

causing network impairment that underlies Ameritech's proposal and the Commission's order has long been established in Ameritech's access and state tariffs [See Attachment 5] and is good policy for several reasons.

First, it encourages carriers and customers to act responsibly and avoid network congestion. Second, it provides an incentive for the offending customers or carriers to remedy the situation. Third, it helps reduce the number of incidents of call blockage and harm to the network. Fourth, it protects innocent customers and carriers from having their service degraded through the acts of others.

In response to the Commission's concern about the potential blocking of calls from prearranged carriers that exceed their forecasts by 125%, Ameritech points out that the same rationale that underlies the Commission's determination that LECs should block Default Traffic causing congestion problems, also compels the blocking of traffic that significantly exceeds forecasts and is thereby causing congestion. From a network planning perspective, a grossly inadequate forecast is no better than no forecast at all, since both create the same risk of congestion and network harm. The key objective should be not only to encourage N-1 carriers to provide forecasts, but provide an incentive for them to provide as accurate forecasts as possible.

Thus, Ameritech believes that the Commission's policy of nondiscriminatory blocking to preserve network reliability is best accommodated by applying blocking to all N-1 carriers that cause an overload condition.<sup>12</sup> In order to be truly nondiscriminatory and effective, such carriers would include both those who have not prearranged with Ameritech for handling their default LNP traffic, as well as those who may have completed such arrangements, but significantly underestimated their actual load.

Consistent with the need for network reliability, Ameritech intends to continuously monitor on a nondiscriminatory basis the sources and volumes of all traffic being delivered into its network. It will track those carriers that either have not pre-arranged for the delivery of unqueried traffic, or routinely exceed their forecasted demand. Ameritech will also continuously monitor the overall level of LNP queries being handled by various components within its signaling network. If a network jeopardy situation arises, Ameritech will notify the carrier responsible,<sup>13</sup> and request that it temporarily suspend forwarding excess traffic to the extent that it is causing Ameritech's network to exceed the established volume threshold. If the carrier refuses to comply and the overload condition persists, Ameritech

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<sup>12</sup> at ¶178.

<sup>13</sup> Non-prearranged carriers and those whose traffic exceeds 125% of their forecasted volumes.

will block that carrier's traffic at the point of interconnection to the extent necessary to reduce traffic levels to appropriate levels.

III. CONCLUSION.

For the reasons described above, Ameritech's Query Service tariff should be allowed to remain in effect, as filed.

Respectfully submitted,



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[LAP0151.doc]

## **Attachment 1 to Direct Case of Ameritech Rationale for Inclusion of SS7 Costs**

Provision of number portability, and the Query Service require the use of the SS7 signaling network. As a result, Ameritech incurred costs to modify its SS7 signaling network so it could accommodate LNP and handle the added volume of signaling traffic involved. These costs would not have been incurred but for the obligation to provide LNP and are thereby directly related to providing LNP, and as such, should be included in the query charges.

In the following sections Ameritech will describe the modifications and augmentations to its signaling network that were implemented solely to implement LNP and to offer the query service, and as explained, would not have been made absent a mandate to provide the service.

### **SMS/SCPs**

Ameritech has deployed a Service Management System (SMS) and several associated pairs of Service Control Points (SCPs) to store routing information and process LNP queries for ported numbers. Collectively referred to as the LNP database, the hardware and operating software for this system has been deployed for the exclusive use of processing calls to

ported numbers. No other service (e.g., 800, voice mail, etc.,) uses this resource, and it would not have been deployed except to provide LNP and the query service.

### **STPs**

The Signal Transfer Points (STPs) within Ameritech's network process and route all SS7 signaling messages, including LNP queries. In essence, they act as the "traffic cop", examining each message and determining the appropriate signaling node that should process it. The LNP SCPs are directly accessed by certain STPs via A-links (56Kb/s transmission facilities) for forwarding LNP queries. New dedicated link terminations (ports) had to be added to the STPs for these SCP links, as well as for additional links to LNP- equipped tandems, end offices and other STPs (required specifically to accommodate the increased message volumes due to LNP queries). Again, these ports would not have been installed except to provide LNP and the query service.

In addition, the introduction of LNP and the query service has necessitated a more complex screening process in the STPs, to examine all of the dialed digits, rather than simply the NPA/NXX, to determine the proper routing. In order to create adequate capacity to perform this

function, Ameritech had to increase memory (software and hardware) within its STPs to handle the additional translation tables needed to accommodate the significant increase in 10-digit Global Title Translations (GTTs). Once more, this added capacity would not have been required but for the obligation to provide LNP and the query service.

### **SS7 Links**

Ameritech has included in its LNP and query costs, the costs of provisioning new SS7 links (A-links & B-links) specifically deployed to accommodate the increase in signaling traffic due to LNP and the query service. This includes the new links to the dedicated LNP SCPs, as well as additional (SSP) links required to handle LNP queries originating from end offices and tandems, and additional inter-STP links (B-links) needed to route LNP queries from local SS7 clusters to more-distant SCPs (databases).

Ameritech's SS7 network architecture homes the LNP SCPs off of local STPs (LSTPs) located at strategic and diverse points throughout its network. This unique layout, which has been reviewed by experts within the industry, ensures maximum diversity and distribution of the LNP and query traffic. One of its purposes is to ensure that a fault or overload

condition at one mated pair of LNP SCPs does not isolate an entire geographic area, and thereby the ability to complete calls to ported numbers. By necessity this required that links between STPs serving different areas within the Ameritech region be augmented so that queries from (for example) Detroit offices could be routed to the LNP SCP in Elgin, Illinois.

It should be noted, however, that Ameritech has not included any costs for adding links to handle normal future growth. Prior to LNP, Ameritech's links were utilizing, on average, approximately 30% of their unreserved capacity. The introduction of LNP has not only claimed the remaining 70%, but also generated the need for additional links to handle the expected LNP traffic load. As such, Ameritech had to provision additional links to handle normal growth much sooner than planned. The costs of these "growth" links were not included.

### **Link Monitoring**

An ongoing objective is Ameritech's ability to quickly identify and isolate faults within our SS7 signaling network<sup>1</sup>. Although Ameritech's existing monitoring system proved sufficient to provide this functionality in

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<sup>1</sup> This concern is believed to be shared by all network providers, and is driven in part by the SS7 outage that occurred in the Northeast several years ago.

the past, the expanded format and volume of LNP messages, and the increased complexity of the LNP database architecture will render the existing system inadequate and obsolete. The requirement to handle default queries will only exacerbate the current situation. The need for a new monitoring system to support LNP became evident shortly after completion of the Illinois (FCC) field trial, when a message looping condition was discovered which totally exhausted the link set capacity on one of the LNP SCPs<sup>2</sup> which, under live LNP conditions, could have resulted in the inability to complete calls to ported numbers, for portions of selected geographic areas. A more efficient and reliable means of monitoring the SS7 links, and trapping, decoding and tracing suspect signaling messages was needed. Ameritech is now in the process of installing a new link monitoring system that will quickly and accurately pinpoint congestion and trouble conditions within its signaling network. Although the introduction of number portability was the sole driver in the decision to purchase this new system, Ameritech acknowledges that it will utilize the system for other applications and that it will thereby benefit other signaling-based services. As such, the costs of the new system have been allocated across all SS7 services, based upon the relative estimated

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<sup>2</sup> The actual cause was a null voice mail parameter in the SCP record of a ported test number.

usage<sup>3</sup>. The resultant allocation to LNP is approximately 30% to LNP and the query service.

The modifications and additions to these SS7 components were essential to provisioning both LNP and the Query Service. The portion of these costs allocated to Query Service was based upon the relationship of the (estimated) Query Service volume to the total (estimated) LNP query demand which will utilize these signaling modifications and additions. The resulting factor is a 15% allocation of the total SS7 costs to Query Service.

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<sup>3</sup> Measured in message octets.

**Attachment 2 Ameritech's Direct Case  
LNP Query Tariff Investigation OSS Cost**

In the Order, the Commission raised the issue of whether any operations support system (OSS) related costs could in fact be direct costs of providing LNP and the Query Service.

The answer is “yes”. During its initial analysis of the impacts of LNP, Ameritech discovered that implementation of LNP would require the development and deployment of several new provisioning and support systems, as well as modifications to a number of existing systems, in order to continue to process requests for service from its customers. Such customers include end users, other interconnecting service providers, competing carriers and those reselling Ameritech services. The additions and modifications were needed not only to process requests for service (including the out-porting and in-porting of telephone numbers) but also to actually install and test the service itself.

Of these systems, four were also required for the provisioning of the Query Service. These systems are the SOAC, Order Path, Number Manager, and NetPilot. Details regarding the specific enhancements made to these four systems follow.

Ameritech stands ready and willing to provide the same level of detail for other systems, including information on how each fits into the actual provisioning process for LNP.

### **SOAC - DSF/FACS**

Modifications to SOAC (Service Order Analysis and Control) were required to efficiently implement Service Activation and Service Assurance for Local Number Portability (LNP). This includes ported out Ameritech TNs to be served out of a TCs switch, ported in TC TNs to be served out of an Ameritech switch. Mechanization of the process was imperative to reduce the time interval involved in supporting these new processes. In addition, the probability of high volume and churn, point to mechanization as a means of cost containment.

SOAC software was enhanced to parse and process new LNP FIDs and map the appropriate data into tags to send to impacted Operating Systems via existing SOAC interfaces. This new SOAC feature provides the necessary LNP data from the service order to involved downstream systems to allow the inventory creation/updating of facility

assignments associated with ported out and ported in TNs. The existing SOAC interfaces included in the enhancement are: LFACS, SWITCH, COSMOS, MARCH, PAWS and NSDB.

In addition to the enhancements to support existing interfaces a new SOAC interface; SOAC/SOA (Service Order Activation), was created to send LNP data from the provisioning flow to the Number Portability Administration Center (NPAC) SMS. This new SOAC interface to SOA was designed as a wire center-level application to application interface. SOAC needed extensive software modifications and table updates to recognize service order involvement for this new interface.

Upon receipt of a service order, SOAC was enhanced to determine whether an order meets the criteria for SOA involvement. New logic was also included to difference SOA involvement on the subsequent pass of an involved order and suppress the message if there was no change in NPAC required data. SOAC changes were required to send pre-completion, correction and cancellation messages to SOA and accept positive or negative acknowledgment from SOA on all passes of an order. Additional modifications were necessary to route errors on negative acknowledgments to the proper work group for resolution.

The SOAC/SOA interface included support for manual transactions and the ability to accept, and route, release TN messages from the NPAC. Existing SOAC inquiries were also updated to reflect whether messages have been sent to SOA.

### **ORDER PATH**

Order Path functions as a Service Order Administration (SOA) system. Order Path processes service orders from Ameritech's SOAC system. Order Path accepts and validates orders, forwards porting requests to the NPAC SMS and provides administrative functions to support porting processes from the NPAC SMS through various downstream systems and work centers.

In addition, customized adapters were required to be developed to support mechanized flow through of service orders from our provisioning systems (i.e. SOAC, MARCH.) Also administrative processes to resolve conflicts and inherent fallout and discrepancy resolution.

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## **NUMBER MANAGER**

Number Manager functions as a local service management system (LSMS). Number Manager stores routing information received from the NPAC SMS and forwards to Ameritech's LNP SCP for proper call routing.

In addition, customized adapters were required to support the tracking and provisioning of:

Activation of ported TNs to the Lucent SMS/SCP platform

Service Provider Network Data (SPIDs, LRNs, & NPA-NXXS)

LNP triggers upon notification of "first ports"

These customized interfaces were to our Translation provisioning systems, billing systems, and service order negotiation systems.

## **NET PILOT**

NetPilot is a Bellcore Signal Transfer Point (STP) translation provisioning system that replaces their previous SEAS system. STP GTTs are required to route both database queries and service specific queries to the appropriate network element. Ameritech is installing this system for normal six digit Global Title Translation (GTT) provisioning and related baseline costs are not being assessed to LNP. The expenditure identified as

LNP NetPilot is only for incremental hardware and new LNP feature application software necessary to provision ten digit GTTs introduced by local number portability and used by the Query Service.

The modification and additions to these systems were essential to the provisioning of both LNP and the Query Service. The costs applicable to the Query Service represent less than 2% of the total OSS costs for LNP.



Re: Call Routing in an LNP Environment

Dear Valued Ameritech Customer,

Soon, local number portability (LNP) will be put into effect pursuant to FCC Orders, for customers who change service providers. In an LNP environment, each N-1 carrier is responsible for Location Routing Number database queries to be performed on an N-1 basis, where N is the entity terminating the call to the end user.

The FCC Order 97-74 states "...most interLATA calls will be queried by the major interexchange carriers, not the incumbent LECs." (Ref: Paragraph 125 of the order, page 73). We are currently sizing our network to perform our own database queries. In order to ensure network reliability and adequate system capacity, we need to know your plans for queries that are performed on an N-1 basis.

In industry forums such as North American Council Working Group meetings, representatives from several companies have indicated their intention to perform their own queries. It is Ameritech's belief that you will be performing your own queries in accordance with the LNP implementation schedule for each Metropolitan Statistical Area, starting with the transition period for Chicago MSA from 10/01/97 through 03/03/98. However, if you do not intend to perform your own queries and will be sending calls to AIT's network, we will need to establish a business arrangement with your firm to perform these inquiries on your behalf.

The FCC notes that "... if an N-1 carrier is designated to perform the query, and that N-1 carrier requires the original terminating LEC to perform the query, then the LEC may charge the N-1 carrier for performing the query, pursuant to guidelines the Commission will establish in the order addressing long-term number portability cost allocation and recovery." (Paragraph 126,

page 73). AIT will need to engineer its network to accommodate outside queries and to receive compensation from your firm for the network capacity.

Please notify AIT in writing no later than September 8, 1997 of your intention that we perform this query service on your behalf. The volume of queries and the length of time that the service is to be performed are also required from your firm in order to price the services correctly.

We realize that the transition to an LNP environment will have an impact on your business, and we wish to extend our services to make this change as smooth as possible. We are enclosing some background information to help you to understand the FCC requirements and the demands of local number portability.

Please do not hesitate to call your Account Manager for any further service.

Sincerely,

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## Local Number Portability (LNP) Query Service

### What is Local Number Portability?

Local number portability (LNP) may be broadly defined as the ability to retain one's telephone number when changing service providers, location, or type of telephone service.

The 1996 Telecommunications Act requires all local exchange carriers (LECs) to provide local number portability in accordance with the mandates of the Federal Communications Commission (FCC). Current mandates require only the service that permits the ability to retain one's number when changing service providers. This is called service provider number portability (SPNP), but will be referred to as LNP in this document.

### Deployment Schedule

The FCC has proposed a phased approach to the deployment of LNP. All LECs must be able to implement LNP in the one hundred largest Metropolitan Statistical Areas during the period October 1997 through December, 1998.

After December 1998, LNP must be available to the rest of the country within six months of a request for LNP. In order to provide local number portability, LECs will need to participate in the number portability planning process within their designated areas.

### LNP Call Routing Method

Before LNP, a call was routed to the serving end office switch based on the NPA-NXX of the number being called. Once LNP is implemented, that method is no longer valid because a single NPA-NXX could be served by more than one switch.

If it is determined that an NPA-NXX is a ported exchange, it is then necessary to determine if it is a ported number. If so, it is then necessary to determine the unique switch number (referred to as the Location Routing Number, or LRN) that serves the called number.

This is done by querying a database that contains the ported numbers as well as the LRNs before the call can be routed. When the LRN of the switch that serves the number is obtained, the call can be routed to the serving switch.

### LNP Call Routing Responsibility

Regardless of the implementation schedule of LNP, all N-1 carriers must perform the query needed to route a call. If a call is delivered by an interexchange carrier (IXC), it is the responsibility of the IXC to perform the query of the LNP database and to route the call to the appropriate LEC. If the call is between two LECs, the originating LEC would be required to perform the query.

### LNP Query Service

According to FCC, "...if the N-1 carrier requires the original terminating LEC to perform the query, the LEC may charge the N-1 carrier for performing the query..."

Ameritech is currently developing a service that would perform queries on behalf of our customers. Also, carriers which are Signaling System 7 (SS7) capable could use own links to query our database for routing information.

**AGENDA**

**Ameritech Meeting  
Tuesday, August 12, 1997  
Regency Suites Hotel  
Green Bay, Wisconsin**

- 8:30 Continental Breakfast
- 9:00 Welcome, Introductions and Opening Remarks - Fran Perone, Ameritech
- 9:10 Local Number Portability - Wayne Heinmiller, Ameritech
- 11:00 Break
- 11:15 Query Services Update - Jim Jermain, Ameritech
- 12:00 Lunch
- 1:00 EMR Changes in the LNP Environment - Charlene Fivecoat, Ameritech
- 1:45 Review of Ameritech's Transport Electronics Offering - Fran Perone
- 2:00 Network Access Security - Jim Massel, Ameritech
- 3:00 National Directory Assistance - Fran Perone
- 3:15 Open Discussion/ Questions & Answers
- 3:30 Closing Comments - Fran Perone

## **AGENDA**

**Ameritech Meeting  
Tuesday, August 19, 1997  
Crowne Plaza Hotel  
Springfield, Illinois**

**8:30 Continental Breakfast**

**9:00 Welcome, Introductions and Opening Remarks - Fran Perone, Ameritech**

**9:10 Local Number Portability - Wayne Heinmiller, Ameritech**

**11:00 Break**

**11:15 Query Services Update - Fran Perone, Ameritech**

**12:00 Lunch**

**1:00 EMR Changes in the LNP Environment - Kaye Morrison, Ameritech**

**1:45 Review of Ameritech's Transport Electronics Offering - Fran Perone**

**2:00 Network Access Security - Jim Massel, Ameritech**

**3:00 National Directory Assistance - Fran Perone**

**3:15 Open Discussion/ Questions & Answers**

**3:30 Closing Comments - Fran Perone**

## **AGENDA**

**Ameritech Meeting  
Tuesday, August 26, 1997  
Holiday Inn - South  
Lansing, Michigan**

8:30 Continental Breakfast

9:00 Welcome, Introductions and Opening Remarks - Fran Perone, Ameritech

9:10 Local Number Portability - Wayne Heinmiller, Ameritech

11:00 Break

11:15 Query Services Update - Jim Jermain, Ameritech

12:00 Lunch

1:00 EMR Changes in the LNP Environment - Kaye Morrison, Ameritech

1:45 Review of Ameritech's Transport Electronics Offering - Fran Perone

2:00 Network Access Security - Jim Massel, Ameritech

3:00 National Directory Assistance - Fran Perone

3:15 Open Discussion/ Questions & Answers

3:30 Closing Comments - Fran Perone



## **Ameritech Information Industry Services**

### **Local Number Portability Seminar August 28, 1997**

9:00 am	Welcome	Roger Burgoyne
9:10 - 11:00 am		LNP Presentation - Wayne Heinmiller
11:00 - 11:15 am		STRETCH BREAK
11:15 - 12:00 pm		Update in other related query services/tie into LNP (eq 800/888 query service) - Jim Jermain
12:00 - 1:00 pm		LUNCH
1:00 - 1:45 pm		EMR Changes required as a result of LNP - Kay Morrison
1:45 - 2:15 pm		National Directory Assistance - Hazel Gillispie
2:15 - 3:00 pm		Network Access Security - Jim Massel
3:00 - 3:15 pm		BREAK
3:15 - 3:45 pm		Global Gateway Services - Rick Gilbert
3:45 - 4:30 pm		Security Link - Mike Rotz
4:30 - 4:45 pm		Revenue Audit Verification Expert System - Bill Bockelman
4:45 - 5:00 pm		Transport Electronics - Roger Burgoyne
5:00		Closing Remarks - Roger Burgoyne
5:00+		RECEPTION



## **Agenda**

### **Ameritech Local Number Portability**

**Wednesday, September 10, 1997  
Adam's Mark Hotel  
Columbus, Ohio**

- 12:00 p.m. **Buffet Lunch (Location: PreConvene Area - South)**
- 1:15 p.m. **Meeting Room: Hayes Ballroom A**  
Welcome, Introductions - Greg Chandler, Ameritech
- 1:20 p.m. Local Number Portability - Wayne Heinmiller, Ameritech
- 2:55 p.m. Break
- 3:00 p.m. Query Services Update - Jim Jermain, Ameritech
- 3:30 p.m. EMR Changes in the LNP Environment - Kaye Morrison, Ameritech
- 4:30 p.m. Collect LNP Survey Forms. Gift Certificate Drawing.  
Closing Comments, Adjourn - Greg Chandler

# LNP Survey

*We thank you for your attendance today and would appreciate you taking a few minutes to complete this LNP Survey Form.*

Ameritech

INFORMATION INDUSTRY SERVICES

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**1. Does your exchange(s) currently have SS7 capabilities now?**

Yes     No

**2. If not, do you plan to become SS7 compatible prior to the date your exchange(s) is mandated by the FCC to be LNP-compliant?**

Yes     No

**3. Has your exchange(s) been updated to support LNP queries?**

Yes     No

**4. If not, do you plan to update your exchange(s) prior to the date your exchange(s) is mandated by the FCC to be LNP-compliant?**

Yes     No

**5. What type of switch(es) is deployed in your exchange(s)?**

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**6. If your exchange(s) supports SS7, do you use Ameritech for your SS7 access?**

Yes     No

**7. Do you use Ameritech for your 800/888 database queries?**

Yes     No

**8. Do you plan any upgrades to your switch(es) by year-end 1997?**

Yes     No

**9. If not by year-end 1997, at what point in time?**

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**10. Will you be performing your own LNP queries?**

Yes     No

**11. If not, have you selected an LNP query service provider?**

Yes     No

12. If yes, name of provider:

\_\_\_\_\_

13. If not, would you be interested in contracting with Ameritech Information Industry Services to serve as your LNP provider?

Yes     No

14. Is there any additional information that you would like for Ameritech to provide to you regarding LNP?

\_\_\_\_\_  
\_\_\_\_\_

**Local Number Portability Meeting**

1. Did this meeting meet your expectations?

to a large degree     somewhat     not at all

Comments: \_\_\_\_\_  
\_\_\_\_\_

2. Was the site of the meeting convenient for you?

Yes     No

3. Were the speakers knowledgeable about their subject matter and did they respond well to the questions posed to them?

Yes     No

Comments: \_\_\_\_\_  
\_\_\_\_\_

4. Would you like to receive additional information on any of the topics presented today?

Yes     No

Comments: \_\_\_\_\_  
\_\_\_\_\_

Name: \_\_\_\_\_ Phone: \_\_\_\_\_

Company Name: \_\_\_\_\_ Title: \_\_\_\_\_