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LOCATION ROUTING NUMBER (LRN) ASSIGNMENT PRACTICES

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A complete listing of INC Documents is available on the ATIS Web Site at: http://www.atis.org/inc/incguides.asp.

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The Industry Numbering Committee (INC) provides an open 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.

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Foreword

The Alliance for Telecommunications Industry Solutions (ATIS) serves the public through improved understanding between carriers, customers, and manufacturers. The Industry Numbering Committee provides an open forum to address and resolve industry-wide issues associated with planning, administration, allocation, assignment and use of the North American Numbering Plan (NANP) numbering resources within the NANP area.

The mandatory requirements are designated by the word *shall* and recommendations by the word *should*. Where both a mandatory requirement and a recommendation are specified for the same criterion, the recommendation represents a goal currently identifiable as having distinct compatibility or performance advantages. The word *may* denotes an optional capability that could augment the standard. The standard is fully functional without the incorporation of this optional capability.

Suggestions for improvement of this document are welcome. They should be sent to the Alliance for Telecommunications Industry Solutions, INC, 1200 G Street NW, Suite 500, Washington, DC 20005.

At the time of consensus on this document, INC, which was responsible for its development, had the following leadership:

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Location Routing Number Assignment Practices

These practices are intended to assist Service Providers (SPs)[1] as to why Location Routing Numbers (LRNs) are necessary and how to establish LRNs from their numbering inventories. The use of LRNs is covered in the ATIS Packet Technology Systems Committee (PTSC) standards and the FCC North American Numbering Council (NANC) Number Portability Industry Forum's (NPIF) best practices,[2] and some of that direction is incorporated in these practices.

An LRN is a 10-digit number, in the format NPA-NXX-XXXX, that uniquely identifies a switch or point of interconnection (POI) per Local Access Transport Area (LATA). The NPA-NXX portion of the LRN is used to route calls to numbers or Pooled Thousands-Blocks (NPA-NXX-X) that have been ported to a different switch or POI than their underlying Central Office (CO) Code (NPA-NXX).

The following criteria should be considered when a SP selects and establishes an LRN:

1. A unique LRN shall be provisioned to identify each recipient switch or POI in the number portability capable network.[3] LRNs shall be used for routing and not for rating or billing calls. Calls are rated and billed to an end-user based on the dialed digits and not on the LRN. There is, however an Automated Message Accounting feature that records the LRN that a call is routed to in order to determine the appropriate SP serving that number for access billing purposes.[4]

2. A SP shall establish one (1) LRN per LATA from an Assigned CO Code for each of its recipient switches or POIs in the number portability capable network. Additional LRNs may be used for internal purposes. Further, additional LRNs are not required to identify United States (US) wireline rate centers. A unique LRN may be established for every LNP equipped switch or POI (and potentially to each CLLI™ Code[5] listed in the iconectiv® LERG™ Routing Guide).

    Requesting an additional CO Code to establish an LRN in certain instances may be justified but precautions need to be taken to ensure number resource optimization. The following points should be considered prior to requesting a new CO Code for the purpose of establishing an LRN:

    •   The requesting SP uses an existing CO Code already homed to the tandem where the LRN is needed for the switch or POI.

    •   The CO Code Holder shall specify the Thousands-Blocks it will retain when a Pooled CO Code is requested for LRN purposes, and the remaining Thousands-Blocks shall be added to the Industry Inventory Pool.

    •   When there are multiple tandems owned by different SPs in a single LATA, the requesting SP may obtain a new CO Code in order to establish an LRN for each subtending switch or POI.

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[1] The term "Service Provider (SP)" refers to a telecommunications carrier or other entity that receives numbering resources from the North American Numbering Plan Administrator (NANPA) or a telecommunications carrier for the purpose of providing or establishing telecommunications service. For the purposes of this part, the term "Service Provider (SP)" includes an interconnected Voice over Internet Protocol (VoIP) Service Provider (47 CFR § 52.5 (e)).

[2] See the Number Portability Industry Forum (NPIF) pages at www.numberportability.com.

[3] ATIS PTSC Standard: ATIS-1000002, *Number Portability for Switching Systems.* Documents are available to ATIS members at the ATIS Public Documents site at https://access.atis.org/apps/group_public/, or to non-members at the ATIS Techstreet store at https://www.techstreet.com/atis/ (may have an associated fee).

[4] See footnote 2.

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- Regulatory waivers granted to ILECs to carry local calls across a LATA boundary may exist. In such instances, SPs may be justified in establishing an additional LRN to properly route calls.

3. Remote switches that have a unique, Assigned CO Code also may have a unique LRN established.[6]

4. The LRN shall be selected and established from a valid CO Code that has been uniquely assigned to the SP by the North American Numbering Plan Administrator (NANPA) and published in the LERG™ Routing Guide. An LRN should be selected and established with the following considerations:

   - Do not select and establish the LRN from aCO Code that is planned to be re-homed to another switch or POI.

   - Do not select and establish the LRN from aCO Code that has a majority of the Telephone Number (TNs) Assigned to a single customer.

   - Do not select and establish the LRN from aCO Code that is Assigned to the local choke network.

   - Do not establish the same TN as both an LRN for a switch and a working number (Assigned status) for a customer.[7]

   - Do not establish any Temporary Local Directory Number (TLDN) or Emergency Services Routing Digit (ESRD)/Emergency Services Routing Key (ESRK) wireless Administrative Number as an LRN.

   - Do not establish any Emergency Services Query Key (ESQK) VoIP Administrative Number as an LRN.

   - Do not select and establish the LRN from a Thousands-Block that otherwise may be eligible for disconnect/Donation or has been disconnected/donated, and is part of the Thousands-Block Industry Inventory Pool.[8]

5. An LRN may have to be changed due to any of the following:

   - Switch replacements

   - CO Code Reassignments

   - As a result of a Number Plan Area (NPA) split

   - Donation/disconnect of the Thousands-Block containing the LRN

6. If a switch serves multiple NPAs, wherever possible, do not select and establish the LRN from an NPA that has been identified for an area code split.

7. The LRN shall be published in the LERG™ Routing Guide.[9] LRN records in the LERG™ Routing Guide are used by some SPs for trouble shooting and network engineering purposes. Within five (5) business days of the Assignment of a CO Code that is to be used for LRN purposes, or when an LRN is

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[6] See footnote 3.

[7] It should be recognized that there are some numbers that have been established as both a Location Routing Number (LRN) and a working customer number, which is technically feasible. There is no requirement that those assignments be discontinued, including instances when the customer has ported the number to another Service Provider (SP). See ATIS-1000002, *Number Portability Switching Systems*.

[8] A Service Provider (SP) can avoid the Donation/Disconnect of Thousands-Blocks containing Administrative Numbers [e.g., Location Routing Numbers (LRNs), Temporary Location Directory Numbers (TLDNs), Mobile Station Roaming Numbers (MSRN)], by consolidating these numbers within Thousands-Blocks it intends to retain. The porting of an LRN can cause call delivery failures.

[9] At a minimum Location Routing Numbers (LRNs) that are associated with ported and/or pooled records in the Number Portabiilty Administration Center (NPAC) shall be published in the LERG™ Routing Guide. Failure to publish Location Routing Numbers (LRNs) in the LERG™ Routing Guide leads to confusion and more investigation time during the resolution process to determine to whom the Location Routing Number (LRN) belongs.

established from a CO Code already in an SP's Inventory, the SP shall forward a CO Code Part 2 Form 7 to its AOCN for input into iconectiv's Business Integrated Routing and Rating Database System (BIRRDS).

8. SPs shall maintain internal records of LRNs as a separate sub-category of "Administrative" in their TN inventories (FCC 00-104 ¶36 and ¶62, see also 47 CFR § 52.15 (f) (1) (i)).

9. The LRN shall only be selected and established by the CO Code Holder from its Assigned or Retained Thousand-Block(s) where Thousands-Block Number Pooling is implemented.