



ATIS-0500034

**Comparison of Enhanced 9-1-1 (E9-1-1) and Next
Generation 9-1-1 (NG9-1-1) Focused on Reportable
Outage Data Points**

TECHNICAL REPORT



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ATIS-0500034, *Comparison of Enhanced 9-1-1 (E9-1-1) and Next Generation 9-1-1 (NG9-1-1) Focused on Reportable Outage Data Points*

Is an ATIS Standard developed by the **Next Generation Interconnection Interoperability Forum (NGES)** Subcommittee under the **ATIS Emergency Services Interconnection Forum (ESIF)**.

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ATIS Technical Report on

Comparison of Enhanced 9-1-1 (E9-1-1) and Next Generation 9-1-1 (NG9-1-1) Focused on Reportable Outage Data Points

Alliance for Telecommunications Industry Solutions

Approved June 7, 2017

Abstract

This Technical Report compares the ability to detect failures/outages associated with emergency calls in an Enhanced 9-1-1 (E9-1-1) environment versus a transitional and end-state NG9-1-1 environment.

Foreword

The Alliance for Telecommunications Industry Solutions (ATIS) serves the public through improved understanding between carriers, customers, and manufacturers.

The Emergency Services Interconnection Forum (ESIF) provides a forum to facilitate the identification and resolution of technical and/or operational issues related to the interconnection of wireline, wireless, cable, satellites, Internet, and emergency services networks.

The ESIF Next Generation Emergency Services (NGES) Subcommittee coordinates emergency services needs and issues with and among SDOs and industry forums/committees, within and outside ATIS, and develops emergency services (such as E9-1-1) standards, and other documentation related to advanced (i.e., Next Generation) emergency services architectures, functions, and interfaces for communications networks.

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

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

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The Next Generation Emergency Services (NGES) Subcommittee was responsible for the development of this document.

Table of Contents

1	Scope, Purpose, & Application	1
1.1	Scope	1
1.2	Purpose	1
1.3	Application	1
2	Informative References.....	1
3	Definitions, Acronyms, & Abbreviations.....	2
3.1	Definitions.....	2
3.2	Acronyms & Abbreviations	2
3.3	Descriptions of Stakeholder Roles	5
3.3.1	<i>Originating Service Provider (OSP) Using Legacy Technology</i>	5
3.3.2	<i>Originating Service Provider (OSP)-IP-Based Technology</i>	5
3.3.3	<i>Legacy Network Gateway (LNG) Operator</i>	5
3.3.4	<i>E9-1-1 System Service Provider (E911SSP)</i>	5
3.3.5	<i>Next Generation 9-1-1 System Service Provider (NG911SSP)</i>	6
3.3.6	<i>Legacy Public Safety Answering Point (PSAP) Gateway (LPG) Operator</i>	6
4	Legacy E9-1-1 Architecture Overview	6
4.1	Legacy Wireline E9-1-1 Service Architecture	7
4.2	Legacy Wireless E9-1-1 Service	8
4.2.1	<i>Wireline Compatibility Mode Approach</i>	9
4.2.2	<i>Wireless NCAS Approach</i>	9
4.2.3	<i>Handling of Interim VoIP Originations Using E9-1-1 Infrastructure</i>	10
5	NG9-1-1 Architecture Overview	11
5.1.1	<i>NG9-1-1 Service Architecture – All-IP End State</i>	12
5.1.2	<i>Transitional/Interworking Architectures in Support of Emergency Calling</i>	13
6	Detection of Failures in Emergency Call &/or Data Delivery.....	25
6.1	Legacy E9-1-1 Environment.....	25
6.1.1	<i>Functional Elements</i>	26
6.1.2	<i>Demarcation Points</i>	27
6.1.3	<i>Interfaces</i>	28
6.1.4	<i>Considerations for Redundant SRs (Dual Tandems)</i>	29
6.1.5	<i>E9-1-1 Failure Considerations</i>	29
6.1.6	<i>Current E9-1-1 Reporting Metrics</i>	32
6.2	NG9-1-1 Environment	32
6.2.1	<i>Functional Elements</i>	33
6.2.2	<i>Demarcation Points</i>	35
6.2.3	<i>NG9-1-1 Failure Considerations – All-IP End-State</i>	37
6.2.4	<i>Interworking Architecture Involving Legacy Network Gateway</i>	38
6.2.5	<i>Interworking Architecture Involving Legacy PSAP Gateway</i>	41
6.2.6	<i>Transitional Architecture Involving Legacy Selective Router Gateway</i>	43
7	Bandwidth Sizing in Support of NG9-1-1	50
8	Summary	51
A	Roles-to-Failure Visibility Chart	52

Table of Figures

Figure 4.1 – E9-1-1 Architecture for Wireline Emergency Calls.....	8
Figure 4.2 – Wireless E9-1-1 – Wireline Compatibility Mode.....	9
Figure 4.3 – Wireless E9-1-1 – NCAS Approach.....	10
Figure 4.4 – VoIP Originations to E9-1-1.....	11
Figure 5.1 – NG9-1-1 Service Architecture (All-IP End State)	12
Figure 5.2 – NG9-1-1 Service Architecture Involving Legacy Network Gateway	15
Figure 5.3 – NG9-1-1 Service Architecture Involving Legacy PSAP Gateway	18
Figure 5.4 – NG9-1-1 Service Architecture Involving Ingress Legacy Selective Router Gateway	20
Figure 5.5 – NG9-1-1 Service Architecture Involving Egress Legacy Selective Router Gateway	24
Figure 6.1 – Typical E9-1-1 Environment.....	26
Figure 6.2 – Redundant SRs (Dual Tandems)	29
Figure 6.3 – NG9-1-1 Environment	33
Figure 6.4 – Transitional Architecture with Ingress Legacy Selective Router Gateway.....	43
Figure 6.5 – Transitional Architecture with Egress Legacy Selective Router Gateway	47

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1 Scope, Purpose, & Application

1.1 Scope

This Technical Report describes the architectures to support emergency call handling in legacy Enhanced 9-1-1 (E9-1-1), as well as in transitional and end-state Next Generation 9-1-1 (NG9-1-1) environments, and compares the ability to detect failures/outages associated with emergency call and data delivery in the context of the legacy E9-1-1 and NG9-1-1 architectures.

1.2 Purpose

As telecommunications networks continue to evolve to all-IP, the FCC has begun investigating the possible expansion of its Part 4 Outage Reporting rules to include broadband and performance metrics (e.g., throughput, latency, and packet loss) in the FNPRM PS Docket No. 11-82 (FCC 16-63) [Ref 4].

As a result, there is a need for service providers across all industry segments (cable, wireline, and wireless), in all stages of the PSTN transition, to be able to identify when their networks may be experiencing service-impacting events that impair or cause the total loss of 9-1-1 services. As service architectures to support 9-1-1 calling and data delivery evolve to NG9-1-1, there is a need to better understand the complexities of how NG9-1-1 service architectures are designed and where there are divergences from the pre-existing legacy E9-1-1 network infrastructures. This information will be critical for service providers to know so as to a) collect network information that may be reportable under the Part 4 Rules and b) to evaluate if standardization efforts are needed to develop metrics for data collection.

The purpose of this Technical Report is to compare the services architectures used today to provide E9-1-1 with NG9-1-1 service architectures and to identify where in the architectures service-impacting events can be detected. However, it should be noted that the technical limitations outlined in this document limit any given stakeholder's monitoring and reporting capabilities.

1.3 Application

This Technical Report applies to emergency call handling and data delivery via legacy and Next Generation (NG) emergency services architectures defined in North American standards in support of regulatory activities associated with 9-1-1-related outage reporting applicable to the U.S. This Technical Report is applicable to wireline, wireless, and IP-based originating network providers as well as E9-1-1/NG9-1-1 System Service Providers.

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.

[Ref 1] NENA-INF-003.1-2013, *NENA Potential Points of Demarcation in NG9-1-1*, March 1, 2013.

[Ref 2] FCC 15-9, PS Docket No. 07-114, 4th Report and Order, *Fourth Report and Order In the Matter of Wireless E911 Location Accuracy Requirements*.

ATIS-0500034

- [Ref 3] NENA-STA-010.2, *Detailed Functional and Interface Standards for the NENA i3 Solution*, September 10, 2016.
- [Ref 4] FCC 16-63, FNPRM PS Docket No. 11-82, *Report and Order, Further Notice of Proposed Rulemaking, and Order on Reconsideration*.
- [Ref 5] NENA-ADM-000.19-2016, *NENA Master Glossary of 9-1-1 Terminology*, December 20, 2016.
- [Ref 6] J-STD-034, *Wireless Enhances Emergency Services*, December 1997.
- [Ref 7] J-STD-036-C, *Enhanced Wireless 9-1-1 Phase II*, June 2011 including the addendum in J-STD-036-C-1, *Addendum to J-STD-036-C, Enhanced Wireless 9-1-1 Phase II*, October 2013.
- [Ref 8] NENA 05-001, *NENA Standard for the Implementation of the Wireless Emergency Service Protocol E2 Interface*, December 2, 2003.
- [Ref 9] OMA-TS-MLP-V3_2-20051124-C, *Mobile Location Protocol 3.2*, November 24, 2005.
- [Ref 10] NENA 03-506, *E9-1-1 Voice Circuit Requirements - Providing a P.01 Grade of Service*, April 13, 2007.
- [Ref 11] NENA 08-506, *Emergency Services IP Network Design for NG9-1-1*, December 14, 2011.

3 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> >.

3.1 Definitions

The use of these terms in this document is exclusively for the function of monitoring and reporting.

Demarcation Point: A mutually-defined boundary dividing one area of responsibility from another.

Physical Demarcation: A mutually-defined boundary dividing one area of responsibility for managing tangible assets, such as computers, routing hardware, or transmission lines from another.

Location Key: A location key may be the callback number and/or pseudo ANI (pANI) (ESRK, ESRD, or ESQK) that may be used for routing and acquiring caller location.

Logical Demarcation: A mutually-defined boundary dividing one area of responsibility for managing NG9-1-1 functional elements from another. The interfaces for these functional elements include the interfaces for intangible assets, such as data stores and applications.

3.2 Acronyms & Abbreviations

ADR	Additional Data Repository
AGPS	Assisted Global Positioning System
ALI	Automatic Location Identification
ANI	Automatic Number Identification
AOA	Angle of Arrival
ATIS	Alliance for Telecommunications Industry Solutions
BCF	Border Control Function
CAMA	Centralized Automatic Message Accounting