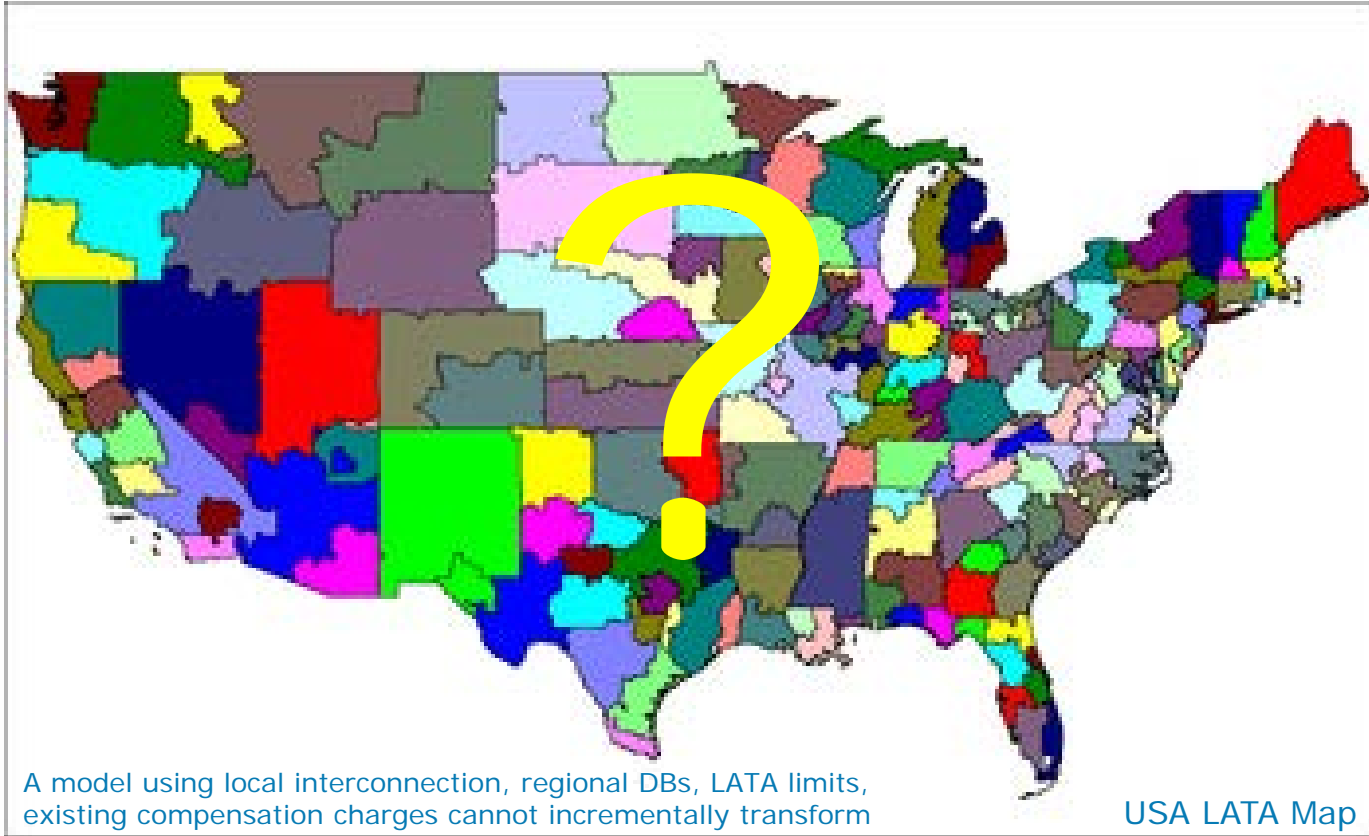# NARUC
Nationwide Number Portability

Mark Lancaster

July 26, 2016

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- Number Portability, as defined in the Telecom Act of 1996 and in its FCC implementation in Docket 95-116, is a local function. You see geography all around LNP – from the name itself, Local Number Portability, to the rate center orientation, the intraLATA LNP processes, and the interconnection in the local market.

- Telecommunications in the late 20th century was formed on an hierarchical structure with the lowest level being the local switch. That switch knew only the nearby geography and how to process up multi-tiered structure in the event a call needed to go elsewhere.

- End users purchased from local service tariffs and local toll tariffs, both of which used the distance between one local switch and another to help set rates.

- Competing carriers, the CLECs and wireless providers, took on much of the geographic nature of the ILEC, using SS7 signaling and popular TDM switches that connected to the ILEC for a seamless exchange of traffic and for porting of numbers.

- To transform to NNP, that network structure must be aware of geography that is beyond its knowledge today. An example of the limits are evident in the switch's local routing tables. If we called from the lobby phone at the Omni Hotel, a 615-259 number in the Nashville rate center, to a Franklin TN, number 615-261, the central office switch would recognize that as a local call. This is an 18 mile distance within the same LATA and metro area. However, for NNP to work, this same Nashville switch has to look at routing information nationwide, thus NATIONWIDE Number Portability.

- The Nashville local switch knows about Franklin TN telephone numbers, but it does not directly know routing information for Franklin ME or Franklin ID, Franklin TX or Franklin WV. NNP requires the Nashville local switch know how to route when the ported number involves any of those other Franklins since a wireless carrier serving that distant geography may want to use its switch to serve the Tennessee customer.

- The gear that allows your constituents to make a call from Nashville TN to Franklin TN is not up for the task of completing that same call to a Franklin WV switch which has won the customer using NNP. The technical approaches presented by the ATIS PTSC offer possible frameworks to begin developing the network to handle number portability in this way.

- As the panel questions indicate, it will take joint resolution among regulators and industry parties to bring this together. The needs of the public are different from those when President Clinton signed the Telecom Act. As we consider how to move the network with the needs, stakeholder participation will help assure that we solve the right problems with the right technology and implementation.

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Changing the Portability Model
## How can NNP work using current design?

A model using local interconnection, regional DBs, LATA limits,
existing compensation charges cannot incrementally transform

USA LATA Map

Areas that would need to be changed, most of which involve FCC rulings, to implement NNP:

| Routing | Trunking | Interconnection | Compensation | NPAC Structure | FCC Orders | Telecom Act |

Local Number Portability Process

1. New service provider notifies old service provider of requested port.

2. Old service provider confirms subscriber's info, notifies new service provider.

3. New service provider notifies NPAC of requested port.

4. NPAC creates pending port, sends notification to old service provider.

5. Old service provider notifies NPAC that it concurs with port.

6. New service provider notifies the NPAC to activate the port.

7. Pending port activated in NPAC, broadcast to industry networks.

Old Service Provider

Customer Data

New Service Provider
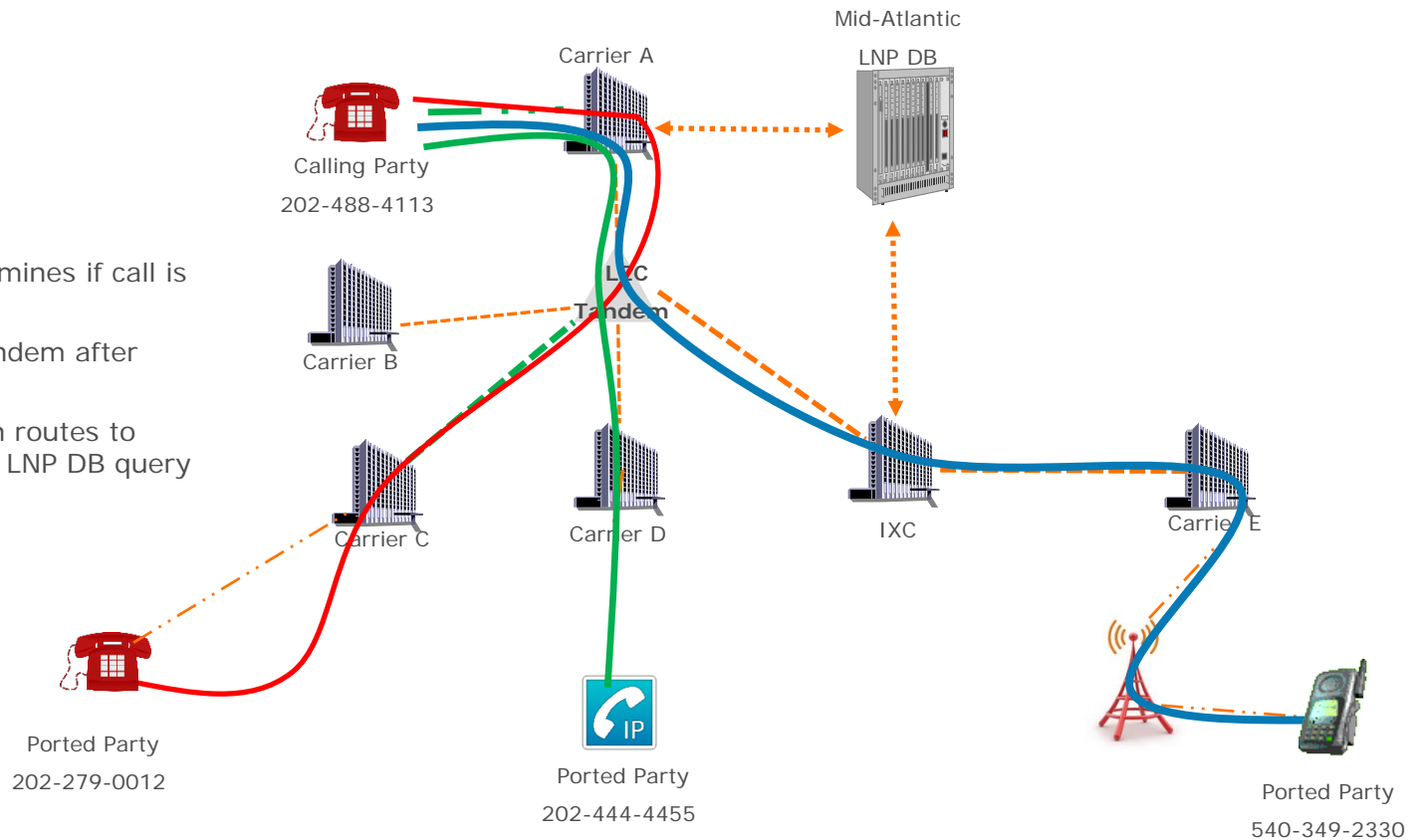
NPAC

Telecom Network

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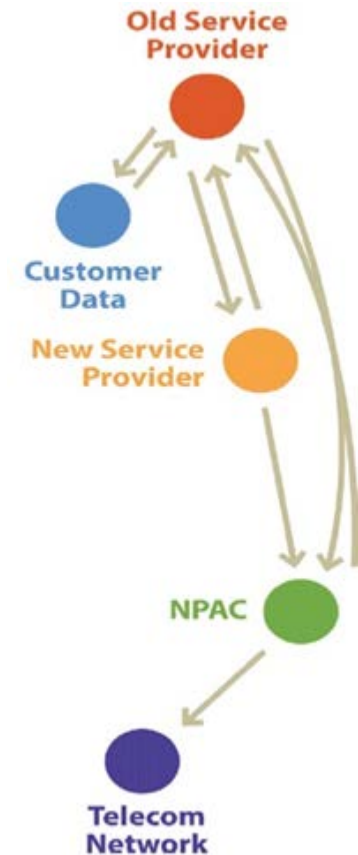
How Does Number Portability Route a Call Today?

Calling wireline

Calling wireless

Calling VoIP

- Originating carrier determines if call is local or LD
- Routes local via ILEC tandem after LNP DB query
- Routes toll to IXC, which routes to terminating carrier after LNP DB query

Mid-Atlantic

LNP DB

Carrier A

Calling Party
202-488-4113

ILEC Tandem

Carrier B

Carrier C

Carrier D

IXC

Carrier E

Ported Party
202-279-0012

Ported Party
202-444-4455

Ported Party
540-349-2330

All porting carriers must have interconnection and a numbering presence in porting LATA

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Nationwide Number Portability

Michele Thomas, T-Mobile USA

NARUC Summer Meeting – Nashville, TN

July 26, 2016

Portability in the US

- The ability to port a telephone number from one service provider to another service provider has spurred significant competition within the telecommunications industry and corresponding consumer benefits;
- Our US porting systems and operations are highly effective in not only meeting consumer requests to move among providers; but, those systems also ***ensure the proper routing and completion of telephone calls in the US***;
- Thousands of ports occur each day in the US and the overwhelming number of customer porting requests are completed within a matter of minutes;
- The current porting architecture, which makes use of Location Routing Numbers, **DOES NOT** support the ability of a consumer to port a telephone number anywhere. To effectuate a valid port between service providers the telephone number must remain within the same general geography per FCC rules and Orders.

Impetus for current activities on NNP

- In 2015 Members of the House Energy & Commerce sent a letter to Chairman Wheeler requesting solutions that might assist certain wireless consumers limited in their ability to port a telephone number beyond the current geographic porting architecture.

- Chairman Wheeler subsequently sent a letter to CCA and CTIA requesting identification of solutions within 3 months.

- In the Fall of 2015, CCA and CTIA filed a joint response to Chairman Wheeler identifying near/existing, mid and long term opportunities to support. (i.e. wholesale arrangements, LRN modifications, and IP Transition).

- In late 2015, the FCC requested that the North American Numbering Council consider impacts of changing the existing national porting architecture (i.e. use of Location Routing Numbers ("LRNs")) to support the implementation of Nationwide Number Portability.

- Soon thereafter, the NANC assigned specific identified issues for assignment to certain Working Groups, including the Future of Numbering Working Group.

- The NANC reported back to the FCC in May 2016 on its assessment and further recommendations.

Future of Numbering WG Report on NNP

- The FON Working Group, which is comprised of state regulators, industry numbering experts and vendors, was assigned the majority of issues identified by the FCC for consideration; and was specifically tasked with evaluating and making recommendations about how changes to the LRN porting architecture would impact the following:

  - ***the applicability and assessment of tolls, tariffs and taxes;***

  - ***the role of State Regulatory Commissions;***

  - ***costs, including cost recovery; and***

  - ***relevant federal rules related to portability.***

- The FON WG met over a five month period to develop such assessments and recommendations on these identified issues. The details of that work can be found in the FON's Final Report dated April 15, 2016...a full copy of that report is available on the NANC-Chair website.

- In support of the FON WG activities, several assumptions were established to support the assessment of the issues:

  - Assumption #1: When the consumer engages in NNP they physically move and their interconnect point is associated within their new geography.

  - Assumption #2: A consumer who engages in NNP will be considered under the new district (Which could be porting to a different rate center or LATA within the same state) or new state laws/regulation(s).

  - Assumption #3: NNP should be implemented up to and including crossing state lines (i.e. porting from CA to NY).

  - Assumption #4: The use of LRNs shall continue until such time that alternate preferred industry technical solutions for NNP are defined, adopted, and implemented.

FON WG Report on NNP cont.

- The FON WG Report broadly concluded that "*regardless of any yet to be identified preferred industry technical solution, the implementation of Nationwide Number Portability will have likely impact on the identified issues.*"

- Accordingly, the FON WG Report recommended that, "*upon the development of preferred industry technical solution(s), that <u>a more detailed inquiry be directed to specific subject matter experts and a broad group of stakeholders to further assess these identified issues and other legal, regulatory, and jurisdictional issues.</u>*"

- In addition, the **FON WG report suggested an evaluation of NNP's impacts to consumers, the competitive marketplace and public safety (i.e. 911/NG911), its related costs on consumers and industry, and overall timing considerations to implement NNP in the context of the ongoing transition of the nation's telecommunications infrastructure to Internet Protocol, and the progress of the LNPA transition.**

Future and on-going activities on NNP

- At the June 30th NANC Meeting, Chairman Kane read a letter from the FCC Wireline Competition Bureau which thanked the NANC for its thoughtful consideration of the issues, its efforts to date… and, further indicated that additional outreach to the NANC would be likely on the topic.

- IP Transition activities in various NANC Working Groups continues including the Local Number Portability Working Group; and, in certain ATIS Working.

National Number Portability

Now what?

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- Disclaimer: The following opinions are those of a deranged, raving lunatic and do not necessarily reflect the opinions of the SIP Forum or its member companies. Etc. etc.

How did we get here.

- We all wanted competitive voice markets.
  - NANP based voice services are still about a 120 Billion dollar a year business and support a wide variety of public goods including the essential 911 Public Safety networks.

- LNP was essential to that. The 96 act made that happen. IT WORKED!
  - All of you please take a bow.

- Unfortunately the porting regulations were restricted to LATA rate center boundaries and existing regulations on inter-carrier compensation.
  - Those issues are resolving themselves through the regular process

My views

- Any way you look at this, NNP is a pro competitive pro consumer policy.
  - Having to change your phone number for any reason is silly.
  - 12 % of the US Population moves every year. Check the census data.
  - We should have done this 10 years ago, but OK
  - The smaller wireless carriers etc have a real point here. Wireless National Roaming puts them at a competitive disadvantage.

- The PSTN Transition keeps coming on.
  - See Second Order on Reconsideration.
  - NNP and the Transition are inexorably tied together.
  - We have to get rid of TDM and SS7 eventually or someone is going to get hurt.

- There are impacts to the carriers, especially the smaller ones, on how their internal routing tables will need to be configured. Billing issues will also need to be resolved.
  - This means All Call Query on Origination
  - The supplier community would need a minimum of 2 years to implement. Buy more memory .. DUH.

- The FCC will have to issue a NPRM on this for any number of endless reasons.
  - Yes "the record is not complete"

My views

- There is "No Material" impact on the NPAC
    - Under NO CIRMSTANCES should this proposal delay the NPAC MSA contract agreement
    - If there are modifications they can be done in the usual NANC change order process.

- This cannot be a wireless specific policy.
    - Do we need to rethink numbering in general?

- Hopefully this can accelerate the process of Inter-carrier Compensation Reform issues to a successful conclusion of a national bill and keep model.

- Yes we want uniform national 10 digit dialing. Its just too difficult to implement NNP without it and after all what's left of 7 digit dialing after all the overlays and the effect of mobile dialing.
    - Some of us think it also provides the basis for new service delivery if the NANP number is a persistent identifier like a domain name.
    - Yes 10 digit dialing expands the NANP by 20% automagically so California, among others can resolve a host of issues. The D digit.
    - More CO Codes etc.

So now what and what is the role of the states?

This is at the heart of the issue here.

Again ..this is a natural consequence of the PSTN Transition and the transition from a local to a national network.

What will be the effect on the landline selective routers for 911?
> Everything may need roaming.

Several states will be directly impacted, especially by 10 digit dialing.
> Single NPA's. ME VT NH DE RI AK WY ND SD.   American Samoa Puerto Rico?

States need to clearly advocate a transition role while encouraging National Number Portability.

 Its going to take several years, my guess is 5, if we start now.