NENA

Procedures for Notification of ERDB and VPC Operators of ESN Changes by 9-1-1 Administrator

Operations Information Document

NENA Procedures for Notification of ERDB and VPC Operators of ESN Changes by 9-1-1 Administrator
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Prepared by:
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OPERATIONS INFORMATION DOCUMENT

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Acknowledgments:

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1 Executive Overview

Voice over Internet Protocol (VoIP) is staged to become the predominant technology used in the telecommunications industry. As the public adopts VoIP, E9-1-1 calls will increasingly come from VoIP users. NENA developed a view of migratory (i2) and long-term (i3) solutions to support location based routing of VoIP E9-1-1 calls to PSAPs.

The i2 solution (refer to NENA 08-001) makes use of a Validation Database (VDB) to ensure that civic location information representing VoIP end user locations is Master Street Address Guide (MSAG) valid and uses the Emergency Service Zone Routing Database (ERDB) function for real-time routing of 9-1-1 calls. NENA 02-013 outlines the functionality of the VDB and ERDB.

This document recommends a procedure for 9-1-1 Administrators to follow to insure appropriate and timely notification to Emergency Routing Database (ERDB) Operators, VoIP Positioning Center (VPC) Operators and Emergency Services Gateway Operators (ESGW) of Emergency Service Number (ESN) addition and changes so they can appropriately update their databases. Typically, ESN changes in the Master Street Address Guide (MSAG) only generate record updates to the ALI and the selective routing databases. VPC, ERDB and ESGW Operators need to know whenever the ESN to Emergency Services Query Key (ESQK) relationship changes in order to make the required changes to their associated databases.

This document suggests an electronic interface be developed as part of the VDB that would allow 9-1-1 Administrators to self-report ESN changes that would be electronically shared with the ERDB and VPC Operators. VPC operators would, in turn, share the information with the ESGW Operators. Because the proposed solution would involve technical development a short-term solution is also outlined. Additionally, this document offers guidance on how a 9-1-1 Administrator will supply ESN Geographic Information System (GIS) information to the ERDB and VPCs.

2 Introduction

2.1 Purpose and Scope of Document

This document was developed as a recommendation for distribution of ESN changes and additions initiated by 9-1-1 Administrators to ERDB, VPC and ESGW operators in the i-2 VoIP environment, which assumes the use of wireline ESNs for the routing of VoIP calls. Its primary goal is to set expectations and improve communications amongst the parties involved to facilitate the timely implementation of VoIP ESN changes and additions, thereby facilitating the proper routing of VoIP E9-1-1 calls. It also makes recommendations as to how to provide the GIS files that reflect the ESN addition or changes requested. This procedural recommendation will involve technical development work. As such, a short term recommendation is also outlined.

2.2 Reason to Implement

This documents primary goal is to set expectations and improve communications amongst all parties to facilitate the timely implementation of VoIP ESN changes and additions, thereby support the proper routing of VoIP E9-1-1 calls. It also makes recommendations as to how to provide the GIS files that reflect the ESN addition or changes requested. This procedural recommendation will involve technical development work. As such, a short term recommendation is also outlined.

Specifically, the reasons to implement are:

- To provide a single location for 9-1-1 Administrators to report changes and additions of VoIP ESNs to VDB/ERDB Operators, ESGW Operators, and VPCs.
- To provide uniformity of process in the way VDB/ERDBs, ESGW, and VPC Operators are notified, retrieve or receive information regarding VoIP ESN changes.
- To provide an audit trail of ESN changes throughout the process.
- To facilitate the transition from special VoIP ESNs to the use of traditional wireline ESNs for VoIP.

2.3 Reason for Reissue

NENA reserves the right to modify this document. Whenever it is reissued, the reason(s) will be provided in this paragraph.

Document Number	Approval Date	Reason For Changes
NENA 57-503	01/08/2008	Initial Document
NENA 57-503.1	05/25/2015	Update web page links

2.4 Recommendation for Standards Development Work

The long-term solution outlined in this document expands the scope of the VDB/ERDB functionality beyond what is outlined in NENA 08-001 (NENA Interim VoIP Architecture for Enhanced 9-1-1 Services (i2), Issue 1, December 6, 2005). It suggests an electronic interface within the VDB be

developed for 9-1-1 Administrators to self-report and submit their ESN additions or changes. This solution, if accepted, would require technical standards development. A similar request was made to the NENA i2.5 WG by the VDB/MSAG Working Group to create an interface for "Error Resolution processes."

2.5 Cost Factors

Cost factors could include application and security development costs at the VDB/ERDB. 9-1-1 Administrators will incur expense in training and administrative responsibilities to manage the required ESN and GIS provisioning processes. Development and management costs will be incurred by the VDB/ERDB. 9-1-1 Administrators are urged to look beyond the costs to provide uniformity of process and timely interaction with the VoIP community.

2.6 Acronyms/Abbreviations

Some acronyms/abbreviations used in this document have not yet been included in the master glossary. After initial approval of this document, they will be included. Link to the master glossary is located at http://www.nena.org/?page=Glossary

The following Acronyms are used in this document:	
ERDB	Emergency Service Zone Routing Database
ESGW	Emergency Services Gateway
ESQK	Emergency Service Query Key
GIS	Geographic Information Systems
VDB	Validation Data Base
VPC	VoIP Positioning Center
VSP	VoIP Service Provider

3 ESN Notification Process

For the purposes of this document, all references to ESN refer to the Routing ESN, the 3- 5 position Emergency Service Number (ESN) used by a selective router to selectively route a call and for switched based selective transfer features. In cases where Routing ESNs are not used, the routing ESN equals the Administrative ESN.
The ESN notification process should follow established procedures between the 9-1-1 Administrator and the Selective Router provider. This includes providing the address ranges associated with the ESN change or addition to the ALI Database if the ESN is to be used for both wireline and VoIP calls. NENA 02-013 outlines the process for the electronic exchange of MSAG changes between the ALI Database and the VDB/ERDB.

Use of unique VoIP ESNs is acceptable for the proposed interim solution. However, the migration to using landline ESNs for VoIP is preferred for both the interim and long-term solutions.

3.1 Request for translation changes to Selective Routing Provider

Once notified of a new, changed or deleted ESN, it is the responsibility of the Selective Router Provider to request the ALI Database build a shell record or make any revisions necessary to the existing record to support the ESN for use in the VoIP environment. The numbering authority responsible for issuing ESQKs should also be notified by the Selective Router Provider. Acknowledgement of completion of both these processes should be sent to the 9-1-1 Administrator. The ALI Database acknowledgement should include a copy of the complete shell record.

3.2 Data to be Provided by 9-1-1 Administrator to VoIP Providers*

Below is a list of data elements to supply to VoIP providers when requesting a new ESN or making revisions to an existing ESN for inclusion on the ESN Change Form as referenced in 3.3.1 and in Appendix B.

PSAP NAME:	The official name of the PSAP
PSAP FCC ID:	
NENA PSAP ID:	
PSAP COUNTY/JURISDICTION:	The administrative jurisdiction of a particular 9-1-1 system. This could be a county/parish or city government, a special 9-1-1 or Emergency Communications District, a Council of Governments, an individual PSAP or other similar body.
PSAP STATE:	State the PSAP is located in.
CONTACT NAME, PHONE, EMAIL:	Person to be contacted regarding this request.
ROUTING ESN:	The 3-5 position ESN used by a selective router to selectively route a 9-1-1 call and for switch-based selective transfer features. In cases where Routing ESNs are not used, the routing ESN equals the Administrative ESN.
ALI Provider:	The name of the entity providing the ALI Database Management System for the PSAP.
Selective Routing Provider:	The name of the entity providing selective routing for the PSAP.
PRIMARY SELECTIVE ROUTER CLLI Code:	The common name and CLLI Code of the primary selective router for this ESN.

SECONDARY SELECTIVE ROUTER CLLI Code	: The common name and CLLI Code of the secondary router (if applicable) for this ESN.
ALTERNATE EMERGENCY ACCESS NUMBER (CONTINGENCY NUMBER):	A 10-digit emergency number to be used due to failure of standard E9-1-1 routing methods
EFFECTIVE DATE:	Date PSAP requests the ESN be implemented.
EXPIRATION DATE: (DELETIONS ONLY)	The date the 9-1-1 Administration requests the ESN be removed from service.
FUNCTION OF CHANGE:	Insert, change or delete. Note, if you were merging one ESN into another ESN, it would require two requests: one for the change and one for the delete.
DESCRIPTION OF IMPACT:	Verbal description of the impact of the change.
ATTACHMENTS:	• Revised ESN GIS Coverage depicting PSAP to ESN relationship. • MSAG shell record for ESN.

*Because English Language Translations (ELTs) will be provided to the PSAP by the ALI system based on the Administrative (MSAG) ESN in the ESQK shell record or V-E2 response (see NENA 08-001), ELTs are not part of the MSAG and will not be supplied in VPC, VDB, and/or ERDB data bases.

3.3 Notification by 9-1-1 Administrator to VDB/ERDB Operators and VPCs

3.3.1 Interim solution

This section outlines the process to be used for VoIP ESN changes, additions or deletes prior to development of the conceptualized automated process described in 3.3.2 Long Term Solution that describes a user interface within the VDB. Notification would be sent directly to all known VPCs. It is recommended that 9-1-1 Administrators require VSPs to register with them prior to sending calls over their network. A sample registration form can be found in Appendix A.

To facilitate the distribution of ESN changes, it is recommended that each VoIP Positioning Center (VPC) establish a designated email for the department responsible for ESN changes (i.e., ESNChanges@company.com). If a VDB/ERDB is in place, an email account should also be established by that entity.

9-1-1 Administrators should complete the ESN Change Form in Appendix B. This form and required attachments shall be provided directly to known VPCs and it's VDB/ERDB via email with a minimum lead time of ten business days prior to the requested implementation date. This process requires the VPC to test with the assistance of the 9-1-1 Administrator. The following status acknowledgements should be provided by the VPC to the 9-1-1 Administrator:

- Change/Addition request initiated by 9-1-1 Administrator received by VPC. (Return receipt within one business day);
- Ready to test. (within 10 business days of receipt of request);
- Completed and implemented. (Within one business day).

Depending on contractual relationships, the notification of new ESNs may be done by the ALIDBMS provider.

The timeframes indicated in this document assume electronic transmission of GIS data. If GIS data is not available, ESZ boundaries must be provided to the ERDB Operator and the VPCs by the 9-1-1 Administrator in an agreed upon format (drawings, maps, etc.). Paper submission of boundary information will add time to the deployment process.

3.3.2 Long Term solution

3.3.2.1 ESN interface

This document suggests a secure electronic interface site be developed as part of the VDB that would allow 9-1-1 Administrators to post ESN data that could be electronically shared with the ERDB and VPC Operators. The VDB was selected as the most logical place for the interface because it is the one entity the 9-1-1 Administrator will have a contractual relationship with in the i2 environment. It is anticipated that that VDB and ERDB will be the same entity. The ERDB supports an interface from one or more VESA certified (Valid Emergency Services Authority) VPCs in the i2 solution. The VDB's ESN interface would notify certified VPCs (possibly by email) of a change or addition in need of retrieval. Once retrieved, VPC operators should share the information with the ESGW Operators with whom they do business.

Some of the features of the ESN interface could include:

- Pre-Populated fields originally entered by 9-1-1 Administrator with ability to select a certain PSAP if more than one in a jurisdiction.
- Automatic notification of ERDB certified VPC operators of changes and/or additions to ESNs.
- Assignment of a unique transaction identifier to the request. All subsequent actions taken should be tracked by that identifier as well as a date and time stamp. Automatically distributed status transactions shall include:
    - Change/Addition/delete request initiated by 9-1-1 Administrator
    - Receipt of request by VPC.

  - VPC request for clarification or assistance from 9-1-1 Administrator.
  - VPC ready to test.
  - Change/addition/delete completed and implemented.
- Ability for 9-1-1 Administrator to query status by transaction identifier
- Ability for uploading and downloading of GIS files and MSAG shell records.
- Ability for VPC to query ESN information specific to the 9-1-1 Administrator.
- Ability to query transaction history.

Examples of the report capability of the ESN interface would include:

- Report of active ESNs by PSAP by VPC. Available to both 9-1-1 Administrator and VPCs.
- Transaction Activity Report for an ESN during a selectable time period. Available to both 9-1-1 Administrator and VPCs.

4 References

NENA 02-013 Data Standards for the Provisioning and Maintenance of MSAG Files to VDBs and ERDBs, Issue 1, January 9, 2007

NENA 56-504, VoIP E9-1-1 Deployment and Operational Guidelines OID, June 6, 2006

NENA 08-001 NENA Interim VoIP Architecture for Enhanced 9-1-1 Services (i2), Issue 1, December 6, 2005

5 Appendix A VoIP Service Provider Information Request Form

Please submit the following information to *Name of Agency* prior to implementation:

1. **VSP's company name and corporate headquarters address**
   Name: _____
   Address1: _____
   Address 2: _____
   City: _____
   State: _____ Zip: _____
   NENA Company ID_____
2. **Name(s), telephone number (s) and email address(es) for:**
   - 24 x 7 Network Operation Center (NOC)
     NOC Telephone:_____

   - Contact name(s), telephone number(s) and e-mail address(es) for those responsible for administering ALI discrepancies

     Name: Name:
     Telephone: Telephone:
     Email: Email:

   - Contact name, telephone number and e-mail address for those responsible for Voice Positioning Center services

     VPC :
     Telephone:
     Email:

   - Contact name(s), telephone number(s) and e-mail address(es) for those responsible for Liaison/Regulatory Affairs Manager

     Name: Name:
     Address 1: Address 1:
     Address 2: Address 2:
     City: City:
     State: Zip: State: Zip:
     email: email:
     Return by FAX to: *Name of Agency and Fax number*

6 Appendix B VoIP ESN Change Form

NOTICE OF ESN CHANGE

DATE_____

PSAP NAME:	
PSAP FCC ID:	
NENA PSAP ID:	
PSAP COUNTY/JURISDICTION:	
PSAP STATE:	
CONTACT NAME	
CONTACT PHONE	
CONTACT EMAIL	
ROUTING ESN:	
ALI PROVIDER:	
SELECTIVE ROUTER PROVIDER:	
PRIMARY SELECTIVE ROUTER CLLI Code:	
SECONDARY SELECTIVE ROUTER CLLI Code (If Applicable)	
ALTERNATE EMERGENCY ACCESS NUMBER (CONTINGENCY NUMBER):	
EFFECTIVE DATE:	
EXPIRATION DATE: (DELETIONS ONLY)	
FUNCTION OF CHANGE:	
DESCRIPTION OF IMPACT:	
ATTACHMENTS:	