Over the past few years, local loop technological innovation has accelerated in response to exponential growth in residential and small business demand for high-speed data access. New multiplexing and modulating technologies and more advanced error correction procedures permit efficient use of the entire transmission potential of loops and make it possible to transmit both voice communications and high-speed data services over pre-existing loops. Hence, it is now theoretically possible for residential and small business customers to obtain high-speed data services at affordable rates when the capabilities of the local loop are fully utilized. That theory will not be reflected in practice, however, if ILECs are able to act on their incentives to impede advanced services competition by restricting entrants' access to the necessary local loop functionalities.

Thus, the Commission has properly expressed concern as to whether or not its "existing rules requiring the unbundling of loops . . . ensure . . . adequate access to the 'last mile[.]'"[79] If the Commission wishes the market to achieve ubiquitous high-speed data access at

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Order"); see also id., ¶ 377 ("Requiring incumbent LECs to make available unbundled local loops will facilitate market entry and improve consumer welfare. Without access to unbundled local loops, new entrants would need to invest immediately in duplicative facilities in order to compete for customers. Such investment and building would likely delay market entry and postpone the benefits of local telephone competition for consumers . . . [I]n some areas, the most efficient means of providing competing service may be through the use of unbundled loops. In such cases, preventing access to unbundled loops would either discourage a potential competitor from entering the market in that area, thereby denying those consumers the benefits of competition, or cause the competitor to construct unnecessarily duplicative facilities, thereby misallocating societal resources").

[79] NPRM, ¶ 151.

affordable rates, it must adopt rules in this proceeding that promote entrants' nondiscriminatory access both to existing local loops (in a manner that allows entrants to offer their own high-speed data services) and to any future loop features, functions, and capabilities.

Fortunately, the general principles the Commission established in the Local Competition Order provide a good foundation for the specific Commission rules necessary to encourage advanced telecommunications services competition. In particular, the Commission can enhance the procompetitive effects of its current loop definition by supplementing it to explicitly identify three loop types that must be unbundled upon request. The Commission also should specify, in the form of rebuttable presumptions, certain minimum performance standards for those loops based largely on current industry standards. The Commission can further promote the provision of advanced services by clarifying and augmenting its OSS rules to make clear that ILECs are obligated to provide nondiscriminatory access to OSS preordering functions (e.g., access to loop information necessary to determine the feasibility of deploying advanced services) as well as the nondiscriminatory OSS functionalities necessary for CLECs to order, maintain, bill for and interconnect with loops equipped for or capable of supporting advanced services.

As explained in more detail below, the Commission should take five steps to further its market-opening objectives with respect to advanced services. First, the Commission should supplement its current loop definition with three types of loops that ILECs must unbundle upon request: a basic loop, an xDSL capable or, and an xDSL equipped loop.[80] The Commission

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[80] As are other industry participants, AT&T is using the term "xDSL" to generically describe current and future loop technologies that support voice and broadband data services. In the future, if non-xDSL technologies emerge that also support voice and broadband data

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should make clear that an ILEC must, upon request, expeditiously perform any requested loop conditioning, such as load coil and bridge tap removal, and spectrum capability testing necessary to convert the basic loop into an xDSL capable loop

Second, as detailed below, the Commission should find that xDSL loops presumptively can support a range of data transmission speeds when a CLEC employs a given xDSL technology on an unbundled xDSL capable or xDSL equipped loop. The presumptions will limit an ILEC's ability to discriminate in favor of itself as well as provide a means for an entrant to detect anticompetitive behavior.

Third, the Commission should expand its existing OSS rules to ensure that the information necessary for carriers to determine whether or not a particular loop can support a specified advanced data service is made available to competitive and incumbent LECs on a nondiscriminatory basis. Moreover, to increase the likelihood that ILECs will unbundle loops on a nondiscriminatory basis, the Commission should require them to collect and disclose disaggregated comparative performance data. At a minimum, incumbents should be required to disclose pre-ordering, ordering, provisioning, maintenance and repair, and billing performance for each identified loop type. Such information will, inter alia, aid detection of discriminatory service activation intervals for advanced data and other services

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services, those technologies would fit within the definitions of xDSL capable and xDSL equipped loops as well.

Fourth, in order further to address the potential for ILECs to use spectrum management claims to forestall competition, the Commission should convene a forum to aid the development of industry standards based on the input of all industry participants. Those standards should incorporate existing industry interference standards, but also establish an administrative process that will govern the nondiscriminatory application of those standards to ILECs, their affiliates, and CLECs. While existing industry fora will address issues of technical feasibility, they are unlikely to establish truly nondiscriminatory spectrum management rules without a Commission-led initiative. The Commission should also require ILECs to disclose periodically, with respect to each binder, every rejection of, or condition imposed on, an entrant's provision of data services, the reason for the rejection or condition, and the number of loops in that binder which the incumbent or its affiliate uses to provide data services, together with the service initiation date for each such loop. ILEC ordering, provisioning and maintenance interval data should be disclosed as well. Only with such disclosure requirements can the Commission reduce the likelihood that spectrum management is not used as an anticompetitive tool for service degradation or denial of service to CLEC customers.

Finally, the Commission should clarify its existing rules to prohibit an ILEC from using a DLC or other remote terminal configuration as sufficient justification for denying a CLEC access to any unbundled loop. Specifically, the Commission should find that when DLC is deployed in a remote terminal, it is technically feasible to unbundle (i) an xDSL equipped loop when a DSLAM is also deployed in the remote terminal, (ii) an xDSL capable "home run" loop, and (iii) a basic, voice-grade loop. The Commission further should conclude that it is technically feasible for a CLEC to interconnect at a remote terminal using either fiber or copper transmission equipment.

A. The Commission Should Find That It Is Technically Feasible For ILECs To Unbundle Basic Loops, xDSL Capable Loops, And xDSL Equipped Loops And Direct Them To Do So.

In its Local Competition Order, the Commission defined the local loop as

> a transmission facility between a distribution frame, or its equivalent, in an incumbent LEC central office, and the network interface device at the customer premises. This definition includes, for example, two-wire and four-wire analog basic loops, and two-wire and four-wire loops that are conditioned to transmit the digital signals needed to provide services such as ISDN, ADSL, HDSL, and DS1-level signals.[81]

Notwithstanding this broad definition, ILECs have hampered entrants' attempts to obtain unbundled loops over which they intend to offer advanced telecommunications services.[82] Consequently, "in order to remove barriers to entry and speed the deployment of advanced services,"[83] the Commission should explicitly identify three loop types -- a basic loop, an xDSL

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81 Local Competition Order, ¶ 380 (footnote omitted).

82 See, e.g., Petition of the Alliance for Public Technology Requesting Issuance of Notice of Inquiry and Notice of Proposed Rulemaking to Implement Section 706 if the 1996 Telecommunications Act, CCB/CPD 98-15, Comments of the Association for Local Telecommunication, at 7 (April 13, 1998); id., Comments of AT&T Corp., at 11-12 (April 13, 1998); id., Intermedia Communications Inc Opposition to Alliance for Public Technology's Petition for a Notice of Inquiry and Notice of Proposed Rulemaking, at ii (April 14, 1998); Petition of the Association for Local Telecommunications Services (ALTS) for a Declaratory Ruling Establishing Conditions Necessary to Promote Deployment of Advanced Telecommunications Capability Under Section 706 of the Telecommunications Act of 1996, CC Docket No. 98-78, DA No. 98-1019, Petition of the Association of the Association for Local Telecommunications Services for a Declaratory Ruling, at 12-18 (May 29, 1998); id., Joint Reply Comments of the Association of Local Telecommunications Services, e.spire Communications, Inc., and Intermedia Communications, Inc., at 16 (June 26, 1998); id., Comments of e.spire Communications, Inc., at 6 (June 19, 1998); id., Comments of KMC Telecom Inc., at 6 (June 19, 1998); id., Comments of LCI International Telecom Corp., at 2 (June 19, 1998); id., Reply Comments of MCI Telecommunications Corp., at 3 (June 26, 1998).

83 NPRM, ¶ 154.

capable loop, and an xDSL equipped loop -- and find that it is technically feasible for an ILEC to provide these unbundled loop types.[84] The Commission should establish the following loop definitions:

> A **Basic Loop** is a transmission facility capable of transmitting communications, in the voice band, between the incumbent's central office switching element or elements, and the network interface device at the customer premises.
>
> An **xDSL Capable Loop** is a basic loop stripped of data transmission degrading equipment such that the loop's electrical characteristics will permit the transmission of communications both within the voice band and within one or more modulated data channels in frequency ranges above the voice band. Such data channels are derived through end user as well as network-deployed transmission enhancing equipment subsequently added to the loop, such as DSLAMs and splitters. An xDSL capable loop must be certified as capable of supporting the specified advanced data service without undue spectral interference.
>
> An **xDSL Equipped Loop** is a basic loop that includes all necessary transmission enhancing equipment within the local network, such as a DSLAM and splitters, to deliver communication in both the voice band and one or more derived data channels that are transmitted above the voice band when the retail customer provides compatible transmission enhancing equipment at the subscriber's premises. The xDSL equipped loop must deliver voice and data traffic without undue spectral interference to the first technically feasible point of interconnection in the central office or, if there is no technically feasible point of interconnection in the central office, then at some technically feasible point further into the incumbent LEC's network.

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84 While many states have specifically ordered unbundled loops supporting xDSL and ISDN services, AT&T is not aware of any state commission findings with respect to advanced services unbundling, standards, or definitions. See id., ¶ 155. AT&T supports the Commission's tentative conclusion that states should be able to promulgate additional rules regarding loops and their features, functions, and capabilities. Id. At the same time, the Commission should emphasize that any state rules must be procompetitive and consistent with the Commission's own requirements.

These loop definitions give effect to two established Commission principles. First, the Commission has found that ILECs must provide loop conditioning.[85] Because a basic loop sometimes includes load coils, bridge taps, and other equipment that can inhibit the broadband capabilities of the loop, the ILEC can be required to condition the basic loop so that its advanced services capability is restored. In order to ensure that a loop has been properly conditioned, the ILEC also may be required to perform spectrum capability testing of a loop and give assurances that, when equipped with conforming equipment, the loop will support data transmission within accepted ranges and neither experience unacceptable interference from, nor cause unacceptable interference with, other services within the same cable binder. The xDSL capable loop is the network element that an entrant obtains when it orders a conditioned loop.

Second, the Commission repeatedly has concluded that equipment placed on the loop to facilitate transmission is part of the loop and, if the incumbent has placed such equipment on the loop, the entrant can obtain it as part of the loop.[86] DSLAM-type equipment, whether installed in a central office or in a remote terminal, is nothing more than transmission-enhancing equipment and, when employed, is part of the loop element. It allows the loop to support greater bandwidth over a longer distance than it could without such equipment. This is no different than load coils that support higher quality voice-grade traffic over longer loops or DLC or other multiplexing equipment that allows greater concentration of loop traffic between a remote

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85 See Local Competition Order, ¶ 382.

86 See, e.g., id., ¶ 391 (rejecting defining a concentrator as a subloop element and instead treating it as part of the loop); id., ¶ 383 (discussing loops that contain IDLC equipment).

terminal and a central office. Indeed, just like multiplexers or DLC equipment, DSLAM-type equipment (which performs multiplexing and modulation functions) can be deployed at a remote terminal in the "middle" of the loop.[87]

By creating these three distinct loop definitions, the Commission will reduce miscommunications and unnecessary delay in the pre-ordering, ordering, and provisioning process. The Commission has already found that unbundling voice-grade and xDSL capable loops is technically feasible. It has also held that, at the request of a CLEC, the incumbent must perform any loop conditioning necessary to convert a basic loop into the xDSL capable loop sought by the CLEC.[88] The Commission further should make clear in this proceeding that an ILEC must make any xDSL equipped loop it already possesses available to a CLEC as an unbundled network element

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87 The proposed definition of the xDSL equipped loop accounts for the fact that a loop supporting advanced services splits the communications into separate data and voice streams, with each stream terminating at a different point in the ILEC's central office. In all events, however, each communications stream will terminate at one of three points: (i) in a LEC's collocation space; (ii) at another unbundled network element; or (iii) on the ILEC's network. Regardless where the communications streams terminate and through what transmission enhancing equipment they pass on their way to a termination point, however, they are just multiple capabilities of the same loop. As with IDLC configured loops, the xDSL equipped loop definition further accounts for the possibility that transmission enhancing equipment, such as a DSLAM, could be deployed at different points along the loop, not just in the central office. Due to current equipment limitations, when a basic or xDSL equipped loop is unbundled, the data stream (in the case of xDSL service) or the voice-band stream (in the case of IDLC) may need to be processed by an intervening routing device or de-multiplexer so that the traffic can be separated by carrier.

88 See NPRM, ¶ 182, n.285 (ILEC must undertake loop conditioning and other "affirmative steps to condition existing loop facilities to enable requesting carriers to provide services not currently provided over such facilities" at the expense of the requesting carrier); see also Local Competition Order, ¶ 382

These three separate loop definitions are necessary to permit entrants to obtain the loops they need to compete effectively. If the ILEC has, for example, an xDSL equipped loop that it is using to serve a customer, a CLEC should be able to lease that equipped loop. By the same token, if an ILEC has an xDSL capable loop, it should not be permitted to deny a competitor access to that loop or to impede that loop's ability to support advanced services. Further, if an ILEC has a basic loop, the entrant should be able to: (i) lease that loop in order to offer voice-grade service, or (ii) lease the loop and then have the ILEC condition it to support advanced services.

Without the availability of these three loop types on an unbundled basis, ILECs will have an insurmountable competitive advantage. In the context of (primarily) voice-grade traffic, the Commission concluded that nondiscriminatory access to the local loop was essential to competition.[89] That conclusion applies here with even greater force. With voice service, distance, loop conditioning, and the presence of transmission enhancing equipment typically is far less important than with high-speed data service. A customer placing a local telephone call is unlikely to notice the quality differences between a 3,000 foot loop and a 12,000 foot loop. With data service, however, it is essential that the CLEC receive nondiscriminatory access to the exact same advanced services loop -- equipped or capable -- with all its features, functions, and capabilities. Access to a different loop that can reach the customer is not acceptable because that loop may have reduced capability.

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[89] See Local Competition Order, ¶ 27.

For example, the ILEC presumably will have chosen the best available loop over which to offer a particular customer an xDSL service. That loop might be less than 3,000 feet of "raw" copper (due to intervening DLC) and support transmission speeds well in excess of 8 Mbps. At the same time, a 12,000 foot basic loop also may be available to serve that customer. That basic loop not only would require conditioning, but even after conditioning would support data transmission speeds less than half of the ILEC's xDSL capable loop if the loop were simply "raw" copper. If the ILEC, then, is not required to give nondiscriminatory access to both its xDSL equipped and capable loops, it will be well-positioned to make its potential competitors incur unnecessary loop conditioning costs and to inhibit the service quality they can offer.

In some instances, identification of a particular carrier or customer's traffic may make delivery of an unbundled xDSL equipped loop appear more difficult than delivering an unbundled basic or xDSL capable loop. Delivering unbundled xDSL equipped loops, however, will be no more difficult than delivering unbundled basic loop riding on IDLC, which the Commission has already found to be technically feasible.[90] For example, a relatively inexpensive packet switch could be placed between an ILEC's DSLAM and its packet switch, thereby allowing separation of traffic by carrier until such time as the DSLAM provides such functionality. A virtual, "nailed-up" circuit might also be created in an ILEC's packet switch that bypasses the packet switch's basic switching functions, but allows for separate identification of carrier traffic.[91]

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[90] See id., ¶ 384.

[91] A virtual, nailed-up circuit might take the form of a Permanent Virtual Circuit ("PVC"). The PVC, created through table definitions in the ILEC's packet switch, would be left unmodified at all times and, as a result, dedicated to separating the traffic of a single

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And, in the case of Internet Protocol traffic -- which will be the majority of traffic coming from small business and residential personal computers -- carrier-specific traffic can be identified by placing a simple router between the DSLAM and the incumbent's data switch. Many other unbundling technologies for xDSL equipped loops will obviously emerge as demand grows, but it is clear that such unbundling is technically feasible today.[92]

B. The Commission Should Give Specific Content To The Obligation To Provide xDSL Capable And xDSL Equipped Loops.

Loop definitions alone, no matter how precise (and, given the pace of technological change, prescient) will not prevent ILECs from acting on their anticompetitive incentives to limit access to the loop facilities and functionalities necessary to provide advanced services. In particular, the Commission must take steps to discourage incumbents from using their control over the critical facilities and information to degrade or limit the advanced services entrants can provide. The Commission can do so by giving specific content to the requirement to provide xDSL capable and equipped loops -- i.e., by establishing minimum transmission speed and service standards. In this regard, the Commission should employ the same powerful tool it has employed in analogous situations where incumbents' incentives and asymmetric control over

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carrier. The PVC would not require any network capacity, signaling, or processing capability except when information was transported across the PVC.

92 Some network equipment vendors are currently considering the development of DSLAMs that would separate data traffic by carrier. Such an innovation would obviate the need for any additional equipment between an unbundled xDSL equipped loop and the CLEC's data switch.

information and facilities threaten the unbundling and competition mandated by the Act: the rebuttable presumption of feasibility.[93]

The rebuttable presumption of feasibility reduces (but does not eliminate) an incumbent's ability to discriminate in favor of itself and to degrade its competitors' services in ways that entrants have few practical means of monitoring.[94] At the same time, it preserves the incumbent's ability to deny truly infeasible or network-harming requests upon disclosure of specific and verifiable supporting information. Given the pace of technological change -- and the concomitant harm that an incumbent could inflict by delaying entry with trumped up technical concerns or degrading competitors' offerings -- the Commission should endorse certain specific standards that the industry already recognizes as easily met with existing technology. The Commission should further make clear that state commissions are free to impose more stringent standards as technology and industry conditions warrant.

Specifically, the Commission should find that certain loop configurations presumptively can support certain minimum data transmission speeds when a LEC employs a

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93 See, e.g., Local Competition Order, ¶ 194.

94 In some instances, CLECs may want to employ line simulators as a means of determining that delivered performance is nondiscriminatory. Line simulators are used in conjunction with noise generators, bit error rate detectors, and xDSL modems in a laboratory environment to test loop capabilities under different conditions and loop characteristics emulating actual service conditions. AT&T has found that simulations, which take approximately 18 hours to run, usually produce performance measurements within 10% of actual line performance measurements. Because the use of line simulators is technically feasible, does not harm the network, and currently provides the only mechanism by which entrants can test for discriminatory performance, the Commission should utilize this mechanism to assist in preventing ILECs from discriminating against potential competitors.

given technology on an unbundled loop. AT&T urges the Commission to adopt the performance standards listed in Table 1 below. It is widely accepted, based upon actual xDSL experience, that the loop configurations in this table can achieve the listed data transmission speeds, and incumbents presumptively should be required to deliver that loop functionality. These standards are consistent with ANSI T1.4.13 Issue 1 and Issue 2, forthcoming.[95] Indeed, if anything, the listed transmission speeds are conservative -- loops with the specified characteristics generally can support much higher data transmission speeds.[96]

Table 1: Transmission Speed Presumptions

	Downstream Data Speeds		Upstream Data Speeds	
xDSL Service	Minimum	Maximum	Minimum	Maximum
HDSL	1.544 Mbps	2.000 Mbps	1.544 Mbps	2.000 Mbps
ADSL	1.544 Mbps	9.000 Mbps	16.00 kbps	1.500 Mbps
ADSL-Lite	384 kbps	1.544 Mbps	32.00 kbps	384 kbps
RADSL	1.544 Mbps	6.000 Mbps	16.00 kbps	640 kbps
SDSL	768 kbps	768 kbps	768 kbps	768 kbps
IDSL	144 kbps	144 APBs	144 kbps	144 kbps
VDSL	12.960 Mbps	51.840 Mbps	1.600 Mbps	2.300 Mbps

95 ANSI T1.4.13 Issue 1 specifies a range of transmission speeds for ADSL. ANSI T1.4.13 Issue 2, forthcoming, will specify additional standards applicable to xDSL services, including RADSL and ADSL-Lite. Both sets of standards support the values in Table 1. These presumptions should be supplanted when industry standards have expanded sufficiently to encompass the new types of equipment being placed on loops to support broadband services.

96 The maximum speeds in Table 1 are only meant to be informative and should not be treated as operational limits on the different xDSL services. Indeed, improvements in maximum throughput have been occurring frequently and all the speeds listed in Table 1 are supported by currently deployed technology. See, e.g., The DSL Source Book, at 23-24 (http://www.paradyne.com/sourcebook_offer/ index.html); "ADSL Tutorial, Twisted Pair Access to the Information Highway," at 2 (http://www.adsl.com/adsl_tutorial.html); "xDSL Local Loop Access Technology", at 4 (http://www.3com.com.xdsl/white_papers.html).

Commission endorsement of the specific xDSL capable and equipped loop functionality presumptions listed above will provide a minimum level of certainty for entrants intending to offer data services, and it will reduce ILECs' abilities to dispute functionality, delay entry and degrade service. These presumptions will also further implementation of the Commission's previous findings that: (i) a CLEC should be able to offer the same services over a loop that the ILEC (or its affiliate) can offer over that loop,[97] and (ii) an ILEC cannot restrict access to a loop feature, function, or capability simply because the ILEC is not currently using it.[98]

Given that the industry, including ILECs, already embraces the minimum standards in Table 1, an the inability of an ILEC-supplied xDSL capable or xDSL equipped loop to meet them would be inherently suspect and unjustifiable unless specific industry spectrum management standards would be violated, and will undermine innovation, thwart competition, and reduce consumer choice. Accordingly, the Commission should establish significant financial or other penalties that would apply whenever an entrant establishes that an unbundled loop delivered by an incumbent does not meet these minimum standards and the incumbent is unable to demonstrate, with specific and verifiable evidence, that (i) the loop is physically incapable of meeting that standard or, (ii) the lower transmission speed is justified by legitimate industry-standard-based spectrum management concerns.

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97 See Local Competition Order, ¶¶ 292, 314

98 See id., ¶ 381

C. The Commission's OSS Rules Must Be Clarified To Include Loop Characteristics And Loop Pre-Qualification Information, As Well As The Standards Used By The ILEC In Pre-Qualifying And Qualifying Loops For Advanced Services.

A CLEC must obtain information about a loop before it can determine which data services it can offer the customer over that loop. In addition to loop length and gauge of wire, which will determine maximum transmission speed, the entrant must also, for example, know whether the loop has load coils and bridge taps that may need to be removed prior to service initiation. In addition, CLECs must know, for example, whether or not a loop possesses DSLAM functionality and the type of equipment used to provide that functionality. If the loop does not have DSLAM functionality, then a CLEC will need to provide its own DSLAM-type equipment. ILECs are uniquely situated to collect and maintain these types of information because they control the loops. And, if this information is not made available on the same basis to entrants and incumbents alike, potential competitors will be at a significant competitive advantage. Indeed, without the ability to obtain such data on a timely and nondiscriminatory basis, a CLEC may be unable to offer advanced telecommunications services at all. Incumbents must therefore be specifically required to make critical loop characteristic data available to entrants on a nondiscriminatory basis, e.g., through electronic OSS where that is the means by which the incumbent or its affiliates access this information. See NPRM ¶ 158.

It is likely that ILECs already maintain loop characteristic information in electronic form. See id. Many incumbents have announced plans to offer xDSL services in addition to the other high-speed advanced services they already provide, including ISDN and T-1. In order to offer these services they must collect the essential loop characteristic data. Indeed, it is highly likely that ILECs maintain databases of "pre-qualified" loops, with specific qualification information that indicates whether or not a particular loop can support one or more data

services.[99] Accordingly, pursuant to the Act's nondiscrimination requirement, the Commission should require incumbents to allow CLECs to query the incumbents' loop databases to ascertain the availability and characteristics of voice-grade, xDSL capable, and xDSL equipped loops.[100] If the incumbent does not electronically maintain necessary loop characteristic information such as wire gauge, loop length, presence and type of equipment that might interfere with advanced services, presence and type of equipment to facilitate the provision of advanced services, and pre-qualification criteria and data. CLECs must have nondiscriminatory access to the ILEC's non-electronic support.

Absent access to information on nondiscriminatory terms, entrants will be in the untenable position of having to lease a loop, subsequently determine if the loop was engineered

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99 It is AT&T's understanding that some ILECs have been pre-qualifying their spare loops for advanced data service capability for some time, an exercise that does not interfere with existing service because active loops generally are not tested. It also is widely known that ILECs already store ISDN information, including whether or not a loop is pre-qualified for ISDN, in an LFACS database. The LFACS database is a BellCore system utilized by all of the RBOCs.

Moreover, the recently announced joint marketing program between SBC and Dell Computer to enable customers to purchase from Dell ADSL-ready computers and ADSL service in a single transaction strongly suggests that pre-order loop qualification can be made available to non-ILECs in a reliable, cost-effective manner. See http://www.sbc.com/News/Article.html?query_type=article&query=19980923-01 (SBC press release announcing venture with Dell)

100 In addition to pre-qualification data itself, the Commission should require ILECs to provide entrants with the criteria they apply in pre-qualifying loops. This information will assist a CLEC in determining whether or not a loop that an incumbent has pre-qualified for one xDSL service could support a different advanced data service. Further, baseline loop parameters, to the extent an ILEC profiles initial transmission characteristics for its own or affiliated operations through procedures such as pre-service testing, also should be captured, retained, and provided to CLECs in a nondiscriminatory manner.

with load coils or bridge taps, test its capability to support an advanced service, and then -- if it passes all these hurdles -- subject it to potential rejection under spectrum management standards. By contrast, the ILEC may only need to make a quick electronic query to determine whether the loop in question is pre-qualified for the advanced data service. In this situation, the CLEC would not be able to tell a potential customer for days, or even weeks, whether or not an advanced service is available at the customer location, while the ILEC could answer that question immediately.[101]

In addition to these information access requirements, the Commission should clarify that, once the appropriate loop plant has been identified, the CLEC also must be afforded the right to reserve the loop and subsequently order the desired configuration on a non-discriminatory basis -- i.e., through efficient electronic interfaces and OSS ordering systems. Likewise, the Commission should reiterate that an ILEC must treat the entrant in a nondiscriminatory manner in all respects, including loop assignment, provisioning, maintenance and repair.

Finally, to promote compliance with these basic requirements of nondiscrimination, the Commission should require ILECs to collect and disclose disaggregated comparative performance data.[102] At a minimum, incumbents should be required to capture and disclose

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101 It should be noted that local customers have been bearing, at least in part, the costs stemming from the collection of loop data through their local rates. Sharing this information with CLECs, as the Act requires, will have the added benefit of ensuring that local customers receive the full benefits of these data collection activities.

102 ILECs cannot be relied on to collect performance data voluntarily. Indeed, Pacific Bell was recently fined $309,000 -- $3,000 per day for 103 days -- by the California Public

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comparative performance measurement results related to pre-ordering, ordering, provisioning, maintenance and repair, and billing support for xDSL capable and equipped loops by loop type, in addition to reporting on such performance for basic loops. Such information will, inter alia, aid detection of discriminatory service activation intervals for advanced data and other services. For example, if an ILEC is routinely activating new ADSL service in an average of 48 hours after receiving a customer request, then CLECs and the Commission need assurance that the ILEC is providing pre-ordering, ordering, and provisioning for unbundled xDSL loops that permits service delivery in a similar time frame.[103]

D. Industry Fora, Not Unilateral ILEC Action, Should Establish Loop Spectrum Management Standards.

xDSL and other services that can support high-speed data transfers have the potential to bring enormous benefits to consumers everywhere. However, the provision of these services (like other services) can produce electromagnetic interference that can inhibit service on other loops in the same binder.[104] The quality of voice service offered over loops in the 12,000 to

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Utilities Commission for failing to provide survey data about the quality of its residential and ISDN data-transmission services. Once it finally did obtain service quality data, the Commission concluded that Pacific's ISDN service had experienced a quality decrease despite Pacific's ISDN service rate increase. See News Release, "CPUC Fines Pacific Bell For Holding Back Data on Poor ISDN Service Quality" (Cal. PUC, released September 17, 1998).

103 LCUG SQM Version 7.0 begins to identify some of the key performance measurements where disaggregation by unbundled loop type is critical (see, e.g., Query Response Interval -- PreOrdering and Average Completion Interval).

104 All telecommunications services generate interference, but proper engineering standards will account for this problem. In the xDSL context, interference occurs because the

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18,000 foot range may be affected as well if load coils are removed so that advanced services can be carried over those loops. The degree of interference will depend on a number of factors, including: (i) the types of service offered over different loops in the binder; (ii) where loops carrying advanced services are located in a binder; (iii) the number of loops carrying advanced services; (iv) the resistance of the loops; (v) and the particular vendor equipment deployed to provide the services.[105]

In order to limit quality degradation and ensure efficient use of loop capabilities, spectrum management -- the process of determining whether or not the addition of loop supporting a particular service will interfere impermissibly with services on other loops -- is undoubtedly required. At the same time, spectrum management has the potential to become another weapon in the ILECs' anticompetitive arsenal. Already, ILECs have transformed spectrum management into a tool for denying entrants access to the loops they need to deploy

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passage of an electric current through a copper wire forces the wire to radiate electromagnetic energy, which in turn produces noise, near end cross talk ("NEXT"), and far end cross talk ("FEXT"). NEXT and FEXT arise when the electric signal in one copper pair wire inductively couples with electric signal in another copper pair, creating signal interference. NEXT is typically more significant because it occurs at the network end of the copper loop where wires are heavily concentrated. FEXT, by contrast, tends to be minimal because relative few copper wires are concentrated at the customer end of the loop. This asymmetry of interference explains why ADSL is designed to support higher downstream transmission rates, which are limited by FEXT, and lower upstream transmission rates, which are constrained by NEXT.

[105] Equipment produced by one vendor may interfere with service provided by another vendor's equipment because most xDSL equipment is currently designed in "DSLAM-customer premises" equipment pairs. In other words, vendors do not design their

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xDSL service.[106] Rejection of such loop requests in many instances appears to be absolute, with the incumbent making no loops available to CLECs

The technology surrounding advanced telecommunications services is evolving rapidly and, as noted above, appropriate spectrum management responses are both technology and situation-specific. But spectrum management, or more generally the assignment of services

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equipment so that it will work with, or even in the presence of, any other vendor's equipment.

106 See, e.g., Southwestern Bell Telephone Company, Pacific Bell, and Nevada Bell Petition for Relief from Regulation Pursuant to Section 706 of the Telecommunications Act of 1996 and 47 U.S.C. Section 160 for ADSL Infrastructure and Service, CC Docket No. 98-91, Opposition Comments of Hyperion Telecommunications, at 7 ("the SBC LECs' proposed Spectrum Management Check is nothing more than a subjective test that will enable the SBC LECs to deny a competitor's loop request because it will interfere with the SBC LECs' own services. Notwithstanding the admitted technical difficulties (the check is currently done manually), the implications of the Spectrum Management Check are profound. The SBC LECs could potentially determine that interference exists merely because the competitor seeks to provide high-speed data service on the same loop over which the SBC LECs provide voice services. One can be assured that the SBC LECs would not decline to provide ADSL services themselves over a loop which they are currently utilizing for voice services."); id., Opposition of KMC Telecom Inc., at 5 ("the SBC LECs themselves admit that the third test - the spectrum management check - is 'projected' to be in place by mid-1999, meaning that only two of the three tests that are supposed to ensure nondiscriminatory access would be in place if the Commission were to grant the Petition. The Commission should not grant the SBC LECs' Petition on the basis of a test that has not yet even been developed and implemented."); id., Opposition of Competitive Telecommunications Association, at 4 ("SBC stated that it will not provision local loops for ADSL services until it performs a facility check, a loop qualification check, and a spectrum management check to make sure competing service 'will not affect existing services.' . . . Each of the three checks presents opportunities for abuse, and the spectrum management check is particularly ominous because it recalls the days when the vertically-integrated Bell System undermined competition in the customer premises equipment market through pretextual findings that new CPE harmed the network.") (citations omitted)

within a cable when interference can adversely impact performance, plainly cannot be left to ILEC discretion. ILECs all too easily could transform their authority to "protect" the local networks into an anticompetitive tools to undermine entrants. By contrast, industry fora are well-positioned to address spectrum management issues and consider the ramifications of new technology.[107] At the same time, spectrum management also requires attention to nondiscrimination, a factor industry fora are not currently considering.

The Commission therefore should convene a forum to develop nondiscriminatory spectrum management standards. These standards should address (i) interference and (ii) the process for administering loops (including how assignments are made within cables) among ILECs, ILEC affiliates, and CLECs. Existing standards already address many of the necessary interference issues. Although additional interference criteria may be needed, the most important standards will address the nondiscriminatory application of such criteria. The promulgation of interference standards alone cannot prevent ILECs from using those standards to disadvantage their competitors. So long as entrants, vendors, and incumbents all participate, such an industry forum will provide the best vehicle for establishing standards covering permissible equipment

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[107] ANSI and ITU standards employ power spectral density masks ("PSDs") to limit and minimize the amount of cross talk caused by an xDSL service into other services (e.g., ISDN, repeater based T1, or another xDSL service). For all relevant frequencies, there is a limit on the maximum allowed power density at that frequency. Further, Commission rules require limitations on the PSDs and dictate certain PSD masks. See 47 C.F.R. § 15.1 et seq.; 47 C.F.R. § 68.1 et seq. Obviously, AT&T will use only equipment that complies with these PSD masks.

types, deployment configurations, loop testing, and loop administration.[108] To complement these standards, the Commission should establish a process for speedy resolution of disputes relating to spectrum management or the application of loop assignment procedures.

Pending the development of industry standards, the Commission should not allow ILECs to exercise unfettered control over spectrum management decisions. First, the Commission should require each incumbent to publish with the Commission and the appropriate state commission its detailed spectrum management policies, annotated with the sources of and justifications for those policies. This requirement is necessary to permit effective policing of ILECs' interim practices. Second, pending the development of industry standards, ILECs should be required to provide CLECs with detailed information about the advanced telecommunications services they offer, especially the loops, loop characteristics, equipment, and spectrum management standards applied. Third, the Commission should require ILECs to disclose periodically, with respect to each binder, every rejection of, or condition imposed on, an entrant's provision of data services, together with the reason for the rejection or condition, the number of loops in that binder that the incumbent or its affiliate use to provide data services, and the service initiation date for each such loop. These disclosure requirements will help implement the principle

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108 Similarly, industry fora, not ILECs acting unilaterally, should establish national standards for electric equipment attachment at the central office end of the loop. See NPRM, ¶ 163. These standards will increase certainty, network reliability, and reduce entry barriers caused by ILEC delay. To that end, the Commission should mandate that any safety requirements are NEBS compliant. Following the approach adopted by the Commission in establishing its customer premise equipment rules, national standards for electric equipment attachment at the central office should address safety and network harm only, not network compatibility or performance. See 47 C.F.R. § 68.1 et seq.

that when spectrum management becomes an issue, ILEC customers (existing and prospective) should have the same likelihood of service degradation or denial as CLEC customers. After industry standards governing spectrum management have been adopted and implemented -- standards that must include disclosure of performance measuring data and ensure nondiscriminatory loop administration -- lifting these interim requirements can be considered.[109]

The NPRM also seeks comment on whether more than one carrier can simultaneously provide multiple services over the same loop if each carrier uses different loop capabilities.[110] Consistent with industry standards, the "owner" of a loop -- who in the case of an unbundled loop is the CLEC leasing the loop, not the ILEC -- should be permitted to allow other LECs to provide data, voice, or both functionalities at the same time. The Commission's rules already permit one carrier to provide long distance service using that same loop that another carrier uses to provide local service even though Commission rules clearly assign ownership of the loop to only one LEC. Absent technical limitations, then, the Commission should take the next step and find that the features, functions, and capabilities that pass with "ownership" of the loop

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109 The Commission also should address the long-term ramifications of allowing ILECs unfettered ability to render spectrum management decisions prior to the development of industry standards. For example, ILECs could deploy DSLAM equipment that may be incompatible with equipment CLECs want to deploy and then seek to "grandfather" their configurations even after industry standards have been promulgated. This practice would be especially anticompetitive if the incumbent transferred network equipment to its separate affiliate and thereby created a situation in which its affiliate would be the only service provider with equipment compatible with the loop. Thus, the Commission should prohibit the "grandfathering" of any equipment and deployment configurations that later prove incompatible with industry standards. See NPRM, ¶ 161.

110 See id., ¶ 162.

can be leased to other service providers. There is no reason to believe that a loop supporting voice and data traffic simultaneously cannot support multiple carriers.[111] Indeed, that is one of the biggest advantages of xDSL services -- the high-speed data services are separable from voice-grade services.[112]

At the same time, the Commission should reconfirm its previous finding that one carrier should not be permitted to offer a data or voice service over another carrier's loop without the loop owner's authorization.[113] See Local Competition Order ¶ 385 ("Giving competing

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111 Without question, ILECs recognize the feasibility of different carriers offering different services over the same loop. Bell Atlantic, BellSouth, GTE, and Pacific Bell have filed tariffs offering ADSL services that route the data traffic to one entity, an internet service provider, and the voice traffic to the ILEC's network. See Bell Atlantic Telephone Companies, Tariff No. 1, Transmittal No. 1076, CC Docket No. 98-168, Order Suspending Tariff and Designating Issues for Investigation, (released September 15, 1998); BellSouth Telecommunications, Inc., BellSouth Tariff FCC No., BellSouth Transmittal No. 476, CC Docket No. 98-161, Order Suspending Tariff and Designating Issues for Investigation, (released September 1, 1998); GTE Telephone Operators, GTOC Tariff No. 1, GTOC Transmittal No. 1148, CC Docket No. 98-79, Order Designating Issues for Investigation, (released August 20, 1998); Pacific Bell Telephone Company, Pacific Bell Tariff FCC No. 128, Pacific Transmittal No. 1986, CC Docket No. 98-103, Order Designating Issues for Investigation, (released September 2, 1998). At the same time, maintaining the Commission's existing policy that a single LEC, be it competitive or ILEC, owns the loop will play an important role in ensuring the quality of service, fraud prevention, and the creation of appropriate business arrangements for compensation.

112 It is conceivable that four carriers could be involved with respect to a single loop. The first carrier, the ILEC, would lease its loops to a second carrier, a CLEC. The CLEC would then act as a wholesaler sending voice traffic to a third carrier who specializes in voice traffic and data traffic to a fourth carrier such as an internet service provider. The Commission should not prohibit LECs from entering such arrangements. In all events, however, the ILEC should manage the multiplexing, transmission enhancing, and other equipment integral to the loop, including the FDM. See NPRM, ¶ 162.

113 The NPRM tentatively concludes that if the ILEC provides a particular voice (or data) service to its advanced services affiliate, it must make that same service available to other CLECs on the same terms and conditions. See NPRM, ¶ 162. ILECs could leverage this

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providers exclusive control over network facilities dedicated to particular end users provides such carriers the maximum flexibility to offer new services to such end users"). If, for example, an internet service provider could obtain the data functionality of a loop owned by another LEC without its authorization, significant billing and customer service difficulties may arise. When service complications arise, the customer is likely to call the LEC despite the fact that (i) the problem may have been caused by the internet service provider or (ii) the LEC might lack the ability to address the problem because the internet service provider controls the implicated facilities.[114] In addition, forcing one carrier to lease a functionality of a network element violates the Commission's rulings that all features, functions and capabilities of a network element pass with ownership of the network element. Id., ¶ 260

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added flexibility by leasing loops to their advanced services affiliates and then buying back the voice capability at an inflated price. Such a compensation arrangement would artificially lower an advanced services affiliate's cost of providing service. Hence, if the Commission adopts the separate affiliate approach it should require, among other things, that ILECs make the same buy back arrangements they have with their affiliates available to CLECs on the same terms and conditions

[114] AT&T previously has discussed additional problems with allowing one carrier to offer a voice or data service over another carrier's loop without first obtaining the loop owner's authorization. See GTE Telephone Operating Companies, GTOC Tariff F.C.C. No. 1, GTOC Transmittal No. 1148, CC Docket No. 98-79, Opposition of AT&T Corp. to Direct Cases, at pp. 7-8 (filed September 18, 1998). Those problems include the inability of customers to control the use of their local loops for data services and the resolution of billing disputes, especially when the customer stops paying one of the carriers. Id.