**Contribution**

**TITLE:** IP Interconnection Routing Outline

**SOURCE\*:** Verizon, AT&T, iconectiv

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**ABSTRACT**

This document proposes an outline for the IP Interconnection Routing Document to be distributed in June 2014 by the ATIS/SIP Forum IP-NNI Task Force.

**NOTICE**

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**ATIS-0x0000x.YYYY**

American National Standard for Telecommunications

**IP Interconnection Routing**

**Alliance for Telecommunications Industry Solutions**

Approved Month DD, YYYY

**American National Standards Institute, Inc.**

**Abstract**

Abstract text here.

**Foreword**

The information contained in this Foreword is not part of this American National Standard (ANS) and has not been processed in accordance with ANSI’s requirements for an ANS. As such, this Foreword may contain material that has not been subjected to public review or a consensus process. In addition, it does not contain requirements necessary for conformance to the Standard.

The Alliance for Telecommunications Industry Solutions (ATIS) serves the public through improved understanding between carriers, customers, and manufacturers. The [**COMMITTEE NAME**] Committee [**INSERT MISSION**]. [**INSERT SCOPE**].

ANSI guidelines specify two categories of requirements: mandatory and recommendation. 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.

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

At the time of consensus on this document, [**COMMITTEE NAME**], which was responsible for its development, had the following leadership:

[**LEADERSHIP LIST**]

The **[SUBCOMMITTEE NAME]** Subcommittee was responsible for the development of this document.

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# Scope, Purpose, & Application

## Scope

This document was developed under a joint ATIS/SIP Forum collaboration. The document discusses the existing in-use and proposed routing solutions to facilitate the exchange of traffic associated with IP-based services between North American service providers.

Many options and issues were previously investigated by an ATIS Inter-Carrier VoIP Call Routing Focus Group (IVCR-FG), which issued its final report in February 2008. At that time, the IVCR-FG report noted that a number of vendor proposals have been made, but no initiative exists to develop the necessary standards needed to enable VoIP call interconnectivity [1].

Subsequent to the formation of the ATIS/SIP Forum collaboration, the Federal Communications Commission authorized the creation of a Numbering Testbed to “spur the research and development of the next generation standards and protocols for number allocation, verification, and call routing.”[[1]](#endnote-1) The Commission also held a workshop to initiate a Numbering Testbed on March 25, 2014. Discussion at the Workshop focused on ideas for a “future integrated registry” that would support number allocation, verification, and call routing across all types of NANP numbers in a post TDM environment.

It should be noted that this first report does not address the development of such an integrated registry, but instead focuses on the identification of existing in-use and proposed “interim” solutions to facilitate call routing across IP interconnections between now and the deployment of the future integrated registry envisioned at the Workshop.

## Purpose

As Service Providers introduce and expand IP-based service offerings, there is increasing interest in identifying the opportunities for the industry to facilitate IP routing of VoIP traffic using E.164 addresses. The ATIS/SIP Forum Task Force has taken on the initiative to develop the necessary standards and is publishing this first report to describe the candidate proposals for circulation and comment.

The purpose of this first report is to:

1. Provide an overview of the in-use and proposed architectures with the provisioning processes and calls flows to facilitate the exchange of VoIP traffic associated with IP-based services using E.164 addresses.
2. Present criteria that provide an overview of the routing information elements required to recognize the comparative characteristics of each of the approaches.

Based upon the output of this first report, further analysis will be presented in a final report that includes:

1. Refinement of solution(s) and criteria that includes consideration of feedback obtained from the first report.
2. How existing in use and proposed interim solution(s) may be adopted and/or coexist, and evolve for transition to a future integrated registry envisioned at the Workshop.
3. Finalization of criteria requirements
4. Development of analysis leading toa recommendation of an interim solution or set of solutions.

## Application

This standard is defined for North America deployments, but may be applicable for deployments outside North America.

# Informative References

[1] ATIS-I-0000017, ATIS Inter-Carrier VoIP Call Routing (IVCR) Assessment and Work Plan, February 2008

[2] ATIS-0x0000x, *Technical Report*.

[3] ATIS-0x0000x.201x, *American National Standard*.

# Definitions, Acronyms, & Abbreviations

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

## Definitions

**AAA**: xxxx.

**Bbbb**: xxxx.

## Acronyms & Abbreviations

[this list was copied from Protocol document]

3GPP 3rd Generation Partnership Project

ALG Application Level Gateway

ATCF Access Transfer Control Function

B2BUA Back to Back user agent

BGCF Border Gateway Control Function

CSCF Call Session Control Function

IBCF Interconnection Border Control Function

I-BGF Interconnection Border Gateway Function

I-CSCF Interrogating-Call Session Control Function

ICSS IMS Centralized Services

II-NNI Inter-IMS Network to Network Interface

IM-CN IP Multimedia Core Networks

IMS IP Multimedia Subsystem

IMS-ALG Multimedia Subsystem Application Level Gateway

IP Internet Protocol

IPSec IP Security

IPv4 Internet Protocol Version 4

IPv6 Internet Protocol Version 6

MGCF Media Gateway Control Function

MGF Media Gateway Function

MIME Multipurpose Internet Mail Extensions

MSC Mobile Switching Center

NAT Network Address Translation

NAT-PT Network Address Translation—Protocol Translation

NNI Network to Network Interface

P-CSCF Proxy Call Session Control Function

RTP Real-Time Protocol

SBC Session Border Controller

S-CSCF Serving-Call Session Control Function

SCTP Stream Control Transmission Protocol

SDP Session Description Protocol

SGF Signalling Gateway Function

SIP Session Initiation Protocol

SIP URI SIP protocol Uniform Resource Identifier

SIP-I SIP with encapsulated ISUP

SIP-T SIP for Telephones

SLA Service Level Agreement

SRVCC Single Radio Voice Call Continuity

TCP Transmission Control Protocol

tel-URI Telephone Uniform Resource Identifier

TRF Transit and Roaming Function

TrGw Transition Gateway

TLS Transport Layer Security

UA User Agent

UDP User Datagram Protocol

URI Uniform Resource Identifier

VoIP Voice over IP

# Current Routing Solution Using Public Routing Data

Placeholder:

This section illustrates some of the mechanisms currently in use and/or being deployed to facilitate the exchange of traffic associated with IP-based multimedia services (e.g., VoIP) between North American service providers.

See IPNNI-2014-045R1.

# Utilization of Existing BIRRDS/LERG Industry Database

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Placeholder:

This section describes the exchange of data for IP routing and interconnection using existing industry database systems, architectures and processes for routing of E.164 Addressed Communications over IP Network-to-Network Interconnection (NNI). See IPNNI-2014-044R1.

# Tiered ENUM Registries Based on Existing Infrastructure

## Use of the NPAC as an ENUM Registry

Placeholder:

This section details procedures for use of the NPAC as part of a tiered ENUM registry to facilitate routing of E.164 number address communication sessions in over IP interconnections. See IPNNI-2014-041R2.

## Utilizing LERG as an ENUM Registry

Placeholder:

This section describes provides utilizing the LERG as part of a Tiered ENUM Registry, for the exchange of data for IP routing and interconnection for routing of E.164 Addressed Communications over IP Network-to-Network Interconnection (NNI). See IPNNI-2014-042R1.

# Independent ENUM Registry

Placeholder:

This section describes an independent ENUM Registry, for the exchange of data for IP routing and interconnection for routing of E.164 Addressed Communications over IP Network-to-Network Interconnection (NNI). See IPNNI-2014-043R1.

# Next Steps

# Appendix A – Routing Criteria Tables

# Appendix B – Data Exchange Worksheet Example

1. FCC 14-5, released January 31, 2014. [↑](#endnote-ref-1)