



Spotlight on the All-IP Transition

The Numbering Impacts

Panelists

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Moderator

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ATIS Industry Numbering Committee

- Established in 1993, the Industry Numbering Committee (INC) provides an expert forum to address and resolve industry-wide issues associated with planning, administration, allocation, assignment and use of North American Numbering Plan (NANP) numbering resources within the NANP area.

Agenda

- Overview of Numbering
- Numbering Oversight
- Recent PSTN Transition Topics

NANP Overview

- NANP includes US and its Territories, Canada, and 18 Caribbean nations
 - Introduced in 1947 to facilitate direct distance calling
- NANP number format: **NPA-NXX-XXXX**
 - **NPA** or numbering plan area or area code
 - **NXX** or central office code or prefix
 - **XXXX** or line number or station number

Numbering Administrators

- The numbering administrators (NANPA and PA) are neutral, non-governmental third parties selected by the Federal Communications Commission (FCC) to administer telephone numbering resources for the U.S. and its territories.

Guideline Development Process

- NANP resources are administered in accordance with industry-developed guidelines and FCC requirements
 - The purpose of assignment guidelines is to provide a detailed framework for the administration of resources and specify the responsibilities of all parties involved
 - Guidelines are developed by industry numbering subject-matter experts
 - Consensus process is used to update/modify/enhance the guidelines
 - FCC rules are incorporated into industry guidelines

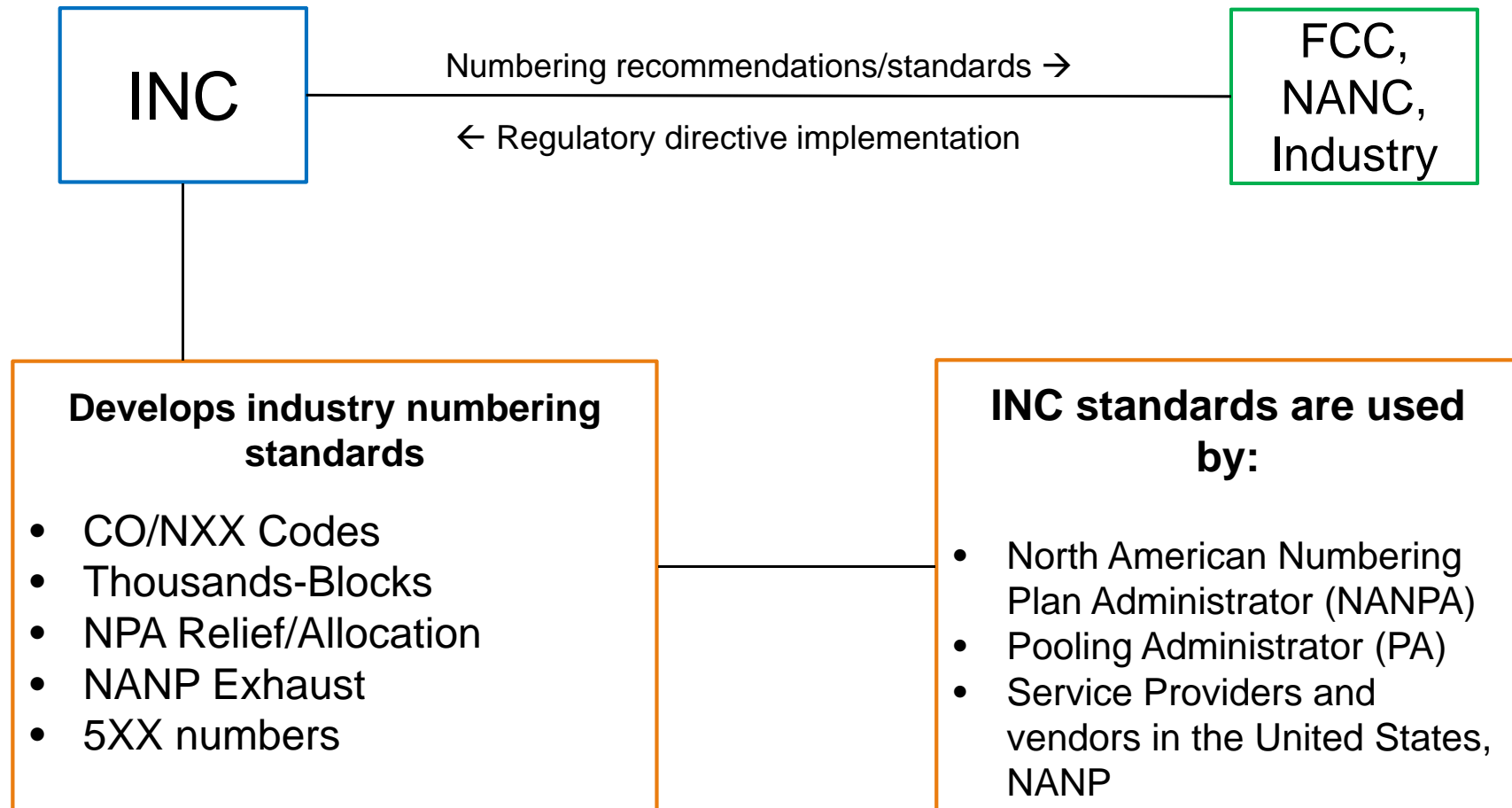
Numbering and Regulatory Oversight

- Federal Communications Commission (FCC)
 - Has jurisdictional authority over numbering in the U.S.
 - Delegates certain authority to the states (e.g., area code relief, resource reclamation)
 - NANPA established by the FCC in 1996; PA in 2002
 - NANPA and PA are not a policy-making entity
 - NANPA and PA's responsibilities are defined in FCC rules and in comprehensive technical requirements drafted by the telecommunications industry and approved by the FCC
- U.S. state regulatory agencies
 - Interface with states concerning resource assignment and reclamation--regularly receive reports on resource requests and their disposition
 - Area code relief planning and implementation (NANPA)

Numbering and Regulatory Oversight

- North American Numbering Council (NANC)
 - FCC created the NANC to advise the FCC on numbering policy matters
 - Members include telecom associations, service providers, state regulators
 - NANPA and the PA are Special Members
 - Establishes working groups to address matters before the Council

The Role of INC

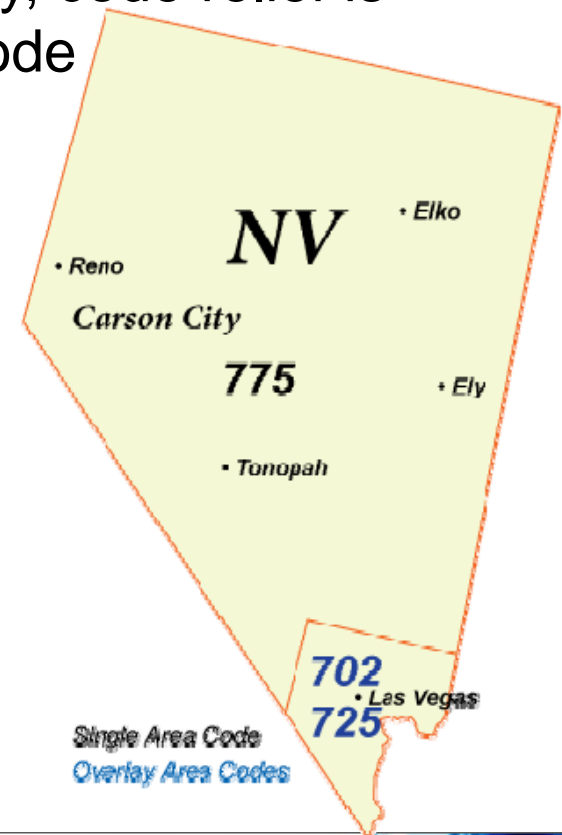


Recent INC PSTN Transition Topics

- Nationwide 10-digit dialing
- Numbering testbed
- Large-scale rate center consolidation

What is an NPA Overlay?

- An NPA overlay occurs when more than one NPA code serves the same geographic area. In an NPA overlay, code relief is generally provided by opening a new NPA code covering the same geographic area as the NPA(s) requiring relief.
- With the overlay method, the FCC requires mandatory 10-digit local dialing between and within the old and new NPAs [47 C.F.R. § 52.19 (c) (3) (ii)].
- 10-digit dialing is the dialing of the NPA-NXX-XXXX for local calls.



Recommendation for Eventual Migration to a National 10-digit Dialing Plan

- INC recommends that the Industry continue to deploy mandatory 10-digit dialing on a structured and consumer-friendly basis as area code relief is needed and overlays are implemented.
- Overlays are the preferred and prevalent form of area code relief today, and their continued implementation in the future will pave the way for an eventual nationwide and standard 10-digit dialing plan.
 - By the end of 2014, 39% of the 308 area codes implemented in the US and its territories will have mandatory 10-digit dialing in place.
- This natural progression to national 10-digit dialing does not preclude the transition to an All-IP network from moving forward.

Numbering Testbed

- FCC Order 14-5 came out on January 31, 2014, and outlines the research and development of a numbering testbed
- INC provided a list of eleven high-level functional requirements to the FCC CTO on March 31, 2014 as a result of the FCC numbering testbed workshop held on March 25

ATIS TOPS Council Testbed Initiative

- Effort launched November 18, 2014
 - Industry transition initiatives are calling for testbeds to validate solutions for migration to All-IP (e.g., numbering evolution, IP-NNI routing, authenticated caller-ID)
 - Individual testbeds duplicate many functions and are inefficient to implement and maintain
- Scope of Work
 - Evaluate existing testbed activities and proposals to identify common requirements
 - Determine if there would be value in combining separate activities into a common testbed support capability
- ATIS INC will serve as subject matter experts for numbering

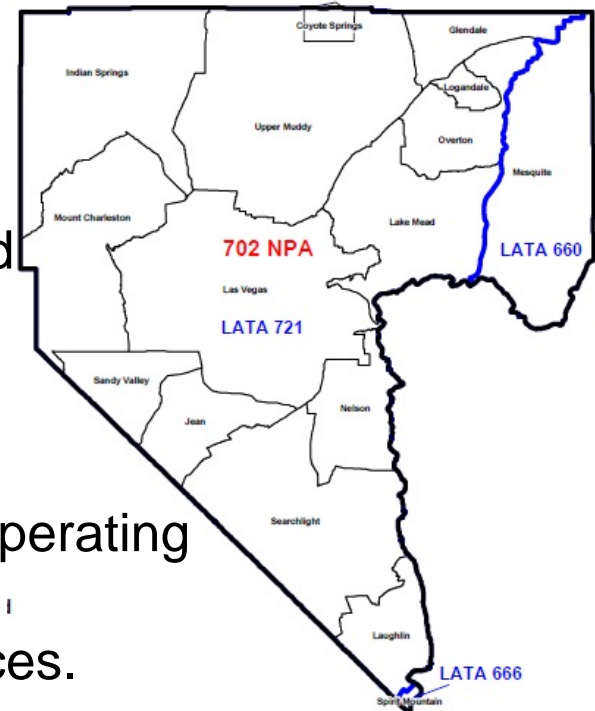
High-Level Functional Requirements for the Numbering Testbed

1. Maintain an assignment pool of applicable numbering resources;
2. Facilitate the assignment of a numbering resource (e.g., e.164 number) in a secure and efficient manner from an administrator(s) within a specified amount of time;
3. Transfer a numbering resource between administrators within a specified amount of time in a secure and efficient manner (assuming multiple administrators);
4. Identify the service(s) and/or destination(s) associated with a resource in a secure and efficient manner;
5. Transfer (e.g., port) a numbering resource and/or service and/or destination(s) between service providers within a specified amount of time;
6. Modify a numbering resource, service(s) associated with a resource, and/or destination(s) in a secure and efficient manner;
7. Return a numbering resource and/or disconnect a service and/or destination(s) in a secure and efficient manner;
8. Notify appropriate entities of any of the above activities in a secure and efficient manner;
9. Track and manage the numbering resource in a secure and efficient manner to assist with the management of conflict resolution as well as service history;
10. Communicate with emergency services (e.g., 911, region emergency SMS messages) and other common services (e.g., 211, n11) for the numbering resources and/or services (e.g., text, voice) and/or destinations (e.g., devices, endpoints); and
11. Appropriately address security issues.

US Rate Centers and LATAs

- A rate center is a geographical area used by a Local Exchange Carrier (LEC) to determine the boundaries for local calling. Typically a call within a rate center is local, while a call from one rate center to another is long-distance.
- In an All-IP network, rate centers may no longer be necessary for routing or billing. Some carriers will likely offer unlimited flat-rate calling plans and consumers may become less aware of the distinction between “local” and “toll” calls.
- A Local Access and Transport Area (LATA) is a geographical area within which a divested Bell Operating Company (BOC) is permitted to offer exchange telecommunications and exchange access services.

Note: The BOCs are generally prohibited from providing services that originate in one LATA and terminate in another.



Rate Centers and LATAs in Nevada

Large-Scale Rate Center Consolidation

- Rate center consolidation involves aggregating two or more rate centers into a single rate center so that a local service provider can use a single numbering resource unit (NXX or NXX-X) to serve any customer in the combined area
- INC drafted a whitepaper in response to the FCC regarding the impacts of implementing any large-scale rate center consolidation during the transition from PSTN to IP.
 - Outlined positive and negative impacts of large-scale rate center consolidation
 - Documented impacts to carriers networks and systems
 - Identified that regulatory changes would be necessary
 - Concluded that, given the complexities related to large-scale rate center consolidation, it is premature to develop a plan for implementation. However, as carriers' network architecture and the market drives the need for such consolidation, the industry and regulators should work collaboratively to develop a plan.

Large-Scale Rate Center Consolidation, cont.

- Negative Impacts of Large-Scale Rate Center Consolidation
 - Upgrades to legacy equipment that might not otherwise be needed
 - Acceleration of complete replacement of some legacy equipment that can't be upgraded
 - Acceleration of significant changes to industry rating and routing systems
 - Acceleration of significant back-office billing and provisioning system changes
 - Potential customer confusion and frustration
 - Acceleration of significant labor costs to carriers to implement such changes
 - Significant revenue loss for some carriers
 - Resources required for state regulatory review and approval of tariff changes
 - If consolidation occurs across LATA boundaries, federal regulatory changes would be needed to allow calls to be transported across those LATA boundaries
 - Length of time for coordination among carriers for implementations
 - E911 impacts – e.g. 911 regulatory authority approval(s) needed, 911 system upgrades may be needed, additional trunking or trunking rearrangements may be needed, significant testing and coordination needed

Large-Scale Rate Center Consolidation, cont.

- Positive Impacts of Large-Scale Rate Center Consolidation
 - More efficient use of numbering resources
 - Fewer numbering inventories for carriers and administrators to manage
 - Fewer local calling areas to maintain
 - A broader area within which local numbers can be assigned and ported
 - Simpler calling plans for customers
- Letter/whitepaper available at <http://www.atis.org/legal/Docs/INC/ATIS%20INC%20RCC.pdf>

Potential Future Topics

- Local Access and Transport Area (LATA) evolution
- Decoupling geography from numbering
- Cryptographic certification at number assignment
- Less-than-thousands-block number allocation
- Number conservation and LRNs considerations

Questions?



Thank you for attending
Spotlight on All-IP Transition: The Numbering Impacts

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