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Association of College & University Telecommunication Administrators

VOLUME 13, NUMBER 8

SEPTEMBER, 1984

RUTH A. MICHALECKI, EDITOR

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President's Message

...by Ruth A. Michalecki

For just this one time, I am going to write as the President of ACUTA in Party Line. Next issue, I will return to using this space as a forum for our common concerns.

First of all--**Mike Toner** will be a hard act to follow. Mike was a very dedicated and hard worker as ACUTA's President. He accomplished many of the things we had talked about trying to do for many years. Things like developing a relationship with other professional organizations; working with NACUBO and other like-associations in the university environment; continuing our efforts to improve seminars, workshops and conferences; and involving our members as much as possible in our activities. If you asked Mike for assistance, his response was positive and quick. If you agreed to do some task for ACUTA, he was determined you would get it done and would prod and prompt you until it was completed. I personally thank Mike for his dedication and for setting an example for all of us in following through on a commitment. (Mike, I just wish you hadn't been quite so good)...

This will be a busy year for ACUTA. We intend to further our new-found relationships and to extend them wherever possible. In this dynamic, turbulent business, we need to be a constant source of information and help for our members. This newsletter is our means of communicating with one another and I hope our members will participate freely in it by asking questions thru the newsletter, writing articles, sending items of general interest and the source of that item to me for possible publication in our newsletter.

This year will see the implementation of a long-time objective--**the novice training program for telecommunications managers and staff**. We are having the materials prepared by a long-time professional in this field and it is our intent to train qualified ACUTA members to be the instructors of this program.

The Regional Directors will be looking for universities within their various regions where these training sessions can be held. Some of the larger regions might have several locations. We would like to use the conference/continuing education facilities at the universities for these workshops. Sites will be chosen with preference given for facilities available, proximity to other universities, colleges in the area and willingness to participate in the project. It will take a lot of work to make this program successful. I know of no other organization that has made such a commitment to its members. This is an enormous undertaking--the continued development and training required to help our members achieve professional growth. The added commitment of bringing the classes

to the regions which will allow our members to attend at a very nominal fee, thus reaching those not fortunate enough to have a travel allowance. By providing the workshops on a local level, our members can afford to involve their entire support staff. We are both excited and committed, and we will need the cooperation of all our members. If you are interested or want to know more about this program, contact your regional director or call me.

Our **Fall Workshop** will be held in Madison, Wisconsin on October 21-23, 1984. The Workshop will be on Telecommunications Management and will cover such concerns as cost accounting/financial analysis, cost-center management, automated inventory control, automated order entry, billing systems, wiring and cable inventory, etc. This is a very timely subject and of great concern for all of us.

The session will include a panel comprised of representatives of some of the commercial organizations offering telecommunications management packages, both turn-key and custom-designed. Several ACUTA members have successful programs in this area and will take part in the general discussion about what works and what doesn't.

If you are interested and didn't get your brochure for the Fall Workshop, be sure to contact Mike Toner at 608-262-0521 right away.

The **Spring Seminar** will be held in Dallas, Texas. It will be offered on two separate dates because the workshop will be restricted to only 40 participants. The dates are March 24-26 and March 26-28, 1985. Each date is a complete workshop, and one is a duplicate of the other.

The workshop will be on "Traffic Engineering" and will incorporate the use of a personal computer to solve your traffic engineering problems. IBM personal computers will be provided at the workshop, along with traffic engineering software. The software will be provided each participant and they will be allowed to take the software package home with them.

Our instructor will cover the theory of traffic engineering and will discuss the impact of access charges, equal access, alternate carriers, the new private line structure, WATS/FX, and rate changes for long distance on large networks. Are large networks cost effective today? This issue and many others will be covered.

Participants will be instructed on the use of the personal computers and will be shown individually how to use the software package. Each participant, when they sign up for the workshop, will be asked to provide traffic statistics on their own specific network. At the workshop, their own data will be used to provide individual assistance with optimizing their network facilities.

President's Message (Continued):

This is a new approach for ACUTA, and one we hope meets with approval of our members. We need to learn to work smarter, not harder—and that means learning how to use the computerized tools available to us.

Brochures for this workshop will be out early January, 1985. If you are interested, you will need to sign up as quickly as possible after receiving the brochure.

The 14th Annual ACUTA Conference will be held in Banff, Canada from July 1 thru July 4th. What a special treat for our members. Banff is absolutely beautiful and it promises already to be a conference you can't afford to miss. Our host is Mal Reader and the University of Calgary.

What a busy year this will be. ACUTA is your organization—it needs your input and your help. Let me know if you are willing to serve in some capacity; willing to write an article for ACUTA News; willing to be a regular contributor to the newsletter. Be sure you respond to our request for information input on our data bank. Let us hear from you... Believe me, active is much better than passive—**get involved!**



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sampling the good life at the Spring Seminar in Orlando....

MIAMI UNIVERSITY

Manager of Telecommunications

Position Description: A new position responsible for management of University telecommunications; voice and data communication planning; analyzing needs and recommending service to individual departments; and directing all operational and administrative tasks associated with an in-house telephone system. A new voice and data communication system is being planned with anticipated cut-over in June 1986, to include on-campus electronic PABX, long-distance network, inter-campus links, data communication, local area networks, and resale of service to residence hall students. Manager will have primary responsibility for proposal analysis, vendor selection, installation, implementation, and operation of new system.

Qualifications: Thorough knowledge of modern voice and data communications systems and operations. Technical and electronic expertise, as well as proven administrative/management abilities. Oral and written communication skills, and ability to effectively relate to members of the University community. A Bachelors degree in a relevant field is desired. Telecommunications experience with both management and technical responsibilities may be substituted for educational requirement.

Compensation: Excellent employee benefit program; salary commensurate with qualifications and experience.

Application: Send complete resume, including salary history and the names, addresses, and telephone numbers of at least three references to: Richard A. Keebler, Director, Purchases and Central Services, Miami University, Oxford, Ohio 45056.

EQUAL OPPORTUNITY IN EDUCATION AND EMPLOYMENT M-F-H

Miami University is a state-assisted institution chartered in 1809 which awards baccalaureate degrees in 90 fields, master's degrees in 66 fields and doctoral degrees in 10 fields. Located in the beautiful wooded rolling country of southwestern Ohio, the city of Oxford is a pleasant residential community of 8,000 (exclusive of students) with easy access to Cincinnati and Dayton.

BOSTON CONFERENCE

.....Ruth A. Michalecki

If you missed the **13th Annual ACUTA Conference** held in Boston this year, I feel sorry for you. It was probably the best conference we have held; the attendance was our largest by far; the program provided excellent speakers offering vital information and help to those of us wrestling with the day-to-day operations of managing telecommunications; and the hospitality was superb! We all knew we were in for an exciting and different week when the Sunday Night Conference Reception was held in the New England Aquarium. What a spectacular place! Beautiful aquariums line the outside walls, holding every species of fish imaginable. The center is one incredibly large aquarium, about three stories high, decorated with rocks and mountains and plants from top to bottom and inhabited by fish of all sizes and breeds, including sharks and giant turtles. A ramp curves around this center aquarium and as you walk both up to the top and back down, you are treated to the wonders of the sea. What fun it was to see the penguins on a small island near the string quartet. It didn't take much imagination to see them assisting with conducting the quartet. **Jim Shea** and his staff at **Boston University** really knocked themselves out to make us feel welcome and to make our week worth-while.

And now to summarize the conference for those not fortunate enough to be there.

Jerry Goldstone, Editor and Publisher of Business Communications Review, was our Keynote Speaker, and as usual Jerry was interesting and informative. He addressed the impact of deregulation and divestiture on telecommunications management. The issue was viewed as two-fold:

- 1) SURFACE PROBLEMS:
 - Circuit Provisions (time frame required and engineering needs)
 - Billing Complexities
 - Trouble Shooting and Maintenance
 - Budgetary Uncertainties
- 2) UNDERLYING PROBLEMS:
 - Multi-Vendor Environment
 - Confusion among Bell Entities
 - Regulatory Uncertainties

Jerry was right on target in his discussion of the problems and the reasons for them. He quoted an old and familiar line as the usual response of the telco when you report trouble on a line: "The trouble left here just fine". Jerry left us with 10 Strategies for Coping:

- 1) Restore one-stop shopping. In the new environment, the customer has the overall responsibilities. One-stop shopping can be restored thru agency agreements, consultants, etc.
- 2) Use alternative long-haul facilities.
- 3) Use alternative local-loop facilities. (By-pass Opportunities)
- 4) Take charge of your trouble shooting & testing.
- 5) Learn from the Data-Processing/Management Information System Experiences. (they have dealt in this multi-vendor environment for years)

- 6) Use computerized tools (management/billing systems).
- 7) Closely follow regulatory developments (get involved!).
- 8) Develop a strategic plan for telecommunications (provide both direction and control)
- 9) Be your own telephone company.
- 10) Develop a utility network. (a general all-purpose backbone network for voice/data/video)

Jerry pointed out that we have a dual mission in our efforts to gain control over our own network; a) obligation--no one else to do it; and b) opportunity--free of domination of the industry--free to manage your own thing.... He ended his presentation with the optimistic view that the problems we are having today are fairly short-term and will correct themselves shortly.

ACUTA thanks Jerry Goldstone for his excellent presentation and for setting the tempo of the conference with his thought-provoking discussion of current issues.

An Industry Panel Discussion followed the Keynote Speaker. They addressed the same deregulation/divestiture issues from a corporate perspective. **Donald MacKenzie** from **NYNEX** said the current situation reminded him of a line used by Stan Laurel to his famous side-kick Oliver Hardy: "Ollie, this is a fine mess you've got me in this time". However, he did say that NYNEX felt their answer lay in a rededication to the SERVICE concept and that they would be very aggressive in the CENTREX market. **Ericsson** was represented by **William Meyers** who supported the solution concept of one single architecture that provides total communications needs with the ability to integrate existing hardware in the system.

Don Flynn from **Northern Telcom** told us: "You ain't seen nothing yet", and went on to discuss the emergence of the PBX as the office controller, operating over twisted pair. He stated that Northern was dedicated to the twisted pair technology. **RoIm** was represented by **Ted Haynes**. His focus was on CENTREX service. Ted stated the service was underpriced by the local companies; speed of data was impacted by length of twisted pair caused by distance between central office and campus (suggesting RoIm's T-1 carrier was an alternative). **Joseph Reaves** from **AT&TIS** talked about the UNIX operating systems and the Systems 75 & 85 being offered by AT&TIS. Since deregulation/divestiture, they have introduced 35 new products and are now offering volume pricing discounts.

Roger Johnson of **AT&T Communications** reached the biggest number of "hot-buttons" however, when he discussed Pre-Subscription and how it would operate. ACUTA News has been promised an article shortly on this entire issue by AT&T Communications, so I will not write about Roger's discussion in this issue. If the article is not available for the next issue of ACUTA News, I will try to summarize his points. He did say that 2/3rds of the long lines will be equal access, however some areas will never be able to convert due to size and expense. It will be up to the long distance carrier to participate in equal access or not.

(continued on page 4)

(BOSTON CONFERENCE, CONTINUED)

Our next session covered the impact of deregulation/-divestiture on the institution and our speaker was **Fred Chanowski of Telecommunications Management Corp.** Fred said that it's the amateur that loses out—education/expertise will survive in the new environment. He viewed the major impact in 4 areas:

- 1) COST:
Access charges; Maintenance problems of discontinued PBX systems; Moves & Changes (think about doing them yourself); Local Service; Directory Assistance Charges; Inside Wiring (insist on documentation).
- 2) Operational/Management:
More will be required; Finger Pointing Syndrome; Multiple Bills (local service, premise equipment, AT&T long distance, OCC long distance, etc); More and better trained staff is required.
- 3) Technology:
Proliferation of new systems and features; Enhancements to existing systems; New peripheral add-ons for directory, management systems, SMDR, and VMS.
- 4) System Replacement and Competition:
Everybody is interconnected; Many systems available; Many vendors; Competition is fierce (pricing lowest in 8 years, down 30% to 50% in past 2 years, making new performance commitments never made before); Creative financing available; AT&T is in the Management Information Business and IBM is in the Voice Business...

What will be required of the telecommunications administrator?

DECISIONS---DECISIONS---DECISIONS:

- Should I change (all or part)?
- Buy from who? (local operating company--other vendors?)
- How should data communications be handled? (PBX--LAN--Data switch?)
- What about student telephone service? (Do I provide local dial tone only--or do we enter the student resale market?)



"Virginia Penikis and Mal Reader"

Looking at the positive side, Fred said the Telecommunications Administrator is suddenly very important. They are gaining professional status and have the top administrative ears which should mean higher salaries and prestige. He cautioned that rewards are commensurate with the risks--predicted an impending shakeout and warned against the 'do-nothing syndrome'. He said the opportunity is there for those willing to invest the time to learn and willing to speak up.

The panel discussion on "The Future of CENTREX" failed to generate the response from our members we thought it would. I suspect the major reason was the thoroughness of **Joe Massey** in covering the subject. However, the session did accomplish a group being formed of CENTREX Users who met after the day's sessions to discuss and share common concerns. We heard that **Telco Research** is publishing a CENTREX Users Newsletter and if we get that verified, we will let all of you fellow CENTREX users know.

The final presentation on Monday was a look at how three different universities looked at the challenges and opportunities and how they arrived at a solution--each university reached a different solution for vastly different reasons--and yet each achieved the optimum solution for their school. **The State University of New York-Albany** was represented by **Karen Zimmer**. **Yale University** was represented by **Mike Grunder** and the **University of Nebraska-Lincoln** by **Ruth Michalecki**. ACUTA News plans a separate and detailed coverage on each of these three universities in the next few editions of our newsletter.

Monday evening was a very special event. We had a dinner/dance cruise of the Boston Harbor. Food, dancing and cruise were all terrific!

Tuesday was devoted to "College-Owned Telephone Systems" and our speaker was **Phillip Beidelman, President of Western Telecommunications Consulting**. As usual, Phil did an excellent job--I am always amazed at how much material he manages to cover in a short time. He reminded us that when we select a consultant, we need to remember what determines need. It is difficult to be your own consultant because: you can't be a prophet in your own town; internal credibility problem in the perception of others; need extra help to do a thorough job; lack of expertise in all areas. You really need to decide what you want done and using an analogy of the construction industry, he said the carpenter is the person who does the job; the architect shows you how to do the job; and the bridge builder brings others into the project, gets the groups together and provides a focal point. Your objective of course is: to support the academic/-research/service missions at your university.

Phillip reminded us that all consultants have predilections and you must look at their past track records to predict:

- 1) How they deal with complex political issues & university structures,
- 2) how they fit with organizations,
- 3) is consultant bid or process oriented,
- 4) price or positioning oriented.

Don't get hung up on exact technology, be much more concerned with vendor support, positioning, and process orientation. Focus on system fit, processing--avoid 'price' judgements only.

(BOSTON CONFERENCE, CONTINUED):

Find out what is the consultant's view on liquidation damages. This clause in a contract will usually cut out more than half of your qualified vendors in the big marketplace and will end up steering you almost always in the direction of 3rd party vendors. Very few manufacturers will agree to this clause. Remember the RFP should offer the most flexibility to the buyer. One alternative is the Open Procurement Bid, where you set the parameters in very specific terms and ask the vendors to offer their solution to your problem.

Forces driving universities to change:

- 1) proliferation of micros/mini-computers
- 2) proliferation of on-line library programs
- 3) continued emergence of departmental computing
- 4) continued support of local area networks
- 5) access into very high-speed computing centers
- 6) continued need to access common information sources
- 7) proliferation of home-owned personal computers
- 8) high speed graphics--health sciences & medical images
- 9) cost of service and the need to control

Phil covered voice/data switches; data distribution systems; tools for evaluation; the matrix; processor and memory capacity. He completed his presentation with some helpful tips on cable plant.

- 1) Don't hire a consultant to **pre-engineer** your cable plant. You need to know what system you are installing before you design your cable plant.
- 2) Be sure cable plant warranties are tied to switch warranties. Warranty should be end-to-end.
- 3) Make sure **all** points of entry to the system are fused at the point of entry, regardless of where the entry is (underground, etc.).
- 4) When in doubt use 24 gauge cable.
- 5) Specify copper wherever you have fiber runs whether you need them or not.
- 6) Extend multiple jack outlets to all stations.
- 7) Take two-pair all the way back to the MDF (main distribution frame).
- 8) Cable study should show (with priced equipment): need by building, entrance facilities, terminal closets, backbone segments.
- 9) Measure cable riser systems to capacity. Seldom does growth happen by building, but by capacity.
- 10) Always put in more cable than deemed necessary by at least 25%.

Wednesday started off with a presentation by **Dr. John Fike of SMU and Telecommunications Enterprises**. Dr. Fike discussed the evolving role of the telecommunications manager on campus. His presentation was unique in that it was prepared as a presentation to campus CEO's and our members had to do some role-playing, pretending to be their university's CEO. Focus was on the need for more support, training and involvement for telecommunications managers and the forces leading up to this need.

Fred Chanowski and John Powers from TMC looked at the impact of data communications in the PBX environment.

A session on Telecommunications Management Information Systems was presented by **Anthony Abbott, President of Commercial Software, Inc.** It was very well done and pointed out the need to control our systems and the new computerized tools on the market to help us with the control management function. Our sessions ended on Wednesday with a look at "Telecommunications--Vehicle for Office Automation" presented by **Dr. Ronald Brown of Coopers & Lybrand**. He defined Office Automation as the use of computing power to increase office efficiency. Economics, environment and technology are the three forces driving office automation. Academic Computing Facilities is, he said, in reality a mess--not very efficient. What corporate data processing requires is a network you can plug into today!

Wednesday evening was our grand banquet and your editor became the president of ACUTA. WHAT A NIGHT! Great speaker, great band, excellent food--and what a surprise Jim Shea and his staff pulled on all of us. We were treated to slide presentation of the week's activities--catching everyone on camera, even right up to and including the banquet.

Thursday morning we heard about Local Area Networks in Academia and our speakers were **Michael Krugman from Boston University, Hal Weber of Brown University and Robert Bardon of Interactive Networks**. It was an excellent session and one of great current interest.

Our last presenter was **William Dougherty from E. F. Hutton** and his subject was "Financing Your Equipment Purchases". When they say everyone listens when E. F. Hutton speaks, they really mean it. The session was most informative and helpful. One word of advice from Bill for our members was to keep the finance issue or bid separate from the switch bid. One thing for certain, he was familiar with political issues and legislative issues involved with universities and their special financing needs. It was a good session.

It is hard to say finished--but all good things must come to an end. I am sure that Jim Shea and his staff were relieved when it was all over, but you would never have known it.

ACUTA would like to thank all the speakers who contributed so much to the success of our conference. Thanks for sharing your special talents and expertise with us. A special thanks to all the sponsors--not only for sponsoring our lunches, breaks, and special events, but also for sharing your product information with us and for being a part of our association. And to a most special university--Boston University, to Jim Shea, his staff and his boss--a most grateful thanks for your hospitality.

WHAT A TERRIFIC CONFERENCE!

* * * * *

WORDS OF WISDOM:

"You can buy mediocrity for gold, but excellence cannot be purchased. It must be achieved."

-----Harry G. Mendelson

"Great necessity elevates man, petty necessity casts him down."

-----Goethe

MULTIPLE POSSIBILITIES FOR MULTIPOINT NETWORKS

Nov. 14.

...by Zvi Kozicki

Just as a multisign post beckons the pedestrian with a confusing array of destinations, the recent restructuring of the interstate private-line tariffs has created a cornucopia of options and proposals to sift through. The restructuring will have a significant impact on the cost of multipoint-line data networks, and cost increases of 35% or more are not unusual. The rapidly changing environment and the resultant uncertainty underline the need for the ability to evaluate the cost of various options.

Figure 1 illustrates the current interstate cost structure under AT&T Federal Communications Commission (FCC) Tariff 260. The point-to-point private line consists of two cost components: an interexchange cost and a station terminal cost.

The interexchange cost is mileage-dependent. All locations in the continental U.S. are assigned to a rate center, established by AT&T FCC Tariff 274. These rate centers are assigned vertical and horizontal Cartesian coordinates and are used to determine the interexchange cost by calculating the air distance between rate centers associated with the endpoints of the point-to-point line. A tapered, rate-per-mile schedule is applied to determine the actual cost. The greater the mileage, the lower the cost per mile.

AT&T also classifies locations as either A, high-density, or B, low-density. One of three rate schedules is used, depending on classification of the endpoints. The most expensive rate schedule is used for B-to-B lines and the least expensive for A-to-A. Currently, the station terminal cost is fixed at \$36.05 per month and is applied to each of the two endpoints.

The price of a multipoint line consists of a station terminal for each point. The rate centers are interconnected in a way that minimizes total interexchange costs. Each interexchange cost is determined as if the interexchange channel were a point-to-point line itself.

This pricing structure reflects AT&T's former end-to-end control of service. Divestiture has changed that, and the proposed tariff reflects the new state of affairs.

The country has been divided into Local Access and Transport Areas (Lata). Communications services inside each Lata are provided by the local operating company, which is prohibited from providing inter-Lata services. A new tariff, FCC Tariff 3, has been proposed. Last month, the FCC deferred a decision on the tariff until

(Continued)

The proposed interstate tariff structure reflects the new environment (see Figure 2). While the current tariff includes two charges, the station interexchange cost and the station terminal cost, the new tariff includes interexchange costs along with three other charges.

The cost components of a circuit include a terminating channel that connects the customer premises to a local central office represented by a rate center, a local distribution channel that connects the local central office associated with an AT&T service office and an interoffice channel between rate centers of AT&T service offices.

The AT&T service office is the point of presence in a Lata from which AT&T provides its communications services. There may be several service offices in the same Lata providing the same service. To determine the local distribution center cost, one would calculate the distance from the customer premises rate center to the nearest rate center with an AT&T service office in the Lata that provides the appropriate service.

AT&T is tarified to provide two types of service. The first, transport service, is the concept that AT&T is the carrier's carrier. AT&T will provide facilities between service offices.

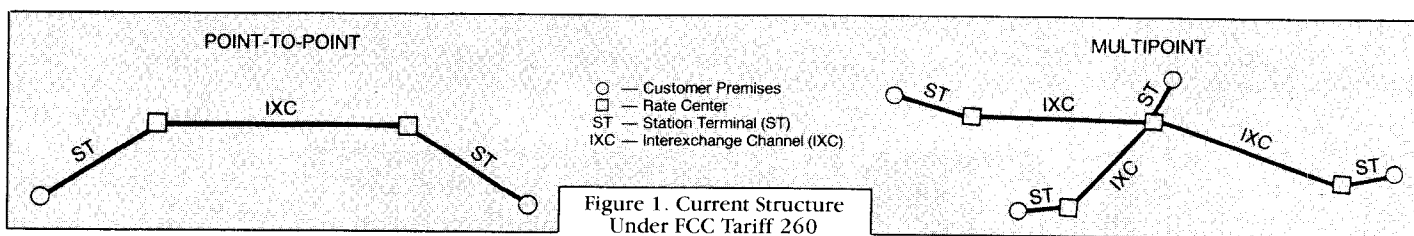
The kinds of services available with transport service are: 4-KHz voice-grade lines, 48-KHz groups, 240-KHz supergroups and the T-1 terrestrial digital carrier.

There is nothing that prohibits AT&T from providing intra-Lata service, but the service is limited exclusively between the AT&T service offices. Ultimately, responsibility for end-to-end service rests with the customer. Thus, a subscriber to the transport service is responsible for distributing the service from the AT&T service office to his premises.

With transport service, bridging is not available. If a customer wanted to create a multipoint line using transport service, he would be required to provide his own bridging facilities. Equipment sites and the circuit would be priced as configured by the customer. AT&T would provide only point-to-point links.

The second option, total service, is the end-to-end, voice-grade data digital channel, telegraph, wide-band terrestrial digital channel (T-1 carrier) and so on. With total service, AT&T does provide end-to-end service to the customers. The multipoint line network is a typical subscriber to total service.

With the total service arrangement, as opposed to transport service, the concept of a multipoint line is included, and the bridging is provided by AT&T. Network configuration and the operation of any particular circuit are also AT&T's responsibilities.



MULTIPOINT NETWORKS (Continued):

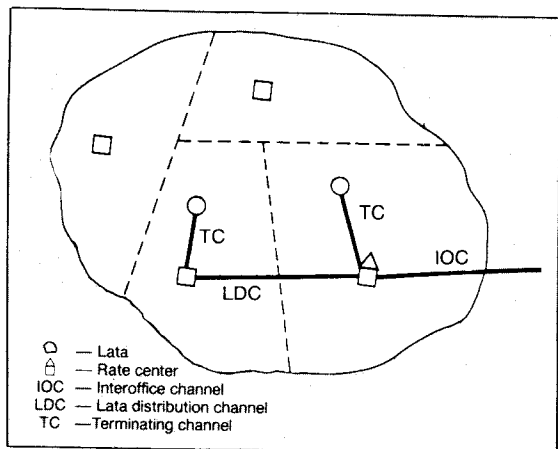


Figure 2. Environment Under Proposed FCC Tariff 3

With total service, multipoint lines have the following cost variables:

● **Interoffice channels.** These connect the rate centers of the AT&T service office. The rate structure is the same as that of the current AT&T 260 tariff, except that the notion of A and B cities has been eliminated.

● **Local distribution channels.** This charge applies when the customer rate center is not the service office rate center. Initially, this charge is an averaged, mileage-sensitive rate. That is, the price is averaged geographically, with the same charge being levied in low-density areas as in high-density areas. The charge may be deaveraged in the future, that is, higher charges can be incurred in low-density areas and lower charges in high-density areas.

● **Terminating channels.** Service functions are applied to each terminating channel. These charges are fixed-cost and averaged, but they may be deaveraged in the future.

● **Service functions.** These functions include bridging, conditioning and a basic service function to account for the engineering and maintenance of the network.

The two types of service have various service functions. For transport service, there is a primary service function that is always applied. And there are secondary functions that vary depending on the service needed. These optional secondary functions include equalization and level conditioning for voice-grade only. Total service also has a primary service function that is always applied. It provides more than the transport primary service function.

Secondary functions are also available for total service, depending on the degree of service needed. These optional secondary services include bridging, conditioning and so on.

In addition, each Lata may have more than one service office, and the service office, and the service offices may be different for each service provided. Figures 3 and 4 illustrate some multipoint circuit examples and the application of the various charges. Figure 3 illustrates point-to-point, inter-Lata total service. It shows a point-to-point line from the customer premises in Lata 1 to that in Lata 2. The total cost includes several variables:

— The local distribution channel cost, from the local rate center to the AT&T rate center;

— The interoffice channel cost between rate centers and;

— The terminating channel cost in Lata 2 from the rate center to the second customer premises. Note that the customer in Lata 2 pays only a terminating channel cost. It does not pay a local distribution channel cost.

Figure 4 illustrates a circuit that is inside a Lata, but with a portion going outside the Lata. In this case, the cost is determined by adding the terminating channel cost for the second customer premises. It is significant that the station terminal charge of \$36.05 per month under the current tariff has been replaced by the same cost of terminating channels, service functions and local distribution channels in the proposed tariff.

Even without the charge for the local distribution channel, which depends on the distance to the service office rate center, the cost is \$143 per month, or a 297% increase in local access costs. This is offset by a reduced interoffice channel mileage cost.

Subsequent to this filing, AT&T declared its intent to eliminate the \$25 surcharge on the terminating channels--which corresponds to the well-known access charge--and to taper the rates of the local distribution channel so that longer local distribution channels will have a decreasing mileage rate. The local access cost increase remains significant.

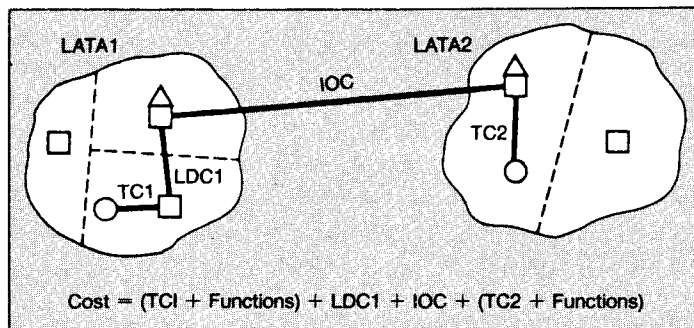


Figure 3. Point-to-Point Inter-Lata Service

$$\text{Cost} = (\text{TC1} + \text{Functions}) + \text{LDC1} + \text{IOC} + (\text{TC2} + \text{Functions})$$

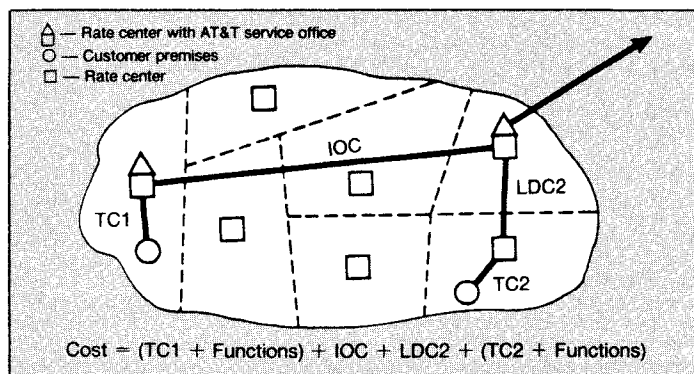


Figure 4. Intra-Lata Service

$$\text{Cost} = (\text{TC1} + \text{Functions}) + \text{IOC} + \text{LDC2} + (\text{TC2} + \text{Functions})$$

— The terminating channel cost, from the customer premises to the local rate center;

MULTIPOINT NETWORKS (Continued):

Up to this point, the discussion has focused on the interstate situation. AT&T has now become an intrastate carrier for states with more than one Lata. In general, AT&T has filed tariffs for inter-Lata intrastate services that virtually duplicate those of the local operating companies in structure and rates. These are expected to be structured soon along the lines of the interstate tariff.

But what does all this mean to the telecommunications manager? Obviously, no two networks are the same, and the cost impact will vary from network to network. One thing is clear: It is imperative to be able to evaluate the tariff charge and to examine alternative designs. For large networks, this is not easy, unless one has network design tools that can manage a large data volume, one is flexible enough to look at diverse tariff structures and rates and one can produce cost-effective network designs.

To study the impact of the tariff structures, an analysis was performed on a network of 599 nodes, randomly selected from all the telephone exchanges nationwide. This network should be representative since population concentration and telephone exchanges should be closely related.

Remote front-end processors were placed in Los Angeles and New York. The location of the host and the trunk network were ignored. It was assumed that there were no more than 10 drops per multipoint circuit. The analysis was divided into six parts:

1. Network under current FCC 260 tariff;
2. Network under proposed FCC Tariff 3;
3. Data digital channel on a subset of the network that has access to the data digital channel;
4. California locations only using the AT&T California intrastate tariff;
5. New York locations only using AT&T New York tariff;
6. Pennsylvania locations only using AT&T Pennsylvania tariff and assuming a remote concentrator in Philadelphia.

The results of Parts 1 and 2 are tabulated in Figure 5. There is a significant shift in network cost from interoffice channels to local access costs. Under the current tariff, interoffice channel accounts for \$155,258, or 87% of the \$179,231 total network cost. Local access accounts for 13% of total network cost, for \$23,973. This local access cost includes only one charge for terminating channels.

	Current Tariff	% of Total Network Cost	Proposed Tariff	% of Total Network Cost
A. Interoffice Channel	\$155,258	87%	\$66,753	27%
B. Local Access:				
1. Local Distribution Channel			\$ 82,195	
2. Service Functions			\$ 26,480	
3. Terminating Channels	\$ 23,973		\$ 68,186	
Local Access Subtotal	\$ 23,973	13%	\$176,861	73%
Total Network Cost	\$179,231		\$243,614	

Figure 5. Network Costs Under Current and Proposed Tariffs

Under the proposed tariff, interoffice channel would account for only 27% of the total network cost--\$66,753 of \$243,614--and access costs would account for \$176,861, or 73% of the \$243,614 total network cost.

The total local access cost includes three separate charges: local distribution channel charges (\$82,195), service functions, (\$26,480) and terminating channels, (\$68,186).

Interoffice channel costs would be reduced 57% from \$155,258 to \$66,753. Local costs would rise an astounding 655%, from \$23,973 to \$176,861. Overall, the net cost would rise 35% from \$179,231 to \$243,614. The data digital channel ratio of local access to interoffice channel would be even steeper but the results were comparable.

Parts 4, 5 and 6 compared the interstate tariff with some popular intrastate tariffs. The interstate cost of an intrastate portion of the network was determined by deleting the intrastate portion of the network and repricing the remaining network. No reoptimization was done, which means that the actual cost of the intrastate portion of the interstate network may be slightly higher.

	INTERSTATE	INTRASTATE
A. Interoffice Channel	\$ 2,541.00	\$4,282.05
B. Local Distribution Channel		
Service Functions	\$ 2,856.15	
Terminating Channels	\$ 2,000.00	\$ 681.87
Subtotal	\$ 5,150.00	\$ 681.87
Total	\$10,006.15	\$ 681.87

Figure 6. Interstate vs. Intrastate in California

	INTERSTATE	INTRASTATE
Interoffice Channel	\$ 1,225.15	\$17,089.01
Local Distribution Channel	\$ 4,167.90	
Service Functions	\$ 1,800.00	\$ 3,184.90
Terminating Channels	\$ 4,635.00	\$ 1,120.44
Total	\$11,828.05	\$21,394.35

Figure 7. Interstate vs. Intrastate in New York

The results of the interstate vs. intrastate comparisons were dramatic and are tabulated in Figures 6 and 7. In California, the intrastate interoffice channel was about 70% more expensive than the interstate channel. However, after adding local access costs, the interstate cost was about 2.5 times greater than the intrastate cost. The interstate rate was twice as expensive as the intrastate rate. An exception was New York where intrastate costs more than doubled the interstate rate.

While it is very likely that by the time this article is printed, the above results will be significantly altered, one thing is clear. Now, more than ever, it is imperative for the telecommunications manager to be able to investigate alternatives and evaluate design strategies.

The structure of the service offering, while being a product of recent technological advances, will also influence technological implementation. Distributed processing, facility location and advanced network management systems are examples of technologies that have become crucial to the telecommunications manager.

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ACUTA

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Ms. Ewing specializes in communications assessments and equipment consultations. She assists clients in assessing the economics and functionality of their telecommunications operation. Her assessments provide an impartial evaluation of the strengths and weaknesses of the client's current procedures, personnel, and equipment. Karen isolates the exposures and areas of risk as well as the opportunities for greater effectiveness. Her assessments cover all aspects of voice, data, and video telecommunications.

Karen also supervises most consulting contracts for equipment acquisition. Her knowledge of current and ongoing technologies and her insight into the operational aspects of telecommunications assist her in preparing specifications for the best mix of function and economy. The scope of her projects frequently encompass the entire acquisitions process as well as supervision of the installation and cut-over of new equipment.

Prior to joining Telco Research, Ms. Ewing spent over ten years in retail sales and retail management. She has a B.S. degree from Penn State University.

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