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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

NOTICE OF PROPOSED RULEMAKING

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By the Commission:

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I. INTRODUCTION

1. Telephone numbers are critical to the routing of telephone calls over the public switched network in the United States. A telephone number generally identifies the specific telecommunications customer being called, as well as the termination point of the call. In many instances, the number also specifies the service provider of the paying customer. As a consequence, telecommunications customers cannot generally retain their telephone numbers if they wish to change service providers or geographic locations. In some instances, customers must change numbers if they change the services offered by the same service provider, such as changing from plain old telephone service (POTS) to integrated services digital network (ISDN) service.

2. The inability of end users to retain their telephone numbers under these circumstances -- that is, a lack of number "portability" -- appears to deter customers who wish to select new and different services or who wish to choose among competing service providers. Changing telephone numbers can be more than inconvenient. Businesses that change telephone numbers, for example, incur administrative and marketing costs. These costs, and the potential loss of customers, may inhibit businesses from selecting new services or new providers. Full number portability would permit customers to change service providers, services, and even geographic locations without having to change their telephone numbers.

3. In the United States, 1-800 numbers are the best example of portable telephone numbers. Since 1981, when AT&T implemented database technology in its network, 800 service subscribers have been able to retain their telephone numbers while changing the termination location for calls placed to their 800 numbers.[1] Since local exchange carriers (LECs) implemented the 800 database access system in 1993, 800 subscribers also have been able to change 800 service providers and obtain service from multiple 800 service providers while using the same 800 number.[2]

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[1] *Provision of Access for 800 Service (800 Access)*, Notice of Proposed Rulemaking, CC Docket No. 86-10, 102 FCC 2d 1387, 1388-89, ¶¶ 3-5 (1986).

[2] *See 800 Access*, Memorandum Opinion and Order on Reconsideration and Second Supplemental Notice of Proposed Rulemaking, CC Docket No. 86-10, 6 FCC Rcd 5421 (1991); Order, 7 FCC Rcd 8616 (1992).

4. Number portability appears to offer substantial public interest benefits because it provides consumers personal mobility and flexibility in the way they use their telecommunications services, and because it fosters competition among service providers. The ability of commercial mobile radio service (CMRS) customers to use their wireless telephones across the country in locations outside their local service areas is one example of the personal mobility that number portability brings to consumers.[3] Another example of personal mobility is the personal communications services offered through 500 numbers. The 500 "follow me" services allow customers to receive calls dialed to a single 500 number at various locations and times throughout the day.[4] The ability of end users to retain their telephone numbers while changing telephone services gives customers flexibility between the services they choose to purchase. In addition, 800 number portability permits businesses to establish toll-free, customer service operations at the most convenient and efficient locations.

5. Number portability also promotes competition among telecommunications service providers. In our *800 Access* proceeding, we addressed the importance of number portability in fostering competition with respect to 800 number services.[5] In that proceeding, we found that 800 service provider portability would, among other things, promote competition and efficiency in the provision of 800 services by allowing customers to respond to price and service changes without changing their 800 numbers.[6] More recently, several states, notably New York, Michigan, Illinois, Washington, and Maryland, have certified competing local telephone companies,[7] and have begun to consider how number portability can promote

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[3] The use of radio spectrum permits CMRS customers one level of mobility by allowing them to use their telephones throughout a particular service area. In addition, many CMRS carriers have established "roaming" agreements with other CMRS carriers that give their customers another level of mobility. Through these agreements, CMRS carriers offer services to the subscribers of other CMRS carriers outside their service area. This permits CMRS customers to "roam" outside their usual service area, in some cases across the United States, and still receive service. *See Interconnection and Resale Obligations Pertaining to Commercial Mobile Radio Services*, Second Notice of Proposed Rulemaking, CC Docket No. 94-54, FCC 95-149 (released April 20, 1995)(*Second CMRS Interconnection NPRM*).

[4] The 500 "follow-me" services permit a customer to call into a central database and specify at what telephone numbers that customer desires to be reached at particular times of the day. Thus, a party wishing to reach that customer may call the customer's 500 number, and the call will be forwarded to the telephone number specified by the customer. *See The Ameritech Operating Companies et al. Petitions for Waiver of Sections 69.4(b) and 69.106 of Part 69 of the Commission's Rules*, Order, 9 FCC Rcd 7873 (Com. Car. Bur. 1994)(*500 Access Order*).

[5] *See 800 Access*, Report and Order, CC Docket No. 86-10, 4 FCC Rcd 2824 (1989).

[6] *Id.* at 2825-26, ¶¶ 11, 13. *See also Competition in the Interstate Interexchange Marketplace*, CC Docket No. 90-132, 6 FCC Rcd 5880, 5904, ¶ 138 (1991).

[7] *See, e.g.*, *Rochester Telephone Corporation*, Order Issuing Certificate of Public Convenience and Necessity, New York Public Service Commission, Case 94-C-0531, 1994 WL 746946 (November 10, 1994); *City Signal, Inc.*, Order, Michigan Public Service Commission, Case No. U-10555, 157 P.U.R.4th 265 (October 12, 1994); *MFS Intelenet of Illinois, Inc.*, Order, Illinois Commerce Commission, Case No. 93-0409, 1994 WL 412966 (July 20, 1994); *Electric Lightwave, Inc.*, Fifth Supplemental Order, Washington Utilities and Transportation Commission, Docket No. UT-901029, 142 P.U.R.4th 293 (April 19, 1993); *MFS Intelenet of Maryland, Inc. Re Policies Regarding Competitive Local Exchange Telephone Service*, Order, Maryland Public Service Commission, Case No. 8584, 152 P.U.R.4th 102 (April 25, 1994).

competition between local telephone companies.[8] These competing telephone companies include interexchange carriers (IXCs), such as AT&T, MCI, and Sprint; cable operators, such as Time Warner and Cablevision Lightpath; competitive access providers (CAPs), such as MFS and Teleport; and wireless carriers, such as current cellular licensees and future PCS service providers.[9]

6. In conjunction with our consideration of the administration of the North American Numbering Plan (NANP), we have solicited comment on number portability.[10] In that proceeding, we recognized the importance of number portability with respect to competition. We deferred consideration of number portability to a future proceeding, however, because the technical feasibility, implementation costs, and overall benefits of number portability required further study.[11] We now initiate that further study and examine these, and other important, issues relating to number portability.

7. In this Notice, we tentatively conclude that the portability of telephone numbers benefits consumers of telecommunications services and would contribute to the development of competition among alternative providers of local telephone and other telecommunications services. We recognize, however, that at this time we lack sufficient information on the costs (monetary and nonmonetary) of making telephone numbers portable either between service providers, services, or locations. Furthermore, we tentatively conclude that the Commission should assume a leadership role in developing a national number portability policy, and we seek comment to determine the specific nature of this role. We seek comment on whether the Commission should promulgate rules to ensure the development of number portability, and if so, what rules the Commission should promulgate. Finally, we tentatively conclude that service provider portability of 900 and 500 numbers is beneficial for customers

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[8] *See Proceeding on Motion of the Commission to Examine Issues Related to the Continued Provision of Universal Service and to Develop a Framework for the Transition to Competition in the Local Exchange Market*, Order Requiring Interim Number Portability, Directing a Study of the Feasibility of a Trial of True Number Portability, and Directing Further Collaboration, New York Public Service Commission, Case No. 94-C-0095 issued and effective March 8, 1995)(*NYPSC Number Portability Order*); *The Investigation by the Commission on Its own Motion into Legal and Policy Matters Relevant to the Regulation of Firms, Including Current Telecommunications Providers and Cable Television Firms, which may Provide Local Exchange and Access Services in Maryland in the Future*, Report on Local Number Portability, by Geoffrey Waldau, Public Service Commission of Maryland, Case No. 8587 (released April 3, 1995)(*Maryland Report*); *Illinois Bell Telephone Company - Proposed Introduction of a Trial of Ameritech's Customers First Plan in Illinois, et al.*, Order, Docket No. 94-0096, at 109-110 (released April 7, 1995)(*Illinois Order*).

[9] *See, e.g.*, *Sprint Strategy for Local Service Challenge Rests on Cable Alliance*, Communications Daily, at 2-3 (November 18, 1994); *AT&T Applies for Local Service Authority in Two States*, Telecommunications Reports, at 35-36 (May 8, 1995). The term "PCS" is used here as it is defined in Section 24.5 of the Commission's rules, and is distinct from the way it is used with respect to 500 number services. *See* n.57 *infra*.

[10] *See Administration of the North American Numbering Plan*, Notice of Inquiry, CC Docket No. 92-237, 7 FCC Rcd 6837, 6842, ¶ 41 (1992); Notice of Proposed Rulemaking, 9 FCC Rcd 2068, 2075, ¶¶ 41-42 (1994); Report and Order, FCC 95-283 (adopted July 13, 1995)

[11] *Administration of the North American Numbering Plan*, Notice of Proposed Rulemaking, CC Docket No. 92-237, 9 FCC Rcd at 2075, ¶ 42.

of those services. We seek comment on that conclusion and on the costs of making such portability available and other related implementation issues.

II. BACKGROUND

A. The Telephone Numbering Plan

8. Telephone numbers in the United States consist of ten digits, as required by the NANP.[12] The first three digits of an NANP telephone number are referred to as the area code or Numbering Plan Area (NPA) code. If an NPA code represents a geographic region, such as 202 for the District of Columbia, the telephone number is referred to as a geographic telephone number. In contrast, certain NPA codes, for example, 800, 900, and 500, identify certain services (not geographic regions), and are referred to as non-geographic telephone numbers. The second three digits, referred to as the central office code or NXX code, identify the service provider switch that serves a specific customer location. NXX codes will be assigned in the future by the new NANP administrator to carriers requiring telephone numbers, such as LECs, cellular carriers, paging companies, CAPs, and smaller local telephone companies.[13] The last four digits, or the line number, are associated with a specific customer.

9. Because most telephone numbers within the NANP are associated with a particular switch operated by a particular service provider, they are inherently non-portable. The NXX code designates the switch within the NPA code to which a call should be routed. The line number designates the specific location within the area served by the switch at which the call should be terminated. Therefore, a telephone number cannot be transferred outside the service area of a particular switch or between switches operated by different service providers. In other words, customers that decide to change service providers or move outside the service area of their current central offices typically cannot retain their telephone numbers.

10. In contrast, telephone numbers with certain NPA codes are portable between geographic locations because the IXCs are able to "map", or translate, the dialed, non-geographic number into a geographic number. Thus, 800, 900, and 500 numbers, for example, are geographically portable -- meaning that customers receiving calls through these services can change the locations where calls to these numbers are delivered without changing the number.

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[12] The NANP now is applicable to 18 countries: Anguilla; Antigua and Barbuda; Commonwealth of the Bahamas; Barbados; Bermuda; British Virgin Islands; Canada; Cayman Islands; Dominican Republic; Grenada; Jamaica; Montserrat; Saint Kitts and Nevis; Saint Lucia; Saint Vincent and the Grenadines; Trinidad and Tobago; Turks and Caicos; and the United States (including Puerto Rico and the U.S. Virgin Islands).

[13] *See Administration of the North American Numbering Plan*, Report and Order, FCC 95-283 (adopted July 13, 1995). Currently, a local administrator (usually the dominant LEC within a particular area) is responsible not only for assigning individual central office codes, but also for entering new assignments into the Local Exchange Routing Guide (LERG). The LERG contains the information necessary for routing messages, common channel signalling system (SS7) call set up, operator access routing, and data for rating calls.

11. In addition, 800 customers can now change service providers and retain their same 800 numbers. Originally, the NXX code of 800 numbers identified the specific 800 service provider responsible for handling the routing and billing of a particular 800 call. Thus, when customers wanted to change 800 service providers, they also had to change their 800 number. In 1993, pursuant to Commission mandate, the Bell Operating Companies and independent telephone companies replaced this system with a database system for 800 access.[14] Under this system, the database contains the NXX code and line number for each 800 number and identifies the IXC that the customer has selected to carry its calls. The LECs identify the appropriate service provider for each 800 call by transmitting a query to the database via their SS7 networks. Because the database system permits LECs to use the entire 800 number, rather than just the NXX code, to identify the preselected IXC, 800 service customers may change 800 service providers while retaining the same NXX code and line number. In addition, a customer may use multiple 800 service providers to handle calls placed to a single NXX code and line number. Indeed, 800 customers can even choose different IXCs to handle calls placed to the same 800 number, based on the origin of the call or the time of day.

12. While customers of 500 and 900 services can change the termination location for their calls, they cannot retain the same NXX code and line number if they wish to change service providers. Instead, LECs use the NXX codes of 500 and 900 numbers to route calls to the appropriate IXCs, as they did originally with 800 numbers.[15]

B. Types of Number Portability

13. There are three basic types of number portability: service provider portability, service portability, and location portability.[16] Service provider portability refers to the ability of end users to retain the same telephone numbers (that is, the same NPA and NXX codes and the same line numbers) when changing from one service provider to another.[17]

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[14] *See 800 Access*, Memorandum Opinion and Order on Reconsideration and Second Supplemental Notice of Proposed Rulemaking, CC Docket No. 86-10, 6 FCC Rcd 5421 (1991); Order, 7 FCC Rcd 8616 (1992).

[15] *500 Access Order*, 9 FCC Rcd at 7873, ¶ 3.

[16] The Industry Numbering Committee (INC) workshop on number portability currently is working to develop formal definitions for these three types of number portability. *See Local Number Portability*, Draft Report of the Industry Numbering Committee's Number Portability Workshop, PORT-66 R2, at 7-8 (draft of June 28, 1995). *See also A Blueprint for Action: The Transition to Local Competition*, MCI Telecommunications Corporation, Tab 3, at 1 (March 1995). The INC is a standing committee of the Industry Carriers Compatibility Forum (ICCF), which in turn exists under the auspices of the Carrier Liaison Committee (CLC) of the Alliance for Telecommunications Industry Solutions (ATIS). ATIS sponsors a number of industry committees and forums, such as CLC, ICCF and INC. The CLC seeks to resolve, through consensus procedures, equal access and network interconnection issues arising on a communications industry-wide basis.

[17] Legislation currently pending in Congress would impose an obligation to provide number portability. S. 652 would require LECs possessing market power in the provision of telephone exchange services or exchange access services to provide telecommunications number portability. S. 652 defines ""telecommunications number portability"" as "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

Service portability refers to the ability of end users to retain the same telephone numbers as they change from one service to another (for example, from POTS to ISDN). Location portability refers to the ability of end users to retain the same telephone numbers when moving from one location to another, either within the area served by the same central office or between areas served by different central offices.

C. Current Status of Number Portability

14. Efforts are under way in several states to explore various issues associated with number portability. In Illinois, Ameritech issued a request for proposals (RFP) to permit its customers to change providers of local telephone services without changing their telephone numbers. Ameritech's RFP sought to implement service provider portability by April 1, 1996, with service and location portability available either concurrently or within two years thereafter. None of the proposals submitted in response to its RFP, however, addressed all of Ameritech's requirements.[18] As a result, Ameritech plans to make the responses to its RFP available to the Illinois number portability task force and will attempt to develop a consensus proposal through that task force.[19]

15. In New York, ten companies, working with the New York Public Service Commission, have jointly issued an RFP to initiate a number portability trial.[20] This RFP sought proposals from manufacturers and providers of network database architectures that would permit customers in the Rochester and Manhattan areas to retain their telephone numbers when

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telecommunications carrier to another." [emphasis added] S. 652, 104th Cong., 1st Sess., § 8(b) (1995).

H.R. 1555 does not define "number portability", but states that the obligations pursuant to Section 201 of the Communications Act include, among other things, "[t]he duty to provide, to the extent technically feasible and economically reasonable, number portability in accordance with requirements prescribed by the Commission." H.R. 1555, 104th Cong., 1st Sess. § 101 (1995).

[18] Ameritech received responses to its RFP from: AG Communications Systems; Anderson Consulting (partnered with Northern Telecom); AT&T Network Systems; Bellcore; Digital Equipment Corporation; DSC Communications Corporation; Ericsson; IBM Integrated Systems; Hewlett Packard; Lockheed; Siemens Stromberg-Carlson; Stratus Computer (partnered with U.S. Intelco); and Tandem Computers.

[19] The Illinois Commerce Commission has adopted the recommendation of its staff to establish a number portability task force. The task force was charged with investigating the development and implementation of longer-term database solutions. *Illinois Order* at 110.

[20] *See NYPSC Number Portability Order*. The ten companies issuing the RFP were: AT&T; Cellular One/Genesee Telephone Company; LOCATE; MCI; MFS Intelenet; NYNEX; Rochester Telephone; Sprint Communications Company; Teleport Communications Group; and Time Warner Communications. Subject to the approval of the New York Public Service Commission, the trial is scheduled to begin on or about February 1, 1996, and continue thereafter for approximately six months

changing service providers.[21] On June 16, 1995, the ten companies announced their selection of Stratus Computer's bid for the Rochester area and MCI Metro's bid for the Manhattan area.[22]

16. In Seattle, Washington, a group of telecommunications service providers is jointly testing a database method developed by Stratus Computer, U.S. Intelco, and others.[23] This method provides both location and service provider number portability. The objective of this technical trial is to identify the technical, operational, and administrative issues that arise when a telephone number is disassociated from its traditional geographic location.

17. In addition, the Industry Numbering Committee is addressing the implementation and deployment of a database method that would make geographic telephone numbers portable. The proposals discussed in paragraphs 36 - 39 *infra* have been presented formally to the INC workshop.

III. DISCUSSION

18. In initiating this proceeding, we seek to obtain comment and information concerning number portability. First, we consider issues relating to number portability for geographic numbers. We then consider service provider portability of 900 and 500 numbers.

A. Portability for Geographic Telephone Numbers

19. We tentatively conclude that the portability of geographic telephone numbers benefits consumers by providing them greater personal mobility and flexibility in the use of telecommunications services and by contributing to the development of competition among alternative providers of local telephone and other telecommunications services. We seek comment on this tentative conclusion and on the public interest benefits of number portability. Furthermore, we tentatively conclude that the Commission should assume a leadership role in developing a national number portability policy due to its impact on interstate telecommunications. We seek comment on this tentative conclusion and on the specific nature of this role. We recognize, however, that we have insufficient information on the costs

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[21] Six bidders, Stratus Computer (partnered with U.S. Intelco), MCI Metro (partnered with DSC Communications, Northern Telecom, Tandem Computers, and Siemens Stromberg-Carlson), Bell Atlantic, DSC Communications Corporation, Northern Telecom, and Independent Telecommunications Network (ITN), responded to this RFP.

[22] Communications Daily at 7 (June 20, 1995). Based on the recommendation of its technical staff, the Public Service Commission of Maryland has commenced an inquiry into whether it should sponsor or encourage a number portability trial in Maryland. *See* Letter to all parties in Case No. 8587 from Daniel P. Gahagan, Executive Secretary, Public Service Commission of Maryland (dated April 25, 1995); *Maryland Report* at 11. Industry participants in California, with monitoring from the California Public Utilities Commission, are conducting meetings to examine the technical aspects of number portability.

[23] The participants include: U.S. Intelco; Electric Lightwave Inc.; US West; Stratus Computer; Teleport Communications Group; GTEINS; and ITN.

(monetary and nonmonetary) of making geographic telephone numbers portable either between service providers, services, or locations. Therefore, we seek comment on: (1) the feasibility, limitations, and costs of longer-term number portability solutions; (2) the feasibility, limitations, and costs of interim number portability measures; and (3) issues associated with a transition to a permanent number portability environment. In developing a record on these issues, we hope to draw upon industry and state efforts in this area.

1. Importance of Number Portability

20. In this subsection, we consider the public interest benefits of number portability for geographic numbers. First, we discuss the benefits that service provider number portability would bring with respect to both wireline and wireless services. We also discuss the importance to consumers of service portability and location portability.

21. Service Provider Number Portability. In light of our tentative conclusions that the portability of geographic numbers benefits consumers and would contribute to the development of competition among alternative providers of local telephone services, we identify in the following paragraphs, and seek comment on, specific issues concerning the competitive impact of number portability.

22. The competitive importance of service provider number portability depends primarily on the value that customers assign to their current telephone numbers. As we noted in the *800 Access* proceeding, service provider number portability promotes competition and efficiency by allowing customers to respond to service and price changes without changing their telephone numbers.[24] When end users attach a significant value to retaining their telephone numbers while changing service providers, a lack of number portability likely would deter entry by competitive providers of local services.[25] For example, MCI has stated, based on a nationwide Gallup survey, that 40-50% of residential customers and 70-80% of business customers who otherwise were willing to consider changing their local telephone company would be unlikely to consider such a change if they also had to change their telephone numbers.[26]

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[24] *800 Access*, Report and Order, CC Docket No. 86-10, 4 FCC Rcd at 2825-26, ¶¶ 11, 13. *See also Competition in the Interstate Interexchange Marketplace*, CC Docket No. 90-132, 6 FCC Rcd 5880, 5904, ¶ 138 (1991).

[25] In supporting its proposed order to Judge Harold Greene regarding Ameritech's request to offer interLATA service, the Department of Justice stated that "number portability was an important issue that needed to be addressed if local competition were to play the role envisioned by Ameritech's [Customers First] Plan." Memorandum of the United States in Support of its Motion for a Modification of the Decree to permit a Limited Trial of Interexchange Service by Ameritech, *United States v. Western Electric Co. et al.*, Civil Action No. 82-0192 (HHG), at 11 (filed May 1, 1995). The New York Public Service Commission also has found that number portability will be essential to the transition to a competitive local exchange market. *See NYPSC Number Portability Order* at 3.

[26] *See A Blue Print for Action: The Transition to Local Exchange Competition*, MCI Telecommunications Corporation, Tab 3, at 2 (March 1995). *See also Local Number Portability National Study*, Executive Summary, prepared by The Gallup Organization for MCI Telecommunications Corporation, Figures 1 and 3 (*MCI Study*)(finding that, while 70% of the business customers interviewed believed it somewhat or very likely that they would change service providers for a 20% discount, only 24% of those business customers believed it somewhat

Business customers, in particular, may be reluctant to incur the administrative, marketing, and goodwill costs of changing telephone numbers. These disincentives to changing service providers may be mitigated, however, if a significant number of customers change their telephone numbers for other reasons.[27] Both residential and business customers change their numbers for a variety of reasons; for example, customers move to areas served by different central offices.[28] Moreover, changes in area codes, such as area code splits or overlays, create a certain level of number churn.[29]

23. We ask commenting parties to provide studies, data, and other information on the relative importance of service provider number portability to the decisions of end users when considering whether to take service from competing providers. We are particularly interested in assessing the importance of this feature relative to other potential deterrents to competitive entry into the provision of local services. Commenting parties also are invited to provide studies, data, and other information on the extent to which situations, such as number churn, and other factors enable competing providers of local telephone services to compete for customers without service provider number portability. Further, we seek specific information on whether different customer groups vary with respect to the value they assign to service provider number portability.

24. We currently are examining issues concerning CMRS providers' interconnection with the public switched network and with each other.[30] To the extent that

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or very likely that they would change service providers for a 20% discount if that change also required them to change their telephone numbers); *The Importance to Customers of Retaining Current Telephone Numbers When Switching Telecommunications Companies*, Contribution of MFS Intelenet, Inc. to the INC Number Portability Workshop, PORT-64 (April 6, 1995)(based on telephone interviews with 1,332 MFS Intelenet business customers, finding that 33% and 48% of the interviewees believe it not very likely and not at all likely, respectively, that they would change their business telephone numbers for comparable or better services and prices).

[27] For instance, Illinois Bell, in oral argument before the Illinois Commerce Commission concerning Ameritech's Customers First Plan, stated that 25% of its customers change their telephone numbers annually for various, non-competitive reasons, such as the wish to avoid harassing telephone calls and the need to relocate outside the service area of one's current central office. Oral Testimony of Illinois Bell Telephone Company before the Illinois Commerce Commission (March 8, 1995). *Cf. MCI Study* at 4, 6 (finding, based on a sampling of 2,050 business customers and 2,008 residential customers, that 3% of the business customers and 13% of the residential customers, changed their telephone numbers during the past year).

[28] We note, however, that this turnover could be reduced through location portability.

[29] Area code splits and overlays are two methods for dealing with area code exhaust. With a split, the geographic area assigned to an existing area code is split (usually in two) so that a portion of that area retains the previous area code and the other portion is assigned a new area code. A recent example of an area code split occurred in Oregon, where the Oregon Public Utilities Commission adopted a plan to split the 503 area code in two. *See* Communications Daily, at 8 (May 4, 1995). With an overlay, a new area code is assigned to a geographic area that overlaps the geographic area(s) of one or more pre-existing area codes. The first overlay was established in 1992 in New York City, where the 917 area code overlays the 212 and 718 area codes.

[30] *See, e.g.*, *Equal Access and Interconnection Obligations Pertaining to Commercial Mobile Radio Services*, Notice of Proposed Rulemaking and Notice of Inquiry, CC Docket No. 94-54, 9 FCC Rcd 5408, 5426-27, ¶¶ 36-39 (1994)(tentatively concluding that requiring cellular providers to offer IXCs equal access: (1) increases consumers'

wireless service providers offer services in competition with local telephone companies, a lack of service provider portability may significantly hamper their ability to compete efficiently to serve existing customers of the incumbent wireline service providers. Parties are asked to provide comment, studies, data, and other information on: (1) the competitive significance of service provider number portability for the development of competition between wireline and wireless service providers; and (2) the current, and estimated future, demand of wireless customers for portable wireless telephone numbers when they change their service provider either to another wireless service provider or to a wireline provider.[31]

25. Service Portability. The need for service portability arises when a particular service is available only through a particular switch. For example, if LECs deploy ISDN by installing new ISDN switches within the existing service areas of switches that provide POTS, customers that wish to receive ISDN services must change their telephone numbers. The same factors that inhibit customers from changing numbers in order to change service providers may also deter customers from taking new services. We seek comment on the demand for service portability, and the extent to which a lack of service portability inhibits the growth of new services, such as ISDN. We seek comment, studies, data, and other information on the relative importance of service portability to the decisions of end users when considering whether to switch from one service to another. We also seek comment on what federal policy objectives would be served by encouraging (or possibly mandating) implementation of service portability, and steps the Commission could take to encourage service portability.

26. Location Portability. Today, telephone subscribers must change their telephone numbers when they move outside the area served by their current central office. Location portability would enable subscribers to keep their telephone numbers when they move to a new neighborhood, a nearby community, across the state, or even, potentially, across the country. As described in paragraph 38 below, the technical trial in Seattle, Washington is exploring the feasibility of providing location portability for wireline telephone numbers that now are associated with a particular geographic location. We seek comment on the extent to which there is demand for location portability and the geographic area in which portability is desired by consumers. What federal policy objectives would be served by encouraging (or possibly mandating) implementation of location portability, and how could such objectives be attained?

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choice between long-distance service providers and promotes price competition; and (2) permits IXCs to develop new and innovative services offerings); *Second CMRS Interconnection NPRM*.

[31] In the *CMRS Interconnection* proceeding, Pacific Bell (a cellular reseller and a future, Part 24 PCS provider) urged that wireless carriers should have the ability to transfer large blocks of consecutive telephone numbers with the associated customers from one service provider to another. Pacific Bell sought this ability for two reasons. First, it argued that this would allow it to transfer its cellular customers to the facilities-based carrier that offers the best underlying services and prices. In addition, Pacific Bell would be able to transfer existing cellular customers to its Part 24 PCS systems when those systems become operational. We sought comment on these issues of "number transferability" in the *CMRS Interconnection* proceeding, and noted that we have not determined whether to address these issues in this or in the *CMRS Interconnection* proceeding. *CMRS Interconnection Second NPRM*, at ¶ 94, n.192.

27. The advent of 500 number services may lead to the first widespread deployment of a service permitting customers to be reached through a single telephone number, regardless of their location. Such services are available because 500 numbers are non-geographic telephone numbers and must be "mapped" into geographic telephone numbers for purposes of routing calls.[32] We seek comment on the potential impact that implementation of location portability for wireline telephone numbers may have on the development of the 500 personal communications services market.[33] Conversely, we seek comment on the cross-elastic effects of the availability of personal mobility services offered through 500 and wireless services on demand for location portability of wireline telephone numbers. Finally, we seek comment, studies, data, or other information on the extent to which end users are requesting 800 numbers to obtain location portability.

2. The Commission's Role

28. Currently, it appears unlikely that market forces alone will drive the development and deployment of a number portability solution. To date, the technical trials and task forces currently examining number portability have been initiated under the mandate or guidance of state commissions. We seek comment on whether there should be a regulatory mandate requiring the availability of number portability measures for geographic telephone numbers. Assuming market forces will push the development and deployment of number portability, we seek comment on whether they are sufficient to promote a nationwide, uniform development of number portability absent such a regulatory mandate.

29. We tentatively conclude that we have a significant interest in promoting the nationwide availability of number portability due to its likely impact upon interstate telecommunications. In the United States, the same set of telephone numbers is used to route intrastate, interstate, and international telephone calls to individual telecommunications customers.[34] This system of numbering promotes an efficient and fair telecommunications system. We tentatively conclude that it is within our jurisdiction to ensure that the portability of telephone numbers within the numbering system is handled efficiently and fairly.[35] Moreover,

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[32] *See* ¶¶ 10, 12 *supra*.

[33] The geographic mobility offered through 500 number services differs from the location portability contemplated by the Seattle trial in that customers first must change their telephone numbers to 500 numbers.

[34] *See Proposed 708 Relief Plan and 630 Numbering Plan Area Code by Ameritech - Illinois*, Declaratory Ruling and Order, IAD File No. 94-102, 10 FCC Rcd 4596, 4601-02, ¶ 12 (1995), *pet. for clarification pending (Proposed 708 Relief Plan)*(stating that preemption of state actions concerning the NANP may be necessary to avoid thwarting federal regulatory goals because it is technologically impossible to have separate NPAs for interstate and intrastate telephone calls). For example, a local caller, an interstate caller, and an international caller all dial the same NXX code and line number to reach the telecommunications customer located in Maryland at (301) 234-1111; the only difference is that some of these callers must add an NPA code or a country code to the dialed number.

[35] *See* 47 U.S.C. § 151 (requiring the Commission to make available to all people of the United States "a rapid, efficient, nation-wide, and world-wide wire and radio communications service"). *See also* 47 U.S.C. § 202 (requiring that the charges, practices, classifications, regulations, facilities, and services of common carriers not be unreasonably discriminatory).

both the subscriber line connecting an individual telephone service subscriber to the LEC's central office and the radio transmission to and from a subscriber's wireless telephone are used by the subscriber to originate and terminate both toll and local telephone calls. As a result, measures such as number portability that promote competition between providers of local telephone services also promote competition between providers of interstate access services.[36]

30. We also tentatively conclude that there is a federal interest in this area because deployment of different number portability solutions across the country would have a significant impact on the provision of interstate telecommunications services. A uniform, national method for providing number portability is likely to be less costly and more efficient for interstate carriers. As we recently stated, we have a significant interest in a nationwide, uniform system of numbering because such a system is essential to the efficient delivery of interstate and international telecommunications services.[37]

31. Finally, we tentatively conclude that we have a federal interest in fostering the development of number portability due to our interest in efficient use of the numbering resource.[38] As discussed in more detail below,[39] the longer-term and interim methods for providing number portability have an impact on the availability and exhaustion of telephone numbers. In some cases, longer-term solutions may even have the beneficial effect of slowing the exhaustion of area codes and NXX codes, thereby avoiding the disruptions that accompany measures to alleviate the exhaustion of telephone numbers and fostering a more uniform numbering plan.

32. We recognize that state regulators also have legitimate interests in the development of number portability, and that they are conducting tests and deploying number portability measures. We encourage these tests because they will provide empirical evidence and other relevant information. We note, however, that state requirements governing number portability should not thwart or impede national policies,[40] such as nondiscrimination and competitive neutrality. We seek comment on areas where state and federal policies on number portability are likely to diverge or become inconsistent, and on the additional costs associated with having different number portability approaches on a state-by-state basis or on a regional basis. Parties should address the need to develop a uniform solution to the provision of number portability, and whether the deployment of different number portability methods across the country is in the public interest.

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[36] *See Expanded Interconnection with Local Telephone Company Facilities*, Memorandum Opinion and Order, 9 FCC Rcd 5154, 5158-59, ¶¶ 8-9 (1994).

[37] *See Proposed 708 Relief Plan*, 10 FCC Rcd at 4602, ¶ 13. *See also* 47 U.S.C. § 151.

[38] *Proposed 708 Relief Plan*, 10 FCC Rcd at 4602, ¶ 13. *See also* 47 U.S.C. § 151.

[39] *Id.*

[40] *See Louisiana Public Service Comm'n v. FCC*, 476 U.S. 355 (1986); *Public Service Comm'n of Maryland v. FCC*, 909 F.2d 1510 (D.C. Cir. 1990).

33. In the event we conclude that number portability should be implemented on a nationwide basis, what specific actions can and should the Commission take to expedite such implementation? For instance, should the Commission direct implementation of number portability by a date certain and direct an industry group to develop a detailed implementation plan? Alternatively, should the Commission adopt rules specifying how number portability shall be implemented? If we mandate implementation of specific number portability measures, upon whom should this obligation fall, and what is a realistic time frame in which that mandate should become effective?

34. Finally, we seek comment on the appropriate role of the Commission in establishing technical and performance standards for number portability. Typically, we look to industry bodies to develop standards in the first instance.[41] Should we leave the establishment of number portability standards to industry organizations and standards-setting bodies, and simply monitor the activities of these groups? Or, should we direct industry bodies to resolve certain issues (technical or otherwise)? If so, which issues should be designated for resolution by these groups, and to which organizations should they be directed? Is it reasonable for the Commission to establish deadlines for the resolution by industry of issues involving number portability? If so, parties should provide recommended time frames. Alternatively, should we take a more active role in the development of such number portability standards? For example, should we develop, and mandate compliance with, particular number portability standards, or should we establish non-binding standards or guidelines?

3. Longer-Term Number Portability Solutions

35. In this subsection, we seek comment on what longer-term number portability solution is in the public interest. For purposes of this subsection, we intend "number portability" to encompass service provider, service, and location portability because a method for providing location portability likely will also enable customers to change service providers and services without changing their telephone numbers. First, we seek comment on various number portability proposals that have been offered by different industry participants. We consider more generally various issues associated with deploying a database method for providing number portability, including call processing scenarios, the geographic area within which numbers should be portable, the database architecture, administration of the database(s), and the estimated cost and appropriate methods of cost recovery. We ask commenting parties to draw upon relevant information obtained through the various ongoing number portability trials.

36. Current Proposals. In response to the New York RFP, MCI Metro (partnered with DSC Communications, Northern Telecom, Tandem Computers, and Siemens Stromberg-Carlson) has proposed a database method that would enable end users within a particular geographic region (most likely a state) to retain their NXX code and line number if

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[41] *See Intelligent Networks*, Notice of Proposed Rulemaking, CC Docket No. 91-346, 8 FCC Rcd 6813, 6820, ¶¶ 55-56, n.64 (1993).

they change their local service provider.[42] Under MCI Metro's proposal, a carrier routing a call into an area where number portability has been deployed would know from the NXX code of the dialed number that the telephone number may have been transferred to another local service provider. The carrier would query a database serving that area, which would return to the carrier a three-digit "carrier portability code" corresponding to the service provider serving the dialed number.[43] The carrier then would route the call according to the carrier portability code and the dialed NXX code. For example, an IXC delivering a call to the 301 NPA would query the database serving the 301 area code. In return, that database would transmit back to the IXC the carrier portability code identifying the local service provider responsible for handling the call, and the IXC would route the call to that carrier.[44] Similarly, carriers providing service within the area would query the same database to identify the local service provider responsible for handling specific local calls. MCI Metro's proposal essentially uses two NPA codes, and therefore precludes use of the second NPA code for other purposes.[45] Furthermore, it is not clear how operator services, such as busy line verification, collect calls, calling card calls, and third-party billing, would be handled under this proposal. Finally, MCI's proposal would only permit location portability within the area served by the number portability database.

37. AT&T has proposed to the INC workshop a similar database method for providing service provider portability on a regional basis.[46] AT&T's method differs from MCI's primarily in that the database would not substitute a new code for the NPA, but rather would simply determine how to route a call based on the dialed NPA-NXX-XXXX. Moreover, MCI's method supports both advanced intelligent network (AIN) and intelligent network capabilities, while AT&T's method only supports AIN capabilities.

38. The Seattle trial is testing a method developed by Stratus Computer and U.S Intelco -- namely, a mapping scheme that uncouples the end user's telephone number from its geographic location. To minimize the impact of this mapping scheme on the network, this scheme uses two sets of 10-digit numbers to associate customers' telephone numbers with their

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[42] *MCI Local Number Portability (LNP) Trial Proposal*, filed in response to New York State Number Portability Trial Request for Proposal (RFP No. 9501)(May 5, 1995). *See also Industry Group Proposes First 'True' Number Portability Plan*, Communications Daily, at 2 (May 10, 1995); *MCI, Manufacturers Unveil Number Portability 'Solution,'* Telecommunications Reports, at 11-12 (May 15, 1995).

[43] Carrier portability codes would identify competing providers of local telephone services within each NPA. The same codes could be used to represent the same company or a different company in other NPAs.

[44] Routing telephone calls based on carrier portability codes likely will require, among other things, that the software be modified in each network switch located in the NPA within which this system is deployed. It would similarly require modification to the LERG on the same NPA-basis so that the LERG contains routing data based on carrier portability codes.

[45] This is so because MCI Metro's method would replace the dialed NPA code with a three-digit carrier portability code, which effectively removes that code from the pool of available NPA codes.

[46] *See* Ameritech's Local Number Portability Request for Proposal Number 6803-01-95, Section 2, p. 4. *See also* Communications Daily, at 7 (May 12, 1995); *MCI, Manufacturers Unveil Number Portability 'Solution,'* Telecommunications Reports, at 11-12 (May 15, 1995).

geographic location. The first set of numbers, referred to as customer name addresses (CNAs), represents the number a party would dial to contact a specific customer. The second set of numbers, referred to as network node addresses (NNAs), are internal mapping numbers that the network uses to identify the geographic location of customers. Thus, the dialed telephone number of a particular customer no longer would associate that customer with a particular geographic location.

39. Finally, in the context of the INC number portability workshop, GTE has proposed to implement number portability by requiring customers to change, on a one-time basis, their telephone number to, for example, a 700 number. The 700 services essentially would operate the same way that 500 services operate.

40. We seek comment on the advantages and disadvantages of the MCI Metro, AT&T, Seattle, and GTE proposals. We ask whether any of these proposals provide a workable model for national implementation of number portability for geographic numbers and whether there are other workable proposals.

41. We tentatively conclude that a number portability environment should support operator services and enhanced 911 services. Such services are in the public interest because they are critical to the public safety and are important features of the public switched network. We seek comment on the extent to which the various proposals support these services.

42. We also tentatively conclude that any number portability proposal should efficiently use telephone numbers. One of the underlying causes of area code exhaustion is the exhaustion of central office codes. The exhaustion of an area code occurs once all the central office codes within that area code have been assigned to individual carriers, whether or not all the line numbers within each central office code have been assigned. Number portability measures that permit the transfer of line numbers between central office codes may make more efficient use of line numbers, and thereby slow the exhaustion of area codes. We seek comment on the impact that each of these proposals would have on the numbering resource.

43. Call Processing Scenarios. In any database solution, it is necessary to determine which carrier involved in processing a call should be responsible for querying the database and at what point in the routing of a telephone call should that database dip be performed. At least three different call processing scenarios exist for routing telephone calls in a number portability environment: (1) the terminating "access" provider (TAP) scenario; (2) the originating service provider (OSP) scenario; and (3) the N-1 ("N minus 1") scenario.

44. The TAP scenario would place the burden of doing the database query on the terminating access provider. With a local telephone call, the call would be routed to the service provider assigned to the NXX code of the dialed telephone number, just as it is currently. When that service provider receives the call, it would query the database to determine how the call should be routed. If the number has been transferred to another carrier, the service provider would route the call to the other carrier; otherwise, it would complete the call. An interLATA call also would be initially routed by the IXC to the assignee of the dialed NXX code, and that carrier would determine if the call needed to be routed to another carrier or to its customer. Because the incumbent LECs are the assignees of the majority of NXX codes, the

burden of performing the database queries under the TAP scenario would fall almost entirely on these LECs. Finally, because all terminating interstate calls would pass over the incumbent LEC's network, the LEC -- not the competing local service provider -- would recover interstate access charges from IXCs for terminating traffic under our existing access charge regime.[47]

45. The OSP scenario would require the originating service provider to perform the database query and pass the information necessary to complete the routing of the call to subsequent carriers. Every originating service provider would have to have access to the information necessary to route all calls to areas where number portability has been deployed. This scenario, therefore, requires a flash-cut implementation of a number portability database (or databases) across the country.[48]

46. Under the N-1 scenario, the carrier immediately prior to the terminating service provider performs the database query. When a call is placed to a local telephone number, the originating service provider becomes the N-1 carrier. The originating service provider would recognize the NPA-NXX codes of the dialed number as a local number, perform the database query to determine the service provider that should receive the call, and route the call accordingly. If the call is an interLATA call, the originating service provider routes the call to the IXC selected by the calling party. The IXC is the N-1 carrier, and performs the database query to determine which service provider should receive the call. This scenario avoids the need to flash-cut to a nationwide database scheme and having to route every call through the original assignee of the telephone number. The N-1 solution, however, may lead to inefficient routing of calls. For example, if a customer moved from one NPA code to another and retained his or her telephone number, calls originating in the second NPA would still be passed to the appropriate IXC even though the number possibly is now located within the originating service provider's local service area.

47. We seek comment on which of these three scenarios, or any alternative, would best serve the public interest. We request that commenters discuss the different burdens that each scenario would place on the relevant carriers involved, any methods that would reduce the number of database queries, the burden such scenarios would place on current SS7 networks and next-generation system signaling networks, and the network modifications such scenarios would require. We also request that commenters address the impact that any call processing scenario would have on transmission quality, call set-up time, and any other relevant service quality considerations. We seek comment on how various call processing scenarios would operate under the proposals offered by MCI Metro, AT&T, GTE, or any alternative, and on whether certain proposals are limited to specific call processing scenarios. We also seek comment on which carrier, or carriers, perform the database query in the Seattle trial, and what has been learned from that experience.

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[47] *See generally Rochester Telephone Corporation -- Petition for Waivers to Implement Its Open Market Plan*, Order, FCC 95-96 (released March 7, 1995).

[48] For example, once number portability was deployed in New York City, an originating service provider in Billings, Montana would be responsible under the OSP scenario for determining the service provider in New York City to which a call should be routed.

48. Geographic Scope. One of the central issues in either a service provider or location portability environment is the geographic region within which numbers should be portable. We seek comment on whether telephone numbers should be portable within local calling areas, throughout a particular area code, state-wide, regionally, nationwide, or on some other basis. What are the advantages and disadvantages of each of these alternatives, and what are the implications of each for carriers and their customers? For example, what changes would the different alternatives require for carrier billing systems? To what extent do varying approaches differently impact different types of carriers, such as LECs, new wireline carriers, and wireless carriers?

49. What is the geographic scope of the number portability trial in Seattle, and what geographic scope is contemplated in the proposals offered by MCI Metro, AT&T, and GTE? We seek comment on whether these proposals could be used to provide number portability on a nationwide basis without significant network modifications.

50. Architecture. We seek comment on what database architecture would best serve the public interest. To what extent is the database used to provide 800 number portability a useful model? Is it technically feasible to deploy a single database to implement number portability on a nationwide basis, or should a database solution be designed to use a number of distributed (that is, regional) databases? If the latter, in what geographic areas should such databases operate, and what are the advantages, disadvantages, and relative costs of each approach?

51. We also seek comment on the method for administering and modifying the data contained in the database(s). Is it better to update and modify such data from a single, central location, or should that process be initiated by different sources? If a de-centralized system for updating the data is preferred, what processes will be required to ensure that the data in different databases is updated consistently and without discrepancies? We also seek comment on the types of information the database(s) will need to contain and who should be permitted access to such data.

52. Administration of the Database. Various administrative issues will need to be resolved before a database solution can be implemented. First, we seek comment on who should own the database(s) used to provide a longer-term number portability solution. Further, we seek comment on how such a database (or databases) should be maintained and funded. We seek comment on the criteria that should be used to evaluate potential administrators of a number portability database system and who should select the administrator. Finally, we seek comment on the scope of responsibilities that should be placed on the administrator or administrators of such a database or databases.

53. Costs and Cost Recovery Issues. In order to weigh the public interest benefits of deploying a longer-term number portability solution against the current interim measures, we must consider the costs associated with designing, building, and deploying such a longer-term solution. The use of a database to provide number portability will require a significant investment in network infrastructure. Several LECs have already begun to deploy

databases and intelligent network capabilities to provide new services to their customers.[49] In many cases, the provision of number portability through a database system may be able to utilize the intelligent network capabilities already being deployed by LECs. We request comment, data, studies and other information on the estimated costs to design, build, and deploy a longer-term database solution. We also seek comment on how these costs should be allocated between federal and state jurisdictions. Commenting parties should, to the extent possible, estimate both the total cost of infrastructure necessary to deploy number portability and the long-term incremental cost of deploying number portability, exclusive of other costs such as network equipment and hardware and software upgrades that would be incurred without implementation of number portability.

54. We also seek comment on how and from whom the costs of designing, building, deploying, and operating a database system should be recovered. If we mandate that LECs implement number portability, should they be allowed to treat these as exogenous costs, and thereby increase their rates? Parties should comment on whether the costs of a database system should be shared between all carriers using the system. Alternatively, should competing providers of local telephone services and their customers bear the costs of such a database system?

4. Interim Number Portability Measures

55. To evaluate whether a transition to a longer-term number portability solution is in the public interest, we must understand what measures are currently available for providing number portability. In this subsection, we discuss the available interim measures, their limitations, and their costs.

56. Currently, LECs offer their business and residential customers services that redirect calls in the telephone network. These services include remote call forwarding (RCF), flexible direct inward dialing (DID), and a few derivations of these two services. These services can be adapted to provide customers with service provider number portability. For example, NYNEX currently is offering RCF and flexible DID to MFS and Cablevision Lightpath, two competitive exchange providers certified by the New York Public Service Commission, as an interim type of number portability.[50]

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[49] *See generally Rolling Out New AIN Services*, Telephony, Daniel D. Briere, 24 (July 11, 1994); *AIN Finally Hits the Ground Running*, Telephony, Daniel D. Briere, 28 (May 30, 1994). *See also* Bell Atlantic's Response to the New York State Number Portability Trial Request for Proposal No. 9501, p. 2 (proposing to use Bell Atlantic's integrated service control point in Newark, New Jersey as the database for the New York trial).

[50] *See Cablevision Lightpath, Inc.*, Case No. 92-C-0680, July 8, 1993 (1993 WL 564541 (N.Y.P.S.C.)); *MFS Intelenet of New York, Inc.*, Case No. 92-C-0803, March 17, 1993 (1993 WL 278869 (N.Y.P.S.C.)). NYNEX offers these services pursuant to individual agreements with the competing service providers. NYNEX offers RCF to MFS and Cablevision Lightpath at $4.00 per line per month for ported business numbers, and at $2.00 per line per month for ported residential telephone numbers.

57. Remote Call Forwarding. If a customer transfers his or her existing telephone number from Carrier A to Carrier B, any call to that customer currently must be routed to the central office switch operated by Carrier A that is designated by the NXX code of the customer's telephone number.[51] Through RCF, Carrier A's switch would route that call to Carrier B translating the dialed number into a number with an NXX corresponding to a switch operated by Carrier B. Carrier B then would complete the routing of the call to its customer. The change in terminating carriers would be transparent to the calling party.

58. Use of RCF to provide service provider portability has several limitations, however. First, RCF places a significant strain on number plan administration and contributes to area code exhaust. Because RCF involves a translation from the dialed telephone number to a telephone number corresponding to the new service provider's switch, this method requires the use of two, ten-digit telephone numbers. Exhaustion of telephone numbers has become a significant problem in numerous metropolitan areas, and the use of RCF as a long-term solution for number portability likely will exacerbate those problems.[52] Second, RCF will not support several custom local area signalling services (CLASS), such as caller ID, and may degrade transmission quality, because RCF actually places a second call to a transparent telephone number. Third, RCF is capable of handling only a limited number of calls to customers of the same competing service provider at any one time.

59. RCF also appears to preclude the development of efficient competing networks. Under RCF, calls to customers that have retained their telephone numbers and moved to competing providers' networks must be routed initially to the customers' original service providers. Thus, the incumbent LEC is always involved in the routing of calls to that customer, even when the customer chose to switch providers.[53] Moreover, the incumbent LEC has little incentive to provide efficient routing services to their competitors. Finally, because all terminating interstate calls would pass over the incumbent LEC's network, the LEC -- not the competing local service provider -- would recover interstate access charges from IXCs under our existing access charge regime.[54]

60. Flexible Direct Inward Dialing. Flexible DID is similar to RCF in that the original service provider and the new service provider perform the same functions. Like RCF, all calls to customers that have retained their telephone numbers while changing service providers must be routed to the carrier's switch designated by the NXX of the customer's

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[51] *See* ¶ 8 *supra*.

[52] *See, e.g.*, Communications Daily, p. 8 (March 23, 1995); *Illinois Commerce Commission Adopts Plan to Split Area Codes in Chicago Suburbs*, Communications Daily, pp. 7-8 (March 22, 1995); *North American Numbering Plan Manager Sees Companies 'In Denial' on Changes*, Communications Daily, p. 6 (March 24, 1995); Communications Daily, p. 8 (May 4, 1995).

[53] *See* ¶ 8 *supra*.

[54] *See generally Rochester Telephone Corporation -- Petition for Waivers to Implement Its Open Market Plan*, Order, FCC 95-96 (released March 7, 1995).

telephone number.[55] Unlike RCF, however, the original service provider does not translate the dialed number to a new number, but routes calls to that particular phone number over a dedicated facility to the new service provider's switch. Flexible DID has many of the same limitations as RCF, such as the inability to support certain CLASS features (for example, caller ID) and the possible degradation of transmission quality. While flexible DID is able to process more simultaneous calls to a competing service provider than RCF, there remain significant limitations on how many such calls flexible DID can process at any one time.

61. Other Interim Measures for Providing Number Portability. We are aware of at least three other interim number portability measures. All three measures are derivatives of RCF and flexible DID, require routing of all incoming calls to the terminating switch identified by the NXX code of the dialed phone number, and involve the loss of CLASS functionalities. They differ from the interim approaches discussed above in that they use LEC tandem switches to aggregate calls to a particular competing service provider before those calls are routed to that provider.[56] Use of such tandem switches is often more efficient, because it alleviates the need for direct connections between every LEC end office in a local exchange and the switch of each competitive exchange provider.

62. We seek comment on the costs, and offsetting benefits, of implementing these interim measures. We recognize that RCF and flexible DID have significant limitations. Parties are asked to comment and elaborate on the limitations and disadvantages of RCF, flexible DID, and their derivatives. Further, we ask commenting parties to discuss the availability of these interim measures and their effectiveness as an interim substitute for a database number portability solution. Finally, parties should consider whether these interim measures can be improved so that they are workable, long-term solutions, and if so, at what cost.

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[55] *See* ¶ 8 *supra*.

[56] Under enhanced remote call forwarding (ERCF), a call is routed to the LEC switch corresponding to the NXX code of the dialed telephone number. The dialed number is then assigned an ERCF "translation" which consists of the same number preceded by a 10XXX prefix. The XXX is the carrier ID code assigned to the competitive exchange provider. This 12 to 15-digit number (telephone number with 10XXX prefix) is sent to a tandem switch that recognizes the 5-digit prefix, strips it out, and routes the call to the competitive exchange provider's switch.

Route index/portability hub also requires the call to be routed to the LEC switch corresponding to the NXX code of the dialed number. The LEC switch inserts a 1XX prefix onto the front of the telephone number. This 1XX code identifies the competitive service provider to which the call will be routed. This 10 to 13-digit number (telephone number with the 1XX prefix) is transmitted to the LEC tandem switch to which the competitive exchange provider is connected. The tandem switch strips the 1XX prefix from the dialed number, and routes the call to the competitive exchange provider's switch, from where the routing of the call is terminated.

Finally, hub routing with AIN is similar to route index/portability hub, except that, rather than the receiving LEC switch interpreting the routing information, the LEC switch interrogates a remote database that contains routing information. Having obtained this routing information from the database, the LEC switch routes the call via a tandem switch to the terminating competitive exchange provider's switch. This method may require that the LEC's tandem switch be equipped with the ability to interrogate a database.

63. Cost Recovery for Interim Measures. Because RCF and flexible DID are based on pre-existing LEC services, the new local service providers, or their customers, generally bear the costs of RCF and flexible DID. For example, under NYNEX's agreements with MFS and Cablevision Lightpath, NYNEX charges the competing telephone companies a monthly, per line fee. This arguably places responsibility for paying the costs of RCF and flexible DID on the parties who directly benefit from the number portability that RCF and flexible DID offer. We seek comment on this approach for recovering the costs of interim number portability measures. We also seek comment on the amounts charged for these interim measures, whether such rates have a significant competitive impact, and whether reductions in such rates would make these measures more workable as long-term solutions. Finally, we ask parties to propose alternative ways to recover the costs of interim measures.

5. The Transition from Interim Portability Measures

64. In this subsection, we consider issues relating to the transition from the existing interim measures to longer-term number portability solutions. It is not clear at this point whether the industry will move to a longer-term solution that provides only service provider number portability, or will evolve to a location portability environment. Commenting parties should identify any transitional issues that are unique to either environment and the particular impacts that short-term choices may have on longer-term possibilities.

65. Transition to Service Provider Portability. We seek comment on the estimated time frame to design, build, and deploy a system that would provide service provider portability. Commenting parties should address the modifications that would be necessary to implement a transition to service provider portability, including, but not limited to, modifications to the carriers' networks, operating procedures (for example, billing and collection procedures), and dialing plans. We seek comment on whether the ability to transfer wireless telephone numbers between different service providers (wireline and wireless) places the same burden on the LECs and other carriers as transferring wireline telephone numbers.

66. Transition to Location Portability. We also seek comment on the estimated time frame to design, build, and deploy a system capable of providing location portability. Commenting parties should address the modifications that would be necessary to implement a transition to location portability, including, but not limited to, modifications to the carriers' networks, operating procedures (for example, billing and collection procedures), and dialing plans.

67. Transitioning to a location portability solution may raise additional issues not relevant in an environment in which there is service provider portability. Today, dialing parties generally can distinguish between a local and a toll call from the telephone number dialed, and have a general sense of the charge that they likely will incur. In a location portability environment, the association between telephone numbers and geographic locations will dissolve, and dialing parties may not be able to determine from the telephone number they dial the charge incurred by placing a telephone call. We seek comment on the impact that a transition to location portability would have on consumers, the network, service providers, and others. Are there ways to provide dialing parties notification of the charge they will incur when they dial a particular number? What effect will location portability have on operator services, directory

assistance, enhanced services, the way carriers determine rates for toll and interLATA calls, and billing systems? What impact would location portability have on the current administration of the numbering resource?

68. Public Interest of a Transition to Longer-Term Solution. To determine what would best serve the public interest, we seek comment comparing the relative costs and benefits associated with the current interim solutions to the costs and benefits associated with alternative longer-term solutions. In answering this question, parties are encouraged to focus on the costs and benefits of the specific proposals currently being tested in Seattle and developed by MCI Metro, AT&T, and GTE. Is it in the public interest to require only that carriers make available interim measures that accommodate number portability and not require the implementation of a longer-term number portability solution? We also seek comment on the additional costs that would be incurred, and the benefits that would be attained, by evolving to location portability from an intermediate step of service provider portability.

B. Portability for Non-geographic Telephone Numbers

69. We tentatively conclude that service provider portability for 900 and 500 (PCS N00) numbers is beneficial for customers of those services.[57] Service provider portability for these services will allow customers to respond more readily to service and price differences among service providers, thereby promoting competition and efficiency in the provision of 900 and PCS N00 services. We seek comment on this tentative conclusion and on the costs (monetary and nonmonetary) of making such portability available. We seek to gather more information to determine whether the public interest would be served by mandating portability for 900 and PCS N00 services, and we consider other issues related to the implementation of such number portability.

70. We note that the INC has addressed PCS N00 and the portability of geographic numbers separately in two different workshops. We seek comment on whether developing and deploying a method for providing number portability for geographic telephone numbers could, or should, include service provider number portability for non-geographic telephone numbers, such as 500 and 900 numbers. Is it technically possible, and cost effective, to use the same database method, and possibly the same database, to provide service provider portability for geographic and service-specific (non-geographic) telephone numbers? Similarly, is it technically possible, and cost effective, to use the same database to provide service provider portability for all types of non-geographic numbers, such as 800, 500, and 900 numbers, or is it preferable to use separate databases for each type of non-geographic number?

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[57] The term "PCS" is used here generically as "a set of capabilities that allows some combination of personal mobility, terminal mobility, and service profile management." PCS N00 number portability includes 500 number portability. The INC uses this more general title of PCS N00 number portability to include other NPA codes, because it recognizes that PCS services may use NPA codes other than, or in addition to, the 500 NPA code. The term "PCS" or "personal communications services" as used here with respect to 500 numbers and the INC workshop should not be interpreted as the term "personal communications services" is defined in Part 24 of the Commission's rules. *See* 47 C.F.R. § 24.5 (1994).

1. 900 Service Provider Portability

71. On October 18, 1994, the Teleservices Industry Association (Teleservices) filed a petition for rulemaking seeking initiation of a rulemaking to make 900 numbers portable among service providers.[58] Currently, 900 number access is provided through NXX screening, as 800 access was provided originally.[59] Teleservices proposes that the Commission require implementation of a ten-digit database system that would enable information providers to switch their 900 service providers without changing their 900 numbers. Ten parties filed comments in response to the Petition, and five parties filed reply comments.[60]

72. Teleservices argues that the benefits of 900 portability far outweigh the costs. It argues that the lack of number portability for 900 numbers has stifled competition among IXCs in the pay-per-call marketplace.[61] Teleservices asserts that competition among IXCs in the market for 900 number transport is almost nonexistent, and that consumers would benefit through lower prices and more services if 900 numbers were portable. Teleservices maintains that implementation of a ten-digit screening system would be relatively inexpensive because most of the necessary software and hardware is already in place and used to route 800 numbers.[62] It also argues that the regulatory costs to implement a 900 database access system would be minimal because the Commission, in adopting regulatory policies for 800 number portability, has already resolved virtually all of the regulatory issues necessary to implement 900 number portability.[63]

73. MCI and information service providers support initiation of a rulemaking to address 900 number portability.[64] Sprint similarly supports initiation of a rulemaking and urges the Commission to address all number portability issues in one rulemaking proceeding. Sprint argues that number portability is a prerequisite to competition because it removes barriers that make customers captive to carriers and limit consumer choice.[65] In contrast, the LECs

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[58] *See* Petition for Rulemaking by Teleservices Industry Association, RM No. 8535 (filed October 18, 1994)(Petition). *See also* FCC Public Notice, Report No. 2037, Mimeo No. 50358 (October 25, 1994).

[59] *See* ¶¶ 11-12 *supra*.

[60] A list of the parties filing comments and replies in response to Teleservices' Petition is attached hereto as Appendix C.

[61] Petition at 5-6; Teleservices Reply at 1-3.

[62] Petition at 15-18; Teleservices Reply at 4-5.

[63] Petition at 18-19.

[64] *See generally* Comments of MCI, Interactive Services Association, Network Telephone Services, and The Weather Channel; MCI Reply.

[65] Sprint at 2. *See also* USTA Reply at 3 (arguing that issues pertaining to 500 and 900 numbers should be addressed simultaneously).

generally question whether the benefits of 900 number portability outweigh the costs.[66] They note that demand for 900 numbers has declined,[67] and they dispute Teleservices' assertion that the costs of implementing 900 number portability would be minimal.[68] They argue that the system used to route 800 calls was specifically designed to handle only 800 calls and cannot be modified easily and inexpensively to route 900 calls.[69] Further, several LECs suggest that the Commission should refer this issue to industry fora for resolution.[70]

74. We seek comment on various issues relating to portability of 900 numbers. We ask parties to address the extent to which 900 number portability will lower prices and thereby stimulate demand for 900 number services. Parties are asked to provide comment, studies, data, and other information on the estimated costs of designing, building, and deploying a 900 database, and the estimated costs of operating such a database. Is it technically feasible to upgrade the existing 800 database and associated software to accommodate 900 numbers, and if so, at what cost? Is AIN a less costly way to implement 900 number portability? We also seek comment on whether the Commission should direct an industry group to develop an implementation plan for a 900 number portability database, and if so, to which industry group should this task be referred. If the Commission decides to mandate implementation of service provider portability for 900 numbers, what is a realistic schedule for implementation?

2. 500 Service Provider Portability

75. In June 1993, Bellcore, as administrator of the North American Numbering Plan, informed the Common Carrier Bureau that, absent a directive to the contrary, Bellcore would begin assigning the 500 NPA and the NXX codes within the 500 service.[71] In response, the Bureau requested a delay of such assignments and sought comment on the use of the 500 NPA.[72] In May 1994, the Bureau directed that assignment of 500 NXX codes begin, urged the development of a plan to achieve 500 number portability, and stressed that such portability be achieved as expeditiously as possible.[73]

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[66] USTA Reply at 2.

[67] Ameritech at 1; BellSouth at 2; SW Bell at 2; NYNEX Reply at 2.

[68] Ameritech at 1; BellSouth at 3; Pacific Bell at 2-4; SW Bell at 2; U S WEST at 2-4; NYNEX Reply at 2.

[69] BellSouth at 3; Pacific Bell at 1-3; SW Bell at 2; U S WEST at 2-4.

[70] BellSouth at 2; NYNEX Reply at 3.

[71] Letter from Ronald R. Conners, Director NANP Administration, Bellcore, to Kathleen B. Levitz, Acting Chief, Common Carrier Bureau, FCC, dated June 23, 1993.

[72] Letter from Kathleen B. Levitz, Acting Chief, Common Carrier Bureau, FCC, to Ronald R. Conners, Director NANP Administration, Bellcore, dated August 5, 1993.

[73] Letter from A. Richard Metzger, Jr., Acting Chief, Common Carrier Bureau, FCC, to Ronald R. Conners, Director NANP Administration, Bellcore, dated May 3, 1994.