I am submitting the following written comments for the January 25, 1999 Indiana Utility Regulatory Commission hearing, regarding Cause No. 41083, Finding No. 3, concerning 9-1-1 and law enforcement issues surrounding long-term number portability and increased local telephone service competition.

Background information---Rick Jones, Loves Park (IL) 9-1-1 Center supervisor, representing the Illinois chapter of NENA (National Emergency Number Association) and the Illinois chapter of APCO (Association of Public Communications Officials) on various national, regional and state committees involving number portability and local telephone service competition as they relate to 9-1-1 and public safety communications work in general. I have attended overall Midwest Region operations, steering and test team number portability committee meetings since November 1996. I have been in public safety communications for 21 ½ years.

Written comments

I apologize for being unable to attend the hearing today, particularly since it concerns such important long-term issues to 9-1-1 and law enforcement regarding local phone service competition.

I congratulate the Indiana Utility Regulatory Commission for taking a pro-active role in protecting 9-1-1 and public safety. I hope that these actions will increase involvement by more state utility regulatory commissions so that increased local phone competition, long term number portability, and number resource optimization methods do not cause any degradation in 9-1-1 and public safety services.

There are three areas of concern I wish to address today. They include (1) the need for 9-1-1 and law enforcement to identify the local service provider related to a phone number, (2) 9-1-1 testing as new local service providers start service and in each area when long-term number portability becomes available, and (3) various 9-1-1 database issues being discovered and worked as LNP is turned on throughout the country and Canada, and as the number of customers using it, increases.

Issue #1—Identifying the local service provider related to an individual phone number.

As long-term number portability is implemented, 9-1-1 ALI (automatic location identification) database providers should be inserting a company-ID field in the ALI data stream. This is used to identify the local facilities-based service provider for the phone number of the telephone being used by the caller. It is the responsibility of the 9-1-1 system to make the necessary changes in its 9-1-1 equipment (and if necessary, its CAD system) to accept and display this field.

Another assumption, which in practice has turned out to be not always the case, is that all local service providers in a 9-1-1 system area, have provided the appropriate 9-1-1 agencies with their 24/7 phone numbers for security, maintenance, etc. This would be used in the event of something being wrong with the ALI record, something being wrong with the phone line, or for other emergency reasons. On most records, the 9-1-1 PSAP (public safety answering point) would have the phone number and the company-ID from the ALI record, so contact could be made if needed.

In my checking with 9-1-1 systems across the country, I find many (from large to medium to small) that do not have all the 24/7 phone numbers for the new local service providers in their area. This problem will be addressed later in my comments.

If a 9-1-1 call taker receives a call in which there is no voice contact or the person is unable to give an address, and if that call displays “no record found” on the ALI screen, the call taker somehow needs to match the phone number displayed to a service provider, in order to find the address.

Pre-competition, that was easy. Call “the” phone company.

With local service competition (more than 10 in the Chicago metro area, more than 15 in the Dallas area), and with the advent of long-term number portability, that checking can become a very time-consuming process and possibly impossible to do.

The people attending today from the 9-1-1 community can document that “no voice contact” 9-1-1 calls have turned into medical emergencies, fire calls, and mainly, domestic violence calls. These are all calls requiring immediate public safety response. In my opinion, a 9-1-1 call taker checking with 5, 10, 15 local service providers just to get an address, is an unacceptable delay, and potentially life-threatening.

The Midwest Region LLC (Limited Liability Corporation) recognized the importance of this issue, both how it relates to 9-1-1 and also, law enforcement. Several months ago, it became the first region in the U.S. and Canada to offer 9-1-1 systems and law enforcement agencies a solution to the problem of matching a local service provider to a phone number, when the number has been “ported” between providers.

The solution, an IVR (interactive voice response unit), is provided currently by Lockheed Martin, The funding of the system comes from the regions (7 in U.S. and 1 in Canada) that buy in to it. In recent months, the Southwest Region (those states having Southwestern Bell) and the Mid-Atlantic Region (those states served by Bell Atlantic-South), have bought in also.

It should be pointed out that as each region buys in to the IVR solution, the initial costs are split. For example, if only one region buys in, it pays all initial costs. If all 8 buy in (7 in U.S. and one in Canada), the costs to each region are 1/8 of the total initial costs.

What is still being worked in a national committee (more on that later) is how to pay for ongoing costs, and how to pay for the administration (registration/password assignment).

For a 9-1-1 system or law enforcement agency (if located in one of the three regions where it is available) to access the IVR, that agency must register with Lockheed Martin, and receive the appropriate phone number and password (numeric).

To use the IVR, a 9-1-1 call taker or law enforcement investigator would call the phone number provided by Lockheed Martin, key in the 10 digit phone number being checked, and, if the number has been "ported", receive a digital voice response which states the local facilities-based service provider and its 24/7 phone number (up to 20 phone numbers can be individually checked during the call).

While the existing system does cover the difficulties surrounding matching a local service provider to a "ported" phone number, it does not cover all phone numbers.

A national 9-1-1, law enforcement, and phone industry committee, which has been working the issue of matching a phone number to a local service provider, met in Chicago, November 5, 1998. Its consensus agreement was that the IVR system should identify all local phone numbers in an area to the proper local facilities based service provider. (This group, of which I am a member, will next meet in Tampa, FL, on February 4, 1999.)

A NENA long-term number portability study group, comprised of representatives from more than 25 local service providers in the U.S. and Canada, also reached consensus in late 1998 that an IVR, which linked facilities based local service providers and all (both ported and non-ported) phone numbers was needed. The group's chairperson has notified all LLCs in the U.S. and Canada of the position taken. (This group, of which I am a member, meets two hours every two weeks, and has for several months, to address and resolve 9-1-1/LNP issues.)

Why are 9-1-1 professionals, law enforcement representatives, telephone company security personnel, 9-1-1 database providers, and 9-1-1 staff of new local service providers all calling for an IVR system to include service provider information for both ported and non-ported local phone numbers?

For public safety communications, the reasons include (1) "no record found", no voice contact 9-1-1 calls, (2) no voice contact 9-1-1 calls with wrong company-Ids or missing company-Ids, and (3) a second-party emergency call from which only the phone number, not the location, of the potential emergency is known.

Item (3) deserves some explanation. In late 1998 in the evening hours, a Chicago suburb public safety communications center received a call from a local doctor reporting a possible medical emergency. His answering service had received a call from a woman stating that she was “bleeding profusely.” The service got her name and phone number only and then contacted the doctor. The doctor did not have a patient with the name given. It was determined that she might have called the wrong doctor (same last names). The second doctor could not be reached.

The frustrated doctor then called his local public safety emergency communications center for assistance. That center began its work, trying to match the phone number/name with a local service provider. The phone number was not an Ameritech number. The center called the IVR (not many centers have yet registered for IVR even though it is fully available in all five Midwest states). It was not a ported or pooled number and so, the IVR had no record. The center called the 7/24 number of a new local service provider (the only one that had registered with the center, even though several are marketing in that area), with no luck. The center also tried contacting wireless companies providing service in the area (phone book for these calls), since these companies are not providing 7/24 phone numbers with most public safety communications center. No luck. The center was unable that night to ever link the phone number to an address (and it was never able to get an answer when calling back the phone number, even though it did ring). Luckily, the whole incident was determined to be unfounded the next day.

That is an excellent example though of why public safety communications needs an IVR that identifies the local facilities based service provider to any phone number, along with a 7/24 contact number.

Local public safety communications personnel and law enforcement agencies need access to a full IVR (full meaning both ported and non ported number identification to service provider) for emergency situations such as kidnapping/hostage types when a phone number is known and an address is needed or the phone line needs to be interrupted or taken over.

Law enforcement agencies need a full IVR to know which local facilities based service provider to issue a subpoena to, for trap/trace, for record information, or for other investigative reasons.

Telephone company security personnel (especially among the incumbent service providers) may support a full IVR because they are unable or not staffed enough to provide the needed information to law enforcement and 9-1-1 for all service providers in the area. In some areas, such security personnel have access to LERG (local exchange routing guide) information, which lists all the prefixes (NXXs) in the area and the codes identifying the local facilities based service providers with those prefixes. However, looking up the information is very time consuming including matching the numeric codes to the correct local service providers.

They may realize they do not have the staff to do all this work for all local service providers (especially considering the potential quantities of subpoenas involved in major metro areas on a weekly basis). In other areas, such security personnel do not have access to LERG data and so only have their own company's information.

9-1-1 database providers and 9-1-1 staff of local service providers need access to a full IVR so that, when there is a problem involving the ALI data of a phone number, they can quickly determine which service provider is the one to contact to fix the data. They often have no access to LERG data or to their own local database (SMS) that drives number portability. And, even if they have such data, they may not always have a phone number for contacting the new service provider in an emergency situation.

It appears that no one disagrees that 9-1-1 and public safety agencies (both communications and law enforcement), have the need to identify for a phone number, the facilities based local service provider and at least one 24/7 phone number. It may be more than one, dependent on the provider, since issues include security (addresses), repair (malfunctions), and database (ALI record emergency corrections).

This basic issue is how is it all paid for.

While LLCs are increasingly (at least 3 of the 8) accepting that a system to identify ported number service provider information to 9-1-1 and public safety is their responsibility, some LLC members are saying that expanding the IVR to include non ported numbers, is not directly related to number portability, and therefor not their responsibility.

The other position, which the groups supporting a full IVR have accepted, is that number portability is a primary cause for so much increased local service competition and therefore, a full IVR should be financially supported by the LLCs of the 8 regions.

9-1-1, public safety communications in general, and local/state law enforcement are caught in the middle of this debate. And not to be forgotten, so is the public.

Issues not yet resolved concerning the IVR include (1) long term maintenance costs, (2) administration for registration and password release), (3) historical data, and (4) access to the IVR through a national computer system, such as NLETS (National law enforcement telecommunications system), the computer system that links together all federal, state and local law enforcement agencies in the country. They will be discussed at the next national 9-1-1/law enforcement/service provider committee meeting, in Tampa, FL, February 4, 1999.

Law enforcement agencies, federal, state and law, need access to historical data, in a number portability environment. Some major investigations can require obtaining telephone records that include times in the past. To obtain this, information is needed as to which local service provider was providing service to the customer on past dates. In a portability environment, a customer can change providers as much as once every 3 business days, so historical data identifying which provider had which number on which date(s) becomes very important.

The Midwest Region has consistently led the nation regarding number portability, how it will work and how to neutrally implement it in a highly competitive environment. It has also been a leader in ensuring that 9-1-1 service is not degraded in this major changeover process.

I am hoping that LLC members will become convinced that once again, the Midwest Region should lead by financially supporting a full IVR, involving both ported and non-ported local phone numbers.

Anything that the Indiana Utility Regulatory Commission can do to assist realizing this goal, would be greatly appreciated, and would help provide a much needed service to 9-1-1 and the entire public safety community.

Issue #2—Testing when number portability becomes available in an area and/or when a new local service provider begins service in an area.

As part of the long-term number portability field trial in the Chicago metro area in 1997, a number of 9-1-1 tests were conducted. Three problems were found and corrected during this time frame. They included (1) a transfer from one PSAP to another did not work, (2) an overflow 9-1-1 call did not work properly, and (3) in one test, the 9-1-1 ALI database was not updated.

Reference (1) transferring from one PSAP to another, the switch software was updated.

Reference (2) 9-1-1 call overflowing, the switch software was also updated. It occurred in a system that had double overflow. When all 9-1-1 lines to one set of call takers were busy, the calls overflowed to another group of call takers. If those lines were also busy, the calls overflowed to another PSAP. The 2nd overflow did not work and was corrected with a switch software change.

Reference (3) timely updating of 9-1-1 ALI database, the recipient service provider had not sent in a 9-1-1 ALI record update prior to the test. When a number changes providers using long-term number portability, the provider losing the number is called the donor provider, and the one taking over the number is called the recipient provider.

The test was redone after the 9-1-1 ALI database updating was completed, and all was correct.

I would strongly suggest that local service providers be required to complete a set of 9-1-1 tests whenever long-term number portability is established in a given area.

Not all switches were tested in the Chicago metro field trial. Also, those switches tested did require software changes and I am not sure it can be safely assumed that the software changes are in all such switches nationwide without some testing.

There was no basic 9-1-1 in the Chicago metro area so, it was not tested. While overflow was tested (and requiring software change due to problem), overflow to operator services was not tested as it is not permitted in Illinois. I believe it exists in Indiana.

Also, testing helps ensure that the local service providers in a given area are aware of 9-1-1, its network and its database, and their responsibilities to make sure it all works properly.

With the advent of so many new local service providers throughout the country and with the knowledge that many of them have not been involved in any 9-1-1 standards' establishment, it would seem that 9-1-1 testing when they turn on service in an area, would help ensure that 9-1-1 works properly for their customers.

From what I have seen during the past 2 plus years, some of these new local service providers will not test their 9-1-1 network in each area, unless a regulatory body mandates it. Testing should include the various segments of the network, default routing, and 9-1-1 ALI database records for their customers. It should involve some live testing to actual PSAPs in the area (this also helps ensure that PSAPs are aware of the new service provider).

Issue #3—Miscellaneous 9-1-1 database issues

The final issue involves changes that were made to ALI database standards because of the advent of long-term number portability.

To ensure no degradation of 9-1-1 service when a customer "ports" from one local service provider to another, a new way of ALI database processing was established.

First, a company-ID field was added to all ALI records so that (1) PSAPs would know which service provider was involved (in porting, the NXX no longer serves as the service provider identifier), and (2) one service provider could not accidentally overwrite the ALI records of another provider's customers.

Next, a change was needed from the normal delete/add ALI database process. For example, if a customer changed service providers prior to number portability, the service provider losing the customer would send a delete record through, and the service provider gaining the customer would send an add record. During the time span between the delete and add, there was no ALI record for that customer. Any calls to 9-1-1 would result in a "no record found" on the ALI screen of the call taker.

With 1996-97 estimates being given that five to 40 per cent of customers may start "porting" their phone numbers between local service providers in the future, it was apparent that having these records disappear from the 9-1-1 ALI database for one or more days was not acceptable.

A procedure was developed through NENA committees and study groups (and approved as a standard by the NENA executive board in June 1997) that would keep the "porting" customer's record in the ALI database during the switchover.

The donor service provider would send an unlock record, rather than a delete, to the 9-1-1 ALI database provider. This would release the security lock on the record while keeping the customer name, address and other information in the ALI database.

The recipient service provider would send a migrate record, which would be treated as a change, and it would overwrite the existing record, basically adding the new company-ID, while overwriting the name, address, etc.

It should be pointed out that NENA standards are voluntary, unless accepted by government regulatory authorities. While it appears that so far, most of the telephone industry is trying to comply, there is no requirement.

I would ask that the Indiana Utility Regulatory Commission consider approving the NENA database standards, and placing them in the Indiana 9-1-1 requirements for any local service provider operating in an area with long-term number portability.

This would help ensure that as more and more service providers enter the local market, there is no degradation of 9-1-1 service for each company's customers.

As long-term number portability was established in each of the 100 top MSAs of the country in 1998, this new unlock/migrate method of processing 9-1-1 ALI records received experience involving larger numbers (about 500,000 numbers were ported in 1998 in the U.S. and Canada, according to Lockheed Martin statistics).

9-1-1 database providers (usually incumbent local service providers) began to find that they had an increasing number of unlock records that were awaiting migrate records from new service providers, for several days.

The NENA study group which developed the original unlock/migrate standards is currently working on discovering why this is so and what recommendations are needed to correct it.

I would recommend that the Indiana Utility Regulatory Commission consider adopting a time standard, such as requiring a local service provider to send a 9-1-1 ALI record to the ALI database provider, no later than 24 hours after providing dial tone to a local phone number.

While we on the 9-1-1 PSAP side would prefer having the ALI database correctly updated as close to the dial tone providing time as possible, preferably at the same time, additional NENA standards-setting needs to be done to reach this goal.

I do suggest though that with the increasing number of local service providers entering the market, government regulatory authorities should set a deadline for ALI records, to protect the customer's 9-1-1 service.

Another difficulty with the unlock/migrate process concerns what happens when a customer both "ports" between providers and moves to another location within the rate center, at the same time.

While this may be a small percentage of the total of phone numbers being ported, it does mean that there is an incorrect ALI record in the database, until the new service provider submits the migrate.

Many 9-1-1 professionals appear to agree that when it comes to the address of the caller, it may be better to have 'no record found' rather than the wrong address.

The appropriate NENA study group is also working on the issue. The draft standard covering when a customer ports and moves at the same time, basically states that the donor local service provider would send a delete record through (rather than a migrate) and the recipient local service provider would send a migrate, which would be treated as an add record and inserted in the ALI database with the new address.

For the process to work, it is essential that the donor local service provider have the information that the customer is moving, and provide this for ALI database processing.

This study group does consist of the majority of the 9-1-1 database providers in the U.S. and Canada, and several of the new local service providers.

When this is adopted by NENA as a revised database standard, I would suggest that the Indiana Utility Regulatory Commission consider placing it in the 9-1-1 regulations for the state.

Some in the PSAP community have suggested that a designator be sent in the ALI data stream to the 9-1-1 call taker's screen, so that the 'unlock' status is known if it exists. The reasoning is that this may be used as a caution flag for possible errors in the screen information. This is being discussed in the appropriate NENA study group as to desirability and feasibility.

While resellers have not been discussed throughout this document since the initial long-term number portability wireline processes only applied to facilities-based local service providers, I would point out that there is a NENA database standard that will include a second company-ID field to identify resellers. A NENA committee is working on PSAP ALI screen display standards and this is one field being considered for addition.

SUMMARY

The following summarizes my suggestions to the Indiana Utility Regulatory Commission.

1.) An IVR system which includes local service provider identification and a 24/7 phone number, is needed for 9-1-1, public safety communications, and law enforcement. Any assistance that the Commission can provide to help convince the Midwest Region LLC to financially proceed with this would be appreciated.

2.) The IVR system for ported/pooled numbers only, exists today in the Midwest. 9-1-1 systems, public safety communication centers, and law enforcement agencies in Indiana should be encouraged to register with Lockheed Martin to obtain the IVR instructions, the access phone number, and the numeric password.

3.) The Commission is asked to consider requiring testing of the appropriate parts of the 9-1-1 network and data processing when any new local service provider starts service in a new area, and with each existing local service provider, when long-term number portability becomes available in an area.

4.) The Commission is asked to consider adopting NENA database standards, including those related to long-term number portability, as part of the 9-1-1 regulations in Indiana.

5.) The Commission is asked to establish a procedure for adopting NENA database standards' revisions as they are promulgated to cover new issues.

6.) The Commission is asked to establish 9-1-1 ALI record time standards, requiring local service providers to submit the appropriate information to the 9-1-1 database provider within 24 hours of providing service to a phone number.

I would like to thank the Indiana Utility Regulatory Commission and the Indiana Office of Utility Consumer Counselor for allowing me to submit written comments on this important topic. My personal thanks to Hal Rees, for his assistance and guidance, in preparing these documents and submitting them so close to the deadline.

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