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FEDERAL COMMUNICATIONS COMMISSION
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Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, D.C. 20554

In the Matters of	)	
	)	
Deployment of Wireline Services Offering Advanced Telecommunications Capability	)	CC Docket No. 98-147
	)	
And	)	
	)	
Implementation of the Local Competition Provisions of the Telecommunications Act of 1996	)	CC Docket No. 96-98

COMMENTS OF AT&T CORP.

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EXECUTIVE SUMMARY

In this proceeding, the Commission continues the discussion it began last year in the *Next-Generation Digital Loop Carrier NPRM* ("*NGDLC NPRM*"). While the Commission asks several questions in this proceeding, they are largely directed at determining whether, and to what extent, the Commission should modify its unbundling rules when incumbent local exchange carriers ("ILECs" or "incumbent LECs") deploy fiber-fed digital loop carrier ("DLC") systems and other next-generation loop architectures.

For example, the Commission asks whether the evolving loop architecture, which includes fiber-fed loops attached to DLC systems housed in remote terminals that are equipped with next-generation products such as line cards that combine both splitting and multiplexing functionalities, changes the nature of the local loop. It does not. The loop remains the quintessential monopoly bottleneck. Thus, the Commission has consistently held that competitive local exchange carriers ("CLECs" or "competitive LECs") are entitled to access the full features, functions, and capabilities of the loop, regardless of the loop architecture deployed by the ILECs.

Nothing about next-generation loop architecture alters the basic functionality of a loop: to provide transmission functionality needed for a customer to send and receive telecommunications signals between his location and his chosen service provider's network. As with all network elements, the local loop is defined by its functionality and is not limited to particular services or technologies. As AT&T explains in detail in these comments, as well as in its comments and reply comments in the *NGDLC NPRM* proceeding, the next-generation loop architecture now being installed by the ILECs provides exactly what the traditional loop has always provided: transmission functionality for telecommunications signals between a

customer's premises and the serving ILEC's central office. Thus, the Commission should clarify that CLECs are entitled to access the "entire" loop, including all of the attached electronics used to support the provision of transmission functionality. Such attached electronics include, but are not limited to, remotely deployed digital subscriber line access multiplexers ("DSLAMs") and Optical Concentration Devices ("OCDs"), which provide complementary multiplexing/demultiplexing functions in incumbent LECs' central offices.[1/] Likewise, the implementation of next-generation loop architecture does not change any of the fundamental legal and policy principles that underscore the Commission's other rules relating to the provision of network elements, especially line sharing and line splitting.

In response to the Commission's specific questions in this FNPRM, AT&T also urges the Commission to:

- Reiterate that an ILEC must provide both line sharing and line splitting arrangements to requesting carriers over the "entire loop," regardless of the loop architecture the incumbent LEC has deployed.
- Reiterate that a CLEC's use of the fiber feeder between a remote terminal and the ILEC's central office is included within the definition of the loop.
- Clarify that the existence of fiber feeder in the loop does not change the fact that the line sharing and line splitting transmission functionality between the remote terminal and the central office is part of the loop element and is not shared transport.
- Clarify that the Central Office Terminal ("COT"), OCD, or similar device is part of the transmission path between the customer's premises and the equivalent of a main distribution frame in the incumbent LEC's central office, so that the end of the loop is the network side of the COT, OCD, or similar device.

[1/] Generally the term multiplexing refers to either multiplexing or demultiplexing. For example, when communications are sent from a customer's premises to the service provider's network, the DSLAM performs the multiplexing and the OCD performs the demultiplexing. When the communication flow is reversed, the OCD performs the multiplexing and the DSLAM performs the demultiplexing. For simplicity the functionality is generally referred to herein as multiplexing.

- Clarify that the rules permitting a CLEC the option of obtaining access to unbundled subloops, dark fiber, or "all-copper" loops do not -- and cannot -- displace a CLEC's right to access an entire loop.

- Remove all reference to DSLAMs from the Commission's "packet switching" and loop definitions to assure that CLECs have access to line sharing and line splitting transmission functionalities associated with the entire loop. In this regard, the Commission must also clarify in the *NGDLC NPRM* proceeding that ILECs are required to provide collocation for "true" packet switching equipment.

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COMMENTS OF AT&T CORP.

AT&T Corp. ("AT&T") submits these comments in response to the Commission's Third Further Notice of Proposed Rulemaking in CC Docket No. 98-147 and Fifth Further Notice of Proposed Rulemaking in CC Docket No. 96-98 ("*FNPRM*").

INTRODUCTION AND SUMMARY

The primary objective of the Telecommunications Act of 1996 was to end almost a century of monopoly control over the local telephone market and bring the benefits of competition to consumers. Foremost among the market-opening tools of the 1996 Act was the obligation imposed on incumbent local exchange carriers ("ILECs" or "incumbent LECs") in section 251(c)(3) to open their networks for use by competing carriers. In particular, section 251(c)(3) requires ILECs to provide requesting carriers with nondiscriminatory access to unbundled network elements. In this context, a network element is defined to mean "a facility or equipment used in the provision of a telecommunications service," including all "features, functions, and capabilities that are provided by means of such facility or equipment."[2/] As the

[2/] 47 U.S.C. § 153(29).

Commission has repeatedly recognized, granting competitive LECs unbundled access to the local loop is *paramount* in the effort to foster local competition.[3/]

In response to the passage of the Act and the Commission's implementing rules, AT&T and dozens of others companies invested billions of dollars in new telecommunications facilities and services. These companies took substantial risks in reliance on the promise of the 1996 Act to establish a regulatory framework in which they would have a fair chance to compete with the established incumbents. But implementation of the Act has been derailed by the ILECs' guerrilla warfare tactics of foot-dragging, litigation, and general intransigence in dealing with new entrants. The ILECs' tactics have deprived consumers of competitive choice virtually everywhere. As AT&T Chairman Michael Armstrong recently pointed out, "rather than make local competition work, the incumbent LECs have been working to make competition disappear."[4/] When the Telecommunications Act was passed, the ILECs controlled 99 percent of the local telephone market. Now, five years after the passage of this landmark bill, ILECs still provide local telecommunications services to nearly 94 percent of residential and small business customers.[5/]

Thus, by all accounts, the ILECs are still monopolists with respect to their primary service offering -- local telephony -- and their local loop remains (in the Commission's apt description) the "quintessential bottleneck facility for competing telecommunications carriers."[6/] This indisputable fact has far-ranging consequences for the telecommunications industry, both for traditional voice services and new digital subscriber line ("DSL") services. Indeed, the

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[3/] *See, e.g.*, *Implementation of the Local Competition Provisions of the Telecommunications Act of 1996*, 15 FCC Rcd 3696 ¶ 163 (1999) ("*UNE Remand Order*"); *Implementation of the Local Competition Provisions in the Telecommunications Act of 1996; Interconnection Between Local Exchange Carriers and Commercial Mobile Radio Service Providers*, 11 FCC Rcd 15499 ¶¶ 377-378 (1996) ("*Local Competition Order*").

[4/] C. Michael Armstrong, Remarks at the National Press Club (Feb. 7, 2001).

[5/] *See Trends in Telephone Service*, Federal Communications Commission, Common Carrier Bureau, at 9-5 (Dec. 21, 2000).

[6/] FCC Brief for Respondents at 22, WorldCom, Inc., et al. v. FCC (D.C. Cir. filed Nov. 2, 2000) (No. 00-1002) ("FCC Appellate Br.").

Commission has recognized that ILECs can use their control over the local loop both to "perpetuate their monopolistic dominance of existing" voice markets and to dominate the "emerging" advanced services market, thus reducing CLECs' short-term and long-term viability.[7] As a result, the Commission has consistently found that, absent unbundling of the loop element, the ILECs would retain the ability to use their bottleneck control over the facilities used to provide voice and DSL services to impede competition in both the voice and data market segments:

> [T]he loop connecting a subscriber to the incumbent's central office is a key bottleneck facility that can be used either for circuit-switched voice telephony or for the DSL-based services at issue here. Imposing the service specific limitations . . . on a competitor's access to such facilities would allow incumbents, contrary to the central purpose of the 1996 Act, to leverage their ownership of bottleneck assets to continue exercising monopolistic control of telecommunications markets.[8]

To achieve the competition that Congress intended, the Commission must stay the course here and assure that CLECs have effective access to all ILEC loops. Consumers are increasingly demanding voice and high-speed services over a single line, and incumbent LECs are already satisfying that demand today by aggressively marketing packaged voice and data offerings to their customers. Critically, the ILECs have made it clear that they consider the ability to offer bundled voice and data services over a single loop a significant competitive advantage. The ILECs have also responded to consumer demand for bandwidth-rich DSL services through the deployment of next-generation loop architecture, which greatly enhances both the transmission functionality and the economies of their local loop plant.

There can be no doubt that the evolving loop architecture, which includes fiber-fed loops attached to digital loop carrier ("DLC") systems housed in remote terminals equipped with next-generation products such as line cards that combine both splitting and transmission functionalities, holds the potential for great consumer benefits. If, however, CLECs cannot access all of the functionalities of the loops that use next-generation transmission equipment,

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[7] *Id.*

[8] *Id.* at 16; *see also id.* at 22-24.

they would be unable to compete for the rapidly increasing number of consumers who are demanding a combined voice/data offering, because consumers will have only one carrier who can meet that demand -- the ILEC.

The ILECs' monopoly control over local loops gives them the incentive and the unique opportunity to use new advances in loop technology as leverage to shut down competition for *all* local telecommunications services, both voice and advanced services alike. Unfortunately for everyone but the ILECs, their efforts thus far have been enormously successful. Notably, although the ILECs showed no interest in offering high-speed residential DSL service until prompted to do so in response to emerging competition from cable operators and competitive LECs like Covad and Northpoint,[9/] they now control approximately 90 percent of all residential DSL lines.[10/] Moreover, over the past year, and despite the Commission's carefully-crafted rules in the *UNE Remand* and *Line Sharing Orders* which were explicitly designed to encourage competition for advanced telecommunications services, the data CLEC industry has virtually collapsed. Some of those would-be competitors have already declared bankruptcy, and others are perilously close. The more fortunate data CLECs have "only" lost 90 percent of their market capitalization in less than a year.[11/]

Critically, larger competitors such as AT&T and WorldCom also have not fared much better in their efforts to compete against the ILECs. For over a year, AT&T and WorldCom have

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[9/] *See Deployment of Advanced Telecommunications Capability to All Americans in a Reasonable and Timely Fashion*, 14 FCC Rcd 2398 ¶ 42 (1999) ("[a]ll this investment, especially that by cable television companies and competitive LECs, appears to have spurred incumbent LECs to construct competitive facilities"); *Telecommunications @ The Millenium: The Telecom Act Turns Four*, Federal Communications Commission, Office of Plans and Policy, at 5 (Feb. 8, 2000) ("[c]able companies' service offerings have spurred telephone companies (both incumbents and their competitors) to deploy Digital Subscriber Line (DSL) technologies to deliver broadband access over telephone lines").

[10/] *See TeleChoice DSL Deployment Projections*, *at* http://ww.xdsl.com/content/resources/deployment_info.asp (last updated Feb. 13, 2001) ("*TeleChoice DSL*").

[11/] *See* John Shinal, *Broadband's Pioneers May Get Beaten, Then Eaten*, BUS. WK., Dec. 4, 2000, at 42. Moreover, CLECs as a whole have lost over 73% of their market capitalization since the beginning of 2000. *See* ALTS, *An ALTS Analysis: Local Competition Policy & The New Economy*, at 11 (Feb. 2, 2001).

demonstrated that ILECs are preventing them from providing competitive voice and data services over a single loop as the ILECs and their data affiliates do. At the time AT&T first brought this disparity to the Commission's attention, the ILECs had less than 500,000 DSL customers. They now have almost four times as many.[12/] And the ILECs *still* do not provide AT&T and other competitive carriers with the ability to provide a voice and DSL service (either on their own or with other competing carriers) in a commercially meaningful manner. Thus, while ILECs continue to sign up growing numbers of DSL customers -- most to long-term contracts -- the number of potential customers that can choose competitive carriers to provide both voice and DSL service is decreasing.

In the recent *Line Sharing Reconsideration Order*, the Commission took some key steps to reduce the incumbent LECs' ability to leverage their monopoly control over the loop in an anticompetitive manner by clarifying that the incumbent LECs' obligation to provide line sharing extends to situations in which the loop is served through a fiber-fed DLC at a remote terminal.[13/] In that order, the Commission, rejecting ILEC arguments to the contrary, found that line splitting for UNE-P CLECs must be available on terms and conditions equivalent to line sharing, without creating discriminatory excess costs or service disruption.[14/] Nevertheless, the Commission's *Line Sharing Reconsideration Order* does not, by itself, eliminate the ILECs' ability to limit access to their loop technology to prevent competing carriers from providing the telecommunications services that CLECs want to offer their customers and that customers want to buy.

In order to address some of these important competitive concerns, the Commission asks here whether, and to what extent, it should modify its unbundling rules when incumbent LECs

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[12/] *See TeleChoice DSL* (indicating that ILECs have captured nearly 1.9 million DSL subscribers at the end of 2000).

[13/] *Deployment of Wireline Services Offering Advanced Telecommunications Capability; Implementation of the Local Competition Provisions of the Telecommunications Act of 1996*, CC Docket Nos. 98-147, 96-98, FCC 01-26 ¶ 10 (rel. Jan. 19, 2001) ("*Line Sharing Reconsideration Order*").

[14/] *Id.* ¶¶ 18-23.

deploy fiber-fed DLCs and other next-generation loop architecture.[15/] For example, in the *FNPRM*, the Commission asks whether the fiber feeder that runs from the remote terminal to the central office should be included within the definition of the local loop. The Commission also asks whether the ILECs should be required to provide line sharing -- and, by implication, line splitting -- over fiber-fed, DLC-equipped loops. The answer to both questions is an unequivocal yes.

As a threshold matter, the Commission must recognize that the ongoing changes in network technology do not -- and cannot -- alter the basic functionality of a loop. Nor do they alter competitive LECs' fundamental need for access to their customers. As discussed in Section I.A., the Commission's rules already make clear that competitive LECs are entitled to access all of the features, functions and capabilities of a loop, *regardless* of the loop architecture deployed by an incumbent LEC. That section also demonstrates that the ILECs' implementation of next-generation architecture does not change *any* of the fundamental legal or policy principles that apply to the provision of network elements, especially the fundamental requirement that line sharing and line splitting apply to the "entire loop even where the incumbent has deployed fiber in the loop."[16/] Likewise, as shown in Section I.B., the mere existence of fiber-fed DLC-equipped loops does not change loops into shared transport.

In Section II, AT&T responds to the Commission's inquiry as to whether it should limit a CLEC's right to access a next-generation loop -- for line sharing, line splitting, or any other unbundling purpose -- in circumstances when other "alternatives" are available. The answer is no. In particular, Section II explains why it is imperative that the Commission make it absolutely clear that competitive LECs are entitled to access transmission functionality associated with line sharing and line splitting in *all* circumstances when ILECs deploy fiber in the loop. A review of the facts concerning the architecture and economics of remote terminals shows that neither

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15/ *See FNRPM* ¶ 55.

16/ *Line Sharing Reconsideration Order* ¶ 10.

subloop nor dark fiber alternatives involving remote terminal collocation nor access to all-copper loops is a practical or economic mass-market competitive strategy. Indeed, to interpret these requirements any other way would limit customers who want voice and data services provided on the same line to a choice of the ILEC alone -- an outcome that is entirely at odds with the purpose of the Act.

Finally, as reiterated in the *Line Sharing Reconsideration Order*, the Commission must make certain that its local competition rules can be adapted to the changes in technology and the market, so they will foster economically rational facilities deployment by competitive LECs. As discussed in Section III, to the extent that the Commission's existing rules may be interpreted to limit competitive LECs' access to an entire loop, this is a definitional error that must be corrected. Specifically, AT&T demonstrates that the Commission's packet switching and loop definitions must be modified to conform to the fact that DSLAM functionality deployed in a remote terminal loop architecture performs *only* a transmission (*i.e.*, encoding/decoding, buffering, and multiplexing/demultiplexing, not a packet switching) function. Moreover, AT&T shows that proper resolution of this issue -- assuming a parallel determination that CLECs may collocate "true" packet switching functions at an ILEC's premises -- would free the Commission from the need to create the data equivalent of the UNE platform.

I. INCUMBENT LECs MUST PROVIDE COMPETITIVE LECs ACCESS TO THE TRANSMISSION FUNCTIONALITY ASSOCIATED WITH LINE SHARING AND LINE SPLITTING, REGARDLESS OF THE LOOP ARCHITECTURE THE INCUMBENT LECs MAY DEPLOY

A. The Implementation of Next-Generation Loop Architecture Does Not Change Any of the Fundamental Legal and Policy Principles That Guide the Commission's UNE Rules.

As the comments in the *NGDLC NPRM* proceeding make clear,[17] the ILECs' deployment of next-generation loop architecture does not change any of the fundamental legal

[17] *See Deployment of Wireline Services Offering Advanced Telecommunications Capability*, CC Docket No. 98-147, *Second Further Notice of Proposed Rulemaking*; *Implementation of the*

and policy principles that have guided the Commission's definition of the local loop network element.[18] In the 1996 Act, Congress required incumbent LECs to provide requesting carriers with access to "a facility or equipment used in the provision of a telecommunications service," including all "features, functions, and capabilities that are provided by means of such facility or equipment."[19] Consistent with this statutory mandate, and because "[*u*]*sing the loop to get to the customer is fundamental to competition*,"[20] the Commission properly determined that incumbent LECs must provide local loops on an unbundled basis to requesting competitive carriers.

Two fundamental principles guided the Commission's definition of the unbundled loop element. First, the Commission correctly recognized that the essential function of the loop is to provide *transmission functionality* needed for a customer to send and receive telecommunications signals between his location and a centralized point in the serving ILEC central office where it is technically feasible for a CLEC to connect to the loop facility.[21] Second, from the very beginning, the Commission recognized that the local loop, as all network elements, is defined by its functionality and is not limited to particular services or technologies.[22]

Local Competition Provisions of the Telecommunications Act of 1996, CC Docket No. 96-98, *Fifth Notice of Proposed Rulemaking*, 15 FCC Rcd 17806, 17856 (2000) ("*NGDLC NPRM*").

[18] *See, e.g.*, *NGDLC NPRM*, Comments of AT&T at 44-50; Conectiv at 29-33; CTSI at 29-35; DSLnet at 6-12; Focal at 26-29; Rhythms at 75-81; Reply Comments of AT&T at 42-54.

[19] 47 U.S.C. § 153(29) (defining a "network element"); 47 U.S.C. § 251(c)(3) (requiring incumbent LECs to provide unbundled access to network elements); *see also UNE Remand Order* ¶ 175 ("[t]he definition of a network element is not limited to facilities, but includes features, functions, and capabilities as well").

[20] *Deployment of Wireline Services Offering Advanced Telecommunications Capability and Implementation of the Local Competition Provisions of the Telecommunications Act of 1996*, 14 FCC Rcd 20912 ¶ 30 (1999) (emphasis added) ("*Line Sharing Order*").

[21] *See* 47 C.F.R. § 51.319(a)(1) ("[t]he local loop network element is defined as a *transmission facility* between a distribution frame (or its equivalent) in an incumbent LEC central office and the loop demarcation point at an end-user customer premises") (emphasis added).

[22] *See UNE Remand Order* ¶ 167 ("[o]ur intention is to ensure that the loop definition will *apply to new as well as current technologies*, and to ensure that competitors will continue to be able to access loops as an unbundled network element as long as access is required") (emphasis added); *Local Competition Order* ¶ 292 ("section 251(c)(3) requires incumbent LECs to provide requesting carriers with all of the functionalities of a particular element, so that requesting carriers can provide *any telecommunications services* that can be offered by means of the element") (emphasis added).

As a result, the Commission's rules make clear that competitive LECs are entitled to access the full features, functions, and capabilities of the loop, regardless of the loop architecture deployed by an incumbent LEC. To be sure, nothing about next-generation loop architecture changes the basic characteristics or functionality of the loop element. In fact, mandating the unbundling of fiber-fed, DLC-equipped loops is entirely consistent with the Commission's desire to ensure unbundling obligations remain technology neutral. Five years after the Act came into effect, and four and a half years after the Commission first implemented rules to ensure competitive access to unbundled network elements, the loop remains "a natural monopoly."[23/] Thus, access to the loop element remains a key necessity, even for facilities-based competitors, because without access to loops they will have no way to serve their customers.

Likewise, the incumbent LECs' implementation of next-generation loop architecture does not change any of the fundamental legal and policy principles that underscore the Commission's other rules relating to the provision of network elements. For instance, just as competitive LECs are entitled to access the full features, functions, and capabilities of the loop irrespective of the loop's underlying architecture, competitive LECs also are entitled to establish line sharing and line splitting arrangements in a technology neutral and nondiscriminatory fashion.

The Commission's line sharing and line splitting rules are crystal clear on this point. Indeed, in connection with this very proceeding, the Commission clarified that "the requirement to provide line sharing applies to the *entire* loop, *even where the incumbent has deployed fiber in the loop*."[24/] This "current obligation" applies to line splitting situations with equal force.[25/] In accordance with the Commission's technological-neutrality principle, incumbent LECs must provide both line sharing and line splitting arrangements to requesting carriers over the entire loop, regardless of the loop architecture the incumbent has deployed. The Commission itself

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[23/] *Association of Communications Enterprises v. FCC*, 235 F.3d 662, 663 (D.C. Cir. 2001) ("*Ascent v. FCC*").

[24/] *Line Sharing Reconsideration Order* ¶ 10 (emphasis added).

[25/] *Id.* ¶ 18.

highlights this point by expressly noting that the use of the phrase "transmission facility" in the definition of the local loop, "rather than [the term] 'copper' or 'fiber,' [was] intended to ensure that this definition was technology-neutral."[26/] Moreover, interpreting the line sharing and line splitting obligations any other way would limit the ability of consumers who want voice and data services over the same line to obtain service from anyone other than the incumbent LEC or its affiliate -- an outcome directly contrary to the purpose of the Act.

B. The Existence of Fiber Feeder in the Loop Does Not Change the Fact That the Transmission Functionality Between the Remote Terminal and the Central Office Is Part of the Loop Element and Is Not Shared Transport.

The Commission asks whether a competitive LEC's use of the fiber feeder between a remote terminal and the incumbent LEC central office is included within the definition of the local loop.[27/] The answer is yes. As discussed above, the Commission has already correctly recognized that the "loop" is simply a transmission pathway between a customer's premises to the incumbent LEC's central office, regardless of the underlying technology the ILEC employs to make the physical connections between those points. Therefore, a competitive LEC's use of fiber feeder as transmission functionality at any point between the customer's premises and the incumbent LEC central office is entirely consistent with -- and indeed required by -- the existing definition of the loop.

Fiber feeder is simply outside facility plant that runs between a remote terminal and an incumbent LEC central office and is typically used (in NGDLC applications) to carry separate signal streams for separately aggregated voice and data traffic.[28] In fact, fiber feeder is commonly employed with current "non-advanced" DLC networks that multiplex voice signals using time division multiplexing to aggregate traffic from many customers onto higher capacity

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[26/] *Id.* ¶ 10.

[27/] *FNPRM* ¶ 61.

[28] It should be noted that it is not technically necessary that voice and data signals be carried over separate fiber strands. *See NGDLC NPRM*, Comments of AT&T, Attachment 3, Declaration of Joseph P. Riolo ¶ 33 & nn. 13 & 18 ("Riolo Decl.").

facilities at a remote terminal.[29] There is no question that the feeder plant in such configurations is part of the loop.[30] Thus, the mere fact that the incumbent LECs use a different multiplexing strategy to send data signals in the NGDLC architecture (statistical multiplexing) does not change the fact that the fiber feeder is providing transmission functionality, the hallmark of the local loop.[31] Moreover, given that voice transmission in ATM cells is already technically feasible, there is no reason to believe that separate voice and data multiplexing strategies will continue to be used for an extensive period.

In all events, CLECs' use of the fiber feeder to provide transmission functionality between the customers' premises and the central office is *not* analogous to shared transport. Shared transport integrates the switching and transport functionality of the ILEC and enables CLECs to share in the efficiencies of the ILEC's transport network, but only when it is using ILEC-provided switching.[32] But the DSLAM performs no switching functionality at all, and indeed, there is no switching of any kind that takes place at a remote terminal in the NGDLC architecture. Thus, the ILEC's fiber feeder in the NGDLC architecture cannot be shared transport.

A practical description of the transmission functionality provided by electronics associated with the next-generation loop architecture underscores the importance of identifying these functionalities as part of the loop network element. As deployed in next-generation

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[29] Based on 1999 ARMIS data reported by the RBOCs and GTE, more than 20% of their consumer loops were served by fiber fed DLC.

[30] *See UNE Remand Order* ¶ 175; *Local Competition* Order ¶ 383; *see also* 47 C.F.R. 51.319(a)(1).

[31] There is also no question that it is technically feasible for CLECs and ILECs to share use of the fiber feeder between a remote terminal and a central office. SBC's willingness to provide a "Broadband Service Arrangement" over its Project Pronto architecture illustrates the point that NGDLC architecture permits retail customers to share statistically multiplexed traffic over the same fiber without imposing insurmountable capacity restraints on the network.

[32] *See* 47 C.F.R. § 51.319(d)(1)(iii) (shared transport is defined as "transmission facilities shared by more than one carrier, including the incumbent LEC, between end office switches, between end office switches and tandem switches, and between tandem switches, in the incumbent LEC network"); *cf. UNE Remand Order* ¶ 372 (noting that it is technically infeasible to use shared transport with CLEC-provided switching).

architecture, there can be no dispute that DSLAMs provide only *transmission*, not packet switching, functionality.[33/] Very simply, the DSLAM does not and cannot perform switching functions -- that is, flexibly interconnecting facilities to create end-to-end transmission paths for communications. Rather, the DSLAM creates the packets, which is an encoding function, and performs both buffering and multiplexing -- all of which are transmission functions.[34/]

Once the transmission from the customer premises is split into the high-frequency and low-frequency components -- a function that is neither an advanced service nor a switching function[35/] -- the DSLAM multiplexes the respective communications of all customers onto one and only one path available from there to the central office.[36/] Therefore, when deployed in a remote terminal, the DSLAM functionality does not -- indeed cannot -- provide any switching functionality. And because no switching can occur at the remote terminal, there is no basis (i) to

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[33/] In the *UNE Remand Order*, the Commission found that packet switching involves the "routing [of] individual data units based on address or other routing information." *UNE Remand Order* ¶ 302. Despite this definition, it classified the DSLAM as part of the packet switching network element rather than the loop element. *Id.* ¶ 303.

[34/] *NGDLC NPRM*, Comments of AT&T at 44-47; Alcatel at 6-7; DSLnet at 7-11; Cisco at 8-10. For this reason, the Commission should reject recent attempts by BellSouth to mask the transmission functionality of the line card in the remote terminal by classifying its function as "packet switching." *See NGDLC NPRM*, Ex Parte of BellSouth (filed Feb. 13, 2001). To the contrary, the line card, which performs DSLAM functionality at the remote terminal, provides only *transmission functionality* for both voice and data traffic. BellSouth's recent statements are all the more disingenuous given the fact that it made its recent assertion even though it recently admitted that "a 'line card' is an *integral part of the loop*" when deployed in a remote terminal environment. *NGDLC NPRM*, Comments of BellSouth (2nd NPRM) at 6 (dated Oct. 12, 2000) (emphasis added).

[35/] *See Ameritech Corp., Transferor, and SBC Communications Inc., Transferee, For Consent to Transfer Control of Corporations Holding Commission Licenses and Lines Pursuant to Sections 214 and 310(d) of the Communications Act and Parts 5, 22, 24, 25, 63, 90, 95 and 101 of the Commission's Rules*, 14 FCC Rcd 14712, App. C ¶3(d) (1999) ("*Ameritech/SBC Merger Order*"); *see also NGDLC NPRM*, Comments of AT&T at 61-62; Reply Comments of AT&T at 47-48.

[36/] No party (other than BellSouth, *supra* n.34 above) disputes the DSLAM's multiplexing function in next-generation architecture. In fact, several commenters in the *NGDLC NPRM* proceeding confirmed this point. *See, e.g., NGDLC NPRM*, Comments of Alcatel at 12; DSLnet at 8-9; Cisco at 8. In that proceeding, Cisco clearly stated that the primary function of a DSLAM is multiplexing, and that the DSLAM also provides other *transport* functions. *NGDLC NPRM*, Comments of Cisco at 8 (such transport functions include "the ability to forward the voice channels, if present, to a circuit switch, ... the ability to extract data units from the data channels on the loops, ... [and] the ability to combine data units from multiple loops onto one or more trunks").

deem that a remote terminal is the equivalent of a central office, or (ii) to eliminate the DSLAM at the remote terminal from the definition of the attached electronics that must be considered part of the unbundled loop element.

It is also critical to understand that, in order for the DSLAM at a remote terminal to work, there must be complementary demultiplexing functionalities in the ILECs' central offices for both voice and data traffic. For low frequency (voice) signals, the ILEC introduces electronics that demultiplex the separately-aggregated voice traffic (typically a Central Office Terminal ("COT")), so the voice traffic can be directed to circuit switches that, in turn, route the communication to diverse end points. For high frequency (data) signals, there must also be a compatible central office demultiplexing capability. This is typically provided through the use of an Optical Concentration Device ("OCD"). As explained in AT&T's earlier comments,[37/] the functionality in the remote terminal enables individual customers' data packets to be commingled on the feeder facility to the central office through the use of statistical multiplexing. These packets, however, must be disaggregated at the central office in order for them to be of use to any individual carrier, including the ILEC.

This functionality is provided by the OCD, which extracts and delivers the packets from individual customers to transmission facilities connecting to the network of each customer's chosen service provider, including the incumbent LEC. The facility terminates (at the far end) on the service provider's packet switch for routing through the chosen carrier's data network. Thus, the incumbent LEC's OCD only provides an essential transmission (multiplexing and demultiplexing) function and does not perform any switching.[38] Moreover, without these functions, there is no way for any carrier, including the ILEC, to obtain the traffic from the fiber feeder that represents only the transmission signals of its own customers. Thus, in the absence of

[37/] *NGDLC NPRM*, Comments of AT&T at 61-62 & n.109.

[38] *See Ameritech/SBC Merger Order*, Ex Parte of Alcatel (filed Feb. 8, 2001) (demonstrating that the function of the OCD in next-generation loop architecture is to "fan out" traffic to the individual carriers). A copy of the Alcatel ex parte letter is attached.

these functions, no carrier -- not even the ILEC -- could provide advanced services based on packet switching deployed in its own data network. Therefore, the Commission must clarify that both the OCD and the COT are part of the transmission path between the customer premises and the equivalent of a distribution frame at the ILEC's central office, so that the end of loop is the network side of the COT, OCD, or similar devices.[39/]

In sum, next-generation architecture provides only what the traditional loop has always provided: *transmission functionality* between the customer premises and the central office. Therefore, the fiber feeder fits squarely -- and solely -- within the definition of the local loop.

II. CLECs ARE ENTITLED TO ACCESS TRANSMISSION FUNCTIONALITY ASSOCIATED WITH LINE SHARING AND LINE SPLITTING WHEREVER ILECs DEPLOY FIBER IN THE LOOP

A competitive carrier's right to access the loop when an incumbent deploys a next-generation loop architecture -- for line sharing, line splitting, or any other unbundling purposes -- should not be limited to instances in which there is no room for collocation at the remote terminal.[40/] In order to support a competitive marketplace, the unbundled loop arrangement described in Section I must be available in *all* circumstances when the ILECs deploy fiber in the loop.[41/] Indeed, the ILECs' efforts to limit CLEC access to such circumstances demonstrate that any such limitation would be anticompetitive.[42/]

[39/] If the OCD were not designated as part of the loop, it would require each CLEC collocated at a central office to establish its own high capacity facility to *each* remote terminal where its customers' copper subloops are terminated in order to provide comparable services to the incumbent LEC. Such a requirement would make the provision of advanced services to end-users prohibitively expensive. *See NGDLC NPRM,* Reply Comments of AT&T at 48-50.

[40/] *FNPRM* ¶ 59.

[41/] This includes instances where incumbent LECs deploy fiber to the curb (*i.e.*, to the customer's premises). The analysis demonstrating CLECs' impairment is the same regardless of whether fiber is deployed in the subloop between the customer premises and the remote terminal or between the remote terminal and the central office.

[42/] *See NGDLC NPRM,* Comments of Network Access Solutions at 17-20 (discussing Verizon's stance that it not provide access to the entire loop for line sharing purpose where adjacent collocation is available). These efforts are a clear attempt by ILECs make it economically infeasible for CLECs to compete, since CLECs cannot expect reasonably to be able to serve the same number of customers from the remote terminal as the ILEC. *See id.*; Reply Comments of AT&T at 63-64.

As a threshold matter, any discussion of limitations on *subloop* unbundling cannot be dispositive of the issue here, *i.e.*, CLECs' right to access an entire loop. The mere fact that subloop unbundling -- which is an *option* available to CLECs -- may be feasible in some limited circumstances has no impact on the Commission's recent holding that ILECs must provide line sharing and line splitting functionality over the "*entire loop, even where the incumbent has deployed fiber in the loop.*"[43/] As the Commission clearly stated, this requirement expressly does not "limit competitive LECs' access to fiber feeder subloops for [either] line sharing"[44/] or line splitting.[45/]

Critically, the record evidence already established in the *NGDLC NPRM* proceeding also demonstrates that CLECs' ability to compete is severely impaired if they do not have access to all of the transmission functionalities associated with the loop, and that this is the only way residential and small business competition can be fostered on a national basis.[46/] The evidence in that proceeding also shows that subloop and dark fiber alternatives (which require remote terminal collocation) or access to all-copper loops are not generally practical for CLECs and will not support competition in the mass-market.

The Commission's rules permitting CLECs the option of obtaining access to unbundled subloops or dark fiber cannot support a mass-market alternative to the incumbent LECs' service offerings, because these alternatives are dependent on the CLECs' ability to collocate at remote terminals. As the Commission has already recognized, a number of CLECs have demonstrated that remote terminal-based collocation "is likely to be costly, time consuming, and often unavailable."[47/] AT&T's comments, in particular, showed that limited space availability, technical impairments and cost considerations make remote terminal-based collocation

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[43/] *Line Sharing Reconsideration Order* ¶ 10 (emphasis added).

[44/] *Id.*

[45/] *See id.* ¶ 18.

[46/] See *NGDLC NPRM*, Comments of AT&T at 50-56; Alcatel at 19-21; Catena at 5-8; Covad at 5; DSLnet at 8-9; WorldCom at 10; Reply Comments of AT&T at 59-69.

[47/] *Line Sharing Reconsideration Order* ¶ 13.

alternatives, including those that use subloop unbundling and dark fiber, particularly ill-suited to support a competitive marketplace.[48/] Moreover, virtually all parties that have already addressed this issue -- including some ILECs -- agree that spare copper does not provide competitive LECs a viable alternative to the entire unbundled loop when ILECs deploy fiber feeder subloops.[49/]

Competitive LECs should certainly have the option of obtaining access to subloop unbundling, dark fiber, or spare copper. Such access is *not*, however, a substitute that assures competitive LECs will have access to the entire loop or to the high-frequency spectrum portion of all loops, including fiber-fed DLC-equipped loops. However, if ILECs were permitted to limit CLECs' access to their loops simply because they choose to implement network upgrades, they and their affiliates would be the only entities able to benefit from the increased economies of scale, scope, and transmission capabilities of the next-generation loop plant, which other market participants cannot readily replicate.[50/] The result, of course, would be diminished competition.

A. Remote Terminal Collocation-Based Alternatives Such as Subloop Unbundling and Dark Fiber Are Generally Unavailable and Uneconomic.

A simple review of (i) the available space at remote terminals, (ii) technical considerations associated with remote collocation and (iii) the economics of remote collocation clearly demonstrates that neither the CLECs' need for access to their customers nor consumers' interest in competition can be satisfied simply by instructing incumbent LECs to permit CLECs to collocate at the remote terminal to access subloops or dark fiber. The voluminous evidence on this subject clearly demonstrates that there are many physical and technical obstacles that

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[48/] *See NGDLC NPRM*, Comments of AT&T at 50-56; Reply Comments of AT&T at 59-69.

[49/] *See NGDLC NPRM*, Comments of BellSouth at 25-26 (spare copper "would not provide adequate service" and is likely an unattractive alternative to most CLECs). *See also* AT&T at 50-52; IP Communications at 5-8; RCN at 21-22, 24-25; Telergy at 55-58; Rhythms at 88-89; AT&T Reply at 67.

[50/] For example, SBC claims that the acquisition cost of a DSL subscriber through a remote terminal will be 25 percent lower than the acquisition cost of a DSL subscriber through a central office. *See* UBS Warburg Summary of Sponsored Meeting with SBC (Feb. 5, 2001).

prevent competitors from using subloop unbundling, dark fiber, or any other strategy that requires remote terminal collocation as a vehicle to serve the mass market. For example, AT&T and other commenters have showed that:

- The incumbent LECs openly admit that remote terminals are typically housed in small cabinets that have not been designed with excess space sufficient to accommodate any additional (competitive LEC) equipment;[51/]

- Even where there may be some extra space, it is almost certainly insufficient to accommodate industry-wide access to all customer communications on copper sub-loops;[52/]

- Even if extra space is available to accommodate industry-wide access, it is unlikely that the space will also have the power to run the equipment and the heat, ventilation, and perhaps air conditioning ("HVAC") necessary for proper deployment of a competitive LEC's electronics;[53/] and

- Even if the remote terminal space is available for collocation and has the necessary power and HVAC, there is typically no way for a competitive LEC to cross-connect facilities efficiently within the remote terminal.[54/]

And that is not all. There are other technical issues associated with subloop unbundling and dark fiber that significantly impair the CLECs' ability to use remote terminal-based collocation alternatives for loop access on a wide-scale basis. For example, subloop unbundling at a remote terminal may present service quality issues because it will likely involve more points of potential failure than an "entire loop" solution. In addition, even if a CLEC could deploy its own DSLAM or line card at a remote terminal, the CLEC would also need to deploy (or have access to) up to *four* dark fiber strands in order to provide service comparable to that which the ILEC can provide.[55/] The likelihood that a competitor would have access to (and deploy) four

[51/] *See NGDLC NPRM,* Comments of Verizon at 26-27; BellSouth at 16; AT&T at 53-55; Catena at 6.

[52/] *See NGDLC NPRM,* Comments of AT&T at 53; Verizon at 27; BellSouth at 16; Reply Comments of AT&T at 60-61.

[53/] *See NGDLC NPRM,* Comments of AT&T at 53-54.

[54/] *See NGDLC NPRM,* Comments of Verizon at 28-29; AT&T at 53-54.

[55/] ILEC deployment of fiber-fed DLCs will typically use two active strands (one voice and one data) and one back-up strand for each. While it is possible for a CLEC to make due with less, the reliability of its service would not be comparable to that of the ILEC.

dark fiber strands at a single remote terminal and have sufficient space, power, and environmental control to deploy electronics to light the fiber (thereby permitting only *one* carrier to compete) is small. The likelihood that sufficient fiber would exist to permit multi-carrier and broad scope competition is virtually zero.

Moreover, the evidence shows that the virtual or physical collocation of line cards is not a substitute for access to an entire loop. Indeed, except possibly for line cards from the manufacturer of the ILEC's DLC equipment, such collocation may present additional technical issues, because it is unclear whether the ILECs' networks can accommodate a wide variety of line cards at the present time. For example, Alcatel Networks previously indicated that a competitive LEC's virtual collocation of its "own line cards in an ILEC's NGDLC system" is not feasible, because line cards from different manufacturers vary in physical size and face software interface constraints.[56/] Thus, CLECs that seek to deploy a virtual collocation solution using different line cards may instead find themselves facing the insurmountable problem of deploying a standalone DSLAM. Moreover, as noted below, virtual collocation of equipment at the remote terminal has many of the same economic constraints inherent in other collocation options. Thus, the possible availability of physical or virtual collocation of line cards at a remote terminal cannot replace access to entire ILEC fiber-fed, DLC-equipped loops.

At least equally significant is the fact that any form of collocation at a remote terminal coupled with subloop access is almost always economically unsustainable.[57/] Experience has shown that competitive LEC collocation at the central office requires a formidable commitment,[58/] but at least the cost of collocation in such centralized locations can be spread

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[56/] *NGDLC NPRM*, Comments of Alcatel at 19-21; *see also* Comments of Nortel at 4. Alcatel also claimed that manufacturers could not practically develop line cards that could be used with other manufacturers' systems. *NGDLC NPRM* Comments of Alcatel at 20.

[57/] *See NGDLC NPRM*, Comments of AT&T at 54-55; Covad at 4; Catena at 7; IP Communications at 7; Network Access Solutions at 18-19; Reply Comments of AT&T Reply at 61-63.

[58/] *See UNE Remand Order* ¶¶ 262-266 (finding that collocating in incumbent LEC central offices imposes material costs and delays on a requesting carrier and materially diminishes a

over the entire universe of customers in that office that a competitive LEC might expect to win. Although the costs of collocation at an individual remote terminal may be marginally smaller than those of collocating at the central office, the universe of potential customers is significantly smaller (and the number of necessary collocations significantly larger), so that the per-customer cost is vastly higher.[59/] For example, in California, Pacific Bell is proposing that collocating CLECs pay between $15,000 and $30,0000 *per remote terminal* for access to the copper subloops, in addition to the other collocation costs the CLECs must incur. Given Pacific Bell's average of 16-24 remote terminals per central office, collocating CLECs would have to spend between $240,000 and $720,000 per central office merely to access subloops. In contrast, Pacific Bell's retail DSL affiliate can access copper subloops through Project Pronto at an incremental cost of zero.[60/]

Finally, any suggestion that access to the entire loop should only be made available when there is "no room for collocation" at the remote terminal will also unnecessarily involve the Commission and states in disputes over collocatable space on a remote terminal-by-remote terminal basis. Given the sheer number of remote terminals,[61/] administrative and enforcement actions necessary to implement such rules would be much more time consuming and costly than comparable actions relating to central office collocation.[62/] And in all events, the availability of

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requesting carrier's ability to self-provision circuit switches to serve residential and small business customers).

[59/] For a detailed discussion of this analysis see *NGDLC NPRM*, Comments of AT&T at 54-55, and Riolo Decl. ¶¶ 79-81; *see also* Reply Comments of AT&T at 61-63.

[60/] *See* Rulemaking on the Commission's Own Motion to Govern Access to Bottleneck Services and Establish a Framework for Network Architecture Development of Dominant Carrier Networks, Rulemaking 93-04-003, Second Joint Pre-hearing Conference Statement of AT&T, WorldCom, and Rhythms Links at 8-9 (filed Feb. 7, 2001).

[61/] *See NGDLC NPRM*, Comments of BellSouth (2nd NPRM) at 19-20 (acknowledging that it has 36,000-plus remote terminals). BellSouth estimates that "it would take in excess of 100,000 person/hours just to conduct site inventories," demonstrating just how cost-prohibitive collocation at the remote terminal is for a CLEC to serve the mass market. *Id.*

[62/] As experience has shown, ILECs are likely to challenge any perceived ambiguity in the FCC's rules. Such a policy would only serve to delay substantially the entry of telecommunications competition as incumbent LECs deploy fiber in the loop.

space for a single carrier at a remote terminal is not the pivotal issue; rather the question is whether CLECs generally would be able to compete.[63]

B. All-Copper Loops Are Not a Viable and Nondiscriminatory Method of Access to Provide Competitive DSL Service.

There is no question that all-copper loops are not a viable method of CLEC access to customers when a carrier seeks to provide DSL service through the use of line sharing or line splitting in areas where the ILEC has deployed fiber-fed DLC-equipped loops or other next-generation loop equipment.[64] Nearly all commenters that have already addressed this issue agree that copper loops running from a customer's premises all the way to an ILEC central office are not a viable substitute for loops that use shorter copper segments, remotely deployed loop electronics, and fiber feeder facilities.[65] Indeed, the Commission itself has recognized this fact, finding in the *UNE Remand Order* that even "if there are spare copper facilities available, these facilities may not meet the necessary technical requirements for the provision of certain advanced services."[66] Thus, spare copper availability alone is insufficient to assure new entrants a reasonable and nondiscriminatory ability to compete against the incumbent in the provision of DSL services.

The copper portion of a fiber-fed DLC-equipped loop will, by definition, *always* be substantially shorter than an all copper loop serving the same customer. Since the laws of physics make it indisputable that transmission rates decrease substantially as the length of copper increases,[67] CLECs that use the all copper-loop alternative cannot offer advanced services at the

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[63] The theoretical possibility that one carrier might be able to compete in one isolated area of an ILEC's territory is not sufficient to support competition. Thus, the Commission has already concluded that the unbundling analysis required by section 251(d)(2) must look to the entire (potentially) competitive market in general, not just the ability of a few competitive LECs to obtain access. *UNE Remand Order* ¶¶ 53, 54.

[64] *See FNPRM* at ¶ 58.

[65] *See NGDLC NPRM*, Comments of AT&T at 50-52, IP Communications at 5-8; RCN at 21-22; 24-25; Telergy at 55-58; Rhythms at 88-89; Reply Comments of AT&T at 67.

[66] *UNE Remand Order* ¶ 313.

[67] *See* Riolo Decl. ¶¶ 26, 87.

same level of quality (*i.e.*, speed) as the incumbent's fiber-fed DLC-equipped loops. Indeed, the ILECs are deploying fiber-fed DLC-equipped loops in part precisely because the increased bandwidth and efficiencies of such loops give them the ability to improve the services they deliver to existing customers and increase their capacity to serve new customers. CLECs are entitled to the nondiscriminatory access to the same facilities to serve their customers.[68/]

C. Broadband "Service" Offerings Are Not A Substitute for Unbundled Access to Entire Loops Used in Line Sharing or Line Splitting Applications.

Access via a "broadband service arrangement" clearly is not an adequate substitute for access to "entire" loops for use in line sharing or line splitting applications, because such "service arrangements" are not unbundled network elements, and thus are not subject to all of the nondiscrimination mandates of section 251(c)(3).[69/] The "broadband service arrangement" previously proposed by SBC for its Project Pronto next-generation loop architecture is flawed for several important reasons. First, as explained in Section I, all of the next-generation equipment used by SBC for its Project Pronto deployment is part of the loop element. Thus, SBC's deployment of Project Pronto cannot limit CLECs' rights to access, on an unbundled basis, all of the transmission functionalities between their customers' premises and the associated ILEC central offices for line sharing or line splitting purposes. Indeed, SBC's willingness to offer its "broadband service arrangement" over its Project Pronto architecture at cost-based rates[70/] is essentially an admission that CLECs are impaired without access to the functionalities of the entire unbundled loop when next-generation architecture is deployed.

[68/] In addition, spectrum management issues are more difficult and complex when a customer served by the DLC is transferred onto an all-copper loop. The signal traversing the longer loop will, by the very nature of the longer copper segment, be more attenuated and therefore susceptible to spectral interference. *See NGDLC NPRM,* Comment of AT&T at 50-51; Riolo Decl. ¶¶ 87-90.

[69/] *FNPRM* ¶ 59.

[70/] *See Ameritech Corp., Transferor and SBC Communications, Inc., Transferee, For Consent to Transfer Control of Corporations Holding Commission Licenses and Lines Pursuant to Sections 214 and 310(d) of the Communications Act and Parts 5, 22, 24, 25, 63, 90, 95, and 101 of the Commission's Rules*, 15 FCC Rcd 17521 ¶ 6 (2000).

Second, the Commission has long recognized that the Act provides multiple methods for competitors to enter the local telecommunications marketplace and that all of these mechanisms should -- and must -- be available. The Commission's previous orders and the court decisions reviewing them could not be clearer that the availability of a service is *not* an alternative to access to a UNE.[71] For example, the Commission has explicitly held that "allowing incumbent LECs to deny access to unbundled elements solely, or primarily, on the grounds that an element is equivalent to a service available at resale would lead to impractical results; incumbent LECs could completely avoid section 251(c)(3)'s unbundling obligations by offering unbundled elements to end users as retail services."[72] The Eighth Circuit upheld the Commission's determination, recognizing that "such an interpretation would allow the incumbent LECs to evade a substantial portion of their unbundling obligation under subsection 251(c)(3)."[73]

Third, there are potentially significant differences in the ILECs' duties with respect to resold "services" and unbundled network elements.[74] For example, there is no ongoing statutory obligation to provide access to a "broadband service." Thus, there is no assurance that the ILECs would not withdraw this service, even if competitive LECs would continue to be impaired without it. In addition, pricing for a "broadband service" (absent vigorously enforced "voluntary commitments") would not be governed by forward-looking cost principles associated with unbundled network elements.[75]

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[71] *Local Competition Order* ¶ 12; *UNE Remand Order* ¶ 5; *Advanced Services Order* ¶ *21; Deployment of Wireline Services Offering Advanced Telecommunications Capability*, CC Docket No. 98-147, *First Report and Order and Further Notice of Proposed Rulemaking*, FCC 99-48, ¶ 14 (1999). *See also* Iowa Utils. Bd. v. Federal Comm'n Commission, 120 F.3d 753, 809 (8th Cir. 1997).

[72] *UNE Remand Order* ¶ 67.

[73] *Iowa Utils. Bd. v. Federal Comm'n Commission*, 120 F.3d at 809 ("[w]hile subsection 251(c)(4) does provide for the resale of telecommunications service, it does not establish resale as the exclusive means through which a competing carrier may gain access to such services"), *aff'd in relevant part, Iowa Utils. Bd. v. Federal Comm'n Commission*, 525 U.S. 366, 394-95 (1999).

[74] Indeed, if there were not such differences, there would have been no reason for SBC's voluntary commitment to provide such service arrangements at cost-based rates.

[75] In addition, the recent decision of the United States Court of Appeals for the District of Columbia Circuit in *Ascent v. FCC*, 235 F.3d 662, eliminates the ILECs' ability to transfer loop

III. THE COMMISSION'S DEFINITION OF "PACKET SWITCHING" SHOULD BE ADJUSTED TO ASSURE THAT CLECs ARE ABLE TO PARTICIPATE IN LINE SHARING AND LINE SPLITTING OVER A CUSTOMER'S EXISTING LOCAL LOOP

Unfortunately, the Commission's current packet switching rules, which sought to foster rationally economic facilities deployment by CLECs,[76] are not adequate to enable competitors to line share when there is fiber in the loop.[77] Moreover, the ILECs are currently exploiting the inconsistencies in the existing rules and urging the Commission to deny CLECs access to essential inputs associated with the transmission functionality of next-generation loop technology. If the ILECs are successful in this effort, CLECs' ability to compete against the ILECs' (or their affiliates') voice and advanced services offerings will be seriously impaired.

No CLEC -- even one that has provisioned its own packet switch -- can provide packet-based services (or a bundle of analog voice and packet-based services) unless it has access to its customers' telecommunications signals. Such signals are delivered over the "entire loop" element, which, as described above, necessarily includes all of the ILEC's facilities between the customer's premises and the ILEC central office.[78] If CLECs are able to access their customers' entire loops (as the *Line Sharing Reconsideration Order* holds they may), new entrants can, at least in most cases, deploy packet switches and compete against incumbent LECs in the provision of advanced (or bundled voice and advanced) services. On the other hand, if CLECs cannot access their customer's entire loop at the central office, then there is simply no way that

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equipment to a separate affiliate to evade its section 251(c) obligations. The D.C. Circuit decision leaves no doubt that "separate" advanced service affiliates of an ILEC are, and have been since their establishment, subject to all of the obligations of section 251(c) of the Act. In *Ascent v. FCC*, the D.C. Circuit determined that "the Commission may not permit an ILEC to avoid section 251(c) obligations by setting up a wholly owned affiliate" and that allowing "an ILEC to sidestep section 251(c)'s requirements by simply offering telecommunications services through a wholly owned affiliate seems to us a circumvention of the statutory scheme." *Id.*, 235 F.3d at 666. Thus, just as the next-generation equipment of the ILEC must be associated with the loop, similar facilities of the affiliate are also subject to requests for unbundled access or interconnection.

[76] *Id.* ¶ 316.

[77] *See FNPRM* ¶ 63.

[78] As described in Section I.B. above, the entire loop terminates at the network side of the OCD-type device for high frequency signals and on the network side of the COT-type device for voice frequency signals (for data signals).

they can compete against the incumbent LECs, no matter how many packet switches they own, because the costs and time necessary to duplicate the ILECs' feeder facilities from thousands of remote terminals are simply too huge to bear.

AT&T does not dispute the Commission's finding that CLECs can, at least in most cases, obtain and deploy their own packet switches – provided that such switches can be collocated in the ILECs' central office. If CLECs cannot obtain access to their customers' entire loops at that point, however, then their deployment of a packet switch is useless. Unfortunately, the Commission's packet switching rules, which were developed principally on the assumption that CLECs would access ordinary copper loops at the central office, contain critical definitional errors and other flaws that impair -- indeed virtually eliminate -- the CLECs' ability to compete when they are applied to the incumbent LECs' use of next-generation DLC loop architecture. Accordingly, the Commission must revise its packet switching rules to eliminate the competitive discrepancy its rules create between the CLECs and ILECs when the ILECs (or their affiliates) deploy DSLAM functionality in remote terminals.

In the *UNE Remand Order*, the Commission determined that packet switching is a network element and defined packet switching to include the DSLAM.[79/] The Commission further found that failure to require unbundling of packet switching would impair competitive LECs' ability to compete for most customers.[80/] Nevertheless, the Commission declined to unbundle packet switching, because it did not believe that the unavailability of this element would impair competitors due to the nascent nature of the advanced services market and its belief that the decision would encourage facilities investment for advanced services.[81/] The Commission nevertheless required that, if certain conditions were met, competitors could have access to unbundled "packet switching," including the DSLAM.[82/]

[79/] *UNE Remand Order* ¶¶ 302-304.
[80/] *Id.* ¶ 306.
[81/] *Id.*
[82/] *Id.* ¶ 313.

The Commission's decision to exempt packet switching from unbundling requirements -- even in the face of a finding of impairment for residential and small business customers[83/] -- was based on the Commission's assumption that the exemption would spur CLEC investment in packet switches. But if CLECs cannot obtain access to their customers' loops, then there is no reason for CLECs to invest in packet switches at all. Thus, it is clear that the Commission's rule was not intended, and should not be allowed, to frustrate CLECs' access to unbundled loops for POTS, line sharing, or line splitting purposes when the ILECs deploy next-generation loop architecture.

Whatever the merits of the Commission's decision to include DSLAM functionality in the definition of packet switching and to exempt packet switching functionality *in the central office environment* from statutory unbundling obligations, the same logic clearly does not apply when the ILECs deploy next-generation DLC loop architecture, including frequency splitting and DSLAM functionality on line cards *in a remote terminal*. Indeed, the *UNE Remand Order* explicitly sought to identify and minimize the ILECs' opportunity to preclude CLECs from offering DSL services in situations where the ILEC has deployed the new loop architecture.[84/] But despite the Commission's well-intended efforts to identify and establish conditions under which the ILECs must provide access to unbundled "packet switching," the ILECs are attempting to use the Commission's current rules to *prevent* CLECs from being able to participate in line sharing and line splitting when they deploy the next-generation loop architecture.[85/] Such obstruction should not be tolerated.

The fundamental problem with the Commission's rules is that the current definitions of the loop and packet switching elements miscategorize the functionality of the DSLAM,

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[83/] *Id.* ¶ 306.

[84/] *See id.* ¶ 313.

[85/] *See BellSouth Ex Parte Letter* at 9 (erroneously arguing that CLECs should not have access to line cards in remote terminals because they provide "packet switching functionality"); *see also NGDLC NPRM*, Comments of Verizon at 28-29 (arguing that CLECs should be required to seek adjacent collocation solutions at remote terminals); *NGDLC NPRM*, Comments of BellSouth (2nd NPRM) at 19-20 (same).

especially as applied to next-generation loop architecture. The Commission should correct this mistake of fact across the board. At a minimum, however, in order to assure that its rules facilitate competition when the ILECs elect to deploy next-generation loop architecture, the Commission must recognize that the DSLAM does not function as a "component of the packet switching functionality"[86/] in the remote terminal context.

The Commission defined the packet switching element as the "function of routing individual data units based on address or other routing information."[87/] But if that is the correct definition of packet switching (and no party has suggested that it is not), then DSLAM functionality cannot be part of packet switching, because it is *impossible* for a DSLAM to serve as a traffic router, especially in a remote terminal architecture.[88/] In the remote configuration, the DSLAM's sole functions are to (1) separate low and high frequency transmissions; (2) multiplex (separately, using two different technologies) the low- and high-frequency traffic from many customers (and destined for many carriers) and (3) direct such commingled traffic onto high-capacity facilities that run to the incumbent LEC's central office. Such commingled traffic cannot possibly be "routed" anywhere until *after* it is demultiplexed at the central office by a separate piece of equipment (usually an OCD for the high frequency signals and the COT for the voice frequency signals). Thus, when DSLAM functionality is deployed in a remote terminal, the DSLAM acts *exclusively* in support of the *transmission* function of establishing a

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86/ *UNE Remand Order* ¶ 303.

87/ *Id.* ¶ 302.

88/ Even in a central office environment, a DSLAM operates exclusively as a multiplexer, because a DSLAM does not have the ability to choose and establish real-time routing paths for particular communications. *See* FCC Appellate Brief at 7 ("[t]he DSLAM routes the voice traffic from the loop to the public, circuit-switched network in the form of 'plain old telephone service,' and sends the data traffic to the *third* component of these xDSL-based services -- a *separate* packet-switched network that transports the data stream to the Internet") (emphasis added).

transmission path for telecommunications signals between a customer's premises and the incumbent LEC's central office.[89] This is unquestionably a part of the loop functionality.

Accordingly, the Commission should remove all reference to DSLAMs from its definition of packet switching[90] and loops.[91] Even if the Commission opts to retain this definitional error when the ILECs use a "traditional" copper loop architecture, importing this factually incorrect characterization of the DSLAM into the remote terminal context would cripple competition and completely undermine the Commission's unbundling analysis in the *UNE Remand Order*.[92] If the Commission were to deny competitive LECs access to the DSLAM functionality in the remote terminal, it would prevent them from being able to access an inherent functionality of the loop, *i.e.*, the ability to transmit telecommunications signals between their customers' premise and the serving ILEC's central office. Most important, because, as shown above, remote collocation (in any form) is either physically unavailable or cost-prohibitive,[93] CLECs would not be able to access all of their customers' telecommunications signals, which in turn would foreclose them from providing voice and DSL services at all. As a result, competitive LECs would lose all incentive to invest in other advanced services facilities, which would be directly at odds with the Commission's intent. Denying CLECs access to DSLAM functionality at the remote terminal would also fly in the face of the Commission's repeated findings that: (1) the loop element is essential to the provision of *any*

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[89] *See NGDLC NPRM*, Comments of AT&T at 61-62; Riolo Decl. ¶¶ 55-56, n.34; @Link Networks at 5-7; DSLnet at 8-9. Critically, equipment manufacturers who filed comments agree with this analysis. *See* Alcatel at 12; Cisco at 8.

[90] *See* 47 C.F.R. § 51.319(c)(4).

[91] *See* 47.C.F.R. § 51.319(a). The Commission should remove the parenthetical reference to DSLAMs in 47 C.F.R. § 51.319(a) because DSLAMs in this context are in fact "attached electronics" of the loop that are used to perform transmission functions. Indeed, the rule itself acknowledges that the DSLAM is part of the attached electronics of the loop, but excludes the DSLAM because it is (incorrectly) defined elsewhere as part of the packet switching element.

[92] Given the Commission's recent clarification that the *Line Sharing Reconsideration Order* does not alter the set of circumstances under which an incumbent LEC is required to provide nondiscriminatory access to "unbundled packet switching capability" at the remote terminal, *Line Sharing Reconsideration Order Clarification* ¶ 1 (rel. Feb. 23, 2001), it is more important than ever the Commission correct its definition of the DSLAM.

[93] *See* Section II above.

telecommunications service; and (2) the ILECs must make loops available to competitors with all of their underlying attributes, regardless of services for which they will be used and without regard to the underlying technology employed by the incumbent LECs.[94/] In sum, failure to make this adjustment to its definition would completely undermine the Commission's decision not to unbundle the packet switching element.[95/]

If the references to the DSLAM are removed from the definitions of both the packet switching and loop elements and CLECs are assured of getting access to entire loops, then there would no longer be any need to require that competitors meet a list of conditions before gaining access to unbundled DSLAM functionality at the remote terminal.[96/] Accordingly, the Commission should simply eliminate these conditions.

By taking all of these actions, the Commission will provide requesting CLECs with access to the DSLAM's essential transmission functionality whenever it is deployed by ILECs (or their affiliates) in conjunction with next-generation loop architecture. In addition, as described above,[97/] the Commission must clarify that the loop terminates at the network side of the OCD-type device for high frequency signals and on the network side of the COT-type device

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[94/] *Local Competition Order* ¶¶ 378, 380-381, 385; *UNE Remand Order* ¶¶ 167,182; *Line Sharing Reconsideration Order* ¶ 10.

[95/] Of course, consistent with its expectation in the *UNE Remand Order* that CLECs would be permitted to collocate "true" packet switching equipment that routes individual data units based on address or other routing information contained in the units (at ¶ 302), the Commission must also clarify that ILECs are required to provide collocation for such equipment, which is necessary if CLECs are to be afforded the opportunity to deliver advanced services as efficiently as the ILECs and their data affiliates. A full description of the legal and policy reasons that mandate this action is set forth in the comments in the *NGDLC NPRM* proceeding. *See, e.g., NGDLC NPRM*, Comments of AT&T at 20-32; Reply Comments of AT&T at 30-34.

[96/] *See* 47 C.F.R. § 51.319(c)(5). In any event, the list of conditions is fundamentally flawed in several respects. As explained above, spare copper will almost never enable a competitive LEC to match the service capabilities of the ILEC, and there is no practical way that CLECs can make use of collocation at (or near) incumbent LEC remote terminals. Thus, one condition to the availability of packet switching -- the availability of spare copper loops that provide "the same level of quality for advanced services" -- is superfluous because it will virtually always apply, and a second condition -- the availability of remote terminal collocation -- acts as a severe competitive barrier, because it erroneously assumes that remote terminal collocation provides CLECs with a practical means to share in the efficiencies and benefits of the next-generation loop architecture to the same extent as the incumbent LECs (and their data affiliates).

[97/] *See supra* Section I.B.

for voice frequency signals. These modifications recognize the actual functionalities of the elements in the incumbent LECs' networks and are fully consistent with the procompetitive goals of the Act and the Commission's prior decisions. Most important, they are the only way that the Commission can ensure CLECs obtain nondiscriminatory access to the loop element when the ILECs deploy DLC systems (including but not limited to, IDLC, UDLC and NGDLC systems) or deploy any other equipment or facilities that have the potential to materially increase the transmission capacity of their loop plant. Such nondiscriminatory access is essential if there is ever to be a competitive market for advanced and bundled packages of advanced and traditional services. Simply put, if an incumbent LEC or its data affiliate are allowed to use next-generation loop technology to offer additional services and increase the scope, efficiencies and economies of the incumbent LEC's outside loop plant (as they should), then the Commission must ensure that CLECs have nondiscriminatory access to such improvements, because it is the only way to provide consumers with a chance for real competition in the provision of DSL services.[98/]

[98/] The Commission also seeks comment on whether it should make a available a separate UNE-data platform to provide "line-shared data services." *FNPRM* ¶ 64. If the Commission adopts rules consistent with the above principles, CLECs should have access to all of the UNE capabilities they need to provide advanced data services and there would be no need to consider whether the incumbent LECs should make a "separate" UNE data platform available.

CONCLUSION

There can be no doubt that the ILECs' decisions to upgrade their loop architecture holds the potential for great consumer benefits. But they also hold the potential for great consumer and competitive harm. If CLECs are unable to access all of the functionalities associated with next-generation equipped -- which are all associated with the loop element -- consumers will not be able to benefit from competition for data services or bundled voice/data offerings. Accordingly, the Commission should adopt rules in accordance with AT&T's recommendations to ensure that consumers will finally have effective choice among service providers.

Respectfully submitted,

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