-distance carrier reported a profit last year.

Analysts said that business customers and high-volume residential users have gained the most from the new rates. Last year, the cost of placing a business call declined an average of 10.6 percent, according to McGraw-Hill. Because local rates have increased an average of 80 percent since 1980, the Consumer Federation of America estimates that only those customers who make about \$40 or more in monthly long distance calls have benefited from this effect of deregulation. 

This article appeared in THE NEW YORK TIMES, Sunday, February 8, 1987 issue.

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## ANNOUNCEMENT

### New Exchange for The University of Chicago, Chicago, Illinois.

702 is the new exchange activated in the 962 area code.

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ASSOCIATION OF COLLEGE & UNIVERSITY TELECOMMUNICATIONS ADMINISTRATORS

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—CALL FOR PRESENTATIONS—CALL FOR PRESENTATIONS—CALL FOR PRESENTATIONS—

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THE 16TH ANNUAL ACUTA CONFERENCE  
JULY 26TH - 30TH, 1987  
MINNEAPOLIS, MINNESOTA

THEME: MANAGING THE TELECOMMUNICATIONS RESOURCE

The 16th Annual ACUTA Conference offers an opportunity for telecommunications managers at colleges and universities to actively participate in the program as a speaker or panellist.

If you feel that your fellow professionals can learn from your experiences or benefit from your expertise, the Program Committee invites you to submit an Abstract that can be developed into an original presentation for the Conference program.

The form for submission of Abstracts is attached. Please complete this and return to the Program Chairman by April 24th, 1987.

The Program Committee will evaluate the submitted ideas based on the following criteria:

- (a) overall quality
- (b) relevance to the general conference theme:  
"Managing The Telecommunications Resource"
- (c) well-defined focus
- (d) practical applications
- (e) timeliness of topic

Notification of a presentation's acceptance will be mailed by May 25th, 1987.

Since the selected presentations will be delivered orally at the Minneapolis Conference the ability to speak competently is necessarily a pre-requisite. It is important, therefore, that you list on the submission form two people who can attest to your public speaking ability.

Remember, this opportunity is open only to those who qualify for Full or Associate Membership in ACUTA. The intent of this initiative is to include in the conference program more down-to-earth information on campus telecommunications happenings.

FORM FOR SUBMISSION OF ABSTRACT

I would like to submit a program idea for the 16th Annual ACUTA Conference in Minneapolis, Minnesota. July 26 - 30, 1987.

Name \_\_\_\_\_ Title \_\_\_\_\_

College/University \_\_\_\_\_

Address \_\_\_\_\_

\_\_\_\_\_ Zip \_\_\_\_\_

Telephone (\_\_\_\_) \_\_\_\_\_

I would prefer that my presentation take the form of a (check one):

- formal lecture  
 panel discussion     other (please specify) \_\_\_\_\_

Level of information I will present (check one):

- basic                     intermediate                     advanced

The amount of time I will need for my presentation is (check one):

- 1/2 hour                     1 hour                     other (please specify) \_\_\_\_\_

The working title of my presentation is: \_\_\_\_\_

My 100-word description/abstract of the topic I would like to cover follows: \_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

My topical outline of not more than one page is attached.

Two people qualified to comment on my public speaking ability are:

Name \_\_\_\_\_

Name \_\_\_\_\_

Address \_\_\_\_\_

Address \_\_\_\_\_

ZIP \_\_\_\_\_ Phone \_\_\_\_\_

ZIP \_\_\_\_\_ Phone \_\_\_\_\_

SEND TO: Call for Presentations  
ACUTA 16th Annual Conference  
c/o Program Chairman, Mal Reader  
University of Calgary  
2500 University Drive, N.W.  
Calgary, Alberta, Canada  
T2R 1N4  
Telephone: (403) 220-3880



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Deadline for submissions is April 24th, 1987