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

In the Matter of)
)
Telephone Number Portability) CC Docket No. 95-116
) RM-8535
)

FIRST MEMORANDUM OPINION AND
ORDER ON RECONSIDERATION

Adopted: March 6, 1997

Released: March 11, 1997

By the Commission:

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I. INTRODUCTION

1. On June 27, 1996, the Commission adopted the First Report and Order and Further Notice of Proposed Rulemaking (First Report & Order)¹ in this docket implementing the requirement under Section 251(b) of the Communications Act of 1934, as amended (the Act), that all local exchange carriers (LECs) offer, "to the extent technically feasible, number portability in accordance with requirements prescribed by the Commission."² By this action, we resolve certain petitions for reconsideration or clarification of our number portability rules adopted in the First Report & Order. Twenty-two parties filed petitions for reconsideration or clarification, nineteen parties filed oppositions or comments on the petitions, and sixteen parties filed reply comments.³ While the petitions raise a broad range of issues, we address three primary issues in this First Memorandum Opinion and Order on Reconsideration (First Reconsideration Order). We will address the remaining issues in one or more subsequent reconsideration orders in this docket. First, we conclude that Query on Release (QOR) is not

¹ Telephone Number Portability, First Report and Order and Further Notice of Proposed Rulemaking, 11 FCC Rcd 8352 (1996).

² 47 U.S.C. § 251(b)(2). This requirement was added by the Telecommunications Act of 1996, Pub. L. No. 104-104, 110 Stat. 56 (1996).

³ A list of petitioners and commenting parties appears at Appendix A.

an acceptable long-term number portability method. Second, we extend the completion deadlines in the implementation schedule for wireline carriers by three months for Phase I and by 45 days for Phase II, clarify the requirements imposed thereunder, and address issues raised by rural LECs and certain other parties. Finally, we affirm and clarify our implementation schedule for wireless carriers.

II. BACKGROUND

A. First Report & Order

2. Pursuant to the statutory requirement of Section 251(b), the First Report & Order requires all LECs to implement a long-term number portability method in the 100 largest Metropolitan Statistical Areas (MSAs) according to a phased deployment schedule that commences October 1, 1997, and concludes December 31, 1998.⁴ Thereafter, in areas outside the 100 largest MSAs, each LEC must make long-term number portability available within six months after a specific request by another telecommunications carrier. The First Report & Order also requires all cellular, broadband personal communications services (PCS), and covered Specialized Mobile Radio (SMR) providers to be able to deliver calls from their networks to ported numbers by December 31, 1998, and requires cellular, broadband PCS, and covered SMR providers to offer number portability throughout their networks and have the capability to support roaming nationwide by June 30, 1999.

3. Rather than choosing a particular technology for the provision of number portability, the Commission established performance criteria that any long-term number portability method selected by a LEC must meet. The Commission noted, however, that one of the criteria it adopted effectively precludes carriers from implementing QOR. The First Report & Order further concludes that long-term number portability should be provided through a system of regional databases that will be managed by one or more independent administrators selected by the North American Numbering Council (NANC).

4. The First Report & Order also requires wireline LECs, pending their deployment of a long-term number portability method, to provide currently available number portability measures upon request by another telecommunications carrier. Consistent with Section 251(e)(2) of the Communications Act, the First Report & Order sets forth principles that ensure that the costs of currently available measures are borne by all telecommunications carriers on a competitively neutral basis, and permits states to utilize various cost recovery

⁴ In the First Report & Order, we identified two methods of providing service provider portability: those methods that use databases (such as the Location Routing Number (LRN) method) and those that do not (such as Remote Call Forwarding (RCF) and Flexible Direct Inward Dialing (DID)). First Report & Order, 11 FCC Rcd at 8359, 8361. We refer to the database methods as those appropriate for "long-term" service provider portability because they do not suffer from the same limitations as non-database methods such as RCF and DID, which are commonly referred to as "interim" or "currently available" measures. See First Report & Order, 11 FCC Rcd at 8361-62.

mechanisms, so long as they are consistent with these statutory requirements and our principles. The Commission also concurrently adopted a Further Notice of Proposed Rulemaking (Further Notice) seeking comment on cost recovery for long-term number portability.

B. Number Portability Methods

5. Because most telephone numbers within the North American Numbering Plan (NANP) are associated with a particular switch operated by a particular service provider, they currently cannot be transferred outside the service area of a particular switch or between switches operated by different service providers without technical changes to the switch or network.⁵ Industry participants have developed several methods for providing service provider portability that would be suitable for long-term use by carriers. These methods for providing long-term number portability employ databases containing the customer routing information necessary to route telephone calls to the proper terminating locations. All of these methods depend on Intelligent Network (IN) or Advanced Intelligent Network (AIN) capabilities.⁶

6. While various methods for providing long-term number portability have been developed, two methods have emerged as the primary ones advocated by parties in this proceeding: Location Routing Number (LRN) and Query on Release (QOR).⁷ Under LRN, a unique 10-digit number, or location routing number, is assigned to each central office switch. Carriers routing telephone calls to customers that have transferred their telephone numbers from one carrier to another perform a database query to obtain the location routing number that corresponds to the dialed telephone number.⁸ The database query is performed for all

⁵ Under the North American Numbering Plan (NANP), telephone numbers consist of ten digits in the form NPA-NXX-XXXX, where N may be any number from 2 to 9 and X may be any number from 0 to 9. Numbering plan areas (or NPAs) are known commonly as area codes. The second three digits of a telephone number are known as the NXX code. Typically, the NXX code identifies the central office switch to which the telephone number had been assigned or central office code (CO). Administration of the North American Numbering Plan, Report and Order, 11 FCC Rcd 2588, 2593-94 (1995) (Numbering Plan Order).

⁶ See generally Intelligent Networks, Notice of Proposed Rulemaking, 8 FCC Rcd 6813 (1993). IN refers to a general call processing architecture in which a centralized database performs some aspect of call set-up. Databases supporting IN services are built to support a specific call processing application. AIN describes a specific model of IN developed by Bellcore in which the database is a general purpose platform capable of supporting multiple call processing services. All of the long-term number portability methods utilize a signalling network (such as signalling system 7 or SS7) capable of routing database queries and responses and forwarding routing instructions. Proposed Final Draft on Number Portability, Industry Numbering Committee (INC Report) at 7.

⁷ For a more detailed description of LRN and QOR, see Appendix C.

⁸ For intraLATA calls, the originating carrier normally would perform the database query. For interLATA calls, the interexchange carrier normally would perform the query.

calls to switches from which at least one number has been ported.⁹ The carrier then routes the call to the new carrier based on the location routing number.

7. QOR, also known as Look Ahead, is a triggering mechanism that operates in conjunction with the LRN addressing scheme. Under QOR, the signalling used to set up a telephone call is routed to the end office switch to which the dialed telephone number was originally assigned (known as the donor switch or the release switch) according to the NPA-NXX of the dialed number. If the dialed number has been transferred to another carrier's switch, the release switch sends a release message back, and the previous switch in the call path queries the database to obtain the routing information.¹⁰ The call is then completed to the new carrier's switch.

C. Current State Efforts

8. Prior to the adoption of our First Report & Order, a number of state commissions had selected LRN as the method for implementing number portability in areas within their states' boundaries. These states include Colorado, Georgia, Illinois, Maryland, New York, and Ohio.¹¹ On August 2, 1996, the California Public Utilities Commission (CA PUC) issued an order mandating the use of LRN as the long-term number portability method to be implemented in California.¹² No states have selected QOR as the preferred method for long-term number portability.

9. Since adoption of the First Report & Order, planning and implementation of long-term number portability has progressed significantly. A number of state commissions have spent the past eight months developing state-specific plans for implementing LRN and resolving technical issues associated with the deployment of LRN. For example, the Illinois Commerce Commission Number Portability Workshop (ICC Workshop) remains in the forefront with respect to implementation of number portability. It has developed a detailed LRN test plan and has resolved numerous operational issues relating to switching, signalling,

⁹ We use the term "ported" in this context to mean the transfer of a telephone number from one carrier's switch to another carrier's switch, which enables a customer to retain his or her number when transferring from one carrier to another.

¹⁰ For intraLATA calls, the previous switch in the call path would be the originating switch. For interLATA calls, the previous switch in the call path would be an interexchange carrier's.

¹¹ First Report & Order, 11 FCC Rcd at 8362-63. The task force in Florida had also selected LRN for implementing number portability prior to adoption of the First Report & Order. Id. at 8362.

¹² California Public Utilities Commission, Re Local Exchange Service, Rulemaking Proceeding 95-04-043, Interim Order 95-04-044, Decision 96-08-028, slip op. at 14-15 (Aug. 2, 1996) (CA PUC Local Exchange Service Decision).

and SCP requirements.¹³ In addition, the Maryland Public Service Commission has determined a ranking and timeline for deployment of LRN in every switch in Maryland; established a comprehensive operations plan for LRN implementation; resolved issues relating to interfaces, ordering, provisioning, repair and maintenance processes as well as operator services; and studied switch and SCP requirements.¹⁴ Number portability task forces in Indiana, Michigan, and Ohio have also developed switch-specific implementation plans for those states.¹⁵

10. The industry, under the auspices of the NANC, has been working on the design of the number portability regional database system. The NANC, a Federal Advisory Committee established under the provisions of the Federal Advisory Committee Act¹⁶ to advise the Commission on numbering issues, held its first meeting on October 1, 1996.¹⁷ The NANC's Local Number Portability Administration (LNPA) Selection Working Group and its task forces have been meeting regularly to assist the NANC in recommending to the Commission resolution of issues related to the selection and duties of an entity or entities to serve as the local number portability administrator(s), the database architecture plan, and the technical and operational requirements for the number portability database system.¹⁸ The

¹³ See Illinois Local Number Portability Steering Committee, Minutes of Dec. 16, 1996, Meeting, CC Docket No. 95-116, filed Jan. 10, 1997 (IL LNP Steering Committee December 16, 1996 Minutes).

¹⁴ Staff of the Public Service Commission of Maryland, Commission's Investigation into Long Term Solutions to Number Portability in Maryland: Third Quarterly Report of the Maryland Local Number Portability Consortium, Case No. 8704, at 14-18, CC Docket No. 95-116, filed Nov. 22, 1996 (rel. Oct. 1996) (MD LNP Consortium October 1996 Report).

¹⁵ See, e.g., Indiana Number Portability Task Force, Cause No. 39983, Oct. 7, 1996, CC Docket No. 95-116, filed Jan. 10, 1997 (IN LNP Task Force October 7, 1996 Minutes); Michigan Local Number Portability Workshop, November 21, 1996 Meeting Minutes and December 17, 1996 Agenda, CC Docket No. 95-116, filed Jan. 10, 1997 (Michigan LNP Workshop November 21, 1996 Minutes); Sprint Ex Parte Letter at 4-5, from Warren D. Hannah, to William F. Caton, FCC, CC Docket 95-116, filed Dec. 19, 1996 (Sprint December 19, 1996 Ex Parte Filing) (minutes of Nov. 13, 1996 meeting of Ohio Local Number Portability Workshop).

¹⁶ 5 U.S.C., App. 2 (1988).

¹⁷ FCC Establishes North American Numbering Council Advisory Committee, Announces Members, and Sets Initial Meeting Date, Public Notice, CC Docket No. 92-237, DA 96-1495 (rel. Sept. 5, 1996) (Establishment of NANC Public Notice).

¹⁸ The North American Numbering Council Chairman Announces Organizational Structure and Seeks Working Group and Task Force Participants, Public Notice, CC Docket No. 92-237, DA 96-1664 (rel. Oct. 4, 1996) (NANC Announces Organizational Structure Public Notice); Local Number Portability Administration Selection Working Group Status Report: North American Numbering Council Meeting of February 26, 1997, at 1, CC Docket No. 95-116, filed Mar. 4, 1997 (LNPA Selection Working Group February 26, 1997 Status Report); see also Local Number Portability Administration Selection Working Group Status Report: North American Numbering Council Meeting of December 2, 1996, at 7, CC Docket No. 95-116, filed Dec. 4, 1997 (LNPA Selection Working Group December 2, 1996 Status Report).

NANC has committed to making its recommendation to the Commission on LNPA issues by May 1, 1997.¹⁹ Under NANC oversight, carriers in Illinois, Georgia, California, Maryland, Colorado, New York, and Texas have formed a Limited Liability Corporation (LLC) and issued a Request for Proposal (RFP) for each state to construct and maintain a number portability database.²⁰ Each LLC has contacted neighboring states seeking to expand these state databases into regional databases covering the RBOC service areas.²¹ The LNPA Selection Working Group projects that all seven regional databases will be ready for testing on dates ranging from April 18, 1997, to July 1, 1997, and will be ready to support number portability deployment on or before October 1, 1997, in accordance with the deployment schedule set forth in the First Report & Order.²²

III. DISCUSSION

A. Issues Relating to Long-Term Number Portability Methods

1. Performance Criteria

a. Background

11. The Act requires all LECs "to provide, to the extent technically feasible, number portability in accordance with requirements prescribed by the Commission."²³ The Act states that "[t]he term 'number portability' means the ability of users of telecommunications services to retain, at the same location, existing telecommunications numbers without impairment of quality, reliability, or convenience when switching from one telecommunications carrier to another."²⁴ We interpreted these statutory provisions to mean that the Commission should develop a national number portability policy and prescribe the requirements that all local exchange carriers, both incumbents and others, must meet to satisfy their statutory obligations.²⁵

¹⁹ NANC Timeline at 1, CC Docket No. 95-116, filed Dec. 9, 1996 (NANC Timeline).

²⁰ North American Numbering Council, State NPAC/SMS Status at 1-5, CC Docket No. 95-116, filed Jan. 8, 1997 (NANC January 8, 1997 State NPAC/SMS Status).

²¹ NANC January 8, 1997 State NPAC/SMS Status at 1-5.

²² LNPA Selection Working Group February 26, 1997 Status Report at 1. See also NANC January 8, 1997 State NPAC/SMS Status at 1-5; LNPA Selection Working Group December 2, 1996 Status Report at 7.

²³ 47 U.S.C. § 251(b)(2).

²⁴ 47 U.S.C. at § 153(30).

²⁵ First Report & Order, 11 FCC Rcd at 8370.

12. In the First Report & Order, we concluded that establishing performance criteria that a LEC's number portability architecture must meet would better serve the public interest than choosing a particular technology or specific architecture.²⁶ We thus adopted the following nine minimum criteria, which require that any long-term number portability method must: (1) support existing network services, features, and capabilities; (2) efficiently use numbering resources; (3) not require end users to change their telecommunications numbers; (4) not require telecommunications carriers to rely on databases, other network facilities, or services provided by other telecommunications carriers in order to route calls to the proper termination point; (5) not result in unreasonable degradation in service quality or network reliability when implemented; (6) not result in any degradation of service quality or network reliability when customers switch carriers; (7) not result in a carrier having a proprietary interest in any long-term method; (8) be able to accommodate location and service portability in the future; and (9) have no significant adverse impact outside the areas where number portability is deployed.²⁷ We concluded that a number of these criteria implement the statutory requirement that customers switching their carrier be able to retain their numbers "without impairment of quality, reliability, or convenience."²⁸

13. In addition, we concluded that criterion four precludes carriers from using such number portability methods as QOR.²⁹ When discussing criterion four, we stated that carriers may experience several undesirable effects if they are forced to rely on the networks of their competitors in order to route calls. For example, the use of number portability methods that first route the call through the original service provider's network in order to determine whether the call is to a ported number, and then perform a query only if the call is to be ported, would treat ported numbers differently than non-ported numbers, resulting in ported calls taking longer to complete than unported calls.³⁰ This differential in efficiency would disadvantage the carrier to whom the call was ported and impair that carrier's ability to compete effectively against the original service provider.³¹

b. Pleadings

14. Most petitioners focus primarily on our conclusion in the First Report & Order that incumbent LECs are prohibited from using QOR as a long-term number portability

²⁶ Id. at 8377.

²⁷ Id. at 8378.

²⁸ Id. at 8378-83.

²⁹ Id. at 8381.

³⁰ Id. at 8380.

³¹ Id.

method.³² They argue that QOR does not violate the performance criteria the Commission established, and that QOR has many public interest benefits that will make it more efficient, easier, and less costly to deploy than other number portability methods.³³ They assert that, at a minimum, we should allow a carrier to use QOR within its own network in order to route calls made by its own customers to NXXs assigned to that carrier.³⁴ Furthermore, they claim that a LEC's "intranetwork" use of QOR would not impact other carriers, nor would it present network interoperability issues.³⁵ Some petitioners also argue that we should allow the use of QOR between networks if the carriers mutually agree to do so.³⁶

15. With respect to the performance criteria, petitioners assert that QOR does not violate performance criterion four (*i.e.*, it does not "require dependency on another carrier's network") any more than other number portability methods, such as LRN.³⁷ For example, Pacific and USTA argue that there is no rational basis for the Commission to conclude that a number portability method that requires an SS7 message to be sent to a switch to which the NXX code of the called number has been assigned (the "essence" of QOR) causes "undue reliance" on the networks of other carriers, while a number portability method that requires an SS7 message to be sent to the incumbent's Service Control Point (SCP) (the "essence" of LRN) does not involve such undue reliance.³⁸ Because every number portability method

³² Bell Atlantic Petition at 7-8; BellSouth Petition at 21; Pacific Petition at 10-11; USTA Petition at 4.

³³ See, e.g., Bell Atlantic Petition at 1-2; BellSouth Petition at 21 n.21; Pacific Petition at 1; SBC Petition at 1-2; USTA Petition at 3; U S West Petition at 12-13; see also Bell Atlantic et al. Ex Parte Letter, from Raymond Smith, Bell Atlantic, et. al. to William Caton, FCC, CC Docket No. 95-116, filed Nov. 26, 1996 (Bell Atlantic et al. November 26, 1996 Ex Parte Filing).

³⁴ Bell Atlantic Petition at 7-8; BellSouth Petition at 21-22; NYNEX Petition at 3-6; Pacific Petition at 3-4; SBC Petition at 1-3; USTA Petition at 6; U S West Petition at 12 n.16. See also Cincinnati Bell Comments at 1; GTE Opposition at 3.

³⁵ Bell Atlantic Petition at 3, 8, 10; BellSouth Petition at 22 n.23; NYNEX Reply at 5; Pacific Petition at 3; USTA Petition at 2, 5-6. See also GTE Reply at 3. Some petitioners suggest that opponents of QOR fail to understand how QOR works, pointing out that QOR does not require competing LECs to rely on the incumbent LEC to process calls originated by the customers of the competing LEC. USTA Petition at 4-5; see also GTE Opposition at 5.

³⁶ BellSouth Petition at 21-22; Pacific Petition at 3; USTA Petition at 6. See also TCG Reply at 3.

³⁷ Bell Atlantic Petition at 9-10; BellSouth Petition at 21; Pacific Petition at 4 n.2, 11; USTA Petition at 4.

³⁸ Pacific Reply at 6; USTA Reply at 2. An SCP is a database in the public switched network that contains information and call processing instructions needed to process and complete a telephone call. An originating switch accesses an SCP to obtain such information. Typically, the information contained in an SCP is obtained from a Service Management System (SMS). An SMS is a database or computer system not part of the public switched network that, among other things: (1) interconnects to an SCP and sends to that SCP the information and call processing instructions needed for a network switch to process and complete a telephone call; and (2) provides telecommunications carriers with the capability of entering and storing data regarding the processing and completing

requires some dependence on another carrier's network facilities, several petitioners suggest that we eliminate criterion four as one of the performance criteria that a long-term number portability method must meet.³⁹

16. Petitioners also argue that QOR does not result in any degradation of service quality or network reliability when customers switch carriers (performance criterion six). These parties contend that claims that use of QOR will cause significant additional delays in the routing of calls to ported numbers are unfounded. They allege that any additional delay attributable to the use of QOR is insignificant and imperceptible, as compared to the delay associated with LRN.⁴⁰ U S West urges the Commission to conduct a survey to determine whether callers would perceive differences in call set-up time between LRN and QOR.⁴¹ In addition, NYNEX asserts that QOR would impose post-dial delay on a much smaller set of calls than LRN, because LRN without QOR increases post-dial delay for all interswitch calls, whether ported or not.⁴² USTA, on the other hand, argues that the standard should not be whether network routing for ported and non-ported numbers is identical, but whether service quality is discriminatory.⁴³

17. With respect to network reliability, proponents of QOR assert that QOR is less likely to threaten the reliability of the network than LRN, because QOR requires far fewer database queries than LRN.⁴⁴ These parties contend that QOR imposes less of a burden on

of a telephone call.

³⁹ BellSouth Petition at 19-21; SBC Petition at 2; USTA Petition at 4.

⁴⁰ Record estimates of the additional post-dial delay stemming from the use of QOR to route calls to ported numbers, as compared to the use of LRN to route calls to ported numbers, range from 0.4 to 0.5 seconds. Pacific Petition at 5, 6 (0.4 seconds); USTA Petition at 7 (0.5 seconds); US West Petition at 14 n.19 (less than 0.5 seconds). See also ALTS Response at 4 (actual delay will depend on number of offices involved in completing QOR inquiry). The additional delay associated with QOR is comprised of the set-up time for the originating switch to determine and signal the terminating switch; for the terminating switch to determine that the number called no longer resides in that switch, create the return message, and signal the originating switch; and for the originating switch to take down the reserved call path. AT&T Ex Parte Presentation at 8, CC Docket No. 95-116, filed October 29, 1996 (AT&T October 29, 1996 Ex Parte Filing). The LRN query must still be performed either by the original terminating switch, the originating switch, or the intermediate (N-1) carrier. The call must go through additional steps, reserve additional trunks, and possibly encounter even more delay if it must go through tandems linking the originating and terminating switches. Id. at 4.

⁴¹ U S West Petition at 12-15.

⁴² NYNEX Reply at 4.

⁴³ USTA Petition at 8; see also GTE Opposition at 4.

⁴⁴ BellSouth Petition at 23-24; GTE Petition at 10; NYNEX Petition at 5-6; Pacific Petition at 9; USTA Petition at 10-11.

the SS7 network and, therefore, poses a lower risk of a network outage.⁴⁵ In a late-filed ex parte presentation, SBC submitted a network reliability study conducted by Bellcore that purportedly demonstrates that there is a 0.036 percent (0.00036) probability of a "catastrophic outage" if LRN is implemented under what they characterize as a "normal" schedule, and no probability of such a catastrophic network outage if QOR is implemented under a "normal" schedule and less than one percent of the numbers are ported.⁴⁶ MCI and AT&T vigorously dispute the purported findings of the Bellcore study, arguing, among other things, that the figures for "catastrophic outage" assume that all number portability databases in Houston fail simultaneously, which they argue is a highly improbable scenario, given that SBC has never experienced a single dual SCP failure, much less a dual failure of all SCPs.⁴⁷ MCI also notes that, according to the Bellcore study, probabilities for FCC reportable outages with LRN and QOR are virtually identical under the same scheduling scenarios.⁴⁸ In response, Bellcore argues that the types of failures contemplated by the Bellcore study are not "too improbable to be of concern" as AT&T claims, because a combination of events and errors has resulted in various switch failures and outages in the past.⁴⁹ Thus, Bellcore asserts that, even though a complete failure has not occurred, there is certainly a reasonable probability that such an event could occur in the future.⁵⁰ In fact, Bellcore claims that such partial and complete failures have been relatively rare in the United States, because the industry has been diligent

⁴⁵ See, e.g., BellSouth Petition at 24; Bell Atlantic Petition at 3, 5; Pacific Petition at 7-8, 9; Pacific Ex Parte Presentation at 3, CC Docket No. 95-116, filed October 24, 1996 (Pacific Oct. 24, 1996, Ex Parte Filing); see also Bell Atlantic/Pacific joint Ex Parte Presentation at 4, CC Docket No. 95-116, filed Jan. 10, 1997 (Bell Atlantic/Pacific January 10, 1997, Ex Parte Filing).

⁴⁶ SBC Ex Parte Letter at att. at 5, from Link Brown, to William F. Caton, FCC, CC Docket No. 95-116, filed Feb. 19, 1997 (SBC February 19, 1997 Ex Parte Filing). The Bellcore study defines "catastrophic outage" as losing all intraLATA, interoffice service for most or all of Houston. The Bellcore study further states that the "normal" introduction of a network capability involves "the definition of the capability, identification of all affected network components, preparation and testing of new software and hardware as needed, development of operations plans, installation and testing of new hardware and software, integration testing and soak of new hardware, software, and procedures within a carrier's network, and intercompany testing and soak." Id. at n.3. Pacific Bell and Bell Atlantic also reiterated their concerns about network reliability if QOR is not permitted. See Pacific Bell, Bell Atlantic, and SBC Ex Parte Letter at 1, from Ross Ireland, to William Caton, FCC, CC Docket No. 95-116, filed Feb. 24, 1997 (Pacific, et al., February 24, 1997 Ex Parte Filing).

⁴⁷ MCI Ex Parte Letter at 2, from Donna Roberts, to William F. Caton, FCC, CC Docket No. 95-116, filed Feb. 26, 1997 (MCI February 26, 1997 Ex Parte Filing); see also AT&T Ex Parte Letter at 1, from R. Gerard Salemme, to William F. Caton, FCC, CC Docket No. 95-116, filed Feb. 26, 1997 (AT&T February 26, 1997 Ex Parte Filing). For further discussion of the Bellcore study, see infra note 248.

⁴⁸ MCI February 26, 1997 Ex Parte Filing at 2; see infra note 235 (defining "FCC reportable outage").

⁴⁹ Bellcore Ex Parte Letter at 1-2, from Michael Knapp, to William Caton, FCC, CC Docket No. 95-116, filed Mar. 5, 1997 (Bellcore March 5, 1997 Ex Parte Filing) (citing outages in the networks of AT&T, Bell Atlantic, and Pacific Bell as examples of prior network failures).

⁵⁰ Id.

in anticipating failures, guarding against them, and adopting designs and procedures that minimize their effects when they occur.⁵¹

18. Parties opposing these petitions argue that QOR violates both criterion four and criterion six.⁵² They argue that QOR requires greater dependence on an incumbent LEC's network than other number portability methods, such as LRN.⁵³ For example, opponents of QOR claim that QOR requires more signalling and routing steps than LRN before the call is delivered to a customer that has ported a number. They also assert that QOR relies to a greater extent on an incumbent LEC's facilities, because QOR uses both the signalling and trunking networks to reserve a call path to the incumbent LEC's terminating switch to which the NXX code of the called party was originally assigned.⁵⁴ Opponents of QOR further assert that the use of QOR affects service quality and network reliability. They contend that: (1) QOR results in service degradation by causing an incremental increase in the post-dial delay for calls ported to a new carrier;⁵⁵ (2) QOR impairs network reliability because additional network routing increases the potential for dropped calls and call blocking for ported calls,⁵⁶ and that (3) QOR is therefore not "competitively neutral," even when it is used only "within a carrier's network" or between consenting carriers.⁵⁷

c. Discussion

19. Criterion Four. Based on our analysis of the record in this proceeding, we now conclude that criterion four should be removed from our list of minimum performance criteria required for number portability, because all interconnected carriers are likely to rely upon each other's networks to some extent to process and route calls in a market in which a long-

⁵¹ Id.

⁵² See, e.g., AT&T Opposition at 14-15; MCI Opposition at 8; Time Warner Comments at 4-5; TRA Comments at 11-12.

⁵³ AT&T Opposition at 14-15; MCI Opposition at 7-8; Time Warner Comments at 4-5.

⁵⁴ See AT&T October 29, 1996 Ex Parte Filing at 10; MCI October 28, 1996 Ex Parte Filing at 3.

⁵⁵ Opponents of QOR assert that the proper comparison for post-dial delay is not the post-dial delay of QOR versus LRN as the proponents of QOR claim, but rather the post-dial delay using QOR for calls to ported numbers versus calls to non-ported numbers. See, e.g., MCI Opposition at 9. MCI further asserts that post-dial delay associated with QOR could be 1.7 seconds or more. MCI Opposition at 9-10; see also ALTS Response at 4; AT&T Opposition at 10; Sprint Opposition at 2-3.

⁵⁶ MCI Ex Parte Presentation at 2, CC Docket No. 95-116, filed Oct. 28, 1996 (MCI October 28, 1996 Ex Parte Filing).

⁵⁷ AT&T Opposition at 11; MCI Ex Parte Presentation at 2, CC Docket No. 95-116, filed Oct. 16, 1996 (MCI October 16, 1996 Ex Parte Filing); MCI October 28, 1996 Ex Parte Filing at 2; Sprint Opposition at 2.

term number portability method has been deployed.⁵⁸ For example, under both LRN and QOR, the competitive LEC may be dependent upon facilities provided by the original service provider for the proper routing of all ported calls, because the original service provider is the entity that launches a query to the number portability database to obtain the location routing number for the dialed number. Furthermore, we find no basis in the record for drawing a principled distinction between permissible and impermissible levels of reliance on the original service provider's network. For these reasons, we find that criterion four -- which requires that any number portability method may not "require telecommunications carriers to rely on databases, other network facilities, or services provided by other telecommunications carriers in order to route calls to the proper termination point" -- is, from a practical perspective, unworkable. Moreover, many of our concerns about reliance on a competitor's network (e.g., the possibility of service degradation and call blocking) are addressed by criterion six. Thus, criterion four does not appear to be necessary in order to implement the statutory definition of number portability. In light of our decision to eliminate criterion four, we conclude that AirTouch's requested clarification of criterion four is moot.⁵⁹

20. Criterion Six. With respect to criterion six, we affirm our conclusion in the First Report & Order that any long-term number portability method must not result in any degradation of service quality or network reliability when customers switch carriers. We further conclude, based on the record in this proceeding, that criterion six prohibits the use of QOR as a long-term number portability method. We agree with the commenters, primarily potential new providers of local exchange services (also referred to as "competitive LECs"), that: (1) QOR results in degradation of service by imposing post-dial delay only on calls ported to new carriers; (2) if network reliability problems were to arise as a result of QOR, those problems would disproportionately affect customers who port their numbers; and (3) QOR should not be permitted on an intranetwork basis, because it is not "competitively neutral."⁶⁰ We discuss each of these conclusions in more detail below.

(1) Service Degradation

21. After considering petitioners' arguments and concerns, we affirm our conclusion in the First Report & Order that, in accordance with criterion six, a long-term number portability method may not cause customers to experience "a greater dialing delay or call set up time" as compared to when the customer was with the original carrier.⁶¹ Criterion

⁵⁸ See, e.g., BellSouth Petition at 19-21; SBC Petition at 2; USTA Petition at 4.

⁵⁹ See AirTouch Petition at 9-10 (seeking clarification that criterion four does not prohibit a carrier from unilaterally relying upon another carrier for the routing and transport of its traffic).

⁶⁰ AT&T Opposition at 11; MCI October 16, 1996 Ex Parte Filing at 2; MCI October 28, 1996 Ex Parte Filing at 2; Sprint Opposition at 2.

⁶¹ First Report & Order, 11 FCC Rcd at 8382.

six implements the statutory requirement that consumers be able to retain their numbers "without impairment of quality, reliability, or convenience when switching from one telecommunications carrier to another."⁶²

22. At the outset, we agree with AT&T and Time Warner that the time it takes to receive a call is an important factor for many subscribers, particularly businesses that receive and respond to a large number of calls on a daily basis.⁶³ If the party making a call to a business experiences additional delay because that business has switched carriers, that delay may negatively impact how the business is perceived, which, in turn, could dissuade the business from switching carriers in the first place. Therefore, we clarify that performance criterion six requires that calls to customers who change carriers (not just calls from customers who change carriers) must not take longer to complete merely because the customer has switched local service providers.⁶⁴ In order to implement the statutory requirement that consumers should be able to change carriers and retain their original phone number without impairment of quality, reliability, or convenience, we conclude that any post-dial delay imposed by a number portability method should be roughly equivalent for all consumers, whether they are calling to or from a ported or a non-ported number.⁶⁵

23. We further conclude that consumers that switch telecommunications carriers and retain their numbers would experience "impairment of quality" if QOR were used, because the post-dial delay imposed by QOR is not equivalent for all consumers. Under QOR, calls that are placed to ported numbers must undergo a series of signalling and routing steps that result in longer post-dial delay than occurs for calls that are placed to non-ported numbers.⁶⁶ (The additional steps in the call flow required by QOR are illustrated in Appendix C.) No party disputes that QOR causes additional post-dial delay. There is disagreement, however, over the appropriate baseline for comparison. Proponents of QOR erroneously focus on the post-dial delay of alternative number portability technologies, comparing the

⁶² Id. (citing 47 U.S.C. § 153(30)).

⁶³ AT&T Opposition at 11; Time Warner Comments at 5. According to AT&T, these customers would be dissuaded from choosing competitive LEC services if that would entail increased call set-up time. AT&T Opposition at 11.

⁶⁴ Parties arguing in favor of QOR contend that post-dial delay associated with QOR would affect only the party originating the call, and not the terminating party that has ported its number. Bell Atlantic Petition at 5-8, 9 n.13; BellSouth Petition at 22 and n.25; GTE Reply at 2-3; NYNEX Petition at 6; Pacific Petition at 5-6; USTA Petition at 7; U S West Petition at 13-15.

⁶⁵ As petitioners point out, various technical factors not related to number portability can contribute to post-dial delay, such as whether the call is an interswitch or an intraswitch call. See, e.g., Bell Atlantic Petition at 5; Pacific Petition at 5.

⁶⁶ Time Warner Ex Parte Presentation at 2, CC Docket No. 95-116, filed Dec. 10, 1996 (Time Warner December 10, 1996 Ex Parte Filing).

incremental post-dial delay associated with a call to a ported number using LRN with that of a call to a ported number using QOR.⁶⁷ That is not the statutory standard. We agree with AT&T and MCI that the proper comparison for incremental post-dial delay is the difference in delay between calls placed to ported numbers and calls placed to non-ported numbers, because that is the delay that occurs "when switching from one telecommunications carrier to another."⁶⁸ According to the most conservative estimates, calls to ported numbers from a network that uses QOR would experience an additional post-dial delay of approximately 1.3 seconds as compared to calls placed to non-ported numbers.⁶⁹ Because we find that post-dial delay of 1.3 seconds is significant, we conclude that QOR violates the statutory definition of number portability and criterion six. By contrast, under LRN, there is no differential between ported and non-ported calls; for all calls, it takes the same amount of time to query the database for appropriate routing instructions. LRN therefore does not impair service quality when a customer changes carriers. Accordingly, we conclude that LRN is consistent with the statutory definition of number portability and performance criterion six.

24. We also reject petitioners' argument that some degree of added post-dial delay should be acceptable, provided that it is not "perceptible" to the public.⁷⁰ First, we agree with AT&T that the studies submitted by petitioners fail to demonstrate that 1.3 seconds of post-dial delay is imperceptible to the public.⁷¹ Second, we agree with those parties that contend that, even if the additional post-dial delay were imperceptible to the caller, QOR could adversely affect competitors, because the incumbent LEC could truthfully advertise the fact

⁶⁷ See supra note 40.

⁶⁸ AT&T October 29, 1996 Ex Parte Filing at 8; MCI Opposition at 9.

⁶⁹ See, e.g., Pacific Reply at 6 (a ported call utilizing QOR will have post-dial delay of approximately 1.3 seconds); but see MCI Opposition at 9-10 (post-dial delay associated with QOR is 1.7 seconds or more).

⁷⁰ AT&T and Sprint dispute the claim that the post-dial delay is imperceptible to customers, arguing there is no record evidence to support this claim. AT&T Opposition at 12; Sprint Opposition at 4.

⁷¹ See, e.g., AT&T Ex Parte Letter at 2, from Frank Simone to Melinda Littell, FCC, CC Docket No. 95-116, filed Nov. 21, 1996, (AT&T November 21, 1996 Ex Parte Filing) (noting that the experiment described in the MacDonald & Archambault Study did not establish a level of post-dial delay below which the delay was imperceptible; rather, the experiment tested impatience levels among the participants when exposed to differences in post-dial delay.) The MacDonald & Archambault Study's authors specifically note that a customer's threshold for post-dial delay may change over time, and customers may demand shorter average post-dial delay than was found tolerable when the study was conducted. See MacDonald & Archambault Study at ¶ 4.1; see also AT&T November 21, 1996 Ex Parte Filing at 2. The Cotton & Kuong-lau Study is inconclusive, because the authors recommend additional studies to resolve differences between the three call models used in the experiment. See Bell Atlantic Petition at 6 & n.6 (citing MacDonald & Archambault, Using Customer Expectations in Planning the Intelligent Network, Proceedings of the 14th International Teletraffic Congress (ITC) 95-104 (1994) (MacDonald & Archambault Study) and Cotton & Kuong-lau, Effects of Initial and Subsequent AIN Call Setup Delays on Grade of Service Expectations, Technical Memorandum TM-NWT-016605, July 1990) (Cotton & Kuong-lau Study); Pacific Petition at 5 & n.5 (citing MacDonald & Archambault Study).

that calls to customers that remain on the incumbent LEC's network are completed more quickly than calls to customers that switch to a competitor's network.⁷² MCI points out that this could create a marketplace perception that competitive LECs are operating inferior networks, which could harm competition.⁷³ In response, six incumbent LECs have voluntarily committed not to mention the call set-up time differences between LRN and QOR in their advertising materials.⁷⁴ As AT&T and MCI point out, however, the incumbent LECs' voluntary commitment is limited to "advertising materials," and therefore does not preclude them from mentioning call set up in all other aspects of their marketing, such as direct sales and telemarketing, news releases, studies commenced to compare competitors' service performance, and editorials.⁷⁵ Furthermore, because only six incumbent LECs signed the letter, we have no basis on which to conclude that all incumbent LECs will refrain from using the differences in call set-up time to influence marketplace perceptions and inhibit competition. Thus, we decline to designate a threshold below which added post-dial delay is permissible. Moreover, given our concerns about these marketplace perceptions, we find U S West's suggestion that the Commission survey consumers to ascertain whether they can perceive the post-dial delay associated with QOR to be unnecessary.⁷⁶

(2) Network Reliability

25. QOR. As discussed above, criterion six requires that no long-term number portability method may result in "any degradation of service quality or network reliability when customers switch carriers."⁷⁷ We agree with the opponents of QOR that technical concerns raised by QOR are more likely to impact ported numbers adversely than non-ported

⁷² MCI Opposition at 10; Sprint Opposition at 5; Time Warner Comments at 5; ALTS Response at 4; but see Bell Atlantic Reply at 2-3, n.4 (asserting that carriers using QOR probably would not advertise the fact that they have intentionally introduced delay into their own service); USTA Reply at 6. Accord Pacific Reply at 7-8 (customer would more readily understand an advertisement that competitive LECs' customers' calls will complete faster than the incumbent's customers).

⁷³ MCI Opposition at 10 (asserting that incumbent LECs are likely to seize upon post-dial delay as a factor to differentiate their services from those of a competitor, and citing as evidence the advertising claims of AT&T prior to the deployment of the 800 number database that its 800 service was operationally superior based on, among other things, its faster call completion).

⁷⁴ See Ex Parte Letter from Bell Atlantic, BellSouth, GTE, NYNEX, Pacific, and SBC, to William Caton, FCC, CC Docket No. 95-116, filed Feb. 10, 1997 (Bell Atlantic et al. February 10, 1997 Ex Parte Filing).

⁷⁵ See Ex Parte Letter from MCI to William Caton, FCC, CC Docket No. 95-116, filed February 19, 1997 (MCI February 19, 1997 Ex Parte Filing); AT&T Ex Parte Letter, to William Caton, FCC, CC Docket No. 95-116, filed Feb. 18, 1997 (AT&T February 18, 1997 Ex Parte Filing).

⁷⁶ U S West Petition at 12-15; see also NEXTLINK Opposition at 5 (urging the Commission to reject U S West's request to delay implementation in order to survey consumers about post-dial delay caused by QOR).

⁷⁷ First Report & Order, 11 FCC Rcd at 8378.

numbers.⁷⁸ For example, QOR requires fewer SS7 links to the number portability database than LRN because of the lower number of queries to support. There is a risk, therefore, that an SS7 network engineered to accommodate a lower traffic level would not be able to handle an unexpected sharp increase in the number of calls to ported numbers. Such increases could occur in response to advertising or promotions by competitive LECs with ported numbers. Difficulties in querying the database may result in call blockage (i.e., lost or incomplete calls) and increased post-dial delay, but only on calls to ported numbers. We also note that the apparent advantage of QOR in requiring fewer queries to the database is offset by the fact that it will require at least two additional signalling messages for each call to a ported number before routing instructions are obtained.⁷⁹ This additional load on the signalling network creates the potential for reliability problems for ported calls.⁸⁰ We conclude that network reliability concerns posed by QOR violate criterion six and the statutory definition of number portability because, if any network problems arise as a result of QOR, they would disproportionately affect consumers who port their numbers.

26. LRN. As a related matter, proponents of QOR assert that deployment of LRN is more likely to result in network failure than if carriers are permitted to use the QOR enhancement to LRN.⁸¹ Although the proponents of QOR do not frame their arguments in terms of the performance criteria we adopted in the First Report & Order, the thrust of their argument appears to fall within the scope of criterion five, which requires that no number portability method should result in "unreasonable degradation in service quality or network reliability when implemented."⁸²

27. Based on the record before us, we conclude that petitioners have not demonstrated that LRN fails to meet criterion five.⁸³ Although the initial deployment of any new technology may pose some risk to the network, we are not persuaded that deployment of LRN will result in unreasonable degradation of network reliability when deployed under the revised schedule adopted in this First Reconsideration Order. Indeed, petitioners' concerns about LRN's impact on network reliability are mitigated by a number of factors. First, as we noted previously, LRN has been examined extensively by a number of state commissions and

⁷⁸ MCI October 28, 1996 Ex Parte Filing at 3.

⁷⁹ See MCI Opposition at 12, 14; Time Warner Comments at 3; see also National Communications System, Local Number Portability: AIN and NS/EP Implications at ¶ 9.2 (July 1996).

⁸⁰ MCI November 6, 1996 Ex Parte Filing at 2.

⁸¹ See, e.g., Bell Atlantic/Pacific January 10, 1997 Ex Parte Filing at 4; BellSouth Petition at 23-24; GTE Petition at 10; NYNEX Petition at 5-6; Pacific Petition at 9; USTA Petition at 10-11; SBC February 19, 1997 Ex Parte Filing.

⁸² First Report & Order, 11 FCC Rcd at 8378.

⁸³ See generally MCI February 26, 1997 Ex Parte Filing; AT&T February 26, 1997 Ex Parte Filing.

industry workshops, and had been selected for deployment by at least six states prior to the adoption of the First Report & Order.⁸⁴ Second, we provided in the First Report & Order for a field test of LRN in the Chicago MSA (Chicago trial), which should help to protect against network reliability problems.⁸⁵ If technical problems with LRN arise with respect to the Chicago trial, we can take appropriate action at that time.⁸⁶ Third, as discussed in more detail in Section III.B.3 below, we are extending the implementation schedule for Phase I to allow carriers additional time to test number portability in a live environment, and to take appropriate steps to safeguard network reliability. Indeed, the Bellcore study submitted by SBC supports our conclusion that additional time for testing, integration, and soaking (limited use of the software in a live environment for a length of time sufficient to find initial defects) will help to reduce the probability of network failure.⁸⁷ Fourth, as we clarify below, the Commission's implementation schedule does not require a flashcut implementation on October 1, 1997, for those MSAs in the first phase of the deployment schedule. Rather, number portability may be implemented gradually throughout the initial phase, provided that implementation in the designated markets is completed by the end of that phase.

28. Moreover, petitioners' fears about LRN's impact on the SS7 network are not grounds for abandoning LRN. Because of the pre-deployment procedures we adopt in this order, carriers will know in advance the specific switches in each MSA that require local number portability capabilities.⁸⁸ Furthermore, the task of forecasting signalling load requirements should be easier with LRN than QOR, because queries are required for all interoffice intraLATA calls. As a result, carriers should be able to use historic traffic flows to help predict how many of these calls are typically destined to switches where local number portability has been deployed. In contrast, for QOR, signalling loads are dependent upon the percentage of numbers actually ported, which is a figure more difficult to predict in advance.

29. In sum, we conclude that claims that LRN will threaten network reliability are speculative and are mitigated by the added time we have provided for carriers to implement number portability during Phase I and Phase II. We expect the industry to continue to anticipate failures, guard against them, and minimize their effects when they occur, which, as Bellcore points out, has helped to make such failures rare events in the United States in the

⁸⁴ First Report & Order, 11 FCC Rcd at 8362-63; see also Section II.C.

⁸⁵ First Report & Order, 11 FCC Rcd at 8393-94.

⁸⁶ In addition, one of the Commission's advisory committees, the Network Reliability and Interoperability Council, has identified number portability as an issue on which it will be developing recommendations for consideration by the Commission and the industry. We expect to receive those recommendations in July 1997. For further information on the Council, see <http://www.fcc.gov/oet/nric>.

⁸⁷ SBC February 19, 1997 Ex Parte Filing at att. at 1.

⁸⁸ See Section III.B.2.

past.⁸⁹ Thus, given all of the safeguards and mitigating factors discussed above, we are persuaded that deployment of LRN will not result in "unreasonable degradation of network reliability."

(3) Intranetwork Use of QOR

30. Incumbent LECs ask us to permit them to use QOR on all calls that originate on their network and are placed to numbers that originally were assigned to one of their end offices (i.e., calls "within their own network" or "intranetwork calls").⁹⁰ We conclude that their request is misleading insofar as it implies that only calls to and from their own customers would be affected. In fact, calls that are placed to numbers that have been ported would require a query to the number portability database after the originating switch is notified by the terminating switch in the incumbent LEC's service area that the called number has been ported. We agree with MCI that, as customers subscribe to alternative carriers, the only calls that will remain "within" the incumbent LEC's network will be calls from one of the incumbent LEC's customers to another.⁹¹ As discussed above, however, the call to the ported number would experience increased post-dial delay because of the additional signalling and routing preparations required by QOR. Such disparity in treatment between ported and non-porting numbers violates criterion six and the statutory definition of number portability.

2. Public Interest Considerations

a. Overview

31. Petitioners further assert that, regardless of our performance criteria, incumbent LECs should not be prohibited from using QOR as a number portability method, because deployment of QOR serves the public interest. First, they claim that QOR will result in significant cost savings.⁹² Second, they claim that permitting incumbent LECs to use QOR will make it easier for them to meet the Commission's implementation schedule.⁹³

32. As an initial matter, we disagree with the petitioners' premise that LECs should be permitted to implement QOR regardless of the performance criteria, if the Commission determines that QOR serves the public interest. As stated above, we conclude that QOR

⁸⁹ Bellcore March 5, 1997 Ex Parte Filing at 2.

⁹⁰ Pacific Petition at 3-4.

⁹¹ MCI Opposition at 7; see also Time Warner Comments at 2-3.

⁹² Bell Atlantic Petition at 5; BellSouth Petition at 23; GTE Petition at 10; NYNEX Petition at 4-5; Pacific Petition at 7-9; SBC Petition at 1-2; USTA Petition at 9-10; U S West Petition at 13 n.18.

⁹³ Bell Atlantic Petition at 10 n.14; NYNEX Petition at 6; Pacific Petition at 9-10.

violates criterion six, which is required by the statute. Thus, we are not at liberty to apply a public interest analysis that could result in an abrogation of the statutory mandate. Nevertheless, because the parties raised public interest concerns, we address them here in order to establish that our decision to prohibit QOR is not contrary to the public interest.

b. Purported Cost Savings Associated with QOR

33. Background. In the First Report & Order, we concluded that there was little evidence on the record to support the claim that deployment of QOR would result in significant cost savings.⁹⁴ We found, based on the record, that the competitive benefits of ensuring that calls are not routed through the original carrier's network outweighed any cost savings that QOR might bring in the immediate future.⁹⁵ Although Pacific submitted summary figures purporting to indicate that it would save approximately \$14.2 million per year if it implemented QOR (assuming that 20 percent of subscribers ported their numbers), we concluded that these purported savings, which represent less than two-tenths of a percent of Pacific's total annual operating revenues, appeared insignificant in relation to the potential economic and non-economic costs to competitors if QOR is used.⁹⁶ There was also record evidence that using QOR would only be cost-effective at low levels of ported numbers, depending on the switch type.⁹⁷ In addition, we expressed concern that, because carriers using QOR may be required to send QOR signalling to another carrier's switch to determine whether a customer has ported his number, this would require the second carrier to have the ability to recognize and respond to the QOR message, thereby increasing its costs.⁹⁸

34. Pleadings. Petitioners again contend they should be allowed to use QOR because they would achieve significant cost savings.⁹⁹ These parties claim that QOR would

⁹⁴ First Report & Order, 11 FCC Rcd at 8381.

⁹⁵ Id. at 8382. We noted that parties had argued that QOR could treat ported and non-ported numbers differently, increase post-dial delay and the potential for call blocking, result in inefficient routing, create significant network interoperability issues, and delay deployment of a long-term number portability method. Id. at 8381.

⁹⁶ Id. at 8381. We note that the cost estimates submitted by Pacific have varied significantly over the course of this proceeding. See infra note 122.

⁹⁷ First Report & Order, 11 FCC Rcd at 8381. AT&T asserted that, using Lucent switches, QOR is cost effective only if less than 12 percent of subscribers port their numbers, and, using Siemens switches, is cost effective only if less than 23 percent of subscribers port their numbers. Id.

⁹⁸ First Report & Order, 11 FCC Rcd at 8381-82; see also 47 C.F.R. § 52.3(a)(4).

⁹⁹ Bell Atlantic Petition at 5; BellSouth Petition at 23; GTE Petition at 10; NYNEX Petition at 4-5; Pacific Petition at 7-9; SBC Petition at 1-2; U S West Petition at 13 n.18; USTA Petition at 9-10. The data in the petitions for reconsideration contained only summary figures, although various carriers provided more detail in their reply comments and through the ex parte process. Some data was submitted on a confidential basis. For specific figures, see infra ¶ 40.

result in a reduction in the number of database queries, which, in turn, would reduce the costs that must be incurred to complete the infrastructure upgrades necessary to implement QOR compared to those necessary to utilize LRN.¹⁰⁰ Specifically, petitioners allege that QOR would require a carrier to install fewer additional SCP pairs and SS7 signalling links, and to upgrade fewer STPs, than would be the case for LRN.¹⁰¹ Petitioners also allege that QOR would place less additional load on switch processors, and would thereby delay the need to upgrade those switch processors.¹⁰²

35. Petitioners further argue that QOR would allow carriers to expand the capacity of their SS7 signalling networks more gradually to handle an increased number of queries, as numbers are ported to other carriers. They allege that LRN, in contrast, will require carriers to engineer their networks to accommodate queries on every call from a given NXX once one telephone number has been ported from that NXX.¹⁰³ According to these parties, this will require their networks to be grossly "over-engineered" when number portability is initially deployed. Several petitioners note that carriers using QOR would be able to decide on a switch-by-switch basis when it is more cost effective to disable the QOR triggering mechanism and use LRN alone.

36. In response, both AT&T and MCI claim that the LECs have overestimated the costs of LRN and underestimated the costs of QOR, thereby grossly exaggerating the relative cost savings associated with QOR.¹⁰⁴ Their principal objections to the carriers' cost studies are that they: (1) overstate the number of SCP pairs needed to deploy LRN;¹⁰⁵ (2) exaggerate the impact of LRN on switch processor capacity and fail to account for the impact of QOR on switch processor capacity;¹⁰⁶ (3) overstate the number of queries from non-participating carriers, which results in overstated cost estimates, and fail to account for offsetting revenues;¹⁰⁷ (4) fail to estimate the cost of unnecessary call set-up under QOR;¹⁰⁸ (5) fail to

¹⁰⁰ Bell Atlantic Reply at 8; GTE Opposition at 6-7; TCG Reply at 2.

¹⁰¹ See, e.g., BellSouth Ex Parte Letter at 2, from Cynthia Cox, to William Caton, FCC, CC Docket No. 95-116, filed Oct. 21, 1996 (BellSouth October 21, 1996 Ex Parte Filing).

¹⁰² See, e.g., NYNEX Ex Parte Letter at 3-4, from Alan Cort, to William Caton, FCC, CC Docket No. 95-116, filed Oct. 21, 1996 (NYNEX October 21, 1996 Ex Parte Filing)

¹⁰³ See, e.g., BellSouth October 21, 1996 Ex Parte Filing at 2.

¹⁰⁴ For specific figures, see infra ¶ 40.

¹⁰⁵ MCI October 28, 1996 Ex Parte Filing at 2; MCI Ex Parte Presentation at 2, 4-5, CC Docket No. 95-116, filed Nov. 6, 1996 (MCI November 6, 1996 Ex Parte Filing).

¹⁰⁶ Id.

¹⁰⁷ AT&T October 29, 1996 Ex Parte Filing at 5; MCI October 28, 1996 Ex Parte Filing at 2; MCI November 6, 1996 Ex Parte Filing at 3, 5.

account for the additional cost of provisioning QOR in all intermediate and terminating switches, including modifications to Operator Support Systems (OSS);¹⁰⁹ and (6) exaggerate the speed of number portability deployment outside of the top 100 MSAs.¹¹⁰ In addition, MCI points out that GTE, SBC, NYNEX, and Bell Atlantic failed to specify the assumptions underlying their cost studies, and Pacific submitted its cost study on a confidential basis, making it difficult to undertake a detailed analysis of those cost studies.¹¹¹

37. Furthermore, there is a dispute in the record over the point at which it becomes more cost effective to use LRN rather than QOR. As we noted in the First Report & Order, AT&T contends that it is more cost effective to deploy LRN in Lucent switches when 12 percent of the customers served by such a switch have ported their numbers, and to deploy LRN in Siemens switches when 23 percent of the customers served by such a switch have ported their numbers.¹¹² In this phase of the proceeding, BellSouth asserts that the crossover point occurs when 68 percent of its customers have ported their numbers.¹¹³ NYNEX contends that the appropriate transition is a function of its SCP costs, its signalling costs, and its switch costs, and suggests that "this point may occur when 50 percent of numbers have ported."¹¹⁴ In contrast, several interexchange carriers have argued that the crossover point for Pacific occurs when 20 percent of numbers have ported.¹¹⁵

38. Discussion. At the outset, it is important to clarify the nature of the asserted "cost savings" associated with QOR. As most carriers recognize, LRN is the more economical way to provide long term number portability once ported numbers for a given switch reach a certain level, although the point at which it becomes more cost-effective to use LRN rather than QOR remains in dispute.¹¹⁶ From an economic perspective, the question is

¹⁰⁸ AT&T Ex Parte Presentation at 2, CC Docket No. 95-116, filed Nov. 19, 1996 (AT&T November 19, 1996 Ex Parte Filing); AT&T October 29, 1996 Ex Parte Filing at 5; MCI November 7, 1996 Ex Parte Filing at 2-5.

¹⁰⁹ AT&T October 29, 1996 Ex Parte Filing at 6.

¹¹⁰ MCI October 28, 1996 Ex Parte Filing at 2.

¹¹¹ MCI November 7, 1996 Ex Parte Filing at 1.

¹¹² First Report & Order, 11 FCC Rcd at 8381.

¹¹³ BellSouth Reply at 6.

¹¹⁴ NYNEX October 21, 1996 Ex Parte Filing at 11.

¹¹⁵ AT&T October 29, 1996 Ex Parte Filing at 7; MCI Ex Parte Letter at exhibit 2 at 12, from Donna Roberts, to William Caton, FCC, CC Docket No. 95-116, filed Oct. 25, 1996 (MCI October 25, 1996 Ex Parte Filing) (arguing jointly with AT&T before the California PUC that, after adjustments, Pacific's savings at 20 percent porting would be \$1 million, rather than the \$71 million claimed).

¹¹⁶ See supra ¶ 37.

whether the present discounted value of the cost of initially deploying LRN is less than the present discounted value of the cost of deploying QOR initially and LRN at some later date.¹¹⁷ Proponents of QOR contend that the use of the QOR enhancement to LRN would result in real cost savings, not just a short-term deferral of expenses, because the number of ported calls in some areas will never reach the level where it is more cost effective to disable QOR and complete the build-out necessary to support LRN.¹¹⁸ We conclude, however, that the statutory scheme that Congress has put in place should, over time, result in vigorous facilities-based competition in most areas, and therefore LRN will be the most economical long-term solution.¹¹⁹ Thus, deploying QOR would most likely result in short-term cost savings, not overall cost savings. In fact, at least one incumbent LEC, Ameritech, has already decided that it is beneficial to deploy LRN from the outset, rather than converting from QOR to LRN at some later date.¹²⁰ Even if facilities-based competition does not develop in the immediate future, however, we conclude that the harm that QOR imposes on competitors (as discussed in Section III.A.1 above) outweighs the benefit of allowing incumbent LECs to defer the cost of implementing a superior long-term number portability solution.

¹¹⁷ The present discounted value is a calculation that converts a dollar amount expended (or received) in the future into its equivalent dollar amount today. A dollar today is worth more than a dollar tomorrow, because a dollar today can be invested today to earn interest, which yields more than a dollar tomorrow. The present discounted value of a dollar amount expended (or received) by a firm n years in the future is computed as $P/(1+r)^n$ where P is the dollar amount, and r is the firm's opportunity cost of capital. See, e.g., Thomas E. Copeland & J. Fred Weston, Financial Theory and Corporate Policy 26 (1980); Kenneth E. Train, Optimal Regulation: The Economic Theory of Natural Monopoly 171 (1991). In the past, the Commission has used the "present discounted value" as an analytical tool for ascertaining economic viability in reviewing Section 214 applications. See, e.g., Applications of New England Telephone and Telegraph for Authority Pursuant to Section 214 of the Communications Act of 1934, as amended, and Section 63.01 of the Commission's Rules, to Construct, Operate, and Maintain Facilities to Provide Video DialTone Service to Communities in Rhode Island and Massachusetts, Order and Authorization, File Nos. W-P-C-6982, 6983, 10 FCC Rcd 5346, 5377 n.165 (1995).

¹¹⁸ See, e.g., NYNEX October 21, 1996 Ex Parte Filing at 8.

¹¹⁹ We have already accounted for the possibility that vigorous facilities-based competition might not occur in every end office, by not requiring incumbent LECs to deploy long-term number portability in those switches unless requested to do so by a competitor. See Section III.B.2.

¹²⁰ See, e.g., Further Comments of Ameritech (filed March 29, 1996) at 10 (arguing that the Commission should prescribe the LRN architecture as the template for long term number portability); see also Ex Parte Letter from Ameritech, AT&T, Central Telephone Co. of Illinois, MCI, MFS, Teleport, Time Warner, and Sprint ("the ICC workshop"), to Regina Keeney, FCC, CC Docket 95-116, filed May 8, 1996 (stating that support for LRN has by no means been confined to Illinois, or to Ameritech among the RBOCs, and that similar industry groups across the country have conducted extensive reviews of available alternatives and likewise voted LRN as the best solution).

39. Moreover, we are not convinced that the incumbent LEC's estimates of the short-term savings associated with QOR are reliable.¹²¹ We are particularly concerned by the fact that the cost savings estimates submitted by incumbent LECs have varied significantly over the course of this proceeding. In some cases, estimates from the same carrier have changed by 100 percent or more. Further, the changed estimates have not moved in the same direction; some carriers' estimates of the cost savings increased drastically and other carriers' estimates decreased equally drastically.¹²² While we recognize that carriers have worked over time to refine their projections, the wide variation in the estimates submitted by individual carriers at different points in this proceeding raises questions about the reliability of these estimates.¹²³ Furthermore, the fact that some carriers have not explained the basis for the assumptions underlying their estimates precludes us from conducting an independent evaluation of the reasonableness and reliability of their projected cost savings and, consequently, limits the weight we can reasonably assign to those estimates.

40. In addition, MCI alleges that the cost savings that would be realized by permitting the deployment of QOR are far less than the estimated \$54 million to \$136.3 million in annual savings alleged by individual incumbent LECs.¹²⁴ The following chart

¹²¹ In reaching this conclusion, we have considered carefully all of the cost information that the carriers submitted, even though a number of the petitioners did not submit such data in a timely fashion. Section 1.429(b) of our rules requires parties to set forth facts on which they rely in their petitions for reconsideration. 47 C.F.R. § 1.429(b). Pacific provided only summary figures in its petition regarding the purported cost savings associated with QOR, with underlying data filed on a proprietary basis, while Bell Atlantic provided cost data supporting its claim of savings in its reply comments. Pacific Petition at 8-9; Bell Atlantic Reply Comments at att. A. A number of other LECs submitted cost data in ex parte filings after the pleading cycle closed on the petitions for reconsideration. See SBC Ex Parte Letter at 2-3, from Michael W. Bennett, to William Caton, FCC, CC Docket No. 95-116, filed Oct. 21, 1996 (SBC October 21, 1996 Ex Parte Filing); NYNEX October 21, 1996 Ex Parte Filing at 3; GTE Ex Parte Letter at 2, from F.G. Maxson, to William Caton, FCC, CC Docket No. 95-116, filed Oct. 21, 1996 (GTE October 21, 1996 Ex Parte Filing). Nevertheless, we have considered the late-filed information, because we believe it serves the public interest. See 47 C.F.R. § 1.429(b)(3).

¹²² Compare Pacific Bell Ex Parte Letter at 7, from Alan F. Ciamporcerro, to William F. Caton, FCC, CC Docket No. 95-116, filed June 6, 1996 (Pacific June 6, 1996 Ex Parte Filing) (estimating \$71 million in cost savings associated with QOR over five-year period) with Pacific Petition at 8-9 (estimating \$130 million in cost savings over five-year period); also compare Bell Atlantic Ex Parte Letter at 3, from Edward D. Young, III, to Hon. Reed E. Hundt, FCC, CC Docket 95-116, filed May 10, 1996 (Bell Atlantic May 10, 1996 Ex Parte Filing) (estimating \$180 million in cost savings for QOR) with Bell Atlantic Reply at 8 & Att. A (estimating \$67.8 million in cost savings for QOR); also compare BellSouth Petition at 23 (estimating \$50 million in cost savings for QOR) with BellSouth Reply at 5 (estimating \$101.5 million in cost savings for QOR).

¹²³ Contrary to the claims of AT&T, we do not believe that the variability of cost estimates across carriers in and of itself undermines the credibility of those estimates, because the technical requirements of different networks could vary significantly. See AT&T October 29, 1996 Ex Parte Filing at 2.

¹²⁴ The LECs collectively estimate they would save between \$624 and \$649 million if permitted to use QOR. MCI has provided figures indicating that the LECs collectively would save only \$50 million, but that figure only includes estimated savings for four out of the seven carriers. As noted infra in note 125, MCI was unable to estimate

shows the difference between estimated savings submitted by the petitioners and estimated savings calculated by MCI:

Carrier	Estimated Savings as Reported by the Carrier (Millions)	Estimated Savings as Reported by MCI (Millions) ¹²⁵
Bell Atlantic	\$68 ¹²⁶	\$15
BellSouth	\$102 ¹²⁷	N/A
GTE	\$136 ¹²⁸	\$28
NYNEX	\$54 ¹²⁹	N/A
Pacific	\$130 ¹³⁰	-\$12
SBC	\$84 ¹³¹	\$19
U S West	\$50-\$75 ¹³²	N/A

cost savings for three carriers due to insufficient information in the record. For three of the carriers for which MCI was able to provide estimates, however, these estimates ranged from 20% to 23% of the corresponding LEC figure. For the fourth carrier, MCI argued that QOR actually would cost more than LRN.

¹²⁵ MCI November 7, 1996 Ex Parte Filing at 2-6; MCI Letter at exhibit 2 at 12, from Donna Roberts, to William Caton, FCC, CC Docket No. 95-116, filed Oct. 25, 1996 (MCI October 25, 1996 Ex Parte Filing). MCI stated that it was unable to determine true cost-savings based on the information presented by BellSouth, NYNEX, and U S West, because these carriers failed to specify adequately the assumptions underlying their calculations.

¹²⁶ Bell Atlantic Reply at 8 & Att. A. This figure assumes that 10 percent of Bell Atlantic customers port their numbers. Bell Atlantic asserts that it would realize approximately \$56 million in savings if 25 percent of numbers were ported.

¹²⁷ BellSouth Reply at 5. This figure assumes that 10 percent of BellSouth's customers port their numbers.

¹²⁸ GTE October 21, 1996 Ex Parte Filing, at 2.

¹²⁹ NYNEX October 21, 1996 Ex Parte Filing at 3. NYNEX figures represent alleged cost savings over a four-year (not five-year) period.

¹³⁰ Pacific Petition at 8-9; Pacific Ex Parte Letter, from Alan Ciamporcero, to William Caton, FCC, CC Docket No. 95-116, filed October 29, 1996 (Pacific October 29, 1996 Ex Parte Filing). The figures assume that 30 percent of Pacific's customers port their numbers.

¹³¹ SBC October 21, 1996 Ex Parte Filing at 2-3. This figure represents estimated savings over a three-year (not five-year) period, assuming that 10 percent of SBC's customers port their numbers. SBC asserts it would save \$62.4 million at 20% porting, and \$57.4 million at 30 percent porting.