

Before the
Federal Communications Commission
Washington, D.C. 20554

In the Matter of)
Implementation of the) CC Docket No. 96-98
Local Competition Provisions)
of the Telecommunications Act of 1996)

**THIRD REPORT AND ORDER AND
FOURTH FURTHER NOTICE OF PROPOSED RULEMAKING**

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By the Commission: Commissioner Ness issuing a statement; Commissioner Furchtgott-Roth concurring in part, dissenting in part and issuing a statement; Commissioner Powell dissenting in part and issuing a statement.

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I. INTRODUCTION

1. In this proceeding, we respond to the Supreme Court's January 1999 decision that directs us to reevaluate the unbundling obligations of section 251 of the

Telecommunications Act of 1996 (1996 Act).¹ The Supreme Court's decision removed many of the uncertainties surrounding the requirements of section 251 by upholding the majority of the Commission's rules implementing that section of the Act, including the Commission's jurisdiction to implement sections 251 and 252 of the Act, the Commission's definitions of network elements, and the Commission's rule requiring incumbent local exchange carriers (LECs) to offer combinations of unbundled network elements that are already combined. The Court has directed us, however, to revise the standards under which the unbundling obligations of section 251(c)(3) are determined. Specifically, the Court has required us to give some substance to the "necessary" and "impair" standards in section 251(d)(2), and to develop a limiting standard that is "rationally related to the goals of the Act." In addition, as we develop the "necessary" and "impair" standards, the Court has required us to consider the availability of alternative network elements outside the incumbent's network.²

2. In passing the 1996 Act, Congress overhauled many aspects of federal regulation of telecommunications services by establishing a pro-competitive and deregulatory framework designed to benefit "all Americans by opening all telecommunications markets to competition."³ Two of the fundamental goals of the 1996 Act are to open the local exchange and exchange access markets to competition and to promote innovation and investment by all participants in the telecommunications marketplace.⁴ Congress sought to foster this competition by fundamentally changing the conditions and incentives for market entry and by attempting to open any remaining local service bottlenecks.⁵ As a result, the provisions of the 1996 Act set the stage for a new competitive paradigm in which carriers in previously segmented markets are able to compete in a dynamic and integrated telecommunications market that promises lower prices and more innovative services to consumers.

3. Central to the new statutory scheme is section 251 of the Act, which seeks generally to reduce inherent economic and operational advantages possessed by incumbent local exchange carriers. Toward this end, section 251 imposes specific market-opening mechanisms, such as mandatory interconnection, unbundling, and resale requirements on incumbent LECs, in order to break the incumbents' control over local facilities.⁶ Congress directed the Commission to implement the provisions of section 251,

¹ Telecommunications Act of 1996, Pub. L. No. 104-104, 110 Stat. 56, codified at 47 U.S.C. §§ 151 et seq. (1996 Act).

² *AT&T v. Iowa Utils. Bd.*, 119 S. Ct. 721, 734-36 (1999) (*Iowa Utils. Bd.*).

³ Joint Statement of Managers, S. Conf. Rep. No. 104-230, 104th Cong., 2d Sess., at 1 (1996) (*Joint Explanatory Statement*).

⁴ *Joint Explanatory Statement* at 1.

⁵ See *BellSouth Corp. v. FCC*, 144 F.3d 58, 61 (D.C. Cir. 1998) ("The 1996 Act rescinded the [Modified Final Judgment] . . . and changed the entire telecommunications landscape.").

⁶ 47 U.S.C. §§ 251(c)(3) and (d)(2). The Act also encourages new entrants to construct their

and to specifically determine which network elements should be unbundled pursuant to section 251(c)(3).⁷

4. Pursuant to our statutory mandate and the directives of the Supreme Court, we reevaluate the unbundling obligations of incumbent LECs, pursuant to sections 251(c)(3) and 251(d)(2). The new standards and framework we adopt in this Order for determining which network elements incumbent LECs must make available on an unbundled basis will remove the uncertainties surrounding the incumbents' unbundling obligations since passage of the Act. More importantly, however, they will define the competitive landscape of telecommunications markets for the foreseeable future.

5. The standards and unbundling obligations that we adopt in this Order are designed to create incentives for both incumbent and competitive LECs to innovate and invest in technologies and services that will benefit consumers through increased choices of telecommunications services and lower prices. We recognize that there will be a continuing need for all three of the arrangements Congress set forth in section 251 to remain available to competitors so that they can serve different types of customers in different geographic areas.⁸ We continue to believe that the ability of requesting carriers to use unbundled network elements, including various combinations of unbundled network elements, is integral to achieving Congress' objective of promoting rapid competition to all consumers in the local telecommunications market.⁹ Moreover, in some areas, we believe that the greatest benefits may be achieved through facilities-based competition, and that the ability of requesting carriers to use unbundled network elements, including various combinations of unbundled network elements, is a necessary precondition to the subsequent deployment of self-provisioned network facilities.

6. Although Congress did not express explicitly a preference for one particular competitive arrangement, it recognized implicitly that the purchase of unbundled network elements would, at least in some situations, serve as a transitional arrangement until fledgling competitors could develop a customer base and complete the construction of their own networks. In particular, Congress stated: "[I]t is unlikely that competitors will

own competitive facilities. In particular, it requires incumbent LECs to interconnect competitive LECs' facilities and equipment with their networks. 47 U.S.C. § 251(c)(2).

⁷ Section 251(d)(2) states that "in determining what network elements should be made available for purposes of subsection (c)(3), the Commission shall consider, at a minimum whether [the elements meet the "necessary" and "impair" standards]. 47 U.S.C. § 251(d)(2) (emphasis added).

⁸ See *Implementation of the Local Competition Provisions of the Telecommunications Act of 1996*, CC Docket No. 96-98, First Report and Order, 11 FCC Rcd 15499, 15509, para. 12 (1996) (*Local Competition First Report and Order*), aff'd in part and vacated in part sub nom., *Competitive Telecommunications Ass'n v. FCC*, 117 F.3d 1068 (8th Cir. 1997) (*CompTel v. FCC*) and *Iowa Utils. Bd. v. FCC*, 120 F.3d 753 (8th Cir. 1997) (*Iowa Utils. Bd. v. FCC*), aff'd in part and remanded, *AT&T v. Iowa Utils. Bd.*, 119 S. Ct. 721 (1999); Order on Reconsideration, 11 FCC Rcd 13042 (1996), Second Order on Reconsideration, 11 FCC Rcd 19738 (1996), Third Order on Reconsideration and Further Notice of Proposed Rulemaking, 12 FCC Rcd 12460 (1997), further recons. pending.

⁹ See *Local Competition First Report and Order*, 11 FCC Rcd at 15509, para. 12.

have a fully redundant network in place when they initially offer local service because the investment necessary is so significant. Some facilities and capabilities . . . will likely need to be obtained from the incumbent [LEC] as network elements pursuant to new section 251."¹⁰ Implicit in this recognition, and in section 271's requirement that the Bell Operating Companies (BOCs) provide access and interconnection to their network facilities in accordance with the requirements in the competitive checklist, is Congress's expectation that new competitors would use unbundled elements from the incumbent LEC until it was practical and economically feasible to construct their own networks.¹¹

7. We fully expect that over time competitors will prefer to deploy their own facilities in markets where it is economically feasible to do so, because it is only through owning and operating their own facilities that competitors have control over the competitive and operational characteristics of their service, and have the incentive to invest and innovate in new technologies that will distinguish their services from those of the incumbent. Unbundling rules that encourage competitors to deploy their own facilities in the long run will provide incentives for both incumbents and competitors to invest and innovate, and will allow the Commission and the states to reduce regulation once effective facilities-based competition develops.¹² Accordingly, the unbundling rules we adopt in this proceeding seek to promote the development of facilities-based competition.

8. We believe that the "necessary" and "impair" standards we adopt below address the Supreme Court's mandate and implement the statutory language and goals of the Act. The standards we adopt take into consideration alternatives outside the incumbent LEC's network, and whether those alternatives are actually available to the requesting carrier as a practical, economic, and operational matter. We consider not only the direct costs, but also other costs and impediments associated with using alternative elements that may constitute barriers to entry. We believe the Commission must assess

¹⁰ *Joint Explanatory Statement* at 148.

¹¹ *See* 47 U.S.C. § 271(c)(2)(B).

¹² *See Promotion of Competitive Networks in Local Telecommunications Markets*, Notice of Proposed Rulemaking and Notice of Inquiry in WT Docket No. 99-217 and Third Further Notice of Proposed Rulemaking in CC Docket No. 96-98, FCC 99-141, paras. 4, 23 (rel. July 7, 1999) (*Competitive Networks Notice*) ("We believe that, in the long term, the most substantial benefits to consumers will be achieved through facilities-based competition, because only facilities-based competitors can break down the incumbent LECs' bottleneck control over local networks and provide services without having to rely on their rivals for critical components of their offerings. Moreover, only facilities-based competition can fully unleash competing providers' abilities and incentives to innovate, both technologically and in service development, packaging, and pricing. . . . In order for competitive networks to develop, the incumbent LECs' bottleneck control over interconnection must dissipate. As the market matures and the carriers providing services in competition with the incumbent LECs' local exchange offerings grow, we believe these carriers may establish direct routing arrangements with one another, forming a network of networks around the current system. In time, it is likely that the incumbent LECs will cease to be viewed as the presumptive primary providers of interconnection, and indeed they will begin to seek interconnection and other arrangements with their challengers. These circumstances would strengthen the case for substantial deregulation of the incumbent LECs.").

these factors to determine the availability of alternatives, and whether access to the incumbent's network element thereby satisfies the "necessary" and "impair" standards of section 251(d)(2).

9. The unbundling standards we adopt in this Order also seek to encourage the rapid introduction of competition in all markets, including residential and small business markets. They seek to create incentives for both incumbents and requesting carriers to invest and innovate in new technologies by establishing a mechanism by which regulatory obligations to provide access to network elements will be reduced as alternatives to the incumbent LECs' network elements become available in the future. In addition, the standards provide reasonable certainty regarding the availability of unbundled elements, thereby allowing requesting carriers to attract investment capital and move forward with implementing national and regional business plans that will allow them to serve the greatest number of consumers

10. To date, we have seen the development of facilities-based competition among providers of particular services in certain sectors of the market. For example, as discussed in more detail below, competitors have deployed their own fiber rings and approximately 700 circuit switches to provide local exchange and exchange access services primarily to medium and large business customers in high-density metropolitan areas.¹³ In addition, the record in this proceeding suggests that a growing number of carriers are deploying packet switches to provide data services in a number of markets, particularly for end users with substantial telecommunications needs.¹⁴

11. Other local markets, however, particularly the residential and small business markets, and geographic markets outside of major metropolitan areas, have seen minimal competition. This may be due to the uncertainty surrounding the ability of competitive LECs to use reasonably priced unbundled network elements to serve these areas as a result of litigation concerning the Commission's unbundling rules.¹⁵ Because unbundled network elements have not been made fully available to requesting carriers as the Commission expected in 1996, we do not yet know the extent to which competition will develop once all of the unbundling rules are actually implemented by incumbent LECs.

12. Only recently have incumbent LECs provided access to combinations of unbundled loops, switches, and transport elements, often referred to as "the platform." Since these combinations of unbundled network elements have become available in certain areas, competitive LECs have started offering service in the residential mass market in those areas. For example, in January of this year, Bell Atlantic, as part of an agreement with the New York Public Service Commission, began offering the unbundled network element platform out of particular end offices in New York City. As a result,

¹³ See *infra* Section V(D)(1).

¹⁴ See *infra* Section V(D)(2).

¹⁵ See MCI WorldCom Comments, Tab 1, Decl. of Judith R. Levine/Ronald J. McMurtrie, at para. 7.

MCI WorldCom had acquired upwards of 60,000 new local residential customers in New York as of June 1999.¹⁶ AT&T also plans to serve local residential customers over the platform in Texas.¹⁷

13. For effective competition to develop as envisioned by Congress, competitors must have access to incumbent LEC facilities in a manner that allows them to provide the services that they seek to offer, as contemplated in section 251(d)(2) of the Act. Despite the development of competition in some markets, incumbents still control the vast majority of the facilities that comprise the local telecommunications network, giving them advantages of economies of scale and scope not enjoyed by competitive LECs.¹⁸ Because competitors do not yet enjoy the same economies of scale, scope and ubiquity as the incumbent, they may be impaired if they do not have access, at least initially, to certain network elements supplied by the incumbent LEC.¹⁹ For example, without access to unbundled network elements, a competitive LEC may choose not to enter a particular market because the cost and delays associated with deploying its own facilities would be too high given the revenues obtainable from that market and the relative attractiveness of other potential new markets. Similarly, a competitive LEC may decline to enter a market because certain of their facilities are subject to economies of scale and scope such that the competitor would need a larger market share than it is likely to have initially. In such cases, competitors may choose to enter a certain market if they can obtain access to particular unbundled network elements on sufficiently favorable terms that such scale economies are overcome, and other potential markets no longer appear more attractive.

14. The standards and rules we adopt in this Order seek to build on industry experience and technological changes that have occurred in the telecommunications marketplace since the 1996 Act was enacted three years ago. Today, both incumbent LECs and requesting carriers are at the early stages of deploying innovative technologies to meet the ever-increasing demand for high-speed, high-capacity advanced services. To encourage competition among carriers to develop and deploy new advanced services, the

¹⁶ *Id.* at para. 17.

¹⁷ Letter from Frank S. Simone, Government Affairs Director, AT&T, to Magalie Roman Salas, Secretary, Federal Communications Commission, CC Docket No. 96-98, Attachment at 4-5 (filed June 25, 1999).

¹⁸ *Local Competition: August 1999*, Industry Analysis Division, Common Carrier Bureau, Federal Communications Commission, at 23 (August 1999) (*FCC Local Competition Report*) (explaining that investment analysts' estimate of total switched lines owned by competitive LECs is in the range of two to three percent of nationwide switched access lines). *See also* Texas PUC Comments at 14 (stating that in Texas, for example, incumbent LECs own 98 percent of all access lines and have deployed 1538 switches throughout the state).

¹⁹ *See, e.g.*, MCI WorldCom Comments, Tab 3, Decl. of Mark T. Bryant, at paras. 2-20 (describing the economies of scale to which all loop, transport and switching unbundled network elements are subject); Covad Comments at iii-iv; Prism Comments at 5-6; Qwest Comments at 8-9; AT&T Reply Comments at 45-46.

marketplace for these services must be conducive to investment, innovation, and meeting the needs of consumers. Accordingly, our unbundling rules are designed to facilitate the rapid and efficient deployment of all telecommunications services, including advanced services. Specifically, unbundling rules that are based on a preference for development of facilities-based competition in the long run will provide incentives for both incumbents and competitors to invest and innovate, and should allow the Commission to reduce regulation once true facilities-based competition develops.

15. The unbundling standards we adopt in this order also are designed to be administratively practical and respond to changes in the marketplace as alternatives to the incumbent LECs' network elements become available. We are committed to reviewing the unbundling obligations in three years, and as the marketplace changes with the development of new technologies and increased facilities-based competition, we will modify the list of unbundled elements, as warranted.

II. EXECUTIVE SUMMARY

Section 251(d)(2)'s "Necessary" and "Impair" Standards. Section 251(d)(2)(A)'s "necessary" standard is a stricter standard that applies to proprietary network elements. Section 251(d)(2)(B)'s "impair" standard applies to non-proprietary network elements. Applying a stricter standard to proprietary network elements is consistent with Congress' intention to spur innovation and investment by both incumbent and competitive LECs. In applying these standards, we look first to what is occurring in the marketplace today.

- **Necessary.** A proprietary network element is "necessary" within the meaning of section 251(d)(2)(A) if, taking into consideration the availability of alternative elements outside the incumbent's network, including self-provisioning by a requesting carrier or acquiring an alternative from a third party supplier, lack of access to that element would, as a practical, economic, and operational matter, *preclude* a requesting carrier from providing the services it seeks to offer. There are limited circumstances under which we may unbundle proprietary information or functionalities even if those elements are not strictly "necessary," as long as the "impair" standard is met. These circumstances are: (1) where an incumbent LEC, for the primary purpose of causing a particular network to be evaluated under the stricter "necessary" standard in order to avoid its unbundling obligation, implements only a minor modification to the network element to make the element proprietary; (2) where an incumbent LEC cannot demonstrate that the information or functionality that it claims is proprietary differentiates its services from its competitors' services, or is otherwise competitively significant; or (3) where lack of access to the proprietary element would jeopardize the goal of the 1996 Act to bring rapid competition to the greatest number of consumers.
- **Impair.** The incumbent LECs' failure to provide access to a non-proprietary network element "impairs" a requesting carrier within the meaning of section 251(d)(2)(B) if, taking into consideration the availability of alternative elements outside the incumbent's network, including self-provisioning by a requesting

carrier or acquiring an alternative from a third-party supplier, lack of access to that element *materially diminishes* a requesting carrier's ability to provide the services it seeks to offer. In order to evaluate whether there are alternatives actually available to the requesting carrier as a practical, economic, and operational matter, we look at the totality of the circumstances associated with using an alternative. In particular, our "impair" analysis considers the cost, timeliness, quality, ubiquity, and operational issues associated with use of the alternative.

Goals of the Act. We also interpret the obligations imposed in section 251(d)(2) within the larger statutory framework of the 1996 Act. Congress apparently contemplated that we would consider additional factors by directing the Commission, in section 251(d)(2), to "consider *at a minimum*" the "necessary" and "impair" standards. The Supreme Court decision requires us to apply a limiting standard "rationally related to the goals of the Act." Accordingly, in addition to the factors set forth above, we may consider the following factors:

- **Rapid Introduction of Competition in All Markets.** We may consider whether the availability of an unbundled network element is likely to encourage requesting carriers to enter the local market in order to serve the greatest number of consumers as rapidly as possible. We also note that Congress required Bell Operating Companies to demonstrate that they are providing loops, switching, transport, signaling and databases, and operator services/directory assistance in order to obtain in-region, interLATA approval. While the section 271 checklist does not determine definitively which elements all incumbent LECs are required to unbundle pursuant to section 251, it sheds some light on what Congress believed was required to open local markets to competition. Accordingly, we believe that we may consider whether requiring all incumbent LECs to unbundle these same elements would promote the rapid introduction of competition on a nationwide basis.
- **Promotion of Facilities-Based Competition, Investment, and Innovation.** We may consider the extent to which the unbundling obligations we adopt will encourage the development of facilities-based competition by competitive LECs, and innovation and investment by both incumbent LECs and competitive LECs, especially for the provision of advanced services.
- **Reduced Regulation.** We may consider the extent to which we can encourage investment and innovation by reducing regulatory obligations to provide access to network elements, as alternatives to the incumbent LECs' network elements become available in the future.
- **Certainty in the Market.** We may consider how the unbundling obligations we adopt can provide the uniformity and predictability that new entrants and fledgling competitors need to develop national and regional business plans. We also consider whether the rules we adopt provide financial markets with reasonable certainty so that carriers can attract the capital they need to execute their business plans to serve the greatest number of consumers.
- **Administrative Practicality.** We may consider whether the unbundling obligations we adopt are administratively practical to apply.

Modification of the National List.

- The Order recognizes that rapid changes in technology, competition, and the economic conditions of the telecommunications market will require a reevaluation of the national unbundling rules periodically. In order to encourage a reasonable period of certainty in the market, the Commission expects to reexamine the national list of unbundled network elements in three years.
- Section 251(d)(3) permits state commissions to require incumbent LECs to unbundle additional elements as long as the obligations are consistent with the requirements of section 251 and the national policy framework instituted in this Order.
- Removal of elements from the national list on a state-by-state basis would not be consistent with section 251 and the goals of the Act.

Network Elements that Must be Unbundled. Applying the above factors, the Order concludes that the following network elements must be unbundled:

- **Loops.** Incumbent local exchange carriers (LECs) must offer unbundled access to loops, including high-capacity lines, xDSL-capable loops, dark fiber, and inside wire owned by the incumbent LEC. The unbundling of the high frequency portion of the loop is being considered in another proceeding.
- **Subloops.** Incumbent LECs must offer unbundled access to subloops, or portions of the loop, at any accessible point. Such points include, for example, a pole or pedestal, the network interface device, the minimum point of entry to the customer premises, and the feeder distribution interface located in, for example, a utility room, a remote terminal, or a controlled environment vault. The Order establishes a rebuttable presumption that incumbent LECs must offer unbundled access to subloops at any accessible terminal in their outside loop plant.
- To the extent there is not currently a single point of interconnection that can be feasibly accessed by a requesting carrier, we encourage parties to cooperate in any reconfiguration of the network necessary to create one. If parties are unable to negotiate a reconfigured single point of interconnection at multi-unit premises, we require the incumbent to construct a single point of interconnection that will be fully accessible and suitable for use by multiple carriers.
- **Network Interface Device (NID).** Incumbent LECs must offer unbundled access to NIDs. The NID includes any potential means of interconnection with customer premises inside wiring at the point where the carrier's local loop facilities end, such as at a cross connect device used to connect the loop to customer-controlled inside wiring. This includes all features, functions, and capabilities of the facilities used to connect the loop to premises wiring, regardless of the specific mechanical design.

- Circuit Switching. Incumbent LECs must offer unbundled access to local circuit switching, except for local circuit switching used to serve end users with four or more lines in access density zone 1 in the top 50 Metropolitan Statistical Areas (MSAs), provided that the incumbent LEC provides non-discriminatory, cost-based access to the enhanced extended link throughout zone 1. (An enhanced extended link (EEL) consists of a combination of an unbundled loop, multiplexing/concentrating equipment, and dedicated transport. The EEL allows new entrants to serve customers without having to collocate in every central office in the incumbent's territory.) Local circuit switching includes the basic function of connecting lines and trunks on the line-side and port-side of the switch. The definition of the local switching element encompasses all of the features, functionalities, and capabilities of the switch.
- Packet Switching. Incumbent LECs must offer unbundled access to packet switching only in limited circumstances in which the incumbent has placed digital loop carrier systems in the feeder section of the loop or has its Digital Subscriber Line Access Multiplexer (DSLAM) in a remote terminal. The incumbent will be relieved of this obligation, however, if it permits a requesting carrier to collocate its DSLAM in the incumbent's remote terminal on the same terms and conditions that apply to its own DSLAM. Packet switching is defined as the function of routing individual data message units based on address or other routing information contained in the data units, including the necessary electronics (e.g., DSLAMs).
- Interoffice Transmission Facilities. Incumbent LECs must offer unbundled access to dedicated interoffice transmission facilities, or transport, including dark fiber. Dedicated interoffice transmission facilities are defined as incumbent LEC transmission facilities dedicated to a particular customer or carrier that provide telecommunications between wire centers owned by the incumbent LECs or requesting telecommunications carriers, or between switches owned by incumbent LECs or requesting telecommunications carriers. State commissions are free to establish reasonable limits governing access to dark fiber if incumbent LECs can show that they need to maintain fiber reserves.
- Incumbent LECs must also offer unbundled access to shared transport where unbundled local circuit switching is provided. 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's network.
- Signaling and Call-Related Databases. Incumbent LECs must offer unbundled access to signaling links and signaling transfer points (STPs) in conjunction with unbundled switching, and on a stand-alone basis. The signaling network element includes, but is not limited to, signaling links and STPs. Incumbent LECs must also offer unbundled access to call-related databases, including, but not limited to, the Line Information database (LIDB), Toll Free Calling

database, Number Portability database, Calling Name (CNAM) database, Operator Services/Directory Assistance databases, Advanced Intelligent Network (AIN) databases, and the AIN platform and architecture. We do not require incumbent LECs to unbundle access to certain AIN software that qualify for proprietary treatment.

- Operations Support Systems (OSS). Incumbent LECs must offer unbundled access to their operations support systems. OSS consists of pre-ordering, ordering, provisioning, maintenance and repair, and billing functions supported by an incumbent LEC's databases and information. The OSS element includes access to all loop qualification information contained in any of the incumbent LEC's databases or other records, including information on whether a particular loop is capable of providing advanced services.

Network Elements that Need Not be Unbundled. The following network elements need not be unbundled:

- Operator Services and Directory Assistance (OS/DA). Incumbent LECs are not required to unbundle their OS/DA services pursuant to section 251(c)(3), except in the limited circumstance where an incumbent LEC does not provide customized routing to a requesting carrier to allow it to route traffic to alternative OS/DA providers. Operator services are any automatic or live assistance to a consumer to arrange for billing or completion of a telephone call. Directory assistance is a service that allows subscribers to retrieve telephone numbers of other subscribers. Incumbent LECs, however, remain obligated under the non-discrimination requirements of section 251(b)(3) to comply with the reasonable request of a carrier that purchases the incumbents' OS/DA services to rebrand or unbrand those services, and to provide directory assistance listing updates in daily electronic batch files.
- Shared Transport where Circuit Switching is not Unbundled. Incumbent LECs are not required to unbundle shared transport where they are not required to offer unbundled local circuit switching, as described above.
- Packet Switching. Incumbent LECs are not required to unbundle packet switching, except in a limited circumstance. Competitive LECs are actively deploying packet switches to serve high-volume customers, and are not impaired in their ability to offer service to such customers without access to the incumbent LEC's facilities. Competitive LECs are impaired, however, in their ability to provide services to small-volume users without access to unbundled packet switching. Nonetheless, we consider the other goals of the Act in making our unbundling determination, and conclude that given the nascent nature of the advanced services market and the Act's goal to provide incentives to all carriers to invest and innovate, incumbent LECs are generally not required to unbundle packet switching.

Section 271-Related Issues.

- If a network element on the section 271 competitive checklist is not required to be unbundled pursuant to section 251(c)(3) (*i.e.*, local circuit switching and shared transport in certain circumstances), Bell Operating Companies are not required to offer unbundled access to any such checklist items in compliance with the Commission's pricing rules. While the applicable price, terms, and conditions for that element are subject to section 201(b) and 202(a) of the Act, it would be counterproductive to mandate that incumbents offer elements at forward looking prices when the market price, rather than a regulated rate, should prevail in circumstances when an element is not unbundled.

Combinations of Network Elements.

- Given the pendency of litigation in the Court of Appeals for the Eighth Circuit, the Order declines to define the enhanced extended link as a separate network element, nor does it address whether an incumbent LEC must combine network elements that are not already combined in the network.

Further Notice of Proposed Rulemaking: Use of Unbundled Network Elements to Provide Exchange Access Service.

- The Further Notice seeks comment on whether there is any basis in the statute or our rules under which incumbent LECs could decline to provide entrance facilities (the link between an interexchange carrier's point of presence and an incumbent's switch or serving wire center) at unbundled network element prices.
- The Further Notice also invites parties to refresh the record on whether requesting carriers may use unbundled dedicated or shared transport facilities in conjunction with unbundled switching to originate or terminate interstate toll traffic to customers to whom the requesting carrier does not provide local exchange service.

III. BACKGROUND

16. On August 8, 1996, the Commission adopted the *Local Competition First Report and Order*, implementing the local competition provisions of the 1996 Act. In that order, the Commission established rules governing the obligations of incumbent LECs to open their local networks to competition pursuant to the requirements of section 251 of the 1996 Act. Among other things, the order adopted rules implementing the network unbundling requirements of sections 251(c)(3) and 251(d)(2) of the 1996 Act. Section 251(c)(3) imposes a duty on all incumbent LECs to provide to competitors access to network elements on an unbundled basis.²⁰ Section 251(d)(2) provides that, in determining which network elements should be unbundled under section 251(c)(3), the Commission shall consider, “at a minimum, whether -- (A) access to such network elements as are proprietary in nature is necessary; and (B) the failure to provide access to such network element would impair the ability of the telecommunications carrier seeking access to provide the services that it seeks to offer.”²¹

17. In the *Local Competition First Report and Order*, the Commission applied its interpretation of the “necessary” and “impair” standards of section 251(d)(2) to the unbundling requirements of section 251(c)(3). Specifically, the Commission defined “necessary” to mean “an element is a prerequisite for competition,”²² and it defined “impair” to mean “to make or cause to become worse; diminish in value.”²³ The Commission also determined that a requesting carrier’s ability to offer service is “impaired” or “diminished in value” if “the quality of the service the entrant can offer, absent access to the requested element, declines” or if “the cost of providing the service rises.”²⁴

18. After addressing the “necessary” and “impair” standards, the Commission adopted rule 51.319, which sets forth the network elements that incumbent LECs were required to make available to requesting carriers on an unbundled basis.²⁵ Section 51.319 of the Commission’s rules required incumbent LECs to offer unbundled access to the following network elements: (1) local loops; (2) network interface devices; (3) local switching; (4) interoffice transmission facilities; (5) signaling networks and call-related databases; (6) operations support systems; and (7) operator services and directory

²⁰ Certain rural telephone companies may be exempt from the unbundling provisions of section 251. *See* 47 U.S.C. § 251(f).

²¹ 47 U.S.C. § 251(d)(2).

²² *Local Competition First Report and Order*, 11 FCC Rcd at 15641-42, para. 282.

²³ *Id.* at para. 285 (quoting Random House College Dictionary 665 (rev. ed. 1984)).

²⁴ *Local Competition First Report and Order*, 11 FCC Rcd at 15643, para. 285.

²⁵ *Id.* at 15683, para. 366.

assistance.²⁶ Section 51.317 of the Commission's rules allowed states to impose additional unbundling requirements pursuant to the Commission's interpretation of section 251(d)(2).²⁷

19. Following adoption of the *Local Competition First Report and Order*, incumbent LECs and state commissions filed various challenges to the Commission's rules; these appeals were consolidated in the Eighth Circuit. The Eighth Circuit, among other holdings, rejected the incumbent LECs' argument that, in determining which elements were subject to the unbundling requirements, the Commission had not properly applied the "necessary" and "impair" standards of section 251(d)(2).²⁸ Accordingly, the Eighth Circuit upheld section 51.319. The Supreme Court granted several parties' requests to review the Eighth Circuit's decision.

20. In its January 25, 1999 opinion, the Supreme Court reversed the Eighth Circuit's decision on this issue, stated that section 51.319 should be vacated, and remanded the matter for further proceedings.²⁹ While the Court affirmed that the Commission has jurisdiction to implement the local competition provisions of the 1996 Act, including the unbundling requirements in section 251, it concluded that the Commission had not adequately considered the "necessary" and "impair" standards of section 251(d)(2).³⁰ The Court found, among other things, that the Commission, in deciding which elements must be unbundled, did not adequately take into consideration the "availability of elements outside the incumbent's network."³¹ The Court also faulted the Commission's "assumption that *any* increase in cost (or decrease in quality) imposed by a denial of a network element renders access to that element 'necessary,' and causes the failure to provide that element to 'impair' the entrant's ability to furnish its desired

²⁶ 47 C.F.R. § 51.319. *Local Competition First Report and Order*, 11 FCC Rcd at 15641-42, paras. 281-83.

²⁷ 47 C.F.R. § 51.317.

²⁸ *Iowa Utils. Bd. v. FCC*, 120 F.3d at 808-10.

²⁹ *Iowa Utils. Bd.*, 119 S. Ct. at 733-36. As already noted, the Supreme Court upheld all but one of the local competition rules that had been challenged. The Supreme Court held that the Commission has general jurisdiction to implement the 1996 Act's local competition provisions, and that the Commission's rulemaking authority extends to sections 251 and 252. The Court further found that: (1) the Commission's interpretation of "network element," as including operator services and directory assistance, operational support systems, and vertical switching functions such as caller I.D., call forwarding, and call waiting, is reasonable; (2) the Commission reasonably omitted a facilities-ownership requirement; (3) the Commission's rule 51.315(b), which forbids incumbents from separating already-combined network elements before leasing them to competitors, reasonably interprets section 251(c)(3) of the 1996 Act; and (4) the Commission's "pick and choose" rule that requires an incumbent LEC to make available to any requesting carrier any individual interconnection, service, or network element arrangement contained in any state-approved agreement "upon the same rates, terms, and conditions as those provided in the agreement" is a reasonable interpretation of section 252(i) of the 1996 Act. *Id.* at 729-34.

³⁰ *Id.* at 730-36.

³¹ *Id.* at 735.

services. . .³² In addition, the Court criticized the Commission's interpretation of section 251(d)(2) because it "allows entrants, rather than the Commission, to determine" whether the requirements of that section are satisfied.³³ On April 16, 1999, we released a Second Further Notice in this docket seeking comment on the appropriate unbundling standard, and which network elements should be unbundled.³⁴

IV. FRAMEWORK FOR DECIDING WHAT NETWORK ELEMENTS MUST BE UNBUNDLED PURSUANT TO SECTION 251

A. Overview

21. In this section, we discuss our framework for determining whether a particular network element should be unbundled. We interpret the terms "necessary," "impair," and "proprietary" in section 251(d)(2) in a manner that gives substance to those terms. We then discuss how we will evaluate alternative elements that are available through self-provisioning or from third-party suppliers. In considering whether to unbundle a particular network element, we look first to what is occurring in the marketplace today. For some network elements, we are beginning to see competitors using alternatives in discrete situations. In order to determine whether these alternative sources of network elements are actually available as a practical, economic, and operational matter, so that incumbents should be free of any unbundling obligations for that element, we look at several factors, including cost, ubiquity, quality, timeliness, and operational impediments.

22. We acknowledge that given the complexity associated with a competitive LEC's decision to enter a certain market, it is extremely difficult to identify one particular factor that is dispositive of whether or not a competitor will seek to offer a particular service in any given market. For example, even where a competitive LEC's costs to provide a service may be comparable to the incumbent's costs to provide a similar service, the competitive LEC, because it cannot enter all markets simultaneously, may choose not to enter a particular market at a particular time because there are other markets that are relatively more profitable to serve. The competitive LEC might also be dissuaded from entering a market because of subsidy distortions or other regulatory factors. Conversely, notwithstanding the fact that a competitive LEC's infrastructure costs in a particular market may be materially different from the incumbent LECs' costs, the competitive LEC may still choose to enter that market if it can provide more services over its network infrastructure, or offer marketing, service, or technical innovations for which customers will pay a premium.

³² *Id.*

³³ *Id.*

³⁴ *Implementation of the Local Competition Provisions in the Telecommunications Act of 1996*, CC Docket No. 96-98, Second Further Notice of Proposed Rulemaking, FCC 99-70 (rel. Apr. 16, 1999) (*Notice*). A list of parties submitting Comments and Reply Comments is provided in Appendix A.

23. Although we may not be able to identify with precision a competitor's incentives, or lack of incentives to enter a particular market, we nonetheless find that evidence demonstrating the lack of competition in certain areas of the country and among certain classes of customers is a strong indicator that there may exist economic and other types of barriers that may, at a minimum, impair a competitor's ability to compete vis-à-vis the incumbent. Accordingly, based on evidence provided in the record, we use our administrative judgment to identify several factors, including cost, ubiquity, quality, timeliness, and operational impediments, that we find particularly helpful in explaining whether a competitor's ability to provide the service it seeks to offer is impaired without access to a particular unbundled network element. Based on the actual state of competition, we look at these factors and their relationship to alternative sources of network elements to determine whether the alternatives are actually available as a practical, economic, and operational matter.

24. In particular, we examine both the direct and other costs a carrier incurs to substitute the alternative network element for the incumbent LEC's network element. We also consider whether self-provisioning or purchasing a network element from a third-party supplier would prevent a requesting carrier from entering the market within a reasonable time, or from expanding its operations to meet promptly the demand of its customers. In addition to costs and delays, we consider whether using alternative sources of network elements introduces quality differences or operational or technical impediments that may impair a requesting carrier's ability to provide the services that it seeks to offer. Specifically, we assess whether use of an alternative source of the network element would cause a requesting carrier's customers to experience degraded service.

25. We also consider the extent to which a requesting carrier can compete for customers on a wide-spread basis using alternative sources of the elements outside the incumbent's network. In some cases, to compete effectively with the incumbent LEC for the same customers, competitive LECs must be able to attain similar economies of scale that can only be achieved by serving a broad base of customers within a geographic area. Although theoretically, all or part, of an incumbent LEC's network can be replicated at some cost, as a practical matter, replication of elements in a ubiquitous manner may impair a requesting carrier's ability to compete vis-à-vis the incumbent. If the competitive LEC must deploy multiple facilities in order to be able to bring competition to a broad base of customers within a geographic area, the costs and delays associated with deploying facilities will likely be magnified, and could "materially diminish" that competitor's ability to provide the services that it seeks to offer.

26. We find that the language of section 251(d)(2) and the Supreme Court decision suggest that we should consider, in addition to the "necessary" and "impair" standards, the overall goals of the 1996 Act. Section 251(d)(2) states that the Commission shall "consider, *at a minimum*," the "necessary" and "impair" standards, thus leaving the Commission free to consider other relevant factors.³⁵ In addition, the Supreme Court decision requires us to apply a limiting standard "rationally related to the

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47 U.S.C. § 251(d)(2).

goals of the Act.” Moreover, as a policy matter, we believe that we may consider additional factors to ensure that the unbundling requirements promote the goals of the Act.

27. Accordingly, we may consider, in addition to the “necessary” and “impair” standards, whether the unbundling obligations we adopt are likely to: (1) encourage competitive LECs to rapidly enter the local market and serve the greatest number of consumers; (2) advance the development of facilities-based competition by competitive LECs, and encourage investment and innovation in new technologies and new services by both incumbent and competitive LECs; (3) reduce regulation of unbundled network elements as alternatives to the incumbent LECs’ network elements become available in the future, (4) provide certainty in the marketplace that will allow new entrants and fledgling competitors to develop national and regional business plans and bring the benefits of competition to the greatest number of consumers; and (5) be administratively practical to apply. We conclude that these important policy goals can only be furthered by adoption of a national list of unbundled elements that takes into consideration, where appropriate, discrete geographic and product market variations that create exceptions to the incumbent LECs’ general duty to unbundle the elements on the list.³⁶

28. We do not assign any particular weight to the factors we identify above. Rather, we consider the relationship among the various factors to determine whether an incumbent LEC’s network element should be unbundled. Indeed, there may be circumstances in which there is significant evidence that competitors are impaired without unbundled access to a particular element, but requiring incumbent LECs to unbundle that element would be inconsistent with the goals of the Act.

B. The “Necessary” and “Impair” Standards of Section 251(d)(2)

1. Application of the “necessary” and “impair” standards to proprietary and non-proprietary elements under Section 251(d)(2)

a. Background

29. In the *Local Competition First Report and Order*, the Commission concluded that section 251(d)(2) establishes separate standards that apply to proprietary and non-proprietary network elements. Specifically, the Commission determined that the “necessary” standard of section 251(d)(2)(A) applies to proprietary elements, and that the “impair” standard in section 251(d)(2)(B) applies to non-proprietary elements.³⁷ In the *Notice*, we sought comment on this interpretation of section 251(d)(2). In particular, we asked parties to comment on the difference between the “necessary” and “impair” standards. Noting that the Act employs two different terms, we asked if the Commission

³⁶ See *infra* Section V(D).

³⁷ *Local Competition First Report and Order*, 11 FCC Rcd at 15641-43, paras. 283-85.

must apply different criteria to determine whether a network element meets these standards.³⁸

30. Only a couple of commenters dispute the Commission's previous decision to apply the "necessary" standard to proprietary elements and the "impair" standard to non-proprietary elements.³⁹ In particular, Sprint argues that the "necessary" and "impair" standards apply only to proprietary elements and thus, all non-proprietary elements must be unbundled.⁴⁰

b. Discussion

31. We find no reason to change our framework for analyzing network elements under section 251(d)(2). In subpart (A) of section 251(d)(2), "necessary" modifies elements that are "proprietary in nature" while in subpart (B), "impair" modifies all other network elements. We agree with the majority of commenters that the "necessary" standard of section 251(d)(2)(A) is a higher standard that applies to proprietary network elements or to proprietary functions within an element.⁴¹ We believe that our conclusion that section 251(d)(2) establishes a higher standard for proprietary network elements than for non-proprietary elements is consistent with both the language of the statute and the goals of the 1996 Act to encourage incumbent LECs and competitive LECs to innovate and invest in new technologies. Specifically, incumbent LECs will have an on-going incentive to innovate if we ensure that their investment in the proprietary portions of their network is protected. While competitive LECs will have access to the incumbent LEC's proprietary network elements where necessary, they will not have unlimited access to those elements. We believe that this balanced approach provides competitive LECs with an incentive to innovate and invest in new technologies that will differentiate their

³⁸ Notice at para. 18.

³⁹ Rhythms Comments at 5-6; Sprint Comments at 9-12.

⁴⁰ Sprint Comments at 11-12. See also Letter from Kathy D. Smith, Acting Chief Counsel, National Telecommunications and Information Administration ("NTIA"), to Magalie Roman Salas, Secretary, Federal Communications Commission, CC Docket No. 96-98, Attachment at 21 (filed Aug. 2, 1999) ("NTIA Comments") ("NTIA agrees with Sprint that one reasonable construction of the statutory language is that the 'necessary' and 'impair' standards were meant to apply only to proprietary network elements. We nonetheless recognize that the Commission adopted (and the reviewing court implicitly accepted) a different construction of the statute in the Local Competition Report, and that there are legitimate reasons why the Commission would be reluctant to reject that construction now.") (citation omitted).

⁴¹ See, e.g., Illinois Commission Comments at 5; Texas PUC Comments at 8; Ameritech Comments at 36-40; GTE Comments at 11-12; SBC Comments at 12-14 (These incumbent LECs agree that network elements with proprietary features must be evaluated under the "necessary" standard, but state that the "impair" standard applies to all network elements. As explained herein, we adopt two distinct limiting standards in order to give substance to Congress' use of the term "necessary."); ALTS Comments at 14-15; Cable & Wireless Comments at 16-17; Choice One Joint Comments at 11; CompTel Comments at 16-17; Corecomm Comments at 13-14; Cox Comments at 19-20; e.spire Joint Comments at 5; Excel Comments at 4; MCI Comments at 20; NEXTLINK Comments at 9; Pilgrim Comments at 6-7; TRA Comments at 15. But see Sprint Comments at 9-13, Rhythms Comments at 5-6 (arguing that the "impair" standard applies to both proprietary and non-proprietary rate elements).

services from the incumbents' services. We note that applying the "necessary" standard to proprietary elements, and the "impair" standard to non-proprietary elements is also consistent with the Commission's previous interpretation of this section that was implicitly adopted by the Supreme Court.⁴²

2. Definition of "Proprietary in Nature"

a. Background

32. Section 251(d)(2)(A) states that "[i]n determining what network elements should be made available for purposes of subsection (c)(3), the Commission shall consider, at a minimum, whether . . . access to such network elements as are proprietary in nature is necessary." In the *Local Competition First Report and Order*, the Commission referred to proprietary network elements as including, for example, "those elements with proprietary protocols or elements containing proprietary information." The Commission found in the *Local Competition First Report and Order* that for most network elements subject to the unbundling obligations of section 51.319, parties had not identified any proprietary concerns. For those network elements where parties did identify proprietary concerns, the Commission found that access to those network elements was "necessary."⁴³

33. In the *Notice*, we sought comment on whether we should consider network elements as non-proprietary if the interfaces, functions, features and capabilities of the elements sought by the requesting carrier are defined by recognized standard-setting bodies (e.g. ITU, ANSI, or IEEE), are defined by Bellcore requirements, or otherwise are widely available from vendors.⁴⁴ We further requested comment on whether the term "proprietary" should be limited to information, software, or technology that can be protected by patents, copyright or trade secret laws.⁴⁵ There is general agreement among the parties that the Commission should define proprietary, under section 251(d)(2)(A),

⁴² Referring to the Commission's decision to limit its section 251(d)(2) inquiry to the incumbent's own network, the Court stated that "that judgment allows entrants, rather than the Commission, to determine whether access to *proprietary* elements is *necessary*, and whether the failure to obtain access to *nonproprietary* elements would *impair* the ability to provide services." *Iowa Utils. Bd.*, 119 S. Ct. at 735 (emphasis added).

⁴³ *Local Competition First Report and Order*, 11 FCC Rcd at 15694, 15697, 15710, 15720, 15739, 15744-45, 15748, 15766, 15774, paras. 388, 393, 419, 446, 481, 490, 497, 521, 539. In this Order, certain parties stated that channel banks and remote terminal equipment used with unbundled loops are often proprietary, that vertical switching features are proprietary, and that there are proprietary interfaces associated with operations support systems. The Commission found that the proprietary concerns did not justify denying requesting carriers access to these elements. Several parties also identified proprietary concerns regarding access to the service creation environment interface and service management system used in the incumbent LECs' advanced intelligent networks. The Commission concluded that access to advanced intelligent networks, including those elements that may be proprietary, was "necessary."

⁴⁴ *Notice* at para. 15.

⁴⁵ *Id.*

consistent with intellectual property categories.⁴⁶ Several competitive LECs maintain that we must define the term “proprietary” narrowly so as not to create incentives for incumbent LECs to attempt to deny access to unbundled network elements on proprietary grounds.⁴⁷

b. Discussion

34. In this Order, we adopt a limited definition of the phrase “proprietary in nature” that tracks the intellectual property categories of patent, copyright, and trade secrets. The majority of parties addressing this issue support using intellectual property law as a basis for defining “proprietary in nature.”⁴⁸ We agree, and find that the intellectual property laws governing patent, copyright and trade secrets find a common purpose in Congress’ intention to protect proprietary interests under section 251(d)(2). The intellectual property laws are designed to protect the incentives of authors and inventors to innovate.⁴⁹ Similarly, Congress recognized that an incumbent LEC’s incentive to innovate could be adversely affected by requiring incumbent LECs to unbundle proprietary portions of network elements to requesting carrier-competitors. Congress therefore required the Commission to consider whether unbundling in such instances is “necessary.”⁵⁰

35. We find that if an incumbent LEC can demonstrate that it has invested resources (time, material, or personnel) to develop proprietary information or network elements that are protected by patent, copyright, or trade secret law, the product of such an investment is “proprietary in nature” within the meaning of section 251(d)(2)(A). This definition is consistent with the 1996 Act’s policy of preserving the incumbent LECs’ innovation incentives. It is also consistent with the Commission’s conclusion, in the *Local Competition First Report and Order*, that in some instances it will be “necessary”

⁴⁶ See, e.g., Iowa Comments at 4; Allegiance Comments at 4-6; ALTS Comments at 16; Ameritech Comments at 40-45; MCI WorldCom Comments at 21-22; NorthPoint Comments at 4; SBC Comments at 11-12; Sprint Comments at 9-10; US WEST Comments at 25; Waller Creek Comments at 12.

⁴⁷ See Cable & Wireless Comments at 17-18; Choice One Joint Comments at 11-12; CompTel Comments at 18; Corecomm Comments at 14-17; KMC Comments at 11.

⁴⁸ See Ameritech Comments at 42; ALTS Comments at 16; CompTel Comments at 19; GSA Comments at 8; RCN Comments at 10; SBC Comments at 12-15.

⁴⁹ See *Feist Publications v. Rural Telephone Service Company, Inc.*, 499 U.S. 340, 348 (1991) (arguing that the primary objective of copyright is to compensate authors and “advance the progress of science and art.”).

⁵⁰ *Implementation of the Telecommunications Act of 1996: Telecommunications Carriers' Use of Customer Proprietary Network Information and Other Customer Information and Implementation of the Non-Accounting Safeguards of Sections 271 and 272 of the Communications Act of 1934, as amended*, CC Docket Nos. 96-115 and 96-149, Second Report and Order and Further Notice of Proposed Rulemaking, 13 FCC Rcd 8061 (1998) (*CPNI Order*), on recon. FCC 99-223 (rel. Sept. 3., 1999), vacated sub nom. *US West v. FCC*, File No. 98-9518 (10th Cir., Aug. 18, 1999).

for new entrants to obtain access to proprietary elements.⁵¹ Finally, our decision to define interests that are “proprietary in nature” along established intellectual property categories is consistent with the Department of Justice and Federal Trade Commission *Guidelines for the Licensing of Intellectual Property*.⁵²

36. Our definition excludes elements that are based on widely accepted industry documents or on standards commonly used by a standards-setting body (e.g. ITU, ANSI, IEEE) or by vendors. There are few innovation incentives associated with elements that are based on well-recognized standards that are widely available in the market, and we therefore are not required to scrutinize such elements under the higher “necessary” standard.

37. Section 251(d)(2) directs the Commission to “consider, at a minimum” whether access to proprietary elements is necessary.⁵³ As discussed below, this discretionary language permits us to consider other factors, in addition to the “necessary” standard, in making our unbundling determination. We find that there are several circumstances which, if they exist with regard to information or functionalities that the incumbent LEC claims are proprietary, will permit us to order unbundling of the proprietary information or functionalities even if unbundled access to the element is not strictly “necessary,” as long as the “impair” standard is met. The first circumstance is where an incumbent LEC, for the primary purpose of causing a particular network to be evaluated under the stricter “necessary” standard in order to avoid its unbundling obligation, implements only a minor modification to the network element to make the element “proprietary in nature.”⁵⁴ Denying a requesting carrier access to the element in this circumstance would not encourage innovation and investment by the incumbent LEC, which is one of the goals of the 1996 Act,⁵⁵ and would reduce consumer benefits by failing to facilitate rapid deployment of competitive services. The second circumstance is where an incumbent LEC cannot demonstrate that the information or functionality that it claims is proprietary differentiates its services from its competitors’ services, or is

⁵¹ *Local Competition First Report and Order*, 11 FCC Rcd at 15641, para. 282.

⁵² U.S. Department of Justice and Federal Trade Commission, *Antitrust Guidelines for the Licensing of Intellectual Property* (issued Apr. 6, 1995). The Guidelines are limited to patents, copyrights and trade secrets and, like the instant rulemaking, address the potential anticompetitive effects that may accrue to holders of patents, copyrights or trade secrets.

⁵³ 47 U.S.C. § 251(d)(2).

⁵⁴ Some commenters have expressed concern that the definition of “proprietary in nature” should not provide a vehicle for incumbent LECs to make minor modifications to network technology to claim that the element must then be analyzed under the more restrictive “necessary” standard. See *Cable & Wireless Comments* at 17-18; *GSA Comments* at 8.

⁵⁵ *Joint Explanatory Statement* at 1 (The 1996 Act provides for “a pro-competitive, deregulatory national policy framework designed to accelerate rapidly private sector deployment of advanced telecommunications and information technologies and services to all Americans by opening all telecommunications markets to competition. . .”).

otherwise competitively significant.⁵⁶ Information or functionalities that do not distinguish an incumbent LEC's service from that of its competitors are unlikely to be the focus of an incumbent LEC's efforts to innovate, and therefore do not require the high level of protection normally afforded to proprietary elements under the "necessary" standard. The third circumstance is where we find that lack of access to the proprietary element would jeopardize the goal of the 1996 Act to bring rapid competition to the greatest number of customers.⁵⁷ In such a circumstance, we may find that the incumbent LEC's asserted proprietary interest is outweighed by the benefits of facilitating more rapid deployment of competition for the greatest number of consumers. Given the significance of the incumbent LECs' proprietary interests, and our commitment to do nothing to discourage innovation and investment by all carriers, we do not envision, outside of these limited circumstances, unbundling a proprietary network element unless the "necessary" standard is satisfied. Moreover, we cannot imagine a situation where we would order unbundling of a proprietary element unless the "impair" standard has been met.

38. We agree with those commenters that argue that "proprietary in nature" applies only to the proprietary interests of the incumbent LEC and not to proprietary interests of third parties.⁵⁸ Limiting the definition of "proprietary" to interests held by the incumbent LEC is consistent with section 251(d)(2)(A)'s goal of preserving the incumbent LECs' incentives to innovate. Moreover, sections 251(c) and 251(d)(2), by their terms, apply only to the proprietary interests of those parties subject to the Act's unbundling obligations -- incumbent LECs. Thus, section 251(d)(2) only indirectly affects, if at all, the innovation incentives of third parties.⁵⁹

39. Finally, we reject CompTel's argument that we should limit the application of proprietary network elements to those circumstances in which the incumbent LEC "discloses" proprietary information.⁶⁰ CompTel argues that if unbundling merely provides a requesting carrier with the "use" of a proprietary methodology, but does not

⁵⁶ Significant differences in the incumbent LEC's service may be derived from characteristics of the service that better satisfy consumer preferences in terms of price, quality or features that are unavailable elsewhere. See Lancaster, *Allocation and Distribution Theory: Technological Innovation and Progress*, 56 Amer. Econ. Rev. : Papers & Proc. 14, 20-22 (1966). See generally *A New Approach to Consumer Theory*, 74 J. Pol. Econ. 132 (1966); Tirole, *The Theory of Industrial Organization* 99 (1988) (discussing Lancaster approach to product characteristics).

⁵⁷ See *Joint Explanatory Statement* at 1.

⁵⁸ ALTS Comments at 17-18; Qwest Comments at 37. The Commission is currently considering the related question of third-party proprietary interests in a separate proceeding. See *Petition of MCI for Declaratory Ruling*, CC Docket No. 96-98, File No. CCBPol. 97-4 (March 14, 1997) (*MCI Petition*).

⁵⁹ Third-party innovation investment incentives are unlikely to be adversely affected by incumbent LEC sharing of proprietary information because third parties recover their innovation investments through fees paid to them by the incumbent LEC. Other third party issues are addressed in the pending *MCI Petition*.

⁶⁰ CompTel Comments at 19. See also RCN Comments at 10.

“disclose” or access the proprietary information itself, the element is not proprietary.⁶¹ We find that the “use” or “disclosure” rationale does not promote the goal of the Act to encourage investment and innovation, and thus is at odds with our decision to define “proprietary” along intellectual property categories.

40. Pursuant to patent law, patent holders trade monopoly rights in their inventions in exchange for a requirement that they disclose the technical details underlying the patent. Patent holders thus recover their investments by obtaining a monopoly on the “use” of their protected intellectual property. We agree with Ameritech that limiting the definition of “proprietary” to requests that would reveal proprietary information would turn intellectual property law and incentives to innovate on their head; “instead of granting exclusivity in exchange for disclosure, it would withhold exclusivity unless needed to avoid disclosure.”⁶² Similarly, under copyright laws, an illegal copy or “use” of a protected work can damage an author’s incentive to produce the work.⁶³ We note, however, that the disclosure of sensitive customer information contained in unbundled network element must be consistent with the requirements of section 222.

3. The “Necessary” Standard of Section 251(d)(2)(A)

a. Background

41. In the *Local Competition First Report and Order*, the Commission defined a “necessary” network element as one that is a “prerequisite” to competition. The Commission stated that “in some instances it will be ‘necessary’ for requesting carriers to obtain access to proprietary elements (e.g., elements with proprietary protocols or elements containing proprietary information) because without such elements, the ability of requesting carriers to compete would be significantly impaired or thwarted.”⁶⁴ It also acknowledged that prohibiting incumbents from refusing access to proprietary elements could reduce their incentives to offer innovative services.⁶⁵ The Commission did not identify any proprietary elements subject to unbundling in the *Local Competition First*

⁶¹ CompTel Comments at 19. See also ALTS Comments at 16. The Commission concluded in the *Local Competition First Report and Order* that concerns about the proprietary nature of a network element would arise only if the proprietary information would be revealed. Specifically, it concluded that loops are, in general, not proprietary in nature because parties did not contend that proprietary information associated with certain loop equipment would be revealed if loops using such equipment were unbundled. *Local Competition First Report and Order*, 11 FCC Rcd at 15694, para. 388.

⁶² Ameritech Comments at 44.

⁶³ Under CompTel’s proposal (CompTel Comments at 19), the Commission would be required to find that Ameritech’s incentive to create proprietary functionalities like Privacy Manager would not be adversely affected even though Ameritech would be subject to forced sharing of Privacy Manager, and requesting carrier customers could obtain the benefits of Privacy Manager without appropriating the underlying software.

⁶⁴ *Local Competition First Report and Order*, 11 FCC Rcd at 15641, para. 282.

⁶⁵ *Id.*

Report and Order, except that it acknowledged the claims of several parties that access to the incumbent LECs' advanced intelligent network (AIN) may raise proprietary concerns. It nevertheless concluded that access to AIN is "necessary" within the meaning of section 251(d)(2)(A).⁶⁶

42. In the *Notice*, the Commission sought comment on the definition of "necessary" for the purpose of determining proprietary network elements that must be unbundled pursuant to the requirements of section 251(d)(2)(A), as well as on what factors or criteria the Commission should apply in determining whether access to a network element is "necessary."⁶⁷

43. Several competitive LECs assert that in determining whether unbundling of a proprietary network element is "necessary," the Commission must evaluate whether the requesting carrier can obtain comparable functionality from an alternative network element. They maintain that if the requesting carrier would experience a material loss in functionality without the network element that the incumbent LEC claims is proprietary, then the incumbent LEC's network element is "necessary" within the meaning of section 251(d)(2)(A).⁶⁸ The incumbent LECs assert generally that both the "necessary" and "impair" standards require an analysis of whether lack of access to their networks elements, taking into consideration alternatives outside the incumbent's network, would *deny* an efficient competitor a meaningful opportunity to compete. These commenters argue that the "necessary" standard requires the Commission to accept a higher degree of proof that alternatives to the element are not available.⁶⁹

b. Discussion

44. We conclude that a proprietary network element is "necessary" within the meaning of section 251(d)(2)(A) if, taking into consideration the availability of alternative elements outside the incumbent's network, including self-provisioning by a requesting carrier or acquiring an alternative from a third-party supplier, lack of access to that element would, as a practical, economic, and operational matter, *preclude* a requesting carrier from providing the services it seeks to offer. We agree with NTIA that the proper focus of the "necessary" standard is whether access to the incumbent LEC's proprietary

⁶⁶ *Id.* at 15748, para. 497.

⁶⁷ *Notice* at paras. 16, 20.

⁶⁸ Cable & Wireless Comments at 19; Net2000 Comments at 9-10. *See also* NEXTLINK Comments at 11.

⁶⁹ *See, e.g.,* Ameritech Comments at 37-40; SBC Comments at 14; US West Comments at 23-26.

element is absolutely required for the competitor's provision of its intended service.⁷⁰ We find, therefore, that an incumbent LEC must provide access to a proprietary element, if withholding access to the element would prevent a competitor from providing the service it seeks to offer. In other words, we conclude that an incumbent LEC's proprietary network element would only be available to a competitor if the competitor is unable to offer service, without access to the element, because no practical, economic, and operational alternative is available, either by self-provisioning or from other sources.

45. The standard we assign to the term "necessary," as used in section 251(d)(2)(A), is consistent with the Supreme Court's decision because it considers alternatives available outside the incumbent's network and gives substance to the meaning of "necessary." Moreover, insofar as the standard focuses on the competitor's ability to furnish a desired service, and not merely on whether profits are increased by using the incumbent's network, the standard is also consistent with the Court's instruction that we must "apply some limiting standard, rationally related to the goals of the Act."⁷¹

46. This "necessary" standard differs from the "impair" standard we adopt below because a "necessary" element would, if withheld, *prevent* a carrier from offering service, while an element subject to the "impair" standard would, if withheld, merely limit a carrier's ability to provide the services it seeks to offer.⁷² We therefore disagree with the standards proposed by ALTS and other competitive LECs that access to a proprietary element is "necessary" if the entrant would experience a material loss in functionality without access to the element.⁷³ A standard based on a test of "material loss" in functionality requires only that the competitive LEC's ability to compete be materially affected in some way, as opposed to precluded, and ignores the higher degree of protection normally afforded intellectual property rights.⁷⁴ The incumbent LECs argue that the "necessary" standard is a higher standard that is intended to preserve their incentive to invest in proprietary protocols,⁷⁵ and that access to a proprietary element is "necessary" only if lack of access to that element would deny an efficient competitor a meaningful opportunity to compete.⁷⁶ We agree with the incumbent LECs' concerns regarding the preservation of their investment incentives. We believe that our standard, by requiring that a requesting carrier be precluded as a practical, economic, and

⁷⁰ NTIA Comments at 27.

⁷¹ *Iowa Utils. Bd.*, 119 S. Ct. at 735-36.

⁷² See Vermont PSB Comments at 10-11; CPI Comments at 7-9.

⁷³ ALTS Comments at 19. See also Cable & Wireless Comments at 3-4; MCI WorldCom Comments at 18-19; Net2000 Comments at 9; NEXTLINK Comments at 10-12.

⁷⁴ See *supra* Section IV(B)(2).

⁷⁵ See, e.g., GTE Comments at 26; SBC Comments at 14.

⁷⁶ See, e.g., Ameritech Comments at 37-40; SBC Comments at 14; US West Comments at 23-

operational matter from providing service without access to the proprietary information, sufficiently protects the incumbents' proprietary property from nonessential access by competitors.

47. We reject, however, the incumbent LECs' proposal to base the "necessary" standard on the requirements of an efficient competitor. As we explain below in our discussion of the "impair" standard, we do not affirmatively base our unbundling standard on an efficient competitor because we conclude that the marketplace is better able than regulators to distinguish efficient competitors from inefficient competitors.⁷⁷ We also note that GTE and SBC state that few, if any, network elements are entirely proprietary in nature.⁷⁸ Other commenters point out that most network equipment and services are non-proprietary because of the need for interoperability of networks.⁷⁹ We therefore expect that the "necessary" standard will be invoked only when there is a serious question of whether access to the element will infringe upon the incumbent's intellectual property.

4. The "Impair" Standard of Section 251(d)(2)(b)

a. Background

48. In the *Local Competition First Report and Order*, the Commission adopted a dictionary definition of the term "impair" that means "to make or cause to become worse; diminish in value." The Commission stated that "generally . . . an entrant's ability to offer a telecommunications service is 'diminished in value' if the quality of the service the entrant can offer, absent access to the requested element, declines and/or the cost of providing the service rises."⁸⁰ In particular, the Commission interpreted the "impair" standard as requiring an evaluation of whether the failure of an incumbent to provide access to a network element would decrease the quality, or increase the financial or administrative cost of the service a requesting carrier seeks to offer.⁸¹

49. In the *Notice*, we sought comment on the meaning of the term "impair," and asked whether we should adopt a standard under which we examine whether the new entrant's ability to offer a telecommunications service in a competitive manner is materially diminished in value.⁸² We also sought comment on the factors or criteria we should adopt to determine whether failure to provide access to the incumbent LEC's

⁷⁷ See *infra* Section IV(B)(4).

⁷⁸ SBC Comments at 12; GTE Comments at 26.

⁷⁹ See, e.g., Choice One Joint Comments at 11-12; KMC Comments at 11.

⁸⁰ *Local Competition First Report and Order*, 11 FCC Rcd at 15643, para. 285 (citing Random House College Dictionary 665 (rev. ed. 1984)).

⁸¹ *Local Competition First Report and Order*, 11 FCC Rcd at 15643, para. 285.

⁸² *Notice* at para. 17.

network elements would impair an entrant's ability to provide service within the meaning of section 251(d)(2).⁸³

50. The incumbent LECs argue generally that a requesting carrier is impaired if, after taking into account the availability of elements from alternative sources outside the incumbent's network, lack of access to the requested element would deny a competitor a meaningful opportunity to compete. This standard is similar to the standard the incumbent LECs propose for the "necessary" standard under section 251(d)(2)(A).⁸⁴ GTE argues that failure to provide access to a network element would impair a requesting carrier's ability to provide service only where the element is essential to competition, and there is convincing evidence that the carrier cannot compete effectively using an alternative network element.⁸⁵ Several incumbent also maintain that we must consider all available alternatives, including those available from other suppliers and through self-provisioning by the requesting carrier.⁸⁶ The Texas PUC proposes that a competitor is impaired if, looking at the marketplace as a whole, lack of access to the incumbent's network element causes it to incur an increase in cost such that the competitor does not have a meaningful opportunity to compete.⁸⁷ The competitive LECs and the Illinois Commerce Commission propose a standard by which a carrier would be impaired if, after taking into account the availability of elements from alternative sources outside the incumbent's network, lack of access to the requested element would materially diminish the requesting carrier's ability to provide service.⁸⁸ The difference between the standard proposed by the competitive LECs and the standard proposed by the incumbent LECs is essentially the difference between whether lack of access to an unbundled network element "denies" or "materially diminishes" the ability of a competitor to provide the services it seeks to offer. Many competitive LECs also assert that the incumbent LECs' failure to provide access to an element would impair a requesting carrier's ability to provide service where there is no competitive wholesale market for the requested element.⁸⁹

b. Discussion

⁸³ *Id.* at para. 20.

⁸⁴ *See, e.g.*, Bell Atlantic Comments at 7-9; BellSouth Comments at 21-22; SBC Comments at 5, 14; US West Comments at 10-11.

⁸⁵ GTE Comments at 14-20.

⁸⁶ *See, e.g.*, Ameritech Joint Reply Comments at 16-17.

⁸⁷ Texas PUC Comments at 7-8.

⁸⁸ *See, e.g.*, Ad Hoc Comments at 4-5; Cable & Wireless Comments at 10-14; Choice One Joint Comments at 6-7; Excel Comments at 6-8; MCI WorldCom Comments at 15-18; Northpoint Comments at 6-10; RCN Comments at 12; TRA Comments at 19-23; Illinois Commission Comments at 6-7.

⁸⁹ *See, e.g.*, Allegiance Comments at 8-11; Cable & Wireless Comments at 6-10; Covad Comments at 14-18; Excel Comments at 8-10; NorthPoint Comments at 6-10.

(i) The “Impair” analysis

51. We conclude that the failure to provide access to a network element would “impair” the ability of a requesting carrier to provide the services it seeks to offer if, taking into consideration the availability of alternative elements outside the incumbent’s network, including self-provisioning by a requesting carrier or acquiring an alternative from a third-party supplier, lack of access to that element materially diminishes a requesting carrier’s ability to provide the services it seeks to offer. We find that a materiality component, although it cannot be quantified precisely, requires that there be substantive differences between the alternative outside the incumbent LEC’s network and the incumbent LEC’s network element that, collectively, “impair” a competitive LEC’s ability to provide service within the meaning of section 251(d)(2).⁹⁰ We therefore agree with the Illinois Commerce Commission that where a competing LEC’s “ability to offer a telecommunications service in a competitive manner is materially diminished in value without access to that element,” the competitor’s ability to provide its desired services would be impaired.⁹¹

52. We believe that a standard that includes a “materiality” component gives substance to the “impair” standard of section 251(d)(2)(B), and responds to the Supreme Court’s concern that we “apply some limiting standard, rationally related to the goals of the Act.”⁹² A standard that includes a materiality component preserves requesting carriers’ ability to provide service using unbundled elements, as contemplated by the Act, and encourages them to invest and innovate. As envisioned by Congress, requesting carriers may need each of the three separate means of providing service (resale of the incumbent LEC’s service, use of unbundled incumbent LEC network elements, deployment of self-provisioned facilities), or various combinations of these means, in order to serve different customer classes in different areas. The purchase of unbundled network elements from the incumbent should serve as a transitional strategy that will provide requesting carriers with the ability to gain a sufficient volume of business to justify economical deployment of their own facilities.

53. Although we recognize that the existence of some significant level of competitive LEC facilities deployment is probative of whether competitive LECs are impaired from providing service within the meaning of section 251(d)(2), we decline to adopt the incumbent LECs’ position that the presence of a single competitor providing service, without using the incumbent’s unbundled network elements, is dispositive

⁹⁰ See Cable & Wireless Comments at 12-14.

⁹¹ Illinois Commission Comments at 6-7. Illinois illustrates the standard by describing the circumstances under which a carrier would be impaired. According to the Illinois Commerce Commission, self-provisioning a loop would impair a requesting carrier’s to compete because it would incur material up-front installation costs and delays, and would have to acquire access to rights-of-way and undertake other labor-intensive activities to replicate the incumbent’s loop facilities. *Id.*

⁹² We note that courts have applied the standard dictionary definition of “impair” as “[t]o weaken, to make worse, to lessen in power, diminish, or relax, or otherwise affect in an injurious manner.” See, e.g., *Humana Inc. v. Forsyth*, 119 S. Ct. 710, 717 (1999).

evidence that a competitor's ability to provide service generally would not be impaired without access to such elements.⁹³ According to Bell Atlantic, if an efficient competitor can and does provide service without access to the incumbent's network element, it is irrelevant whether a less efficient competitor might claim that it would be impaired without access to the element.⁹⁴ We find that the "efficiency" argument raised by Bell Atlantic and other incumbent LECs is more relevant to the length of time a competitor has been in business than to the efficiencies created by the competitor's inherent capabilities or cost structure. More importantly, however, we agree with MCI WorldCom that the Act is not calibrated to the performance of the company whose business plan allows it to rely the least on the incumbent LEC's network elements.⁹⁵ The provisions of the 1996 Act do not contemplate that either the incumbent LEC or the regulator will determine whether a particular carrier is "efficient." Rather, the Act is designed to create a regulatory framework that requires incumbent LECs to make network elements subject to the unbundling obligations of section 251 available to *all* requesting carriers, subject to the requirements of section 251(d)(2), and allows the marketplace to determine ultimately which competitors thrive or survive.⁹⁶

54. Moreover, the ability of one or more competitors to serve certain customers in a particular market is not dispositive of whether competitive LECs without unbundled access to the incumbent LEC's facilities are able to compete for other customers in the same market or for customers in other markets. In some markets, particularly those markets serving high-volume business customers, it may be practical and economical for competitive LECs to compete using self-provisioned facilities. In other markets, however, typically those markets consisting of residential consumers and small businesses, the delay and costs associated with self-provisioning a network element will preclude those same competitors, or others, from assuming the risk of entry, unless they can purchase unbundled elements from the incumbent.⁹⁷ We agree with the commenters that point out that we cannot evaluate the needs of every potential carrier seeking access to each network element on a case-by-case basis.⁹⁸ We conclude, however, that we

⁹³ Bell Atlantic Comments at 14; US West Comments at 12.

⁹⁴ Bell Atlantic Comments at 9.

⁹⁵ MCI WorldCom Reply Comments at 23-24.

⁹⁶ See NTIA Comments at 5-6, n.16 ("The obvious conclusion [of the market opening provisions of the 1996 Act] is that Congress sought to foster entry by multiple firms and then let competitive market processes distinguish the 'efficient' providers from the 'inefficient' ones.").

⁹⁷ See, e.g., Qwest Comments at 18 ("The fact that some CLECs are engaging in self-supply of network elements also is not evidence of lack of impairment. It is evidence only that for some carriers, in some instances, for some customers, during particular time periods, in particular geographic areas, they are able to cost-justify self-supply."); AT&T Reply Comments at 120, 123-24 and Tab B, Aff. of R. Glenn Hubbard/William H. Lehr/Janusz A. Ordover/Robert D. Willig, at paras. 36-38; MCI WorldCom Reply Comments at 36-37.

⁹⁸ See Ameritech Comments at 36; Choice One Joint Comments at 12-13; CPI Comments at 13; KMC Comments at 7; MCI WorldCom Comments, Tab 2, Decl. of John E. Kwoka, at para. 38; Prism

should not adopt rules that would deny access to network elements to all competitors based on the presence of a single competitor that has been able to enter without the use of a particular unbundled network element from the incumbent LEC.

55. We believe that Congress rejected implicitly the argument that the presence of a single competitor, alone, should be dispositive of whether a competitive LEC would be “impaired” within the meaning of section 251(d)(2). For example, although Congress fully expected cable companies to enter the local exchange market using their own facilities, including self-provisioned loops, Congress still contemplated that incumbent LECs would be required to offer unbundled loops to requesting carriers.⁹⁹ A standard that would be satisfied by the existence of a single competitive LEC using a non-incumbent LEC element to serve a specific market, without reference to whether other competitive LECs are “impaired” under section 251(d)(2), would be inconsistent with the Act’s goal of creating robust competition in telecommunications. In particular, such a standard would not create competition among multiple providers of local service that would drive down prices to competitive levels. Indeed, such a standard would more likely create stagnant duopolies comprised of the incumbent LEC and the first new entrant in a particular market. An absence of multiple providers serving various markets would significantly limit the benefits of competition that would otherwise flow to consumers.

56. On the other hand, we are not persuaded by arguments of competitive LECs that the “impair” standard is met only once it is determined that a wholesale market exists for a particular element.¹⁰⁰ We agree with the incumbent LECs that basing the “impair” standard on the existence of a wholesale market does not take into consideration self-provisioning as a viable substitute to the incumbent LECs’ network elements.¹⁰¹ The Supreme Court decision in *Iowa Utils. Bd.* expressly faulted the Commission’s analysis in the *Local Competition First Report and Order* for not comparing use of the incumbent LEC’s element with “self-provision” or with “purchas[ed elements] from another provider.”¹⁰² We find that, in order to thoroughly evaluate the availability of alternative elements outside of the incumbent LEC’s network, we must consider elements available from all sources, including those elements available from third-party suppliers and through self-provisioning.¹⁰³

Comments at 9-10.

⁹⁹ *Joint Explanatory Statement* at 148 (recognizing potential of cable companies to become facilities-based competitors within the meaning of section 271(c)(1)(A), and stating that competitors will still need access to the incumbent LECs’ network.).

¹⁰⁰ *See, e.g.*, Allegiance Comments at 8-11; Cable & Wireless Comments at 6-10; Covad Comments at 14-18; Excel Comments at 8-10; NorthPoint Comments at 6-10.

¹⁰¹ Ameritech Joint Reply Comments at 17.

¹⁰² *Iowa Utils. Bd.*, 119 S. Ct. at 735.

¹⁰³ ALTS points out that although new entrants always have the potential of offering service using self-provisioned elements, the Act contemplates more immediate entry by competitors through the use of resale and unbundled network elements. ALTS Reply Comments at 19-20. The unbundling standard that

57. Several of the incumbent LECs argue that our standard should be based on an analysis similar to the one used by courts in determining whether, according to the essential facilities doctrine, a firm must share its facilities with competitors.¹⁰⁴ We disagree. Although we acknowledge that the Supreme Court referred to the possibility of adopting a limiting standard based on the essential facilities doctrine,¹⁰⁵ we find nothing in the legislative history or statutory language of the 1996 Act, or in the Court's decision that requires us to apply that doctrine in determining which network elements the incumbent LECs must unbundle. Indeed, the Court expressly declined to decide, as a matter of law, whether the essential facilities doctrine is mandated by section 251(d).¹⁰⁶ Further, we believe that the standard under section 251(d) better reflects the overall goals of the Act. Accordingly, as discussed more fully below, we describe several factors that should be considered in determining whether a particular network element must be unbundled pursuant to section 251(c)(3).¹⁰⁷

58. As an initial matter, the legislative history and statutory language of the Act indicate that Congress did not intend to codify the essential facilities doctrine when it enacted section 251(d)(2). Specifically, the legislative history indicates that Congress was aware of antitrust principles and the essential facilities doctrine, in particular, when it considered the 1996 Act. At least since 1991, the Senate had considered telecommunications legislation that expressly referred to "essential facilities."¹⁰⁸ Yet, in spite of its awareness of this doctrine, Congress did not adopt an essential facilities test for unbundling of network elements. Congress chose, instead, to adopt unbundling requirements that are based upon the "necessary" and "impair" standards of section 251(d)(2). Moreover, section 601(b)(1) of the Act expressly preserves the existing antitrust laws, indicating that Congress intended for the Act to augment, not replace, traditional antitrust rules.¹⁰⁹

59. The essential facilities doctrine is an antitrust doctrine that imposes an obligation on a firm that controls facilities that are essential for the existence of

we adopt does not allow for the incumbent's unbundling obligation to be eliminated based merely upon a showing that a requesting carrier has the potential to self-provision or acquire facilities at some indefinite time in the future. This would be inconsistent, as ALTS suggests, with the Act's goal to encourage for all consumers rapid deployment of competitive alternatives. The unbundling analysis that we undertake considers instead the current facts in the marketplace.

¹⁰⁴ See, e.g., Ameritech Comments at 28-32; GTE Comments at 14-20; US West Comments at 6-7.

¹⁰⁵ *Iowa Utils. Bd.*, 119 S. Ct. at 734.

¹⁰⁶ *Id.*

¹⁰⁷ See *infra* Sections (IV)(B)(4)(b)(ii) and (IV)(C).

¹⁰⁸ MCI WorldCom Comments at 35 (citing 137 Cong. Rec. S7054, S7058 (daily ed. June 5, 1991) (reading S. 1200, 102d Cong. § 202 1991)).

¹⁰⁹ 47 U.S.C. § 601(b)(1).

competition between itself and a competitor to share such facilities on non-discriminatory terms.¹¹⁰ The doctrine creates a narrow exception to the general antitrust presumption that a single firm may decline to deal with another firm.¹¹¹ Under the essential facilities doctrine, a court may require a firm possessing monopoly control over an essential input to deal with a competitor, if it is shown that the monopolist is misusing control of an essential facility to foreclose competition in a downstream market.¹¹²

60. Although we find that the essential facilities doctrine promotes the same economic and policy goals embodied in the 1996 Act, we find it to be of limited assistance in our analysis of the unbundling obligations of the Act because, as NTIA explains, the Act plainly imposes on incumbent LECs a broader duty to deal with competitors than does the essential facilities doctrine.¹¹³ In particular, the essential facilities doctrine differs from the analysis the Commission must undertake under section 251(d)(2) because Congress has already created an affirmative obligation for incumbent LECs to make their facilities available to competitors.¹¹⁴ Specifically, section 251(c)(3) imposes on incumbent LECs a general obligation to provide access on an unbundled basis to any network elements that the Commission identifies under section 251(d)(2). This obligation is not limited to situations in which the incumbent is misusing control of a unique facility to foreclose competition in a downstream market. Rather, section 251(d)(2) requires incumbents to share their facilities if competitors are merely "impaired" in their ability to provide services they seek to offer. In addition, sections 251(c)(3) and 251(d)(2) require incumbent LECs to make their facilities available at cost-based rates, whereas the essential facilities doctrine allows monopolists to continue charging monopoly rates for use of their facilities.¹¹⁵

61. It is particularly notable that although the essential facilities doctrine is referenced in several Supreme Court rulings, the Supreme Court has never explicitly adopted the doctrine.¹¹⁶ Moreover, because antitrust jurisprudence has not clearly defined

¹¹⁰ See MCI WorldCom Comments at 28-29 (citing Section 2 of the Sherman Act, 15 U.S.C. § 2; *MCI Telecommunications Corp. v. American Tel. & Tel. Co.*, 708 F.2d 1081, 1132-33 (7th Cir. 1983)) (*MCI v. AT&T*).

¹¹¹ See Phillip Areeda, *Essential Facilities: An Epithet in Need of Limiting Principles*, 58 ANTITRUST L.J. 841, 841 (1989); *Olympia Equipment Leasing Co. v. Western Union Telegraph Co.*, 797 F.2d 370, 376, reh. den. 802 F.2d 217 (7th Cir. 1986).

¹¹² See *MCI v. AT&T*, 708 F.2d at 1132-33.

¹¹³ NTIA Comments at 14-16.

¹¹⁴ See NTIA Comments at 16 ("Indeed, to the extent that Congress considered the essential facilities doctrine at all, it concluded that (1) the ILECs' networks *are* essential facilities and (2) that alternative providers must have broad access to those facilities if there was to be local competition.") (emphasis in original).

¹¹⁵ See Sprint Comments at 15-16.

¹¹⁶ Areeda, *supra* note 111, at 841 (Calling the essential facilities doctrine a "so-called"

the contours of the essential facilities doctrine, the doctrine provides limited guidance in developing a limiting standard under section 251(d)(2). In order to establish liability under the essential facilities doctrine, a plaintiff must establish the existence of five elements: 1) a monopolist controls an essential facility; 2) the competitor is unable to practically or reasonably duplicate the essential facility; 3) the monopolist denies a competitor use of the facility; 4) the monopolist can feasibly provide the facility; and 5) there is no legitimate business justification for denying access to the facility the monopolist controls.¹¹⁷ Although the second prong of this test resembles the inquiry the Commission must undertake to evaluate the availability of alternative elements outside of the incumbent LEC's network, it does not establish a standard by which the Commission can measure the extent to which the cost of duplicating the element is economically infeasible, which, as described below, is a significant part of the our unbundling analysis.

**(ii) Factors for Determining Availability of
Alternative Network Elements**

62. In order to respond to the Supreme Court's decision, we consider whether a requesting carrier's ability to provide the services that it seeks to offer would be materially diminished if it were required to use an alternative element available outside the incumbent LEC's network. We agree with those parties that argue that we must consider the totality of the circumstances to determine whether an alternative to the incumbent LEC's network element is available in such a manner that a requesting carrier can realistically be expected to actually provide service using the alternative.¹¹⁸ We therefore take into account alternatives that are available through both self-provisioning and from third-party suppliers,¹¹⁹ and we consider the extent to which these alternatives are available as a practical, economic, and operational matter.

63. We are not persuaded by the incumbents' argument that we must look at each element in isolation to determine whether or not that element independently satisfies section 251(d)(2).¹²⁰ Such an analysis fails to reflect the manner in which carriers interconnect their networks, and ignores factors that would impair a requesting carrier's ability to actually provide service, which is the focus of section 251(d)(2)(B). Even if a

doctrine because "the cases support the doctrine only by implication and in a highly qualified way. . . . It is less a doctrine than an epithet, indicating some exception to the right to keep one's creation to oneself, but not telling us what those exceptions are.").

¹¹⁷ *MCI v. AT&T*, 708 F.2d at 1132-33.

¹¹⁸ See, e.g., McLeod Comments at 5 (stating that there are "multiple dimensions" associated with the question of the availability of a particular network element such as ubiquity, economies of scale and scope, constrained capital resources and lag times associated with new construction); RCN Comments at 12 (stating that the Commission should consider how the totality of the circumstances indicates that requiring unbundling of an element would promote the pro-competitive purpose of the 1996 Act).

¹¹⁹ In this Order, when we refer to the availability to a requesting carrier of an element from a third-party supplier, we are referring to a supplier other than the incumbent LEC.

¹²⁰ SBC Comments at 9-11.

particular element may be purchased outside of the incumbent LEC's network at reasonable prices, other factors, including the costs and delays associated with collocation arrangements, as well as additional costs and operational impediments associated with the manual processes used to interconnect certain network elements, may make it impossible as a practical, economic, and operational matter for a competitor to provide services in the local market quickly and on a wide-spread basis.

64. We acknowledge that some of the factors we consider in our analysis may implicate other proceedings or provisions of the statute.¹²¹ We therefore remain open to the possibility that issues that we address under our "impair" analysis, (e.g., collocation), could be addressed in other contexts, such as in enforcement proceedings.

65. Although we recognize that the factors of cost, timeliness, quality, ubiquity, and operational factors are only some of the factors that may influence a carrier's decision to enter a particular market, we agree with the California PUC that these factors are relevant to an inquiry of whether alternative sources of network elements are reasonably available from other sources, and thus, in many cases, whether requesting carriers are able to actually provide service using the alternative element.¹²² We also agree with the commenters that point out that we cannot evaluate the needs of every potential entrant for every network element on a carrier-by-carrier, market-by-market, week-by-week (or other time period) basis.¹²³ We therefore will not analyze the availability of alternative elements, including those provided through self-provisioning, from the perspective of a carrier using any specific competitive strategy in a particular geographic market.

66. Although we find it reasonable to consider cost, time, quality, ubiquity, and other factors associated with self-provisioning or acquiring an element from a third-party provider, we do not base our decision on cost models or on the theoretical availability of alternatives from other sources. Rather, we find the marketplace to be the most persuasive evidence of the actual availability of alternatives as a practical, economic, and operational matter. As the Texas PUC stated, the Commission and the states should "base their decisions on marketplace information, while recognizing that minor increases in a competitor's costs must be weighed against other factors such as service quality,

¹²¹ See, e.g., *Deployment of Wireline Services Offering Advanced Telecommunications Capability*, CC Docket No. 98-147, *First Report and Order and Further Notice of Proposed Rulemaking*, 14 FCC Rcd 4761 (1998) (*Advanced Services First Report and Order and FNPRM*); *Performance Measurements and Reporting Requirements for OSS, Interconnection, and Operator Services and Directory Assistance*, CC Docket No. 98-56, Notice of Proposed Rulemaking, 13 FCC Rcd 12817 (1998) (*Performance Measurements Notice*).

¹²² See, e.g., California PUC Reply Comments at 3-8 (stating that the Commission should evaluate quality, reliability, geographic scope, quantity, time, cost and operational factors associated with using an alternative network element.).

¹²³ See Ameritech Comments at 36; Choice One Joint Comments at 12-13; CPI Comments at 13; KMC Comments at 7; MCI WorldCom Comments, Tab 2, Decl. of John E. Kwoka, at para. 38; Prism Comments at 9-10.

technological innovation, and the loss of efficiency in a rapidly changing marketplace.”¹²⁴ Discerning the practical, economic, and operational viability of self-provisioning or obtaining alternative elements from third-party providers is technical, complex, and subject to considerable uncertainty. We believe, however, that an examination of the factors we have identified provides the Commission with the ability to identify, through the exercise of its administrative judgment, discernable material differences between using the incumbent’s unbundled network elements and those available from other sources that ultimately will affect a requesting carrier’s ability to provide the services it seeks to offer.

67. We assign little weight in our “impair” analysis to the ability of a requesting carrier to use the incumbent LECs’ resold or retail tariffed services as alternatives to unbundled network elements. In the *Local Competition First Report and Order*, the Commission expressly rejected the incumbent LECs’ argument that requesting carriers are not impaired in their ability to provide service if they can provide their proposed service by purchasing the service at wholesale rates from the incumbent LEC. As the Commission concluded in that Order, 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.¹²⁵ In other words, denying access to unbundled elements on the grounds that an incumbent LEC offers an equivalent retail service could force requesting carriers to purchase, for example, an unbundled loop and switching out of an incumbent’s retail tariff at a wholesale discount, subject to all of the associated tariff restrictions. US West maintains that it need not unbundle local transport because requesting carriers can purchase its tariffed special access services.¹²⁶ In light of the little

¹²⁴ Texas PUC Comments at 7-8.

¹²⁵ *Local Competition First Report and Order*, 11 FCC Rcd at 15643-44, paras. 286-87. The Eight Circuit agreed that while subsection 251(c)(4) does provide for the resale of telecommunications services, it does not establish resale as the exclusive means through which a competing carrier may gain access to such services. It consequently agreed with the Commission that such an interpretation would allow the incumbent LECs to evade a substantial portion of their unbundling obligation under section 251(c)(3). Specifically, the Eighth Circuit stated, in response to the incumbent LECs’ argument that vertical switching features were services subject to resale and therefore need not be unbundled, that,

Simply because these capabilities can be labeled as ‘services’ does not convince us that they were not intended to be unbundled as network elements. While subsection 251(c)(4) does provide for the resale of telecommunications services, it does not establish resale as the exclusive means through which a competing carrier may gain access to such services. We agree with the FCC that such an interpretation would allow the incumbent LECs to evade a substantial portion of their unbundling obligation under subsection 251(c)(3).

Iowa Utils. Bd. v. FCC, 120 F.3d at 809. The Supreme Court found that the statutory definition of “network element” does not include only the physical facilities used to provide local phone service, but also includes the features, functions and capabilities that are provided by these facilities, such as vertical switching features. *Iowa Utils. Bd.*, 119 S. Ct. at 734.

¹²⁶ Letter from Melissa Newman, Vice President – Federal Regulatory, US West, to Magalie

weight we assign to the availability of resold services in our analysis, we reject US West's argument. This argument would foreclose competitive LECs from taking advantage of the distinct opportunity Congress gave them, through section 251(c)(3), to use unbundled network elements.¹²⁷

68. As the Commission explained in the *Local Competition First Report and Order*, using unbundled network elements and resold services present different opportunities, risks, and costs, in connection with providing local telephone service. These differences influence the entry strategies of potential competitors.¹²⁸ The Commission stated that carriers using unbundled elements will have greater opportunities to offer services that are different from those services offered by the incumbents. More specifically, carriers reselling incumbent LEC services are limited to offering the same service an incumbent LEC offers at retail.¹²⁹ While competitive LECs using unbundled elements may have greater competitive opportunities than carriers offering services available for resale, they also face greater risks. A carrier purchasing unbundled elements must pay for the cost of the element, pursuant to terms and conditions agreed to in negotiations or ordered by states in arbitrations. Thus, the competitive LEC faces the risk that end-user customers will not demand a sufficient number of services to allow the competitive LEC to recoup the costs it incurs using the unbundled element; a carrier that resells the incumbent LEC's services does not face the same risk.¹³⁰ The 1996 Act grants competitive LECs the option of using either the incumbent LEC's unbundled network elements or resold services, thereby allowing the competitors to balance the risks and opportunities associated with each.

69. In addition, even if we agreed with US West that an incumbent LEC's retail tariff provided competitive LECs with a viable alternative to the incumbent LEC's unbundled network element, competitors would have no assurance that the incumbent LEC would not change the tariff in such a manner that the competitive LEC could no longer rely on it to provide the services it seeks to offer. Most services that competitive LECs purchase for resale are contained in state tariffs, and are subject to the states' tariff approval process. Relying on these state-approved tariffs would compromise our ability to determine which network elements must be unbundled pursuant to section 251(d)(2) because we would not be able to evaluate each incumbent LEC retail tariff as a possible alternative for every network element. In addition to being administratively unworkable for us to evaluate every state tariff filed by the incumbent LECs, relying on these tariffs as

Roman Salas, Secretary, Federal Communications Commission, CC Docket No. 96-98, at 1-2 (filed Aug. 18, 1999).

¹²⁷ See ALTS Comments at 23 (stating that the Commission should not consider the availability of resale because it would "eviscerate the 1996 Act's 'bright line' distinction between the resale and UNE methods of entry.").

¹²⁸ *Local Competition First Report and Order*, 11 FCC Rcd at 15667, para. 331.

¹²⁹ *Id.* at 15667, para. 332.

¹³⁰ *Id.* at 15668, para. 334.

alternatives to the incumbent LECs' unbundled network elements would create inconsistent unbundling rules among the states, a result that, as we explain further below, would not promote the development of competition for all consumers.

70. Moreover, we do not find the Supreme Court's decision requiring us to consider the availability of elements outside the incumbent LECs' network to be at all inconsistent with our decision to consider alternatives available through self-provisioning or from third-party suppliers. The Supreme Court required us to compare the use of unbundled network elements with "self-provision, or with purchase from *another provider*."¹³¹ If we were to construe the Supreme Court's opinion in the manner suggested by US West, we would have to consider whether an incumbent LEC's duty to unbundle an element would be limited by the existence of an alternative service that the incumbent LEC provides itself, whether or not there are other competitively-supplied alternatives. In other words, under US West's argument, the existence of its retail tariffs alone would be sufficient to eliminate its obligation to unbundle certain elements. The Supreme Court's opinion does not require us to ignore whether there are other non-incumbent LEC alternatives to the incumbent LEC's unbundled network elements, proposed by US West.

71. We believe that the "impair" standard we adopt in this Order will encourage the development of facilities-based competition. Specifically, as competitors acquire more customers, and the material differences in cost, time, quality, and operational impediments diminish, competitors will gradually reduce their reliance on the incumbent LECs' facilities. Competitors will also deploy more of their own facilities as it becomes practical to do so. As the material differences decrease, the Commission will be able to apply the same standard to remove elements from the national unbundling obligations.

72. Cost. In addition to the direct cost of purchasing the element, we consider all of the costs that requesting carriers would incur using an alternative element to provide the services it seeks to offer. Although not dispositive, the costs associated with self-provisioning or purchasing alternative elements from third-party suppliers are relevant to our determination of whether the element is a practical and economical alternative to the incumbent LEC's unbundled network element.

73. We believe that an "impair" standard based on cost is more appropriate than a standard based on profitability, because profit margins for both new and existing carriers will depend on the degree of competition that exists in the market. If the cost of the alternative element is materially greater than the cost of obtaining the corresponding element from the incumbent, the requesting carrier will not be able to provide service at prices that are competitive with the incumbent's prevailing retail prices.

74. In determining whether the cost of self-provisioning or purchasing an element from a third-party source is materially higher than using the incumbent LEC's unbundled network element, we evaluate the difference between the cost to the requesting

¹³¹ *Iowa Utils. Bd.*, 119 S. Ct. at 735 (emphasis added).

carrier of obtaining the unbundled element from the incumbent LEC at forward-looking costs and the cost of an alternative element. Because the Commission's rules require that network elements be priced based on forward-looking economic costs, we believe that forward-looking costs are the appropriate costs to consider in our analysis.

75. In order to provide service using its own facilities, a competitor will incur the costs of purchasing, installing, and provisioning the equipment it needs to provide service using its own loop or by interconnecting with the incumbent's network. The record in this proceeding addresses several types of costs associated with using an alternative element. These include the direct costs of provisioning the element, including fixed and sunk costs, as well as other costs that are likely to materially affect the requesting carrier's ability to provide the services it seeks to offer. "Fixed costs" are costs that do not vary with the level of output.¹³² A "sunk cost," on the other hand, is a cost that, once incurred, cannot be recouped if the firm ceases production.¹³³ To the extent that a competitive LEC incurs significant fixed costs or sunk costs when it uses its own facilities or acquires facilities from a third party, these costs can disadvantage the competitor relative to the incumbent.

76. Fixed costs are frequently associated with economies of scale. Specifically, where a firm faces both a fixed cost and a constant or declining variable cost, the firm's average unit cost will fall as output increases, and the firm's cost structure is said to exhibit economies of scale. For example, the cost a competitive LEC incurs to construct its own fiber transport ring would constitute a fixed cost, because, at least in the short run, this cost would not vary as the competitive LEC's output changed.¹³⁴ If a competitive LEC incurs significant fixed costs when it uses a particular facility, in its early stages of development it would have a significantly higher average unit cost than the incumbent LEC, which has a significantly larger output and customer base over which to spread the fixed cost. Since the Commission's rules require unbundled transport to be priced based on forward-looking costs (a form of long-run average incremental cost), leasing the incumbent's unbundled transport facilities is likely to be significantly less costly than deploying one's own transport facilities when the competitor has a relatively small volume of traffic, and thus its output would be small relative to that of the incumbent.¹³⁵

¹³² See, e.g., Dennis W. Carlton & Jeffrey M. Perloff, *Modern Industrial Organization* 31 (1989).

¹³³ See *id.* at 32.

¹³⁴ Similarly, a competitor that purchases its own switch or deploys feeder and distribution plant will incur significant fixed costs.

¹³⁵ Cf. *Applications of 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*, CC Docket No. 98-141, Description of the Transaction, Public Interest Showing and Related Demonstrations, at 49-55 (filed July 24, 1998) (applicants argue that, because of economies of scale, they must merge in order to compete in areas outside of their regions).

77. Certain network facilities also involve sunk costs, because the facilities cannot be easily re-deployed or sold should the competitor decide to cease offering service over those facilities.¹³⁶ For example, the cost of the loop serving a customer's home is largely a sunk cost because it cannot be recovered if the carrier ceases serving the customer. It is generally recognized that the need to incur sunk costs can constitute a barrier to entry.¹³⁷ Specifically, where an incumbent has already deployed sunk facilities to serve all customers, a competitive LEC may be unwilling to sink the costs of duplicative facilities, either because it may be unable to lure customers away from the incumbent and generate enough revenue to recover these sunk costs, or because resulting competition between itself and the incumbent LEC would drive prices so low that, even if the competitive LEC won a significant number of customers, it would still be unable to recover its sunk costs. In such situations, the incumbent has a "first mover" advantage.¹³⁸

78. The non-recurring costs of collocating equipment in the incumbent's end offices, including the costs of connecting the incumbent LEC's unbundled loops to the competitor's switch, and the fees required to obtain rights-of-ways, also constitute sunk costs. Unlike the costs associated with purchasing portable equipment, such as multiplexers or switches, the non-recurring costs incurred to collocate equipment and connect network elements to the competitive LEC's collocated equipment in an incumbent's central office are sunk costs and cannot be recovered if, for whatever reason, the carrier exits that market.

79. Additional costs, such as the costs a competitive LEC incurs to connect its own facilities to the incumbent LEC's unbundled network elements, affect the extent to which an alternative element is available as a practical and economic matter, such that a requesting carrier can actually use the element to provide the service it seeks to offer. For example, when a competitive LEC deploys its own switch but purchases the customer's unbundled loop from the incumbent, the competitive LEC may incur significant costs to connect the customer's loop, located in the incumbent LEC's central office, to its own switch. When these cutover costs are added to the costs of collocation, a competitor's ability to provide service in an efficient manner, when using its own switch for unbundled switching, could be materially diminished. We thus look at all of the costs a competitor must incur when using alternatives to the incumbent LEC's network element.

¹³⁶ See MCI WorldCom Comments, Tab 2, Decl. of John E. Kwoka, paras. 11-12; AT&T Reply Comments, Tab B, Aff of R. Glenn Hubbard/William H. Lehr/Janusz A. Ordover/Robert D. Willig at para. 51. The total costs of providing telecommunications services include sunk costs and fixed costs. Sunk costs are costs that the entrant must incur that cannot be recovered if it later decides to exit the market, such as non-recurring costs for collocation, delays associated with connecting the incumbent's loops to a competitor's switch, and fees required by municipalities to construct rights-of-way. Fixed costs are those costs that carriers incur which do not vary based on the number of customers that they serve.

¹³⁷ See, e.g., William J. Baumol, John C. Panzar & Robert D. Willig, *Contestable Markets and The Theory of Industry Structure* 290-92 (1982).

¹³⁸ See, e.g., Jean Tirole, *The Theory of Industrial Organization* 314-15 (1988); Richard J. Gilbert, *Mobility Barriers and the Value of Incumbency in 1 The Handbook of Industrial Organization* 491 (Richard Schmalensee and Robert D. Willig, eds.) (1989)

80. We find that significant fixed and sunk costs associated with using alternatives outside the incumbent LEC's network contribute to a finding that lack of access to the incumbent's unbundled network elements impairs the requesting carrier's ability to provide the service it seeks to offer. This is particularly true for a new competitive LEC that has few customers from which it can recover these costs. Because the per-customer costs decrease as the number of subscribers served by the carrier increases, a carrier must acquire a sufficient customer base if it is to recover substantial costs associated with deploying its own facilities.¹³⁹ It is reasonable, therefore, that a competitive LEC, at a minimum, would want to serve a substantial number of business and/or residential customers within a particular Metropolitan Statistical Area (MSA).¹⁴⁰ If the competitor must collocate its own switches in multiple central offices throughout the MSA in order to serve those customers, the costs associated with collocation may impair the competitor's ability to provide the services it seeks to offer, even if the cost of purchasing the individual equipment hardware is not excessive.

81. In addition, we find that the type of customers that a competitive LEC seeks to serve is relevant to our analysis of whether the cost of self-provisioning or acquiring an element from a third-party supplier impairs the ability of a requesting carrier to provide the services it seeks to offer. Section 251(d)(2)(B) requires us to consider whether lack of access to the incumbent LEC's network elements would impair the ability of the carrier to provide the *services* it seeks to offer. Consistent with the Act, we define the term "services" as it is used in section 251(d)(2)(B), to mean "telecommunications service," as it is defined in section 153(46) of the Act.¹⁴¹ Section 251(c)(3) of the Act places an affirmative duty on the incumbent LEC to provide unbundled elements to "any requesting telecommunications carrier for the provision of a telecommunications service."¹⁴² Section 251(d)(2)(B), in turn, requires that a requesting carrier should not have access to unbundled elements unless it would be impaired in its ability to provide "the services that

¹³⁹ In addition, the per-customer costs decrease as the distance required to reach each subscriber decreases. The per-subscriber cost of service will be lower in those situations where carriers can aggregate and carry large volumes of traffic over short distances rather than small volumes of traffic over long distances. See MCI WorldCom Comments, Tab 3, Decl of Mark T. Bryant, at para. 11.

¹⁴⁰ See, e.g., Covad Comments at 2 (business plans call for it to deploy facilities in 51 MSAs by the end of 1999); USTA UNE Report at III-3 ("Within top 50 MSAs, CLECs have deployed nearly 30,000 miles of fiber"). An MSA is also a reasonable entry market because number portability is deployed on an MSA basis, and available to serve a requesting carrier's customers within these areas. *Telephone Number Portability*, First Memorandum Opinion and Order and Further Notice of Proposed Rulemaking, 11 FCC Rcd 8352, para. 3 (1997) (requiring all LECs to implement long term number portability in the 100 largest MSAs according to a phased deployment schedule). We recognize that carriers may serve areas smaller than the total MSA. If we make a determination that the incumbent need no longer offer an unbundled element because there are viable alternatives available on an MSA basis, we do not believe that such a carrier would be impaired because the alternatives would most likely be available to serve customers located in smaller areas within the MSA.

¹⁴¹ 47 U.S.C. § 153(46).

¹⁴² 47 U.S.C. § 251(c)(3).

it seeks to offer.”¹⁴³ Different types of customers use different services (*e.g.*, large business customers order different services than residential customers). We therefore conclude that it is appropriate for us to consider the particular types of customers that the carrier seeks to serve.

82. Competitive LECs generally seek to provide service to residential and small business customers and/or to large business customers. The different revenue-generating potential of these different customer groups will often determine whether or not a competitive LEC can afford to incur the costs of self-provisioning a facility or of acquiring it from a third-party supplier, to the extent that it is available from a third-party provider. For example, a model submitted by MCI WorldCom that compares the costs of serving residential customers using unbundled elements from the incumbent LEC with the costs of serving the customers using its own facilities indicates that, at low market penetration levels, the costs of collocation would impair a competitive LEC’s ability to serve residential customers using its own facilities. The model further demonstrates, however, that using the incumbent LEC’s unbundled network elements, the entrant would be able provide service, even at the same low market-penetration levels.¹⁴⁴

83. Although the model submitted by MCI WorldCom is clearly not dispositive, we note it to illustrate that a requesting carrier’s ability to serve residential and small business customers may be materially diminished without access to the incumbent LEC’s network. Larger business customers, on the other hand, may generate sufficient revenue to allow the requesting carrier to serve the customer using certain self-provisioned facilities or facilities acquired from third-party sources.

84. We also consider, as part of our analysis, the economies of scale and scope that the incumbents have due to their ubiquitous network. The record demonstrates that, although facilities-based competition has developed in particular markets (primarily for large business customers in high-density areas), incumbent LECs continue to enjoy significant economies of scale and density not enjoyed by competitive LECs.¹⁴⁵ Because these economies lower the incumbent’s per-customer costs of providing service, *vis-à-vis* their competitors, we find these economies relevant to our inquiry of the extent to which costs of using alternative elements impair a requesting carrier’s ability to provide the services it seeks to provide.

¹⁴³ 47 U.S.C. § 251(d)(2)(B).

¹⁴⁴ Letter from Lori Wright, MCI WorldCom, to Magalie Roman Salas, Secretary, Federal Communications Commission, CC Docket Nos. 96-98; 95-185 (filed July 13, 1999).

¹⁴⁵ For example, MCI WorldCom describes the economies of scale to which several unbundled elements are subject. MCI WorldCom Comments, Tab 3, Decl. of Mark T. Bryant, at paras. 2-24. *See also* NTIA Comments at 30-31 (“To the extent that the inability to obtain an unbundled element from an ILEC increases a CLEC’s costs (for example, by forcing it to purchase a more expensive substitute or by denying the CLEC the economies of scale, scope, or density associated with the ILEC UNE), the resulting diminution in profits will reduce the internal funds available to extend and upgrade the CLEC’s network and service offerings); Qwest Comments at 20 (stating that the incumbent LECs, themselves, admit that the ubiquity of their networks creates unique economies of scope and scale.) (citation omitted).

85. We are not persuaded by the argument of BellSouth and other incumbent LECs that we should not consider the impact of the incumbents' economies of scale because competitors are capable of matching or exceeding the incumbent LECs' economies by building their own facilities.¹⁴⁶ The Commission has concluded previously that an incumbent LEC's existing infrastructure generally enables it to serve new customers at a much lower cost than a requesting carrier that must install its own switches, trunking, and loops to serve its customers, and that Congress has addressed this problem by mandating that incumbent LECs share their economies of scale and density with competitors.¹⁴⁷

86. We continue to believe that one important purpose of the unbundling provisions of the Act is to permit competitive LECs to compete with the same economies as the incumbents, especially in the early stages of local competition, when their networks are limited in their reach, and their customer bases are necessarily small.¹⁴⁸ The incumbent LECs still enjoy cost advantages and superiority of economies of scale, scope, and ubiquity as a result of their historic, government-sanctioned monopolies. These economies are now critical competitive attributes and would belong unquestionably to the incumbent LECs if they had "earned" them by superior competitive skills. These advantages of economies, however, were obtained by the incumbents by virtue of their status as government-sanctioned and protected monopolies. We believe that these government-sanctioned advantages remain barriers to the requesting carriers' ability to provide a range of services to a wide array of customers, and that their existence justifies placing a duty on the incumbent carriers to share their network facilities. Indeed, Congress, in section 259 of the Act, recognized expressly the benefits that the incumbent LECs have as a result of their economies of scale and scope. Section 259 requires the Commission to ensure that incumbent LECs make their infrastructure available to qualifying carriers on terms and conditions that permit the qualifying carriers to "fully benefit from the economies of scale and scope of such [incumbent] local exchange carrier."¹⁴⁹ Although section 259 of the Act is different from section 251 in that qualifying carriers obtaining infrastructure from the incumbent LEC pursuant to a section 259 agreement may not use such infrastructure to compete with the incumbent LEC in its service territory, both sections make the incumbent LECs' broad economies of scale and scope available to other carriers by requiring them to grant other carriers access to their networks.¹⁵⁰

¹⁴⁶ BellSouth Reply Comments at 3-5.

¹⁴⁷ *Local Competition First Report and Order*, 11 FCC Rcd at 15508-09, para. 10-11.

¹⁴⁸ *Id.* at 15528, 15531, 15624, paras. 56, 61, 242.

¹⁴⁹ 47 U.S.C. § 259(b)(4).

¹⁵⁰ *Implementation of Infrastructure Sharing Provisions in the Telecommunications Act of 1996*, CC Docket No. 96-237, Report and Order, 12 FCC Rcd 5470, 5495, 5497, paras. 50, 54 (1997). (*Infrastructure Sharing Order*) (stating that incumbent LECs must make the same network facilities and functionalities, including unbundled network elements and resale, available to qualifying carriers under section 259 as they would make available under section 251). The Commission also found in the

87. We do not agree with Ameritech that competitive LECs are not impaired in their ability to provide service because they have cost efficiencies which the incumbent LECs do not have.¹⁵¹ Although we agree that competitors may have certain cost advantages, we find that these advantages are likely to be outweighed by other costs that competitive LECs, but not incumbent LECs, incur to provide service. For example, many competitive LECs are likely to incur higher costs than the incumbent LECs to attract customers, because unlike the incumbent, many competitive LECs must establish a brand name and develop a reputation for service quality before they can overcome the incumbents' long-standing relationships with their customers. Similarly, competitive LECs must incur the initial costs of setting up their operations and developing their back-office systems. AT&T also points out that new entrants face a high level of risk when they enter the local market, because they enter without the incumbent LEC's knowledge of local operating costs (e.g., location and quality of outside plant facilities) and consumer demand (e.g., peak traffic volumes over certain facilities and demand growth).¹⁵²

88. We recognize that a new entrant in many industries will face disadvantages arising from economies of scale. We further recognize that, even after competition in local telecommunications markets is well-established, and the Commission can eliminate certain unbundling requirements, smaller competitors will be at a disadvantage to the extent that incumbent LECs continue to enjoy significant economies of scale in the provision of local telephone service. Nonetheless, we believe that the existence of economies of scale, as well as sunk costs, are relevant factors to consider in our assessment of whether failure to provide access to a particular unbundled network element will impair a requesting carriers' ability to provide the services it seeks to offer. Although we find economies of scale to be a relevant factor in our analysis, we note that we are not basing our determination of whether competitive LECs are "impaired" within the meaning of section 251(d)(2) solely on the existence of scale economies, nor do we assume that the incumbent LEC's scale economies are insurmountable in all circumstances.

89. Timeliness. We also conclude that the time associated with using alternative elements is relevant to a determination of whether a requesting carrier would be impaired in its ability to provide the services it seeks to offer. A thorough evaluation of the delays associated with using alternative elements requires an analysis of both the start-up time required for a competitor to enter a market and serve a substantial number of

Infrastructure Sharing Order that cost, availability, timeliness, functionality and other operational aspects associated with use of the incumbent LEC's infrastructure determine whether or not the qualifying carrier seeking access to the incumbent LEC's network under section 259 "fully benefits from the economies of scale and scope" of the incumbent LEC. *Id.* at 5528, para. 117. These are some of the same factors that we have identified here as being relevant to whether a requesting carrier can achieve the same benefit from using an alternative network element as it would from using the incumbent LEC's network element.

¹⁵¹ See, e.g., Ameritech Comments at 61; Ameritech Reply Comments, Att. A, Aff. of Debra J. Aron/William L. Fitzsimmons/Robert G. Harris, at 16-19.

¹⁵² AT&T Reply Comments at Tab B, Aff. of R. Glenn Hubbard/William H. Lehr/Janusz A. Ordover/Robert D. Willig, at para. 65.

customers in an MSA, as well as the time it would take a competitor that has already entered the market to expand its operations to serve more customers. We conclude that delays caused by the unavailability of unbundled network elements that exceed six months to one year may, taken together with other factors, materially diminish the ability of competitive LECs to provide the services that they seek to offer.

90. We recognize that the deployment of alternative elements, whether through self-provisioning facilities or by acquiring them from third-party suppliers, will require a reasonable amount of time. The delays associated with using alternative network elements will exist whether the requesting carrier is either just beginning to provision service or whether it is deploying additional facilities to expand its operations to serve more customers. Commenters differ in their opinions as to what constitutes a reasonable time to self-provision facilities.¹⁵³ There is considerable evidence in the record, however, that indicates that it takes between six months and one year to engineer, furnish, and install a switch, including the time needed to obtain collocation space in the incumbent LEC's central offices where the switch will be connected to unbundled loops.¹⁵⁴ Also, NTIA argues that we should consider as nontrivial any delay in service provisioning in excess of six months as compared to the time it would take for a competitive LEC to begin provisioning a service using an incumbent LEC's network element.¹⁵⁵

91. Based on the record before us, we conclude that it is reasonable to expect that a competitive LEC will need between six months and one year to provide service using a self-provisioned facility or one acquired from an alternative source. The local telecommunications market grows at an extremely rapid pace for many products and services. Indeed, we have reported that the demand for certain services has increased significantly from year to year since the passage of the 1996 Act¹⁵⁶ and that we expect this trend to continue, particularly for advanced services.¹⁵⁷ We believe that any delay

¹⁵³ See *infra* section V(D) (stating that some incumbent LECs claim that a switch can be fully provisioned in 40 days (BellSouth Reply Comments at 29), while competitive LECs assert that it can take between six months and two years (CompTel Comments at 39, n.89)).

¹⁵⁴ See *infra* Section V(D). AT&T also maintains that gaining access to commercial buildings for the deployment of loop facilities often involve delays of up to six months while the competitor attempts to negotiate access with the building owner. AT&T Reply Comments at 82.

¹⁵⁵ NTIA Comments at 32.

¹⁵⁶ For example, residential customers with existing telephone service purchased over two million additional telephone lines for their homes between 1996 and 1997. *Trends in Telephone Service*, Federal Communications Commission, Sept. 1999, at Table 20.4 (*Trends in Telephone Service*). The number of cellular telephone subscribers increased by nearly 14 million subscribers between December 1997 and December 1998. *Trends in Telephone Service* at Table 2.1.

¹⁵⁷ *Inquiry Concerning the Deployment of Advanced Telecommunications Capability to All Americans in a Reasonable and Timely Fashion, and Possible Steps to Accelerate Such Deployment Pursuant to Section 706 of the Telecommunications Act of 1996*, Report, 14 FCC Rcd 2398, 2419-20, 2428, 2445-46, paras. 42, 56, 90 (1999) (*706 Report*) (Report finds that there is currently rapid demand for broadband services by all consumers, particularly residential consumers, and that such demand is expected to grow.).

that a competitive LEC experiences in serving this fast-paced, high-growth market can impair its ability to provide its desired services. Although we cannot quantify precisely how much of a delay associated with an alternative network element will materially diminish the ability of a competitor to provide its desired services, we find that delays that exceed six months to one year may, taken together with other factors, materially diminish the ability of a competitive LEC to provide the services it seeks to offer because it prevents the competitive LEC from responding quickly to the demand for its services in a rapidly changing market. Moreover, we agree with NTIA that incumbent LECs can take advantage of delays caused by the unavailability of unbundled network elements by using their “unique access to most customers to gain a foothold in new markets, and, in markets where services may be offered pursuant to long term-contracts (*e.g.*, DSL and other advanced data services), to ‘lock-up’ customers in advance of competitive entry.”¹⁵⁸

92. We disagree with Ameritech that a competitor is not impaired in its ability to provide a service if it can deploy alternative facilities within two years of its decision to do so.¹⁵⁹ Congress made unbundled elements available to competitive LECs to avoid the time it would take competitive LECs to duplicate the incumbents’ networks, thereby promoting the rapid development of competition for all consumers. We believe that requiring consumers to wait up to two years to have access to a choice of competitive service offerings, while competitors attempt to provide service without access to unbundled elements, is unreasonable and inconsistent with the objectives of the Act.

93. We also disagree with US West’s claim that we should not consider the amount of time required for a competitive LEC to self-provision an element or acquire it from a third-party supplier because there are always inherent provisioning delays associated with using alternative elements.¹⁶⁰ We believe the amount of time it takes a competitive LEC to self-provision an element or acquire an alternative from a third-party supplier is highly relevant to its ability to provide the services it seeks to offer. In particular, we agree with commenters that in order to compete effectively, competitive LECs must be able to initiate service promptly upon the request of their customers.¹⁶¹ We also agree with NTIA that delays in the introduction of competitive services caused by the unavailability of unbundled elements from the incumbent LEC would give the incumbent valuable time to entrench itself with existing customers.¹⁶²

¹⁵⁸ NTIA Comments at 31.

¹⁵⁹ Ameritech Comments at 35.

¹⁶⁰ US West Comments at 22-23.

¹⁶¹ *See, e.g.*, AT&T Reply Comments at 45 (“The delays AT&T has discussed – such as those involved in obtaining building access and right-of-way agreements to lay fiber – are substantial delays and ones that would be imposed on a recurring, ongoing basis as to CLECs that have already ‘entered’ a market and are seeking to win new customers, to build and connect facilities for those customers, and to compete with the incumbent LEC in offering timely commitments for due dates when those customers are choosing a carrier.”); MCI WorldCom Comments at 18.

¹⁶² NTIA Comments at 31.

94. Although we agree with US West that self-provisioning or acquiring alternative network elements from third-party suppliers involves normal delays incurred when starting or expanding a business, we find that significant delays will materially diminish a requesting carrier's ability to provide the services it seeks to offer. In addition, we have accounted for the inherent provisioning period to which US West refers by determining that it will take competitors approximately six months to one year to provide service, and that delays that exceed that time period would materially diminish a requesting carrier's ability to provide a competitive service.

95. We disagree with US West that it would be too administratively complex to consider the differences between the time it would take a competitor to obtain an element from the incumbent LEC and the time it would take to self-provision an element.¹⁶³ We do not find it to be too administratively complex to consider whether a delay associated with using an alternative network element exceeds the six month to one year timeframe we identified above. As we stated above, the "impair" standard does not mandate precise quantification; nor does it involve an analysis of the delay suffered by every carrier. It requires instead a consideration of whether, as a general matter, there is an identifiable difference in the amount of time required to provide service using an alternative element and the amount of time required to provide service using the incumbent LEC's element, such that the delay would materially diminish the competitor's ability to provide the services that it seeks to offer.

96. Quality. We also conclude that the quality of alternative network elements available to the competitive LEC is relevant to a determination of whether a requesting carrier's ability to provide service is impaired. We agree with the California PUC and other commenters that a material degradation in service quality associated with using an alternative element will materially diminish a competitor's ability to effectively provide service.¹⁶⁴ Examples of diminished quality presented in the record include greater dialtone delay, higher blocking rates, elevated noise on a telephone line and increased failure rates.¹⁶⁵ These types of quality problems, all of which are recognizable by the end-user customer may, taken together with other factors, materially diminish the ability of the competitor to provide the services that it seeks to offer. In addition, we believe that the type of service a competitor seeks to provide is also relevant to the quality factor. For example, end users may be much less tolerant of problems that affect data services, than they would be for voice service.¹⁶⁶

¹⁶³ US West Comments at 22-23.

¹⁶⁴ California PUC Reply Comments at 3. *See also* Texas PUC Comments at 7-8; Choice One Joint Comments at 6-7; Columbia Comments at 9; Corecomm Comments at 17-20; KMC Comments at 5-6; Pilgrim Comments at 14-15.

¹⁶⁵ TRA Comments at 23. *See also* ALTS Comments at 21-22 ("If use of an alternative results in a competitive service offering with greater levels of signal loss, circuit outage or mean repair time compared to that of the incumbent, it cannot be found that the alternative presents the requesting carrier with an element that consumers will accept as part of a competitive service offering.").

¹⁶⁶ *See* TRA Comments at 23 (stating that a competitive LEC is impaired if the substitute

97. Ubiquity. We conclude that we should also consider the extent to which the competitive LEC can serve customers ubiquitously using its own facilities or those acquired from third-party suppliers. We agree with competitive LECs that they may be impaired if lack of access to an unbundled element materially restricts the number or geographic scope of the customers they can serve.¹⁶⁷ For example, incumbent LECs own 98 percent of all access lines in Texas and have deployed 1538 switches throughout the state. According to the Texas PUC, if a competitive carrier seeks to provide local telephone service throughout the state, it would be impractical, if not impossible, for the carrier to replicate the incumbents' networks.¹⁶⁸

98. Although we acknowledge that not all competitive LECs will want to provide ubiquitous service across broad geographic areas, those that do will likely be disadvantaged vis-à-vis the incumbent, especially in the early stages of deployment, because the incumbent LECs still enjoy advantages of a ubiquitous network that provide them with economies of scale and the ability to reach all consumers in their service territories. It is reasonable to expect that, in many cases, competitors would want to provide ubiquitous service in order to achieve similar economies of scale that will allow them to spread the costs of construction, equipment, and marketing across as many customers as possible. It is also reasonable to expect that in some cases, the ability to serve ubiquitously will be necessary to meet consumer demand for competitive alternatives in broad geographic areas. In such cases, lack of access to the incumbent's unbundled network elements could significantly thwart the competitor's ability to respond to consumer demand.¹⁶⁹ Denying access to the incumbent's unbundled network elements, when use of alternative sources would materially diminish the competitors' ability to serve their intended geographic area, would be inconsistent with the goal of the 1996 Act to bring competition to the greatest number of customers. Indeed, the inability to provide service ubiquitously may be especially important for competitive LECs seeking to serve residential and small business customers located throughout a state.

99. Impact on Network Operation. We find that we should also consider how self-provisioning a network element or obtaining it from a third-party supplier may affect the technical manner in which the competitor can operate its network. We agree with the Washington Utilities Commission that overall network performance is an important consideration in our "impair" analysis.¹⁷⁰ In order to compete with the incumbent, competitive LECs must be able to connect alternative elements either to their own networks or to other incumbent LEC elements that they use to provide service. Thus,

element would prevent it from offering the same functionality as the incumbent's service, *e.g.*, stutter dialtone or message-waiting indicator).

¹⁶⁷ See, *e.g.*, Cable & Wireless Comments at 11; Prism Comments at 15; TRA Comments at 23.

¹⁶⁸ Texas PUC Comments at 14.

¹⁶⁹ See MCI WorldCom Comments at 23-24.

¹⁷⁰ Washington UTC Comments at 13.

material operational or technical differences in functionality that arise from interconnecting alternative elements may also impair a requesting carrier's ability to provide its desired services.¹⁷¹

100. As we stated above, the incumbent LECs' relative advantages regarding costs, ubiquity, timeliness, and quality comprise only a part of a determination of whether or not a competitive LEC's ability to provide a competitive service is impaired. Indeed, as stated above, competitive LECs may have reasons for not entering a particular market that have nothing to do with whether lack of access to the incumbent's network would or would not impair their ability to offer service in that market. For example, it is likely that not all competitive LECs intend to invest in their own facilities to serve residential customers. Congress, however, clearly intended for competition to develop in these markets, as well as in the business markets, and we see as one of the primary goals of section 251, to facilitate competition in these markets. Because the ground work for competition is still uncharted, and we have seen very limited competition in the residential market to date, we seek to remove economic and other barriers that may forestall the development of competition for these consumers. Accordingly, we unbundle elements in a manner that we believe will have the desired effect of promoting competition in all markets as quickly as possible.

**(iii) Other Factors to Be Weighed in Our
Unbundling Analysis**

101. We conclude that, in addition to the "necessary" and "impair" standards, section 251(d)(2) permits us to consider other factors that are consistent with the objectives of the Act in making our unbundling determination. Section 251(d)(2) states that, "[i]n determining what network elements should be made available for purposes of subsection 251(c)(3), the Commission shall consider, at a minimum" the "necessary" and "impair" standards."¹⁷² This language implies clearly that other factors may be considered as long as we consider the "necessary" and "impair" standards. Moreover, as the D.C. Circuit has held, when Congress requires an agency to "consider" several listed factors, it may also consider additional factors in making its decision. For example, in *Central Vermont Railway, Inc. v. Interstate Commerce Commission*, the D.C. Circuit found that the language of a statute addressing railroad mergers that directed the Interstate Commerce Commission to "consider at least the following [factors]," also allowed the agency to consider factors other than those specifically listed.¹⁷³ In a later case that cited *Central Vermont Railway*, the court explained that an agency's duty to "consider" specific

¹⁷¹ See, e.g., ALTS Comments at 21; Cable and Wireless Comments at 14-16; MCI WorldCom Comments at 25-26; Qwest Comments at 22-25.

¹⁷² 47 U.S.C. § 251(d)(2).

¹⁷³ *Central Vermont Ry. v. ICC*, 711 F.2d 331, 335 (D.C. Cir. 1983) (*Central Vermont Ry. V. ICC*).

factors means only that it must “reach an ‘express and considered conclusion’ about the bearing of a factor, but is not required to give ‘any specific weight’ to the factor.”¹⁷⁴

102. In the *Local Competition First Report and Order*, the Commission stated that it agreed with several incumbent LECs that the plain import of the “at a minimum” language in section 251(d)(2) requires the Commission to consider the standards enumerated there, “as well as other standards we believe are consistent with the objectives of the 1996 Act.”¹⁷⁵ The Supreme Court did not dispute this determination. In fact, it directed us to adopt “some limiting standard rationally related to the goals of the Act.”¹⁷⁶ We are therefore not persuaded by the argument of the incumbent LECs that we may now require unbundling only where the “necessary” or “impair” standards have been met.¹⁷⁷ If Congress had intended to require the incumbent LECs to unbundle an element only when it was “necessary” to, or would “impair” the requesting carrier’s ability to provide its desired service, Congress would not have used the discretionary phrase “consider at a minimum.” Rather, Congress would have required the Commission to apply the “necessary” and “impair” standard, without consideration of any additional factors.

103. Accordingly, in addition to the “necessary” and “impair” standard, we conclude that we may consider several factors, set out below, that further the goals of the Act in accordance with the Supreme Court’s directive. Two fundamental goals of the Act are to open the local exchange and exchange access markets to competition and to promote innovation and investment by all participants in the telecommunications marketplace.¹⁷⁸ To further the goal of opening the local market to competition, we may consider how access to specific unbundled network elements will encourage the rapid introduction of local competition to the benefit of the greatest number of consumers.

104. We may also consider how the unbundling rules we adopt will promote facilities-based competition by competitive LECs. We believe that it is the development of facilities-based competition that will provide both incumbent and competitive LECs with the incentives to innovate and invest in new technologies. Such innovation and investment will bring greater choices of telecommunication services and lower prices to a greater number of consumers. We may also consider the extent to which we can reduce regulatory obligations to provide access to network elements as alternatives to the incumbent LECs’ network elements become available in the future.

105. We may further consider whether unbundling particular network elements will provide certainty in the market so that competitive LECs can attract investment

¹⁷⁴ *Time Warner Entertainment Co. v. FCC*, 56 F.3d 151, 175 (D.C. Cir. 1995) (quoting *Central Vermont Ry. v. ICC*, 711 at 336).

¹⁷⁵ *Local Competition First Report and Order*, 11 FCC Rcd at 15641, para. 280.

¹⁷⁶ *Iowa Utils. Bd.*, 119 S. Ct. at 734.

¹⁷⁷ See, e.g., GTE Comments at 27-28; Ameritech Joint Reply Comments at 23-25.

¹⁷⁸ *Joint Explanatory Statement* at 1.

capital and execute their business plans. We may also take into account how we can make the unbundling rules administratively manageable for the Commission and the states to apply. The adoption of administratively workable unbundling rules will enable the Commission and the states to implement and enforce such rules, thereby facilitating the ability of competitive LECs to enter the market as quickly and efficiently as possible.

106. We do not give particular weight to any of the factors we identify. Rather, we consider the relationship among the factors we take into account for a particular network element, and determine whether the sum total of the effect of the factors require a finding that the element must be unbundled. Thus, we do not require that all of the factors be met before we decide whether or not to require incumbent LECs to unbundle a particular network element. Indeed, there may be circumstances in which there is significant evidence that competitors are impaired without unbundled access to a particular element, but that unbundling the element would not further the goals of the Act. In the final analysis, as we explain in more detail below, we consider the effect of these factors in order to develop unbundling obligations that are most consistent with Congressional intent.

107. Rapid Introduction of Competition in All Markets. Congress has emphasized that a major goal of the 1996 Act is to accelerate the development of local competition. Indeed, the preamble to the Act states that it provides a “pro-competitive, de-regulatory national policy framework designed to accelerate rapidly” deployment of advanced telecommunications technologies by opening all markets to competition.¹⁷⁹ With regard to unbundled network elements, in particular, the Eighth Circuit Court of Appeals found that the use of unbundled elements promotes the prompt development of competition, as intended by the Act. The court stated that the Act “provides for unbundled access to incumbent LECs’ network elements as a way to jumpstart competition in the local telecommunications industry.”¹⁸⁰ We therefore find that we may consider whether an unbundling obligation is likely to encourage requesting carriers to rapidly enter the local market and serve the greatest number of customers. Conversely, we may also consider whether the failure to require unbundling will cause any class of consumers to wait unnecessarily for competitive alternatives.

108. We also note that Congress specified certain network elements in the section 271 checklist that BOCs are required to unbundle before they obtain in-region interLATA relief. In particular, the checklist requires BOCs to demonstrate that they are providing loops, switching, transport, signaling and databases, and operator services/directory assistance.¹⁸¹ Accordingly, we may consider whether requiring all incumbent LECs to unbundle these same elements would promote the rapid introduction of competition on a nationwide basis.

¹⁷⁹ *Id.*

¹⁸⁰ *Iowa Utils Bd. v. FCC*, 120 F.3d at 811.

¹⁸¹ 47 U.S.C. § 271(c)(2)(B).

109. We agree with NTIA that there is a common purpose between sections 251 and 271 of the Act of opening the incumbents' monopoly local exchange networks to competition.¹⁸² We believe that Congress intended section 251(c)(3) of the Act and the competitive checklist to contain similar, if not identical, obligations. Although we do not conclude that the checklist determines definitively that all incumbent LECs are required, pursuant to section 251, to unbundle the items enumerated in section 271, we find that section 271 sheds some light on what elements Congress believed should be unbundled in order to open local markets to competition. We may therefore consider whether an element is among the elements identified in the competitive checklist as we make our determination of which network elements incumbent LECs must provide on an unbundled basis.

110. Promotion of Facilities-Based Competition, Investment, and Innovation. A fundamental goal of the Act is to promote investment and innovation by all participants in the telecommunications marketplace, and, in particular, to encourage rapid deployment of new telecommunications technologies.¹⁸³ As the Commission has stated, the construction of new local exchange networks "will not only lead to innovation by the new competitors, but should also spur [the incumbent LECs] to upgrade their systems and offer a broader array of desired service options to meet consumers' demands."¹⁸⁴ By promoting innovation both by the incumbent LECs and competitive LECs, the Act enables these carriers to produce innovative new services for consumers. Specifically, consumers benefit when carriers invest in their own facilities because such carriers can exercise greater control over their networks, thereby promoting the availability of new products that differentiate their services in terms of price and quality. We may therefore consider the extent to which the unbundling obligations we adopt will advance the development of facilities-based competition and will encourage innovation by both incumbent and competitive LECs.

111. We seek to adopt unbundling requirements that are broad enough to provide requesting carriers with the elements they need to ramp up towards facilities deployment. At the same time, we remain cognizant of the Supreme Court's mandate against granting blanket access to the incumbents' network in a manner that is inconsistent with the "necessary" and "impair" standards of section 251(d)(2), or with the goals of the 1996

¹⁸² NTIA Comments at 35-40.

¹⁸³ *Joint Explanatory Statement* at 1. See also NTIA Comments at 15, n.42, (citing H.R. Rep. No. 104-204, at 47-48 (1995) ("For decades, U.S. telecommunications policy has relied heavily on regulated monopolies to provide telecommunications service to business and consumers. . . . Technological advances would be more rapid and services more widely available and at lower prices if telecommunications markets were competitive rather than regulated monopolies."); 141 Cong. Rec. S8015 (daily ed. June 8, 1995) (statement of Sen. Pressler) ("if we had done what we are trying to do in this bill - that is, to require [incumbent LECs] to unbundle and interconnect, to allow for local competition, . . . the whole telephone communications industry might be more innovative today than it is.")).

¹⁸⁴ *Competitive Networks Notice* at para. 23.

Act.¹⁸⁵ We believe that the standards we articulate in this Order will strike the appropriate balance by unbundling only those network elements without which a competitive LEC's ability to provide service will be materially diminished.

112. We agree with the competitive LECs that argue that unbundled access to certain incumbents' network elements will accelerate initially competitors' development of alternative networks because it will allow them to acquire sufficient customers and the necessary market information to justify the construction of new facilities.¹⁸⁶ Indeed, many commenters in this proceeding emphasize that they plan to deploy alternative facilities as soon as it is technically and economically possible to do so at a cost that is close to the incumbent LECs' prices for network elements.¹⁸⁷ According to these commenters, competitive LECs prefer to use their own facilities or alternatives outside of the incumbent's network when they are able to do so, in order to reduce their reliance on a primary competitor.¹⁸⁸ We find this explanation to be reasonable. Use of the incumbent LEC's network elements requires competitive LECs to disclose details about their customers to their chief competitor. Moreover, it is reasonable to expect that competitive LECs would prefer to have direct control of their networks to ensure the quality of their service and to offer products and pricing packages that differentiate their services from the perspective of end users.¹⁸⁹

113. Reduced Regulation. Another goal of the Act is to deregulate where market conditions warrant.¹⁹⁰ We may therefore consider the extent to which we can reduce regulatory obligations to provide access to network elements as alternatives to the incumbent LECs' network elements become available in the future.

114. Certainty in the Market. Among other things, the Act seeks to promote competition by eliminating barriers to entry into the local market. We may therefore consider how the unbundling obligations we adopt in this Order facilitate competitive

¹⁸⁵ *Iowa Utils, Bd.*; 119 S. Ct. a 735. See also NTIA Comments at 25 (“[The Commission] should seek so far as possible to construe [Section 251(d)(2)] in a way that advances the procompetitive goals of the 1996 Act, including the promotion of facilities-based competition.”)

¹⁸⁶ See, e.g., AT&T Comments at 11-12, 21-22 (stating that using unbundled network elements also facilitates the transition to facilities-based competition because it permits entrants to gather critical information, such as customers' calling volumes and traffic patterns, that they need to plan their facilities' deployment); MCI WorldCom Comments at 8-9; Sprint Reply Comments at 8.

¹⁸⁷ See, e.g., AT&T Reply Comments at 33-34; CompTel Comments at 12; MCI WorldCom Comments at 8-9, 26-27; Net2000 Comments at 2; Sprint Comments at 19-21 (“Any carrier desiring a significant market presence over the long term must consider self-provisioning as the most desirable business strategy – indeed the only strategy that can ensure that a carrier is the master of its own fate.”)

¹⁸⁸ See MCI WorldCom Comments at 8-9; Sprint Comments at 20; ALTS Reply Comments at 23-24; MCI WorldCom Reply Comments at 19.

¹⁸⁹ See *Competitive Networks Notice* at para. 4; Sprint Comments at 19.

¹⁹⁰ *Joint Explanatory Statement* at 1.

entry. Accordingly, we find that the unbundling requirements we adopt should typically provide the uniformity and predictability new entrants and fledgling competitors need to develop and implement national and regional business plans. In addition, uniform and predictable unbundling rules will provide financial markets with reasonable certainty so that competitive LECs can attract the investment capital they need to execute their business plans. Specifically, uniform and predictable unbundling rules reduce substantially competitive LECs' risk of underutilized investment or cash flow drain by providing financial markets with some certainty that the competitors will be able to execute their business plans.

115. We also find that we should, whenever possible, adopt unbundling obligations that can be included easily in interconnection agreements between the incumbents and the competitive LECs, with as little risk of subsequent litigation as possible. Litigation over the incumbents' unbundling obligations requires the parties to these agreements, and the state commissions that approve them, to expend vast amounts of time and resources, ultimately impairing the ability of competitive LECs to execute their business plans.

116. Administrative Practicality. We may also consider whether the unbundling rules we adopt are administratively practical to apply. Any rule adopted in an administrative proceeding runs the risk of being potentially overinclusive in some situations and under-inclusive in other situations. A rule of general applicability rarely will neatly fit all situations. Nonetheless, administrative agencies are entitled to proceed by rulemaking as well as by adjudication.¹⁹¹ In addition, the goal of administrative efficiency has widespread support from diverse segments of the industry, even where they disagree on the substantive outcome of the proceeding.¹⁹² We therefore seek to adopt unbundling rules that provide for administrative ease in addressing the incumbents' unbundling obligations today, as well as in the future, as alternatives to incumbent LEC network elements become available. We believe that adopting rules that are administratively practical to apply will also enhance certainty in the marketplace by allowing us to apply the rules efficiently to respond to changes in the marketplace.

C. Adoption of a National List of Unbundled Network Elements

1. Background

117. In the *Local Competition First Report and Order*, the Commission concluded that identifying a specific list of network elements that must be unbundled,

¹⁹¹ Our mandate from the Court is similar to other instances in which federal agencies have implemented a general rule of applicability. *See FCC v. WNCN Listeners Guild*, 450 U.S. 582 (1981); *Checkosky v. SEC*, 23 F.3d 452 (D.C. Cir. 1994); *Northeast Utils. Service Co. v. FERC*, 993 F.2d 937 (1993).

¹⁹² *See, e.g.*, Ameritech Comments at 5 (stating that Ameritech's proposed standards are "easy to administer."); CPI Comments at 13 (stating that the Commission should make regulation efficient by avoiding case-by-case decisions); KMC Comments at 2-3 (stating that a national list of unbundled elements allows for more efficient implementation of the 1996 Act).

applicable in all states and territories, would best further the “national policy framework” Congress established to promote competition in local markets. In particular, the Commission found that a national list would: (1) allow requesting carriers, including small entities, to take advantage of economies of scale; (2) provide financial markets with greater certainty in assessing requesting carrier’s business plans; (3) facilitate the states’ ability to conduct arbitrations; and (4) reduce the likelihood of litigation regarding the requirements of section 251(c)(3).¹⁹³

118. In the *Notice*, we stated that we found nothing in the Supreme Court’s decision that would require us to eliminate national unbundling requirements. We tentatively concluded that we should continue to identify a minimum set of network elements that must be unbundled on a nationwide basis, and sought comment on this conclusion. We also sought comment on whether the existence of geographic variations in the availability of elements outside of the incumbent LEC’s network is relevant to a decision to impose minimum national unbundling requirements.¹⁹⁴

119. Nearly all of the state commissions commenting in this proceeding,¹⁹⁵ and all of the competitive LECs,¹⁹⁶ assert that we should adopt a national list of unbundled elements. The state commissions agree that the Commission has authority to adopt such a list, and that it should implement a process for the states to modify the list in the future, based on conditions that exist in a particular state.¹⁹⁷ The New York Commission also proposes that, in establishing the national list, we should evaluate whether to exclude an element from the unbundling obligations in discrete market areas where commercially

¹⁹³ *Local Competition First Report and Order*, 11 FCC Rcd at 15616-27, paras. 226-48, 281-83.

¹⁹⁴ *Notice* at para. 14.

¹⁹⁵ California PUC Comments at 3-4; Connecticut DPUC Comments at 3-4; Illinois Commission Comments at 2; Iowa Comments at 1-2; Kentucky PSC Comments at 2; New York DPS Comments at 4-7; Ohio PUC Comments at 3-5; Oregon PUC Comments at 1; Texas PUC Comments at 2-3; Washington UTC Comments at 3-5; NARUC Reply Comments at 3; New Jersey DRA Reply Comments at 11; Wisconsin PSC Reply Comments at 3-4. *But see* Florida PSC Comments at 7-8 (suggesting that the Commission establish a “rebuttable presumption” in favor of unbundling network elements listed in section 271 of the 1996 Act instead of adopting a national list).

¹⁹⁶ *See, e.g.*, Ad Hoc Comments at 3; Allegiance Comments at 2-4; AT&T Comments at 39-46; Cable & Wireless Comments at 22-28; Choice One Joint Comments at 2-3; Columbia Comments at 8; CO Space Comments at 4-5; Corecomm Comments at 8-10; Covad Comments at 3-6; CPI Comments at 4-6; Excel Comments at 17-19; KMC Comments at 2-3; MCI WorldCom Comments at 4-10; Net2000 Comments at 3-7; New England Voice & Data Comments at 4, n.4; NEXTLINK Comments at 3-7; NorthPoint Comments at 1-3; OpTel Comments at 2; Prism Comments at 3-5, 9-10; Rhythms Comments at 9; TelTrust Comments at 2; TRA Comments at 9-10 Waller Creek Comments at 11-12.

¹⁹⁷ *See, e.g.*, NARUC Reply Comments at 3; California PUC Comments at 3-4; 7-14; Illinois Commission Comments at 2-3; Kentucky PSC Comments at 2; New York DPS Comments at 3-7; Ohio PUC Comments at 3-5, 21; Oregon PUC Comments at 1; Texas PUC Comments at 3-5; Washington UTC Comments at 3-9.

viable alternatives are available.¹⁹⁸ The incumbent LECs argue, on the other hand, that the Supreme Court's decision in *Iowa Utils. Bd.* requires a geographic market-by-market analysis that will ultimately not result in a national list of unbundled elements. These carriers propose that the Commission adopt national standards to be applied by state commissions on a market-by-market basis.¹⁹⁹

2. Discussion

120. We adopt our tentative conclusion to identify a minimum list of network elements that should be unbundled on a national basis. Similar to New York's proposal, we also conclude, as explained below, that we must apply discrete geographic and product market exceptions to the incumbent's duty to unbundle the elements on the national list, where appropriate. We conclude that the Commission has the legal authority to adopt a national list of network elements that must be made available on an unbundled basis, and that the other factors we identify above, such as rapid introduction of competition, certainty in the marketplace, administrative practicality, and promotion of facilities-based competition, can only be furthered by adoption of a national list.

a. Legal Authority

121. The Supreme Court decision in *Iowa Utils. Bd.*, the statutory language of section 251(d)(2), and the legislative history of the 1996 Act support our authority to develop a national list of unbundled elements. In particular, the Supreme Court upheld explicitly the Commission's jurisdiction to adopt minimum national rules to implement each subsection of the 1996 Act.²⁰⁰ Consistent with the language in the statute, the Supreme Court stated that section 251(d)(2) ". . . requires the Commission to determine on a rational basis *which network elements must be made available*, taking into account the objectives of the Act and giving some substance to the 'necessary' and 'impair' requirements."²⁰¹ The Court stated that some of the national unbundling rules the Commission adopted originally in the *Local Competition First Report and Order* might have been supported by the standard required by section 251(d)(2). The Court stated however, that because the standard was not consistently applied, it was forced to vacate Rule 319.²⁰² As explained above, we have adopted a limiting standard that we believe

¹⁹⁸ New York DPS Comments at 4-5.

¹⁹⁹ See, e.g., Ameritech Comments at 5-6, 53-65; BellSouth Comments at 12-18, 31; GTE Comments at 20-22; SBC Comments at 15-18; US West Comments at 26-32.

²⁰⁰ *Iowa Utils. Bd.*, 119 S. Ct. at 733.

²⁰¹ *Id.* at 736 (emphasis added).

²⁰² *Id.* (citing *Local Competition First Report and Order*, 11 FCC Rcd at 15766, paras. 521-22 (requiring the incumbent LECs to unbundle their operational support systems because "competitors' ability to provide service successfully would be significantly impaired if they did not have access to the incumbent LECs' operation support system functions.")).

responds to the Supreme Court's concerns.²⁰³ We have also applied the standard consistently to derive a list of network elements that must be made available on an unbundled basis nationwide.

122. In addition, we do not find that the Supreme Court decision in *Iowa Utils. Bd.* requires us to determine, on a localized state-by-state or market-by-market basis which unbundled elements are to be made available. The Commission examined the conditions in the nation as a whole to determine, in the *Local Competition First Report and Order*, that the incumbent LECs must make available a minimum list of elements. The Commission also concluded that it would not adopt an exhaustive list of elements, but that the states would identify additional unbundling obligations based on local market conditions.²⁰⁴ The Supreme Court did not take issue with this determination. The Court held that the Commission must determine on a rational basis which network elements must be made available, taking into account "the objectives of the Act and giving some substance to the 'necessary' and 'impair' requirements of section 251(d)(2)."²⁰⁵ Although this language permits the Commission to undertake a market-by-market assessment of alternatives, it plainly does not mandate such an approach. Rather, it provides the Commission with the discretion to look at the nation as a whole and to identify differences in the availability of alternatives outside of the incumbent's network that may exist in discrete geographic areas.

123. However the Commission chooses to limit the incumbent LEC's duty to unbundle in accordance with the Supreme Court's opinion, Congress has charged the Commission in section 251(d)(2) with "determining what network elements should be made available for purposes of subsection [251](c)(3)."²⁰⁶ We thus have the authority to identify a minimum list of network elements that must be unbundled on a nationwide basis.²⁰⁷ In addition, the legislative history indicates that Congress specifically contemplated that the Commission would open the last monopoly bottleneck strongholds in telecommunications by requiring incumbents to share their local exchange facilities, including "the equipment with capabilities of routing and signaling calls, network capacity, and network standards."²⁰⁸ This legislative history indicates that Congress expected the Commission would identify a national list of unbundled network elements that would include, at a minimum, these basic network elements.

203 See *supra* Section (IV)(B).

204 *Local Competition First Report and Order*, 11 FCC Rcd at 15624, para. 243.

205 *Iowa Utils. Bd.*, 119 S. Ct. at 736.

206 47 U.S.C. § 251(d)(2).

207 47 U.S.C. § 251(d)(2). See also *Iowa Utils. Bd.*, 119 S. Ct. at 736 (section 251(d)(2) "requires the Commission to determine on a rational basis which network elements must be made available") (emphasis in original).

208 H.R. Conf. Rep. 104-204, at 49 (1995).

b. Goals of the Act

124. We find that adoption of a national list of unbundled network elements furthers the statutory purpose and design of section 251(d)(2) to provide competitive LECs with access to unbundled network elements that will allow them to provide the services they seek to offer. Moreover, we find that adoption of a national list is supported by the factors we identify above as being important to further the fundamental goals of the Act.

125. Rapid Introduction of Competition. We find that a national list of unbundled elements will encourage the rapid introduction of competition in the greatest number of markets because it will provide competitive LECs with certainty regarding the availability of network elements. In fact, the record reflects that many competitive LECs are poised to begin providing service using unbundled elements, particularly for residential and small business customers, as soon as the elements are available with a reasonable degree of certainty.²⁰⁹ Thus, we believe that the certainty that adoption of a national list will bring to the market will benefit the greatest number of consumers, particularly residential and small business customers.

126. We agree with AT&T that the lack of nationwide access to unbundled elements will hinder mass market competition during the time it would take competitive LECs to construct alternative networks capable of serving all residential customers and most business customers in a community.²¹⁰ Even in areas where competitors are able to provide facilities-based service in specific wire centers, their ability to provide service on an MSA, LATA, or state-wide basis, for all classes of customers, is impaired without access to the incumbent's elements on a broader basis. A national list of unbundled elements will allow requesting carriers to enter local markets in a manner that will allow them to approach the incumbent LECs' historic economies of scale, scope, and ubiquity, thereby promoting rapid competition for all customers, including residential and small business customers, in all areas of the country.

²⁰⁹ See, e.g., Corecomm Comments at 2-3 ("As it expands its operations in Ameritech and Bell Atlantic's incumbent areas, Corecomm intends to make increasing use of high quality, cost-based unbundled network elements from the [incumbent LECs] to reach those residential customers that may be beyond the reach of most competitive carriers' facilities."); Covad Comments at 2 ("Covad's planned deployment by the end of 1999 will cover 51 MSAs, more than 25 percent of the nation's homes and businesses. This is a large-scale, national roll-out, based upon the nationwide availability of collocation, unbundled dedicated transport, and unbundled local loops."); McLeod Comments at 1-2 ("As of March 31, 1999, McLeodUSA provided competitive local exchange services to over 143,000 residential and small business customers, with over 395,000 lines.... McLeodUSA anticipates that use of unbundled network elements to provide service will increase in the future, and therefore has a substantial interest in the outcome of this proceeding."); NorthPoint Comments at 3 ("...the simple fact is that in the local markets in which NorthPoint currently offers service or intends to in the near future, the incumbent LECs are the only ubiquitous sources for loops, transport and other facilities that NorthPoint needs to provide service.").

²¹⁰ AT&T Reply Comments at 3-4.

127. According to the *FCC Local Competition Report*, competitors provide only about 1.8 percent of local services to end users.²¹¹ The record in this proceeding indicates that requesting carriers have not yet been able to obtain unbundled elements on a wide-spread basis nationwide, which may have prevented competitive LECs from serving a greater number of end users. For example, only recently has unbundled switching been made available in combination with other unbundled network elements in certain states. MCI WorldCom observes that, with the availability of unbundled switching in New York, it has been able to provide local service to upwards of 60,000 residential customers since January, 1999.²¹² We believe that by re-establishing a national list, with certain geographic and product market exceptions that are consistent with the standards of section 251(d)(2), we will best promote efficient, rapid, and widespread entry by carriers using unbundled network elements. Competitive market entry and service expansion on a widespread basis is a necessary precondition to construction of self-provisioned facilities.

128. Moreover, as the Illinois Commerce Commission; California PUC, and Connecticut Department of Public Utility Control all assert, a national list will allow competition to proceed quickly because it will reduce the number of issues that the states must address in upcoming arbitrations under section 252(b) of the Act.²¹³ This is significant because many states will be conducting arbitrations and reviewing interconnection agreements as the initial agreements that they approved in 1996 and 1997 begin to expire.

129. We are not persuaded by Ameritech's argument that adoption of national standards containing bright-line tests, as opposed to a national list of unbundled elements, would facilitate arbitrations.²¹⁴ Using the bright-line test proposed by Ameritech is inappropriate because the test does not allow us to consider the totality of the circumstances to determine whether alternative elements are actually available as a practical, economic, and operational matter. Moreover, the resources and time that requesting carriers would be required to devote to individual regulatory proceedings designed to determine if the bright-line criteria had been met in every market would delay the introduction of competition. The outcomes of each proceeding would likely vary across the country, thereby making it more difficult for competing carriers to execute reasonably uniform national or regional business plans. We believe that a national list of elements will better allow carriers to enter the market and to expand their businesses as rapidly as possible.

²¹¹ *FCC Local Competition Report* at 12.

²¹² MCI WorldCom Comments, Tab 1, Decl. of Judith R. Levine/Ronald J. McMurtrie, at para. 17. *See also* AT&T Reply Comments at 15-18 (stating that because for the last three years, critical unbundled network elements have been effectively unavailable because of the Eighth Circuit's decision on Rule 315(b), competition has existed only at the margins, and has been limited to portions of the highest volume customer markets.).

²¹³ Illinois Commission Comments at 2; California PUC Comments at 3-4; Connecticut DPUC Comments at 3.

²¹⁴ Ameritech Comments at 64-65.

130. As explained below, we will revisit our unbundling rules in three years. Although we recognize that due to changes in the market and new technologies, the national list will likely be modified over time, we do not find that we should delay the onset of meaningful competition while we require the incumbent LECs and the competitors to produce voluminous amounts of data and participate in multiple proceedings to determine whether alternatives to the incumbent's network are available and being used in every market. We believe that a national list (that accounts for discrete geographic and product market exceptions) that can be applied at this time, with the least amount of regulatory involvement, will allow carriers to deploy resources to provide service to the greatest number of consumers instead of conducting regulatory proceedings.

131. We note that we established recently collocation-based triggers to determine when it would be appropriate to grant incumbent LECs pricing flexibility for certain interstate access services based on the existence of competition for those services.²¹⁵ In the *Pricing Flexibility Order*, we stated that the triggers we adopted were policy determinations based on our agency expertise and our interpretation of the record before us in that proceeding. We acknowledged, however, that the use of triggers to measure competition precisely is not an exact science, particularly because we lack verifiable data from competitors concerning the deployment of their facilities. Given this constraint, and our desire not to impose heavy administrative burdens on the industry or conduct protracted proceedings to determine the extent of competition, we devised pricing flexibility triggers based on "objectively measurable criteria,"²¹⁶ such as the number of collocation arrangements in a given wire center.²¹⁷ We found that it is appropriate to give incumbent LECs pricing flexibility when competitors have made an irreversible, sunk investment in facilities, and that collocation by competitors in incumbent LEC wire centers is a reliable indication of sunk investment by competitors.²¹⁸ Specifically, to obtain pricing flexibility, we required incumbent LECs to show that "*at least one* competitor relies on transport facilities provided by a transport provider other than the incumbent at each wire center listed in the incumbent's pricing flexibility petition as the site of an operational collocation arrangement."²¹⁹

132. It is not appropriate to use these types of triggers to determine whether alternative sources of network elements are actually available as a practical, economic, and operational matter. As we explain above, the ability of one competitor to serve

²¹⁵ *Access Charge Reform and Price Cap Performance Review for Local Exchange Carriers*, CC Docket Nos. 96-262, *et al.*, Fifth Report and Order and Further Notice of Proposed Rulemaking, FCC 99-206, paras. 77-141 (rel. Aug. 27, 1999) (*Pricing Flexibility Order*).

²¹⁶ *Id.* at para. 84.

²¹⁷ *Id.* at para. 77.

²¹⁸ *Id.* at paras. 81-86.

²¹⁹ *Id.* at para. 82 (emphasis added).

certain customers in a particular market is not indicative of whether, without unbundled access to the incumbent LEC's facilities, competitive LECs could provide service to other customers in the same market or to customers in other markets. While the triggers we adopted in the *Pricing Flexibility Order* allow us to determine when an incumbent LEC can re-price its services to respond to competition, they do not allow us to evaluate whether the incumbent LEC can withhold access to the inputs that requesting carriers need to provide competitive services in the first place. In order to undertake this evaluation, we must consider the cost, timeliness, quality, ubiquity and operational characteristics of alternative elements. As we explain above, discerning the practical, economic, and operational viability of these alternatives is technical, complex, and subject to considerable uncertainty.²²⁰ Based on the record before us, we do not believe that we can develop reliable triggers based on objectively measurable criteria to make this determination. In particular, the administrative difficulty associated with developing triggers that capture the cost, timeliness, quality, ubiquity, and operational factors of alternatives in every wire center throughout an incumbent LEC's service territory requires us to reject such an approach. Indeed, the Commission chose precisely to adopt triggers in the *Pricing Flexibility Order*,²²¹ because we found that they were administratively easy to apply. Conversely, it would not be administratively easy to apply triggers to determine which network elements the incumbent LECs must unbundle. Moreover, the use of triggers also does not allow us to evaluate whether the unbundling obligations we adopt are consistent with the goals of the Act, as the Supreme Court has required us to do.²²²

133. Moreover, a national list of unbundled network elements will facilitate the introduction of rapid competition by eliminating needless litigation that would result from unbundling requirements that differ in every market. Such litigation would require incumbent LECs, competitive LECs, and the state commissions to expend considerable time and resources to litigate issues surrounding whether a particular unbundled network element should be available to individual carriers seeking to serve specific customers or specific areas of the state. Although there has been significant litigation over the past three years regarding the incumbent's duty to unbundle elements under section 251(c)(3),²²³ we believe that re-establishing a national list, subject to the Supreme Court's mandate to include a rational limiting standard, will reduce the likelihood of further litigation and its accompanying delays and costs, in all fifty states.

134. Promotion of Facilities-Based Competition, Investment, and Innovation. We find that adoption of a national list will facilitate the deployment by competitors of their own facilities. Permitting competitors to obtain access to unbundled elements on a broad basis will allow these carriers to acquire sufficient customers and essential market information to enable them to determine whether construction of new facilities is

²²⁰ See *supra* Section (IV)(B)(4)(b)(ii).

²²¹ *Pricing Flexibility Order* at para. 77.

²²² *Iowa Utils. Bd.*, 119 S. Ct. at 734.

²²³ *Id.* at 736.

justified. We believe that it is through self-provisioning their own facilities that competitive LECs will have a greater ability to serve all classes of customers.

135. Ameritech claims that the Commission “dismissed outright” the principal goal of the 1996 Act to encourage new investment and innovation by all competitors in the market when it adopted national unbundling rules.²²⁴ According to Ameritech, the national unbundling rules adopted in 1996 protected inefficient competitors and discouraged efficient entrants from investing and innovating in telecommunications services as the Act intended.²²⁵ Based on the incumbents’ own evidence, we find this argument lacking in credibility.

136. The incumbent LECs have submitted a market study in this proceeding, the USTA UNE Report, that details the competitive LECs’ investment in their own facilities on an element-by-element basis since the passage of the 1996 Act, and *during* the time that the Commission’s national unbundling rules have been in effect.²²⁶ Although the Commission’s unbundling rules have been the subject of extensive litigation, none of the parties dispute that competitors have used unbundled elements, particularly unbundled loops and transport, where these elements have been made available. Yet, the incumbents’ UNE Report shows that competitors have built nearly 30,000 miles of fiber within the top 50 MSAs, serving nearly 15 percent of all commercial office buildings.²²⁷

137. The USTA UNE Report also states that competitors have deployed approximately 700 switches to serve medium and large business customers.²²⁸ The report indicates that these carriers have deployed fixed wireless connections to extend their fiber networks out to many more customers.²²⁹ The incumbents also assert that many competitors are providing advanced services by attaching their own facilities to the incumbent LEC’s unbundled copper loops.²³⁰ Overall, the incumbents estimate that competitive LECs are offering service over approximately 2.5 million facilities-based lines in the incumbents’ service territories.²³¹ As explained more fully below, these facilities are still not available broadly enough to prevent competitive LECs, in most cases, from being impaired in their ability to provide service without access to the

²²⁴ Ameritech Comments at 17.

²²⁵ *Id.* 17-27.

²²⁶ USTA Comments, Peter W. Huber and Evan T. Leo, UNE Fact Report (*USTA UNE Report*).

²²⁷ *Id.* at II-6, III-3.

²²⁸ *Id.* at I-1.

²²⁹ *Id.* at 11-4, III-10 to 12.

²³⁰ *Id.* at VI-19-20.

²³¹ *Id.* at III-16 (The incumbent LECs state that this total excludes US West’s territory.).

incumbent's network. Nonetheless, the data presented by the incumbents shows significant and growing investment by the competitive LECs. Accordingly, we find no merit in the claim made by Ameritech and other incumbent LECs that unbundling elements will impede the Act's goal of encouraging new investment and innovation in telecommunications services.

138. The incumbents also claim that national unbundling requirements will discourage them from investing and innovating, particularly if they have to unbundle elements for the provision of advanced services.²³² While we desire to do nothing to discourage investment and innovation by all carriers, we note that the Commission's national unbundling policy has clearly not discouraged incumbent LECs from seeking to serve new markets. Although in the *Local Competition First Report and Order*, the Commission did not order unbundling of certain equipment used in providing advanced services, it made clear that the states could extend the incumbents' unbundling obligations as necessary to account for changes in technology and to address local conditions.²³³ Incumbent LECs have therefore known since 1996 that they might eventually be required to unbundle elements used to provide advanced services. Moreover, last year, in the *Advanced Services Order and NPRM*, we sought specifically comment on whether to unbundle facilities used to provide advanced services.²³⁴ Notwithstanding the fact that the incumbents have been on notice that they could be required to unbundle facilities used to provide advanced services, the incumbents have announced aggressive rollout plans for xDSL service.²³⁵ In fact, a recent financial analyst's report indicates that advanced data

²³² See Ameritech Comments at 25-27, BellSouth Reply Comments at 7-9; SBC Reply Comments at 27.

²³³ *Local Competition First Report and Order*, 11 FCC Rcd at 15619, para. 234.

²³⁴ *Deployment of Wireline Services Offering Advanced Telecommunications Capability*, CC Docket No. 98-147, Memorandum Opinion and Order and Notice of Proposed Rulemaking, 13 FCC Rcd 24012, 24092-93, paras. 180-82 (*Advanced Services Memorandum Opinion and Order and NPRM*), remanded *US West Communications v. FCC*, No. 98-1410 (D.C. Cir. Aug. 25, 1999).

²³⁵ Today's broadband services include services based on digital subscriber line technology (commonly referred to as xDSL), and include ADSL (asymmetric digital subscriber line) services. See, e.g., *Communications Daily*, Nov. 20, 1998, 1998 WL 10697801 (Bell Atlantic announces plans to deploy xDSL capable lines in Boston and New York City to a total of three million customers); *Communications Daily*, Feb. 9, 1999, 1999 WL 7578715 (Bell Atlantic announces that its xDSL service will pass by 20 million households in-region by the end of 2000, with 10 or 11 million lines qualified for xDSL upgrade by that date); *Communications Daily*, July 29, 1999, 1999 WL 7580057 (Bell Atlantic and GTE announces that the total number of xDSL-capable lines available in-region by year's end will be 17 million, and that they will have ADSL capability installed in 550 central offices by year's end, thereby allowing it to serve potentially as many as 6.1 million DSL lines); *Communications Daily*, July 21, 1999, 1999 WL 7580000 (SBC announces that it had 32,000 DSL customers as of the end of 2nd quarter 1999. SBC plans to reach 10 million homes with xDSL-capable wires by the end of 1999); US West at <http://www.uswest.com/about/communicator/vol2no1/7.html> (US WEST launched ADSL service in 40 in-region metropolitan areas, Jan. 29, 1998); BellSouth at <http://www.bellsouthcorp.com/proactive/documents/render/16942.html> (BellSouth announced roll-out of BellSouth.Net Fast Access ADSL Internet service in 30 markets. Service began in seven key markets: New Orleans, Atlanta, Birmingham, Jacksonville, Raleigh, Charlotte, and Ft. Lauderdale encompassing 1.7 million customers by the end of 1998. It states that service will extend to 23 additional markets in 1999.).

services currently comprise an average of 9.9 percent of the revenues of the BOCs and GTE.²³⁶ Although the incumbents claim that competitors have deployed more advanced services equipment than the incumbents have deployed,²³⁷ they nevertheless acknowledge that the incumbent LECs are offering advanced services in 7 of the 10 largest MSAs and in 22 of the top 50 MSAs.²³⁸ We find these statistics to be significant because they demonstrate that the development of competition, and the threat of losing revenue and customers to carriers offering advanced services, provides a powerful incentive for carriers to invest.

139. We therefore conclude, as the Commission did in the *Local Competition First Report and Order*, that by adopting a national list of elements, and by giving the states the flexibility to add elements as technology and local market conditions change, we will not discourage incumbent LECs from investing and deploying innovative services.²³⁹ The incumbent LECs will have an increased incentive to reduce their operating and capital costs and to introduce new and innovative services that will increase the overall usage level of their networks as they face competition for all of their services. Moreover, the Commission's pricing methodology includes a risk-adjusted return on capital and economic depreciation for the incumbent as part of the forward-looking rate.²⁴⁰ As we indicated above, we are also adopting a "necessary" standard that fully protects the incumbents' intellectual property associated with proprietary network elements when those elements are used by the incumbent to differentiate its products from those of its competitors.²⁴¹ We therefore do not find merit in arguments that the adoption of a list of network elements that must be unbundled nationwide will discourage innovation and investment by incumbent or competitive LECs.

140. Certainty in the Marketplace. We find that a national list of unbundled elements will provide uniformity and predictability that will facilitate the development and implementation of national and regional business plans by competitive LECs, thereby extending the benefits of competition for the greatest number of consumers. We agree with the California PUC that a national list will allow multi-state competitors to create a

²³⁶ Daniel Reingold and Ehud Gelblum, *Telecom Services – Local*, Merrill Lynch & Co., July 12, 1999, at 3.

²³⁷ To the extent that network innovations are undertaken by equipment vendors, they are not subject to the unbundling rules we adopt.

²³⁸ USTA UNE Report at VI-19.

²³⁹ *Local Competition First Report and Order*, 11 FCC Rcd at 15626, para. 245 ("We are not persuaded that national rules will discourage incumbent LECs from developing new technologies and services; to the contrary, based on our experience in other telecommunications markets, we believe that competition will stimulate innovation by incumbent LECs.").

²⁴⁰ *Local Competition First Report and Order*, 11 FCC Rcd at 15849-50, paras. 686-88; MCI WorldCom Comments at 9 and Tab 2, Decl. of John E. Kwoka, at para. 25.

²⁴¹ See *supra* Section IV(B)(2).

national business plan with the knowledge that a set of network elements will be available in all states.²⁴² Indeed, we find that the unavailability of elements on a nationwide basis would jeopardize the usefulness of unbundled elements as a method of serving the maximum number of consumers.²⁴³

141. We also continue to believe that national unbundling requirements will provide financial markets with greater certainty regarding the elements that are available to competitive LECs. Such certainty should reduce the risk of entry, thereby making more capital available at less cost to new entrants and fledgling competitors.²⁴⁴ We do not agree with Ameritech that a national list would perpetuate uncertainty in capital markets because carriers would challenge the list regardless of what elements it contains.²⁴⁵ As stated above, we believe that a national list will actually reduce the risk of litigation.

142. Administrative Practicality. We find that a national list of unbundled elements is administratively easier for the Commission, the states, and the industry to apply than a list that varies on a state-by-state or market-by-market basis. As we stated in the *Notice*, application of the “necessary” and “impair” standard is fact-intensive.²⁴⁶ Determining the availability of practical alternatives to the incumbents’ network elements on a market-by-market basis, even through the use of bright-line tests as proposed by the incumbent LECs, would potentially require the Commission or the states to analyze the availability of alternatives in almost every wire center. In addition to creating uncertainty in the market, such a proposal would consume enormous amounts of resources and time, thereby undermining the goal of the Act to bring the benefits of rapid competition to all consumers. Such an approach would also require a new analysis each time a new carrier sought to initiate service in a particular market, and would likely lead to additional

²⁴² California PUC Comments at 3. *See also* CPI Comments at 5; MCI WorldCom Comments at ii, 5; Net2000 Comments at 4-5.

²⁴³ For example, MCI WorldCom points out that the Commission declined to order nationwide unbundling of certain elements in the *Local Competition First Report and Order*, including subloop elements and dark fiber. It states that this led to dozens of state commission arbitrations and subsequent lawsuits, and that where determinations have been made on the availability of these elements, MCI WorldCom reports that the outcomes have been inconsistent from one state to another, for reasons having nothing to do with geographic or market differences. It states that the result has been that competitive LECs have been unable to formulate any national or regional strategies that rely on the use of dark fiber or subloop elements. MCI WorldCom Comments at 7-8.

²⁴⁴ *See* NorthPoint Comments at 2 (“Further, as the Commission correctly anticipated, the establishment of national requirements for unbundled elements has assisted NorthPoint in its efforts to attract capital by providing ‘financial markets with greater certainty in assessing new entrants’ business plans”). The availability of a national list of elements will also provide certainty for incumbent LECs seeking to raise capital to enter markets outside of their service territories.

²⁴⁵ Ameritech Comments at 64.

²⁴⁶ *Notice* at para. 12.

litigation by adversely affected carriers.²⁴⁷ We do not believe that Congress or the Supreme Court had in mind the adoption of a procedure that would impose such an undue—and unworkable—administrative burden on the Commission, the states, or the industry.

143. **Reduced Regulation.** We believe that a national list of elements that contains discrete geographic and product market exceptions will result immediately in reduced regulation. Moreover, a national framework under which elements can be removed from the national list is consistent with the deregulatory goals of the Act. Reduced regulation will occur as we remove elements from the list as requesting carriers are no longer impaired without access to those elements, and it otherwise does not further the goals of the Act to continue requiring incumbent LECs to unbundle them.

D. Modification of the National List

1. Background

144. In the *Local Competition Order First Report and Order*, the Commission acknowledged that the rapid pace and ever-changing nature of technological advancement in the telecommunications industry made it essential that the Commission retain the ability to revise the rules as circumstances change. The Commission noted that, absent such ability, its rules might impede technological change and frustrate the 1996 Act's overriding goal of bringing the benefits of competition to consumers of local phone service. Accordingly, the Commission determined that, in addition to identifying unbundled network elements that incumbent LECs were required to make available at the time the original rules were adopted, it had the authority to identify additional or different unbundling requirements that would apply to incumbent LECs in the future.²⁴⁸

145. In the *Local Competition Order First Report and Order*, the Commission also determined that state commissions could impose additional unbundling requirements, as long as the requirements were consistent with the 1996 Act and our regulations.²⁴⁹ The Commission codified this grant of authority in section 51.317 of its rules.²⁵⁰ The Commission believed that the states' authority to impose additional requirements,

²⁴⁷ See MGC Comments at 8 (stating that a national list is an administrative necessity and required for business certainty).

²⁴⁸ *Local Competition Order First Report and Order*, 11 FCC Rcd at 15626, para. 246. The Commission also noted that its existing rules set forth a process by which incumbent LECs could request a waiver of the requirements adopted in the *Local Competition First Report and Order*. *Id.* at 15625, para. 244.

²⁴⁹ *Id.* We based this grant of authority on 47 U.S.C. 252(e)(3), which states: "Preservation of Authority. – Notwithstanding paragraph (2), but subject to section 253, nothing in this section shall prohibit a State commission from establishing or enforcing other requirements of State law in its review of an agreement, including requiring compliance with intrastate telecommunications service quality standards or requirements." 47 U.S.C. 252(e)(3). Section 252(e)(3) requires interconnection agreements to be submitted to the state commission for approval.

²⁵⁰ 47 C.F.R. 51.317.

combined with its ability to modify the national unbundling rules, provided the necessary flexibility to accommodate any truly unique conditions that might exist.²⁵¹ The Commission, however, did not address the issue of whether states could remove elements from the national list.

146. In the *Notice* we sought comment on whether the Commission should adopt an approach that would allow sunset or modification of the section 253(c)(3) unbundling obligations as technology and market conditions evolve over time.²⁵² We noted that, under our rules, states have the authority to impose additional unbundling requirements.²⁵³ We sought comment on whether section 251(d)(2), or any other provision of the Act, provides the Commission with the authority to delegate to the states the responsibility of removing network elements from any national requirement.²⁵⁴ We sought comment on proposals for a mechanism for removal, including which party should bear the burden of proof.²⁵⁵ We asked whether the Commission should consider a phase-out period for network elements removed from the national list. Further, we asked whether we should institute a period of time during which incumbents could not seek removal of network elements from our new unbundling rules.²⁵⁶ We also asked whether we could adopt a “sunset” provision.²⁵⁷

147. Several of the state commissions argue that they have the authority to add and subtract elements from the national list,²⁵⁸ while the Vermont and Illinois state

²⁵¹ *Local Competition Order First Report and Order*, 11 FCC Rcd at 15625, para. 244.

²⁵² *Notice* at paras. 11, 36.

²⁵³ *Id.* at para. 14 (citing 47 C.F.R. § 51.317; *Local Competition First Report and Order*, 11 FCC Rcd at 15641-42, paras. 281-83). In the *Notice*, we noted that the Supreme Court’s analysis of section 251(d)(2) might have a bearing on Rule 51.317, but that the Court did not directly address that issue. We also noted that the Commission asked the Eighth Circuit for a voluntary remand of Rule 51.317 so that the Commission may consider it in light of the Supreme Court’s decision. *Notice* at 14, n.21. In requesting a remand from the Eighth Circuit, the Commission did not attempt to defend the substance of Rule 51.317. Nothing in this Order interferes or is intended to interfere with the Eighth Circuit’s jurisdiction over this matter.

²⁵⁴ *Notice* at paras. 14, 38. As part of this inquiry, we asked if the Commission should be able to review state decisions to remove network elements. *Id.* at para. 14.

²⁵⁵ *Id.* at para 37. We asked if there was a modification of an unbundling requirement whether an incumbent LEC should be required to continue to unbundle a particular element identified in an interconnection agreement until the date that the agreement expired. We also asked whether an incumbent LEC should be able to refuse to unbundle a network element that is no longer required when negotiating a new contract with other parties. *Id.* at para. 36.

²⁵⁶ *Id.* at para. 37.

²⁵⁷ *Id.* at paras. 39-40.

²⁵⁸ Iowa Comments at 2 (“Network elements should be added or removed by the state commissions pursuant to the record made before the commissions in proceedings to arbitrate and modify interconnection agreements.”); New York DPS Comments at 5-6; Ohio PUC Comments at 3-5; Oregon PUC

commissions argue that the Commission should establish a set of unbundling obligations to which the state may add additional unbundling obligations.²⁵⁹ BellSouth argues that states should be able to add or remove unbundled elements in a particular zone.²⁶⁰ SBC and GTE oppose allowing the states to add or subtract elements.²⁶¹ US West argues that states should be able to determine whether network elements no longer need to be unbundled, but that they not be allowed to add network elements.²⁶² The vast majority of competitive LECs that commented in this proceeding, as well as NTIA and ALTS, argue that the states should be allowed to add, but not to remove, elements from the national list.²⁶³

Comments at 1; Texas PUC Comments at 3 (“It is the Texas PUC’s belief that the Commission has the authority to allow states to have substantial discretion in the addition or removal of network elements from the presumptive national list .); Washington UTC Comments at 7 (claiming that “the Commission could implement something analogous to state commission authority to ‘subtract’ elements from the federal list.”); NARUC Reply Comments at 3.

²⁵⁹ Vermont PSB Comments at 4-5 (arguing that the Act “establish[es] a *floor* beneath which State regulatory bodies may not go, but not a *ceiling* on State efforts to encourage competition”(emphasis in original)); Illinois Commission Comments at 4. *See also* Kentucky PSC Comments at 1-2 (arguing that “state commissions should evaluate issues involving [unbundled network elements] not specifically prescribed by the [Commission]”); California PUC Comments at 9, 13 (urging the Commission to delegate to the states the authority to remove network elements added by the states); Connecticut DPUC Comments at 4.

²⁶⁰ BellSouth Comments at 29-30. As part of its proposals, BellSouth argues that the Commission should establish a “strong presumption” against adding network elements to the list.

²⁶¹ SBC Comments at 18-19; GTE Comments at 29.

²⁶² US West Comments at 29-32.

²⁶³ NTIA Comments at 42, n. 114; ALTS Comments at 5-6; CoreComm Comments at 10-12; e.spire Joint Comments at 7; Joint Consumer Advocates Comments at 5-6; McLeod Comments at 3; MGC Comments at 7; Net2000 Comments at 6; NEXTLINK Comments at 5-7; OpTel Comments at 3, 14; Prism Comments at 10; Qwest Comments at 40-42; RCN Comments at 4-5; AT&T Reply Comments at 67; CoreComm Reply Comments at 7; Level 3 Reply Comments at 12; MCI WorldCom Reply Comments at 10-11; RCN Reply Comments at 10. *See also* Covad Comments at 6 (opposing state authority to remove network elements from the national list) Metro One Comments at 19 (arguing that the Act does not provide the Commission with the authority to delegate to states the responsibility of removing network elements from the national list); Cable & Wireless Comments at 45-46 (opposing state authority to remove network elements from the national list). *But see* TRA Comments at 29-31 (arguing that for the first two years the Commission should review petitions, but, subsequently, state commissions should be able to add or remove network elements pursuant to the case law established during the first two years); Excel Comments at 19 (stating that it “would not object to rules giving the States a significant role in determining whether to remove [unbundled network elements] from the mandatory list after the initial three-year period”); ALTS Reply Comments at 6 (“The Commission only should consider adopting a mechanism for state-by-state removal of [unbundled network elements] from the national list after a two year period during which the Commission’s unbundling rules are allowed to be given their full effect . . .”).

2. Discussion

a. Modification of the National List by the Commission

148. As discussed above, section 251(d)(2) grants the Commission authority to establish a national list of network elements that are subject to the unbundling requirements of the Act.²⁶⁴ Given the rapid changes in technology, competition, and the economic conditions of the telecommunications market, we expect that the list of unbundled network elements that meets the standards of section 251(d)(2) will change over time. We therefore agree with commenters that we will need to reevaluate our national rules periodically.²⁶⁵

149. The need to reassess periodically the availability of elements outside the incumbent's network is borne out by the changes that have taken place since we first adopted our unbundling rules three years ago. For example, the evidence in this proceeding indicates that competition is developing in some geographic markets for certain customer groups, (e.g., medium and large businesses in major metropolitan areas). Only by periodically reevaluating the availability of alternative network elements outside the incumbent's network can we truly determine whether the incumbent's network should be unbundled in order to meet the requirements of section 251 and the goals of the Act. We therefore conclude that as market conditions change and new technologies develop, we will periodically revisit the issue of what elements are subject to the unbundling obligations of the Act.

150. Although we will periodically revisit our unbundling rules, we believe that it would be inconsistent with our overall policy goals to consider petitions to remove elements from the national list immediately upon adoption of this order.²⁶⁶ Specifically,

²⁶⁴ See *supra* Section (IV)(D).

²⁶⁵ California PUC Reply Comments at 13; New York DPS Comments at 1,7; ALTS Comments at 6; CompTel Comments at 54; Cox Comments at 37-38; KMC Comments at 27; Level 3 Comments at 24; MCI WorldCom Comments at 11; McLeod Comments at 3; RCN Comments at 27; Rhythms Comments at 3, 28; AT&T Reply Comments at 51; KMC Reply Comments at 27; Rhythms Reply Comments at 14. See also Allegiance Comments at 24; Cable & Wireless Comments at 46; GTE Reply Comments at 79-80. *But see* OpTel Comments at 14-15 (arguing it is premature to establish mechanisms for removal); Sprint Comments at 40 (arguing that it is premature to address this issue at this time). Sprint is also concerned that "if the Commission gives any encouragement at all to [a] waiver option, it is likely to be inundated with such requests." Sprint Comments at 41. The California PUC recommends that the review process begin three years after the adoption of a minimal list. California PUC Reply Comments at 13. Allegiance recommends that removal be considered on an incumbent LEC-by-incumbent LEC basis. Allegiance Comments at 25.

²⁶⁶ See ALTS Comments at 6-7; MCI WorldCom Comments at 11; Sprint Comments at 41 (arguing for a five year "quiet period"); ALTS Reply Comments (recommending a two-year "gestation" period); Rhythms Reply Comments at 14 (arguing that a two-year period may be too short).

as discussed above, the rules we adopt today seek to provide a measure of certainty to ensure that new entrants and fledgling competitors can design networks, attract investment capital, and have sufficient time to attempt to implement their business plans.²⁶⁷ Entertaining, on an *ad hoc* basis, numerous petitions to remove elements from the list, either generally or in particular circumstances, would threaten the certainty that we believe is necessary to bring rapid competition to the greatest number of consumers. In addition, entertaining numerous petitions on an *ad hoc* basis would undermine the goal of implementing unbundling rules that are administratively practical to apply.

151. We expect to reexamine our national list of network elements that are subject to the unbundling obligations of the Act every three years.²⁶⁸ We note that many of the first interconnection agreements negotiated in 1996 are now approaching expiration of their typical three-year terms and will be eligible for renewal. We expect parties to implement the requirements of this Order as they negotiate new interconnection agreements. We find that a similar three-year time frame for reevaluating the unbundling obligations is warranted to provide competitors with reasonable certainty for a period of time that is sufficient time to implement their plans. Revisiting our rules in three years should provide sufficient certainty to the carriers and capital markets and should provide carriers with sufficient time to implement their plans.²⁶⁹

152. We decline to adopt a rule mandating that elements will not be subject to unbundling after a date certain in the future. Several parties have suggested that it would be extremely difficult for us to predict a date at which a particular network element would no longer meet the “necessary” and “impair” standards of section 251(d)(2).²⁷⁰ As noted by the Illinois Commission, in the three years since the Act was implemented, no BOC has demonstrated that it satisfies the competitive checklist in section 271. In 1996, few would have expected that three years later BOCs would not have qualified for section 271 approval. This suggests that it would be similarly very difficult for us to predict, at this time, the date at which incumbent network elements would no longer be subject to unbundling obligations under section 251. Moreover, we note that we find no basis in the record before us to make predictive judgments about when an unbundling standard will no longer be met for particular network elements. Thus, at this point in time, we do not

²⁶⁷ Sprint Comments at 41. *See also* Excel Comments at 19.

²⁶⁸ *Accord* California PUC Reply Comments at 13; CO Space Comments at 16; Excel Comments at 19; MCI WorldCom Comments at 13 and Tab 2, Decl. of John E. Kwoka, para. 38; AT&T Reply Comments at 51.

²⁶⁹ *See* ALTS Comments at 7 (advocating a two year review cycle). This is consistent with the MFJ’s tri-ennial review process. The review may begin after approximately only two years of experience so that it can be completed in three-year intervals.

²⁷⁰ Illinois Commission Comments at 15-16; Choice One Joint Comments at 27; MCI WorldCom Comments at 12; OpTel Comments at 14; RCN Comments at 26; Sprint Comments at 42-43; KMC Reply Comments at 27-28; Sprint Reply Comments at 12. *See also* CoreComm Comments at 40; KMC Comments at 27-28; Level 3 Comments at 24; California PUC Reply Comments at 14; Pilgrim Reply Comments at 12.

have enough information and experience to determine what events would lead to an automatic sunset of one of our unbundling requirements. Accordingly, at this time, we decline to adopt a sunset provision for removing network elements from the national list adopted in this Order.

b. Modification of the National List by the States

153. We agree with commenters that section 251(d)(3) provides state commissions with the ability to establish additional unbundling obligations, as long as the obligations comply with subsections 251(d)(3)(B) and (C).²⁷¹ Section 251(d)(3) states that:

In prescribing and enforcing regulations to implement the requirements of this section, the Commission shall not preclude the enforcement of any regulation, order, or policy of a State commission that—

(A) establishes access and interconnection obligations of local exchange carriers;

(B) is consistent with the requirements of this section; and

(C) does not substantially prevent implementation of the requirements of this section and the purposes of this part.²⁷²

154. This section of the statute allows state commissions to establish access obligations of local exchange carriers that are consistent with our rules implementing section 251.²⁷³ We believe that section 251(d)(3) grants state commissions the authority to impose additional obligations upon incumbent LECs beyond those imposed by the national list, as long as they meet the requirements of section 251 and the national policy framework instituted in this Order. As explained below however, we find that state-by-state removal of elements from the national list would substantially prevent implementation of the requirements and purposes of this section of the Act.

155. Section 51.317 of the Commission's rules codifies the standards state commissions must apply to add elements to the national list of network elements we adopt in this Order.²⁷⁴ In its current form, Rule 51.317 reflects the Commission's

²⁷¹ California PUC Comments at 7-8; Washington UTC Comments at 6-7; Ameritech Comments at 48-49; NEXTLINK Comments at 6, n.17; NTIA Comments at 42; Allegiance Reply Comments at 13 (quoting 47 U.S.C. § 251(d)(3)); MCI WorldCom Reply Comments at 12-13; NARUC Reply Comments at 4; Washington UTC Reply Comments at 5-6. *But see* SBC Comments at 19 (arguing that section 251(d)(3) prevents states from adding network elements to the list).

²⁷² 47 U.S.C. § 251(d)(3).

²⁷³ California PUC Comments at 8; Washington UTC Comments at 6; Allegiance Reply Comments at 13-14. *But see* GTE Comments at 29; SBC Comments at 18-19.

²⁷⁴ 47 C.F.R. § 51.317.

interpretation of the necessary and impair standards adopted in the *Local Competition First Report and Order*. Inasmuch as we have modified the “necessary” and “impair” standard to respond to the Supreme Court’s directive, we must also amend Rule 51.317 to reflect the new standards. Accordingly, we modify Rule 51.317, to bring it into compliance with our new standards and the Supreme Court’s decision. Modification of this rule will enable state commissions to add additional unbundling obligations consistent with sections 251(d)(3)(B) and (C) of the Act.²⁷⁵

156. We agree with the California PUC that states have the authority to remove network elements *added by the states*. Thus, if a state commission, pursuant to section 251(d)(3), adds a network element to the list of network elements an incumbent LEC must provide, state commissions also have the authority subsequently to remove those elements they add.²⁷⁶ As discussed above, section 251(d)(3)(A) allows state commissions to impose additional unbundling obligations as long as they comply with subsections 251(d)(3)(B) and (C). If a state commission determines that the additional unbundling obligations it imposed no longer comply with section 251, it must remove those obligations pursuant to section 251(d)(3). Beyond ensuring that removal of those state-imposed obligations are consistent with sections 251 and 253 of the Act, the Commission has no authority to prevent a state from removing a state-imposed unbundling obligation. Furthermore, state commissions that have imposed additional unbundling requirements, pursuant to section 51.317 of our rules, will need to periodically revisit such decisions to determine whether such decisions continue to comply with the standards articulated in this Order.

157. We conclude that, at this time, removing network elements from the unbundling obligations established in this Order on a state-by-state basis would not be consistent with the goals of the 1996 Act. Specifically, in this proceeding, we have examined each network element identified previously by the Commission or by the parties, and we have made an affirmative finding as to whether or not the particular element now satisfies the unbundling standards of the Act as clarified by the Supreme Court. Moreover, we have considered how unbundling these elements will affect the development of competition in the local markets as contemplated by Congress, and whether unbundling particular elements will further the goals of the Act. Indeed, we have found that unbundling particular network elements is necessary to further the goals of the Act. Consequently, at this time, state decisions to remove these network elements from the national unbundling obligations would “substantially prevent implementation of the requirements of section 251,” as prohibited by subsection 251(d)(3)(C).

158. Furthermore, we find that there are compelling policy reasons for not removing elements from the national list on a state-by-state basis at this time.²⁷⁷

²⁷⁵ Rule 51.317 also codifies the standard under which this Commission will consider which network elements must be unbundled. See Appendix C.

²⁷⁶ California PUC Comments at 9; California PUC Reply Comments at 13.

²⁷⁷ Covad Comments at 7. Allegiance suggests that once the Commission has gained some

Unbundling obligations that vary from state to state in the near future would substantially undermine the reasons discussed above for implementing a national list in the first instance.²⁷⁸ We agree with commenters that argue that state-by-state removal of network elements from the national list, at least in the near future, would lead to greater uncertainty in the market and would hinder the development of competition.²⁷⁹ As discussed above, we have determined that national unbundling rules promote competition in telecommunications market by guaranteeing that a specific set of network elements will be available nationwide for a minimum amount of time.²⁸⁰

159. We agree with the California PUC and other state commissions that having a guaranteed list of network elements provides enough certainty to allow competitive LECs to develop and implement regional and national business plans.²⁸¹ Creating certainty and predictability in the market will also benefit competition by enabling competitors to raise capital at lower cost to create and enhance their networks.²⁸² If each state could remove immediately the unbundling obligations established in this Order, competitors would not have the benefit of knowing how long an element would be available on an unbundled basis in any given locale. The resulting uncertainty would frustrate the ability of carriers to plan and implement competitive entry strategies developed to serve customers on a regional or national basis.

160. We also agree with commenters that state-by-state removal of network elements from the national list would complicate negotiation of interconnection agreements and would most likely lead to increased litigation.²⁸³ Indeed, it could force competitive LECs, each time they seek to enter into an interconnection agreement, to

experience with removing elements from the national list that it might be possible to formulate guidelines and turn the process over to the states. Allegiance Comments at 25. This would be an appropriate inquiry when this Commission reviews the national list in three years. *See supra* para. 151.

²⁷⁸ CompTel Comments at 53; Cable & Wireless Comments at 45-46; CoreComm Comments at 9, 11-12; MGC Comments at 7; Net 2000 Comments 5-7; NEXTLINK Comments at 5-6; CoreComm Reply Comments at 7. *See also supra* Section (IV)(D).

²⁷⁹ Illinois Commission Comments at 3; Kentucky PSC Comments at 2; ALTS Comments at 6; CompTel Comments at 53; CoreComm Comments at 9; NTIA Comments at 42, n. 114; CoreComm Reply Comments at 9.

²⁸⁰ *See* Connecticut DPUC Comments at 3 (arguing that a minimum national list should facilitate competition by minimizing new entrant's cost by taking advantage of economies of scale as they enter multiple local markets); Kentucky PSC Comments at 2; MGC Comments at 6.

²⁸¹ California PUC Comments at 3; Kentucky PSC Comments at 2; CoreComm Comments at 9; California PUC Reply Comments at 13.

²⁸² MGC Comments at 7; NorthPoint Comments at 2.

²⁸³ Illinois Commission Comments at 4; CoreComm Comments at 9; Covad Comments at 7-8, 27; MCI WorldCom Comments at 6-7; MGC Comments at 8; NEXTLINK Comments at 6; Qwest Reply Comments at 42.

demonstrate that the identified elements continue to meet the standards of the Act.²⁸⁴ Once an incumbent LEC is able to convince a state commission that the element no longer meets our unbundling standard, the ruling would likely set a precedent for other LECs. In addition, the possibility that a state decision in one interconnection proceeding could affect all interconnection agreements would require competitive LECs to monitor the status of these arbitrations even if they are not participants in the arbitration. We therefore agree with the Illinois Commission that having only this Commission remove elements from the national list makes it easier for the states to resolve disputed issues during inter-carrier negotiations and arbitrations.²⁸⁵

161. We believe that incumbent LECs have more of an incentive than competitive LECs to challenge the unbundling obligations set forth in this Order.²⁸⁶ In addition to the delay and uncertainty created by litigating the unbundling obligations of incumbent LECs, state commissions, as well as incumbent LECs and competitors, would be faced with the additional costs of litigation.²⁸⁷ Many state commissions and small carriers have limited resources and would be unduly burdened if they were have to finance on-going litigation of the unbundling rules.²⁸⁸ Moreover, as several state commenters and NARUC note, section 252(e)(6) appears to limit review of state commission decisions to federal district court.²⁸⁹ Thus, each state decision could eventually lead to litigation in the federal courts, creating even more uncertainty and further delaying the benefits of competition to consumers.

²⁸⁴ GSA Comments at 4 (arguing that uniform standards eliminate “the need to establish basic requirements for unbundling in each instance”); Net2000 Comments at 3 (claiming that “uniform nationwide rules would avoid re-litigation of the same issue in dozens of jurisdictions”); Qwest Comments at 41. *See also* Prism Comments at 4; KMC Reply Comments at 2.

²⁸⁵ Illinois Commission Comments at 4; Connecticut DPUC Comments at 3. *See also* California PUC Comments at 3-4 (stating that a national list “facilitates the arbitration process in individual states”); GSA Comments at 4 (claiming that “uniform unbundling standards will help state regulators to conduct arbitrations . . . without the need to establish basic requirements for unbundling in each instance”); NorthPoint Comments at 2 (stating that “national requirements have significantly eased the burden of interconnection negotiations and arbitrations for NorthPoint”); Qwest Comments at 39 (citing *Local Competition First Report and Order*, 11 FCC Rcd at 15,528, para. 56); Qwest Reply Comments at 42; Rhythms Reply Comments at 13 (arguing that a national list will streamline the state arbitration process).

²⁸⁶ CoreComm Reply Comments at 9. *See also* Qwest Comments at 41-42.

²⁸⁷ Prism Comments at 4-5; Qwest Comments at 41; CoreComm Reply Comments at 3. *See also* Allegiance Reply Comments at 3-4 (stating that the Commission’s national rules “eliminated the need to litigate in state after state an incumbent LEC’s obligation to offer access to loops and other particular network elements that facilities-based [competitive LECs] need to offer service”); CoreComm Comments at 9; Covad Comments at 7-8, 27; MGC Comments at 7-8; Sprint Reply Comments at 12.

²⁸⁸ ALTS Comments at 6; Covad Comments at 7-8, 27; TRA Comments at 31. *See also* Allegiance Comments at 3.

²⁸⁹ Iowa Comments at 3; Florida PSC Comments at 2-5; NARUC Comments at 3-4; Texas PUC Comments at 5.

V. APPLICATION OF THE STANDARD TO INDIVIDUAL NETWORK ELEMENTS

A. Loops

1. Background

162. In the *Local Competition First Report and Order*, the Commission found that incumbent LECs must provide local loops on an unbundled basis to requesting carriers.²⁹⁰ The Commission concluded that such access was technically feasible and would promote competition in the local exchange market.²⁹¹ The Commission, at that time, did not require subloop unbundling, or specify whether “dark fiber” fell within the definition of the loop.²⁹² The *Local Competition First Report and Order* also did not address the status of “inside wire” (wiring located inside the customer premises but owned by the incumbent).

163. In the *Notice*, we stated that it was our strong expectation that, under any reasonable interpretation of the “necessary” and “impair” standards of section 251(d)(2), loops would be subject to the section 251(c)(3) unbundling obligations.²⁹³ The *Notice* also requested that parties discuss specific costs and analyze the availability of alternative sources of the loop facilities.²⁹⁴

164. In general, incumbent LECs contend that the definition of the loop should not include high-capacity loops that serve large business customers, dark fiber, inside wire, and loop conditioning.²⁹⁵ State regulatory commissions and competitive LECs argue that loops should be unbundled.²⁹⁶ The state commissions disagree among themselves as to whether or not competitive providers are impaired without access to dark

²⁹⁰ *Local Competition First Report and Order*, 11 FCC Rcd at 15689-90, para. 377.

²⁹¹ *Id.*

²⁹² *Id.* at 15695-96, paras. 390-391 (subloop unbundling). Dark fiber is defined as “[u]nused fiber through which no light is transmitted, or installed fiber optic cable not carrying a signal.” It is “dark” because it is sold without light communications transmission. The [carrier] leasing the fiber is expected to put its own electronics and signals on the fiber and make it “light.” Harry Newton, *Newton’s Telecom Dictionary*, 14th ed. (Flatiron Publishing, New York, 1998) 197-98 (*Newton’s Telecom Dictionary*).

²⁹³ *Notice* at para. 32. (We noted that, in the *Local Competition First Report and Order*, even incumbent LECs agreed that the loop network element must be unbundled pursuant to sections 251(c)(3) and 251(d)(2) of the Act.)

²⁹⁴ *Notice* at para 33.

²⁹⁵ *See, e.g.*, Ameritech Comments at 101-102; BellSouth Comments at 64; GTE Comments at 63-68; SBC Comments at 23-24; U S West Comments at 38-39.

²⁹⁶ *See, e.g.*, Kentucky PSC Comments at para. 3; Ohio PUC Comments at 13; Texas PUC Comments at 14; CompTel Comments at 34-35; e-Spire Joint Comments at 23; Focal Comments at 6-7; Level 3 Comments at 15; MCI WorldCom Comments at 43; Qwest Comments at 59-61.

fiber. They also disagree as to whether dark fiber should be included within the loop and transport unbundled network elements definitions or be unbundled as a separate network element.²⁹⁷

2. Discussion

165. We conclude that LECs must provide access to unbundled loops, including high-capacity loops, nationwide. We find that requesting carriers are impaired without access to loops, and that loops include high-capacity lines, dark fiber, line conditioning, and certain inside wire. Requiring carriers to obtain loops from alternative sources would materially raise entry costs, delay broad-based entry, and limit the scope and timeliness of the competitor's service offerings. As described below, we conclude that neither self-provisioning loops nor obtaining loops from third-party sources is a sufficient substitute that would justify excluding loops from an incumbent LEC's unbundling obligation under section 251(c)(3).

a. Definition

166. In the *Local Competition First Report and Order*, the Commission defined the 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."²⁹⁸ The Commission also stated that the definition included, for example, two-wire and four-wire analog voice-grade loops, and two-wire and four-wire loops that are conditioned to transmit digital signals, such as xDSL.²⁹⁹ The Commission did not, however, specify whether "dark fiber" fell within the definition of the loop.³⁰⁰

167. We modify the definition of the loop network element to include all features, functions, and capabilities of the transmission facilities, including dark fiber and attached electronics (except those used for the provision of advanced services, such as DSLAMs) owned by the incumbent LEC, between an incumbent LEC's central office and the loop demarcation point at the customer premises.³⁰¹ In order to secure access to the

²⁹⁷ See, e.g., Florida PSC Comments at 8-9; Illinois Commission Comments at 15; Iowa Comments at 9.

²⁹⁸ *Local Competition First Report and Order*, 11 FCC Rcd at 15691, para. 380.

²⁹⁹ "xDSL" refers to the various kinds of Digital Subscriber Line service, such as ADSL (Asynchronous Digital Subscriber Line) and HDSL (High-bit-rate Digital Subscriber Line). *Id.* at n.823. The definition includes the provision of cross-connect facilities. *Id.* at 15693, para. 386.

³⁰⁰ In the *Local Competition First Report and Order*, the Commission refrained from limiting the transmission technology that would fit the loop definition, stating only that the "definition includes, for example, two-wire and four-wire analog voice-grade 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. *Id.* at 15691, para. 380. (emphasis added). For a definition of dark fiber, see *supra* n.292.

³⁰¹ In other words, our revised definition retains the definition from the *Local Competition First Report and Order*, but replaces the phrase "network interface device" with "demarcation point," and

loop's full functions and capabilities, we require incumbent LECs to condition loops. This broad approach accords with section 3(29) of the Act, which defines network elements to include their "features, functions and capabilities."³⁰² Our 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 that access is required pursuant to section 251(d)(2) standards.

168. Termination of the Loop. The loop definition the Commission adopted in the *Local Competition First Report and Order* defined the loop as terminating at the network interface device (NID) at the customer premises.³⁰³ We find the demarcation point preferable to the NID in defining the termination point of the loop because, in some cases, the NID does not mark the end of the incumbent's control of the loop facility.³⁰⁴ Where incumbents maintain ownership and control over a portion of the loop beyond the NID, the definition of the loop as set forth by the Commission in the *Local Competition First Report and Order* may not provide the competitor with actual access to the subscriber.³⁰⁵

169. Section 68.3 of our rules defines the demarcation point as that point on the loop where the telephone company's control of the wire ceases, and the subscriber's control (or, in the case of some multiunit premises, the landlord's control) of the wire begins.³⁰⁶ Thus, the demarcation point is defined by control; it is not a fixed location on the network, but rather a point where an incumbent's and a property owner's responsibilities meet.³⁰⁷ The demarcation point is often, but not always, located at the

makes explicit that dark fiber and loop conditioning are among the "features, functions and capabilities" of the loop. Issues regarding an incumbent LEC's obligation to afford access under section 251(c)(3) to facilities that it controls but does not own are being addressed in the *Competitive Networks Notice*.

³⁰² 47 U.S.C. 153(29).

³⁰³ The network interface device (NID) is the cross-connect device used to connect loop facilities to inside wiring. 47 C.F.R. § 51.319(b)(1). Until 1990, the Commission mandated the connection of inside wiring to the Public Switched Telephone Network through a carrier-installed jack to ensure the easy disconnection of inside wire if network harm should occur, and to limit access to the protector on the carrier's side of the demarcation point. *Review of Sections 68.104 and 68.213 of the Commission's Rules Concerning Connection of Simple Inside Wiring to the Telephone Network and Petition for Modification of Section 68.213 of the Commission's Rules filed by the Electronic Industries Association*, Report and Order and Further Notice of Proposed Rulemaking, CC Docket No. 88-57, 5 FCC Rcd 4687, at para. 3 (1990).

³⁰⁴ See, e.g. Ohio PUC Comments at 19-20; AT&T Comments at 83-85; CoreComm Comments at 35-36; MediaOne Comments at 16-19; OpTel Comments at 7-12; RCN Comments at 20-21; Teligent Comments at 2-10; WinStar Comments at 2-13.

³⁰⁵ See CoreComm Comments at 35-36; KMC Comments at 22; OpTel Comments at 7; Letter from W. Kenneth Ferree, Attorney, OpTel, to Magalie R. Salas, Secretary, Federal Communications Commission, CC Docket Nos. 96-98 and 99-217 (filed July 22, 1999).

³⁰⁶ 47 C.F.R. § 68.3. See, e.g., GTE Comments at 89; MGC Comments at 19-20.

³⁰⁷ Any loop plant that exists beyond the demarcation point is, by definition, beyond the incumbent LEC's control.

minimum point of entry (MPOE), which is the closest practicable point to where the wire crosses a property line or enters a building.³⁰⁸ In multiunit premises, there may be either a single demarcation point for the entire building or separate demarcation points for each tenant, located at any of several locations, depending on the date the inside wire was installed, the local carrier's reasonable and nondiscriminatory practices, and the property owner's preferences.³⁰⁹ Thus, depending on the circumstances, the demarcation point may be located either at the NID, outside the NID, or inside the NID.

170. Although inside wire typically consists of junction and utility boxes, riser cable, and horizontal distribution wiring within an apartment building, it can also include the loop facility within a campus, a commercial park, or a garden apartment complex. We note that Teligent prefers the term "intra-building wiring," to emphasize that the plant in question is not always inside the customer premises, but may, especially in multiunit buildings, exist primarily within the landlord's, rather than the subscriber's, premises.³¹⁰ Yet even the term "intra-building wire" may suggest limitations that do not apply in some situations, because "inside" wire is often out-of-doors, as is the case at garden apartments and campuses, among other places.³¹¹ Thus, although we refer to "inside wire" and "customer premises," for the sake of convenience, we acknowledge that the wire may be out-of-doors, and the "customer" may be a subscriber, a landlord, a condominium, a university, and so on.

171. Defining the loop to terminate at the same point as the incumbent LEC's control over facilities that it owns, will ensure that the competitor will be able to gain access to the entire loop, including inside wire.³¹² We note that, in our *Access to Competitive Networks* proceeding, we are seeking additional comment on the legal and technical issues arising from unbundled inside wiring and premises facilities.³¹³ We also note that Section 251(d)(2) imposes obligations only on incumbent local exchange carriers and not, for instance, on third parties (such as the owners of multi-tenant

³⁰⁸ 47 C.F.R. § 68.3. ("The 'minimum point of entry' [is] either the closest practicable point to where the wiring crosses a property line or . . . enters a multiunit building or buildings.").

³⁰⁹ See 47 C.F.R. § 68.3(b)(2) for further definition of the term "demarcation point" as it applies in multiunit installations. See also Teligent Comments at 5-6 (providing a graphic illustration of possibilities). In the *Competitive Networks Notice*, we have sought comment on how the definition of the demarcation point under Part 68 affects access to multiple tenant environments by competitive telecommunications providers, including whether an incumbent LEC's control over the loop for purposes of competitive access may be greater than its control for purposes of installation and maintenance. *Competitive Networks Notice* at paras. 65-67. Accordingly, we may subsequently refine our criteria for determining the extent of an incumbent LEC's ownership and control, and hence the termination point of the loop, in accordance with the record developed in that proceeding.

³¹⁰ Teligent Comments at 4, n.4.

³¹¹ See, e.g., OpTel Comments at 7.

³¹² We discuss unbundling of inside wire as a separable subloop at Section (V)(B) *infra*.

³¹³ *Competitive Networks Notice* at para. 51.

buildings). Thus, the rules adopted in this Order are not intended to give competitive service providers any additional legal rights vis-a-vis such third parties, including access to a multi-unit building over the objection of the property owner. Those issues are being addressed in other proceedings before the Commission.³¹⁴

172. Conditioned Loops. We clarify that incumbent LECs are required to condition loops so as to allow requesting carriers to offer advanced services.³¹⁵ The terms “conditioned,” “clean copper,” “xDSL-capable” and “basic” loops all describe copper loops from which bridge taps, low-pass filters, range extenders, and similar devices have been removed. Incumbent LECs add these devices to the basic copper loop to gain architectural flexibility and improve voice transmission capability.³¹⁶ Such devices, however, diminish the loop’s capacity to deliver advanced services, and thus preclude the requesting carrier from gaining full use of the loop’s capabilities. Loop conditioning requires the incumbent LEC to remove these devices, paring down the loop to its basic form.

173. GTE contends that the Eighth Circuit, in the *Iowa Utils. Bd. v. FCC* decision, overturned the rules established in the *Local Competition First Report and Order* that required incumbents to provide competing carriers with conditioned loops capable of supporting advanced services even where the incumbent is not itself providing advanced services to those customers.³¹⁷ We disagree. Although the Eighth Circuit overturned certain rules to the extent those rules required incumbent LECs to provide access to unbundled network elements at levels of quality superior to those the incumbent LECs provide themselves, the court also expressly affirmed the Commission’s determination that section 251(c)(3) requires incumbent LECs to provide modifications to their facilities to the extent necessary to accommodate access to network elements.³¹⁸ We find that loop conditioning, rather than providing a “superior quality” loop, in fact enables a requesting carrier to use the basic loop. Because competitors cannot access the loop with all its native “features, functions, and capabilities” unless it has been stripped of accreted devices, we conclude that loop conditioning falls within the definition of the loop network element, and is also consistent with the Eighth Circuit opinion.

³¹⁴ See, e.g., *Access to Competitive Networks; Telecommunications Services Inside Wiring*, CS Docket No. 95-189, First Report and Order and Second Further Notice of Proposed Rulemaking, 13 FCC Rcd 3659 (1997).

³¹⁵ See also *Advanced Services Memorandum Opinion and Order and NPRM*, 13 FCC Rcd at 24036-37, paras. 52-53.

³¹⁶ See Covad Reply Comments at 13-14.

³¹⁷ GTE Comments at 86-87; GTE Reply Comments at 72-73.

³¹⁸ *Iowa Utils Bd. v. FCC*, 120 F.3d at 813, n.33 (citing *Local Competition First Report and Order*, 11 FCC Rcd at 15602, para. 198). Covad notes that no party appealed to the Supreme Court the Eighth Circuit’s holding that § 251(c)(3) requires incumbent LECs to provide such modifications. Covad Reply Comments at 12. See also AT&T Comments at 76.

174. Dark Fiber. We also modify the loop definition to specify that the loop facility includes dark fiber.³¹⁹ Dark fiber is fiber that has not been activated through connection to the electronics that “light” it, and thereby render it capable of carrying communications services.³²⁰ Because it is in place and easily called into service, we find that dark fiber is analogous to “dead count” or “vacant” copper wire that carriers keep dormant but ready for service. Thus, we disagree with GTE’s argument that, unlike vacant copper, dark fiber does not qualify as loop plant.³²¹ GTE maintains that extra “copper cable is installed to provide optimum flexibility” and contrasts this copper to dark fiber, which GTE terms “unused inventory.” GTE clarifies that “[t]hese fibers remain dark until they are needed.”³²² We find this to be a distinction without a difference, and conclude that both copper and fiber alike represent unused loop capacity. We find, therefore, that dark fiber and extra copper both fall within the loop network element’s “facilities, functions, and capabilities.”³²³

175. Attached Electronics. We conclude that, with the exception of Digital Subscriber Line Access Multiplexers (DSLAMs), the loop includes attached electronics, including multiplexing equipment used to derive the loop transmission capacity.³²⁴ The definition of a network element is not limited to facilities, but includes features, functions, and capabilities as well.³²⁵ Some loops, such as integrated digital loop carrier (IDLC), are equipped with multiplexing devices, without which they cannot be used to provide service to end users. Because excluding such equipment from the definition of the loop would limit the functionality of the loop, we include the attached electronics (with the exception

³¹⁹ Notice at 34 (We asked parties whether, in light of technological or commercial developments since adoption of the *Local Competition First Report and Order*, we should modify the definition of the loop to include dark fiber.).

³²⁰ See Choice One Joint Comments at 25; CO Space Comments at 2; KMC Comments at 20-21.

³²¹ GTE Reply Comments at 63-64.

³²² *Id.* at 64.

³²³ In designating dark fiber as a network element, we acknowledge that some facilities that the incumbent LEC currently uses to provide service may not constitute network elements (e.g. unused copper wire stored in an incumbent LEC’s warehouse). Defining all such facilities as network elements would read the “used in the provision” language of section 153(29) too broadly. Dark fiber, however, is distinct in that it is unused loop capacity that is physically connected to facilities that the incumbent LEC currently uses to provide service; was installed to handle increased capacity and can be used by competitive LECs without installation by the incumbent. Thus, we conclude that dark fiber falls within the statutory definition of a network element.

³²⁴ See, e.g. ALTS Comments at 41-46; CompTel Comments at 32-33; MCI WorldCom Comments at 45-46. Carriers providing advanced services use DSLAMs to split voice and data traffic and route each to the appropriate destination. For discussion of DSLAMs, see *infra* Section (V)(D).

³²⁵ 47 U.S.C. 153(29).

of DSLAMs) within the loop definition. By contrast, and as we discuss below, we find that the DSLAM is a component of the packet switch network element.³²⁶

176. High-Capacity Loops. We disagree with incumbent LECs that high-capacity loops should be excluded from the definition of the loop.³²⁷ High-capacity loops retain the essential characteristic of the loop: they transmit a signal from the central office to the subscriber, or vice versa. In a DS1 loop, for example, the attached electronics boost the wire's capacity, but the wire facility used for transmission of the traffic is indistinguishable from any other copper wire. Although it may be more profitable to serve customers over higher capacity lines, such differences do not support a modification of the loop *definition* to exclude high-capacity lines. Whether the Commission should refrain from unbundling high-capacity loops is another matter, which we discuss below in our unbundling analysis.

177. For similar reasons, we reject US West's argument that we should exclude from the definition the loop facilities that underlie private line and special access interconnection, because providing these services to competitors at lower-than-tariffed rates would "promote regulatory arbitrage and serve no valid statutory or public purpose."³²⁸ The Commission has not previously found that the requirements of section 251(c)(3) are limited to any particular kind of service.³²⁹ Moreover, section 251(d)(2) of the Act refers to a ". . . carrier seeking access to provide the *services that it seeks to offer*."³³⁰ We find no basis for placing a restriction on what services a carrier may offer using the loop network element. Indeed, the prospect of competition among carriers to provide services over the loop at prices that more closely reflect the provider's costs seems to us to accord fully with Congress's intent in passing the 1996 Act. We do not now decide whether or not this analysis may extend to the enhanced extended loop (EEL), but rather seek comment on that issue in the *Further Notice of Proposed Rulemaking*, below.³³¹

178. Cross Connects. In the *Local Competition First Report and Order*, the Commission concluded that incumbent LECs must provide cross connect facilities

³²⁶ See *infra* Section (V)(D)(2) (packet switching).

³²⁷ See generally Ameritech Comments at 100-102; Bell Atlantic Comments at 37-39; Bell South Comments at 65-67, 70-71; GTE Comments at 63-70; SBC Comments at 23-25, 30; US West Comments at 36-40. See also BellSouth Comments at 64.

³²⁸ US West Comments at 38-39. US West refers specifically to lines "DS1 and higher."

³²⁹ See *Local Competition First Report and Order*, 11 FCC Rcd at 15679-15683, paras. 356-365. See also *CompTel v. FCC*, 117 F.3d at 1073 (upholding the Commission's decision to allow the incumbent to collect the carrier common line charge (CCLC) and 75 percent of the transport interconnection charge, until June 30, 1997.)

³³⁰ 47 U.S.C. § 251(d)(2) (*emphasis added*).

³³¹ See *infra* Section VII.

between an unbundled loop and a requesting carrier's collocated equipment.³³² The Commission emphasized this requirement because of its concern that incumbent LECs might have imposed unreasonable rates, terms, and conditions for such cross connect facilities in the past.³³³ Nothing in this Order disturbs the Commission's findings regarding cross connect facilities. In particular, we continue our policy that incumbent LECs may recover the cost of providing such facilities in accordance with our rules governing the costs of interconnection and unbundling. Charges for cross connect facilities must meet the cost-based standard provided in section 252(d)(1), and the terms and conditions of providing cross connect facilities must be reasonable and nondiscriminatory under section 251(c)(3).³³⁴

179. Because we agree with the Commission's analysis of cross connect facilities in the *Local Competition First Report and Order*, we decline to include cross connect facilities within the definition of the loop network element.³³⁵ We continue to view the cross connect as a means of interconnection with a network element, rather than as part of the network element. We require, however, that incumbents provide cross connect facilities according to sections 252(d)(1) and 251(c)(3) at any technically feasible point that a requesting carrier seeks access to the loop. We conclude that such a requirement is needed wherever a competitor seeks access to the loop, because cross connection offers a potential bottleneck, and incumbents may have the incentive to impose unreasonable rates, terms, and conditions for cross-connect facilities.

b. Proprietary Concerns Associated with the Loop

180. In the *Local Competition First Report and Order*, the Commission concluded that the technology associated with the loop is not proprietary in nature.³³⁶ Parties in this proceeding have not identified any proprietary concerns associated with unbundled loops, and we find none. We therefore apply the "impair" standard of section 251(d)(2), rather than the "necessary" standard, to determine whether loops are subject to the unbundling obligations of the Act.

c. Unbundling Analysis for the Loop in General

³³² *Local Competition First Report and Order*, 11 FCC Rcd at 15693, para. 386. A cross connection is defined as "[a] connection scheme between cabling runs, subsystems, and equipment using patch cords or jumpers that attach to connecting hardware on each end." *Newton's Telecom Dictionary* at 187.

³³³ *Local Competition First Report and Order*, 11 FCC Rcd at 15693, para. 386.

³³⁴ 47 U.S.C. §§ 252(d)(1) and 251(c)(3).

³³⁵ See, e.g., ALTS Comments at 38-39; e.spire/Intermedia Comments at 23; MCI WorldCom Comments at 45-46.

³³⁶ *Local Competition First Report and Order*, 11 FCC Rcd at 15694, para. 388.

181. We require incumbent LECs to provide unbundled access to loops nationwide. The record demonstrates that lack of access to unbundled loops impairs a carrier's ability to provide the services it seeks to offer because requiring carriers to self-provision loops would materially raise entry costs, delay broad-based entry, and limit the scope and quality of the competitor's offerings. We conclude that neither self-provisioning loops nor obtaining loops from third-party sources is an adequate alternative for loops that a carrier can obtain from an incumbent LEC under the section 251(c) unbundling obligation. We analyze the obligation to unbundle separable elements of the loop, such as inside wire, when we discuss subloop unbundling, below. We defer a decision on whether to unbundle the high frequency portion of the loop to a further proceeding.

182. Cost and Timeliness. We agree with the argument that self-provisioning is not a viable alternative to the incumbent's unbundled loops because replicating an incumbent's vast and ubiquitous network would be prohibitively expensive and delay competitive entry.³³⁷ We find the reasons for unbundling the loop that the Commission articulated in the *Local Competition First Report and Order* are still valid three years later. In that order, the Commission recognized that, without access to unbundled loops, competitors would need to invest immediately in duplicative facilities in order to compete for most customers, and that such investment and construction would likely delay, if not prohibit, market entry and postpone, perhaps indefinitely, the benefits of telephone competition for consumers. Moreover, the Commission found that without access to unbundled loops, competitive LECs would be required to sink a large initial investment in loop facilities before they had a customer base large enough to justify such an expenditure, thereby increasing the risk of entry and raising the competitive LEC's cost of capital.³³⁸ By contrast, permitting a competitor to purchase unbundled loops from the incumbent LEC allows the competitive LEC to build facilities gradually, and to deploy loops for its customers where it is efficient to do so.³³⁹

183. Nothing in the record of this proceeding leads us to a different conclusion. To the contrary, we find that, as a practical matter, building loop plant continues to be, in most cases, prohibitively expensive and time-consuming. Because of the size of their networks, incumbent LECs enjoy advantages of scope that competitors cannot replicate.³⁴⁰ We find that it would be unreasonable to expect a competitive LEC to invest the large sums of capital needed to build out ubiquitous loop plant before the competitive

³³⁷ AT&T Comments at 63-64; Covad Comments at 32; Focal Comments at 6; Qwest Comments at 59-61; RCN Comments at 15; Sprint Comments at 29. *See also* MCI WorldCom Comments at 43 (loops comprise 44% of ILEC network investment); *Local Competition First Report and Order*, 11 FCC Rcd at 15690, para. 378 n.818 (Local loop plant comprises approximately \$109 billion.).

³³⁸ *Local Competition First Report and Order*, 11 FCC Rcd at 15690, para. 378.

³³⁹ *Id.* at 15690, para. 378.

³⁴⁰ *See* Illinois Commission Comments at 11-12; ALTS Comments at 36-37; AT&T Comments at 62-66; CompTel Comments at 34-35; Covad Comments at 32; Focal Comments at 6-7; MCI WorldCom Comments at 43; Sprint Reply Comments at 6.

LEC has established a substantial and secure customer base. Unlike switches, which can be scaled to need, relocated if the business fails to develop, and which can accommodate a fluctuating customer base, much of the loop is often dedicated to a particular location. In addition, if the competitive LEC loses the customer back to the incumbent or to another competitor, the competitive LEC would probably bear the full loss of its sunk investment in the redundant loop.³⁴¹

184. We disagree with incumbents' assertions that we should not unbundle high-capacity loops because competitive LECs have successfully self-provisioned loops to certain large business customers. According to these commenters, the call concentration and revenue potential of "high-capacity" lines (DS1 and higher) make self-provisioning high-capacity lines an economically viable alternative to the incumbent LECs' unbundled high-capacity loops.³⁴² Building out any loop is expensive and time-consuming, regardless of its capacity.³⁴³ That some competitive LECs, in certain instances, have found it economical to serve certain customers using their own loops suggests to us only that carriers are unimpaired in their ability to serve those particular customers. This evidence tells us nothing about the customer the competitor would like to serve but cannot because the cost of building a loop from the customer premises to the competitive LEC's switch is prohibitive.

185. For similar reasons, we reject BellSouth's proposal that we not require incumbent LECs to unbundle larger business loops in Special Access Pricing zones 1 and 2.³⁴⁴ Because of the expense inherent in building loops, we find that it would be extremely difficult for competitive LECs to overbuild the ubiquitous loop plant that the incumbents have built up over decades, even to serve businesses in urban districts. The enormous sunk investment required to install loops would inevitably lead to competition in patches, rather than the seamless competitive service of a fully competitive market. Moreover, we find that using Special Access Pricing zones, as recently modified by the Commission, would provide incumbent LECs with discretion to define their own loop unbundling obligations.³⁴⁵ We agree with MCI WorldCom that the Special Access

³⁴¹ In theory, the entrant could lease the loop to another competitive LEC, if one exists, but the other competitor might have its loop needs met by the incumbent LEC.

³⁴² See Ameritech Comments at 101-102; Bell Atlantic at 37-39; SBC Comments at 23-25; U S West comments at 36-40. Several of these parties cite the *USTA UNE Report at III-3 and III-16* (stating that competitive LEC fiber serves 15% of all commercial office buildings and between 9% and 18% of all business lines from dense wire centers with collocation by one or more competitive LECs.).

³⁴³ For example, assuming the availability of existing conduit and pole space, the estimated cost for New England Voice & Data to install its own fiber is \$46,680 per mile for a 96 fiber cable. Letter from Thomas Jones, on behalf of New England Voice & Data, LLC, to Magalie Roman Salas, Secretary, Federal Communications Commission, CC Docket No. 96-98, at 6 (filed July 15, 1999).

³⁴⁴ BellSouth Comments at 64-66; BellSouth Reply Comments at 37-38.

³⁴⁵ Incumbent LECs generally proceed through a three step process to assign central offices to zones within a given study area. In the first step, an incumbent LEC ranks its wire centers in order of decreasing traffic density, based on some measure of density chosen by the incumbent LEC. In the second

Pricing zone approach would grant incumbent LECs latitude to “change their methodologies for defining zones to upset their competitor’s business plans.”³⁴⁶ We find that premising an incumbent LEC’s loop unbundling obligation on a geographic boundary defined, to a large degree, by the incumbent LEC itself could allow an incumbent LEC to minimize its unbundling obligation, and would not respond to a requesting carrier’s need for access to unbundled loops.

186. In addition to the large costs of building loop plant, we agree with commenters in this phase of the proceeding that overbuilding the incumbent LEC’s loops would embroil the competitor in lengthy rights-of-way disputes, and would require the unnecessary digging up of streets.³⁴⁷ Thus, we find that even if competitors were able to finance the replication of the incumbents’ loop plant, construction of new facilities would – at the least – materially delay competitors’ ability to bring their services to consumers. Such delays would frustrate the competitor’s ability to offer timely service to prospective customers. Although competitive LECs have successfully constructed loops in some circumstances, we find that the cost, risk, disruption, and delay of self-provisioning loop plant would, for many consumers, foreclose the benefits of competition.³⁴⁸

187. Moreover, in the *Local Competition First Report and Order*, the Commission specified that the definition of the loop includes various grades of loops to allow transmission of digital signals needed to provide multiple services and DS1-level signals.³⁴⁹ The Commission reasoned that the ability to offer various functions in competition with incumbent LECs could benefit small entities serving niche markets.³⁵⁰

step, the incumbent LEC sets breakpoints within the zone density ranking to partition the wire centers into zones and finally, an incumbent LEC further adjusts the zones as it sees fit, based on geographic contiguity or community of interest reasons. See *Expanded Interconnection with Local Telephone Company Facilities*, CC Docket No. 91-141, *Amendment of the Part 69 Allocation of General Support Facility Costs*, CC Docket No. 92-222, *Report and Order and Notice of Proposed Rulemaking*, 7 FCC Rcd 7369 (1992) (*Expanded Interconnection Order*), vacated in part and remanded, *Bell Atlantic v. FCC*, 24 F.3d 1441 (1994); First Reconsideration, 8 FCC Rcd 127 (1993); Second Reconsideration, 8 FCC Rcd 7341 (1993); Second Report and Order, 8 FCC Rcd 7374 (1993); Memorandum Opinion and Order, 9 FCC Rcd 5154 (1994), remanded, *Pacific Bell v. FCC*, 81 F.3d 1147 (1996); 47 C.F.R. § 61.38(b)(4).

³⁴⁶ MCI WorldCom argues that where a requesting carrier plans to purchase unbundled [elements], the incumbent LEC could change its methodology for ranking central office traffic density in such a way that the central office changed zones, and the incumbent LEC was no longer required to offer the [element] to requesting carriers. See Letter from Chuck Goldfarb, Director, Law and Public Policy MCI WorldCom, to Larry Strickling, Chief, Common Carrier Bureau, CC Docket No. 96-98, at 7 (filed August 9, 1999).

³⁴⁷ See, e.g., AT&T Comments at 63-64; Focal Comments at 6; Qwest Comments at 60.

³⁴⁸ See ALTS Reply Comments at 18-20; Level 3 Reply Comments at 3; RCN Reply Comments at 6; Qwest Reply at 50.

³⁴⁹ In the *Local Competition First Report and Order*, the Commission stated that its definition of the loop “. . . includes, for example . . . DS1-level signals.” *Local Competition First Report and Order*, 11 FCC Rcd 15691 at para. 380.

³⁵⁰ *Id.* at 15691, para. 380.

We continue to believe that access to these high-capacity lines is necessary for ubiquitous deployment of high-speed services, including high-speed Internet access. We therefore agree with competitive LECs that failing to assure access to high-capacity loops would impair their ability to provide the services that they seek to offer in broadband service markets.³⁵¹

188. Ubiquity and Quality. We disagree with parties that argue that mobile telephones and fixed wireless offer an alternative to the incumbent's loop, and that loops therefore should not be unbundled.³⁵² Although we find these technologies promising, we conclude that they are not yet viable alternatives to the incumbent's wireline loop facilities. In particular, we find that alternative loop technologies are not as widespread as the incumbent's ubiquitous network. These alternatives do not offer the same functionality as wireline service, and the data capabilities of these mobile services are generally inferior to wireline loops' data transmission capabilities. Cellular and PCS telephone footprints, though expanding, are not ubiquitous. Indeed, millions of Americans are not yet served by mobile wireless carriers.³⁵³ Moreover, the sound quality of cellular and PCS service is not always equal to wireline service.³⁵⁴ Fixed wireless cannot yet offer more than four lines, or high-speed Internet connection.³⁵⁵

189. We also disagree with the incumbent LECs' argument that cable television service offers a viable alternative to the incumbent's unbundled loop.³⁵⁶ Cable service is largely restricted to residential subscribers, and generally supports only one-way service, not the two-way communications telephony requires.³⁵⁷ Moreover, we conclude that declining to unbundle loops in areas where cable telephony is available would be inconsistent with the Act's goal of encouraging entry by multiple providers. Given that neither mobile nor fixed wireless can yet replace wireline service, if we were to take the incumbents' approach, consumers might be left to choose between only the cable company and the incumbent LEC.

³⁵¹ See, e.g., CompTel Comments at 32-34; e.spire Joint Reply Comments at 16; RCN Comments at 16.

³⁵² Ameritech Comments at 103-105; Bell Atlantic Comments at 36-39; BellSouth Comments at 67-75; GTE Comments at 66-67; SBC Comments at 25-30; US West Comments at 37.

³⁵³ See AT&T Comments at 67-72; Illinois Commission Comments at 11; ALTS Comments at 37; Level 3 Comments at 15.

³⁵⁴ AT&T Comments at 67-69. Covad points out that xDSL high-speed data service cannot be provided over cellular or PCS. Covad Reply Comments at 8.

³⁵⁵ AT&T Comments at 69-70.

³⁵⁶ See, Ameritech Comments at 103-05; Bell Atlantic Comments at 36; BellSouth Reply Comments at 38-39; GTE Comments at 68-70; SBC Comments at 26-28; US West Comments at 37-38.

³⁵⁷ AT&T Comments at 70-72.

190. Loops Capable of Providing High-Speed Data Services. We conclude that permitting incumbents to deny access to basic loops stripped of accreted devices, *i.e.*, “conditioned” loops, would preclude the ability of competitors to offer high-speed data services. Such unencumbered copper wire is necessary for requesting carriers to provide most types of xDSL service.³⁵⁸ While some “flavors” of xDSL can be provided over loops with a limited number of impediments, as a general rule the quality of such service – particularly the speed – is significantly diminished, compared to the service provided over unencumbered wires.³⁵⁹ DSL-capable loops provide end users with broadband data transmission, which allows rapid access to the Internet.³⁶⁰ Unbundling basic loops, with their full capacity preserved, allows competitors to provide xDSL services. This in turn will foster investment, innovation, and competition in the local telecommunications marketplace. Without access to these loops, competitors would be at a significant disadvantage, and the incumbent LEC, rather than the marketplace, would dictate the pace of the deployment of advanced services.³⁶¹ We also note that the availability of conditioned loops enables competitors to deploy xDSL service beyond the major metropolitan areas.³⁶² Finally, we note our obligation under section 706 to encourage the deployment of advanced services by, among other means, promoting competition in the telecommunications market.³⁶³

191. As the Commission stated in the *Local Competition First Report and Order*, requiring incumbents to provide conditioned loops will, in some instances, require the incumbent LEC to take affirmative steps to enable requesting carriers to provide services that the incumbent does not currently provide.³⁶⁴ We now clarify that we require the incumbent to provide loops with all their capabilities intact, that is, to provide

³⁵⁸ See, *e.g.*, Covad Reply Comments at 14; NorthPoint Comments at 14. As we explained in our recent *Advanced Services First Report and Order and FNPRM*, xDSL technology provides multiple benefits to the consumer that cannot be achieved with traditional analog transmission. The use of xDSL modems allows transmission of data over the copper loop at vastly higher speeds than can be achieved with analog data transmission. Moreover, combining xDSL technology with packet switching permits more efficient use of the network because information generated by multiple users can be sent over a telecommunications facility that in a circuit-switched environment may be dedicated to only one customer for the duration of a call. In addition, the customer can potentially make ordinary voice calls over the public switched network at the same time he or she is using the same line for high-speed data transmission. *Advanced Services First Report and Order and FNPRM*, 14 FCC Rcd at 4766-67, paras. 9-10.

³⁵⁹ *Newton's Telecom Dictionary* at 38-39.

³⁶⁰ *Advanced Services First Report and Order and FNPRM*, 14 FCC Rcd at 4767, para. 10.

³⁶¹ See, Covad Comments at 36-37. Covad states that Bell Atlantic makes conditioned loops available only when Bell Atlantic seeks to provide ADSL service to end users, thus holding competitive LEC expansion plans hostage until Bell Atlantic is ready. Covad Comments at 36, n.63.

³⁶² See, *e.g.*, Covad Comments at 36.

³⁶³ 47 U.S.C. § 706(a).

³⁶⁴ *Local Competition First Report and Order*, 11 FCC Rcd at 15692, para. 382.

conditioned loops, *wherever* a competitor requests, even if the incumbent is not itself offering xDSL to the end-user customer on that loop. Thus, incumbent LECs cannot refuse a competitive LEC's request for conditioned loops on the grounds that they themselves are not planning to offer xDSL to that customer.

192. In the *Local Competition First Report and Order*, the Commission also stated that requesting carriers would compensate the incumbent LECs for the cost of conditioning the loop.³⁶⁵ Covad and Rhythms argue that, because loops under 18,000 feet generally should not require devices to enhance voice-transmission, the requesting party should not be required to compensate the incumbent for removing such devices on lines of that length or shorter.³⁶⁶

193. We agree that networks built today normally should not require voice-transmission enhancing devices on loops of 18,000 feet or shorter.³⁶⁷ Nevertheless, the devices are sometimes present on such loops, and the incumbent LEC may incur costs in removing them. Thus, under our rules, the incumbent should be able to charge for conditioning such loops.³⁶⁸

194. We recognize, however, that the charges incumbent LECs impose to condition loops represent sunk costs to the competitive LEC, and that these costs may constitute a barrier to offering xDSL services. We also recognize that incumbent LECs may have an incentive to inflate the charge for line conditioning by including additional common and overhead costs, as well as profits. We defer to the states to ensure that the costs incumbents impose on competitors for line conditioning are in compliance with our pricing rules for nonrecurring costs.³⁶⁹

195. In addition, we agree with commenters that argue that incumbent LECs must provide "trouble reports" to the competitive LECs for any function or capability of the accessed loop element, and that the incumbent may not limit such reports to voice-transmission trouble only.³⁷⁰ Not knowing whether or not the accessed line is functioning properly impairs a competitive LEC's ability to provide service, because subscribers may tend to blame the new competitor, rather than the familiar incumbent, for any lapse or degradation of service. Thus, we conclude that, in so far as it is technically feasible, the

³⁶⁵ *Id.*

³⁶⁶ Covad Comments at 42-43; Rhythms Reply Comments at 21.

³⁶⁷ See generally *Bellcore Notes on the Network, Loop Transmission*, ch. 7.15, (Telcordia, 1997); Regis J. Bates and Donald Gregory, *Voice and Data Communications Handbook Signature Edition*, (McGraw-Hill, New York, 1997), at 76-77.

³⁶⁸ *Local Competition First Report and Order*, 11 FCC Rcd at 15692, para. 382.

³⁶⁹ 47 C.F.R. § 51.507(e). See generally 47 C.F.R. §§ 51.501 *et seq.*; *Local Competition First Report and Order*, 11 FCC Rcd at 15875-15876, paras. 749-751.

³⁷⁰ MGC Reply Comments at 11.

incumbent must test and report trouble on conditioned lines, if requested by the competitor, for all of the line's features, functions, and capabilities, and may not restrict its testing to voice-transmission only.

196. Dark Fiber. We agree with commenters that argue that, because dark fiber provides high transmission capabilities at relatively low cost, unbundling dark fiber is essential for competition in the provision of advanced services.³⁷¹ We reject the incumbents' reasoning that, because competitive LECs have installed lit fiber to certain high-volume customers, they could also install their own dark fiber, and therefore are not impaired without access to the incumbent's dark fiber.³⁷² As with other loops, we decline to infer from competitive LEC self-provisioning in certain circumstances that, as a general matter, the expense and delay involved in laying fiber do not impair the ability of entrants and other competitive LECs to provide the services they seek to offer.³⁷³ We see no reason to distinguish dark fiber from our general unbundling analysis for loops.

197. US West argues that competitors do not need the incumbent LECs' fiber because a wholesale market exists in loop fiber.³⁷⁴ We find, however, that the nascent wholesale market in fiber loop facilities is not yet extensive enough for us to conclude that competitors are not impaired without access to incumbent LECs' unbundled dark fiber loops.³⁷⁵ We also agree with the argument that unbundled loops, including fiber, allow competitive LECs to build out their networks gradually.³⁷⁶ By supplementing their own facilities with unbundled fiber loops, a competitive LEC can offer advanced services ubiquitously and not limit its service offering to small areas of concentrated demand.³⁷⁷

198. Because fiber is currently a more significant component of interoffice transport than the loop network element, we discuss aspects of dark fiber common to both

³⁷¹ Illinois Commission Comments at 15; Iowa Comments at 9; Cable & Wireless Comments at 34; CO Space Comments at 7; GSA Comments at 7; Waller Creek Comments at 17. *See also* Texas PUC Comments at 16; KMC Comments at 21. New England Voice & Data states that fiber loops are particularly necessary to bring competition in advanced services to the residential market. New England Voice & Data Comments at 9-10.

³⁷² GTE Comments at 32; US West Comments at 39-40.

³⁷³ *See* New England Voice & Data Comments at 14-15.

³⁷⁴ US West Comments at 39-40.

³⁷⁵ New England Voice & Data states that although Neon, NEES, and C2C offer fiber in the Northeast, they do not offer fiber on a ubiquitous basis, and thus are not a readily available, reasonable substitute for unbundled dark fiber. New England Voice & Data Comments at 13.

³⁷⁶ RCN Comments at 15.

³⁷⁷ New England Voice & Data Comments at 9-10. New England Voice & Data states that without unbundled dark fiber loops, its ability to offer advanced services would be limited to approximately two miles ("about 12,000") from the central office. New England Voice & Data Comments at 10.

elements when we discuss interoffice transport below.³⁷⁸ We note here, however, that GTE raises concerns that incumbents, because of their carrier-of-last-resort obligations, have a special need for fiber reserves.³⁷⁹ As we explain in greater detail below, we find these concerns exaggerated, because the capacity of fiber can be increased many fold simply by increasing the power of the electronics that light it. We find, therefore, that a shortage of fiber capacity caused by unbundling is highly unlikely.

199. In addition, GTE and the Telecommunications Industry Association argue that requiring incumbent LECs to unbundle fiber will reduce their incentive to build fiber loops in the first place.³⁸⁰ We remain skeptical that this is the case, because incumbents face loop unbundling obligations no matter which technology they deploy. We note, however, that the Texas commission has already established moderate restrictions governing the availability dark fiber.³⁸¹ We do not wish to disturb the reasonable limitations and technical parameters for dark fiber unbundling that Texas or other states may have in place. If incumbent LECs are able to demonstrate to the state commission that unlimited access to unbundled dark fiber threatens their ability to provide service as a carrier of last resort, state commissions retain the flexibility to establish reasonable limitations governing access to dark fiber loops in their states.

200. Goals of the Act. We conclude that access to the full capabilities of incumbent LECs' loop plant nationwide will further the goals of the Act. Requiring access to unbundled loops will promote the rapid development of competition and bring the benefits of competition to greater numbers of consumers. Access to unbundled loops will also encourage competition to provide broadband services. We are convinced that greater, not fewer, options for procuring loops will facilitate entry by competitors, and that Congress intended for competitors to have these options available.³⁸² We find that the benefits of uniform loop unbundling outweigh the costs of creating a patchwork regime in which incumbents will seek to litigate whether particular loops should be unbundled or where an alternative to the incumbent LEC's loop is arguably substitutable. For these reasons, incumbent LECs must provide unbundled access to their loop network element nationwide.

³⁷⁸ See *infra* Section (V)(E).

³⁷⁹ GTE Comments at 83-84.

³⁸⁰ GTE Comments at 83-84; Letter from Derek R. Khlopin, Regulatory Counsel, Telecommunications Industry Association, to Magalie R. Salas, Secretary, Federal Communications Commission, CC Docket No. 96-98, Attachment at 4-12 (filed Aug. 2, 1999) (stating that incumbent LECs continue to build copper loop facilities even though fiber could be deployed at no additional cost, because, according to TIA, of being required to unbundle new fiber facilities.).

³⁸¹ See Texas PUC Comments at 16-18.

³⁸² *Local Competition First Report and Order*, 11 FCC Rcd at 15718-15719, para 441.

201. Spectrum Unbundling. A number of parties request that the Commission identify loop spectrum as a separate unbundled network element.³⁸³ In particular, they argue that requesting carriers need access to the high-frequency loop spectrum on an unbundled basis in order to provide advanced telecommunications services, including xDSL. We decline, at this time, to identify loop spectrum as a separate unbundled network element. In the *Advanced Services First Report and Order and FNPRM*, we will consider whether the high-frequency spectrum of the loop qualifies as an unbundled network element and the operational issues associated with such unbundling.³⁸⁴ We believe that the record developed in that proceeding more fully addresses the issues associated with spectrum unbundling, and we therefore decline to address those issues in this proceeding.

³⁸³ Covad Reply Comments at 9-11; Network Access Solutions Comments at 20-26; NorthPoint Comments at 14-16; Rhythms Comments at 16-18; Rhythms Reply Comments at 25-28.

³⁸⁴ *Advanced Services First Report and Order and FNPRM*, 14 FCC Rcd at 4806-12, paras. 96-107.

B. The Subloop

1. Background

202. In the *Local Competition First Report and Order*, the Commission declined to identify the feeder, feeder/distribution interface (FDI), and distribution components of the loops as individual network elements.³⁸⁵ The Commission noted, however, that subloop unbundling could provide competitors flexibility in deploying some portions of loop facilities, while elsewhere relying on the incumbent LEC's facilities. In addition, the Commission noted that carriers would need access at points along the loop closer to the customer premises to provide some high bandwidth services, such as ADSL.³⁸⁶ The Commission also found that, although the record presented evidence mainly of logistical, rather than technical, impediments to subloop unbundling, proponents of subloop unbundling did not address technical issues raised by incumbent LECs.³⁸⁷ The Commission stated that it would revisit subloop unbundling when the record on the issue had been more fully developed.³⁸⁸

203. In the *Notice*, we sought comment on whether, due to technological changes, we should require subloop unbundling at the remote terminal or at other points within the incumbent LEC's network. We sought comment on whether to unbundle incumbent-owned facilities on the end-user side of the NID. We asked commenters to apply the "necessary" and "impair" standards and to discuss costs and availability on an element-by-element basis. We also asked those commenters requesting further unbundling of the local loop to discuss possible alternatives.³⁸⁹

204. Competitive LECs argue generally that they need unbundled access to subloop elements in order to: (1) connect their own facilities to the incumbent's inside wire; (2) access loops that an incumbent LEC provides over integrated digital loop carrier (IDLC) technology; and (3) provide advanced services over xDSL.³⁹⁰ These commenters

385 *Local Competition First Report and Order*, 11 FCC Rcd at 15695-15696, paras. 390-391.

386 *Id.* at 15696, para. 390.

387 *Id.* at 15696, para. 391.

388 *Id.*

389 *Notice* at para. 33

390 *See, e.g.*, Choice One Joint Comments at 21; Inline Comments at 3-4; Level 3 Comments at 17-18; RCN Comments at 22-23. Digital Loop Carrier (DLC) systems digitally encode and aggregate, i.e. "multiplex," the traffic from subscribers' loops into DS1 signals or higher for more efficient transmission or more extended range than traditionally permitted by copper loops. The analog signals are carried from customer premises to a remote terminal (RT) where they are converted to digital, mixed with other signals, and carried, generally over fiber, to the LEC central office. Integrated Digital Loop Carriers (IDLC) establish a direct, digital interface with the switch at the LEC central office, which makes it difficult, or even impossible, for competitors to access individual loops at that location. "xDSL" refers to Digital Subscriber

argue that they are also financially burdened if they must pay for an entire loop when they need to use only a portion of it.³⁹¹ Incumbents argue generally that competitors are not impaired without access to subloops; that technical and logistical impediments prevent subloop unbundling; and that network architectures differ too broadly to adopt an unbundling rule that applies nationwide.³⁹² Several state commissions argue that subloop unbundling requires a case-by-case analysis that the states are in the best position to perform.³⁹³ For example, Texas states that subloop unbundling meets the “impair” standard of section 251(d)(2) and requires subloop unbundling at the remote terminal.³⁹⁴

2. Discussion

205. We find that lack of access to unbundled subloops materially diminishes a requesting carrier’s ability to provide services that it seeks to offer. We also conclude that access to subloop elements is likely to be the catalyst that will allow competitors, over time, to deploy their own complementary subloop facilities, and eventually to develop competitive loops. Lack of access to subloops discourages competitive LECs from attempting to combine their own feeder plant with the incumbent’s distribution plant to minimize their reliance on the incumbents’ facilities. We also find that lack of unbundled access to the incumbent’s subloops would preclude competitors from offering some broadband services. Accordingly, we conclude that incumbent LECs must provide unbundled access to subloops nationwide, where technically feasible.

a. Definition of the Subloop

206. We define subloops as portions of the loop that can be accessed at terminals in the incumbent’s outside plant. An accessible terminal is a point on the loop where technicians can access the wire or fiber within the cable without removing a splice case to reach the wire or fiber within.³⁹⁵ These would include a technically feasible point near

Loop; the lower case “x” is a place holder for the several versions, or “flavors” of DSL technology. DSL modems allow transmission of data over the copper loop at vastly higher speeds than can be achieved with analog data transmission. In addition, customers using xDSL can make ordinary voice calls while using the line for high-speed data transmission. xDSL cannot work over fiber, and it generally requires a “clean” (i.e., conditioned) copper loop.

³⁹¹ See, e.g., Ohio PUC Comments at 20.

³⁹² See, e.g., GTE Comments at 87-89; SBC Comments at 30-31.

³⁹³ See, e.g., California PUC Comments at 9-10 (Commission should establish guidelines, but allow parties to negotiate and states to arbitrate specific terms); Florida PSC Comments at 8 (Subloop unbundling should be determined case-by-case); Ohio PUC Comments at 16-18 (States should develop policy on an ongoing basis as technology/business evolves).

³⁹⁴ Texas PUC Comments at 15-16. Texas also describes limitations it imposes to safeguard the integrity of the network. *Id.* at 16.

³⁹⁵ Accessible terminals contain cables and their respective wire pairs that terminate on screw posts. This allows technicians to affix cross connects between binding posts of terminals collocated at the same point. Terminals differ from splice cases, which are inaccessible because the case must be breached to

the customer premises, such as the pole or pedestal,³⁹⁶ the NID (which we discuss below),³⁹⁷ or the minimum point of entry to the customer premises (MPOE). Another point of access would be the feeder distribution interface (FDI), which is where the trunk line, or “feeder,” leading back to the central office, and the “distribution” plant, branching out to the subscribers, meet, and “interface.” The FDI might be located in the utility room in a multi-dwelling unit, in a remote terminal, or in a controlled environment vault (CEV).³⁹⁸ We acknowledge that some FDIs are more accessible than others; utility rooms are generally more spacious than vaults. A third point of access is, of course, the main distribution frame in the incumbent’s central office.³⁹⁹

207. We believe that a broad definition of the subloop that allows requesting carriers maximum flexibility to interconnect their own facilities at these points where technically feasible will best promote the goals of the Act. Access to portions of the loop element at these points, *i.e.*, access to the subloop, will facilitate rapid development of competition, encourage facilities-based competition, and promote the deployment of advanced services. Our intention is to ensure that the subloop definition will apply to new as well as current technologies, and to ensure that competitors will continue to be able to access subloop unbundled network elements as long as that access is required pursuant to section 251(d)(2) standards.

b. Proprietary Concerns Associated with Subloops

208. The record does not indicate, nor do commenters argue, that subloops are proprietary. Moreover, we do not discern any copyright, patent, or trademark or trade secrecy implications to subloop unbundling. We therefore apply the “impair” standard of section of 251(d)(2)(B) to determine whether subloops are subject to the unbundling requirements of the Act.

c. Unbundling Analysis for Subloops

reach the wires within. For a discussion of outside plant, *see* Green, James Harry, *The Irwin Handbook of Telecommunications*, McGraw Hill, New York (3rd Ed. 1997), at ch. 6.

³⁹⁶ The pole or pedestal is where the distribution connects to the “drop.” The drop is the dedicated wire connecting the subscriber to the network.

³⁹⁷ In the *Local Competition First Report and Order*, the Commission defined the NID as a cross-connect device used to connect loop facilities to inside wiring. *Local Competition First Report and Order*, 11 FCC Rcd at 15697, para. 392, n.852.

³⁹⁸ Controlled environments are necessary to protect the electronic devices, such as the multiplexing equipment on IDLC lines, or DSLAMs. The controlled environment is known as a “controlled environment vault” (CEV) if it is located below ground, and as a “hut” if it is located above ground. If the FDI is in a remote terminal in a utility room, there may be no distribution or drop, and the loop may go directly from the feeder to inside wire.

³⁹⁹ We note that even central offices can present feasibility issues, as when they are filled to capacity, or when certain lines, such as IDLC, cannot be accessed at that point, but must be accessed closer to the end user.

209. We conclude that incumbent LECs must provide unbundled access to subloops. Applying our unbundling analysis, we conclude that lack of access to unbundled subloops at technically feasible points throughout the incumbent's loop plant will impair a competitor's ability to provide services that it seeks to offer. We agree with commenters that self-provisioning subloop elements, like the loop itself, would materially raise entry costs, delay broad-based entry, and limit the scope and quality of the competitive LEC's service offerings.⁴⁰⁰ In addition, we find that access to subloop elements promotes self-provisioning of part of the loop, and thus will encourage competitors, over time, to deploy their own loop facilities and eventually to develop competitive loops where it is cost efficient to do so.

210. We clarify that "technically feasible points" would include a point near the customer premises, such as the point of interconnection between the drop and the distribution cable, the NID, or the MPOE. Such access would give competitors unbundled access to the inside wire subloop element, in cases where the incumbent owns and controls wire inside the customer premises. It would also include any FDI, whether the FDI is located at a cabinet, CEV, remote terminal, utility room in a multi-dwelling unit, or any other accessible terminal.

211. Cost and Timeliness. We agree with commenters that loop facilities, including subloop elements, are the most time-consuming and expensive network element to duplicate on a pervasive scale, and that the cost of self-provisioning subloops can be prohibitively expensive.⁴⁰¹ Self-provisioning subloops would require requesting carriers to incur significant sunk costs prior to offering services to end users.⁴⁰² Requiring competitors to expend such sums would, at a minimum, delay entry and thus postpone the benefits of competition for consumers.⁴⁰³

212. We are not persuaded by GTE's argument that, because the whole loop is an acceptable substitute, a competitor is not impaired without access to the subloop.⁴⁰⁴ First, as we explain below, the undivided loop does not always afford competitors access to subscribers, as is the case with IDLC loops.⁴⁰⁵ Also, as a rule, requesting carriers that supply their own facilities cannot afford to pay twice – first for the facilities they self-provision, and again for the incumbent's loop, including the portion that they do not

⁴⁰⁰ See, e.g., ALTS Comments at 46-48; Choice One Joint Comments at 21; CoreComm Comments at 33-35; Level 3 Comments at 17-18; NorthPoint Comments at 16; OpTel Comments at 6-7.

⁴⁰¹ See, e.g., ALTS Comments at 37-38; AT&T Comments at 63-64; Focal Comments at 6-7; Level 3 Comments at 15; MCI WorldCom Comments at 43-44; Qwest Comments at 59-61; RCN Comments at 15. See also *Local Competition First Report and Order* 11 FCC Rcd at 15690, para. 378.

⁴⁰² *Local Competition First Report and Order*, 11 FCC Rcd at 15690, para. 378.

⁴⁰³ *Id.*

⁴⁰⁴ GTE Comments at 86-87

⁴⁰⁵ Choice One Joint Comments at 21; CoreComm Comments at 34.

utilize.⁴⁰⁶ We agree with the Illinois Commission that unbundling subloops provides greater efficiency for the requesting carrier because the carrier will not have to buy the entire loop to interconnect its own facilities with wiring on the customer premises.⁴⁰⁷ If competing carriers that need only a portion of the loop must either pay for the entire loop or forego access to that loop altogether, many consumers will be denied the benefits of competition.

213. GTE contends that possible rights-of-way, zoning, power supply, and similar alleged impediments should prevent us from requiring the incumbent to provide loop sub-elements on an unbundled basis.⁴⁰⁸ We assume that GTE is referring to potential obstacles that the requesting carrier may encounter from cities, counties, electric power companies, and similar third parties when it seeks to interconnect its equipment at subloop access points. We find that such obstacles, however, to the extent they develop, are for the competitive LEC to resolve with the municipality or utility. Such obstacles are not relevant to our determination of whether the competitor is impaired without unbundled access to the incumbent's subloop elements, and do not absolve the incumbent from its obligation to provide unbundled access to those elements.

214. Impact on Network Operations. In order to encourage the development of facilities-based competition, requesting carriers must be able to interconnect their networks with the incumbent's network facilities that are designed to provide similar services.

215. First, if those competitors that are attempting to rely primarily on their own facilities are unable to interconnect near the customer premises, the end users those competitors target would have to forego the benefits of competition and new technology those competitors offer.⁴⁰⁹ We agree with several state regulatory commissions that argue that, to the extent that requesting carriers are denied flexibility in connecting their facilities to the local loop, these carriers are impaired from developing their own network infrastructure.⁴¹⁰ In those instances where competitive carriers are able to self-provision a portion of the loop, lack of access to the part of the incumbent's loop they need could impede the competitors' ability to develop their own network architecture and provide

⁴⁰⁶ See Ohio PUC Comments at 20 (stating that it is uneconomical for competitive LECs to purchase an entire loop just to obtain access to the riser cable.) See also MCI WorldCom Comments at 44-45.

⁴⁰⁷ Illinois Commission Comments at 14-15.

⁴⁰⁸ GTE Comments at 88-89.

⁴⁰⁹ See, e.g., OpTel Comments at 7-8; Teligent Comments at 7-8; WinStar Comments at 2-3, 5-7.

⁴¹⁰ Illinois Commission Comments at 14-15 (stating that subloop unbundling, which allows competitive LECs flexibility in self-provisioning segments of the loop, allows them to provide their own facilities where construction is uncomplicated, and tie those facilities to the incumbent LEC's plant.); Texas PUC Comments at 15 (stating that subloop unbundling would promote development, technological advancement, and new types of service.)

new service offerings. On the other hand, the gradual self-provisioning that such access encourages could lead, in time, to conditions that would permit the eventual elimination of the loop element from the unbundling obligations of the Act.

216. For example, wireless providers may require only the final leg of loop distribution plant before the wire passes to customer control at the demarcation point.⁴¹¹ In particular, a facilities-based provider's ability to offer service in a multi-unit building or campus may be severely impaired if it must install duplicative inside wiring.⁴¹² We agree with the argument that requiring competitive LECs to convince landlords and customers to permit the construction of redundant inside wiring would substantially impede market entry and competition.⁴¹³ Even if permission were obtained, overbuilding inside wire might be sufficiently expensive and time-consuming to deter potential competitors.⁴¹⁴ Thus, we conclude that access to these subloop elements at technically-feasible interconnection points is necessary for successful competition by facilities-based competitors.⁴¹⁵

217. Second, carriers need unbundled subloops to serve subscribers currently served by IDLC loops. IDLC technology allows a carrier to "multiplex" and "demultiplex" (combine and separate) traffic at a remote concentration point, or remote terminal, and to deliver the combined traffic directly into the switch, without first separating the traffic from the individual lines.⁴¹⁶ In such cases, competitors generally cannot access IDLC loops at the incumbent's central office.⁴¹⁷ In order to reach

⁴¹¹ Depending on the specific architecture, this interconnection point might be at the pedestal, the NID, the MPOE, or any other accessible terminal.

⁴¹² See, e.g., OpTel Comments at 7-8; Teligent Comments at 7-8; WinStar Comments at 2-3, 5-7.

⁴¹³ See, e.g., RCN Comments at 21-22. Because landlords and subscribers may reasonably object to the disruption of installing duplicative wiring, we reject GTE's argument that the existence of a "robustly competitive" market in electrical contractors may be interpreted to mean that withholding access to the incumbent's inside wire would not impair competitors' ability to offer services. GTE Comments at 90.

⁴¹⁴ See, e.g., KMC Comments at 22; WinStar Comments at 6.

⁴¹⁵ See, e.g., OpTel Comments at 7-9; Teligent Comments at 7.

⁴¹⁶ The device which accomplishes both the mixing of signals bound for the central office, and the separation of signals bound for subscribers, is a "multiplexer." See generally MCI WorldCom Comments at 44-45 (Copper wire runs from the customer premises to a remote terminal, from where the traffic is no longer transported on its own channel, but rather is transported over shared channels.).

⁴¹⁷ But see MCI WorldCom, *Unbundling Digital Loop Carriers*, at 11-15 (March 1999). MCI WorldCom states that there are four ways that competitive LECs may gain access to IDLC subscribers: (1) Multiple Switch Hosting; (2) Integrated Network Architecture; (3) Digital Cross Connect Grooming; and (4) Side Door Grooming. We note, however, that Multiple Switch Hosting is available only on the newest IDLC systems (Telcordia GR-303) and accommodates only a few competitors; Integrated Network Architecture appears to be cost-effective only for competitive LECs with substantial market penetration, and also works only for GR-303-compatible systems; Digital Cross Connect Systems require all loop signals, including signals for loops retained by the incumbent LEC, to pass through the DCS system for processing, and is

subscribers served by the incumbent's IDLC loops, a requesting carrier usually must have access to those loops before the point where the traffic is multiplexed. That is where the end-user's distribution subloop can be diverted to the competitive LEC's feeder, before the signal is mixed with the traffic from the incumbent LEC's other distribution subloops for transport through the incumbent's IDLC feeder.⁴¹⁸ Accordingly, we find that denying access at this point may preclude a requesting carrier from competing to provide service to customers served by the incumbent's IDLC facilities. This would particularly affect consumers in rural areas, where incumbent LECs use the greatest proportion of DLC loops.⁴¹⁹

218. Third, competitors seeking to offer services using xDSL technology need to access the copper wire portion of the loop.⁴²⁰ In cases where the incumbent multiplexes its copper loops at a remote terminal to transport the traffic to the central office over fiber DLC facilities, a requesting carrier's ability to offer xDSL service to customers served over those facilities will be precluded, unless the competitor can gain access to the customer's copper loop before the traffic on that loop is multiplexed. Thus, we note that the remote terminal has, to a substantial degree, assumed the role and significance traditionally associated with the central office.⁴²¹ In addition, in order to use its own facilities to provide xDSL service to a customer, a carrier must locate its DSLAM within

therefore very expensive; and MCI WorldCom agrees that Side Door Grooming can only be done for a few lines per remote terminal. Thus, despite their future potential, these methods do not now substantially reduce the competitive LECs' need to pick up IDLC customers' traffic before it is multiplexed.

⁴¹⁸ In the *Local Competition First Report and Order*, the Commission concluded that incumbent LECs must provide competitors with access to unbundled loops, regardless of whether the incumbent LEC uses IDLC technology, or similar remote concentration systems, for the particular loop sought by the competitor. In that Order, the Commission noted that if incumbent LECs were not required to unbundle IDLC-delivered loops, end users served by such technologies would be effectively deprived of competition for their business, and incumbent LECs would be encouraged to hide loops from competitors through the use of IDLC technology. The Commission also found that it is technically feasible to unbundle IDLC-delivered loops through use of a multiplexer to separate the unbundled loop(s) prior to connecting the remaining loops to the switch. *Local Competition First Report and Order*, 11 FCC Rcd at 15692, para 383. In the three years since the *Local Competition First Report and Order*, however, such methods have not proven practicable. Competitors are not yet able economically to separate and access IDLC customers' traffic on the wire-center side of the IDLC multiplexing devices. See Level 3 Comments at 17-18; NorthPoint Comments at 16-18; Prism Comments at 21; RCN Comments at 22.

⁴¹⁹ See, e.g., MCI WorldCom Comments at 44-45. (More than 20% of loops use DLC technology, and the percentage will only increase over time.). MCI WorldCom Reply Comments at 45 (More than half the wire centers in the United States (10,967 out of 20,637) – the majority in rural areas – serve under 2000 lines. In these rural areas, about half the loops are provisioned over DLC). See also Choice One Joint Comments at 21; CoreComm Comments at 34.

⁴²⁰ See, e.g., Covad Comments at 33-34, 39-41.

⁴²¹ The Commission has long held collocation at the central office to be desirable. Our analysis extends the Commission's reasoning to new situations as the network architecture evolves. See generally *Advanced Services First Report and Order and FNPRM*, 14 FCC Rcd at 4771-94, paras. 19-60.

a reasonable distance of the customer premises, usually less than 18,000 feet.⁴²² In both of these situations, a requesting carrier needs access to copper wire relatively close to the subscriber in order to serve the incumbent's customer.

219. Goals of the Act. Access to unbundled subloop elements allows competitive LECs to self-provision part of the loop, and thus, over time, to deploy their own loop facilities, and eventually to develop competitive loops. If requesting carriers can reduce their reliance on the incumbent by interconnecting their own facilities closer to the customer, their ability to provide service using their own facilities will be greatly enhanced, thereby furthering the goal of the 1996 Act to promote facilities-based competition. Failure to unbundle the subloop would cause residential and small business consumers to wait unnecessarily for competitive alternatives. We also find that the availability of unbundled subloops will accelerate the development of alternative networks, because it will allow requesting carriers efficiently to connect their facilities with the incumbent's loop plant. Thus, our decision to unbundle subloops is consistent with the 1996 Act's goals of rapid introduction of competition and the promotion of facilities-based entry.

d. Technical Feasibility

220. We note that parties commenting in this proceeding disagree as to the technical feasibility of accessing various points of the loop. For example, SBC contends that incumbents should not be required to unbundle subloops at the CEV because the CEV is a small, protected environment that is not designed for access by multiple parties. SBC also argues that unbundling at the cabinet will jeopardize network security.⁴²³ Competitive LECs, on the other hand, argue that SBC exaggerates these impediments, which they maintain are not insurmountable.⁴²⁴

⁴²² *Id.* at 4772, para 21. *See also* AT&T Comments at 85 (stating that high speed data transmission over xDSL technology will come at the expense of competition unless CLECs can deploy their own SONET rings and lease loop distribution from the ILEC.); Level 3 Comments at 17-18; RCN Comments at 22-23. DSL technology can require loop lengths as short as 4,000 feet.

⁴²³ *See, e.g.,* SBC Comments at 30-31 (By separating feeder from distribution, the ability to mechanize testing and monitoring from the switch would be lost; sending technicians in place of mechanized testing would decrease service and increase prices.) *See also* Letter from Lincoln E. Brown, SBC, to Magalie R. Salas, Secretary, Federal Communications Commission, CC Docket No. 96-98, (filed July 30, 1999) (SBC July 30, 1999 *Ex Parte*) (stating that unbundling is not feasible at a serving terminal; that FDI's are small and sized for serving areas; and present an extremely limited opportunity for single CLEC cable; that access to the subloop is not feasible in the Hub; and that there is extremely limited opportunity for access at RT/FDI combinations due to space constraints.)

⁴²⁴ *See, e.g.,* Letter from Scott A. Sarem, MGC, to Magalie R. Salas, Secretary, Federal Communications Commission, CC Docket No. 96-98, (filed July 26, 1999) (MGC July 23, 1999 *Ex Parte*) (stating that GTE has explained to MGC in detail how it would provision MGC with subloops through a D-4 channel bank, and citing letter from Ellen Robinson, GTE, to Mark Peterson, MGC, Apr. 16, 1998); Letter from Patrick J. Donovan, CoreComm, to Magalie R. Salas, Secretary, Federal Communications Commission, CC Docket No. 96-98, (filed July 30, 1999) (CoreComm Jul. 30, 1999 *Ex Parte*.) (stating that loops are typically comprised of segments accessible – and accessed by incumbents – at natural junctures; FDI's are

221. MGC asserts, and we agree, that our collocation rules, which we recently clarified in the *Advanced Services First Report and Order*, apply to collocation at any technically feasible point, from the largest central office to the most compact FDI.⁴²⁵ This is because our collocation rules concern methods and standards of obtaining interconnection and access to unbundled network elements under section 251 of the Act, and thus are not directed to any one type of facility. Although we intend to make collocation available at all accessible terminals on the loop, we acknowledge that the incumbent's network was not designed to house additional equipment of competitors. Our rules do not require incumbents to build additional space. Nor do our rules, however, preclude requesting carriers from constructing their own facilities adjacent to the incumbent's equipment.⁴²⁶ Moreover, in some cases, technicians may not need to enter the cabinet or vault at all because virtual collocation arrangements will satisfy the needs of all parties.⁴²⁷ We note that, prior to adoption of rules requiring incumbent LECs to offer collocation to competitors, incumbent LECs raised similar doubts as to whether collocation would be feasible at central offices.⁴²⁸ As indicated by the number of collocation arrangements in place today, these doubts were not well-founded.

designed to facilitate connection between feeder and distribution); Letter from David N. Porter, MCI WorldCom, to Magalie R. Salas, Secretary, Federal Communications Commission, CC Docket No. 96-98, (filed Aug. 10, 1999) (MCI WorldCom Aug. 10, 1999 *Ex Parte*.) (stating that unbundling is feasible at either end of a copper loop; and that manufacturers are introducing new DLC and DSL multiplexing equipment that will allow local exchange carriers to share common shelves).

⁴²⁵ 47 C.F.R. §§ 51.321-323; MGC July 23, 1999 *Ex Parte* at 2. Pursuant to our recent *Advanced Services First Report and Order and FNPRM*, an incumbent LEC may not refuse to permit collocation of equipment on the grounds that it does not satisfy certain Bellcore Network Equipment and Building Specifications (NEBS) performance requirements, and an incumbent may not impose on a collocating competitor safety standards that exceed the safety standards it imposes on its own equipment. *Advanced Services First Report and Order and FNPRM*, 14 FCC Rcd at 4781-4782, paras. 35-36. In addition, we revised our rules to permit collocating carriers to construct their own cross connects. *Id.* at 4779-4780, para. 33.

⁴²⁶ See MCI WorldCom Aug. 10, 1999 *Ex Parte* at 2.

⁴²⁷ MGC July 23, 1999 *Ex Parte* subpart F; CoreComm July 30, 1999 *Ex Parte*. MGC, however, doubts that incumbents' junction boxes do in fact lack space for fiber termination equipment, because such equipment may not take up more than a shelf or two on an equipment rack. MGC July 23, 1999 *Ex Parte*. In a physical collocation arrangement, a competitor leases space at a LEC's premises for its equipment. The competing provider has physical access to this space to install, maintain, and repair its equipment. See *Local Competition First Report and Order*, 11 FCC Rcd at 15784, n.1361; *Expanded Interconnection Order*, 7 FCC Rcd at 7391, para. 42. In a virtual collocation arrangement, the competitor designates the equipment to be placed at the incumbent LEC's premises. The competing provider, however, does not have physical access to the incumbent's premises. Instead, the equipment is under the physical control of the incumbent LEC, and the incumbent is responsible for installing, maintaining, and repairing the competing provider's equipment. See *Local Competition First Report and Order*, 11 FCC Rcd at 15784-15785, para. 559; *Virtual Collocation Order*, 9 FCC Rcd 5154, 5158, para. 7 (1994).

⁴²⁸ See generally *Expanded Interconnection Order*, 7 FCC Rcd 7369 (1992); *Advanced Services Memorandum Opinion and Order and NPRM*, 13 FCC Rcd 24012; *Advanced Services First Report and Order FNPRM*, 14 FCC Rcd 4761.

222. The record indicates that the space available for collocating and interconnecting at various subloop access points will vary depending on the incumbent's existing plant at a particular location.⁴²⁹ For example, the feeder/distribution interface for a business park could be located in a room that contains a mini-MDF, racks of equipment, and enough unoccupied space to accommodate easily the requesting carrier's equipment. In other situations, such as at a remote terminal in a cabinet, the FDI may be housed in a facility that has no spare space at all.⁴³⁰ We note that Texas supports unbundling the subloop, but has not ordered unbundling at the FDI due to technical problems that, according to Texas, would threaten the integrity of the network.⁴³¹ Ohio states that copper loops are still the dominant technology in its state, and that it has not seen evidence to suggest that it is technically feasible to unbundle copper subloops.⁴³² Ohio also points out that the technical feasibility of unbundling subloops at particular points on the network may change with the introduction of new technologies.⁴³³

223. As we explain above, however, we conclude that the goals of the Act are best served by determining unbundling rules that apply to network elements nationwide.⁴³⁴ In adopting a rule that requires incumbents to unbundle subloops at the points identified above, we seek to provide requesting carriers maximum flexibility to interconnect with the incumbent's network at technically feasible points in order to allow competitors to serve customers efficiently. Accordingly, we establish a rebuttable presumption that the subloop can be unbundled at any accessible terminal in the outside loop plant. If the parties are unable to reach an agreement pursuant to voluntary negotiations about the availability of space or the technical feasibility of unbundling the subloop at one of the points identified above, the incumbent will have the burden of demonstrating to the state, in the context of a section 252 arbitration proceeding, that there is no space available or that it is not technically feasible to unbundle the subloop at these points.⁴³⁵

224. Our approach to subloop unbundling permits evaluation of the technical feasibility of subloop unbundling on a case-by-case basis, and takes into account the different loop plant that has been deployed in different states. We find that the questions of technical feasibility, including the question of whether or not sufficient space exists to make interconnection feasible at assorted huts, vaults, and terminals, and whether such

429 See SBC Comments at 30-31; SBC July 30, 1999 *Ex Parte*.

430 SBC July 30, 1999 *Ex Parte*.

431 Texas PUC Comments at 15-16.

432 Ohio PUC Comments at 16-17. See also MCI WorldCom Aug. 10, 1999 *Ex Parte* (defining entire dedicated copper loop from NID to RT or CO as single subloop element.).

433 Ohio PUC Comments at 16. See also USTA Comments at 35-36.

434 See *supra* Section (IV)(C).

435 See 47 U.S.C. § 252(b).

interconnection would pose a significant threat to the operation of the network, are fact specific. Such issues of technical feasibility are best determined by state commissions, because state commissions can examine the incumbent's specific architecture and the particular technology used over the loop, and thus determine whether, in reality, it is technically feasible to unbundle the subloop where a competing carrier requests.⁴³⁶ We also note we are considering legal issues regarding access to premises in the *Access to Competitive Networks* proceeding.⁴³⁷

225. We further note that SBC proposes to avoid difficulties associated with competing carriers serving multi-unit premises by eliminating multiple demarcation points in favor of a single demarcation point, which, according to SBC, would remedy competitive LECs' concerns.⁴³⁸ OpTel similarly suggests that the incumbent should provide a single point of interconnection at or near the property line of multi-unit premises.⁴³⁹ OpTel further maintains that the cost of any network reconfiguration required to create a point of interconnection that would be accessible to multiple carriers should be shared by all the carriers concerned.⁴⁴⁰

226. Although we do not amend our rules governing the demarcation point in the context of this proceeding, we agree that the availability of a single point of interconnection will promote competition.⁴⁴¹ To the extent there is not currently a single point of interconnection that can be feasibly accessed by a requesting carrier, we encourage parties to cooperate in any reconfiguration of the network necessary to create one. If parties are unable to negotiate a reconfigured single point of interconnection at multi-unit premises, we require the incumbent to construct a single point of interconnection that will be fully accessible and suitable for use by multiple carriers.⁴⁴² Any disputes regarding the implementation of this requirement, including the provision of compensation to the incumbent LEC under forward-looking pricing principles, shall be subject to the usual dispute resolution process under section 252.⁴⁴³ We emphasize that this principle in no way diminishes a carrier's right to access the loop at any technically feasible point, including other points at or near the customer premises. We also note that

⁴³⁶ See, e.g., Florida PSC Comments at 8; Iowa Comments at 9; Ohio PUC Comments at 18. See also Kentucky PSC Comments at para. 1; New York DPS Comments at 6.

⁴³⁷ See *Competitive Networks* Notice at para. 28 et seq.

⁴³⁸ SBC Reply Comments at 9 (citing OpTel Comments at 10; Teligent Comments at 3).

⁴³⁹ OpTel Comments at 10.

⁴⁴⁰ *Id.*

⁴⁴¹ See 47 C.F.R. § 68.3.

⁴⁴² The incumbent is obligated to construct the single point of interconnection whether or not it controls the wiring on the customer premises.

⁴⁴³ See 47 U.S.C. § 252

unbundling inside wire, and access to premises facilities in general, present specific technical issues, and that we have sought additional comment on these issues in our *Access to Competitive Networks* proceeding.⁴⁴⁴ If the record developed in that proceeding demonstrates the need for additional federal guidance on legal or technical feasibility issues related to subloop unbundling, we will provide such additional guidance, consistent with the policies established in this Order.

227. Our approach to subloop unbundling reflects the network as it exists today. Technology may develop, however, in ways that would render this approach too limiting. For that reason, we establish a further rebuttable presumption that, once one state has determined that it is technically feasible to unbundle subloops at a designated point, it will be presumed that it is technically feasible for any incumbent LEC, in any other state, to unbundle the loop at the same point everywhere. If the conditions surrounding a request for unbundling at a similar point differ to such an extent that it is not technically feasible for the incumbent to provide unbundled access to that subloop element, the incumbent will have the burden of demonstrating in a section 252 arbitration proceeding that such an arrangement is indeed not technically feasible under those different conditions. For example, Texas requires subloop unbundling at the remote terminal.⁴⁴⁵ If a competitive LEC seeks unbundled access to a subloop at the remote terminal from an incumbent LEC in New York, the burden rests with the New York incumbent LEC to prove that its own situation differs to such an extent that the Texas arrangement is not technically feasible. We believe that this “best practices” approach insures that incumbent LECs do not limit access to subloops based on unforeseeable technological and infrastructure developments.

228. In addition to arguing that remote terminals will in some cases be inaccessible, SBC also argues that, by separating feeder plant from distribution plant, the ability to perform mechanized testing and monitoring of the loop from the incumbent’s switch would be lost.⁴⁴⁶ We do not believe that this technical issue precludes us from establishing unbundling obligations for subloops. Once the competitor has acquired the customer from the incumbent, the competitor will have the incentive to ensure that there is a method by which the customer’s loop can be tested. The technical method by which this testing is accomplished is a matter for the parties to decide through negotiations. If the incumbent can demonstrate to the satisfaction of the state regulatory commission that it would incur increased expenses associated with testing the subloop network element, we presume such expenses would be included in the forward-looking price of the

⁴⁴⁴ See generally *Competitive Networks Notice* at paras. 49-51 and 65-67.

⁴⁴⁵ Texas PUC Comments at 15-16. We note that Texas determined that the RT itself would not be part of the unbundled subloop. To protect the public interest, Texas places other limitations on its unbundling requirement. *Id.*

⁴⁴⁶ SBC Comments at 31.

element.⁴⁴⁷ For similar reasons, we reject the argument that subloop unbundling is not feasible because it may create additional administrative costs.⁴⁴⁸

229. Accordingly, we are not persuaded by incumbents' arguments that technical feasibility issues require us to find that subloops are not subject to the unbundling obligations of the Act. We note that incumbent LECs advanced similar arguments against collocation at central offices; we continue to reject those arguments in the subloop context as well.⁴⁴⁹ To the extent disputes arise over the feasibility of interconnecting at various points on the loop, states will address these issues as part of the arbitration process under section 252.

C. Network Interface Devices (NIDs)

1. Background

230. In the *Local Competition First Report and Order*, the Commission concluded that incumbent LECs must offer unbundled access to the network interface device (NID).⁴⁵⁰ It defined the NID network element as a cross-connect device used to connect loop facilities to inside wiring.⁴⁵¹ In that order, the Commission noted that a competitor deploying its own loops must be able to connect those loops to customers' inside wiring in order to provide service, especially to customers in multi-tenant buildings. The Commission also concluded that a requesting carrier is entitled to connect its loops, via its own NID, to the incumbent LEC's NID.⁴⁵²

231. In the *Notice*, we sought comment on application of the "necessary" and "impair" standards of section 251(d)(2) to the network elements previously identified in the *Local Competition First Report and Order*, including the NID.⁴⁵³ Incumbent LECs argue that NIDs are off-the-shelf devices that can be purchased inexpensively.⁴⁵⁴ Competitive LECs argue that self-provisioning the NID is economically impracticable at the level of ubiquity needed to deploy service on a widespread basis.⁴⁵⁵

⁴⁴⁷ See 47 U.S.C § 252(d).

⁴⁴⁸ See, e.g., GTE Reply Comments at 76.

⁴⁴⁹ See, e.g., *Expanded Interconnection Order*, 7 FCC Rcd 7369; *Advanced Services First Report and Order and FNPRM*, 14 FCC Rcd 4761.

⁴⁵⁰ *Local Competition First Report and Order*, 11 FCC Rcd at 15697, para. 392.

⁴⁵¹ *Id.* at 15697, para. 392, n.852.

⁴⁵² *Id.* at 15697, para. 392.

⁴⁵³ *Notice* at paras. 31-33.

⁴⁵⁴ See, e.g., GTE Comments at 56.

⁴⁵⁵ See, e.g., MCI WorldCom Comments at 47; MGC Comments at: 20; Net2000 Comments at

2. Discussion

232. We conclude that lack of unbundled access to the incumbent's NID impairs the ability of requesting carriers to provide the services that they seek to offer. As described below, we conclude that the competitor's ability to self-provision NIDs does not constitute a viable alternative to unbundled access to the incumbent's NID element. Although the physical structure of the NID is widely available, it is access to the function, rather than the hardware itself, that competitors rely upon. The record indicates that requiring a requesting carrier to self-provision NIDs for all customers it seeks to serve would materially raise the cost of entry, delay broad facilities-based market entry, and materially limit the scope and quality of the competitor's service offerings.⁴⁵⁶ Accordingly, we require incumbent LECs to provide unbundled access to NIDs nationwide.

a. Definition of the NID

233. In the *Local Competition First Report and Order*, the Commission defined the NID as a cross-connect device used to connect loop facilities to inside wiring. We modify that definition of the NID to include all features, functions, and capabilities of the facilities used to connect the loop distribution plant to the customer premises wiring, regardless of the particular design of the NID mechanism. Specifically, we define the NID to include any means of interconnection of customer premises wiring to the incumbent LEC's distribution plant, such as a cross-connect device used for that purpose.⁴⁵⁷

234. We conclude that the NID definition, for the purposes of our unbundling analysis, should be flexible and technology-neutral. The Commission's rules permit considerable variation in the interconnection facilities between carrier and customer-controlled facilities.⁴⁵⁸ Furthermore, evolution in network design and technology will likely cause additional design variations among the hardware interfaces between carrier and customer premises facilities. Accordingly, we define the NID broadly to ensure that competitors will be able to obtain access to any of these facilities as an unbundled network element. Our intention is to ensure that the NID definition will apply to new technologies, as well as current technologies, and to ensure that competitors will continue to be able to access customer premises facilities as an unbundled network element, as long as that access is required pursuant to section 251(d)(2) standards.

12-13; Rhythms Comments at 18.

⁴⁵⁶ See, e.g., Cable and Wireless Comments at 34-35; Choice One Joint Comments at 19; CoreComm Comments at 31.

⁴⁵⁷ As we discuss at Section (V)(A) *supra*, where we define the loop, the loop may terminate at the NID, before the NID, or beyond the NID.

⁴⁵⁸ See 47 C.F.R. §§ 68.3, 68.104, 68.213, 68.215.

235. We decline to adopt parties' proposals to include the NID in the definition of the loop.⁴⁵⁹ Similarly, we reject arguments that we should include inside wiring in the definition of the NID in order to permit facilities-based competitors access to inside wiring.⁴⁶⁰ Although competitors may choose to access the inside wire via the NID, in some circumstances they may choose to access the inside wire at another point, such as the minimum point of entry. By continuing to identify the NID as an independent unbundled network element, we underscore the need for the competitive LEC to have flexibility in choosing where best to access the loop. Competitors purchasing a subloop at the NID, however, will acquire the functionality of the NID for the subloop portion they purchase. We therefore find no need to include inside wiring in the definition of the NID, or to include the NID as part of any other subloop element.

b. Proprietary Concerns Associated with the NID

236. In the *Local Competition First Report and Order*, the Commission did not identify any proprietary concerns associated with NIDs.⁴⁶¹ No parties in this proceeding identify any proprietary concerns associated with the NID, and we find none. We therefore apply the "impair" standard of section 251(d)(2)(A) to determine whether NIDs are subject to the unbundling obligations of the Act.

c. Unbundling Analysis

237. We find that lack of access to the NID would materially diminish a competitor's ability to provide the services it seeks to offer. In particular, we find that requesting carriers would be impaired without access to NIDs because self-provisioning NIDs would materially raise entry costs, delay broad facilities-based entry, and materially limit the scope and quality of the competitor's service offerings.⁴⁶² Accordingly, we require incumbent carriers to provide unbundled access to their NIDs nationwide. Specifically, an incumbent LEC must permit a requesting carrier to connect its own loop facilities to the inside wire of the premises through the incumbent LEC's network interface device, or at any other technically feasible point, to access the inside wire subloop network element.

⁴⁵⁹ See Cable & Wireless Comments at 34; Choice One Joint Comments at 19; KMC Comments at 18; MCI WorldCom Comments at 45, 47; MGC Comments at 19; Qwest Comments at 67.

⁴⁶⁰ See Cable & Wireless Comments at 34-35; CompTel Comments at 36.

⁴⁶¹ In the *Local Competition First Report and Order*, the Commission concluded that incumbent LECs must offer unbundled access to the NID, as a network element. *Local Competition First Report and Order*, 11 FCC Rcd at 15697, para. 392.

⁴⁶² In that phase of the proceeding, the Commission noted that a competitor deploying its own loops must be able to connect those loops to customers' inside wiring in order to provide service, especially in multi-tenant buildings. The Commission therefore concluded that a requesting carrier is entitled to connect its loops, via its own NID, to the incumbent LEC's NID. *Local Competition First Report and Order*, 11 FCC Rcd at 15697, para 392.

⁴⁶² See *supra* Section (IV)(B)(4).

238. Cost and Timeliness. We agree with those commenters that maintain that there are no economic or practical alternatives to the NID that would otherwise enable requesting carriers to provide service.⁴⁶³ NIDs are individually dedicated to specific customer premises, and are often difficult to replace. Requesting carriers' ability to provide service to their customers would be materially diminished if they had to self provision NIDs because of the significant labor and construction costs involved in visiting the premises of each customer and installing the device. This is true for all customers, but is particularly evident for residential and small business markets because of the greater number of NIDs required to provide service to each customer.⁴⁶⁴ We therefore conclude that requiring competitors to install numerous, redundant NIDs at the interface to customer premises wiring would constitute a substantial economic and practical barrier to market entry, and a needless waste of carrier resources.

239. Ubiquity. We conclude that self-provisioning NIDs is not economically practical at the level of ubiquity at which incumbent LECs' NIDs are currently deployed. We disagree with GTE's argument that the NID should not be unbundled because the hardware is inexpensive and available from a multitude of non-incumbent LEC sources. Specifically, GTE claims that the NID hardware costs between \$25 and \$40, and that requesting carriers can purchase NIDs from the same sources that incumbent LECs use.⁴⁶⁵ We do not find that the cost and availability of NID hardware is dispositive of the need to unbundle access to incumbent LEC-installed NIDs. As with other network elements, in conducting our unbundling analysis under section 251(d)(2), we do not consider the cost and availability of network elements in isolation. Rather, we examine whether, after applying the factors we explained in the unbundling standard above, a requesting carrier is able, as a practical, economic, and operational matter, to use alternatives for the incumbent's network elements. Although the record indicates that NID hardware may be available from alternative sources and that NIDs are affordable individually, it is the aggregate cost and difficulty of installing duplicate NIDs at every potential customer location that substantially impairs a requesting carrier from offering services.⁴⁶⁶

240. Goals of the Act. Access to unbundled NIDs furthers the Act's goals of promoting innovation, the rapid introduction of competition, and the development of facilities-based competition. If requesting carriers can reduce their reliance on the incumbent by interconnecting their own facilities closer to the customer, their ability to provide services using their own facilities will be greatly enhanced, thereby furthering the goal of the 1996 Act to promote facilities-based competition. We find that the availability

⁴⁶³ See Choice One Joint Comments at 19; CoreComm Comments at 31; MGC Comments at 20; KMC Comments at 18; Net2000 Comments at 12-13; Rhythms Comments at 18.

⁴⁶⁴ See Cable and Wireless Comments at 33-34; Choice One Joint Comments at 19; CoreComm Comments at 31; KMC Comments at 18; Level 3 Comments at 17; MCI WorldCom Comments at 47.

⁴⁶⁵ GTE Comments at 56.

⁴⁶⁶ See MCI WorldCom Comments at 47; MGC Comments at 20.

of unbundled NIDs will accelerate the development of alternative networks, because it will allow requesting carriers efficiently to connect their facilities with the incumbent's loop plant. Thus, our decision to unbundle NIDs is consistent with the 1996 Act's goals of rapid introduction of competition and the promotion of facilities-based entry. We recognize that there may be situations where a competitive LEC could successfully self-provision NIDs. We find, however, that the benefits of unbundling the NID on a nationwide basis outweigh the costs of creating a patchwork regime in which incumbents will seek to litigate whether particular NIDs should be unbundled or whether an alternative to the incumbent LEC's NID is arguably available as a practical, economic, and operational matter.

D. Local Switching

1. Local Circuit Switching

a. Background

241. In the *Local Competition First Report and Order*, the Commission concluded that incumbent LECs must provide local circuit switching as an unbundled network element.⁴⁶⁷ The Commission found that denying access to the local circuit switching element would "substantially impair the ability of many competing carriers to provide switched telecommunications services."⁴⁶⁸

242. In the *Notice*, we sought comment on the application of the "necessary" and "impair" standards to previously identified unbundled network elements, including the switch.⁴⁶⁹ The *Notice* requested that parties include specific costs and an analysis of the availability of alternative sources of switching.⁴⁷⁰

243. Incumbent LECs argue that a market-by-market analysis of the availability of local circuit switching requires a finding that requesting carriers are not impaired without access to unbundled switching in certain areas.⁴⁷¹ Conversely, a number of requesting carriers argue that they are impaired without unbundled local circuit switching nationwide primarily because of the operational impairment associated with obtaining collocation and coordinated hot cuts.⁴⁷² We note also that at least nine of the eleven states

⁴⁶⁷ *Local Competition First Report and Order*, 11 FCC Rcd at 15602, para. 197.

⁴⁶⁸ *Id.*

⁴⁶⁹ *Notice* at para. 32.

⁴⁷⁰ *Id.* at para. 33.

⁴⁷¹ Ameritech Comments at 5; BellSouth Comments at 56; Bell Atlantic Comments at 23; GTE Comments at 39; SBC Comments at 42; USTA Comments at 34; US WEST Comment at 44.

⁴⁷² AT&T Comments at 86; Cable & Wireless Comments at 36; KMC Comments at 15; Net2000 Comments at 13; Qwest Comments at 70; Sprint Comments at 31.

participating in this proceeding agree that the Commission should unbundle local circuit switching.⁴⁷³

b. Discussion

(i) Definition of Local Circuit Switching

244. In the *Local Competition First Report and Order*, the Commission defined local circuit switching as including the basic function of connecting lines and trunks.⁴⁷⁴ In addition to line-side and trunk-side facilities, the definition of the local switching element encompasses all the features, functions and capabilities of the switch.⁴⁷⁵ With the exception of MCI WorldCom, no commenter proposes that we modify the current definition of local switching. We disagree with MCI WorldCom, and find no reason to alter our current definition of local circuit switching.

245. MCI WorldCom proposes that we modify our definition of local circuit switching to omit the line-side/trunk-side distinction in favor of a technologically-neutral definition that connects “loop access points” and “transport access points” to the “switching facility,” regardless of whether a given switch has equipment that could be identified as line port cards or trunk port cards. MCI WorldCom suggests that we should take into account the increasing use of switches to connect to facilities other than home run copper loops, including DLCs.⁴⁷⁶ We cannot find, on the basis of the record before us, that incumbent LEC circuit switching technologies have changed in such a way as to warrant modification of our circuit switching definition.⁴⁷⁷ Furthermore, adopting MCI

⁴⁷³ California PUC at 4,5; Connecticut PUC Comments at 4,5; Florida PSC Comments at 7; Illinois Commission Comments at 11, 12-13; Iowa Comments at 6-7, 8; Kentucky PSC Comments at 2; New York DPS Comments at 2, 4; Texas PUC Comments at 14; Washington UTC Comments at 11. *But see* Ohio PUC Comments at 8.

⁴⁷⁴ *See Local Competition First Report and Order*, 11 FCC Rcd. at 15706, para. 412. The line-side switch facilities include the connection between a loop termination at, for example, a main distribution frame (MDF), and a switch line card. Trunk-side facilities include the connection between trunk termination at a trunk-side cross-connect panel and a trunk card. The “features, functions, and capabilities” of the local switch include the basic switching function of connecting lines to lines, lines to trunks, trunks to lines and trunks to trunks.

⁴⁷⁵ *Id.* The local switching element includes all vertical features that the switch is capable of providing, including customized routing functions, CLASS features, Centrex and any technically feasible customized routing functions. Custom calling features, such as call waiting, three-way calling, and call forwarding, are switch-based calling functions. CLASS features, such as caller ID, are number translation services that are based on the availability of interoffice signaling.

⁴⁷⁶ MCI WorldCom Comments at 56-58. A loop that connects an end office to an end user’s premises is sometimes referred to as a “home run” copper loop.

⁴⁷⁷ For example, in response to MCI WorldCom’s proposal, Ameritech asserted that its switching technology has not changed to warrant a modification to the local circuit switching rule. *See* Letter from John T. Lenahan, Assistant General Counsel, Ameritech, to Magalie R. Salas, Secretary, Federal Communications Commission, CC Docket 96-98 at 3-4 (filed July 30, 1999) (Ameritech Jul. 30, 1999 *Ex Parte*).

WorldCom's proposed changes could require state commissions to re-evaluate their current pricing analysis of unbundled circuit switching. Replacing the existing definition of switching with "loop access points" or the "switching facility" could lead to uncertainty and different cost determinations in state pricing proceedings. We find no procompetitive basis on which to require states to modify their settled state proceedings that have addressed forward-looking pricing for unbundled switching. Accordingly, we decline to modify our definition of local circuit switching.

**(ii) Proprietary Concerns Associated With
Local Circuit Switching**

246. We conclude that incumbent LECs may not withhold access to switch routing tables as part of the unbundled local circuit switching element under section 251(d)(2)(A). With the exception of Ameritech, no commenter identifies any proprietary concerns associated with local circuit switching.⁴⁷⁸ Ameritech argues that, if we conclude that local switching qualifies as an unbundled network element, we should decline to require incumbent LECs to make their switch routing tables available to requesting carriers because these tables are "proprietary," within the meaning of section 251(d)(2)(A).⁴⁷⁹ According to Ameritech, routing tables are "part of the computer software that instructs a switch how to route network traffic," and contain "extremely valuable information" that is not "necessary" to a requesting carrier under section 251(d)(2)(A).⁴⁸⁰ Ameritech further argues that its routing tables meet the legal requirements for trade secret protection from unauthorized disclosure.⁴⁸¹

247. Ameritech contends that, because it has invested resources in creating economic value in its routing tables, and it takes reasonable steps to protect its routing tables from unauthorized disclosure, switch routing tables meet the general requirements for trade secret protection.⁴⁸² No opposing party addresses whether Ameritech's routing table meets the legal requirements for trade secret protection. CompTel avers that switch routing tables merely perform a function that allows a switch to operate in a network, and as such, switch routing tables are not proprietary and should be included within the unbundled switching element.⁴⁸³ On the basis of Ameritech's uncontested assertion that its routing tables qualify for trade secret protection, we find that Ameritech's routing table may qualify for trade secret protection. Thus, it appears that the routing aspect of the local circuit switching element may be proprietary.

478 Ameritech Comments at 85.

479 *Id.*

480 *Id.*

481 *See* Ameritech July 30, 1999 *Ex Parte* at 4.

482 *See id.* at 2.

483 CompTel Reply Comments at 15.

248. The “Necessary” Standard. As previously discussed, there are several circumstances which, if they exist with respect to information or functionalities that the incumbent LEC claims are proprietary, will permit us to order unbundling of the proprietary information or functionality even if such unbundling is not strictly “necessary.” Access to the incumbent LEC’s routing tables may be necessary for some carriers because they would be precluded, as an economic matter, from providing service to certain classes of customers if they were forced to self-provision their own routing tables. Requesting carriers would be economically precluded from providing service because of the costs associated with developing their own routing tables and the additional non-recurring and administrative costs of substituting dedicated transport unbundled network elements for shared transport.⁴⁸⁴ As we found in the *Local Competition Third Reconsideration Order*, the high costs that requesting carriers would incur without access to shared transport would deter entry and impose significant costs on new entrants without any corresponding, direct benefits.⁴⁸⁵

249. Even if it is not strictly necessary for all carriers to have access to the incumbent LECs’ routing tables, we find that they should be required to unbundle them because two of the three circumstances that we identified previously exist, and because requesting carriers would be impaired without access to routing tables as part of the unbundled local circuit switching element.

250. Specifically, we find that it is unlikely that Ameritech will compete for end-user customers based on the ability to send a call to an appropriate destination, or that its routing tables allow it to differentiate its services from its competitors’ services. As we stated above, information or functionalities that do not distinguish an incumbent LEC’s service from that of its competitor’s services are unlikely to be the focus of an incumbent LEC’s efforts to innovate, and therefore do not require the higher level of protection normally afforded to proprietary elements under the “necessary” standard.

251. Moreover, we find that incumbent LECs may not withhold access to switch routing tables as part of the unbundled local switching element because doing so would jeopardize the goal of the 1996 Act to bring rapid competition to the greatest number of customers. One of the most essential functions a switch performs is to provide routing information that sends a call to the appropriate destination.⁴⁸⁶ Requiring requesting carriers to engage in the potentially lengthy process of compiling traffic studies and populating routing tables with data in the incumbent LEC’s unbundled switch would

⁴⁸⁴ See *Implementation of the Local Competition Provision in the Telecommunications Act of 1996*, Third Order on Reconsideration and Further Notice of Proposed Rulemaking, 12 FCC Rcd 12460, 12486-87, para. 50 (1997) (Local Competition Third Reconsideration Order) (“[W]e concluded that the relative costs of dedicated transport, including the associated NRCs [Non-recurring charges], is an unnecessary barrier to entry for competing carriers.”)

⁴⁸⁵ *Id.* at 12481, para. 34.

⁴⁸⁶ *Id.* at 12486-87, para. 45.

frustrate a requesting carrier's ability to use unbundled local circuit switching to serve customers quickly.

252. As described below, we conclude that carriers would be impaired without access to routing tables as part of the unbundled local circuit switching element. Requesting carriers have not generally deployed self-provisioned local circuit switches to serve the mass market.⁴⁸⁷ We conclude that requesting carriers are impaired without access to unbundled local circuit switching to serve certain customer classes in discrete geographic areas. We therefore order incumbent LECs to provide access to unbundled local circuit switching in these circumstances.⁴⁸⁸ We note that requesting carriers will request unbundled access to local circuit switching when, in the judgment of the requesting carrier, the costs and delays associated with self-provisioning switching do not warrant purchase and installation of a local circuit switch. Accordingly, because of the circumstances identified above, and because requesting carriers would be impaired without access to routing tables as part of the local circuit switching element, we find that incumbent LECs may not, pursuant to section 251(d)(2)(A), withhold access to switch routing tables.

(iii) General Unbundling Analysis for Local Circuit Switching

253. We conclude that, as a general matter, unbundled local circuit switching meets the "impair" standard set forth in section 251(d)(2). Accordingly, we require incumbent LECs to provide local switching as an unbundled network element. Based on the record, we find that, in general, lack of access to unbundled local switching materially raises entry costs, delays broad-based entry, and limits the scope and quality of the new entrant's service offerings. As discussed in detail below, our unbundling analysis focuses upon the ability of a requesting carrier to self-supply switching because the record does not support a finding that requesting carriers, as a general matter, can obtain switching from carriers other than the incumbent LEC.⁴⁸⁹ We find, however, that an exception to this rule is required under certain market circumstances. We find that, where incumbent LECs have provided nondiscriminatory, cost-based access to combinations of loop and transport unbundled network elements, known as the enhanced extended link (EEL), requesting carriers are not impaired without access to unbundled switching for end users

⁴⁸⁷ We note that when requesting carriers provide service to end users with self-provisioned switches, they do not rely upon the incumbent LEC's routing table.

⁴⁸⁸ See *infra* Section V(D)(1)(b)(iii)(exception to national unbundling requirement for local circuit switching).

⁴⁸⁹ See TRA Comments at 34-36 (citing Appendix II, Report of the Competitive Communications Group). See also, Letter from Chuck Goldfarb, Director Law and Public Policy, MCI WorldCom to Larry Strickling, Chief, Common Carrier Bureau, Federal Communications Commission, CC Docket No. 96-98 (filed August 9, 1999) (MCI WorldCom August 9, 1999 *Ex Parte*) ("Wholesale switching markets are extremely unlikely to develop due to CLECs' desire to differentiate their product offerings by self-provisioning their own switching capability wherever feasible.").

with four or more lines within density zone 1 in the top 50 metropolitan statistical areas (MSAs).

254. Alternatives Outside the Incumbent's Network. As of March 1999, approximately 167 different competitors have deployed approximately 700 switches throughout the country.⁴⁹⁰ According to USTA, approximately 320 cities are served by at least one competitive switch.⁴⁹¹ SBC, using a methodology that tracks requesting carriers' switches by examining migration of lines using ported numbers, contends that within the 50 largest MSAs, competitors' switches currently serve approximately 75 percent of all BOC and GTE rate exchange areas.⁴⁹² Although certain requesting carriers argue that incumbent LEC statistics are not precise,⁴⁹³ the record indicates that a significant number of competitive switches have been deployed.⁴⁹⁴ Our examination of switching investments in the market shows that requesting carriers have self-provisioned a significant number of switches, but that this investment represents only a small fraction of the number of switches deployed by the incumbent LECs.

255. Since the Commission adopted the *Local Competition First Report and Order*, competition has continued to develop in certain geographic markets, particularly for large business customers or other users with substantial telecommunications needs.⁴⁹⁵ The pattern of switch deployment by competitors suggests that the costs and operational delays of self-provisioning switching do not preclude requesting carriers from serving certain customer classes in certain geographic markets. In general, however, we conclude that requesting carriers are impaired in their ability to provide service in most markets,

⁴⁹⁰ USTA UNE Report at I-1 (citing Bellcore, TR-EQP-000315, Local Exchange Routing Guide (Mar. 1, 1999)).

⁴⁹¹ USTA UNE Report at I-1.

⁴⁹² SBC Comments at 38.

⁴⁹³ At the end of 1998, ALTS put the number of competitive switches at 667. See ALTS Press Release, The Telecommunications Act of 1996: Progress After Three Years, January 21, 1999. The Competition Policy Institute placed the number of competitive switches at 579 at the end of 1999. CPI Reply Comments at 24 (citing 1999 CLEC report, The 10th Annual Report from New Paradigm Resources Group, Inc., Table 7). AT&T counters that inclusion of its 4ESS switch in the incumbent LEC's count is inappropriate because these switches cannot provide certain basic aspects of local phone service. AT&T Reply Comments at 96.

⁴⁹⁴ See, e.g., Ameritech Comments at 70-71; Bell Atlantic Comments at 20-21; SBC Comments at 34-35.

⁴⁹⁵ USTA UNE Report at I-10-19. See also AT&T Reply Comments at 104 ("AT&T's two 5ESS switches in Dallas . . . are not being used 'to reach . . . as much as 98 percent . . . of the addressable business and residential market' as GTE claims is the case. [citations omitted]. Rather, those switches like AT&T's DMS-100 in Washington, D.C. are being used to offer service to business customers. The same is true for each of AT&T's local switching in other markets, such as Los Angeles, Denver, Detroit and Tampa."); Ameritech Comments at 73-79; BellSouth Comments at 58-59; GTE Comments at 40-42, 46-47; SBC Comments at 36,38; US WEST Comments at 42-43.

primarily because of the costs of self-provisioning switching in those markets.⁴⁹⁶ We find that section 251(d)(2)(B) requires consideration not simply of whether denial of access to unbundled switching would impair a competitor's ability to serve the high-volume business market that many requesting carriers are already serving, but whether the requesting carrier is impaired in its ability to provide the "services that it seeks to offer," including services to residential and small business markets. Although the groundwork for residential local competition is evolving, and competition, to date, has focused upon users with substantial telecommunications needs, we do have some evidence that some requesting carriers will seek to offer residential phone service to the mass market where unbundled switching is available.⁴⁹⁷ Accordingly, we find that our unbundling analysis should take into account the possibility that carriers will offer residential service. We find that, taking into account the cost, quality, ubiquity and timeliness factors in our "impair" standard as well as the goals of the Act, lack of access to unbundled switching as a general matter, impairs the ability of a requesting carrier to provide service to consumers.

256. Incumbent LECs use the geographic dispersion of deployed local circuit switches to argue for a geographic or market-specific approach to circuit switch unbundling.⁴⁹⁸ Certain incumbent LECs further argue that the presence of one competitor's switch and collocation in a given market is dispositive of whether requesting carriers generally will be impaired without access to unbundled switching.⁴⁹⁹ We reject this argument. Just as the Supreme Court made clear that the "impair" standard is not triggered by *any* increase in cost or decrease in quality, we find that switch unbundling cannot turn on whether a single carrier has self-provisioned switching. The fact that a single carrier is collocated in a particular central office and is not using unbundled switching does not conclusively demonstrate that a variety of carriers can self-provision switches without significant cost or other impediments that diminish a collocating carrier's ability to provide the services it seeks to offer. Indeed, based on financial analysts' reports of competitive LECs' operations, a significant number of requesting carriers currently self-provisioning switches are not generating net income (*i.e.*,

⁴⁹⁶ See AT&T Reply at 90; CompTel Comments at 39; MCI WorldCom Comments, Tab 3, Decl. of Mark T. Bryant, paras. 14-15 (MCI WorldCom Bryant Decl).

⁴⁹⁷ See *supra* para. 126.

⁴⁹⁸ Ameritech Comments at 5-6 (proposing elimination of switch unbundling in any wire center in which collocation is available and throughout rate exchange area served by one or more competitive switches); Bell Atlantic Comments at 23 (proposing elimination of switching in any geographic area where competitors currently provide self-provisioned switching); BellSouth Comments at 56 (proposing national market for elimination of switch unbundling); GTE Comments at 39-42 (proposing nationwide elimination of switch unbundling); SBC Comments at 42 (proposing elimination of switch unbundling in rate exchange areas served by one switch); USTA Comments at 34 (proposing nationwide elimination of switch unbundling requirement); US WEST Comments at 44 (proposing presumption of elimination of switch unbundling within 50 miles of a competitor's switch).

⁴⁹⁹ Ameritech Comments at 5-6, 84; Bell Atlantic Comments at 23; BellSouth Comments at 56; GTE Comments at 39; SBC Comments at 42; USTA Comments at 34; US WEST Comment at 44.

profits).⁵⁰⁰ Thus, it is too early to know whether self-provisioning is economically viable in the long run, although capital markets appear to be supplying requesting carriers with access to capital in the absence of demonstrated profitability.

257. Incumbent LECs have provided business case analyses that purport to demonstrate that a requesting carrier could expect to earn profits upon entry using self-provided switching by comparing the revenues that could be expected from self-provisioning switching with the full costs of entry.⁵⁰¹ As discussed in Section IV above, we favor an analytical approach that considers the totality of the circumstances a requesting carrier will face, rather than a specific business case analysis, to determine whether lack of access to particular network elements materially diminishes a requesting carrier's ability to provide the services it seeks to offer. Adopting a business case approach would require the Commission to conduct a detailed analysis of the profitability of entry for a representative firm using various business strategies in each possible market.⁵⁰² Such an approach would also require the Commission to make specific assumptions regarding the competitor's business model, including which technology a competitor would choose to deploy, which market a competitor would choose to enter (e.g., business and/or residential), and what services a competitor would choose to offer. In addition, a business case approach would require the Commission to forecast revenues that a requesting carrier would earn if it entered a particular market. Whereas the actual costs of network elements such as switches are quantifiable, revenues may fluctuate according to evolving competitive conditions in the local telecommunications market.

⁵⁰⁰ See, e.g., Mark Kastan and Daniel Reingold, *Telecom Services - Local*, Merrill Lynch & Co., June 3, 1999, at 12, 13 (stating that of the 10 competitive LECs that are primarily facilities based (i.e., less than half of lines are through resale), only four of those are EBITDA positive as of the first quarter 1999. Of the rest, Merrill Lynch expects them to break even (turn EBITDA positive) between 2000 and 2003.). See also W. Todd Scott and David J. Bank, *Competitive Local Exchange Carriers*, ING Barings, July 26, 1999, at 9 (stating that ING Barings expects some CLECs to still have negative earnings in 2000 and 2001).

⁵⁰¹ See Ameritech Comments, Tab B, Aff. of William L. Fitzsimmons (Ameritech Fitzsimmons Aff.); USTA Comments at 34 (citing Housman/Sidak study of unbundled switching); GTE Comments, Tab B, "An Analysis of Alternative Network Elements Available to CLECs." See also Letter from W. Scott Randolph, Director, Regulatory Affairs, GTE Service Corp., to Magalie R. Salas, Secretary, Federal Communications Commission, CC Docket No. 96-98 (filed July 8, 1999) ("PNR and Associates, May 1999 Study").

⁵⁰² The Commission would need to carefully evaluate the specific assumptions, both concerning costs and expected revenues, under consideration. Ameritech included a study, the Fitzsimmons study, that contains a number of weaknesses. We note that it assumes that between 40% and 60% of fiber structure costs should be attributed to local entry, reflecting the fact that costs can be shared with other network providers. In the *Universal Service* proceeding, after much discussion by all parties, sharing percentages of from 55% to 90% for underground and buried plant were recommended. The Fitzsimmons study assumes a start-up cost for a switch of \$150,000 and a per line cost of \$110. In contrast, the Commission's universal service proceeding has assumed corresponding costs of \$447,000 and \$83. The Fitzsimmons study uses a cost of capital of 12%, which is only slightly higher than the value of 11.25% assumed in the universal service context. Since a competitor would be unlikely to be able to obtain debt financing on the same terms as an established incumbent, the competitive cost of capital should perhaps reflect a higher proportion of equity financing or a higher cost of debt. In either case, the assumed value of 12% may be an underestimate of actual capital costs. See Ameritech Fitzsimmons Aff. at para. 20.

258. Although we do not adopt an approach that is based on a business case analysis for determining whether a particular entity is impaired, we do make several general observations regarding the direct cost that bear on a requesting carrier's decision to self-provision a switch. Fixed costs are the largest portion of the cost of a switch. The average cost of providing service to customers decreases as the number of customers served increases. As a general rule, we find that scale economies are more pronounced when switches operate at full utilization. Because incumbent LEC switches serve the majority of customers for local exchange service, they are likely to be able to take advantage of substantially greater economies of scale than the competitor would using its own switches.⁵⁰³ We find however, that facilities-based competitors need not deploy switches in exactly the same network configuration as an incumbent, thus allowing competitors to achieve their own unique and competitive efficiencies by deploying their own switches.⁵⁰⁴

259. Cost. We find, as a general matter, that the total costs of self-provisioning a switch impose on the requesting carrier a significant cost disadvantage relative to the incumbent LEC, particularly in its early stages of entry. We emphasize that cost is only one factor we examine in our "impair" analysis. The evidence of circuit switching direct costs submitted in the record varies significantly. For example, incumbent LECs provide evidence that the direct costs to competitors of self-provisioning switches is between \$100,000 and \$814,000 and that the incremental cost is between \$110 and \$146 per line.⁵⁰⁵ AT&T counters that incumbent LEC models exaggerate the efficiencies

⁵⁰³ See MCI WorldCom Bryant Decl. at paras. 21-22.

⁵⁰⁴ GTE Reply Comments, Tab B, Reply Declaration of Francis J. Murphy at 7 ("based on the latest technology options, the number of switches required to serve the entire country [i]s 4,200 (or only 22% of the current number of total switches)) (GTE Murphy Reply Decl.); California PUC Comments at 4 (competitors "have found it advantageous to have their switches serve a much larger geographic area than LEC switches, and most competitors in California have configured their networks to take advantage of those economies.").

⁵⁰⁵ GTE submitted evidence to show that the HAI model (developed by AT&T, MCI) run with the host/remote option enabled produces a stand-alone fixed host switch investment of between \$315,001 and \$855,003 and a per-line cost between \$129 and \$124, and a fixed remote switch investment cost of between \$17,143 and \$385,716 and a per-line cost between \$120 and \$146. GTE Comments at 43 (citing "An Analysis of Alternative Network Elements Available to CLECs" at 21); The USTA UNE Report provides evidence that small scale circuit switches can be purchased for as little as approximately \$100,000. USTA UNE Report at I-29, n.66. MCI WorldCom contends that the HAI Model bases its results on a fixed switch investment of \$242.73 per line for Rocs and large independent telephone companies and a fixed investment of \$416.11 per line for small independent telephone companies, including additional variable costs per line ranging from \$140 to \$80 per line as the size of the switch increases. MCI WorldCom Comments at 51 (citing Decl. of Mark T. Bryant, at para. 21). Ameritech's analysis adopts the Universal Service Joint Board's assumption that start-up switch costs total \$150,000 with an incremental cost of \$110 per line. Ameritech Fitzsimmons Aff. at 20. CompTel filed an *Ex Parte* describing the costs, on average, of installing a circuit switch as several million dollars. See Letter from Carol Ann Bischoff, Executive Vice President and General Counsel, CompTel, to Lawrence E. Strickling, Chief, Common Carrier Bureau, Federal Communications Commission, CC Docket 96-98 (filed August 18, 1999) (citing Arias Affidavit at para. 5; Tidwell Affidavit May 26, 1999 at para 5; James Affidavit August 10, 1999 at para 4; Walker Affidavit at para 4.); SPR Comments at 6. *But see* Comments of Bell Atlantic at 2, filed in CC Docket No. 96-45; CC Docket No. 97-160 (filed July 23, 1999) (stating "manufacturers offer very large discounts on initial switch purchases,

associated with requesting carrier switches.⁵⁰⁶ Independent sources, however, estimate the fixed cost per host switch to be \$447,000 and the per-line cost to be \$83.⁵⁰⁷ The disparity in switching costs contained in the record appear to depend on the technical attributes of the switch at issue. The more critical aspect of our “impair” analysis is not the costs of purchasing a local circuit switch, but rather the economies of scale that may characterize local circuit switching and the additional costs that requesting carriers incur when placing their self-provisioned switches into operation.

260. We find that incumbent LECs retain material scale advantages with regard to provisioning and operating local circuit switches. Requesting carriers therefore will encounter generally greater direct costs per subscriber when provisioning their own switches, particularly in the early stages of entry when requesting carriers may not have the large number of customers that is necessary to increase their switch utilization rates significantly. When we examine the market as a whole, we find that requesting carriers incur higher costs due to their inability to realize economies of scale using circuit switching equipment. We find that the scalability of a switch mitigates but does not eliminate the incumbent LEC’s scale advantages and reduces but does not eliminate competitor’s sunk costs and entry barriers. For example, it is generally less expensive to purchase a 20,000 line switch rather than four increments of 5000 lines.⁵⁰⁸ Furthermore, the advantages of incumbent LEC scale economies are more pronounced when requesting carriers provide switch-based service to a relatively small number of customers through a self-provisioned switch.⁵⁰⁹ For example, competitor’s switching costs per minute at a

because they know that the carrier will be “locked in” to the same manufacturer for additional equipment, which can be priced at smaller discounts. Since the add-ons are so profitable, the competition for initial switch purchases is intense, and manufacturers will offer “fire sale” prices to win a switch replacement contract.”).

⁵⁰⁶ AT&T Reply Comments at 95, Tab A, Aff. of Michael R. Baranowski/John C. Klick/Brian F. Pitkin, at para. 67) (AT&T Baranowski Reply Aff.).

⁵⁰⁷ *See Commission Takes Action to Reform Universal Service Support for Non-Rural Carriers Providing Service in High-Cost Areas and Commission Adopts Framework for Federal Universal Service High-Cost Support Mechanism; Commission Seeks Comment on the Input Values for the Forward-Looking Cost Model*, CC Docket Nos. 96-45; 96-262; 97-160, FCC No. 99-17 (released May 27, 1999) 1999 WL 345534 (FCC).

⁵⁰⁸ *See* Comments of Bell Atlantic at 9 filed in CC Docket No. 96-45; CC Docket No. 97-160 (filed July 23, 1999) (stating “the costs per-line of a new switch is significantly below the costs of adding capacity to an existing switch.”). *See also* Letter from Chuck Goldfarb, Director Law and Public Policy, MCI WorldCom to Jake Jennings, Special Advisor, Common Carrier Bureau, Federal Communications Commission, CC Docket No. 96-98 (filed September 1, 1999) (arguing that for a 20,000 line switch the average cost per line is \$319 and for a 5,000 line switch the average cost per line is \$462.).

⁵⁰⁹ Sprint estimates that if a requesting carrier deploys a switch capable of serving 100,000 access lines but initially only serves 1000 access lines, the cost per line for switching is roughly \$66, whereas if the incumbent LEC purchases the same switch at the same cost but serves 50,000 lines, it would have a per-line cost of roughly \$4.55. Should the requesting carrier purchase a smaller switch, Sprint argues that if the requesting carrier served 10,000 lines its monthly cost for switching would be roughly \$27 per line, roughly six times the incumbent LEC’s cost of switching. Sprint Comments at 29-30. *See*, MCI WorldCom Comments at 51 (Bryant Decl. at paras. 25-27).

10% penetration level are slightly more than twice the cost of an incumbent LEC serving the remaining 90% of the market with its own switch.⁵¹⁰ We find that, as a general proposition, requesting carriers will incur a materially greater cost when self-provisioning switching at low penetration levels. As a requesting carrier's switch utilization rates increase, the difference between the switching costs incurred by competitive and incumbent LECs decreases, but the impact of this difference does not become irrelevant in the impair analysis until incumbent LEC and competitor's switch utilization levels are more comparable.⁵¹¹ Market facts show that that competitors have made inroads into the local telecommunications markets, but they have garnered only between 2.6 percent to 5 percent of the market for switched telecommunications services.⁵¹² A significant portion of these figures represent service to medium and large business customers, rather than to the mass market.⁵¹³ Accordingly, we find that as a general matter, requesting carriers have not gained sufficient market share to generate switch utilization rates and economies of scale comparable to the incumbent LEC, particularly to serve the mass market.

261. We recognize that switches deployed by competitive LECs may be able to serve a larger geographic area than switches deployed by the incumbent LEC, thereby reducing the direct, fixed cost of purchasing circuit switching capacity and allowing requesting carriers to create their own switching efficiencies. If a competitor uses a single switch to serve a rate area consisting of 10-15 incumbent LEC switches, the average utilization of the competitor's one switch can be as high, or higher, than many, or even all, of the incumbent LEC switches. This dynamic mitigates, to a varying degree, incumbent LEC advantages of scale, but does not enable competitive LECs to achieve comparable scale economies, particularly in the early stages of entry.⁵¹⁴ Incumbent LECs contend that once a requesting carrier incurs the costs to deploy a switch, it can economically extend the reach of the switch to serve broader markets. We find, however, that switch capacity, distance-sensitive transport costs, and collocation costs significantly impair a requesting carrier from fully exploiting this market entry strategy. We note that,

⁵¹⁰ MCI WorldCom Comments at 51 (Citing Bryant Decl. chart 11).

⁵¹¹ MCI WorldCom contends that at 10% percent market penetration, switching costs for a requesting carrier are about 132% above incumbent LEC switching costs but decrease to 31% above incumbent LEC switching costs at 30% penetration levels. *See* MCI WorldCom Comments at 51 (Bryant Decl. at para. 30).

⁵¹² *See* Bell Atlantic Reply Comments, Tab 2, Decl. of Robert W. Crandall, at 9. (Bell Atlantic Crandall Reply Decl.) NTIA estimates that requesting carriers currently serve between 2 and 3 percent of all local access lines. NTIA Comments at 10 (citing Council of Economic Advisers, Progress Report: Growth and Competition in U.S. Telecommunications 1993-1998 8, 18 (February 8, 1999). *See also* FCC Local Competition Report (finding that local competitors have capture 5% of the local market).

⁵¹³ *See* Letter from Lori Wright, Senior Manager, Regulatory Affairs, MCI WorldCom, to Magalie R. Salas, Secretary, Federal Communications Commission, CC Docket No. 95-98, July 13, 1999.

⁵¹⁴ We agree with AT&T that even if a competitor's switch can be used to serve customers scattered throughout a broad geographic area, a single switch would still lack the capacity to serve a significant percentage of customers in all but the most sparsely populated areas. AT&T Reply Comments at 97.

for smaller carriers, an inability to achieve switching scale economies may have greater effect upon their ability to offer service than it does for larger carriers. For example, TRA contends that, without access to unbundled switching, smaller requesting carriers with targeted entry plans deploy their own switch to serve approximately 3,000 lines will incur a direct additional cost of \$300,000 annually without access to unbundled local switching.⁵¹⁵ We find that utilizing unbundled switching is likely to mitigate this early-stage entry barrier and is consistent with Congress' intention that requesting carriers use unbundled network elements as a transitional market entry strategy.⁵¹⁶

262. We find, as a general matter, that the costs of self-provisioning switching also materially diminish a requesting carrier's ability to provide the services it seeks to offer. Our standard recognizes that the full costs of using self-provisioned circuit switching must include the costs incurred by a competitor to substitute its local circuit switch for that of the incumbent LEC. These costs include the costs of collocating in an incumbent LEC's central office from which the requesting carrier accesses unbundled loops to serve its end-user customers. Requesting carriers require collocation because they have not yet duplicated the incumbent LEC's loop plant to provide "last mile" connectivity to end users. Obtaining unbundled loops and connecting these loops to collocated equipment is therefore the only reasonable and economically rational manner by which requesting carriers can provide connectivity to their end users.

263. We agree with parties that argue that collocation imposes materially greater costs on requesting carriers than use of the incumbent LEC's switching.⁵¹⁷ Based on the record, it appears that the current range for non-recurring charges for obtaining physical collocation is between \$15,000 and \$508,000 for each central office from which a competitor serves customers using the incumbent LEC's unbundled loops.⁵¹⁸ This

⁵¹⁵ TRA Comments at 36.

⁵¹⁶ Although Congress did not explicitly express a preference for one particular competitive strategy, it implicitly recognized that the purchase of unbundled network elements would, at least in some situations, serve as a transitional strategy until such time as fledgling competitors could develop a customer base and complete the construction of their own networks. In particular, Congress stated, "[I]t is unlikely that competitors will have a fully redundant network in place when they initially offer local service because the investment necessary is so significant. Some facilities and capabilities... will likely need to be obtained from the incumbent [LEC] as network elements pursuant to new section 251." *See Joint Explanatory Statement* at 148.

⁵¹⁷ AT&T Comments at 96, Tab E, Aff. of Michael Pfau, para. 25 (AT&T Pfau Aff.); California PUC Comments at 4-5; CPI Comments at 21; Cable & Wireless Comments at 36; CompTel Comments at 40. *See also* Letter from Jonathan E. Canis, Counsel for ALTS, Intermedia, e.spire, to Magalie R. Salas, Secretary, Federal Communications Commission, CC Docket No. 96-98 (filed August 27, 1999).

⁵¹⁸ *See* Letter from Carol Ann Bischoff, Executive Vice President and General Counsel, CompTel, to Lawrence E. Strickling, Chief, Common Carrier Bureau, Federal Communications Commission, CC Docket No. 96-98 (filed August 18, 1999) (stating that "CompTel members report that recent quotes from US West for cageless collocation average \$41,000 (compared to \$53,000 for caged collocation.)"). BellSouth provides information that the total non-recurring cost of a 200 square foot collocation costs approximately \$76,000. BellSouth Comments at Attachment A at 1. Allegiance claims that GTE demanded \$508,000 for a 10 x 10 collocation cage in Santa Monica, California. According to Advanced TelCom, initial quotes for

additional cost increases the costs of the equipment installed in the cage by between 15 to 20 percent.⁵¹⁹ We find that due in part to these non-recurring charges, a requesting carrier's decision to collocate presumes significant market penetration, even in dense wire centers. For example, data submitted by MCI WorldCom for New York City suggests that collocation in dense wire centers is not profitable until a requesting carrier's market penetration exceeds 8-15 percent.⁵²⁰ We agree that the costs associated with collocation and the revenue opportunities associated with a given wire center may not justify establishing a collocation arrangement with the incumbent LEC in many central offices.⁵²¹

264. Accordingly, we find that as a general matter, collocation costs materially diminish the ability of a requesting carrier to offer service using self-provisioned switching. Although the collocation rules we adopted in our *Advanced Services First Report and Order and FNPRM* are intended, and expected, to reduce the costs and operational delays associated with collocation, our revised rules do not eliminate altogether the cost and delay associated with collocation.⁵²² We recognize that incumbent LECs still have an incentive and the ability to raise a requesting carrier's cost of collocation, and thus raise the total cost of self-provisioning switching.

265. In addition to the costs of establishing collocation arrangements with the incumbent LEC, requesting carriers incur additional costs to extend unbundled loops to their collocation cage. The manual work of extending a loop to a requesting carrier's collocation cage is known as a coordinated loop cutover. A coordinated loop cutover requires incumbent LEC technicians to disconnect the subscriber's loop from the incumbent LEC's main distribution frame and rapidly cross-connect it to the competitor's

10x10 cages in U S West's territory run from \$35,000 to \$68,000 and \$30,000 to \$82,000 in Pacific and Nevada Bell territories. See Letter from Jonathan E. Canis, Counsel for ALTS, Intermedia, e.spire, to Magalie R. Salas, Esq., Secretary, Federal Communications Commission, CC Docket No. 96-98 (filed Aug 27, 1999). SBC asserts its average NRC is \$15,405 for caged collocation and \$10,566 for cageless collocation in Texas. See Letter from Lincoln E. Brown, Director - Federal Regulatory, SBC, to Magalie R. Salas, Secretary, Federal Communications Commission, CC Docket No. 96-98 (filed July 15, 1999). See also CompTel Comments at 39, Tab E, Aff. of Richard L. Tidwell at para. 5 (CompTel Tidwell Aff.) (arguing that total cost of switch installation is \$4-6 million).

⁵¹⁹ AT&T Comments at 96. See also, BellSouth Comments Attachment A at 1 (describing \$128,700 cost of purchasing necessary equipment for one collocation arrangement.).

⁵²⁰ MCI WorldCom's collocation analysis assumes dense wire centers (37,500 lines) and a customer churn rate of 15-33 percent. See Letter from Lori Wright, Senior Regulatory Counsel, MCI WorldCom, to Magalie R. Salas, Esq., Secretary, Federal Communications Commission (filed July 9, 1999). We find that Ameritech's collocation model which assumes a non-recurring charge of \$70,000 may not be accurate for individual competitor collocation requests, particularly in dense wire centers. Ameritech Comments at 76.

⁵²¹ We recognize however, that the costs of collocating in a given central office will be spread between a requesting carriers total service offerings, including services other than circuit-switched services.

⁵²² *Advanced Services First Report and Order and FNPRM*, 14 FCC Rcd at 4771-94, paras. 19-60.

facilities. From the time the technician disconnects the subscriber's loop until the competitor re-establishes service, the subscriber is without service. Simultaneously, incumbent LEC and competitor technicians must coordinate to ensure that the subscriber's telephone number is "ported" to the competitor's switch so that inbound calls are properly routed to the requesting carrier's switch.

266. The coordinated cutover process imposes a non-recurring cost on competitive carriers that connect their own switches to unbundled loops. For example, AT&T contends that the non-recurring, per-line charge for a coordinated cutover is approximately \$45 in New York.⁵²³ CompTel argues that a manual loop and switching port migration costs between \$59.91 and \$218.62 per unbundled loop.⁵²⁴ We acknowledge that incumbent LECs may incur coordinated cutover costs when they win customers from competitive LECs. The record does not demonstrate, however, that incumbent LECs are incurring coordinated cutover costs in the same or substantially similar volumes as competitive LECs. We find that the additional cost of coordinated loop cutovers, when added to the costs of collocation, materially diminishes a competitor's ability to substitute its own switch for unbundled switching. Although this per-line non-recurring cost is likely to vary between incumbent LECs, it represents a significant cost to those requesting carriers seeking to provide service to the mass market due to the large number of individual loop cutovers that are necessary to serve this market.

267. Ubiquity and Timeliness. In addition to the costs associated with accessing individual unbundled loops in multiple end offices, we find that collocation and the coordinated loop cutover process imposes a material delay on competitive LECs that offer services using self-provisioned switches, and materially limits the scope of customers a requesting carrier may serve quickly. The delay includes the total amount of time required to purchase, install, turn up a switch, and obtain collocation, as well as the amount of time needed for incumbent LECs to complete coordinated loop cutovers.

268. In order to self-provision a switch, a requesting carrier must order, test the switch, and integrate it into its network and internal operations support systems.⁵²⁵ Incumbent LECs claim that a switch can be fully provisioned in as little as 40 days.⁵²⁶ Although this may be theoretically possible, there is evidence in the record that the time

⁵²³ AT&T Comments at 95-96; AT&T Pfau Aff. at paras. 22-23.

⁵²⁴ See Letter from Carol Ann Bischoff, Executive Vice President and General Counsel, CompTel, to Lawrence E. Strickling, Chief, Common Carrier Bureau, CC Docket No. 96-98 (filed August 19, 1999) (CompTel August 19, 1999 *Ex Parte*) (describing "Standard Manual Loop/Port Migration costs of \$178.00 in Florida, \$59.91 in Georgia, \$67.18 in New York, \$107.63 in Illinois, \$143.15 in Kansas, \$123.45 in Iowa and \$218.62 in Montana).

⁵²⁵ AT&T Reply Comments at 99.

⁵²⁶ GTE Comments at 45-46; Bell South Comments at 58.

frame for provisioning a switch is significantly longer.⁵²⁷ Furthermore, incumbent LECs focus their analysis on the time to purchase a switch rather than the time required to put a switch into operation. Actual delivery of a switch is only one part of the process of self-provisioning switching.⁵²⁸ Requesting carriers assert that it takes approximately six months to one year to engineer, furnish and install a switch.⁵²⁹

269. Related to the time required to provision a switch is the time required to provision collocation. Incumbents and requesting carriers offer conflicting assertions regarding the time required to provision collocation in incumbent LEC central offices. We are troubled by anecdotal evidence that collocation imposes a delay of six, nine or twelve months on the provision of ubiquitous service.⁵³⁰ MCI WorldCom for example, argues that collocating on a broad scale to provide ubiquitous service results in lengthy collocation delays.⁵³¹ NorthPoint maintains that some incumbent LECs have imposed “governors” on the number of collocation applications they will accept, thereby delaying ubiquitous rollout of services.⁵³² Incumbent LECs counter that they have, and will

⁵²⁷ MCI WorldCom Comments Tab 5, Decl. of Dennis Herold/Joseph Stockhausen/Ray Lathrop, at para. 6) (MCI WorldCom Herold Decl.) (arguing that once a decision to deploy a switch is made, it takes 18 to 24 months to provision a Class 5 switch).

⁵²⁸ For example, according to KMC Telecom, the standard installation interval for a Lucent 5ESS switch is between nine and 12 months, only 8 weeks of which is attributable to the delivery of the switch itself. See Letter from Carol Ann Bischoff, Executive Vice President, CompTel to Lawrence E. Strickling, Chief, Common Carrier Bureau, Federal Communications Commission, CC Docket No. 96-98 (filed August 18, 1999) (CompTel August 18, 1999 *Ex Parte*).

⁵²⁹ Most commenters addressing switch deployment delays describe the outer time boundaries for provisioning a switch. See e.g., Cable & Wireless Comments at 36; Choice One Joint Comments at 16; CompTel Comments at 39, n. 89 and Tab D, Aff. of Martin J. Arias at para 5 (switch deployment takes “up to 9 months” or even “almost two years.”) (CompTel Arias Aff.); KMC Comments at 15; Net2000 Comments at 14. See also, Letter from Roy Choates, Senior Vice President Construction, KMC Telecom, to Magalie R. Salas, Secretary, Federal Communications Commission, CC Docket No. 96-98 (filed August 12, 1999) (describing actual provisioning interval of 9 – 12 months for Lucent 5 ESS switch). The USTA UNE Report notes that switch vendors do not typically deliver a switch until two-and-a-half to three months after an order is received. USTA UNE Report at I-30 (citing e.spire statement of seven months from placing an order to deployment of switch).

⁵³⁰ AT&T Comments at 91 (citing AT&T Pfau Aff. describing collocation delays of six to eight months); CompTel Comments at 40 (citing CompTel Arias Aff. describing collocation delays of several months at a minimum); MCI WorldCom Reply Comments at 51 (collocation takes 6 months to a year). Rhythms notes that collocation represents the “single greatest obstacle” to providing service and that collocation typically takes between five and seven months to provision. See Letter from Jeffrey Blumenfeld, Counsel, Rhythms NetConnections, Inc., to Magalie R. Salas, Secretary, Federal Communications Commission, CC Docket No. 96-98 (filed September 8, 1999).

⁵³¹ MCI WorldCom Reply Comments at 51. MCI WorldCom estimates that establishing a single collocation arrangement requires approximately five months before the arrangement is in place. MCI WorldCom also argues, however, that if a requesting carrier seeks to expand the scope of its services by requesting collocation arrangements, the collocation delay amounts to several years before it can provide service. MCI WorldCom Herold Decl. at paras. 9-11).

⁵³² See Letter from Jonathan E. Canis, Counsel for ALTS, Intermedia, e.spire, to Magalie R.

continue to, provision collocation on a broad scale and in a timely fashion.⁵³³ Ameritech specifically contends that competitive LECs have established collocation arrangements in rate centers in which 70 percent of Ameritech's access lines are located.⁵³⁴ The presence of one collocater, in and of itself, however, does not establish how long it will take to accommodate subsequent collocators. We find nothing in the record to demonstrate conclusively that incumbent LECs have committed to and satisfied a collocation provisioning interval of less than six months.

270. We therefore find incumbent LEC arguments that requesting carriers do not experience collocation delays contradicted by the actual experiences of requesting carriers. Incumbent LECs do not appear to include such things as the collocation application process in their analysis of collocation delays. We are persuaded by those commenters that assert that collocation, examined from the time a requesting carrier initiates the collocation process until a collocation arrangement is delivered, generally imposes a delay of approximately six months on the provision of service.⁵³⁵ We conclude that, although the delays associated with provisioning collocation arrangements will vary from incumbent LEC to incumbent LEC and by requesting carrier, as a general matter, collocation delays materially diminish the ability of a requesting carrier to provide the services it seeks to offer. As discussed in Section IV above, although we cannot quantify precisely how much of a delay associated with collocation and self-provisioning switching will materially diminish the ability of a competitor to provide the services it seeks to offer, we find that delays that exceed six months to one year materially diminish the ability of a competitive LEC to provide the services it seeks to offer because such delay prevents the competitive LEC from responding quickly to the demand for its services in a rapidly changing market.

271. As noted above, requesting carriers must also wait for coordinated cutovers before providing service with their own switch.⁵³⁶ We disagree with BellSouth, GTE, Ameritech, and other commenters that argue that the Commission should not consider coordinated cutover delays and service-quality issues in its impair analysis.⁵³⁷ Without

Salas, Secretary, Federal Communications Commission, CC Docket No. 96-98 (filed August 27, 1999) (stating that "BellSouth will accept 5 applications per carrier per month.").

⁵³³ Ameritech Comments at 77; Bell Atlantic Reply Comments at 14; SBC Reply Comments at 16; US WEST Reply Comments at 44. SBC submitted an *Ex Parte* presentation which states that the average caged collocation interval in Texas is 90 days and 55-70 days for cageless collocation. In California, the average caged collocation interval is 120 days and 110 days for cageless. See Letter from Lincoln E. Brown, Director - Federal Regulatory, SBC, to Magalie R. Salas, Federal Communications Commission, CC Docket No. 96-98 (filed July 15, 1999).

⁵³⁴ Ameritech Reply Comments at 22.

⁵³⁵ AT&T Comments at 91; CompTel Comments at 40; MCI WorldCom Reply Comments.

⁵³⁶ See *supra* para. 266.

⁵³⁷ BellSouth Comments at 61; GTE Comments at 45, n. 32; Ameritech Reply Comments at

coordinated loop cutovers, requesting carriers self-provisioning switching and accessing unbundled loops cannot provide the services they seek to offer. To date, incumbent LECs have provisioned relatively small volumes of coordinated loop cutovers compared to anticipated demands.⁵³⁸ Incumbent LECs counter that they have instituted procedures to provide timely coordinated cutovers to requesting carriers.⁵³⁹ Where incumbent LECs have undergone comprehensive testing of their loop provisioning processes, however, independent auditors have found difficulties regarding coordinated loop cutover performance.⁵⁴⁰ Furthermore, because broad-based residential competition is at best nascent, incumbent LECs generally have not successfully provisioned coordinated loop cutovers in the volumes necessary for requesting carriers to serve the mass market. We therefore find incumbent LEC promises of future hot cut performance insufficient to support a Commission finding that the coordinated loop cutover process does not impair the ability of a requesting carrier to provide the service it seeks to offer without unbundled circuit switching.⁵⁴¹ We recognize that the hot cut process requires manual processing,

⁵³⁸ AT&T Reply Comments at 105; Ameritech Reply Comments at 29 (stating that Ameritech has, to date, provisioned 185,000 unbundled loops and expects to provision 117,000 additional unbundled loops by end of 1999).

⁵³⁹ BellSouth argues that in April, 1999, BellSouth cutover 70% of loop orders within 5 minutes and over 88% were performed in 15 minutes for a average time of 6.94 minutes. Bell South Reply Comments, Attachment E, Aff. of W. Keith Milner at para. 10. Ameritech argues that if coordinated loop cutovers are relevant to the impair analysis, it can accommodate any reasonably foreseeable demand, and its coordinated loop cutover process is not error-prone such that requesting carriers face service-quality impairments. Ameritech Reply Comments, Attachment B, Aff. of John B. Mayer at 11, 16-29, Schedules 1, 2. This assertion does not carry more weight merely because it is made in a sworn affidavit; assertions regarding future performance are inherently unsupported.

⁵⁴⁰ In Texas, SBC is undergoing a third party test of its coordinated loop cutover processes by Telcordia Technologies, Inc. In their July, 1999 OSS report, Telcordia states that "[e]ighteen ordering types for UNE-L (loop provisioning) were tested, of which nine were successfully ordered and provisioned by SBC. Nine ordering types did not meet expectations, of which six have been selected" for retesting. The Public Utility Commission of Texas Southwestern Bell Operations Support Systems Report, Issue 1, July 1999, at Pg. ES-9. In New York, Bell Atlantic is undergoing a third party test of its coordinated loop cutover process by KPMG. In their July, 1999 OSS report, KPMG states that Bell Atlantic technicians performing "disconnects and Main Distribution Frame (MDF) rewiring are not performing their activities in a synchronized manner at the requested Frame Due Time of the order and perform some portion of cut either late or early." KPMG Draft Final Report, July 22, 1999, at IV-67. *See also* Communications Daily, July 28, 1999 at 10 ("Major uncorrected exceptions [found by KPMG in NY] include BA problems with meeting deadlines for "hot cuts," where BA disconnects loops from its own network and reconnects it to requesting carrier's network. BA has claimed 95% of hot cuts are performed on time and without service interruptions, but AT&T claims real rate is only 75%.); Letter from Robert W. Quinn, Jr., Director - Federal Government Affairs, AT&T, to Mr. Jake Jennings, Special Advisor, Common Carrier Bureau, Federal Communications Commission, CC Docket No. 96-98 (filed August 18, 1999) (citing supplemental affidavit of Mr. Jack Meek before the New York Department of Public Service). Mr. Meek's affidavit contends that for the period March 23 through July 23 approximately 13% of BA-NY's hot cut loop orders resulted in errors attributable to BA-NY.

⁵⁴¹ Our insistence on actual performance-- and not future promises -- of incumbent LEC compliance with our rules is not new. *See* Application of Ameritech Michigan Pursuant to Section 271 of the Communications Act of 1934, as amended, To Provide In-Region, InterLATA Services in Michigan, CC Docket No. 97-137, *Memorandum Opinion and Order*, 12 FCC Rcd 20543 (1997) (*Ameritech Michigan 271*

which likely creates delays between the time a requesting carrier wins a customer and the time it can provide service to that customer. Accordingly, we find that the coordinated loop cutover process impairs the ability of a requesting carrier to provide timely service.

272. Goals of the 1996 Act. As noted above, our unbundling analysis takes into account whether unbundling a particular network element is consistent with the goals of the 1996 Act.⁵⁴² We find our decision to unbundle local circuit switching is consistent with the 1996 Act's goals of rapid introduction of competition and the promotion of facilities-based entry.

273. Our unbundling analysis considers how the switch unbundling obligation we adopt will encourage requesting carriers to rapidly enter the local market in order to serve the greatest number of customers, and whether the failure to require unbundling will cause any class of consumers to wait unnecessarily for competitive alternatives. Failure to unbundle local circuit switching would cause residential and small business consumers to wait unnecessarily for competitive alternatives. As discussed above, the costs and operational delays associated with collocating in multiple end offices and provisioning delays caused by the inability of a requesting carrier to gain access to unbundled local circuit switching will cause residential and small business customers to wait for service. Requiring incumbent LECs to provide access to unbundled switching, and to use unbundled switching in combination with other network elements, will allow requesting carriers to serve the greatest number of customers, without incurring collocation and switch provisioning delays. Where unbundled switching has been made available, requesting carriers have gained market share in the residential and small business markets.⁵⁴³ Accordingly, we find that requiring incumbent LECs to provide access to unbundled switching will allow requesting carriers to rapidly enter local markets.

274. We also find that the availability of unbundled switching will also accelerate the development of alternative networks because it will allow requesting carriers to generate revenues to justify the construction of new switching facilities.⁵⁴⁴ As noted above, many carriers emphasize that they plan to deploy alternative facilities as soon as it is technically and economically possible to do so at a cost close to the

Order).

⁵⁴² See *supra* Section IV(B)(4)(b)(iii).

⁵⁴³ MCI WorldCom Reply at 42-46; AT&T Reply at 23-24; SBC Reply at 3-4. Since these combinations of unbundled network elements have become available, competitive LECs have started offering service in the residential mass market in those areas. For example, in January of this year, Bell Atlantic, as part of an agreement with the New York Department of Public Service, began offering the unbundled network element platform out of particular end offices in New York City. As a result, between January 1, 1999 and May 26, 1999, MCI WorldCom acquired upwards of 60,000 new local residential customers. AT&T also plans to begin serving local residential customers over the platform in Texas. See *supra* Section I.

⁵⁴⁴ See, e.g., AT&T Comment at 21-22 (stating that using unbundled network elements also facilitates the transition to facilities-based competition because it permits entrants to gather critical information, such as customers' calling volumes and traffic patterns that they need to plan their facilities' deployment); ALTS Comment at 20-24; MCI WorldCom Comment at 8.

incumbent LECs' prices for network elements.⁵⁴⁵ Granting requesting carriers access to unbundled switching will allow these carriers to serve customers in areas where traffic volumes and customer densities make it difficult initially to justify deploying a switch. Furthermore, allowing requesting carriers to purchase unbundled switching will allow new entrants to test market demand for circuit switched services before deploying their own facilities. As requesting carriers obtain customers using unbundled switching, we expect that the revenues generated from this activity will enable requesting carriers to extend the reach of their existing switching capabilities or deploy switching capability to serve the residential and small business market.

275. On balance, we conclude that local circuit switching should be unbundled nationwide. We now consider whether it would be appropriate to establish an exception to the national unbundling requirement.

(iv) Exception to National Unbundling Requirement

276. As discussed in section IV above, we do not limit our unbundling analysis to the cost, timeliness, ubiquity and quality factors described above. Rather, we look at the totality of the circumstances and marketplace developments when considering whether a requesting carrier is impaired without access to unbundled local circuit switching. In addition to examining where requesting carriers have deployed switches, we look to the marketplace to see which customers are receiving service from facilities-based competitors. To the extent the market shows that requesting carriers are not serving a market segment with self-provisioned switches, we find that this fact is probative evidence that for a discrete market segment requesting carriers are impaired without access to unbundled local circuit switching. Conversely, to the extent that the market shows that requesting carriers are generally providing service in particular situations with their own switches, we find this fact to be probative evidence that requesting carriers are not impaired without access to unbundled local circuit switching. The task before us is to develop an administratively simple rule that reflects marketplace developments and provides certainty to market participants. We seek to adopt a rule that serves as a reasonable proxy for when competitors are indeed impaired in their ability to provide the services they seek to offer.

277. In their initial and reply comments in this proceeding, the parties take sharply diverging positions regarding the circumstances and geographic areas where local circuit switches should be unbundled, if at all. Incumbent LECs generally support elimination of their obligation to unbundle local circuit switches in a geographic area

⁵⁴⁵ See CompTel Comments at 12; MCI WorldCom Comments at 8-9, 26-27; Net2000 Comments at 2-3; Sprint Comments at 16-19.

where one requesting carrier has deployed a single local circuit switch.⁵⁴⁶ Competitive LECs oppose the incumbent LEC proposals for elimination of the circuit switch unbundling obligation and argue that local circuit switching should be unbundled on a national basis.⁵⁴⁷ In several *ex parte* presentations after the record closed, a number of parties softened their initial positions and propose a more narrowly tailored rule for determining when circuit switching need not be unbundled.⁵⁴⁸ A number of other parties respond to these fall-back positions in subsequent *ex parte* presentations.⁵⁴⁹

278. Despite our conclusion that, in general, requesting carriers are impaired without access to unbundled switching, we conclude that it is appropriate to establish a more narrowly tailored rule to reflect significant marketplace developments. As described more fully below, we find that requesting carriers are not impaired without access to unbundled local circuit switching when they serve customers with four or more lines in density zone 1 in the top 50 metropolitan statistical areas (MSAs), as set forth in Appendix B, where incumbent LECs have provided nondiscriminatory, cost-based access to the enhanced extended link (EEL) throughout density zone 1.⁵⁵⁰

⁵⁴⁶ Ameritech Comments at 5-6, 84; Bell Atlantic Comments at 23; BellSouth Comments at 56; SBC Comments at 42; GTE Comments at 39; USTA Comments at 34; US WEST Comment at 44.

⁵⁴⁷ See, e.g., Cable & Wireless Comments at 36; KMC Comments at 15; Net2000 Comments at 13; Sprint Comments at 31; Qwest Comments at 70; AT&T Comments at 86.

⁵⁴⁸ See Letter from Chuck Goldfarb, Director, Law and Public Policy MCI WorldCom, to Lawrence E. Strickling, Chief, Common Carrier Bureau, Federal Communications Commission, CC Docket No. 96-98, at 4 (filed August 9, 1999) (concluding that the top 29 MSAs should define the geographic scope of an incumbent LEC's local circuit switch unbundling obligation); Letter from Christopher M. Heimann, Director of Legal Affairs, Ameritech, to Magalie R. Salas, Secretary, Federal Communications Commission, CC Docket No. 96-98 (filed September 7, 1999) (stating that Ameritech "would not oppose an MSA approach pursuant to which ULS and the UNE platform would not be made available in the top 100 MSAs in the United States."); CompTel August 19, 1999 *Ex Parte* (arguing that local circuit switching should not be unbundled in density zone 1 within the highest density MSAs); Letter from Kathleen B. Levitz, Vice President – Federal Regulatory, BellSouth, to Ms. Magalie R. Salas, Secretary, Federal Communications Commission, CC Docket No. 96-98 (filed July 29, 1999) (proposing that local circuit switching should not be unbundled in zones 1 and 2 or in rate exchange areas served by one of more CLEC switches).

⁵⁴⁹ See Letter from Robert W. Quinn, Jr., AT&T, to Mr. Lawrence Strickling, Chief, Common Carrier Bureau, Federal Communications Commission, CC Docket No. 96-98 (filed August 19, 1999) (AT&T August 19, 1999 *Ex Parte*) (arguing AT&T would be impaired if local circuit switching is not unbundled in MSAs 36-100); Letter from David Scott, Birch Telecom, to Jake E. Jennings, Special Advisor, Common Carrier Bureau, Federal Communications Commission, CC Docket No. 96-98 (filed September 8, 1999) (opposing attempts to restrict the availability of unbundled local circuit switching); Letter from Melissa Newman, Vice President – Federal Regulatory U S WEST, to Magalie R. Salas, Secretary, Federal Communications Commission, CC Docket No. 96-98 (filed August 18, 1999) (opposing MCI's MSA approach);

⁵⁵⁰ 47 C.F.R. § 69.123 of the Commission's rules define the parameters for the establishment of density pricing zones that allow price-cap LECs to charge geographically deaveraged rates for switched transport services. Density zone 1 is the geographic area with the highest access line density and amount of traffic volume.

279. Top 50 MSAs. We conclude that it is appropriate to create an exception to the switching unbundling obligation in certain circumstances in the top 50 MSAs, as they are defined by the Office of Management and Budget.⁵⁵¹ We thus respond to various suggestions in the record that an exception from the switching unbundling obligation should encompass the top 29, top 35 and top 100 MSAs in the United States.⁵⁵²

280. As previously noted, as of March, 1999, approximately 167 different competitors have deployed approximately 700 switches throughout the country.⁵⁵³ When we analyze where requesting carriers have deployed these switches, we find that most of these switches have been deployed within the confines of the top 50 MSAs.⁵⁵⁴ According to USTA's data, which relies on the Local Exchange Routing Guide, approximately 61 percent of all requesting carrier switches nationwide have been deployed in the top 50 MSAs.⁵⁵⁵ More significantly, the vast majority of these MSAs contain multiple switches owned by competitors. In particular, four or more competitive switches have been deployed in 96 percent of the top 50 MSAs.⁵⁵⁶ According to USTA's data, only two MSAs in the top 50 -- Cincinnati and Las Vegas -- have less than three requesting carrier switches serving an incumbent LEC rate exchange area within the MSA.

281. Based on the evidence in the record, we conclude that exempting incumbent LECs from unbundling local circuit switching in certain circumstances in the top 50 MSAs is reasonable because nearly all of the top 50 MSAs contain a significant number

⁵⁵¹ An MSA is made up of a county or group of contiguous counties surrounding a city with a population of 50,000 or more. The Office of Management and Budget defines MSAs for use in federal statistical activities pursuant to 44 U.S.C. § 3504(d)(3) and 31 U.S.C. § 1104(d). Presently, there are 258 MSAs in the United States.

⁵⁵² See Letter from Chuck Goldfarb, Director, Law and Public Policy MCI WorldCom to Larry Strickling, Chief, Common Carrier Bureau, Federal Communications Commission, at Page 4, CC Docket No. 96-98 (filed August 9, 1999) (Top 29 MSAs); AT&T August 19, 1999 *Ex Parte* (Top 35 MSAs); Letter from Christopher M. Heimann, Director of Legal Affairs, Ameritech, to Magalie R. Salas, Secretary, Federal Communications Commission, CC Docket No. 96-98 (filed September 7, 1999) (analysis of top 100 MSAs).

⁵⁵³ USTA UNE Report at I-1.

⁵⁵⁴ USTA UNE Report at I-11 ("Rate Exchange Areas in top 50 MSAs Where CLECs Have Obtained NXX Codes"). We recognize also that requesting carrier switches may serve more than one rate exchange area. See USTA UNE Report at I-23 ("According to the March 1999 LERG, the average CLEC switch in BOC and GTE territory has NXX codes for 14 rate exchange areas.").

⁵⁵⁵ USTA UNE Report at I-11 ("Rate Exchange Areas in top 50 MSAs Where CLECs Have Obtained NXX Codes"). We note that the remainder of the switches if evenly deployed throughout MSAs 50-200 would result in no MSA having more than 2 requesting carrier switches in an MSA. For example, the USTA UNE Report states that there are 12 competitive LEC switches in New York, 23 competitive LEC switches in Washington, D.C., 19 competitive LEC switches in Atlanta, 11 competitive LEC switches in Seattle and 12 competitive LEC switches in Denver.

⁵⁵⁶ See USTA UNE Report at I-11.

of competitive switches.⁵⁵⁷ In contrast, MSAs below the top 50 typically contain fewer competitive switches. For example, in US WEST's territory, no MSA between 50 and 150 contains more than three competitive switches.⁵⁵⁸ In the top 100 MSAs in Ameritech's territory, only six percent of Ameritech's wire centers are served by four or more competitive switches.⁵⁵⁹

282. We recognize that drawing the line at the top 50 MSAs means that incumbent LECs serving more rural territories, which have fewer MSAs that are in the top 50 MSAs, will continue to be subject to an unbundled switching obligation. We nonetheless believe that this is a reasonable exercise of our administrative discretion. Extending an incumbent LEC's switch unbundling exemption to include more than the top 50 MSAs would require us to find that requesting carriers are not impaired without unbundled access to local circuit switching in these MSAs. We have no basis in the record before us to make such a finding because there are relatively few competitive switches outside of the top 50 MSAs.

283. We note that collocation costs and delay, as compared to revenue potential, may contribute to the relative lack of robust competitive switch deployment in areas outside of the top 50 MSAs. As discussed above, the total costs of a competitor using self-provisioned local circuit switching on an MSA basis include the costs incurred in providing service to every customer that the competitor seeks to serve. We concluded above that collocation imposes indirect costs on carriers installing their own switches.⁵⁶⁰ We also found that the amount of collocation cost are likely to vary according to individual requesting carriers.⁵⁶¹ We believe that the revenue potential of serving less dense markets outside the top 50 MSAs is unlikely to outweigh the costs of collocating in

⁵⁵⁷ See USTA Comments, Tab 3, Map 1 (overlying borders of top 50 MSAs to CLEC switches; Source: March 1999 LERG). CompTel also submitted the following data to describe competitive LEC operations in the top 50 MSAs. Where carriers obtain unbundled loops, they are providing service with their own switch. In the New York MSA, there are 2,154,569 business lines and the incumbent LEC has provisioned 49,442 unbundled loops resulting in a market share for all competitive LECs of 2.2 percent. In the Los Angeles MSA, there are 2,149,360 business lines and the incumbent LEC has provisioned 46,561 unbundled loops resulting in a market share of 2.1 percent. In the Chicago MSA, there are 2,068,118 business lines and the incumbent LEC has provisioned 20,469 unbundled loops resulting in a market share of 1.0 percent. In the Washington, D.C. MSA, there are 1,657,658 business lines and the incumbent LEC has provisioned 3,391 unbundled loops resulting in a market share of .2 percent. In the Boston MSA, there are 1,355,657 business lines and the incumbent LEC has provisioned 3,098 unbundled loops resulting in a market share of .2 percent. See CompTel August 19, 1999 *Ex Parte*.

⁵⁵⁸ See Letter from Melissa Newman, Vice President – Federal Regulatory, US WEST, to Magalie R. Salas, Secretary, Federal Communications Commission, CC Docket No. 96-98 Attachment A (filed August 18, 1999) (US WEST August 18, 1999 *Ex Parte*).

⁵⁵⁹ See Letter from Christopher M. Heimann, Director of Legal Affairs, Ameritech to Magalie R. Salas, Secretary, Federal Communications Commission, CC Docket No. 96-98 (filed September 7, 1999) (Ameritech September 7 *Ex Parte*).

⁵⁶⁰ See *supra* Section (V)(D)(1).

⁵⁶¹ *Id.*

these markets, and accordingly, competitors are impaired without access to unbundled local switching.

284. Density Zone 1. When we examine the deployment of switches by competitors at a more granular level, we find that, based on the record before us, requesting carriers have deployed greater numbers of switches in areas of high customer density. Several incumbent LECs argue that switching should not be unbundled in dense wire centers, but each proffers its own geographic market definition for our local circuit switch unbundling analysis.⁵⁶² BellSouth proposes, and other incumbent LECs support, the use of density zones 1 and 2 to capture the areas in which competitors have deployed switches and where incumbent LECs need not unbundle switching.⁵⁶³

285. We conclude that it is appropriate to create an exception to the local circuit switching unbundling obligation only in density zone 1, within the top 50 MSAs. The exception applies to density zone 1 as it was defined on January 1, 1999. Based on the limited evidence in the record, we believe that density zone 1 closely reflects the wire centers where competitive LEC switches are located. In particular, of the seven markets in the top 50 MSAs served by BellSouth, each MSA contains at least one density zone 1⁵⁶⁴ where approximately 97 percent of all competitive LEC switches have been deployed.⁵⁶⁵ We recognize that only one commenter, BellSouth, provided detailed data to describe where requesting carriers have deployed switches in density zone 1. The record does not contain similar data for other incumbent LECs. Given the record before us and the need to provide a measure of certainty to the market, we believe that drawing a line at density zone 1 within the top 50 MSAs represents a reasonable approximation of where requesting carriers are not impaired without access to unbundled local circuit switching.

286. In order to prevent incumbent LECs from modifying their density zones to limit their unbundling obligation for local circuit switching, we freeze, for unbundling

⁵⁶² *Id.*

⁵⁶³ 47 C.F.R. § 69.123. Incumbent LECs generally proceed through a three-step process to assign central offices to density zones within a given study area. In the first step, an incumbent LEC ranks its wire centers in order of decreasing traffic density, based on some measure of density chosen by the incumbent LEC. In the second step, the incumbent LEC sets breakpoints within the zone density ranking to partition the wire centers into zones, and finally, an incumbent LEC further adjusts the zones as it sees fit, based on geographic contiguity or community of interest reasons. See *Expanded Interconnection Order*, 7 FCC Rcd at 7454-55, para. 179; 47 C.F.R. § 61.38(b)(4). See also *Access Charge Reform*, CC Docket No. 96-262, Fifth Report and Order and Further Notice of Proposed Rulemaking, 1999 WL 669188, (rel. August 5, 1999). See Letter from Kathleen B. Levitz, Vice President – Federal Regulatory BellSouth, to Magalie R. Salas, Secretary, Federal Communications Commission, CC Docket No. 96-98 (filed July 28, 1999) (Incumbent LEC Joint *Ex Parte*) (96% of Zone 1 wire centers served by one or more CLEC switches; 84 % of Zone 2 wire centers served by one or more CLEC switches).

⁵⁶⁴ BellSouth Comments at Attachment D.

⁵⁶⁵ See BellSouth Comments at 59. Specifically, in Atlanta, competitive LECs have deployed 20 switches in zone 1; in Miami, 13 switches in zone 1; in Orlando, 9 switches in zone 1; in Charlotte, 9 switches in zone 1; in New Orleans, 7 switches in zone 1; in Nashville, 7 switches in zone 1; and in Greensboro, 2 switches in zone 1.

purposes, the incumbent LECs' density zone 1 as it was defined on January 1, 1999. Otherwise, incumbent LECs would retain significant discretion to define their density zone boundaries in the future. The Commission reviews incumbent LEC zone density pricing plans under a "reasonableness" standard.⁵⁶⁶ For example, our rules allow incumbent LECs to define zone boundaries upon a showing that "the assignment of central offices to each of the zones reflects cost-related characteristics, such as traffic density or some measure of traffic through each office."⁵⁶⁷ MCI WorldCom argues that using the zone approach would allow incumbent LECs to "redefine breakpoints to put more central offices into zones in which the incumbent LECs were not required to provide switching as an unbundled network element" and would allow incumbent LECs to "change their methodologies for defining zones to upset their competitor's business plans."⁵⁶⁸ To address the possibility that incumbent LECs, going forward, could amend their density zones to minimize their unbundling obligations, we create an exception to the unbundling obligation in the density zones as they existed on January 1, 1999.⁵⁶⁹ We believe that freezing the zones as of January 1, 1999, for purposes of section 251 unbundling obligations, addresses MCI WorldCom's concerns.

287. As discussed in our unbundling analysis above, as requesting carriers' switch utilization rates increase, the difference between the switching costs incurred by competitive and incumbent LECs decreases, and the per line switching costs will decrease as a requesting carrier's customer base grows.⁵⁷⁰ Because of increased demand for telecommunications services and the enhanced revenue opportunities associated with serving customers in high-density areas, such as density zone 1, we find that requesting carriers serving these dense areas are able to make more efficient use of their switching facilities, and can thus counter incumbent LEC scale economies. We therefore find that

⁵⁶⁶ See *GTE Service Corporation Revised Zone Density Pricing Plan*, Order, 10 FCC Rcd. 5696, 5697 para. 7 (1995); *BellSouth Telecommunications Inc., GTE Service Corporation, Lincoln Telephone and Telegraph Co. NYNEX Telephone Companies, Pacific Bell, and Rochester Telephone Corporation Zone Density Pricing Plans*, Order, 8 FCC Rcd 4443, 4446, para. 8 (1993) (*First Zone Density Order*).

⁵⁶⁷ See *Expanded Interconnection Order*, 7 FCC Rcd at 7454-55, para 179; 47 C.F.R. § 61.38(b)(4). MCI WorldCom notes that it is unaware of any zone density plan that has been found unreasonable. Letter from Chuck Goldfarb, Director, Law and Public Policy, MCI WorldCom to Larry Strickling, Chief, Common Carrier Bureau, Federal Communications Commission (filed August 9, 1999).

⁵⁶⁸ MCI WorldCom argues that where a requesting carrier plans to purchase unbundled switching, the incumbent LEC could change its methodology for ranking central office traffic density in such a way that the central office changed zones, and the incumbent LEC was no longer required to offer switching to requesting carriers. MCI is further unaware of any incumbent LEC methodology or zone plan that has ever been found unreasonable. See MCI WorldCom August 9 *Ex Parte*.

⁵⁶⁹ See *CompTel August 19 Ex Parte* (supporting use of density zone 1 as they existed on January 1, 1999 in top MSAs.).

⁵⁷⁰ As previously noted, MCI WorldCom contends that at 10% percent market penetration, switching costs for a requesting carrier are about 132% above incumbent LEC switching costs but decrease to 31% above incumbent LEC switching costs at 30% penetration levels. See MCI WorldCom Comments at 51 and MCI WorldCom Bryant Decl. at para. 30).

the cost of purchasing a circuit switch does not impair a requesting carrier's ability to provide the services it seeks to offer in density zone 1, in certain circumstances.

288. Need for Enhanced Extended Link. Our conclusion that competitors are not impaired in certain circumstances without access to unbundled switching in density zone 1 in the top 50 MSAs also is predicated upon the availability of the enhanced extended link (EEL). As noted in section VI(B) above, the EEL allows requesting carriers to serve a customer by extending a customer's loop from the end office serving that customer to a different end office in which the competitor is already collocated. The EEL therefore allows requesting carriers to aggregate loops at fewer collocation locations and increase their efficiencies by transporting aggregated loops over efficient-high capacity facilities to their central switching location. Thus, the cost of collocation can be diminished through the use of the EEL. We agree with ALTS that, if requesting carriers can obtain nondiscriminatory, cost-based access to the enhanced extended link, their collocation costs would decrease, and they would need to collocate in as few as one incumbent LEC central office in an MSA to provide service.⁵⁷¹

289. We are not persuaded by arguments that use of the EEL produces only a short term advantage over collocation.⁵⁷² Although we agree with SBC that distance-sensitive EEL costs can exceed the costs associated with collocation over time, we find that the ability of a requesting carrier to provision EELs more quickly than collocation arrangements, without the substantial upfront costs of establishing collocation in multiple central offices, can reduce significantly the costs of self-provisioning a switch in the initial phase of an entry strategy. When projected EEL costs exceed projected collocation costs, competitive LECs may reconfigure their networks to ensure the continued efficiency of their networks. We conclude that requesting carriers, reacting to marketplace demands and their own network topologies, are better able to weigh the costs and benefits of EELs compared to collocation and adjust their plans accordingly. Where a requesting carrier chooses the EEL, we find that it reduces a requesting carrier's reliance on collocation.

290. Customers with Four or More Lines. Our analysis of an incumbent LEC's local circuit switching obligation has focused primarily upon the geographic areas where competitive carriers have deployed switches. We now consider whether, within these geographic areas, market facts demonstrate that requesting carriers are not impaired without access to local circuit switching for discrete market segments or customer classes.

⁵⁷¹ ALTS Comments at 62.

⁵⁷² In Texas, SBC compares a \$21 monthly loop cost and a \$29 EEL cost which does not include approximately \$40 per month of distance sensitive transport costs (assuming 8 miles from the SBC central office to collocation cage). SBC further assumes that requesting carriers incur on average a \$15,405 non-recurring charge for collocation and a \$995 recurring charge per month for collocation. Thus, under SBC's cost analysis, it would take a requesting carrier a matter of months before the recurring EEL and transport costs are greater than the up-front collocation expenses. See Letter from Lincoln E. Brown, Director - Federal Regulatory, SBC, to Magalie R. Salas, Secretary, Federal Communications Commission, CC Docket No. 96-98 (filed July 15, 1999).

291. We conclude that without access to unbundled local circuit switching, requesting carriers are impaired in their ability to serve the mass market. As discussed above, our unbundling analysis takes into account market conditions to determine whether a requesting carrier is impaired without access to unbundled local circuit switching. Since the Commission adopted the *Local Competition First Report and Order*, competition has continued to develop, primarily for business customers or users with substantial telecommunications needs.⁵⁷³ Commenters in this proceeding generally argue that requesting carriers have deployed switches to serve medium and large business customers and are not yet serving mass market customers, which largely are residential customers.⁵⁷⁴ No party in this proceeding, however, identifies the characteristics that distinguish medium and large business customers from the mass market.

292. There are several methods we could use to distinguish between the mass market and the medium and large business market for purposes of our unbundling analysis. For example, we could use revenues, number of employees, number of lines, or some other factor to distinguish between the mass market and the medium and large business market.

293. We find, however, that a rule that provides access to unbundled local switching for requesting carriers when they serve customers with three lines or less captures a significant portion of the mass market. First, virtually all residential customers would be captured by such a rule. While an increasing number of American homes are served by second lines, we believe it is a rare case in which residences have three lines, and even more unusual for a home to have four or more lines. Second, any business that has three or fewer lines is likely to share more characteristics of the mass market customer than a medium and large business. In particular, small businesses are likely to use the same number of lines as many residential subscribers and purchase similar volumes and types of telecommunications services.

294. We recognize that a rule that removes unbundling obligations based on line count will be marginally overinclusive or underinclusive given individual factual circumstances. We find, however, that in our expert judgment, a rule that distinguishes customers with four lines or more from those with three lines or less reasonably captures the division between the mass market – where competition is nascent – and the medium and large business market – where competition is beginning to broaden.

295. Our decision to examine mass market and larger business markets separately is consistent with the Commission's merger review analysis and the

⁵⁷³ See *Advanced Services Memorandum Opinion and Order and NPRM*, 13 FCC Rcd at n. 80 (“The local competition that has developed has focused on larger business customers in large cities, not on residential or small business customers.”). See also *Trends in Telephone Service*, Industry Analysis Division, Common Carrier Bureau, Federal Communications Commission, September 1999, at Section 9-1.

⁵⁷⁴ USTA UNE Report at I-10-I-19 & App. A. See also Ameritech Comments at 73-79; AT&T Reply Comments at 104; BellSouth Comments at 58-59; GTE Comments at 40-42, 46-47; SBC Comments at 36, 38; US WEST Comments at 42-43.

Commission's reform of the interstate access charge regime. In the *MCI-WorldCom* merger, we identified two distinct product markets – residential and small business, which we described as one market, and medium and large business customers, which we described as the larger business market.⁵⁷⁵ In the *Access Reform* proceeding, the Commission distinguished between primary residences and single line businesses which constitute a large portion of the mass market, and multi-line business customers which constitute the medium and large business markets.⁵⁷⁶ We therefore conclude that it is appropriate to make a similar distinction between mass market customers and larger business customers in creating an exception to the unbundling obligation for local circuit switching.

296. As discussed above, a requesting carrier is materially diminished in its ability to offer service to mass market customers without access to unbundled switching because it will face materially greater costs, materially greater delay, and will lack the same ubiquitous reach as the incumbent LEC's network. In addition to the costs of establishing a collocation arrangement with the incumbent LEC, we noted above that requesting carriers incur additional costs and face service quality impediments when extending a customer's loop to their collocation cages.⁵⁷⁷

297. In contrast, marketplace developments suggest that competitors are not impaired in their ability to serve certain high-volume customers in the densest areas. We believe that the coordinated cutover process will not necessarily impair the ability of a requesting carrier to serve an end user in density zone 1. Medium and large business customers are often sophisticated users of telecommunications services that are able to order their operations in a manner that minimizes disruptions that may be caused by coordinated cutovers.⁵⁷⁸ For example, requesting carriers seeking to provide service to medium and large business customers may engage in direct outbound marketing in such a way as to control coordinated cutover order flows to the incumbent LEC.⁵⁷⁹ In addition,

⁵⁷⁵ See *Application of WorldCom, Inc. and MCI Communications Corporation for Transfer of Control of MCI Communications Corporation to WorldCom, Inc.*, Memorandum Opinion and Order, 13 FCC Rcd 18025, at paras. 24-26 (1998) (“we identify two distinct product markets, reflecting customers groups with different patterns of demand: (1) residential customers and small business (mass market); and (2) medium-sized and large business customers (larger business market).”).

⁵⁷⁶ See *Access Charge Reform*, CC Docket No. 96-262 et al., First Report and Order, 12 FCC Rcd 15982 (1997) (*Access Charge Reform Order*), aff'd sub nom. *Southwestern Bell Tel. Co. v. Fed. Communications Comm'n*, ___ F.3d ___ (8th Cir., Aug. 19, 1998); Order on Reconsideration, 12 FCC Rcd 10119 (1997), Second Order on Reconsideration and Memorandum Opinion and Order, 12 FCC Rcd 16606 (1997) (distinguishing between primary residences, single line business and multi-line business customers).

⁵⁷⁷ See *supra* para. 268. We note that for medium and large business customers in dense wire centers, many requesting carriers serve these customers with their own SONET rings and thus incur no additional hot cut costs, delays or service quality impairments.

⁵⁷⁸ For example, coordinated cutovers that do not occur during normal business hours may not disrupt the operations of a business customer.

⁵⁷⁹ For example, a competitive LEC may use a sales force instead of mass market advertising

to the extent that incumbent LECs provide requesting carriers with unbundled switching to serve the mass market, requesting carriers will require fewer coordinated loop cutovers in the aggregate and incumbent LECs can focus their efforts on coordinated cutovers for customers not served with unbundled local circuit switching.⁵⁸⁰ Finally, because business customers generate comparably greater revenues than residential customers, requesting carriers may be more willing to incur the provisioning difficulties that may be present in the coordinated cutover process.

298. We conclude that carriers will not be impaired in their ability to serve high volume users only when the EEL is provided throughout density zone 1. While some customers in this area already are being served by facilities-based carriers without the EEL, the availability of the EEL will ensure that requesting carriers are able to serve customers ubiquitously throughout the area. If the EEL is available and a requesting carrier seeks to serve a high volume business, the incumbent LEC can provision the high capacity loop and connect directly to a requesting carrier's collocation cage.⁵⁸¹ In this scenario, the requesting carrier need not initiate a coordinated loop cutover. Moreover, the availability of the EEL substantially reduces the delay a requesting carrier would experience before it is able to actually provide service.⁵⁸²

299. Goals of the 1996 Act. As noted above, our unbundling analysis considers how the switching unbundling obligation we adopt will encourage requesting carriers to rapidly enter the local market and whether the failure to require unbundling will cause any class of consumers to wait unnecessarily for competitive alternatives. Our decision to relieve incumbent LECs of their unbundling obligations in the circumstances described above will not require medium and large businesses to wait unnecessarily for competitive alternatives. We find that requesting carriers have deployed a large number of switches to serve medium and large business customers in the densest areas of the top 50 MSAs, and these medium and large business customers by and large, have a choice in their local service provider.⁵⁸³ Accordingly, we find that relieving incumbent LECs of their

to control the demand for its services and thus the number of coordinated cutovers required to serve its customers.

⁵⁸⁰ In Ameritech's territory, the market segment for business customers with three lines or less accounts for approximately 72 percent of Ameritech's business customer base. See Letter from James K. Smith, Director, Federal Relations, Ameritech, to Magalie R. Salas, Secretary, Federal Communications Commission, CC Docket No. 96-98 (filed September 8, 1999) ("Ameritech Business Customer Base by Line Size").

⁵⁸¹ Furthermore, requesting carriers and incumbent LECs have developed routine provisioning processes to deploy the EEL using the ASR or Access Service Request process, and thus requesting carriers will not face material provisioning delays and costs to integrate the EEL into their networks.

⁵⁸² See Letter from Jonathan E. Canis, Counsel for ALTS, Intermedia, e.spire, to Magalie R. Salas, Secretary, Federal Communications Commission, CC Docket No. 96-98 (filed August 27, 1999).

⁵⁸³ AT&T Reply Comments at 104 ("AT&T's two 5ESS switches in Dallas . . . are not being used 'to reach . . . as much as 98 percent . . . of the addressable business and residential market' as GTE claims is the case. [citations omitted]. Rather, those switches like AT&T's DMS-100 in Washington, D.C. are being used to offer service to business customers. The same is true for each of AT&T's local switching in

unbundled switching obligation, as set forth herein, will not require medium and small business consumers to wait unnecessarily for competitive alternatives because they are largely available today. Furthermore, eliminating an incumbent LEC's local circuit switching obligation in these circumstances is consistent with our goal to reduce regulation when possible. Our decision also provides requesting carriers with access to the elements they need to ramp up towards continued deployment of self-provisioned switches and is therefore consistent with our policies of encouraging facilities-based competition and encouraging innovation.

2. Packet Switching

a. Background

300. In the *Local Competition First Report and Order*, the Commission declined to find that incumbent LEC packet switches should be identified as unbundled network elements because the Commission did not have an adequate record to support such a conclusion.⁵⁸⁴ In the *Notice*, we sought comment on whether "packet switches should be unbundled pursuant to section 251(c)(3), and whether there is "any basis for treating network elements used in the provisioning of packet-switched advanced services any differently than those used in the provisioning of circuit-switched voice services."⁵⁸⁵ Incumbent LECs argue that they generally trail in the deployment of packet switches, and therefore should not be subject to unbundling requirements that might eliminate their incentives to invest in equipment used to provide advanced services.⁵⁸⁶ Several competitors argue in favor of unbundling packet switching to encourage the broad-based deployment of advanced services.⁵⁸⁷

301. We are aware, however, that US WEST has argued that section 251(c)(3) does not apply to any network elements, such as packet switches, used to provide advanced services, such as xDSL.⁵⁸⁸ We note that the Commission has requested, and has received, a remand from the United States Court of Appeals for the District of Columbia Circuit to address US WEST's argument that the Commission is without statutory authority to require incumbent LECs to provide access to unbundled elements

other markets, such as Los Angeles, Denver, Detroit and Tampa.").

⁵⁸⁴ *Local Competition First Report and Order*, 11 FCC Rcd. at 15713, para. 427.

⁵⁸⁵ *Notice* at para 35.

⁵⁸⁶ SBC Reply Comments at 26-27, 74, 76-77; US WEST Comments at 57-58; BellSouth Comments at 32-33; Bell Atlantic Comments at 40. *See also* Ameritech Comments at 118; GTE Comments at 73 (Incumbent LECs should not have to unbundle packet switches because CLECs and cable companies lead in the deployment of such services.).

⁵⁸⁷ Allegiance Comments at 16; Cable & Wireless Comments at 4; Covad Comments at 6; GSA Comments at 6; KMC Comments at 25-26; Net2000 Comments at 130; Qwest Reply Comments at 66.

⁵⁸⁸ US WEST Comments at 56, n. 122.

used in the provision of advanced services.⁵⁸⁹ After receiving a more complete administrative record, we intend to fully address US WEST's arguments in the *Advanced Services Memorandum Opinion and Order and NPRM* remand proceeding.⁵⁹⁰ In remanding back to the agency, the court declined to vacate portions of the *Advanced Services Memorandum Opinion and Order and NPRM* challenged by US WEST. Accordingly, our decision in that Order that xDSL services are "either" telephone exchange service or exchange access service remains in effect during the pendency of the *Advanced Services Memorandum Opinion and Order and NPRM* remand proceeding.⁵⁹¹ We therefore may consider whether packet switching should be unbundled under the framework established in this proceeding.

b. Discussion

(i) Definition of Packet Switching

302. As a threshold matter, we must define the functionality of the packet switching unbundled network element. In packet-switched networks, messages between network users are divided into units, commonly referred to as packets, frames, or cells. These individual units are then routed between network users. The switches that provide this routing function are "packet switches," and the function of routing individual data units based on address or other routing information contained in the units is "packet switching."⁵⁹²

303. We find that a component of the packet switching functionality, and included in our definition of packet switching is the Digital Subscriber Line Access Multiplexer (DSLAM). The DSLAM splits voice (low band) and data (high band) signals carried over a copper twisted pair. DSLAM equipment sometimes includes a splitter. If not, a separate splitter device separates voice and data traffic. The voice signal is transmitted toward a circuit switch, and the data from multiple lines is combined in packet or cell format and is transmitted to a packet switch, typically ATM or IP. The DSLAM combines: (1) the ability to terminate copper customer loops (which includes both a low-band voice channel and a high-band data channel, or solely a data channel);

⁵⁸⁹ See *US WEST v. Federal Communications Commission*, Order No. 98-1410 (D.C. Cir. Aug. 25, 1999).

⁵⁹⁰ See Comments Requested in Connection with Court Remand of August 1998 Advanced Services Order, *Public Notice*, CC Docket Nos. 98-11, 98-26, 98-32, 98-78, 98-91, 98-147 (rel. September 9, 1999).

⁵⁹¹ *Advanced Services Memorandum Opinion and Order and NPRM*, 13 FCC Rcd at 24032, at para. 40.

⁵⁹² With packet switching, the packet switches place data units on inter-switch trunks only when there are active communications between network users. When users are not sending each other messages or packets, no bandwidth is used on the trunks between packet switches. By contrast, with voice connections between circuit switches, when both users are silent, the digital trunks carry digitally encoded silence. Inter-switch bandwidth is required even when no information is being exchanged.

(2) the ability to forward the voice channels, if present, to a circuit switch or multiple circuit switches; (3) the ability to extract data units from the data channels on the loops; and (4) the ability to combine data units from multiple loops onto one or more trunks that connect to a packet switch or packet switches.

304. We define packet switching as the function of routing individual data units, or “packets,” based on address or other routing information contained in the packets. The packet switching network element includes the necessary electronics (*e.g.*, routers and DSLAMs). We find that packet switching qualifies as a network element because it includes “all features, functions and capabilities . . . sufficient . . . for transmission, routing or other provision of a telecommunications service.”⁵⁹³ Because packet switching and DSLAMs are used to provide telecommunications services, packet switching qualifies as a network element.⁵⁹⁴ We adopt a definition of packet switching that does not favor or disadvantage one packet switching technology over another. Our intention is to define packet switching in such a way as to capture the functionality of packet networks, without regard to a particular “packetizing” technology that an incumbent LEC has deployed in its network. Several parties propose definitions of packet switching which elaborate on the Commission’s existing circuit switching definition.⁵⁹⁵ We decline to adopt proposed definitions of packet switching that exclude DSLAMs from the packet switching functionality.⁵⁹⁶ We further decline to adopt equipment-specific packet switching network elements, as proposed by Intermedia and e.spire.⁵⁹⁷ We find that with today’s technology, packetizing is an integral function of the DSLAM. Accordingly, we include the DSLAM functionality, with the routing and addressing functions of packet switches, in our functional definition of packet switching.

**(ii) Proprietary Concerns Associated With
Packet Switching**

305. No party alleged that packet switching was proprietary within the meaning of section 251(d)(2). We find that the record provides no basis for withholding packet switching from competitors based on proprietary considerations or subjecting packet switching to the more demanding “necessary” standard set forth in section

⁵⁹³ *Local Competition First Report and Order*, 11 FCC Rcd. at 15633, para. 262.

⁵⁹⁴ ALTS Reply Comments at 57.

⁵⁹⁵ CompTel Comments at 37-38; Qwest Reply Comments at 66.

⁵⁹⁶ CompTel proposed a definition that includes the “assembling, disassembling, addressing, conversion or routing of digital information in packet form. The packet switching capability network element shall include all features, functions and capabilities of the packet switching and/or routing devices.” CompTel Comments, Appendix A at 5.

⁵⁹⁷ e.spire Joint Comments at 30-31.

251(d)(2)(A).⁵⁹⁸ Instead we examine packet switching under the “impair” standard of section 251(d)(2)(B).

(iii) **Unbundling Analysis for Packet Switching**

306. We decline at this time to unbundle the packet switching functionality, except in limited circumstances. Among other potential factors, we recognize that the presence of multiple requesting carriers providing service with their own packet switches is probative of whether they are impaired without access to unbundled packet switching. The record demonstrates that competitors are actively deploying facilities used to provide advanced services to serve certain segments of the market — namely, medium and large business — and hence they cannot be said to be impaired in their ability to offer service, at least to these segments without access to the incumbent’s facilities. In other segments of the market, namely, residential and small business, we conclude that competitors may be impaired in their ability to offer service without access to incumbent LEC facilities due, in part, to the cost and delay of obtaining collocation in every central office where the requesting carrier provides service using unbundled loops. We conclude, however, that given the nascent nature of the advanced services marketplace, we will not order unbundling of the packet switching functionality as a general matter.

307. Both the record in this proceeding, and our findings in the *706 Report*, establish that advanced services providers are actively deploying facilities to offer advanced services such as xDSL across the country.⁵⁹⁹ Competitive LECs and cable companies appear to be leading the incumbent LECs in their deployment of advanced services.⁶⁰⁰ For example, in 1999, Rhythms expects to roll out xDSL services in 1,000 end offices nation wide.⁶⁰¹ Covad’s planned network deployment is expected to reach 51 MSAs by the end of 1999.⁶⁰² In the past year, NorthPoint deployed facilities capable of transmitting xDSL signals in 17 metropolitan markets.⁶⁰³ NorthPoint plans to expand its

⁵⁹⁸ See MGC Comments at 21; Net2000 Comments at 13-14; Rhythms Comments at 19; TRA Comments at 12.

⁵⁹⁹ USTA UNE Report at VI-1 to 8. *706 Report*, 14 FCC Rcd at 2398. In the *706 Report*, we concluded that incumbents and competitive carriers alike have made tens of billions of dollars of investment in broadband facilities. Incumbent LECs alone have announced plans to offer broadband, xDSL services to approximately twenty million homes in 1999. *706 Report*, 14 FCC Rcd at 2419-20, para 42.

⁶⁰⁰ See *706 Report*, 14 FCC Rcd at 2423-24, para. 48. See also Comments of GTE at 74.

⁶⁰¹ Rhythms Comments at 1 (“By the end of 1999, Rhythms plans to collocate networking equipment in at least 1,000 central offices and be operational in 33 metropolitan markets.”).

⁶⁰² Covad Comments at 2 (“Covad’s planned network deployment by the end of 1999 will cover 51 MSAs, more than 25% of the nation’s homes and businesses”).

⁶⁰³ NorthPoint Comments at 2 (“In the past year alone, for example, NorthPoint has begun offering service in 17 new markets in the United States, including San Francisco, New York, Chicago, Pittsburgh and Cleveland.”). See also Letter from John J. Heitmann, Counsel for Intermedia/e.spire to Magalie R. Salas, Secretary, Federal Communications Commission (filed July 21, 1999). (“e.spire has deployed 66 data switches nationwide and Intermedia has deployed 175 data switches”).

DSL-based local networks from 25 major markets, representing 37 metropolitan statistical areas (MSAs), to 28 markets, or 61 MSAs, by the end of 1999.⁶⁰⁴ Qwest announced in August 1999, that it is now providing DSL service in 13 U.S. markets and plans to expand to more than 30 major markets by the end of 1999.⁶⁰⁵ In addition, EarthLink has partnered with Sprint to offer nationwide xDSL service.⁶⁰⁶ KMC Telecom Inc. announced aggressive rollout of DSL services with plans to introduce additional broadband applications by year-end.⁶⁰⁷ Marketplace developments like the ones described above suggest that requesting carriers have been able to secure the necessary inputs to provide advanced services to end users in accordance with their business plans. This evidence indicates that carriers are deploying advanced services to the business market initially as well as the residential and small business markets.

308. Several parties, in addition to the incumbent LECs, argue that the Commission should not unbundle packet switching or DSLAMS generally.⁶⁰⁸ We recognize that equipment needed to provide advanced services, such as DSLAMS and packet switches, are available on the open market at comparable prices to incumbents and requesting carriers alike.⁶⁰⁹ Incumbent LECs and their competitors are both in the early stages of packet switch deployment, and thus face relatively similar utilization rates of their packet switching capacity. Packet switching utilization rates will differ from circuit switching utilization rates because of the incumbent LEC's monopoly position as carrier of last resort. Incumbent LEC circuit switches, because they serve upwards of 90 percent of the circuit switched market, may achieve higher utilization rates than the circuit switches of requesting carriers. Because the incumbent LEC does not retain a monopoly position in the advanced services market, packet switch utilization rates are likely to be more equal as between requesting carriers and incumbent LECs. It therefore does not appear that incumbent LECs possess significant economies of scale in their packet switches compared to the requesting carriers.

⁶⁰⁴ NorthPoint Launches DSL Service in the Twin Cities; Offering the Speediest Business-Class DSL Service Around, August 3, 1999 <<http://www.northpoint.net/press/press_990803.html>>. NorthPoint Brings DSL Internet Access to Baltimore, PRNewswire, March 30, 1999.

⁶⁰⁵ *Qwest Launches Digital Subscriber Line Service*, Cambridge Telecom Report, August 1, 1999 available at 1999 WL 8103900.

⁶⁰⁶ Telephony, Communications Daily, July 15, 1999, at 11.

⁶⁰⁷ Telephony, Communications Daily, June 8, 1999, at 10.

⁶⁰⁸ Northpoint Comments at 18-19 (stating that when competitive LECs have access to loops and collocation, any competitive LEC can provide the necessary infrastructure, *i.e.* DSLAMs and packet switches); Rhythms Comments at 26 (stating that incumbent LECs "must make their DSLAMs available on an unbundled basis when advanced service providers are unable to access a full clean copper loop."); Ohio PUC Comments at 15.

⁶⁰⁹ See ITIC Comments at 6-7 ("ILECs' competitors can acquire and install equipment for advanced services on a relatively equal footing with the incumbent LECs. The relevant electronic equipment is produced by numerous vendors, establishing a competitive equipment market that can effectively discipline prices, provisioning and other service terms for the foreseeable future.").

309. Collocating in incumbent LEC central offices imposes material costs and delays on a requesting carrier and materially diminishes a requesting carrier's ability to provide the services it seeks to offer. As discussed above, we identified the costs and delays associated with collocation as factors that impair a requesting carrier's ability to self-provision circuit switches to serve residential and small business market.⁶¹⁰ We see no reason to distinguish a requesting carrier's collocation-related costs and delays to provide circuit-switched service from those collocation costs and delays incurred by requesting carriers to provide packet-switched services. These costs and delays lead us to find that competitors are impaired in their ability to offer advanced services without access to incumbent LEC facilities. As discussed in more detail below, that conclusion is not dispositive of whether unbundling is appropriate at this time under section 251(d)(2). As discussed in section IV above, in addition to the "impair" standard we consider whether unbundling will open local markets to competition and how access to a given network element will encourage the rapid introduction of local competition to the benefit of the greatest number of customers.⁶¹¹

310. NorthPoint argues that an additional impediment it faces when providing advanced services using xDSL technologies is the absence of line sharing.⁶¹² Currently, many incumbent LECs offer advanced services over the high-frequency range of the same loops they use to offer voice services. Although the incumbent LEC may use a single copper pair to provide xDSL services, in the absence of line sharing, requesting carriers providing xDSL services must purchase an additional unbundled loop to serve their customers, thereby incurring additional non-trivial costs. In light of the substantial number of packet switches deployed by competitive LECs, even in comparison to incumbent LEC deployment, we conclude that these non-trivial costs are substantial enough to impair the requesting carrier's ability to provide the services it seeks to offer within the meaning of section 251(d)(2). Unlike circuit switching services, however, requesting carriers providing data services do not face the operational impediment of obtaining a coordinated cutover of the loop on a timely basis, because they typically are providing service over a second line. Because such carriers purchase an additional unbundled copper loop to serve the customer, the customer's voice service is never disconnected, and the requesting carrier faces none of the timing and quality impediments associated with the "hot cut" process.

311. We further decline to unbundle specific packet switching technologies incumbent LECs may have deployed in their networks. E.spire/Intermedia request that we require incumbent LECs to unbundle: (1) the ports on their data switches or routers; and (2) the connectivity, including the switching fabric and associated software functions, between such ports at capacities ranging from DS0 to DS3.⁶¹³ E.spire/Intermedia focus

⁶¹⁰ See *supra* Section (V(D)(1).

⁶¹¹ See *supra* Section IV.

⁶¹² See NorthPoint Comments at 14-15.

⁶¹³ e.spire/Intermedia Comments at 29.

their request upon a particular packet-switching technology -- frame relay.⁶¹⁴

E.spire/Intermedia argue that they are impaired without access to these data unbundled network elements to complete “virtual circuits” because they lack the incumbent LEC’s economies of density and the ability to statistically multiplex data traffic to make efficient use of transport facilities.⁶¹⁵

312. We reject e.spire/Intermedia’s request for a packet switching or frame relay unbundled network element. First, as discussed above, we will define unbundled network elements, to the extent practicable, in a technologically neutral manner so as to not favor one particular packet switching technology over another. Defining an unbundled network element according to a particular packet switching technology, such as frame relay, violates this principle of technological neutrality. Furthermore, defining packet switching elements according to a specific technology creates the possibility that as innovative packet switching technologies are deployed, they may or may not fall within our definition of packet switching. Second, e.spire/Intermedia have not provided any specific information to support a finding that requesting carriers are impaired without access to unbundled frame relay. We note, however, that e.spire/Intermedia are free to demonstrate to a state commission that lack of unbundled access to the incumbent’s frame relay network element impairs their ability to provide the services they seek to offer. A state commission is empowered to require incumbent LECs to unbundle specific network elements used to provide frame relay service, consistent with the principles set forth in this order.

313. We do find, however, one limited exception to our decision to decline to unbundle packet switching. Access to packetized services to provide xDSL service requires “clean” copper loops without bridge taps or other impediments.⁶¹⁶ Furthermore, xDSL services generally may not be provisioned over fiber facilities. In locations where the incumbent has deployed digital loop carrier (DLC) systems, an uninterrupted copper loop is replaced with a fiber segment or shared copper in the distribution section of the loop. In this situation, and where no spare copper facilities are available, competitors are effectively precluded altogether from offering xDSL service if they do not have access to unbundled packet switching.⁶¹⁷ Moreover, if there are spare copper facilities available, these facilities may not meet the necessary technical requirements for the provision of certain advanced services. For example, if the loop length exceeds 18,000 feet, the provision of ADSL service is technically infeasible. When an incumbent has deployed DLC systems, requesting carriers must install DSLAMs at the remote terminal instead of

⁶¹⁴ See Letter from John J. Heitmann, Counsel for Intermedia/e.spire, to Magalie R. Salas, Secretary, Federal Communications Commission, CC Docket No. 96-98 (filed July 21, 1999) (*Frame Relay and Data UNEs Ex Parte*).

⁶¹⁵ *Id.*

⁶¹⁶ See Ohio PUC Comments at 14-15; Covad Comments at 40; Northpoint Comments at 19; Rhythms Comments at 15-16.

⁶¹⁷ Level 3 Comments at 23; NorthPoint Comments at 18-19; Rhythms Comments at 27.

at the central office in order to provide advanced services. We agree that, if a requesting carrier is unable to install its DSLAM at the remote terminal or obtain spare copper loops necessary to offer the same level of quality for advanced services, the incumbent LEC can effectively deny competitors entry into the packet switching market. We find that in this limited situation, requesting carriers are impaired without access to unbundled packet switching. Accordingly, incumbent LECs must provide requesting carriers with access to unbundled packet switching in situations in which the incumbent has placed its DSLAM in a remote terminal. This obligation exists as of the effective date of the rules adopted in this Order. The incumbent will be relieved of this unbundling obligation only if it permits a requesting carrier to collocate its DSLAM in the incumbent's remote terminal, on the same terms and conditions that apply to its own DSLAM. Incumbents may not unreasonably limit the deployment of alternative technologies when requesting carriers seek to collocate their own DSLAMs in the remote terminal.

314. Policy Goals. Incumbent LECs argue in this proceeding that their incentive to invest and innovate in new technologies capable of providing advanced services will be curtailed if we mandate unbundling.⁶¹⁸ We note that investments in facilities used to provide service to nascent markets are inherently more risky than investments in well established markets. Customer demand for advanced services is also more difficult to predict accurately than is the demand for well established services, such as traditional plain old telephone service (POTS).

315. We acknowledge that the incumbent LEC argument that unbundling may adversely affect innovation is consistent with economic theory, but events in the marketplace suggest that other factors may be driving incumbent LECs to invest in xDSL technologies, notwithstanding the economic theory. For example, in January 1998, U S WEST announced a rollout of ADSL service to 40 in-region metropolitan areas.⁶¹⁹ In October 1998, BellSouth announced its plans to offer ADSL service to 1.7 million customers in 30 markets by the end of 1998, and 23 additional markets in 1999.⁶²⁰ In January 1998, SBC announced a "massive rollout" of ADSL, "targeting more than 500 central offices and 9.5 million residential and business customers by year-end."⁶²¹ In January 1999, Bell Atlantic announced plans to rollout ADSL service in several states and entered into a marketing alliance with America On-Line in which Bell Atlantic hopes, by

⁶¹⁸ BellSouth Comments at 32-33; Bell Atlantic Comments at 43-45; U S WEST Comments at 57-58; SBC Comments at 74. We note that incumbent LECs made similar claims in response to our *Notice* in the Advanced Services docket. See *Advanced Services Memorandum Opinion and Order and NPRM*, 13 FCC Rcd 24012.

⁶¹⁹ See US West at <http://www.uswest.com/about/communicator/vol2no1/7.html> (US WEST launched ADSL service in 40 in-region metropolitan areas during the first half of 1998).

⁶²⁰ See BellSouth Rolls Out ADSL to ISP, CLEC, & IXC's, RBOC Update, Oct. 1, 1998.

⁶²¹ See *Telephony, Communications Daily*, Jan. 13, 1998. See also, *Bell Atlantic and SBC Push Merger Plans to Analysts*, *Communications Daily*, Nov. 17, 1998.

the end of 1999 to make ADSL available to seven million subscribers.⁶²² Combined, Bell Atlantic and GTE have stated that the number of xDSL capable-lines available in region will be 17 million and they will have ADSL capability in 550 central offices, allowing them to serve as many as 6.1 million xDSL customers.⁶²³ Such investments have been planned and undertaken notwithstanding the fact that we sought comment in August 1998 on whether facilities used to provide advanced services must be unbundled pursuant to section 251.⁶²⁴

316. Despite the encouraging signs of investment in facilities used to provide advanced services described above, we are mindful that regulatory action should not alter the successful deployment of advanced services that has occurred to date. Our decision to decline to unbundle packet switching therefore reflects our concern that we not stifle burgeoning competition in the advanced service market. We are mindful that, in such a dynamic and evolving market, regulatory restraint on our part may be the most prudent course of action in order to further the Act's goal of encouraging facilities-based investment and innovation.⁶²⁵

317. Our overriding objective, consistent with the congressional directive in section 706, is to ensure that advanced services are deployed on a timely basis to all Americans so that consumers across America have the full benefits of the "Information Age." The advanced services marketplace is a nascent one. Although some investment has occurred to date, much more investment in the future is necessary in order to ensure that all Americans will have access to these services. We remain concerned about the lack of deployment in rural areas. We note that we will carefully monitor the deployment of broadband services to ensure that the objectives of section 706 and the Act are being met. We decline to unbundle packet switching at this time, except for the limited exception described above.

E. Interoffice Transmission Facilities

1. Background

⁶²² See Bell Atlantic to Offer Special ADSL Service for AOL, Comm. Daily, November 17, 1998 at 1.

⁶²³ See Communications Daily, July 21, 1999.

⁶²⁴ See *Advanced Services Memorandum Opinion and Order and NPRM*, 13 FCC Rcd at 24054-63 paras. 92-115. Furthermore, it is widely believed that incumbent LECs' recent moves to offer broadband to residential customers are primarily a reaction to other companies' entry into broadband. In the 706 proceeding, U S West noted that when cable television-based broadband was available in three cities it served, it announced competing service in 14 states and 43 cities. Reply Comments of U S West Communications, Inc. filed in CC Docket No. 98-147, at 6 n. 9.

⁶²⁵ The Commission emphasized the need for caution by regulators when it stated "we need to be particularly careful about any action we take to promote broadband deployment, given the nascent nature of the residential market for broadband. At this time, the dimensions of broadband and the upper limits of market-based supply and demand are unclear." *Advanced Services First Report and Order and FNPRM*, 14 FCC Rcd. at 2436-37, para. 74.

318. In the *Local Competition First Report and Order*, the Commission concluded that incumbent LECs must provide interoffice transmission facilities on an unbundled basis to requesting carriers. In particular, the Commission required incumbent LECs to provide dedicated and shared transport as an unbundled network element pursuant to section 251(c)(3).⁶²⁶ The Commission found that such access was technically feasible and would promote competition in the local exchange market.⁶²⁷ In that order, however, the Commission declined to address the unbundling of incumbent LEC dark fiber because the record provided insufficient evidence to decide that issue.⁶²⁸

319. In the *Notice*, we sought comment on the application of the “necessary” and “impair” standards to previously identified unbundled network elements, including interoffice transport facilities.⁶²⁹ The *Notice* requested that parties include specific costs and an analysis of the availability of alternative sources of transport supply.⁶³⁰ We also sought comment on whether, in light of technological advances or experience in the marketplace since adoption of the *Local Competition First Report and Order*, we should modify the definition of any of the previously identified network elements including, for example, the definition of “transport,” to include dark fiber.⁶³¹

320. Incumbent LECs generally argue that interoffice transport should not be unbundled where a single alternative source of transport is available.⁶³² Competitive LECs argue that because alternative sources of transport supply are largely unavailable, requesting carriers are impaired without access to unbundled transport.⁶³³ Most of the state commissions addressing this issue agree that transport should remain an unbundled network element.⁶³⁴

⁶²⁶ *Local Competition First Report and Order*, 11 FCC Rcd at 15717, para. 439. See also *Third Reconsideration Order*, 12 FCC Rcd at 12475, para. 25.

⁶²⁷ *Local Competition First Report and Order*, 11 FCC Rcd at 15717-18, para. 439.

⁶²⁸ *Id.* at 15722, para. 450. Dark fiber is deployed fiber optic cable connecting two points within the incumbent LEC’s network. It is “dark” because it does not have electronics on either end of the dark fiber segment to energize it to transmit a telecommunications service.

⁶²⁹ *Notice* at para. 33.

⁶³⁰ *Id.*

⁶³¹ *Id.* at para. 34.

⁶³² Ameritech Comments at 88; Bell Atlantic Comments at 30; BellSouth Comments at 53; GTE Comments at 10, 59; SBC Comments at 50.

⁶³³ Ad Hoc Comments at 3; Cable & Wireless Comments at 37-38; Choice One Joint Comments at 14, 18; CoreComm Comments at 25; Excel Comments at 4; KMC Comments at 12, 15; ; MGC Comments at 2, 9, 21; NorthPoint Comments at 19; Net2000 Comments at 10,14; Prism Comments at 17; TRA Comments at 12,15;

⁶³⁴ Connecticut DPUC Comments at 4; Florida PSC Comments at 11; Illinois Commission

2. Discussion

321. We find that requesting carriers are impaired without access to unbundled dedicated and shared transport network element. In particular, self-provisioning ubiquitous interoffice transmission facilities, or acquiring these facilities from non-incumbent LEC sources, materially increases a requesting carrier's costs of entering a market or of expanding the scope of its service, delays broad-based entry, and materially limits the scope and quality of a requesting carrier's service offerings. Although the record indicates that competitive LECs have deployed transport facilities along certain point-to-point routes, the record also demonstrates that self-provisioned transport, or transport from non-incumbent LEC sources, is not sufficiently available as a practical, economic, and operational matter to warrant exclusion of interoffice transport from an incumbent LEC's unbundling obligations at this time. Accordingly, we conclude that incumbent LECs must offer unbundled access to their interoffice transmission facilities nationwide.

a. Dedicated Transport

(i) Definition

322. In the *Local Competition First Report and Order*, the Commission defined dedicated interoffice transmission facilities as "incumbent LEC transmission facilities dedicated to a particular customer or carrier that provide telecommunications between wire centers owned by incumbent LECs or requesting telecommunications carriers, or between switches owned by incumbent LECs or requesting telecommunications carriers."⁶³⁵ The Commission further concluded that incumbent LECs must provide all technically feasible capacity-related services such as DS1-DS3 and OC3-OC96 services.⁶³⁶

323. High-Capacity Transmission. We reaffirm that the definition of dedicated transport set forth in the *Local Competition First Report and Order* includes all technically feasible capacity-related services such as DS1-DS3 and OC3-OC96 dedicated transport services. We clarify that this definition includes all technically feasible capacity-related services, including those provided by electronics that are necessary components of the functionality of capacity-related services and are used to originate and terminate telecommunications services.⁶³⁷ We find that unbundling high-capacity

Comments at 13; Iowa Comments at 6-7; Kentucky PSC Comments at 2; Oregon PUC Comments at 2; Texas PUC Comments at 14.

⁶³⁵ *Local Competition First Report and Order*, 11 FCC Rcd at 15718, para. 440.

⁶³⁶ *Id.*

⁶³⁷ Incumbent LECs often deploy equipment such as the NEC RC-23D, Lucent DDM2000 and

dedicated transport offerings will encourage competition and facilitate the deployment of advanced services. Unbundling high-capacity dedicated transport offerings also addresses claims by CompTel and other parties that non-incumbent LEC facilities cannot provision sufficient bandwidth for data-intensive services.⁶³⁸ Accordingly, we modify section 319(d)(ii) of our rules to clarify that incumbent LEC must unbundle DS1 through OC192 dedicated transport offerings and such higher capacities as evolve over time. Our intention is to ensure that the definition of interoffice transmission will apply to new, as well as current technologies, and to ensure that competitors will continue to be able to access these facilities as unbundled network elements as long as that access is required pursuant to section 251(d)(2).

324. Notwithstanding the fact that we require incumbents to unbundle high-capacity transmission facilities, we reject Sprint's proposal to require incumbent LECs to provide unbundled access to SONET rings.⁶³⁹ In the *Local Competition First Report and Order*, the Commission limited an incumbent LEC's transport unbundling obligation to existing facilities, and did not require incumbent LECs to construct facilities to meet a requesting carrier's requirements where the incumbent LEC has not deployed transport facilities for its own use.⁶⁴⁰ Although we conclude that an incumbent LEC's unbundling obligation extends throughout its ubiquitous transport network, including ring transport architectures, we do not require incumbent LECs to construct new transport facilities to meet specific competitive LEC point-to-point demand requirements for facilities that the incumbent LEC has not deployed for its own use.

325. Dark Fiber. In addition, we modify the definition of dedicated transport to include dark fiber. Dark fiber is deployed, unlit fiber optic cable that connects two points within the incumbent LEC's network. As discussed above, dark or "unlit" fiber, unlike "lit" fiber, does not have electronics on either end of the dark fiber segment to energize it to transmit a telecommunications service.⁶⁴¹ Thus, dark fiber is fiber which has not been activated through connection to the electronics that "light" it and render it capable of carrying telecommunications services.⁶⁴² To provide additional capacity, new electronics are attached to previously "lit" fiber or to previously "dark" fiber. Because dark fiber is

GR-303 to provide capacity-related services. See BellSouth Comments, Attachment A at 1.

⁶³⁸ For example, in Atlanta, Allegiance argues that the sole alternative transport network serves only three incumbent LEC central offices and that the provider is unwilling or unable to provision sufficient bandwidth to meet Allegiance's requirements. Allegiance Comments at 19. See also Covad Comments at 47 (requesting that the Commission recognize that interoffice bandwidth is not unlimited and given Covad's bandwidth requirements, there will be an insufficient supply of interoffice transport if an incumbent LEC is no longer required to unbundle transport); CompTel Comments at 42 (requesting unbundled access to high-capacity or packet transport services.)

⁶³⁹ Sprint Comments at 38.

⁶⁴⁰ *Local Competition First Report and Order*, 11 FCC Rcd at 15722, para. 451.

⁶⁴¹ See *supra* Section (V)(A)(2).

⁶⁴² Choice One Joint Comments at 25; CO Space Comments at 2; KMC Comments at 21.

already installed and easily called into service, we find that it is similar to the unused capacity of other network elements, such as switches or “dead count” or “vacant” copper wire that is dormant until carriers put it in service.⁶⁴³

326. We agree with state commissions and competitive LECs that dark fiber meets the statutory definition of a network element, and therefore is included within the definition of the dedicated interoffice transport network element.⁶⁴⁴ Section 153(29) of the Act defines the term “network element” as a “facility or equipment used in the provision of a telecommunications service, including “features, functions, and capabilities that are provided by means of such facility or equipment.”⁶⁴⁵ The Supreme Court upheld this broad definition of a network element and acknowledged that it includes not only physical elements but non-physical elements as well.⁶⁴⁶ Because dark fiber is unused transport capacity, we find that it is “a feature, function, and capability of facilities used to provide telecommunications services.”⁶⁴⁷ In addition, we note that since the Commission released its *Local Competition First Report and Order*, several states, acting through arbitration proceedings, have required incumbent LECs to unbundle dark fiber interoffice transport facilities, and several federal district courts, in affirming state commission decisions, have held that dark fiber meets the statutory definition of an unbundled network element.⁶⁴⁸

327. We reject incumbent LECs’ arguments that because dark fiber is transport that is not currently “used” in the provision of a telecommunications service, within the meaning of section 153(29), it does not meet the statutory definition of a network element

⁶⁴³ See, e.g., Petition for Arbitration of an Interconnection Agreement Between AT&T Communications of the Pacific Northwest, Inc. and GTE Northwest, Incorporated, Washington UTC Docket No. UT-960307, Commission Order Approving Interconnection Agreement, at 19-20 (1997) (“As a form of spare capacity, “dark” fiber is not fundamentally different than “dead” copper.”). See also Comments of CO Space at 12, (citing a New Hampshire commission finding that “the fact that dark fiber is not currently used in the provision of service to customers for a fee does not distinguish itself from other network elements.”) (citation omitted).

⁶⁴⁴ Illinois Commission Comments at 10; Iowa Comments at 9; GSA Comments at 7,10; Cable and Wireless Comments at 34; CO Space Comments at 7; Waller Creek Comments at 17; See also Texas Commission Comments at 16; KMC Comments at 21.

⁶⁴⁵ 47 U.S.C. § 3(29) provides that: “The term ‘network element’ means a facility or equipment used in the provision of a telecommunications service. Such term also includes features, functions, and capabilities that are provided by means of such facility or equipment, including subscribers numbers, databases, signaling systems, and information sufficient for billing and collection or used in the transmission, routing, or other provision of a telecommunications service.” 47 U.S.C. § 3(29). See also, *Local Competition First Report and Order*, 11 FCC Rcd at 15631, para. 258.

⁶⁴⁶ *Iowa Utils. Bd.*, 119 S. Ct. at 731.

⁶⁴⁷ CO Space Comments at 3 (and cases cited therein).

⁶⁴⁸ See CO Space Reply Comments at 3 (and cases cited therein).

or the definition of interoffice transport.⁶⁴⁹ Rather, we agree with the Illinois Commission that the term “used in the provision of telecommunications service” in section 153(29) refers to network facilities or equipment that is “customarily employed for the purpose” of providing a telecommunications service.⁶⁵⁰ Although particular dark fiber facilities may not be “lit” they constitute network facilities dedicated for use in the provision of telecommunications service, as contemplated by the Act. Indeed, most other network elements have surplus capacity or can be upgraded to provide additional capacity and therefore are not always “currently used” as the term is interpreted by incumbent LECs. For example, switches, loops, and other network elements each may have spare, unused capacity, yet each meets the definition of a network element.⁶⁵¹

328. We acknowledge that it would be problematic if some facilities that the incumbent LEC customarily uses to provide service were deemed to constitute network elements (*e.g.*, unused copper wire stored in a spool in a warehouse). Defining such facilities as network elements would read the “used in the provision” language of section 153(29) too broadly.⁶⁵² Dark fiber, however, is distinguishable from this situation in that it is physically connected to the incumbent’s network and is easily called into service. Thus, as indicated above, we conclude that dark fiber falls within the statutory definition of a network element.

329. We also note that our reading of the term “used” comports with the Commission’s interpretation of the term “provide” in the context of section 271. Specifically, in the order denying Ameritech’s application to provide long distance service pursuant to section 271 of the Act, the Commission rejected competitors’ arguments that the term “provide” requires the BOC to “actually furnish” a checklist item.⁶⁵³ Rather, the Commission concluded that the term “provide” requires incumbent LECs to “make available” to requesting carriers the checklist item in question upon reasonable demand.⁶⁵⁴ Similarly, we interpret the term “used” in the definition of a network element to mean “capable of being used” in the provision of a telecommunications service.

⁶⁴⁹ GTE Comments at 64, 80; US WEST Comments at 39-40; Bell Atlantic Reply Comments at 31.

⁶⁵⁰ *MCI Corp.: Petition for Arbitration Pursuant to Section 252(b) of the Telecomms. Act of 1996 to Establish an Interconnection Agreement with Central Tel. Co. of Ill.*, 96 AB-009, 1997 Ill. PUC LEXIS 61, at *7 (Feb. 5, 1997) (emphasis added).

⁶⁵¹ *See, e.g.*, “As a form of spare capacity, “dark” fiber is not fundamentally different than “dead” copper.” In the matter of the Petition for Arbitration of an Interconnection Agreement Between AT&T Communications of the Pacific Northwest, Inc. and GTE Northwest, Incorporated, Washington UTC Docket No. UT-960307, Commission Order Approving Interconnection Agreement, at 19-20 (1997).

⁶⁵² 47 U.S.C. § 153(29).

⁶⁵³ *Ameritech Michigan 271 Order*, 12 FCC Rcd at 20601-02, para. 110.

⁶⁵⁴ *Id.*

330. We do not agree with GTE that, unlike vacant copper, dark fiber does not qualify as interoffice transport.⁶⁵⁵ According to GTE, dark fiber differs from extra copper pairs in a cable because dark fiber is “unused inventory,” whereas copper cable is installed to provide maximum flexibility.⁶⁵⁶ We find this to be a distinction without a difference. Whether located in the loop plant or in the transport network of an incumbent LEC, both copper and fiber represent unused capacity. Accordingly, we conclude that dark fiber falls within the dedicated transport network element’s “facilities, functions, and capabilities.”⁶⁵⁷

(ii) Proprietary Concerns Associated with Dedicated Transport

331. In the *Local Competition First Report and Order*, the Commission did not identify any proprietary concerns associated with dedicated transport.⁶⁵⁸ No party has identified any proprietary concerns associated with unbundled dedicated transport in this phase of the proceeding, and we find none. We therefore apply the “impair” standard of section 251(d)(2) to determine whether dedicated transport is subject to the unbundling obligations of the Act.

(iii) Unbundling Analysis

332. We conclude that lack of access to unbundled interoffice transport impairs a carrier’s ability to provide the services it seeks to offer. Requiring carriers to self-provision, or acquire from third-party providers, extensive interoffice transmission facilities materially increases the costs of market entry or of expanding service, delays broad-based entry, and limits the scope and quality of the competitor’s service offerings. Neither self-provisioning interoffice transport facilities nor obtaining these facilities from third-party sources is an adequate alternative to the ubiquitous transmission facilities that a competitor can obtain from the incumbent LEC under section 251’s unbundling obligations. Accordingly, we require incumbent LECs to provide unbundled access to their interoffice transmission facilities.

333. Although the record indicates that competitive LECs have deployed interoffice transport facilities along selected point-to-point routes, primarily in dense market areas, we find that these facilities are not available, as a practical, economic, and operational matter, such that a requesting carrier’s ability to provide the services it seeks to offer would not be impaired without access to the incumbent’s ubiquitous interoffice transmission facilities. Specifically, the competitive transport facilities that

⁶⁵⁵ GTE Comments at 64.

⁶⁵⁶ Id.

⁶⁵⁷ 47 U.S.C. § 13(29). We address incumbent LEC concerns about their special need for fiber reserves below. See *infra* Section V.E.2.

⁶⁵⁸ The Commission reaffirmed this conclusion in the *Local Competition Third Reconsideration Order*, 12 FCC Rcd at 12480-12481, para 32.

currently exist do not interconnect all of an incumbent LEC's central offices and all interexchange carrier's points of presence within an MSA, or a substantial portion thereof.

334. Availability of Alternatives Outside the Incumbent's Network. Local competitors began deploying fiber networks in urban markets approximately 15 years ago.⁶⁵⁹ Incumbent LECs have provided a significant amount of data indicating the location of transport facilities deployed by competitive LECs. For example, the incumbents submitted, through the USTA UNE Report, data that indicates that, by the end of 1998, competitive LECs had deployed interoffice transport in approximately 300 cities.⁶⁶⁰ According to the USTA UNE Report, competitors have deployed nearly 30,000 route miles of fiber within the top 50 MSAs.⁶⁶¹

335. In addition, the USTA UNE Report states that of the top 50 MSAs, forty-seven are served by at least three competitors; 29 are served by five or more competitors; and 16 are served by seven or more competitors.⁶⁶² The USTA Report also asserts that requesting carriers have deployed fiber in all but 15 of the MSAs ranked between 50 and 150⁶⁶³ and that competitors have centered their deployment of competitive fiber around "dense" wire centers, which USTA defines as wire centers with 40,000 or more access lines.⁶⁶⁴ The USTA UNE Report also maintains that as of March 1999, incumbent LECs have the following number of wire centers that are served by at least one competitive fiber provider: Ameritech 161; Bell Atlantic 274; BellSouth 136; GTE 70; SBC 284; US WEST 118.⁶⁶⁵

336. The incumbents also provide evidence of the number of collocation arrangements in many of their wire centers. Relying on this data, the incumbents argue that there are significant alternatives to interoffice transport services available. According to USTA, the fact that competitors have operational collocation arrangements in approximately 874 dense wire centers implies the presence of competitive fiber "nearby."⁶⁶⁶ In particular, according to the USTA UNE Report, of the wire centers with

⁶⁵⁹ In 1985, New York state regulators granted Teleport authority to provide interoffice services in New York City. See Case 28891, *Teleport Communications* (NYDPS Jan., 7, 1985).

⁶⁶⁰ Among the competitors with the most extensive fiber networks are AT&T, MCI, Sprint, Qwest, Level 3, Enron, MFN, Williams, Frontier, IXC, NEXTLINK, Intermedia, Hyperion, RCN, GST, ICG, Electric Lightwave and e.spire. See *USTA UNE Report* at II.

⁶⁶¹ *USTA UNE Report* Appendix B at II-6.

⁶⁶² *Id.*

⁶⁶³ *Id.*

⁶⁶⁴ The *USTA UNE Report* argues that there is a close correlation between collocation and the presence of competitive fiber facilities in these dense wire centers. *USTA UNE Report* at I-8.

⁶⁶⁵ *USTA UNE Report* at II-20.

⁶⁶⁶ *Id.*

20,000 or more lines, 90 percent in the SBC region, 72 percent in the Bell Atlantic region, and 74 percent in the US West region have collocation, which the incumbents assert signifies competitive transport is available.⁶⁶⁷

337. Bell Atlantic also argues that its Competitive Alternative Transport Terminal (CATT) service, currently offered on a trial basis with Metromedia Fiber Network Services (MFN), offers high capacity interoffice dedicated transport services to any collocated carrier. Bell Atlantic claims that MFN has entered into this CATT arrangement in a large number of end offices and that CATT will be generally available to other carriers pursuant to tariff.⁶⁶⁸

338. Other evidence in the record, however, undermines the incumbents' suggestion that competitive fiber is sufficiently available that transport should not be unbundled. MCI WorldCom, for example, provides information about the number of transport providers in the six major cities included in the USTA survey. According to MCI WorldCom, only eight of the 138 wire centers in Los Angeles have three or more collocators that provide transport.⁶⁶⁹ Similarly, MCI WorldCom states that only four of 64 wire centers in Seattle have three or more collocators providing transport and only one of 25 wire centers in San Jose has three or more collocators providing transport. In addition, MCI WorldCom reports that, in Minneapolis, Richmond and Washington DC with 135, 51, and 158 wire centers respectively, no end office has three collocators providing transport.⁶⁷⁰

339. In addition, NorthPoint reports that the incumbent LEC is the only source of transport for at least 70% of central offices in which NorthPoint is collocated, even in dense wire centers in large metropolitan areas.⁶⁷¹ Similarly, Sprint asserts that in New

⁶⁶⁷ *Id.* at II-8.

⁶⁶⁸ See Letter from Dee May, Federal Regulatory - Bell Atlantic, to Magalie R. Salas, Secretary, Federal Communications Commission, Docket 96-98 (filed July 13, 1999).

⁶⁶⁹ See MCI WorldCom August 13, 1999 *Ex Parte*.

⁶⁷⁰ Letter from Chuck Goldfarb, Director Law and Public Policy MCI WorldCom, to Larry Strickling, Chief, Common Carrier Bureau, Federal Communications Commission, CC Docket No. 96-98 (filed August 16, 1999). MCI WorldCom contends that this level of collocation evidences an "astonishingly small amount of transport competition." *Id.*

⁶⁷¹ Letter from A. Richard Metzger, Jr., attorney for NorthPoint Communications, to Magalie R. Salas, Secretary, Federal Communications Commission, CC Docket No. 96-98 (filed August 13, 1999) (NorthPoint submits data that in Atlanta, the incumbent LEC is the only transport alternative for 78% of COs where it is collocated. In the San Francisco metropolitan area, the incumbent LEC is the sole transport provider in 70% of COs where it is collocated. In New York, the number is 75%; Chicago, 71%, Los Angeles, 77% and Seattle, 73%). MCI WorldCom submitted an *Ex Parte* showing that out of approximately 20,000 incumbent LEC central offices nationwide, there are two end offices with five competitor collocations; 28 end offices with four competitor collocations and 63 end offices with three competitor collocations offering competitive transport. See Letter from Chuck Goldfarb, Director Law and Public Policy MCI WorldCom to Larry Strickling, Chief, Common Carrier Bureau, Federal Communications Commission, CC Docket No. 96-98 (filed August 13, 1999).

York City, which is considered the most mature market in the country, Sprint continues to use the incumbent LEC extensively for transport because competitive fiber is not available in sufficient numbers of incumbent LEC central offices for it to offer a ubiquitous service in this area.⁶⁷²

340. Ubiquity. We conclude that, despite the evidence of some competitively deployed interoffice transmission facilities, lack of access to the incumbent's dedicated transmission facilities impairs a requesting carrier's ability to provide the services it seeks to offer. The alternatives cited in the evidence submitted by the incumbents are not ubiquitously available, and therefore competitive transport is not available as a practical, economic and operational matter.

341. As an initial matter, we are not persuaded that the incumbents' data accurately reflects the extent to which alternatives are actually available to competitors. In particular, we find that only at a granular, wire center-by-wire center level does the record show the presence of competitive alternatives to the incumbent's interoffice transport, albeit on a non-ubiquitous basis.⁶⁷³ Thus, without access to unbundled dedicated transport, requesting carriers would be forced to create a patchwork of alternative network facilities, where they have been deployed and are being offered to other carriers, or alternatively to construct their own transport facilities. The USTA UNE Report based its analysis on the markets that have attracted the most competitive transport entry. For example, the USTA UNE Report states that "[I]n the Los Angeles MSA, 72 wire centers serve 40,000 + lines. Of these, 20 have at least one collocated competitive LEC. An analysis of fiber route maps shows that CLEC fiber passes through at least 15 of 20 wire center areas with collocation."⁶⁷⁴ Thus, according to USTA's data, 15 of 72

⁶⁷² Sprint Comments at 32-33.

⁶⁷³ As discussed above, we recognize that the Commission has established a framework for incumbent LEC pricing flexibility in areas where competition for dedicated transport and most special access services has developed. Competition evidenced by the satisfaction of certain triggers, to the extent they are met, however, does not demonstrate that a requesting carrier is not impaired without access to unbundled dedicated transport. The Commission's pricing flexibility rules provide for flexibility where one requesting carrier is collocated in a serving wire center. These rules allow incumbent LECs to meet competitive transport entry with pricing flexibility. They do not, however, describe market conditions where requesting carriers would not be impaired without access to unbundled transport. Furthermore, even in those areas where competition for special access services is present and where, presumably the triggers for pricing flexibility have been met, the price differentials between TELRIC-priced transport and special access may persist for an indefinite period of time because the differential between unbundled transport and retail special access services are significant. According to one commenter, in the San Francisco Bay Area, PacBell's monthly access charge for a DS3 special access service is more than 50% higher than unbundled transport. In New York City, Bell Atlantic's monthly DS3 tariff rate is 258% higher than the comparable unbundled network element transport rate. In Miami, BellSouth's DS3 tariff rate is 353% higher than comparable unbundled network element interoffice transport rates. See Covad Comments at 45, Attachment 3, Aff. of Mark Shipley and David Rauschenberg, at para. 22-23.

⁶⁷⁴ USTA UNE Report at II-8.

dense wire centers or approximately 21% of dense wire centers in the Los Angeles MSA include competitive fiber “nearby.”⁶⁷⁵

342. We note that the incumbents do not explain what is meant by fiber that is “nearby.” Nor do incumbents explain how having fiber “nearby” reflects the availability of ubiquitous transport alternatives. In addition, however, because the incumbents’ data focuses only on the most dense wire centers, the data provides little to no information about the availability of transport in less dense wire centers in the same cities. If the analysis were expanded to include less dense wire centers, or wire centers serving less than 40,000 lines, the analysis would presumably show a lower percentage of competitive alternatives for the entire MSA than is reflected by the data provided by the incumbents.

343. Incumbents rely on the evidence of competitively deployed transport submitted in the USTA UNE Report to argue that competitive LECs are not impaired without access to unbundled transport facilities in locations where competitive LECs have already deployed transport. Specifically, the incumbents argue that the Commission should exclude dedicated transport from an incumbent LEC’s unbundling obligations in any area where at least one requesting carrier has deployed transport facilities and has collocated its own transmission equipment in an incumbent LEC central office.⁶⁷⁶ We reject this argument. Although the incumbents’ evidence shows that nearly 30,000 route miles of fiber have been deployed in the top 50 MSAs, there are few, if any alternative transport facilities outside the incumbent LECs’ networks that connect all or most of an incumbent LEC’s central offices and interexchange carriers’ points of presence within an MSA.⁶⁷⁷ Even where competitive alternatives exist, the alternatives generally do not travel the same routes as the incumbent’s facilities. Thus, even if competitors were able to purchase indirect routing from alternative providers, to the extent alternatives exist, competitors more than likely have to route their traffic along indirect, inefficient routing patterns, thereby increasing their costs of transport.⁶⁷⁸ Thus, contrary to arguments made

⁶⁷⁵ *Id.*

⁶⁷⁶ GTE Comments at 10, 59 (stating that the Commission should not unbundle transport in wire centers with 15,000 or more access lines and the presence of one or more collocation arrangements); Ameritech Comments at 88 (stating that the Commission should not unbundle dedicated transport in dense wire centers with one or more collocation arrangements); SBC Comments at 50 (stating that the Commission should not unbundle dedicated transport in dense wire centers with one or more collocation arrangements); BellSouth Comments at 53 (stating that the Commission should not require unbundling of dedicated transport in Zone 1 and Zone 2); Bell Atlantic Comments at 30 (stating that the Commission should not require unbundling of dedicated transport in any area here at least one carrier has deployed its own network and there is the presence of one collocation arrangement); US WEST Comments at 48 (stating that the Commission should establish a presumption that incumbent LECs do not have to unbundle transport to or from wire centers with 20,000 or more loops and have one or more collocation arrangements).

⁶⁷⁷ *USTA UNE Report* at II-6. Covad states that it is dependent on incumbent LEC inter-office transport for 83 percent of its transport requirements and that it has a choice of transport providers for less than 7 percent of its collocation facilities. Covad Comments at 44. AT&T argues that it purchases 82% of its dedicated transport requirements from incumbent LECs because competitive offerings are not ubiquitously available. AT&T Comments at 122.

⁶⁷⁸ Letter from Robert Shanahan, Vice President, New England Voice & Data, to Magalie R.

by incumbent LECs, we find that the evidence demonstrates that a significant number of central offices in a given MSA are not effectively served by competitive fiber facilities.

344. We reject any bright-line test that triggers elimination of an incumbent LEC's unbundling obligation based on the presence of a single competitor that has self-provisioned transport in a particular market. As discussed above, in order to determine whether or not a requesting carrier's ability to provide the services it seeks to offer is "impaired" within the meaning of section 251(d)(2), we must determine whether alternatives outside the incumbent's network are available as a practical, economic, and operational matter, and determine whether unbundling a particular element is consistent with the goals of the Act.⁶⁷⁹

345. In particular, we find that basing our unbundling rules on the bright-line proposed by the incumbents does not address whether lack of unbundled access to the incumbent's ubiquitous transport facilities would impair other requesting carriers' ability to provide the services they seek to offer. Indeed, under the test proposed by the incumbents, the first new entrant to deploy transport facilities in any particular market would determine the degree and pace of competition in that market as well as the scope of an incumbent LEC's unbundling obligation, and would potentially result in the presence of only two competitors in the market (e.g. a duopoly). Limiting the development of competition in such a manner is contrary to the goals of the Act and is inconsistent with the purpose of our unbundling rules.

346. In order to provide service, competitive LECs require dedicated transport facilities that are more extensive than those that are currently deployed along the point-to-point routes. The competitive alternatives that are available along limited point-to-point routes do not necessarily allow competitive LECs to connect their collocation arrangements or switching nodes according to the needs of their individual network designs. These carriers also require dedicated transport to deliver traffic from their own traffic aggregation points to the incumbent LEC's network for purposes of interconnection. Without access to the incumbent's ubiquitous transport facilities, competitive LECs are faced with the delays and costs of deploying their own transport facilities to meet the demand. Alternatively, competitive LECs must utilize a patchwork of competitive alternatives, where available, to collect and route traffic to the required destination.

347. *Entrance Facilities.* Bell Atlantic and BellSouth specifically argue that extensive deployment by competitive LECs of the transport link between the interexchange carrier point of presence and an incumbent's serving wire center (the "entrance facility"), requires us to find that requesting carriers are not impaired in their

Salas, Secretary, Federal Communications Commission, Docket 96-98 (filed July 15, 1999) (describing Manchester, N.H. to Nashua, N.H. fiber buildout and increase of 11 miles over incumbent LEC's route if a competitive transport alternative is selected).

⁶⁷⁹ See supra Section (IV)(B)(4).

ability to serve these point-to-point markets.⁶⁸⁰ According to Bell Atlantic, for example, there are competitors that serve approximately 90 percent of Bell Atlantic's special access transport customers.⁶⁸¹ According to BellSouth, 19 percent of their wire centers have at least one actual or pending collocation arrangement and one actual or pending entrance facility.⁶⁸²

348. We acknowledge that, based on the record before us, the entrance facility market appears to be the most mature segment of the interoffice transport market, and thus may, in some situations, provide requesting carriers with effective alternatives to unbundled transport for certain point-to-point routes.⁶⁸³ The record does not indicate, however, the extent to which these facilities are available to other requesting carriers or whether the location of these facilities serve the transport needs of requesting carriers seeking to provide service to particular locations. In particular, the incumbents' data does not indicate the locations at which competitive entrance facilities terminate, or whether the facilities connect incumbent LEC serving wire centers to all or substantially all of the interexchange carrier points of presence. Accordingly, we cannot conclude, based on the record before us, that the competitive entrance facility market is providing requesting carriers with effective alternatives to unbundled transport for all, or substantially all of the routes requesting carriers would need in order to provide the services they seek to offer.

349. *Dark Fiber.* Incumbent LECs argue that some competitive LECs have deployed significant amounts of fiber to meet the growing demand for transport services, and that competitive LECs are not impaired without access to the incumbent's unbundled dark fiber.⁶⁸⁴ Incumbent LECs further argue that the presence of competitive fiber in

⁶⁸⁰ See Letter from Susanne Guyer, Assistant Vice President, Bell Atlantic, to Magalie R. Salas, Esq., Secretary, Federal Communications Commission, CC Docket No. 96-98 (filed August 25, 1999) (Bell Atlantic August 25 *Ex Parte*); Letter from Kathleen B. Levitz, Vice President – Federal Regulatory, BellSouth, to Magalie R. Salas, Esq., Secretary, Federal Communications Commission, CC Docket No. 96-98 (filed August 16, 1999) (BellSouth August 16, 1999 *Ex Parte*).

⁶⁸¹ See Bell Atlantic August 25, 1999 *Ex Parte*.

⁶⁸² See BellSouth August 16, 1999 *Ex Parte*.

⁶⁸³ We note that, in addition, Bell Atlantic, Intermedia, Allegiance and Time Warner argue, in a joint *Ex Parte* filing, that the Commission should establish a limitation on loop transport combinations to prevent substitution of special access service for unbundled loop transport combinations in this segment of the transport market. Letter from Edward D. Young, Associate General Counsel, Bell Atlantic, Heather B. Gold, Vice President, Industry Policy, Intermedia Communications, Robert W. McCausland, Vice President, Regulatory and Interconnection, Allegiance Telecom, Inc., Don Shephard, Vice President, Federal Regulatory, Time Warner Telecom, to Honorable William E. Kennard, Chairman, Federal Communications Commission, CC Docket No. 96-98 (filed September 2, 1999). ALTS agrees and supports excluding entrance facilities from an incumbent LEC's transport obligation where a given point-to-point route does not meet the impair standard. Letter from Jonathan Askin, Vice President, ALTS, to Magalie R. Salas, Secretary, Federal Communications Commission, CC Docket No. 96-98 (filed September 3, 1999).

⁶⁸⁴ Bell Atlantic Comments at 31-32; GTE Comments at 82; US WEST Comments at 39-40. These carriers argue that the evidence of competitively deployed fiber has created a "wholesale market" for dark fiber.

dense wire centers is evidence of a wholesale market for dedicated transport,⁶⁸⁵ and support this claim by providing anecdotal evidence that competitors are swapping fiber capacity with each other.⁶⁸⁶ We disagree. Rather, we agree with those commenters that argue that a competitive wholesale market for alternative network elements has not developed for dedicated transport, in part because of the lack of ubiquitous transport alternatives.⁶⁸⁷

350. Although there is evidence of transport deployment by non-incumbent providers along some point-to-point routes, the record does not support a general finding that requesting carriers can, on a ubiquitous basis, practically and effectively substitute transport services provided by other competitive carriers for unbundled transport. Indeed, the record indicates that the “fiber frenzy” and “bandwidth markets” cited by incumbent LECs are largely limited to portions of inter-city, long-haul networks that do not ubiquitously reach the interoffice segments of the incumbent LEC’s network.⁶⁸⁸ Lack of access to ubiquitous transport alternatives, which allow competitive LECs to interconnect their networks with all the central offices serving their customers, will impair these carriers’ ability to provide the services they seek to offer.⁶⁸⁹ Accordingly, we reject the incumbent LECs’ argument that the presence of a competitive transport alternatives along certain routes is evidence that requesting carriers generally are not impaired without access to the incumbents’ unbundled dark fiber.

351. In addition, to the extent that there may be excess capacity along these fiber routes, non-incumbent providers of competitive transport facilities are under no legal obligation to offer their excess capacity to their competitors. Moreover, interexchange carriers (IXCs) operate both as access customers of the incumbent LEC, as well as the

⁶⁸⁵ Bell Atlantic Comments at 31; BellSouth Comments at 51; GTE Comments at 61.

⁶⁸⁶ See Letter from Kathleen B. Levitz, Vice President-Federal Regulatory, BellSouth to Jake Jennings, Special Advisor, Common Carrier Bureau, Federal Communications Commission, CC Docket No. 96-98 (filed July 22, 1999).

⁶⁸⁷ AT&T Comments at 122; CompTel Comments at 42; ALTS Comments at 51.

⁶⁸⁸ AT&T Reply Comments at 128; Covad Comments at 44-45; Waller Creek Reply Comments at 11.

⁶⁸⁹ For Example, New England Voice & Data argues that substituting lit OC-48 fiber for unbundled dark fiber would result in a material decrease in the reliability of its network because it would introduce three additional multiplexers, and thus three additional potential points of failure, at each collocation. In addition, New England Voice & Data claims that if it were required to purchase lit transport, New England Voice & Data’s control and management of its interconnection links would become totally dependent upon incumbent LECs. In contrast, if New England Voice & Data is able to obtain access to unbundled dark fiber, it installs its own multiplexers to complete its SONET ring architecture and therefore controls its own provisioning, surveillance and repair. Thus, according to New England Voice & Data, substituting lit fiber for unbundled dark fiber in the interoffice transport segment of the network prevents it from installing a highly reliable SONET ring architecture to offer ring-based services and introduces additional failure points in a requesting carrier’s end to end transport service. New England Voice & Data Comments at 12-13.

incumbent's competitor in the local exchange market. These inter-carrier relationships complicate the functioning of an effective wholesale transport market because the alternative provider of transport is also a significant competitor.⁶⁹⁰ In these circumstances, it is possible that local affiliates of IXCs could potentially discriminate against unaffiliated requesting carriers seeking access to competitive transport facilities by denying access altogether.

352. Although we include dark fiber in the unbundling obligations of section 251(c)(3), we note that GTE argues that it must maintain control of its dark fiber reserves because, as a carrier of last resort, it is obliged to provide service to any and all customers as the need arises.⁶⁹¹ GTE also argues that requiring incumbent LECs to make their reserve capacity available to new entrants discourages long term business planning and deprives the incumbents of the fruits of their investment.⁶⁹² We note that with the addition of electronics such as Dense Wave Division Multiplexing (DWDM) equipment, incumbent and competitive carriers alike can expand the bandwidth of existing capacity without installing new dark fiber.⁶⁹³ We find that technological solutions such as these largely address GTE's concern that unbundled access to dark fiber may adversely affect its ability to provide service. In addition, however, if incumbent LECs are able to demonstrate to a state commission that unbundling dark fiber threatens their ability to provide service as a "carrier of last resort," states have the flexibility to establish reasonable limitations and technical parameters for dark fiber unbundling.⁶⁹⁴ We conclude, however, that for a limitation on dark fiber to be reasonable, it must relate to a likely and foreseeable threat to an incumbent LEC's ability to provide service as a carrier of last resort. In establishing reasonable limitations and technical parameters for dark

⁶⁹⁰ Because AT&T controls TCG and MCI WorldCom controls MFS, Sprint notes that it has considerable reluctance to shifting its access dependence from potential long distance competitors, the RBOCs, to its current long distance competitors. Sprint Comments at 34.

⁶⁹¹ GTE Comments at 83-84.

⁶⁹² *Id.* at 84.

⁶⁹³ Dense Wavelength Division Multiplexing (DWDM) is a multiplexing technique that permits multiple SONET or other optical signal formats to be carried on one fiber on different wavelengths. The capacity of existing DWDM systems now exceeds several hundred gigabits per second (Gbps), and has been approximately doubling each year for the past several years. DWDM allows carriers to extend the capacity of their embedded fiber.

⁶⁹⁴ For example, the Texas Commission allows incumbent LECs, upon establishing need to the satisfaction of the state commission, to revoke leased fiber from competitive LECs with 12 months notice. The Texas commission's dark fiber unbundling rules also allow incumbent LECs to take back underused (less than OC-12) fiber, and forbid competitors in any two year period from leasing more than 25% of the dark fiber in a given segment of the network. We believe the measures established by the Texas PUC address the incumbent LEC's legitimate concerns. Texas PUC Comments at 16-17. We note that MGC, a competitive LEC that urges the Commission to unbundle dark fiber, also supports limitations such as those adopted in Texas. See Letter from Scott A. Sarem, Assistant Vice President, Regulatory, MGC Communications, to Christopher Libertelli, Attorney, Common Carrier Bureau, Federal Communications Commission, CC Docket No. 96-98 (filed August 12, 1999).

fiber, states should acknowledge that requesting carriers require regulatory certainty in order to implement their business plans.

353. *Other Technologies.* We reject Bell Atlantic's proposal that the Commission consider the availability of wireless transport in our unbundling analysis.⁶⁹⁵ The record does not demonstrate that wireless transport options are available across any particular MSA. Nor does the record address the question of whether integrating wireless transport offerings into a wireline transport network allows providers to offer service of the same quality and functionality as they would be able to offer using wireline alternatives. Notably, NEXTLINK, the largest Local Multipoint Distribution Service (LMDS) licensee and a potential source of competitive wireless transport, supports the continued availability of unbundled dedicated transport network elements.⁶⁹⁶

354. *Tariffed Offerings.* We also reject GTE and US West's argument that competitive LECs have access to ubiquitous transport through the use of the incumbents' special access tariff arrangements.⁶⁹⁷ As discussed above, we give little weight to the incumbent LEC's special access tariffs.⁶⁹⁸ Moreover, the Commission previously rejected this argument in the *Local Competition First Report and Order*.⁶⁹⁹ For reasons the Commission articulated in that order, we reject the incumbents' argument here. If we were to adopt the incumbents' approach, the incumbents could effectively avoid all of the 1996 Act's unbundling and pricing requirements by offering tariffed services that, according to the incumbents, would qualify as alternatives to unbundled network elements. This would effectively eliminate the unbundled network element option for requesting carriers, which would be inconsistent with Congress' intent to make available to requesting carriers three different competitive strategies, including access to unbundled network elements.

355. *Cost.* We conclude that the costs of self-provisioning dedicated transport facilities materially diminish a requesting carrier's ability to provide the services it seeks to offer. We agree with commenters that argue that replicating the incumbent's vast and ubiquitous transport network would be prohibitively expensive, and delay competitive entry.⁷⁰⁰ In the *Local Competition First Report and Order*, the Commission concluded

⁶⁹⁵ Bell Atlantic Comments at 30.

⁶⁹⁶ NEXTLINK Reply Comments at 27.

⁶⁹⁷ GTE Comments at 61. *See also* Letter from Melissa Newman, Vice President – Federal Regulatory, US West, to Magalie R. Salas, Secretary, Federal Communications Commission, CC Docket No. 96-98 at Pg. 2 (filed August 18, 1999) (arguing that the relevance of tariffed services as a substitute for unbundled transport in the *Local Competition First Report and Order* is “no longer valid precedent.”).

⁶⁹⁸ *See supra* Section (IV)(B)(4).

⁶⁹⁹ *Local Competition First Report and Order*, 11 FCC Rcd at 15644, para. 287.

⁷⁰⁰ California PUC Comments at 4-5; AT&T Comments at 96; Cable and Wireless Comments at 36; CompTel Comments at 40; CPI Comments at 21; Sprint Comments at 34-36. *See also* Letter from John J. Heitmann, representing ALTS, to Magalie R. Salas, Secretary, Federal Communications Commission, CC

that a requesting carrier would incur "much higher costs" if it "had to construct all of its own facilities" to match the scope of an incumbent LEC's interoffice transport network.⁷⁰¹ Nothing has changed in the intervening three years to cause us to alter this conclusion. Indeed, based on the record before us, we conclude that the material costs and delays associated with self-provisioning duplicate, ubiquitous transport facilities would impair a competitive LEC's ability to offer services to a broad base of consumers. Accordingly, we require incumbent LECs to offer unbundled access to their dedicated transport facilities.

356. Self-provisioning dedicated transport requires competitive LECs to incur significant direct and other costs, including the cost of fiber, the cost of deploying fiber in public rights of way, trenching and the cost of purchasing and collocating the necessary transmission equipment.⁷⁰² For example, the record indicates that the direct equipment costs of purchasing interoffice transport equipment exceeds \$300 per line,⁷⁰³ and that the cost of constructing alternative transport facilities (e.g., digging and backfilling trench) are between \$200,000 - \$300,000 per mile in densely populated areas.⁷⁰⁴ According to GTE, the direct cost of constructing a one hundred mile dedicated transport facility is close to \$3 million.⁷⁰⁵

357. In addition, in order to use alternative transport facilities, either through self-provisioning or through third-party providers, a competitive LEC must collocate at the incumbent's central office. Collocating in each end office imposes materially greater costs on requesting carriers than would the purchase of the incumbent's interoffice transport facilities. Based on the record, it appears that the current range for non-recurring charges for provisioning physical collocation arrangements is between \$15,000 and \$508,000 for each central office where a competitor serves customers with unbundled loops.⁷⁰⁶ This results in an increase of between 15 and 20 percent to the costs of the equipment installed in the cage.⁷⁰⁷ In addition to the substantial costs of constructing and

Docket No. 96-98 (filed Aug 6, 1999).

⁷⁰¹ *Local Competition First Report and Order*, 11 FCC Rcd at 15718, para. 441.

⁷⁰² This can include such things as fiber distribution panels, optical terminating equipment, multiplexers, digital cross connects, test access equipment, digital loop carrier equipment, power distribution panels, and cable racks.

⁷⁰³ AT&T Comments at 121.

⁷⁰⁴ *Id.* at 120.

⁷⁰⁵ GTE Comments at Exhibit B, page 32.

⁷⁰⁶ *See* CompTel Comments at 39 (arguing that total cost of switch installation is \$4-6 million).

⁷⁰⁷ AT&T Comments at 96. *See also* Bell South Comments, Attachment A at 1 (describing \$128,700 cost of purchasing necessary equipment for one collocation arrangement.).

collocating self-provisioned transport facilities, competitive LECs must incur additional of negotiating and obtaining municipal rights-of-way permissions⁷⁰⁸

358. If a competitive LEC were required to obtain transport from multiple, non-ubiquitous alternative providers of transport, to the extent it is available, they would incur additional costs associated with coordinating back office billing and collection arrangements, as well as the costs associated with coordinating operational issues arising out of use of multiple vendors.⁷⁰⁹ While we acknowledge that the precise level of costs will vary according to the business plans of each competitive LEC, we conclude that contracting with third-parties to coordinate among multiple carriers in order to serve ubiquitously would materially diminish the ability of a requesting carrier to provide the services it seeks to offer. Moreover, because purchasing transport capacity is generally less expensive at higher levels of capacity, competitive LECs using multiple providers would lose efficiencies they would otherwise achieve if they were able to aggregate their traffic over the facilities of one ubiquitous provider.⁷¹⁰

359. We reject the incumbent LECs' cost models that purport to demonstrate that the fact that competitors have deployed a significant amount of fiber in downtown business districts is evidence that the cost of self-provisioning transport facilities does not impair a competitive LEC's ability to provide the service it seeks to offer.⁷¹¹ We find that cost models estimating the costs of self-provisioning transport are highly sensitive to assumptions that are not necessarily representative of the actual market place. For example, BellSouth provides a cost model that analyzes the transport networks of several competitive LECs located in Atlanta, and projects that the costs to the competitive LECs of extending the scope of their network to reach all central offices within that city is

⁷⁰⁸ NEXTLINK states that to obtain a telecommunications franchise from the City of New York, it was required to pay "exorbitant fees" to deploy facilities in public rights of way. NEXTLINK Reply Comments at 29 (arguing that the City of New York assesses exorbitant fees and assesses a multitude of discriminatory, non-competitively neutral requirements that are not imposed on Bell Atlantic.); AT&T Comments at 121 (citing Beans Affidavit at para 12, describing 4% gross revenue fees associated with Dearborn, Michigan franchise). *See also* Allegiance Comments at 19; Sprint Comments at 33; Network Access Solutions Reply Comments at 11; NEXTLINK Reply Comments at 29; Qwest Reply Comments at 72-77;.

⁷⁰⁹ Sprint Comments at 34.

⁷¹⁰ CompTel Comments at 42

⁷¹¹ *See, e.g., USTA UNE Report at II-1; GTE Comments at Exhibit B, at 22-33 (Network Engineering Consultants Inc.'s "Analysis of Alternative Network Elements Available to CLECs"); Bell Atlantic Comments at Exhibit C; Decl. of R. Dean Foremann/Charles L. Jackson, at 11-18. BellSouth analyzes AT&T's existing transport facilities in one representative market, Atlanta, and estimates that AT&T could build out its existing facilities to deploy a ubiquitous transport network for an estimated average cost per month of \$36 per DS1 transport facility. See Letter from Kathleen Levitz, Vice President - Federal Regulatory BellSouth, to Magalie R. Salas, Secretary, Federal Communications Commission (filed July 30, 1999) (BellSouth estimates MCI's cost per DS1 transport at \$35 per month; ICG's cost per DS1 transport at \$36 per month; and e.spire's cost per DS1 transport at \$38 per month). See also Comments of Bell Atlantic at 26; Comments of GTE at 48 (Appendix D).*

between \$35 and \$38 per DS1.⁷¹² BellSouth does not explain the difference between its model's cost estimate of \$35-\$38 per month, per dedicated DS1 and the cost estimate of \$84 per month, per dedicated DS1 generated by a model the Commission developed in its universal service proceeding.⁷¹³ Nor does BellSouth explain why the costs generated by its model are significantly lower than the costs generated by the model developed by Hatfield Associates, Inc., which shows the cost of a DS-1 to be \$110 per month.⁷¹⁴ Moreover, it is not clear whether BellSouth's cost estimates assume full utilization of the transport facilities. For competitive LECs entering the market that have little usage, the relevant comparison between the costs of self-provisioning and purchasing unbundled transport from the incumbent should be based on the number of DS1s actually carried, not on the number of DS1s that could potentially be used by the requesting carrier.

360. Ameritech proposes the use of a model that, it asserts, shows that in two second tier cities in Ameritech's territory, it is economical for competitive LECs to build ubiquitous transport networks of less than 100 miles to wire centers with a total of 100,000 access lines.⁷¹⁵ Even assuming, *arguendo*, that Ameritech's model accurately projects the theoretical viability or profitability of extending a competitive LEC's transport network, as noted by the Supreme Court, the ability to "amass earnings" alone is not dispositive of whether or not a requesting carrier is impaired without access to the incumbent's unbundled transport.⁷¹⁶ We therefore find that cost models proposed by BellSouth, Ameritech, and others do not accurately indicate the extent to which the costs associated with self-provisioning transport materially diminish a requesting carrier's ability to provide the services it seeks to offer. Finally, as discussed above, we do not base our unbundling analysis on individual business case analyses.⁷¹⁷

361. Timeliness. We conclude that lack of access to the incumbent's interoffice transport network would materially delay a requesting carrier entry into the local market or alternatively delay expansion of an existing carrier's service offerings. Whether

⁷¹² See Letter from Kathleen Levitz, Vice President – Federal Regulatory BellSouth, to Magalie R. Salas, Esq., Secretary, Federal Communications Commission (filed July 30, 1999).

⁷¹³ See generally *Commission Takes Action to Reform Universal Service Support for Non-Rural Carriers Providing Service in High-Cost Areas and Commission Adopts Framework for Federal Universal Service High-Cost support Mechanism; Commission Seeks Comment on the Input Values for the Forward-Looking Cost Model*, CC Docket No. 96-45; 96-262; 97-160, FCC No. 99-17 (released May 27, 1999).

⁷¹⁴ BellSouth's fill factor assumption of 75% may also not be representative of actual market conditions for requesting carriers.

⁷¹⁵ Ameritech Fitzsimmons Aff. at pg. 32.

⁷¹⁶ *Iowa Utils. Bd.*, 119 S. Ct. 721, 734 ("An entrant whose anticipated annual profits from the proposed service are reduced from 100% of investment to 99% of investment has perhaps been "impaired" in its ability to amass earnings, but has not ipso facto been 'impair[ed] . . . in its ability to provide the services it seeks to offer.'").

⁷¹⁷ See *supra* Section (IV)(B)(2).

requesting carriers self-provision interoffice transport, or purchase it from third-party providers, they must collocate their own equipment at the incumbent's central office. Thus, collocation is an essential prerequisite to self-provisioned and third-party provisioned transport, and the time required to collocate affects a requesting carrier's ability to provide service using dedicated transport.

362. Incumbents and requesting carriers provide different estimates about the time required to implement a single collocation arrangements in an incumbent LEC's central office. In general, competitive LECs argue that each collocation arrangement requires between six months and a year to provision.⁷¹⁸ In addition, these carriers argue that the delay associated with implementing collocation arrangements is compounded as competitive LECs expand their networks and seek to establish more collocation arrangements.⁷¹⁹ Incumbent LECs respond that they have provisioned collocation to requesting carriers in a timely fashion and on a broad scale.⁷²⁰

363. We acknowledge that collocation arrangements necessarily require some time to implement, and that the amount of time required to order and provision a collocation arrangement will vary from incumbent LEC to incumbent LEC and by requesting carrier. Accordingly, we do not attempt to specifically quantify what constitutes a reasonable provisioning interval for a single collocation arrangement. We agree, however, with commenters that provisioning the multiple collocation arrangements needed to provide a ubiquitous transport network within an MSA would compound significantly the inherent delays associated with provisioning a single collocation arrangement. NorthPoint contends that most incumbent LECs have imposed "governors" on the number of collocation applications they will accept.⁷²¹ Specifically, BellSouth has limited the number of collocation applications a requesting carrier may file to five per

⁷¹⁸ See *supra* Section (V)(D)(1). AT&T Comments at 91 (citing collocation delays of six to eight months); CompTel Comments at 40 (stating that collocation takes several months at a minimum); MCI WorldCom Reply Comments at 52 (stating that collocation takes 6 months to a year). New England Voice & Data notes that it took six months to gain access to conduit space to pull cable 11,000 feet of fiber from Bell Atlantic's switch to New England Voice & Data's switch. New England Voice & Data Comments at 14.

⁷¹⁹ MCI WorldCom estimates that establishing a single collocation arrangement requires approximately five months before the arrangement is in place. MCI WorldCom also argues, however, that if a requesting carrier seeks to expand the scope of its services by requesting collocation arrangements, the collocation delay amounts to several years before it can provide service. MCI WorldCom Comments, Herold Declaration, at para. 10-11.

⁷²⁰ Ameritech Comments at 28, 77; SBC Reply Comments at 16; US WEST Reply Comments at 44; Bell Atlantic Reply Comments at 14; BellSouth Reply Comments at 36. SBC submitted an *Ex Parte* presentation which states that the average caged collocation interval in Texas is 90 days and 55-70 days for cageless collocation. In California, the average caged collocation interval is 120 days and 110 days for cageless. See Letter from Lincoln E. Brown, Director - Federal Regulatory, SBC, to Magalie R. Salas, Secretary, Federal Communications Commission, CC Docket No. 96-98 (filed July 15, 1999).

⁷²¹ See Letter from John J. Heitmann, representing ALTS, to Magalie R. Salas, Secretary, Federal Communications Commission, CC Docket No. 96-98 (filed Aug 6, 1999).

month, thereby delaying ubiquitous rollout of services.⁷²² Requiring requesting carriers to collocate in numerous end offices in order to obtain ubiquitous transport facilities would materially delay the ability of requesting carriers to enter a market or to expand its service offerings to the greatest number of consumers.

364. Several carriers argue that the process of securing necessary access to rights-of-way, pole attachments, and conduit space significantly delays their ability to compete.⁷²³ For example, NEXTLINK notes that it took two years to negotiate and obtain a telecommunications franchise from the City of New York before it could deploy competitive facilities, and that it must negotiate separate agreements with each municipality traversed by its fiber ring.⁷²⁴ We find that the delays of this magnitude associated with obtaining authority to access public rights-of-way materially delay the ability of a requesting carrier to self-provision transport.

365. Functionality and Quality. We conclude that requiring carriers to utilize alternative sources of transport imposes functional and quality disadvantages that materially diminish a requesting carrier's opportunity to provide the services it seeks to offer. If the Commission were to adopt the incumbent LEC proposals to eliminate unbundled access to interoffice transport in areas where there are one or more alternative suppliers in the market, carriers would have to use multiple alternative suppliers, where available, for their transport requirements. Using a patchwork of transport offerings consisting of facilities acquired from competitive LEC/competitive access providers and the incumbent LEC, in lieu of ubiquitous incumbent LEC transport facilities, would introduce additional complexity into a ubiquitous end-to-end transport network. For example, Sprint notes that when facilities of more than one carrier are involved, repair times are roughly three times longer than if the entire transport network were controlled by one carrier or provisioned exclusively through unbundled transport.⁷²⁵ In addition, Sprint argues that an end-to-end transport offering provisioned by multiple providers may require several digital-to-analog and analog-to-digital conversions or protocol conversions, which could lower total connection speeds otherwise achievable with a single provider transport offering.⁷²⁶ Although we do not conclude that digital-to-analog or analog-to-digital protocol conversions result in a material quality degradation, we find that, as a general matter, requiring requesting carriers to utilize a patchwork of competitive alternatives, to the extent they are available, to collect and route traffic to the

⁷²² See id.

⁷²³ New England Voice & Data Comments at 14; NEXTLINK Reply Comments at 28.

⁷²⁴ NEXTLINK Reply Comments at 29.

⁷²⁵ Sprint notes that nationwide, incumbent LECs meet transport provisioning deadlines 90 percent of the time; while CLECs meet these dates between 48 and 68 percent of the time. Sprint Comments at 34 and Appendix B, Decl. of Kevin E. Brauer, at 4.

⁷²⁶ Sprint Comments, Appendix D, "Sprint Experience with BellSouth," at 4.

required destination can result in a material degradation of quality in the service the requesting carrier to seeks to provide.

366. Goals of the Act. We recognize that requiring incumbent LECs to unbundle dedicated transport may be marginally overinclusive because of the presence of some alternative fiber along selected point-to-point routes in dense markets. We believe, however, that the benefits of uniform transport unbundling outweigh the costs of creating a patchwork regime in which incumbent LECs would likely seek to litigate its transport unbundling obligation on particular point-to-point routes where transport alternatives are arguably available. As we stated above, unbundling requirements that provide uniformity and certainty to the market will allow new entrants and fledgling competitors to implement national and regional business plans and attract capital investment. Litigation over the incumbents' unbundling obligations requires the parties to these agreements and the state commissions that approve them to expend vast amounts of time and resources and would impede the development of competition.

367. Creating a patchwork of transport unbundling obligations would be inconsistent with the goal of the 1996 Act to facilitate rapid entry into the local exchange market. We reiterate the Commission's conclusion in the *Local Competition First Report and Order* that "[w]e recognize that there are alternative suppliers of interoffice facilities in certain areas. We are convinced, however, that entry will be facilitated if competitors have greater, not fewer, options for procuring interoffice facilities as part of their local networks, and that Congress intended for competitors to have these options available from competitors."⁷²⁷ Furthermore, we believe that our decision to unbundle interoffice transport is consistent with Congress' recognition, in section 271, that providing unbundled access to interoffice transport would encourage rapid entry into the local exchange market.⁷²⁸

368. We further find that the allegations of the competitive harms resulting from a uniform transport unbundling obligation are overstated. We believe that there are significant operational and technical incentives for a requesting carrier to eliminate its reliance upon transport provided by incumbent LECs over the long term.⁷²⁹ Where alternative providers build transport facilities to areas exclusively served by the incumbent LEC's facilities, requesting carriers may substitute those alternative sources of transport as they become available. We therefore expect the need for unbundled transport will decrease as competitive transport networks become more ubiquitous. We will closely monitor the developments in the transport market to determine whether the transport

⁷²⁷ *Local Competition First Report and Order*, 11 FCC Rcd. 15718-15719, at para 441.

⁷²⁸ 47 U.S.C. § 271(2)(B)(v).

⁷²⁹ Sprint contends that better financial results, over the long run, should be achievable by increasing the return from capital dollars spend rather than continuing to expense to multiple third party transport providers. Sprint argues that dependence upon external vendors also increases the business uncertainties and risks (in terms of pricing fluctuations, quality control, choice of vendors, changes in vendor business strategy) associated with third party transport provisioning. Sprint Comments, Declaration of Kevin Brauer, at 4.

market, or a particular segment of this market, is supplying requesting carriers with effective alternatives to the incumbent LEC's unbundled network elements when we reexamine these rules in three years.⁷³⁰

b. Shared Transport

369. We find that lack of unbundled access to incumbent's shared transport would impair the requesting carrier's ability to use unbundled switching.⁷³¹ In particular, without access to unbundled shared transport, a requesting carrier would have to self-provision or purchase dedicated transport from the incumbent, which would materially increase the costs and decrease the quality of services the requesting carrier could provide, and would materially limit the carrier's ability to serve a broad base of customers. Accordingly, where an incumbent LEC provides requesting carriers with access to unbundled switching, we require incumbent LECs also to provide access to unbundled shared transport services.

(i) Definition

370. In the *Local Competition Third Reconsideration Order*, the Commission defined shared transport 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's network.⁷³² The Commission clarified in that proceeding that incumbent LECs are not required to provide shared transport between incumbent LEC switches and serving wire centers.⁷³³ No commenter in this phase of the proceeding specifically addressed the definition of shared transport and the record provides no basis for modifying our definition of shared transport.

⁷³⁰ See Letter from Ernest L. Bush, Jr., Assistant Vice President – BellSouth Telecommunications, to Lawrence Strickling, Chief, Common Carrier Bureau, Federal Communications Commission, CC Docket No. 96-98 (filed August 16, 1999) (arguing that the “entrance facilities” or POP to incumbent LEC wire center segment of the transport market has developed to such an extent that requesting carriers are not impaired without access to unbundled transport in this market segment.).

⁷³¹ We note at the outset that a requesting carrier that uses its own self-provisioned switch, rather than unbundled local switches obtained from an incumbent LEC, to provide local exchange and exchange access service would use dedicated transport facilities to carry traffic between its network and the incumbent LEC's network. Thus, the only carrier that would need shared transport facilities would be one that was using an unbundled local switch. Requesting carriers may also utilize unbundled tandem switching to substitute shared transport for common transport in situations where the requesting carrier is not providing local service to the end user. We note that this use of shared transport is currently pending before the Commission and we expect to address it in connection with the *Further Notice* adopted in this proceeding.

⁷³² The definition of shared transport includes shared transport from one end office to another end office. See 47 C.F.R. § 51.319(d)(1)(ii). It does not include the provision of shared transport from an end office to an end user. See Centennial Joint Comments at 5.

⁷³³ *Local Competition Third Reconsideration Order*, 12 FCC Rcd 12453, at para. 27.

371. Ameritech, however, argues that shared transport is not an “unbundled” network element within the meaning of section 251(c)(3). Specifically, Ameritech argues that under the Supreme Court’s ruling, incumbent LECs must provide to requesting carriers pre-assembled combinations of individual unbundled network elements if the element can be purchased separately.⁷³⁴ Because shared transport is technically inseparable from unbundled switching requesting carriers do not have the option of using unbundled shared transport without also taking unbundled local switching. Thus, according to Ameritech, the shared transport element is not an “unbundled” element within the meaning of section 251(c)(3).⁷³⁵

372. We reject Ameritech’s arguments. The Supreme Court upheld the Commission’s interpretation that the phrase “on an unbundled basis” in section 251(c) does not refer to physically separated elements but rather to separately priced elements.⁷³⁶ Shared transport is an “unbundled” element because it consists of separately priced switching and transport network elements. The fact it is technically infeasible for a competitor to use shared transport with self-provisioned switching is irrelevant to whether an element is “unbundled” pursuant to section 251(c)(3). In addition, the Eighth Circuit, in affirming our decision in the *Local Competition Third Reconsideration Order*, rejected Ameritech’s argument when it held that shared transport meets the definition of an unbundled network element because it is a “feature, function, [or] capability,” that is provided by facilities and equipment used in the provision of a telecommunications service.⁷³⁷ Accordingly, we conclude that shared transport meets the definition of an unbundled network element.

(ii) Proprietary Concerns Associated With Shared Transport

373. Ameritech asserts that its routing table used to provide shared transport is proprietary. As discussed above, we reject Ameritech’s claim because we find that incumbent LECs may not withhold access to unbundled local switching on the grounds that switch routing tables are proprietary in nature under section 251(d)(2)(A).⁷³⁸ With the exception of Ameritech, no commenter identifies any proprietary concerns associated with the provision of shared transport, and we identify none. Accordingly, we analyze shared transport under the “impair” standard of section 251(d)(2)(B).

(iii) Unbundling Analysis

⁷³⁴ Ameritech Comments at 94-96.

⁷³⁵ *Id.*

⁷³⁶ *Iowa Utils. Bd.*, 119 S. Ct. at 737.

⁷³⁷ *Southwestern Bell Tel. Co. v. Federal Communications Commission*, 153 F.3d 597, 603 (8th Cir. 1998).

⁷³⁸ *See supra* Section (V)(D)(1).

374. We conclude that a requesting carrier's ability to provide the services it seeks to offer is impaired without access to the incumbent's unbundled shared transport. Without access to unbundled shared transport, a requesting carrier would have to self-provision or purchase dedicated transport from the incumbent, which would materially increase the costs and decrease the quality of services the requesting carrier could provide, and would materially limit the carrier's ability to serve a broad base of customers.⁷³⁹ Accordingly, we conclude that incumbent LECs must provide unbundled access to shared transport.

375. Costs and Quality. We find that lack of unbundled access to the incumbent's shared transport facilities materially increases a requesting carrier's costs of providing service. As described above, we find that there is a lack of ubiquitous transport alternatives available to requesting carriers. Thus, without access to the incumbent's shared transport facilities, a requesting carriers must either deploy its own dedicated facilities or purchase dedicated transport from the incumbent. Because requesting carriers, in the early stages of entering the local market, may not yet have sufficient market information to forecast accurately their traffic volumes, they may miscalculate the amount of dedicated transport capacity they will need. Specifically, an inability to reasonably forecast traffic volumes would likely cause a requesting carrier to purchase an insufficient amount, or conversely, too much dedicated transport capacity. In shared transport arrangements, the switch routes the competitor's traffic through the most efficient trunking group available. The trunking group is shared among many users, including the incumbent LEC's end users, thereby reducing requesting carrier costs and utilizing capacity only when necessary to route and complete a call.⁷⁴⁰

376. In addition, as traffic demands increase, a requesting carrier will incur a non-recurring charge each time it purchases additional transport capacity. In contrast, where a requesting carrier purchases unbundled shared transport to meet increased customer demand, it effectively purchases the entire capacity of the incumbent LEC's network and will not incur non-recurring charges for additional increments of dedicated transport capacity. Purchasing only those increments of capacity that the requesting carrier requires to meet demand eliminates inefficient use of dedicated transport facilities. In addition, at low volumes requesting carriers will incur significantly higher recurring, per-minute costs to substitute dedicated transport for shared transport arrangements at low volumes. We reiterate the Commission's conclusion in the *Third Order on Reconsideration* that "the relative costs of dedicated transport, including the associated NRCs [non-recurring charges], is an unnecessary barrier to entry for competing carriers."⁷⁴¹

⁷³⁹ AT&T Comments at 99; Centennial Joint Comments at 7; TRA Comments at 39.

⁷⁴⁰ We recognize that competitors face significant demand uncertainty, particularly in the early stages of entry, but as the local exchange market matures, competitors will be required to assume the normal business risks of forecasting demand and provisioning transport to meet this demand.

⁷⁴¹ *Local Competition Third Reconsideration Order*, 12 FCC Rcd at 12488, para 50. In the *Third Reconsideration* proceeding, AT&T contended that the cost is \$.041767 per minute for dedicated

377. According to Ameritech, competitive LECs have the option of using its end office integration (EOI) service, a tariffed, retail service that Ameritech claims will carry, on a minute-of-use basis, whatever interoffice transport traffic the competitive LEC delivers to its point of interconnection.⁷⁴² Under this plan, Ameritech would not require requesting carriers to order dedicated transport facilities until their actual volume levels justified provisioning a dedicated trunk. Consistent with the little weight we afford the incumbents' tariffed offerings for consideration as an alternative to dedicated transport, we reject the argument that Ameritech's tariffed EOI service eliminates the obligation to unbundle shared transport.⁷⁴³

378. We agree with commenters that argue that the ability to obtain access to shared transport enables them to handle traffic at peak loads and maintain call blockage levels that are at parity with those of the incumbent LECs.⁷⁴⁴ As the Commission stated in the *Local Competition Third Reconsideration Order*, a new entrant entering the local market with smaller traffic volumes would have to maintain greater excess transport capacity relative to the incumbent LEC in order to provide the same level of service quality (*i.e.* same level of successful call completion) as the incumbent LEC.⁷⁴⁵ We conclude a requesting carrier would be impaired without access to unbundled shared transport because it would have to choose between purchasing excess capacity or incurring increased call blockage rates.

379. Goals of the Act. We find that requiring incumbent LECs to provide unbundled access to shared transport is consistent with the Act's goal of encouraging requesting carriers to rapidly enter the local market and serve the greatest number of customers. Requiring unbundled access to shared transport is particularly important because it addresses the transport needs of requesting carriers in the early stages of competitive entry by allowing competitors to efficiently purchase transport facilities as they ramp up toward higher-capacity dedicated transport requirements. Furthermore,

transport plus associated non-recurring charges. AT&T claimed that Ameritech would charge a total of \$5008.58 per DS1 and \$58,552.87 per switch. AT&T argued that this compares with \$.000776 per minute for unbundled shared transport. Ameritech responded that the correct price for tandem routed dedicated facilities cost is \$.0031148 per minute plus associated NRCs. *Id.*

⁷⁴² Ameritech Comments at 72.

⁷⁴³ See *supra* Section (IV)(B)(4). There are also substantial questions concerning whether Ameritech's EOI includes the transport and termination charges Ameritech would levy on top of the per-minute fees and the non-recurring charges that Ameritech would impose for establishing its EOI service.

⁷⁴⁴ MCI WorldCom Comments 62 and Tab 4, Decl. of John M. Wimmer, at para. 28; AT&T Reply Comments at 108.

⁷⁴⁵ *Local Competition Third Reconsideration Order*, 12 FCC Rcd at 12488, para 51 (citing William W. Sharkey, *The Theory of Natural Monopoly*, 184-85 (1982) ("that for a given number of circuits the economies [of scale] are more pronounced at higher grades of service (lower blocking probability). The economics of scale, however, decline substantially as the number of circuits increases. Therefore for small demands, a fragmentation of the network could result in a significant cost penalty because more circuits would be required to maintain the same grade of service. At large demands, the costs of fragmentation are less pronounced.") *Id.*

when used in conjunction with unbundled switching, requesting carriers may find it economical to serve the small business and residential markets using shared transport because these market segments may not always support traffic volumes that justify using dedicated transport services. Accordingly, we find that requiring unbundled access to shared transport promotes the prompt development of competition to serve the greatest number of customers, as intended by the Act.

F. Signaling Networks and Call-Related Databases

1. Signaling Networks

a. Background

380. In the *Local Competition First Report and Order*, the Commission concluded that incumbent LECs, upon request, must provide nondiscriminatory access to their signaling networks on an unbundled basis.⁷⁴⁶ The Commission stated that it was technically feasible for incumbent LECs to provide such access, and that such access was critical to entry in the local exchange market.⁷⁴⁷ The Commission concluded that incumbent LECs must provide unbundled access to signaling networks as part of the unbundled switch network element as well as on a standalone basis.⁷⁴⁸

381. In the *Notice*, we sought comment on the application of the “necessary” and “impair” standards to previously identified unbundled network elements, including signaling networks.⁷⁴⁹ The *Notice* also requested that parties include specific costs and an analysis of the availability of alternative signaling facilities.⁷⁵⁰

382. The majority of state commissions and competitive LECs commenting in this phase of the proceeding argue that the incumbent LECs’ signaling networks should

⁷⁴⁶ *Local Competition First Report and Order*, 11 FCC Rcd at 15738, para. 479. These networks are referred to as “out of band” signaling networks, and they simultaneously carry signaling messages for multiple calls. In general, most LECs’ signaling networks adhere to a Bellcore standard Signaling System 7 (SS7) protocol. SS7 networks use signaling links to transmit routing messages between switches, and between switches and call-related databases (such as the Line Information Database, Toll Free Calling Database, and Advanced Intelligent Network databases). These links enable a switch to send queries via the SS7 network to call-related databases, which return customer information or instructions for call routing to the switch. A typical SS7 network includes a signaling link that transmits signaling information in packets, from a local switch to a signaling transfer point (STP), which is a high-capacity packet switch. The STP switches packets onto other links according to the address information contained in the packet. These additional links extend to other switches, databases, and STPs in the incumbent LECs’ networks. A switch routing a call to another switch will initiate a series of signaling messages via signaling links through a STP to establish a call path on the voice network between the switches. *Id.* at paras 479-483.

⁷⁴⁷ *Id.* at 15738, para. 479.

⁷⁴⁸ *Id.* at 15738-41, paras. 479-483.

⁷⁴⁹ *Notice* at para. 33.

⁷⁵⁰ *Id.*

be unbundled because alternatives to the incumbents' signaling networks are more costly, have lower quality, and do not provide the ubiquity of the incumbents' networks.⁷⁵¹ The incumbent LECs argue that based on the availability of alternative signaling providers, requesting carriers are not impaired in their ability to provide services.⁷⁵²

b. Discussion

383. We conclude that without unbundled access to the incumbent LECs' signaling networks, a requesting carrier's ability to provide the services it seeks to offer is impaired. Requiring a requesting carrier to obtain signaling from alternative sources would materially diminish its ability to provide the services it seeks to offer, due to the quality differences between the signaling networks available from the incumbent LEC and those available from alternative providers of signaling. As described below, we conclude that neither self-provisioning signaling networks, nor obtaining this element from third-party sources, is a sufficient substitute that would justify excluding signaling networks from the incumbent LECs' unbundling obligation under section 251(c)(3). We therefore require incumbent LECs to provide requesting carriers with unbundled access to their signaling networks.

⁷⁵¹ See Florida PSC Comments at 6-7; Illinois Commission Comments at 14; Iowa Comments at 6; Kentucky PSC Comments at 2; Allegiance Comments at 20; Cable & Wireless Comments at 37-38; Choice One Joint Comments at 18; Cox Comments at 34-36; KMC Comments at 16-17; Level 3 Comments at 15-16; Net 2000 Comments at 15-16. *But see* MGC Comments at 31.

⁷⁵² See Ameritech Comments at 114-116; BellSouth Comments at 76; GTE Comments at 54-56; SBC Comments at 43; US WEST Comments at 47; USTA UNE Report, Tab 5, at 1-5.

(i) **Definition**

384. In the *Local Competition First Report and Order*, the Commission defined the signaling network element as including, but not limited to, signaling links and signaling transfer points (STPs).⁷⁵³ No party commenting in this phase of the proceeding has asked us to modify our definition, and we find no marketplace developments that would cause us to re-evaluate our definition of the signaling network element. Accordingly, we reaffirm the definition of signaling networks that was adopted in the *Local Competition First Report and Order*.⁷⁵⁴

(ii) **Proprietary Analysis**

385. We agree with commenters that signaling links and STPs are not proprietary.⁷⁵⁵ Moreover, we do not discern any copyright, patent, or trade secret implications to unbundling signaling links and STPs, and carriers do not generally rely upon their signaling links and STPs to differentiate themselves from their competitors. In addition, SS7 signaling networks generally adhere to Bellcore standards rather than LEC-specific protocols, and provide seamless connectivity between networks.⁷⁵⁶ We therefore conclude that signaling links and STPs are not proprietary elements, and we analyze signaling networks under the “impair” standard of section 251(d)(2)(B).

(iii) **Unbundling Analysis**

386. Current switch technology requires each local switch to connect to a single STP.⁷⁵⁷ All parties, including incumbent LECs, agree that because the incumbent LECs’ switching networks are already connected to a STP, a carrier that purchases unbundled switching from an incumbent LEC must also purchase signaling from that incumbent

⁷⁵³ *Local Competition First Report and Order*, 11 FCC Rcd at 15724, para. 456.

⁷⁵⁴ *Id.* at 15723-24, para. 455.

⁷⁵⁵ *See, e.g.*, Allegiance Comments at 19-20; Cox Comments at 34-35; e-spire Joint Comments at 26.

⁷⁵⁶ *Local Competition First Report and Order*, 11 FCC Rcd at 15739, para. 481.

⁷⁵⁷ BellSouth Comments at 76. *See also* Ameritech Comments at 114 n.326 (citing James H. Green, *The Irwin Handbook of Telecommunications* 297 (3rd Ed. 1997) (“the SS7 network routes messages on a point-to-point basis using unique originating and terminating point codes. Each node in the network is identified by its own unique point code/network address. When a call is set up between two end office switches, the originating end office formulates an initial address message (IAM) to the terminating end office. The IAM includes the originating telephone number, originating point code, terminating telephone number, and terminating point code. To route a signaling packet successfully, the STP must associate each point code with a particular end office. Existing technology, therefore, permits routing over only a single set of A-links, (links between a specific end office and the SS7 network), for any given point code.”).

LEC.⁷⁵⁸ In such cases, the incumbent LEC must provide access to its signaling network from that switch in the same manner in which it obtains such access itself.⁷⁵⁹

387. A requesting carrier that has deployed its own switch, or has purchased switching from an alternative source, however, may purchase signaling from an incumbent LEC and link its switch to the incumbent LEC's signaling network. Alternatively, the requesting carrier may self-provision signaling or purchase signaling from an alternative provider. Thus, the only issue left to be resolved is whether competitive LECs that do not purchase switching from an incumbent LEC are impaired without unbundled access to the incumbent's signaling network element.

388. We conclude that regardless of whether a requesting carrier self-provisions its own switching, or purchases switching from an alternative source, the incumbent LEC must provide the requesting carrier with unbundled access to the incumbent's signaling network, pursuant to section 251(c)(3). Consistent with our framework for unbundling as set forth above, we find that in such situations, lack of access to unbundled signaling systems materially diminishes the ability of a requesting carrier to provide the services it seeks to offer. In particular, requiring a competitor to self-provision or use alternative sources of signaling materially degrades the quality of its service to end users and materially restricts its ability to provide service on a ubiquitous basis. We therefore require incumbent LECs to provide requesting carriers that have deployed their own switching facilities access to the incumbent LEC's unbundled signaling network for each of the requesting carrier's switches. This connection shall be made in the same manner as an incumbent LEC connects one of its own switches to a signaling transfer point.

389. Alternatives in the Market. The record indicates that there are several alternatives to the incumbent LECs' signaling networks available in the market.⁷⁶⁰ In particular, there are six major facilities-based SS7 network providers (AT&T, MCI WorldCom, Illuminet, TNX, GTE-INS, and SBC/SNET) and four mid-sized facilities-based SS7 network providers (GST, ICG, Intermedia and US LEC), that operate regional SS7 networks.⁷⁶¹ In GTE's service area, twelve competitive LECs have opted to build their own signaling networks.⁷⁶² In addition, there are several suppliers of the equipment used to operate a signaling network: Lucent, Tekelec, Nortel, Alcatel, IEX Corporation,

⁷⁵⁸ See, e.g., SBC Comments at 43 ("Signaling is a servant to switching. . . current technology requires each local switch to link to one-and only one-signaling network. To the extent that a CLEC purchases unbundled switching from an RBOC or GTE, it must necessarily connect to that same ILEC's signaling network."). See also BellSouth Comments at 76; MCI WorldCom Comments at 55; US WEST Comments at 47; USTA UNE Report, Tab 5, at 1.

⁷⁵⁹ See *Local Competition First Report and Order*, 11 FCC Rcd at 15740, para. 483.

⁷⁶⁰ BellSouth Comments at 76; USTA UNE Report, Tab 5, at 1.

⁷⁶¹ USTA UNE Report at V-5.

⁷⁶² GTE Comments at 55.

SummaFour, and Siemens.⁷⁶³ We also note that the equipment produced by these companies is based on standard interfaces and protocols.

390. As discussed above, however, the mere existence of alternatives outside the network does not mean that requesting carriers are not impaired without unbundled access to the incumbent LEC's network.⁷⁶⁴ Based on our analysis of the factors identified above, we find that a requesting carrier is materially diminished in its ability to offer service if it is not able to purchase signaling as an unbundled network element.⁷⁶⁵

391. Cost. In light of the significant evidence of multiple third-party providers of signaling, we disagree with parties that assert that self-provisioning signaling, or obtaining signaling from alternative providers, would involve substantial and material cost and would delay competition in the local market.⁷⁶⁶ Although several states and competitive LECs argue that replication of the incumbent LEC's signaling network would be "extremely costly," they have not submitted cost data in the record to support their claims.⁷⁶⁷

392. Unlike self-provisioning a switch or network elements that are dedicated to individual subscribers (*i.e.* the NID), deploying a signaling network does not require a requesting carrier to incur substantial sunk and fixed costs, because a carrier does not need multiple signaling facilities in order to establish a signaling network that is capable of providing service to a broad base of customers. Rather, existing technology permits the carrier that is using its own switch to route signals over a single set of A-links (links

⁷⁶³ *Id.* at 54.

⁷⁶⁴ *See supra* Section (IV)(B)(4) (discussing the "impair" standard of section 251(d)(2)(B)).

⁷⁶⁵ *Id.*

⁷⁶⁶ *See* MGC Comments at 31 (stating SS7 signaling "is made generally available on a national basis and in a cost-effective manner.").

⁷⁶⁷ Time Warner Reply Comments at 3. *See also* Illinois Commission Comments at 13 (The Illinois Commission noted that utilization of the incumbent LECs switching signaling is required for the completion of a call, and that a replication of the incumbent's in-place network would be extremely costly, thereby posing an impediment to competition.); Letter from Jonathan Askin, Vice President – Law, ALTS, to Magalie Roman Salas, Secretary, Federal Communications Commission, CC Docket No. 96-98, at 2 (filed July 29, 1999) (ALTS July 29, 1999 *Ex Parte*) ("Start-up CLECs do not have big enough SS7 message volumes to justify volume discounts that hub providers may offer to larger firms, creating a significant barrier to entry since the CLECs cannot approach the low unit costs that the ILECs achieve with their own volumes.); CoreComm Comments at 30 (CoreComm notes that requiring new entrants to incur the cost of deploying redundant network architecture would significantly impair the ability of requesting carriers to compete.); Letter from Tina S. Pyle, Executive Director, Public Policy, MediaOne, to Jake E. Jennings, Policy and Programming Division, Common Carrier Bureau, Federal Communications Commission, CC Docket No. 96-98, Signaling Attachment at 1-2 (filed August 12, 1999) (MediaOne August 12, 1999 *Ex Parte*) (stating that "MediaOne cannot economically self-provision a signaling system;" and estimating that "the point at which the costs of providing the SS7 network first were less than the cost of obtaining the SS7 network was the time period at which MediaOne forecast slightly more than one million subscriber lines."). We note that MediaOne did not submit cost data in the record to support this claim.

between a specific end office and the SS7 network for any given point code).⁷⁶⁸ The carrier's single STP can serve its entire network. Alternatively, a competitive LEC can purchase signaling from the non-incumbent sources mentioned above. We agree with MGC that cost-effective SS7 signaling networks are generally available on a national basis.⁷⁶⁹

393. Several parties argue that because alternative signaling providers have not established the ubiquitous presence to match the incumbent LECs' signaling footprint, the cost of transport to an alternative provider's signaling network materially increases the requesting carrier's cost.⁷⁷⁰ Replicating the ubiquitous signaling networks of the incumbent LECs may be prohibitively expensive for some competitive LECs. In addition, new entrants in the local market most likely do not have the scale necessary to justify the investment needed to replicate the incumbent LECs' signaling networks. We do not find sufficient evidence in the record, however, to support a conclusion that the cost of self-provisioning or purchasing signaling from alternative sources, in and of itself, would require us to unbundle the incumbent's signaling network. Accordingly, we find that the cost of non-incumbent LEC alternative signaling networks is not dispositive of whether or not a competitive LEC's ability to provide the services it seeks to offer is materially diminished. For reasons we discuss below, however, we do find that competitive LECs need to have access to a ubiquitous signaling network in order to ensure the same quality of service as the incumbents.

394. Ubiquity and Quality. Although we do not conclude that the cost of self-provisioning alternative signaling impairs a requesting carrier's ability to provide the services it seeks to offer, we find that lack of access to the incumbent LECs' ubiquitous networks materially diminishes this ability. We agree with commenters who argue that because alternative vendors of signaling networks only have a few geographically dispersed STPs, they cannot provide requesting carriers with signaling that is of comparable quality to that of the incumbent LECs' signaling networks.⁷⁷¹

⁷⁶⁸ See, e.g., Ameritech Comments at 114, n.326.

⁷⁶⁹ See MGC Comments at 31.

⁷⁷⁰ See, e.g., ALTS July 29 *Ex Parte* at 2-3 (stating that any CLEC ordering A-Link connectivity "from the local ILEC can expect to pay for a local T1 within a few miles or so from their central office for transport of the 56-kb signal. On the other hand, a CLEC ordering its 'A-Links' from an alternative provider can expect to order a T1 for transport of several hundred miles from an IXC carrier."); John J. Heitmann, Net 2000, to Jake E. Jennings, Policy and Programming Division, Common Carrier Bureau, Federal Communications Commission, CC Docket No. 96-98, Presentation at 2, 5 (filed August 13, 1999) (Net 2000 August 13, 1999 *Ex Parte*) (stating that regional STP pairs require long transport links for connectivity, and longer transport links lead to higher costs in smaller markets where connectivity with a single pair of ILEC STPs would be required).

⁷⁷¹ MCI WorldCom Reply Comments at 55-56. MCI WorldCom also noted "[i]f a CLEC wishes to offer ubiquitous, high-quality local services, it must, as a practical matter, tap into the ILECs' signaling networks and databases." *Id.* at 55. See also Time Warner Reply Comments at 16 (stating that alternative SS7 vendors "do not offer anything close to an adequate substitute" for incumbent LECs' SS7 signaling networks).

395. The ubiquitous nature of an incumbent LEC's signaling network provides it with advantages that competitive LECs cannot achieve through use of alternative signaling networks. For example, the Bell Operating Companies have deployed at least one STP in every LATA.⁷⁷² Each of the incumbent LEC's STPs is connected to one or more incumbent switches serving customers limited to a particular geographic area within the incumbent LEC's region, while alternative signaling systems typically rely on a very few or even a single STP pair as a gateway to its signaling system.⁷⁷³ Consequently, if a competitive LEC uses an alternative provider of signaling, the competitive LEC's entire customer base may be connected to a single STP pair. If an outage occurs within the incumbent LEC's signaling network, only those customers served by switches connected to that particular STP will be adversely affected. In contrast, where a competitive LEC relies on one or a small number of STPs to serve its entire network, a greater portion, if not all, of the competitive LECs' customers will be negatively affected by a network outage.⁷⁷⁴ The lack of access to a ubiquitous signaling network could adversely impact the competitive LEC's customer satisfaction, thereby placing the competitive LEC at a disadvantage vis-à-vis the incumbent.

396. We note that Time Warner claims that alternative signaling networks lack diversity in signaling links that provide redundant signaling paths, and this lack of diversity reduces the reliability of the signaling network.⁷⁷⁵ Time Warner argues that this

⁷⁷² USTA UNE Report at V-1. *See also* MCI WorldCom Reply Comments at 55 ("No third party vendor owns a signaling network in every Local Access Transport Area ("LATA"), nor do they provide direct connectivity with the ILECs' switches."); Time Warner Reply Comments at 17 ("ILEC signaling systems contain many STP pairs (typically one per LATA).")

⁷⁷³ *See, e.g.*, KMC Comments at 16-17 (noting that independent signaling vendors do not offer signaling services everywhere); Time Warner Reply Comments at 17; Letter from Thomas Jones, Counsel for Time Warner Telecom, to Magalie Roman Salas, Secretary, Federal Communications Commission, CC Docket 96-98, Attachment at 3 (filed July 15, 1999) (Time Warner July 15, 1999 *Ex Parte*) (noting "[m]ost CLECs who have deployed switches have not deployed their own regional or national signaling networks.").

⁷⁷⁴ A number of requesting carriers argue that they have experienced customer outages as a result of utilizing alternative signaling providers. A single fiber cut, which affected 132 DS3s for nearly seven hours, and an outage which disrupted service to 800 customers in four markets, demonstrated the material decrease in quality experienced by Time Warner when it utilized an alternative signaling provider. The cut caused the vendor's SS7 network to block Integrated Switched Digital Network User Part (call set-up) messages originating at Time Warner's Memphis switch. Thus, no call originating at a line served by the Memphis switch and terminating at a line served by another switch could be completed. Time Warner's problem with its 800 number service was caused by the failure of four of 19 T1s in the vendor's network. The problem lasted for approximately five hours. Time Warner also cited outages in Rochester, New York, Memphis, Tennessee, and Raleigh, North Carolina, which caused its customers to lose service and "seriously damaged [its] reputation for high-quality, reliable service." Letter from Thomas Jones, Counsel for Time Warner Telecom, to Magalie Roman Salas, Secretary, Federal Communications Commission, CC Docket 96-98, Attachment at 1-3 (filed July 27, 1999) (Time Warner July 27, 1999 *Ex Parte*).

⁷⁷⁵ Time Warner Reply Comments at 16-18; Time Warner July 15, 1999 *Ex Parte*, Attachment at 3. *See also* Time Warner Reply Comments at 16 ("Signaling systems typically aggregate their traffic from each STP pair to a regional STP pair, where additional information is stored in a call-related database. The messages traveling between STP pairs are carried over signaling links. These signaling links are crucial to the signal system networks, and signaling links must travel over diverse paths in order to be considered properly

lack of diversity also leads to more frequent outages that directly impact customer satisfaction.⁷⁷⁶ Although we agree that lack of diversity in signaling networks could very likely result in greater numbers of customers affected by network outages, Time Warner has not provided evidence in this proceeding to support its specific claim.

397. Other commenters identify similar quality issues associated with the use of alternative signaling networks.⁷⁷⁷ We agree that a lack of redundant signaling paths may increase the likelihood that more customers may be affected by signaling outages. We are, however, unable to conclude based on the record before us, if the outages attributed to a lack of diversity are isolated incidents, or if they are the result of an increased risk of failure. Thus, we do not base our decision to unbundle the incumbent LECs signaling networks on the lack of diversity in alternative providers' signaling networks. As discussed above, however, we find that a competitive LEC's ability to provide the service it seeks to offer is materially diminished, because alternative providers' signaling networks lack the ubiquity of the incumbent LECs' networks, and that larger portions of a requesting carrier's network would likely be affected by a single point of failure on the signaling network.⁷⁷⁸

398. Other quality problems identified by ALTS' members include poor customer service associated with utilizing alternative signaling providers.⁷⁷⁹ While we agree that these quality concerns may materially decrease the ability of requesting carriers to provide the services it seeks to offer, we do not find them dispositive of whether requesting carriers are impaired in general. In particular, it is not clear from the record whether these quality concerns are isolated instances, or alternatively, are prevalent throughout the industry.

redundant, and therefore reliable.”).

⁷⁷⁶ Time Warner July 27, 1999 *Ex Parte* at Attachment at 3.

⁷⁷⁷ See, e.g. Time Warner Reply Comments at 17. ALTS July 29, 1999 *Ex Parte* at 2, Attachment at 1 (citing alternative vendors' inability to attain personnel with the requisite skill and experience to operate a reliable SS7 signaling network); Cox Comments at 35 (stating that “use of third party vendors can result in delays and errors that would not result if a CLEC is connected directly with the ILEC signaling system.”); ALTS July 29 *Ex Parte* at 3 (citing an ALTS member that has A-Link connectivity to three signaling providers, one incumbent LEC and two alternative providers. The member stated that it has been materially impaired in obtaining signaling service due to significant obstacles it has encountered with personnel, equipment, and ubiquity in its dealings with the two alternative providers. The member asserted that it has maintained connectivity to the incumbent LEC because the alternative providers did not have any capacity.).

⁷⁷⁸ See, e.g., MediaOne August 12, 1999 *Ex Parte*, Signaling Attachment at 1 (citing a failure at an alternative signaling vendor's STP, which caused signaling traffic to be re-routed to the vendor's other STP. Software problems at the second STP produced service degradation and an eventual outage of six hours, which affected a number of carriers nationwide.). MediaOne also cited another STP failure by the same provider, which resulted in an outage of nearly seven hours. *Id.*

⁷⁷⁹ ALTS July 29, 1999 *Ex Parte* at 3.

399. Goals of the 1996 Act. We conclude that unbundling the incumbent LECs' signaling networks will promote the development of facilities-based competition and thereby encourage investment and innovation in new technologies and telecommunications services. Competitive LECs deploying their own switches will not have the incentive to do so if they are faced with having to rely on less ubiquitous and less reliable alternatives for signaling. Unbundling the incumbent LECs' signaling networks will give competitive LECs incentive to deploy their own switches, because they can be connected to the ubiquitous incumbent LECs' signaling networks. The 1996 Act was designed to spur competition in the local market. Our decision to unbundle incumbent LECs' signaling networks facilitates this goal, and creates options for consumers in their local telecommunications service.

2. Call-Related Databases

a. Background

400. In the *Local Competition Order*, the Commission determined that access to call-related databases was technically feasible, and concluded that incumbent LECs must provide nondiscriminatory access to their call-related databases on an unbundled basis, for the purpose of switch query and database response through the SS7 network.⁷⁸⁰ The Commission also required incumbent LECs to provide unbundled access to the Advanced Intelligence Network (AIN) platform. The Commission found that such access was technically feasible, and that competitors would be impaired without access to the AIN platform.⁷⁸¹

401. In the *Notice*, we asked parties to comment on unbundling the seven network elements we previously identified, including signaling and call-related databases.⁷⁸² Most requesting carriers argue that the Commission should require incumbent LECs to provide access to call-related databases on an unbundled basis.⁷⁸³ Incumbent LECs argue that access to call-related databases on an unbundled basis is not required under section 251(d)(2).⁷⁸⁴

b. Discussion

⁷⁸⁰ *Local Competition First Report and Order*, 11 FCC Rcd at 15741, para. 484. Call-related databases are those SS7 databases used for billing and collection or used in transmission, routing, or other provision of a telecommunications service. *Id.* at n.1126.

⁷⁸¹ *Id.* at 15743-45, paras. 488-491.

⁷⁸² *Notice* at para. 33.

⁷⁸³ See, e.g., Allegiance Comments at 20; Cable & Wireless Comments at 37-38; KMC Comments at 16-17; TRA Comments at 41.

⁷⁸⁴ See, e.g., Ameritech Comments at 116-118; BellSouth Comments at 76; SBC Comments at 44-45.

402. We find that, as a general matter, requesting carriers' ability to provide the services they seek to offer is impaired without unbundled access to the incumbent LECs' call-related databases. Thus, we require incumbent LECs, upon request, to provide nondiscriminatory access to their call-related databases on an unbundled basis, for the purpose of switch query and database response through the SS7 network. We conclude that requesting carriers' ability to provide the services they seek to offer is impaired without unbundled access to the incumbent LECs' AIN platform and architecture. Thus, we find that incumbent LECs, upon request, must provide nondiscriminatory access to their AIN platform and architecture. We also conclude, however, that service software created in the AIN platform and architecture is proprietary and thus analyzed under the "necessary" standard of section 251(d)(2)(A). Based on our "necessary" standard, we conclude that incumbent LECs are not required to unbundle the services created in the AIN platform and architecture that qualify for proprietary treatment.

(i) **Definition**

403. In the *Local Competition First Report and Order*, the Commission defined call-related databases as "databases, other than operations support systems, that are used in signaling networks for billing and collection or the transmission, routing, or other provision of telecommunications service."⁷⁸⁵ The Commission further required incumbent LECs to provide unbundled access to their call-related databases, including but not limited to: the Line Information database (LIDB), the Toll Free Calling database, the Local Number Portability database, and Advanced Intelligent Network databases.⁷⁸⁶ No commenter in this phase of the proceeding challenges the definitions of call-related databases or AIN that were adopted in the *Local Competition First Report and Order*, and we find no reason for modifying those definitions. As discussed below, however, we clarify that the definition of call-related databases includes, but is not limited to, the calling name (CNAM) database, as well as the 911 and E911 databases.

404. The Advanced Intelligent Network (AIN) uses distributed intelligence in centralized databases to control call processing and manage network information, eliminating the need for those functions to be performed at every switch.⁷⁸⁷ The AIN database enables some call processing functions to be performed outside the switch. There are two separate components of the AIN. The first component is the AIN platform and architecture. The AIN platform and architecture basically consists of an off-line computer known as the Service Creation Environment (SCE), Service Management System (SMS),⁷⁸⁸ and AIN software. AIN services are designed and tested in the SCE.⁷⁸⁹

⁷⁸⁵ *Local Competition First Report and Order*, 11 FCC Rcd at 15741 n.1126.

⁷⁸⁶ *Id.* at 15741-42, para. 484.

⁷⁸⁷ *Id.* at 15724-25, para. 459.

⁷⁸⁸ An SMS interconnects to the SCP to send information and call processing instructions that are needed for a network switch to process and complete a telephone call. It also provides carriers with the capability of entering and storing data regarding the processing and completing of a telephone call.

Once a service is successfully tested, the software is transferred to a SMS that administers and supports service control point (SCP) databases in the network.⁷⁹⁰ The SMS then regularly downloads software and information to a SCP where interaction with the voice network takes place via signaling links and STPs.⁷⁹¹

405. When a software “trigger” is activated, an AIN capable switch uses the SS7 network to access databases, SCPs, that contain service software and subscriber information, for instruction on how to route, monitor, or terminate the call. The second component of the AIN is the AIN service software that is developed in the AIN platform, and is used to provide telecommunications service. Examples of AIN services include: deployment of number portability, wireless roaming, and advanced services such as same-number service (*i.e.* 500 number service) and voice recognition dialing.

406. As a general matter, no commenter challenges the definitions of call-related databases or AIN that were adopted in the *Local Competition First Report and Order*. Several commenters, however, request that the Calling Name (CNAM) database be classified as a call-related database.⁷⁹² The CNAM database contains the name of the customer associated with a particular telephone number and is used to provide Caller ID and related services.⁷⁹³ We take this opportunity to clarify that the definition of call-related databases includes, but is not limited to, the calling name (CNAM) database, as well as the 911 and E911 databases. Call-related databases are databases that supply information or instructions used for “billing and collection or used in the transmission, routing, or other provision of telecommunications service.”⁷⁹⁴ The CNAM, 911, and E911 databases are call-related databases, because they are used for “billing and collection, or used in the transmission, routing or other provision of a telecommunications service.”⁷⁹⁵ CNAM databases are used to provide Caller ID and related telecommunications services, and the 911 and E911 databases are telecommunications services used to provide emergency assistance. We specifically identify the CNAM, 911

⁷⁸⁹ *Local Competition First Report and Order*, 11 FCC Rcd at 15724-25, para. 459.

⁷⁹⁰ *Id.*

⁷⁹¹ *Id.*

⁷⁹² See MCI WorldCom Comments at 60-62 (citing CNAM as the “Customer Name” database); MediaOne Comments at 15-16. See also AT&T Comments at 110 (citing CNAM as the “Caller Name” database); Cox Comments at 36.

⁷⁹³ See MCI WorldCom Comments at 60; MediaOne Comments at 15.

⁷⁹⁴ *Local Competition First Report and Order*, 11 FCC Rcd at 15741, n.1126. Updating or compiling the information in these databases takes place through a separate process involving different equipment. Carriers input information directly into a service management system (SMS), which downloads such information into the appropriate database.

⁷⁹⁵ *Id.*

and E911 databases as being illustrative of call-related databases, and not as a comprehensive list of all call-related databases.

407. We note that Low Tech Designs requests that the Commission require AIN triggers and AIN trigger upgrades be made available to competitors on an unbundled basis.⁷⁹⁶ We find that there is not enough evidence in the record to make a determination about the technical feasibility of unbundling AIN triggers. We therefore decline to expand our definition of call-related databases to include AIN triggers, and reaffirm the definition of call-related databases in the *Local Competition First Report and Order*. Low Tech Designs also requests that the Commission mandate the interconnection of “CLEC-provided and other third-party AIN/SS7 Service Control Points and Intelligent Peripherals.”⁷⁹⁷ We decline this request because we find that there is not enough evidence in the record to make a determination as to the technical feasibility of interconnecting third-party SCPs and Intelligent Peripherals to incumbent LECs’ signaling networks. Our refusal to grant Low Tech Design’s request in this proceeding does not affect the ability of any state commission to address this issue.

(ii) Proprietary Concerns Associated with Call-Related Databases

408. With the exception of AIN service software, commenters do not identify proprietary concerns associated with the provision of call-related databases. Moreover, with the exception of AIN service software, we do not discern any copyright, patent, or trade secret implications to unbundling call-related databases. Thus, with the exception of AIN service software, we analyze call-related databases under the “impair” standard of section 251(d)(2)(B).

409. Because certain services created in the AIN platform and architecture are proprietary, we agree with Ameritech and BellSouth that if competitive LECs receive unbundled access to incumbent LECs’ AIN platforms, access to AIN service software should not be unbundled.⁷⁹⁸ Ameritech cites a new proprietary service, “Privacy Manager,” to illustrate why its AIN service software qualifies as a proprietary network element. Privacy Manager is derived from the SCE, and allows consumers to screen telemarketing calls.⁷⁹⁹ Ameritech asserts that Privacy Manager “includes several new and

⁷⁹⁶ Low Tech Comments at 14.

⁷⁹⁷ Id.

⁷⁹⁸ Ameritech Comments, Tab A, Joint Affidavit of Debra J. Aron/Robert G. Harris (Ameritech Aron & Harris Aff.) at 20 (citing Ameritech’s new service, “Privacy Manager,” as an example of AIN software the merits evaluation pursuant to the “necessary” standard of section 251(d)(2)(A)); BellSouth Comments at 80-81.

⁷⁹⁹ When a call is received and Caller ID cannot identify the caller because the number is “blocked,” “unavailable,” “out of the area,” or “private,” Privacy Manager intercepts the call before the telephone rings, and informs the caller that the number he or she has dialed does not accept calls from unidentified numbers. The caller is then prompted to say his or her name or the company he or she represents in order to complete the call. “If no name is given, the call is disconnected. If a name is given, the call rings

useful improvements” that are subject to patent protection, and are the subject of several pending patent applications.⁸⁰⁰ Ameritech adds that Privacy Manager is currently a trade secret because it has independent economic value, is not generally known by or readily discernable to Ameritech’s competitors, and has been the subject of reasonable security measures.⁸⁰¹ We agree with Ameritech that services such as Privacy Manager qualify as “proprietary” treatment. We also agree that software services such as Privacy Manager are new and innovative products used to differentiate the incumbent LECs’ service offering. As such, they should be evaluated under the “necessary” standard of section 251(d)(2)(A).⁸⁰²

(iii) Unbundling Analysis for Call-Related Databases

(a) The “Impair” Standard

410. Consistent with our framework for unbundling set forth above, we find that lack of access to call-related databases on an unbundled basis would materially impair the ability of a requesting carrier to provide the services it seeks to offer in the local telecommunications market.⁸⁰³ In particular, we are persuaded that there are no alternatives of comparable quality and ubiquity available to requesting carriers, as a practical, economic, and operational matter, for the incumbent LECs’ call-related databases. Thus, we require incumbent LECs to provide non discriminatory access to their call-related databases, including, but not limited to, the CNAM Database, the 911 Database, the LIDB, Toll Free Calling Database, AIN databases, and downstream number portability databases, by means of physical access at the signaling transfer point linked to the unbundled databases. Incumbent LECs must allow requesting carriers that have purchased an incumbent LEC’s local switching capability to use the incumbent LEC’s service control point element in the same manner, and via the same signaling links, as the incumbent LEC itself. An incumbent LEC must allow a requesting carrier that has deployed its own switch and has linked that switch to an incumbent LEC’s signaling system to gain access to the incumbent LEC’s service control point in a manner that allows the requesting carrier to provide any call-related database-supported services to customers served by the requesting carrier’s switch.

through, and the recorded name is played to the called party.” The called party is given the option of accepting the call, declining the call or refusing a sales call.” Letter from John T. Lenahan, Assistant General Counsel, Ameritech, to Magalie Roman Salas, Secretary, Federal Communications Commission, CC Docket 96-98, Proprietary Network Elements Attachment at 4-5 (filed July 30, 1999) (Ameritech July 30, 1999 *Ex Parte*).

⁸⁰⁰ *Id.*

⁸⁰¹ *Id.* at 5-6.

⁸⁰² We note that BellSouth states that it has invested heavily in internally developing proprietary applications software that runs on its AIN platform, and that it has received patents on many of its developments. BellSouth Comments at 80.

⁸⁰³ *See supra* Section (IV)(B)(4) (discussing the “impair” standard of section 251(d)(2)(B)).

411. We note that our analysis of call-related databases is intertwined with our analysis of signaling, because signaling is necessary to obtain access to certain call-related databases.⁸⁰⁴ Thus, our decision to unbundle the signaling network leads us to unbundle call-related databases as well.⁸⁰⁵ We believe that access to call-related databases, such as the LIDB, Toll Free calling, CNAM and Number Portability databases, encourages efficient network architecture deployment and promotes the ability of new entrants and established competitors to provide service in the local exchange market.⁸⁰⁶ We also agree with commenters that access to the incumbent LECs' call-related databases is critical to permitting the seamless routing and completion of traffic both among competitors and between competitors and the incumbent LEC.⁸⁰⁷

412. With respect to AIN specifically, the Commission found in the *Local Competition First Report and Order* that requesting carriers need equivalent access to the incumbent LECs' SMSs to populate their own information in call-related databases. The Commission explained that information bound for many call-related databases is entered into an SMS that then downloads the information to the databases for real-time use on the network.⁸⁰⁸ To ensure efficient access to the incumbent LECs' databases, we affirm that incumbent LECs must provide a requesting telecommunications carrier with the information necessary to enter correctly, or format for entry, the information relevant for input into the incumbent LECs' SMS. The Commission also found in the *Local Competition First Report and Order*, that it is technically feasible to access the SMS, through the SCE, to deploy AIN services.⁸⁰⁹ There is no evidence in this record to suggest otherwise, and we therefore affirm the finding in the *Local Competition First Report and Order* that incumbent LECs must provide a requesting carrier the same access to design, create, test, and deploy AIN-based services at the SMS, through a SCE, that the incumbent LEC provides to itself. Incumbent LECs must also provide requesting carriers with access to call-related databases and access to the SMS in a manner that complies with the privacy requirements in section 222 of the Act.⁸¹⁰

413. As we further found in the *Local Competition First Report and Order*, access to the incumbent LECs' SCPs, SMS and SCE for the creation and deployment of AIN services may require incumbent LECs and requesting carriers to develop measures to

⁸⁰⁴ See, e.g., Allegiance Comments at 20 ("In particular, the 800 database, local number portability database, and AIN platform are inherently related to the signaling network.").

⁸⁰⁵ Similarly, if we had initially concluded that call-related databases must be unbundled, we would have been led to unbundle signaling networks.

⁸⁰⁶ See also Cable & Wireless Comments at 38; Net 2000 Comments at 15.

⁸⁰⁷ Qwest Comments at 82.

⁸⁰⁸ *Local Competition First Report and Order*, 11 FCC Rcd. at 15746, para. 494.

⁸⁰⁹ *Id.* at 15747-48, para. 495.

⁸¹⁰ 47 U.S.C. § 222.

protect the incumbent LECs' facilities and data.⁸¹¹ We continue to believe that there may be mediation issues that need to be addressed before a competing carrier obtains access to these databases. Accordingly, if parties are unable to agree to appropriate mediation mechanisms through negotiations, we conclude that during arbitration of such issues, state commissions (or the Commission acting pursuant to section 252(e)(5)) must consider whether such mediation is necessary, and if so, whether it will protect adequately against intentional or unintentional misuse of the incumbent LEC's AN facilities.

414. SBC argues that requesting carriers have access to alternative call-related databases to store their data in any LIDB in the nation.⁸¹² Similarly, BellSouth and GTE claim that requesting carriers can obtain call-related database capabilities from alternative sources.⁸¹³ Despite these assertions, we find that as with signaling networks, requesting carriers are impaired without unbundled access to incumbent LECs call-related databases pursuant to section 251(d)(2).

415. Cost and Quality. Several commenters argue that it would be costly for requesting carriers to replicate the incumbent LECs' call-related databases, or obtain call-related database services from alternative vendors.⁸¹⁴ MediaOne submitted data to support these claims for the LIDB and CNAM databases.⁸¹⁵ Other commenters, however, generally have not submitted sufficient cost data in the record to support their claims that it would be extremely costly to replicate the incumbent LECs' call-related databases, or obtain call-related database services from alternative providers. Based on the record before us, we find that the cost incurred by a requesting carrier to self-provision or use alternative databases does not appear to materially diminish the carrier's ability to provide the services it seeks to offer.

416. We conclude that unbundled access to incumbent LECs' call-related databases is required in some instances for requesting carriers to offer the telecommunications services they seek to provide. For example, in some cases, access to

⁸¹¹ *Local Competition First Report and Order*, 11 FCC Rcd at 15743-44, 15748, paras. 488, 496.

⁸¹² SBC Comments at 44.

⁸¹³ BellSouth Comments at 76; GTE Comments, Appendix B at 47-51. GTE cites third party providers of call related databases including, Illuminet, SNET, GTE Intelligent Network Services, and Revcom. GTE Comments, Appendix B at 48-49.

⁸¹⁴ *See, e.g.*, CompTel Comments at 44; CoreComm Comments at 30; KMC Comments at 16-17; MediaOne Comments at 12-13, 15-16; Qwest Comments at 83.

⁸¹⁵ MediaOne Comments at 12-13 (stating that MediaOne asked three alternative providers for quotes for LIDB validation, and the providers submitted prices ranging from 5 cents to 10 cents per transaction, compared to an average of .034 cents per transaction for incumbent LECs). MediaOne also stated that "BellSouth proposed to charge MediaOne a rate of 1 cent per query for access to its CNAM database in Florida, but only charges about 5 cents per line per month in Georgia. This means that with an average subscriber receiving approximately 225 calls per month, the Florida rate works out to \$2.25 per line per month, or 45 times the Georgia rate." *Id.* at 15.

incumbent LEC databases is the only practical way to ensure proper call flow.⁸¹⁶ Specifically, incumbent LECs are the only providers of CNAM database information.⁸¹⁷ Incumbent LECs' CNAM databases provide information about customers of both requesting carriers and incumbent LECs.⁸¹⁸ Therefore, in order for a switch-based competitor to provide caller ID to its customers, it must have access to the incumbent LEC's CNAM database. Such access is critical, especially because a majority of calls to a competitor's customers originate from the incumbent.

417. Goals of the Act. Requiring incumbent LECs to provide access to call-related databases, including access to the AIN databases, will foster investment and innovation in the local telecommunications marketplace. Requesting carriers require access to call-related databases and AIN databases to provide the services they seek to offer in the local telecommunications market. Requesting carriers also require access to the AIN platform and architecture, so that they may have the opportunity to devise innovative AIN services that will spur competition and benefit consumers through greater choices of telecommunications services.⁸¹⁹

(b) The "Necessary" Standard

418. As discussed above, we find that AIN service software qualifies as a proprietary network element, and therefore, should be analyzed under the "necessary" standard. Our interpretation of the "necessary" standard requires the Commission to

⁸¹⁶ See Cox Comments at 35. Cox notes that access to incumbent LEC call related databases is necessary to ensure proper call flow when an incumbent LEC customer is using call forwarding features. *Id.*

⁸¹⁷ See Cox Comments at 36 (Cox notes that "ILEC CNAM databases give access to information about both the ILEC subscribers and subscribers of other local exchange carriers that choose to store this information in the CNAM database. In Cox's experience, third party vendors do not have access to this information, with the result that customers simply do not receive the caller name information they expect."); MediaOne Comments at 15-16; Letter from MediaOne, to Jake E. Jennings, Federal Communications Commission, CC Docket No. 96-98 (filed August 11, 1999) (MediaOne August 11, 1999 *Ex Parte*) ("While others can provide access to the ILECs' CNAM databases, only the ILECs have a database with their customers' names."). *But see* SBC Comments at 44 (stating that "CLECs that provide their own switches also do not need access to SBC's Line Information databases at TELRIC prices. Switch-based CLECs can readily store their data in any Line Information (LIDB) or Name Information (CNAM) database in the nation.").

⁸¹⁸ See Cox Comments at 36.

⁸¹⁹ See, e.g., Iowa Comments at 8 (stating that "service management systems are integrally related to signaling networks and call related databases," and noting that the failure to unbundle service management systems would eliminate a competitor's ability to provide service); Allegiance Comments at 20-21 ("Because AIN is a service platform that incumbent LECs use to build their own services, CLECs cannot offer comparable services without access to AIN capabilities."); KMC Comments at 17 (stating that access to the SMS is "necessary for competitors to effectively use call related databases."); MCI WorldCom Comments at Tab 6, Decl. of Bernard Ku, at para. 8 ("CLEC access to AIN databases, ILEC Service Creation Environment, and Service Management System is critical if the CLECs are to develop and deploy new and innovative services. These services require interoperability; and one critical aspect of this testing, field deployment testing, cannot be duplicated outside the ILEC AIN environment.").

determine whether, after taking into consideration alternatives outside the incumbent's network, lack of access to that element would, as a practical, economic, and operational matter, preclude the requesting carrier from providing the services it seeks to offer.

419. We agree with Ameritech that unbundling AIN service software such as "Privacy Manager" is not "necessary" within the meaning of the standard in section 251(d)(2)(A). In particular, a requesting carrier does not need to use an incumbent LEC's AIN service software to design, test, and implement a similar service of its own.⁸²⁰ Because we are unbundling the incumbent LECs' AIN databases, SCE, SMS, and STPs, requesting carriers that provision their own switches or purchase unbundled switching from the incumbent will be able to use these databases to create their own AIN software solutions to provide services similar to Ameritech's "Privacy Manager." They therefore would not be precluded from providing service without access to it. Thus, we agree with Ameritech and BellSouth that AIN service software should not be unbundled.⁸²¹

420. We believe that excluding AIN service software, such as "Privacy Manager," from the unbundling requirements of section 251(d)(2), will protect incentives for the incumbent LEC to invest and deploy new and innovate services. We also believe that such protection, in conjunction with our decision to unbundle the AIN platform and architecture, will promote innovation and deployment of new services by requesting carriers.

G. Operations Support Systems

1. Background

421. In the *Local Competition First Report and Order*, the Commission concluded that incumbent LECs must provide access to operations support systems (OSS) functions on an unbundled basis to requesting carriers.⁸²² The Commission also required incumbent LECs to make modifications to their OSS as necessary in order to offer nondiscriminatory access to these functions, including access to interface design systems.⁸²³ Specifically, the Commission determined in the *Local Competition First Report and Order* that the provision of access to OSS functions and the information they contain is integral to the ability of competing carriers to enter the local exchange

⁸²⁰ Ameritech Comments at 128.

⁸²¹ Ameritech Aron & Harris Aff. at 20; BellSouth Comments at 80.

⁸²² *Local Competition First Report and Order*, 11 FCC Rcd at 15763-68, paras. 516-28. OSS are composed of various "back office" systems, databases and personnel that an incumbent LEC uses to commercially provision telecommunications service to its customers, resellers, and the purchasers of unbundled network elements. *Id.* at 15766-67, para. 523.

⁸²³ *Id.* at 15767-68, paras. 524-25. The Commission affirmed these obligations in the *Local Competition Second Reconsideration Order*, 11 FCC Rcd at 19740-45, paras. 5-12. The interface design system is an electronic gateway used to electronically access OSS information such as telephone number, address validation, order receipt notice, etc.

market.⁸²⁴ The Commission further concluded that a requesting carrier that lacks access to the incumbent's OSS "will be severely disadvantaged, if not precluded altogether, from fairly competing."⁸²⁵ In *Iowa Utils. Bd.*, the Supreme Court expressly affirmed the Eighth Circuit's holding that the Commission's designation of operations support systems as a network element was an "eminently reasonable" interpretation of the 1996 Act.⁸²⁶

422. In the *Notice*, we sought comment on the application of the "necessary" and "impair" standards to previously identified unbundled network elements, including OSS.⁸²⁷ The *Notice* also requested comment on whether the Commission should modify the definition of OSS.

423. All commenters to this proceeding agree that OSS qualifies as an unbundled network element.⁸²⁸ Incumbent LECs, however, argue that the Commission should limit access to OSS functions to those instances when a requesting carrier purchases another network element, an interconnection offering, or resold services from the incumbent LEC.⁸²⁹ Competitors, on the other hand, argue that OSS qualifies as an independent unbundled network element and therefore is not subject to any such limitations.⁸³⁰ Additionally, they argue that an incumbent LEC's duty to provide unbundled access to OSS includes an obligation to provide loop qualification information.⁸³¹ ALTS requests

⁸²⁴ *Local Competition First Report and Order*, 11 FCC Rcd at 15763-64, para. 518; *Local Competition Second Reconsideration Order*, 11 FCC Rcd at 19741-43, paras. 6-10.

⁸²⁵ *Local Competition First Report and Order*, 11 FCC Rcd at 15763-64, paras. 516-518.

⁸²⁶ *Iowa Utils. Bd.*, 119 S. Ct. at 733-34.

⁸²⁷ *Notice* at para. 33.

⁸²⁸ *See, e.g.*, California PUC Comments at 5 (stating that OSS is "where the rubber meets the road" in developing a competitive market); Cox Comments at 31 (stating that the inability to access incumbent LEC OSS functionalities would have a "devastating" effect on competitive LECs); Qwest Comments at 84 (stating that lack of access to incumbent LEC's OSS would drastically increase costs and delays of competitors); Pilgrim Reply Comments at 8 (stating that a broad array of incumbent LEC OSS functionalities are required to provide virtually any competitive telecommunications service).

⁸²⁹ *See, e.g.*, GTE Comments at 71 (competitive LECs may have access to OSS when reselling incumbent LEC service or purchasing unbundled incumbent LEC elements, but retail use of incumbent OSS by competitors should not be required); SBC Comments at 56-57 (incumbent LECs need not provide OSS functions to a competitive LEC to enable that competitive LEC to obtain a service of facility from a non-incumbent LEC source); U S WEST Comments at 41 (incumbent LECs are only required to provide unbundled OSS access to network elements that meet the necessary and impair standards).

⁸³⁰ *See, e.g.*, MCI WorldCom Reply Comments at 62.

⁸³¹ *See, e.g.*, ALTS Comments at 60-61; Covad Comments at 53-54; Prism Comments at 22-23; Rhythms Comments at 22-24.

that the Commission require incumbent LECs to provide access to OSS functions for carrier-to-carrier transactions.⁸³²

2. Discussion

424. We find that requesting carriers are impaired without access to the incumbent LEC's OSS as an unbundled network element. The record demonstrates that, in general, lack of access to OSS as an unbundled network element materially diminishes a requesting carrier's ability to provide the services it seeks to offer. We also clarify that the definition of OSS includes access to loop qualification information. Finally, we reject the incumbent LECs' proposal to limit access to OSS to situations where the requesting carrier is ordering other unbundled network elements or resold services.

a. Definition of OSS

425. In the *Local Competition First Report and Order*, the Commission defined OSS as consisting of pre-ordering, ordering, provisioning, maintenance and repair, and billing functions supported by an incumbent LEC's databases and information.⁸³³ OSS includes the manual, computerized, and automated systems, together with associated business processes and the up-to-date data maintained in those systems.⁸³⁴ Because of the varied, and largely non-standardized, development of incumbent LECs' OSS, the Commission identified certain functions needed by competitive carriers to deliver local exchange and exchange access services at the level expected by customers and state commissions. Specifically, the Commission identified the five functions of OSS that incumbent LECs must make available to competitors on an unbundled basis: pre-ordering, ordering, provisioning, repair and maintenance, and billing.⁸³⁵

426. We find no reason to modify our definition of OSS. The majority of commenters support the existing definition of OSS.⁸³⁶ A few parties request that we broaden the definition of OSS to include access to the incumbent LEC's electronic interface and gateways to enable the processing of orders without manual intervention.⁸³⁷

⁸³² Letter from Jonathan Askin, ALTS, to Magalie Roman Salas, Secretary, Federal Communications Commission, CC Docket No. 96-98 (filed July 30, 1999) (ALTS July 30, 1999 *Ex Parte*).

⁸³³ 47 C.F.R. § 51.319(f)(1).

⁸³⁴ MCI WorldCom Comments at 67-68. *See also Local Competition First Report and Order*, 11 FCC Rcd at 15763-64, paras. 517-18.

⁸³⁵ *Local Competition First Report and Order*, 11 FCC Rcd at 15764-66, paras. 518, 523. OSS are composed of varied systems, databases and personnel that an incumbent LEC uses to commercially provision telecommunications service to its customers, resellers and the purchasers of unbundled network elements.

⁸³⁶ AT&T Comments at 134; Cable & Wireless Comments at 39; CompTel Comments at 45; MediaOne Comments at 14.

⁸³⁷ *See, e.g.*, Covad Comments at 54.

Because these requests focus on the method by which competitors access incumbent LEC OSS, we believe that interface and gateway issues are already captured in the nondiscriminatory access requirements of the *Local Competition First Report and Order*.⁸³⁸ Accordingly, we find it unnecessary to modify our definition of OSS in this manner. We agree with ALTS, however, that the Commission should clarify that the pre-ordering function includes access to loop qualification information. Loop qualification information identifies the physical attributes of the loop plant (such as loop length, the presence of analog load coils and bridge taps, and the presence and type of Digital Loop Carrier) that enable carriers to determine whether the loop is capable of supporting xDSL and other advanced technologies.⁸³⁹ This information is needed by carriers seeking to provide advanced services over those loops through the use of packet switches and DSLAMs.⁸⁴⁰

427. We clarify that pursuant to our existing rules, an incumbent LEC must provide the requesting carrier with nondiscriminatory access to the same detailed information about the loop that is available to the incumbent, so that the requesting carrier can make an independent judgment about whether the loop is capable of supporting the advanced services equipment the requesting carrier intends to install. Based on these existing obligations, we conclude that, at a minimum, incumbent LECs must provide requesting carriers the same underlying information that the incumbent LEC has in any of its own databases or other internal records. For example, the incumbent LEC must provide to requesting carriers the following: (1) the composition of the loop material, including, but not limited to, fiber optics, copper; (2) the existence, location and type of any electronic or other equipment on the loop, including but not limited to, digital loop carrier or other remote concentration devices, feeder/distribution interfaces, bridge taps, load coils, pair-gain devices, disturbers in the same or adjacent binder groups; (3) the loop length, including the length and location of each type of transmission media; (4) the wire gauge(s) of the loop; and (5) the electrical parameters of the loop, which may determine the suitability of the loop for various technologies. Consistent with our nondiscriminatory access obligations, the incumbent LEC must provide loop qualification information based, for example, on an individual address or zip code of the end users in a particular wire center, NXX code, or on any other basis that the incumbent provides such information to itself.

428. In addition, we agree with Covad that an incumbent LEC should not be permitted to deny a requesting carrier access to loop qualification information for

⁸³⁸ *Local Competition First Report and Order*, 13 FCC Rcd at 15766-68, para. 523-28.

⁸³⁹ ALTS Comments at 60-61; Covad Comments at 53-54; Prism Communications Comments at 23. As described in Part (V)(A) *supra*, Digital Loop Carrier (DLC) systems digitally encode and aggregate, *i.e.* "multiplex", the traffic from subscribers' loops into DS1 signals or higher for more efficient transmission or more extended range than traditionally permitted by copper loops. The analog signals are carried from customer premises to a remote terminal (RT) where they are converted to digital, mixed with other signals, and carried, generally over fiber, to the LEC central office.

⁸⁴⁰ ALTS Comments at 60-61; Covad Comments at 53-54; Prism Comments at 23; Rhythms Comments at 22-24.

particular customers simply because the incumbent is not providing xDSL or other services from a particular end office.⁸⁴¹ We also agree with commenters that an incumbent must provide access to the underlying loop information and may not filter or digest such information to provide only that information that is useful in the provision of a particular type of xDSL that the incumbent chooses to offer.⁸⁴² For example, SBC provides ADSL service to its customers, which has a general limitation of use for loops less than 18,000 feet. In order to determine whether a particular loop is less than 18,000 feet, SBC has developed a database used by its retail representatives that indicates only whether the loop falls into a “green, yellow, or red” category.⁸⁴³ Under our nondiscrimination requirement, an incumbent LEC can not limit access to loop qualification information to such a “green, yellow, or red” indicator. Instead, the incumbent LEC must provide access to the underlying loop qualification information contained in its engineering records, plant records, and other back office systems so that requesting carriers can make their own judgments about whether those loops are suitable for the services the requesting carriers seek to offer. Otherwise, incumbent LECs would be able to discriminate against other xDSL technologies in favor of their own xDSL technology.

429. We disagree, however, with Covad’s unqualified request that the Commission require incumbent LECs to catalogue, inventory, and make available to competitors loop qualification information through automated OSS even when it has no such information available to itself.⁸⁴⁴ If an incumbent LEC has not compiled such information for itself, we do not require the incumbent to conduct a plant inventory and construct a database on behalf of requesting carriers. We find, however, that an incumbent LEC that has manual access to this sort of information for itself, or any affiliate, must also provide access to it to a requesting competitor on a non-discriminatory basis. In addition, we expect that incumbent LECs will be updating their electronic database for their own xDSL deployment and, to the extent their employees have access to the information in an electronic format, that same format should be made available to new entrants via an electronic interface.

430. We also clarify that under our existing rules, the relevant inquiry is not whether the retail arm of the incumbent has access to the underlying loop qualification information, but rather whether such information exists anywhere within the incumbent’s back office and can be accessed by any of the incumbent LEC’s personnel. Denying

⁸⁴¹ Covad Comments at 54.

⁸⁴² Letter from Michael Olsen, Deputy General Counsel, NorthPoint Communications, to Carol E. Matthey, Chief, Policy and Program Planning Division, Common Carrier Bureau, Federal Communications Commission, (filed August 19, 1999)(NorthPoint August 19, 1999 *Ex Parte*)

⁸⁴³ NorthPoint August 19, 1999 *Ex Parte*. See also Rhythms Comments at 23 (stating that incumbent LECs routinely provide competitor with a “yes” or “no” answer as to whether the incumbent believes a given loop is ADSL capable).

⁸⁴⁴ Covad Comments at 54.

competitors access to such information, where the incumbent (or an affiliate, if one exists) is able to obtain the relevant information for itself, will impede the efficient deployment of advanced services. To permit an incumbent LEC to preclude requesting carriers from obtaining information about the underlying capabilities of the loop plant in the same manner as the incumbent LEC's personnel would be contrary to the goals of the Act to promote innovation and deployment of new technologies by multiple parties.

431. Consistent with the framework we adopted in the *Local Competition First Report and Order*, we conclude that access to loop qualification information must be provided to competitors within the same time intervals it is provided to the incumbent LEC's retail operations. To the extent such information is not normally provided to the incumbent LEC's retail personnel, but can be obtained by contacting incumbent back office personnel, it must be provided to requesting carriers within the same time frame that any incumbent personnel are able to obtain such information. It would be unreasonable, for instance, if the requesting carrier had to wait several days to receive such information from the incumbent in the incumbent's personnel have the ability to obtain such information in several hours. In order to provide local exchange and exchange access service, a competitor needs such information quickly to be able to determine whether a particular loop will support xDSL service.

b. Proprietary Concerns Associated with OSS

432. The record does not indicate, nor do commenters argue, that OSS is proprietary. Moreover, we do not discern any copyright, patent, or trademark or trade secrecy implications to unbundling OSS. We therefore conclude that OSS should be evaluated under the "impair" standard.⁸⁴⁵

c. Unbundling Analysis for OSS

433. We conclude that lack of access to the incumbent LEC's OSS impairs the ability of requesting carriers to provide the services they seek to offer. The incumbents' OSS provides access to key information that is unavailable outside the incumbents' networks and is critical to the ability of other carriers to provide local exchange and exchange access service. We therefore require incumbent LECs to offer unbundled access to their OSS nationwide.

434. Commenters overwhelmingly agree that the unbundling of OSS satisfies the "impair" standard of section 251(d)(2).⁸⁴⁶ OSS is a precondition to accessing other unbundled network elements and resold services because competitors must utilize the

⁸⁴⁵ See ALTS Comments at 59.

⁸⁴⁶ See, e.g., California PUC Comments at 5-6; Florida PSC Comments at 7; Illinois Commission Comments at 6-7; ALTS Comments at 59-61; AT&T Comments at 134-35; CompTel Comments at 45-46; e.spire Joint Comments at 20-22; Focal Comments at 8; MCI WorldCom Comments at 67-70; MGC Comments at 27-28; Net2000 Comments at 16-17; Network Access Solutions Comments at 19; NEXTLINK Comments at 40-41; NorthPoint Comments at 20.

incumbent LEC's OSS to order all network elements and resold services.⁸⁴⁷ Thus, the success of local competition depends on the availability of access to the incumbent LEC's OSS.⁸⁴⁸ Without unbundled access to the incumbent LEC's OSS, competitors would not be able to provide their customers comparable, competitive service, and hence would have to operate at a material disadvantage.⁸⁴⁹ While we acknowledge that a competitive market is developing for OSS systems, these alternative providers do not provide substitutable alternatives to the incumbent LEC's OSS functionality.⁸⁵⁰ Alternative OSS vendors provide requesting carriers with an electronic interface that allow competitive LECs to access the incumbent LEC's OSS and internal customer care systems. These vendors cannot provide a sufficient substitute for the incumbent LEC's underlying OSS because incumbent LECs have access to exclusive information and functionalities needed to provide service (*e.g.*, customer service record information, provisioning of orders for unbundled network element and resold services, ability to initiate repairs for unbundled network elements and resold services, etc.).⁸⁵¹

435. We reject the incumbent LECs' arguments to limit the scope of a requesting carrier's access to the incumbent's OSS functions to situations where the competitor is ordering other unbundled network elements or resold services from the incumbent LEC.⁸⁵² We find such limitations to be discriminatory because access to the same information and support functions as the incumbent LEC is needed by requesting carriers to provide quality service over their own facilities. For example, the incumbent LEC has access to unique information about the customer's service, and a competitor's ability to provide service is materially diminished without access to that information. This is true

⁸⁴⁷ ALTS Comments at 58; AT&T Comments at 134; Covad Comments at 53; GTE Comments at 71; MCI WorldCom Comments at 68-69; Rhythms Comments at 21.

⁸⁴⁸ ALTS Comments at 58-60 (citing the *Local Competition First Report and Order*, 11 FCC Rcd at 15763-64, para. 518); AT&T Comments at 134-35.

⁸⁴⁹ Iowa Comments at 7; CompTel Comments at 45-46; Cox Comments at 30-31; e.spire/Intermedia Comments at 21-22; Focal Comments at 8; MediaOne Comments at 14; Qwest Comments at 84-85. *See also* AT&T Comments at 135; Level 3 Comments at 17; MCI WorldCom Comments at 69; RCN Comments at 18-19.

⁸⁵⁰ GTE Comments at 71 (stating that 19 OSS vendors—including Lucent, IBM, Ascend, and Nortel—market database systems and other products to perform all OSS functions)(citation omitted); US West Comments at 41-42 (stating that OSS vendors include Metasolv, Visionael, Remedy, Nortel, and Lucent).

⁸⁵¹ CompTel Comments at 45; Cox Comments at 31; MCI WorldCom, Tab 7, Decl. of John Sivori, at para. 5. *See also* AT&T Comments at 135.

⁸⁵² *See, e.g.*, SBC Comments at 56-57 (stating that incumbent LECs need not provide OSS functions to a competitive LEC to enable that competitive LEC to obtain a service or facility from a non-incumbent LEC source); GTE Comments at 71 (stating that competitive LECs may have access to OSS when reselling incumbent LEC service or purchasing unbundled incumbent LEC elements, but retail use of incumbent OSS by competitors should not be required); US West Comments at 41 (stating that incumbent LECs are only required to provide unbundled OSS access to network elements that meet the "necessary" and "impair" standards).

regardless of whether the competitor is providing service entirely through its own facilities, entirely over the incumbent's, or using some combination of the two. In particular, the full facilities-based competitor runs the risk of offering a lower quality service from the perspective of the end user if it does not know all the details of the customer's current service offering. As another example, carriers may also need to access the repair and maintenance function in the incumbent's OSS to submit trouble tickets for interconnection trunks.

436. We do not decide ALTS' request at this time that incumbent LECs provide access to OSS functions even when the incumbent is no longer the retail provider of local service to an end user.⁸⁵³ The record has not been sufficiently developed to establish how, absent access to incumbent LEC OSS, requesting LECs ability to provide the services they seek to offer would be materially diminished when the incumbent LEC is not involved in providing service to a retail customer. The most apparent example of this situation would be customer changeovers where competitive LECs are serving customers through resale of the incumbent's services or use of the incumbent's unbundled network elements. This appears to us to be an industry-wide issue. Thus, as a first step, we encourage the industry to develop guidelines and standards to facilitate the orderly transition of customers from one carrier to another. We note that any solution to this problem must adhere to the requirements of the Act, including the nondiscriminatory access requirements of section 251(c)(3) and the CPNI obligations of section 222.⁸⁵⁴

437. We reject commenters' proposal that the Commission establish and ensure that incumbent LECs meet OSS performance standards, both quantitative and qualitative, to demonstrate parity under the rules.⁸⁵⁵ Failure to satisfy these performance standards, according to MCI WorldCom, should automatically trigger a process to identify and correct the root cause of the OSS problem.⁸⁵⁶ We decline to adopt performance standards in this proceeding. The issue before us in this proceeding is whether OSS is subject to the unbundling obligations of section 251, not whether the Commission should establish performance standards and penalties to determine if an incumbent is providing nondiscriminatory access to its OSS functions. We note that the states have primary

⁸⁵³ ALTS July 30, 1999 *Ex Parte* (stating that, for example, if CLEC A takes a customer from CLEC B, CLEC A may need access to the ILEC's OSS where CLEC B had provisioned service to that customer using an unbundled loop. The loop would have to be disconnected from the ILEC's main distribution frame from CLEC B and reconnected to CLEC A. The timing of the loop cutover and issues of number portability require coordination).

⁸⁵⁴ For instance, the incumbent LEC must not discriminate in the provision of services necessary for customer changes. "Winback" is an example of a situation requiring such customer changes, where the incumbent LEC wins back a former customer from a competitor. The incumbent would be under a concomitant duty to perform customer changes for requesting carriers on a basis equal to that which it provides for itself.

⁸⁵⁵ CPI Comments at 30; MCI WorldCom Comments at 70; Media One Comments at 14; Prism Comments at 23.

⁸⁵⁶ MCI WorldCom Comments at 70, Tab 7, Decl. of John Sivori, at para. 8.

authority under section 252 for setting schedules and resolving disputes concerning access to OSS functions as unbundled network elements. In addition, in the *Second Order on Reconsideration*, the Commission did not preclude requesting carriers from bringing enforcement actions against incumbent LECs to the Commission for consideration.⁸⁵⁷ Thus, more appropriate forums exist for the resolution of specific allegations of noncompliance with our unbundling rules. Accordingly, we find it unnecessary, at this time, to modify our rules in the manner suggested.

H. Operator Services and Directory Assistance

1. Background

438. In the *Local Competition First Report and Order*, the Commission required incumbent LECs to provide unbundled access to their operator services and directory assistance (OS/DA). The Commission found that access to the systems supporting both operator call completion services and directory assistance was necessary, under section 251(d)(2)(A) for new entrants to provide competing local exchange service.⁸⁵⁸ The Commission also concluded that a competitor's ability to provide service would be significantly impaired, under section 251(d)(2)(B), if it did not have access to the incumbent LECs' operator call completion services and directory assistance.⁸⁵⁹ The Commission therefore required incumbent LECs to provide unbundled access to the databases used in the provision of both call completion services and directory assistance.⁸⁶⁰ In *Iowa Utils. Bd.*, the Supreme Court expressly affirmed the Eighth Circuit's holding that the Commission's designation of operator services and directory assistance as a network element was an "eminently reasonable" interpretation of the 1996 Act.⁸⁶¹

439. In the *Notice*, we sought comment on whether the definition of OS/DA should be modified and whether there are any proprietary concerns associated with OS/DA systems.⁸⁶² We also sought comment on whether OS/DA should remain an unbundled network element.⁸⁶³ We sought further comment on the implications of an incumbent LEC's obligations to provide OS/DA services under the nondiscriminatory

⁸⁵⁷ See *Local Competition Second Reconsideration Order*, 11 FCC Rcd at 19744, para. 11.

⁸⁵⁸ *Local Competition First Report and Order*, 11 FCC Rcd at 15774, para. 539.

⁸⁵⁹ *Id.* 11 FCC Rcd at 15774, para. 540.

⁸⁶⁰ *Id.* at 15773-74, para. 538.

⁸⁶¹ *Iowa Utils. Bd.*, 119 S. Ct. at 733-34.

⁸⁶² *Notice* at paras. 15, 34.

⁸⁶³ *Id.* at para. 33.

access provisions of section 251(b)(3) if those services are not provided by incumbent LECs as unbundled network elements under section 251(c)(3).⁸⁶⁴

440. Commenters generally support the existing definition of operator services and directory assistance and do not identify proprietary concerns associated with OS/DA systems. The majority of commenters, including competitive LECs, interexchange carriers, alternative OS/DA providers, and most state commissions, argue that incumbents should provide unbundled access to their OS/DA services.⁸⁶⁵ The incumbent LECs, MGC (a facilities-based competitive LEC), and the Ohio PUC note the general availability of third-party OS/DA alternatives as evidence of a wholesale market and argue that the Commission should not unbundle the incumbent LECs' OS/DA services.⁸⁶⁶

2. Discussion

441. We find that where incumbent LECs provide customized routing, lack of access to the incumbents' OS/DA service on an unbundled basis does not materially diminish a requesting carrier's ability to offer telecommunications service.⁸⁶⁷ The record provides significant evidence of a wholesale market in the provision of OS/DA services and opportunities for self-provisioning OS/DA services. Moreover, we do not find that the evidence regarding the differences in cost, timeliness, quality, interoperability and ubiquity between the incumbent's OS/DA service and alternative OS/DA services, provided either through self-provisioning or third-party alternatives, is sufficient to conclude that lack of unbundled access to the incumbent's OS/DA service would materially diminish a requesting carrier's ability to offer the services it seeks to provide. We note that nondiscriminatory access to the incumbent's underlying databases used in the provision of OS/DA is required under section 251(b)(3) of the 1996 Act. The additional nondiscrimination requirements of section 251(b)(3), coupled with evidence of multiple alternative providers of OS/DA service in the marketplace, provide strong

⁸⁶⁴ Notice at para. 42. Section 251(b)(3) imposes on each telecommunications carrier, including incumbent LECs, "the duty to provide dialing parity to competing providers of telephone exchange service and telephone toll service, and the duty to permit all such providers to have nondiscriminatory access to telephone numbers, operator services, directory assistance, and directory listing, with no unreasonable dialing delays." 47 U.S.C. § 251(b)(3).

⁸⁶⁵ See, e.g., Kentucky PSC Comments at para. 2; Allegiance Comments at 23-24; AT&T Comments at 126-134; AT&T Reply Comments at 136-42; Choice One Joint Comments at 20; CompTel Comments at 46-47; GSA Comments at 4-6.

⁸⁶⁶ Ohio PUC Comments at 11-13; Bell Atlantic Comments at 32-36; BellSouth Comments at 77-79; Cincinnati Bell Comments at 7; GTE Comments at 49-54; MGC Comments at 31; USTA UNE Report at IV-1 to 10.

⁸⁶⁷ Customized routing permits requesting carriers to designate the particular outgoing trunks associated with unbundled switching provided by the incumbent, which will carry certain classes of traffic originating from the requesting provider's customers. This feature would allow the requesting carrier to specify that OS/DA traffic from its customers be routed over designated trunks which terminate at the requesting carrier's OS/DA platform or a third party's OS/DA platform.

evidence that competitors are not impaired without access to the incumbent's OS/DA service as an unbundled network element.

442. Accordingly, incumbent LECs need not provide access to its OS/DA as an unbundled network element. All LECs, however, must continue to provide their competitors with nondiscriminatory access to their OS/DA, pursuant to section 251(b), as implemented by the Commission. We believe that this outcome best comports with the realities of a growing OS/DA marketplace, embraces a deregulatory approach where justified, and does not unduly confine the entry strategies of competitive carriers.

a. Definition of Operator Services and Directory Assistance

443. The Commission has defined operator services as "any automatic or live assistance to a consumer to arrange for billing or completion, or both, of a telephone call,"⁸⁶⁸ and has stated that directory assistance is a service that allows "subscribers to retrieve telephone numbers of other subscribers."⁸⁶⁹ In the *Local Competition Second Report and Order*, the Commission clarified that the nondiscriminatory requirements of section 251(b)(3) included the obligation of LECs to comply with the reasonable request of a competing provider to rebrand or unbrand its OS/DA services.⁸⁷⁰ We recently reaffirmed this holding in the *Directory Listing Information Order*, where we stated that to the extent technically feasible, a LEC must identify and rebrand the traffic it provides to its competitors.⁸⁷¹

444. We decline to expand the definition of OS/DA, as proposed by some commenters, to include an affirmative obligation to rebrand OS/DA⁸⁷² and to provide directory assistance listing updates in daily electronic batch files.⁸⁷³ We find such

⁸⁶⁸ *Local Competition Second Report and Order*, 11 FCC Rcd at 19448, para. 110 (citing 47 U.S.C. § 226(a)(7)). The Commission also concluded that busy line verification, emergency interrupt, and operator-assisted directory assistance are forms of "operator services." *Id.* at para. 110, citing 47 U.S.C. § 226(a)(7).

⁸⁶⁹ *Performance Measurements Notice*, 13 FCC Rcd at 12823, n.14.

⁸⁷⁰ *Local Competition Second Report and Order* at 19455, paras. 128-29 (operator services) and 19463, para. 148 (directory assistance); 47 C.F.R. § 51.217(d).

⁸⁷¹ *Implementation of the Telecommunications Act of 1996: Telecommunications Carriers' Use of Customer Proprietary Network Information and Other Customer Information, Implementation of the Local Competition Provisions of the Telecommunications Act of 1996, Provision of Directory Listing Information under the Telecommunications Act of 1934, As Amended*, CC Docket Nos. 96-115, 96-98, 99-273, Third Report and Order, Second Order on Reconsideration, and Notice of Proposed Rulemaking, FCC 99-227, paras. 141-148 (rel. September 9, 1999) (*Directory Listing Information Order*).

⁸⁷² See RCN Comments at 20 (stating that incumbent LECs should be required to rebrand OS/DA services for the requesting carrier).

⁸⁷³ See, e.g., AT&T Comments at 134; MCI WorldCom Comments at 71-74; MediaOne Comments at 13; Metro One Comments at 17-18.

modifications unnecessary because, as mentioned above, these obligations already exist under section 251(b)(3), and the relevant rules promulgated thereunder.

b. Proprietary Concerns Associated with OS/DA

445. With the exception of one commenter, no parties identify proprietary concerns associated with OS/DA, and we find none.⁸⁷⁴ Moreover, we do not discern any copyright, patent, or trademark or trade secrecy implications associated with OS/DA. Accordingly, we analyze incumbent LECs' obligations to provide unbundled access to its OS/DA under the "impair" standard.⁸⁷⁵

c. Unbundling Analysis

446. Consistent with the unbundling analysis set forth above, we conclude that where an incumbent LEC provides customized routing to the requesting carrier as part of the unbundled switching element, lack of access to the incumbent's OS/DA on an unbundled basis does not materially diminish a requesting carrier's ability to provide the services it seeks to offer. The record demonstrates that a variety of alternative providers of OS/DA offer services at comparable cost and quality to those of the incumbents. We agree with the incumbent LECs, MGC, and the Ohio PUC that the incumbents enjoy no material advantage obtaining the key inputs for OS/DA services.⁸⁷⁶ Certain commenters point to differences in cost and the amount of time required to implement services provided by these alternative sources to support their arguments that competing carriers are impaired without access to the incumbents' OS/DA services. The majority of these commenters, however, focus on the differences in the quality and accessibility of the information in the incumbent LECs' OS/DA databases relative to that available from

⁸⁷⁴ We note that while Metro One argues that directory assistance is not proprietary and should be unbundled, it identifies unpublished directory assistance listings as the only conceivably "proprietary" aspect of the incumbent LECs' OS/DA services. Metro One, however, does not describe the intellectual property concerns associated with unpublished listings and does not claim a need for unbundled access to unpublished listings under the "necessary" standard in section 251(d)(2)(A). Metro One simply states that incumbent LECs have refused to make unpublished listings available to requesting carriers, while they enjoy access to unpublished listings in the provision of directory assistance to their customers. Metro One Comments at 10-11. Metro One requests that in lieu of providing the "non-published" customer's name and address, the incumbent LEC provide the name of the customer without the telephone number or address with a notation that the listing is non-published. *Id.* We note that pursuant to rule 51.217(c)(3)(iii), however, LECs cannot provide access to unlisted telephone numbers or other information customers have asked a LEC not to make available. 47 C.F.R. § 51.217(c)(3)(iii). Conversely, section 251(c)(3) requires LECs to provide nondiscriminatory access to directory assistance. 47 U.S.C. § 251(c)(3). The Commission recently resolved any potential inconsistency by requiring a LEC to make available to requesting carriers the names and addresses of unlisted or unpublished subscriber information to the extent its own operators have access to this information. For example, if subscriber information is not available to the incumbent's operator, then no access need be given to the competitor. *See Directory Listing Information Order* at paras. 164-169.

⁸⁷⁵ *See, e.g.,* Cox Comments at 30 (stating that OS/DA are not proprietary, so they should be subject to the "impair" test).

⁸⁷⁶ Bell Atlantic Comments at 32-36; Cincinnati Bell Comments at 7; MGC Comments at 31; Ohio PUC Comments at 11-13.

third-party sources. As discussed more fully below, we find that these quality differences are addressed adequately by other sections of the Act.

447. Alternatives in the Marketplace. Competition in the provision of operator services and directory assistance has existed since divestiture.⁸⁷⁷ Such competition has accelerated in the directory assistance market as a result of the Supreme Court's decision to allow copying of carriers' white pages listings in their entirety.⁸⁷⁸ For example, according to SBC, more than 30 competitive LECs presently provide their own OS/DA services or resell the services of non-incumbent LECs.⁸⁷⁹ In Bell Atlantic's region, only 70 out of 400 interconnection agreements require Bell Atlantic to provide OS/DA as an unbundled network element.⁸⁸⁰ Thus, in more than 80% of Bell Atlantic's interconnection arrangements, competitive LECs have chosen to provide OS/DA for themselves or to obtain such service from wholesale providers. According to the Rural Telephone Coalition, rural incumbent LECs have obtained OS/DA services from outside sources for many years because they find third-party sources to be cost-effective.⁸⁸¹ In addition, Bell Atlantic reports that its wireless affiliate, Bell Atlantic Mobile, relies on a third-party OS/DA provider.⁸⁸² MGC advocates that OS/DA not be unbundled because, in its view, competitive LECs can purchase OS/DA from a number of vendors offering cost-effective nationwide alternatives to those of the incumbent LECs.⁸⁸³

448. Even requesting carriers advocating the unbundling of operator and directory assistance services acknowledge that there exists a substantial number of alternative providers of operator and directory assistance services. For example, AT&T, MCI WorldCom, and Sprint have already established national operator services via toll-free numbers.⁸⁸⁴ McLeod USA self-provisions nationwide directory assistance

⁸⁷⁷ See Cincinnati Bell Comments at 7 (attests that the market for OS/DA has been competitive for years because it has purchased OS/DA services from competitive providers for that long); USTA UNE Report at IV-1.

⁸⁷⁸ *Feist v. Rural Telephone Service Co.*, 499 U.S. 340, 111 S. Ct. 1282 (1991).

⁸⁷⁹ SBC Reply Comments at 22. See also Cincinnati Bell Comments at 7 (reports awareness of 17 competitive providers of operator services and 13 directory assistance providers).

⁸⁸⁰ Bell Atlantic Comments at 32. Bell Atlantic also asserts that there is an over-capacity in the OS/DA market that has resulted in an increased competitiveness within the market, a trend it expects to continue for the next two to three years. *Id.* at 32-33.

⁸⁸¹ Rural Telephone Coalition Comments at 10-11. See also Cincinnati Bell Comments at 7.

⁸⁸² Bell Atlantic Comments at 34 (stating that InfoNXX provides OS/DA services for a variety of telecommunications service providers, including Bell Atlantic's wireless subscribers).

⁸⁸³ MGC Comments at 31. MGC, however, currently purchases OS/DA services from the incumbent LECs. Letter from Scott A. Sarem, Assistant Vice President, Regulatory, MGC, to Christopher Libertelli, Common Carrier Bureau, Policy Division, Federal Communications Commission, CC Docket Nos. 96-98, 95-185 (filed August 12, 1999).

⁸⁸⁴ See Bell Atlantic Comments at 33. Bell Atlantic also points out that MCI WorldCom,

service.⁸⁸⁵ Metro One provides OS/DA services to ALLTEL and GST Telecom.⁸⁸⁶ Cox and Omnipoint obtain OS/DA service from Teltrust, and WinStar obtains these services from Frontier.⁸⁸⁷ Requesting carriers may also obtain OS/DA services and directory listings from numerous wholesale providers, including CenturyTel Telecommunications, Clifton Forge, Consolidated Communications, Excell, Experian's TEC Group, Frontier, HebCom, InfoNXX, Metro One, Quest411 and Teltrust.⁸⁸⁸

449. It appears that this increasing availability of competitive OS/DA providers coincides with a decrease in incumbent LEC OS/DA call volumes. Evidence in the record indicates that call volumes to incumbent OS/DA services have declined steadily over the past few years. For example, SBC claims directory assistance call volumes have decreased almost 30 percent since 1995, and SBC operator-assisted calls have dropped by over 50 percent during the same period.⁸⁸⁹ Similarly, BellSouth's operator-assisted call volumes have declined over 60 percent in the past eight years.⁸⁹⁰ According to Bell Atlantic, it lost greater than 67 percent of its wholesale directory assistance calls between 1994 and 1998.⁸⁹¹ In fact, Bell Atlantic claims that interexchange carriers accounted for over 68% of the operator services market in 1998 and represented 72% of the wholesale operator services market by 1997.⁸⁹² This trend, combined with the number of alternative operator services and directory assistance providers outside the incumbent LECs' networks, strongly suggests that requesting carriers are not impaired without access to the incumbent LECs' OS/DA service. Significantly, we find that the existence of multiple alternative providers of OS/DA service in the marketplace, coupled with evidence of competitors' decreasing reliance on incumbent OS/DA services, demonstrates that requesting carriers' ability to provide the services it seeks to offer is not materially diminished without access to the incumbent's OS/DA service on an unbundled basis.

AT&T and Sprint offer operator services and directory assistance as both wholesale and retail services. *Id.*

⁸⁸⁵ USTA UNE Report IV-9.

⁸⁸⁶ *Id.* at IV-2, 5.

⁸⁸⁷ *Id.* at IV-2, 5 (citation omitted).

⁸⁸⁸ See Bell Atlantic Comments at Ex. 4. In addition, various Internet sites provide national directory listings at no charge, including Alta Vista People Search, At Hand, Big Yellow, Bigbook, 555-1212.com, InfoSpace, InfoUSA, Switchboard.com, Smartpages, WhoWhere People Finder, Worldpages, Yahoo! People Finder, and Zip2. See USTA UNE Report at IV-1 to 6.

⁸⁸⁹ SBC Comments at 64.

⁸⁹⁰ USTA UNE Report at IV-6.

⁸⁹¹ Bell Atlantic Comments at 34-35. See also USTA UNE Report at IV-6 (citing that Bell Atlantic lost approximately 60 percent of its wholesale DA calls between 1994 and 1997).

⁸⁹² Bell Atlantic Comments at 33 (citation omitted).

450. Cost. In light of the significant evidence of multiple third-party providers of OS/DA, we find unpersuasive assertions that replication of OS/DA service facilities and functionalities would involve substantial and material cost and would delay competitive entry into the local market.⁸⁹³ The costs associated with self-provisioning OS/DA include: (1) the cost of the facility, including employees, real estate, computers,⁸⁹⁴ (2) the cost of transporting traffic to the facilities; and (3) the cost of obtaining the underlying subscriber information contained in OS/DA databases.⁸⁹⁵ We acknowledge that, in some situations, depending on the type of OS/DA service a requesting carrier seeks to provide, OS/DA service may be more expensive if it is purchased from third-party providers than it would be if purchased from the incumbent. We find, however, that such differences will not materially diminish a requesting carrier's ability to provide local exchange or exchange access service.

451. We are unpersuaded by Cox's argument that OS/DA service should be unbundled because incumbents enjoy economies of scale and scope that greatly reduce the cost of providing these services to their own customers.⁸⁹⁶ In light of the number of alternative providers currently providing OS/DA service and the competitive market that is developing for long distance transport, we find this argument unconvincing. We also find that incumbents do not have any particular advantage in obtaining the facilities needed to create a call center, including employees, real estate and computers.⁸⁹⁷ In addition, unlike many other network elements, such as switching or transport, the ability to provide a nationwide OS/DA service does not require large amounts of sunk and fixed costs in facilities that must be deployed ubiquitously in order to serve a broad customer base. Rather, a requesting carrier can establish one call center or a few regional centers to which it can transport all of the calls on its network and provide OS/DA service nationwide.⁸⁹⁸ Moreover, we believe that a competitive LEC or a group of competitive LECs can achieve economies of scale by aggregating demand for OS/DA services over various regions by processing them through a single call center. Unlike the self-provisioning of switches, or other such network elements, self-provisioning a single OS/DA platform would not require the competitive carrier to deploy equipment throughout the network to ubiquitously serve its customers.

⁸⁹³ See, e.g., CompTel Comments at 46-47.

⁸⁹⁴ By use of the term "facility," we refer to the real estate, employees, and computers used in the provision of OS/DA call centers.

⁸⁹⁵ See, e.g., USTA UNE Report at IV-9 to 10.

⁸⁹⁶ Cox Comments at 32.

⁸⁹⁷ See, e.g., Bell Atlantic Comments 35-36; GTE Comments at 53; USTA UNE Report at IV-9 to 10.

⁸⁹⁸ We note that whether the requesting carrier is purchasing OS/DA from a third-party provider or the incumbent LEC, the costs would include the cost of the underlying subscriber information contained in the OS/DA databases (which is generally subject to various pricing schemes and includes the cost of the facilities) and the cost of transport to the OS/DA call center.

452. Certain competitive LECs assert that purchasing long-haul DS1 facilities to alternative OS/DA call centers is more expensive than purchasing local loops to access OS/DA services provided by incumbent LECs.⁸⁹⁹ In particular, Time Warner claims that special access rates to trunk its OS/DA calls to a vendor's national call center are approximately \$500,000 a year.⁹⁰⁰ MediaOne estimates that remote long-haul facilities cost \$1500-\$2000 per month for a DS1 compared to local loops provisioned by the incumbent LEC for about \$500 per month.⁹⁰¹

453. While, on its face, the disparity between transport costs to carry OS/DA traffic between the competitor's switch and a self-provisioned call center appears significant, it does not persuade us that transport costs associated with self-provisioning or purchasing OS/DA from third-party vendors materially diminishes the ability of requesting carriers to provide local exchange service. The record reveals a number of alternative OS/DA providers with multiple call centers located throughout the country. For example, HebCom operates five regional call centers, Excell operates six regional call centers and InfoNXX operates four.⁹⁰² Teltrust operates a national OS/DA service with several call centers.⁹⁰³ The availability of multiple locations of alternative providers, both regional and national, allows competitors to choose a service that will be most cost-efficient, depending on the area in which it provides service. It is not clear from the record whether Time Warner considered the availability of these regional solutions to its OS/DA needs when making its initial decision to transport calls.⁹⁰⁴ Additionally, the incumbent LEC itself often maintains regional call centers that are outside the local calling area of a particular call center. Bell Atlantic, for example, offers directory assistance for most of New England (Rhode Island, Vermont, New Hampshire, Maine and western Massachusetts) out of its Providence, RI, Burlington, VT and Portland, ME offices, with all calls routed through a switch in Manchester, NH.⁹⁰⁵ In such cases, the incumbent may also incur long-haul transport costs to trunk its OS/DA traffic to the call center.

⁸⁹⁹ MediaOne Comments at 13.

⁹⁰⁰ Time Warner states that it migrated to the incumbent LEC's OS/DA services, in part, to reduce transport expenses. Time Warner July 15, 1999 *Ex Parte*, Attachment at 1.

⁹⁰¹ *See, e.g.*, MediaOne Comments at 12-13.

⁹⁰² USTA UNE Report at IV-9 to 10. *See also* Letter from John T. Lenahan, Assistant General Counsel, Ameritech, to Magalie Roman Salas, Secretary, Federal Communications Commission, CC Docket No. 96-98, at 2 (filed July 30, 1999) (Ameritech July 30 *Ex Parte*).

⁹⁰³ Teltrust Comments at 3-4.

⁹⁰⁴ *See, e.g.*, Ameritech July 30, 1999 *Ex Parte* at 2-3.

⁹⁰⁵ Letter from Dee May, Director Federal Regulatory Affairs, Bell Atlantic, to Magalie Roman Salas, Secretary, Federal Communications Commission, CC Docket No. 96-98, Attachments (filed August 30, 1999).

454. Regardless of the OS/DA provider, the cost of transporting traffic to the call center is factored into the overall price of OS/DA services. Where a competitive LEC obtains OS/DA services from an incumbent LEC, even at cost-based rates, the incumbent charges the competitive LEC for transport, either separately or as part of the total cost for OS/DA service. Similarly, where a competitive LEC obtains OS/DA from an alternative OS/DA provider, the carrier or OS/DA provider must pay for transport to the call center. It is notable that rural incumbent LECs, which arguably have to haul traffic the furthest, find third-party OS/DA sources cost-effective.⁹⁰⁶ The fact that rural LECs and a significant number of competitive LECs and interexchange carriers presently either self-provision these services or rely on wholesale providers for their OS/DA services constitutes substantial evidence that the cost of transport does not materially diminish the ability to provide service.

455. Because OS/DA databases are available on a value added and nondiscriminatory basis under section 251(b)(3) of the Act, a competing carrier need only provide transport to an incumbent's LEC's database. We acknowledge that self-provisioning OS/DA service may require competing carriers to incur substantial start-up costs that may represent a high percentage of overall expenses until call volumes and customer penetration levels rise.⁹⁰⁷ We find, however that the costs of self-provisioning OS/DA do not impair a requesting carrier's ability to provide service because in addition to self-provisioning, there are multiple alternatives available in the market.⁹⁰⁸ In addition, regional or nationwide OS/DA call centers enable competitive carriers to aggregate call volume to reach sufficient economies of scale. We note too that carriers are not limited to self-provisioning. Carriers may choose instead to use alternative OS/DA providers, reducing the fixed costs of provisioning OS/DA services. Moreover, competitive carriers who wish to obtain OS/DA from the incumbent may do so consistent with the incumbent LEC's nondiscriminatory access obligations under section 251(b)(3).⁹⁰⁹

456. Quality. We find that the functionality of third-party supplied OS/DA is sufficiently equivalent to that of the incumbent's services such that a requesting carrier's ability to provide the services it seeks to offer is not impaired without access to the incumbent's OS/DA service. Although we acknowledge that differences in quality may exist, we find that, in light of the full scope of OS/DA options available to requesting carriers, the differences identified in this proceeding do not materially diminish a requesting carrier's ability to offer local exchange or exchange access service.

⁹⁰⁶ See Rural Telephone Coalition Comments at 10-11

⁹⁰⁷ See Qwest Reply Comments at 83-85.

⁹⁰⁸ See *supra* Section (IV)(B)(4).

⁹⁰⁹ Section 251(b)(3) requires incumbent LECs to "provide dialing parity to competing providers of telephone exchange service and telephone toll service, and the duty to permit all such providers to have nondiscriminatory access to telephone numbers, operator service, directory assistance, and directory listing, with no unreasonable dialing delays." 47 U.S.C. § 251(b)(3).

457. Specifically, we find that lack of unbundled OS/DA service from the incumbent LEC does not materially diminish the ability of requesting carriers to provide the service they seek to offer; several carriers have successfully self-provisioned OS/DA, while other carriers rely upon alternative providers of OS/DA services. Requesting carriers, however, complain that the alternative sources for operator services and directory assistance are inferior because the information provided to customers is not as complete, and is not updated as frequently, as incumbent LEC databases.⁹¹⁰ According to several commenters, incumbent LECs update their directory listing databases daily, and often on a real-time basis, as they complete service order processes.⁹¹¹ In contrast, alternative providers may obtain their data from sources such as yellow pages databases, scanned white page listings, postal service change of address forms, motor vehicle registration records, and voter registration records, which are not updated as often.⁹¹² Requesting carriers, however, have the ability, under section 251(b)(3), to obtain nondiscriminatory access to the incumbent LEC's, or any other competing LEC's, databases used in the provision of OS/DA.⁹¹³ Where competitive LECs may obtain OS/DA information and services, directly or indirectly, from incumbent LEC sources, we do not find cognizable differences in the quality of that information or services. The record indicates that carriers that are entitled to access to incumbent LEC database information and updates, such as competitive LECs and interexchange carriers like MCI WorldCom, Sprint and AT&T, offer directory assistance on a wholesale basis to other competitive LECs.⁹¹⁴ Additionally, we note that third-party OS/DA providers are often able to purchase incumbent LEC OS/DA database information and updates.⁹¹⁵ We are therefore not

⁹¹⁰ See, e.g., AT&T Comments at 130; Allegiance Comments at 23; Cox Comments at 33; MCI WorldCom Comments at 72; MediaOne Comments at 12; Metro One Comments at 3-4.

⁹¹¹ AT&T Comments at 130; AT&T Reply Comments at 140-141. See also Cox Comments at 33.

⁹¹² AT&T Comments at 130-131; Metro One Comments at 3-4. See also Cox Comments at 33.

⁹¹³ Teltrust asserts that it has been unable to obtain nondiscriminatory access to incumbent LEC database information because it is not a telecommunications carrier. Teltrust claims that there are compelling reasons why alternative OS/DA providers are currently precluded from competing effectively against incumbent LECs, including blocked access to incumbent LEC databases and high tariff rates. Teltrust urges the Commission to clarify our access obligations to require incumbent LECs to make their OS/DA databases available to third parties that provide OS/DA as outsourced functions for requesting telecommunications carriers. Teltrust Comments at 9. We do not have a full record on this issue in this docket and therefore decline to address Teltrust's arguments at this time. We recently sought comment on whether the Commission can and should grant nondiscriminatory access to LEC directory assistance databases to those directory assistance providers that are not themselves exchange service providers or toll service providers. *Directory Listing Information Order* at paras. 155-156. Accordingly, we will address these issues in that proceeding.

⁹¹⁴ Bell Atlantic Comments at 33-34 and Exhibit 4.

⁹¹⁵ See, e.g., Letter from Lincoln E. Brown, Director-Federal Regulatory, SBC, to Magalie Roman Salas, Secretary, Federal Communications Commission, CC Docket No. 96-98, at 2 (filed July 26, 1999); Letter from Loretta Garcia, Counsel for Teltrust, to Magalie Roman Salas, Secretary, Federal

persuaded that lack of unbundled access to incumbent LEC databases used in the provision of OS/DA necessarily results in quality differences that would materially diminish a requesting carrier's ability to offer service.

458. MediaOne claims that operators of alternative OS/DA providers may be unfamiliar with the names of the local communities because their call centers are often distantly located.⁹¹⁶ We do not believe that this constitutes a material difference in quality. First, we note that MediaOne does not explain how an operator's proximity to the customer results in a difference in OS/DA service quality. Search strategies used by OS/DA operators can be based on fuzzy logic queries and phonetic spellings that enable operators to retrieve information without the exact spelling of, or familiarity with, a place or proper name. For local directory assistance, alternative providers also train their call center operators to be familiar with the localities and any necessary variations on word pronunciations.⁹¹⁷ In addition, incumbents often maintain remote or regional call centers that are located outside the local calling area of a large percentage of the incumbent LEC's own customers⁹¹⁸ Thus, the incumbent's operators may have no more familiarity with the names of particular locales in a geographic area than do the operators of a competitor. Thus, if a competitor wants to ensure that the operators it is utilizing are trained for a particular area, it can best achieve this result by self-provisioning OS/DA service and training its own operators. Alternatively, a competitive carrier may also select an alternative OS/DA provider with a call center closer to the carrier's customer base than the incumbent's call center or contract with the provider for special operator training to cover the names of locales within the specific geographic markets the competitive carrier serves. We are satisfied that operator-training disparities between vendor-provided operators and those of the incumbent LEC do not materially diminish a requesting carrier's ability to offer service.

459. We reject arguments that we should unbundle access to the incumbent's OS/DA service because national operator services have limited ability to connect to local public safety answering points (PSAPs) in emergency situations. Specifically, certain commenters argue that in such situations, national operator services usually advise the caller to hang-up and dial 911.⁹¹⁹ While issues of public safety are of paramount concern, the standard by which we decide to unbundle a non-proprietary network element

Communications Commission, CC Docket No. 96-98 at 1 (Teltrust obtains most of its OS/DA database information from Experian. Teltrust believes that "Experian buys its data from most of the RBOCs.") (filed August 12, 1999) (Teltrust August 12, 1999 *Ex Parte*).

⁹¹⁶ MediaOne Comments at 12. *See also* Allegiance Comments at 24 (local operators may have language skills that are useful in serving ethnic communities in their service areas).

⁹¹⁷ Teltrust August 12, 1999 *Ex Parte* at 2.

⁹¹⁸ For example, Bell Atlantic provides directory assistance for New York from a call center located in Massachusetts. Bell Atlantic August 30, 1999 *Ex Parte* Attachment. *See also*, Cincinnati Bell Comments at 7 ("Neither operator services nor directory assistance have a geographically distinct market").

⁹¹⁹ Cox Comments at 33. *See also* Teligent Reply Comments at 6.

focuses on whether a carrier's ability to provide the services that it seeks to offer is impaired by lack of access to that element.⁹²⁰ Accordingly, we look to whether the ability or inability to connect OS/DA calls to a PSAP impairs the ability of a carrier to offer local exchange services. We conclude that it does not.

460. Although subscribers may mistakenly dial OS/DA to reach emergency assistance, the ability to connect a misdirected call to a PSAP is unlikely to result in a competitive advantage in the provision of local exchange service. At least one third-party provider of OS/DA service, Teltrust, states that it requires its customers to provide the emergency number of the PSAP for the originating caller so that it knows which agency to call.⁹²¹ In cases where it receives an incoming call from an 800 number and does not have an emergency number associated with the calling party's location, the operator can call emergency services if the calling party can provide the name of the location. Should a competitive carrier decide to obtain OS/DA services for its customers from the incumbent on a nondiscriminatory basis, under section 251(b)(3), it will be able to connect its customers to the PSAP in the same manner as the incumbent. Moreover, it is not clear whether all incumbent LEC OS/DA call centers, especially those with remote OS/DA call centers, have the ability to connect their own customers to every PSAP.⁹²² Thus, even if a requesting carrier had unbundled access to the incumbent's OS/DA service, its subscribers may receive instructions from the incumbent's operator that do not measurably differ from the instructions it would receive from an alternative provider's operator. Indeed the only way in which a competitor can retain control over the quality of OS/DA service is to self-provide its own OS/DA call center and train its own operators. By self-providing its own call centers it can require its customers to provide it with detailed emergency information and populate its database accordingly.

461. We find insufficient evidence in the record to suggest that, based on performance measurements, there is a material difference in the timelines with which an incumbent's operator, compared to third-party operators, can respond to an inquiry. MediaOne asserts that the average speed to answer OS/DA calls for competitors is 15-18 seconds, while the incumbent commits to answering calls to its OS/DA platform in less than six seconds.⁹²³ The data MediaOne provides, while helpful, is inconclusive. Specifically, the data, which consists of the performance of one incumbent and a few competitors, provides too small a sample size for us to extrapolate these results over the entire OS/DA industry and conclude that competitive carriers' ability to provide service is

⁹²⁰ See 47 U.S.C. § 251(d)(2)(B).

⁹²¹ Teltrust August 12, 1999 *Ex Parte* at 2.

⁹²² AT&T argues that competitive LECs need updated and accurate information on PSAPs on the same terms that incumbent LECs provide such updates to themselves. AT&T Comments at 129-130. The obligation of a LEC to provide such listings and updates to competing providers in readily accessible formats in a timely fashion upon request, is already contained in rule 51.217(c)(3)(ii), implementing the nondiscriminatory access requirements in section 251(b)(3). 47 C.F.R. § 51.217(c)(3)(ii); 47 U.S.C. § 251(b)(3).

⁹²³ MediaOne Comments at 12.

impaired. While we acknowledge that there are likely to be some measurable differences among OS/DA providers for particular OS/DA components, we do not find sufficient record evidence to conclude that a requesting carrier is impaired without access to the incumbent's OS/DA service. Moreover, applying the unbundling standard we set forth above, the question of whether lack of access to the incumbent's network element materially diminishes a requesting carrier's ability to provide the services it seeks to offer is determined based on the totality of the circumstances. Thus, while relevant, we cannot say that the proffered average speed to answer calls, or other OS/DA quality issues, contribute significantly to a competitor's overall ability to provide local exchange and exchange access service.

462. Timeliness. We do not find any impediments associated with self-provisioning OS/DA services that would delay a requesting carrier's entry into the local exchange or exchange access market. Although AT&T identifies delays associated with implementing the customized routing necessary to use alternative OS/DA providers,⁹²⁴ the record indicates that AT&T's customized routing issues have been resolved.⁹²⁵ We are unaware of any ongoing problems that create material delays when competing carriers purchase OS/DA service from alternative providers. We agree that customized routing is necessary to access alternative sources of OS/DA for competitors not deploying their own switches.⁹²⁶ Commenters state that a key component of providing carriers with a choice of competitive OS/DA suppliers is the availability of line class codes in the unbundled switching element.⁹²⁷ Lack of a customized routing solution that enables competitors to route traffic to alternative OS/DA providers would therefore effectively preclude competitive LECs from using such alternative providers.⁹²⁸ Thus, if an incumbent LEC does not provide customized routing to requesting carriers that use the incumbent's unbundled switching element, it must provide unbundled access to its OS/DA service.

⁹²⁴ AT&T Comments at 126-28. AT&T reports that it took two years in Texas and one year in Connecticut to resolve customized routing issues. AT&T claims that customized routing solutions, either through AIN or line class codes, can take up to two years to implement. According to AT&T, either approach requires the entrant and the ILEC to: (1) negotiate the technical details; (2) design a test plan; (3) deploy the facilities and perform the necessary changes in switch software; (4) perform the testing; and (5) resolve problems encountered in the test. The solution must then be deployed at all switches where customized routing is necessary. Until customized routing solutions have been tested and broadly deployed, AT&T urges the Commission to require incumbent LECs to unbundle their OS/DA services. *Id.*

⁹²⁵ Letter from Kathleen B. Levitz, Vice President-Federal Regulatory, BellSouth, to Jake Jennings, Policy and Program Planning Division, Common Carrier Bureau, Federal Communications Commission, CC Docket No. 96-98 (filed July 26, 1999) (BellSouth July 26, 1999 *Ex Parte*) (Georgia from June, 5, 1997 to September 14, 1997; South Florida from August 21, 1997 to December 19, 1997; Tennessee from August 21, 1997 to week of December 8, 1997).

⁹²⁶ The Commission has required incumbent LECs to implement customized routing where it is technically feasible. *Local Competition First Report and Order*, 11 FCC Rcd at 15709, 15773, paras. 418, 536.

⁹²⁷ See, e.g., Qwest Comments at 87-88.

⁹²⁸ CompTel Reply Comments at 24.

463. Impact on Network Operations. We conclude that the interoperability issues identified in the record do not materially diminish a requesting carrier's ability to provide local exchange or exchange access service. In particular, MCI WorldCom complains that incumbent LECs should implement Feature Group D signaling, instead of outdated legacy signaling protocol.⁹²⁹ According to MCI WorldCom, to use the incumbent LECs' signaling protocol instead of Feature Group D, most competitive LECs would have to either deploy new customized operator platforms or modify their existing platforms, both of which impose substantial costs.⁹³⁰ SBC responds that the customized routing of Feature Group D is not technically feasible in all end-office switches.⁹³¹ BellSouth, however, offers a technical solution to MCI WorldCom's concern in some of its offices and states its willingness to deploy these solutions throughout its network.⁹³² In instances where the requesting carrier obtains the unbundled switching element from the incumbent, the lack of customized routing effectively precludes requesting carriers from using alternative OS/DA providers and, consequently, would materially diminish the requesting carrier's ability to provide the services it seeks to offer. Thus, we require incumbent LECs, to the extent they have not accommodated technologies used for customized routing, to offer OS/DA as an unbundled network element.

464. Finally, we find that the ability to obtain nondiscriminatory access to operator services and directory assistance under section 251(b)(3) significantly mitigates any potential impairment a requesting carrier may experience if denied access to the incumbent's OS/DA services as an unbundled network element.⁹³³ There are a substantial number of regional and national alternative providers of OS/DA service that are serving a variety of customers, including some incumbent LECs and IXC's. We do not find differences in cost, quality, timeliness, and ubiquity that would lead to the conclusion that requesting carriers' ability to provide local exchange and exchange access services would be materially diminished without access to the incumbent's OS/DA service as an unbundled network element. Rather, we find that these alternative sources of OS/DA service are available as a practical, economic, and operational matter.

⁹²⁹ MCI WorldCom Comments at 73. MCI WorldCom asserts that Feature Group D signaling protocol is already being used to route traffic between the ILEC switch and other carriers. MCI WorldCom adds that it would be extremely costly to accommodate "mass signaling" protocol, and that the expense is unnecessary because another protocol is available to meet competitive LECs' needs. *Id.* See also CompTel Reply Comments at 24.

⁹³⁰ Qwest Reply Comments at 84.

⁹³¹ SBC Reply Comments at 26.

⁹³² BellSouth July 26, 1999 *Ex Parte* (explaining the technical solutions used to resolve the compatibility issues surrounding MCI WorldCom's use of Feature Group D signaling).

⁹³³ MediaOne supports the Commission's decision not to require incumbents to unbundle OS/DA, provided the Commission reaffirms the requirement for nondiscriminatory access under section 251(b)(3), including the requirement that a LEC not discriminate in favor of its own use of these services. Letter from Tina S. Pyle, Executive Director, Public Policy, MediaOne, to Jake Jennings, Policy and Program Planning Division, Common Carrier Bureau, Federal Communications Commission, CC Docket No. 96-98 (filed August 12, 1999).

Moreover, we believe that not requiring that incumbent LECs to unbundle OS/DA service is consistent with the goals of the Act, because it will reduce competitors' reliance on the incumbent's network and create new opportunities for competitors of OS/DA service to differentiate their services through increased quality and decreased prices.

VI. MISCELLANEOUS ISSUES

A. Section 271-Related Issues

1. Background

465. Section 271(c)(2)(B) enumerates a competitive checklist that BOCs must comply with to obtain interLATA authority.⁹³⁴ In particular, prior to obtaining authority to provide long distance service, section 271(c)(2)(B) requires BOCs to demonstrate, among other things, that they are providing or "generally offering" to requesting carriers the following network elements: local loops, transport, switching, databases and signaling.⁹³⁵

466. In the *Notice*, we sought comment on the interplay between the unbundling obligations of section 251(c), and the competitive checklist network elements of section 271.⁹³⁶ Among other things, we sought comment on what pricing standards would apply if a checklist network element were no longer required to be unbundled pursuant to section 251(c)(3), after considering the "necessary" and "impair" standards of section 251(d)(2).⁹³⁷

467. Ameritech argues that if a network element on the checklist no longer needs to be unbundled, the item need not be provided to requesting carriers at prices predicated on our forward looking costs.⁹³⁸ Other commenters counter that the inclusion of network elements on the checklist is presumptive evidence that these elements must be unbundled,⁹³⁹ and thus, provided to requesting carriers at prices predicated on our forward looking costs.

2. Discussion

⁹³⁴ 47 U.S.C. § 271(c)(2)(B).

⁹³⁵ *Id.*

⁹³⁶ *Notice* at para. 41.

⁹³⁷ *Id.*

⁹³⁸ *See* Ameritech Comments at 52-53; Ameritech Joint Reply Comments at 23.

⁹³⁹ MCI WorldCom Comments at 23; Qwest Comments at 56-57; Sprint Comments at 27.

468. In this Order, we conclude that circuit switching and shared transport need not be unbundled in certain circumstances.⁹⁴⁰ Nonetheless, providing access and interconnection to these elements remains an obligation for BOCs seeking long distance approval. We therefore must decide what prices, terms, and conditions apply to these elements that no longer need to be unbundled.⁹⁴¹

469. We conclude that the prices, terms, and conditions set forth under sections 251 and 252 do not presumptively apply to the network elements on the competitive checklist of section 271.

470. The Commission must consider unbundling network elements in accordance with section 251(c)(3), while according due deference to the “necessary” and “impair” standards articulated in section 251(d)(2), and by the Supreme Court. The Commission must evaluate the network elements on the competitive checklist under the auspices of section 271. If a checklist network element is unbundled, the applicable prices, terms and conditions are determined in accordance with sections 251 and 252. If a checklist network element does not satisfy the unbundling standards in section 251(d)(2), the applicable prices, terms and conditions for that element are determined in accordance with sections 201(b) and 202(a).

471. Although section 271 does not specify that the checklist network elements must be provided in accordance with section 251(c)(3), the Commission nonetheless has independent authority to ensure that items (iv)-(vi) of the checklist are provided on a reasonable, nondiscriminatory basis. In *Iowa Utils. Bd.*, the Supreme Court affirmed the Commission’s regulatory authority over the pricing of section 251 unbundled network elements, rejecting the claim that this matter is reserved to the states.⁹⁴² In reaching this conclusion, the Court held that the Commission’s pricing authority resides broadly in section 201(b), which grants the agency authority to prescribe rules and regulations “as may be necessary in the public interest to carry out the provisions of this Act.”⁹⁴³

472. Section 201(b) provides a basis for the Commission to scrutinize the prices, terms, and conditions under which the checklist network elements are offered. Section 201(b) states that “[a]ll charges, practices, classifications, and regulations for and in connection with such communication services, shall be *just and reasonable*, and any such charge, practice, classification, or regulation that is unjust or unreasonable is hereby declared unlawful.”⁹⁴⁴ Section 202(a) mandates that “[i]t shall be unlawful for any common carrier to make any unjust or unreasonable discrimination in charges, practices,

⁹⁴⁰ See *supra* Sections (V)(D)(1) and (V)(E)(2)(b).

⁹⁴¹ Network elements unbundled pursuant to section 251(c) must comply with the pricing standards of section 252(d)(1). 47 U.S.C. § 251(c)(3).

⁹⁴² *Iowa Utils. Bd.*, 119 S. Ct. at 732.

⁹⁴³ *Id.*

⁹⁴⁴ 47 U.S.C. § 201(b).

classifications, regulations, facilities, or services for or in connection with like communication service.”⁹⁴⁵ In addition, checklist items (vii) and (x) explicitly require “nondiscriminatory access” to OS/DA, databases, and signaling.⁹⁴⁶

473. In circumstances where a checklist network element is no longer unbundled, we have determined that a competitor is not impaired in its ability to offer services without access to that element. Such a finding in the case of switching for large volume customers is predicated in large part upon the fact that competitors can acquire switching in the marketplace at a price set by the marketplace.⁹⁴⁷ Under these circumstances, it would be counterproductive to mandate that the incumbent offers the element at forward-looking prices. Rather, the market price should prevail, as opposed to a regulated rate which, at best, is designed to reflect the pricing of a competitive market.⁹⁴⁸

B. Combinations of Unbundled Loops and Transport Network Elements

474. A number of parties identify issues surrounding combinations of loop and transport network elements. In particular, several competitive LECs argue that the Commission should identify the “enhanced extended link” (EEL) as a separate network element or require incumbent LECs to provide requesting carriers access to loop and transport elements in combination, even if those elements are not currently combined.⁹⁴⁹ Incumbent LECs argue that, for loop transport elements that are currently combined requesting carriers should not be allowed to substitute such combinations of elements for existing, regulated special access services.⁹⁵⁰ According to incumbent LECs, allowing this substitution would either force them to increase local rates or undermine universal service.⁹⁵¹

⁹⁴⁵ 47 U.S.C. § 202(a).

⁹⁴⁶ 47 U.S.C. § 271(c)(2)(B).

⁹⁴⁷ *See supra* Section (V)(D)(1)(b).

⁹⁴⁸ *See Ameritech Joint Reply Comments at 23.*

⁹⁴⁹ ALTS Comments at 62-67; CompTel Comments at 47-53; e.spire Joint Comments at 28; Level 3 Comments at 20; McLeod Comments at 8.

⁹⁵⁰ Bell Atlantic Reply Comments at 26; SBC Reply Comments at 28.

⁹⁵¹ Letter from William B. Barfield, Associate General Counsel, BellSouth Corporation, to Lawrence E. Strickling, Chief, Common Carrier Bureau, Federal Communications Commission, CC Docket No. 96-98, at 1,6 (filed Aug. 9, 1999)(BellSouth Aug. 9, 1999 *Ex Parte*); Letter from Susanne Guyer, Assistant Vice President, Federal Regulatory, Bell Atlantic, to Magalie R. Salas, Secretary, Federal Communications Commission, CC Docket No. 96-98 (filed Aug. 25, 1999); Letter from J. Richard Teel, Vice President, BellSouth, to Lawrence E. Strickling, Chief, Common Carrier Bureau, Federal Communications Commission, CC Docket 96-98, at 2 (filed Sept. 8, 1999)(BellSouth Sept. 8, 1999 *Ex Parte*). *See also* Letter from Kathleen B. Levitz, Vice President-Federal Regulatory, BellSouth Corporation, to Magalie R. Salas, Secretary, Federal Communications Commission, CC Docket No. 96-98, at 4 (filed August 26, 1999).

1. Enhanced Extended Link

a. Background

475. In the *Local Competition Order*, the Commission identified loops and transport as network elements subject to the unbundling obligation of section 251(c)(3). In rule 51.315(b), the Commission prohibited incumbents from separating network elements that are currently combined.⁹⁵² In addition, the Commission adopted rules 51.315(c) – (f) requiring incumbent LECs to combine unbundled network elements in any manner, even if those elements are not currently combined.⁹⁵³ The Eighth Circuit overturned a number of the Commission's rules, including rules 51.315(b) – (f).⁹⁵⁴ Rule 51.315(b), however, was reinstated by the Supreme Court.⁹⁵⁵ In light of the reasoning set forth in the Court's opinion, the Commission asked the Eighth Circuit to reinstate rules 51.315(c) – (f).⁹⁵⁶

⁹⁵² Rule 51.315(b) states: "Except upon request, an incumbent LEC shall not separate requested network elements that the incumbent LEC currently combines."

⁹⁵³ Rule 51.315(c)-(f) states:

(c) Upon request, an incumbent LEC shall perform the functions necessary to combine unbundled network elements in any manner, even if those elements are not ordinarily combined in the incumbent LEC's network, provided that such combination is:

(1) Technically feasible; and

(2) Would not impair the ability of other carriers to obtain access to the unbundled network elements or to interconnect with the incumbent LEC's network.

(d) Upon request, an incumbent LEC shall perform the functions necessary to combine unbundled network elements with elements possessed by the requesting telecommunications carrier in any technically feasible manner.

(e) An incumbent LEC that denies a request to combine elements pursuant to paragraph (c)(1) or paragraph (d) of this section must prove to the state commission that the requested combination is not technically feasible.

(f) An incumbent LEC that denies a request to combine elements pursuant to paragraph (c)(2) of this section must prove to the state commissions that the requested combination would impair the ability of other carriers to obtain access to unbundled network elements or to interconnect with the incumbent LEC's network.

47 C.F.R. §§ 51.315(c)-(f).

⁹⁵⁴ *Iowa Utils. Bd. v. FCC*, 120 F.3d at 813.

⁹⁵⁵ *Iowa Utils. Bd.*, 119 S.Ct at 736-738.

⁹⁵⁶ *Iowa Utils. Bd. v. FCC*, Brief for Respondents at 79-87 (Oral argument was held on September 17, 1999. To date, no decision has been announced).

476. In the *Notice*, we sought comment on whether we should identify additional network elements beyond the seven listed in the *Local Competition First Report and Order*.⁹⁵⁷ We also sought comment on whether, in light of the Supreme Court's decision, we could require incumbent LECs to combine network elements that are not currently combined, such as an unbundled loop with unbundled transport.⁹⁵⁸

477. In response to the *Notice*, a number of parties, including competitive LECs and state commissions, argue that we should either identify a new network element comprised of unbundled loop, multiplexing/concentrating equipment, and dedicated transport (the enhanced extended link or "EEL") or, alternatively, reinstate rules 51.315(c)–(f) which require incumbent LECs to provide unbundled loop and transport elements on a combined basis.⁹⁵⁹ Incumbent LECs argue that we should not identify the EEL as a separate network element because it would constitute an unlawful combination of two or more elements not currently combined.⁹⁶⁰ The incumbent LECs also argue that we cannot reinstate rules 51.315(c)–(f) because they are currently pending before the Eighth Circuit.

b. Discussion

478. We decline to define the EEL as a separate network element in this Order. As discussed above, the Eighth Circuit is currently reviewing whether rules 51.315(c)–(f) should be reinstated. We see no reason to decide now whether the EEL should be a separate network element, in light of the Eighth Circuit's review of those rules.

479. A number of commenters argue that we should reaffirm the Commission's decision in the *Local Competition First Report and Order*.⁹⁶¹ In that order the Commission concluded that the proper reading of "currently combines" in rule 51.315(b) means "ordinarily combined within their network, in the manner which they are typically combined."⁹⁶² Incumbent LECs, on the other hand, argue that rule 51.315(b) only applies to unbundled network elements that are currently combined and not to elements that are

⁹⁵⁷ *Notice* at para. 33.

⁹⁵⁸ *Id.*

⁹⁵⁹ AT&T Comments at 136-37; Cable & Wireless Comments at 40-41; Choice One Joint Comments at 23. *See also* California PUC Comments at 6; ALTS Comments at 62; CoreComm Comments at 36-37.

⁹⁶⁰ *See, e.g.*, GTE Comments at 84-85; Ameritech Joint Reply Comments at 26-28.

⁹⁶¹ ALTS Comments at 79-80. *See also* Excel Comments at 14; Net2000 Comments at 22; NEXTLINK Comments at 42-43; e.spire Joint Reply Comments at 17-18; GSA Reply Comments at 17.

⁹⁶² *Local Competition First Report and Order*, 11 FCC Rcd at 15648, para. 296.

“normally” combined.⁹⁶³ Again, because this matter is currently pending before the Eighth Circuit, we decline to address these arguments at this time.

480. We note that in the *Local Competition First Report and Order*, and again in this proceeding, we identify the loop and dedicated transport as separate unbundled network elements.⁹⁶⁴ In particular, as discussed above, we define the loop as the functionality that extends from the customer demarcation point to the main distribution frame associated with the incumbent LEC’s central office switch. We define dedicated transport as the transmission facilities dedicated to a particular customer between wire centers owned by the incumbent LECs or requesting telecommunications carriers, or between switches owned by incumbent LECs or requesting carriers. To the extent an unbundled loop is in fact connected to unbundled dedicated transport, the statute and our rule 51.315(b) require the incumbent to provide such elements to requesting carriers in combined form. Thus, although in this Order, we neither define the EEL as a separate unbundled network element nor interpret rule 51.315(b) as requiring incumbents to combine unbundled network elements that are “ordinarily combined,” we note that in specific circumstances, the incumbent is presently obligated to provide access to the EEL. In particular, the incumbent LECs may not separate loop and transport elements that are currently combined and purchased through the special access tariffs. Moreover, requesting carriers are entitled to obtain such existing loop-transport combinations at unbundled network element prices.⁹⁶⁵

481. We also decline at this time to reinstate rules 51.315(c) – (f). As discussed above, this issue is currently pending before the Eighth Circuit. As a general matter, however, we believe that the reasoning of the Supreme Court’s decision to reinstate rule 51.315(b) based on the nondiscrimination language of section 251(c)(3) applies equally to rules 51.315(c) – (f). Specifically, the Court held that section 251(c)(3)’s nondiscrimination requirement means that access provided by the incumbent LEC must be at least equal in quality to that which the incumbent LEC provides to itself.⁹⁶⁶ We note that incumbent LECs routinely combine loop and transport elements for themselves. For example, incumbent LECs routinely provide combinations of loop and transport elements for themselves in order to: (1) deliver data traffic to their own packet switches; (2) provide private line services; and (3) provide foreign exchange service.⁹⁶⁷ In addition, we

⁹⁶³ GTE Reply Comments at 84-85; SBC Reply Comments at 28.

⁹⁶⁴ *Local Competition First Report and Order*, 11 FCC Rcd at 15689-93, 15718, paras. 377-85, 440.

⁹⁶⁵ See 47 U.S.C. § 252(d)(1).

⁹⁶⁶ *Iowa Utils. Bd.*, 119 S.Ct at 737. See also *Local Competition First Report and Order*, 11 FCC Rcd. at 15658, para. 312; 47 C.F.R. § 51.311(b).

⁹⁶⁷ ALTS Reply Comments at 53; GTE Comments at 85.

note that incumbent LECs routinely provide the functional equivalent of the EEL through their special access offerings.⁹⁶⁸

482. We believe that the basis upon which the Eighth Circuit invalidated rules 51.315(c) – (f) has been called into question by the Supreme Court’s decision. In particular, the Eighth Circuit determined that “unbundled” meant physical separation of network elements.⁹⁶⁹ The Supreme Court clarified that “unbundled” means “separate prices.”⁹⁷⁰ The Supreme Court also stated that section 251(c) “does not say, or even remotely imply, that elements must be provided [in discrete pieces, and never in combined form.]”⁹⁷¹ We also note that an additional basis for the Eighth Circuit’s decision to invalidate rules 51.315(b) – (f) was its understanding that incumbents “would rather grant their competitors access to their facilities” than combine elements on behalf of requesting carriers.⁹⁷² Experience over the last year demonstrates that incumbent LECs have refused to provide access to network elements so that competitors could combine them, except in situations where competitive LECs have collocated in the incumbent’s central offices.⁹⁷³ Accordingly, we believe that section 251(c)(3) provides a sound basis for reinstating rules 51.315(c) – (f).

2. Use of unbundled network elements to provide exchange access services

a. Background

483. As discussed above, in some situations in the incumbent’s network, loops and dedicated transport network elements are already combined to provide special access services for interexchange carriers. In *ex parte* filings, incumbent LECs, including BellSouth and SBC, argue that the Commission should restrict a requesting carrier from obtaining such combined facilities as unbundled network elements in order to prevent

⁹⁶⁸ See, e.g., GTE Comments at 85; ALTS Reply Comments at 53.

⁹⁶⁹ *Iowa Utils. Bd. v. FCC*, 120 F.3d at 813.

⁹⁷⁰ *Iowa Utils. Bd.*, 119 S. Ct. at 737.

⁹⁷¹ *Id.*

⁹⁷² *Iowa Utils. Bd. v. FCC*, 120 F.3d at 813.

⁹⁷³ See, e.g., AT&T Comments at 141-42. We note that we held previously in *BellSouth 271 Louisiana II* that incumbent LECs may not limit a competitor’s ability to access network elements in order to combine them to collocation arrangements. Specifically, we stated that “BellSouth’s offering in Louisiana of collocation as the sole method for combining unbundled network elements is inconsistent with section 251(c)(3).” *Application of BellSouth Corporation, BellSouth Telecommunications, Inc., and BellSouth Long Distance, Inc. for Provision of In-Region, InterLATA Services in Louisiana*, 13 FCC Rcd 20599, 20703-05, para. 168. This decision was based on our rule that requesting carriers are entitled to request any “technically feasible” methods of accessing and combining unbundled network elements. We found that section 251(c)(3) required incumbent LECs to provide “nondiscriminatory access to network elements on an unbundled basis at any technically feasible point . . .,” which was not limited to collocation arrangements. *Id.*

requesting carriers from by-passing existing special access services.⁹⁷⁴ BellSouth and SBC both argue that such a restriction is necessary to prevent interexchange carriers from benefiting from the difference between special access rates and unbundled network element prices and thus, protect the incumbent LECs' current exchange access revenue streams.⁹⁷⁵ Competitive LECs respond that the plain language of section 251(c)(3) precludes the Commission from imposing any restrictions on the use of unbundled network elements.⁹⁷⁶

b. Discussion

484. Section 251(c)(3) of the Act requires incumbent LECs to provide to requesting carriers access to unbundled network elements "for the provision of a telecommunications service"⁹⁷⁷ In the *Local Competition First Report and Order*, the Commission found that section 251(c)(3) "permits interexchange carriers and all other requesting carriers, to purchase unbundled elements for the purpose of offering exchange access services, or for the purpose of providing exchange access services to themselves in order to provide interexchange services to consumers."⁹⁷⁸ In particular, the Commission found that its conclusion not to impose restrictions on the use of unbundled network elements was "compelled by the plain language of the 1996 Act" because exchange access and interexchange services are "telecommunications services."⁹⁷⁹ Moreover, in the *Local Competition First Report and Order*, the Commission found that "the language of section 251(c)(3), which provides that telecommunications carriers may purchase unbundled elements in order to provide a telecommunications service, is not ambiguous."⁹⁸⁰ This conclusion that the Act does not permit usage restrictions was codified in Rule 51.309(a), which provides that "[a]n incumbent LEC shall not impose limitations, restrictions, or requirements on request for, or the use of, unbundled network

⁹⁷⁴ BellSouth Aug. 9, 1999 *Ex Parte* at 1, 4-5; Letter from Martin E. Grambow, Vice President and General Counsel, SBC, to Lawrence F. Strickling, Chief, Common Carrier Bureau, Federal Communications Commission, CC Docket No. 96-98, at 1, Att. 1-9 (filed Aug. 11, 1999) (SBC August 11, 1999 *Ex Parte*).

⁹⁷⁵ BellSouth Sept. 8 *Ex Parte* at 1; Letter from Lincoln E. Brown, Director-Federal Regulatory, SBC, to Magalie Roman Salas, Secretary, Federal Communications Commission, CC Docket 96-98, Att. at 2, 6-7 (filed Sept. 9, 1999)(SBC Sept. 9, 1999 *Ex Parte*). Alternatively, BellSouth argues that the Commission should decline to unbundle transport facilities between a requesting carrier's switch and the incumbent LEC's switch. BellSouth Sept. 8, 1999 *Ex Parte* at 1. *See also* SBC Sept. 9, 1999 *Ex Parte* Att. at 2-5. As discussed Section (V)(E) *supra*, we reject the incumbent LECs' argument not to unbundle such dedicated transport links.

⁹⁷⁶ *See, e.g.*, e.spire Joint Comments at 13-18; ALTS Reply Comments at 54.

⁹⁷⁷ 47 U.S.C. § 251(c)(3).

⁹⁷⁸ *Local Competition First Report and Order*, 11 FCC Rcd. at 15679, para.356.

⁹⁷⁹ *Id.* at 15679, para.356.

⁹⁸⁰ *Id.* at 15680, para.359 (citation omitted).

elements that would impair the ability of a requesting telecommunications carrier to offer a telecommunications service in the manner the requesting telecommunications carrier intends.”⁹⁸¹ That rule was not challenged in court by any party.

485. Parties have raised again arguments that allowing requesting carriers to use unbundled network elements to provide exchange access would have significant policy ramifications. As BellSouth explains, existing combinations of unbundled loops and transport network elements are a “direct (and often physically identical) substitute for the incumbent LEC’s regulated access services . . . ,” but priced significantly lower than tariffed special access services.⁹⁸² The special access service that BellSouth and SBC refer to consists of entrance facilities from the interexchange carrier’s point of presence (POP) to an incumbent LEC’s switch or serving wire center (SWC), a dedicated transport link from the SWC to an end office, and a channel termination facility from the end office to the end user.⁹⁸³

486. As an initial matter, under existing law, a requesting carrier is entitled to obtain existing combinations of loop and transport between the end user and the incumbent LEC’s serving wire center on an unrestricted basis at unbundled network element prices.⁹⁸⁴ In particular, any requesting carrier that is collocated in a serving wire center is free to order loops and transport to that serving wire center as unbundled network elements because those elements meet the unbundling standard, as discussed above. Moreover, to the extent those unbundled network elements are already combined as a special access circuit, the incumbent may not separate them under rule 51.315(b), which was reinstated by the Supreme Court.⁹⁸⁵ In such situations, it would be impermissible for an incumbent LEC to require that a requesting carrier provide a certain amount of local service over such facilities.

487. Moreover, we wish to make clear that in situations where the requesting carrier is collocated and has self-provisioned transport or obtained transport from an alternative provider, but is purchasing unbundled loops, that carrier may provide only exchange access over those facilities. Thus, for instance, a requesting carrier is entitled to purchase unbundled loops in order to provide advanced services (*e.g.*, interstate special access xDSL service).

⁹⁸¹ 47 C.F.R. § 51.309(a).

⁹⁸² BellSouth August 9, 1999 *Ex Parte* at 1.

⁹⁸³ Letter from Ernest L. Bush, Jr., Assistant Vice President, BellSouth, to Lawrence Strickling, Chief, Common Carrier Bureau, Federal Communications Commission, CC Docket No. 96-98, at 1, (filed August 16, 1999) (BellSouth August 16, 1999 *Ex Parte*)

⁹⁸⁴ See 47 C.F.R. §§ 51.309(a), 51.315(b).

⁹⁸⁵ *Iowa Utils. Bd.*, 119 S. Ct. at 736-38. We note, however, that any substitution of unbundled network elements for special access would require the requesting carrier to pay any appropriate termination penalties required under volume or term contracts.

488. Finally, we clarify that interexchange carriers are entitled to use unbundled dedicated transport from their POP to a serving wire center in order to provide local telephone exchange service. Such carriers are entitled to obtain such dedicated transport links pursuant to the unbundling standard discussed above. The fact that such carriers may also provide exchange access over those facilities does not alter our conclusion.

489. We conclude that the record in this phase of the proceeding is insufficient for us to determine whether or how our rules should apply in the discrete situation involving the use of dedicated transport links between the incumbent LEC's serving wire center and an interexchange carrier's switch or point of presence (or "entrance facilities"). Only a handful of parties commented on the special access arbitrage issue that was first raised by BellSouth's August 9, 1999, *ex parte* filing. We believe that we should fully explore the policy ramifications of applying our rules in a way that potentially could cause a significant reduction of the incumbent LECs' special access revenues prior to full implementation of access charge and universal service reform. Therefore, we set certain discrete issues for further comment below.

C. Nondiscrimination Obligations of Incumbent LECs

490. We reaffirm the conclusion the Commission adopted in the *Local Competition First Report and Order* that national rules defining "nondiscriminatory access" to unbundled network elements will reduce the costs of entry and speed the development of competition in local telecommunications markets.⁹⁸⁶ We find that the phrase "nondiscriminatory access" in section 251(c)(3) means at least two things: first, the quality of an unbundled network element that an incumbent LEC provides, as well as the access provided to that element, must be equal between all carriers requesting access to that element; second, where technically feasible, the access and unbundled network element provided by an incumbent LEC must be provided in "substantially the same time and manner" to that which the incumbent provides to itself.⁹⁸⁷

491. In those situations where an incumbent LEC does not provide access to network elements to itself, we reaffirm our requirement that incumbent LECs must provide access in a manner that provides a requesting carrier with a meaningful opportunity to compete.⁹⁸⁸ Because we believe that the technical infeasibility problem will arise rarely, we expect incumbent LECs to fulfill the non-discrimination requirement in nearly all instances where they provision unbundled network elements. In the rare instances where technical feasibility issues arise, incumbent LECs must prove to a state

⁹⁸⁶ *Local Competition First Report and Order*, 11 FCC Rcd at 15657, para. 309.

⁹⁸⁷ *Local Competition First Report and Order*, 11 FCC Rcd at 15763-64. We note that rule 51.311(c) is currently before the Court of Appeals for the Eighth Circuit.

⁹⁸⁸ See *Ameritech Michigan Order*, 12 FCC Rcd at 20619; *Local Competition First Report and Order*, 11 FCC Rcd at 15660; *Local Competition Second Reconsideration Order*, 11 FCC Rcd at 19742.

commission that it is technically infeasible to provide access to unbundled elements at the same level of quality that the incumbent LEC provides to itself.⁹⁸⁹

VII. FOURTH FURTHER NOTICE OF PROPOSED RULEMAKING

A. Background

492. As noted above, in the *Local Competition First Report and Order*, the Commission held that for all unbundled network elements, including combinations of network elements, incumbent LECs may not impose any usage restriction on the use of such elements, or combinations thereof. In that order, however, the Commission imposed a temporary access charge on the purchase of unbundled switching. In particular, the Commission required requesting carriers to pay, for a limited time period, the carrier common line charge (CCL) and 75 percent of the Tandem Interconnection Charge (TIC).⁹⁹⁰ The Commission found that it had discretion under the Act “to adopt a limited, transitional plan to address public policy concerns raised by the bypass of access charges via unbundled elements.” This decision was upheld by the Eighth Circuit, which found that the Commission decision was reasonable.⁹⁹¹

493. In the *Third Order on Reconsideration*, the Commission required incumbent LECs to provide access to shared transport as an unbundled network element in conjunction with local and tandem switching. In that order, the Commission limited the obligation of incumbent LECs to provision shared transport to end users to whom the requesting carrier was providing local exchange service. The Commission sought comment on whether requesting carriers may use unbundled dedicated or shared transport facilities in conjunction with unbundled switching, to originate or terminate interstate toll traffic to customers to whom the requesting carrier does not provide local exchange service.⁹⁹² Specifically, the *Further Notice of Proposed Rulemaking* requested comment on the “intensely interrelated” question of whether such use would conflict with the Commission’s implementation of access charge reform and universal service.⁹⁹³

B. Discussion

494. Parties have argued in this proceeding that allowing requesting carriers to obtain combinations of loop and transport unbundled network elements based on forward-looking cost would provide opportunities for arbitrage of special access services. We are cognizant that special access pre-dates passage of the 1996 Telecommunications Act and

⁹⁸⁹ *Local Competition First Report and Order*, 11 FCC Rcd at 15658-59, para. 313.

⁹⁹⁰ *Id.* at 15864-66, paras. 721-25. The Commission selected June 30, 1997 as the ultimate end date for this transitional time period.

⁹⁹¹ *CompTel v. FCC*, 117 F.3d at 1073-75.

⁹⁹² *Local Competition Third Reconsideration Order*, 12 FCC Rcd. at 12462, para. 3.

⁹⁹³ *Id.* at 12462, 12495-96, paras. 3, 60-61. This Further Notice remains pending.

has historically been provided by incumbent LECs at prices that are higher than the unbundled network element pricing scheme of section 252(d)(1). Accordingly, in this Further Notice we consider whether there is any basis in the statute or our rules under which incumbent LECs could decline to provide entrance facilities at unbundled network element prices.

495. We seek comment on the argument that the “just and reasonable” terms of section 251(c) or section 251(g) permit the Commission to establish a usage restriction on entrance facilities. Parties should also address whether there is any other statutory basis for limiting an incumbent LEC’s obligation to provide entrance facilities as an unbundled network element.

496. We acknowledge that resolution of this issue potentially could have large financial impact on incumbent local exchange carriers. We seek comment on this issue, and on the extent to which any such impact should be considered in reaching a decision on this issue. We seek comment on the policy implications, if any, of a significant reduction in special access revenues for our universal service program.⁹⁹⁴ Finally, because the record developed in the *Further Notice of Proposed Rulemaking* in the *Shared Transport Order* is two years old, we invite parties to refresh the record on whether requesting carriers may use unbundled dedicated or shared transport facilities in conjunction with unbundled switching to originate or terminate interstate toll traffic to customers to whom the requesting carrier does not provide local exchange service.⁹⁹⁵

VIII. PROCEDURAL ISSUES

A. Final Regulatory Flexibility Analysis

497. As required by the Regulatory Flexibility Act (RFA),⁹⁹⁶ an Initial Regulatory Flexibility Analysis (IRFA) was incorporated in the *Notice* in CC Docket No. 96-98.⁹⁹⁷ The Commission sought written public comments on the proposals in the

⁹⁹⁴ We note that in a recent Notice of Proposed Rulemaking in the *Access Reform and Universal Service* proceeding, we tentatively concluded that when non-rural local exchange carriers receive explicit interstate universal service support, they should eliminate implicit support by reducing switched access common line rates. We did not propose to treat special access services as if the current prices of those services included implicit support for universal service. *Federal-State Joint Board on Universal Service*, CC Docket 96-45, Seventh Report and Order and Thirteenth Order on Reconsideration in CC Docket No. 96-45, Fourth Report and Order in CC Docket No. 96-262 and Further Notice of Proposed Rulemaking, 14 FCC Rcd 8078, 8138-8139, para. 128-131 (May 28, 1999).

⁹⁹⁵ *Local Competition Third Reconsideration Order*, 12 FCC Rcd. at 12462, para. 3.

⁹⁹⁶ See 5 U.S.C. § 603. The RFA, see 5 U.S.C. § 601 *et. seq.*, has been amended by the Contract With America Advancement Act of 1996, Pub. L. No. 104-121, 110 Stat. 847 (1996) (CWAAA). Title II of the CWAAA is the Small Business Regulatory Enforcement Fairness Act of 1996 (SBREFA).

⁹⁹⁷ *Notice* at paras. 46-53.

Notice, including comments on the IRFA. This present Final Regulatory Flexibility Analysis (FRFA) conforms to the RFA.⁹⁹⁸

1. Need for, and Objectives of, the Third Report and Order

498. This Order responds to the Supreme Court's January, 1999, decision that directs the Commission to revise the standards used to determine which network elements incumbent LECs must unbundle pursuant to section 251 of the Act.⁹⁹⁹ More specifically, this Order gives substance to the "necessary" and "impair" standards in section 251(d)(2) of the Act. Applying these standards, and considering the availability of elements outside of the incumbent's network, this Order adopts a list of network elements that must be unbundled on a national basis, subject to certain discrete geographic and product market exceptions. This Order also announces that the Commission will reexamine the national list of unbundled network elements in three years. It reaffirms a state commission's authority to require incumbent LECs to unbundle additional elements, as long as the unbundling obligations: (1) are consistent with the requirements of section 251; (2) do not substantially prevent implementation of the requirements of that section and the purposes of the Act; and (3) are consistent with the national policy framework established in this Order. Finally the Order reaffirms that incumbent LECs are obligated to offer combinations of network elements that are already combined, including combinations of loop, multiplexing/concentrating equipment, and dedicated transport if they are currently combined.

2. Summary of Significant Issues Raised by the Public Comments in Response to the IRFA

499. We received no comments in response to the IRFA in the *Notice*. We did, however, receive some general small-business-related comments which are discussed throughout the Order and are summarized in subsection 5 of the FRFA, *infra*.

3. Description and Estimate of the Number of Small Entities to which Rules will Apply

500. In the FRFA to the Commission's *Local Competition First Report and Order*,¹⁰⁰⁰ we adopted the analysis and definitions set forth in determining the small entities affected by this Order for purposes of this FRFA. The RFA directs agencies to provide a description of and, where feasible, an estimate of the number of small entities that will be affected by rules.¹⁰⁰¹ The RFA generally defines the term "small entity" as having the same meaning as the terms "small business," "small organization," and "small

⁹⁹⁸ See 5 U.S.C. § 604.

⁹⁹⁹ *Iowa Utils. Bd.*, 119 S. Ct. at 734-36.

¹⁰⁰⁰ *Local Competition First Report and Order*, 11 FCC Rcd at 16150-56, paras. 1343-57.

¹⁰⁰¹ 5 U.S.C. §§ 603(b)(3), 604(a)(3).

governmental jurisdiction."¹⁰⁰² The RFA defines a "small business" to be the same as a "small business concern" under the Small Business Act,¹⁰⁰³ unless the Commission has developed one or more definitions that are appropriate to its activities.¹⁰⁰⁴ Under the Small Business Act, a "small business concern" is one that: (1) is independently owned and operated; (2) is not dominant in its field of operation; and (3) meets any additional criteria established by the Small Business Administration (SBA).¹⁰⁰⁵ Below we further describe and estimate the number of small entities that may be affected by the rules adopted in this Order.

501. We have included small incumbent LECs in this RFA analysis. As noted above, a "small business" under the RFA is one that, *inter alia*, meets the pertinent small business size standard (*e.g.*, a telephone communications business having 1,500 or fewer employees), and "is not dominant in its field of operation."¹⁰⁰⁶ The SBA's Office of Advocacy contends that, for RFA purposes, small incumbent LECs are not dominant in their field of operation because any such dominance is not national in scope.¹⁰⁰⁷ We have therefore included small incumbent LECs in this RFA analysis, although we emphasize that this RFA action has no effect on the Commission's analyses and determinations in other non-RFA contexts.

502. The United States Bureau of the Census (the Census Bureau) reports that at the end of 1992, there were 3,497 firms engaged in providing telephone services, as defined therein, for at least one year.¹⁰⁰⁸ These firms include a variety of different categories of carriers, including LECs, interexchange carriers, competitive access providers, wireless providers, operator service providers, pay telephone operators, wireless providers, and resellers. At least some of these 3,497 telephone service firms

¹⁰⁰² 5 U.S.C. § 601(6).

¹⁰⁰³ 15 U.S.C. § 632.

¹⁰⁰⁴ 5 U.S.C. § 601(3) (incorporating by reference the definition of "small business concern" in 5 U.S.C. § 632).

¹⁰⁰⁵ 15 U.S.C. § 632.

¹⁰⁰⁶ 5 U.S.C. § 601(3).

¹⁰⁰⁷ Letter from Jere W. Glover, Chief Counsel for Advocacy, SBA, to William E. Kennard, Chairman, Federal Communications Commission (May 27, 1999). The Small Business Act contains a definition of "small business concern," which the RFA incorporates into its own definition of "small business." See 15 U.S.C. § 632(a) (Small Business Act); 5 U.S.C. § 601(3) (RFA). SBA regulations interpret "small business concern" to include the concept of dominance on a national basis. 13 C.F.R. § 121.102(b). Since 1996, out of an abundance of caution, the Commission has included small incumbent LECs in its regulatory flexibility analyses. *Local Competition First Report and Order*, 11 FCC Rcd at 16144-45, paras. 1328-30.

¹⁰⁰⁸ United States Department of Commerce, Bureau of the Census, 1992 Census of Transportation, Communications, and Utilities: Establishment and Firm Size, at Firm Size 1-123 (1995) (1992 Census).

may not qualify as small entities because they are not "independently owned and operated."¹⁰⁰⁹ For example, a wireless provider that is affiliated with a LEC having more than 1,500 employees would not meet the definition of a small business. It seems reasonable to conclude, therefore, that fewer than 3,497 of these telephone service firms are small entities that may be affected by this Order. Since 1992, however, many new carriers have entered the telephone services marketplace. At least some of these new entrants may be small entities that are affected by this Order.

503. The SBA has developed a definition of small entities for telephone communications companies other than radiotelephone (wireless) companies. The Census Bureau reports that there were 2,321 such telephone companies that had been operating for at least one year at the end of 1992.¹⁰¹⁰ According to the SBA's definition, a wireline telephone company is a small business if it employs no more than 1,500 persons.¹⁰¹¹ All but 26 of the 2,321 wireline companies listed by the Census Bureau were reported to have fewer than 1,000 employees. Thus, even if all 26 of those companies had more than 1,500 employees, there would still be 2,295 wireline companies that might qualify as small entities. Although it seems certain that some of these carriers are not independently owned and operated, we are unable at this time to estimate with greater precision the number of wireline carriers and service providers that would qualify as small business concerns under the SBA's definition. Consequently, we estimate that fewer than 2,295 of these wireline companies are small entities that this Order may affect. Since 1992, however, many wireline carriers have entered the telephone services marketplace. Many of these new entrants may be small entities that are affected by this Order.

504. Incumbent Local Exchange Carriers. Neither the Commission nor the SBA has developed a definition specifically directed toward small incumbent LECs. The closest applicable definition under SBA rules is for telephone communications companies other than radiotelephone (wireless) companies. The most reliable source of information regarding the number of LECs nationwide of which we are aware appears to be the data that we collect annually in connection with the Telecommunications Relay Service (TRS). According to our most recent data, 1,410 companies reported that they were engaged in the provision of local exchange services.¹⁰¹² Although it seems certain that some of these carriers are not independently owned and operated or have more than 1,500 employees, we are unable at this time to estimate with greater precision the number of small incumbent LECs that would qualify as small business concerns under SBA's definition. Consequently, we estimate that there are fewer than 1,410 small incumbent LECs that may be affected by the decisions and rules adopted in this Order.

¹⁰⁰⁹ 15 U.S.C. § 632(a)(1).

¹⁰¹⁰ 1992 Census, *supra* note 1008, at Firm Size 1-123.

¹⁰¹¹ 13 C.F.R. § 121.201, Standard Industrial Classification (SIC) Code 4812.

¹⁰¹² Federal Communications Commission, Carrier Locator: Interstate Service Providers, Fig. 1 (Jan. 1999) (*Carrier Locator Report*).

4. Description of Projected Reporting, Recordkeeping, and Other Compliance Requirements

505. Pursuant to sections 251(c) and (d) of the 1996 Act, incumbent LECs, including those that qualify as small entities, are required to provide nondiscriminatory access to unbundled network elements.¹⁰¹³ The only exception to this rule is those carriers that qualify and have gone through the process of obtaining an exemption, suspension or modification pursuant to section 251(f) of the Act. This Order interprets the necessary and impair standards of section 251(d)(2) in such a way that it fulfills the Supreme Court's requirement that we apply some limiting standard to an incumbent LEC's 251(c) obligations.¹⁰¹⁴ In this Order, we identify a minimum set of network elements that incumbent LECs are obligated to offer to requesting carriers on an unbundled basis nationwide: (1) local loops, including dark fiber and high-capacity loops;¹⁰¹⁵ (2) subloops;¹⁰¹⁶ (3) network interface devices;¹⁰¹⁷ (4) local switching, except under certain conditions;¹⁰¹⁸ (5) interoffice transport;¹⁰¹⁹ (6) signaling and call-related databases;¹⁰²⁰ (7) operations support systems;¹⁰²¹ and (8) in very limited situations, packet switching.¹⁰²² State commissions may require incumbent LECs to provide additional network elements on an unbundled basis.¹⁰²³ The Order also clarifies that incumbent LECs are obligated to provide access to combinations of loop, multiplexing/concentrating

¹⁰¹³ 47 U.S.C. § 251(f).

¹⁰¹⁴ *Iowa Utilities Bd.*, 119 S. Ct. at 734.

¹⁰¹⁵ *See supra* Section (V)(A).

¹⁰¹⁶ *See supra* Section (V)(B).

¹⁰¹⁷ *See supra* Section (V)(C).

¹⁰¹⁸ *See supra* Section (V)(D). Incumbent LECs must offer unbundled access to local circuit switching, except for switching used to serve end users with four or more lines in access density zone 1 (the densest areas) in the top 50 Metropolitan Statistical Areas (MSAs), provided that the incumbent LEC provides non-discriminatory, cost-based access to the enhanced extended link. (An enhanced extended link (EEL) consists of a combination of an unbundled loop, multiplexing/concentrating equipment, and dedicated transport. The EEL allows new entrants to serve customers without having to collocate in every central office in the incumbent's territory.)

¹⁰¹⁹ *See supra* Section (V)(E).

¹⁰²⁰ *See supra* Section (V)(F).

¹⁰²¹ *See supra* Section (V)(G).

¹⁰²² *See supra* Section (V)(D)(2). In circumstances where a requesting carrier is unable to install its DSLAM at the remote terminal or obtain spare copper loops, and the incumbent LEC has deployed packet switching for its own use, an incumbent LEC must provide a requesting carrier with access to unbundled packet switching.

¹⁰²³ *See supra* Section (IV)(E).

equipment and dedicated transport if they are currently combined. Compliance with the rules and decisions adopted in this Order may require the use of engineering, technical, operational, accounting, billing, and legal skills.

5. Steps Taken to Minimize the Economic Impact of this Order on Small Entities, and Alternatives Considered

506. As we concluded in the original FRFA,¹⁰²⁴ and as discussed more thoroughly above,¹⁰²⁵ we believe that our actions establishing a minimum national list of unbundled network elements in this Order facilitates the development of competition in the local exchange and exchange access markets. This decision decreases entry barriers and provides reasonable opportunities for all carriers, including small entities, to provide local exchange and exchange access services.

507. National requirements for unbundling allows requesting carriers, including small entities, to take advantage of economies of scale in network. Requesting carriers, which may include small entities, should have access to the same technologies and economies of scale and scope available to incumbent LECs. Having such access will facilitate competition and help lower prices for all consumers, including individuals and small entities. A minimum national list of unbundled network elements also should facilitate the development of consistent standards and help resolve issues without imposing additional litigation costs on parties, including small entities.

508. Establishing a minimum national list of unbundled network elements facilitates negotiations and reduces regulatory burdens for all parties, including small entities. Adopting a national list lowers requesting carrier's cost by enabling them to implement regional and/or national business plans. In reaching this conclusion we considered one proposal to adopt national standards that would be applied by state commissions on a market-by-market basis. We concluded that this approach would lead to greater uncertainty in the market and would hinder the development of competition. We also found that it would complicate the negotiation of interconnection agreements and lead to increased litigation. Furthermore, this approach would increase the administrative burden on state commissions and parties arbitrating interconnection agreements before these state commissions.¹⁰²⁶ All of these factors would slow the development of competition. Therefore we reaffirmed our decision in the *Local Competition First Report and Order* to adopt a national list.

6. Report to Congress

509. The Commission will send a copy of the Third Report and Order, including this FRFA, in a report to be sent to Congress pursuant to the Small Business Regulatory

¹⁰²⁴ *Local Competition First Report and Order*, 11 FCC Rcd at 16157-58, para. 1364.

¹⁰²⁵ *See supra* Section (IV)(D).

¹⁰²⁶ *See supra* Section (IV)(E).

Enforcement Fairness Act of 1996.¹⁰²⁷ In addition, the Commission will send a copy of the Third Report and Order, including the FRFA, to the Chief Counsel for Advocacy of the Small Business Administration. The Third Report and Order and FRFA, or summaries thereof, will also be published in the Federal Register.¹⁰²⁸

B. Initial Regulatory Flexibility Analysis (IRFA)

510. As required by the RFA,¹⁰²⁹ the Commission has prepared this present Initial Regulatory Flexibility Analysis (IRFA) of the possible significant economic impact on small entities by the policies and rules proposed in this Fourth Further Notice of Proposed Rulemaking. Written public comments are requested on this IRFA. Comments must be identified as responses to the IRFA and must be filed by the deadlines for comments on the Fourth Further Notice of Proposed Rulemaking provided above in section VII. The Commission will send a copy of the Fourth Further Notice of Proposed Rulemaking, including this IRFA, to the Chief Counsel for Advocacy of the Small Business Administration.¹⁰³⁰ In addition, the Fourth Further Notice of Proposed Rulemaking and IRFA, or summaries thereof, will be published in the Federal Register.¹⁰³¹

1. Need for, and Objectives of, the Proposed Rules

511. In this proceeding commenters have argued that allowing requesting carriers to obtain combinations of loop and transport unbundled network elements based on forward-looking cost would provide opportunities for arbitrage of special access services. We recognize that special access has historically been provided by incumbent LECs at prices that are higher than the unbundled network element pricing scheme of section 252(d)(1). Accordingly, in this Fourth Further Notice, the Commission seeks comment on the legal and policy bases for precluding requesting carriers from substituting dedicated transport for special access entrance facilities. We ask whether there is any basis in the statute or our rules under which incumbent LECs could decline to provide entrance facilities at unbundled network element prices.

512. Finally, because the record developed in the *Further Notice of Proposed Rulemaking* in the *Shared Transport Order* is two years old, we invite parties to refresh the record on whether requesting carriers may use unbundled dedicated or shared transport facilities in conjunction with unbundled switching to originate or terminate

¹⁰²⁷ See 5 U.S.C. § 801(a)(1)(A).

¹⁰²⁸ See 5 U.S.C. § 604(b).

¹⁰²⁹ See *supra* note 996.

¹⁰³⁰ See 5 U.S.C. § 603(a).

¹⁰³¹ See *id.*

interstate toll traffic to customers to whom the requesting carrier does not provide local exchange service.¹⁰³²

2. Legal Basis

513. Sections 1-4, 10, 201, 202, 251-254, 271, and 303(r) of the Communications Act, as amended, 47 U.S.C. §§ 151-54, 160, 201, 202, 251-54, 271, and 303(r).

¹⁰³²

Local Competition Third Reconsideration Order, 12 FCC Rcd. at 12462, para.3.

3. Description and Estimate of the Number of Small Entities to Which the Proposed Rules Will Apply

514. In the FRFA in the Third Report and Order, *supra*, we have described the entities possibly affected by that decision.¹⁰³³ We anticipate that the same entities, as well as those described below, could be affected by any action taken in response to the Fourth Further Notice. We therefore incorporate the description and estimates used in the FRFA in the Third Report and Order,¹⁰³⁴ and add the following descriptions.

515. *Competitive Local Exchange Carriers.* Neither the Commission nor SBA has developed a definition of small entities specifically directed toward providers of competitive local exchange services. The most reliable source of information regarding the number of competitive LECs nationwide of which we are aware appears to be the data we collected in the August, 1999 *Local Competition Report*. According to our most recent data, 158 companies reported that they were local service competitors holding numbering codes.¹⁰³⁵ Although it seems certain that some of these carriers are not independently owned and operated, or have more than 1,500 employees, we are unable at this time to estimate with greater precision the number of competitive LECs that would qualify as small business concerns under SBA's definition. Consequently, we estimate that there are fewer than 158 small entity competitive LECs that may be affected by the decisions and rules adopted in response to the Fourth Further Notice of Proposed Rulemaking.

516. *Competitive Access Providers.* Neither the Commission nor SBA has developed a definition of small entities specifically directed toward providers of competitive access services (CAPs). The closest applicable definition under SBA rules is for telephone communications companies other than radiotelephone (wireless) companies. The most reliable source of information regarding the number of CAPs nationwide of which we are aware appears to be the data that we collect annually in connection with the *TRS Worksheet*. According to our most recent data, 129 companies reported that they were engaged in the provision of competitive access services.¹⁰³⁶

¹⁰³³ See *supra* paras. 500-504.

¹⁰³⁴ See *supra* paras. 500-504.

¹⁰³⁵ Report, *Local Competition: August 1999*, at 45, Table 4.1 (This report is an update of the *Local Competition Report* issued in December of 1998. The report was compiled by the Industry Analysis Division of the Common Carrier Bureau of the Federal Communications Commission. This report is available in the Commission's Reference Information Center at 445 12th Street, S.W., Courtyard Level, Washington, DC. Copies may be purchased from the International Transcription Services, Inc., at (202) 857-3800. It can also be downloaded, file name LCOMP99-1.PDF or LCOMP99-1ZIP, from the Commission's internet site at <http://www.fcc.gov/ccb/stats>.)

¹⁰³⁶ *Carrier Locator Report* at Fig. 1. This figure also includes competitive LECs, as determined by TRS filings.

Although it seems certain that some of these carriers are not independently owned and operated, or have more than 1,500 employees, we are unable at this time to estimate with greater precision the number of competitive LECs that would qualify as small business concerns under SBA's definition. Consequently, we estimate that there are fewer than 129 small entity competitive LECs that may be affected by the decisions and rules adopted in response to the Fourth Further Notice of Proposed Rulemaking.

4. Description of Projected Reporting, Recordkeeping, and Other Compliance Requirements

517. If the Commission does not establish any restrictions on the use of unbundled network elements or combinations of network elements, no additional compliance requirements are anticipated from further consideration of this issue. If, however, restrictions on access to network elements are imposed, and depending on how the restrictions are imposed, competitive LECs, CAPs and other purchasers of unbundled network elements, including small entities, may be subject to additional reporting, recordkeeping and other compliance requirements. Incumbent LECs, including small incumbent LECs, would also be impacted because they would have to keep track of competitive LEC filings and whether the use of the unbundled network element changed in such a way that a restriction would attach. If restrictions are placed on the use of unbundled network elements or combinations of such elements, compliance with these requests may require the use of engineering, technical, operational, accounting, billing, and legal skills.¹⁰³⁷

5. Steps Taken to Minimize Significant Economic Impact on Small Entities, and Significant Alternatives Considered

518. If requesting carriers can substitute unbundled network elements, such as transport, for entrance facilities, incumbent LECs, including small entities, may be significantly economically impacted. On the other hand, substituting unbundled network elements for entrance facilities could benefit competitive LECs, CAPs, and other purchasers of unbundled network elements. The Commission will evaluate in this proceeding whether there are legal grounds for restricting such access. If no such grounds exist, and instead if the statute requires unrestricted access to these unbundled network elements or combinations, then the Commission will have no alternative other than implementation of the statutory requirements for unrestricted access.

6. Federal Rules that May Duplicate, Overlap, or Conflict with the Proposed Rules

519. None.

¹⁰³⁷ See *supra* Section VII.

IX. ADMINISTRATIVE MATTERS

520. Pursuant to Sections 1.415 and 1.419 of the Commission's rules, 47 C.F.R. §§ 1.415, 1.419, interested parties may file comments on or before January 12, 2000 and reply comments on or before February 11, 2000. Comments may be filed using the Commission's Electronic Comment Filing System (ECFS) or by filing paper copies. See Electronic Filing of Documents in Rulemaking Proceedings, 63 Fed. Reg. 24,121 (1998).

521. Comments filed through the ECFS can be sent as an electronic file via the Internet to <<http://www.fcc.gov/e-file/ecfs.html>>. Generally, only one copy of an electronic submission must be filed. If multiple docket or rulemaking numbers appear in the caption of this proceeding, however, commenters must transmit one electronic copy of the comments to each docket or rulemaking number referenced in the caption. In completing the transmittal screen, commenters should include their full name, Postal Service mailing address, and the applicable docket or rulemaking number. Parties may also submit an electronic comment by Internet e-mail. To get filing instructions for e-mail comments, commenters should send an e-mail to ecfs@fcc.gov, and should include the following words in the body of the message, "get form <your e-mail address.>" A sample form and directions will be sent in reply.

522. Parties who choose to file by paper must file an original and four copies of each filing. If you want each Commissioner to receive a personal copy of your comments, you must file an original plus eleven copies. All filings must be sent to the Commission's Secretary, Magalie Roman Salas, Office of the Secretary, TW-A306, Federal Communications Commission, 445 12th Street, S.W., Washington, D.C. 20554. The Common Carrier Bureau contact for this proceeding is Jodie Donovan-May at 202-418-1580. If more than one docket or rulemaking number appear in the caption of this proceeding, commenters must submit two additional copies for each additional docket or rulemaking number.

523. Parties who choose to file by paper should also submit their comments on diskette. These diskettes should be submitted to: Jodie Donovan-May, Federal Communications Commission, 445 12th Street, S.W., Washington, D.C. 20554. Such a submission should be on a 3.5 inch diskette formatted in an IBM compatible format using Word for Windows or compatible software. The diskette should be accompanied by a cover letter and should be submitted in "read only" mode. The diskette should be clearly labeled with the commenter's name, proceeding (including the lead docket number in this case, Docket No. 96-98, type of pleading (comment or reply comment), date of submission, and the name of the electronic file on the diskette. The label should also include the following phrase "Disk Copy - Not an Original." Each diskette should contain only one party's pleadings, preferably in a single electronic file. In addition, commenters must send diskette copies to the Commission's copy contractor, International Transcription Service, Inc., 1231 20th Street, N.W., Washington, D.C. 20037.

524. *Ex Parte Rules*. This proceeding will be treated as a "permit-but-disclose" proceeding subject of the "permit-but-disclose" requirements under Section 1.1206(b) of

the Commission's rules.¹⁰³⁸ Ex parte presentations are permissible if disclosed in accordance with Commission rules, except during the Sunshine Agenda period when ex parte or otherwise, are generally prohibited. Person making oral ex parte presentations are reminded that a memorandum summarizing a presentation must contain a summary of the substance of the presentation and not merely a listing of the subjects discussed. More than a one or two sentence description of the view are arguments presented is generally required.¹⁰³⁹ Additional rules pertaining to oral and written presentations are set forth in Section 1.1206(b).

X. ORDERING CLAUSES

525. Accordingly, IT IS ORDERED that pursuant to Sections 1, 3, 4, 201-205, 251, 256, 271, 303(r) of the Communications Act of 1934, as amended, 47 U.S.C. §§ 151, 153, 154, 201-205, 251, 252, 256, 271, 303(r) the THIRD REPORT AND ORDER AND FOURTH FURTHER NOTICE OF PROPOSED RULEMAKING is hereby ADOPTED.

526. IT IS FURTHER ORDERED that section 51.317 of the Commission's Rules, 47 C.F.R. § 51.317, as set forth in Appendix C hereto, is effective 30 days after publication in the Federal Register.

527. IT IS FURTHER ORDERED that § 51.319 of the Commission's Rules, 47 C.F.R. § 51.319, as set forth in Appendix C hereto, is effective 30 days after publication in the Federal Register, with the exception of only the following requirements, which are effective 120 days after publication in the Federal Register: the requirement to provide access on an unbundled basis to dark fiber as set forth in § 51.319(a)(1); the requirement to provide access on an unbundled basis to subloops and inside wire as set forth in § 51.319(a)(2); the requirement to provide access on an unbundled basis to packet switching in the limited circumstances set forth in § 51.319(c)(5); the requirement to provide access on an unbundled basis to dark fiber transport as set forth in § 51.319(d)(1)(ii); the requirement to provide access on an unbundled basis to the Calling Name Database, 911 Database, and E911 Database as set forth in § 51.319(e)(2)(i); and the requirement to provide access on an unbundled basis to loop qualification information as set forth in § 51.319(g).¹⁰⁴⁰

528. IT IS FURTHER ORDERED that the Commission's Office of Public Affairs, Reference Operations Division, SHALL SEND a copy of this THIRD REPORT AND ORDER, including the Final Regulatory Flexibility Analysis, to the Chief Counsel for Advocacy of the Small Business Administration.

¹⁰³⁸ 47 C.F.R. § 1.1206(b), as revised.

¹⁰³⁹ See id. at § 1.1206(b)(2).

¹⁰⁴⁰ These delineated requirements were not contained in § 51.319 prior to the rule being vacated by the Supreme Court in *Iowa Utils. Bd.*

529. IT IS FURTHER ORDERED that the Commission's Office of Public Affairs, Reference Operations Division, SHALL SEND a copy of this FOURTH FURTHER NOTICE OF PROPOSED RULEMAKING, including the Initial Regulatory Flexibility Analysis, to the Chief Counsel for Advocacy of the Small Business Administration.

FEDERAL COMMUNICATIONS COMMISSION

Magalie Roman Salas
Secretary

APPENDIX A**List of Commenters in CC Docket No. 96-98**

Ad Hoc Telecommunications Users Committee (Ad Hoc)
Allegiance Telecom, Inc. (Allegiance)
Ameritech (Ameritech)
Association for Local Telecommunications Services (ALTS)
AT&T Corp. (AT&T)
Bell Atlantic Telephone Companies (Bell Atlantic)
BellSouth Corporation/BellSouth Telecommunications, Inc. (BellSouth)
Cable and Wireless USA, Inc. (Cable & Wireless)
Centennial Cellular Corporation, CenturyTel Wireless, Inc., Thumb Cellular Limited Partnership, and Trillium Cellular Corporation (Centennial Joint)
Choice One Communications, Network Plus, Inc., GST Telecom Inc., CTSI, Inc., and Hyperion Telecommunications, Inc. (Choice One Joint)
Cincinnati Bell Telephone Company (Cincinnati Bell)
CO Space Services, Inc. (CO Space)
Columbia Telecommunications, Inc. (Columbia)
Competition Policy Institute (CPI)
Competitive Telecommunications Association (CompTel)
Connecticut Department of Public Utility Control (Connecticut DPUC)
Corecomm Limited (Corecomm)
Covad Communications Company (Covad)
Cox Communications, Inc. (Cox)
e.spire Communications, Inc. and Intermedia Communications Inc. (e.spire Joint)
Excel Communications, Inc. (Excel)
Florida Public Service Commission (Florida PSC)
Focal Communications Corporation (Focal)
General Services Administration (GSA)
GTE Service Corporation (GTE)
Illinois Commerce Commission (Illinois Commission)
Information Technology Industry Council (ITIC)
Inline Connection Corporation (Inline)
Iowa Utilities Board (Iowa)
Joint Consumer Advocates (Joint Consumer Advocates)
Kentucky Public Service Commission (Kentucky PSC)
KMC Telecom Inc. (KMC)
Level 3 Communications, Inc. (Level 3)
Low Tech Designs, Inc. (Low Tech)
MCI WorldCom, Inc. (MCI WorldCom)
McLeodUSA Telecommunications Services, Inc. (McLeod)
Mediaone Group, Inc. (Mediaone)
Metro One Telecommunications, Inc. (Metro One)
Metromedia Fiber Network Services, Inc. (MFN)
MGC Communications, Inc. (MGC)
National Association of Regulatory Utility Commissioners (NARUC)
National Telecommunications and Information Administration (NTIA)

Net2000 Communications, Inc. (Net2000)
Network Access Solutions Corporation (NAS)
New England Voice & Data, LLC (New England Voice & Data)
New Jersey Division of the Ratepayer Advocate (New Jersey DRA)
New York State Department of Public Service (New York DPS)
NEXTLINK Communications, Inc. (NEXTLINK)
Northpoint Communications, Inc. (Northpoint)
Ohio Public Utilities Commission (Ohio PUC)
Optel, Inc. (OpTel)
People of the State of California and the California Public Utilities Commission
(California PUC)
Pennsylvania Public Utility Commission (Pennsylvania PUC)
Pilgrim Telephone, Inc. (Pilgrim)
Prism Communications Services, Inc. (Prism)
Oregon Public Utility Commission (Oregon PUC)
Qwest Communications Corp. (Qwest)
RCN Telecom Services, Inc. (RCN)
Rhythms Netconnections Inc. (Rhythms)
Rural Telephone Coalition (Rural Telephone Coalition)
SBC Telecommunications, Inc. (SBC)
Sprint Corporation (Sprint)
Strategic Policy Research (SPR)
Telecommunications Resellers Association (TRA)
TelTrust, Inc. (TelTrust)
Teligent, Inc. (Teligent)
Texas Public Utility Commission (Texas PUC)
Time Warner Telecom (Time Warner)
United States Telephone Association (USTA)
US WEST, Inc. (US West)
UTC, The Telecommunications Association (UTC)
Vermont Public Service Board (Vermont PSB)
Waller Creek Communications, Inc. (Waller Creek)
Washington Utilities and Transportation Commission (Washington UTC)
Weingarten, Michael (Weingarten)
WinStar Communications, Inc. (WinStar)
Wisconsin Public Service Commission (Wisconsin PSC)

APPENDIX B

Top 50 Metropolitan Statistical Areas (MSAs)

1. Los Angeles – Long Beach
2. New York
3. Chicago
4. Philadelphia
5. Washington, D.C.
6. Detroit
7. Houston
8. Atlanta
9. Boston
10. Dallas
11. Riverside – San Bernardino
12. Phoenix – Mesa
13. Minneapolis – St. Paul
14. San Diego
15. Orange County
16. Nassau – Suffolk
17. St. Louis
18. Baltimore
19. Pittsburgh
20. Oakland
21. Seattle – Bellevue – Everett
22. Tampa – St. Petersburg – Clearwater
23. Cleveland – Lorain – Elyria
24. Miami
25. Newark
26. Denver
27. Portland – Vancouver
28. San Francisco
29. Kansas City
30. San Jose
31. Cincinnati
32. Fort Worth – Arlington
33. Norfolk – Virginia Beach – Newport News
34. Sacramento
35. San Antonio
36. Indianapolis
37. Orlando
38. Milwaukee – Waukesha
39. Fort Lauderdale
40. Columbus, OH
41. Las Vegas
42. Charlotte – Gastonia – Rock Hill

43. Bergen – Passaic
44. New Orleans
45. Salt Lake City – Ogden
46. Buffalo – Niagara Falls
47. Greensboro – Winston Salem – High Point
48. Nashville
49. Hartford
50. Providence – Fall River – Warwick

Source: March 1999 LERG; USTA UNE Report at I-22.

§ 51.5 Terms and definitions.

* * * * *

Pre-ordering and ordering. Pre-ordering and ordering includes the exchange of information between telecommunications carriers about: current or proposed customer products and services; or unbundled network elements, or some combination thereof. This information includes loop qualification information, such as the composition of the loop material, including but not limited to: fiber optics or copper; the existence, location and type of any electronic or other equipment on the loop, including but not limited to, digital loop carrier or other remote concentration devices, feeder/distribution interfaces, bridge taps, load coils, pair-gain devices, disturbers in the same or adjacent binder groups; the loop length, including the length and location of each type of transmission media; the wire gauge(s) of the loop; and the electrical parameters of the loop, which may determine the suitability of the loop for various technologies.

* * * * *

3. Section 51.317 is revised to read as follows:

§ 51.317 Standards for requiring the unbundling of network elements.

(a) Proprietary network elements. A network element shall be considered to be proprietary if an incumbent LEC can demonstrate that it has invested resources to develop proprietary information or functionalities that are protected by patent, copyright or trade secret law. The Commission shall undertake the following analysis to determine whether a proprietary network element should be made available for purposes of section 251(c)(3) of the Act:

- (1) Determine whether access to the proprietary network element is “necessary.” A network element is “necessary” if, taking into consideration the availability of alternative elements outside the incumbent LEC’s network, including self-provisioning by a requesting carrier or acquiring an alternative from a third-party supplier, lack of access to the network element precludes a requesting telecommunications carrier from providing the services that it seeks to offer. If access is “necessary,” then, subject to any consideration of the factors set forth under paragraph (c) of this section, the Commission may require the unbundling of such proprietary network element.
- (2) In the event that such access is not “necessary,” the Commission may require unbundling subject to any consideration of the factors set forth under paragraph (c) of this section if it is determined that:
 - (i) The incumbent LEC has implemented only a minor modification to the network element in order to qualify for proprietary treatment;
 - (ii) The information or functionality that is proprietary in nature does not differentiate the incumbent LEC’s services from the requesting carrier’s services; or
 - (iii) Lack of access to such element would jeopardize the goals of the 1996 Act.

(b) Non-proprietary network elements. The Commission shall undertake the following analysis to determine whether a non-proprietary network element should be made available for purposes of section 251(c)(3) of the Act:

- (1) Determine whether lack of access to a non-proprietary network element “impairs” a carrier’s ability to provide the service it seeks to offer. A requesting carrier’s ability to provide service is “impaired” if, taking into consideration the availability of alternative elements outside the incumbent LEC’s network, including self-provisioning by a requesting carrier or acquiring an alternative from a third-party supplier, lack of access to that element materially diminishes a requesting carrier’s ability to provide the services it seeks to offer. The Commission will consider the totality of the circumstances to determine whether an alternative to the incumbent LEC’s network element is available in such a manner that a requesting carrier can provide service using the alternative. If the Commission determines that lack of access to an element “impairs” a requesting carrier’s ability to provide service, it may require the unbundling of that element, subject to any consideration of the factors set forth under section 51.317 (c).
- (2) In considering whether lack of access to a network element materially diminishes a requesting carrier’s ability to provide service, the Commission shall consider the extent to which alternatives in the market are available as a practical, economic, and operational matter. The Commission will rely upon the following factors to determine

whether alternative network elements are available as a practical, economic, and operational matter:

- (i) Cost, including all costs that requesting carriers may incur when using the alternative element to provide the services it seeks to offer;
- (ii) Timeliness, including the time associated with entering a market as well as the time to expand service to more customers;
- (iii) Quality;
- (iv) Ubiquity, including whether the alternatives are available ubiquitously;
- (v) Impact on network operations.

(3) In determining whether to require the unbundling of any network element under this rule, the Commission may also consider the following additional factors:

- (i) Whether unbundling of a network element promotes the rapid introduction of competition;
- (ii) Whether unbundling of a network element promotes facilities-based competition, investment, and innovation;
- (iii) Whether unbundling of a network element promotes reduced regulation;
- (iv) Whether unbundling of a network element provides certainty to requesting carriers regarding the availability of the element;

- (v) Whether unbundling of a network element is administratively practical to apply.

(4) If an incumbent LEC is required to provide nondiscriminatory access to a network element in accordance with § 51.311 and section 251(c)(3) of the Act under § 51.319 of this section or any applicable Commission Order, no state commission shall have authority to determine that such access is not required. A state commission must comply with the standards set forth in this § 51.317 when considering whether to require the unbundling of additional network elements. With respect to any network element which a state commission has required to be unbundled under this § 51.317, the state commission retains the authority to subsequently determine, in accordance with the requirements of this rule, that such network element need no longer be unbundled.

4. Section 51.319 is revised to read as follows:

§ 51.319 Specific unbundling requirements.

(a) Local loop and subloop. An incumbent LEC shall provide nondiscriminatory access, in accordance with § 51.311 and section 251(c)(3) of the Act, to the local loop and subloop, including inside wiring owned by the incumbent LEC, on an unbundled basis to any requesting telecommunications carrier for the provision of a telecommunications service.

(1) Local Loop. The 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, including inside wire owned by the incumbent LEC. The local loop network element includes all features, functions, and capabilities of such transmission facility. Those features, functions, and capabilities include, but are not limited to, dark fiber, attached electronics (except those electronics used for the provision of advanced services, such as Digital Subscriber Line Access Multiplexers), and line conditioning. The local loop includes, but is not limited to, DS1, DS3, fiber, and other high capacity loops. The requirements in this section relating to dark fiber are not effective until May 17, 2000.

(2) Subloop. The subloop network element is defined as any portion of the loop that is technically feasible to access at terminals in the incumbent LEC's outside plant, including inside wire. An accessible terminal is any point on the loop where technicians can access the wire or fiber within the cable without removing a splice case to reach the wire or fiber within. Such points may include, but are not limited to, the pole or pedestal, the network interface device, the minimum point of entry, the single point of interconnection, the main distribution frame, the remote terminal, and the feeder/distribution interface. The requirements in this section relating to subloops and inside wire are not effective until May 17, 2000.

(i) Inside wire. Inside wire is defined as all loop plant

owned by the incumbent LEC on end-user customer premises as far as the point of demarcation as defined in § 68.3 of this chapter, including the loop plant near the end-user customer premises. Carriers may access the inside wire subloop at any technically feasible point including, but not limited to, the network interface device, the minimum point of entry, the single point of interconnection, the pedestal, or the pole.

(ii) Technical feasibility. If parties are unable to reach agreement, pursuant to voluntary negotiations, as to whether it is technically feasible, or whether sufficient space is available, to unbundle the subloop at the point where a carrier requests, the incumbent LEC shall have the burden of demonstrating to the state, pursuant to state arbitration proceedings under section 252 of the Act, that there is not sufficient space available, or that it is not technically feasible, to unbundle the subloop at the point requested.

(iii) Best practices. Once one state has determined that it is technically feasible to unbundle subloops at a designated point, an incumbent LEC in any state shall have the burden of demonstrating, pursuant to state arbitration proceedings under section 252 of the Act, that it is not technically feasible, or that sufficient space is not available, to unbundle its own loops at such a point.

(iv) Rules for collocation. Access to the subloop is subject to the Commission's collocation rules at §§ 51.321 through 51.323.

(v) Single point of interconnection. The incumbent LEC shall provide a single point of interconnection at multi-unit premises that is suitable for use by multiple carriers. This obligation is in addition to the incumbent LEC's obligation to provide nondiscriminatory access to subloops at any technically feasible point. If parties are unable to negotiate terms and conditions regarding a single point of interconnection, issues in dispute, including compensation of the incumbent LEC under forward-looking pricing principles, shall be resolved under the dispute resolution processes in section 252 of the Act.

(3) Line conditioning. The incumbent LEC shall condition lines required to be unbundled under this section wherever a competitor requests, whether or not the incumbent LEC offers advanced services to the end-user customer on that loop.

(i) Line conditioning is defined as the removal from the loop of any devices that may diminish the capability of the loop to deliver high-speed switched wireline telecommunications capability, including xDSL service.

Such devices include, but are not limited to, bridge taps, low pass filters, and range extenders.

(ii) Incumbent LECs shall recover the cost of line conditioning from the requesting telecommunications carrier in accordance with the Commission's forward-looking pricing principles promulgated pursuant to section 252(d)(1) of the Act.

(iii) Incumbent LECs shall recover the cost of line conditioning from the requesting telecommunications carrier in compliance with rules governing nonrecurring costs in § 51.507(e).

(iv) In so far as it is technically feasible, the incumbent LEC shall test and report trouble for all the features, functions, and capabilities of conditioned lines, and may not restrict testing to voice-transmission only.

(b) Network interface device. An incumbent LEC shall provide nondiscriminatory access, in accordance with § 51.311 and section 251(c)(3) of the Act, to the network interface device on an unbundled basis to any requesting telecommunications carrier for the provision of a telecommunications service. The network interface device network element is defined as any means of interconnection of end-user customer premises wiring to the incumbent LEC's distribution plant, such as a cross connect device used for that purpose. An incumbent

LEC shall permit a requesting telecommunications carrier to connect its own loop facilities to on-premises wiring through the incumbent LEC's network interface device, or at any other technically feasible point.

(c) Switching capability. An incumbent LEC shall provide nondiscriminatory access, in accordance with § 51.311 and section 251(c)(3) of the Act, to local circuit switching capability and local tandem switching capability on an unbundled basis, except as set forth in § 51.319(c)(2), to any requesting telecommunications carrier for the provision of a telecommunications service. An incumbent LEC shall be required to provide nondiscriminatory access in accordance with § 51.311 and section 251(c)(3) of the Act to packet switching capability on an unbundled basis to any requesting telecommunications carrier for the provision of a telecommunications service only in the limited circumstance described in § 51.319(c)(4).

(1) Local circuit switching capability, including tandem switching capability. The local circuit switching capability network element is defined as:

- (i) Line-side facilities, which include, but are not limited to, the connection between a loop termination at a main distribution frame and a switch line card;
- (ii) Trunk-side facilities, which include, but are not limited to, the connection between trunk termination at

a trunk-side cross-connect panel and a switch trunk card; and

(iii) All features, functions and capabilities of the switch, which include, but are not limited to:

(A) The basic switching function of connecting lines to lines, lines to trunks, trunks to lines, and trunks to trunks, as well as the same basic capabilities made available to the incumbent LEC's customers, such as a telephone number, white page listing and dial tone, and

(B) All other features that the switch is capable of providing, including but not limited to, customer calling, customer local area signaling service features, and Centrex, as well as any technically feasible customized routing functions provided by the switch.

(2) Notwithstanding the incumbent LEC's general duty to unbundle local circuit switching, an incumbent LEC shall not be required to unbundle local circuit switching for requesting telecommunications carriers when the requesting telecommunications carrier serves end-users with four or more voice grade (DS0) equivalents or lines, provided that the incumbent LEC provides nondiscriminatory access to

combinations of unbundled loops and transport (also known as the “Enhanced Extended Link”) throughout Density Zone 1, and the incumbent LEC’s local circuit switches are located in:

- (i) The top 50 Metropolitan Statistical Areas as set forth in Appendix B of the Third Report and Order and Fourth Further Notice of Proposed Rulemaking in CC Docket No. 96-98, and
- (ii) In Density Zone 1, as defined in § 69.123 of this chapter on January 1, 1999.

(3) Local tandem switching capability. The tandem switching capability network element is defined as:

- (i) Trunk-connect facilities, which include, but are not limited to, the connection between trunk termination at a cross connect panel and switch trunk card;
- (ii) The basic switch trunk function of connecting trunks to trunks; and
- (iii) The functions that are centralized in tandem switches (as distinguished from separate end office switches), including but not limited, to call recording, the routing of calls to operator services, and signaling conversion features.

(4) Packet switching capability. (i) The packet switching capability

network element is defined as the basic packet switching function of routing or forwarding packets, frames, cells or other data units based on address or other routing information contained in the packets, frames, cells or other data units, and the functions that are performed by Digital Subscriber Line Access Multiplexers, including but not limited to:

- (ii) The ability to terminate copper customer loops (which includes both a low band voice channel and a high-band data channel, or solely a data channel);
- (iii) The ability to forward the voice channels, if present, to a circuit switch or multiple circuit switches;
- (iv) The ability to extract data units from the data channels on the loops, and
- (v) The ability to combine data units from multiple loops onto one or more trunks connecting to a packet switch or packet switches.

(5) An incumbent LEC shall be required to provide nondiscriminatory access to unbundled packet switching capability only where each of the following conditions are satisfied. The requirements in this section relating to packet switching are not effective until May 17, 2000.

- (i) The incumbent LEC has deployed digital loop carrier systems, including but not limited to, integrated digital loop carrier or universal digital loop carrier systems; or has

deployed any other system in which fiber optic facilities replace copper facilities in the distribution section (*e.g.*, end office to remote terminal, pedestal or environmentally controlled vault);

(ii) There are no spare copper loops capable of supporting xDSL services the requesting carrier seeks to offer;

(iii) The incumbent LEC has not permitted a requesting carrier to deploy a Digital Subscriber Line Access multiplexer in the remote terminal, pedestal or environmentally controlled vault or other interconnection point, nor has the requesting carrier obtained a virtual collocation arrangement at these subloop interconnection points as defined by paragraph (b) of this section; and

(iv) The incumbent LEC has deployed packet switching capability for its own use.

(d) Interoffice transmission facilities. An incumbent LEC shall provide nondiscriminatory access, in accordance with § 51.311 and section 251(c)(3) of the Act, to interoffice transmission facilities on an unbundled basis to any requesting telecommunications carrier for the provision of a telecommunications service. The requirements in this section relating to dark fiber transport are not effective until May 17, 2000.

(1) Interoffice transmission facility network elements include:

- (i) Dedicated transport, defined as incumbent LEC transmission facilities, including all technically feasible capacity-related services including, but not limited to, DS1, DS3 and OCn levels, dedicated to a particular customer or carrier, that provide telecommunications between wire centers owned by incumbent LECs or requesting telecommunications carriers, or between switches owned by incumbent LECs or requesting telecommunications carriers;
 - (ii) Dark fiber transport, defined as incumbent LEC optical transmission facilities without attached multiplexing, aggregation or other electronics;
 - (iii) Shared transport, 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.
- (2) The incumbent LEC shall:
- (i) Provide a requesting telecommunications carrier exclusive use of interoffice transmission facilities dedicated to a particular customer or carrier, or use the features, functions, and capabilities of interoffice transmission facilities shared by more than one customer or carrier.
 - (ii) Provide all technically feasible transmission facilities, features, functions, and capabilities that the requesting telecommunications carrier could use to provide telecommunications services;
 - (iii) Permit, to the extent technically feasible, a requesting telecommunications carrier to connect such interoffice facilities to equipment designated by the

requesting telecommunications carrier, including but not limited to, the requesting telecommunications carrier's collocated facilities; and

- (iv) Permit, to the extent technically feasible, a requesting telecommunications carrier to obtain the functionality provided by the incumbent LEC's digital cross-connect systems in the same manner that the incumbent LEC provides such functionality to interexchange carriers.

(e) Signaling networks and call-related databases. An incumbent LEC shall provide nondiscriminatory access, in accordance with § 51.311 and section 251(c)(3) of the Act, to signaling networks, call-related databases, and service management systems on an unbundled basis to any requesting telecommunications carrier for the provision of a telecommunications service.

(1) Signaling networks. Signaling networks include, but are not limited to, signaling links and signaling transfer points.

- (i) When a requesting telecommunications carrier purchases unbundled switching capability from an incumbent LEC, the incumbent LEC shall provide access from that switch in the same manner in which it obtains such access itself.
- (ii) An incumbent LEC shall provide a requesting telecommunications carrier with its own switching facilities access to the incumbent LEC's signaling network for each of the requesting telecommunications carrier's switches. This connection shall be made in the same manner as an incumbent LEC connects one of its own switches to a signaling transfer point.

(2) Call-related databases. Call-related databases are defined as databases, other than operations support systems, that are used in signaling networks for billing and collection, or the transmission, routing, or other provision of a telecommunications service.

- (i) For purposes of switch query and database response through a signaling network, an incumbent LEC shall provide access to its call-related databases, including but not limited to, the Calling Name Database, 911 Database, E911 Database, Line Information Database, Toll Free Calling Database, Advanced Intelligent Network Databases, and downstream number portability databases by means of physical access at the signaling transfer point linked to the unbundled databases. The requirements in this section relating to the Calling Name Database, 911 Database, and E911 Database are not effective until May 17, 2000.
- (ii) Notwithstanding the incumbent LEC's general duty to unbundle call-related databases, an incumbent LEC shall not be required to unbundle the services created in the AIN platform and architecture that qualify for proprietary treatment.
- (iii) An incumbent LEC shall allow a requesting telecommunications carrier that has purchased an incumbent LEC's local switching capability to use the incumbent LEC's service control point element in the same manner, and via the same signaling links, as the incumbent LEC itself.
- (iv) An incumbent LEC shall allow a requesting telecommunications carrier that has deployed its own switch, and has linked that switch to an incumbent LEC's signaling system, to gain access to the incumbent LEC's

service control point in a manner that allows the requesting carrier to provide any call-related database-supported services to customers served by the requesting telecommunications carrier's switch.

- (v) An incumbent LEC shall provide a requesting telecommunications carrier with access to call-related databases in a manner that complies with section 222 of the Act.

(3) Service management systems:

- (i) A service management system is defined as a computer database or system not part of the public switched network that, among other things:
 - (A) Interconnects to the service control point and sends to that service control point the information and call processing instructions needed for a network switch to process and complete a telephone call; and
 - (B) Provides telecommunications carriers with the capability of entering and storing data regarding the processing and completing of a telephone call.
- (ii) An incumbent LEC shall provide a requesting telecommunications carrier with the information necessary to enter correctly, or format for entry, the information relevant for input into the incumbent LEC's service management system.
- (iii) An incumbent LEC shall provide a requesting telecommunications carrier the same access to design, create, test, and deploy Advanced Intelligent Network-based services at the service management system,

through a service creation environment, that the incumbent LEC provides to itself.

- (iv) An incumbent LEC shall provide a requesting telecommunications carrier access to service management systems in a manner that complies with section 222 of the Act.

(f) Operator services and directory assistance. An incumbent LEC shall provide nondiscriminatory access in accordance with § 51.311 and section 251(c)(3) of the Act to operator services and directory assistance on an unbundled basis to any requesting telecommunications carrier for the provision of a telecommunications service only where the incumbent LEC does not provide the requesting telecommunications carrier with customized routing or a compatible signaling protocol. Operator services are any automatic or live assistance to a consumer to arrange for billing or completion, or both, of a telephone call. Directory assistance is a service that allows subscribers to retrieve telephone numbers of other subscribers.

(g) Operations support systems. An incumbent LEC shall provide nondiscriminatory access in accordance with § 51.311 and section 251(c)(3) of the Act to operations support systems on an unbundled basis to any requesting telecommunications carrier for the provision of a telecommunications service. Operations support system functions consist of pre-ordering, ordering, provisioning, maintenance and repair, and billing functions supported by an incumbent LEC's databases and information. An incumbent LEC, as part of its duty to provide access to the pre-ordering function, must provide the requesting carrier with nondiscriminatory access to the same detailed

information about the loop that is available to the incumbent LEC. The requirements in this section relating to loop qualification information are not effective until May 17, 2000.

APPENDIX D

CURRENT UNBUNDLED NETWORK ELEMENTS

