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January 16, 2004

Honorable Deborah Taylor Tate, Chairman
Tennessee Regulatory Authority
460 James Robertson Parkway
Nashville, TN 37243-0505

In Re: Implementation of the Federal Communications Commission's Triennial Review Order (Nine-month Proceeding) (Switching)
Docket No. 03-00491

Dear Chairman Tate:

Enclosed please find a CD-Rom and five (5) copies of James Webber's non-proprietary testimony filed on behalf of MCImetro Access Transmission Services, Inc. and Brooks Fiber Communications of Tennessee, Inc. (collectively "MCI"). Also enclosed is one (1) proprietary version of Mr. Webber's testimony. Copies of the proprietary version of the testimony has been served on all parties of record.

Very truly yours,

BOULT, CUMMINGS, CONNERS & BERRY, PLC

By: Jon Hastings
Jon E. Hastings

JEH/th

Enclosures

CERTIFICATE OF SERVICE

I hereby certify that on January 16, 2004 a copy of the foregoing document was served on the parties of record, via electronically, US mail or hand delivery:

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Jon E. Hastings

PUBLIC VERSION

BEFORE THE TENNESSEE REGULATORY AUTHORITY
NASHVILLE, TENNESSEE

IN RE:

Implementation of the Federal	)	
Communication's Commission's	)	**DOCKET NO.**
Triennial Review Order – 9 MONTH	)	**03-00491**
PROCEEDING – SWITCHING	)	

DIRECT TESTIMONY OF

James Webber

On behalf of

MCImetro Access Transmission Services, LLC
Brooks Fiber Communications of Tennessee, Inc.

January 16, 2004

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I. INTRODUCTION

Q. PLEASE STATE YOUR NAME AND BUSINESS ADDRESS.

A. My name is James D. Webber and my business address is: QSI Consulting, 4515 Barr Creek Lane, Naperville, Illinois 60564.

Q. BY WHOM ARE YOU EMPLOYED AND IN WHAT CAPACITY?

A. I am employed by QSI Consulting as a senior consultant within the firm's Telecommunication Division. QSI is a privately held consulting firm that provides consulting services to a diverse group of clients within the regulated utility industries including, for example, competitive local exchange carriers, long distance carriers and energy service providers.

Q. PLEASE PROVIDE A SYNOPSIS OF YOUR EDUCATIONAL BACKGROUND AND RELEVANT WORK EXPERIENCE.

A. I earned both a Bachelor of Science degree in Economics (1990) and a Master of Science degree in Economics (1993) from Illinois State University. I have approximately 12 years of experience in the regulated utility industries, with the last 10 years specifically focused on competitive issues within the telecommunication industry.

Prior to accepting my current position with QSI Consulting, Inc., I was employed by ATX/CoreComm as the Director of External Affairs. In that capacity, my responsibilities included: management and negotiation of interconnection agreements ("ICAs") and other contracts with other telecommunications carriers; management and resolution of operational

impediments (including, for example, the unavailability of shared transport for purposes of IntraLATA toll traffic or continual problems associated with failed hot cut processes) arising from relationships with other carriers; management of financial disputes with other carriers; design and implementation of cost minimizations initiatives; design and implementation of legal and regulatory strategies; and, management of the company's tariff and regulatory compliance filings. I was also involved in the Company's business modeling as it pertained to the use of Resale services, UNE-Loops and UNE-P.

Before joining CoreComm, I was employed by AT&T from November 1997 to October 2000 where I held positions within the company's Local Services and Access Management organization and its Law and Government Affairs organization. As a District Manager within the Local Services and Access Management organization I had responsibilities over local interconnection and billing assurance. Prior to that position, I had served as a District Manager – Law and Government Affairs where I was responsible for implementing AT&T's policy initiatives at the state level.

Prior to joining AT&T, I was employed (July 1996 to November 1997) as a Senior Consultant with Competitive Strategies Group, Ltd. ("CSG"), a Chicago-based consulting firm that specialized in competitive issues in the telecommunications industry. While working for CSG, I provided expert consulting services to a diverse group of clients, including telecommunications carriers and financial services firms.

From 1994 to 1996, I was employed by the Illinois Commerce Commission ("ICC") where I served as an Economic Analyst and, ultimately, as Manager of the Telecommunications Division's Rates Section. In addition to my supervisory responsibilities, I worked closely with the ICC's engineering department to review Local Exchange Carriers' ("LECs") – and to a lesser extent Interexchange Carriers' ("IXCs") and Competitive Local Exchange Carriers' ("CLECs") - tariffed and contractual offerings as well as the supporting cost, imputation and aggregate revenue data.

From 1992 to 1994, I was employed by the Illinois Department of Energy and Natural Resources where I was responsible for modeling electricity and natural gas consumption and analyzing the potential for Demand Side Management ("DSM") programs to offset growth in the demand for, and consumption of, energy. In addition, I was responsible for analyzing policy options regarding Illinois' compliance with environmental legislation.

A more detailed discussion of my educational and professional experience can be found in **Exhibit JDW-1,** attached to this testimony.

Q. ON WHOSE BEHALF WAS THIS TESTIMONY PREPARED?

A. This testimony was prepared on behalf of MCImetro Access Transmission Services, LLC and Brooks Fiber Communications of Tennessee, Inc. ("MCI").

II. PURPOSE AND SUMMARY

Q. WHAT IS THE PURPOSE OF YOUR TESTIMONY?

A. The purpose of this testimony is: (1) to describe numerous network operational problems CLECs would be required to address if they were moved to a UNE-L service delivery method in Tennessee; and (2) to discuss steps the Tennessee Regulatory Authority ("Authority") should take to address these problems. The FCC concluded that economic and operational barriers associated with the Incumbent Local Exchange Carriers' ("ILECs'") "hot cut" processes justify a national finding that requesting carriers are impaired without access to Unbundled Local Switching ("ULS") when attempting to serve the mass market. (*Triennial Review Order, or TRO,* at ¶476). The FCC also described numerous operational factors, including, for example, issues related to ILEC unbundling performance, collocation and the lack of processes and procedures facilitating the transfer of loops from one CLEC's switch to another CLEC's switch that it believed could add to the impairment faced by CLECs attempting to serve the mass market without access to ULS.

Q. BEFORE SUMMARIZING YOUR TESTIMONY, DO YOU HAVE ANY GENERAL COMMENTS?

A. Yes, I do. UNE-P has achieved a certain level of success in becoming a tool for mass market competition in large part because (1) a host of talented people and an enormous number of resources (agency resources, CLEC resources and ILEC

resources alike) were dedicated to its development as a commercially viable delivery platform over a period of many years (with the last four years exhibiting the most focused efforts) and (2) because UNE-P involves the end-to-end lease of ILEC facilities, UNE-P provides CLECs access to the customer's loop in much the same manner as that available to the ILEC.

UNE-L currently requires the disconnection of an end-user's loop facility from one carrier's switch and, when successful, the near simultaneous re-connection to another carrier's switch. Thus UNE-L presents more challenging operational, technical and network hurdles than UNE-P. Based on the industry's experience with UNE-P over the past several years, it is not realistic to expect that these challenges can be overcome by July 2004. Further, overcoming the operational challenges imposed by UNE-L will be all the more difficult because the Authority no longer has the 271 "carrot" to hold out as an incentive to garner cooperation in the resolution of technical issues. Similar to our experience with UNE-P, it is more logical to assume that the operational and technological issues giving rise to impairment will be resolved over time, and true loop portability – as described throughout this testimony - will become a reality only with the guidance and oversight of the Authority and proper incentives for the incumbent local exchange carriers' cooperation.

Q. PLEASE SUMMARIZE THE REMAINDER OF YOUR TESTIMONY.

A. Before MCI can rely on a UNE-L deployment strategy, issues pertaining to loop provisioning, loop facilities, collocation, transport and Enhanced Extended Links

("EELs") must be first be resolved, to say nothing of the economic issues addressed in Dr. Bryant's testimony or the specific customers impacting issues addressed in Ms. Lichtenberg's testimony. For purposes of clarity I have summarized these issues below:

(1) Loop Provisioning Issues:

The incumbent local exchange carriers' hot cut processes are intensively manual. Not only is the actual cutover of the loop done by hand, but much of the communication back and forth between the carriers is done by telephone or email. The cumulative effect of managing a mass migration of the embedded base of UNE-P customers to UNE-L, and, simultaneously, coping with substantially increased volumes day in and day out, month in and month out, can be expected to overwhelm an already fragile process that is not as effective as the process used to support mass market customers via the UNE-P. The need to manage multiple provisioning scenarios, such as CLEC-to-CLEC migrations, migrations involving line splitting, and EEL migrations, would only make matters more difficult, and early indications are that the incumbent local exchange carriers, especially BellSouth, intend to completely ignore such scenarios altogether. Solutions to all of these issues must be in place and tested before UNE-L can be said to be a viable mass market delivery platform.

(2) Loop Facilities:

ILECs have consistently resisted unbundling end user loops that are provided over Integrated Digital Loop Carrier ("IDLC") technology, claiming that such unbundling is impossible, infeasible or inferior to other solutions. And, instead of working toward resolution of operational issues involved with such unbundling, they have consistently offered up other alternatives such as moving customer loops to spare copper facilities or placing them on to Universal Digital Loop Carriers ("UDLC"). These workarounds are typically time consuming, expensive and fraught with technological deficiencies resulting in unbundled loops being provided to CLECs that yield inferior performance from the customer's perspective (*e.g.*, limited "dial –up" modem capabilities and/ or DSL capabilities).

These workarounds comprise the incumbent local exchange carriers' first and second choice alternatives to unbundling IDLC. BellSouth is deploying IDLC technology with increasing frequency, thereby exacerbating the problems on a going-forward basis. For example, IDLC is deployed to serve in excess of 80% of the end users in some central offices ("COs"). In fact, approximately one third of all UNE-P lines in Tennessee are currently served over BellSouth IDLC facilities.

(3) Collocation/Transport Complexities

A workable UNE-L architecture requires the CLEC to procure and place numerous telecommunications assets for purposes of aggregating and transporting UNE loops from the ILEC's CO to its own switching facility. Many of these facilities such as loop aggregation equipment can be purchased and managed by the CLEC itself, while others like collocation, transport and EELs are likely to be leased from the incumbent local exchange carriers and managed consistent with interconnection agreements and tariffs. The Authority should consider that both of these types of facilities are unique to a UNE-L architecture and are not required either by the incumbent local exchange carriers in serving their own retail customers, or by a CLEC relying on UNE-P. Thus, the operational processes and resultant costs of procuring, placing and managing these facilities are over and beyond those incurred by the incumbent local exchange carriers or by a CLEC using UNE-P. This is important to understand because the additional complexity associated with procuring and managing these facilities is not only important from a perspective of operational impairment (in some circumstances), but must also be considered for purposes of economic impairment.

Additionally, the availability and extent to which such services are currently deployed in relationship to the mass market must be considered when addressing impairment from an operational standpoint, particularly if the incumbent local exchange carriers' policies, procedures and abilities are limiting factors.

Dr. Bryant's testimony speaks directly to the economic impact of these collocation and transport facilities and their relationship to economic impairment. My

testimony describes the need for those facilities and the extent to which costs associated with those facilities are unique to a UNE-L delivery strategy.

Q. BASED ON THESE ISSUES, WHAT DO YOU RECOMMEND?

A. Below is a non-exhaustive list summarizing steps I believe the Authority should take if it intends to minimize, if not eliminate, issues giving rise to operational impairment in the geographic markets throughout the state of Tennessee.

1. Hot Cuts
   a. The Authority should approve, test and implement a *Mass Market Hot Cut* process, as described in this testimony, which is designed to address ongoing carrier-to-carrier migrations. This process should be seamless, timely and economically practicable. Moreover, it should not exclude critical order types such as CLEC-to-CLEC migrations and UNE-P to UNE-L or EEL provisioning scenarios.
   b. The Authority should approve, test and implement a *Transitional Batch Cut* process that is sufficient to transition the embedded base of UNE-P customers to UNE-L while simultaneously managing increased daily volumes similar to those experienced with UNE-P over the past 12 to 24 months.
   c. The Authority should require carriers to employ automated processes that can minimize the level of coordination and communication required to facilitate hot cuts between carriers.
   d. The Authority should require carriers to use existing and emerging technologies to minimize manual intervention in the hot cut process.

2. Loops
   The Authority should require that unbundled loops - regardless of whether end-user facilities are currently provided on IDLC systems - be provided on a timely basis without the necessity of "changing" the facilities over which current connectivity is presently provided unless spare copper facilities are readily – and economically – available such that end user service quality will not be diminished in any sense after having received services via an unbundled loop.

3. Collocation and Transport
   The Authority should open and continue proceedings to monitor performance related to the implementation and provisioning of

collocation, transport and related services. To the extent that issues pertaining to such performance limit CLECs' ability to provide services, backstop measures and dynamic impairment findings should be implemented expeditiously.

4. EELs

The Authority should implement EEL provisioning guidelines that assure that CLECs are able to purchase DS0 level loops in combination with transport, multiplexing, and concentration as described in this testimony. Moreover, such EELs should be integrated into the Mass Market Hot Cut and Transitional Batch Hot Cut Processes.

Q. TO WHAT EXTENT DOES MCI UTILIZE UNE-P IN TENNESSEE?

A. MCI is currently serving **********end-user lines via UNE-P in Tennessee from********** separate BellSouth wire-centers.

Q. IS MCI CURRENTLY ABLE TO SERVE ITS EMBEDDED CUSTOMER BASE THROUGH A UNE-L STRATEGY?

A. Setting aside questions regarding the economic practicability of serving residential and smaller business customers via UNE loops in the state of Tennessee - a topic Dr. Bryant addresses in his testimony - MCI cannot currently reach its customer base throughout most of the state. As is clearly demonstrated on the map contained in confidential Exhibit JDW-2, MCI's local customers are spread throughout the state and the company is only collocated in a few of BellSouth's wire-centers. Without collocation or some other method of physically accessing customer loops - such as EELs coupled with a seamless hot cut process capable of handling large volumes of both inbound and outbound customer movement – MCI cannot offer services to most of its current, or embedded, base of customers

absent access to unbundled local switching. MCI is currently dependent on ULS to serve the mass market in Tennessee.

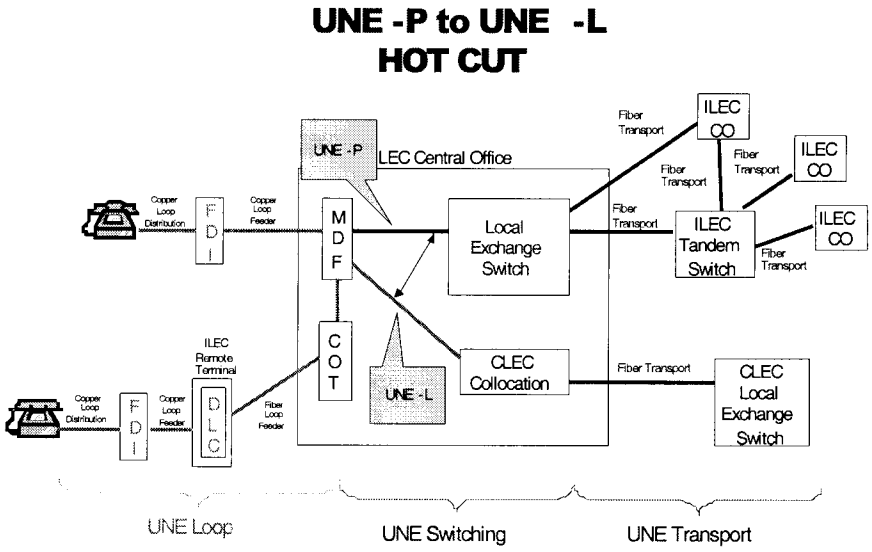
III. BELLSOUTH'S HOT CUT PROCESSES ARE INADEQUATE AND LEAD TO IMPAIRMENT

Q. THERE ARE A NUMBER OF ISSUES IN THIS PROCEEDING RELATED TO HOT CUTS. PLEASE DESCRIBE THE HOT CUT PROCESS AND EXPLAIN WHY THESE ISSUES ARE IMPORTANT.

A. The term "hot cut" describes the near-simultaneous disconnection of a working loop from a port on one carrier's switch and the reconnection of that loop to a port on a different carrier's switch, without any significant out-of-service period. A hot cut must also include some type of notification made to the appropriate number administrator informing the administrator that the customer's telephone number is now assigned to a different carrier, thereby allowing the customer to receive incoming calls at his or her existing telephone number. In a hot-cut scenario, regardless of whose switch the customer is moving from, and to, the ILEC must perform two manual wiring activities at the main distributing frame ("MDF"): (1) pre-wiring and (2) the actual loop cutover.

During the pre-wiring stage the technician places a jumper between the CLEC tie facility connecting the CLEC's collocation cage to the ILEC CO, and the customer loop. The jumper is terminated at the tie facility but not at the loop side. When the cut is scheduled to begin, the jumper that is connected to the loop side

of the existing loop/port arrangement is disconnected and the jumper connected to the receiving CLEC's tie facility is terminated in its place. This completes a circuit between the CLEC facility in its collocation cage and the customer's loop, thereby accomplishing the cut. As discussed above, Local Number Portability ("LNP") translation activities are typically involved with this type of transaction and have traditionally been the responsibility of the receiving carrier. The diagram below provides a high level depiction of the process described above.



Q. PLEASE BRIEFLY DESCRIBE THE HOT CUT PROCESSES OFFERED BY BELLSOUTH PRIOR TO THE EFFECTIVE DATA OF THE TRO.

A. It is my understanding that BellSouth had implemented two "flavors" of hot cuts prior to the FCC's *TRO*. The company's "individual" hot cut process is designed to address requests pertaining to individual customer accounts where the affected lines are terminated at the same location. Another process, referred to as a "project" hot cut, was designed to address line counts of 15 or more at a single

end user customer location. Whereas the individual hot cut process is designed to work without up front negotiations and project management, the project hot cut process – as the name implies – requires up front negotiation and does not adhere to typical provisioning intervals. And, following the FCC's announcement of its *TRO*, the company released a third process it currently describes as a "batch" hot cut process. It provides CLECs the ability to order hot cuts on a "batch" basis so long as the batches include homogenous loop types within a single wire-center.

Q. PARAGRAPH 488 OF THE FCC's *TRIENNIAL REVIEW ORDER* DIRECTS STATE COMMISSIONS TO APPROVE "BATCH" HOT CUT PROCESSES TO BE IMPLEMENTED BY ILECS. ARE THESE PROCESSES DIFFERENT FROM THE EXISTING PROCESSES?

A. Yes, they should be significantly different. These new processes – once approved, implemented and tested – will serve two separate but related purposes. MCI recommends that the Authority implement two flavors of hot cut processes that address the FCC's requirements that a "seamless, low-cost batch cut process for switching mass market customers from one carrier to another" be approved which, when implemented, will allow CLECs an opportunity to compete effectively in the mass market. (*TRO at* ¶ 487.) The first flavor, to which MCI refers as the ***Transition Batch Hot Cut Process,*** should be implemented to effectuate a transition of customers off of UNE-P and onto UNE-L in large quantities, or "batches." This facet of the process should be capable of operating at volumes sufficient to migrate the embedded UNE-P base of customers to UNE-L. A

variant of this process should be approved and implemented such that CLECs are able to compete effectively for mass market customers on an ongoing, day-to-day basis both prior to and after a massive transition to UNE-L based facilities should such a migration occur in the future. For purposes of clarity, MCI refers to this daily process as a ***Mass Market Hot Cut Process***. This version of the hot cut process would be used, for example, during the period beginning five months after an Order by a state public service commission containing a finding of "no impairment" in certain geographic markets, to address daily order volumes currently supported by UNE-P.

If an effective, permanent process is not established, CLECs will remain impaired in their ability to address the mass market, for all of the reasons cited in the *TRO*. Moreover, the Authority should ensure that hot cut processes are not only "identified" and "documented" but that they are actually tested and implemented, prior to contemplating whether a finding of non-impairment in the absence of ULS is appropriate.

Q. GENERALLY SPEAKING, WHAT ARE SOME OF THE MAIN ISSUES THE AUTHORITY SHOULD CONSIDER WHEN DETERMINING THE PROCESS THAT SHOULD BE EMPLOYED TO PERFORM BATCH HOT CUTS?

A. In addition to the numerous issues described in Ms. Lichtenberg's testimony, MCI's concerns regarding ILEC hot cut process can generally be categorized as follows: (1) workability; (2) availability; (3) costs; and (4) scalability. As of

September 2003, BellSouth provided 204,567 UNE-P lines to CLECs throughout the telecommunications markets of Tennessee, growing at the rate of approximately 7,770 lines per month.[1] In markets where CLECs, including MCI, choose to serve their mass market customer base via UNE-L, a hot cut would be required to support each newly won customer, as well as the daily churn and the migration of existing UNE-P based customers to UNE-L *en masse*. The current systems and processes to accommodate this substantially increased volume of hot cuts in a timely manner without customer service interruption are critical. Using existing processes, manual intervention will be required for each loop cutover. In other words, a technician will be dispatched to accommodate the frame manipulation for every single loop that must be transitioned from one carrier to another. This is especially troubling because the incumbent local exchange carriers have accomplished very few UNE-L hot cuts in a commercial setting and almost none on a mass markets basis.

Q. PLEASE EXPLAIN YOUR CONCERNS REGARDING "WORKABILITY."

A. A hot cut is, by definition, a coordinated effort on the part of the ILECs, in this case BellSouth, and the CLECs to "cut" a loop with minimal disconnection time (i.e., the time in which the customer is connected to no switch or is connected to a switch where his or her telephone number is no longer active). For this reason,

[1] Growth is based upon BellSouth's Supplemental Response to AT&T IROG No. 55 as well as the FCC's table in Selected *RBOC Local Telephone Data Dec 2002.xls,* located at http://www.fcc.gov/wcb/iatd/comp.html .

the incumbent local exchange carriers' hot cut process must be specifically designed to minimize not only the time and cost specific to the incumbent local exchange carriers' activities, but also the time and cost associated with the CLEC (both CLEC representatives and CLEC systems). In short, BellSouth's processes must work well not only for BellSouth, but for the CLEC as well. For example, to the extent that CLECs require immediate notification following a completed cut, they should be able to receive such notification without the need to attend a conference call or wait for telephone calls or email. Immediate, electronic notification or web-based update procedures may be beneficial and "workable" for all parties.

Q. PLEASE EXPLAIN YOUR CONCERNS ABOUT "AVAILABILITY."

A. My understanding is that BellSouth intends to limit both the types of loops and the number of loops accommodated via its hot cut processes in a timely fashion. The company has stated during hot cut workshops held in both Florida and Tennessee, for example, that it intends to limit the "batch" hot cut process such that: (1) CLEC-to-CLEC, UNE-L based migrations would not be available via the hot cut process; (2) lines currently involved in a "line splitting" arrangement could not be cut via the hot cut process; (3) IDLC lines may not be available for timely provisioning via the hot cut process; (4) lines to be provisioned over EELs would not be available; and (5) requests for cuts comprised of higher line counts, sent in bulk, in most circumstances would not be available without significant

"negotiation" and departure from existing provisioning and performance intervals. All of these restrictions, and others, substantially reduce the benefit provided by the hot cut process and could severely limit the efficiency with which CLECs could offer mass market services on a UNE-L basis. In short, hot cut processes with these types of restrictions do not overcome the FCC's national finding of impairment and should not be approved by state commissions toward that end.

Q. EXPLAIN YOUR CONCERNS WITH RESPECT TO HOT CUT COSTS.

A. After substantial time and effort, CLECs and state commissions waded through a plethora of ILEC data to conclude that UNE-P provisioning costs were closer to $1 for a customer migration, rather than the more than $100 originally advocated by ILECs across the country. The lesson to be learned from that experience is that ILECs have an overpowering incentive to dramatically exaggerate the costs associated with provisioning UNEs, and ILEC estimates tend to be based on cost studies that incorporate inefficient procedures or technologies. Likewise, their studies are generally defined by duplicative work steps, exaggerated estimated work times and many other errors all tending toward non-recurring charges substantially in excess of efficiently-incurred costs. MCI is concerned that existing hot cut costs – to the extent they might be applied in the future – and any hot cut charges that may be determined in future proceedings will be inappropriately based on inefficient processes and technologies and, as a consequence, set at rates that are too high to allow for economic use of the UNE-L

strategy for mass market customers. Dr. Bryant addresses these issues in greater depth.

Q. WHAT IS THE MAJOR OBSTACLE TO A SCALABLE HOT CUT PROCESS ON THE PART OF THE ILECS?

A. The major bottleneck in the hot cut processes typically advocated by ILECs exists at the MDF. BellSouth's batch hot cut process, for example, currently requires that each customer migrating to UNE-L must be rewired manually for purposes of connecting the UNE loop to the receiving CLEC's collocation cage. It is easy to envision multiple frame technicians working on a number of individual large business hot cuts concentrated on a given loop count; however, it is equally as easy to envision the potentially chaotic situation that could develop as a result of multiple technicians working simultaneously on a number of large residential single line hot cut projects involving loops appearing in random locations on the frame.

Q. ARE THERE ANY RECOMMENDATIONS YOU CAN MAKE TO THE AUTHORITY REGARDING THE LONG TERM USE OF TECHNOLOGY TO REDUCE LABOR TIMES, EXPENSES AND THE POTENTIAL FOR ERROR IN THE HOT CUT PROCESS?

A. Yes. If policy makers truly intend for UNE-L to replace UNE-P, such that tens of thousands of loops will be "ported" from one carrier to another on a regular basis, technology that automates the loop cutover function is the only way in which to

reach that objective. Today's hot cut processes as briefly described above remain largely manual, or labor intensive, and can be made only marginally more efficient with system and process related improvements. While many of these processes and systems changes are important, and can lead to a more efficient, scalable and low cost hot cut methodology, they completely ignore the largest manually intensive step in the process, which is the work of the frame technician to actually cutover the loop.

Q. CAN YOU PROVIDE AN EXAMPLE OF THE SYSTEM OR PROCESS IMPROVEMENTS THAT CAN BE MADE FOR PURPOSES OF IMPROVING THE HOT CUT PROCESS?

A. Many ILECs are experimenting with electronic systems that help the two companies involved in a hot cut first schedule the appropriate activities, and then track the progress of the activities on a near-real-time basis. Verizon, for example, continues to develop its Wholesale Provisioning and Tracking System ("WPTS"), which provides progress toward addressing many of the coordination steps that until now have been performed manually. The intention of these systems is to mitigate the need for a three-way conference call that has generally existed between the CLEC, the ILEC frame technician and an ILEC provisioning agent on the day of the cut (as well as other manual coordination steps). Further, these systems should help to reduce if not eliminate any up-front "negotiation" required between the CLEC and the ILEC in choosing the most efficient time for a given CLEC's hot cut orders to be provisioned. While at least two of the nation's

ILECs, SBC and Verizon, have described electronic systems they are currently developing to further automate these non-frame processes, much still needs to be learned about these systems and their capabilities, such as whether they can operate in a system-to-system mode without monitoring by CLEC personnel, whether they can provide real-time access to work step completion information.

Q. DO THE SYSTEMS YOU HAVE DESCRIBED ABOVE ADDRESS MANUAL WORK STEPS ASSOCIATED WITH THE ACTUAL PRE-WIRING AND LOOP CUTOVER ACTIVITIES UNDERTAKEN BY A FRAME TECHNICIAN?

A. No, they do not. Though the pre-wiring and cutover functions undertaken by the incumbent local exchange carriers' frame technician represent the most substantial barriers to scalability, reliability and cost reduction, the incumbent local exchange carriers are not proposing some type of mechanization or automation of any of these functions within their hot cut process.

Q. DOES TECHNOLOGY EXIST THAT COULD BE USED TO AUTOMATE THESE FUNCTIONS?

A. Yes, for example, Verizon within its network today employs two of the most common types of technology that can be used to cutover a loop without manual intervention: (1) automated or mechanized frame systems and (2) electronic loop provisioning via GR-303. There are numerous vendors that provide these automated loop provisioning systems and each vendor describes in detail how its

system can obviate the need for manual intervention in the cutover process. Examples of vendors that provide electromechanical and micro-relay type frame systems include NHC (www.nhc.com) and Simpler Networks (www.simplernetworks.com), respectively. There are many others as well.

Q. PLEASE EXPLAIN THE LIMITATIONS CURRENTLY HINDERING THIS TECHNOLOGY FOR MORE WIDESPREAD USE.

A. Unless required to provide a UNE-L provisioning process approaching the automated efficiency of its retail or UNE-P-based services, the incumbent local exchange carriers have little incentive to consider a technology that will make UNE-L a more viable option. Indeed, the local exchange carriers are motivated to delay the implementation of such advances, claiming they are unnecessary, too costly or impossible. As long as the incumbent local exchange carriers can convince state commissions that the substantially limited manual processes, and the enormous non-recurring charges they may require, are sufficient, the incumbent local exchange carriers have little incentive to automate the process or improve it to any degree beyond that required on a regulatory basis. Accordingly, the incumbent local exchange carriers spend the majority of their time pointing to the limitations of existing equipment rather than describing how it could be improved or trialing innovative alternatives.

Q. ARE PROBLEMS ASSOCIATED WITH HOT CUTS EXACERBATED WHEN THE MIGRATION IS FROM ONE CLEC TO ANOTHER?

A. The potential for increased complication for CLEC-to-CLEC cuts certainly exists. The amount of coordination, the information required and a number of other complicating factors are magnified with the introduction of CLEC-to-CLEC hot cuts as well as with myriad other scenarios (e.g., hot cut from a line sharing CLEC to a CLEC handling both the broadband and narrowband application, moves from one CLEC to another wherein the receiving CLEC is serving via the ILEC's resale services and many others). In many of these scenarios, three or more individual carriers as well as providers of ancillary services such as NPAC and PSAPs, are required to cooperate, in real time, for purposes of accommodating this largely manual process. A failure at any one of the numerous steps can result in a customer losing service.

Q. SHOULD THE HOT CUT PROCESSES ULTIMATELY IMPLEMENTED BY THE AUTHORITY EXCLUDE ANY PARTICULAR ORDER TYPES?

A. Generally, no. While there might be a legitimate reason to exclude some particular order type, such exclusion should be the exception as opposed to the rule. BellSouth, from what I have seen to date, appear to make such exclusions common place, thus mitigating the potential benefits of improved hot cut processes. To the extent their efforts are successful the process in which we are currently engaged is likely to be for naught.

Q. WHY IS THIS ISSUE IMPORTANT?

A. Customers served by UNE-P today are not homogeneous with respect to service type, customer type, or loop type. If BellSouth is successful in maintaining the numerous exclusions they have proposed concerning their hot cut processes, there will be a large number of existing UNE-P customers who will not be able to use the hot cut process. For example, absent the ability to use EELs and CLEC to CLEC migrations, it is likely that CLECs will be unable to utilize UNE-L to reach certain customers. Hence, the functionality of the hot cut process is irrelevant because the hot cut process cannot be used to reach these customers. Further, to maintain their customers over any length of time on a going-forward basis, CLECs need to be able to address efficiently all customer types represented in their market. That would include, at a minimum, all types of lines that are currently contained within their embedded base.

Q. CAN YOU PROVIDE AN EXAMPLE OF SUCH AN EXCLUSION AND EXPLAIN WHY IT WILL DISRUPT THE CLECS' BUSINESS IF MAINTAINED?

A. Yes, I can provide two of the most important examples. First, I understand that any line that is currently being used for both voice and data services (line sharing or line splitting) will be excluded from BellSouth's proposed hot cut processes. Second, I also understand that BellSouth does not intend to support hot cuts where the receiving carrier is not collocated in the office where an end user's loop is terminated, meaning it will not allow for hot cuts to take place where EELs are used to gain access to end users.

By including these – and potentially other – prohibitions on the use of hot cut processes, BellSouth has substantially reduced the percentage of current and future customers' loops that could potentially benefit from such processes. Even with the improved hot cut processes advocated by the incumbent local exchange carriers, CLECs will remain impaired when attempting to serve the mass market customers who happen to fall into these categories. The excluded customers could be well more than half of the mass market. Indeed, approximately 29% of all UNE-P based customers in BellSouth's Tennessee territory are provided services via BellSouth's IDLC. This group of customers comprises approximately 59,324 lines. Moreover, to the extent the CLECs are denied a hot cut process for a substantial portion of the network seriously calls into question whether economies of scale will be sufficient enough to warrant any attempt by CLECs to implement UNE-L for the remainder of the market.

Q. DO THE ISSUES BRIEFLY OUTLINED ABOVE ADDRESS ALL ATTRIBUTES BY WHICH INCUMBENT LOCAL EXCHANGE CARRIERS' HOT CUT PROCESSES SHOULD BE EVALUATED?

A. No, they do not. Ms. Lichtenberg addresses a number of issues in her testimony. Likewise, MCI is continuing to participate in hot cut collaboratives around the country and is providing input and recommendations in any forum where provided the opportunity. Additionally, I address issues pertaining specifically to loops, collocation and transport later in this testimony. The list of properties to be

included in the incumbent local exchange carriers' upcoming ***Transition Batch Hot Cut*** and ***Mass Market Hot Cut*** processes will be expanded as a part of those discussions. Finally, MCI will comment more fully on this subject once it has had the opportunity to review the incumbent local exchange carriers' testimony in these proceedings and final, detailed proposals concerning its various hot cut proposals.

IV. OPERATIONAL AND TECHNOLOGICAL ISSUES RELATED TO UNBUNDLED LOOPS GIVE RISE TO IMPAIRMENT

Q. PLEASE SUMMARIZE THE ISSUES RELATED TO UNBUNDLED LOOPS THAT GIVE RISE TO IMPAIRMENT

A. The majority of the operational issues I describe below results directly from the fact that in a UNE-L environment BellSouth will be separating network elements, which it had specifically combined to provide its own retail service in as efficient a manner as possible (and currently maintains in a combined fashion to provide UNE-P). The intentional separation, which is required by BellSouth for any UNE delivery strategy other than UNE-P, a combined loop and port, generates at least the following two types of problems:

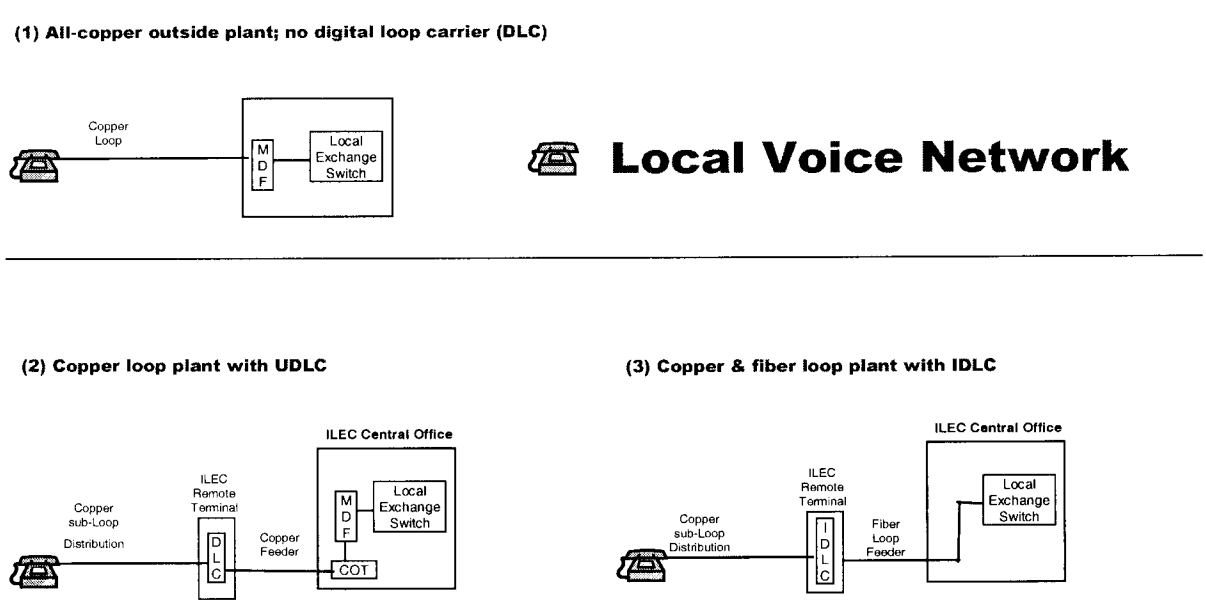
> (1) Because ILECs, including BellSouth, generally insist that integrated DLC facilities (IDLC) cannot be unbundled at the DS-0 (individual line) level, when required to provide unbundled access they typically offer up alternate facilities (e.g., UDLCs or home run copper loops). This is true even though that same customer, as a BellSouth retail end user, or even as an MCI customer served via UNE-P, may have been using the facility currently supporting his/her service for years. Worse yet, in many circumstances the facility to which the customer is reassigned is

technologically inferior to the existing facility, or may simply be a facility that has been poorly maintained. Further, even the presumably simple process of reassigning a new facility is anything but simple, and can cause numerous service-impacting problems for the customer (problems the customer will undoubtedly identify with switching service providers) that would be avoided absent the need to "un-combine" the existing facilities used for retail/UNE-P.

(2) As greater and greater numbers of competitors are moved from more efficient fiber-based services to copper-based services via the reassignment process described above, and the incumbent local exchange carriers take advantage of the FCC's relaxation of retirement and maintenance requirements, the Authority will begin to see two networks develop and exhibit dramatically different levels of quality: the network used by the incumbent local exchange carriers to serve their retail customers, and the network leased to CLECs by the incumbent local exchange carriers (for purposes of competing against CLECs). As CLECs in this environment compete for limited numbers of inferior quality facilities (as BellSouth begins to retire their copper plant), situations of "no facilities" or facilities that will require costly repair before they can be used will become more prominent for the CLEC, thereby increasing the amount of time required to service any single customer, and increasing the CLECs' customer acquisition costs.

Q. PLEASE PROVIDE A BRIEF OVERVIEW OF THE COMMON ILEC LOOP ARCHITECTURES.

A. The diagrams below depict the three most common outside local loop serving arrangements.



In the case depicted at the top portion of the diagram, the copper loop enters the CO where it is manually cross-connected from the vertical side of the MDF (generally considered the "outside plant" or OSP appearance) to the horizontal side of the frame (generally considered the "central office" or CO appearance).

The lower portion of the diagram shows two alternate serving arrangements that use more advanced "pair gain" platforms known as universal digital loop carrier (UDLC) on the left, and integrated digital loop carrier (IDLC) on the right. In a general sense, the purpose of both DLC applications is to aggregate the traffic of literally hundreds of individual customers and then multiplex those individual signals into a single, higher bandwidth signal that can be transported more efficiently between the remote terminal ("RT") and the CO.

In the UDLC scenario, the copper loop that leaves the customer connects to a DLC RT which is likely located in the customer's own neighborhood. The electronics in the DLC convert the analog signals to a digital multiplexed format, and then send the digital signal over a feeder cable (copper in this case) to the CO. The cable terminates in the CO on a Central Office Terminal (COT), which converts the signal back to an analog format, at a voice grade (individual line) level, ultimately terminating at the MDF for manual wiring purposes. The MDF wiring appearances serve as a point of interface for the carriers' switching equipment (and as a point of interconnection for a CLEC).

In the second example, the loop from the customer connects to a remote terminal equipped with IDLC technology. With this application, the electronics in the RT convert the analog signals to a digital multiplexed format, and then send the digital signal over fiber feeder cable to the CO, terminating directly in the incumbent local exchange carriers' digital switch without converting the signal back to analog. While certain fiber termination equipment actually exists between the RT and the switch, the point of the diagram is that equipment required to convert the signal from digital to analog, or any other format, is not required.

Q. CAN YOU EXPLAIN THE DIFFERENCE BETWEEN UDLC AND IDLC IN MORE DETAIL?

A. Older UDLC technology consists of an RT, a transmission (transport) facility to link the RT to the CO, and a COT. The RT aggregates the copper distribution pairs and performs conversions -- converting the customer's analog signal to a

digital multiplexed format going to the CO, and (in the opposite direction) converting the digital signal from the CO to the customer to an analog signal. The transport carries the digital signal from the RT to the COT, and vice versa. The COT equipment converts the digital signal from the RT to an analog signal before the signal is terminated on the MDF and cross-connected to the switch port.

With the introduction of digital switches, an additional conversion was needed at the MDF. The signal that was converted from digital to analog at the COT had to be converted back to a digital signal by an Analog Interface Unit ("AIU") resident in the switch. The required digital-to-analog conversion at the CO was unnecessary, inefficient, and expensive, as more and more digital switches were deployed. IDLC addressed these inefficiencies by eliminating the need for the additional analog-to digital conversions at the CO. The analog signal originating at the customer's premises still is converted to digital at the RT, but no other analog/digital conversions are necessary as digital switches can accept the digitally formatted signal without conversion (something older analog switches could not do). Unlike traditional copper loops or UDLC lines, IDLC lines do not typically have termination appearances on the MDF.

Q. OTHER THAN THE LACK OF DIGITAL/ANALOG CONVERSION, ARE THERE OTHER ADVANTAGES SPECIFIC TO IDLC OVER UDLC?

A. The answer to that question depends on whether retail or UNE-P service is being provided, on the one hand, or UNE-L service on the other. With respect to retail and UNE-P, there are undisputable advantages to IDLC. For bundled services,

IDLC allows local loops to be connected to a digital circuit switch more efficiently and cost effectively when compared to UDLC, because IDLC requires neither an analog conversion at the CO, nor the AIU line card at the switch, nor manual MDF wiring. As a result, compared to today's IDLC technology, older UDLC systems require unnecessary investment for digital-to-analog and analog-to-digital conversion equipment and MDF wiring in the CO.

To the extent that IDLC has advantages over UDLC and the incumbent local exchange carriers continue to insist that they will not unbundle IDLC systems for use by their CLEC competitors, these advantages accrue only to retail and UNE-P services that rely on the combined nature of the IDLC system.

Q. HOW DO THE INCUMBENT LOCAL EXCHANGE CARRIERS CURRENTLY PROVISION UNE LOOPS WHEN THE EXISTING, BUNDLED LOOP FACILITY IS PROVIDED OVER IDLC?

A. I understand that in the majority of circumstances, the incumbent local exchange carriers, including BellSouth, bypass the IDLC system and transfer the loop to an all-copper pair, if one is available, or use a UDLC serving application. Either procedure requires CO and outside plant rewiring to complete the new circuit from the MDF to the customer and provides the CLEC (and the end user customers) with a very different facility than that it enjoyed when receiving service from the incumbent local exchange carriers (and would likely enjoy again if the customer returned to the incumbent local exchange carriers).

Q. HOW DOES THIS CHANGE OF FACILITIES TAKE PLACE?

A. The following diagram taken from Telcordia Notes on the Network Issue 4 section 12.13.2.1 provides an illustrative example of the two "work arounds" described above. **(See Figure 12-33)**

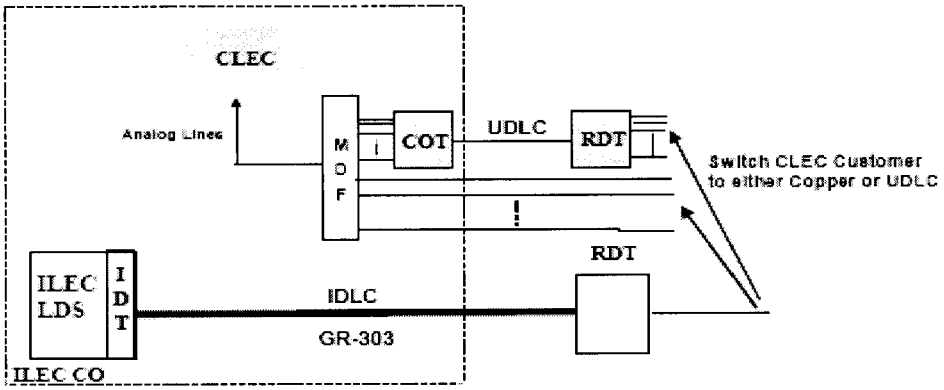


Figure 12-33. IDLC Unbundling - Bypass the IDLC System

Q. UNDER THE COPPER SCENARIO DESCRIBED ABOVE, DO EITHER THE INCUMBENT LOCAL EXCHANGE CARRIER OR THE CLEC NEED TO DISPATCH TECHNICIANS FOR LOOP INSTALLATIONS?

A. Technicians are involved with CO work in this scenario. And, in most cases technicians also are dispatched to the RT and even to the end-user premise in some instances to change facilities. In addition, in some situations, CLECs also must visit the customer's premises to change or validate wiring and test customer equipment. In comparison, a UNE-P environment involving an "as is" or "as specified" migration does not typically require the incumbent local exchange carriers or the CLEC to dispatch technicians to the CO or field.

Q. DO THESE UNBUNDLING METHODS IDENTIFIED ABOVE IMPAIR THE CLECs?

A. Absolutely. Clearly the CLEC faces both technical and provisioning disadvantages with either work around identified above. The process almost invariably entails additional provisioning time and costs, and the result is often an inferior facility. Likewise, all of these difficulties and increased costs appear to the customer to be a direct result of choosing a competitor's service. The incumbent local exchange carriers' customer who is currently being served by an IDLC (a growing probability) is more likely to convert to a CLEC if the transition is quick and seamless, but not if the new service is technologically inferior and takes an extended period of time to provision.

Further, Section 12.13.3 of Telcordia Notes on the Networks (SR-2275, Issue 4, October 2000) which is entitled "Unbundling Issues Associated with UDLC and IDLC Systems" states that UDLC contributes to multiple problems including (a) increased dial tone delay, (b) degradation of on-hook transmission services, such as caller ID, (c) degradation of signal quality as a result of multiple A/D and D/A conversions and (d) reduction in analog modem operation speeds due to the number of A/D conversions.

Q. CAN YOU EXPLAIN THIS LAST ISSUE – REDUCED MODEM SPEED – IN GREATER DETAIL?

A. Microsoft's Windows 2000 support website explains that: "there can be only one analog connection between your modem and the host computer" if a PC modem is to support a V.90 dial-up connection capable of operating at speeds up to 56 kilobits per second (kbps), making full use of the capacity available.[2] Where end users are taken off IDLCs and unbundled loops provisioned via UDLC, such loops will necessarily include multiple A/D conversions and modems operating on those loops will, therefore, be incapable of supporting a V.90 dial-up protocol. Instead, modems will drop to a V.34 protocol, which is limited to 33.6 kbps. BellSouth's *Loop Technology Deployment Directives* corroborates this conclusion that modem speeds for circuits on universal carriers will be lower than those on IDLC. Clearly, unbundling such loops and placing them onto UDLC facilities will hinder performance when compared to an incumbent local exchange carriers', and specifically BellSouth's, retail or, UNE-P based, services.

Additionally, it is unclear whether the incumbent local exchange carriers' provisioning of these lesser capable loops is consistent with the FCC's loop unbundling rules. FCC Rule 51.319(a)(2)(iii) states:

> When a requesting telecommunications carrier seeks access to a hybrid loop for the provision of narrowband services, the incumbent LEC may either:
>
> (A) Provide non-discriminatory access, on an unbundled basis, to an entire hybrid loop capable of voice-grade service **(i.e., equivalent to DS0 capacity),** using time division multiplexing technology; or
>
> (B) Provide non-discriminatory access to a spare home-run copper loop serving that customer on an unbundled basis.

(Emphasis added)

[2] See Attachment JDW - 3.

Q. CAN THE AUTHORITY HELP TO ADDRESS THE OPERATIONAL IMPAIRMENT ISSUES YOU HAVE DESCRIBED ABOVE?

A. Yes. But addressing these issues will require diligent efforts on the part of the Authority as well as the incumbent local exchange carriers. The only way to ensure CLECs are not impaired is to ensure they have access to the same facilities the incumbent local exchange carriers use to serve its end-user customers and UNE-P providers use to provide their services. In the case of IDLC, that can only be accomplished by unbundling the IDLC technology in an electronic (seamless, no dispatch) manner that provides the CLEC with access to individual customer circuits at a digital level. Short of achieving this solution, it is clear that CLECs will continue to be impaired in the marketplace without UNE-P because they will be saddled with less effective facilities to be used in competing for the very same end user customers.

Q. CAN IDLC BE UNBUNDLED DIGITALLY AS YOU DISCUSS ABOVE?

A. Yes, despite arguments to the contrary, it is technically feasible to unbundle IDLC in a digital format without losing the inherent "integrated" advantages enjoyed by the incumbent local exchange carriers' bundled products. Indeed, the FCC in its *Triennial Review Order* noted:

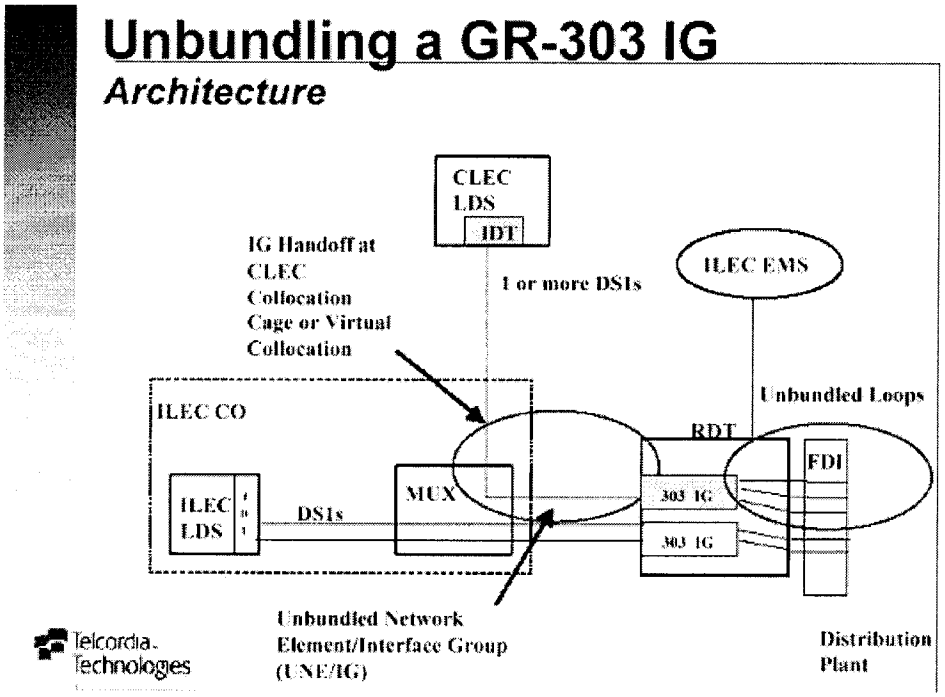
> "We recognize that it *is* technically feasible (though not always desirable for either carrier) to provide unbundled access to hybrid loops served by Integrated DLC systems."[3]

[3] *Triennial ReviewOrder*, ¶ 297, footnote 855 (emphasis added).

The most advanced IDLC systems engineered and deployed today (GR-303 compliant) have that capability. Bellcore (now Telcordia), which developed the GR-303 interface, describes at least two methods by which GR-303 compliant IDLC can be unbundled electronically without requiring a dispatch.

Q. PLEASE DESCRIBE THOSE METHODS.

A. One such method entails the establishment of separate interface groups (IGs) at the IDLC remote terminal so that a distinct IG is assigned to a CLEC and passed through a multiplexing device in the CO for purposes of accessing individual lines at the DS0 or DS1 level. This unbundling strategy has been discussed for years by industry bodies, and has been supported by Telcordia in numerous symposiums. The following diagram depicting how this process would work was constructed by Telcordia and provided to the industry in one of its GR-303 symposiums.



Source: Telcordia's GR-303 Access Symposium binder, Tab 4, August 11, 1999

Q. DO OTHER METHODS OF UNBUNDLING IDLC EXIST?

A. Yes, Telcordia also describes another method of sharing GR-303 Interface Groups between the incumbent local exchange carrier and the CLEC, using a sidedoor port on the incumbent local exchange carrier's digital switch for purposes of accessing individual DS0s for transfer to the CLEC's switch. The diagram below shows the use of a GR-303 Interface Group sharing the incumbent local exchange carrier's and CLEC traffic where all CLEC traffic is routed through a sidedoor port, supporting a DS1 or DS0 unbundling scenario. This drawing is also taken from Telcordia documentation, this time from Telcordia's most recent issue of

Notes on the Network, a leading source of engineering documentation relevant to today's telecommunication network. [4]

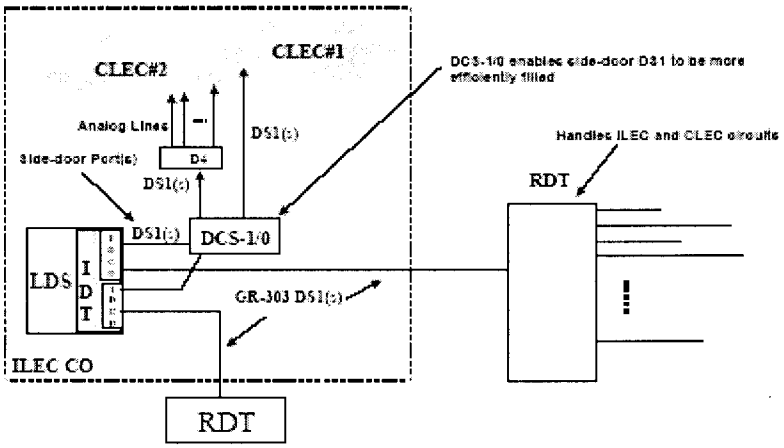


Figure 12-36. IDLC Unbundling Using Sidedoor Port

In the scenario above, unbundled CLEC loops are provisioned as non-locally switched circuits within the IDLC system. Telcordia describes this application as follows:

> "While the digital system cross-connect ("DCS"), DCS-1/0, is shown in the figure, it is not a requirement of this architecture. The advantage of using a DCS-1/0 is realized if the CLEC is not fully utilizing a DS1 from the ILEC local digital switch (LDS) to the CLEC, and multiple switch modules with individual digital control units (IDCU) are used by the ILEC. If a DCS-1/0 is placed between the LDS DS1 sidedoor port and the CLEC DS1s, it would permit full utilization of the sidedoor LDS/IDCU hardware by enabling CLEC DS0s to be rearranged in the DCS-1/0 and placed on the individual CLEC DS1s."

(See *Notes on the Networks* at Section 12-56).

[4] Examples taken from: Telcordia Notes on the Networks, Issue 4, October 2000.

Q. IN ADDITION TO CLECS BEING ABLE TO GAIN ACCESS TO UNBUNDLED CIRCUITS, ARE THERE OTHER ADVANTAGES TO THIS TYPE OF DIGITAL UNBUNDLING?

A. Yes, there are. Not only would either of these methods provide a CLEC unbundled access to the same customer loops the customer enjoys today, without a technician dispatch, it would also mitigate (if not remove entirely) the need for manual intervention in the loop provisioning process. Because GR-303 IDLC systems are largely software driven, and do not rely on manual copper wire manipulation for purposes of cross-connecting the derived circuits they support, unbundled loops could be provisioned to a CLEC on an electronic basis, free of any costly or time consuming technician dispatch. This type of IDLC unbundling thus would go along way toward providing nondiscriminatory access to unbundled loops, and also toward removing impairment caused by the manually intensive and cumbersome hot cut processes supported by the incumbent local exchange carriers. In short, this type of unbundling once implemented, tested and proven in a commercial setting, would be a major step toward removing the impairment currently faced by mass-market CLECs without access to unbundled local switching.

Q. ARE THERE COMPLEXITIES ASSOCIATED WITH UNBUNDLING IDLC IN THE FASHION YOU HAVE DESCRIBED ABOVE?

A. Yes, there are. Although unbundling IDLC is feasible, the work required to establish necessary processes and techniques to unbundle IDLC in this fashion in

a commercial setting has never been undertaken in earnest by the ILECs. They have simply been provided no incentive to support this type of process that will only serve to enhance competition in the local market they currently dominate. As such, time and effort must be put toward making this technology a reality. Below I list a number of the obstacles that must be overcome on the road to efficiently unbundling IDLC for purposes of removing impairment:

A. Because each CLEC circuit requires a nailed up DS0, without additional software functionality or other processes, the ILEC may encounter blocking over the IDLC system as other circuits compete for DS0 channels.

B. The number of sidedoor ports that can be engineered varies depending on the LDS supplier and no standard appears to have emerged, hence, a concerted effort on the part of the ILEC may be required to standardize this technology for this purpose.

C. There is limited support in existing special services design systems and databases to support sidedoor port circuits. Again, this results primarily from the fact that the vendors design systems based on the needs of their primary customers and the incumbent local exchange carriers have had little incentive in the past to pursue this type of unbundling technology. This issue could undoubtedly be overcome by the vendors, if provided the proper incentive.

D. Other issues regarding security for an IDLC system providing multiple IGs to multiple CLECs need to be addressed. Likewise, numerous other details associated with sharing test resources, alarms, etc. would require additional development.

Q. WHAT CONFIDENCE CAN THE AUTHORITY HAVE THAT IDLC CAN BE UNBUNDLED AND THAT THESE ISSUES YOU'VE IDENTIFIED ABOVE CAN BE OVERCOME?

A. Though these issues are real, and real effort will be required to address them, Telcordia developed the specifications for the GR-303 platform for unbundling, and has demonstrated its commitment to resolving the issues associated with unbundling by providing the methods described above. In the final analysis, these types of issues are really no different than the many issues the industry has been addressing for several years concerning the evolution of the network and unbundling in general. The arguments the ILECs typically make in opposition to IDLC unbundling should remind the Authority of similar arguments the same ILECs made almost ten years ago when they argued that loops in general could not be unbundled without catastrophic repercussions to the entire network. Those catastrophic events failed to materialize and the same will undoubtedly hold true for IDLC unbundling.

Q. WHY IS THIS SUCH AN IMPORTANT ISSUE?

A. BellSouth's Loop *Technology Deployment Directives* call for increased use of fiber fed IDLC systems throughout the company's operating territories. Moreover, that same document calls for decreased reliance on copper facilities and, to an extent, calls for the retirement of such facilities. Increasingly, copper will become scarce. IDLC technology is currently employed to reach approximately one third of the company's retail and UNE-P based end users. As a result, absent some resolution of the problems identified above, a significant percentage of the end users in some exchanges would likely experience either decreased service quality if they switch to a CLEC's service accommodated by

UNE-L (because their loop will be changed to a less efficient technology), or they could experience significant delays in service availability from the CLEC as the incumbent local exchange carriers "work around" the IDLC technology for purposes of providing an alternative facility. In many cases customers will experience both problems when purchasing service from a CLEC in this manner, but would experience none of those same problems if they stayed with the incumbent local exchange carriers, or returned to the incumbent local exchange carriers' service. In either circumstance, the CLEC will be required to wait longer, and pay more to serve its customer when IDLC is present, absent the unbundling options I've described above.

Q. HOW CAN THE AUTHORITY ADDRESS THIS ISSUE?

A. The Authority should find that CLECs are impaired without access to UNE switching until the IDLC issues have been addressed. Second, MCI urges the Authority to take a leadership role on this issue and require BellSouth to reuse existing loop facilities when requested to provide unbundled access to end-users and to provide a *digital* handoff to CLECs where IDLC is deployed. While the actual implementation of such a ruling will take time and collaborative effort, the rewards to customers are plentiful. A marketplace where each customer's loop is truly portable between carriers will provide real benefits.

Q. ARE THERE OTHER AREAS THE AUTHORITY SHOULD FOCUS ON TO ADDRESS THE IDLC ISSUE?

A. Yes, there are. Until IDLC can be unbundled, and even thereafter for those facilities not served by IDLC, issues concerning accessing high quality, copper facilities will continue to exist. As fiber-based facilities continue to expand in use in the network, and as the incumbent local exchange carriers continue to retire copper facilities that have been replaced by those newer technologies, available, high quality copper loops will become less prevalent and "no facilities available" notices for UNE loop orders will become more common.

Q. ARE THERE STEPS THE AUTHORITY CAN TAKE TO ADDRESS THE ISSUE OF AVAILABLE COPPER FACILITIES?

A. Yes, there are. The Authority can ensure that BellSouth maintains and retires facilities in a nondiscriminatory manner, thereby ensuring that maintenance and facility retirements are undertaken pursuant to proper engineering management, not at the control of competitive strategy. Indeed, the FCC's *Triennial Review Order* also encourages this type of non-discriminatory treatment:

> We require incumbent LECs to make routine network modifications to unbundled transmission facilities used by requesting carriers where the requested transmission facility has already been constructed. By "routine network modifications" we mean that incumbent LECs must perform those activities that incumbent LECs regularly undertake for their own customers.[5]

V. COLLOCATION AND TRANSPORT ISSUES MAY GIVE RISE TO IMPAIRMENT

Q. PLEASE INTRODUCE THIS ISSUE.

[5] *Triennial Review Order,* ¶632.

A. For MCI to move toward a mass market UNE-L deployment strategy, such a strategy must be operationally sound and economically viable. MCI will be unable to offer retail services when and where these requirements are not met. If MCI is to rely on the UNE-L strategy, MCI must be able to reach mass market customers utilizing collocation and transport services required to extend loops to its switching facilities. Timely, efficient and low cost access to these elements is therefore critical.

Q. PLEASE BRIEFLY DISCUSS COLLOCATION AND HOW IT IS GENERALLY ACCOMPLISHED FOR PURPOSES OF ACCESSING UNE LOOPS.

A. In simplest terms, collocation within an incumbent local exchange carriers' CO provides a CLEC two things required to support a UNE-L delivery strategy (1) an environmentally controlled space for purposes of placing transport equipment; and (2) access to the incumbent local exchange carriers' MDF and potentially other frames for purposes of accessing UNE loops. The MDF is the central point of termination for virtually all voice-grade facilities and equipment, except IDLC, in a CO. At a very simplistic level, COs are designed such that any loop can be cross-connected to any individual CO electronic equipment (primarily the switch for purposes of completing basic local exchange services). This is accomplished in most cases by terminating all outside plant facilities to a defined "appearance" on the MDF. Likewise, the majority of CO electronic equipment is terminated to the MDF with a defined appearance. After all such equipment is terminated to the

MDF in this fashion, connecting any two pieces of equipment for purposes of providing service can be accomplished by placing a cross-wire connection (a very labor intensive, "on site" process) between the two appearances for purposes of establishing an electrical circuit. All MDF appearances are electrical as opposed to optical, which are terminated using different equipment. From a collocating CLEC's perspective, it is the MDF where the CLEC gains access to the outside plant network of the incumbent local exchange carriers and it is from that location that the differences, and disadvantages to the collocating CLEC, become starkly clear.

Q. PLEASE DESCRIBE THE DISADVANTAGES THAT ACCRUE TO A CLEC THAT MUST COLLOCATE TO ACCESS A UNE LOOP.

A. BellSouth, for example, can access customers by performing a single manual step -- placing a jumper on the frame and thereby connecting its local switch with the customer's loop. The incumbent local exchange carriers have developed their network over a period of more than 100 years with the specific intention of making this process as efficient as possible. Compare that simple process with the activities required by the CLEC to accomplish the same connection and the disadvantages become clear. For example, a CLEC must "build out" from its own CO electronic equipment to each incumbent local exchange carriers' CO via collocation arrangements and physical transport facility placements, to reach the very same customer. There are obvious differences in the costs and activities associated with serving an end user customer between the incumbent local

exchange carriers, which perform a single step, and a CLEC that must perform multiple steps in addition to the step performed by the incumbent local exchange carriers. Because the CLEC is required to perform these additional steps, and because these steps are costly (as discussed in MCI's economic testimony), the CLEC is – by definition – disadvantaged and therefore potentially impaired.

COLLOCATION RELATED IMPAIRMENT

Q. IS MCI IMPAIRED AS A RESULT OF ISSUES PERTAINING TO COLLOCATION?

A. Yes. As it stands today, MCI and many other CLECs do not currently have collocation arrangements (whether they be physical, cageless or virtual) that would be necessary to serve their UNE-P based mass market customers throughout the state. Indeed, MCI serves ********** customer lines via UNE-P in ********** different COs throughout Tennessee. By way of comparison, MCI is collocated in only ********** different BellSouth COs in Tennessee, leaving approximately ********** BellSouth COs where MCI has today no way to reach its customers were the Authority to reach a conclusion that MCI was not impaired without UNE-P.

Q. CAN MCI UTILIZE EELS IN THE NEAR TERM TO SERVE THESE CUSTOMERS AND THEN BUILD OUT ITS FACILITIES TO THOSE OFFICES OVER TIME IF REQUIRED?

A. No. It is best to take those two issues one at a time. First, I discuss the EEL and its potential for assisting UNE-L carriers later in this testimony. Suffice it to say for now that much development work remains before EELs can be relied on to serve mass market customers. Second, it is likely that given proper time, financial wherewithal and potential profitability, MCI could build out its network and collocate in additional COs. However, if the Authority is not able to assist the industry in overcoming the operational issues I have identified above with respect to a UNE-L delivery platform, there is little incentive for MCI to expend resources for collocation space that cannot be used to its fullest potential. Moreover, setting aside questions regarding the extent to which mass market customers can be economically served based on a network that includes collocation, it is currently unclear whether the CLECs as a whole will be able to obtain collocation arrangements in conjunction with the necessary transport facilities on a timely basis such that a migration can be supported. Keep in mind that in some Tennessee wire centers numerous existing providers would need to procure incremental collocation space to serve their UNE-P customers. Further, collocation is a time-consuming process that requires CLECs to perform numerous complex functions and activities that are not required with ULS. Each step taken by the CLEC to reach the end user customer through collocation adds time and cost to the process and introduces a probability of error and customer dissatisfaction that is not associated with the incumbent local exchange carriers' provision of service to the same customer on a retail basis or UNE-P.

Q. ASSUMING THAT MCI IS ABLE TO OBTAIN THE COLLOCATION ARRANGEMENTS NECESSARY TO SERVE EXISTING AND FUTURE END USER CUSTOMERS, WHAT OTHER ISSUES MAY CAUSE IMPAIRMENT?

A. It has been MCI's experience during the early stages of collocation that, even when space is ultimately made available by an ILEC, it is not uncommon to experience significant delays before gaining access to the requested arrangements. To the extent that history repeats itself in an era where requests for collocation would obviously increase dramatically, CLECs could have difficulties reaching their customers without continued availability of UNE-P.

Q. HOW COULD THE AUTHORITY REMEDY THESE POTENTIAL PROBLEMS?

A. To the extent the Authority enters at some future date a finding of no ULS impairment in this docket, the Authority should implement backstop measures related to collocation. Specifically, to the extent that a CLEC's ability to access its end users is delayed or otherwise impeded as a result of the incumbent local exchange carriers' collocation performance, the Authority should mandate that ULS remain available to such carriers and in such locations where mass market customers are concerned. Moreover, to the extent that collocation is ultimately implemented in such a location, the CLEC should have the choice to leave any remaining customers on UNE-P until such time as a migration to UNE-L is operationally feasible.

TRANSPORT-RELATED IMPAIRMENT

Q. WHY HAVE YOU INCLUDED TRANSPORT IN THE SAME SECTION OF YOUR TESTIMONY AS COLLOCATION?

A. Transport and collocation are intrinsically related because of the functions they perform in a typical CLEC network. Availability of and access to collocation space is meaningless in a CLEC network unless the CLEC is able to reach the end user customer's loop and extend it to its own switch via available transport capacity. Therefore, collocation without available transport, and vice versa, renders a UNE-L framework unusable. The Authority can consider the UNE-L framework to be a complex chain, each link of which must be procured, assigned, provisioned and maintained for customers to receive telephone services without disruption. Each link is subject to its own issues and complications, but each link is equally important to providing the ultimate service. Any single component of the service, including transport, has the potential to take the customer out of service if something goes wrong.

Q. DOES TRANSPORT POSE CHALLENGES IN AND OF ITSELF?

It certainly can. In a situation where CLECs are replacing UNE-P with UNE-L, they will rely heavily on their ability to use the incumbent local exchange carriers' provided transport to extend individual customer loops to their own local switching facilities. Additionally, CLECs will be largely dependent on the

incumbent local exchange carriers' provided transport to originate and terminate local, intraLATA and interLATA traffic on behalf of their end users that, heretofore, had been carried within the incumbent local exchange carriers' network via shared transport. Moreover, CLECs will likely use the incumbent local exchange carriers' provided transport to establish 911 trunk groups and, to a lesser extent, OS and DA trunk groups. The sheer magnitude of blanketing a state or even a LATA with collocation arrangements and the transport facilities described herein can become daunting from a logistic and economic perspective. Given that these transport requirements are, for the most part, over and above those already required by a UNE-P-based CLEC, the logistical and financial ramifications flowing from these requirements may lead to real operational and economic impairment.

Q. PLEASE DISCUSS SPECIFIC OPERATIONAL ISSUES THAT MAY GIVE RISE TO IMPAIRMENT.

A. It is unclear whether the incumbent local exchange carriers' networks are currently set up to accommodate the CLECs' need for transport, both in terms of their need to extend loops (whether via collocation and interoffice transport arrangements or via EELs) to their own switches or in terms of meeting demand for the transport necessary to originate and terminate traffic. Thus, it is unclear whether the incumbent local exchange carriers will claim that "facilities are not available," rendering a migration from UNE-P to UNE-L doubtful at best. Moreover, it is unclear whether the incumbent local exchange carriers will claim

that as a result of the *Triennial Review Order* it is not required to provide transport to requesting carriers in any or all of the circumstances identified above. Indeed, if the necessary physical connections cannot be obtained, or are substantially delayed, CLECs will be operationally impaired, if not physically precluded from accessing customers.

Q. PLEASE EXPLAIN IN MORE DETAIL YOUR CONCERNS RELATED TO TRANSPORT CAPACITY REQUIRED TO ORIGINATE AND/OR TERMINATE TRAFFIC.

A. When a customer is served via UNE-P, his or her local calls are routed just as any other incumbent local exchange carriers' retail customer's calls would be routed. Thus, the majority of that traffic is routed either within the same incumbent local exchange carriers' switch (i.e., an inter-switch call) or to another switch within the same local calling area, which is connected to the caller's originating switch via a direct-trunked connection. As local networks have evolved, trunk groups directly connecting end office switches within a local area have become more common and most ILEC networks today rely heavily on substantial levels of inter-office direct trunking. Absent these direct trunks, tandem switches would be required to route all inter-switch calls.

Q. WILL THESE TRAFFIC PATTERNS CHANGE IF CLECS ARE REQUIRED TO UTILIZE A UNE-L DELIVERY STRATEGY?

A. Yes. As described above, in a UNE-L strategy, the CLEC collocates equipment in the incumbent local exchange carriers' CO and routes the customer's traffic back to its own switching facility. Hence, every call made by the customer (including local, long distance and other call types) is routed through the CLEC's switch now instead of the incumbent local exchange carriers' switch. Likewise, the CLEC's switch is then interconnected with the incumbent local exchange carriers' network either at the tandem (where the vast majority of connections occur at the tandem), or via direct connections to high volume end offices. The entirety of the customer's local traffic that is intended for the incumbent local exchange carriers' customers (presumably the majority of the customers calls given that the incumbent local exchange carriers will still serve the majority of local customers) must now pass through the interconnection trunks established by the CLEC and the incumbent local exchange carriers, instead of through the incumbent local exchange carriers' direct end office trunks as has historically been the case. In short, moving a significant portion of the local customer base from UNE-P to UNE-L will immediately and dramatically change the traffic patterns for a substantial portion of the local traffic that currently rides the network. The implications of this fundamental shift in traffic patterns, and the additional trunking resources required to accommodate it, have not been thoroughly examined.

Q. DO THESE TRAFFIC PATTERN CHANGES HAVE THE POTENTIAL TO IMPAIR CLECS?

A. Absolutely. Even if (1) the hot cut process worked smoothly, (2) the CLEC could somehow gain unfettered access to the customer's loop, (3) collocation could be arranged and (4) the CLEC could transport the customer's traffic back to its own switch, the CLEC could still face severe, customer impacting problems if the incumbent local exchange carriers failed to provide adequate trunking for purposes of terminating traffic originated on the CLEC network. Keep in mind that if all CLECs were required to transition from UNE-P to UNE-L, the incumbent local exchange carriers would, in theory, be required to supplement their trunk groups used for interconnection (including where necessary tandem trunk ports and switching capacity) within 27 months. Unfortunately, where the incumbent local exchange carriers failed to meet this benchmark, it would be the CLEC that would bear the brunt of the failure because it would be the CLECs' customers who would experience network busy signals when they attempted to place local calls to the incumbent local exchange carriers' customer.

Q. HOW SHOULD THESE TRANSPORT ISSUES BE ADDRESSED?

A. The Authority should consider, at a minimum, initiating proceedings that examine and ultimately provide for EELs as discussed more fully later in this testimony; continued availability of transport; and backstop measures that provide for use of ULS for mass market customers where transport is not reasonably available.

VI. THE EEL AS A DS0 LOOP TRANSPORT TOOL

Q. CAN STATE COMMISSIONS WORK TOWARD REDUCING IMPAIRMENT THAT EMANATES FROM TRANSPORT-RELATED ISSUES?

A. Yes. There are a number of transport-related issues that should be addressed. For example, EELs could play a large role in overcoming issues contributing to impairment with respect to transport facilities, but EELs require continued development before they can be used to serve mass market customers. While there are areas where continued development on the part of the industry could mitigate the issues that lead to today's impairment, Authority involvement will be required to make any realistic progress in these areas. The Authority should undertake the following actions to address transport and its potential impact on impairment for mass market switching:

> (1) Monitor concurrent proceedings relative to loop and transport impairment to spot areas where the incumbent local exchange carriers insists triggers have been met for mass market switching, yet the incumbent local exchange carriers are attempting to remove the very UNE transport those triggering carriers use to provide the local services constituting the mass market switching trigger. In other words, if the incumbent local exchange carriers insist a carrier providing UNE-L service in a given area should constitute a mass market switching trigger, the Authority should take a close look at whether the incumbent local exchange carriers are likewise attempting to remove their obligation to provide UNE transport to that very same carrier in the Loop/Transport proceeding. It is likely that the financial and operational issues associated with that "triggering" CLEC will change dramatically (perhaps even fundamentally altering its ability to continue to provide service), if that carrier can no longer purchase transport from the incumbent local exchange carriers on a UNE basis.
>
> (2) The Authority should work with the incumbent local exchange carriers and CLECs alike to provide UNE transport arrangements aimed more directly at serving the mass market. EELs are a primary example. To this

point, EELs have been used, to the extent the incumbent local exchange carriers have provided them at all, primarily for high volume customers with substantial amounts of access traffic. Their use in supporting local services to multiple, individual customers requiring only a few DS0 circuits is largely untested. Nonetheless, EELs have the potential to substantially reduce the additional transport costs inherent within a UNE-L strategy, including notable sunk costs that could be avoided for collocation.

Q. PLEASE EXPLAIN YOUR POINT REGARDING THE POTENTIAL CONNECTION BETWEEN MASS MARKET SWITCHING IMPAIRMENT AND UNE TRANSPORT IMPAIRMENT.

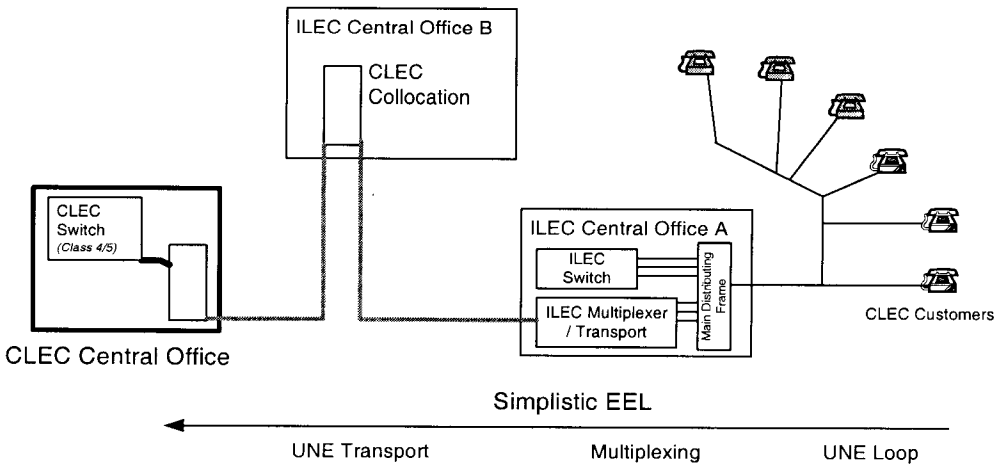
A. Because UNE transport is governed by the Telecommunications Act of 1996, and it is provided via interconnection agreements that are arbitrated by state commissions (with prices set consistent with TELRIC), changes in the availability of UNE transport for existing CLECs providing facilities based services could substantially alter those CLECs' capabilities to continue providing services. Removing the incumbent local exchange carriers' obligation to provide UNE transport within a given market has the potential to affect the process by which those "triggering" carriers access transport capacity because (they would largely be left to fend for transport in a nascent wholesale transport environment or pay substantially higher incumbent local exchange carriers' special access rates. Removing that obligation also would affect the prices the triggering carriers would pay for such transport. A decision to remove UNE transport from the UNE list in a given market thus has the potential to change whether a carrier could be considered a "trigger" with respect to mass market switching impairment. State

commissions should be cognizant of this relationship as they evaluate the evidence provided by the incumbent local exchange carriers specific to impairment in both regards.

Q. PLEASE EXPLAIN YOUR SECOND CONSIDERATION ABOVE CONCERNING DS0-RELATED TRANSPORT ARRANGEMENTS BY DESCRIBING AND DEFINING AN EEL.

A. EELs are nothing more than a combination of unbundled loops, multiplexing in some cases, and unbundled interoffice transport. The diagram below provides a simplistic example where DS0 loops are cross connected to transport facilities (DS0, DS1 or higher depending on volumes) within the ILEC's central office for termination at the CLEC's collocation arrangement in a distant central office.

Simple EEL



The primary advantage of an EEL is that a competitive carrier using an EEL need not collocate in every incumbent local exchange carriers' CO within which it chooses to serve a customer. By combining the unbundled loop with interoffice transport, the CLEC is able to "extend" the loop directly to its own CO. This is important for several reasons. First, EELs allow a carrier to build a customer concentration in an incumbent local exchange carriers' CO before expending considerable resources to build a collocation cage. This not only speeds the competitive carrier's products to market without the need for an expensive and sometimes time-consuming collocation process, but also allows the carrier to make an economically rational decision about allocating finite collocation resources. Second, without the need for a costly collocation in each CO, the economics of a UNE-L strategy can be improved. Finally, and most importantly, EELs are another method by which competing carriers can attempt to gain economies of scale and scope similar to that of their primary competitors, the incumbent local exchange carriers. By spreading the costs of switching equipment over a greater number of customers, competitors can substantially reduce their average costs per-customer.

Q. DOES THE INDUSTRY HAVE MUCH EXPERIENCE WITH EELS USED TO SUPPORT DS0-BASED SERVICES LIKE THOSE THAT WOULD BE REQUIRED TO PROVIDE MASS MARKET OFFERINGS?

A. Compared to the experience it has with UNE-P, no. In fact, in response to MCI Interrogatory 109, BellSouth stated that it is only providing 14 EELs comprised of

DS0 loops and DS0 transport in the state of Tennessee and that it is not providing any EEL arrangements that are comprised of DS0 loops and a higher level (DS1 or DS3 transport) in all of Tennessee. This is highly troubling given the FCC's implicit (if not explicit) reliance on the EEL for purposes of making UNE-L a more attractive delivery mechanism in lieu of continued availability of UNE-P. While UNE-P is a proven mechanism by which to provide competitive services to mass market customers in an efficient and economical manner, UNE-L fueled by increased reliance on DS0-based EELs is almost completely untried and certainly unproven. Very little if any real world experience exists in support of the notion that EELs can actually be used effectively as a DS0 transport option on any scalable, commercially viable basis.

Q. WHAT SHOULD BE DONE SO THAT CLECS CAN USE EELS EFFECTIVELY IN A UNE-L ENVIRONMENT?

A. There are two primary EEL related objectives that will dramatically increase the likelihood that EELs in the future can be used effectively in a mass market scenario: (1) the Authority can ensure that any approved incumbent local exchange carriers' Transitional Batch Hot Cut and Mass Market Hot Cut processes include detailed information and processes related to "cutting" a UNE loop to an EEL arrangement, as opposed to a the more restrictive proposal that collocation cages be the only location to which loops can be "hot cut" ; and (2) the Authority should explore arrangements related to "concentrated" EELs. The Authority should elevate EELs to a more effective platform capable of enhancing

the likelihood of UNE-L success, and therefore likelihood mass market customers will enjoy competitive alternatives from carriers other than those relying solely on UNE-P. After having affirmed, in this proceeding, the FCC's finding that CLECs like MCI are impaired without access to UNE switching functionality, the Authority should begin the process, via follow-up proceedings, of addressing those issues generating impairment. When evaluating ways to overcome the economic and operational issues related to transport, the Authority's time would be well spent exploring with the industry how EELs could work more effectively in a concentrated format, and the extent to which ordering and provisioning processes specific to concentrated EELs could be used to limit some of the economic and operational challenges that exist with providing transport via a UNE-L platform today.

Q. HOW SHOULD BELLSOUTH'S HOT CUT PROCESSES CHANGE TO ACCOMMODATE EELS?

A. In order to make EELs useful, CLECs should be allowed to submit an LSR that requests a loop housed in BellSouth Central Office A, for example, to be "hot cut" to a collocation facility (designated by a specific CFA) in Central Office B. When BellSouth receives such an order, it should provision on the CLEC's behalf, as part of its hot cut pre-wiring function, a DS0 EEL extending from Central Office A to the CLEC's CFA in Central Office B. All ANI testing should be completed via the DS0 EEL. On the day of the cut, BellSouth should cut the requested loop

to the EEL so that CLEC dial tone from its collocation in Central Office B is provided to the customer's loop located in Central Office A.

Q. WHAT DO YOU MEAN BY "CONCENTRATED" EELS?

A. A concentrated EEL is nothing more than the same unbundled loop and interoffice transport combination, with the added capability to "oversubscribe" the interoffice transport element with unbundled loops in a greater than 1:1 ratio. Said another way, "concentrating" an EEL allows a CLEC to purchase far fewer interoffice transport circuits to serve the same number of customers, with little or no impact on its resulting quality of service.

Q. HOW WOULD THE CLEC ACHIEVE A CONCENTRATION RATIO GREATER THAN 1:1?

A. Next generation DLC equipment (primarily GR-303 compatible equipment) allows a carrier to concentrate traffic traveling between an RT and the integrated terminal on the CO switch. GR-303 compatible DLC allows a carrier to engineer its outside plant facilities with 4:1, 6:1 or even greater levels of concentration, thereby substantially reducing the feeder capacity required to serve the same number of distribution pairs.[6] A concentrated EEL relies on this very same technology in extending the loop between COs.

[6] See Newton's Telecom Dictionary, 19th Edition; Copyright 2003 Harry Newton, Published by Telecom Books, An imprint of CMP Media Inc., New York, NY 10010, page 361. IDLC systems can achieve concentration ratios of up to 44:1 depending upon traffic characteristics.

Q. HOW WOULD A CONCENTRATED EEL BE DIFFERENT FROM THE USE OF EELS TODAY?

A. One of the primary disadvantages of a traditional EEL delivery platform is that a competitive carrier must purchase one interoffice transport circuit for every unbundled loop it purchases in a CO, which limits competing carriers to a 1:1 concentration ratio between loop and interoffice transport. This restriction significantly and unnecessarily increases the costs of EELs and contributes to an enormous waste of the incumbent local exchange carriers' interoffice transport resources. A requirement that the incumbent local exchange carriers provide EELs in a more efficient, concentrated manner can reduce transport costs by as much as 75% to 90% and reduce wasted capacity by the same amount.

Q. PLEASE EXPLAIN THIS POINT IN GREATER DETAIL.

A. A concentrated EEL arrangement could rely on the same GR-303 equipment discussed earlier. In simplest terms, to support a concentrated EEL arrangement, BellSouth could be required to place a GR-303 compatible RT in their CO, and lease access to that GR-303 RT on a "per port basis" to individual CLECs. Using the GR-303 RT, individual CLECs could purchase individual DS0 UNE loops from the BellSouth's, cross-connect those loops to the RT, and purchase transport from the RT to their own CO switches (using GR-303 signaling). Assuming a CLEC chose to use 4:1 concentration in such an arrangement, the CLEC would, using the concentrated EEL in this fashion, be required to purchase 1/4 the

interoffice transport capacity originally required (likewise using 6:1 concentration would allow the CLEC to purchase only 1/6 the amount previously required).

Q. PLEASE SUMMARIZE YOUR POSITION ON CONCENTRATED EELS.

A. The concentrated EEL typifies the manner by which newer technologies can be, and should be, used to reduce costs for all involved, in addition to providing a more efficient and scaleable competitive opportunity. There are few, if any technical barriers to a concentrated EEL arrangement and while operational issues will no doubt require some amount of development, the competitive advantages undoubtedly require the effort. Nonetheless, the incumbent local exchange carriers will not offer concentrated EELs of their own volition (indeed, many ILECs have already refused to provide these arrangements in the fashion described above). State commissions therefore should open a docket to develop a workable concentrated EEL platform. Proceedings of this type should immediately follow the Authority's decision in this proceeding in an effort to mitigate those transport-related issues giving rise to the impairment that exists today with respect to unbundled mass market switching.

Q. DOES THIS CONCLUDE YOUR TESTIMONY?

A. Yes, it does.

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Testimony Profile and Experience

Federal Communications Commission

File No. EB-01-MD-017
In the matter of CoreComm Communications, Inc. and Z-Tel Communications, Inc., Complainants v. SBC Communications Inc., Southwestern Bell Telephone Company, Pacific Bell Telephone Company, Nevada Bell Telephone Company, The Southern New England Telephone Company, Illinois Bell Telephone Company, Indiana Bell Telephone Company, Inc., Michigan Bell Telephone Company, The Ohio Bell Telephone Company, and Wisconsin Bell, Inc.
On behalf of CoreComm Communications, Inc.

Florida Public Service Commission

FPSC Docket No.030851-TP
In re: Implementation of requirements arising from Federal Communications Commission's triennial UNE review: Local Circuit Switching for Mass Market Customers. .
On behalf of MCImetro Access Transmission Services LLC and MCI WorldCom Communications, Inc

Georgia Public Service Commission

Docket No. 17749-U
In re: FCC's Triennial Review Order Regarding the Impairment for Local Switching for Mass Market Customers
On behalf of MCImetro Access Transmission Services, LLC MCI WORLDCOM Communications, Inc

Illinois Commerce Commission

ICC Docket No. 00-0700
Illinois Commerce Commission on its own motion -vs- Illinois Bell Telephone Company. Investigation into tariff providing unbundled local switching with shared transport.
On behalf of CoreComm Illinois, Inc.

ICC Docket Nos. 97-0516, 97-0601, and 96-0602
Illinois Commerce Commission on its own motion -vs- Illinois Bell Telephone Company; et al. Investigation into non-cost based access charge rate elements in the intrastate access charges of incumbent local exchange carriers in Illinois. Illinois Commerce Commission on its own motion Investigation into implicit universal service subsidies in intrastate access charges and to investigate how these subsidies should be treated in the future.
On Behalf of AT&T Communications of Illinois, Inc.

ICC Docket Nos. 96-0486 and 96-0596
Illinois Commerce Commission on its own motion Investigation into forward looking cost studies and rates of Ameritech Illinois for interconnection, network elements, transport and termination of traffic. Illinois Bell Telephone Company Proposed rates, terms and conditions for unbundled network elements.
On behalf of AT&T Communications of Illinois, Inc.

ICC Docket Nos. 95-0458 and 95-0531
AT&T Communications of Illinois, Inc. Petition for a total local exchange wholesale service tariff from Illinois Bell Telephone Company d/b/a Ameritech Illinois and Central Telephone Company Pursuant to

section 13-505.5 of the Illinois Public Utilities Act. LDDS Communications, Inc. d/b/a LDDS Metromedia Communications. Petition for a total wholesale network service tariff from Illinois Bell Telephone Company d/b/a Ameritech Illinois and Central Telephone Company pursuant to Section 13-505.5 of the Illinois Public Utilities Act.
On behalf of the Staff of the Illinois Commerce Commission

ICC Docket Nos. 95-0201 and 95-0202
Illinois Bell Telephone company proposed establishment of separate rate elements for single line versus multiline business access line customers. Illinois Bell Telephone company proposed establishment of separate rate elements for directory assistance to business sand residence customers.
On behalf of the Staff of the Illinois Commerce Commission

ICC Docket No. 94-0048
IntraLATA Presubscription Rule Making.
On behalf of the Staff of the Illinois Commerce Commission

ICC Docket Nos. 94-0096, 94-0117, and 94-0146
Proposed Introduction of a Trial of Ameritech's Customers First Plan in Illinois, et al.
On behalf of the Staff of the Illinois Commerce Commission

Indiana Regulatory Utility Commission

IRUC Cause No. 40571-INT-03
AT&T Communications of Indiana, Inc. TCG Indianapolis petition for arbitration of interconnection rates terms and conditions and related arrangements with Indiana Bell Telephone Company, Incorporated d/b/a Ameritech Indiana pursuant to Section 252(b) of the Telecommunications Act of 1996.
On behalf of AT&T Communications of Indiana, Inc and TCG Indianapolis.

IRUC Cause No. 40785
In the matter of the investigation on the Commission's own motion into any and all matters relating to access charge reform and universal service reform including, but not limited to high cost or universal service funding mechanisms relative to telephone and telecommunications services within the state of Indiana pursuant to IC 8-1-2-51, 58, 59, 69; 8-1-2.6 ET. SEC. and other related state statutes, as well as the Federal Telecommunications Act of 1996 (47 U.S.C. Sec. 151, ET. SEC.)
On behalf of AT&T Communications of Indiana, Inc.

IURC Cause No. 40611
In the matter of the Commission investigation and generic proceeding on Ameritech Indiana's rates for interconnection, service, unbundled elements, and transport and termination under the Telecommunications Act of 1996 and related Indiana statutes.
On behalf of AT&T Communications of Indiana, Inc.

Michigan Public Service Commission

MPSC Case No. U-13796
In the matter, on the Commission's own motion, to facilitate the implementation of the Federal Communication Commission's Triennial Review determinations in Michigan.
On behalf of Sage Telecom, Inc.

MPSC Case No. U-12622

James D. Webber

In the Matter of the application of Ameritech Michigan for approval of shared transport cost study and resolution of disputed issues related to shared.
On behalf of CoreComm Michigan, Inc.

MPSC Case No. U-12465
In the matter of the application of AT&T Communications of Michigan, Inc., and TCG Detroit for arbitration of interconnection rates, terms and conditions and related arrangements with Ameritech Michigan Pursuant to 47 USC 252(b).
On Behalf of AT&T Communications of Michigan, Inc., and TCG Detroit.

MPSC Case No. U-11831
In the matter, on the Commission's own motion, to consider the total long run service incremental costs for all access, toll, and local exchange services provided by Ameritech Michigan.
On behalf of AT&T Communications of Michigan, Inc.

MPSC Case No. U-11743

MPSC Case No. U-11757

MPSC Case No. U-11448
In the matter of the application of the Michigan Exchange Carriers Association, Inc., for approval of a joint total service long run incremental cost study.
On behalf of AT&T Communications of Michigan, Inc. and MCI Telecommunications Corporation.

MPSC Case No. U-11280
In the matter, on the Commission's own motion, to consider the total service long run incremental costs and to determine the prices of unbundled network elements, interconnection services, resold services, and basic local exchange services for Ameritech Michigan.
On behalf of AT&T Communications of Michigan, Inc.

Public Utility Commission of Ohio

PUCO Case No. 02-579-TP-CCS
In the matter of the Complaint of CoreComm Newco, Inc., Complainant, V. Ameritech Ohio, Respondent.
On behalf of CoreComm Newco, Inc.

PUCO Case No. 00-942-TP-COI
In the matter of the further investigation into Ameritech Ohio's entry into in-region interLATA service under section 271 of the Telecommunications Act of 1996.
On Behalf of CoreComm Newco, Inc.

PUCO Case No. 00-1188-TP-ARB
In the matter of the application of AT&T Communications of Ohio Inc. and TCG Ohio for arbitration of interconnection rates, terms and conditions and related arrangements with SBC Ohio.
On Behalf of AT&T Communications of Ohio, Inc.

PUCO Case No. 96-899-TP-ALT
In the matter of the application of Cincinnati Bell Telephone Company for approval of a retail pricing plan which may result in future rate increases and for a new alternative regulation plan.
On Behalf of AT&T Communications of Ohio, Inc.

PUCO Case No. 96-366-TP-ALT

James D. Webber

In the matter of the complaint of AT&T Communications of Ohio, Inc., Complainant, V. Ameritech Ohio, Respondent, In the matter of the implementation of substitute Senate Bill 306 or substitute House Bill 734 of the 121st General Assembly.
On Behalf of AT&T Communications of Ohio, Inc.

PUCO Case No. 96-922-TP-UNC
In the matter of the review of Ameritech Ohio's Economic Costs for Interconnection, Unbundled Network Elements, and Reciprocal Compensation for Transport and Terminations of Local Telecommunications Traffic.
On Behalf of AT&T Communications of Ohio, Inc.

Public Service Commission of Wisconsin

PSCW Docket No. 2815-TR-103
Application of CenturyTel of the Midwest-Kendall LLC Requesting Public Service Commission to Approve Alternative Regulation Plan.
On behalf of AT&T Communications of Wisconsin, L.P. and TCG Milwaukee.

PSCW Docket No. 05-TI-174
Generic review of carrier performance and consumer benefits under alternative regulation.
On behalf of AT&T Communications of Wisconsin, Inc.

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A modem connection must fulfill three requirements to support a 56 kilobits per second (Kbps) (also called V.90) connection.

1. The host server must use a digital connection to the network. Your Internet service provider can tell you if they support 56 Kbps service.
2. Both ends of the connection must support the same protocol, the V.90 standard or either of its predecessors, K56flex, or 3COM/USR X2. For example, if your Internet service provider has a V.90 device, your modem must support the V.90 protocol.
3. There can only be one analog connection between your modem and the host computer. The phone line in most homes is an analog line.

If a connection does not meet these requirements, a modem falls back to the fastest protocol that works for the connection. For example, a 56 Kbps V.90 modem falls back to the 33.6 Kbps V.34 protocol if it cannot make a V.90 connection. Even if your connection fulfills these requirements, other factors may reduce either the transmission speed or the number of times that you successfully obtain the highest speed connection. For example, old lines or lines that are subject to interference may reduce transmission speeds. Maximum throughput speeds of 26 Kbps are not unusual in these cases.

Devices to improve the quality of your telephone service may also hamper 56 Kbps V.90 modem connections. Load coils found on long wire lengths to improve voice quality do not usually prevent V.90 connections, but can reduce the speed. Digital pads, which balance the volume of voice calls, usually do not prevent V.90 connections, but they can reduce the speed. Analog pads prevent V.90 connections, because they convert the digital data to analog to balance the volume and then back to digital. This inserts an additional analog section in the line.

In practice, the 56 Kbps speed supported by the V.90 and other protocols is unattainable. U.S. government regulations to safeguard public phone systems right now limit transmission speeds to 53 Kbps. Phone-line noise and other limitations of phone systems usually keep average transmissions in the 40 to 50 Kbps range.

For more information, see The V.90 modulation protocol, Data transfer speed, Improving modem throughput speeds, Optimizing data transfer speed, and Protocols and standards

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