ATIS-0300037

ATIS Standard on -

Next Generation Interconnection Interoperability Forum (NGIIF)

Network Routing Resources Educational Document: Intercompany Responsibilities in the Telecommunications Industry

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Network Routing Resources Educational Document: Intercompany Responsibilities in the Telecommunications Industry

Alliance for Telecommunications Industry Solutions

Approved November 8, 2019

Abstract

This document serves as a reference for many of the steps and data flows involved with a company becoming integrated within certain aspects of the telecommunications industry. It is primarily directed for use by telecommunications service providers (SPs) as a source for understanding interconnection processes, data requirements, and data exchange processes among carriers. This document has been designed to provide an overview of the various processes and procedures that a SP should acknowledge and understand.

Foreword

The Alliance for Telecommunications Industry Solutions (ATIS) serves the public through improved understanding between carriers, customers, and manufacturers. The Next Generation Interconnection Interoperability Forum (NGIIF) addresses next-generation network interconnection and interoperability issues associated with emerging technologies. Specifically, it develops operational procedures which involve the network aspects of architecture, disaster preparedness, installation, maintenance, management, reliability, routing, security, and testing between network operators. In addition, the NGIIF addresses issues which impact the interconnection of existing and next generation networks and facilitate the transition to emerging technologies.

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, NGIIF, 1200 G Street NW, Suite 500, Washington, DC 20005.

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

Karen Riepenkroger, Sprint

Randee Ryan, Comcast

Trademark Acknowledgements

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Next Generation Interconnection Interoperability Forum (NGIIF): Network Routing Resources Educational Document: Intercompany Responsibilities in the Telecommunications Industry

1 Scope, Purpose, & Background

1.1 *Scope*

This document provides an overview of the various processes and procedures relative to general intercompany routing processes that a service provider (SP) should acknowledge and understand. References are made to other sources where additional, more specific, information may be obtained. This document is not inclusive of all processes and procedures that may need to be followed. Variations and/or alternative processes to those documented herein may exist due to reasons such as interpretation, company-specific requirements, and regulatory variations (e.g., by state).

1.2 *Purpose*

This document serves as a reference for a company becoming integrated within certain aspects of the communications industry.

It is primarily directed for use by SPs as a source for understanding interconnection processes, data requirements, and data exchange processes among carriers related to network and routing resources.

1.3 *Background/Overview of Processes*

As underscored by the issuance of the Telecommunications Act of 1996, there has been a rapid increase in the number of participants in the communications industry. The need to develop guidelines, provide information, and provide a means for efficient intercompany integration is a major factor in maintaining an operable network. This document has been updated by the ATIS Next Generation Interconnection Interoperability Forum (NGIIF) as an aid for new and established providers.

In general, most SPs are involved in providing services to a "subscriber" (e.g., business, residence, or wireless). These companies may own, lease, and/or resell various components of the network that support these services. Identification of these network elements and their interrelationships becomes increasingly important and complicated as the number of providers and services increase.

To support an understanding of these elements and processes, this document covers topics such as Interconnection Agreements, Certification to Provide Service, Common Language® Information Services, Company Codes/Operating Company Numbers (OCNs), Administrative Operating Company Number (AOCN), Revenue Accounting Office (RAO), Thousands-Block (NPA-NXX-X) & Central Office Code (NPA-NXX) Administration Guidelines (TBCOCAG), Local Number Portability (LNP), Thousands-Block Pooling, NECA Tariff Federal Communications Commission (FCC) No. 4, Industry Forums, and Telecom Routing Administration (TRA).

2 Informative References

The following standards contain provisions which, through reference in this text, constitute provisions of this Standard. At the time of publication, the editions indicated were valid. All standards are subject to revision, and parties to agreements based on this Standard are encouraged to investigate the possibility of applying the most recent editions of the standards indicated below.

ATIS-0300251.2007(R2012), *Codes for Identification of Service Providers for Information Exchange.*[1]

ATIS-0300253.2011, *Identification of Location Entities for Information Exchange.*[1]

ATIS-0300027, *Next Generation Interconnection Interoperability (NGIIF) Reference Document: Part VI, Network Management Guidelines Attachment A Emergency SS7 Restoration Operations Planning Considerations.*[1]

ATIS-0300026, *Next Generation Interconnection Interoperability (NGIIF) Reference Document: Part VI, Network Management Guidelines.*[1]

ATIS-0300055, *NPA Allocation Plan and Assignment Guidelines.*[1]

ATIS-0300066, *Thousands Block (NXX-X) Pooling Administration Guidelines.*[1]

ATIS-0300065, *Location Routing Number Assignment Practice.*[1]

ATIS-0300008, *Next Generation Interconnection Interoperability (NGIIF) Reference Document.*[1]

ATIS-0300106, *Intercarrier Call Completion/Call Termination Handbook.*[1]

ATIS-0300119, *Thousands-Block (NPA-NXX-X) & Central Office Code (NPA-NXX) Administration Guidelines (TBCOCAG) .*[1]

Report and Order and Further Notice of Proposed Rulemaking in the matter of Numbering Resource Optimization, CC Docket No. 99-200, FCC 00-104 (March 31, 2000).[2]

Telecommunications Act of 1996, Pub. LA. No. 104-104, 110 Stat. 56 (1996).[2]

3 Definitions, Acronyms, & Abbreviations

For a list of common communications terms and definitions, please visit the *ATIS Telecom Glossary*, which is located at < https://glossary.atis.org/ >.

3.1 *Definitions*

Administrative Operating Company Number (AOCN): A 4-character numeric or alphanumeric that identifies the administrator of one (or more) data records contained in BIRRDS. The AOCN further identifies the entity authorized by the Code Holder to input and maintain data into BIRRDS.

Business Information Routing & Rating System (BIRRDS): A centralized database maintained by Telcordia® Technologies, Inc. dba iconectiv® through which SPs enter and maintain routing and rating data in support of their NANP numbering assignments. Output from BIRRDS includes the LERG™ Routing Guide and TPM™ Data Source.

Block Holder: The SP to which a Thousands-Block (NXX-X) has been assigned for use.

Canadian Central Office Code (NXX) Assignment Guidelines (Canadian COCAG): The Canadian Steering Committee on Numbering (CSCN) developed the Canadian COCAG for the administration of Central Office (CO) Codes within Canadian Numbering Plan Areas (NPAs) by a Canadian independent third party administrator called the Canadian Numbering Administrator (CNA). These Guidelines provide direction to the CNA, Code Applicants, and Code Holders with respect to the administration, assignment, activation, and use of CO Codes and the numbering resources contained therein.

Central Office (CO) Code: The three-digit code following the NPA code in a TN, i.e., digits D-E-F of a 10-digit NANP Area address. Central office codes are in the form "NXX", where N is a number from 2 to 9 and X is a number from 0 to 9. Central office codes may also be referred to as "NXX codes".

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[1] This document is available from the Alliance for Telecommunications Industry Solutions (ATIS) at < https://www.atis.org/docstore/ >.

[2] This document is available from the Federal Communications Commission (FCC) at < http://www.fcc.gov >.

CLLI™ (Common Language Location) Code: An eleven-character alphanumeric which identifies the geographic location and certain functional categories, e.g., switches, points of interconnection/interface. For an eleven-character location identifier to be termed a CLLI Code, it must exist in CLONES (Central Location ONline Entry System). Telcordia Technologies, Inc. dba iconectiv serves as the maintenance agent for ATIS-0300253, *Identification of Location Entities for Information Exchange,* which specifies the associated format and structures. Companies that are subscribers of Common Language Location Information Service can refer questions to their company's CLLI Code Coordinator or contact iconectiv via contact information in Clause 10.

Central Location ONline Entry System (CLONES): A registry maintained by Telcordia Technologies, Inc. dba iconectiv for the creation and maintenance of CLLI Codes by Common Language subscribers. For an eleven-character location identifier to be termed a CLLI Code, it must exist in CLONES. Associated information includes but is not limited to address, postal code, latitude and longitude, vertical and horizontal coordinates, and switching system type.

CO (Central Office) Code Administrator: The entity responsible for the administration of the NXXs within an NPA.

Code Holder: An assignee of an NXX code which was allocated by the CO Code Administrator.

Company Code: A unique four-character alphanumeric code (NXXX) assignable to all telecommunications SPs. For purposes of this document, N=0-9 and X=0-9 or A-Z.

Effective Date: The date by which routing and rating changes within the PSTN must be complete for the assigned thousands-block or the assigned CO Code. Also, the date by which the thousands-block becomes an active block. (Also referred to as "the LERG™ Routing Guide effective date".)

Incumbent Local Exchange Carrier (ILEC): (As stated in Telecommunications Act of 1996, Section 251(h) (1)), with respect to area.) The local exchange carrier that on February 8, 1996 provided telephone exchange service in such area; and on February 8, 1996, was deemed to be a member of the National Exchange Carrier Association (NECA) pursuant to Section 69.601(b) of the Commission's regulation (47 C.F.R. 69.601(b)); or is a person or entity that, on February 8, 1996, became a successor or assign of a member described in Clause 1.

> NOTE: The NECA categories of ILEC and Regional Bell Operating Company (RBOC) are used in the LERG™ Routing Guide to identify all ILECS. However, to differentiate between the incumbent independent telephone companies and the Bell Operating Companies (BOCs) prior to 1984, the independent companies are identified by the ILEC category and the BOCS are identified by the RBOC category.

Industry Numbering Committee (INC): A standing ATIS committee that provides an open forum to address and resolve industry-wide issues associated with the planning, administration, allocation, assignment and use of numbering resources, and related dialing considerations for public telecommunications within the North American Numbering Plan (NANP) area.

Initial Code: The first geographic NXX code assigned in a unique rate center.

IP-Enabled Services (IPES): An SP deploying voice over IP (VoIP) services on a commercial basis to residential and business customers. Company Codes in this Category shall be used to identify IPES SPs interconnecting to the PSTN and can be used to enable the deployment of any new IP-enabled service, technology, or advanced service.

Local Access and Transport Area (LATA): Also referred to as service areas by some BOCs, a LATA serves two basic purposes: to provide a method for delineating the area within which the BOCs may offer services, and to provide a basis for determining how the assets of the former Bell System were to be divided between the BOCs and AT&T at divestiture.

The LERG™ Routing Guide: A centralized database maintained by Telcordia Technologies, Inc. dba iconectiv that contains information about the local routing data obtained from BIRRDS. This information reflects the current network configuration and scheduled network changes for all entities originating or terminating Public Switching Telephone Network (PSTN) calls within the North American Numbering Plan (NANP).

Local Number Portability (LNP): Allows telephone subscribers to retain their telephone numbers should they desire to change local SPs or their location within their Rate Exchange Area.

Local Reseller: An access customer who resells the access service obtained from a LEC.

Location Routing Number (LRN): The 10-digit (NPA-NXX-XXXX) number assigned to a switch/POI used for routing in a permanent local number portability environment.

North American Numbering Plan (NANP): A numbering architecture in which every station in the NANP Area is identified by a unique 10-digit address consisting of a 3-digit NPA code, a 3-digit central office code of the form NXX, and a 4-digit line number of the form XXXX.

North American Numbering Plan Administration (NANPA): Holds overall responsibility for the neutral administration of NANP numbering resources, subject to directives from regulatory authorities in the countries that share the NANP. NANPA's responsibilities include assignment of NANP resources, and, in the U.S. and its territories, coordination of area code relief planning and collection of utilization and forecast data.

NECA Tariff FCC No. 4: Contains an SP's wire center and interconnection information that supports the ordering, billing, and provisioning of interstate access services. NECA serves as the agent for this FCC tariff.

Numbering Plan Area (NPA): A 3-digit code defining a specific part of the NANP area, commonly referred to as an area code. This code can designate a geographic or non-geographic (i.e., toll free numbers). ATIS-0300055, *NPA Allocation Plan and Assignment Guidelines,* developed by ATIS INC, provides guidelines for the assignment of Numbering Plan Area (NPA) codes.

Operating Company Number (OCN): A four-character alphanumeric code that uniquely identifies providers of local telecommunications service. OCN assignments are required of all SPs in their submission of utilization and forecast data (FCC 00-104 ¶ 41 and Public Notice DA 00-1549). Relative to CO Code assignments, NECA-assigned Company Codes may be used as OCNs. Companies with no prior CO Code or Company Code assignments should contact NECA at (973) 884-8249 to be assigned a Company Code(s). Since multiple OCNs and/or Company Codes may be associated with a given company, companies with prior assignments should direct questions regarding appropriate OCN usage to the TRA Customer Service Center at 866-672-6997 or (732) 699-6700.

Personal Communication Service (PCS): A company that provides an all-digital, higher frequency (1900MHz) alternative to traditional cellular telecommunications service.

PCS Reseller: A company that obtains numbers from another SP to resell PCS services to its customers.

Pooling Administrator (PA): An entity responsible for administering a thousands-block number pool (FCC 00-104, §52.7 (g)).

Public Switched Telephone Network (PSTN): Composed of all transmission and circuit switching facilities and signal processors supplied and operated by all telecommunications common carriers for use by the public. Every station on the PSTN is accessible by all other stations on the PSTN via the use of NANP E.164 numbering plan.

Rate Area: Denotes the smallest geographic area used to distinguish rate boundaries.

Rate Center: A geographically specified point used for determining mileage-dependent rates for PSTN calls. A rate center point may be utilized for one or more rate areas.

Regional Bell Operating Company (RBOC): This term is used to identify the corporations (to provide local exchange and certain other services) that resulted from AT&T's January 1, 1984 divestiture.

Revenue Accounting Office (RAO): A physical location where billing records are processed. An RAO is identified by a three-character numeric or alphanumeric code(s) used to route billing records across different physical locations.

Service Provider (SP): A telecommunications carrier or other entity that receives numbering resources from the NANPA, a PA, or a telecommunications carrier for the purpose of providing or establishing telecommunications service (FCC 00-104, § 52.5 (i)).

Switching Entity: An electromechanical, electronic, or digital system for connecting lines to lines, lines to trunks, or trunks to trunks for the purpose of originating/terminating calls. A single switching system may handle several CO codes.

Tandem Switch: A tandem switch connects one trunk to another and serves as a trunk concentration and distribution function to minimize direct end office interconnection. A tandem switch is an intermediate switch or connection between an originating switch and the final switch call destination. A tandem switch does not allow origination or termination of telephone calls. Tandems serve a designated geographic area consisting of specific rate centers.

Telecom Routing Administration (TRA): The Telecom Routing Administration (TRA) is an organization within iconectiv, LLC that supports the telecommunications industry by providing data services and products that centrally

collects and disseminates pertinent routing and rating information within the industry. The data collection process permits SPs to report routing and rating data based on numbering resource assignments utilizing a consistent process to ensure efficiency, and timeliness of data. Additional information regarding TRA products and services may be located at www.trainfo.com. TRA, as an industry neutral process, requires that all companies follow the same available processes as any other company relative to data input and in the ordering and billing for output products and services.

TPM™ Data Source: A set of data files issued by Telcordia Technologies, Inc. dba iconectiv, primarily to support call rating. The TPM Data Source includes all assigned NPA NXX and thousands-blocks within the NANP with associated data elements that include: OCN, Rate Center, Rate Center Major Vertical and Horizontal Coordinates, Rate Center LATA, RAO, Place Name, state/province/country, daylight savings indicator, time zone, and portability indicator.

Test Number: A 3 to 10-digit number assigned for inter- and intra-network testing purposes.

Thousands-Block: A range of 1,000 line numbers within an NPA-NXX beginning with X000 and ending with X999, where X is a value from 0 to 9.

***Thousands-Block (NPA-NXX-X) & Central Office Code (NPA-NXX) Administration Guidelines (TBCOCAG)* (ATIS-0300119):** ATIS Industry Numbering Committee (INC) developed these guidelines for the administration and assignment of Central Office (CO) Codes (NPA-NXX) and Thousands-Blocks (NPA-NXX-Xs) to Local Number Portability (LNP)-capable SPs within geographic numbering plan areas (NPAs).

Thousands-Block (NXX-X) Number Pooling: A process by which the 10,000 numbers in a central office code (NXX) are separated into 10 sequential blocks of 1,000 numbers each (thousands-blocks) and allocated separately within a rate center (FCC 00-104, § 52.20 (a)).

Voice over Internet Protocol (VoIP): VoIP is a technology that allows voice calls using a broadband Internet connection.

Wireless: A company that provides wireless telecommunications service to customers (e.g., cellular SPs, radio common carriers, paging companies).

Wireless Reseller: A company that obtains numbers from another SP to resell wireless services to its customers.

3.2 *Acronyms & Abbreviations*

AMPS	Advanced Mobile Phone System
AOCN	Administrative Operating Company Number
ASR	Access Service Request
ATIS	Alliance for Telecommunications Industry Solutions
BID	Billing Identification
BIRRDS	Business Integrated Routing and Rating Database System
BOC	Bell Operating Company
CDMA	Code Division Multiple Access
CECC	Combined Entity Company Codes
CIGRR	Common Interest Group on Routing and Rating
CLONES	Central Location ONline Entry System
CMDS	Centralized Message Distribution System
CMRS	Commercial Mobile Radio Service

CNA	Canadian Numbering Administration
CO	Central Office
CRTC	Canadian Radio-television and Telecommunications Commission
CSCN	Canadian Steering Committee on Numbering
DSL	Digital Subscriber Loop
EMI	Exchange Message Interface
FCC	Federal Communications Commission
FRN	FCC Registration Number
ILEC	Incumbent Local Exchange Carrier
IMSI	International Mobile Station Identifier
INC	Industry Numbering Committee
IPES	Internet Protocol Enabled Services
ISP	Internet Service Provider
LATA	Local Access Transport Area
LNP	Local Number Portability
LRN	Location Routing Number
MBI	Mobile Identification Number Block Identifier
MDN	Mobile Directory Number
MIN	Mobile Identification Number
MSA	Metropolitan Statistical Area
MSID	Mobile Station Identifier
NANP	North American Numbering Plan
NANPA	North American Numbering Plan Administration
NPA	Numbering Plan Area
NARUC	National Association of Regulatory Utility Commissioners
NECA	National Exchange Carrier Association
NGIIF	Next Generation Interconnection Interoperability Forum
NPAC	Number Portability Administration Center
NRUF	Numbering Resource Utilization Forecast
OCN	Operating Company Number
PA	Pooling Administrator
PCS	Personal Communication Service
PSTN	Public Switched Telephone Network

RAO	Revenue Accounting Office
RBOC	Regional Bell Operating Company
RLD	Red Light Display
SID	System Identification Number
SP	Service Provider
SPID	Service Provider Identifier
TBCOCAG	Thousands-Block (NPA-NXX-X) & Central Office Code (NPA-NXX) Administration Guidelines
TDMA	Time Division Multiple Access
TRA	Telecom Routing Administration
US Telecom	United States Telecom Association
VoIP	Voice over Internet Protocol

4 Company Codes/OCNs

4.1 *Overview*

Company Codes and OCNs are often used synonymously as terms for a code identifying a communications company. The set of Company Codes, in their entirety, comprise a large subset of OCNs, signifying the same company in both cases. The values and assignment processes involved with these codes have evolved in parallel with the industry.

4.2 *Company Codes*

A Company Code is a four-character code NXXX (N=0-9, X=0-9, A-Z) that identifies companies that cover various categories of communications. Per ATIS-0300251, *Codes for Identification of Service Providers for Information Exchange*, NECA serves as the maintenance agent to administer Company Codes. The code set is used in mechanized systems and documents throughout the industry to facilitate the identification of communications companies.

Company Codes may be utilized for, but not limited to:

- NECA Tariff FCC No. 4
- Use as an OCN
- Use as a Service Provider Identifier (SPID)
- Routing and Rating Practices

Company Code assignments can be requested online at www.neca.org or by calling the Company Code Administrator at (973) 884-8249. In support of such requests, parties requesting company code assignments are required to provide various supporting material to NECA based on their category classification.

4.3 *Mergers, Acquisitions & Company Name Changes*

If there is a need to make administrative changes to the status or information supporting a Company Code due to mergers, acquisitions, or company name changes, the company should contact the NECA Company Code Administrator (ccfees@neca.org). NECA also has a Combined Entity Company Code (CECC) process permitting merged entities the ability to retain non-surviving codes. For more information on this process and the appropriate CECC Request Form, contact NECA. NECA will also notify TRA of any Company Code changes.

4.4 *Contact Name Changes*

Companies should contact the NECA Company Code Administrator (ccfeees@neca.org) for the process to make contact name, address, and telephone number changes for Company Codes.

Companies should contact TRA for OCN changes represented in BIRRDS.

4.5 *Operating Company Numbers (OCNs)*

OCNs are used in TRA processes and in various industry guidelines and data flows to map data and other information to a given company. For example, an OCN is required as part of the process to request an NXX assignment as detailed in the TBCOCAG.

OCNs beginning with a numeric value are the set of Company Codes as described previously. OCNs that begin with an alpha character are assignments which are made by TRA. Such assignments are for various TRA database purposes only for reasons that include management of OCN data in TRA databases by third parties (non SPs), identification of companies in TRA data that are assigned certain numbering resources but whose guidelines do not require an OCN to be established, and any other cases where identification of a company may be needed within TRA data, but extends beyond current Company Code assignment practices and industry requirements.

Companies with no prior Company Code assignments must contact NECA at www.neca.org, or by calling the Company Code Administrator at 973-884-8249. Since multiple OCNs and/or Company Codes may be associated with a given company, companies with prior assignments can also direct questions regarding appropriate OCN usage in TRA databases to the TRA Customer Care Center (1-866-672-6997 or 1-732-699-6700).

5 Administrative Operating Company Number (AOCN)

5.1 *Overview*

An AOCN is a term used to identify a company that has assumed the responsibilities to enter its own and/or other companies' network routing and rating data into databases that include BIRRDS.

5.2 *Becoming/Obtaining an AOCN*

Companies (record holders) with data that needs to be created or updated in BIRRDS database have two options: (1) they can directly input their own data by becoming an AOCN, or (2) they can reach an agreement with a third-party to perform the input function. A list of companies that perform this third-party function can be found on the TRA website at www.trainfo.com. Any company wanting to become an AOCN must contact the TRA (1-866-672-6997 or 1-732-699-6700) to establish the necessary agreement to become an AOCN.

5.3 *AOCN Responsibilities*

An AOCN directly inputs data it is responsible for into TRA databases in a timely and accurate manner per industry practices and guidelines. An AOCN also has the responsibility to address data discrepancy reports and database changes (e.g., introduction of new data elements) relative to data in TRA databases. Through a user group known as the Common Interest Group on Routing and Rating (CIGRR), an AOCN can participate in developing changes to the databases and/or surrounding processes.

5.4 *Consequences of Not Having an AOCN*

Only AOCNs can enter data into BIRRDS. If a company's data is not entered into BIRRDS, related calls have a high probability of being blocked because industry required rating and routing information is not available through this process. Lack of data will negatively impact call completion from both originating and terminating perspectives. Rating problems may also impact billing and collection.

Issues such as those just cited that result from missing data for newly assigned NPA NXXs or blocks are straightforward. However, network elements and configurations can change (e.g., switch re-homes), new required data may need to be reported, rate centers may be consolidated, etc. AOCN responsibilities include the ongoing maintenance of data, not just its initialization.

6 Revenue Accounting Office (RAO)

6.1 *Overview*

An RAO is identified by a three-character numeric or alphanumeric code used in the routing of billing records. RAOs are used to exchange message details between the company recording a message at the point of origination, and the company billing the call to an end user.

Exchange message details are arranged in packs (groups) of common RAOs by the company recording a message and are then forwarded to the intended billing companies. These billing packs are electronically sent over the Centralized Message Distribution System (CMDS).

Only companies serving as “direct participants” may be linked directly to CMDS in order to originate or receive billing packs. Other companies may use CMDS, but only through a contract with a Direct Participant Company serving as a host agent.

RAO Code Guidelines issued by Telcordia Technologies, Inc. dba iconectiv which addresses the assignment and use of RAOs can be downloaded from www.trainfo.com.

6.2 *Obtaining an RAO Code*

RAO code requests are sent to the RAO Code Administrator at Telcordia Technologies, Inc. dba iconectiv for assignment, as described in the RAO Code Guidelines. RAO codes containing at least 1 alpha character will be assigned unless there is an expectation that the RAO code will be used to provide Special Calling Card services, in which case a fully numeric RAO code would be assigned. Currently, four types of RAO codes are identified in the Guidelines: Full Status, Nationwide, Shared, and Non-hosted.

Also, a CMDS Direct Participant Company, in its capacity as a CMDS Host Company, per a contract/agreement with a telecommunications SP, requests a hosted RAO code (either Full Status or Nationwide as defined in the guidelines) from the RAO Code Administrator on the behalf of the SP. Non-hosted RAO codes, however, are obtained directly from the RAO Code Administrator.

6.3 *Centralized Message Distribution System (CMDS)*

CMDS is owned and administered by Telcordia Technologies, Inc. dba iconectiv as a national electronic data transmission system used to exchange Exchange Message Interface (EMI) formatted data among CMDS Direct Participants. Any company can be a CMDS Direct Participant, provided it has negotiated a contractual agreement with Telcordia Technologies, Inc. dba iconectiv. However, other companies may become CMDS Indirect Participants by using CMDS through a CMDS Direct Participant that serves as a host agent.

CMDS is a clearinghouse for the distribution of many types of EMI formatted records. These records types include:

- End user billing
- Carrier access billing
- Mutual compensation
- Database queries
- Customer account information
- Copy records
- IntraLATA alternate billing

CMDS also incorporates a settlement report system for intraLATA alternate billing records.

7 Interconnection Agreements

7.1 *Overview*

For calls to originate and terminate within the Public Switched Telephone Network (PSTN), companies must interface physically, thus “interconnecting” with each other. Contractual Interconnection Agreements must be established between ALL physically interconnecting companies.

In addition to agreements developed between physically interconnecting companies, further agreements are often needed with Local Exchange Carriers (LECs) to complete a local or toll call.

7.2 *Reporting of Interconnection Arrangements*

Once an Interconnection Agreement has been established and an effective date is determined, the NXX, valid switch, and supporting homing arrangement information must be entered in a timely manner into BIRRDS, for notification to other carriers via the LERG Routing Guide. Delays in entering this data will increase the probability of calls being blocked on the effective date.

Homing arrangements entered into BIRRDS must denote connectivity between the two switching entities for the function(s) indicated. Incorrect homing arrangements in BIRRDS may result in blocked calls destined for a switching entity.

8 Wireless

8.1 *Overview*

The FCC controls the use of radio frequency spectrum used to transmit cellular signals and grants licenses to build and operate cellular systems. To do business, a carrier must be licensed by the FCC. As in the wireline arena, Interconnection Agreements and other facility requirements are necessary in order to provide service in a specific area. This Clause provides information unique to wireless carriers. However, unless otherwise noted, all other Clauses of this document also pertain to wireless carriers.

8.2 *System Identification – SID*

The SID is a 5-digit number stored in the mobile station and is used to identify the mobile station's home system in communications between the mobile and the base station. SIDs are assigned by the FCC.

SID assignments for the United States and its territories range from 00001 to 02094. SIDs are also used to associate roaming billing records for roamer calls and charges.

8.3 *Billing Identification – BID*

BIDs are codes used to track smaller geographic areas and/or billing information. BIDs are currently coordinated, administered, and sold by CIBERNET. The SID or the BID is used in various parts of billing systems. Many billing systems use them interchangeably, hence the term SID BID. The SID BIDs are located within the switch and the customer's phone and the term SID BID is used to define a communication service area.

8.4 *FCC Data on Wireless*

The FCC maintains a database for all wireless (includes cellular) licensees. The URL to access the database is: < http://wireless2.fcc.gov/UlsApp/UlsSearch/searchLicense.jsp >.

8.5 *Separation of the Mobile Identification Number (MIN) & the Mobile Directory Number (MDN) for Commercial Mobile Radio Service (CMRS)*

Code Division Multiple Access (CDMA), Time Division Multiple Access (TDMA), and Advanced Mobile Phone System (AMPS) SPs administer MINs separately to meet their unique requirements, which include number portability and number pooling. Mobile subscribers will require two types of numbers: an MDN and Mobile Station Identifier (MSID). The MSID is non-portable and non-dialable. MSID can take the format of a 15-digit International Mobile Station Identifier (IMSI) or a 10-digit MIN. The MIN Block Identifier (MBI) Assignment Guidelines and Procedures only address the administration of the 6-digit MBI associated with the 10-digit MIN format MSID.

Conservation and control of MINs within the NANP area will avoid conflicts with existing NANP assignments. Adherence to these guidelines will ensure the allocation of this resource in the most efficient and impartial manner.

8.5.1 Administrator

A neutral third-party entity has been selected to be the MBI Administrator. The MBI Assignment Guidelines document provides guidelines and procedures for the assignment and use of MBIs. The Guidelines, Procedures, and associated forms can be found on the MBI Administrator website at http://www.mbiadmin.com.

9 IP-Enabled Services (IPES)

Protocols which are used to carry voice over an IP network are commonly referred to as VoIP. VoIP is a technology that allows subscribers to make telephone calls using a broadband connection. Some services using VoIP may only allow calls to be placed only to people using the same service (sometimes known as peer-to-peer services), while other services may allow for calling anyone who has a telephone number (known as interconnected VoIP services). This includes local, long distance, mobile, and international numbers. While some services may only work over a computer or a special VoIP phone, other services may allow use of a traditional phone through an adaptor.

10 Common Language Information Services

Most SPs in the United States and Canada subscribe to Common Language Information Services. These codes are used in various network data and information exchange processes [e.g., Access Service Requests (ASRs), the LERG Routing Guide, NECA FCC Tariff No. 4].

For more information on Common Language Information Services, visit the Common Language website at http://www.commonlanguage.com, or contact the Common Language Customer Support Center (1-877-699-5577 or clcsc@iconectiv.com).

11 Thousands-Block (NPA-NXX-X) & Central Office Code (NPA-NXX) Administration Guidelines (TBCOCAG)

Thousands-Block pooling allows for the sharing of CO Codes among multiple SPs serving the same rate area. All ten thousand telephone numbers within each NXX Code continue to be associated with the same rate area designation (i.e., V&H coordinates), but can be distributed among multiple SPs at the Thousands-Block (NXX-X) level. Thousands-Block pooling requires using LNP technology and is mandated by the FCC in the top 100 Metropolitan Statistical Areas (MSAs) or pursuant to a state commission order for state pooling.

The TBCOCAG is maintained by ATIS INC. The TBCOCAG are guidelines that should be followed to request a CO Code and a Thousands-Block and identifies the rights and responsibilities of the Code/Block Applicant, Code/Block Holder, and CO Code and Pooling Administrators relative to CO Codes and Thousands-Blocks. Currently, Thousands-Block pooling applies to only the United States and its territories, The latest version of the TBCOCAG (ATIS-0300119, Thousands-Block (NPA-NXX-X) & *Central Office Code (NXX) Administration Guidelines (TBCOCAG)*) and forms are available on the ATIS Document Center at https://www.atis.org/docstore.

11.1 *Thousands-Block Forecast Report*

Each SP must provide a Thousands-Block Forecast Report indicating the number of thousands-blocks they will need for the next twelve months by state, NPA, and pooling rate area on a semi-annual basis, as new pools are added, and on an ad hoc basis (i.e., entering the number "1" on the forecast form equates to 1 block, which equals 1,000 TNs).

12 Numbering Resource Utilization Forecast (NRUF) Report (Form 502)

The NRUF Form 502 and instructions can be found on the NANPA website at <http://www.nanpa.com/nruf >.

13 Canadian Central Office Code (NXX) Assignment Guidelines (Canadian COCAG)

The Canadian Steering Committee on Numbering (CSCN) developed the Canadian COCAG for the administration of CO Codes within Canadian NPAs by a Canadian independent third-party administrator called the Canadian Numbering Administrator (CNA). The purpose of the Guidelines is to provide direction to the CNA, Code Applicants, and current and prospective Code Holders with respect to the administration, assignment, activation, and use of CO Codes and the numbering resources contained therein. For the most part, the Canadian COCAG aligns with the COCAG issued by INC, although there are some differences.

The latest version of the Canadian Radio-television and Telecommunications Commission (CRTC)-approved Canadian COCAG are located on the CRTC website at < http://www.crtc.gc.ca/cisc/eng/cisf3fg.htm > and are accessible from the CNA website at < http://www.cnac.ca/co_codes/co_code_guidelines.htm >.

14 Local Number Portability (LNP)

LNP refers to the ability of end users to retain their telephone number when they change their physical location, SP or type of service. A telephone number that has been retained when one of these changes is made is called a "ported number".

There are three types of number portability:

- SP Portability – the ability to change SPs (while at the same location / Rate Center) and retain the same number.
- Location Portability – the ability to change physical location (beyond the Rate Center area) and retain the same number. (Location portability is not in effect today.)
- Service Portability – the ability to change the type of service (while at the same location) and retain the same number.

14.1 *Location Routing Number (LRN)*

LNP is made technically feasible by use of an LRN. An LRN is a 10-digit number used to uniquely identify a switch that has ported numbers from another switch (i.e., subscribers now work out of the new switch rather than the switch the NPA NXX was originally native to). The LRN for a particular switch must be a native/Code Holder NPA NXX (A) Record Holder assigned to the SP for that switch. An LRN assigns a unique 10-digit telephone number to each switch in a defined geographic area. The LRN serves as a network address.

For further information regarding LRNs, refer to ATIS-0300065, *Location Routing Number Assignment Practices.*

15 Maintenance Guidelines for Trouble Shooting, Reporting & Contact Lists

Following are resources available to the industry for maintenance guidelines for trouble shooting and reporting, as well as contact lists for communicating among SPs.

15.1 *NGIIF Reference Document*

The NGIIF Reference Document has identified the maintenance parameters and performance thresholds (tolerance range) in the guidelines for the various access services classes and the interconnected facilities between companies. Each type of access service classes and the interconnecting facilities service levels are within the various "Installation and Maintenance Responsibilities" Clauses as listed in ATIS-0300008, *Next Generation Interconnection Interoperability (NGIIF) Reference Document*.

15.2 *Service Provider Contact Directory (SPCD)*

The purpose of the NGIIF SPCD is to provide contact numbers to the telecommunication industry for reporting or passing on trouble reports to interconnecting companies relating to access services. ATIS NGIIF strongly encourages telecommunications companies to provide/update information for the directories. To request access to the SPCD, or to submit new and/or updated contact information, visit the ATIS NGIIF Contact Directories webpage at https://www.atis.org/01_committ_forums/ngiif/contact-directories/, or contact the NGIIF Administrator at ngiif-admin@atis.org.

15.3 *Call Completion Failure Situations*

As there are numerous factors involved in establishing a call through interconnected networks, failures of various types will undoubtedly occur. For information on call completion failure situations, visit the ATIS NGIIF Call Termination webpage at https://www.atis.org/01_committ_forums/ngiif/call-completion/, and refer to ATIS-0300106, *Intercarrier Call Completion/Call Termination Handbook*.

16 Emergency Communication; Emergency Preparedness Plans

The NGIIF Reference Document recommends that each interconnected company have plans for Emergency Communications between other interconnected companies. ATIS-0300027, *Part VI, Attachment A*, of the NGIIF Reference Document (ATIS-0300008) identifies Emergency SS7 Restoration Operations Planning Considerations. In ATIS-0300026, *Part VI, Network Management Guidelines*, Clause 8, Emergency Communications, Subsection A, the recommendation is to interconnect via Public Packet Switched Network (PPSN).

17 Red Light Rule

To facilitate the implementation of the Debt Collection Improvement Act (DCIA), the FCC established the Red Light rule. The Red Light Rule went into effect on November 1, 2004.

The Red Light Rule, found at 47 C.F.R. §1.1910, provides that anyone seeking a benefit from the Commission or one of its components (including the Universal Service Fund, the Telecommunications Relay Service, or the NANPA) who is delinquent in debt owed to the FCC will be unable to obtain a benefit until there is resolution of that delinquency.

Anyone filing an application or seeking a benefit who is discovered to be delinquent in debt owed to the FCC will be notified of the delinquency and be given a specified period to pay the debt in full or make other satisfactory arrangements. Failure to do so will result in dismissal of the application or other request for a benefit.

SPs may access the Red Light Display (RLD) system to see if they have outstanding delinquent debt with the Commission. Access to this system requires your FCC Registration Number (FRN), and an established password. The RLD system is located at < http://www.fcc.gov/redlight >.

18 NECA Tariff FCC No. 4

NECA Tariff FCC No. 4 is the industry resource for ILECs, competitive carriers, and for wireless carriers' wire center and interconnection information used for the ordering, billing, and provisioning of interstate access services in the NANP.[3] NECA's Tariff FCC No. 4 is a company's legal authority to bill access service charges.

NECA Tariff FCC No. 4 is a centralized industry database containing the location and technical capabilities of participants' wire centers, which provide interstate access services. This database contains the information to determine the distance between telecommunications facilities, so charges based on distance can be calculated accurately. NECA Tariff FCC No. 4 also specifies billing percentage agreements when more than one company provides transport services.

NECA Tariff FCC No. 4 is a database maintained by NECA. This Tariff is updated and filed monthly with the FCC. Companies have through the 6th calendar day of each month to enter data. The changes are filed with the FCC on 15 days' notice and become effective the first day of the following month.

19 Industry Forums, Associations, General Industry Support

As in any broad industry arena, the telecommunications industry has numerous associations, groups, forums, and similar organizations, each of whose membership base reflects representation from many different companies. The areas in telecommunications that these groups may focus on may be wide in scope, covering operations, equipment, standards, etc., or may be specific to a given technology or segment of the industry.

Membership in most of these organizations is usually "optional", may require a company pay dues or similar membership fees, work within defined scopes and mission statements, and follow defined rules in conducting business.

Several organizations are an integral component in the development of industry (or industry segment) standards, operating guidelines, and procedures that ultimately are intended for the entire industry or segment. Membership and active participation in appropriate organizations is encouraged to permit companies to have a say in the development of processes that will impact them and to gain insight into the ever-changing nature of the industry.

[3] NECA Tariff FCC No. 4 applies to companies under the FCC's jurisdiction (United States and the U.S. Territories).

20 Industry Reference Web Sites

ATIS	http://www.atis.org
CNA	http://www.cnac.ca
Common Language	http://www.commonlanguage.com
CRTC	http://www.crtc.gc.ca
FCC	http://www.fcc.gov
NANC	http://www.fcc.gov/ccb/nanc
NANPA	http://www.nanpa.com
NARUC	http://www.naruc.org
NECA	http://www.neca.org
NPAC	http://www.npac.com
PA	http://www.nationalpooling.com
TRA	http://www.trainfo.com
US Telecom	http://www.ustelecom.org