

## **NENA Statement on VoIP E9-1-1 Implementation Issues**

*March 6, 2006*

NENA issues this statement to clarify its position on the complex issues affecting the deployment of VoIP E9-1-1 services.

In the nine months since release of the Commission's Order on VoIP E9-1-1,<sup>1</sup> VoIP service providers ("VSPs"), Public Safety Answering Points ("PSAPs"), 9-1-1 System Service Providers ("SSPs) and vendors have actively reviewed various methods to meet the FCC's Order and provide E9-1-1 to all VoIP customers.

NENA believes that it is imperative that all entities involved in the delivery of VoIP E9-1-1 operate from common principals and understanding. This is an evolving issue that will continue to require diligence and cooperation to assure that the quality of VoIP meets that of traditional wireline E9-1-1 service.

### **MSAG Application for VoIP E9-1-1**

Ensuring that the PSAP is provided an accurate and unambiguous location of an emergency is critical to the functioning of the E9-1-1 system. Public safety utilizes an addressing validation method called the Master Street Address Guide ("MSAG"). For the E9-1-1 system to work properly from end to end, any address registered by the subscriber must be validated against the MSAG, an Emergency Services Number (ESN) must be identified for routing and the MSAG valid address must be transmitted to the PSAP. To do so, VSP's or their third party providers must have access to the MSAG data.

MSAG validation must be applied to all VoIP fixed and nomadic (non-wireless) subscriber records in preparation for 9-1-1 calling, equivalent to wireline treatment. Optimally, MSAG processes should be used for call routing definition as well.

### **Pseudo Automatic Number Identification (pANI)**

NENA asserts its earlier recommendation that the FCC take immediate steps to establish an interim, followed by a permanent, national administration function for E9-1-1 routing control codes for both VoIP E9-1-1 and wireless E9-1-1 services.<sup>2</sup> VSP's have neither direct number assigning authorization, nor the ability to readily acquire numbers for 9-1-1 calling routing control purposes on a national scale. This circumstance creates a roadblock in accomplishing the FCC's VoIP E9-1-1 Order, as the use of routing codes is critical for nomadic and non-local NPA subscribers in E9-1-1 service. NENA's published Migratory solution (i2) standard for VoIP service interface to the current E9-1-1 systems assumes and depends upon the use of ESQKs.

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<sup>1</sup> *E911 Requirements for IP-Enabled Service Providers*, FCC 05-116, released June 3, 2005.

<sup>2</sup> Letter of Roger Hixson to Thomas Navin, August 2005.

Both for current VoIP needs, and as an improvement for the wireless arena, NENA believes that a national Routing Number Administrator (RNA) is critical.

### **VoIP Emergency Service Number (ESN) Selection**

Where Selective Transfer is utilized for the PSAP, “detail” ESNs are required for VoIP E9-1-1.<sup>3</sup> If the Public Safety Authority agrees to temporary use of a single ESN per PSAP for simplification of VoIP E9-1-1 implementation, an agreement should be included for later conversion to detail ESNs to support full replication of wireline equivalent E9-1-1 service for fixed/static and nomadic (non-wireless) VoIP subscribers.

### **ESGW to Selective Router Trunk Group Sizing, and Geographic Relationships**

Trunk groups from Emergency Services Gateway (ESGW) to Selective Router (SR) should typically be sized at the county or equivalent level and sized consistent with standard network engineering principals based on expected call loads. This approach provides a degree of congestion control, and is consistent with default call handling within a county set of PSAPs, where one-button transfer to adjacent PSAPs is likely to be available. One button transfer is especially important in the initial stages of VoIP E9-1-1 deployment when automatic location technology is not available and a high percentage of subscriber registered locations are inaccurate creating a potential for misrouted calls. See NENA 03-006, E9-1-1 Call Congestion Management Standard, Section 2.3, for recommendations on network engineering methods and geographic considerations.

### **Intentional Misrouting**

The use of shell records to support directed, accurate call routing is the minimal level of E9-1-1 service consistent with FCC Order content, and applies where dynamic data update (ALI steering) capability is not available to involved PSAPs

Utilizing default settings to “complete” calls to Selective Routers and then to a default PSAP is inappropriate, and amounts to intentional misrouting of 9-1-1 calls, which can cause significant delays in emergency response and will create serious operational difficulties for the PSAPs that have the misfortune to be the recipient of these intentionally defaulted calls. This is inconsistent with the FCC Order, which requires that 9-1-1 calls be routed to the appropriate PSAP for the caller’s Registered Location.

### **Private Call Center use during VoIP E9-1-1 Deployment to PSAPs**

Private call centers should never be utilized as the primary option for delivery of VoIP 9-1-1 calls in E9-1-1 service areas. However, handling of 9-1-1 calls by private call centers to provide

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<sup>3</sup> Selective Transfer is an E9-1-1 feature that allows the capability to transfer a 9-1-1 call to a response agency by operation of one of several buttons typically designated as police, fire, and emergency medical, based on the stored ESN of the caller. Detail ESNs are defined by unique combination of law enforcement, fire, and EMS jurisdictions, and support the logic required to identify and display that jurisdictional detail to the PSAP telecommunicator and allow the use of the Selective Transfer feature. A Glossary of terms is attached.

human interface and support for 9-1-1 call completion is appropriate during the deployment process until 9-1-1 calls can be accurately routed through the E9-1-1 systems to the appropriate PSAP for the caller's location. Under any circumstances, private call centers should only be considered as a means of last resort.

## Glossary of Terms

ALI Steering – redirection of an ALI query through the serving ALI servers to other or remote databases for retrieval of ALI related data.

Default PSAP – a pre-designated PSAP used to receive a 9-1-1 call when the call cannot be properly selectively routed due to an ANI failure, missing call routing data, or other cause.

ESGW – Emergency Service Gateway, an inter-network router used to interface an IP network to a TDM (time division multiplexing) network for delivery of VoIP 9-1-1 calls.

ESN – Emergency Service Number, a three to five digit number which facilitates selective routing through Selective Routing switch translations to the trunk group for a specific PSAP.

Detail ESN - a three to five digit number representing a unique combination of emergency service agencies (Law Enforcement, Fire, and Emergency Medical Service) designated to serve a specific range of addresses within a particular geographical area, or Emergency Service Zone (ESZ). The ESN facilitates selective routing and selective transfer, if required, to the appropriate PSAP and the dispatching of the proper service agency(ies).

ESQK – Emergency Service Query Code, a 10 digit routing code representing the target PSAP for a 9-1-1 call. The ESQK is delivered to the E9-1-1 Selective Router (SR) and to the PSAP. The ESQK is used by the SR as the key to the Selective Routing data associated with the call. The ESQK is subsequently used by the PSAP to request ALI information for the call.

Selective Router - The switch that provides the tandem switching of 9-1-1 calls. It controls delivery of the voice call with ANI to the PSAP and provides Selective Routing, Speed Calling, Selective Transfer, Fixed Transfer, and certain maintenance functions for each PSAP.

Selective Transfer - The capability to transfer a 9-1-1 call to a response agency by operation of one of several PSAP equipment buttons typically designated as police, fire, and emergency medical, based on the detail ESN of the caller.

Shell Record – an ALI record manually established in the ALI servers to represent a pANI code and which have generic data field content meant to be dynamically updated during 9-1-1 call processing to provide call-specific ALI data for subscriber information and callback number. For VoIP E9-1-1 calls, the term pANI is synonymous with ESQK.