BELLSOUTH TELECOMMUNICATIONS, INC.

DIRECT TESTIMONY OF KEITH MILNER

BEFORE THE FLORIDA PUBLIC SERVICE COMMISSION

DOCKET NO. 960833-TP

AUGUST 12, 1996

Q. Please state your name, address and position with BellSouth Telecommunications, Inc. ("BellSouth" or "The Company").

A. My name is W. Keith Milner. My business address is 675 West Peachtree Street, Atlanta, Georgia 30375. I am a Director - Strategic Management for BellSouth Telecommunications, Inc. I have served in this role since February, 1996 and have been involved with the management of certain issues related to local interconnection ahd unbundling.

Q. Please summarize your background and experience.

A. I graduated from Fayetteville Technical Institute in Fayetteville, North Carolina in 1970 with an Associate of Applied Science in Business Administration degree. I also have a Master of Business Administration Degree from Georgia State University in Atlanta, Georgia. I am also a member of Beta Gamma Sigma, the national honor society for business school graduates.

My business career spans 26 years and includes responsibilities in the areas of network planning, engineering, training, administration and operations. I have held positions of significant responsibility with a local exchange telephone company, a long distance company and a research and development laboratory. I have extensive experience in all phases of telephonic network planning, deployment and operation (including research and development) in both the domestic and international arenas.

I began my career with Southern Bell (now BellSouth) in 1970 as a Traffic Engineer for switches in North Carolina. My responsibilities included planning and switch engineering and for providing network administrative staff support. In 1974, I was assigned to Southern Bell Company Headquarters in Atlanta, Georgia where I provided technical support to network administration groups. I was also part of a team that implemented mechanized data collection and processing systems (Total Network Data System) used by Network personnel throughout Southern Bell. I joined Southern Bell's technical training organization where I developed and delivered technical training to managers in the Network Department. I was concurrently responsible for curriculum planning for administration and engineering job disciplines. In 1978 I joined Southern Bell's Engineering Department in Miami, Florida where I managed a group of management network design engineers. Based on my extensive knowledge of mechanized support systems, I formed

and led a new group responsible for planning and implementing all Operations Support Systems in South Florida. In 1981, I joined Southern Bell's Network Operations Department where I led an operations center responsible for installation and maintenance of central office equipment for special services, message trunking and digital carrier systems in large metropolitan switching centers in the South Florida Area. I also managed a group which provided switching system administration, service analysis and performance monitoring for a major portion of South Florida. In 1982 I joined AT&T as part of its Divestiture Planning Team in Basking Ridge, New Jersey. I served as Technical Expert for switching network planning and engineering. This team developed and implemented intercompany contracts representing about $1 Billion per year in contract billing between AT&T and the Operating Companies. Upon Divestiture in 1984, I joined Bell Communications Research as a Member of Technical Staff and was responsible for systems engineering for digital switching systems (AT&T 5ESS and Northern Telecom DMS-100). I developed computerized engineering and administration tools. I also developed and conducted load capacity and regression analyses to determine switch performance with various methods of load and computer memory management. During that assignment I won the Bell Communications Research Award for Excellence for my research in digital switching technology.

In 1986 I returned to BellSouth in Atlanta, Georgia where I joined the Network Planning and Engineering Department. I developed and led the New Service Planning and Network Architecture Planning Group. This group was responsible for financial and technical evaluations as well as funding and deployment coordination. In 1993 I joined BellSouth International as Associate Director for Operations. In this role I was responsible for business planning and implementation activities for national and international long distance markets. I was responsible for regulatory and interconnection planning activities in BellSouth's successful bid for a long distance license in Chile. I served as a key member of that implementation team. In 1994 I returned to BellSouth Telecommunications, Incorporated as Director - Access Customer Advocate Centers. In this role I directed the implementation and operation of three customer operations centers for key access customers (AT&T, MCI, and all Wireless Customers). I led a large team of managers and technicians which provided provisioning and maintenance of switched and special access services across a nine-state region.

Q. Have you testified previously before any state public service commission; and if so, briefly describe the subject of your testimony.

A. I have testified before the state Public Service Commission in Georgia on the issue of technical capabilities of the switching and facilities

network regarding the introduction of new service offerings, expanded calling areas, etc.

Q. What is the purpose of your testimony in this proceeding?

A. The purpose of my testimony is to discuss the technical feasibility of unbundling certain network elements as requested by AT&T. The following discussion is based on my understanding of AT&T's request as described in AT&T's Petition For Arbitration in this proceeding. I may, in the future, provide testimony in response to AT&T testimony in this proceeding.

Specifically, I will address the eight (8) network elements for which no agreement between BellSouth and AT&T has been reached. BellSouth believes that these eight network elements are either (1) available at present via BellSouth's tariffs or (2) cannot be made available because there is no technically feasible method of providing such unbundling. I will address the network elements in the following list:

- Network Interface Device
- Loop Distribution Media
- Loop Concentrator/Multiplexer
- Loop Feeder
- Local Switching
- Operator Systems

- Dedicated Transport
- Common Transport

Additionally, AT&T has raised the issue of providing unbundled access to certain capabilities referred to as Advanced Intelligent Network (AIN) triggers. I will address that subject as well.

Q. Since the term "technical feasibility" has been and will continue to be widely used, please give a summary of BellSouth's definition of technical feasibility.

A. In establishing the technical feasibility of an unbundled network element, the following minimum criteria are appropriate:

1. The ability to provision, track and maintain the element.
2. The ability to deliver discrete, stand-alone facilities, equipment, or logical functions of the existing or scheduled LEC network.
3. The ability to maintain network integrity without undue risk, including risk of physical hazards to telephone plant or operating personnel, or risk to service degradation or service impairment of any kind.
4. The ability to provide physical or logical operational interfaces between the incumbent LEC and the requesting company.

Q. AT&T made the claim in its Petition For Arbitration in this proceeding that it is technically feasible to provide access to the network elements it has requested. In some cases AT&T has based its claim of technical feasibility on references to a proposed Interconnection Agreement between AT&T and BellSouth as well as references to AT&T's Attachment 2 of that proposed Interconnection Agreement. Would you comment on the content of these claims?

A. The references to the issue of technical feasibility as presented in AT&T's Petition For Arbitration in this proceeding may be found in the following footnotes. Also shown is the network element being discussed in these footnotes:

- Footnote 47 (Network Interface Device)
- Footnote 48 (Loop Distribution)
- Footnote 49 (Loop Concentrator/Multiplexer)
- Footnote 50 (Loop Feeder)
- Footnote 51 (Local Switching)
- Footnote 54 (Operator Systems)
- Footnote 55 (Dedicated Transport)
- Footnote 56 (Common Transport)

Each and every one of these "supporting" statements refer back to AT&T's original request for the unbundled network element. In other words, AT&T's support for its claim that unbundling is technically

feasible is based on the fact that AT&T requested such unbundling. AT&T would have this Commission believe that the technical feasibility of unbundling is evidenced by AT&T's request for unbundling and little else. Such "circular references" serve only to obscure the fact that AT&T has produced little or no support for its claims of technical feasibility except that (1) AT&T made a request and (2) AT&T disagrees with BellSouth's conclusions regarding unbundling of network elements.

Q. Please briefly describe the format and content of BellSouth's evaluation of technical feasibility of unbundling the network elements that AT&T has requested in its Petition For Arbitration.

A. I will address each element separately, citing technical limitations, testing and operational considerations, record-keeping requirements and other factors as may be appropriate to the network element under discussion. The first four network elements discussed (Network Interface Device, Distribution Media, Concentrator/Multiplexer and Feeder) are loop elements. Attachment WKM-1 shows a high level view of these loop elements.

Network Interface Device (NID)

Q. Please define the requested Network Element.

A. The NID is a single-line termination device or that portion of a multiple-line termination device required to terminate a single line or circuit. The fundamental function of the NID is to establish the official network demarcation point between a company and its end-user customer. The NID features two independent chambers or divisions which separate the service provider's network from the customer's inside wiring. Each chamber or division contains the appropriate connection points or posts to which the service provider, and the end-user customer each make their connections. The NID provides a protective ground connection, and is capable of terminating cables such as twisted pair cable. Attachment WKM-2 shows a functional schematic of a typical residential NID. Attachment WKM-3 shows the use of the NID as part of the overall loop composition.

Q. What is your understanding of how AT&T intends to use this Network Element?

A. AT&T wishes to attach its transmission media (that is, AT&T's loops) to embedded installed NIDs located at the customer's premises.

Q. Please give an estimate of the amount of investment represented by the Network Element as well as an estimate of the degree of difficulty presented to AT&T if they were to replicate this Network Element.

A. No specific investment data is available, however, every residence and business line in service today (approximately 21 million) is terminated on a NID or equivalent. BellSouth has not been presented with any information which would indicate that it is either technically difficult or economically burdensome for AT&T to install its own NIDs.

Q. Will BellSouth provide the requested unbundled Network Element?

A. No. BellSouth cannot provide NID as an unbundled Network Element because of the following:

1. The National Electrical Code requires that loop distribution plant be grounded and bonded via the NID. Attachment WKM-4 shows pertinent sections of the National Electrical Code as it pertains to grounding requirements for the NID (National Electrical Code, Paragraph 800.30, 1996 version).

2. The NID also provides a standard test access point for the BellSouth loop. If the NID is located outside a business customer's premises, BellSouth would utilize a NID that is similar to that used for residence outdoor NID applications.

3. If the NID is located inside the customer's premises, several different types of devices are used depending on the number of lines terminated and the type of NID requested by the customer.

Q. Please comment on the National Electrical Code requirement for grounding of the loop and risks incurred if BellSouth were to not conform with this requirement.

A. BellSouth's investigation revealed the following:

1. The National Electrical Code requires that loop plant be terminated to a protector device at the customer's premises. Use of such a device allows proper bonding and grounding of the loop in order to prevent or eliminate electrical hazards.

2. Removal of the BellSouth loop from an existing NID without re-termination of that loop to another similarly bonded and grounded NID would create a potentially hazardous condition and thus a Code violation. To prevent such a situation would require that a BellSouth technician be dispatched to the customer's premises to install a new NID and to move BellSouth's loop to that NID for bonding and grounding purposes.

Thus, BellSouth's conclusion is that, given the Code requirement for the loop to be connected to a protector device (which is an integral part of the outdoor NID), unbundling of the NID is not technically feasible. Since AT&T will be at the customer's premises to install its own loop or

loop equivalent, it seems reasonable to expect, given these Code requirements, that AT&T would furnish its own NID at the same time.

Q. For NIDs, are the serving arrangements different in residential and business settings?

A. The serving arrangement in business settings may or may not be different from that of residence settings on a case-by-case basis. If the NID is located outside the customer's premises, BellSouth would utilize a NID that is similar to that used for residence outdoor NID applications. If the NID is located inside the customer's premises, several different types of devices are used (i.e., RJ21X, RJ45, RJ48, RJ11, etc.) depending on the number of lines terminated and the type of NID requested by the customer.

Q. Please comment on the technical feasibility of unbundling the NID in business settings.

A. In those instances where a multiple line NID is used (that is, RJ21X), unbundling of the NID is not technically feasible for the following reasons:

- The actual customer interface is a 50 pin amphenol connector on the side of the RJ21X jack into which the customer directly plugs the inside wire. Placing different service provider's circuits on a

single RJ21X interface is not a sound practice nor is it desirable from the end-user's viewpoint. The purpose of the amphenol connector is to enable the end user's Customer Provided Equipment (CPE) to be quickly and easily disconnected in order to avoid potential harm to the service provider's network and to facilitate service provider testing of the network while isolating the end-user's CPE. Shared use on an RJ21X would result in all service provider's circuits being disconnected during maintenance and repair visits to the end-users premises even though only one service provider's circuits were in trouble.

- If the NID was not to be shared but simply reused by the company, technical difficulties would result during cutover procedures since removal of the amphenol plug would cause an out-of-service condition. Since, in all cases, the actual NID is an integrated connector (either single or multi-line), it is not possible to disconnect the NID without interrupting the customer's existing service.

- In addition, there are instances where BellSouth utilizes business NIDs inside a building which incorporate electrical and lightning protection into the NID unit. Similar to outdoor-type devices, disconnection of BellSouth's feeder cable from this device would leave the cable unprotected, resulting in a safety hazard in violation of the National Electrical Code.

Q. Are there more varieties of NID used in BellSouth's network?

A. Yes. A wide variety of different devices have been deployed in BellSouth's network over time. The basic configuration of all of these NIDs can be found in the FCC's Code of Federal Regulations, Part 68. There is such a variety of NIDs, and such a variety of manufacturers used for each type of NID, as to seemingly make a listing of these of questionable value. This is true especially since the usage of NIDs is subject to very frequent change. The choice of NID is made based on the quantity of loops to be terminated and the customer's order. It should be noted that actual cost of NID hardware is relatively insignificant compared with the cost to install the drop wire or cable. It is BellSouth's opinion that the costs associated with unbundling the NID (that is, coordination between companies, potential service outages, need for dispatch of a BellSouth service technician, etc.) plus the potential creation of electrical hazards would far outweigh any perceived benefit derived from the unbundling of this device.

Q. What alternatives can BellSouth offer for this functionality?

A. BellSouth is unable to identify <u>any</u> circumstances where it is technically feasible to unbundle the NID. Also, given the apparent ease with which AT&T could install its own NIDs, it seems obvious that while AT&T is at the customer's premises installing its loops, AT&T could also install a

NID and connect it to that loop for very little additional time and expense. BellSouth has agreed, however, to install a new NID at AT&T's expense upon request.

Q. Please comment on typical costs of providing a separate NID for AT&T's use.

A. Even if the technical limitations that prevent the unbundling of the NID could somehow be overcome the cost for BellSouth to provide an unbundled NID would be significant. No cost study has been developed by BellSouth but some rough cost estimates have been made. Using typical NID material cost, average travel times for a technician dispatch to the end user premises and minimal installation time yields a total cost of about $58.30. This cost may be considered a "best case" cost and was developed for a single line residence or single line business customer. Of course, more complex or difficult NID placements such as those in high-rise buildings, older construction buildings or apartment complexes would yield significantly higher costs. Given this large variability in cost, BellSouth has offered to provide and install a NID for AT&T on a time and materials basis.

Distribution Media

Q. Please define the requested Network Element.

A. Distribution Media provides sub-loop connectivity between the NID component of Loop Distribution and the terminal block on the customer-side of a Feeder Distribution Interface (FDI). The FDI is a device that terminates the Distribution Media and the Loop Feeder, and cross-connects them in order to provide a continuous transmission path between the NID and a telephone company central office. For loop plant that contains a Loop Concentrator/Multiplexer, the Distribution Media may terminate at the FDI (if one exists), or at a termination and cross-connect field associated with the Loop Concentrator/Multiplexer. This termination and cross-connect field may be in the form of an outside plant distribution closure, remote terminal or fiber node, or an underground vault. The Distribution Media may be copper twisted pair, coax cable, or single or multi-mode fiber optic cable. Attachment WKM-5 shows the Distribution Media as a loop element.

Q. What is your understanding of how AT&T intends to use this Network Element?

A. It is anticipated that AT&T would provide their own feeder facilities and would use this portion to complete the loop facilities to the customer.

Q. Will BellSouth provide the requested unbundled Network Element?

A. No. BellSouth cannot unbundle the distribution portion of the local loop. It is not technically feasible to unbundle this network element because:

1. The operations and support systems including Loop Facilities Assignment and Control System (LFACS) and Trunk Inventory and Record Keeping System (TIRKS) cannot handle administration of loops without feeder facilities. TIRKS and LFACS are registered trademarks of Bell Communications Research, Incorporated. The systems used by BellSouth build loops from the Central Office to the end-user premises and cannot handle administration of loops without feeder facilities (that is, sub-loop elements). Considerable cost and time would be needed to redesign the existing systems to handle these configurations.

2. Without a viable support system, assignment information would need to be maintained via manual paper records. These paper records would conflict with the mechanized record keeping systems. There would be no way to mechanically feed this manually maintained information to AT&T.

3. Additional facilities would need to be built to provide access to the distribution facilities. This could include replacement of

existing cross connect boxes which is extremely time consuming and costly.

4. Ordering, provisioning, maintenance, administration and billing systems would all be adversely affected. Manual procedures would be necessary which would add considerable costs.

5. Future provisioning options would be limited or complicated. Establishment of a permanent hand off point (that is, a point of interface) would make altering the feeder/distribution network difficult. Future rearrangements would be costly both to the Local Exchange Company (LEC) and Alternative Local Exchange Companies (ALEC). Should the facilities need reinforcement or replacement considerable LEC labor would be involved.

6. Establishment of a permanent point of interface could constrain BellSouth from using new technology such as "Fiber In The Loop" (FITL) when a replacement for copper is planned. There is no feasible way to make the FITL technology available for hand off to an ALEC on an individual loop basis. This is because the fiber may carry a number of different multiplexed loops simultaneously. There should be no constraints placed on BellSouth that would make copper an imbedded distribution

facility with no way for BellSouth to replace it with new technology.

Q. What alternatives can BellSouth offer for this functionality?

A. BellSouth can provide a complete unbundled loop from the BellSouth central office to the end-user premises.

Loop Concentrator/Multiplexer

Q. Please define the requested Network Element.

A. The Loop Concentrator/Multiplexer is the Network Element that:

1. Aggregates lower bit rate or bandwidth signals to higher bit rate or bandwidth signals (multiplexing).

2. Disaggregates higher bit rate or bandwidth signals to lower bit rate or bandwidth signals (demultiplexing).

3. Aggregates a specified number of signals or channels to fewer channels (concentrating).

4. Performs signal conversion, including encoding of signals (*i.e.*, analog to digital and digital to analog signal conversion).

5. In some instances performs electrical to optical (E/O) conversion.

The Loop Concentrator/Multiplexer function may be provided through a Digital Loop Carrier (DLC) system, channel bank, multiplexer or other equipment at which traffic is encoded and decoded, multiplexed and demultiplexed, or concentrated. Attachment WKM-6 shows the Concentrator/Multiplexer as a loop element.

Q. What is your understanding of how AT&T intends to use this Network Element?

A. AT&T requests access to that portion of the local loop which consists of the loop concentrator/multiplexer function of the carrier systems that BellSouth has deployed to provide feeder facilities in BellSouth's network. AT&T wants access to the concentration capabilities of the BellSouth carrier systems. AT&T would use this to concentrate their local loops through BellSouth carrier systems and then transport them back to their switch through transport facilities.

Q. Will BellSouth provide the requested unbundled Network Element?

A. No. This option is not technically feasible. BellSouth cannot provide this service because:

1. BellSouth's operations and support systems, particularly the Loop Facilities Assignment and Control System (LFACS) and Trunk Inventory and Record Keeping System (TIRKS), cannot handle assignment and administration of this small portion of a carrier system. Manual records would need to be maintained that would conflict with BellSouth's mechanized systems.

2. There is no technically feasible method to segregate the concentration portion of the carrier system from the feeder transport to it. The systems are designed as a single entity and cannot be separated. This means that the concentration portion and the feeder transport portion are one entity. They provide the necessary facilities to transport and concentrate loop facilities from the central office to the remote terminal.

3. Providing this type of service based upon existing technology could constrain BellSouth from using new technology such as Fiber In The Loop (FITL) when replacement is planned. There is no technically feasible method to make the FITL technology available for hand off to an ALEC on an individual loop basis. This is because the fiber may carry a number of multiplexed loops simultaneously. BellSouth should not be constrained from being able to transition to a newer technology as appropriate.

Q. What alternatives can BellSouth offer for this functionality?

A. The technically feasible alternative is to provide an unbundled loop from the Central Office to the end-user premises.

Loop Combinations with Integrated Digital Loop Carrier

Q. Please define the requested Network Element.

A. The requested Network Element is a complete contiguous loop from the BellSouth Central Office to the end-user premises, where that loop is provided via Integrated Digital Loop Carrier (IDLC). IDLC comprises loop facilities that include multiple NIDs, distribution media, remote terminal and feeder. The feeder interfaces directly to the digital switch at the DS1 level without the requirement for a central office terminal or other demultiplexing equipment. Attachment WKM-7 depicts a typical Contiguous Loop configuration.

Q. What is your understanding of how AT&T intends to use this Network Element?

A. AT&T desires the ability to utilize single unbundled loops that are integrated into IDLC arrangements. This involves a "splintering" of the integrated loop facilities into discrete (individual) loops. This would require a conversion of the digital bitstream (multiple loops) back to analog (individual loops). Such an arrangement would add cost. Also,

from a voice quality viewpoint, multiple extra conversions from digital to analog and back to digital lower overall transmission quality due to the voice sampling and encoding techniques used.

Q. Will BellSouth provide the requested unbundled Network Element?

A. BellSouth cannot provide an unbundled loop through integrated facilities in all cases because:

1. Loops served by IDLC do not have an analog (copper) appearance in the central office and therefore cannot be provided to an ALEC. The multiplexed loops are attached directly to the switch without digital to analog conversion.

2. Integrated facilities were designed not to have a copper appearance in the central office and thereby eliminate costly electronics associated with carrier systems. The switch handles the concentration/channelization of the carrier system. Use of integrated facilities results in considerable savings.

3. Converting an integrated DLC system to a universal DLC system (non-integrated) would cause economic penalties in provisioning the switch. Considerable labor is required to convert an integrated carrier system to a non-integrated carrier system.

4. If BellSouth were to be forced to provide loops through integrated systems, the use of integrated systems will decrease causing the cost of providing service to BellSouth's customers to increase.

Q. What alternatives can BellSouth offer for this functionality?

A. Several alternatives have been investigated for those loops served by IDLC. The following describes those alternatives and the results:

Alternative 1: Reassign the loop from an integrated carrier system and use a physical copper pair.

This is a technically feasible alternative in cases where sufficient physical copper pair facilities are available. If sufficient physical copper pairs are available, BellSouth will assign the unbundled loop to a physical copper pair. Available facilities are those that are generally available for use rather than those specifically placed there for other reasons. Such cases could include but are not limited to the following: Unloaded pairs in a loaded area reserved for digital services or limited physical pairs placed in a Carrier Serving Area (CSA) for services that cannot be integrated.

Alternative 2: Bring the loop out of the integrated switch using "hair pin" options. Attachment WKM-8 depicts a typical "hair pin"

configuration for extracting a single loop out of an Integrated DLC digital bitstream.

This alternative is not technically feasible for the following reasons:

Using the "hair pin" option ties up a channel into and out of the switch and would be functionally equivalent to AT&T's use of an unbundled switch port. As a result, valuable switching equipment is tied up permanently (switch ports, DS-1 and D4 banks and plug-ins). This would result in premature exhaust of the equipment. Also, since the loop must be brought to a D4 channel bank and handed off at the Voice Frequency (VF) level, added expense is incurred in provisioning the plug-in in the D4 bank. In summary, this alternative does not separate the switch port from the loop.

Alternative 3: In the case of Next Generation Digital Loop Carrier (NGDLC) systems, "groom" the integrated loops to form a virtual Remote Terminal (RT) set up for universal service. In this context, "groom" means to assign certain loops (in the input stage of the NGDLC) in such a way that discrete combinations of multiplexed loops may be assigned to transmission facilities (in the output stage of the NGDLC).

This is a technically feasible alternative in cases where NGDLC facilities are available. Both of the NGDLC systems currently approved

for use in the BellSouth network have "grooming" capabilities. However, the availability of this option is limited. Given that NGDLC is still a relatively new technical capability, currently there is an insufficient amount of NGDLC in the BellSouth network to meet AT&T's total demand. Availability will be limited due to the fact that the universal portion of a NGDLC system is sized for those special service circuits that cannot be integrated that were forecast for a given site. This option is available only where fully approved NGDLC systems are operating. As in the case of Alternative 1 described above, available facilities are those that are generally spare and available for use rather than those specifically placed there to meet other specific needs.

Alternative 4: Physically groom all channels of a carrier system so that one or more DS-1 circuits contain only the ALEC's service and hand off these DS-1 circuits to the ALEC.

This alternative is not technically feasible. This is a version of concentrated DS-1 transport with the transport vehicle being located in the field. BellSouth's operations support systems cannot handle the administration that would be needed for this arrangement. In addition, BellSouth's existing older technology systems do not have the ability to groom. In order to provide DS-1 circuits with only one ALEC's traffic, mechanized processes are not available to provision that ALEC's circuits via specific channel banks. This would in effect dedicate a

channel bank (D4 or similar) to an ALEC that would not otherwise be available for other traffic.

Alternative 5: In those cases where DLC serves a customer where the ALEC has won 100% of the business, would BellSouth sell the ALEC the entire system?

This alternative is not technically feasible if AT&T expects BellSouth to provide associated Operations Support Systems for provisioning, maintenance and administration. Here again BellSouth's Operation Support Systems cannot assign and maintain this type of arrangement. Problems would occur in the provisioning and maintenance of the system. In particular, the alarms that are normally sent when a DLC experiences a failure are wired from the central office terminal. With this type of service the alarms would not be accessible by BellSouth's mechanized systems. Further, since the equipment is located at a remote site, it is not available for manual inspection. The system could fail and no one (and no mechanized system) would be aware of the failure. BellSouth's assignment systems, TIRKS and LFACS would require extensive manual interventions and "workarounds" to accomplish the required assignment and inventorying tasks.

Loop Feeder

Q. Please define the requested Network Element.

A. The Loop Feeder is the Network Element that provides connectivity between (1) a Feeder Distribution Interface (FDI) associated with Loop Distribution and a termination point appropriate for the media in a central office, or (2) a Loop Concentrator/Multiplexer provided in a remote terminal and a termination point appropriate for the media in a central office. Attachment WKM-9 shows Loop Feeder as a loop element.

Q. What is your understanding of how AT&T intends to use this Network Element?

A. AT&T wants physical access to the FDI and the right to connect its distribution media to the Loop Feeder at the FDI. AT&T wants to have access to the feeder facilities from the BellSouth central office to a hand off point within the BellSouth network.

Q. Will BellSouth provide the requested Network Element?

A. Yes, however, this capability is available now and should not be considered part of loop unbundling. Loop feeder facilities can be purchased as tariffed services. The following describes the existing tariffed offerings:

1. The capabilities sought by AT&T do not request unbundling, but rather a service already provided in BellSouth's Special Access Tariffs.

2. These facilities may be provided as at present via Special Access Tariffs.

3. BellSouth will provide connections, consisting of DS-0 or DS-1 level service, from its central office to a premises site designated by an ALEC.

4. ALEC premises can be either an ALEC cross box or another appropriate termination point.

5. In any event, however, the termination point must allow for the location of an appropriate network demarcation and any required NIDs.

6. The demarcation point and NIDs used will vary based on the type of service.

7. This transport will consist of the feeder from the BellSouth central office to the termination point. If the connection is to an ALEC owned cross box, BellSouth will place and assign the pairs in this "tie cable" facility between the BellSouth cross box and the ALEC cross box.

8. BellSouth will generate and provide to the ALEC a Design Layout Record (DLR) as part of the provisioning process. The cable pair assignment will be under BellSouth assignment control and the actual pair(s) used will be indicated in the DLR.

Attachment WKM-10 shows a typical special access circuit that provides the same functionality requested by AT&T as the unbundled network element "Loop Feeder".

Combination of Loop Concentrator/Multiplexer with Loop Feeder

Q. Please define the requested Network Element.

A. This element is a bundled combination of the previously described Loop Feeder and Loop Concentrator/Multiplexer.

Q. What is your understanding of how AT&T intends to use this Network Element?

A. This combination of elements equates to the feeder provided by a carrier system. AT&T wants two unbundled elements, feeder and concentration, put together to form one element. This element is equivalent to a carrier system with concentration.

Q. Will BellSouth provide the requested Network Element?

A. Yes. BellSouth can supply feeder facilities under existing tariffs however BellSouth does not guarantee a particular level of loop concentration (concentration ratio) will be achieved. Attachment WKM-10 shows a typical special access circuit that provides the same functionality requested by AT&T as the unbundled network element "Combination of Loop Concentrator/Multiplexer with Loop Feeder".

Q. Why is BellSouth not able to guarantee a particular level of loop concentration?

A. BellSouth cannot administer a carrier system in this manner for the following reasons:

1. This would necessitate making a concentration ratio part of the service. As used here, the term concentration ratio refers to the ratio of the quantity of loops to be concentrated (on the input stage of the carrier system) to the quantity of transmission paths or channels in the transmission media (in the output stage of the carrier system). Concentration ratios are set and administered based on call volume. As the call volume increases, the concentration ratio decreases towards a one-to-one relationship. BellSouth's tariffs do not make assurances of which concentration ratios that will be used in particular cases. For example, the tariffs do not separately address one party

residential flat rate service (1FR) as being carried over DLC (where there is no concentration) versus 1FR service provided via DLC with a variety of possible concentration ratios.

2. Facility assignments such as LFACS are not driven by concentration ratios. To set up a system to guarantee a certain concentration ratio would make that system dedicated to that ALEC.

3. Making guarantees of concentration ratio would lock in the type of technology (and concentration ratios) for which the DLC system was initially designed. It would be very difficult at some future date to change technologies or to change concentration ratios. Each and every DLC technology choice would require a unique design making the migration from one to the other difficult.

Local Switching

Q. Please define the Network Element Local Switching.

A. Local Switching is the Network Element that provides the functionality required to connect the appropriate originating lines or trunks wired to the Main Distributing Frame (MDF) or to the Digital Cross Connect (DSX) panel to a desired terminating line or trunk. The functionality is

often referred to as the unbundled network element "switch port". The functionality includes all of the features, functions, and capabilities that the switch is capable of providing for the given class of service, including but not limited to: line signaling and signaling software, digit reception, dialed number translations, call screening, routing, recording, call supervision, dial tone, switching, telephone number provisioning, announcements, carrier pre-subscription (for example, long distance company intraLATA toll), testing and other operational features inherent to the switch and switch software. It provides access to capabilities such as calling features and capabilities (including call processing), Centrex and Automatic Call Distributor (ACD). It also provides access to transport, signaling (ISDN User Part or ISUP) and Transaction Capabilities Application Part (TCAP), and platforms such as adjuncts, Public Safety Systems (911), BellSouth operator services, BellSouth directory services, BellSouth repair service and Advanced Intelligent Network (AIN) services. BellSouth will clearly provide local switching as an unbundled network element.

Q. Will BellSouth provide unbundled switching as defined above?

A. Yes.

Q. Is there a difference between what BellSouth will provide as unbundled local switching and AT&T's request for unbundled local switching?

A. Yes. AT&T has created considerable confusion by requesting that the local switching capability be made available both as an unbundled network element and as a separate element of total service resale. What AT&T defines as "local switching" is more appropriately referred to as "selective routing". AT&T requested that the Commission order BellSouth to provide selective routing arrangements that will enable an end-user (for which AT&T acquires service from BellSouth at wholesale and resells at retail) to reach an AT&T operator platform just as a BellSouth customer can reach a BellSouth operator service or repair service platform today (i.e., through dialing 0, 411 or 611). AT&T has further attempted to confuse this Commission by defining three other unbundled network elements (operator systems, dedicated transport and common transport) as having the selective routing capability. BellSouth will offer all three capabilities (operator and directory services, dedicated transport and common transport) on an unbundled basis, however, when BellSouth provides local switching it is not technically feasible for it to allow selective routing to similar non-BellSouth functions. Further, BellSouth believes it is not appropriate to provide such selective routing when requested as a modification to a resold local exchange service.

Q. Please describe the capability that AT&T has defined as unbundled local switching.

A. Fundamentally, AT&T requests that for certain calls (for example, those calls destined for an operator services or repair service platform) a determination be made during call set-up of whose customer (AT&T's end user or BellSouth's end user) is dialing the call and to make a selection of outgoing trunk group accordingly. This implies that:

1. Billing records (or some surrogate for billing records) would be accessed by the switch.

2. A determination of account control would be made (that is, "AT&T end user" or "BellSouth end user").

3. This information would be used by the switch to properly select a trunk group to AT&T's operator services platform or to BellSouth's operator services platform based on that account control indicator.

Q. Why is BellSouth not able to provide the requested unbundled Network Element?

A. First of all, the selective routing functionality does not exist. This request is not a legitimate request for unbundling. The ability to selectively route calls to termination points specified by resellers (differing from BellSouth designated points) would be a <u>new</u> capability. BellSouth made inquiries of two switching equipment manufacturers

(Lucent Technologies and Nortel) regarding the current capabilities of their flagship switching products. Responses from those manufacturers are attached as Attachment WKM-11. Lucent Technologies responded that "This feature, Alternate Local Exchange Routing Capability or Third PIC, is not currently available on the 5ESS switch." Similarly, Nortel responded that "Currently Nortel's DMS10 and DMS100 Switching Systems do not have the requested capability as outlined in you Request For Feature BSO000403, SFIS #30863."

Second, an insurmountable complication arises because AT&T desires that its customers dial the same telephone numbers to reach its operator services or repair service (0-, 411 and 611) and have the telephone switching network somehow determine whose customer (that is AT&T's end user or BellSouth's end user) is dialing the call.

Q. Please describe BellSouth's analysis of exiting capabilities of its switches regarding provision of selective routing?

A. BellSouth analyzed the technical feasibility of four alternatives for the capability of providing selective routing of AT&T customers to AT&T operator service platforms. Not one of the four alternatives accommodate the selective routing that AT&T has requested. The following four alternative serving arrangements were analyzed:

- Use of Line Class Codes (LCCs).

- Use of switching system translations capabilities to create individual dialing plans.
- Use of AIN capabilities to provide selective routing.
- Use of other switch-based capabilities to provide selective routing.

Line Class Codes (LCCs)

Q. Please discuss BellSouth's evaluation of the Line Class Code alternative.

A. In order to terminate the same dialed digits to multiple destinations, the originating switching system must have the intelligence to determine the desired routing. BellSouth has had discussions with several ALECs (including AT&T) who have stated their intent to resale most or all classes of service that BellSouth currently offers. Routing to a different reseller's location based on the same dialed digits would require BellSouth to duplicate every resold class of service in a given end office for every reseller. Correspondingly, these new classes of service would each require a unique LCC to be assigned. However, there is a finite number of LCCs codes available.

The table in Attachment WKM-12 shows LCC capacity in the various switch types used in BellSouth's network in Florida. Discussions with Lucent Technologies suggested that their technical reference

documents were in error regarding the stated LCC capacity for the 5ESS and that the capacity might be nominally higher. Lucent Technologies was not willing, however, to confirm a different LCC capacity than as shown in the latest version of their technical reference documents. Even with the presumed higher LCC capacity for 5ESS, no material difference in BellSouth's conclusion would result regarding the infeasibility of using LCCs to achieve selective routing.

Q. Please describe the parameters of BellSouth's evaluation of the LCC alternative.

A. The study parameters include the following:

1. Counts of LCCs in service were taken during July and August 1995. No growth of LCCs in service was assumed except for completion of deployment of the Call Authorization Management[SM] (CAM) capability. As a result, true case will be worse than as calculated and depicted without the inclusion of growth for LCCs used.

2. LCC capacities for specific switch types were set at the maximum known capability. These maximum levels are the greater of currently installed capacities or, as in the case of the Nortel DMS-100, announced LCC capacity levels. Apart from

these assumed levels of LCC capacity, BellSouth is not aware of other augmentations either planned or under development.

3. The measurement mechanism used could not count LCCs actually in service above the level of 1000 due to a restriction of the register size. This situation is limited to the case of the Lucent Technologies 5ESS switches. As a result, the true case is actually worse than depicted for three (3) of the 56 5ESS switches in which the counts were taken.

4. Counts were taken in 102 switches of the following types

- Lucent Technologies 1AESS (6 of 32)
- Lucent Technologies 5ESS (56 of 58)
- Nortel DMS-100 (40 of 41)

The 1AESS switches have not been equipped for Mechanized Translations System (MTS) given the replacement strategy for this switch type. At present, BellSouth has a total of 131 of the switch types listed above in its network in Florida. Thus the sampled rate of this universe is 78%.

The table in Attachment WKM-13 shows the results of BellSouth's study. The percentages shown are the proportions of installed switches that are not capable of providing the selective routing requested by AT&T.

Q. Please describe BellSouth's conclusions regarding the use of LCCs to accommodate selective routing.

A. The obvious conclusions that may be drawn from the information in the table above include the following:

- Use of LCCs as a method of providing selective routing in the resale environment only 'works' for BellSouth plus one ALEC (that is, AT&T) in 76% of the switches in BellSouth's network in Florida (100% - 24%). Such a limited capability will produce widespread confusion if the Commission orders BellSouth to provide the capability because customers served by certain switches would have their calls routed differently than customers served by other switches.

- In the robust, competitive environment that BellSouth expects to operate, most or all companies would demand similar treatment of calls from their resold customers to their own branded operators. Virtually all of BellSouth's switches would be exhausted (82%) in the likely 'real world' scenario of BellSouth competing with five (5) or more ALECs in the near future. BellSouth expects to face at least eight (8) competitors in major markets in Florida. With BellSouth and eight ALEC competitors none of BellSouth's switches in Florida could accommodate the

selective routing capability. All of these switches would reach exhaustion based on LCC utilization.

- Since entire communities are often served by a single switch, for those switches exhausted by LCCs, selective routing capability would not be available.

- LCCs are used for a variety of purposes including the creation of new local serving areas and new services. To cause the premature exhaust of LCC capacity simply to allow AT&T (but not other companies) a marketing advantage would be done at the expense of BellSouth's nót being able to introduce new products, services or dialing patterns. It is in the public interest to deny AT&T's request for this type of switching capability and to have BellSouth continue the stream of new products and services so customers can have more choices, rather than less, in the new competitive environment. Until the switch vendors, such as Nortel and Lucent Technologies, can provide additional capabilities or features to accommodate selective routing, selective routing based on use of LCCs should not be an option.

- To cause the premature exhaust of LCCs would preclude the possibility in some cases of adding remote switches to an existing host switch. In such a case, significant extra cost would be incurred by BellSouth to deploy a stand-alone or host switch

when a simple remote switch could be provisioned. Further, some existing host/remote arrangements would have to be modified such that the remote switches would need to be upgraded to host switches, again with considerable expense to BellSouth.

Q. Please summarize BellSouth's position on the use of LCCs to accommodate selective routing.

A. BellSouth's analysis demonstrates that the use of LCC is not a technically feasible alternative given that:

1. This solution only 'works' for BellSouth and AT&T in the 5ESS and DMS-100 switches. No development work is planned for the Lucent Technologies 1AESS or 2BESS switches to expand LCC capacity since these switch types are being steadily replaced.

2. BellSouth expects at least eight (8) competitors in major markets in Florida who would demand equal treatment. This selective routing solution used for all eight competitors could be accommodated in none of BellSouth's 1AESS, 5ESS and DMS-100 switches (100% switch exhaust based on LCC consumption).

Switch Translations Capabilities

Q. Please discuss BellSouth's findings regarding the use of switch translations capabilities to accommodate selective routing.

A. BellSouth's analysis of the use of switch translation capabilities to create individual dialing plans likewise requires the duplication of existing LCCs. Due to this dependence on LCCs to implement the use of switching translation capabilities, the use of translations capabilities is also not technically feasible. BellSouth is aware of no technically feasible means of using switch translations capabilities to create the selective routing capability in a resale environment as requested by AT&T.

A second translations capability that was examined in terms of its ability to accommodate AT&T's request is the use of certain code conversion tables. The code conversion provides the capability to associate directory assistance, repair service and 911 services to a particular telephone number. The problem with this solution is that the code conversion works on a rate area basis. In other words, all customers in a particular rate area will be routed to the individual destinations for each the above services, as designated in the code conversion form. Code conversion could not be performed on an individual customer basis.

Q. Are there other technical limitations to using switch translations capabilities to accommodate selective routing?

A. Yes. Even if the technical limitations described earlier could be overcome, there are other switch resources that would become limiting factors in each switch technology.

BellSouth analyzed the use of each of these other switch resources and concludes that such use is neither practical nor technically feasible. The switch resources analyzed include:

- Digit prefixing and deleting
- Screening Indices
- Directory assistance trunk group capacity
- Rate centers'

Q. Please discuss the technical limitations of using digit deleting and prefixing.

A. AT&T requested that certain calls (that is, calls dialed as "411" and "611") be converted to 10-digit numbers and delivered to AT&T for routing through its network. Delivering calls via selective routing as requested by AT&T, would require deleting and prefixing digits (that is, for example, delete "411" and prefix the 10-digit number). The Lucent Technologies 5ESS and 1AESS switching systems can not delete and

prefix digits with equal access signaling on Signaling System 7 (SS7) trunks. With traditional signaling on Multifrequency (MF) trunks, the 1AESS can only delete and prefix seven (7) digits.

Q. Please discuss the technical limitations of using screening indices.

A. Screening indices are resources that are used to minimize translations required by serving as standard pre-translators in the Nortel DMS-100 or Digit Analysis Selectors (DAS) in the Lucent Technologies 5ESS. In most cases, these resources are even more limited, and thereby, more restrictive, than the LCCs.

Q. Please discuss the technical limitations of directory assistance trunk group capacity.

A. Technical limitations include the Nortel DMS-100 capacity of 16 routes for 411. At present, four of the 16 are in use. Replication would be required for each company that wanted its own selective routing pattern so only four (4) companies (including BellSouth) could have the selective routing capability for its customers. Other companies would not be able to offer selective routing to their customers, thereby creating a potential discrimination issue between competing service providers.

Q. Please discuss the technical limitations of switch translations rate centers.

A. Routing 0- traffic in the 5ESS or the DMS-100 on a selective routing basis would require a different rate center to be created for each service provider. Here again, based on switch type, rate center capacities range from 64 to 255. Implementing selective routing using unique rate centers would require that separate rate centers be established for each company. This solution would be even more limiting than the use of LCCs. Additionally, this alternative suffers from being significantly more complex than the LCC scenario.

Q. Please summarize BellSouth's conclusions regarding the technical feasibility of using switch translations capabilities to accommodate selective routing.

A. BellSouth's analysis demonstrates forcefully that the use of existing translations capabilities to effect the selective routing that AT&T has requested is not technically feasible.

Advanced Intelligent Network (Ain) Capabilities

Q. Please discuss BellSouth's findings regarding the use of AIN capabilities to accommodate selective routing.

A. BellSouth does not currently have an AIN capability that will provide the selective routing capability that AT&T has requested. Further study is required to determine if a new AIN capability could provide such a functionality in the BellSouth switches that are AIN equipped (that is, 5ESS and DMS-100 offices that are equipped for AIN Release 0.1). BellSouth asserts that the use of existing AIN capabilities to effect the selective routing that AT&T has requested is not technically feasible.

Q. Please discuss BellSouth's findings regarding the use of other switch based capabilities to accommodate selective routing.

A. The capability to provide a selective routing capability where customer routing patterns can be determined based upon a preferred LEC indicator (rather than using LCCs, switch translations capabilities or AIN capabilities as discussed above) is not available in any end office switch in BellSouth today.

Bell Communications Research (Bellcore) at present supports a preferred carrier indicator only for calls bound for intraLATA carriers, interLATA carriers or international carriers. These indicators are discussed in Bellcore's Local Switching Systems Generic Requirements (LSSGR). Development would be needed to create requirements for a similar indicator for LECs. Calls originating from customers could be automatically routed to their preferred local carrier unless the customer specifies a different carrier by dialing a special

access code prefix. Again, Bellcore does not at present support a preferred carrier indicator feature for LECs.

For these reasons, the use of other existing switch based capabilities to effect the selective routing that AT&T has requested is not technically feasible.

Q. Please summarize BellSouth's position on the technical feasibility of selective routing using existing switch resources and capabilities.

A. The capability for selective routing based on account control does not at present exist, nor could it be constructed with existing switch based or AIN based capabilities.

Q. Does BellSouth believe that it is appropriate to combine the use of unbundled network elements with resale of total service?

A. No. AT&T's suggestion that the Commission order BellSouth to provide this selective routing in the total service resale environment confuses the clearly distinct subjects of resale and unbundling. AT&T argued that it, and perhaps other resellers, wanted to provide their own operator services where, for example, they resold BellSouth's 1FR or 1FB service. If AT&T wishes to purchase unbundled loops from BellSouth and to use its own operators to service its customers, that is AT&T's option. However, the term "resale" seems pretty simple to

understand. If AT&T wants to resell BellSouth's 1FR service, it has to resell that service, with its abilities and limitations. It cannot disassemble the service to suit its own notion of what it wants and claim to be reselling the service.

Q. Please compare serving arrangements in the resale environment compared to the facilities based interconnection environment.

A. In the resale environment, the resold service includes routing of traffic to directory assistance, operator services and repair services delivered to BellSouth specified termination points. These termination points are the same for BellSouth end user customers as well as for the end user customers of all resellers.

By comparison, in the facilities based interconnection environment, calls can be delivered to BellSouth operator services platforms (or Alternate Operator Services platforms) over dedicated trunk groups from AT&T switches. For example, AT&T could acquire unbundled loops from BellSouth, transport those loops to an AT&T switch and then deliver 0- or 411 traffic to either its own or BellSouth's operator services platform. Since the traffic arrives over discrete rather than common trunk groups, BellSouth's operator services platforms could differentiate calls from AT&T customers reaching the BellSouth platform from the calls of BellSouth customers reaching that same platform. If AT&T desired that BellSouth brand incoming calls to

BellSouth's operators, then, at a minimum, additional cost would be incurred by BellSouth for development of this new service.

Q. Could a facilities based company use some of BellSouth's unbundled network elements in conjunction with its own elements to achieve the functionality that AT&T desires?

A. Yes. For example, AT&T could acquire unbundled loops from BellSouth, transport those loops to an AT&T switch and then deliver 0- or 411 traffic to either its own or BellSouth's operator services platform. Since the traffic arrives over discrete rather than common trunk groups, BellSouth's operator services platforms could differentiate calls from AT&T customers reaching the BellSouth platform from the calls of BellSouth customers reaching that same platform. However, if AT&T desired that BellSouth brand incoming calls to BellSouth's operators, then, at a minimum, additional cost would be incurred by BellSouth for development of this new service.

Q. Please comment on any additional costs that BellSouth would incur if selective routing were somehow to become technically feasible.

A. Resale of local exchange service envisions discounts to reflect costs avoided by BellSouth. Setting technical limitations aside, selective routing of directory assistance or operator services for resellers would

generate additional, new costs for BellSouth. These costs would include the following activities:

- Switch translations changes to implement new LCCs.

- Changes to order entry systems to allow an indication of the routing treatment desired on an end user customer-by-customer basis.

- Numerous new ordering entries required to convey new LCC information into switch memory.

Operator Systems

Q. Please define the requested Network Element.

A. Operator Systems provide for access to the operator or automated call handling and billing, special services, customer telephone listings, and optional call completion services. Operator Systems provides two types of capabilities: operator services and directory services. BellSouth will offer both operator services and directory services as separate stand-alone capabilities. If AT&T wishes to use BellSouth's operator services and directory services, it must provide its own routing capability in order to reach those platforms. Presumably, this would be

accomplished by AT&T's providing its own switches to provide the routing functionality needed.

Q. What is your understanding of how AT&T intends to use the Network Element that AT&T defines as Operator Systems?

A. As in the case of the local switching AT&T has intentionally confused the technical issues. AT&T requested that the Commission order BellSouth to provide selective routing arrangements that will enable a customer (for which AT&T acquires service from BellSouth at wholesale and resells at retail) to reach an AT&T operator platform just as a BellSouth customer can reach a BellSouth operator service platform today (i.e., through dialing 0 or 411). Fundamentally, AT&T requests that for certain calls (that is, only those calls destined for an operator services or repair service platform) a determination be made during call set-up of whose customer (AT&T's end user or BellSouth's end user) is dialing the call and to make a selection of outgoing trunk group accordingly.

Q. Is this the same technical issue (selective routing) as was discussed in the local switching network element discussed earlier?

A. It is exactly the same issue. The same reasons as cited earlier as to why AT&T's request for unbundled local switching is not technically feasible are also applicable in discussing Operator Systems.

Q. What alternatives can BellSouth offer for this functionality?

A. Here again, access to operator services on a selective routing basis should not be confused with the actual provision of operator services. BellSouth will provide unbundled operator services and directory services as separate, stand-alone capabilities. In order to use the unbundled operator services and directory services that BellSouth will provide, AT&T must perform its own routing, presumably with its own switch. If AT&T chooses not to utilize BellSouth's operator services and directory services, then AT&T must make some arrangement to have its customers reach the reseller's operators.

Q. It has been suggested that, if AT&T wants its 0- or 411 calls directed to a BellSouth operator, that BellSouth put some type of indicator (a special tone or signaling sequence, for example) such that these calls may be identified and branded "AT&T". Some have described this capability as discrete signaling. Are BellSouth's switches capable of providing "discrete signaling" in this manner?

A. No. This "discrete signaling" is selective routing by yet another name. Such identification of incoming calls to BellSouth's operator service and directory service platforms is not possible except in the case where AT&T were to provide its own routing, with its own switch, and place this traffic on a separate "AT&T only" trunk group.

Dedicated Transport

Q. Please define the Network Element.

A. Dedicated Transport is an interoffice transmission path between two designated points. Dedicated Transport is used exclusively by a single company (in this case, AT&T) for the transmission of its traffic.

Q. Will BellSouth provide Dedicated Transport?

A. Yes. BellSouth will provide to ALECs, via its access tariffs, the same access services (including dedicated transport) that BellSouth now offers its access customers.

Q. Is there a difference between what BellSouth will provide as Dedicated Transport and AT&T's request for Dedicated Transport?

A. Yes. AT&T defines Dedicated Transport as an interoffice transmission path between AT&T designated points used in conjunction with a selective routing capability that would allow the switch to direct calls to a given trunk group based on who (BellSouth or AT&T) provides service to the end user. Dedicated Transport is used exclusively by a single company (in this case, AT&T) for the transmission of its traffic. Here again, the technical issue is whether BellSouth's switches are

capable of providing selective routing to determine which trunk group to select based not on what digits the customer dialed but rather on who the service provider is (BellSouth or AT&T).

Q. Is this the same technical issue, (selective routing) as was discussed in the local switching network element discussed earlier?

A. Here again, it is exactly the same issue. The same reasons as cited earlier as to why AT&T's request for unbundled local switching is not technically feasible are also applicable in discussing Dedicated Transport.

Q. Will BellSouth provide the unbundled Network Element as requested by AT&T?

A. No. For the same reasons as were cited earlier in the discussion of Local Switching, BellSouth cannot provide the unbundled Network Element as it has been defined by AT&T. BellSouth, however, will offer Dedicated Transport. Here again, this access to dedicated transport should not be confused with the actual provision of dedicated transport.

Common Transport

Q. Please define the Network Element.

A. Common Transport is an interoffice transmission path between two designated points. Common Transport is used to carry the traffic of more than a single company for the transmission of their aggregate traffic.

Q. Will BellSouth provide Common Transport?

A. Yes. BellSouth will provide to ALECs, via its restructured access tariffs, the same access services that BellSouth now offers its access customers.

Q. Is there a difference between what BellSouth will provide as Common Transport and AT&T's request for Common Transport?

A. Yes. AT&T defines Common Transport as an interoffice transmission path between AT&T designated points used in conjunction with a selective routing capability that would allow the switch to direct calls to a given trunk group based on who (BellSouth or AT&T) provides service to the end user. Common Transport is used by more than one company for the transmission of their collective traffic. As with local switching, operator systems and dedicated transport, the technical issue is whether BellSouth's switches are capable of providing selective routing to determine which trunk group to select based not on what digits the customer dialed but rather on who the service provider is.

Q. Is this the same technical issue (selective routing) as was described in the local switching network element discussed earlier?

A. Here again, it is exactly the same issue. The same reasons as cited earlier as to why AT&T's request for unbundled local switching is not technically feasible are also applicable in discussing Common Transport.

Q. Will BellSouth provide the unbundled Network Element as requested by AT&T?

A. For the same reasons as were cited earlier in the discussion of Local Switching, BellSouth cannot provide the unbundled Network Element as requested by AT&T. As in the case of local switching, operator systems and dedicated transport, this access to common transport should not be confused with the actual provision of common transport.

Advanced Intelligent Network (AIN)

Q. Please define the requested Network Element.

A. AT&T has requested unbundling of the following AIN network elements:

1. Signal Transfer Points which provide a signaling network function that, along with their associated signaling links, enable

the exchange of Signaling System 7 (SS7) messages among and between switching elements, database elements and signaling transfer point switches.

2. Service Control Points/Databases provide the functionality for storage of, access to, and manipulation of information required to offer a particular service and/or capability. A Service Control Point (SCP) is a specific type of database network element deployed in a SS7 network that executes service application logic in response to SS7 queries sent to it by a switching system also connected to the SS7 network. SCPs also provide operational interfaces to allow for provisioning, administration and maintenance of subscriber data and service application data. For example, an 800 database stores customer record data that provides information necessary to route 800 calls.

Q. Will BellSouth provide the requested unbundled Network Element?

A. No. SS7 AIN access as proposed by AT&T is not technically feasible. There are a number of functions required to support SS7 access to AIN that cannot be supported via AT&T's proposed architecture. These functions include the following:

1. Routing/Addressing. The Routing/Addressing function allows AIN messages to be routed to the appropriate AIN destination

(e.g., the third party AIN), This function requires identification of the destination AIN based on information established in the service provisioning process.

2. Protocol Interworking. Protocol Internetworking is an agreement between BellSouth and third parties regarding which protocols will be used for messages and parameters. This function provides a common syntactical basis for communication, for example, what messages to expect, the order in which messages will occur, what to do with those messages, what behavior is acceptable, what to do in the case of a syntactical error or upon receipt of a type message or value that cannot be understood.

3. Recording/Billing. The two main Recording/Billing capabilities that are needed for Open AIN are the ability to charge on a per message basis and the ability to pass billing information (e.g., correct charge number) to the switch to generate the appropriate Automatic Message Accounting (AMA)records.

4. Provisioning. The Provisioning function determines how third party service providers place orders for service on behalf of end users and how BellSouth provisions those services on the end users' lines. This function addresses how BellSouth's

operational processes, centers, and systems are set up to receive, coordinate, and work orders.

5. Security. Security functions control access to the network to determine the appropriateness of the access. Security measures are required to ensure privacy and protect proprietary information as well as ensuring high quality, reliable service.

6. Network management. This functionality provides real-time measurement and control of network traffic between network elements. The function is needed to control traffic to/from different AIN destinations so that the guaranteed traffic volume is available to each AIN destination and does not exceed provider capacity. This function is also required to monitor the use of particúlar resources, such as switch announcements.

7. Performance Management. Performance Management involves monitoring functions that generate, collect, and analyze maintenance traffic data.

8. Fault Management. This functionality includes processes between BellSouth and the Open AIN service provider for trouble detection, trouble isolation, and recovery.

9. Protocol/Message Screening. This is real-time functionality to screen AIN messages (or parameter values within messages) that are inappropriate for the service provider to send. Without this functionality, a service provider could turn off a competitor's trigger, charge calls to inappropriate numbers, etc.

10. Feature Interaction Management. Feature Interaction Management includes the procedures and capabilities to manage interactions between multiple services to which the end user may subscribe. Feature interactions may apply between multiple AIN services on a line, or between an AIN service and a switch-based feature (e.g., custom calling).

Q. What does BellSouth propose to allow the AIN access requested by AT&T?

A. BellSouth is investigating a means of supporting the functions required to support SS7 access to AIN via a mediation device which BellSouth refers to as the Open Network Access Point (ONAP). The ONAP would provide an alternative SS7 access to AIN that would enable third parties to create and implement the same services as would AT&T's proposed architecture for SS7 AIN Access.

Because neither the ONAP nor the functions required to support SS7 access to AIN exist in the network today, SS7 access to AIN via the ONAP is not technically feasible today.

Q. What new functionality is needed to overcome the Routing/addressing limitations?

A. The capability exists today to route based on Translation Type. However, Translation Types are a limited resource. In an environment in which the goal is as many AIN Service Providers supported as possible, there will be too many service providers for each to have a unique Translation Type. Therefore routing -- specifically, identifying the correct service provider to which to route the call – in this environment will require network capabilities which do not exist today.

Q. What new functionality is needed to overcome the Protocol Interworking limitations?

A. Existing protocols (AIN 0.1 and SS7/TCAP/ISUP) should be used for Open AIN interworking. It is important to note that protocol interworking addresses the protocol to be passed, but not the appropriateness of the values or messages for a given service provider. So, while no new protocols are required for Open AIN, there does exist a need for protocol/message screening functions that do not exist today.

Q. What new functionality is needed to overcome the Recording/billing limitations?

A. Presently it is completely appropriate in the TCAP protocol for the SCP to omit AMA parameters or to populate them with any values. Without the mediation point to validate responses, a third party could avoid billing or could cause billing to be assigned to the wrong accounts.

If BellSouth wants to charge service providers on a per query basis, and/or charge differently for different types of messages, network functionality is needed to record, in real time, the data necessary to bill each service provider. There are no existing network capabilities that fulfill this function.

Q. What new functionality is needed to overcome the Provisioning limitations?

A. Existing provisioning functions are not designed to support a multiple service provider Open AIN environment. BellSouth's experience with Carrier Identification Code (CIC) "slamming" indicates that a process is required to properly protect end users and third parties from similar practices in Open AIN. The Open AIN provisioning function must equip the network with the ability to allow service providers to control their own services and service specific customer data while ensuring that service providers and their service specific customer data remain

properly partitioned from one another. Additionally, the provisioning function may include features such as electronic ordering in lieu of the manual process of having to place a phone call to BellSouth.

Q. What new functionality is needed to overcome the Security limitations?

A. Security measures are an important part of many of the required mediation functions. Without the proper security functionality, a third party SCP connected directly to a BellSouth switch would have numerous opportunities to engage in fraudulent practices.

Q. Please give examples of such fraudulent practices.

A. The third party could activate/deactivate any trigger on the switch. This would mean that any third party who is interconnected in this manner could turn on or off services that are provided by another third party or by BellSouth.

The third party could control CIC codes on a real-time basis. This would permit a third party who provides an AIN service to an end user to override that end user's presubscribed interexchange carrier (IXC) without the end user's knowledge or consent.

The third party could modify parameters such as Charge Number, resulting in billing fraud.

The third party could send concentrated traffic to a competing service provider's route index in order to create congestion at the competitor's location, resulting in denial of service.

Q. What new functionality is needed to overcome the Network Management limitations?

A. The network as it exists today has limited capabilities to control traffic among multiple interconnected networks. For example, Automatic Code Gapping (ACG) is used to control overloads in AIN. If an SCP becomes overloaded, it will send ACG messages to the appropriate Service Switching Points (SSPs) requesting that the SSPs discontinue sending queries that originate from certain NPA-NXXs. An SSP cannot determine that it should control queries to only one service provider's SCP and let queries continue to originate to other SCPs. Instead, once ACG is invoked, the SSP will inhibit *all* messages that originate in the affected NPA-NXXs, and all service providers' services may be impacted.

Q. What new functionality is needed to overcome the Provisioning limitations?

A. The ability to measure and analyze maintenance traffic data on a per service provider basis does not exist today.

Q. What new functionality is needed to overcome the Fault Management limitations?

A. Although BellSouth currently has internal procedures for trouble detection, trouble isolation, and recovery, no procedures exist for performing these functions in the Open AIN environment with multiple third parties. Open AIN trouble resolution procedures are needed (e.g., who is the customer's first point of contact, how do the forces in each company contact one another to isolate troubles, etc.).

Q. What new functionality is needed to overcome the Protocol/message screening limitations?

A. Network capabilities exist today to identify protocol errors, such as inappropriate response messages, or a message being formatted incorrectly, but these capabilities are based on, and are limited to, what is conformant to the protocol. What does not exist today in the network is the capability to identify messages (or parameter values within messages) that conform to the protocol, but are capable of causing harm in the network.

An example is sending a route index value that does not match the value that BellSouth has provisioned for the service provider. Such a message would be correct and conform from a protocol perspective so

no existing capabilities would catch this. At worst, this could result in switches crashing, or trunks associated with the incorrect route index taken out of service. These trunks could be associated with other BellSouth access customers.

BellSouth uses and maintains route index values in its normal installation and maintenance processes. Presently these values are not distributed, coordinated or verified with outside organizations. A mediation point can be used to map the route index parameter values from the third party to values reflected in the BellSouth network. To support this parameter without mediation, BellSouth would have to make substantial changes to BellSouth's procedures. This is costly and error prone. Without a mediation point validating or mapping route index values there is a high probability of frequent service failures and the opportunity for deliberate or accidental denial of service, misuse of facilities and fraud.

Also, without new screening capabilities it would be possible for one third party to turn off the triggers for any subscriber line, including ones using another third party's services.

Q. What new functionality is needed to overcome the Feature Interaction Management limitations?

A. An example of a feature interaction is the conflict that can arise when an end user is subscribed to both AIN services and custom calling services that depend on Calling Party Number (CPN). The SCP has the ability to control the value of the CPN. If a third party's SCP were to alter the CPN from that of the originating caller, and then terminate the call to an end user who has subscribed to certain custom calling features, the custom calling features would not operate as designed. For instance, if the end user is subscribed to a calling number or calling name delivery service, the incorrect number/name would be presented. If the end user attempted to invoke a call return-type service, the call would not be returned to the intended caller.

Feature interactions could be reduced or eliminated in non-real-time by severely restricting the combinations of services that may be provisioned on an end user's line; however, this kind of restriction is highly undesirable. For the CPN example, a preferred alternative would be to provide a real-time screening mechanism that could restrict messages in which manipulation of CPN has occurred.

Q. Could BellSouth's concerns be satisfied through certification and contractual agreements?

A. No. Certification only validates a system at a single point in time. Once a system completes certification it begins evolving over time. Program changes will occur in the platforms and applications. The data

used by those programs will also change. The third party service provider will want the ability to make changes as often as is necessary to respond to market demand and innovation.

Each of these updates increases the likelihood that a significant failure will occur. Most of the highly publicized network failures over the past few years have occurred following a program update which introduced new problems.

No certification program can re-certify every software update. To attempt to do so would be costly and cumbersome for both the third party service provider and for BellSouth. Also, in the competitive environment of Open AIN, a third party service provider will not want BellSouth to know that a new service is being created until they start marketing it.

Certification also will not address the failures that can occur due to provisioning errors.

Thus, certification should be viewed as a supplement to, rather than a replacement for, real-time mediation.

Q. Please cite an example of how certification alone would not provide adequate safeguards.

A. During the provisioning process, BellSouth and a third party agree to certify allowable route index values. After the service is implemented, the third party begins sending a route index value that does not match the value that BellSouth has provisioned for them. Because such a message would be correct and conform from a protocol perspective, no existing capabilities would catch this. At worst, this could result in switches crashing, or trunks associated with the incorrect route index being taken out of service. These trunks could be associated with other BellSouth access customers. Only real-time mediation can adequately screen out improper parameter values such as route index.

Q. Please summarize BellSouth's position on the technical feasibility of unbundled AIN access.

A. Access to AIN network elements is not technically feasible. BellSouth has identified ten different functions required to support unbundled access to AIN that currently cannot be supported. Even with the development of this new functionality, mediated access to AIN elements will still be required. The mechanism for mediated access (the Open Network Access Point) has likewise not yet been developed.

Rights of Way (ROW), Conduits and Pole Attachments

Q. Please define AT&T's request.

A. AT&T has requested access to ROW, conduits, pole attachments and any other pathways.

Q. Will BellSouth provide the requested unbundled Network Element?

A. Yes.

Q. Are there procedural issues on which BellSouth and AT&T have not agreed?

A. Yes. I will discuss two such issues. The first refers to the amount of space in conduits or on poles that BellSouth should be allowed to reserve for its own uses. The second issue refers to the proprietary nature of certain records of conduits and poles.

Q. Please discuss BellSouth's position regarding the amount of space in conduits or poles it should be allowed to reserve for its own uses.

A. BellSouth's position is that it is entitled to reserve in advance five year's worth of capacity for itself. BellSouth has agreed to provide AT&T equal and non-discriminatory access to poles, duct, conduit (excluding maintenance spares), entrance facilities, ROW under its control and not required by BellSouth in its 5-year forecast. Such equal and non-discriminatory access shall be on terms and conditions equal to that provided by BellSouth to itself or to any other party. Such access shall

not include BellSouth's maintenance spares, nor shall it include mandatory conveyance of interest in real property involving third parties.

Q. What has AT&T proposed regarding the amount of conduit or pole capacity that BellSouth should be entitled to reserve for its own uses?

A. AT&T has requested that BellSouth reduce its allocation to one year's requirement.

Q. Does BellSouth agree with AT&T that BellSouth's reserved conduit and pole capacity should be reduced to that required for one year?

A. No. BellSouth's planning and construction program is forecast for five (5) years for budgeting, growth forecasting and construction program planning. This is reviewed annually and revised appropriately. This planning window reflects long held industry practices that pre-date the 1984 Divestiture. In negotiations, AT&T admits that they use the same five year standard with annual updates. Foregoing BellSouth's five year planning cycle will have adverse budget and growth impacts.

AT&T has requested access to any available structure space, including BellSouth's maintenance spares not used within twelve months. BellSouth refuses to give access to its maintenance spare at any time. Reserving a maintenance spare is another standard

telecommunications industry practice. A spare cell is reserved for emergency restoration situations, testing new cables, etc. Extensive delays in service restoration will be experienced if the maintenance spare is forfeited.

BellSouth has no way of guaranteeing the maintenance needs for its emergency cell for only twelve months after AT&T's request for occupancy. AT&T had readily admitted during negotiations that they, too, retain a maintenance spare in their own structures for their emergency needs and would not be willing to allow it to be used by other utilities.

AT&T has not requested the reservation of one year's capacity for AT&T's needs. BellSouth's response would be, however, that BellSouth will provide available space on a first come, first served basis under the terms and conditions outlined above. This could result in needless expenditures for construction (materials and labor) of facilities that may or may not ultimately be used. Also, it would imply that BellSouth would be required to physically monitor any space that AT&T has reserved to make sure that no other company attached in that reserved space. The 1996 Telecommunications Act does not require BellSouth to reserve space for ALECs in these facilities for future ALEC needs.

Q. Will BellSouth provide the conduit and pole engineering records requested by AT&T?

A. No. The 1996 Telecommunications Act does not require BellSouth to provide copies of BellSouth's engineering records referred to as "plats". BellSouth has agreed to provide AT&T with structure occupancy information regarding conduits, poles, and other right-of-way requested by AT&T within a reasonable time frame. BellSouth will allow designated AT&T personnel, or agents acting on behalf of AT&T, to examine engineering records or drawings pertaining to such requests that BellSouth determines would be reasonably necessary to complete the job. In negotiations, AT&T has said it has been satisfied with BellSouth's coordination and cooperation on structure access situations. Additionally, in negotiations AT&T said that it would not be willing to give BellSouth copies of their plats in a reverse situation. Plats and detailed engineering records are considered proprietary information. If BellSouth were to provide plats and engineering records to AT&T, BellSouth would be obligated to provide these types of records to all parties upon request.

Q. Please summarize your testimony.

A. BellSouth has demonstrated that for three network elements (NID, Distribution Media and Concentrator/Multiplexer) there is no technically feasible method of providing the access that AT&T has requested given

existing capabilities in the operations support systems used to assign and inventory network facilities. Until such time as these operations systems are enhanced to allow such automatic assignment and inventorying, intensive manual intrusions into the assignment and inventory systems would be required which would lead to unreliable records as well as costly, inefficient provisioning maintenance processes and procedures.

In the case of four other elements (Local Switching, Operator Systems, Dedicated Transport and Common Transport) BellSouth will provide the capability. There is, however, using available network resources and capabilities, no technically feasible method of providing the selective routing capability in the "real world" of multiple local exchange companies who would each demand the same capabilities. The issue of selective routing is not limited to Florida but is instead an industry limitation, national in scope. Any technical solution must work in a variety of situations with a variety of service providers and their variety of equipment and their variety of network configurations. It is BellSouth's understanding is that AT&T has proposed this issue to the Industry Carriers Compatibility Forum (ICCF) for resolution. BellSouth agrees with AT&T that a national forum such as the Industry Carriers Compatibility Forum is the vehicle which has the necessary expertise to successfully resolve this complex issue. The Commission should defer this issue to the ICCF for resolution.

In the case of one network element (Loop Feeder) BellSouth has shown that the functionality requested by AT&T may be obtained via BellSouth's existing tariffs without the need for network unbundling.

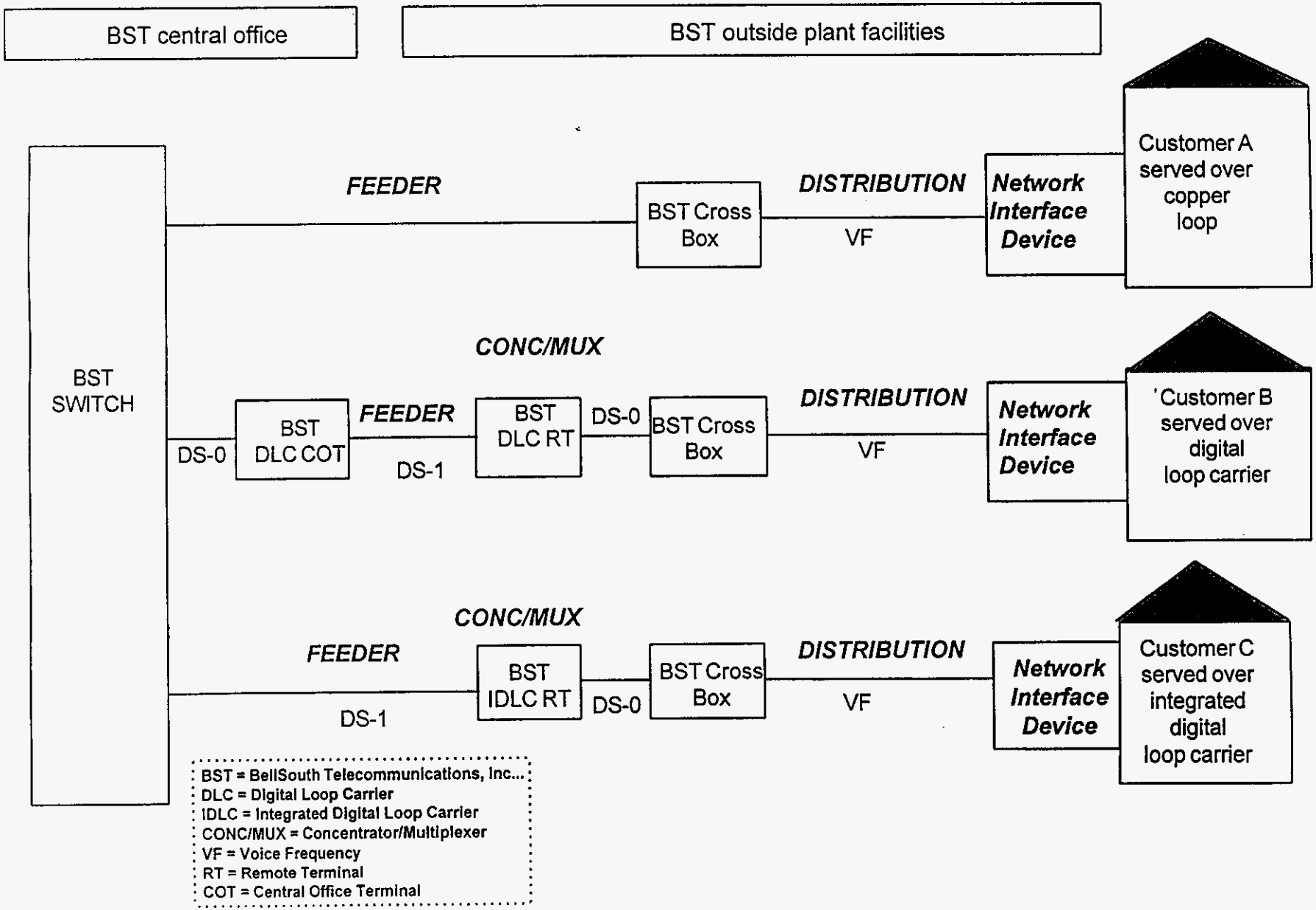
BellSouth has demonstrated that access to AIN network elements is not technically feasible. BellSouth has identified ten different functions required to support unbundled access to AIN that currently cannot be supported. Even with the development of this new functionality, mediated access to AIN elements will still be required. The mechanism for mediated access (the Open Network Access Point) has likewise not yet been developed.

Q. Does this conclude your testimony?

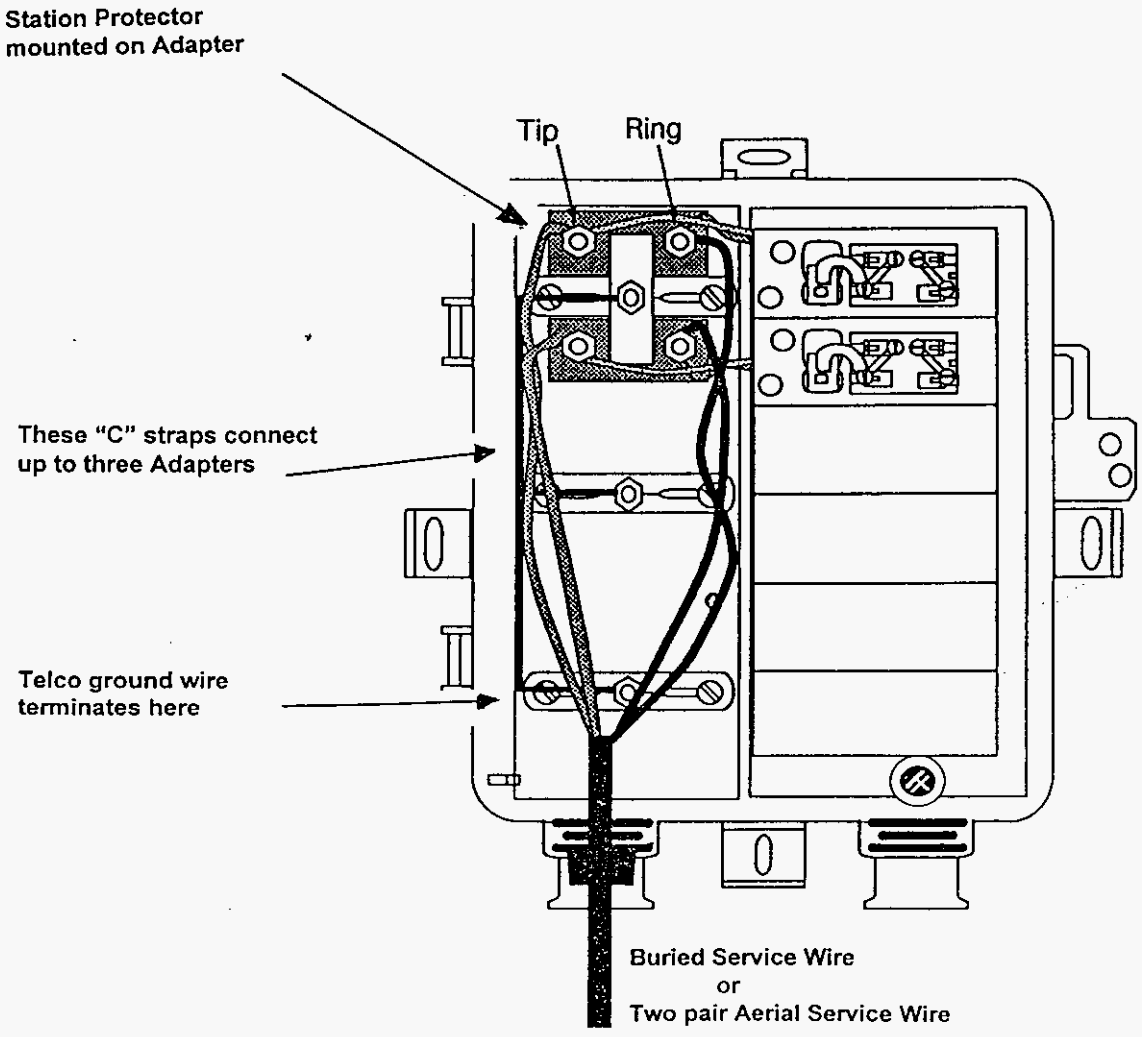
A. Yes.

INDEX OF ATTACHMENTS

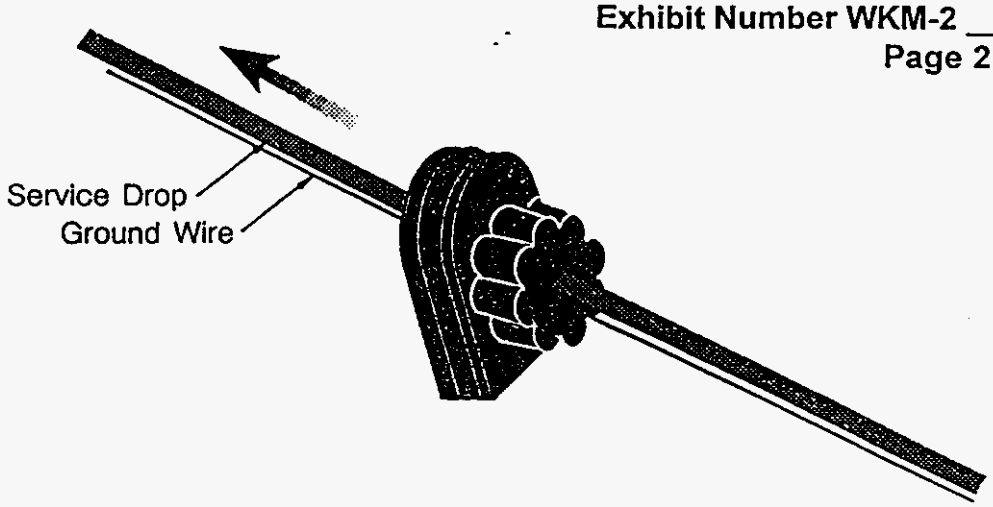
Loop elements



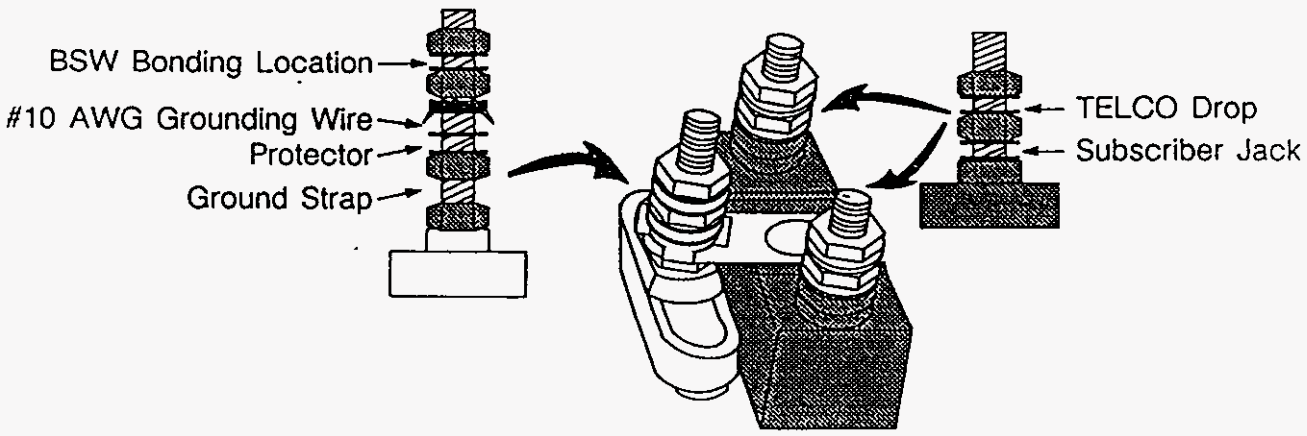
Functional schematic of Network Interface Device



TELCO PAIR PROTECTOR WIRING



TELCO EXTERNAL WIRE ENTRANCE GROMMET
SERVICE DROP INSTALLATION



GROUND WIRE TERMINATION

Pertinent section of National Electrical Code relating to grounding of Network Interface Device

extend circuits to a building from a cable having a grounded metallic sheath. Raceways or bushings shall slope upward from the outside or, where this cannot be done, drip loops shall be formed in the communications wires and cables immediately before they enter the building.

Raceways shall be equipped with an approved service head. More than one communications wire and cable shall be permitted to enter through a single raceway or bushing. Conduits or other metal raceways located ahead of the primary protector shall be grounded.

800-13. Lightning Conductors. Where practicable, a separation of at least 6 ft (1.83 m) shall be maintained between open conductors of communications systems on buildings and lightning conductors.

C. Protection

800-30. Protective Devices.

(a) Application. A listed primary protector shall be provided on each circuit run partly or entirely in aerial wire or aerial cable not confined within a block. Also, a listed primary protector shall be provided on each circuit, aerial or underground, so located within the block containing the building served as to be exposed to accidental contact with electric light or power conductors operating at over 300 volts to ground. In addition, where there exists a lightning exposure, each interbuilding circuit on a premises shall be protected by a listed primary protector at each end of the interbuilding circuit. Installation of primary protectors shall also comply with Section 110-3(b).

(FPN No. 1): The word "block" as used in this article means a square or portion of a city, town, or village enclosed by streets and including the alleys so enclosed, but not any street. The word "premises" as used in this article means the land and buildings of a user located on the user side of the utility-user network point of demarcation.

(FPN No. 2): The word "exposed" as used in this article means that the circuit is in such a position that, in case of failure of supports or insulation, contact with another circuit may result.

(FPN No. 3): On a circuit not exposed to accidental contact with power conductors, providing a listed primary protector in accordance with this article will help protect against other hazards, such as lightning and above-normal voltages induced by fault currents on power circuits in proximity to the communications circuit.

(FPN No. 4): Interbuilding circuits are considered to have a lightning exposure unless one or more of the following conditions exist:

1. Circuits in large metropolitan areas where buildings are close together and sufficiently high to intercept lightning.
2. Interbuilding cable runs of 140 ft (42.7 m) or less, directly buried or in underground conduit, where a continuous metallic cable shield or a continuous metallic conduit containing the cable is bonded to each building grounding electrode system.
3. Areas having an average of five or fewer thunderstorm days per year and earth resistivity of less than 100 ohm-meters. Such areas are found along the Pacific coast.

(1) Fuseless Primary Protectors. Fuseless-type primary protectors shall be permitted under any of the following conditions:

a. Where conductors enter a building through a cable with grounded metallic sheath member(s) and if the conductors in the cable safely fuse on all currents greater than the current-carrying capacity of the primary protector and of the primary protector grounding conductor.

Pertinent section of National Electrical Code relating to grounding of Network Interface Device

b. Where insulated conductors in accordance with Section 800-12(a) are used to extend circuits to a building from a cable with an effectively grounded metallic sheath member(s) and if the conductors in the cable or cable stub, or the connections between the insulated conductors and the exposed plant, safely fuse on all currents greater than the current-carrying capacity of the primary protector, or the associated insulated conductors and of the primary protector grounding conductor.

c. Where insulated conductors in accordance with Section 800-12(a) or (b) are used to extend circuits to a building from other than a cable with a metallic sheath member(s) if (1) the primary protector is listed for this purpose, and (2) the connections of the insulated conductors to the exposed plant or the conductors of the exposed plant safely fuse on all currents greater than the current-carrying capacity of the primary protector, or the associated insulated conductors and of the primary protector grounding conductor.

d. Where insulated conductors in accordance with Section 800-12(a) are used to extend circuits aerially to a building from an unexposed buried or underground circuit.

e. Where insulated conductors in accordance with Section 800-12(a) are used to extend circuits to a building from cable with an effectively grounded metallic sheath member(s) and if (1) the combination of the primary protector and insulated conductors is listed for this purpose, and (2) the insulated conductors safely fuse on all currents greater than the current-carrying capacity of the primary protector and of the primary protector grounding conductor.

(FPN): Effectively grounded means intentionally connected to earth through a ground connection or connections of sufficiently low impedance and having sufficient current-carrying capacity to prevent the buildup of voltages that may result in undue hazard to connected equipment or to persons.

(2) **Fused Primary Protectors.** Where the requirements listed under items a through e above are not met, fused-type primary protectors shall be used. Fused-type primary protectors shall consist of an arrester connected between each line conductor and ground, a fuse in series with each line conductor, and an appropriate mounting arrangement. Primary protector terminals shall be marked to indicate line, instrument, and ground, as applicable.

(b) **Location.** The primary protector shall be located in, on, or immediately adjacent to the structure or building served and as close as practicable to the point at which the exposed conductors enter or attach.

For purposes of this section, the point at which the exposed conductors enter shall be considered to be the point of emergence through an exterior wall, a concrete floor slab, or from a rigid metal conduit or an intermediate metal conduit grounded to an electrode in accordance with Section 800-40(b).

For purposes of this section, primary protectors located at mobile home service equipment located in sight from and not more than 30 ft (9.14 m) from the exterior wall of the mobile home it serves, or at a mobile home disconnecting means grounded in accordance with Section 250-24 and located in sight from and not more than 30 ft (9.14 m) from the exterior wall of the mobile home it serves, shall be considered to meet the requirements of this section.

(FPN): Selecting a primary protector location to achieve the shortest practicable primary protector grounding conductor will help limit potential differences between communications circuits and other metallic systems.

National Electric Code 1996

National Fire Protection Association
Batterymarch Park
Quincy, Massachusetts

Pertinent section of National Electrical Code relating to grounding of Network Interface Device

(c) Hazardous (Classified) Locations. The primary protector shall not be located in any hazardous (classified) location as defined in Article 500, nor in the vicinity of easily ignitible material.

Exception: As permitted in Sections 501-14, 502-14, and 503-12.

800-31. Primary Protector Requirements. The primary protector shall consist of an arrester connected between each line conductor and ground in an appropriate mounting. Primary protector terminals shall be marked to indicate line and ground as applicable.

(FPN): One way to determine applicable requirements for a listed primary protector is to refer to the *Standard for Protectors for Communications Circuits,* ANSI/UL 497-1991.

800-32. Secondary Protector Requirements. Where a secondary protector is installed in series with the indoor communications wire and cable between the primary protector and the equipment, it shall be listed for the purpose. The secondary protector shall provide means to safely limit currents to less than the current-carrying capacity of listed indoor communications wire and cable, listed telephone set line cords, and listed communications terminal equipment having ports for external wire line communications circuits. Any overvoltage protection, arresters, or grounding connection shall be connected on the equipment terminals side of the secondary protector current-limiting means.

(FPN No. 1): One way to determine applicable requirements for a listed secondary protector is to refer to the *Standard for Secondary Protectors for Communications,* UL 497A-1990.

(FPN No. 2): Secondary protectors on exposed circuits are not intended for use without primary protectors.

800-33. Cable Grounding. The metallic sheath of communications cables entering buildings shall be grounded as close as practicable to the point of entrance or shall be interrupted as close to the point of entrance as practicable by an insulating joint or equivalent device.

For purposes of this section, the point of entrance shall be considered to be at the point of emergence through an exterior wall, a concrete floor slab, or from a rigid metal conduit or an intermediate metal conduit grounded to an electrode in accordance with Section 800-40(b).

D. Grounding Methods

800-40. Cable and Primary Protector Grounding. The metallic member(s) of the cable sheath, where required to be grounded by Section 800-33, and primary protectors shall be grounded as specified in (a) through (d) below.

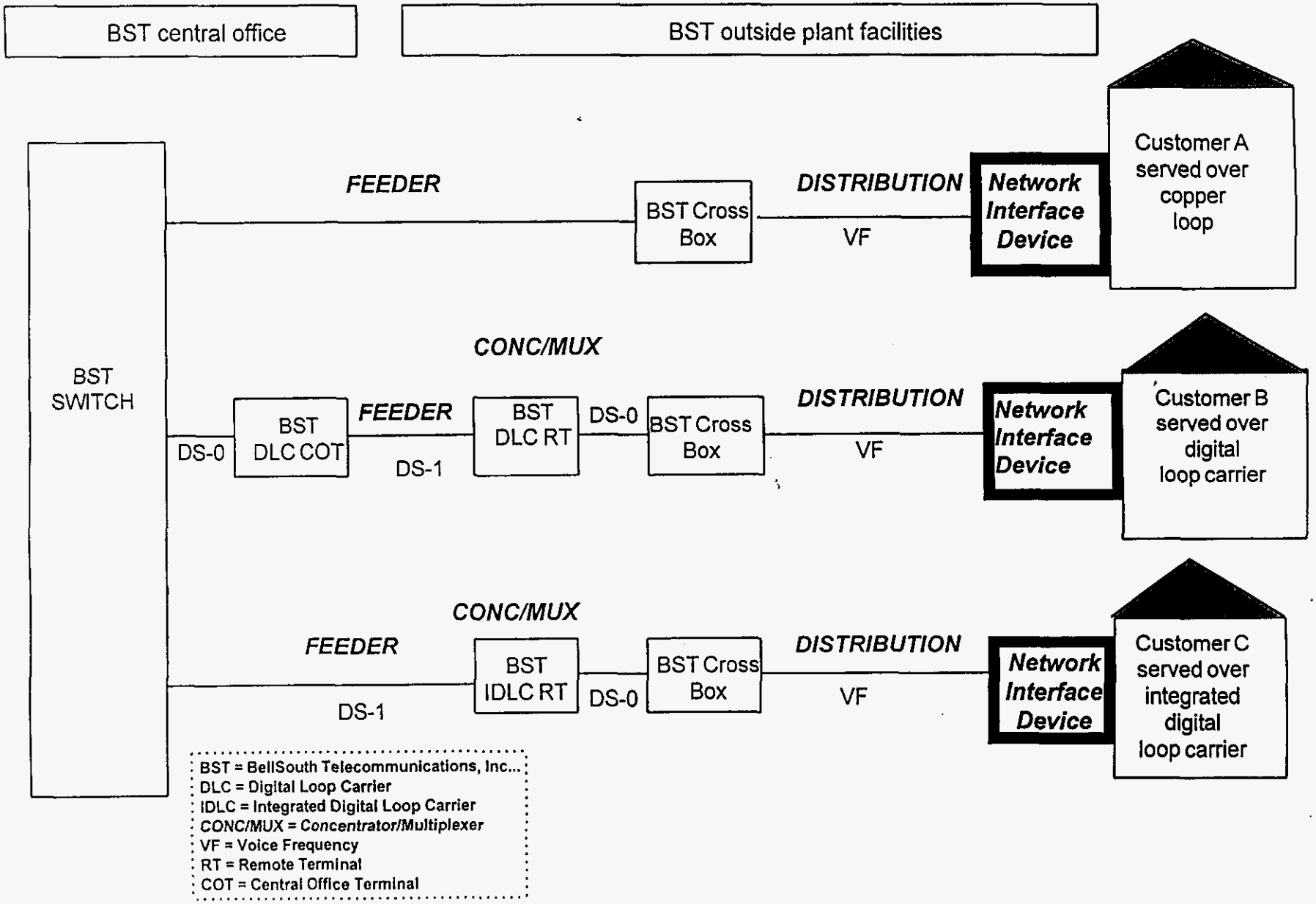
(a) Grounding Conductor.

(1) Insulation. The grounding conductor shall be insulated and shall be listed as suitable for the purpose.

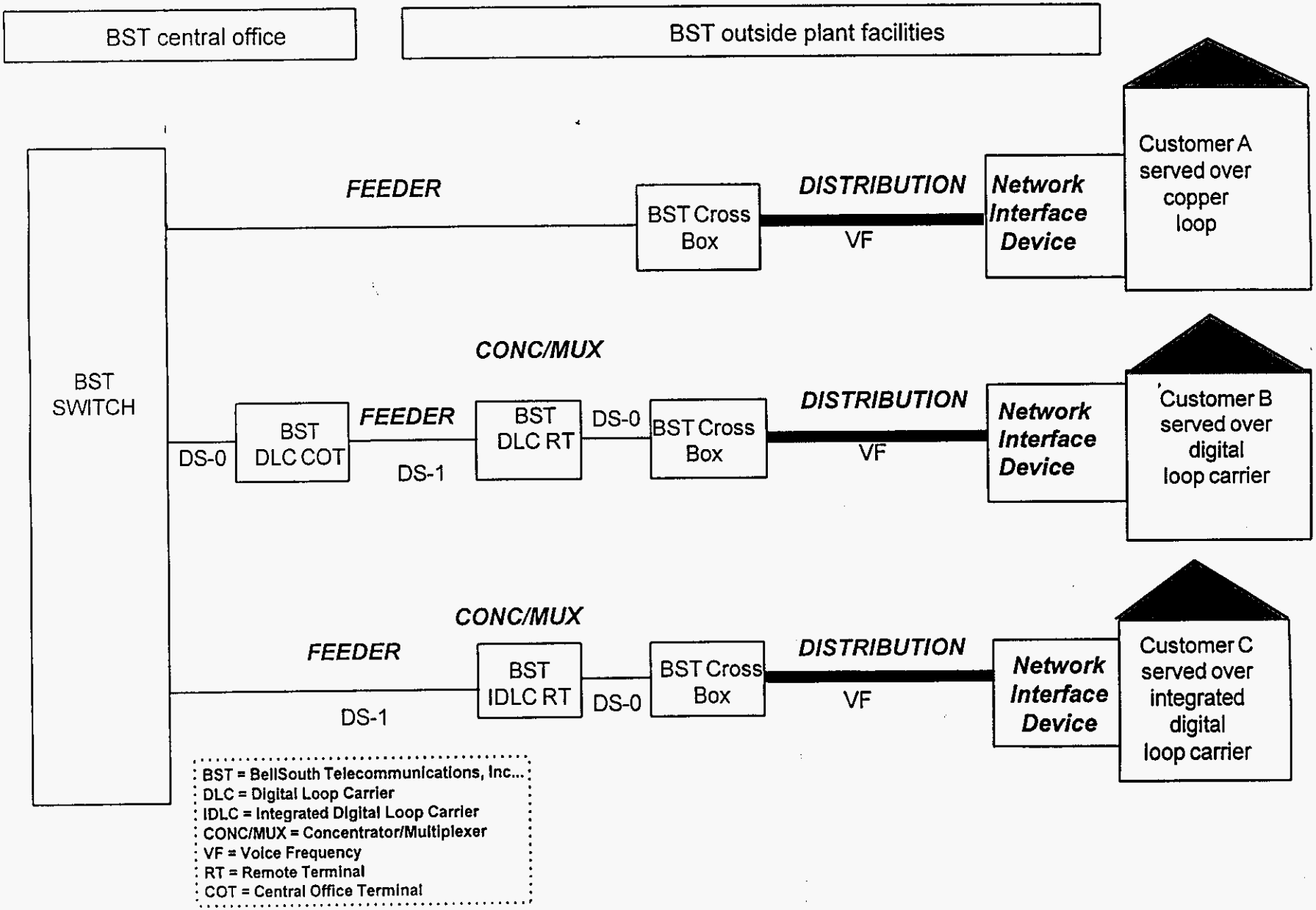
(2) Material. The grounding conductor shall be copper or other corrosion-resistant conductive material, stranded or solid.

(3) Size. The grounding conductor shall not be smaller than No. 14.

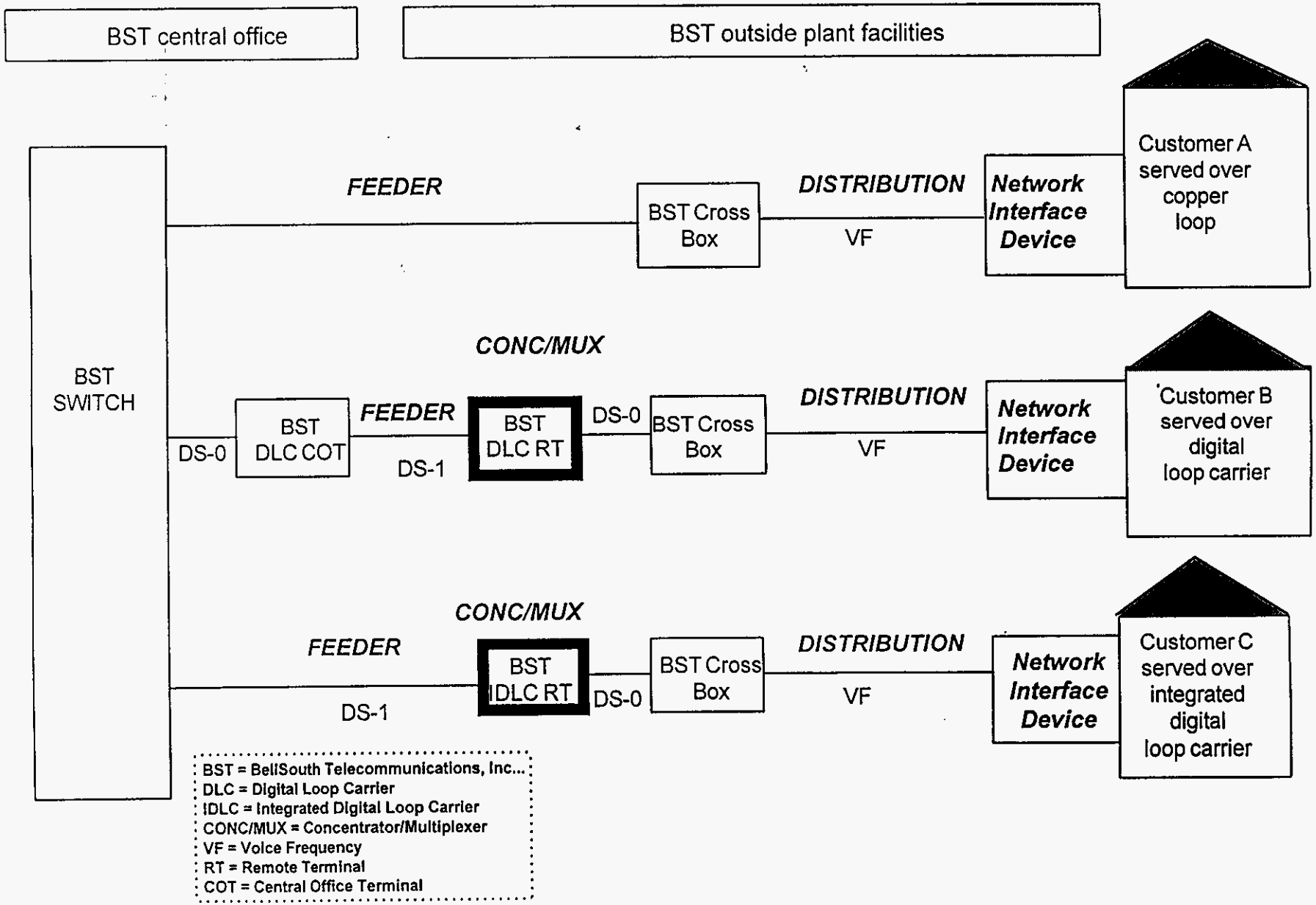
Network Interface Device as Loop Element



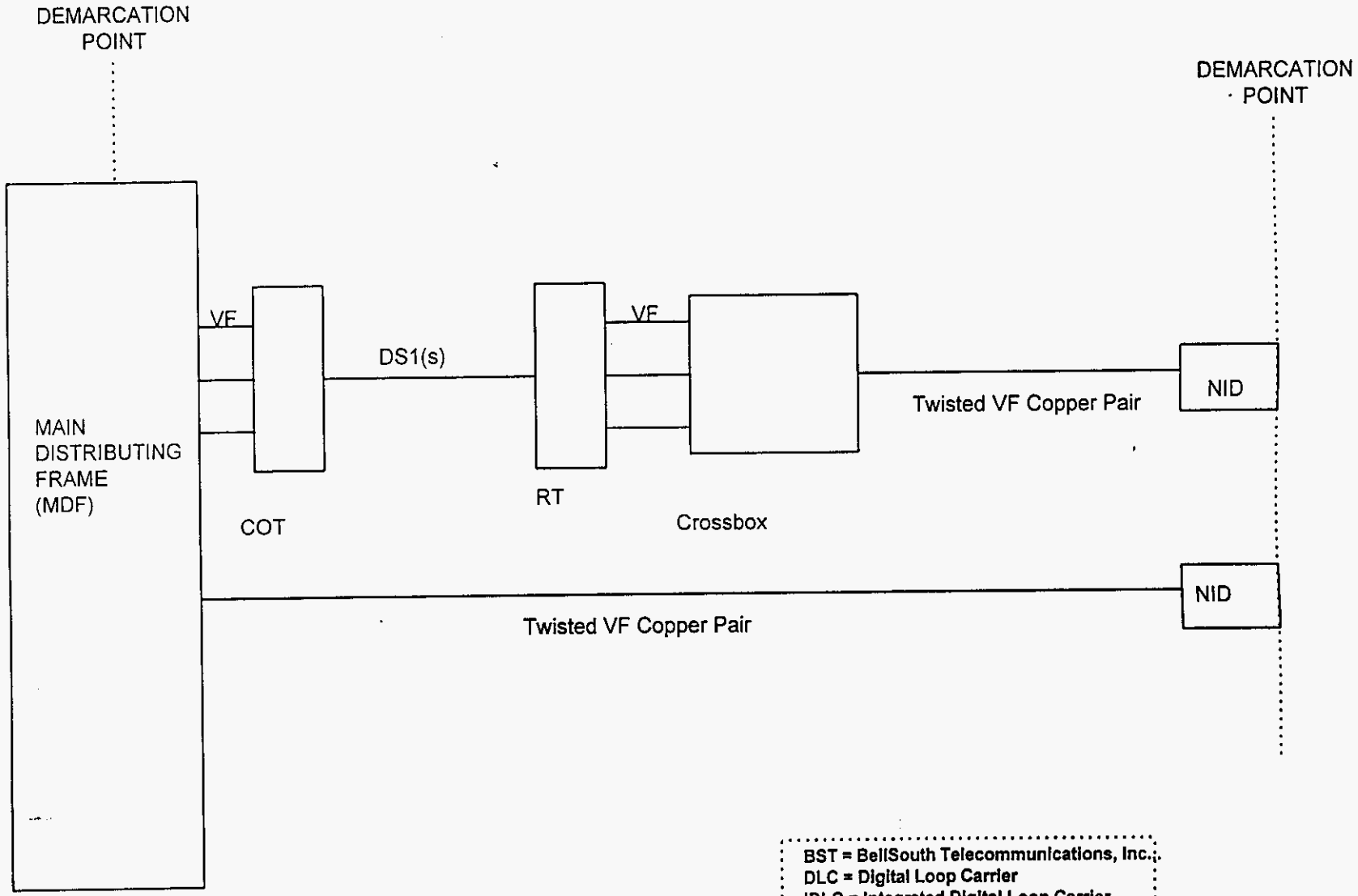
Distribution Media as Loop Element



Concentrator/Multiplexer as Loop Element

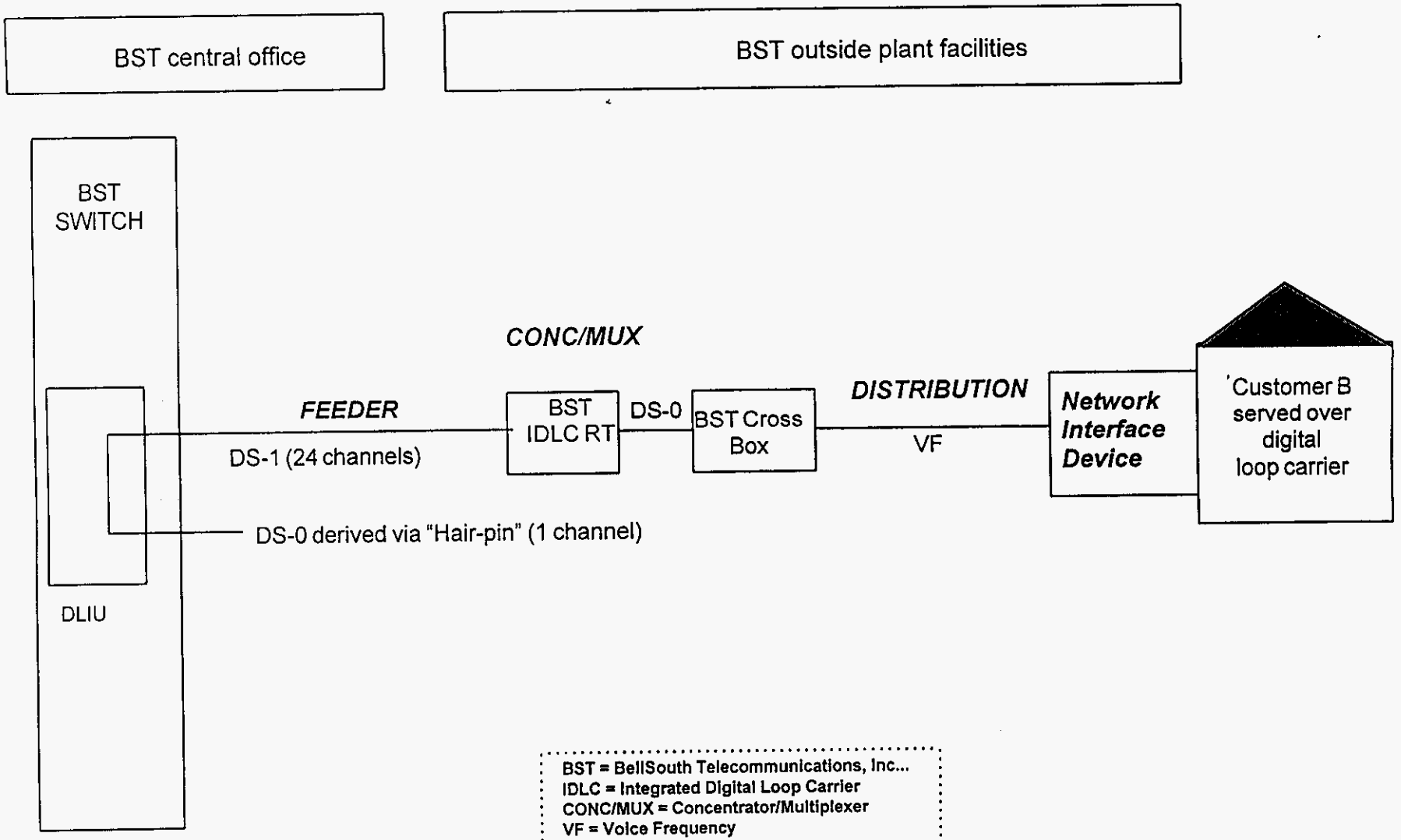


Contiguous loop



BST = BellSouth Telecommunications, Inc.
DLC = Digital Loop Carrier
IDLC = Integrated Digital Loop Carrier
CONC/MUX = Concentrator/Multiplexer
VF = Voice Frequency
RT = Remote Terminal
COT = Central Office Terminal

Integrated Digital Loop Carrier "Hair-pin" Configuration



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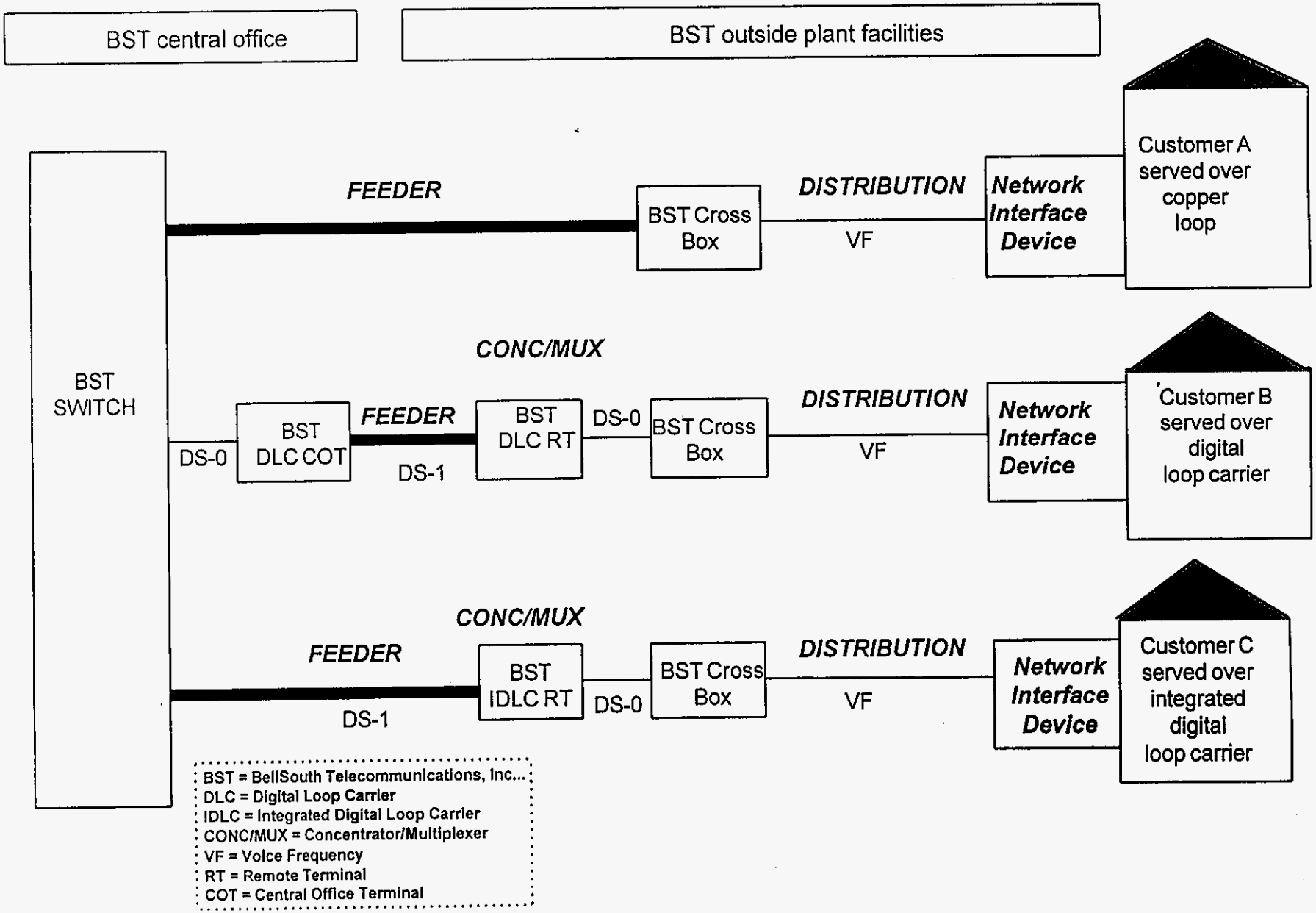
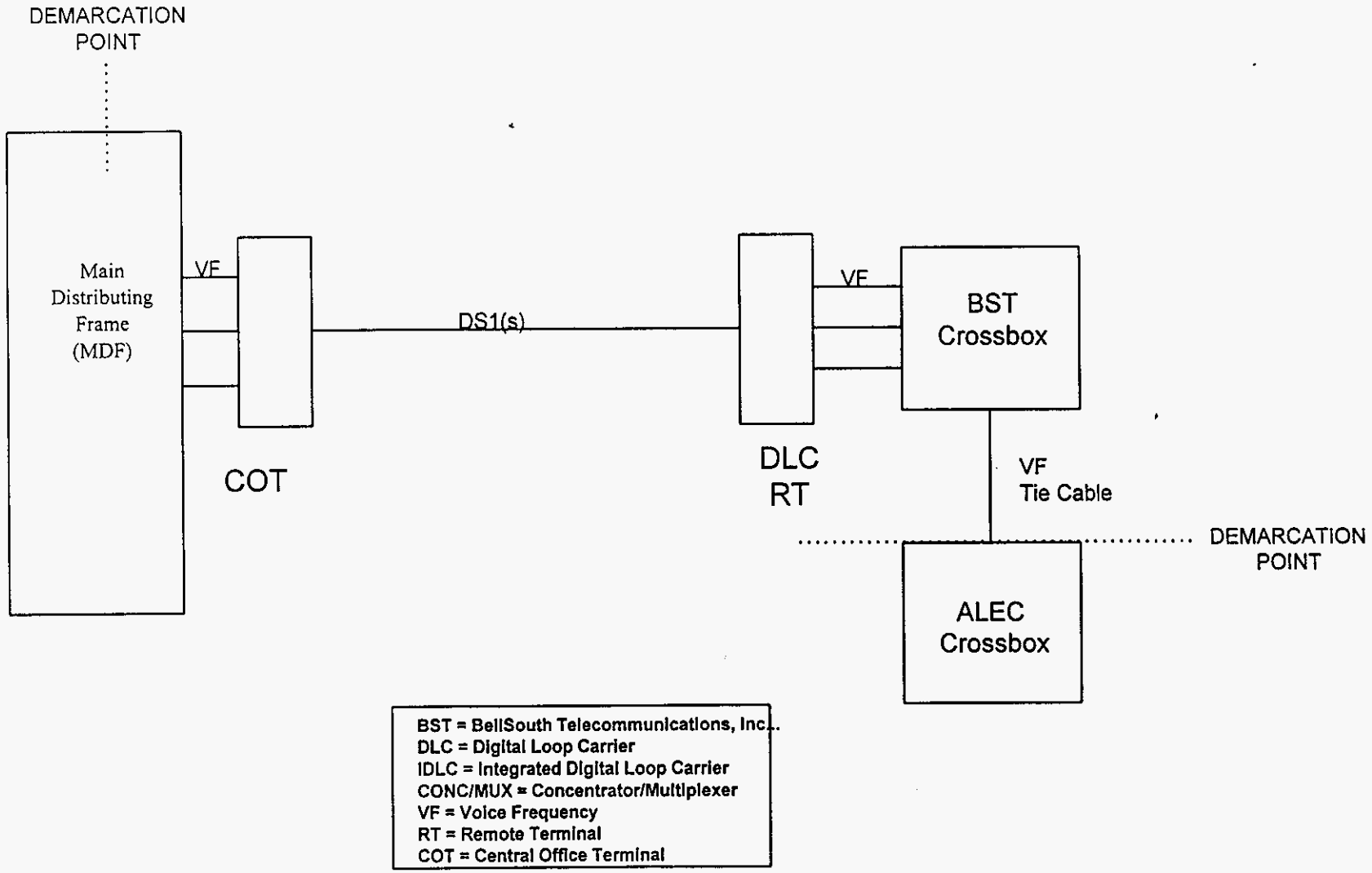
Loop elements



Special Access Feeder Circuit



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Lucent Technologies
Bell Labs Innovations

Timothy Payne
Account Manager
Network Systems

Lucent Technologies Inc.
300 Chase Park South
Birmingham, Al 35244

Telephone 205 560 2134

July 8, 1996

Mr. Jim Bridges
Staff Manager
BellSouth Telecommunications, Inc.
NW3B1
3535 Colonnade Parkway
Birmingham, Alabama 35243

Dear Jim:

Thank you for your Feature Request Number 30863 on the 5ESS Switch. This feature, Alternate Local Exchange Routing Capability or Third PIC, is not currently available on the 5ESS Switch.

Lucent Technologies is currently investigating the resources, timeframes and costs associated with developing this feature. We will provide you with a time and cost estimate as soon as it is available.

Please call if I may provide additional information at this time .

Sincerely,

Timothy Payne
Account Manager

Northern Telecom
5555 Windward Parkway, Suite B
Alpharetta, GA 30201-3895

Tel 404 661-4000

NORTEL

Mr. Jim Bridges
BellSouth Telecommunications
North W3B
3535 Colonnade Parkway
Birmingham, AL 35243

Re: SFIS 30863, Alternate Local Exchange Routing Capability - DMS10/DMS100

Dear Jim:

Currently Nortel's DMS10 and DMS100 Switching Systems do not have the requested capability as outlined in your Request For Feature BSO000403, SFIS #30863. Providing this capability will require major development effort for the DMS100 and significant development for the DMS10. The estimated delivery timeframe is 12 months after the feature has been committed to the NA100 and DMS10 Generic release streams.

If you have any questions or need additional information please contact me at (770) 661-4168.

Thank you for your interest in Nortel.

Sincerely,

Susan Smith-Lewis

Susan Smith-Lewis
Manager, Sales Support

cc: Keith Milner

BellSouth Telecommunications, Inc.

FPSC Docket Number 960833-TP

Exhibit Number WKM-12 _____

Table showing Line Class Code (LCC) capacities in the various switch types used in BellSouth's network in Florida

MANUFACTURER	SWITCH TYPE	LINE CLASS CODE CAPACITY
Lucent Technologies	1AESS	1024
Lucent Technologies	2BESS	512
Lucent Technologies	5ESS	4096
Nortel	DMS-100	1024
Siemens Stromberg Carlson	EWSD	4096

BellSouth Telecommunications, Inc.

FPSC Docket Number 960833-TP

Exhibit Number WKM-13 _____

Table showing the results of BellSouth's study of LCC consumption as a result of selective routing

Switch type	BellSouth switches in Florida exhausted based on LCC capacity with BellSouth plus one ALEC	BellSouth switches in Florida exhausted based on LCC capacity with BellSouth plus two ALECs	BellSouth switches in Florida exhausted based on LCC capacity with BellSouth plus five ALECs	BellSouth switches in Florida exhausted based on LCC capacity with BellSouth plus eight ALECs
1AESS	100%	100%	100%	100%
5ESS	11%	20%	68%	100%
DMS-100	30%	83%	100%	100%
TOTAL	24%	49%	82%	100%