ORIGINAL

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January 28, 2003

BY HAND DELIVERY
Ms. Blanca Bayó, Director
The Commission Clerk and Administrative Services
Room 110, Easley Building
Florida Public Service Commission
2540 Shumard Oak Blvd.
Tallahassee, Florida 32399-0850

Re: Docket No. 030851-TP

Dear Ms. Bayó:

Enclosed for filing are an original and 15 copies of the Surrebuttal Testimony of Jay Bradbury, Cheryl Bursh, Mark Van De Water (Redacted), Richard Walsh, and Don Wood on behalf of AT&T Communications of the Southern States, LLC in the above-referenced docket.

* Steven E. Turner

Please acknowledge receipt of this letter by stamping the extra copy of this letter "filed" and returning to me.

Thank you for your assistance with this filing.

DNs 01313-04 thru 01318-04

Sincerely yours,

Tracy Hatch/las

Tracy W. Hatch

AUS
CAF
CMP
COM 5 + orig
CTR
ECR
GCL 1
OPC
MMS 2
SEC 1
OTH

TWH/las
Enclosure
cc: Parties of Record

* TURNER was left out of letter.
AT&T/las called for correction.
All testimony accounted for.
mas 1/29

CERTIFICATE OF SERVICE
DOCKET NO. 030851-TP

I HEREBY CERTIFY that a copy of the foregoing has been furnished via electronic mail and U.S. Mail or as indicated this 28th day of January 2004, to the following parties of record:

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Tracy Hatch/es

Tracy W. Hatch

BEFORE THE FLORIDA PUBLIC SERVICE COMMISSION

In re: Implementation of requirements arising from Federal Communications Commission triennial UNE review: Local Circuit Switching for Mass Market Customers.	))))	Docket No. 030851-TP

SURREBUTTAL TESTIMONY OF

JAY M. BRADBURY

ON BEHALF OF
AT&T COMMUNICATIONS OF THE SOUTHERN STATES, LLC

JANUARY 28, 2004

Q. PLEASE STATE YOUR NAME, BUSINESS ADDRESS AND POSITION TITLE.

A. My name is Jay M. Bradbury. My business address is 1200 Peachtree Street, Suite 8100, Atlanta, Georgia 30309. I am employed by AT&T Corp. ("AT&T") as a District Manager in the Law and Government Affairs Organization.

Q. ARE YOU THE SAME JAY M. BRADBURY THAT PREVIOUSLY FILED DIRECT TESTIMONY IN THIS DOCKET ON DECEMBER 4, 2003, AND REBUTTAL ON JANUARY 7, 2004?

A. Yes, I am.

Q. WHAT IS THE PURPOSE OF YOUR TESTIMONY?

A. My surrebuttal testimony responds to portions of the rebuttal testimony of BellSouth's witnesses W. Keith Milner, A. Wayne Gray, Gary Tennyson, and Eric Fogle. I also respond to a portion of the rebuttal testimony of Verizon's panel of witnesses. My responses focus on the operational and economic impairments that arise from various CLEC network architecture requirements, the impact of those impairments upon the CLECs, and the role of Electronic Loop Provisioning (ELP) in this docket.

RESPONSES TO MR. MILNER

Q. ON PAGE 2 OF HIS REBUTTAL TESTIMONY MR. MILNER CHALLENGES YOUR STATEMENT THAT CLEC SWITCHES ARE

ALWAYS LOCATED REMOTELY FROM THE ILEC CENTRAL OFFICE WHERE THE EXISTING LOCAL LOOPS TERMINATE. HE NOTES THAT ONE CLEC IN FLORIDA HAS CHOSEN TO INSTALL SWITCHES WITHIN COLLOCATION ARRANGEMENTS. DOES MR. MILNER'S INFORMATION DISPROVE YOUR STATEMENT?

A. No. Mr. Milner has simply provided the proverbial exception that proves the rule. Further, the FCC's findings in the TRO support the general validity of my statement (TRO ¶480, ¶464, FN 1406, ¶ 424, FN 1298, ¶ 429.) Mr. Milner's testimony is also misleading in that Mr. Milner uses the plural beginning on line 3 – "For example, one (1) CLEC in Florida has chosen to install its switches in that CLEC's collocation arrangements within BellSouth's central offices thereby reducing its "backhaul" costs." (Emphasis added.) In truth, however, there is *one CLEC* that has collocated *one switch* in *one BellSouth central office,* according to the response provided to the Florida Staff's Second Set of Interrogatories, Item No. 17, prepared by Mr. Milner and cited on page 6 of his rebuttal testimony.

Additionally, while placing switches in collocations might reduce "backhaul" costs, doing so will exponentially increase collocation costs (preparation, space, power, etc.) for the CLEC. Were such arrangements truly viable, one would expect to see many companies doing so, not just one CLEC in one collocation in one BellSouth central office.

Q. ON PAGE 2 OF HIS REBUTTAL TESTIMONY MR. MILNER ALSO CHALLENGES YOUR USE OF THE FCC'S FINDINGS RELATED TO THE

CLECS' NEED TO USE SWITCHES LOCATED "RELATIVELY FAR FROM THE END USER'S PREMISES" RESULTING IN "MUCH LONGER LOOPS THAN THE INCUMBENT ". HE STATES THAT A CLEC COULD "HOUSE ITS SWITCH IN A BUILDING DIRECTLY ACROSS THE STREET FROM THE ILEC'S CENTRAL OFFICE", AND REFERENCES CITATIONS IN HIS DIRECT TESTIMONY TO AT&T TESTIMONY IN AN EARLIER ARBITRATION PROCEEDING. PLEASE RESPOND.

A. Mr. Milner admits I have quoted the FCC correctly, but then goes on to state that he disagrees with the FCC.

Placing a CLEC switch across the street from one of several ILEC central offices being served by that CLEC switch, as Mr. Milner suggests, clearly does nothing to change the fact that the CLEC switch will still be "relatively far" from the end user's premises and require "much longer" loops than the ILEC for every end user premises NOT served from that ILEC central office. A CLEC switch that is close to an ILEC central office, by definition, means that it is "relatively far" from other ILEC central offices and the end users being served through those central offices.

Even for the single location where the CLEC switch is "directly across the street" from the ILEC central office, the CLEC will still require a collocation arrangement within the central office and backhaul to cross the street. Any cost reductions from such an arrangement (at the one location) would be incremental and would not eliminate the impairment that results from the significant cost disadvantage required to backhaul the loop from multiple ILEC central offices where the mass market customer loops terminate.

I have already addressed Mr. Milner's (and BellSouth's other witnesses') inappropriate use of the statements in AT&T's Arbitration testimony in my rebuttal testimony on pages 19-20, 22-23, and 24-25. In short, Mr. Milner's reliance upon AT&T's arbitration testimony is misplaced because the issues in that case are different from the issues in this docket. The fact that AT&T is entitled to the tandem switching rate because its switches serve widely dispersed enterprise customers (the issue in the arbitration) does not demonstrate that CLECs are not impaired in attempting to serve the mass market in the absence of unbundled switching (the issue in this docket).

Q. ON PAGES 3-4 OF HIS REBUTTAL TESTIMONY MR. MILNER CHALLENGES THE NEED FOR CLECS TO "ESTABLISH A COLLOCATION ARRANGEMENT IN EVERY ILEC WIRE CENTER". CAN YOU ADDRESS THIS?

A. Yes. Mr. Milner's direct testimony and my response to BellSouth's Interrogatory 154 both indicate that CLECs may generally have three options in the use of collocation arrangements to extend loops to their switches to serve the mass market. CLEC arrangements may include (1) collocations in ILEC wire centers that directly extend loops to the CLEC switch, or (2) collocations in ILEC wire centers that are "hubbed" to collocations located in another wire center through the use of "transport," with the receiving collocation equipped to directly extend the "hubbed" collocation loops to the CLEC switch, or (3) extending loops from a wire center without a collocation to a wire center that does have a collocation through the use of DS0 Enhanced Extended

Links (EEL), with the receiving collocation equipped to directly extend the EEL loops to the CLEC switch.

Only the third option (DS0 EELs) allows the potential for a CLEC to serve a wire center without having a collocation in that wire center. However, CLECs have found that the use of DS0 EELs to serve mass market customers is operationally and financially infeasible. BellSouth reports in its response to AT&T's Interrogatory 125 that there are only 6 DS0 EELs in service from only 4 wire centers in Florida. Thus, as a practical matter, collocation in each wire center is required.

Q. ON PAGES 4-5 OF HIS REBUTTAL TESTIMONY MR. MILNER CHALLENGES YOUR STATEMENT THAT ILEC CHARGES TO TRANSFER LOOPS FROM THE ILEC TO THE CLEC OR BETWEEN CLECS ARE EXORBITANT. WHERE CAN THE COMMISSION LOOK TO FORM AN OPINION ABOUT THE LEVEL OF ILEC CHARGES FOR LOOP TRANSFERS?

A. As stated on page 27 of the rebuttal testimony of Mark Van de Water:

> The FCC stated that the "record evidence indicates that the non-recurring costs associated with cutting over large volumes of loops would likely be prohibitively expensive for a competitive carrier seeking to provide service without the use of unbundled local circuit switching. TRO at ¶ 470. The FCC then found that a seamless, ***low-cost*** batch cut process switching mass market customers from one carrier to another is necessary, at a minimum, for carriers to compete effectively in the market. TRO at ¶ 487 (emphasis added). This batch cut process must "render the hot cut process more efficient and reduce per-line hot cut costs." TRO at ¶ 460.

Clearly, the FCC was aware the non-recurring costs had been set in state proceedings, and they found them "prohibitively expensive".

Q. ON PAGES 5-6 OF HIS REBUTTAL TESTIMONY MR. MILNER CHALLENGES THE VALIDITY OF COMPARING THE LOOP TRANSFER PROCESS WITH THE UNE-P OR PRIMARY INTEREXCHANGE CARRIER (PIC) CHANGE PROCESSES. ARE THESE VALID COMPARISONS?

A. Yes. In his direct testimony, beginning on page 62, AT&T's witness Mark Van de Water discussed how the FCC identified the standard against which an ILEC's hot cut process should be measured. The FCC itself established the UNE-P process as a standard.

> This review is necessary to ensure that customer loops can be transferred from the incumbent LEC main distribution frame to a competitive LEC collocation *as promptly and efficiently as incumbent LECs can transfer customers using unbundled local circuit switching*." TRO at n.1574 (emphasis added).

My discussion serves to demonstrate what must happen in order to eliminate the operational impairment caused by the manual hot cut processes Mr. Milner references. However, as I discuss in my rebuttal testimony, the Commission should establish a separate docket to investigate ways to eliminate this operational impairment, such as Electronic Loop Provisioning (ELP), after it confirms through its deliberations in this docket that the FCC's impairment findings still apply in Florida.

Q. ON PAGE 7 OF HIS REBUTTAL TESTIMONY MR. MILNER ASSERTS THAT CLECS DO NOT NEED TO PERFORM THE FUNCTIONS YOU DISCUSS (DIGITIZATION, CONCENTRATION, MULTIPLEXING, AND AGGREGATION) FOR THEMSELVES BUT CAN RELY UPON BELLSOUTH'S UNBUNDLED LOOP CONCENTRATION (ULC)

OFFERING. ARE YOU AWARE OF THIS OFFERING AND IS IT THE SUBSTITUTE MR. MILNER CLAIMS?

A. Yes, I am aware of this offering and no, it is not the solution Mr. Milner would have this Commission believe.

First, it is important to note that Mr. Milner does not dispute that these functions (digitization, concentration, multiplexing, and aggregation) must be performed in order for a CLEC to backhaul its customer's traffic to its own switch. Therefore, a legitimate question is whether the CLEC should lease or purchase the equipment to perform these functions. BellSouth's ULC offer might be thought of as the option to lease the equipment rather than purchase.

However, BellSouth's ULC offering introduces a number of operational problems not present when a CLEC installs its own Digital Loop Carriers (DLC). A major operational problem is the ordering of BellSouth's ULC offering. All ordering of service for the ULC arrangement must be performed manually, using facsimile transmission of the Local Service Request (LSR). Further, there is not one word of instruction as to how to fill out such an LSR in the BellSouth Local Ordering Handbook, which may be found and searched for "Unbundled Loop Concentration" or "ULC" on-line at http://www.interconnection.bellsouth.com/guides/leo/bbrlo_releases/14_0/pdf/140-3.pdf.

Additional operational concerns include the fact that the use of BellSouth's ULC offering and the provisioning of a CLEC Digital Subscriber Line (DSL) service are incompatible and that CLEC testing and repair of the DLC portion of its backhaul arrangement is eliminated. BellSouth's ULC offering is clearly inferior to CLEC owned DLCs installed in the CLEC's collocation.

Evidently, neither BellSouth nor Mr. Milner considers ULC to be a creditable solution, since Mr. Milner's direct testimony does not mention it as part of any network architecture option available or useful to CLECs, and BellSouth's own BACE model does not include the use of the ULC offering in its manipulations.

Q. ON PAGE 7 OF HIS REBUTTAL TESTIMONY MR. MILNER CHALLENGES YOUR REASONS FOR THE CLECS' USE OF DLC, ASSERTS THAT YOUR TESTIMONY STATES THAT ONLY CLECS MAKE USE OF DLC EQUIPMENT, AND NOTES THAT ILECS USE DLC EQUIPMENT ROUTINELY. HOW DO YOU RESPOND?

A. In his rebuttal Mr. Milner manages to ignore the contents of the very next paragraph of my testimony that states:

> The equipment digitizes, encodes, concentrates and multiplexes the analog signals received from the customer so that the CLEC can extend the loop signal back to its remote switch in a manner the (1) provides service quality that will meet customer expectations and (2) minimizes the CLEC's costs to transport its customers' traffic back and forth from its switch. (Bradbury, direct, page 30, lines 5-10.)

I make no suggestion that DLC equipment is "useful only for achieving a certain level of transmission performance." (Milner, rebuttal, page 7, lines 23-24).

Further, I make no suggestion that "only CLECs make use of DLC equipment," (Milner rebuttal, page 7, lines 24-25). In fact, on pages 40-42 of my direct testimony I discuss the impairments to CLECs that arise from the *ILECs'* use of DLCs in their network.

At the central office, the need to use DLCs in their collocations to interface with analog DSO mass market loops is unique to CLECs and not required for the ILEC's interface with those very same loops. BellSouth's response to AT&T's Interrogatory 118, prepared by Mr. Milner, confirms this. When asked to provide the number and percentage of loops converted to T1 (DS1) level interfaces through the use of DLCs located in the central office, Mr. Milner replied:

> This question cannot be answered as posed because any multiplexing of copper subloops (that is, individual cooper loop distribution pairs) unto DS1 of higher level digital transmission facilities occurs at the DLC Remote Terminal ("RT"), rather than within the central office.

Mr. Milner's claim that my direct testimony regarding the CLECs use of DLCs "is simply a red herring" (Milner, rebuttal, page 7, line 25) is totally inaccurate. CLECs must use DLCs in their ILEC central office collocations to receive analog communications from the loop, and digitize, concentrate, and mulitiplex the communications so that the connecting backhaul facility can be used efficiently; the CLEC's switch can provide the customer with dial tone, ringing, and other functions; and customer service quality will meet expectations. The ILEC is able to achieve all of this with the "jumper" wire pair I discussed on page 19 of my direct testimony.

Q. ON PAGES 8-9 OF HIS REBUTTAL TESTIMONY MR. MILNER ATTEMPTS TO ADDRESS THE "LUMPY" CHARACTERISTICS OF DLC EQUIPMENT, AND DIGITAL CROSS CONNECTION (DSX) EQUIPMENT. DO HIS COMMENTS ALTER THE PRINCIPLE YOU DISCUSS OR THE IMPACT UPON THE CLECS?

A. No. There are DLCs that come in sizes smaller than used in my example. The tool used by Mr. Turner to conduct the DSO Impairment Analysis allows for this flexibility, as does BellSouth's BACE model. However, CLECs electing to use DLCs installed in smaller increments will then have to bear the increased cost of more frequent installations. It is a decision that means the CLEC will be selecting between which kinds of lumps it wants in its cost equation – equipment cost lumps or installation cost lumps. In either case, CLEC costs to serve the same mass market customers are greater than ILEC costs.

While Mr. Milner's comments are generally factual, he has provided mis-information about DSX-3 and DSX-1 equipment. A DSX-1 is not a smaller version of a DSX-3. These two pieces of equipment operate at different digital single levels. If you need a DSX-3, a DSX-1 cannot be substituted.

Q. ON PAGE 9 OF HIS REBUTTAL MR. MILNER CLAIMS TO BE SPEAKING TO YOUR TESTIMONY LISTING THE STEPS IN BELLSOUTH'S HOT CUT PROCESS AND STATES THAT HE SEES SOME SORT OF IRONY THAT YOUR EARLIER TESTIMONY FOUND THIS PROCESS TO BE INADEQUATE. HOW DO YOU RESPOND?

A. Mr. Milner offers no rebuttal of my testimony and there is no irony. The paragraph he is citing concludes "the process is inadequate to service mass market customers." Clearly Mr. Milner had some agenda other than rebutting my testimony and the Commission should disregard the entire question and answer in Mr. Milner's testimony.

Q. ON PAGES 10-11 OF HIS REBUTTAL TESTIMONY MR. MILNER CHALLENGES YOUR STATEMENT CONCERNING THE NEED FOR COPPER LOOPS OF LESS THAN 18,000 FEET IN ORDER TO PROVIDE DSL SERVICES, STATING THAT A CLEC "COULD LIKEWISE COLLOCATE ITS DSLAM (DIGITAL SUBSCRIBER LINE ACCESS MULTIPLEXER) AT THE REMOTE TERMINAL." IS IT REALLY THAT SIMPLE?

A. No. CLECs do not have "remote terminals" as Mr. Milner is using the term. A CLEC's "terminals" (DLCs) are located in the central office. BellSouth will not allow a CLEC to place a CLEC DSLAM card in a BellSouth remote terminal. Therefore, to have a "remote terminal collocation", a CLEC would have to build it and provide or arrange transport facilities from it to the CLEC's central office collocation.

While the technology for remote collocation exists, the economics do not. This is evidenced by the fact that, to the best of my knowledge, there are no CLEC remote terminal collocations in BellSouth's territory. If this were a valid solution one would

expect to see CLECs requesting and performing remote terminal (RT) collocations. They are not.

I would note that this is another case in which BellSouth and Mr. Milner apparently do not believe in the validity of their own proposals, since Mr. Milner's direct testimony mentions remote terminal collocation only in passing and BellSouth's BACE model does not include the use of remote terminal collocation in its manipulations.

Q. ON PAGE 11 OF HIS REBUTTAL TESTIMONY MR. MILNER CHALLENGES YOUR STATEMENT THAT THE CLECS' LACK OF ECONOMIES OF SCALE WILL MAKE THEIR CALL TERMINATION ARRANGEMENTS MORE RELIANT ON THE ILEC'S TANDEM NETWORK. HOW DO YOU RESPOND?

A. Once again, Mr. Milner is providing the exception that proves the rule. While the list of factors both the CLECs and the ILECs use in the calculus of determining whether to direct or tandem trunk are the same, the values in each parties equations will be vastly different. The values in a CLEC's equations will always result in a higher reliance upon tandem trunking because of the CLEC's relative lack of scale in comparison to the ILEC. Where a CLEC does have sufficient scale (volume) between two offices to justify direct trunking, I would expect that CLEC to make the proper economic decision.

Having a higher reliance upon ILEC tandem trunking increases the CLEC's cost of call termination and the greater potential for call blockage if the ILEC fails to properly manage the tandem trunk network.

RESPONSES TO MR. GRAY

Q. ON PAGES 7-8 OF HIS REBUTTAL TESTIMONY MR. GRAY CHALLENGES THE NEED FOR CLECS TO HAVE A COLLOCATION ARRANGEMENT IN EVERY ILEC WIRE CENTER IN ORDER TO OFFER FACILITIES BASED MASS MARKET SERVICES. IS THIS CHALLENGE ANY DIFFERENT FROM THAT MADE BY MR. MILNER?

A. No. Mr. Gray's comments are the same as those made by Mr. Milner, discussed previously. As a practical matter, collocation in each wire center is required to serve the analog DS0 loop mass market customer, EELs and assembly points notwithstanding. I would note that assembly points were not mentioned in Mr. Milner's direct testimony and that the BellSouth BACE model does not include them in its manipulations.

Q. ON PAGES 8-10 OF HIS REBUTTAL TESTIMONY MR. GRAY ADDRESSES THE ISSUE OF PLACING SWITCHES IN COLLOCATIONS. DOES THIS DISCUSSION PROVIDE THE COMMISSION WITH ANY MEANINGFUL INFORMATION?

A. No. As I discussed previously, there is *one CLEC* that has located *one switch* in *one*

collocation in Florida. The meaningful information is the fact that no other CLECs have found such an arrangement to be economically attractive.

Q. ON PAGES 10-14 OF HIS REBUTTAL TESTIMONY MR. GRAY DISCUSSES A NUMBER OF CHARGES AND FEES ASSOCIATED WITH COLLOCATION ARRANGEMENTS. DOES ANY OF THIS INFORMATION SIGNIFICANTLY CHALLENGE OR CHANGE THE FACT THAT THESE COSTS OF COLLOCATION EXIST FOR CLECS?

A. No. Mr. Gray's comments provide clarification about how these costs are billed to CLECs by BellSouth, but otherwise confirm that the costs exist and are significant factor in any CLECs attempts to serve mass market customers using analog DS0 loops.

RESPONSES TO MR. TENNYSON

Q. ON PAGES 2 THROUGH 5 OF HIS REBUTTAL TESTIMONY MR. TENNYSON COMMENTS ON ELECTRONIC LOOP PROVISIONING (ELP), CITING TO THE TESTIMONY OF AT&T'S WITNESS MARK VAN DE WATER. DID YOU ALSO ADDRESS ELP IN DIRECT AND REBUTTAL TESTIMONY?

A. Yes. I addressed ELP on pages 46-49 of my direct testimony and on pages 28-30 of my rebuttal testimony.

Q. WHAT RECOMMENDATION TO THE COMMISSION DID YOU MAKE IN YOUR REBUTTAL TESTIMONY REGARDING ELP?

A. I noted that AT&T was not proposing that the Commission order the implementation of ELP as a result of its deliberations in this docket as that was not one of the purposes of this docket. I further noted that ELP was not an issue in the docket. My recommendation was that:

> The Commission should open a separate docket to address how to eliminate the impairment it will find here. It is in that docket that ELP and any other proposals with potential to eliminate impairment should be considered. (Bradbury, rebuttal, page 30, lines 7-9)

Q. IS THIS STILL YOUR RECOMMENDATION TO THE COMMISSION?

A. Yes it is.

Q. WHAT THEN DO YOU SUGGEST THAT THE COMMISSION DO WITH THE INFORMATION ABOUT ELP AND THE OTHER PROPOSALS WITH POTENTIAL TO ELIMINATE IMPAIRMENT BEING PRESENTED IN THIS DOCKET BY VARIOUS PARTIES, INCLUDING AT&T?

A. The Commission should accept the information that has been presented in this docket for use in formulating the scope of the follow-on docket in which it would consider these issues. This would allow the parties and the Commission to focus in the current docket on the issues specifically requiring consideration in this proceeding by the TRO.

In the separate follow-on docket the parties and the Commission would then not be constrained by the arbitrary 9-month interval mandated by the TRO. The parties and the Commission could then devote the appropriate resources necessary to present and consider the complex technological, cost and policy issues associated with an effort to eliminate impairment in a more reasoned and less constrained manner.

Q. IS THERE SPECIFIC INFORMATION IN MR. TENNYSON'S TESTIMONY TO WHICH YOU WISH TO RESPOND?

A. Yes. In keeping with my view of how the Commission should proceed with regard to information presented in this docket related to ELP and other proposals with potential to eliminate impairment, I will limit my comments, with the expectation that there will be a forum at a later date in which a full investigation of the issues will occur. Additional detail about ELP in support of the comments I will make below can be found in Exhibit No. ____, JMB-SR1, a presentation entitled "Electronic Loop Provisioning (ELP), Enabling the Competitive, All Service Network of the Future," dated November, 2003.

On page 3, Mr. Tennyson discusses packetizing digital signals into Asynchronous Transfer Mode (ATM) cells and then asserts "this packetization is not performed in any DLC systems used in BellSouth today". This is misleading. All DLCs in Florida that BellSouth has equipped to provide DSL service (approximately 4,000) do perform packetization to ATM format for the DSL service. BellSouth has not invested in cards for those DLCs that are capable of packetizing voice or combined

voice and DSL. Such cards convert the existing Next Generation DLCs (NGDLCs) into the "true" NGDLC (tNGDLC) discussed in Exhibit No. ____, JMB-SR1.

At the bottom of page 3, Mr. Tennyson provides the following note and assertion. "Note that this process (referring to ELP) would require that every loop be connected to an ATM switch, a switch that does not exist in BellSouth's network today." Mr. Tennyson is wrong on both counts. As can be seen in the diagrams on pages 15, 26 and 27 of Exhibit No. ____, JMB-SR1 in the ELP architecture, once the loop has been treated by the tNGDLC it is the highly efficient, packetized, high capacity ATM uplink of the tNGDLC that is connected to the ATM switch, individual loop connections to the ATM do not exist. Second as Mr. Tennyson later admits (page 5) BellSouth does have ATM switching capability. Today that capability is used to support BellSouth's DSL product lines and others that make use of ATM technology. The fact that "BellSouth does not have the location, capacity, or quantity necessary to deploy ELP" (Tennyson, rebuttal page 5, lines 11-12) is unremarkable and does not demonstrate that it could not deploy additional ATM switching capacity to implement ELP.

On page 5, Mr. Tennyson also admits that BellSouth has voice gateways in its network, but once again makes the unremarkable claim that they are not "in the right locations, capacity, or quantity." This claim does not demonstrate that BellSouth could not deploy additional voice gateway capacity to implement ELP.

On page 4, Mr. Tennyson makes the claims that "ELP is not the best architecture to enable DSL and would impede DSL innovation." These claims are absurd – ELP is

built on exactly the same architecture that BellSouth is using to implement DSL -- remote terminal NGDLC deployments using ATM protocols.

On page 5, Mr. Tennyson, in discussing how long it might take to deploy ELP, states "It would take at least several years, given the magnitude of such an undertaking given that each and every loop in BellSouth's region will need to be modified." ELP can be implemented in phases, over time and by "priority", starting when and where BellSouth desires to be relieved of its obligation to provide unbundled switching. As each geographic area is converted on BellSouth's (or the Commission's ordered) schedule, unimpaired competition would be established and BellSouth would receive the relief it seeks. While, ultimately, modification of "each and every loop" *may* eventually be required, it also may *never* be required. Only those loops that actually do become subject to migration to a CLEC need to be immediately "ELPed," allowing for the use of a managed process like that being used for the support of BellSouth's DSL deployment. Further, I would note that the UNE-P to UNE-L transition itself, if BellSouth were granted relief in this docket, would not complete until May 2007, or several years from now.

Finally there is the matter of cost. Mr. Tennyson provides a discussion of cost on page 4, lines 5-13, but provides no support for how any of the three major data points he presents were determined. First he claims that with ELP, CLECs would avoid only $13 per loop in costs compared to the existing hot cut costs. There is no explanation as to how this number was derived; however, here are some factors that would have to play in such a calculation: (1) the cost to CLECs of an SL1 hot cut in Florida is $83.11; (2) the BellSouth central office technician work time per hot cut is

approximately 43 minutes; (3) an additional hour of BellSouth outside plant technician work time is required on all loops served by IDLC (36% in Florida). It is difficult to grasp Mr. Tennyson's determination that only $13 dollars of cost is avoided by ELP given the known amount of work that is eliminated. Second, Mr. Tennyson states that there would have to be an on-going monthly charge of $6.66 per loop per month. Again no explanation is provided. Possibly this number was somehow derived from Mr. Tennyson's third claim that "it would cost BellSouth approximately $8 billion in capital expenditures to implement ELP in its network," but there is no indication how that number was determined, either.

Exhibit No. ___, JMB-SR1 addresses costs on page 21. AT&T's estimate of the total cost to implement ELP in BellSouth's territory would be approximately one-half BellSouth's estimate, and that does not take into consideration the costs avoided by the elimination of collocation costs, hot cuts, etc.

Q. SHOULD COST BE THE ONLY CONSIDERATION IN EVALUATING AN ELP PROPOSAL?

A. No, of course not, and that is one of the major reasons behind my recommendation that the Commission open a separate docket to consider these matters. An investment in ELP or any other proposal with the potential to eliminate impairment must be viewed in the context of its benefits. ELP provides significant benefits (including cost reductions, enhanced features, and increased revenue opportunities) to a broad range of constituents and telecommunications issues, including:

- End-Users

- Competition
- CLECs & ILECs
- Broadband & Advanced Services
- Local Network Infrastructure
- Telecommunications Industry / Market
- U.S. Economy

It simply is not possible within the scope and the artificial time constraints placed upon this proceeding by the TRO for the Commission to make a fully informed decision about ELP in this docket.

RESPONSES TO MR. FOGLE

Q. ON PAGE 20 OF HIS REBUTTAL TESTIMONY, MR. FOGLE CHALLENGES YOUR STATEMENT THAT CLECS ARE DENIED THE ABILITY TO PROVIDE DSL SERVICE TO CUSTOMERS EXCEPT WHEN A COPPER LOOP OF LESS THAN 18,000 FEET IN LENGTH IS AVAILABLE AND DISCUSSES A NUMBER OF OPTIONS HE STATES A CLEC CAN UTILIZE. IS THERE ANY DIFFERENCE BETWEEN MR. FOGLE'S COMMENTS AND THOSE OF MR. MILNER, TO WHICH YOU RESPONDED ABOVE?

A. Not really. Mr. Fogle's list of options is longer but contains none that allows any CLEC to have a DSL reach relative to mass market customers that is anywhere near equal to BellSouth's at an economic cost. As I noted in my direct testimony, the retail product BellSouth provides to the mass market is its FastAccess ® Service. All of the options Mr. Fogle lists are either (1) prohibited by BellSouth, (2) uneconomic,

(3) inappropriate for the mass market, (4) and/or provide an inferior service when compared to BellSouth's FastAccess ® Service.

RESPONSES TO VERIZON FLORIDA'S PANEL OF WITNESSES

Q. ON PAGE 8 OF THEIR REBUTTAL TESTIMONY VERIZON'S PANEL ASSERTS THAT THE FCC HAS REJECTED AT&T'S ELP PROPOSAL. IS THIS CORRECT.

A. No. As I noted in my discussion of this issue on pages 28-30 of my rebuttal testimony the FCC did not reject ELP, it reserved the right to consider requiring it in the future. Please see my responses to the rebuttal testimony of BellSouth's witness, Tennyson, above, for a more complete discussion of the role ELP should play in this docket.

Q. DOES THIS CONCLUDE YOUR TESTIMONY?

A. Yes.

Electronic Loop Provisioning (ELP)

Enabling The Competitive, All-Service Network Of The Future

November 2003

Overview

Electronic Loop Provisioning (ELP)

Enabling The Competitive, All-Service Network Of The Future

<<< Background and Introduction >>>

<<< Network Architecture and Design >>>

<<< Investments and Costs >>>

<<< Attachments >>>

Background and Introduction

Background

Why The Need For ELP ?

- The local network and loop access architecture was designed with one carrier and one carrier only in mind—the Incumbent LEC
- As a result, there are inherent architectural impediments in the Incumbent LECs' local networks that effectively preclude practical and economic CLEC access to analog voice-grade loops used to provide voice services
- Unlike the ILECs, whose circuit switches are located at the same location where their end-users' loops terminate (i.e. the Local Serving Office or LSO), CLECs must create an extensive "backhaul network" to extend their end-users' loops to their circuit switches
- In order to connect their customers' loops to their switches, the ILECs merely run a jumper wire from one side of a Main Distribution Frame ("MDF") to the other in the same LSO
- In sharp contrast, CLECs face a significant "backhaul penalty" in order to connect UNE-Loops to their circuit switches
- The underlying network must change in order to accommodate practical, efficient and economical multi-carrier access to loops – ELP is one potential way

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Background

The CLEC Backhaul Penalty

- In summary, the CLEC backhaul penalty includes the following costs :

  (1) Engineering, establishing and maintaining collocation, including the associated space preparation and power requirements for sustaining collocation

  (2) Installing and maintaining digitization, concentration and multiplexing equipment at collocations, as well as related monitoring/testing and power distribution equipment

  (3) Arranging for and providing transport between collocations and CLEC switch locations

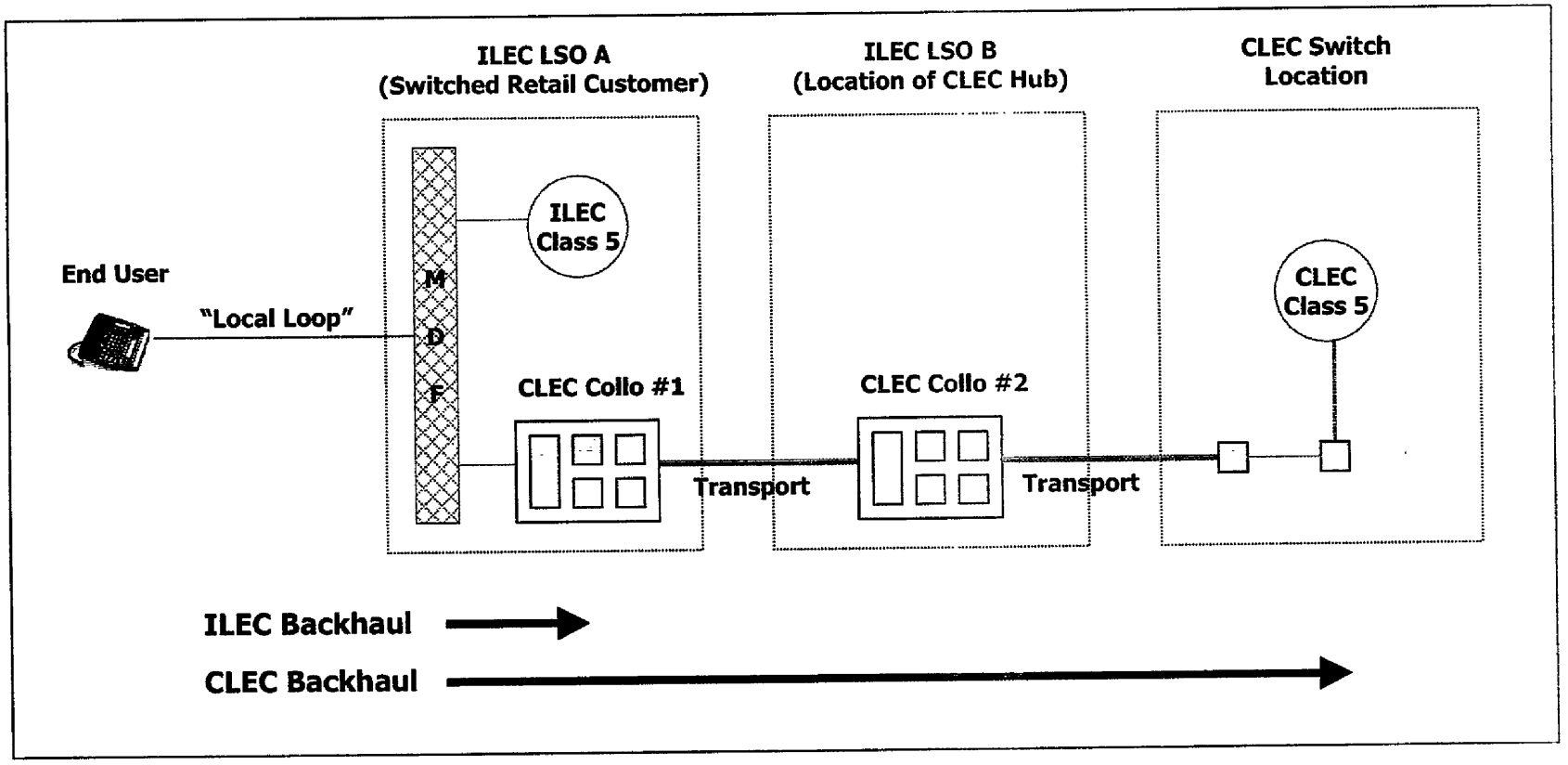
  (4) Engaging in the "coordinated hot-cut process" in order to migrate loops from the ILEC's network to the CLEC's network, which starts at the CLEC collocation

- Only after each of these requirements have been satisfied can a CLEC provision POTS service to end-users using an unbundled ILEC loop

- This "backhaul penalty" makes it practically and economically prohibitive to service analog voice grade loops using a UNE-L facilities based entry

Background

ILEC vs. CLEC Loop Access



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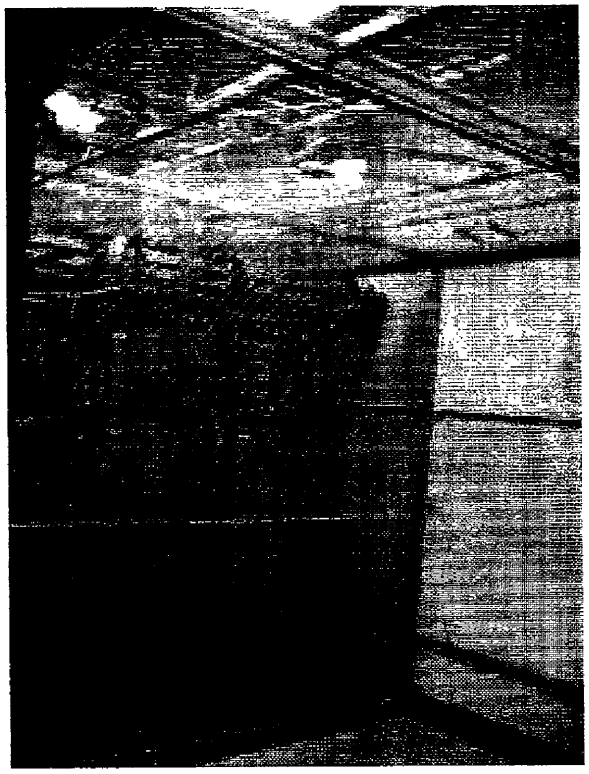
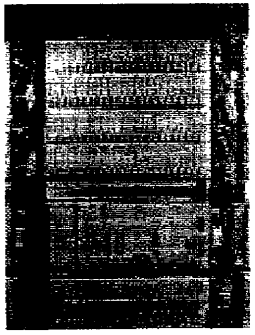
Background

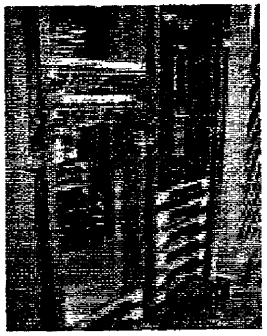
Today's Collocation*
Digitization, Concentration, Multiplexing, Power and Testing Equipment



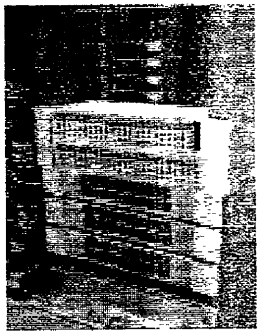
Collocation Cage
(Empty—Looking Out)



DLC



DSX-1



DSX-3

OC-X

BDFB

*NOTE : Collocation profiles may vary based on CLEC and/or particular circumstances.

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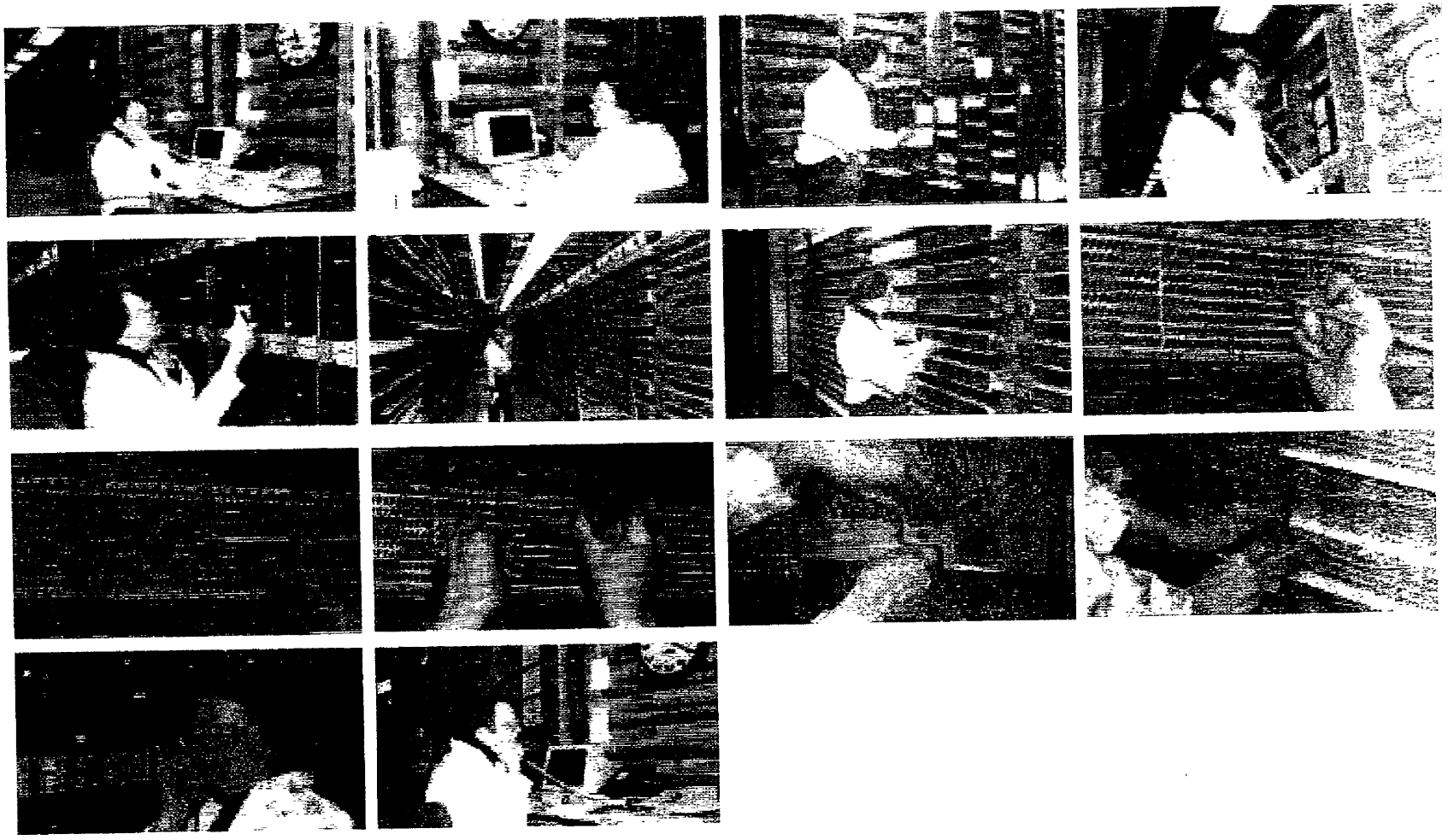
Background

Today's Loop Migration via "Hot-Cuts"



Source : BellSouth

Background

ELP Is One Potential Solution

- ELP addresses the underlying network architecture issues that impede competition for the so-called "mass-market" (i.e., residential and small business locations)

- ELP is a targeted infrastructure upgrade to the incumbent LECs' local network that introduces currently available network transmission technology into the local access network that digitizes and packetizes all end-user communications traffic, both voice and data

- Digitization and Packetization of the local access network...

  - ...eliminates the need for manual, labor-intensive "hot-cuts"
  - ...reduces the need for CLEC collocation and related equipment
  - ...improves CLEC transport economies

- ELP (or a technological equivalent that provides CLECs equivalent access to end-user loops as the ILECs) in conjunction with pro-competitive policies is required in order to make it both (a) practical, and (b) economic for CLECs to serve mass market locations using UNE-L facilities based entry

- Absent such a solution, UNE-P is the only practical and economic entry strategy to bring local competition to mass market locations

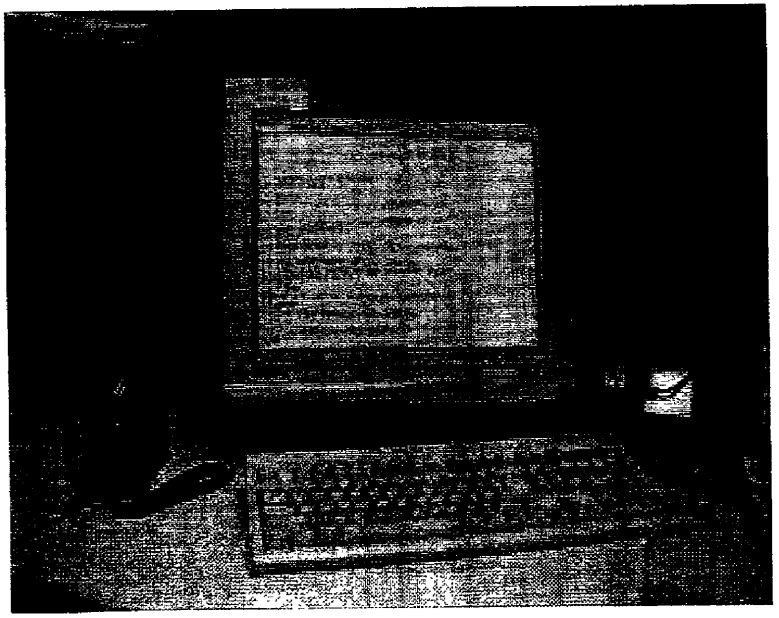
Introduction

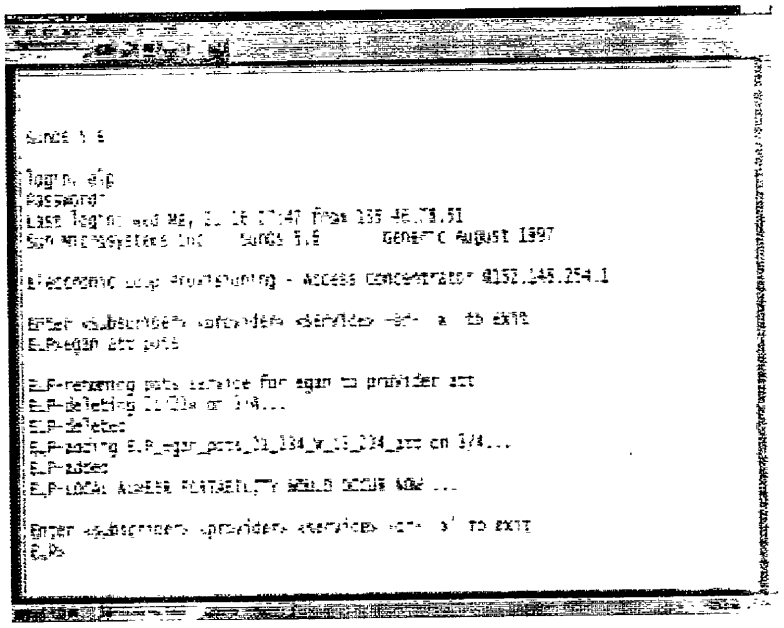
AT&T's Proposed Solution

- AT&T's ELP proposal is one way in which voice digitization and packetization in the access network can be achieved
- It is premised on a "true" NGDLC access architecture that employs ATM transmission protocol
- ELP introduces three network elements into the local access network:
  - "true" Next Generation Digital Loop Carrier (tNGDLC) equipment
  - ATM modules
  - Voice Gateways (VGs)
- The introduction of these network elements transforms the local network into a digital, packet access network
- This fundamental change enables an open network architecture that will support nondiscriminatory multi-carrier access

Background

Loop Migration via ELP

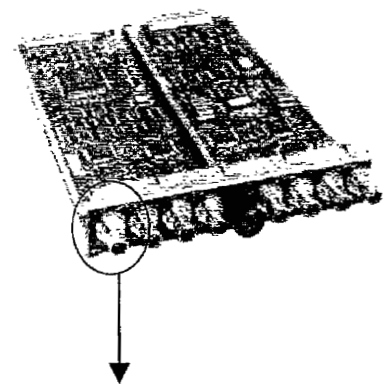




Background

Collocation Under ELP
*An ATM Module Port and Associated Transport Facility**

ATM Module (Backplane View)



CLEC Collocation can equal a DS1, DS3, or OC-3 or higher port on the ATM Module w/associated transport facility

*NOTE : Collocation under ELP will vary/be dependent upon how it is architecturally implemented.

Network Architecture and Design

Network Architecture and Technology

Three Key Elements

- Three Prime Components in the ELP Architecture
  - "true" NGDLC (tNGDLC)
  - ATM module
  - Voice Gateway (VG)
- ***tNGDLC.*** Performs the analog-to-digital conversion, voice and data "packetization" (e.g., Voice Packet Processing or VPP), multiplexing and concentration of end-users' communications traffic
- ***ATM Module.*** Performs the multiplexing and concentration of end-users' communications traffic from sub-tending tNGDLC units in RTs or in the CO
- ***VG.*** Performs the packet-to-circuit protocol conversion between the ATM based ELP access architecture and TDM based circuit switched architecture

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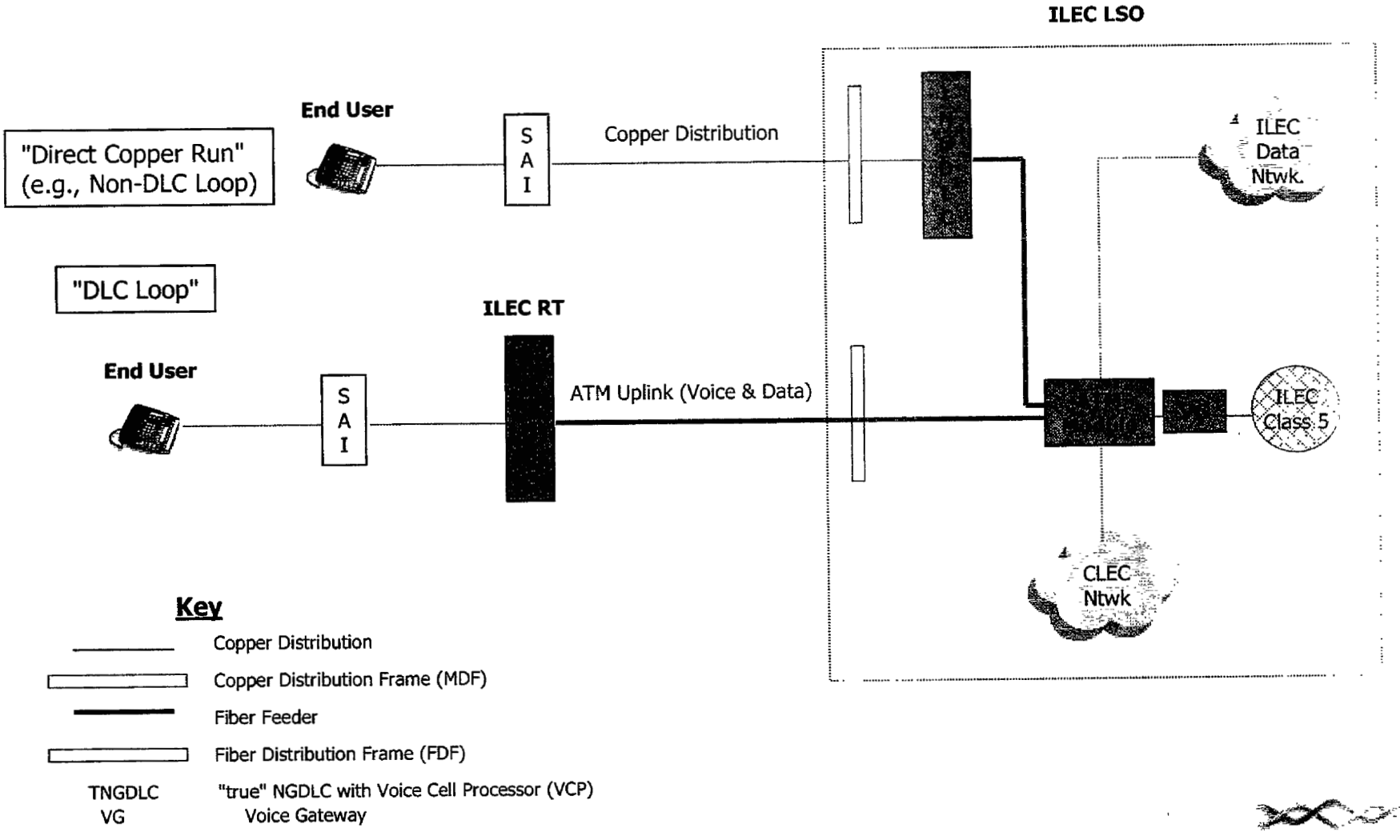
ELP Network Architecture Overview

Generic ELP Network Architecture



Network Architecture and Technology

"true" NGDLC Technology

- **"True" NGDLC (tNGDLC) technology** converts current separate voice/data hardwired end-user to central office connections into software-defined connections that:
  - Convert end-user analog voice signals into packet format before they are transported to the central office
  - Combine these voice signals with data traffic (which current DSL technology already transports as packets)
  - Transport these combined voice and data packets to the central office over all-fiber facilities
- The most convenient packet-like transport format is likely to be **Asynchronous Transfer Mode (ATM)** protocol:
  - ATM is the format currently used for nearly all DSL transport
  - ATM permits quality-controlled permanent virtual circuits (PVCs) to be established and maintained for voice traffic as well

Network Architecture and Technology

Values of a Digital, Packet Access Network

- By converting data *and* voice traffic into packet format...
  - All traffic rides on a converged loop network
  - A central office-located packet module (e.g., an ATM module) serves as an efficient interface point where all service providers can access all voice and data PVCs ("loops") subtending this switch
    - An end-user's voice traffic may be unbundled separately from that end-user's data traffic
    - Both ILECs and CLECs obtain identical access to these loops (although CLECs still face some asymmetric but reduced backhaul costs and issues)
  - Because the "loop" and "network" ports on this packet module are software-controlled:
    - Loops can be assigned to different carriers instantaneously
    - New services can be provisioned by all carriers equally
    - Functionality analogous to 1980s FGD "equal access" with its automated PIC process for selecting long distance carriers is established for local loops and carriers

Network Architecture and Technology

Preservation of Legacy Investments

- All other portions of current loop infrastructure may remain unchanged by ELP
  - CPE used for voice services remains unchanged – as does CPE currently used for advanced services such as DSL or derived voice lines, etc.
  - Copper distribution facilities remain unchanged (unless they need to be shortened and/or repaired or conditioned to improve service)
  - Fiber feeder facilities remain unchanged (copper facilities upgraded to fiber, as necessary)
- Substantial portions of current ILEC NGDLC investment (and investment in legacy DLC systems) may be reusable
  - Sites, cabinets, power systems
  - Channel banks, common cards and channel cards (depending on vendor of legacy equipment)
  - ATM Modules (e.g., OCDs under Pronto, PARTS, etc.)

Investments and Costs

ELP Forward-Looking Investment Cost

Three Key Elements

- **Baseline forward-looking network costed using UNE SynMod**
  - No change to SynMod NID or loop distribution investments because are based on <18 kft. of clean copper
  - DLC investments adjusted to current GR-303 prices
  - Feeder remains copper/fiber – no concentration and no daisy-chaining
  - CO remains Class 5 circuit switch
  - SONET ring / TDM interoffice transport
  - SS7 signaling

- **Forward-looking basic ELP costed using UNE SynMod *(assuming DSL capability, but no actual DSL provisioning)***
  - No change to NID or loop distribution investments
  - Add tNGDLC investments on previous copper lines
  - Substitute tNGDLC investments on previous fiber/DLC lines
  - All feeders costed as fiber – no daisy-chaining
  - Add ATM module and voice gateway at each CO
  - CO remains Class 5 circuit switch
  - SONET ring / TDM interoffice transport
  - SS7 signaling

Network Architecture and Technology

Results

- Incremental forward-looking investment cost for basic ELP over current forward-looking baseline
  - ~ $113/line
  - Cost to upgrade all RBOC lines: ~$17.4 B
  - This cost will vary based on extent of ELP upgrade (e.g., just switched lines or switched plus special lines), carrier universe (e.g., just RBOCs or all nonrural) and expected ADSL "take" rate
- Further investments necessary to actually provision DSL
  - Substitution of a combo voice/DSL channel card for a voice-only channel card
  - Modest increases in ATM capacity
  - Cost of interoffice data network to serve ISPs
  - Extra investment cost over basic ELP: ~ $150/line
  - Cost to provision DSL on 40% of all RBOC lines: ~$9.2 B

ELP Short Run Incremental Cost

"Upgrades" By Loop Technology

Loop Technology	Additional Equipment
Fiber-fed IDLC/NGDLC	Voice Packet Processor (VPP) ATM module and VG
Fiber-fed UDLC	tNGDLC w/ VPP ATM module and VG
Copper-fed legacy DLC or all copper >18 kft.	tNGDLC w/ VPP Fiber feeder ATM module and VG
All copper <18 kft.	tNGDLC w/ VPP Fiber feeder (if needed) ATM module and VG

- The cost of these short run incremental investments to current embedded networks will depend on these networks' existing penetrations of fiber and modern DLC. It will likely exceed full forward-looking incremental investment cost by 25 to 50%.

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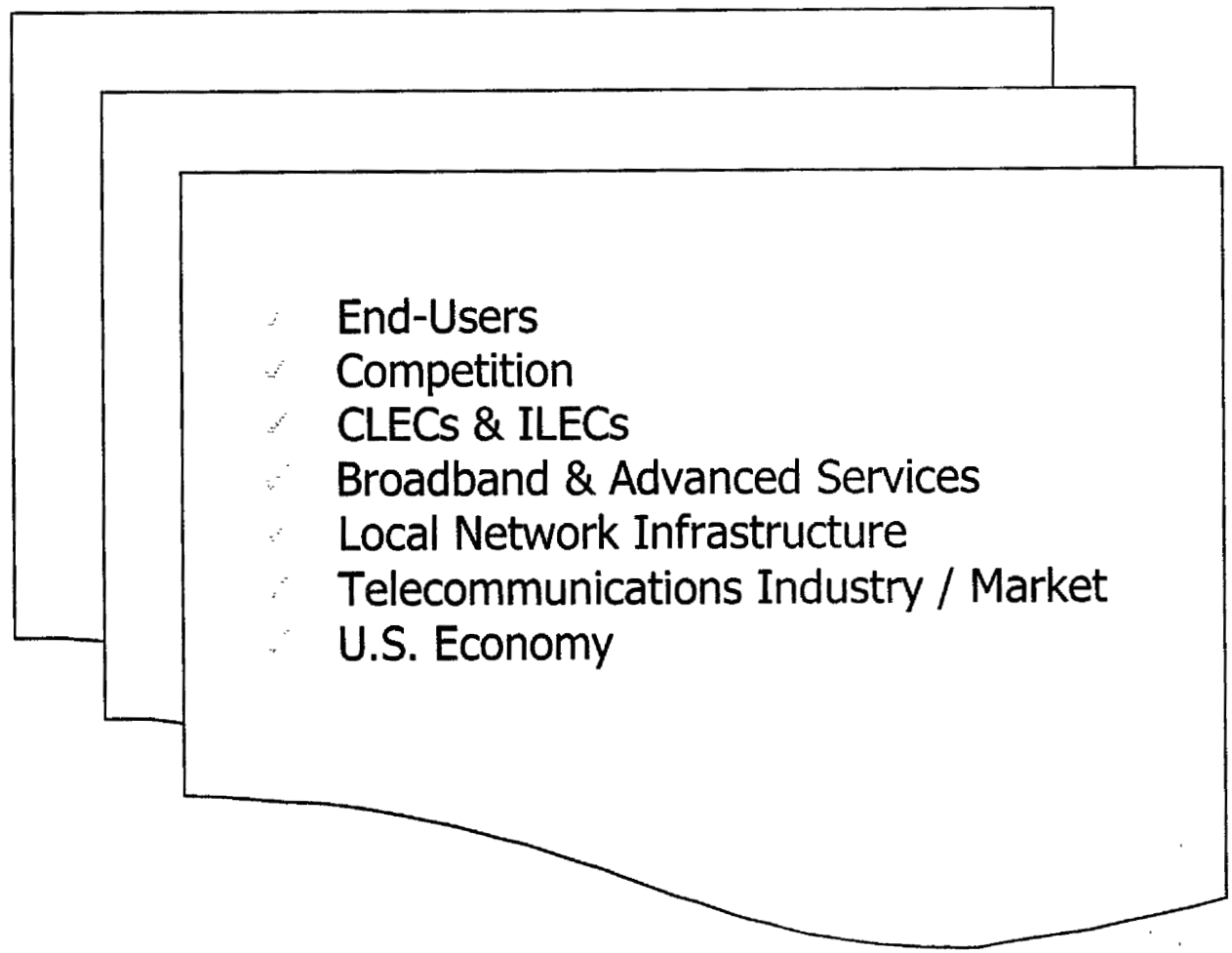
Investments and Costs In Perspective

ELP Investment Must Be Viewed in The Context of Its Benefits



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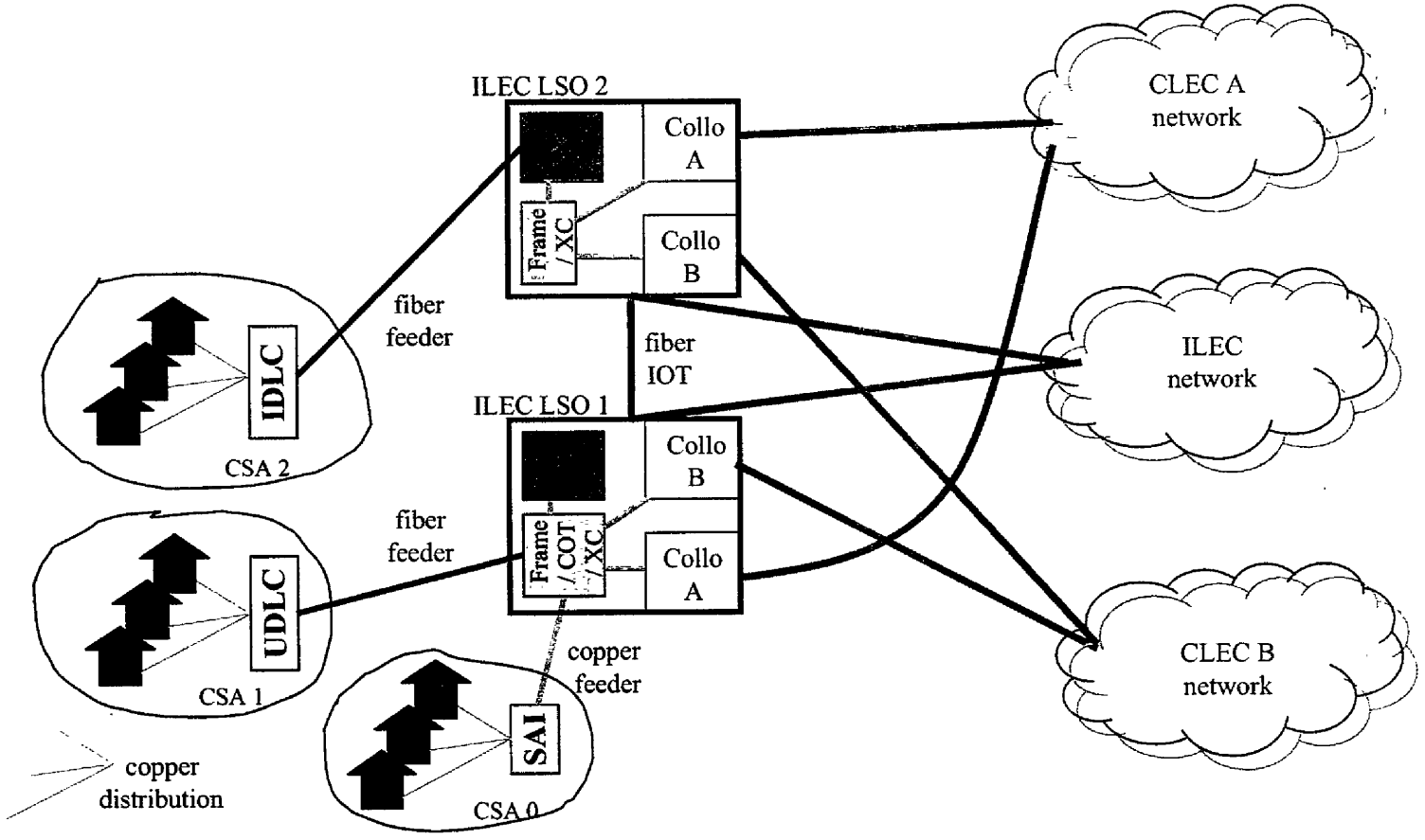
Attachments

Legacy ILEC Network Topologies

Carrier Serving Architecture



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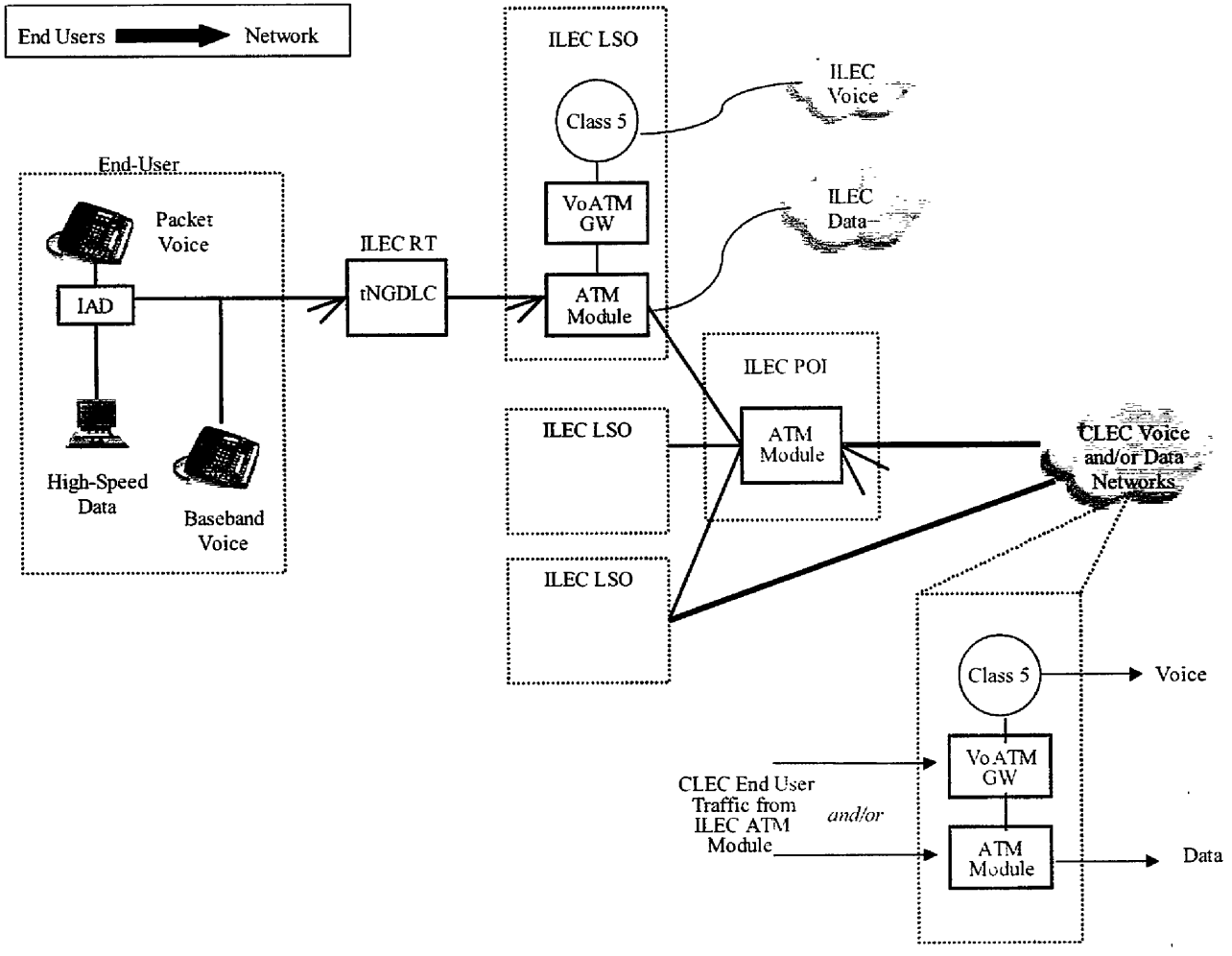
ELP Network Architecture

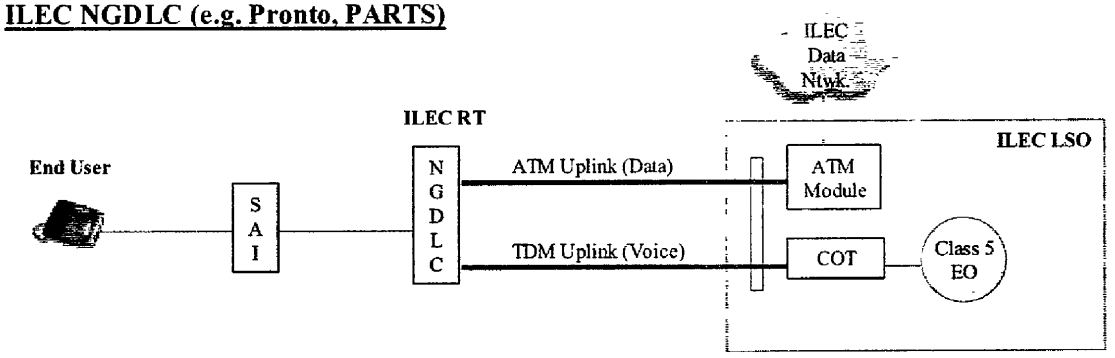
Base ELP Design



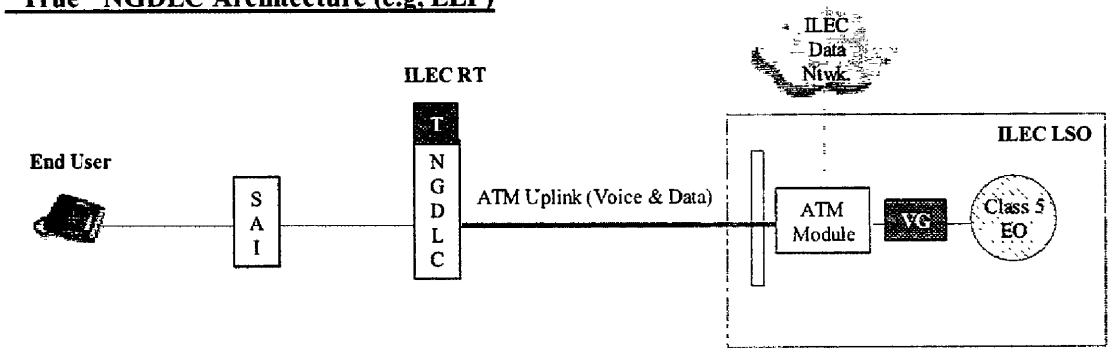
ILEC NGDLC vs. "true" NGDLC

Key Functional Differences

ILEC NGDLC (e.g. Pronto, PARTS)



"True" NGDLC Architecture (e.g. ELP)



Key

	Copper Distribution
	Fiber Feeder
	Fiber Distribution Frame (FDF)
TNGDLC	NGDLC with Voice Packet Processor (VPP)
VG	Voice Gateway