

### 6.3 Roles

When authenticating within the ESInet, an agent or agency assumes one or more roles. The roles which an agent or agency may assume are limited by policy of the immediately superior agency.

Agency Roles defined within this specification are:

- PSAP
- Local 9-1-1 Authority
- State 9-1-1 Authority
- ESInet operator
- ESRP operator
- ECRF/LVF operator
- LIS operator.

This document creates a new registry to be managed by NRS for agency roles. See section 12.12. While ESInet implementations may define other roles for agencies, it is recommended that the policies of the ESInet provide 100% functionality without additional roles so that availability of resources is maximized when disaster situations occur and other ESInets and agencies are providing services to the PSAPs. In the same vein, all ESInets must have agencies that assume all of the above roles.

Agent roles defined in this specification are:

- PSAP Manager
- Assist Manager
- Shift Supervisor (to include Dispatch, Call Taking or a combination of both)
- Dispatcher
- Call taker
- GIS Specialist
- GIS Supervisor
- Maintenance Supervisor
- Maintenance Technician
- Temporary Technician
- ESInet Network Operator
- ESInet Network Operations Supervisor

- 9-1-1 Authority Director
- 9-1-1 Authority Agent
- Database Administrator
- IT Systems Analyst.

Specific definitions of these roles will be defined in an OID to be referenced in a future edition of this document. This document creates a registry of roles to be managed by NRS. See Section 12.13.

## 6.4 Authentication

Most services within the ESInet implement a Single Sign On paradigm. The mechanism used is OASIS SAML (Security Assertion Markup Language). There are two entities: an Identity Provider (IDP) which authenticates users, and supplies services with a “token” that can be used in subsequent operations to refer to an authorized user and a Relying party which uses the token. SAML is used by a Relying Party to ask if an operation should be permitted by the user.

For applications that depend upon interactions with authorized browsers of web-based applications, several profiles of the Security Assertion Markup Language version 2 [SAML2CORE] as amended by errata shall be used. SAMLv2, is an XML-based framework for creating and exchanging security information. [SAML2OV] and [SAML2TECH] provide non-normative overviews of SAMLv2. The SAMLv2 specification set is normatively defined by [SAML2C].

SAMLv2 consists of a suite of core specifications, which outline schema and protocols [SAML2CORE], transport bindings [SAML2BIND], and a set of concrete profiles [SAML2PROF], which carefully orchestrate bindings and message patterns for SAML processors to discover SAML authorities and relying parties, as well as request, produce, send, and receive SAML assertions. Also specified are the publication and discovery mechanisms for entity metadata [SAML2META] necessary for bootstrapping interactions between parties, and for the description of federations [SAML2META1].

For HTTP-bound NG9-1-1 web applications, the following existing SAML2 profiles must be supported by both asserting parties (aka IDP) and relying parties (aka RP), as specified in [SAML2PROF]:

- Web Browser SSO Profile
- Identity Provider Discovery Profile
- Single Logout Profile.

In addition, the following profiles may be supported:

- Enhanced Client or Proxy (ECP) Profile
- Artifact Resolution Profile.

The Web Browser SSO Profile outline the exchanges for requesting and producing SAML2 assertions, in the presence of a web browser based user-agent, which is used as the intermediary transport agent for these request, via orchestrated HTTP 302 redirects. For systems that use a client application to authenticate a user, the X500 profile of [REF] is used.

The Identity Provider Discovery Profile provides a mechanism for enabling the discovery of authentication authorities by means of a shared HTTP cookie, which carries an enumeration of IDPs for which the client is capable of authenticating to. It is recommended that this be the primary means for IDP discovery for an actor. Providers are identified by a URI as defined above.

#### **6.4.1 Trusting Asserting and relying parties**

In order for entities within the NENA infrastructure to be strongly identified in this federated authentication architecture, and for the proper run-time provisioning of new entities within the infrastructure, SAML metadata XML instances, as defined by [SAML2META] of each entity should be aggregated into a single XML instance using the <EntitiesDescriptor/> container. This aggregated metadata document MUST be signed (via XML Signature) by an identified administrative body, using a well-known signing certificate. Thus any entity (and the encryption and signing keys contained within the <EntityDescriptor> element are identified as an authorized party to the infrastructure.

Within this framework, each identity provider must insist on two factor authentication of agents. The factors defined are:

- Passwords, which must conform to local password policy
- Tokens (RSA SecureID)
- Smart Cards conforming to ISO/IEC-7816 (1-15)
- Biometrics, including fingerprints, palm prints, retina scans, face recognition and voice recognition.

It is recommended that all authentication services enroll agents with as many factors as practical, and allow any specific authentication to use any two. At present, there are no widely accepted standards for biometric information. Consequently, biometric authentication would only work where the authentication server and enrollment server use the same brand of scanner. Further if network access to the authentication data is lost, biometric authentication may not work. All agencies should have backup mechanisms (such as smart cards) available for local authentication when network access is unavailable.

Protocol operations use RSA-1024 with the credentials rooted in the PCA, typically over TLS or IPsec. All elements in the ESInet must accept RSA-1024 with a certificate rooted in the PCA. They may accept alternate authentication cryptosystems as long as they are at least as strong as RSA-1024.

ALL protocol exchanges across the ESInet should be authenticated.

## 6.5 Authorization

Authorization in NG9-1-1 is based on XACML 1.0 [87]. Each XACML policy defines: a “target”, which describes what the policy applies to (by referring to attributes of users, roles, operations, objects, dates, and more), and one or more “rules” to permit or deny access. Access is defined to mean some combination of:

- Read – the ability to retrieve a data object
- Update – the ability to modify an existing data object
- Create – the ability to create a new data object
- Delete – the ability to remove an existing data object
- Execute – the ability to execute one or more functions from a service.

Rules may “permit” or “deny” access.

XACML policies are stored in a policy store. The XACML “Policy Decision Point” can be inside the element or agency that has the “Policy Enforcement Point”, or may be external to it.

## 6.6 Integrity Protection

All protocol operations must be integrity-protected (via TLS or IPsec), preferably using SHA-256. Systems currently using SHA-1 are acceptable but upgrades to SHA-256 should be completed by January 2011. Alternate integrity protection algorithms are acceptable as long as they are at least as strong as SHA-256.

## 6.7 Privacy

All protocol operations must be privacy protected (via TLS or IPsec), preferably using AES. Systems currently using DES or triple DES must be upgraded to at least AES. Alternate encryption algorithms are acceptable as long as they are at least as strong as AES.

Stored data which contains confidential information must be stored encrypted, using AES or an equivalently strong algorithm. Encryption key storage must be protected.

Note: a future edition of this standard will specify more precise key storage requirements

## 7 Gateways

While NG9-1-1 is defined to utilize an end-to-end IP architecture, there will continue to be wireline and wireless (circuit switched) originating networks and legacy PSAPs deployed after emergency service networks and a significant number of PSAPs have evolved to support the i3 Solution. Since any i3 PSAP will need to be able to receive emergency calls that originate on these legacy networks, and legacy PSAPs will need to process voice emergency call originations that traverse ESInets, it is clear that gateways will be a required part of the i3 Solution architecture. The Legacy Network Gateway is an i3 functional element that supports the interconnection of legacy originating networks and the ESInet. The Legacy PSAP Gateway is a functional element that supports the interconnection of the ESInet with legacy PSAPs. Each of these gateways is comprised of a set of functional components. The placement of the gateways in the i3 Solution architecture, and the functional components that make up the Legacy Network Gateway and the Legacy PSAP Gateway are

illustrated in Figure 7-1. The following subsections provide a detailed description of the functional components and interfaces that must be supported by a Legacy Network Gateway and a Legacy PSAP Gateway.

Note: Another component, a Legacy Selective Router Gateway, is used as part of transition to i3. The LSRG is described in a separate document [ ].

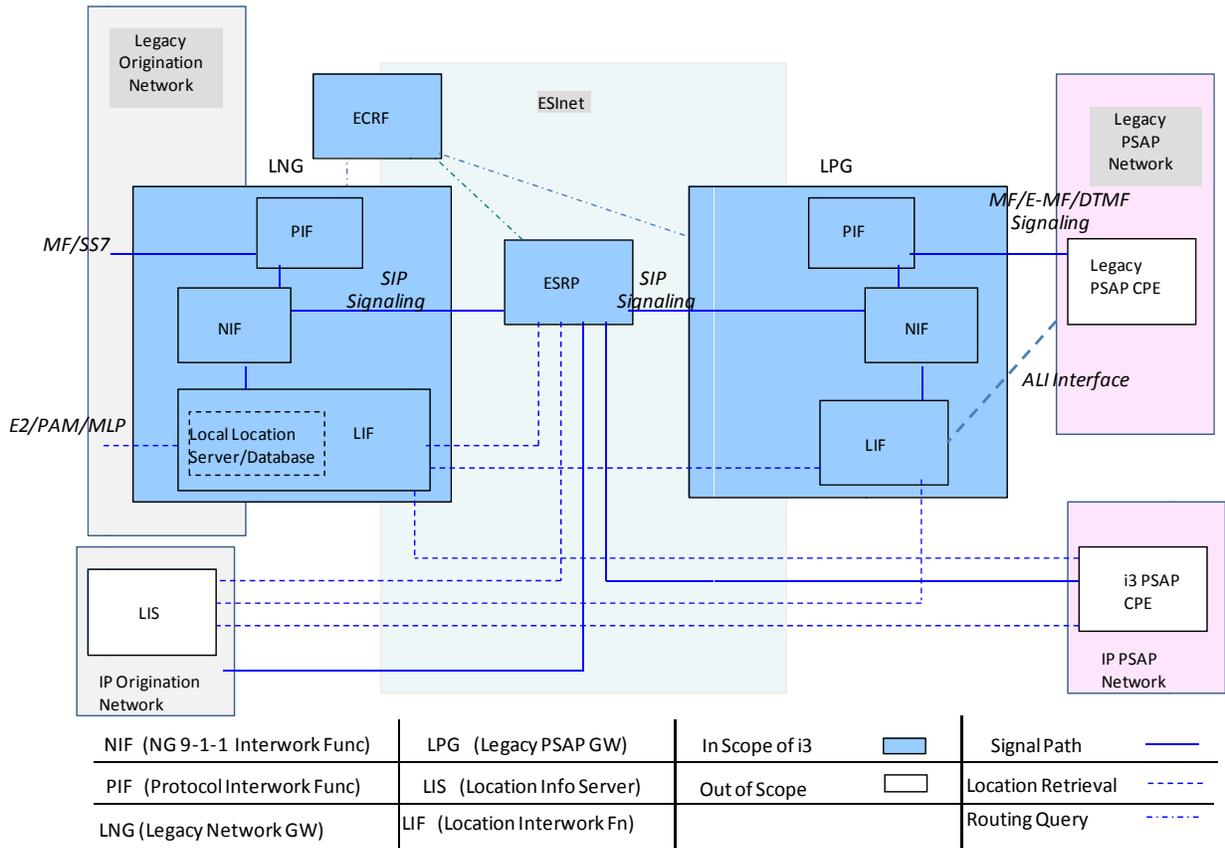


Figure 7-1 i3 Gateways - Functional Architecture

### 7.1 Legacy Network Gateway (LNG)

A Legacy Network Gateway is a signaling and media interconnection point between callers in legacy wireline/wireless originating networks and the i3 architecture. The Legacy Network Gateway logically resides between the originating network and the ESInet and allows i3 PSAPs to receive emergency calls from legacy originating networks. Calls originating in legacy wireline or wireless networks must undergo signaling interworking to convert the incoming Multi-Frequency (MF) or Signaling System Number 7 (SS7) signaling to the IP-based signaling supported by the ESInet. Thus, the Legacy Network Gateway supports a physical SS7 or MF interface on the side of the originating network, and an IP interface which produces SIP signaling towards the ESInet, and must provide the protocol interworking functionality from the SS7 or MF signaling that it receives from the legacy originating network to the SIP signaling used in the ESInet.

The Legacy Network Gateway is also responsible for routing emergency calls to the appropriate ESRP in the ESInet. To support this routing, the Legacy Network Gateway must apply specific interwork functionality to legacy emergency calls that will allow the information provided in the call setup signaling by the wireline switch or MSC (e.g., calling number/ANI, ESRK, cell site/sector represented by an ESRD) to be used as input to the retrieval of location information from an associated location server/database. The Legacy Network Gateway uses this location information to query an ECRF to obtain routing information in the form of a URI. The Legacy Network Gateway must then forward the call/session request to an ESRP in the ESInet, using the URI provided by the ECRF, and include callback and location information in the outgoing signaling.

The Legacy Network Gateway functional element contains three functional components, as illustrated in **Error! Reference source not found.**<sup>25</sup> These functional components are described below:

1. (MF/SS7 to SIP) Protocol Interworking Function. This functional component performs a standard interworking function that converts the incoming MF signaling or SS7 protocol from the legacy network to the SIP protocol expected by the i3 ESInet and also converts the incoming TDM voice to the RTP data required by the i3 ESInet. It is assumed that the PIF functional component does not require specialized hardware, and can therefore be implemented using commercially available hardware. (See Section **Error! Reference source not found.** for further details.)
2. NG9-1-1 specific Interwork Function (NIF). This functional component provides NG9-1-1-specific processing of the incoming call signaling, which includes identification of the 10-digit key(s) (e.g., calling number/ANI, ESRK, ESRD) that will be used as input to location retrieval. (See below for further information regarding the Location Interwork Function [LIF] functional component of the Legacy Network Gateway.) Having received the location information from the LIF, the NIF functional component provides the means by which the address of the target ESRP is identified (i.e., via a query to the ECRF), and the route to that ESRP is selected. This functional component also includes the ability to select a default route if necessary. Having identified the route to the ESRP, the NIF is also responsible for forwarding the request to the ESRP and including location and callback information in the outgoing SIP signaling. The NIF is also responsible for taking any non-location call information provided by the LIF and generating a data structure that contains additional data about the call, along with a pointer/reference to that data structure. (See Section 7.1.2 for further details.)

---

<sup>25</sup> Note that the functional decomposition of the Legacy Network Gateway described in this section is provided to assist the reader in understanding the functions and external interfaces that a Legacy Network Gateway must support. Actual implementations may distribute the functionality required of the Legacy Network Gateway differently among functional components, as long as all of the functions and external interfaces described herein are supported.

3. **Location Interwork Function (LIF).** This functional component is responsible for taking the appropriate key(s) from the incoming signaling (e.g., calling number/ANI, ESRK, ESRD), provided to it by the NIF, and using it (them) to retrieve location information via an associated location server/database.<sup>26</sup> The location information is provided to the NIF for use in determining the route for the emergency call, and for populating the outgoing SIP INVITE message. Other non-location information associated with the call that is known or obtained by the LIF will be passed to the NIF for population in an “Additional Data Associated with a Call” data structure. (See Section 7.1.3 for further details.)

The following subsections describe each of the functional components of the Legacy Network Gateway in detail.

Note: The LNG must log all significant events. Log record formats for this purpose will be provided in a future edition of this document.

### **7.1.1 Protocol Interworking Function (PIF)**

To receive emergency calls from legacy originating networks, the Legacy Network Gateway is expected to support MF and SS7 trunking arrangements. Flexibility is required to accommodate different implementations for each type of interface.

#### **7.1.1.1 MF Trunk Interface**

If legacy wireline or wireless emergency calls are routed via MF trunks from the wireline end office or wireless MSC to the Legacy Network Gateway, the PIF component of the Legacy Network Gateway shall be capable of receiving and processing the following MF signaling:

- The PIF component of the Legacy Network Gateway shall be capable of recognizing a trunk seizure and returning a wink back to the wireline switch or MSC.
- The PIF component of the Legacy Network Gateway shall be capable of receiving and processing the appropriate ANI sequence. If CAMA-type signaling is used on the MF trunk from a wireline end office to the Legacy Network Gateway, the PIF component of the Legacy Network Gateway shall be capable of receiving and processing an ANI sequence that consists of “I + 7-digit ANI.”
- If Feature Group D operator-type signaling is used on the MF trunk from a wireline end office to the PIF component of the Legacy Network Gateway, the PIF component shall be capable of receiving and processing an ANI sequence consisting of “II + 7/10-digit ANI.”

---

<sup>26</sup> Note that, in the case of certain legacy wireless emergency call originations, the location server/database will need to query an element in the legacy wireless network (i.e., an MPC/GMLC) to obtain location information associated with the emergency call.

- If the Legacy Network Gateway receives an emergency call that originates in a wireless network and is routed over an MF trunk group from an MSC, the PIF component of the Legacy Network Gateway shall be capable of receiving and processing Feature Group D signaling as described below:
  - If an emergency call originates in a wireless network and is routed from an MSC to the Legacy Network Gateway over an MF trunk group, and ESRD is outpulsed with the ANI, the PIF component of the Legacy Network Gateway shall be capable of receiving and processing “II+7/10-digit+10-digit” Feature Group D-type signaling, where ANI is outpulsed as the first 7/10 digit number, and ESRD is outpulsed as the second 10-digit number (i.e., the called party number).
  - If an emergency call originates in a Commercial Mobile Radio Service (CMRS)-type wireless network and is routed from an MSC to the Legacy Network Gateway over an MF trunk group, and the wireless network uses the Wireline Compatibility Mode approach (i.e., only the ESRK is signaled), the PIF component of the Legacy Network Gateway shall be capable of receiving and processing an ESRK following the “II” (i.e., as ANI), and the digits “9-1-1,” “1-1,” or “1” as the called number.
- The PIF component of the Legacy Network Gateway shall be capable of receiving and processing an on-hook indication from a wireline switch or MSC, and shall generate a SIP BYE message toward the NIF, as described in Section 7.1.1.3.

#### **7.1.1.2 SS7 Interface**

When a wireline end office or MSC determines that an SS7 Initial Address Message (IAM) associated with a 9-1-1 call is to be generated, it will also need to generate and pass some Message Transfer Part (MTP)-level information, along with the Integrated Services Digital Network User Part (ISUP) information, to the Legacy Network Gateway.

##### **7.1.1.2.1 SS7 Message Transfer Part (MTP) Signaling for 9-1-1 Call Setup**

The wireline end office/MSC will be responsible for generating information that will be populated in the MTP Signaling Information Field (SIF) and the Service Information Octet (SIO) portions of the IAM sent to the Legacy Network Gateway.

The SIO contains the service indicator that identifies the MTP user involved in the message. In the case of a call setup message generated by a wireline end office or MSC, the service indicator will identify the ISDN User Part as the MTP user. The subservice field will indicate that the message is a national network message and will identify the MTP message priority. In the case of IAMs related to 9-1-1 calls, the message priority will have the value “1” (where priority 3 is the highest priority

assigned to SS7 messages).<sup>27</sup> Therefore, the PIF component of the Legacy Network Gateway shall be capable of receiving and processing an IAM that contains MTP information that includes a Service Information Octet (SIO) that contains the following information:

- The service indicator shall identify the ISDN User Part as the MTP user
- The subservice field shall indicate that the message is a national network message and that the message priority has a value of “1.”

The SIF contains a routing label, consisting of the Originating and Destination Point Codes, as well as the Signaling Link Selection value for the message, a Circuit Identification Code associated with the trunk selected for the call, a Message Type Code identifying the message as an Initial Address Message (IAM), and the content of the IAM itself. The PIF component of the Legacy Network Gateway shall be capable of receiving and processing an IAM that contains MTP information that includes a Signaling Information Field (SIF) containing the following information:

- A routing label that contains the point code of the wireline end office or MSC in the Originating Point Code field, the point code of the Legacy Network Gateway in the Destination Point Code field, and an SLS code assigned by the wireline end office/MSC.
- A Circuit Identification Code assigned by the wireline end office/MSC and associated with the trunk selected for the call.
- A Message Type code identifying the message as an IAM.
- The content of the IAM itself.

Further details related to MTP message structure can be found in GR-246-CORE, Chapter T1.110.1, Section 5.1 and Chapter T1.111.3, Section 2.

#### **7.1.1.2.2 SS7 ISUP Signaling for 9-1-1 Call Setup**

This subsection describes requirements on the Legacy Network Gateway for processing ISUP signaling related to the receipt of emergency calls originated by legacy wireline and wireless customers over an SS7-controlled trunk. It is assumed that the trunk group from the wireline end office or MSC to the Legacy Network Gateway is a dedicated trunk group per carrier.

If the incoming trunk to the Legacy Network Gateway is an SS7-controlled dedicated trunk selected by a wireline end office or wireless MSC, the PIF component of the Legacy Network Gateway shall be capable of receiving and processing an ISUP IAM containing parameters populated as described in GR-2956-CORE, *CCS/SS7 Generic Requirements in Support of E9-1-1 Service*, Sections 5.2.1.2.1, R2956-77 and 5.2.1.4.1, R2956-82, respectively.

---

<sup>27</sup> Note that the MTP message priority does not determine which messages are processed first when received at a node, but is used instead to determine which messages should be discarded if the SS7 network experiences congestion.

The PIF component of the Legacy Network Gateway shall also be capable of receiving and processing an ISUP Release (REL) message from a wireline end office or MSC, formatted as described in Table A-5 of GR-317-CORE, and generating a Release Complete Message (RLC) formatted as described in Table A-6 of GR-317-CORE in response. The PIF component of the Legacy Network Gateway will also generate a SIP BYE message toward the NIF, as described in Section 7.1.1.3.

The PIF component of the Legacy Network Gateway shall be capable of receiving and processing supervisory ISUP messages sent by wireline end offices and MSCs (e.g., Blocking, Blocking Acknowledgement). The PIF component shall follow the procedures described in Section 3.1.4 of GR-317-CORE for processing these messages.

### 7.1.1.3 Internal Interface to the NIF Component

The PIF component of the Legacy Network Gateway must have the capability to use standard interworking procedures, as defined in ATIS T1.679-2004 , IETF Internet Draft draft-patel-dispatch-cpc-oli-parameter-02, and IETF Internet Draft draft-york-sipping-p-charge-info-08, to generate a SIP INVITE message based on incoming MF or SS7 signaling, and pass that INVITE message to the NIF component of the Legacy Network Gateway.<sup>28</sup>

The SIP INVITE generated by the PIF will consist of the following information:

- A Request-URI that contains the information signaled in the SS7 Called Party Number parameter (per T1.679-2004) or as the MF called number
- A To header that contains the information signaled in the SS7 Called Party Number parameter (per T1.679-2004) or as the MF called number
- A From header that contains the information signaled in an SS7 Generic Digits Parameter [GDP], if present.

If a GDP is not received in incoming signaling, the From header will be populated with the information signaled in the SS7 Calling Party Number parameter (if present).

- A P-Asserted-Identity (PAI) header that is populated with the information contained in the SS7 Calling Party Number parameter (per T1.679-2004). In addition, the PAI header will also contain the content of the SS7 Calling Party Category (CPC) parameter and the Originating Line Information (OLI) parameter, if present in the received SS7 Initial Address Message (IAM), (per draft-patel-dispatch-cpc-oli-parameter-02)

---

<sup>28</sup> Note that interworking of the ISUP Generic Digits Parameter (GDP) is based on existing implementations where the principles described in ITU-T Q.1912.5 for interworking the ISUP Generic Number parameter (i.e., the ITU-T equivalent of the ANSI Generic Name parameter) with the SIP From header are also applied to the ISUP GDP.

- A P-Charge-Info header that is populated with the information that was contained in the SS7 Charge Number parameter (per draft-york-sipping-p-charge-info-08) or was signaled as the MF ANI
- A Contact header that contains the trunk group parameters that identify the ingress trunk group to the Legacy Network Gateway, as defined in RFC 4904
- A Via header that is populated with the element identifier (see Section 3.1.3) for the Legacy Network Gateway
- An SDP offer that includes the G.711 codec.

The PIF component of the Legacy Network Gateway shall be capable of receiving and processing a SIP Trying (100) message passed to it by the NIF component, acknowledging receipt of the INVITE that was previously generated by the PIF component.

The PIF component of the Legacy Network Gateway shall also be capable of receiving and processing a 180 Ringing message. If the incoming trunk group to the Legacy Network Gateway is an SS7 trunk group, then upon receiving the 180 Ringing message, the PIF component of the Legacy Network Gateway shall generate an ISUP Address Complete Message (ACM) formatted as described in Section 7.2.1.1 of T1.679-2004 and Section 3.1.1.5 of GR-317-CORE, *LSSGR: Switching System Generic Requirements for Call Control Using the Integrated Services Digital Network User Part (ISDNUP)*, with the following clarification. It is expected that bits DC of the Backward Call Indicator parameter should be set to “01” indicating “subscriber free,” bits HG of the Backward Call Indicator parameter should be set to “00” indicating “no end-to-end method available,” bit I shall be set to “1” indicating “interworking encountered,” bit K shall be set to “0” indicating “ISDN User Part not used all the way,” and bit M shall be set to “0” indicating “terminating access non-ISDN.”

The PIF component of the Legacy Network Gateway shall be capable of receiving and processing a 200 OK message, indicating that the call has been answered. If the incoming trunk to the Legacy Network Gateway is an SS7 trunk, then upon receiving the 200 OK message, the PIF shall generate an ISUP Answer Message (ANM) formatted as described in Section 3.1.1.6 of GR-317-CORE. If ANM is the first backward message sent by the Legacy Network Gateway (i.e., no ACM is sent previously due to the 200 OK being the first SIP message received), the Legacy Network Gateway will follow the procedures specified in Section 7.5.1 of T1.679-2004. Specifically, the Called Party’s Status indicator (Bit DC) of the Backward Call Indicators parameter will be set to “no indication,” bit I shall be set to “1” indicating “interworking encountered,” bit K shall be set to “0” indicating “ISDN User Part not used all the way,” and bit M shall be set to “0” indicating “terminating access non-ISDN.”

If the incoming trunk to the Legacy Network Gateway is an MF trunk, then upon receiving the 200 OK message, the PIF shall generate an answer signal to the wireline switch or MSC.

The PIF component of the Legacy Network Gateway shall be capable of receiving and processing a SIP BYE message, and acknowledging the BYE by returning a 200 OK message to the NIF. If the incoming trunk to the Legacy Network Gateway is an SS7 trunk, then upon receipt of the BYE message, the PIF shall generate an ISUP REL message, and be capable of receiving and processing

an ISUP RLC sent in response. If the incoming trunk to the Legacy Network Gateway is an MF trunk, then upon receipt of the BYE message, the PIF shall generate an on-hook signal to the wireline switch or MSC.

The PIF shall also be capable of generating a BYE message and sending it to the NIF if an ISUP REL is received from the wireline switch or MSC, and receiving and processing a 200 OK message from the NIF sent in acknowledgement.

If the PIF component receives other SIP messages from the NIF component, it shall process them per RFC 3261.

## **7.1.2 NG9-1-1 specific Interwork Function (NIF)**

### **7.1.2.1 1.1.2.1 NIF Handling of INVITE from PIF**

The NIF component of the Legacy Network Gateway functional element is expected to provide special processing of the information received in the incoming INVITE message from the PIF component to facilitate call delivery to an i3 ESInet. The NIF will determine based on the incoming trunk group and/or the incoming signaling, whether the call is a wireline or wireless emergency call. If the call is received over an MF trunk group, the NIF will make this determination based on the incoming trunk group parameters included in the Contact header of the INVITE message from the PIF. If the call is received over an SS7 trunk group, the NIF will make this determination based on the coding of the cpc and oli parameters in the PAI header of the INVITE message from the PIF and/or the ingress trunk group parameters in the Contact header of the INVITE message from the PIF. Based on this determination, the NIF will extract the appropriate information (i.e., calling party number, charge number, and/or ESRD) from the incoming signaling to be used as the location key and shall pass it to the Location Interwork Function (LIF) for use in obtaining caller location information. (See Section 7.1.3 for further discussion of LIF functionality and interfaces.)

If the NIF determines that the incoming call is a legacy wireline emergency call, and only one 10-digit number is received in incoming signaling as the Calling Party Number (CPN)/ANI (i.e., the URI in the From, PAI, and P-Charge-Info headers of the INVITE message received from the PIF contains the same 10-digit CPN/ANI), the NIF will pass this number to the LIF to use in retrieving the location for the call.<sup>29</sup> If the NIF determines that the incoming call is a legacy wireline emergency call and two different 10-digit numbers are received in incoming signaling (i.e., the INVITE message from the PIF contains a URI associated with the Charge Number in the P-Charge-Info header and a different URI associated with the CPN in the PAI header) the NIF must support a configuration option to tell it which 10-digit number to send to the LIF as input to location retrieval.

---

<sup>29</sup> Note that this processing will also apply to wireless Wireline Compatibility Mode calls, since these are marked as wireline in incoming signaling and contain a single 10-digit number, the ESRK, which is signaled as the SS7 CPN or MF ANI.

If the NIF determines (based on the `oli` parameter in the PAI header or the trunk group information in the Contact header) that the incoming call is a legacy wireless emergency call, and both a callback number (i.e., Mobile Directory Number [MDN]) and an ESRD are received in incoming signaling, the NIF will send both numbers to the LIF since both are required to uniquely identify the call. The NIF will determine, based on configured information associated with the trunk group identified in the trunk group parameters within the Contact header of the received INVITE, where to extract the callback information and ESRD from. The ESRD may be populated in the Request URI/To headers or in the From header. The MDN may be populated in the From header or the PAI header.

(See Section 7.1.3 for further discussion of what the LIF does with this information.)

### **7.1.2.2 NIF Handling of Location Information from the LIF**

Once the NIF receives location information from the LIF in geo or civic format, the NIF must be capable of generating a routing request to an ECRF. The NIF shall generate a LoST query, which includes the location information provided by the LIF and an appropriate service URN (i.e., `urn:service:sos`), following the procedures described in Section 4.5.

Upon receiving the response from the ECRF, the NIF will determine the outgoing route for the call using the URI of the target ESRP received in the LoST response. If the NIF component of the Legacy Network Gateway does not receive a response to a LoST query within a provisioned time period, or receives an error indication from the ECRF, it shall log the event and route the call based on a provisioned default ESRP URI.

In addition to determining the outgoing route, the NIF may generate a data structure that contains additional data about the call, along with a pointer/reference to that data structure. The data structure shall contain the mandatory information identified in Section 3.1 of NENA 71-001, as well as any other non-location information associated with the call that is provided to the NIF by the LIF, formatted according to NENA 71-001. The pointer will contain the URI of the database where the additional information is stored. The URI generated by the NIF should include the callback number. If there is only static information and no per-call information, the NIF may include a reference URI to a static database that may be maintained at the NIF or elsewhere if maintained by the 9-1-1 Authority. The NIF will include the reference URI in the Call-Info header of the INVITE message sent to the ESRP.

### **7.1.2.3 SIP Interface to the ESInet**

The NIF is expected to behave as a B2BUA and generate a SIP INVITE message to be sent to the ESRP. This INVITE message will contain information received in the INVITE message from the PIF component, as well as location and callback information received from the LIF component, and the reference URI for the additional data structure generated by the NIF. Specifically, the INVITE message will contain the following information:

- A Request-URI that contains a service URN in the “sos” tree, i.e., `urn:service:sos`
- A To header that contains the digits “911”
- A From header that contains the callback number (or Originating TN for legacy wireline emergency call originations) retrieved by the LIF component. If the call was originated by a

non-initialized mobile caller (i.e., the callback number is of the form 911+ “last 7 digits of the ESN or IMEI expressed as a decimal”) the From header will contain a value of “Anonymous.”

- A P-Asserted-Identity (PAI) header that contains the callback number retrieved by the LIF component or received in incoming signaling (for legacy wireline emergency call originations). If the call was originated by a non-initialized mobile caller, the PAI header will be omitted.
- A Via header that is populated with the element identifier (see Section 3.1.3) for the Legacy Network Gateway
- A Route header that contains the ESRP URI obtained from the ECRF
- A Contact header that contains a SIP URI or tel URI identifying the user to facilitate an immediate call back to the device that placed the emergency call. The Legacy Network Gateway constructs this URI, which can be anything that leads back to the Legacy Network Gateway and identifies the device which placed the call. In this case, the Contact header is expected to include the callback number that was retrieved by the LIF.
- A Supported header that contains the “geolocation” option tag.
- A Geolocation header that either:
  - Points to the message body (using a “Content Identification (cid)” URI, as defined in RFC 2392) where a PIDF-LO containing the location value retrieved by the LIF is coded (see Section 7.1.3),<sup>30</sup> or
  - Contains a location-by-reference URI.<sup>31</sup>
- An SDP offer that includes the G.711 codec.
- A Call Info header that contains a URI associated with the database that contains the “Additional Data Associated a Call” data structure created by the Legacy Network Gateway which, when de-referenced, would yield additional information about the call
- A P-Preferred-Identity header populated with 911 + “last 7 digits of the ESN or IMEI expressed as a decimal” if the call was originated by a non-initialized mobile caller.

After sending the SIP INVITE to the ESInet, the NIF shall return a SIP Trying (100) message to the PIF.

---

<sup>30</sup> This method will be used for wireline emergency calls and may also be used for emergency calls that originate in wireless networks that are only Phase 1 capable.

<sup>31</sup> This method will be used for wireless Phase 2 calls to allow the PSAP to query for initial location and location updates.

The NIF component shall be capable of receiving and processing a 180 Ringing message from the ESInet in response to the SIP INVITE. If the NIF component receives a 180 Ringing message, it shall send a 180 Ringing message to the PIF component.

The NIF component shall also be capable of receiving and processing a 200 OK message from the ESInet. If the NIF component receives a 200 OK message from the ESInet, it shall send it to the PIF component. The NIF component shall be capable of receiving and processing an ACK message from the PIF component in response to the 200 OK message. The NIF component shall subsequently send an ACK message to the ESInet.

The NIF component shall be capable of receiving and processing a BYE message from the ESInet. If the NIF component receives a BYE message from the ESInet, it shall pass it to the PIF component. The NIF component shall be capable of receiving and processing a 200 OK message from the PIF component in response to the BYE message, and shall subsequently send a 200 OK message to the ESInet.

If the NIF component receives other SIP messages from the ESInet, it shall validate them and if necessary, apply the appropriate error handling per RFC 3261. If the messages pass the validity checks, the NIF component shall pass them to the PIF component.

The NIF component shall be capable of receiving and processing a BYE message from the PIF component. If the NIF component receives a BYE message from the PIF component, it shall send a BYE message to the ESInet. Upon receiving a 200 OK message from the ESInet in response to the BYE message, the NIF component shall return a 200 OK message to the PIF component.

### **7.1.3 Location Interwork Function (LIF)**

At the request of the NIF, the LIF will invoke location retrieval functionality to obtain the location information that will be used as the basis for call routing and that will be delivered to the PSAP. Specifically the LIF will query an associated location server/database. If the call is a wireline emergency call, the associated database will contain location information in the form of a location value. This may also be the case for Phase 1 wireless emergency calls, depending on the implementation. If the call is a wireless Phase 2 emergency call (or a Phase 1 wireless emergency call using this implementation), the associated database will query an MPC/GMLC for location information.

The data in the internal location server/database may be provisioned using proprietary mechanisms/interfaces (e.g., using the existing provisioning flows, systems and interfaces that are used for provisioning legacy ALI databases today), or using a standard provisioning interface, as specified in a subsequent NENA standard, depending on the business agreements that exist between the Legacy Network Gateway provider and the data owners.

The LIF may receive one or two 10-digit numbers/keys from the NIF to be used for location retrieval/acquisition. Upon receiving the key(s), the LIF will consult “steering” data to determine whether another system must be queried to obtain the location information. If the key(s) is (are) not present in the steering data, the LIF will retrieve location data from its associated database. Specifically, if the LIF receives only a single 10-digit key (i.e., CPN/ANI or ESRK) from the NIF, it will determine whether this number is contained in its steering data. If it is, it will generate an E2,

PAM, or MLP query to the system identified in the steering data to obtain the location information. If it is not contained in the steering data, it will retrieve the location information from its associated location database. If the LIF receives two 10-digit numbers (i.e., callback number and ESRD), the LIF shall again search for these numbers in its steering data. If it finds them, it will generate an E2 or MLP query to the system identified in the steering data. If not, it will utilize internally-defined procedures/protocols to retrieve the location information from an associated location server/database. .

If the call is from a legacy wireline originating network, it is expected that the LIF will map the CPN/ANI to a location value (in the form of a civic address) and other non-location call-related information (e.g., callback number, class of service). The location value and any non-location information will be returned to the NIF.

If the call originated in a legacy wireless network using Wireline Compatibility Mode, the LIF will interrogate its steering data with the ESRK. The steering data will contain the address of the MPC/GMLC in the legacy wireless network that should be queried for initial/updated location information. The LIF will generate an E2, PAM, or MLP query containing the ESRK to the MPC/GMLC and must be capable of processing an E2/PAM/MLP response. The LIF will return the location value returned by the MPC/GMLC (which is initially expected to convey information about the location of the cell site/sector) to the NIF, along with a SIP or HELD location reference that contains the ESRK and the URI of the Legacy Network Gateway and any other non-location information, including the callback number.

If the call originated in a legacy wireless network which supports the signaling of callback number and ESRD, the LIF will consult its steering data using the ESRD. The steering data includes the address of the MPC/GMLC in the legacy wireless network that should be queried for initial/updated location information. If the LIF finds steering data corresponding to the ESRD, it will generate an E2/MLP query containing the callback number and ESRD to the MPC/GMLC and must be capable of processing an E2/MLP response. If the legacy wireless network is only Phase I-capable, the LIF may not find steering data that corresponds to the ESRD and instead retrieve from its local database a static location value that is associated with the cell site/sector, along with any other non-location information associated with the call and return it to the NIF.

If the call originated in a wireless network which supports the signaling of callback number and ESRD, and the originating legacy wireless network is Phase II capable, the steering data in the associated location server/database associated with callback number and ESRD should include the address of the MPC/GMLC in the legacy wireless network to which an E2/MLP query for initial/updated location information should be sent. The LIF will pass the location value returned by the MPC/GMLC (which is initially expected to convey the location of the cell site/sector) to the NIF for use in querying the ECRF. The LIF will also pass a SIP or HELD location reference that uniquely identifies the location record and the Legacy Network Gateway to the NIF, along with any other non-location information received in the E2 response.

Since the Legacy Network Gateway may provide a location reference (e.g., associated with a legacy wireless emergency call origination) in the INVITE that it sends to the ESRP, the LIF must also support the dereferencing of location references by external elements (e.g., ESRPs, PSAPs). The interface used by a LIF for dereferencing is the same as the interface used by a LIS for

dereferencing, as described in Section 4.2. Specifically, the LIF must support SIP and/or HELD dereferencing protocols, and must be capable of applying the appropriate one based on the format of the location reference provided as output from the location retrieval process.

Note: This version does not describe interworking between SIP/HELD and E2/MLP/... for location conveyance and updates. This will be covered in a future edition of this document.

## 7.2 Legacy PSAP Gateway

The Legacy PSAP Gateway is a signaling and media interconnection point between an ESInet and a legacy PSAP. It plays a role in the delivery of emergency calls that traverse an i3 ESInet to get to a legacy PSAP, as well as in the transfer and alternate routing of emergency calls between legacy PSAPs and i3 PSAPs. The Legacy PSAP Gateway supports an IP (i.e., SIP) interface towards the ESInet on one side, and a traditional MF or Enhanced MF interface (comparable to the interface between a traditional Selective Router and a legacy PSAP) on the other. The Legacy PSAP Gateway also includes an ALI interface (as defined in NENA 04-001 or NENA 04-005) which can accept an ALI query from the legacy PSAP. The legacy PSAP controller supplies an appropriate ALI query key (i.e., “ANI”) for the call. When queried with this key, the Legacy PSAP Gateway responds with the location. If the emergency call routed via the ESInet contains a location by value, the Legacy PSAP Gateway responds with that value. If the ESInet provides a location by reference, the ALI query to the Legacy PSAP Gateway results in a dereference operation from the gateway to the LIS or Legacy Network Gateway. The results of the dereference operation are returned to the Legacy PSAP Gateway, and subsequently passed from the Legacy PSAP Gateway to the legacy PSAP. The ALI response generated by the Legacy PSAP Gateway will also contain additional information that may be obtained from a variety of sources. See Section 7.2.3 for further discussion.

The Legacy PSAP Gateway functional element contains three functional components, as illustrated in Figure 7-1<sup>32</sup>:

1. (SIP -MF/E-MF/DTMF) Protocol Interworking Function (PIF). This functional component interworks the SIP protocol to traditional MF, Enhanced MF, or ISDN, or other protocols, as appropriate for the interconnected PSAP<sup>33</sup>. It is assumed that the PIF functional component does not require specialized hardware, and can therefore be implemented using commercially available hardware. (See Section 7.2.1 for further details.)

---

<sup>32</sup> Note that the functional decomposition of the Legacy PSAP Gateway described in this section is provided to assist the reader in understanding the functions and external interfaces that a Legacy PSAP Gateway must support. Actual implementations may distribute the functionality required of the Legacy PSAP Gateway differently among functional components, as long as all of the functions and external interfaces described herein are supported.

<sup>33</sup> Note that only interworking between SIP and traditional MF, E-MF and DTMF signaling are addressed in this specification. Interworking with custom ISDN and other protocols that may be used by legacy PSAPs is outside the scope of this specification.

2. NG9-1-1 specific Interwork Function (NIF). This functional component provides NG9-1-1-specific processing of the call signaling, which includes special handling of attached location, selection of trunk groups, and callback number mapping, etc. The NIF associates one form of identifier with another, which includes mapping any combination of identifiers, such as 10 digit NANP numbers, non-NANP identifiers (pANIs), E.164 (International 11-15 digit) identifiers, and SIP URIs. For example, when a call is received with location and a SIP URI and it is destined for a legacy PSAP, the NIF maps the attached location and callback identifier information to a pANI that is then delivered to the PSAP with the call and used by the PSAP as a key for subsequent location and callback information retrieval. In addition, the NIF includes functionality to support transfer requests and, optionally, requests for the invocation of alternate routing (e.g., in cases of PSAP evacuation.) This functional component should be viewed as a Back to Back User Agent (B2BUA) in front of the PIF. (See Section 7.2.2 for further details.)
3. Location Interwork Function (LIF). This functional component supports standard ALI query/response interface protocols, as well as the interworking of NG9-1-1 relevant data elements to a standardized ALI format for population in ALI response messages. (See Section 7.2.3 for further details.)

The following subsections describe each of these functional components of the Legacy PSAP Gateway in detail.

Note: The LPG must log all significant events. Log record formats for this purpose will be provided in a future edition of this document.

### **7.2.1 Protocol Interworking Function (PIF)**

The PIF component of the Legacy PSAP Gateway will be responsible for interworking the SIP signaling received from the NIF component with the traditional or Enhanced MF signaling sent over the interface to the destination PSAP. The PIF will also be responsible for accepting Dual Tone Multi Frequency (DTMF) signaling (e.g., associated with transfer requests) from the legacy PSAP and sending it to the NIF component in RTP packets, per RFC 2833.

The PIF component of the Legacy PSAP Gateway must be capable of accepting a SIP INVITE message generated by the NIF component (see Section 7.2.2.3).

Upon receiving the INVITE method, the PIF component of the Legacy PSAP Gateway will identify the destination PSAP based on the information in the Request URI and select an outgoing trunk to that PSAP based on the outgoing trunk group information in the Contact header. Based on the information received in incoming signaling from the NIF component, the PIF component will generate either traditional MF (i.e., 8-digit CAMA) or Enhanced MF (E-MF) call signaling. In both cases, the MF signaling sequences used in delivering emergency calls to legacy PSAPs include a

“Special Handling” indication along with the ANI<sup>34</sup>. (See Section 7.2.2.2 for further information.) Legacy PSAPs that support E-MF interfaces may support the delivery of a 10-digit key or pANI which serves as a reference to the caller’s location information in addition to a 10-digit callback number and “Special Handling” indication. The traditional MF and E-MF signaling interfaces that may be supported by a legacy PSAP are described below.

### 7.2.1.1 Traditional MF Interface

If a traditional MF interface is supported by the legacy PSAP, the signaling interworking provided by the Legacy PSAP Gateway will be as depicted below:

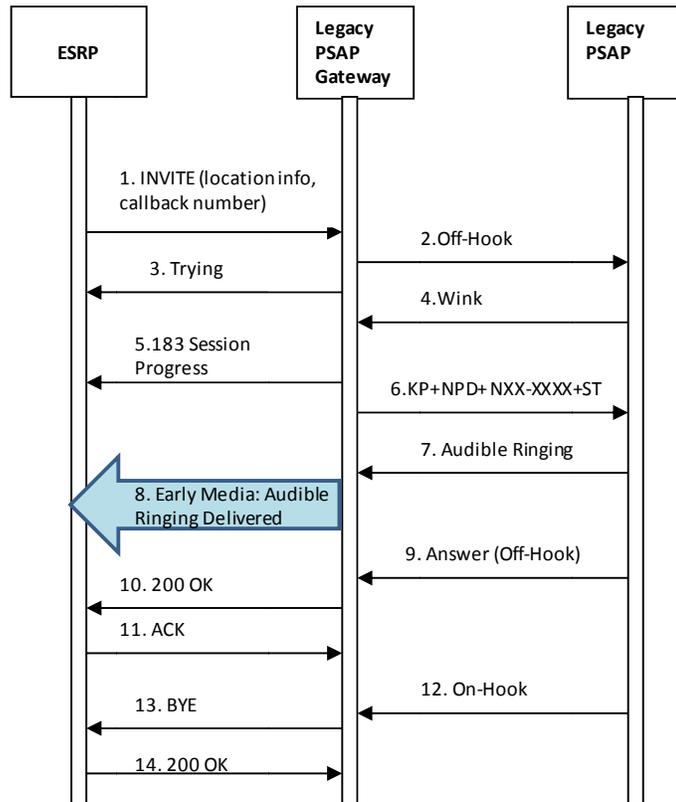


Figure 7-2. Call Delivery with Traditional MF Interface to PSAP

The emergency call delivery flow illustrated above begins when the ESRP determines that a call is to be delivered to a particular PSAP, and that the route to that PSAP is via the Legacy PSAP Gateway.

<sup>34</sup> The “ANI” may contain the caller’s callback information or a query key (i.e., a pANI).

1. The ESRP constructs a SIP INVITE and sends it to the Legacy PSAP Gateway. The SIP INVITE is populated as described in RFC 3261 [12], with the clarifications provided in Sections 4.1 and 7.2.2.
2. When the NIF component of the Legacy PSAP Gateway receives the INVITE message, it follows the procedures described in RFC 3261 [12] for processing the INVITE, with the following clarifications. The NIF component of the Legacy PSAP Gateway uses the content of the INVITE to determine that the call is an emergency call, and to determine the information that will be signaled to the PSAP CPE to support such functions as display of ANI and queries for ALI information (i.e., the Numbering Plan Digit (NPD)<sup>35</sup> and ANI digits to be signaled via MF to the legacy PSAP).

If the INVITE contains both callback information and location information, the NIF component will be provisioned to determine, on a per-PSAP basis, whether the information signaled as the ANI will be associated with the callback information or the location information.

It is desirable that a callback number be delivered to the PSAP as the “ANI” for emergency calls that traverse an i3 ESInet, whenever possible. This will give the PSAP the ability to call back the emergency caller even if attempts to access ALI information are unsuccessful.

If, based on provisioning, the PSAP should receive callback information, the ANI will usually be based on the callback number/address included in the PAI (if available) or the From header of the incoming INVITE message.

If the PAI or the From header contains callback information that is in the form of a 10-digit NANP number, and the NPA portion of that number is appropriate for the target PSAP (i.e., can be associated with an appropriate NPD value), the NIF will identify an NPD associated with the NPA and will signal the NPD-NXX-XXXX in the From header of the INVITE message sent to the PIF component. The PIF component will then prepare to signal that NPD along with the NXX-XXXX portion of the callback number received in the incoming INVITE message in the ANI sequence.

If the PAI or the From header in the INVITE message received by the NIF contains callback information that is either not in the form of a 10-digit NANP number, or is in the form of a 10-digit NANP number, but the NPA portion of that number is not appropriate for the target PSAP, the NIF will identify an NPD associated with an NPA that is appropriate for the target PSAP, and will generate a 7-digit pANI that consists of the following:

- An NXX of “511”

---

<sup>35</sup> See Section **Error! Reference source not found.** for further discussion of NPD digits.

- An XXXX consisting of a sequential number from 0000 to 9999 with wrap around<sup>36</sup>.

The NIF will signal the pANI in the From header of the INVITE message it sends to the PIF.

If, based on provisioning, the PSAP should only receive a location key, the NIF will signal that information to the PIF in a From header that consists of an NPD associated with an NPA that is appropriate for the target PSAP and a 7-digit pANI of the form 511-XXXX.

The PIF component of the Legacy Network Gateway creates connectivity (i.e., seizes an MF trunk) to the PSAP CPE for the emergency call.

3. After sending the INVITE message to the PIF component, the NIF component sends a SIP 100 Trying message to the ESRP. The PIF also sends a SIP 100 Trying message to the NIF component (not shown).
4. The PSAP CPE responds with a “wink” indicating that it is ready to receive further signaling related to the emergency call.
5. The PIF component signals a SIP 183 Session Progress back to the NIF (not shown), and the NIF signals a SIP 183 Session Progress message back to the ESRP indicating that connectivity should be established in the backward direction to support call progress signaling (i.e., early media/audible ringing) provided by PSAP CPE.
6. The PIF signals an MF digit string consisting of a Key Pulse (KP) signal followed by the NPD and seven NXX-XXXX digits derived in Step 2. The MF signaling sequence ends with the Start (ST) signal. (See GR-350-CORE or NENA 04-001 for further discussion of signaling sequences associated with traditional MF interfaces.)
7. Upon receiving complete ANI information, the PSAP signals the attendant and returns audible ringing to the calling party.
8. Early media/audible ringing is delivered via the ESRP to the calling UA.
9. The PSAP call taker answers the call and the off-hook signal is conveyed to the PIF.
10. The PIF component sends a SIP 200 OK message to the NIF component (not shown) and the NIF component sends a SIP 200 OK message to the ESRP.
11. The ESRP forwards the SIP ACK generated by the calling UA to the NIF component of the Legacy PSAP Gateway to confirm acceptance of the answer indication. The NIF component forwards the SIP ACK to the PIF component (not shown).

*The media streams are established. The caller and the PSAP call taker can now communicate.*

---

<sup>36</sup> Because the pANI is only sent by the Legacy PSAP Gateway to the legacy PSAP, and is not sent onward to any other entity, there is no significance beyond the gateway and the legacy PSAP.

12. In this example flow, the PSAP initiates the release of the call by sending an on-hook signal to the Legacy PSAP Gateway.
13. In response to receiving the on-hook signal from the legacy PSAP CPE, the PIF component sends a SIP BYE message to the NIF (not shown) and the NIF component sends a BYE message to the ESRP.
14. The ESRP forwards the 200 OK message generated by the calling UA, confirming the call termination.

### 7.2.1.2 Enhanced MF (E-MF) Interface

As described in Section 7.2.2.3, the use of E-MF signaling on an interface to a legacy PSAP will be selectable on a trunk group basis by the Legacy PSAP Gateway. A legacy PSAP that supports an E-MF interface may be capable of receiving one or two MF signaling sequences. If a PSAP supports the delivery of only one 10-digit number, and only the callback number, referred to in E-MF as the Calling Station Number, is available, the PIF component of the Legacy PSAP Gateway shall signal the following:

**KP + II + NPA NXX XXXX ST'**,

where NPA NXX XXXX is the Calling Station Number obtained from the From header of the incoming INVITE message **sent by** the NIF and the ST' denotes the omission of the second 10-digit number sequence. The value to be signaled forward in the II digits will be obtained from the oli parameter in the From header of the INVITE message from the NIF. (See Section 7.2.2.3 for further discussion of encoding of the II digits.) Today, this scenario is typically associated with the delivery of wireline emergency calls to legacy PSAPs.

Where the PSAP supports delivery of two 10-digit numbers via the E-MF interface, the PIF component of the Legacy PSAP Gateway shall signal the following:

**KP + II + NPA NXX XXXX ST KP NPA NXX XXXX ST**

where the first NPA NXX XXXX is the callback/Calling Station Number received in the PAI header of the INVITE from the NIF and the second NPA NXX XXXX contains a location key/reference formatted as a 10-digit NANP number obtained from the From header of the INVITE message from the NIF. The value to be signaled forward in the II digits will be obtained from the oli parameter in the PAI header of the INVITE message from the NIF. (See Section **Error! Reference source not found.** for further discussion of the encoding of the II digits.)<sup>37</sup> Today, this scenario is typically associated with the delivery of wireless emergency calls to legacy PSAPs.

---

<sup>37</sup> See GR-2953-CORE or NENA 03-002 for further discussion of MF signaling sequences associated with E-MF interfaces.

With respect to legacy emergency call originations, if a PSAP is capable of receiving only one 10-digit number, and both the callback number/Calling Station Number and location reference are available at the SR, the SR is provisioned to determine, on a per-PSAP basis, whether to signal the Calling Station Number or the location reference. For VoIP emergency call originations, if the PSAP is only capable of receiving one 10-digit number, and both callback information and location information are received by the Legacy PSAP Gateway in the incoming INVITE, the NIF component of the Legacy PSAP Gateway will determine, on a per-PSAP basis, whether to signal the callback information or location information to the legacy PSAP. In either case the PIF component of the Legacy PSAP Gateway shall signal the following:

**KP + II + NPA NXX XXXX + ST'**

where NPA NXX XXXX is the one 10-digit number specified by the PSAP and provided in the From header of the incoming INVITE message from the NIF. The II value to signal forward will be determined based on the information in the oli parameter in the From header of the received INVITE message.

(See Section 7.2.2.2 for a discussion of the encoding of the II digits under the above scenarios.)

The call flow for a legacy PSAP that utilizes an E-MF interface is the same as depicted in **Error! Reference source not found.** for a PSAP that utilizes a traditional MF interface, with the following modifications.

- In Step 3, the NIF component of the Legacy PSAP Gateway will determine, via provisioning, whether one or two 10-digit numbers are to be signaled to the destination PSAP, and will populate that information accordingly in the INVITE message it sends to the PIF (see Section 7.2.2.3.1). The PIF will determine the information to be populated in that/those signaling sequence(s) based on the information received in the INVITE from the NIF.

If, based on provisioning, the PSAP is supposed to receive two 10-digit numbers, the NIF will include a PAI header containing callback information and a From header containing location information in the INVITE message it sends to the PIF. The PIF will use the callback information in the PAI to populate the first MF sequence, and the location key/reference from the From header to populate the second MF sequence.

The PIF will populate the II digits based on the oli parameter in the PAI header of the INVITE from the NIF.

If, based on provisioning, the PSAP is supposed to receive only a single 10-digit number, the NIF will populate the associated information in the From header of the INVITE message it sends to the PIF. The PIF will take the information from the From header of the received INVITE to populate the single outgoing MF sequence. The PIF will populate the II digits based on the oli parameter in the From header of the INVITE from the NIF.

In Step 6, the signaling sequence generated by the PIF shall either consist of **KP + II + NPA NXX XXXX ST'** or **KP + II + NPA NXX XXXX ST KP NPA NXX XXXX ST**. If the PIF only receives a From header in the INVITE message from the NIF, it shall populate the MF signaling sequence **KP + NPA NXX XXXX + ST'** based on this information. If the PIF receives both a From header and a PAI header in the INVITE message from the NIF, it shall

populate the first MF sequence based on the content of the PAI header, and the second MF sequence based on the content of the From header.

If the PIF receives a From header and no PAI header in the INVITE message from the NIF, it will populate the II digits based on the oli parameter in the From header. If the PIF receives both a From header and a PAI header in the INVITE message from the NIF, it will populate the II digits based on the oli parameter in the PAI header.

### 7.2.2 NG9-1-1 Specific Interwork Function (NIF)

The NIF component of the Legacy PSAP Gateway functional element is expected to provide special processing of the information received in incoming call setup signaling to facilitate call delivery to legacy PSAPs, to assist legacy PSAPs in obtaining the necessary callback and location information, and to support feature functionality currently available to legacy PSAPs, such as call transfer and requests for alternate routing.

The NIF component of the Legacy PSAP Gateway must be capable of accepting SIP signaling associated with emergency call originations, as described in Section 4.1. Specifically, the NIF component of the Legacy Network Gateway must be capable of receiving and processing an INVITE that includes the following information:

- Request URI = PSAP URI resolving at the gateway<sup>38</sup>
- Max Forwards <70
- Record Route = ESRP URI
- Route header = urn:service:sos
- From = Callback Number/Address or “Anonymous,” if unavailable
- To: [sip:911@vsp.com](mailto:sip:911@vsp.com)
- PAI = the callback number/address or omitted if call is from a non-initialized mobile caller (i.e., P-Preferred-Identity containing 911 + last 7 digits of the ESN or IMEI expressed as a decimal” is present)
- P-Preferred-Identity = 911 + “last 7 digits of the ESN or IMEI expressed as a decimal” (if present for emergency calls originated by non-initialized mobile callers)
- Via = ESRP (added to other Via headers present in INVITE received by the terminating ESRP)

---

<sup>38</sup> A Legacy PSAP gateway could support more than one legacy PSAP. Each legacy PSAP would have a separate URI, but they would all resolve to the gateway. As an example, the PSAP URI for PSAP “A” might be [psapA@gateway1.esinet.net](mailto:psapA@gateway1.esinet.net) and the PSAP URI for PSAP “B” might be [psapB@gateway1.esinet.net](mailto:psapB@gateway1.esinet.net). The domain of the gateway in this example would be gateway1.esinet.net.

- Contact = SIP URI or tel URI identifying the user to facilitate an immediate call back to the device that placed the emergency call
- Supported = as received by the terminating ESRP
- SDP = as received by the terminating ESRP
- Geolocation = content id URI or location reference
- Call Info = a URI which, when de-referenced, would yield additional information about the call
- History-Info = as specified in RFC 4244 (will be present if call has undergone diversion)
- Reason – as specified in RFC 3326 (will be present if call has undergone diversion).

Upon receiving an INVITE message from an ESRP, the NIF component will analyze the signaled information and apply NG9-1-1-specific processing to ensure that the information delivered to the PSAP is in an acceptable format.

#### **7.2.2.1 Handling of Emergency Calls with Non-NANP Callback Information**

Traditional MF and E-MF interfaces to legacy PSAPs assume that callback information signaled to a PSAP will be in the form of a 10-digit NANP number. There are specific non-NANP number strings defined for use in scenarios where the callback number is either missing or garbled. It is possible that VoIP emergency call originations will contain callback information that is not in the form of (or easily converted to) a 10-digit NANP number. To address this situation, the NIF component of the Legacy PSAP Gateway will perform a mapping from the non-NANP callback information to a locally-significant digit string that can be delivered to the legacy PSAP via traditional MF or E-MF signaling. As described in Sections 7.2.1.1 and 7.2.1.2, the locally-significant digit string delivered to the PSAP will be of the form “NPD/NPA-511-XXXX.” If a pANI of the form NPD/NPA-511-XXXX is sent in the MF sequence corresponding to the callback number, the same digit string can be generated by the Legacy PSAP Gateway and delivered to the legacy PSAP as a pANI that represents location information received by the Legacy PSAP Gateway in incoming signaling.

Note that legacy PSAPs will not be able to initiate a callback if the callback information associated with the emergency call is not in the form of a NANP number.

#### **7.2.2.2 Special Handling Indication**

Whether a legacy PSAP supports a traditional MF interface or an E-MF interface, it is possible for the information that appears at the PSAP CPE display to “flash” if the call has first been default-routed or alternate-routed. Today, in a legacy E9-1-1 environment, the decision about whether or not to flash the display at the PSAP depends upon local administration of Emergency Services Number (ESN) information.

In a legacy E9-1-1 environment, default routing occurs when the initial Selective Routing process at the first E9-1-1 tandem fails, due to a valid ESN not being produced, or no valid Calling Station Information being available on a wireline call, or no valid cell site and sector information being available on a wireless call. Under these circumstances, the call is sent to the default ESN associated with the incoming trunk group for that call.

Alternate routing occurs when the interface to a selected PSAP is found to be busy for any of these conditions: traffic busy (all trunks in use), night transfer (make-busy key operated), or upon detection of a failure condition (all trunks out of service). The alternate PSAP (or other destination) to which the call is routed may be on the same E9-1-1 tandem as the first PSAP or it may be served by a different E9-1-1 tandem.

In a legacy environment, whether flashing will occur depends on the particular ESN used to point the call to the PSAP. Each Selective Router has a list of ESNs that indicate that flashing should occur when calls are directed to the associated PSAP. ESN definitions are under local control. An incoming call could be mapped to a flashing ESN at one tandem, and the same call could be mapped to a non-flashing ESN at the second tandem.

An E9-1-1 tandem indicates to the PSAP CPE that a flashing display should be provided by the NPD value or the “II” value signaled to the legacy PSAP in the MF signaling sequence. For PSAPs that support traditional MF interfaces, an NPD digit with a value of 0- 3 represents a steady ANI display. An NPD digit with a value of 4-7 represents a flashing ANI display (an NPD value of “8” is used for test calls.) For PSAPs that support an E-MF interface, an II value of “40” indicates a steady display, and a value of “44” represents a flashing display. (An II value of “48” is used for test calls.)

One other scenario in which the II digits are used to communicate “special handling” is where a PSAP supports the delivery of a single 10-digit number over an E-MF interface and expects the Calling Station Number to be delivered, but a 10-digit location reference is signaled instead because the Calling Station Number is not available.

In the current i3 architecture, the ESRP interacts with a PRF to identify alternate routing addresses based on policy information associated with the next hop in the signaling path. The i3 Solution must support a means of signaling forward an indication that alternate/default routing has been applied to an emergency call so that the Legacy PSAP Gateway can determine when to include a Special Handling Indication in the MF signaling it sends to the legacy PSAP.<sup>39</sup> The ESRP shall use the History-Info header (RFC4244 [44]) and the associated Reason header (RFC3326 [22]) to communicate an indication of alternate/default routing. The NIF component of the Legacy Network Gateway will determine the appropriate coding of the NPD or II based on the content of received History-Info and Reason headers and provisioning associated with the destination PSAP.

### 7.2.2.3 Internal Interface to the PIF Component

The NIF component will generate an INVITE message to be sent to the PIF component. This message will contain information from the incoming INVITE message associated with the emergency call, as well as any pANIs mapped by the NIF component. The NIF must determine,

---

<sup>39</sup> It is not currently assumed that a Legacy PSAP Gateway will have the intelligence to autonomously determine (e.g., via provisioning) an alternate PSAP based on detection of a busy or failure condition on the trunk to the primary PSAP.

based on provisioning, whether the interface to the target PSAP is a traditional or Enhanced MF interface so that it can populate the callback and location information correctly in the INVITE that it sends to the PIF component. The NIF will obtain callback information from the incoming INVITE message in the following way. If the incoming INVITE message contains a PAI header, it will use the information in this header as callback information. If the incoming INVITE message does not contain a PAI header, the NIF will look in the From header. If the From header contains a value other than “Anonymous,” the NIF will use the content of the From header as the callback information. If the From header contains the value “Anonymous” and a P-Preferred-Identity header is present in the message, the NIF will use the content of the P-Preferred-Identity as the callback information. The NIF will obtain location information from the Geolocation header of the incoming INVITE message.

If the PSAP supports a traditional MF interface, then the NIF will determine, based on provisioning associated with the destination PSAP, whether to populate the From header of the INVITE message that it sends to the PIF with an NPD + 7-digit number that is associated with callback information or with an NPD + 7-digit number that is associated with the location information.

If the PSAP expects callback information to be delivered but the callback information is unavailable or is of the form 911+ “last 7 digits of the ESN or IMEI expressed as a decimal,” and location information is available, the NIF should signal the location information in the From header. If the PSAP expects location information to be delivered and location information is not available, or if neither callback information nor location information is available, the digits “0-911-0TTT” shall be signaled in the From header. In a legacy environment, the “TTT” represents an end office identifier associated with the incoming trunk group to the E9-1-1 tandem. Further study is needed to determine what should be populated as the “TTT” value for calls originating from VoIP customers.

A legacy PSAP that supports an E-MF interface may be capable of receiving one or two MF signaling sequences. If a PSAP supports the delivery of only one 10-digit number, the NIF will determine, based on per-PSAP provisioning, whether callback information or location information should be populated in the From header of the INVITE message it sends to the PIF. If the expected 10-digit number (e.g., Calling Station Number) is unavailable, but the second number (e.g., corresponding to the caller’s location) is available, the available 10-digit number should be signaled in the From header. If neither 10-digit number is available, and only one 10-digit number is expected to be signaled over the E-MF interface, the digits “000-911-0TTT” shall be signaled in the From header.

If the legacy PSAP supports an E-MF interface and is capable of receiving two MF signaling sequences, the NIF will populate a 10-digit number that represents location in the From header and a 10-digit number that represents callback information in the PAI header of the INVITE it sends to the PIF.

If the legacy PSAP supports an Enhanced MF interface in which two 10-digit sequences are expected, and either the Calling Station Number or the location reference is unavailable, the NIF should substitute the digits “000-911-0TTT” for the missing information in the PAI or From header. If neither 10-digit number is available, and two 10-digit numbers are expected to be signaled over E-MF interface, the NIF shall substitute the digits “000-911-0TTT” for both the Calling Station Number and the location reference. Further study is needed to determine what should be populated as the ‘TTT’ value for calls originating from VoIP customers.

### 7.2.2.3.1 INVITE Message Sent from NIF Component to PIF Component

The INVITE message sent by the NIF component to the PIF component will contain the following information:

- Request URI = PSAP URI resolving at the gateway
- Max Forwards <70
- Record Route = ESRP URI
- Route header = urn:service:sos
- From = See Table 7-1
- To = [sip:911@vsp.com](mailto:sip:911@vsp.com)
- PAI = See Table 7-1
- Via = an identifier for the Legacy PSAP Gateway
- Contact = as received by the NIF component
- Supported = as received by the NIF component
- SDP = as received by the NIF component
- Geolocation = as received by the NIF component
- Call Info = as received by the NIF component
- History-Info = as received (if present in the INVITE message received by the NIF component)
- Reason = as received (if present in the INVITE message received by the NIF component)
- A Contact header that contains the trunk group parameters that identify the outgoing trunk group to the destination PSAP, as defined in RFC 4904.

**Table 7-1. Population of From and PAI Headers in INVITE Message Sent to PIF**

<b>PSAP Interface Supported</b>	<b>Scenario</b>	<b>From Header Content</b>	<b>PAI Header Content</b>
Traditional MF	Callback information expected and available	NPD-NXX-XXXX or NPD-511-XXXX (associated with callback information)	Not present
Traditional MF	Location information expected and available	NPD-511-XXXX (associated with location information)	Not present
Traditional MF	Callback information desired; only location information available or	NPD-511-XXXX (associated with location information)	Not present

<b>PSAP Interface Supported</b>	<b>Scenario</b>	<b>From Header Content</b>	<b>PAI Header Content</b>
	Non-initialized mobile caller		
Traditional MF	Location information desired; only callback information available	0-911-0TTT	Not present
Traditional MF	Neither callback nor location available	0-911-0TTT	Not present
Enhanced MF	Interface supports delivery of 20 digits; callback and location information are available	NPA-511-XXXX (associated with location information)	NPA-NXX-XXXX or NPA-511-XXXX (associated with callback information)  oli parameter
Enhanced MF	Interface supports delivery of 20 digits; callback is available, location is not available	000-911-0TTT	NPA-NXX-XXXX or NPA-511-XXXX (associated with callback information)  oli parameter
Enhanced MF	Interface supports delivery of 20 digits; location is available, callback is not available	NPA-511-XXXX (associated with location information)	000-911-0TTT
Enhanced MF	Interface supports delivery of 20 digits; non-initialized mobile caller, location available	NPA-511-XXXX (associated with location information)	911 + “last 7 digits of the ESN or IMEI expressed as a decimal”  oli parameter
Enhanced MF	Interface supports delivery of 20 digits; neither location nor callback is available	000-911-0TTT	000-911-0TTT
Enhanced MF	Interface supports delivery of 10 digits; Callback information expected and available	NPA-NXX-XXXX or NPA-511-XXXX (associated with callback information)	Not present

<b>PSAP Interface Supported</b>	<b>Scenario</b>	<b>From Header Content</b>	<b>PAI Header Content</b>
Enhanced MF	Interface supports delivery of 10 digits; Location information expected and available	oli parameter NPD-511-XXXX (associated with location information)	Not present
Enhanced MF	Interface supports delivery of 10 digits; Callback information desired; only location information available	oli parameter NPD-511-XXXX (associated with location information)	Not present
Enhanced MF	Interface supports delivery of 10 digits; Location information desired; only callback information available	oli parameter NPA-NXX-XXXX or NPA-511-XXXX (associated with callback information)	Not present
Enhanced MF	Interface supports delivery of 10 digits; Neither callback nor location available	000-911-0TTT	Not present
Enhanced MF	Interface supports delivery of 10 digits; Callback information desired; call is from a non-initialized mobile	911 + “last 7 digits of the ESN or IMEI expressed as a decimal” oli parameter	Not present

#### 7.2.2.4 Support for Emergency Call Transfer

When a legacy PSAP determines that it is necessary to transfer an emergency call, it sends a “flash” signal and waits for dial tone. Once the dial tone is received, the PSAP requests the transfer either by operating a key associated with a particular type of secondary PSAP (e.g., fire department) or a particular PSAP destination (e.g., using a speed calling feature), or by manually dialing the number of the desired destination.

When the PIF component of the Legacy PSAP Gateway detects a flash, it will follow the procedures defined in RFC 2833 for passing the “flash” signal to the NIF component of the Legacy PSAP

Gateway and provide dial tone to the legacy PSAP. The NIF component will interpret receipt of the flash as a request from a legacy PSAP to initiate a call transfer. In response to the dial tone, the PSAP will provide DTMF signaling in the form of a \*XX code, “# + 4 digits” or a 7/10-digit directory number. Upon receiving the “\*XX” code, “# + 4 digits,” or the 7/10-digit directory number of the destination party, the PIF component of the Legacy PSAP Gateway will pass the information to the NIF component using the mechanisms defined in RFC 2833. The NIF will interpret the DTMF information received from the NIF and request that a conference be created. The NIF will then generate a SIP REFER method to request that the caller (or B2BUA, depending on the architecture being used by the ESInet to support call transfer) be invited to the conference. The NIF component of the Legacy PSAP Gateway will subsequently generate another SIP REFER method to request that the conference bridge invite the transfer-to party to the conference. This latter REFER method will include an indication of the transfer-to party in the Refer-To header. The NIF will determine the transfer-to party in one of the following ways:

- If the PIF receives a 7/10-digit destination number in the transfer request signaling from the legacy PSAP and passes this information to the NIF using the mechanisms defined in RFC 2833, the NIF shall use this information to populate the URI in the Refer-To header of the outgoing REFER method.
- If the PIF receives a “# + 4-digits” in the transfer request signaling from the legacy PSAP and passes this information to the NIF using the mechanisms defined in RFC 2833, the NIF shall add the appropriate NPA-NXX digits at the beginning of the 4-digit string, and use this information to populate the URI in the Refer-To header of the outgoing REFER method.
- If the PIF receives a code of the form “\*XX” in the transfer request signaling from the legacy PSAP and passes this information to the NIF using the mechanisms defined in RFC 2833, the NIF shall do one of the following, based on trunk group provisioning:
  - The NIF shall map the received \*XX code to a static URI, and populate this URI in the Refer-To header of the outgoing REFER method
  - The NIF shall map the received \*XX code to a service URN, and query an ECRF using this service URN and the location information received with the call. The NIF will then use the URI returned in the response from the ECRF to populate the Refer-To header of the outgoing REFER method.<sup>40</sup>

Figure 7-3 and Figure 7-1 provide an example of an emergency call transfer flow to illustrate different aspects of an emergency call transfer that has been requested by a legacy PSAP. Figure 7-3 shows the establishment of a conference by the Legacy PSAP Gateway in response to a transfer request from a legacy PSAP. **Error! Reference source not found.** shows the completion of the

---

<sup>40</sup> This will require that the Legacy PSAP Gateway be able to map of all the \*XX codes supported by each PSAP that it serves to an appropriate service URN value that it can use to obtain the associated transfer-to destination address from the ECRF.

transfer of the emergency call to the secondary PSAP. Section 4.1.1.2 provides a more complete discussion of the REFER method, and Sections 5.7 and 5.8 provide detail flows describing the alternatives for supporting bridging and transfer in an i3 environment.

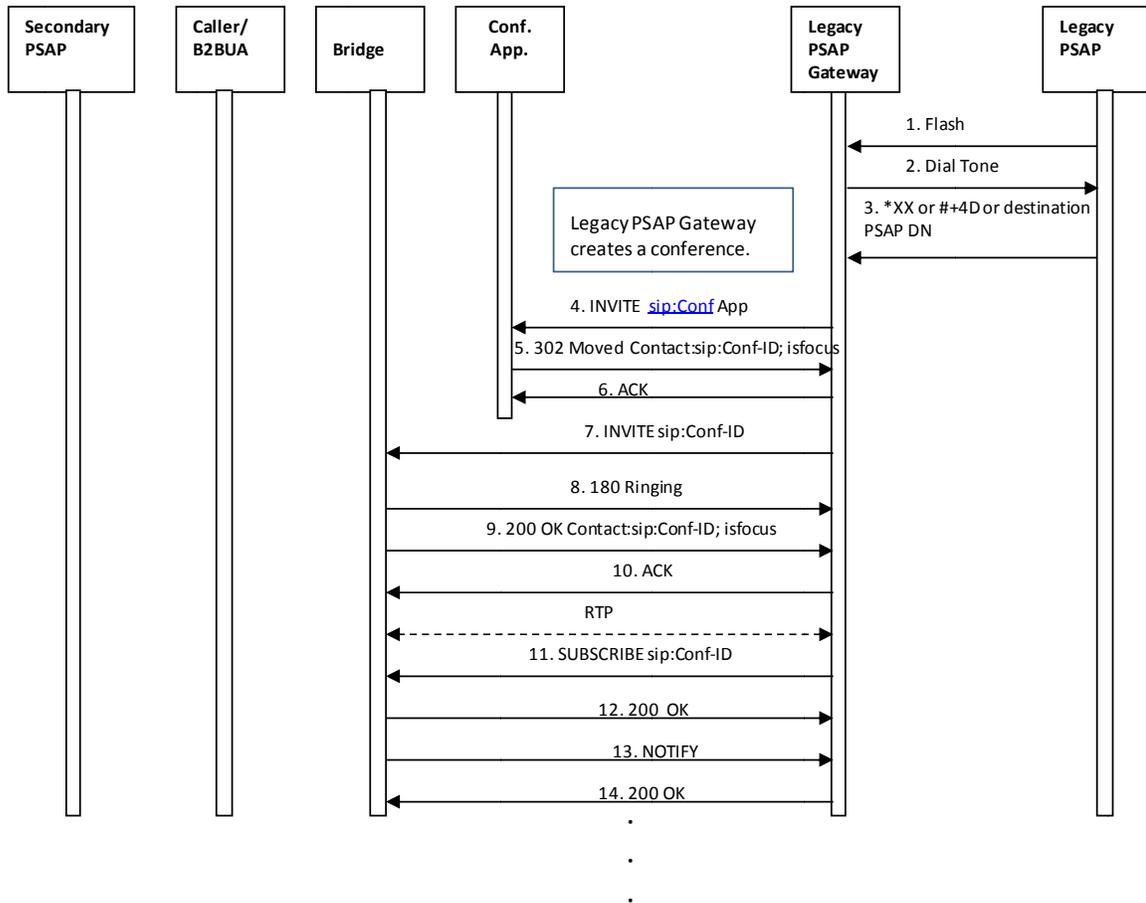


Figure 7-3. Emergency Call Transfer Request from Legacy PSAP – Conference Established

The emergency call transfer flow illustrated above begins when the legacy PSAP determines that an emergency call needs to be transferred.

1. Upon determining that an emergency call needs to be transferred, the legacy PSAP initiates a transfer request by sending a flash signal to the Legacy PSAP Gateway.
2. When the Legacy PSAP Gateway receives the flash signal, it returns dial tone to the legacy PSAP and prepares to receive DTMF signaling.
3. The legacy PSAP provides a “\*XX code,” a string consisting of “# + 4-digits” or the directory number associated with the transfer-to PSAP/public safety agency.

4. The Legacy PSAP Gateway creates a conference by first sending an INVITE to a conference application, using a URI that is known or provisioned at the Legacy PSAP Gateway.
5. The Conference Application responds by sending a 302 Moved message which redirects the Legacy PSAP Gateway to the conference bridge, and provides the Conference-ID that should be used for the conference.
6. The Legacy PSAP Gateway acknowledges the receipt of the 302 Moved message.
7. The Legacy PSAP Gateway generates an INVITE to establish a session with the conference bridge.
8. The conference bridge responds to the INVITE by returning a 180 Ringing message.
9. The conference bridge then returns a 200 OK message, and a media session is established between the Legacy PSAP Gateway and the conference bridge.
10. The Legacy PSAP Gateway returns an ACK message in response to the 200 OK.
11. – 14. Once the media session is established, the Legacy PSAP Gateway subscribes to the conference URI obtained from the Contact URI provided in the 200 OK message from the conference bridge.

After the Legacy PSAP Gateway establishes the conference, it sends a REFER method to the conference bridge asking it to invite the caller/B2BUA to the conference, following the procedures described in Section 5.7. Once the conference bridge has done so, the Legacy PSAP Gateway asks the conference bridge to invite the transfer-to party to the conference. It does this by generating a REFER method with a Refer-To header that contains the URI of the transfer-to PSAP/agency, determined using one of the methods described above. The REFER should include any location information associated with the original caller that was received in the initial INVITE message. The Legacy PSAP Gateway will populate the remaining fields of the REFER based on RFC 3515.

As described in Section 5.7, the Legacy PSAP Gateway shall be capable of receiving a 202 Accepted message in response to the REFER, followed by a NOTIFY that contains the status of the REFER request. The Legacy PSAP Gateway then returns a 200 OK in response to the NOTIFY.

When the call to the secondary PSAP is answered, the Legacy PSAP Gateway will receive a NOTIFY message indicating this event. The Legacy PSAP Gateway will respond to the NOTIFY by returning a 200 OK message.

The Legacy PSAP Gateway will create an AdditionalPSAPData structure (which contains the AdditionalCallData and AdditionalCallerData if present in the call) to pass to the secondary PSAP as an escaped Call-Info header (as described in Section 5.7.1.3). While the Legacy PSAP Gateway does not know all of the information the primary PSAP developed in its handling of the call, it should pass what it does know to the secondary PSAP using this mechanism.

When the primary PSAP determines that it should drop off the conference and complete the transfer, it will follow the steps illustrated in Figure 7-4.

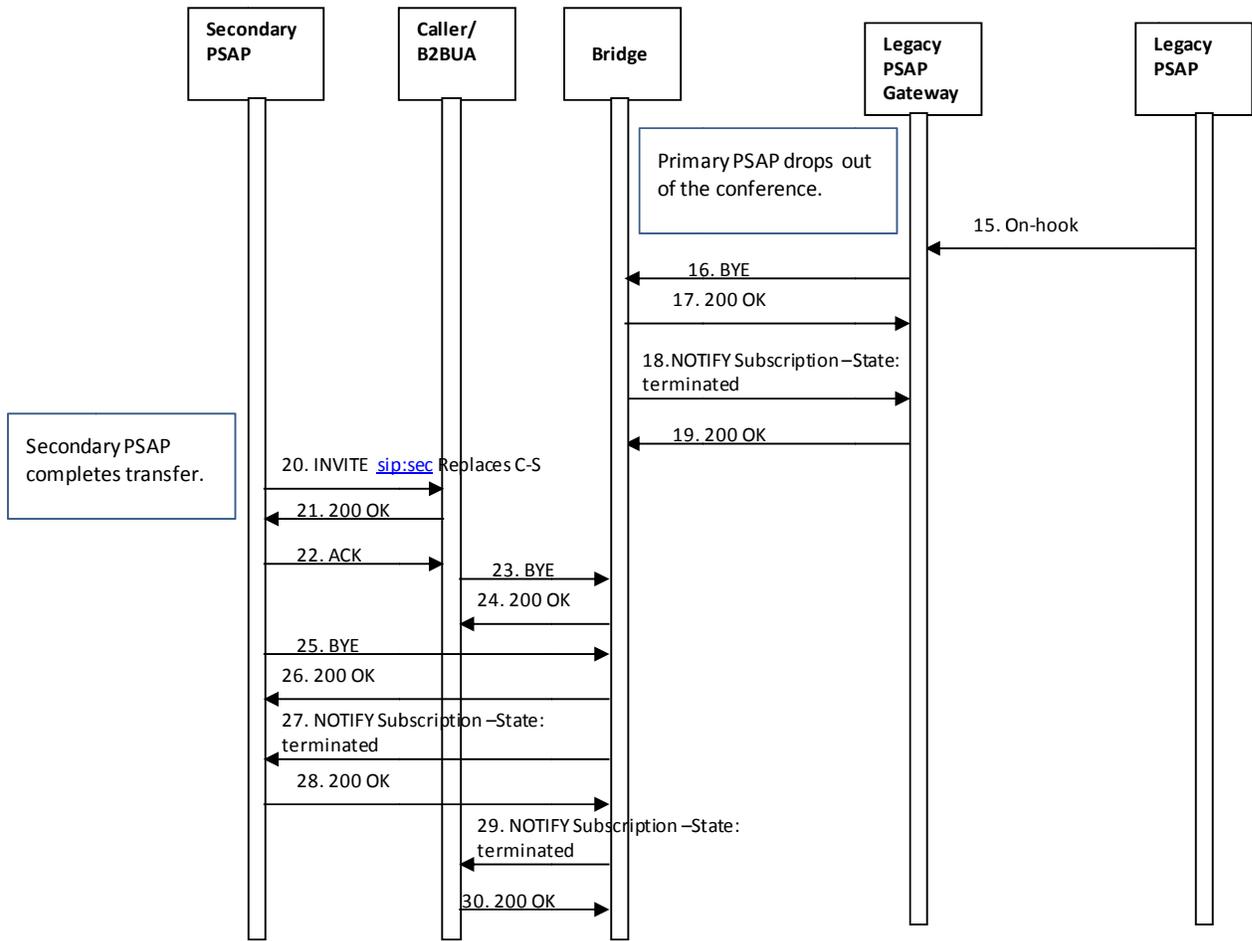


Figure 7-4. **Emergency Call Transfer Request from Legacy PSAP – Transfer Completed**

The emergency call transfer flow illustrated above begins when the legacy PSAP determines that it can drop off the conference with the caller and the secondary PSAP, and complete the transfer.

15. Upon determining that the emergency call transfer should be completed, the legacy PSAP disconnects from the call by sending an on-hook signal to the Legacy PSAP Gateway.
16. When the Legacy PSAP Gateway receives the on-hook signal, it sends a BYE message to the conference bridge.
17. The conference bridge responds by returning a 200 OK message.
18. The conference bridge then returns a NOTIFY message indicating that the subscription to the conference has been terminated.
19. The Legacy PSAP Gateway returns a 200 OK in response to the NOTIFY.
20. The secondary PSAP completes the transfer by sending an INVITE to the caller/B2BUA requesting that they replace their connection to the bridge with a direct connection to the secondary PSAP.

21. The caller/B2BUA responds by returning a 200 OK message.
22. The secondary PSAP responds by returning an ACK to the caller/B2BUA.
23. The caller/B2BUA then sends a BYE to the conference bridge to terminate the session.
24. The conference bridge responds by sending the caller/B2BUA a 200 OK message.
25. The secondary PSAP also terminates its session with the conference bridge by sending a BYE message.
26. The conference bridge responds by sending a 200 OK message to the secondary PSAP.
27. The conference bridge then returns a NOTIFY message to the secondary PSAP indicating that the subscription to the conference has been terminated.
28. The secondary PSAP responds with a 200 OK message.
29. The conference bridge sends a NOTIFY message to the caller/B2BUA indicating that the subscription to the conference has been terminated.
30. The caller/B2BUA responds with a 200 OK message.

#### **7.2.2.5 Alternate Routing Invocation and Notification**

Alternate routing allows a network to temporarily re-route calls to a different PSAP when the primary PSAP is unavailable to answer the call, or when connectivity to the primary PSAP is not available due to network failure.

In a legacy environment, when a PSAP determines that alternate routing needs to be manually invoked (e.g., the PSAP needs to evacuate), it calls the alternate PSAP to inform them of the situation, so they are prepared to begin to receive all of the primary PSAP's calls. Today, the capability to manually invoke/cancel alternate routing is controlled by the primary PSAP. Typically, when alternate routing is to be invoked, the primary PSAP manually activates a switch or other control item to change the state of a control circuit connected to a scan point or other sensing device at the SR. When the state of the circuit is changed (e.g., by "shorting out" the circuit or closing a relay on a Network Control Module [NCM]), the scan points get saturated and, from the perspective of the SR, it appears as an "all circuits busy" condition on the trunk group. This causes the E9-1-1 tandem to route calls intended for the primary PSAP to the alternate PSAP. To remove alternate routing, the primary PSAP restores the normal state of the control circuit (or re-opens the relay(s) at the NCM). In some cases manual alternate routing is invoked when the primary PSAP places a call to their E9-1-1 System Service Provider to request that action. This is also something a Legacy PSAP Gateway will need to be able to replicate.

In an i3 Solution environment, a Legacy PSAP Gateway needs to be capable of recognizing a request to activate alternate routing. This request may come in the form of a physical switch, or it may be made via a GUI or web server. Upon detecting the alternate routing request, the Legacy PSAP Gateway will return an event notification back to the ESRP to inform it of the change in PSAP state. Note that, using this event notification mechanism, the ESRP will be able to distinguish between alternate routing that is due to traffic volumes (i.e., events related to queue state) and "make busy" scenarios, where the PSAP is experiencing some type of failure or evacuation situation (i.e.,

events related to PSAP state). It is assumed that the policy rules associated with alternate routing requests related to a specific PSAP will have been previously populated in the PRF.

### 7.2.3 Location Interwork Function (LIF)

As described in Section Figure 7-2 the Legacy PSAP Gateway must support an ALI interface which can accept an ALI query from the legacy PSAP and return location information based on the formats specified in NENA 04-001 and NENA 04-005. There is additional information beyond just callback number and location information that may be included in an ALI response. There are various ways that ALI data may be obtained by the Legacy PSAP Gateway so that it can be returned to the legacy PSAP in the expected format.

If the Legacy PSAP Gateway receives callback information (i.e., in the form of a 10-digit NANP number) and location-by-value in the incoming INVITE message from the ESRP, the Legacy PSAP Gateway can use this information to populate the callback number and location fields of the ALI response. The Legacy PSAP Gateway can also generate an appropriate Class of Service for the call. If location-by-reference is received in the incoming INVITE message from the ESRP, the Legacy PSAP Gateway will have to support the ability to query other elements (i.e., LISs, Legacy Network Gateways) using an appropriate dereferencing protocol, as specified in Section 4.2.

The Legacy PSAP Gateway will need to access “Additional Data” structures to populate other fields in the ALI response. To do this, the Legacy PSAP Gateway will need to support the HTTP GET method described in IETF RFC 2616. The Legacy PSAP Gateway will use the information contained in the Call Info header of the received INVITE to identify the address of the target subscriber database to which the GET will be directed. The Legacy PSAP Gateway shall be capable of receiving and processing the XML-formatted data in the response from the subscriber data, and using it to populate the appropriate fields of the ALI response message.

See Appendix A for a detailed description of where the Legacy PSAP Gateway will obtain the necessary information to populate ALI response messages.

## 8 Data Associated with call/caller/location/PSAP

With the implementation of NG9-1-1 there will be many forms of additional data available to emergency responders: data associated with a call, a location, a caller and a PSAP. Together with the SIP Invite and PIDF-LO, Additional Data associated with a Call (NENA 71-001) [254] has the ability to look at other data sources; for example, Vehicle Emergency Data Set (VEDS) to assist in determining the appropriate call routing and handling.

NENA defined the use of supportive and supplemental data in the Future Path Plan, and USDOT included it in their documentation. Supportive data is data used during the 9-1-1 call flow to provide proper routing instructions such as Vehicle Emergency Data Set (VEDS). Supplemental data is retrieved after the call reaches the PSAP or the responding emergency agency such as building data or medical records. It is not easy to separate additional data into these two categories because some additional data may be used either with the call flow or upon response thus all data not in the SIP Invite or PIDF-LO is called Additional Data. Supportive and supplemental data are often indistinguishable and inter-changeable. NENA NG9-1-1 documents do not differentiate.

Additional Data is defined as data that is associated with a call, a caller, a location or PSAP. Any of the additional data elements in NENA 71-001, NENA Standard for NG9-1-1 Additional Data, or data available from an external data source may be used by PSAP management to establish business rules/policies for call handling and routing.

Additional Data is usually signaled with a URI. Dereferencing the URI is accomplished with an HTTPS Get (with fallback to HTTP if appropriate). ESInet elements use credentials traceable to the PCA, which must be accepted by the entity holding the data.

### **8.1 Additional Data associated with a Call (NENA 71-001)**

The Additional Data Associated with a Call is defined in detail in NENA Specification 71-001, section 3.1 [107].

Additional data may be associated with a specific 9-1-1 call. This data may be provided by the device which places the call, or any intermediary, such as a carrier, telematics provider, alarm company or video relay, which handles the call. Devices may provide additional data; any intermediary handling the call must provide additional data, when available. The data is in the form of an XML data structure, retrieved by a simple HTTPS GET operation. The call includes a Call-Info header as in RFC 3261 [12]. The “purpose” parameter is set to “emergencyCallData”. The XML data structure is defined by NENA 71-001 [105]. The data is supplied by a Call Information Database (see section 5.10). The data addressed via these URIs may be accessed by the ESRP, Primary PSAP, Secondary PSAP, or responders.

More than one Call-Info header with an emergencyCallData purpose can be expected. The device may insert one, and an intermediary may insert its own. When there are multiple intermediaries each intermediary may each insert one. For example, a telematics service provider may provide one and the mobile carrier handling the call may provide one.

### **8.2 Additional Data associated with a location (NENA 71-001)**

The Additional Data Associated with a Location is defined in detail through NENA Specification 71-001, section 3.2 [107].

Data associated with a location is provided in an xml data structure retrieved from a web service. The ECRF has an “additionalData” service (urn:ena:service:additionalLocationData) that returns the URI for the data associated with a location to authorized entities. This URI will allow the Additional Data associated with a Location to be retrieved from any number of sources, including distributed databases containing further information about the location. This will allow the ESRP, Primary or Secondary PSAP’s or Responders to access this data as needed. The xml data structure returned will be defined in future work. This structure must be able to be broken into sections, or separate XML documents for building owner and multiple instances of tenant information. The additional location data structure includes building owner and /or tenant contact information whereas the additional call data includes subscriber contact and AdditionalCallerData includes caller contact. Either can be used to determine which tenant the call originates from. NENA is working with other agencies/associations to establish additional data streams for Additional Data associated with a location/building.

### **8.3 Additional Data Associated with a caller (NENA 71-001)**

The Additional Data Associated with a Caller is defined in detail through NENA Specification 71-001, section 3.3 [105].

Data associated with a caller is provided in an xml data structure retrieved from a web server. The call may include a header containing the URI for the data associated with the caller. The data is in the form of an XML data structure, retrieved by a simple HTTPS GET operation. This query may be executed by the ESRP, Primary PSAP, Secondary PSAP, or the Responders. To protect the privacy of the caller, the amount of information returned by this query may vary depending on the credentials of the entity dereferencing the URI used in establishing the TLS session. PSAPs will have credentials traceable to the PCA which must be accepted by the data provider. The call includes a Call-Info header as in RFC 3261 [12]. The “purpose” parameter is set to “emergencyCallerData”. The web service may be operated by an independent service provider trusted by the user, who would offer a URI for the data associated with the caller to every carrier the caller uses. The entity operating the domain must construct the URI to maintain the privacy of the caller. The entity may provide each carrier, if the caller has more than one carrier, with a different URI, any of which would return the same data. The caller-data URI must be provided automatically on emergency calls. There may be multiple URIs and each will lead to one or more instances of the XML data elements defined in the NENA 71-001 specification. If the URI is used to retrieve the data subsequent to the call, the data may have changed; therefore, if this data must be kept, it must be retrieved while the call is in progress and stored by the PSAP. NENA is working with other agencies/associations to establish additional data streams for Additional Data associated with a Caller (NENA 71-001), specifically medical data.

### **8.4 Additional Data associated with a PSAP (NENA 71-001)**

A preliminary definition of Additional Data Associated with a PSAP is defined in NENA Specification 71-001, section 3.4 [107].

When a PSAP handles a call it develops information about the call, which must be passed to subsequent PSAPs, dispatchers and/or responders. This structure or a reference to it will be passed with a transferred call or as part of a CAD interface.

The Additional Data associated with a PSAP is a placeholder pending the definition of the Emergency Incident Data Document (EIDD). Once the EIDD is defined, additional PSAP data will be added as necessary, and the EIDD definition will replace this section.

The SIP headers and non-SDP bodies for the original call must be retained as part of the Additional Data associated with a PSAP. SIP headers and non-SDP bodies may be repeated to support multiple calls per incident. This will allow Secondary PSAPs to access the information associated with the Primary PSAP’s handling of the call, as these headers include previously retrieved Location information, URIs for Additional Call data, and Additional Caller data.

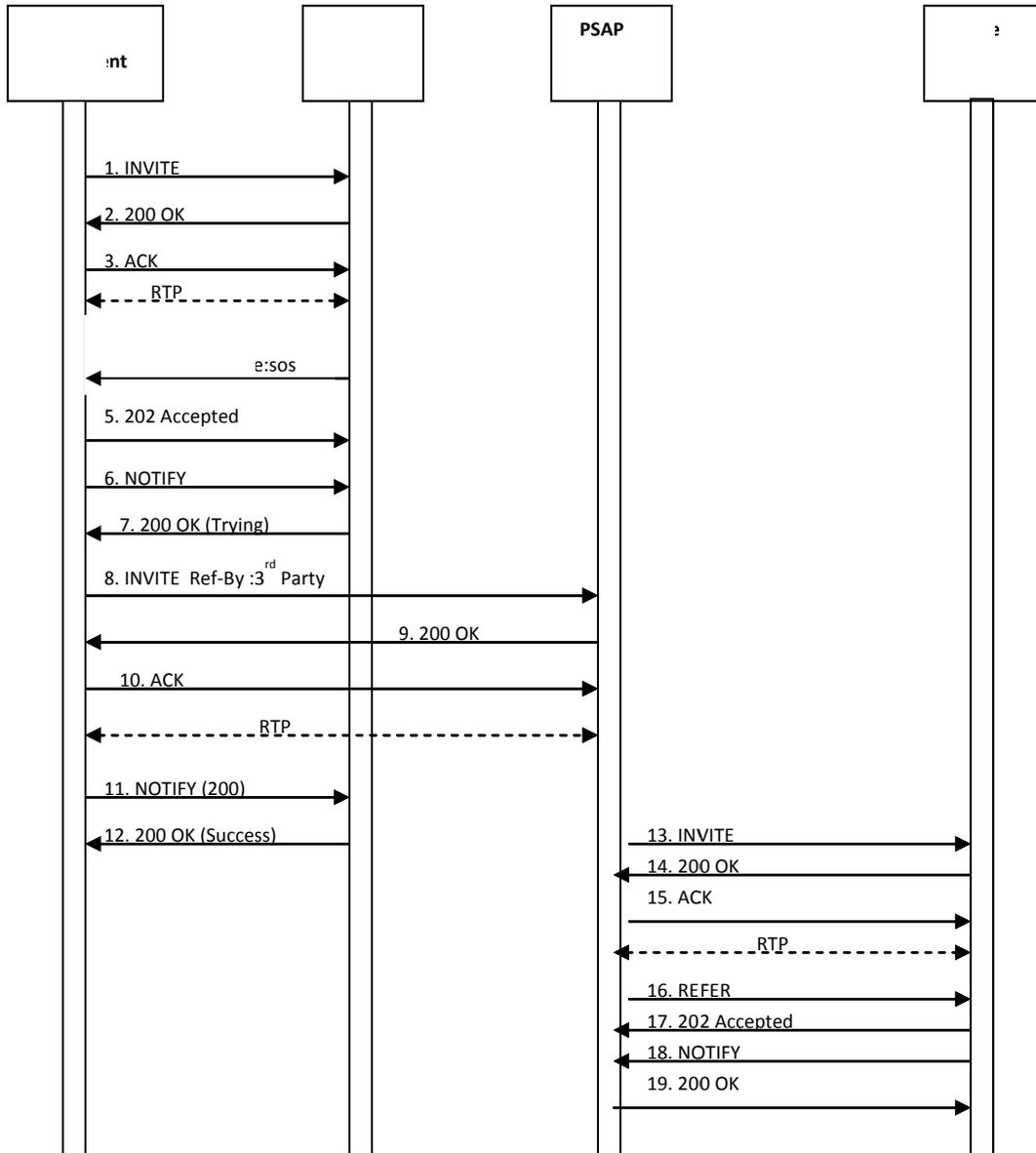
## **9 3rd Party Origination**

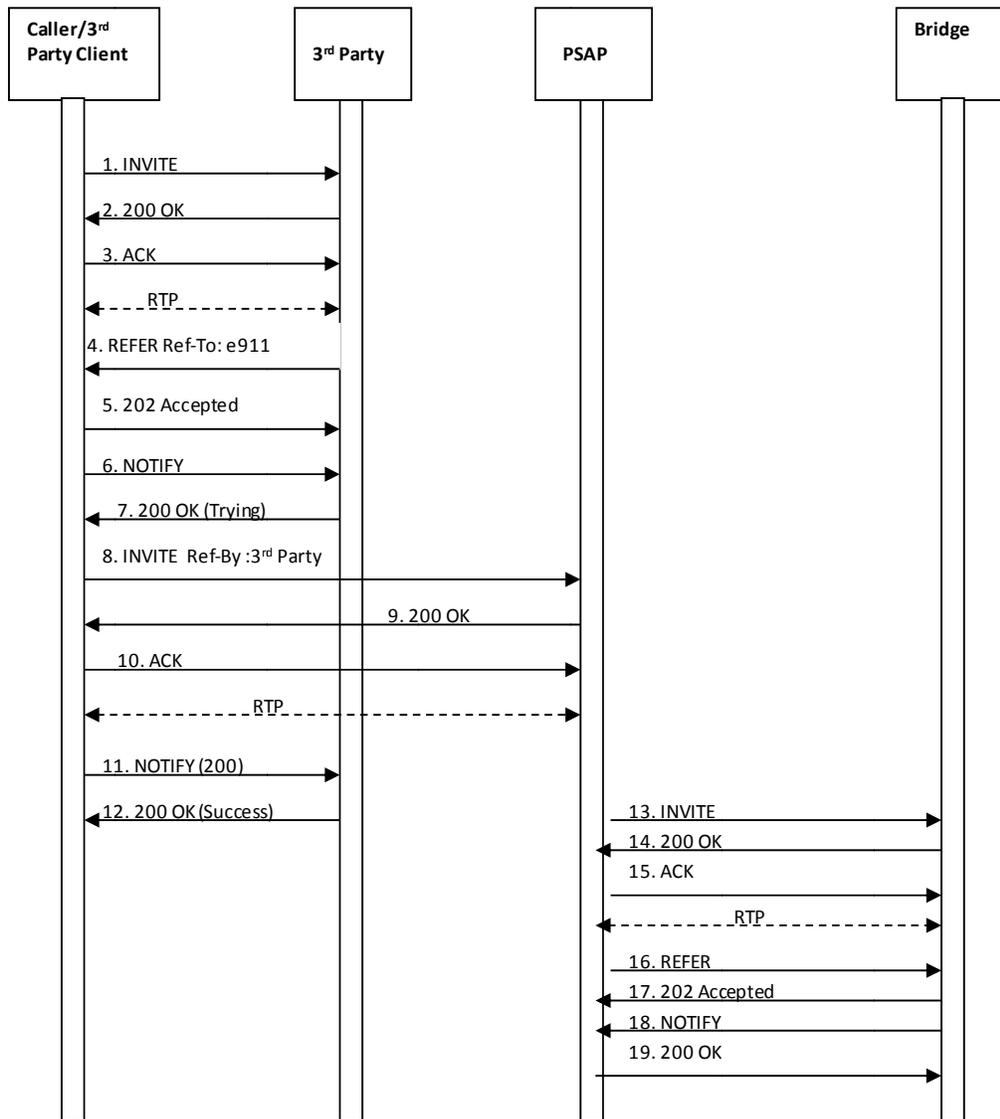
Service providers who operate call centers and wish to facilitate emergency calls from their subscribers with the call center agent remaining on the line (i.e., initially a three way call with the caller, the call agent and the PSAP call taker) may use 3<sup>rd</sup> Party Origination.

The caller is assumed to have a two way SIP call between the caller and the call agent. Service providers who do not use SIP between the call and the call agent may use a gateway to interwork the call signaling from the caller to SIP, and must similarly use a gateway to interwork the call agent signaling to SIP. In such cases, the following signaling description applies, even though the call starts without a SIP call between the caller and call agent.

### **9.1 3<sup>rd</sup> Party Client is Referred to PSAP; PSAP Establishes Conference**

In the first portion of the flow, the 3<sup>rd</sup> party client has encountered an emergency situation and a call is placed to the 3<sup>rd</sup> party call agent. The 3<sup>rd</sup> party call agent requests that the caller initiate an emergency call. Upon receiving an emergency session request that contains an indication of referral by a 3<sup>rd</sup> party agency, the PSAP establishes a session with a conference bridge and requests that the bridge refer the 3<sup>rd</sup> party call agent to the conference.

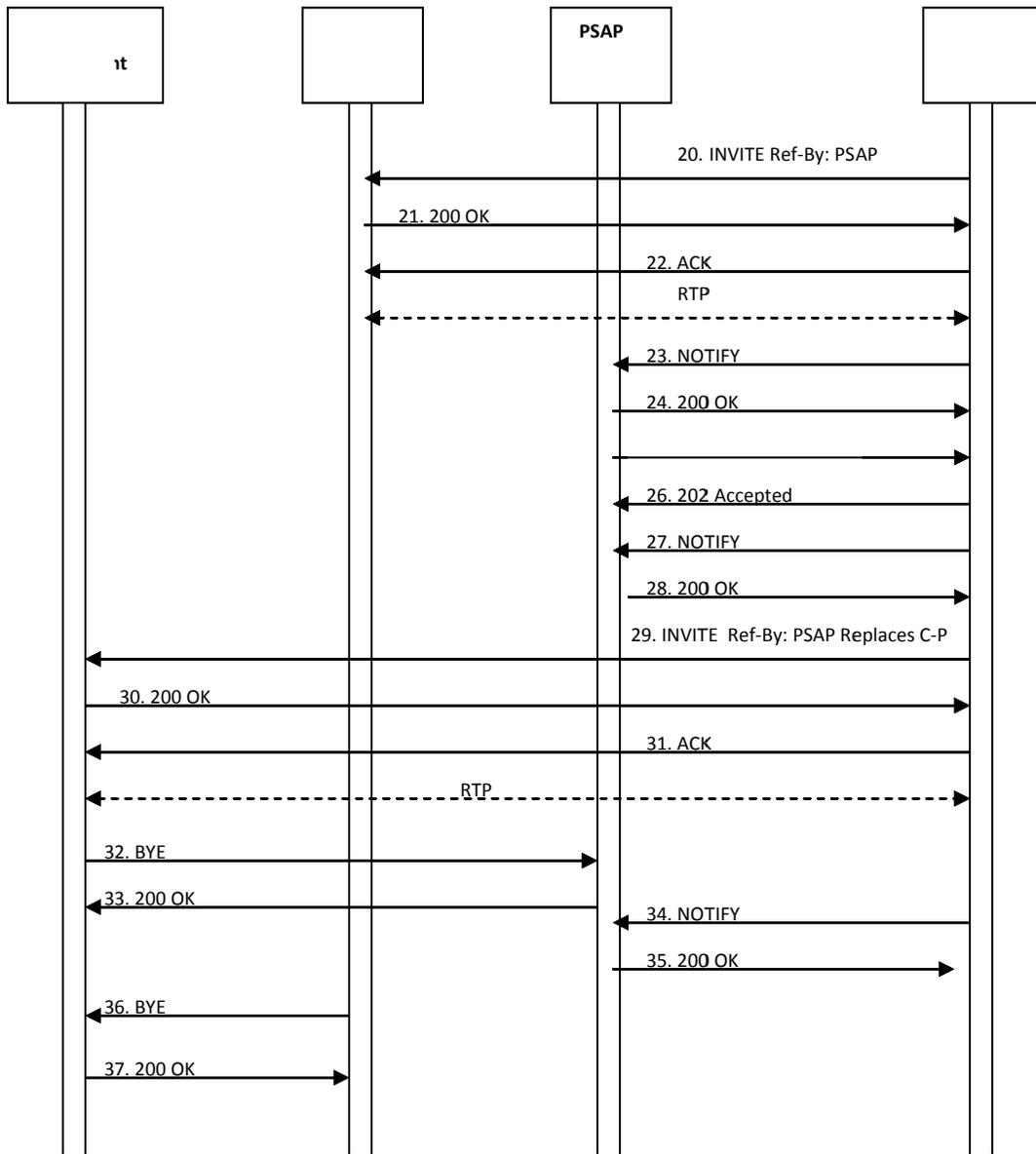


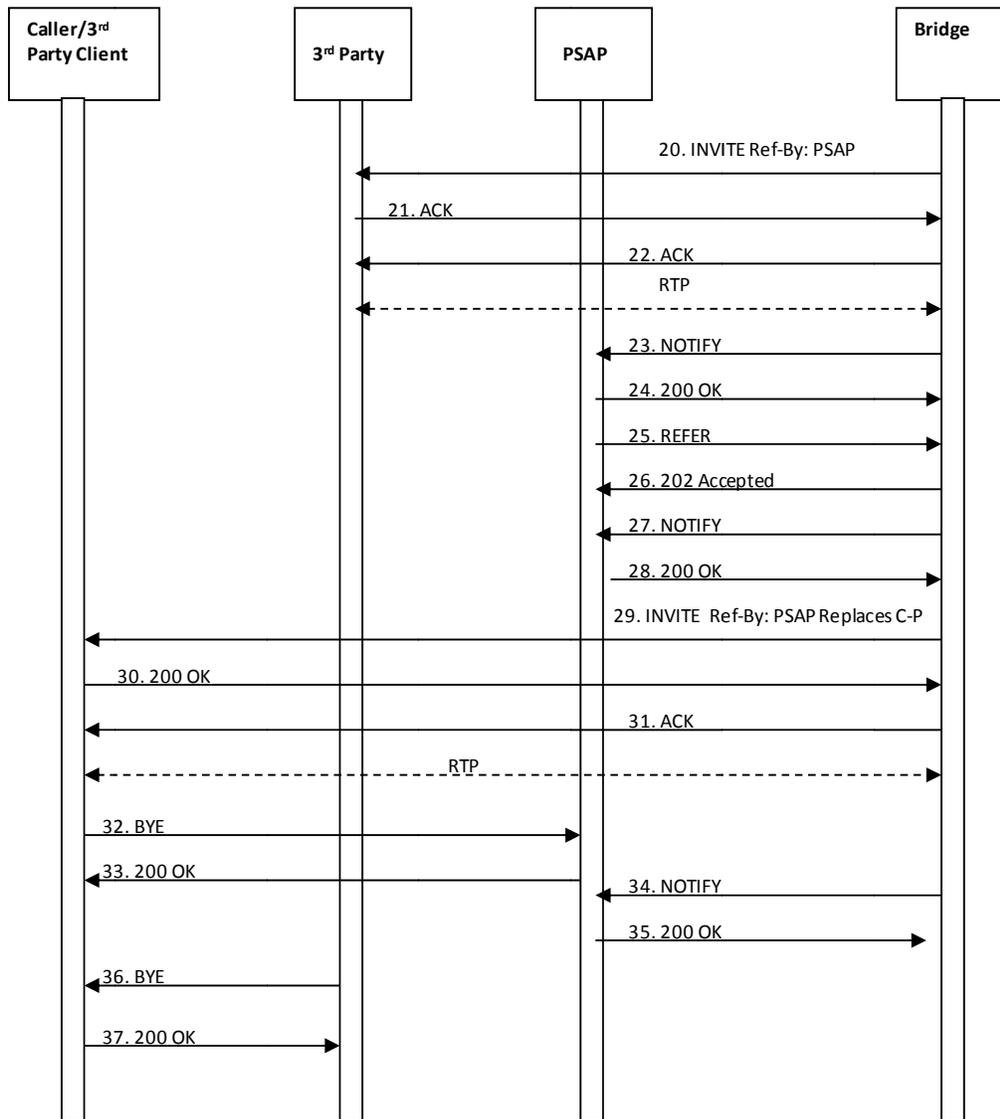


1. Upon encountering an emergency situation, an INVITE message is sent by a 3<sup>rd</sup> party client requesting that a session be established with a 3<sup>rd</sup> party call agent.
2. The 3<sup>rd</sup> party call agent responds to the INVITE message by returning a 200 OK message.
3. The caller/3<sup>rd</sup> party client returns an ACK to the 3<sup>rd</sup> party call agent in response.  
*At this point a session is established between the caller/3<sup>rd</sup> party client and the 3<sup>rd</sup> party call agent. The agent determines that a 9-1-1 call is required.*
4. The 3<sup>rd</sup> party call agent sends a REFER message to the caller/3<sup>rd</sup> party client with a Refer-To header containing the destination urn:service:sos, that indicates that an emergency session request should be initiated. Note that the call agent includes an AdditionalCallData URI in an escaped Call-Info header in the REFER.
5. The caller/3<sup>rd</sup> party client responds by returning a 202 Accepted message to the 3<sup>rd</sup> party call agent.

6. The caller/3<sup>rd</sup> party client also returns a NOTIFY message, indicating the subscription state of the REFER request (i.e., active).
7. The 3<sup>rd</sup> party call agent returns a 200 OK message in response to the NOTIFY message.
8. The caller/3<sup>rd</sup> party client then initiates an emergency call by sending an INVITE message to urn:service:sos. This INVITE is a normal 9-1-1 call, and has all of the content specified by [59]. This INVITE message contains a Referred-by header indicating that this emergency session request is associated with a REFER that was generated by a 3<sup>rd</sup> party call agent. It also includes the AdditionalCallData URI that it received in the escaped Call-Info header in the REFER from the 3<sup>rd</sup> party call agent.
9. When the PSAP receives the emergency session request with the Referred-By header, it returns a 200 OK message to the caller/3<sup>rd</sup> party client.
10. The caller/3<sup>rd</sup> party client responds by returning an ACK to the PSAP.  
*At this point, a session is established between the caller/3<sup>rd</sup> party client and the PSAP.*
11. The caller/3<sup>rd</sup> party client sends a NOTIFY message to the 3<sup>rd</sup> party call agent updating the status of the REFER request.
12. The 3<sup>rd</sup> party call agent responds by returning a 200 OK confirming the success of the REFER.
13. Based on receipt of the Referred-By header in the INVITE message from the caller/3<sup>rd</sup> party client indicating a need for a bridge to handle a 3 way call, the PSAP sends an INVITE to its conference bridge to establish a session with the bridge.
14. The bridge responds by returning a 200 OK message to the PSAP.
15. The PSAP responds by sending an ACK to the bridge.
16. The PSAP sends a REFER message to the bridge requesting that it invite the 3<sup>rd</sup> party call agent to the conference.
17. The bridge responds by sending a 202 Accepted message to the PSAP.
18. The bridge then sends a NOTIFY message indicating the status of the REFER request.
19. The PSAP responds to the NOTIFY by returning a 200 OK message to the bridge.

## 9.2 3<sup>rd</sup> Party Call Agent and Caller Added to Conference





20. The bridge sends an INVITE message to the 3<sup>rd</sup> party call agent. The INVITE contains an indication in a Referred-by header that it is related to a REFER initiated by the PSAP.
21. The 3<sup>rd</sup> party call agent responds by returning an 200 OK message to the bridge.
22. The bridge returns an ACK to the 3<sup>rd</sup> party call agent.  
*At this point a session is established between the 3<sup>rd</sup> party call agent and the bridge.*
23. The bridge sends a NOTIFY message to the PSAP indicating the status of the REFER request.
24. The PSAP responds by returning a 200 OK message.
25. The PSAP then sends a REFER message to the bridge requesting that it invite the caller/3<sup>rd</sup> party client to the conference. The REFER includes a Replaces header to indicate to the caller/3<sup>rd</sup> party that the session with the bridge replaces its existing session with the PSAP.
26. The bridge responds by sending a 202 Accepted message to the PSAP.

27. The bridge then sends a NOTIFY message to the PSAP indicating the status of the REFER request.
28. The PSAP responds by returning a 200 OK message.
29. The bridge then sends an INVITE message to the caller/3<sup>rd</sup> party client asking that they replace their connection to the PSAP with a connection to the bridge.
30. The caller/3<sup>rd</sup> party client responds by returning a 200 OK message to the bridge.
31. The bridge responds by returning an ACK to the caller/3<sup>rd</sup> party client.  
*At this point the caller/3<sup>rd</sup> party client has established a session with the bridge.*
32. The caller/3<sup>rd</sup> party client then sends a BYE message to the PSAP to terminate its session with the PSAP.
33. The PSAP responds by sending a 200 OK message to the caller/3<sup>rd</sup> party client.
34. The bridge sends a NOTIFY message to the PSAP indicating the status of the REFER request.
35. The PSAP responds by sending a 200 OK message to the bridge.
36. The 3<sup>rd</sup> party call agent sends a BYE message to the caller/3<sup>rd</sup> party client to terminate the session it had with the caller/3<sup>rd</sup> party client.
37. The caller/3<sup>rd</sup> party client responds by returning a 200 OK to the 3<sup>rd</sup> party call agent.

The above sequence assumes that the caller/3<sup>rd</sup> party client has the most accurate location information to route and dispatch the call. In some circumstances, the 3<sup>rd</sup> party call agent may have better location. It can supply the location in the Additional Call Data, or it can arrange to have the caller/3<sup>rd</sup> party client send its emergency call INVITE (step 8) through the 3<sup>rd</sup> party call agent and add the more accurate location to the call.

Either the 3<sup>rd</sup> party client or the caller can initiate the disconnect of the original session between them (step 36).

## 10 PSAP Management

To be provided in a future edition of this document.

## 11 Test Calls

PSAPs must implement the test function described in [59]. As the function is designed to test if a 9-1-1 call was placed from the test-initiating device, the test mechanism should mimic the entire actual 9-1-1 call path as closely as practical. The test mechanism is completely automatic, with no manual intervention required.

An INVITE message with the Service URN (found in a Route header) of “urn:service:sos.test” shall be interpreted as a request to initiate a test call. The PSAP should return a 200 OK response in normal conditions, indicating that it will complete the test function. The PSAP may limit the number of test calls. If that limit is exceeded, the response must be 486 Busy Here. PSAPs may accept requests for secondary services such as urn:service:sos.fire.test and complete a test call, or the PSAP may reject the call and return 404 Not Found. PSAP management may disable the test function (using PSAP policy).

If the PSAP accepts the test, it should return a body with MIME type text/plain consisting of the following contents:

- a. The name of the PSAP, terminated by a CR and LF
- b. The string “urn:service:sos.test” terminated by a CR and LF
- c. The location reported with the call (in the geolocation header). If the location was provided by value, the response would be a natural text version of the received location. If the location was provided by reference, the PSAP should dereference the location, using credentials acceptable to the LIS issued specifically for test purposes. Credentials issued by a PCA-rooted CA must have the token “test” as the agent name or the first token in the domain name. The location returned may not be the same as the LIS would issue for an actual emergency call.

The PSAP should insert its identity in the Contact header field of the response. To provide authentication, the Identity header field (RFC 4474 [86]) should be inserted, signed by an entity in the path (such as an ESRP) with a certificate traceable to the PCA.

A PSAP accepting a test call should accept a media loopback test [137] and should support the "rtp-pkt-loopback" and "rtp-start-loopback" options. The PSAP user agent would specify a loopback attribute of "loopback-source", the PSAP being the mirror. The PSAP should loop back no more than 3 packets of each media type accepted (voice, video, text), after which the PSAP should send BYE.

PSAP CPE should refuse repeated requests for test from the same device (same Contact URI or source IP address/port) in a short period of time (within 2 minutes). Any refusal is signaled with a 486 Busy Here.

## 12 NRS Consideration

This document requests NRS to create several registries.

### 12.1 URN Registry

The IETF has delegated to NRS the urn:nena namespace. NRS is requested to create a registry for urn:nena. The urn:nena namespace will have a “top level” (to NRS) label, which in many cases will refer to a sub registry. For example, this document creates the “service” sub registry for urn:nena:service. The separator between the “nena” label and the urn subtype (urn:nena registry name) is a colon “:”.

#### 12.1.1 Name

The name of this registry is urn:nena.

#### 12.1.2 Information required to create a new value

A new entry to urn:nena requires an explanation of when the urn will be used, and how the new label is distinguished in its use from other urns. It should describe who creates urns with the label, and who uses such urns.

### 12.1.3 Management Policy

A NENA Technical Standard is required to add a new entry into the registry. Sub registries under urn:nena may not be delegated outside the control of the NRS.

### 12.1.4 Content

This registry contains:

- The UTF-8 “Name” of the “top level” label (a short string)
- The UTF-8 “Purpose” of the label (explanatory text)
- A “Reference” to a sub registry if appropriate (name of sub registry)
- A reference (URI) to the NENA Technical Standard that defines the label.

### 12.1.5 Initial Values

See Section 12.2 below defining the “service” label.

## 12.2 “service” urn Sub Registry

When calls are routed within an ESInet, the routing element (PSAP or ESRP) queries the ECRF for the (nominal) route. It does so with a service urn. External routing is accomplished with urn:service:sos, as defined by the IETF. Within the ESInet, NENA defined service urns are used.

This document requests NRS to add a new entry to the urn:nena registry. The name of this entry is “service”. The purpose of this entry is “Routing 9-1-1 calls within an ESInet”. The “Reference” should refer to the registry created by this section, urn:nena:service. The separator between the “service” label and the service (urn:nena:service registry name) is a colon “:”.

Service URNs as defined here begin with urn:nena:service. The sub-namespace defined by this registry may be further subdivided (potentially several times), by sub-registries under this sub-registry. A new entry starting with urn:nena:service should denote a new type of route, which must be distinguished by the PSAP or ESRP from other uses. For example, 9-1-1 calls being routed within the ESInet use urn:nena:service:sos (or a subspace of it). Calls routed by a PSAP to a responder use urn:nena:service:responder (actually, the type of responders is also included, e.g., urn:nena:service:responder.police). A PSAP or ESRP specifies the urn in a LoST query, the ECRF uses it to choose a (nominal) route. In this entry in the urn:nena registry, “service” means a path towards a service, as it does for urn:service as defined by the IETF.

### 12.2.1 Name

The name of this sub registry is urn:nena:service.

### 12.2.2 Information required to create a new value

A new entry to urn:nena;service requires an explanation of when the urn will be used, and how the new label is distinguished in its use from other urns. It should describe who creates urns with the label, and who uses such urns.

### 12.2.3 Management Policy

A NENA Technical Standard is required to add a new entry into the registry.

### 12.2.4 Content

This registry contains:

- The UTF-8 “Name” of the label (a short string)
- The UTF-8 “Purpose” of the label (explanatory text)
- A reference to a “Subregistry” if appropriate (name of subregistry)
- A reference (URI) to the NENA Technical Standard that defines the label.

### 12.2.5 Initial Values

This document defines the “AdditionalLocationData” name, with the purpose “Return a URI to an Additional Location Data structure as defined in NENA 71-001”. There is no reference. An entity such as a PSAP wishing to obtain additional data about a location queries the ECRF with this urn. The ECRF returns the URI to the AdditionalLocationData structure if one is available.

See section 12.3 and section 12.4 below for two initial additional values of this registry.

## 12.3 urn:nenaservice:sos Registry

Routing of emergency calls within the ESInet is a primary function of this specification. When ESRPs must route calls within the ESInet, they query the ECRF for the route. Routing for emergency calls may involve multiple levels of ESRPs. Each level may need a different urn to distinguish them (it is also possible for the ECRF to distinguish by the identity of the ESRP that queries it). Routing of emergency calls, including instant messages and non-human-initiated calls, is accomplished with a urn beginning with urn:nenaservice:sos.

NRS is requested to create an entry in the urn:nenaservice registry with the name “sos” and with the purpose noted as “routing emergency calls within the ESInet towards a primary PSAP call taker”. The reference will be to the registry created by this section, urn:nenaservice:sos. The separator between the “sos” label and the service (urn:nenaservice:sos registry name) is a period “.”.

The urn:nenaservice:sos registry contains label values appropriate for the various levels of routing within the ESInet.

### 12.3.1 Name

The name of this registry is urn:nenaservice:sos.

### 12.3.2 Information required to create a new value

A new entry to urn:nenaservice:sos requires an explanation of when the urn will be used, and how the new label is distinguished in its use from other urns. It should describe who creates urns with the label, and who uses such urns.

### 12.3.3 Management Policy

A NENA document is required to add a new entry into the registry.

### 12.3.4 Content

This registry contains:

- The UTF-8 “Name” of the label (a short string)
- The UTF-8 “Purpose” of the label (explanatory text)
- A reference (URI) to the NENA Technical Standard that defines the label.

### 12.3.5 Initial Values

<b>Name</b>	<b>Purpose</b>	<b>Reference</b>
psap	Route calls to primary PSAP	<insert reference to this document>
level_2_esrp	Route calls to a second level ESRP (for an example, a state ESRP routing towards a county ESRP)	<insert reference to this document>
level_3_esrp	Route calls to a third level ESRP (for example, a regional ESRP that received a call from a state ESRP and in turn routes towards a county ESRP).	<insert reference to this document>
call_taker	Route calls to a call taker within a PSAP	<insert reference to this document>

## 12.4 urn:nena:service:responder Registry

Once a PSAP gets a call, they may have to transfer the call to a secondary PSAP. The secondary PSAP is chosen based on the type of responder, and the location of the caller. Routing of emergency calls from a PSAP towards a responder, including instant messages and non-human-initiated calls, is accomplished with a urn beginning with urn:nena:service:responder.

NRS is requested to create an entry in the urn:nena:service registry with the name “responder” and with the purpose noted as “routing emergency calls within the ESInet towards a responder”. The reference will be to the registry created by this section, urn:nena:service:responder.

The urn:nena:service:responder registry contains label values appropriate for the types of responders within the ESInet. The separator between the “responder” label and the type of responder (urn:nena:service:responder registry name) is a period “.”.

### 12.4.1 Name

The name of this registry is urn:nena:service:responder.

### 12.4.2 Information required to create a new value

A new entry to urn:nena:service:responder requires an explanation of the type of responder, and how it is distinguished from other responder types already in the registry.

### 12.4.3 Management Policy

A NENA document is required to add a new entry into the registry.

### 12.4.4 Content

This registry contains:

- The UTF-8 “Name” of the label (a short string)
- The UTF-8 “Purpose” of the label (explanatory text)
- A reference (URI) to the NENA Technical Standard that defines the label.

### 12.4.5 Initial Values

Name	Purpose	Reference
police	Route calls to Police Agency	<insert reference to this document>
fire	Route calls to a Fire Department	<insert reference to this document>
ems	Route calls to a Emergency Medical Service	<insert reference to this document>
poison_control	Route calls to a Poison Control Center	<insert reference to this document>
mountain_rescue	Route calls to a Mountain Rescue Service	<insert reference to this document>
fbi	Route calls to the appropriate FBI field office	<insert reference to this document>
sheriff	Route calls to a Sheriff’s office, when both a police and Sheriff dispatch may be possible	<insert reference to this document>
state_police	Route calls to a state police office	<insert reference to this document>
coast_guard	Route calls to a Coast Guard station	<insert reference to this document>

## 12.5 elementState Registry

The elementState event returns an enumerated value of the current state of an agency or element as defined in Section 3.3.2. A registry is needed to enumerate the possible values returned.

### 12.5.1 Name

The name of this registry is elementState.

### 12.5.2 Information required to create a new value

A new entry to elementState requires an explanation of when value will be returned and how it is differentiated from other values in the registry.

### **12.5.3 Management Policy**

A NENA Technical Document required to add a new entry into the registry.

### **12.5.4 Content**

This registry contains:

- The UTF-8 “Value” of the entry
- The UTF-8 “Purpose” of the entry and when it should be used
- A reference (URI) to the NENA Technical Standard that defines the label.

### **12.5.5 Initial Values**

The initial value and purposes of the registry are found in Section 3.3.2.

## **12.6 serviceState Registry**

The serviceState event returns an enumerated value of the current state of a service as defined in Section 3.3.3. A registry is needed to enumerate the possible values returned.

### **12.6.1 Name**

The name of this registry is serviceState

### **12.6.2 Information required to create a new value**

A new entry to serviceState requires an explanation of when value will be returned and how it is differentiated from other values in the registry.

### **12.6.3 Management Policy**

A NENA Technical Document is required to add a new entry into the registry.

### **12.6.4 Content**

This registry contains:

- The UTF-8 “Value” of the entry
- The UTF-8 “Purpose” of the entry and when it should be used
- A reference (URI) to the NENA Technical Document that defines the label.

### **12.6.5 Initial Values**

The initial value and purposes of the registry are found in Section 3.3.3.

## **12.7 securityPosture Registry**

The SecurityPosture event returns an enumerated value of the current security posture of an agency or element as defined in Section 3.3.1. A registry is needed to enumerate the possible values returned.

### **12.7.1 Name**

The name of this registry is securityPosture.

### **12.7.2 Information required to create a new value**

A new entry to securityPosture requires an explanation of when value will be returned and how it is differentiated from other values in the registry.

### **12.7.3 Management Policy**

A NENA Technical Document is required to add a new entry into the registry.

### **12.7.4 Content**

This registry contains:

- The UTF-8 “Value” of the entry
- The UTF-8 “Purpose” of the entry and when it should be used
- A reference (URI) to the NENA Technical Document that defines the label.

### **12.7.5 Initial Values**

The initial value and purposes of the registry are found in Section 3.3.1. The reference is this document.

## **12.8 ExternalEventCodes Registry**

CAP messages are used for events sent to, and within an ESInet. CAP messages have an <event code> tag. For use within ESInets, elements sending or receiving CAP messages must have a common understanding of what kind of an event is being sent, primarily to use in routing decisions. A registry is needed for event codes defined by NENA as outlines in Section 4.1.10.

### **12.8.1 Name**

The name of this registry is ExternalEventCode.

### **12.8.2 Information required to create a new value**

A new entry to ExternalEventCode requires an explanation of the use of the new code how it is differentiated from other values in the registry.

### **12.8.3 Management Policy**

Expert Review is required to add a new entry into the registry. The Expert should consider whether the new proposed code is needed to differentiate a CAP message with that code from existing values. A proliferation of codes is not helpful because the routing mechanisms may get cumbersome. On the other hand, there are many possible sources of alerts, which may well need to be routed differentially, and thus the barrier for a new code should be modest.

#### 12.8.4 Content

This registry contains:

- The UTF-8 “Value” of the entry
- The UTF-8 “Purpose” of the entry and when it should be used
- A reference to the person or document requesting the entry.

#### 12.8.5 Initial Values

The registry should have the following entries:

<b>Value</b>	<b>Purpose</b>	<b>Reference</b>
VEDS	A message from an automatic vehicle alert system containing a VEDS dataset	<insert reference to this document>
BISACS	A message from an intelligent building or a building central alarm monitoring service containing a BISACS alert message	<insert reference to this document>

### 12.9 EsrpNotifyEventCodes Registry

CAP messages are used for events sent to, and within an ESInet. CAP messages have an <event code> tag. For use the ESRPnotify event, CAP event code definitions are needed so that the recipient of the message knows why it received the message. A registry is needed for event codes defined by NENA as outlined in Section 5.2.1.5

#### 12.9.1 Name

The name of this registry is EsrpNotifyEventCode.

#### 12.9.2 Information required to create a new value

A new entry to EsrpNotifyEventCode requires an explanation of the use of the new code how it is differentiated from other values in the registry.

#### 12.9.3 Management Policy

Expert Review is required to add a new entry into the registry. The Expert should consider whether the new proposed code is needed to differentiate a CAP message with that code from existing values. A proliferation of codes is not helpful because interoperable implementations may get cumbersome. On the other hand, there are many possible reasons for sending these messages, which may well need to be differentiated, and thus the barrier for a new code should be modest.

#### 12.9.4 Content

This registry contains:

- The UTF-8 “Value” of the entry
- The UTF-8 “Purpose” of the entry and when it should be used

- The UTF-8 “Category” that will be included in the CAP message when this event code is used
- A reference to the person who created the entry.

### 12.9.5 Initial Values

The registry should have the following entries:

Value	Purpose	Category	Reference
-------	---------	----------	-----------

### 12.10 RouteCause Registry

The ESRP routes calls using its Policy Routing Function. The result of evaluating a ruleset is a Route action which routes the call towards a PSAP (or responder). The Route action includes a cause value, which is placed in a Reason header associated with a History-Info header that informs the recipient why it got the call. A registry is needed for the values in the cause. The Route action cause is an enumeration, but the Reason header has a numeric cause value and a text string.

#### 12.10.1Name

The name of this registry is RouteCause.

#### 12.10.2Information required to create a new value

A new entry to RouteCause requires an explanation of the use of the new cause and how it is differentiated from other values in the registry.

#### 12.10.3Management Policy

Expert Review is required to add a new entry into the registry. There is little reason to constrain the number of entries in the Registry as long as the value definitions are distinct enough for recipients to understand why the call was received. The Expert should therefore grant new requests for values as long as the value is clearly differentiateable from existing values. There should not be proprietary values, i.e., values that are expressly created for a particular implementation and generally not intended to be used by other implementations. Rather the values should have wide applicability to any implementation.

#### 12.10.4Content

This registry contains:

- The UTF-8 “Value” of the entry
- The integer “Code” of the entry for the Reason header
- The UTF-8 “Text” of the entry for the Reason header
- A reference to the person or document that created the entry.

### 12.10.5 Initial Values

The registry should have the following entries:

Value	Code	Text	Reference
NormalNextHop	200	Normal Next Hop	<insert reference to this document>
TimeOfDay	401	Time of Day	<insert reference to this document>
	402		<insert reference to this document>

### 12.11 LogEvent Registry

Log entries have a LogEvent which specifies what kind of log record the entry contains. Log entries are defined in Section 5.12.1.1.

#### 12.11.1Name

The name of this registry is LogEvent.

#### 12.11.2Information required to create a new value

A new entry to LogEvent requires an explanation of the new value, when it would be used, and the parameters required in the log record.

#### 12.11.3Management Policy

A NENA Technical Document is required to add a new entry into the registry

#### 12.11.4Content

This registry contains:

- The UTF-8 “Value” of the entry
- The UTF-8 “Purpose” of the entry and when it should be used
- A reference (URI) to the NENA Technical Document that defines the LogEvent.

#### 12.11.5Initial Values

The initial value and purposes of the registry are found in Section 5.12.1.1. The reference is this document.

### 12.12 AgencyRoles Registry

Agencies are classified by a role in the ESInet.

#### 12.12.1Name

The name of this registry is AgencyRoles.

#### 12.12.2Information required to create a new value

A new entry to AgencyRole requires a definition of the role, and must be suitably explicit to differentiate the role from existing roles.

### **12.12.3 Management Policy**

A NENA Technical Document is required to add a new entry into the registry.

### **12.12.4 Content**

This registry contains:

- The UTF-8 “role” of the entry
- A reference (URI) to the NENA Document that defines the role.

### **12.12.5 Initial Values**

The initial roles are found in Section 6.3. The role entry in the registry should be in “camelCase”, thus “ESInet Operator” as listed in Section 6.3 should be “ESInetOperator” in the registry. The reference is this document.

## **12.13 AgentRoles Registry**

Agents authenticate to the ESInet in one or more roles. The roles are defined in an OID to be referenced in a future edition of this document.

### **12.13.1 Name**

The name of this registry is AgentRoles.

### **12.13.2 Information required to create a new value**

A new entry to AgentRoles requires a definition of the role, and must be suitably explicit to differentiate the role from existing roles.

### **12.13.3 Management Policy**

A NENA Document is required to add a new entry into the registry. Normally, this will be a revision to a specific OID (to be created) that defines all NG9-1-1 agent roles.

### **12.13.4 Content**

This registry contains:

- The UTF-8 “role” of the entry
- A reference (URI) to the NENA Document that defines the role.

### **12.13.5 Initial Values**

The initial roles are found in Section 6.3. The role entry in the registry should be in “camelCase”, thus “Shift Supervisor” as listed in Section 6.3 should be “shiftSupervisor” in the registry. The reference is this document.

## 13 References

Note that this version of the document contains many references to documents that are works in progress at the IETF and other organizations. As such this document may be revised as these references stabilize.

1. i3 Technical Requirements Document, National Emergency Number Association, [NENA 08-751](#)
2. NENA Master Glossary of 9-1-1 Terminology, National Emergency Number Association, [NENA 00-001](#)
3. Interim VoIP Architecture for Enhanced 9-1-1 Services (i2), National Emergency Number Association, [NENA 08-001](#)
4. Framework for Emergency Calling in Internet Multimedia, B. Rosen, J. Polk, H. Schulzrinne, A. Newton, Internet Engineering Task Force, [draft-ietf-ecrit-framework](#) (work in progress)
5. Geopriv Requirements, J. Cueller et. al, Internet Engineering Task Force, [RFC 3693](#)
6. A Presence-based GEOPRIV Location Object Format, J. Peterson, Internet Engineering Task Force, [RFC 4119](#)
7. Dynamic Host Configuration Protocol Option for Coordinate-based Location Configuration Information, J. Polk, J. Schnizlein, M. Linsner, Internet Engineering Task Force, [RFC 3825](#)
8. Dynamic Host Configuration Protocol (DHCPv4 and DHCPv6) Option for Civic Addresses Configuration Information, H. Schulzrinne, Internet Engineering Task Force, [RFC 4776](#)
9. HTTP Enabled Location Delivery (HELD) M. Barnes, ed., Internet Engineering Task Force, [RFC 5985](#)
10. Session Initiation Protocol Location Conveyance, J. Polk, B. Rosen, Internet Engineering Task Force, [draft-ietf-sipcore-location-conveyance](#) (work in progress)
11. A Hitchhikers Guide to the Session Initiation Protocol (SIP), J. Rosenberg, Internet Engineering Task Force, [RFC 5411](#)
12. Session Initiation Protocol, J. Rosenberg et. al., Internet Engineering Task Force, [RFC 3261](#)
13. RTP: A Transport Protocol for Real-Time Applications, H. Schulzrinne et. al., Internet Engineering Task Force, [RFC 3550](#)
14. SDP: Session Description Protocol, J. Handley, V. Jacobson, Internet Engineering Task Force, [RFC 4566](#)
15. Session Initiation Protocol (SIP): Locating SIP Servers, J. Rosenberg, H. Schulzrinne, Internet Engineering Task Force, [RFC 3263](#)
16. An Offer/Answer Model with the Session Description Protocol (SDP), J. Rosenberg, H. Schulzrinne, Internet Engineering Task Force, [RFC 3264](#)

17. Session Initiation Protocol (SIP)-Specific Event Notification, A. Roach, Internet Engineering Task Force, [RFC 3265](#)
18. The Session Initiation Protocol UPDATE Method, J. Rosenberg, Internet Engineering Task Force, [RFC 3311](#)
19. A Privacy Mechanism for the Session Initiation Protocol (SIP), J. Peterson, [RFC 3323](#)
20. Private Extensions to the Session Initiation Protocol (SIP) for Asserted Identity within Trusted Networks, C. Jennings, J. Peterson, M. Watson, Internet Engineering Task Force, [RFC 3325](#)
21. Session Initiation Protocol (SIP) Extension for Instant Messaging, B. Campbell et. al., Internet Engineering Task Force, [RFC 3428](#)
22. The Reason Header Field for the Session Initiation Protocol (SIP), H. Schulzrinne, D. Oran, G. Camarillo, Internet Engineering Task Force, [RFC 3326](#)
23. The Session Initiation Protocol (SIP) Refer Method, R. Sparks, Internet Engineering Task Force, [RFC 3515](#)
24. Grouping of Media Lines in the Session Description Protocol (SDP), G. Camarillo et. al., Internet Engineering Task Force, [RFC 3388](#)
25. An Extension to the Session Initiation Protocol (SIP) for Symmetric Response Routing, J. Rosenberg, H. Schulzrinne, Internet Engineering Task Force, [RFC 3581](#)
26. Real Time Control Protocol (RTCP) attribute in Session Description Protocol (SDP), C. Huitema, Internet Engineering Task Force, [RFC 3605](#)
27. Control of Service Context using SIP Request-URI, B. Campbell, R. Sparks, Internet Engineering Task Force, [RFC 3087](#)
28. Connected Identity in the Session Initiation Protocol (SIP), J. Elwell, Internet Engineering Task Force, [RFC 4916](#)
29. Indicating User Agent Capabilities in the Session Initiation Protocol (SIP), J. Rosenberg, H. Schulzrinne, P. Kyzivat, Internet Engineering Task Force, [RFC 3840](#)
30. Caller Preferences for the Session Initiation Protocol (SIP), J. Rosenberg, H. Schulzrinne, P. Kyzivat, Internet Engineering Task Force, [RFC 3841](#)
31. A Presence Event Package for the Session Initiation Protocol (SIP), J. Rosenberg, Internet Engineering Task Force, [RFC 3856](#)
32. A Watcher Information Event Template-Package for the Session Initiation Protocol (SIP), J. Rosenberg, Internet Engineering Task Force, [RFC 3857](#)
33. The Session Initiation Protocol (SIP) "Replaces" Header, R. Mahy, B. Biggs, R. Dean, Internet Engineering Task Force, [RFC 3891](#)
34. The Session Initiation Protocol (SIP) Referred-By Mechanism, R. Sparks, Internet Engineering Task Force, [RFC 3892](#)

35. Best Current Practices for Third Party Call Control (3pcc) in the Session Initiation Protocol (SIP), J. Rosenberg et. al., Internet Engineering Task Force, [RFC 3725](#)
36. Using E.164 numbers with the Session Initiation Protocol (SIP), J. Peterson et. al., Internet Engineering Task Force, [RFC 3824](#)
37. Early Media and Ringing Tone Generation in the Session Initiation Protocol (SIP), G. Camarillo, H. Schulzrinne, Internet Engineering Task Force, [RFC 3960](#)
38. Presence Information Data Format (PIDF), H. Sugano, Internet Engineering Task Force, [RFC 3863](#)
39. Session Timers in the Session Initiation Protocol (SIP), S. Donovan, J. Rosenberg, Internet Engineering Task Force, [RFC 4028](#)
40. Internet Media Type message/sipfrag, R. Sparks, Internet Engineering Task Force, [RFC 3420](#)
41. The Session Initiation Protocol (SIP) "Join" Header, R. Mahy, D. Petrie, Internet Engineering Task Force, [RFC 3911](#)
42. Transcoding Services Invocation in the Session Initiation Protocol (SIP) Using Third Party Call Control (3pcc), G. Camarillo et. al., Internet Engineering Task Force, [RFC 4117](#)
43. Basic Network Media Services with SIP, J. Berger et. al., Internet Engineering Task Force, [RFC 4240](#)
44. An Extension to the Session Initiation Protocol (SIP) for Request History Information, M. Barnes et. al., Internet Engineering Task Force, [RFC 4244](#)
45. Actions Addressing Identified Issues with the Session Initiation Protocol's (SIP) Non-INVITE Transaction, R. Sparks, Internet Engineering Task Force, [RFC 4320](#)
46. Extending the Session Initiation Protocol (SIP) Reason Header for Preemption Events, J. Polk, Internet Engineering Task Force, [RFC 4411](#)
47. Communications Resource Priority for the Session Initiation Protocol (SIP), H. Schulzrinne, J. Polk, Internet Engineering Task Force, [RFC 4412](#)
48. Suppression of Session Initiation Protocol (SIP) REFER Method Implicit Subscription, O. Levin, Internet Engineering Task Force, [RFC 4488](#)
49. Conveying Feature Tags with the Session Initiation Protocol (SIP) REFER Method, O. Levin, A. Johnston, Internet Engineering Task Force, [RFC 4508](#)
50. Addressing an Amplification Vulnerability in Session Initiation Protocol (SIP) Forking Proxies, R. Sparks et. al., [RFC 5393](#)
51. Session Initiation Protocol Call Control - Conferencing for User Agents, A. Johnston, O. Levin, Internet Engineering Task Force, [RFC 4579](#)
52. A Session Initiation Protocol (SIP) Event Package for Conference State, R. Rosenberg, H. Schulzrinne, O. Levin, Internet Engineering Task Force, [RFC 4575](#)

53. Obtaining and Using Globally Routable User Agent (UA) URIs (GRUU) in the Session Initiation Protocol (SIP), J. Rosenberg, Internet Engineering Task Force, [RFC 5627](#)
54. Managing Client Initiated Connections in the Session Initiation Protocol (SIP), C. Jennings et. al., Internet Engineering Task Force, [RFC 5626](#)
55. SDP: Session Description Protocol, M. Handley et. al, Internet Engineering Task Force, [RFC 4566](#)
56. Session Initiation Protocol Package for Voice Quality Reporting Event, A. Pendleton et. al., Internet Engineering Task Force, [draft-ietf-sipping-rtcp-summary](#) (work in progress)
57. Interactive Connectivity Establishment (ICE): A Methodology for Network Address Translator (NAT) Traversal for Offer/Answer Protocols, J. Rosenberg, Internet Engineering Task Force, [RFC 5245](#)
58. A Uniform Resource Name (URN) for Emergency and Other Well-Known Services, H. Schulzrinne, Internet Engineering Task Force, [RFC 5031](#)
59. Best Current Practice for Communications Services in support of Emergency Calling, B. Rosen, J. Polk, Internet Engineering Task Force, [draft-ietf-ecrit-phonebcp](#) (work in progress)
60. Location-to-URL Mapping Architecture and Framework, H. Schulzrinne, Internet Engineering Task Force, [RFC5582](#)
61. LoST: A Location-to-Service Translation Protocol, T. Hardie et. al., Internet Engineering Task Force, [RFC 5222](#)
62. A Framework for Centralized Conferencing, M. Barnes, C. Boulton, O. Levin, Internet Engineering Task Force, [RFC 5239](#)
63. Conference Information Data Model for Centralized Conferencing (XCON), O. Novo, G. Camarillo, D. Morgan, E. Even, Internet Engineering Task Force, [draft-ietf-xcon-common-data-model](#) (work in progress)
64. IP Multimedia Subsystem (IMS) emergency sessions, 3<sup>rd</sup> Generation Partnership Project, [3GPP TS 23.167](#)
65. General Packet Radio Service (GPRS); Service description; Stage 2, 3<sup>rd</sup> Generation Partnership Project, [3GPP TS 23.060](#)
66. IP multimedia call control protocol based on Session Initiation Protocol (SIP) and Session Description Protocol (SDP); Stage 3, 3<sup>rd</sup> Generation Partnership Project, [3GPP TS 23.229](#)
67. [ATIS Next Generation Network \(NGN\) Framework, Part III: Standards Gap Analysis](#), Alliance for Telecommunications Industry Solutions, May 2006
68. IP Network-to-Network Interface (NNI) Standard for VoIP, Alliance for Telecommunications Industry Solutions, ATIS-PP-1000009.2006
69. Enhanced Wireless 9-1-1 Phase 2, Telecommunications Industry Association and Alliance for Telecommunications Industry Solutions, J-STD-036-B

70. Universal Description, Discovery and Integration (UDDI) Version 3.0, Organization for the Advancement of Structured Information Standards (OASIS), [UDDI V3.0](#)
71. OASIS UDDI Specifications TC - Committee Best Practices, Organization for the Advancement of Structured Information Standards (OASIS), [UDDI Best Practices](#)
72. OASIS UDDI Specifications TC - Committee Technical Notes, Organization for the Advancement of Structured Information Standards (OASIS), [UDDI Technical Notes](#)
73. NENA Technical Requirements Document for Location Information to Support IP-Based Emergency Services, [NENA 08-752, Issue 1](#)
74. NENA Recommended Method(s) for Location Determination to Support IP-Based Emergency Services - Technical Information Document, [NENA 08-505, Issue 1](#)
75. GEOPRIV Presence Information Data Format Location Object (PIDF-LO) Usage Clarification, Considerations, and Recommendations, J. Winterbottom, M. Thomson, H. Tschofenig, Internet Engineering Task Force, [RFC5491](#)
76. Revised Civic Location Format for Presence Information Data Format Location Object (PIDF-LO), M. Thomson, J. Winterbottom, Internet Engineering Task Force, [RFC 5139](#)
77. Requirements for a Location-by-Reference Mechanism used in Location Configuration and Conveyance, R. Marshall, Internet Engineering Task Force, [RFC 5808](#)
78. A Location Dereferencing Protocol Using HELD, J. Winterbottom, et al, Internet Engineering Task Force, [draft-ietf-geopriv-deref-protocol](#) (work in progress)
79. Session Initiation Protocol (SIP) Overload Control, V. Hilt, D. Malas, H. Schulzrinne, Internet Engineering Task Force, [draft-gurbani-soc-overload-control-01](#) (work in progress)
80. Lightweight Directory Access Protocol (v3), M. Wahl, T. Howes, S. Kille, Internet Engineering Task Force, [RFC 2251](#)
81. Lightweight Directory Access Protocol (v3) Extension for Transport Layer Security, J. Hodges, R. Morgan, M. Wahl, Internet Engineering Task Force, [RFC 2830](#)
82. Real Time Streaming Protocol (RTSP), H. Schulzrinne, A. Rao, M. Lanphier, Internet Engineering Task Force, [RFC 2326](#)
83. The Transport Layer Security (TLS) Protocol Version 1.1, T. Dierks, E. Rescola, Internet Engineering Task Force, [RFC 4346](#)
84. Assertions and Protocols for the OASIS Security Assertion Markup Language (SAML) V2.0, Organization for the Advancement of Structured Information Standards (OASIS), [saml-core-2.0-os](#)
85. Internet X.509 Public Key Infrastructure Certificate Policy and Certification Practices Framework, S. Chokani et. al., Internet Engineering Task Force, [RFC 3647](#)
86. Enhancements for Authenticated Identity Management in the Session Initiation Protocol (SIP), J. Peterson, C. Jennings, Internet Engineering Task Force, [RFC 4474](#)

87. eXtensible Access Control Markup Language (XACML) Version 2.0, Organization for the Advancement of Structured Information Standards (OASIS), [XACML 2.0](#)
88. The Secure Hash Algorithm, Federal Information Processing Standards Publication 180-2, National Institute of Standards and Technology, [FIPS-PUB-180-2](#)
89. Advanced Encryption Standard, Federal Information Processing Standards Publication 197, National Institute of Standards and Technology, [FIPS-PUB-197](#)
90. (Extensible Markup Language) XML-Signature Syntax and Processing, D. Eastlake, J. Reagle, D. Solo, Internet Engineering Task Force, [RFC 3275](#)
91. [OASIS Service Provisioning Markup Language \(SPML\) Version 2](#), Organization for the Advancement of Structured Information Standards (OASIS), [pstc-spml-2.0-os](#)
92. Simple Network Management Protocol, Version 3 (SNMPv3), J. Case, et. al., Internet Engineering Task Force, [RFC 3410](#) through [RFC 3418](#)
93. RTP Control Protocol Extended Reports (RTCP XR), T. Friedman ed., Internet Engineering Task Force. [RFC 3611](#)
94. XML Path Language (XPath) Version 1.0, J. Clark, S. Derosé, World Wide Web Consortium (W3C), [TR/1999/REC-xpath-19991116](#)
95. Common Alerting Protocol V1.0, A. Botterell, Organization for the Advancement of Structured Information Standards (OASIS), [oasis-200402-cap-core-1.0](#)
96. Emergency Provider Access Directory (EPAD) Technical Implementation Guide, J. Rowland, J. Lawton, COMCARE, [EPAD TIG](#)
97. Security Requirements for Cryptographic Modules, Federal Information Processing Standards Publication 140-3, National Institute of Standards and Technology, FIPS-PUB-140-3
98. Report from the Special Joint LTD/PONGI Tech/Ops team on Congestion Control in NG9-1-1 Technical Information Document, National Emergency Number Association, work in progress
99. An INVITE-Initiated Dialog Event Package for the Session Initiation Protocol (SIP), J. Rosenberg, H. Schulzrinne, R. Mahy, Internet Engineering Task Force, [RFC 4235](#)
100. GML 3.1.1 PIDF-LO Shape Application Schema for Use by the Internet Engineering Task Force (IETF), M. Thomson and C. Reed, [Candidate OpenGIS Implementation Specification 06-142r1, Version 1.0, April 2007](#)
101. NENA Functional and Interface Standards for Next Generation 9-1-1 Version 1.0 (i3), National Emergency Number Association, [NENA 08-002](#)
102. NENA Technical Information Document Network/System Access Security, National Emergency Number Association, [NENA 04-503](#)
103. Filtering Location Notifications in the Session Initiation Protocol (SIP), R. Mahy, B. Rosen, H. Tschofenig, [draft-ietf-geopriv-loc-filters](#) (work in progress)

104. Use of Device Identity in HTTP-Enabled Location Delivery (HELD) J. Winterbottom, M. Thomson, H. Tschofenig, R. Barnes, [draft-ietf-geopriv-held-identity-extensions](#) (work in progress)
105. NG9-1-1 Additional Data, National Emergency Number Association, [NENA 71-001](#)
106. Domain Names -- Concepts And Facilities, P. Mockapetris, [STD13](#)
107. A DNS RR for specifying the location of services (DNS SRV), A. Gulbrandsen, P. Vixie, L. Esibov, [RFC2782](#)
108. SIPconnect Technical Recommendation V1.0, C. Sibley, C. Gatch, SIPforum, [sf-adopted-twg-IP\\_PBX\\_SP\\_Interop-sibley-sipconnect](#)
109. NENA Civic Location Exchange Format, National Emergency Number Association, work in progress
110. Interworking between the Session Initiation Protocol (SIP) and the Extensible Messaging and Presence Protocol (XMPP): Instant Messaging, P. Saint-Andre, [draft-saintandre-sip-xmpp-im](#) (work in progress)
111. Emergency Data Exchange Language Distribution Element (EDXL-DE) 1.0, M. Raymond, S. Webb, P. Aymond, Organization for the Advancement of Structured Information Standards, [OASIS EDXL-DE v1.0](#)
112. Synchronizing Location-to-Service Translation (LoST) Protocol based Service Boundaries and Mapping Elements, H. Schulzrinne, H. Tschofenig, [draft-ietf-ecrit-lost-sync](#) (work in progress)
113. Session Initiation Protocol (SIP) Event Notification Extension for Notification Rate Control, A. Niemi, K. Kiss, S. Loreto, [draft-ietf-sipcore-event-rate-control](#) (work in progress)
114. Design Considerations for Session Initiation Protocol (SIP) Overload Control, V. Hilt, E. Noel, C. Shen, A. Abdelai, [draft-hilt-soc-overload-design-00](#) (work in progress)
115. Data elements and interchange formats -- Information interchange -- Representation of dates and times, International Organization for Standardization, [ISO 8601:2004](#)
116. Session Traversal Utilities for NAT (STUN), J. Rosenberg, R. Mahy, P. Matthews, D. Wing, Internet Engineering Task Force, [RFC5389](#)
117. Framework for Real-Time Text over IP Using the Session Initiation Protocol (SIP), A. van Wijk, G. Gybels, Internet Engineering Task Force, [RFC5194](#)
118. RTP Payload for Text Conversation, G. Hellstrom, P. Jones, Internet Engineering Task Force, [RFC4103](#)
119. Framework for Transcoding with the Session Initiation Protocol (SIP), G. Camarillo, Internet Engineering Task Force, [RFC5369](#)
120. Indication of Message Composition for Instant Messaging, H. Schulzrinne, Internet Engineering Task Force, [RFC3994](#)

121. The Message Session Relay Protocol (MSRP), B. Campbell, R. Mahy, C. Jennings, Internet Engineering Task Force, [RFC4975](#)
122. Relay Extensions for the Message Session Relay Protocol (MSRP), C. Jennings, R. Mahy, A.B. Roach, Internet Engineering Task Force, [RFC4976](#)
123. Multipurpose Internet Mail Extensions (MIME) Part Two: Media Types, N. Freed, N. Borenstein, Internet Engineering Task Force, [RFC2046](#)
124. vCard MIME Directory Profile, F. Dawson, T. Howes, Internet Engineering Task Force, [RFC2426](#)
125. The Secure Real-time Transport Protocol (SRTP), M. Baugher, et. al., Internet Engineering Task Force, [RFC3711](#)
126. Session Description Protocol (SDP) Security Descriptions for Media Streams, F. Andreassen, M. Baugher, D. Wing, Internet Engineering Task Force, [RFC4568](#)
127. NG9-1-1 Additional Data, National Emergency Number Association, [NENA 71-001](#)
128. An Extensible Markup Language (XML)-Based Format for Event Notification Filters, H. Khartabil, E. Leppanen, M. Lonnfors, J. Costa-Requena, Internet Engineering Task Force, [RFC4661](#)
129. Filtering Location Notifications in the Session Initiation Protocol (SIP), R. Mahy, B. Rosen, H. Tschofenig, Internet Engineering Task Force, [draft-ietf-geopriv-loc-filters](#) (work in progress)
130. OGC Web Feature Service Implementation Specification Version 1.1.0, P. Vretanos, Open Geospatial Consortium, [OGC04-094](#)
131. OGC Loosely Coupled Synchronization of Geographic Databases in the Canadian Geospatial Data Infrastructure Pilot Version 0.0.9, R. Singh, Open Geospatial Consortium, [OGC 08-001](#)
132. The Atom Syndication Format, M. Nottingham, R. Sayre, Internet Engineering Task Force, [RFC4287](#)
133. The ATOM Publishing Protocol, J. Gregorio, B. de hOra, Internet Engineering Task Force, [RFC5023](#)
134. Voice Extensible Markup Language (VoiceXML) Version 2.0, S. McGlashan et. al., World Wide Web Consortium, [REC-voicexml20-20040316](#)
135. Real Time Streaming Protocol (RTSP), H. Shulzrinne, A. Rao, R. Lanphier, Internet Engineering Task Force, [RFC2326](#)
136. The Session Description Protocol (SDP) Label Attribute, O. Levin, G. Camarillo, Internet Engineering Task Force, [RFC4574](#)
137. An Extension to the Session Description Protocol (SDP) for Media Loopback, K. Heyadat et. al., Internet Engineering Task Force, [draft-ietf-mmusic-media-loopback](#) (work in progress)
138. "Enhanced Variable Rate Codec, Speech Service Option 3 for Wideband Spread Spectrum Digital Systems", 3GPP2 TSGC-CC.S0014-A V1.0, TIA/EIA/IS-27-A; and also "RTP

- Payload Format for Enhanced Variable Rate Codecs (EVRC) and Selectable Mode Vocoders (SMV)", A. Li, [RFC3558](#).
139. "Enhanced Variable Rate Codec, Speech Service Option 3 and 68 for Wideband Spread Spectrum Digital Systems", 3GPP2 TSGC-C C.S0014-B V1.0, TIA/EIA/IS-127-B; and also "Enhancements to RTP Payload Formats for EVRC Family Codecs", Q.Xie, R. Kapoor, [RFC 4788](#).
  140. "Enhanced Variable Rate Codec, Speech Service Options 3, 68, and 70 for Wideband Spread Spectrum Digital Systems", 3GPP2 TSGC-C C.S0014-C V1.0, TIA/EIA/IS-127-C; and also "RTP Payload Format for the Enhanced Variable Rate Wideband Codec (EVRC-WB) and the Media Subtype Updates for EVRC-B Codec", H. Desineni, Q. Xie, [RFC 5188](#).
  141. "Enhanced Variable Rate Codec, Speech Service Options 3, 68, 70, and 73 for Wideband Spread Spectrum Digital Systems" 3GPP2 TSGC-C C.S0014-D V1.0 TIA/EIA/IS-127-D; and also "RTP payload format for Enhanced Variable Rate Narrowband-Wideband Codec(EVRC-NW)", [draft-zfang-avt-rtp-evrc-nw](#) (work in progress).
  142. "NG Partner Program 9-1-1 Funding Report", NENA, [NGFundingReport](#)
  143. "Next Generation 9-1-1 Transition Policy Implementation Handbook: A Guide for Identifying and Implementing Policies to Enable NG9-1-1", NENA, [NG911 Transition Policy Handbook](#)
  144. "Additional Data related to a Call for Emergency Call Purposes", B. Rosen, H. Tschofenig, Internet Engineering Task Force, [draft-rosen-ecrit-additional-data](#) (work in progress)
  145. "RObust Header Compression (ROHC): Framework and four profiles: RTP, UDP, ESP, and uncompressed", C. Bormann et. al., Internet Engineering Task Force, [RFC 3095](#)
  146. "Geolocation Policy: A Document Format for Expressing Privacy Preferences for Location Information", H. Schulzrinne, H. Tschofenig et. al, Internet Engineering Task Force, [draft-ietf-geopriv-policy](#) (work in progress)
  147. "Common Policy: A Document Format for Expressing Privacy Preferences", H. Schulzrinne et. al., Internet Engineering Task Force, [RFC 4745](#)

## Appendix A – Mapping of PIDF-LO to Legacy PSAP ALI

NENA Data Elements	Field Name, if applicable	Comes from Structure	Field in SIP Header, PIDF-LO or Additional Data Structure
Record Type	DAT or RTN	Not Applicable	Not Applicable
Status Indicator	STI	Not Applicable	Not Applicable
Function Code/Function of Change	FOC	Not Available	Not Available
Calling Party Number (v2.1 used two separate fields - NPA and CALLING NUMBER)	CPN	SIP Invite	If PAI is present and identity is not, use P-A-I. If identity is there and P-A-I is not, use From. If both are present, it's confusing, probably use From.
Main Telephone Number (v2.1 used two separate fields - MAIN NPA and MAIN NUMBER)	MTN	Additional Data Associated with a Call	<i>vCARD for subscriber's data</i>
Call Back Number (calling #-ALI display)	CBN	Additional Data Associated with a Subscriber	<i>vCARD for subscriber's data</i> NOTE: Placement of this data for legacy ALI display varies by PSAP. Coordination with all parties will be required
P-ANI (main #-ALI display) - wireless - only pANI when CPN is not North American number	PNI	SIP Invite	If PAI is present and identity is not, use P-A-I. If identity is there and P-A-I is not, use From. If both are present, it's confusing, probably use From. NOTE: Placement of this data for legacy ALI display varies by PSAP. Coordination with all parties will be required.

NENA Data Elements	Field Name, if applicable	Comes from Structure	Field in SIP Header, PIDF-LO or Additional Data Structure
House Number		PIDF	HNO
House Number Suffix		PIDF	HNS
Prefix Directional		PIDF	PRD
Street Name		PIDF	RD
Street Suffix		PIDF	STS
Post Directional		PIDF	POD
MSAG Community Name		PIDF	A3 - if not available use PCN (mapped by PIDF TO MSAG CONVERSION FUNCTION and returns an MSAG valid address from the current MSAG)
Postal Community Name	PCN	PIDF	PCN
State/Province		PIDF	A1
Country		PIDF	Country
Location / Location Description		PIDF	LOC (This could be a combination of FLR, UNIT, ROOM, SEAT. Most CPE only displays 20 characters.)
Building		PIDF	BLD
Floor		PIDF	FLR
UnitNum		PIDF	ROOM
UnitType		PIDF	UNIT
Landmark Address	LMK	PIDF	LMK
Also Rings At Address	ARA	Not Applicable	Not Applicable
Customer Name		Additional Data	Caller Contact (vCARD)

NENA Data Elements	Field Name, if applicable	Comes from Structure	Field in SIP Header, PIDF-LO or Additional Data Structure
<p>Class of Service  <b>Valid Entries:</b>            1 = Residence            2 = Business            3 = Residence PBX            4 = Business PBX            5 = Centrex            6 = Coin 1 way out            7 = Coin 2 way            8 = Mobile            9 = Residence OPX            0 = Business OPX            A = Customer owned Coin Telephone (COCOT)            B = Not Available (used locally by a few to represent ESCO failure)            G = Wireless Phase I            H = Wireless Phase II            I = Wireless Phase II returning Phase I            V = Voice Over IP Default COS            C = VoIP Residence            D = VoIP Business            E = VoIP Coin/Pay Phone            F = VoIP Wireless            J = VoIP Nomadic            K = VoIP Enterprise Services - Centrex &amp; PBX</p>		<p>Additional Data             INCLUDE THE METHOD FIELD OF THE PIDF</p>	<p>Service Environment (Business or Residence)  <b>PLUS</b>            Service Delivered by Provider to End User.            (This defines the type of service the end user has subscribed to. The implied mobility of this service cannot be relied upon.)</p> <ul style="list-style-type: none"> <li>• Mobile Telephone Service: Includes Satellite, CDMA, GSM, Wi-Fi, WiMAX, LTE (Long Term Evolution)</li> <li>• Fixed Public Pay/Coin telephones: Any coin or credit card operated device.  <b>CONVERT BACK TO: 7</b></li> <li>• One way outbound service  <b>CONVERT BACK TO: 6</b></li> <li>• Inmate call/service  <b>CONVERT BACK TO: 6</b></li> <li>• Soft dial tone/quick service/warm disconnect/suspended  <b>CONVERT BACK TO: 1</b></li> <li>• Multi-line telephone system (MLTS): Includes all PBX, Centrex, key systems,</li> </ul>

NENA Data Elements	Field Name, if applicable	Comes from Structure	Field in SIP Header, PIDF-LO or Additional Data Structure
			<p>Shared Tenant Service.            (ask operations if they want analog and digital identified for calling back caller)  <b>CONVERT BACK TO: 4</b></p> <ul style="list-style-type: none"> <li>• Sensor, unattended:              Includes devices that generate DATA ONLY. This is one-way information exchange and there will be no other form of communication.  <b>NOT AVAILABLE</b></li> <li>• Sensor, attended: Includes devices that are supported by a monitoring service provider or automatically open a two-way communication path.  <b>NOT AVAILABLE</b></li> <li>• Wireline: Plain Old Telephone Service (POTS).  <b>CONVERT BACK TO: 1 OR 2, DEPENDING ON SERVICE ENVIRONMENT</b></li> <li>• VoIP Telephone Service: A type of service that offers communication over internet protocol. Includes fixed, nomadic, mobile, unknown.  <b>CONVERT BACK TO: V</b></li> </ul>

NENA Data Elements	Field Name, if applicable	Comes from Structure	Field in SIP Header, PIDF-LO or Additional Data Structure
			<ul style="list-style-type: none"><li>• Unknown <b>NOT AVAILABLE</b></li></ul>

NENA Data Elements	Field Name, if applicable	Comes from Structure	Field in SIP Header, PIDF-LO or Additional Data Structure
Type of Service <b>Valid entries:</b> 0 = Not FX nor Non-Published 1 = FX in 911 serving area 2 = FX outside 911 serving area 3 = Non-Published 4 = Non-Published FX in serving area 5 = Non-Published FX outside 911 serving area 6 = Local Ported Number (LNP) 7 = Interim Ported Number	" "	Additional Data	Telephone Number Privacy Indicator (Allowable Values: Published or Non-Published)  <b>Published converts back to 0</b>  <b>Non-Published converts back to 3</b>
ESN			The MSAG Conversion function can convert a PIDF to an MSAG data format, which contains the ESN.
Agencies:Police:Name		ECRF	Display name for urn:nena:service:sos.police
Agencies:Police:TN		ECRF	AoR (Address of Record) for urn:nena:service:sos.police
Agencies:Fire:Name		ECRF	Display name for urn:nena:service:sos.fire
Agencies:Fire:TN		ECRF	AoR (Address of Record) for urn:nena:service:sos.fire
Agencies:EMS:Name		ECRF	Display name for urn:nena:service:sos.ems
Agencies:EMS:TN		ECRF	AoR (Address of Record) for urn:nena:service:sos.ems
Agencies:OtherAgencies:Name		ECRF	Display name for the appropriate nena service urn
Agencies:OtherAgencies:TN		ECRF	AoR (Address of Record) for the appropriate nena service urn



NENA Data Elements	Field Name, if applicable	Comes from Structure	Field in SIP Header, PIDF-LO or Additional Data Structure
Agencies:AdditionalInfo		Not Available	Not Available
Order Number		Not Available	Not Available
Extract Date		Not Available	Not Available
Completion Date	CPD	Not Applicable	Not Applicable
County ID - 5 characters		PIDF	A2 (mapping of PIDF back to 5-character field)
Access Infrastructure Provider ID (Company ID 1)		–Not Available, future work in process to provide in PIDF	Not Available
Data Provider ID (Company ID 2)		Additional Data Associated with a Call	Provided by Company ID <ProviderCompanyID>
PSAPID		Call Signaling	Request URI
PSAPName		Not Available	Not Available
RouterID		Call Signaling	VIA headers
Exchange		Not Available	Not Available
CLLI		Not Available	Not Available
Source ID		Not Available	Not Available
ZIP Code (5 characters) <b>PLUS</b> ZIP + 4 (4 characters)		PIDF	PC
Postal/ZIP Code	ZIP	PIDF	PC
General Use		Not Available	Not Available

NENA Data Elements	Field Name, if applicable	Comes from Structure	Field in SIP Header, PIDF-LO or Additional Data Structure
Customer Code		Not Available	Not Available
Comments		Not Available	Not Available
X Coordinate / Longitude		PIDF via GML Schema	Longitude
Y Coordinate / Latitude		PIDF via GML Schema	Latitude
Z Coordinate / Elevation		PIDF via GML	Elevation
Cell Site:Cell ID		Call Signaling	P-Access Info
Cell Site:Sector ID		Call Signaling	P-Access Info
Cell Site:LocationDescription		Not Available	Not Available
Datum		Fixed	Always WGS-84
Heading		Not Available	Not Available
Speed (in KPH/MPH)		Not Available	Not Available
PositionSource		Not Available	Not Available
Uncertainty		PIDF via GML Schema	Uncertainty - determined by the size of the shape
Confidence		Fixed	Confidence - fixed
DateStamp		PIDF via GML Schema	TimeStamp
Comment		Not Available	Not Available
TAR Code		Not Available	Not Available
Reserved		Not Available	Not Available
General Use 1	GU1	Not Applicable	Not Applicable
General Use 2	GU2	Not Applicable	Not Applicable
General Use 3	GU3	Not Applicable	Not Applicable
General Use 4	GU4	Not Applicable	Not Applicable
General Use 5	GU5	Not Applicable	Not Applicable

<b>NENA Data Elements</b>	<b>Field Name, if applicable</b>	<b>Comes from Structure</b>	<b>Field in SIP Header, PIDF-LO or Additional Data Structure</b>
General Use 6	GU6	Not Applicable	Not Applicable
General Use 7	GU7	Not Applicable	Not Applicable
General Use 8	GU8	Not Applicable	Not Applicable
ALT #		Not Available	Not Available
Alternate Telephone Number (used for interim number portability - probably no longer used)	ALT	Not Applicable	Not Applicable
Return Code Number	RCN	Not Applicable	Not Applicable
Special Attention Indicator 1 = TTY call 2 = ACN, Automatic Crash/Collision Notification	SAI	Not Applicable	Not Applicable
Common Language Location Indicator (CLLI)	CLI	Not Applicable	Not Applicable
Expanded Extract Date		Not Available	Not Available
NENA Reserved		Not Available	Not Available
Reserved		Not Available	Not Available
Field Separator		Not Applicable	Not Available
End of Record NL	NL	Not Applicable	Not Available
End of Record {always an asterisk (*)}	*	Not Available	Not Available

## Appendix – B GIS Layer Definitions

The Model below is for use in the interface between the SIF and the ECRF/LVF.

The USE R / O is an indication that the field is Required or Optional. If the field is Required, the individual attribute information in the field may be blank if they are not present.

<u>ATTRIBUTE NAME</u>	<u>USE R/O</u>	<u>TYPE</u>	<u>DATA DESCRIPTION</u>
<b>Centerlines</b>			
Source of Data	R	A	Agency that last updated the record – usually the name of the 9-1-1 Authority
Data Updated	R	AN	Date of last update using ISO 8501 format Ex. 2010-08-30T15:52+05
Effective Date	R	AN	Date the new information goes into effect using ISO 8601 format Ex. 2010-10-12T01:01+05
Unique_ID	R	AN	Unique ID for each Road Segment, with domain of agency included. ID's not to be re-used when road is split or deleted. Ex. GHC123@houston.eoc.tx
Country	R	A	The name of a country represented by its two-letter ISO 3166-1 English country alpha-2 code elements in capital ASCII letters. Ex. US (country in RFC 5139)
State Left	R	A	The name of a state, province or equivalent, represented by the two-letter abbreviation given in ISO 3166-2 on the left side of the road. A state/province is a primary governmental division of the United States/Canada. Ex. TX (A1 in RFC 5139)
State Right	R	A	The name of a state, province or equivalent, represented by the two-letter abbreviation given

<u>ATTRIBUTE NAME</u>	<u>USE R/O</u>	<u>TYPE</u>	<u>DATA DESCRIPTION</u>
			in ISO 3166-2 on the right side of the road. A state/province is a primary governmental division of the United States/Canada. Ex. TX (A1 in RFC 5139)
County Left	R	AN	The completely spelled out name of county or county-equivalent on the left side of where the road is located, as given in FIPS 6-4 <sup>1</sup> . A county (or its equivalent) is the primary legal division of a state, province or territory Ex. Harris (A2 in RFC 5139)
County Right	R	AN	The completely spelled out name of county or county-equivalent on the right side of where the road is located, as given in FIPS 6-4 <sup>1</sup> . A county (or its equivalent) is the primary legal division of a state, province or territory Ex. Harris (A2 in RFC 5139)
Municipality Left	O	A	The name of the incorporated municipality or other general-purpose local governmental unit (if any) on the left side of the road Ex. Chicago, (A3 in RFC 5139)
Municipality Right	O	A	The name of the incorporated municipality or other general-purpose local governmental unit (if any) on the right side of the road Ex. Chicago, (A3 in RFC 5139)
Unincorporated Community Right	O	A	The name of an unincorporated community, either within an incorporated municipality or in an unincorporated portion of a county, where the address is located. The area must have a definite boundary - on the Right side of the

<u>ATTRIBUTE NAME</u>	<u>USE R/O</u>	<u>TYPE</u>	<u>DATA DESCRIPTION</u>
			road (A4 in RFC 5139).
Unincorporated Community Left	O	A	The name of an unincorporated community, either within an incorporated municipality or in an unincorporated portion of a county, where the address is located. The area must have a definite boundary - on the Left side of the road (A4 in RFC 5139)
Neighborhood Community Right	O	A	Neighborhood or other informal designation for a part of a city - on the Right side of the road (A5 in RFC 5139)
Neighborhood Community Left	O	A	Neighborhood or other informal designation for a part of a city - on the Left side of the road (A5 in RFC 5139)
Street Segment	R	S	StreetSegment
Alias Street Segment	O	S	StreetSegment, may occur more than once
Road Class	R	A	<ul style="list-style-type: none"> <li>• Interstate</li> <li>• Primary – Other Freeways and Expressways</li> <li>• Secondary – Other Principal Arterial or Collector</li> <li>• Local – Neighborhood Road, Rural Road, City Street</li> <li>• Ramp – Typically unaddressed access to adjacent roads</li> <li>• Alley – usually unnamed and unaddressed</li> <li>• Private – may be unnamed and/or unnumbered</li> </ul>

<u>ATTRIBUTE NAME</u>	<u>USE R/O</u>	<u>TYPE</u>	<u>DATA DESCRIPTION</u>
			<ul style="list-style-type: none"> <li>Trail – Bike paths, recreational vehicles</li> </ul>
One-way	O	A	One way road classification <ul style="list-style-type: none"> <li>B or blank – travel in both directions</li> <li>FT – One-way from FROM node to TO node (in direction of arc);</li> <li>TF – One way from TO node to FROM Node (opposite direction of arc)</li> </ul>
Speed Limit	O	N	Normal Posted Speed in mph
Postal Community Name Left	R	A	The name of the post office from which mail is delivered to the address, completely spelled out, on the Left side of the street. (PCN in RFC 5139)
Postal Community Name Right	R	A	The name of the post office from which mail is delivered to the address, completely spelled out, on the Right side of the street. (PCN in RFC 5139)
Postal Code/ZIP Code Left	R	AN	Postal or ZIP code as identified on the Left side of the street <sup>2</sup> (PC in RFC 5139)
Postal Code/ZIP Code Right	R	AN	Postal or ZIP code as identified on the Right side of the street <sup>2</sup> (PC in RFC 5139)
ESN Left	O	AN	3-5 digit Emergency Service Number associated with the Left side of the street <sup>3</sup>
ESN Right	O	AN	3-5 digit Emergency Service Number associated with the Right side of the street <sup>3</sup>
MSAG Community Name Left	O	A	Valid service community name as identified by the MSAG on the Left side of the street <sup>3</sup>
MSAG Community Name Right	O	A	Valid service community name as identified by the MSAG on the Right side of the street <sup>3</sup>

<u>ATTRIBUTE NAME</u>	<u>USE R/O</u>	<u>TYPE</u>	<u>DATA DESCRIPTION</u>
<b>CompleteStreetName</b>			
Street Pre-Modifier	O	A	A word or phrase that precedes the primary street name and is not a leading street direction (PRM in RFC 5139). Street Pre-Modifier is only used when the Street Prefix Directional is also used. Examples: Alternate, Business, Bypass, Extended, Historic, Loop, Old, Private, Public, Spur, etc.
Leading Street Direction	O	A	Leading street direction prefix. Valid Entries: N S E W NE NW SE SW (PRD in RFC 5139)
Street Type Prefix	O	A	The type of street preceding the street name element. Must always be spelled out. (STP, proposed)
Street Name	R	A	The Legal street name as assigned by local addressing authority (RD in RFC 5139)
Street Type Suffix	O	A	The type of street following the street name. Abbreviations listed in USPS Publication 28 Appendix C1 may be used, or Street Type Suffix may be spelled out. All other street types are permitted, but must be spelled out completely. (STS in RFC 5139)
Trailing Street Direction	O	A	Trailing street direction suffix. Valid Entries: N S E W NE NW SE SW (POD in RFC 5139)
Street Post-Modifier	O	A	A word or phrase that follows the street name and is not a street suffix or trailing street direction. (POM in RFC 5139). Valid Entries include, but are not limited to: Access, Alternate, Business, Bypass, Connector, Extended, Extension, Loop, Private, Public,

<u>ATTRIBUTE NAME</u>	<u>USE R/O</u>	<u>TYPE</u>	<u>DATA DESCRIPTION</u>
			Scenic, Spur, Ramp, Underpass, Overpass.
MSAG Street Name	O	A	The street name as it appears in the MSAG
MSAG Suffix	O	A	The suffix as it appears in the MSAG
<b>CompleteAddressNumber</b>			
Address Number Prefix	O	AN	An extension of the address number that precedes it and further identifies a location along a thoroughfare or within a defined area (HNP, proposed)
Address Number	R	N	The numeric identifier of a location along a thoroughfare or within a defined community. (HNO in RFC5139)
Address Number Suffix	O	AN	An extension of the address number that follows it and further identifies a location along a thoroughfare or within a defined area.
<b>StreetSegment</b>			
Complete Street Name	R	S	CompleteStreetName
Left From Address	R	N	The address on the Left side of the road, which corresponds to the "Left FROM Node" of the arc segment. It is quite possible that this address be higher than the "Left TO Node" ex. 399
Left To Address	R	N	The address on the Left side of the road, which corresponds to the "Left TO Node" of the arc segment. It is quite possible that this address be lower than the "Left From Address" ex. 199
Parity Left	R	A	A single character code that explicitly defines the allowable addresses on the Left side of the road. Valid values include "O", "E", or "B" for

<u>ATTRIBUTE NAME</u>	<u>USE R/O</u>	<u>TYPE</u>	<u>DATA DESCRIPTION</u>
			odd, even or both respectively.
Validation Left	R	A	Indicates House Number MUST be validated against the Site / Structure layer on left side of street. Valid entries are SSVAl - to validate against Site Structure layer, SSNR – to allow House Number validation with centerlines. <sup>6</sup>
Right From Address	R	N	The address on the Right side of the arc which corresponds to the Right "From Node" of the arc segment. It is quite possible that this address is higher than the "Right To Address" ex. 398
Right To Address	R	N	The address on the Right side of the road, which corresponds to the "To Node" end of the arc segment. It is quite possible that this address be lower than the "Low Address Right" ex. 198
Parity Right	R	A	A single character code that explicitly defines the allowable addresses on the Right side of the road. Valid values include "O", "E", or "B" for odd, even or both respectively.
Validation Right	R	A	Indicates House Number MUST be validated against the Site / Structure layer on right side of street. Valid entries are SSVAl - to validate against Site Structure layer or SSNR – to allow House Number validation with centerlines and SSEXP to validate against Site Structure as exceptions. <sup>6</sup>
<b>CompleteAddress</b>			
Complete Street Name	R	S	CompleteStreetName

<u>ATTRIBUTE NAME</u>	<u>USE R/O</u>	<u>TYPE</u>	<u>DATA DESCRIPTION</u>
Complete Address Number	R	S	CompleteAddressNumber
<b>Site / Structure Location point</b> <b>Site/Structure Location Layer</b>			
Source of Data	R	A	Agency that last updated the record – Agency ID e.g., the domain name of the 9-1-1 Authority
Date Updated	R	AN	Date of last update using ISO 8106 format ex. 2010-08-30T15:52+05
Effective Date	R	AN	Date the new layer information goes into effect using ISO 8106 format Ex. 2010-10-12T01:01+05
Unique_ID	R	AN	Unique ID for each record
Country	R	A	The name of a country represented by its two-letter ISO 3166-1 English country alpha-2 code elements in capital ASCII letters.
State	R	A	The name of a state, province or equivalent, represented by the two-letter abbreviation given in ISO 3166-2. A state/province is a primary governmental division of the United States/Canada. ex. TX (A1 in RFC 5139)
County	R	A	The completely spelled out name of county or county-equivalent where the road is located, as given in FIPS 6-4 <sup>1</sup> . A county (or its equivalent) is the primary legal division of a state, province or territory (A2 in RFC 5139)
Municipality	O	A	The name of the incorporated municipality or other general-purpose local governmental unit (if any) where the address is <sup>4</sup> (A3 in RFC 5139)

<u>ATTRIBUTE NAME</u>	<u>USE R/O</u>	<u>TYPE</u>	<u>DATA DESCRIPTION</u>
Unincorporated Community	O	A	The name of an unincorporated community, division, or area, either within an incorporated municipality or in an unincorporated portion of a county, where the address is located. The area must have a definite boundary (A4 in RFC 5139)
Neighborhood Community	O	A	Neighborhood or other informal designation for a part of a municipality (A5 in RFC 5139)
Address	R	S	CompleteAddress
Alias Address	O	S	CompleteAddress. May occur more than once.
ESN <sup>3</sup>	O	AN	Emergency Service Number associated with this House Number, Street Name and Community Name <sup>3</sup>
Postal Community Name	R	A	The name of the post office from which mail is delivered to the address, completely spelled out. (PCN in RFC 5139)
Postal Code/ZIP Code	R	AN	Postal or ZIP code ex. 05421 Format: ANANAN (PC in RFC 5139)
Building	O	AN	Building Name e.g., DuPont Hotel, Shiloh Church (BLD in RFC 5139)
Floor	O	AN	The Floor the location is associated with (FLR in RFC 5139)
Unit	O	AN	Unit, apartment, suite designation (UNIT in RFC 5139)
Room	O	AN	Room designation (ROOM in RFC 5139)
Seat	O	AN	Seat, cubicle, etc... (SEAT in RFC 5139)
Landmark	O	AN	Landmark or Vanity address (LMK in RFC 5139)

<u>ATTRIBUTE NAME</u>	<u>USE R/O</u>	<u>TYPE</u>	<u>DATA DESCRIPTION</u>
			5139)
LOC	O	AN	Additional location information ex. Room 222 (LOC in RFC 5139)
Place Type	R	A	Type of place, e.g., office, store, school, residential (PLC in 5139)

Notes:

<sup>1</sup> The FIPS Codes Standard shall not apply to applications involving interchange of international data that require the use of the country codes of the International Organization for Standardization, i.e., ISO 3166. For the convenience of such users, the ISO 3166 country codes are published in FIPS PUB 104, *Guideline for Implementation of ANSI Codes for the Representation of Names of Countries, Dependencies, and Areas of Special Sovereignty*. FIPS PUB 104 provides both two- and three-character alphabetic codes for each entity listed. Federal agencies that do not require FIPS PUB 104 for international data interchange, and are not involved in national defense programs or with the mission of the U.S. Department of State, may adopt either set of codes. <http://www.census.gov/geo/www/fips/fips65/index.html>

<sup>2</sup> The USPS considers ZIP codes to be delivery points instead of areas. There may be differences between this depiction and actual ZIP code mailing address.

<sup>3</sup> Used in Legacy Systems and is not used in a full i3 implementation

<sup>6</sup> Setting Validation Flag to SSVAl will result in the House Number (HNO) being validated against the Site Structure location layer. If the House Number is not valid in the Site Structure Layer, the HNO field will have either a <valid> or <invalid> response from the LVF.

Setting the Validation Flag to SSNR will result in the HNO being first checked against the Site/Structure layer, and if there is no Site/Structure with that House Number, a range validation will be performed against the Left/Right range values in Road Centerline. If the House Number is within a range values of the appropriate Road Center Line, the LVF will return "unchecked". If the House Number is not within a range, the LVF will return "invalid".

All of these fields may not be loaded into the ECRF.

This is the minimum data, there can be many other fields not shown .e.g., direction of travel, number of lanes.

All other existing GIS data layer schemas, other than the revised layers shown above, should be used.

<u>ATTRIBUTE NAME</u>	<u>USE R/O</u>	<u>TYPE</u>	<u>DATA DESCRIPTION</u>
<b>National Subdivisions (State Boundary)</b>			
Source of Data	R	A	Agency that last updated the record – Agency ID e.g., the domain name of the 9-1-1 Authority
Date Updated	R	AN	Date of last update using ISO 8601 format Ex. 2010-08-30T15:52+05
Effective Date	R	AN	Date the new layer information goes into effect using ISO 8601 format Ex. 2010-10-12T01:01+05
Unique_ID	R	AN	Unique ID for each record
Country	R	A	The name of a country represented by its two-letter ISO 3166-1 English country alpha-2 code elements in capital ASCII letters.
State	R	A	The name of a state, province or equivalent, represented by the two-letter abbreviation given in ISO 3166-2. A state/province is a primary governmental division of the United States/Canada. ex. TX (A1 in RFC 5139)
<b>County Boundary</b>			
Source of Data	R	A	Agency that last updated the record – Agency ID e.g., the domain name of the 9-1-1 Authority
Date Updated	R	AN	Date of last update using ISO 8601 format Ex. 2010-08-30T15:52+05
Effective Date	R	AN	Date the new layer information goes into effect using ISO 8601 format Ex. 2010-10-12T01:01+05
Unique_ID	R	AN	Unique ID for each record

<u>ATTRIBUTE NAME</u>	<u>USE R/O</u>	<u>TYPE</u>	<u>DATA DESCRIPTION</u>
Country	R	A	The name of a country represented by its two-letter ISO 3166-1 English country alpha-2 code elements in capital ASCII letters.
State	R	A	The name of a state, province or equivalent, represented by the two-letter abbreviation given in ISO 3166-2. A state/province is a primary governmental division of the United States/Canada. ex. TX (A1 in RFC 5139)
County	R	A	The completely spelled out name of county or county-equivalent as given in FIPS 6-4 <sup>1</sup> . A county (or its equivalent) is the primary legal division of a state, province or territory
<b>Emergency Services Boundary</b>			
Source of Data	R	A	Agency that last updated the record – Agency ID e.g., the domain name of the 9-1-1 Authority
Date Updated	R	AN	Date of last update using ISO 8601 format Ex. 2010-08-30T15:52+05
Effective Date	R	AN	Date the new layer information goes into effect using ISO 8601 format Ex. 2010-10-12T01:01+05
Unique_ID	R	AN	Unique ID for each record
Country	R	A	The name of a country represented by its two-letter ISO 3166-1 English country alpha-2 code elements in capital ASCII letters.
State	R	A	The name of a state, province or equivalent, represented by the two-letter abbreviation given in ISO 3166-2. A state/province is a primary governmental division of the United

<u>ATTRIBUTE NAME</u>	<u>USE R/O</u>	<u>TYPE</u>	<u>DATA DESCRIPTION</u>
			States/Canada. ex. TX (A1 in RFC 5139)
AgencyId	R	AN	Unique domain name for the Service.
ServiceResponse	R	S	Service supplied for this boundary. May occur more than once.
<b>Service Response</b>			
Route	R	URI	URN/URL for Routing ex. sip:sos@psap.columbus.oh.us
Service URN	R	URN	The URN/URL for the Emergency Service or other Well-Known Service (e.g., "urn:service:sos" for a PSAP or "urn:service:sos.ambulance" for an ambulance service. Per RFC 5031.
Service Number	O	AN	The emergency services number appropriate for the location provided in the query.
Agency vCard URI	R	URI	URI for the vCARD of contact information.
Display Name	O	A	Display Name of the Service ex. Houston FD
<b>Municipal Boundary</b>			
Source of Data	R	A	Agency that last updated the record – Agency ID e.g., the domain name of the 9-1-1 Authority
Date Updated	R	AN	Date of last update using ISO 8106 format Ex. 2010-08-30T15:52+05
Effective Date	R	AN	Date the new layer information goes into effect using ISO 8106 format Ex. 2010-10-12T01:01+05
Unique_ID	R	AN	Unique ID for each record
Country	R	AN	The name of a country represented by its two-

<u>ATTRIBUTE NAME</u>	<u>USE R/O</u>	<u>TYPE</u>	<u>DATA DESCRIPTION</u>
			letter ISO 3166-1 English country alpha-2 code elements in capital ASCII letters.
State	R	A	The name of a state, province or equivalent, represented by the two-letter abbreviation given in ISO 3166-2. A state/province is a primary governmental division of the United States/Canada. Example: TX (A1 in RFC 5139)
County	R	A	The completely spelled out name of county or county-equivalent where the road is located, as given in FIPS 6-4 <sup>1</sup> . A county (or its equivalent) is the primary legal division of a state, province or territory (A2 in RFC 5139)
Municipality	R	A	The name of the incorporated municipality or other general-purpose local governmental unit (if any)
<b>Unincorporated Community Boundary</b>			
Source of Data	R	A	Agency that last updated the record – Agency ID e.g., the domain name of the 9-1-1 Authority
Date Updated	R	AN	Date of last update using ISO 8106 format Ex. 2010-08-30T15:52+05
Effective Date	R	AN	Date the new layer information goes into effect using ISO 8106 format Ex. 2010-10-12T01:01+05
Unique_ID	R	AN	Unique ID for each record
Country	R	AN	The name of a country represented by its two-letter ISO 3166-1 English country alpha-2 code elements in capital ASCII letters.

<u>ATTRIBUTE NAME</u>	<u>USE R/O</u>	<u>TYPE</u>	<u>DATA DESCRIPTION</u>
State	R	A	The name of a state, province or equivalent, represented by the two-letter abbreviation given in ISO 3166-2. A state/province is a primary governmental division of the United States/Canada. Example: TX (A1 in RFC 5139)
County	R	A	The completely spelled out name of county or county-equivalent where the road is located, as given in FIPS 6-4 <sup>1</sup> . A county (or its equivalent) is the primary legal division of a state, province or territory (A2 in RFC 5139)
Municipality	R	A	The name of the incorporated municipality or other general-purpose local governmental unit (if any)
Unincorporated Community	R	A	The name of an unincorporated community, either within an incorporated municipality or in an unincorporated portion of a county, where the address is located. The area must have a definite boundary (A4 in RFC 5139).
<b>Neighborhood Boundary</b>			
Source of Data	R	A	Agency that last updated the record – Agency ID e.g., the domain name of the 9-1-1 Authority
Date Updated	R	AN	Date of last update using ISO 8106 format Ex. 2010-08-30T15:52+05
Effective Date	R	AN	Date the new layer information goes into effect using ISO 8106 format Ex. 2010-10-12T01:01+05
Unique_ID	R	AN	Unique ID for each record

<u>ATTRIBUTE NAME</u>	<u>USE R/O</u>	<u>TYPE</u>	<u>DATA DESCRIPTION</u>
Country	R	AN	The name of a country represented by its two-letter ISO 3166-1 English country alpha-2 code elements in capital ASCII letters.
State	R	A	The name of a state, province or equivalent, represented by the two-letter abbreviation given in ISO 3166-2. A state/province is a primary governmental division of the United States/Canada. Example: TX (A1 in RFC 5139)
County	R	A	The completely spelled out name of county or county-equivalent where the road is located, as given in FIPS 6-4 <sup>1</sup> . A county (or its equivalent) is the primary legal division of a state, province or territory (A2 in RFC 5139)
Municipality	O	A	The name of the incorporated municipality or other general-purpose local governmental unit (if any)
Unincorporated Community	O	A	The name of an unincorporated community, either within an incorporated municipality or in an unincorporated portion of a county, where the address is located. The area must have a definite boundary (A4 in RFC 5139).
Neighborhood Community	R	A	Neighborhood or other informal designation for a part of a city (A5 in RFC 5139).

# **NENA**

# **Master Glossary**

# **Of**

# **9-1-1 Terminology**



NENA Master Glossary of 9-1-1 Terminology  
NENA 00-001, Version 16, August 22, 2011

Prepared by:  
National Emergency Number Association (NENA) Committee Chairs

Published by NENA  
Printed in USA



## NENA STANDARDS

### NOTICE

This NENA STANDARD is published by National Emergency Number Association (**NENA**) as a guide for the designers and manufacturers of systems that are used for the purpose of processing emergency calls. It is not intended to provide complete design specifications or parameters nor to assure the quality of performance of such equipment.

NENA reserves the right to revise this NENA STANDARD for any reason including, but not limited to, conformity with criteria or standards promulgated by various agencies, utilization of advances in the state of the technical and operational arts or to reflect changes in the design of equipment or services described herein.

It is possible that certain advances in technology or operations will precede these revisions. Therefore, this NENA STANDARD should not be the only source of information used. **NENA** members are advised to contact their Telecommunications Carrier representative to ensure compatibility with the 9-1-1 network.

Patents may cover the specifications, techniques or network interface/system characteristics disclosed herein. No license expressed or implied is hereby granted. This document is not to be construed as a suggestion to any manufacturer to modify or change any of its products, nor does this document represent any commitment by NENA or any affiliate thereof to purchase any product whether or not it provides the described characteristics.

This document has been prepared solely for the voluntary use of all entities involved with E9-1-1 products and services; i.e., service system providers, network interface and system vendors, participating telephone companies, PSAPs, Telecommunicators, etc.

By using this document, the user agrees that NENA will have no liability for any consequential, incidental, special, or punitive damages arising from use of the document.

NENA has developed this document. Suggestions for change to this document may be submitted to:

National Emergency Number Association  
4350 N Fairfax Dr, Suite 750  
Arlington, VA 22203-1695  
800-332-3911  
Or: [admincomments@nena.org](mailto:admincomments@nena.org)

Acknowledgments:

This document has been developed by the National Emergency Number Association (NENA) Technical and Operations Committee Chairs.

The following industry experts and their companies are recognized for their contributions in development of this document.

<b>Technical Committee Members:</b>	<b>Company/Jurisdiction</b>
Roger Hixson, ENP – Technical Issues Director	NENA
Tom Breen, ENP – Technical Committee Chair	AT&T
Tony Busam, ENP – Technical Committee Vice Chair	RCC Consultants, Inc
Bob Gojanovich, ENP – Technical Advisor	
Billy Ragsdale – Technical Advisor	Independent
Anand Akundi – Network Chair	Telcordia Technologies
John Garner, ENP – Network Vice Chair	AT&T Mobility
Dave Irwin – NonTraditional Chair	Washington Military Department, Emergency Management Division
Paul McLaren – NonTraditional Vice Chair	Positron
Delaine Arnold, ENP – Data Chair	Independent Consultant
Erica Aubut, ENP – Data Vice Chair	Vermont Enhanced 9-1-1 Board
Mike Vislocky –Customer Premise Equipment Chair	Network Orange
Robert Walthall – Customer Premise Equipment Vice Chair	NPSS911
Nate Wilcox-VoIP-Packet Chair	microData Inc.
Roger Marshall – VoIP-Packet Vice Chair	TeleCommunications Systems (TCS)
David Jones, ENP – NGTPC Technical Co-Chair	Mission Critical Partners
Robert Sherry, ENP – NGTPC Technical Co-Vice Chair	Intrado

<b>Operations Committee Members:</b>	<b>Company/Jurisdiction</b>
Rick Jones, ENP – Operations Issues Director	NENA
Pete Eggimann, ENP – Operations Committee Chair	Metropolitan Emergency Services Board, MN
Wendi Lively, ENP – Operations Committee Vice Chair	Spartanburg County Communications/9-1-1, SC
Dick Wells, ENP – Educational Advisory Board Representative	R.K.Wells & Associates Inc.
Richard Ray – Accessibility Chair	City of Los Angeles, Department on Disability

Donna Platt – Accessibility Vice Chair	Emergency Education Program Hearing, Speech & Deafness Center (WA)
Marc Berryman, ENP – Next Generation Integration Chair	Digital Data Technologies, Inc.
Rachel Kilby – Next Generation Integration Vice Chair	Guilford Metro 9-1-1
Bill Hinkle– NGTPC Operations Co-Chair	Intrado
Jim Goerke – NGTPC Operations Co-Vice Chair	Texas 9-1-1 Alliance
Collet Crabill, ENP – PSAP Operations Chair	Jefferson County Communications, WV
Dave Cox – PSAP Operations Vice Chair	Skamania County, WA
John Haynes, ENP – Contingency Planning Chair	Chester County, PA
Ed Marecki, ENP- Human Resources Chair	Delaware State Police
Sonya Lopez-Clauson, ENP – Public Education and PSAP Training Chair	Greater Harris County 9-1-1, TX
April Heinze – Public Education and PSAP Training Vice Chair	Eaton County Central Dispatch
Amy Bedford – Standard Operating Procedures Chair	Harris County Sheriff's Office
Lisa Henderson - Welsh, CPM / CPMM, – Standard Operating Procedures Vice Chair	PlantCML

## TABLE OF CONTENTS

<b>1</b>	<b>EXECUTIVE OVERVIEW .....</b>	<b>6</b>
1.1	PURPOSE AND SCOPE OF DOCUMENT .....	6
1.2	BENEFITS .....	6
1.3	REASON FOR ISSUE .....	<b>ERROR! BOOKMARK NOT DEFINED.</b>
1.4	REASON FOR REISSUE .....	<b>ERROR! BOOKMARK NOT DEFINED.</b>
1.5	REFERENCES .....	11
<b>2</b>	<b>TERMS/DEFINITIONS.....</b>	<b>14</b>
<b>3</b>	<b>ACRONYMS.....</b>	<b>126</b>

# 1 Executive Overview

## 1.1 Purpose and Scope of Document

This “NENA Master Glossary of 9-1-1 Terminology” document is a guide for readers of NENA publications and tool for members of the NENA committees that prepare them. It defines the terms, acronyms and definitions associated with the 9-1-1 industry. Intended users of this document are any person needing NENA’s definition/description of a 9-1-1 related term.

## 1.2 Benefits

Use of this “NENA Master Glossary of 9-1-1 Terminology” will:

- provide a consistent definition for all definitions and acronyms identified with NENA Standards documents produced by the NENA Committees
- reduce the work required to establish definitions for consistently utilized terms and acronyms

## 1.3 Reason for Issue/Reissue

This standards document is met to convey 9-1-1 database industry standards for all 9-1-1 DBMSPs, SPs and 9-1-1 jurisdictional entities to assist in ensuring the accuracy and integrity of the 9-1-1 database. NENA reserves the right to modify this document. Upon revision, the reason(s) will be provided in the table below.

Version	Date	Reason For Changes
Original	March 1998	Initial Document
2	October 2002	Updated to include new terms utilized within NENA standards documents and to adjust existing definitions to comply with technology improvements.
3	February 2003	Updated to include new terms utilized in revised 02-011 standard document and new 06-002, 06-003 standard documents.
4	October 2004	Updated to include new/revised terms utilized in the following documents: <ul style="list-style-type: none"> <li>• 03-501 Network Quality Assurance;</li> <li>• 03-502 Trunking for Private Switch 9-1-1 Service; Future 9-1-1 Models TID;</li> <li>• 05-001 Implementation of the Wireless Emergency Service Protocol E2 Interface;</li> <li>• 05-501 SS7 guidelines for MSC to Selective Router Connectivity;</li> <li>• 07-501 E9-1-1 and Emerging Technologies.</li> </ul>
5	February 2005	Updated to reflect Operations Committees input and use of this document as well as Technical Committees.

6	November 2005	<p>Updated to include terms and acronyms utilized in the following documents:</p> <ul style="list-style-type: none"> <li>• 03-503 SS7 Guidelines for Wireline and VoIP Emergency Services Gateway Interconnection to 9-1-1 Selective Routers TID;</li> <li>• 03-504 PSAP Callback to all 9-1-1 Callers, Combating Wireless E9-1-1 Fraud and Mobile Emergency Services (E9-1-1M) TID,</li> <li>• 52-002 Managers Guide to Title II: Direct Access,</li> <li>• 53-002 Mutual Aid Standard/Model Recommendation,</li> <li>• 54-501 Human Resources Sub-Committee Resource List OID,</li> <li>• 56-502 Minimum Standards for Emergency Telephone Notification Systems,</li> <li>• 56-502 Milepost OID.</li> </ul>
7	April 2006	<p>This update changes the document number for the NENA Master Glossary of 9-1-1 Terminology from <b>01-002 to 00-001</b>. The number change moves the document to the General Administrative section of NENA Standards utilized for standards that are applicable to all Committees.</p> <p>Update includes terms and acronyms utilized in the following documents:</p> <ul style="list-style-type: none"> <li>• 08-001, Interim VoIP Architecture for Enhanced 9-1-1 Services (i2)</li> <li>• 52-003, Call Taker Proficiency and Quality Assurance</li> <li>• 02-502, Company ID Registration Service</li> </ul>
8	November 2006	<p>Updated to include terms and acronyms utilized in the following documents:</p> <ul style="list-style-type: none"> <li>• 02-501, Wireless (Pre-XML) Static and Dynamic ALI Data Content</li> <li>• 03-503, Technical Information Document on Rate Center Consolidation</li> <li>• 08-001, Interim VoIP Architecture for Enhanced 9-1-1 Services (i2) Definitions</li> <li>• 08-504, VoIP Standards Development Organizations</li> <li>• 54-002, Hearing Standards for Public Safety Telecommunicators</li> </ul>

		<ul style="list-style-type: none"> <li>• 56-005, Call Answering Standard/Model Recommendation</li> <li>• 56-503, Wide Area/Statewide Emergency Notification Systems</li> <li>• 56-504, VoIP E9-1-1 Deployment and Operational Guidelines</li> <li>• 58-502, VoIP Funding and Regulatory Issues</li> </ul>
9	March 30, 2007	<p>Updated to include terms and acronyms utilized in the following documents:</p> <ul style="list-style-type: none"> <li>• 02-013, NENA Data Standards for the Provisioning &amp; Maintenance of MSAG Files to VDBs &amp; ERDBs</li> <li>• 02-503, NENA Technical Information Document on XML Namespaces</li> <li>• 03-002, NENA Standard for the Implementation of Enhanced MF Signaling, E9-1-1 Tandem to PSAP</li> <li>• 03-505, NENA Technical Information Document on Rate Center Consolidation Technical Information Document</li> <li>• 04-005 NENA ALI Query Service Standard</li> <li>• 08-505, NENA VoIP Recommended Method(s) for Location Determination to Support IP-Based Emergency Services Technical Information Document</li> <li>• 08-751, NENA i3 Technical Requirements Document</li> <li>• 08-752, NENA Technical Requirements Document for Location Information to Support IP –Based Emergency Services</li> <li>• 53-501, NENA Hazard and Vulnerability Analysis Operation Information Document</li> <li>• 53-502, NENA Resources Analysis Operations Information Document</li> </ul>
10	June 1, 2007	<p>Updated to include terms and acronyms utilized in the following documents:</p> <ul style="list-style-type: none"> <li>• General 9-1-1 &amp; VoIP terms and definitions</li> <li>• 03-506, NENA E9-1-1 Voice Circuits Requirements Document</li> <li>• 04-002, NENA PSAP Master Clock Standard</li> <li>• 07-504, NENA Automatic Collision Notification and Vehicle Telematics Technical Information Document</li> </ul>

		<ul style="list-style-type: none"> <li>• 53-503, NENA PSAP Survivability Operations Information Document</li> <li>• 56-505, Guidelines for Handling Call Regarding Missing and Exploited Children Operations Information Document</li> <li>• 57-002, NENA Wireless Maintenance Call Routing and Testing Verification Standard</li> <li>• 58-001, NENA IP Capable PSAP Minimum Operational Requirements Standard</li> </ul>
11	May 16, 2008	<p>Updated to include terms and acronyms utilized in the following documents:</p> <ul style="list-style-type: none"> <li>• 00-002, NENA Standards Advisory Committee (SAC) Membership, Roles and Responsibilities Document, Versions 1 &amp; 2</li> <li>• 01-001 Technical Committee Organizational Structure and Document Development &amp; Approval Process, Version 4</li> <li>• 02-010, NENA Standard Formats &amp; Protocols for ALI Data Exchange, ALI Response &amp; GIS Mapping</li> <li>• 02-013, NENA Data Standards for the Provisioning &amp; Maintenance of MSAG Files to VDBs &amp; ERDBs, V2</li> <li>• 02-014, NENA GIS Data Collection and Maintenance Standards</li> <li>• 03-004, NENA Standard for E9-1-1 Functional Entity Model Version 2</li> <li>• 03-008, NENA Recommended Standard for E9-1-1 Default Assignment and Call Routing Functions</li> <li>• 08-002, NENA Functional and Interface Standards for Next Generation 9-1-1 (i3)</li> <li>• 51-001, NENA Operations Committee Organization and Document Development &amp; Approval Process</li> <li>• 52-502, NENA Video Relay Service &amp; IP Relay Service PSAP Interaction OID</li> <li>• 53-504, NENA Drills and Exercises OID</li> <li>• 53-505, APCO-NENA Service Capability Criteria Rating Scale OID</li> <li>• 56-002, NENA Standard for NORAD/FAA Notification: Airborne Events Version 2</li> <li>• 56-506, NENA PSAP Site Selection Criteria</li> </ul>

		<p>Operations Information Document</p> <ul style="list-style-type: none"> <li>• 57-503, NENA Procedures for Notification of ERDB and VPC Operators of ESN Changes by 9-1-1 Administrator</li> </ul>
12	July 15, 2009	<p>Updated to include terms and acronyms utilized in the following documents:</p> <ul style="list-style-type: none"> <li>• 2-001, NENA Information Document for Synchronizing Geographic Information System databases with MSAG &amp; ALI, Version 1</li> <li>• 01-001, Technical Committee Organizational Structure and Document Development &amp; Approval Process, Version 4.1</li> <li>• 02-013, NENA Data Standards for the Provisioning and Maintenance of MSAG Files to VDBs and ERDBs</li> <li>• 02-502, Company ID Registration Service, Version 3</li> <li>• 03-507, ESQK Guidelines for VoIP to E9-1-1 Connectivity</li> <li>• 06-502, Industry Common Mechanism for MLTS E9-1-1 Caller Information</li> <li>• 06-750, Model Legislation, Enhanced 9-1-1 for Multi-Line Telephone Systems, Version 2 (Converted from 06-501)</li> <li>• 52-001, E9-1-1 TTY Training, Version 2</li> <li>• 53-506, NENA Intra-Agency Agreements Model Recommendations, Version 1</li> <li>• 53-507, NENA Virtual PSAP Management, Version 1</li> <li>• 56-006, Emergency Call Processing Protocol Standard Model</li> <li>• 56-507, NENA Railroad &amp; PSAP Interaction, Version 1</li> </ul>
13	March 17, 2010	<p>Updated to provide new numbering structure for Joint Committee developed documents in section 1.5 and to include terms and acronyms utilized in the following documents:</p> <ul style="list-style-type: none"> <li>• 03-508, NENA Impacts of Using a Common Trunk Group to Carry Calls of Multiple Service Types into a Legacy Selective Router, Version 1</li> <li>• 56-508, NENA Protocol for Handling Calls Regarding Human Trafficking, Version 1</li> </ul>

		<ul style="list-style-type: none"> <li>• 70-001, NENA Registry System Standard, Version 1</li> <li>• 71-001, NENA Standard for NG9-1-1 Additional Data Version 1</li> </ul>
14	September 29, 2010	Updated to include terms and acronyms utilized in the following documents: <ul style="list-style-type: none"> <li>• 71-502, An Overview of Policy Rules for Call Routing and Handling in NG9-1-1</li> </ul>
15	February 24, 2011	Updated to reflect Operations Committees input and use of this document as well as Technical Committees.
16	August 21, 2011	Updated to include terms and acronyms utilized in the following documents: <ul style="list-style-type: none"> <li>• 08-003, Detailed Functional and Interface Specification for the NENA i3 Solution – Stage 3</li> <li>• 57-750, NG9-1-1 System and PSAP Operational Features and Capabilities Requirements</li> <li>• 56-509, NENA/APCO Best Practices Model for Providing Emergency Medical Dispatch Services Operations Information Document</li> </ul>

#### 1.4 References

NENA documents will be registered by the NENA Executive Office and assigned an identifying number in accordance with the following numbering plan:

NENA-xx-yyy, where “xx” represents the categories:

“xx” Administrative Documents

00 for NENA Committee Administrative Documents

“xx” Technical Standards and Technical Information Documents

01 for Technical Committee Administrative Documents

02 for Technical Data Documents

03 for Technical Network Documents

04 for Technical PSAP-CPE Documents

05 for Technical Wireless Documents

06 for ALEC and Private Switch Documents

07 for Non Traditional Communication Documents

08 for VoIP/Packet Documents

09-19 Reserved for Technical Categories

“xx” Regulatory/Legislative Standards and Information Documents

20 for Reg/Leg Committee Administrative Documents

21 for Regulatory Documents  
22 for Legislative Documents  
23-29 Reserved for Reg/Leg Categories

“xx” Education Advisory Board Standards and Information documents  
30 for EAB Committee Administrative Documents  
31 for EAB Documents  
31-39 Reserved for EAB Categories

“xx” Operations Standards and Operations Information Documents  
51 for Operations Administrative Documents  
52 for Accessibility  
53 for Contingency Planning  
54 for Human Resources  
55 for Public Education  
56 for Standard Operating Procedures  
57 for PSAP Operations and Next Generation Integration (formerly PSAP Service  
Integration and Wireless Operations)  
58 for VoIP Operations  
59-69 Reserved for Operations Categories

“xx” Joint Technical/Operations Documents  
70 for Systems Management/Core Services Documents  
71 for Data Structures Documents  
72 for Transport and Interconnection Documents  
73 for Accessibility Documents  
74 for Education Documents  
75 for Security Documents  
76 for PSAP Operations Documents

77-89 Reserved for Joint Technical/Operations Categories and “yyy” represents the document  
number (i.e.; 001, 002, 003, etc.)  
001 – 500 Standards  
501 – 749 Information Documents  
750 – 999 Requirements Documents

“xx” Numbering Currently Not Reserved  
40-50 available  
90-99 available

All documents shall show the document number in the upper right corner of each page as  
follows:

Document Title

NENA-xx-yyy, Version X<sup>1</sup>, September 1, 1996 (zzzzzzz)

Where “zzzzzzz” is the term “Draft” until issued, “Original” if new, or the term “Draft Revision” if document is being revised, and “Revised” when issued.

NENA Standards Documents are available on the NENA WEB Site: [www.nena.org](http://www.nena.org)

---

<sup>1</sup> Version number may not be utilized. Current Committee template requirements shall take precedence.  
Version 16, August 21, 2011

## 2 Terms/Definitions

<i>Term</i>	<i>Definition</i>	<i>N)ew U)pdate</i>
<b>IA2</b>	A designation for Key Telephone Systems which utilize an “A” lead for control.	
<b>3GPP</b>	The 3 <sup>rd</sup> Generation Partnership Project (3GPP) is a collaboration agreement that was established in December 1998. The collaboration agreement brings together a number of telecommunications standards bodies which are known as “Organizational Partners”.	
<b>3<sup>rd</sup> Rail</b>	The 3 <sup>rd</sup> Rail is the electrified steel rail running parallel to track. It is used to power commuter trains such as those found in subways and urban elevated transit systems. 3 <sup>rd</sup> rails are typically charged with 600 volts or higher. Their positioning on the railroad makes them susceptible to contact.	
<b>9-1-1</b>	A three-digit telephone number to facilitate the reporting of an emergency requiring response by a public safety agency.	
<b>9-1-1 Administrator</b>	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.	
<b>9-1-1 Authority</b>	The local agency responsible for overall operation of, and data for the 9-1-1 system	N
<b>9-1-1 Authority Manager</b>	An agent of a 9-1-1 Authority who defines policy for a PSAP.	
<b>9-1-1 Governing Authority or 9-1-1 Authority</b>	The organization having administrative jurisdiction over 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 or other similar body.	
<b>9-1-1 Service Area</b>	The geographic area that has been granted authority by a state or local governmental body to provide 9-1-1 service.	
<b>9-1-1 System</b>	The set of network, software applications, data bases, CPE components and operations and management procedures required to provide 9-1-1 service.	

<i>Term</i>	<i>Definition</i>	<i>N)ew U)pdate</i>
<b>9-1-1 Tandem</b>	(see Enhanced 9-1-1 Control Office)	
<b>“A” Lead Control</b>	A wire used to control the Key Telephone Unit in a 1A2 type Key Telephone System. In some E9-1-1 systems it is used to identify the position connected to the trunk.	
<b>Abandoned Call</b>	A call placed to 9-1-1 in which the caller disconnects before the call can be answered by the Public Safety Answering Point (PSAP) attendant.	
<b>Access Infrastructure Provider (AIP)</b>	The entity providing physical communications access to the subscriber. This access may be provided over telco wire, CATV cable, wireless or other media. Usually, this term is applied to purveyors of broadband internet access but is not exclusive to them.	
<b>Access Line</b>	The connection between a customer premises network interface and the Local Exchange Carrier that provides access to the Public Switched Telephone Network (PSTN).	
<b>Access Location Entity (ALE)</b>	A network entity or function that provides network measurements to a LIS allowing the LIS to correlate a device with a physical location.	
<b>Access Provider</b>	An access provider is any organization that arranges for an individual or an organization to have access to the Internet.	
<b>Acoustic Coupler</b>	The rubber cups, which hold the telephone handset on the TTY.	
<b>Additional Agency Event</b>	A log entry indicating another agency’s involvement with a call or incident, which may have log records for that call or event in their own log.	N
<b>Additional Data</b>	Data associated with a call for which a URI is sent with the call or retrieved from the ECRF, for example, Additional Call Data, Additional Caller data and Additional Location Data	U

<b><i>Term</i></b>	<b><i>Definition</i></b>	<b><i>N)ew U)pdte</i></b>
<b><i>Administrative (ESN)</i></b>	A 3-5 digit number that represents an ESZ. It is stored in the MSAG and is returned from an ALI query. The Administrative ESN facilitates dispatching of the proper emergency service agency(ies). An Administrative ESN is assigned to each MSAG range to associate the physical addresses to an ESZ. It is used to display English Language Translations (ELT) and may be used by CPE to transfer calls to the correct responder. An Administrative ESN may not be the same as a routing ESN (Refer to Routing ESN)	
<b><i>Advanced Mobile Phone Service (AMPS)</i></b>	The analog radio interface utilized in cellular telephone systems.	
<b><i>Agency Identifier</i></b>	A domain name for an agency used as a globally unique identifier.	N
<b><i>Agent/Advisors</i></b>	A person who handles incoming or outgoing customer calls for a business. An agent may be qualified to manage account inquiries, customer complaints or support issues. Other titles for an agent include customer service representative (CSR), telephone sales or service representative (TSR), attendant, associate, operator or team member.	N
<b><i>Aggregator</i></b>	An entity that takes calls of multiple traffic types or calls from multiple carriers and combines them on a trunk group to the selective router. A carrier may provide aggregation functions for their own network, or an entity can provide aggregator services for their clients.	
<b><i>Alarm Dry Contacts</i></b>	A set of relay contacts which are caused to either open or close when an alarm condition occurs. (Ref. NENA 04-001)	
<b><i>ALI Retrieval</i></b>	A request for ALI record from the PSAP to the ALI data base.	
<b><i>ALI Retrieval Rate</i></b>	The number of requests for ALI that are not duplicated within a two (2) minute time frame.	
<b><i>All Circuits Busy (ACB)</i></b>	A telephone line state that informs the caller that all available telephone lines are in use.	

<b><i>Term</i></b>	<b><i>Definition</i></b>	<b><i>N)ew U)pdate</i></b>
<b><i>Alliance for Telecommunications Industry Solutions (ATIS)</i></b>	A U.S.-based organization that is committed to rapidly developing and promoting technical and operations standards for the communications and related information technologies industry worldwide using a pragmatic, flexible and open approach. Please refer to: <a href="http://www.atis.org/">http://www.atis.org/</a>	
<b><i>Alternate Address Record</i></b>	An Alternate Address record may be the Postal equivalent to the MSAG or it may be any other alternate address required (i.e. an alias street name – John Carpenter Freeway vs. Highway 121).	
<b><i>Alternate Emergency Access Number (AEAN)</i></b>	A 10-digit unlisted number, answered on a 24/7 basis, used to receive VoIP calls until these calls can be delivered to the selective router serving the PSAP. After E9-1-1 implementation, these lines should only be used for specific routing circumstances (as defined in NENA VoIP Deployment and Operational Guidelines OID, 56-504, section 3.7.3 Default, Overflow and Alternate Routing). It can also be utilized to receive misrouted calls from other PSAPs not within the selective routing service area, operator-assisted emergency calls, default-routed wireless calls, calls routed to the PSAP via private call centers, and calls relayed from telecommunications relay services. Caller identification should be included as an option.	
<b><i>Alternate ISDN PSAP</i></b>	(see Alternate Public Safety Answering Point)	
<b><i>Alternate Number</i></b>	Used in Interim Number Portability (INP), the caller's original telephone number which is call forwarded to the new carrier's telephone number. Also known as Call Forward Number.	
<b><i>Alternate PSAP</i></b>	A PSAP designated to receive calls when the primary PSAP is unable to do so.	
<b><i>Alternate Routing</i></b>	The capability of routing 9-1-1 calls to a designated alternate location(s) if all 9-1-1 trunks are busy or out of service. May be activated upon request or automatically, if detectable, when 9-1-1 equipment fails or the PSAP itself is disabled.	
<b><i>Alternative Local Exchange Carrier (ALEC)</i></b>	(See Local Exchange Carrier (LEC))	

<b><i>Term</i></b>	<b><i>Definition</i></b>	<b><i>N)ew U)pdate</i></b>
<b><i>Alternative Methods of Notification</i></b>	Having the ability to locate the emergency caller and initiate emergency response. The adequacy of alternative methods of notification and responding to emergencies would be determined by appropriate governmental authorities operating pursuant to applicable legal requirements.	
<b><i>Alternative Methods to Support Enhanced 9-1-1</i></b>	Methods used by a MLTS Operator to permit a 9-1-1 emergency response team reasonable opportunity to quickly locate a caller as alternatives to the MLTS signaling needed to produce the automatic display of caller location information on the video terminal of the call-taker.	
<b><i>American National Standards Institute (ANSI)</i></b>	Entity that coordinates the development and use of voluntary consensus standards in the United States and represents the needs and views of U.S. stakeholders in standardization forums around the globe. Please refer to: <a href="http://www.ansi.org/">http://www.ansi.org/</a>	
<b><i>American Sign Language</i></b>	A visual/gestural, non-written language with its own unique syntax and grammar based on hand shapes, body movements and facial expressions.	
<b><i>American Sign Language (ASL) Gloss</i></b>	ASL has no written form. When communicating in ASL through typing or writing, many of the visual elements crucial to clear communications are based on ASL.	
<b><i>American Standard Code for Information Interchange (ASCII)</i></b>	A standard for defining codes for information exchange between equipment produced by different manufacturers. A code that follows the American Standard Code for Information Interchange.	
<b><i>Americans with Disabilities Act (ADA)</i></b>	Federal Legislation passed into law July 26, 1990, that prohibits discrimination on the basis of disabilities.	
<b><i>Amplitude Modulated</i></b>	The encoding of a carrier wave by variation of its amplitude in accordance with an input signal.	
<b><i>Analog Telephone Adapter (ATA)</i></b>	An analog telephone adaptor (ATA) is a device used to connect a standard telephone to a computer or network so that the user can make calls over the Internet.	

<b><i>Term</i></b>	<b><i>Definition</i></b>	<b><i>N)ew U)pdate</i></b>
<b><i>Angle of Arrival (AOA)</i></b>	A terrestrial Location Determination Technology (LDT) that computes a transmitter's location based upon the angle at which the transmitter's radio signal strikes multiple receivers.	
<b><i>Answering Position</i></b>	(see Attendant Position)	
<b><i>Answering Position Unit (APU)</i></b>	A term used to define call-taking equipment.	
<b><i>Answering Positioning Unit (APU)</i></b>	Answering Position Unit used to define call taking equipment.	
<b><i>Application Layer Security</i></b>	Providing security to application layer protocols (HTTP, FTP, SMTP for example) through one of many methods that may include end-to-end privacy (PKE etc), message integrity, non repudiation, proof of submission etc	
<b><i>ArcNet</i></b>	Multiplexed switching technology used to transport small fixed packets called "cells".	
<b><i>ASL Gloss</i></b>	The reference to "ASL gloss" is when American Sign language is communicated through typing – as on a TTY – and many of the visual elements crucial to clear communications are lost.	
<b><i>Association of Public Safety Communications Officials (APCO)</i></b>	APCO is the world's oldest and largest not-for-profit professional organization dedicated to the enhancement of public safety communications.	
<b><i>Association of Radio Industries and Businesses (ARIB)</i></b>	The objectives of ARIB are to conduct investigation, research & development and consultation of utilization of radio waves from the view of developing radio industries, and to promote realization and popularization of new radio systems in the field of telecommunications and broadcasting.	
<b><i>Asymmetrical Digital Subscriber Line (ADSL)</i></b>	A Digital Subscriber Line, that transmits and receives at different speeds.(See Digital Subscriber Line)	
<b><i>Asynchronous Transfer Mode (ATM)</i></b>	A link layer protocol that uses very small frames (53 bytes) and predetermined routes, which allows for efficient switching.	
<b><i>Asynchronous Transfer Mode (ATM) Adaptation Layer-AALI, 2, 5</i></b>	Used within an ATM network to convert the data from an end-user application into a form that fits into ATM cells [ <i>the number relates to the applicable layer</i> ]	

<b><i>Term</i></b>	<b><i>Definition</i></b>	<b><i>N)ew U)pdte</i></b>
<b><i>Attendant Position</i></b>	The Customer Premises Equipment (CPE) at which calls are answered and responded to by the Telecommunicator.	
<b><i>Authentication</i></b>	A security term referring to the process of reliably identifying an entity requesting access to data or a service.	N
<b><i>Authentication Process</i></b>	The process of verifying the claimed identity of a session requester. Mutual authentication is important to ensure that both the originator of the session and the recipient of the request are both satisfied with the credential information being provided. Authentication mechanisms are needed in the i2 solution to ensure that only trusted entities with existing relationships will be provided access to E9-1-1 data and services.	
<b><i>Authority Having Jurisdiction (AHJ)</i></b>	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. <i>(see 9-1-1 Governing Authority, 9-1-1 Administrator)</i>	
<b><i>Authorization</i></b>	A security term referring to the process of making a decision what access rights an authenticated entity has to data or a service	N
<b><i>Auto-Re-Addressing</i></b>	Feature that allows for delivery of a voice call to the jack where the caller's device is currently connected after moving.	
<b><i>Automatic Alarm and Automatic Alerting Device</i></b>	Any automated device which will access the 9-1-1 system for emergency services upon activation and does not provide for two-way communication. (Many states prohibit the dialing of 9-1-1 by an automated device.)	
<b><i>Automatic Call Distributor (ACD)</i></b>	Equipment that automatically distributes incoming calls to available PSAP attendants in the order the calls are received, or queues calls until an attendant becomes available.	

<b><i>Term</i></b>	<b><i>Definition</i></b>	<b><i>N)ew U)pdate</i></b>
<b><i>Automatic Collision Notification (I)</i></b>	The process of identifying that a motor vehicle has been involved in a collision, collecting data from sensors in the vehicle, and communicating that data to a Call Center or PSAP.	
<b><i>Automatic Location Identification (ALI)</i></b>	The automatic display at the PSAP of the caller's telephone number, the address/location of the telephone and supplementary emergency services information of the location from which a call originates.	
<b><i>Automatic Location Identification (ALI) Call Retrieval</i></b>	A process of counting ALI data base queries not duplicated within a two (2) minute time frame.	
<b><i>Automatic Location Identification (ALI) Customer Retrieval</i></b>	A process of counting ALI data base queries not duplicated within a twenty-four (24) hour time frame.	
<b><i>Automatic Location Identification (ALI) Data Base</i></b>	The set of ALI records residing on a computer system.	
<b><i>Automatic Location Identification (ALI) Discrepancy</i></b>	An ALI Discrepancy is defined as a record being retrieved from ALI during an actual E9-1-1 call with incorrect address. For example, the house number or directional is wrong for the caller.	
<b><i>Automatic Location Identification (ALI) Multiplexer</i></b>	A CPE component which performs the function of communicating with the ALI data base. An ALI Multiplexer typically works in conjunction with an ANI controller.	
<b><i>Automatic Location Identification (ALI) Operator</i></b>	Operates the Automatic Location Identification infrastructure used to provide caller information associated with a pANI offered in a query from a PSAP.	
<b><i>Automatic Location Identification (ALI) Queries</i></b>	The act of querying/retrieving the automatic display at the PSAP of the address/location of the telephone and supplementary emergency service information related to the caller's telephone number.	
<b><i>Automatic Location Identification (ALI) Retrieval</i></b>	The process of querying the 9-1-1 data base for ALI records.	
<b><i>Automatic Number Identification (ANI)</i></b>	Telephone number associated with the access line from which a call originates.	

<b><i>Term</i></b>	<b><i>Definition</i></b>	<b><i>N)ew U)pdate</i></b>
<b><i>Automatic Number Identification (ANI) Controller</i></b>	A stand-alone CPE component which provides the ANI decoding and function key control for 9-1-1 service.	
<b><i>Automatic Number Identification Information Digits (ANI II Digits)</i></b>	Digits in the Enhanced MF Signaling protocol that indicate to the PSAP CPE ANI display device whether the display should remain steady or flash, or if the call is a test call.	
<b><i>Automatic Vehicle Location (AVL)</i></b>	A means for determining the geographic location of a vehicle and transmitting this information to a point where it can be used.	
<b><i>Average Busy Hour</i></b>	The 1-hour period during the week statistically shown over time to be the hour in which the most telephone calls are received.	
<b><i>Average Sector Radius Range</i></b>	The average true sector radius under average operating conditions. Radius at which cell tower's polygon of coverage influence ends and another begins.	
<b><i>Back to Back User Agent (B2BUA)</i></b>	<p>A back to back user agent is a SIP element that relays signaling mechanisms while performing some alteration or modification of the messages that would otherwise not be permitted by a proxy server.</p> <p>A logical entity that receives a request and processes it as a user agent server (UAS). In order to determine how the request should be answered, it acts as a user agent client (UAC) and generates requests. Unlike a proxy server it maintains dialog state and must participate in all requests sent on the dialogs it established.</p>	U
<b><i>Backup Public Safety Answering Point (PSAP)</i></b>	Typically a disaster recovery answering point which serves as a backup to the primary PSAP and is not co-located with the primary PSAP.	
<b><i>Basic 9-1-1</i></b>	An emergency telephone system which automatically connects 9-1-1 callers to a designated answering point. Call routing is determined by originating central office only. Basic 9-1-1 may or may not support ANI and/or ALI.	

<i>Term</i>	<i>Definition</i>	<i>N)ew U)pdate</i>
<b><i>Basic Rate Interface (BRI)</i></b>	Interface by which ISDN terminals access the local switch that provides full-duplex ISDN basic rate access. The BRI is composed of two 64-kbps clear B channels for information (voice or data) transfer in either circuit or packet mode and one 16-kbps clear D channel for packet data information transfer and signaling communication with the Telco Switch.	
<b><i>Baseline MSAG</i></b>	MSAG file that is a snapshot image which represents a complete, up-to-date set of MSAG data at the point in time it was created.	
<b><i>Baud Rate</i></b>	A measure of signaling speed in data communications that specifies the maximum number of signaling elements that can be transmitted each second.	
<b><i>Baudot Code</i></b>	A five-bit encoding scheme developed for Telex transmission that represents text, numerals, punctuation and control signals. It is the standard transmission signaling scheme used by TTY (TDD) devices. (per EIA PN-1663)	
<b><i>Bell Operating Company (BOC)</i></b>	Individual local telephone companies which were part of the Bell System prior to divestiture of AT&T.	
<b><i>Binary Coded Decimal (BCD)</i></b>	A coding system in which each decimal digit from 0 to 9 is represented by four binary (0 or 1) digits. (Ref. NENA 04-002)	
<b><i>Boolean Expression</i></b>	An expression that contains logical (i.e. true or false) expressions and Boolean operators (i.e. NOT, AND, OR), i.e. "An Orange is a vegetable" is FALSE, 3 is less than 5 is TRUE	
<b><i>Border Control Function (BCF)</i></b>	Provides a secure entry into the ESInet for emergency calls presented to the network. The BCF incorporates firewall, admission control, and may include anchoring of session and media as well as other security mechanisms to prevent deliberate or malicious attacks on PSAPs or other entities connected to the ESInet.	
<b><i>Bridging</i></b>	Connecting two or more parties with a conference bridge	N
<b><i>Broadband Remote Access Server (BRAS)</i></b>	A server that routes traffic to and from the digital subscriber line access multiplexers (DSLAM) on an Internet service providers (ISP) network.	

<b><i>Term</i></b>	<b><i>Definition</i></b>	<b><i>N)ew U)pdate</i></b>
<b><i>Building Unit Identifier (BUI)</i></b>	A room number or equivalent designation of a portion of a structure/building.	
<b><i>Business Day</i></b>	A 24 hour period of time beginning at midnight which is established by the Data Base Management System Providers' and/or Service Providers' hours of operation. Business days do not normally include Saturday and Sunday or any Provider's recognized holidays.	
<b><i>Busy Hour</i></b>	The hour each day with the greatest call volume.	
<b><i>Busy Line Interrupt (BLI)</i></b>	Ability of an operator in special circumstances or emergency situations to interrupt a conversation, if necessary at the request of a PSAP	
<b><i>Busy Line Verification (BLV)</i></b>	An operator service whereby the operator checks a line to see if it is busy, off-hook, or whether some trouble has caused a false busy signal	
<b><i>Busy Tone</i></b>	An audible signal indicating a call cannot be completed because the called access line is busy. The tone is applied 60 times per minute.	
<b><i>BYE transaction</i></b>	A SIP transaction used to terminate a session	N
<b><i>Cable Modem Termination System (CMTS)</i></b>	The node used to control cable modems in a cable network system.	
<b><i>Cable TV/Telephony</i></b>	Service that use hybrid coaxial/fiber network device to deliver voice grade communications.	
<b><i>Call</i></b>	A session established by signaling with two way real-time media and involves a human making a request for help. We sometimes use "voice call", "video call" or "text call" when specific media is of primary importance. The term "non-human-initiated call" refers to a one-time notification or series of data exchanges established by signaling with at most one way media, and typically does not involve a human at the "calling" end. The term "call" can also be used to refer to either a "Voice Call", "Video Call", "Text Call" or "Data-only call", since they are handled the same way through most of NG9-1-1.	N

<b><i>Term</i></b>	<b><i>Definition</i></b>	<b><i>N)ew U)pdate</i></b>
<b><i>Call Associated Signaling (CAS)</i></b>	Allows for the device position or location information to be delivered to the emergency services network in the call signaling as part of the call setup information. With CAS, the originating network pushes the position information to an Emergency Services Network Entity (ESNE).	
<b><i>Call Back</i></b>	The capability to re-contact the calling party	
<b><i>Call Back Number</i></b>	A number used by the PSAP to re-contact the location from which the 9-1-1 call was placed. The number may or may not be the number of the station used to originate the 9-1-1 call.	
<b><i>Call Check</i></b>	(see Recall Recorder)	
<b><i>Call Delivery</i></b>	The capability to route a 9-1-1 call to the designated selective router for ultimate delivery to the designated PSAP for the caller's ANI/KEY.	
<b><i>Call Detail Logging</i></b>	The process of recording incoming call data. Also known as ANI printout. (Ref. NENA 04-001)	
<b><i>Call Detail Record (CDR)</i></b>	A record stored in a database recording the details of a received or transmitted call (from 08-003).  The data information sent to the ALI computer by a remote identifying device (PBX, Call Position Identifier, ...) (From 03-007)	U
<b><i>Call Identifier</i></b>	An identifier assigned by the first element in the first ESInet which handles a call. Call Identifiers are globally unique.	U
<b><i>Call-Info Header</i></b>	A SIP header which contains a URI referring to some kind of data relevant to a call, and a "purpose" parameter describing what the URI refers to. Used to carry URIs to such entities as Additional Call and Caller data, and call/Incident Tracking Identifiers	N
<b><i>CallPath Associated Signaling (CAS)</i></b>	A method for delivery of wireless 9-1-1 calls in which the Mobile Directory Number and other call associated data are passed from the Mobile Switching Center to the PSAP via the voice path.	
<b><i>Call Progress Signals</i></b>	Audible cues to advise 9-1-1 callers of the status of their call. (e.g. Busy Tone, Reorder Tone)	

<b><i>Term</i></b>	<b><i>Definition</i></b>	<b><i>N)ew U)pdte</i></b>
<b><i>Call Queuing</i></b>	The method of selection of which calls get passed to the outgoing trunk group when there are more call originations than terminating members on the outgoing trunk.	
<b><i>Call Relay</i></b>	Forwarding of pertinent information by a PSAP attendant to the appropriate response agency (Not to be confused with Telephone Relay Service).	
<b><i>Call Routing</i></b>	The capability to selectively route the 9-1-1 call to the appropriate PSAP.	
<b><i>Call Sequencer</i></b>	A unit which monitors incoming calls at a PSAP and indicates to the answering positions, which of the incoming calls has been unanswered the longest.	
<b><i>Call Server</i></b>	The term Call Server in the Interim VoIP Architecture For Enhanced 9-1-1  Services standard is used to refer to the entity in a private or public IP domain that provides service to endpoints in an emergency caller's home domain and that interworks with the SIP servers and other elements in the IP domain used to support emergency services call routing in the i2 solution. The Call Server may use SIP or some other VoIP signaling protocol within its own serving domain.	
<b><i>Call Session Control Function (CSCF)</i></b>	General term for a functional entity within a IMS core network that can act as Proxy CSCF (P-CSCF), Serving CSCF (S-CSCF), Emergency CSCF (E-CSCF), or Interrogating CSCF (I-CSCF).	
<b><i>Call Set-up Time</i></b>	The amount of time between when a caller dials the last one (1) in 9-1-1 and the call is presented to the appropriate PSAP.	
<b><i>Call Taker</i></b>	An agent of a PSAP who answers emergency calls	
<b><i>Call Taker Position</i></b>	(see Attendant Position)	
<b><i>Call Taker Supervisor</i></b>	An agent of a PSAP who supervises Call Takers	
<b><i>Call Transfer</i></b>	The capability to redirect a call to another party.	

<b><i>Term</i></b>	<b><i>Definition</i></b>	<b><i>N)ew U)pdte</i></b>
<b><i>Callback Number</i></b>	An identifier for an emergency caller that can be used by the PSAP to reach an emergency caller subsequent to the release of an emergency call. In the i2 solution, the Callback Number is an E.164 number, but may be represented in VoIP signaling by a uniform resource identifier (URI), for example.	
<b><i>Caller Hold</i></b>	The capability of the PSAP to maintain control of a 9-1-1 caller's access line, even if the caller hangs up.	
<b><i>Calling Line Identification (CLID)</i></b>	Signaling parameter that identifies the telephone number of the party placing a call.	
<b><i>Calling Party Hold</i></b>	The capability of the PSAP to maintain control of a 9-1-1 caller's access line, even if the caller hangs up.	
<b><i>Calling Party's Number (CPN)</i></b>	Typically a call back number associated with a wireless telephone. The CPN may also be the MDN, MIN, a temporary call back number, a tracking number or ID number and may not support call back in all cases.	
<b><i>Calls</i></b>	A generic term used to include any type of request for emergency assistance (RFEA);and is not limited to voice	
<b><i>Canadian Radio-television and Telecommunications Commission (CRTC)</i></b>	Supervises and regulates broadcasting and telecommunications systems in Canada.	
<b><i>CANCEL transaction</i></b>	A SIP transaction which is used to cancel an INVITE transaction which has not yet completed	N
<b><i>CAP MESSAGE</i></b>	A notification using the Common Alerting Protocol. CAP is used within the ESInet to send alerts from automated systems to PSAPs, and is also used to communicate data between agencies without a call.	N
<b><i>Carrier</i></b>	A function provided by a business entity to a customer base, typically for a fee. Examples of carriers and associated services are; PSTN service by a Local Exchange Carrier, VoIP service by a VoIP Service Provider, email service provided by an Internet Service Provider.	
<b><i>Carrier Frequency</i></b>	The frequency of the unmodulated IRIG B or E signal.	

<b><i>Term</i></b>	<b><i>Definition</i></b>	<b><i>N)ew U)pdate</i></b>
<b><i>Case Number</i></b>	Tracking number used to reference recorded incidents and events. Related nomenclature: Call Number, Report Number, Incident number, Report number.	
<b><i>Catenary</i></b>	On electrified railroads, Catenary is the wiring system suspended above the tracks used to power electric trains. Note: These wires are extremely dangerous; they carry very high voltage power. Any wire found to be dangling or down on a railroad location should be considered live unless confirmed otherwise by a railroad official.	
<b><i>Catenary Pole</i></b>	Poles used to support and suspend catenary wires	
<b><i>Cathode Ray Tube (CRT)</i></b>	Video monitor used for displaying information.	
<b><i>Catypes</i></b>	A component of a civic address in a PIDF-LO such as a Street Name or House Number, which has a code used to identify what kind of component.	N
<b><i>Cell</i></b>	The wireless telecommunications (Cellular or PCS) antenna serving a specific geographic area.	
<b><i>Cell face</i></b>	(see Cell Sector)	
<b><i>Cell Sector</i></b>	One face of a cell antenna (typically 3-sided) that operates independently of the other sectors.	
<b><i>Cell Site</i></b>	The location of a cell and related equipment.	
<b><i>Cellular Priority Access Service (CPAS)</i></b>	A uniform nationwide method of providing priority access to authorized wireless subscribers in the event of an emergency.	
<b><i>Central Office (CO)</i></b>	The Local Exchange Carrier facility where access lines are connected to switching equipment for connection to the Public Switched Telephone Network.	
<b><i>Central Office (CO) Transfer</i></b>	A service provided by the Central Office that allows an established call to be transferred to another location.	
<b><i>Central Processing Unit (CPU)</i></b>	The part of a computer which performs the logical, computational and decision making functions.	
<b><i>Centralized Automated Message Accounting (CAMA)</i></b>	A type of in-band analog transmission protocol that transmits telephone number via multi-frequency encoding. Originally designed for billing purposes.	

<b><i>Term</i></b>	<b><i>Definition</i></b>	<b><i>N)ew U)pdate</i></b>
<b><i>Centrex</i></b>	A business telephone service offered by some Local Exchange Carriers that provides PBX type features over access lines.	
<b><i>Centrex-based Internet Protocol (CTX-IP)</i></b>	Telco voice service that provides Internet protocol based private automatic branch exchange or PABX-like features on all lines used by a single customer; the switching equipment is located at the central office and is operated and maintained by the Telco.	
<b><i>Channel Associated Signaling (CAS)</i></b>	An option for the signaling channel (time slot 16) of an E1 interface; ITU G.704. Used on digital interfaces for signaling.	
<b><i>China Communications Standards Association (CCSA)</i></b>	A nationally unified communications standards organization that can adapt the growing market, keep pace with global industry and accord with Chinese situations.	
<b><i>Circuit Route</i></b>	The physical path between two terminal locations.	
<b><i>Circuit-Switched Networks</i></b>	Circuit-switched is a type of network in which a physical path is obtained for and dedicated to a single connection between two end-points in the network for the duration of the connection. Ordinary voice phone service is circuit-switched.	
<b><i>Civic Address</i></b>	Any city-style address that includes a house number and a street name is considered a Civic Address. Civic Addresses include a community name that may or may not be recognized by the USPS or be MSAG valid. Civic Addresses may be used as Postal address if recognized by the USPS. Civic Addresses may be used as MSAG addresses if they are an exact match to the MSAG address. A rural route delivery address or FPO or APO address is not considered a Civic Address. See Civic Location.	
<b><i>Civic Location</i></b>	A set of elements that describe detailed street address information. See Civic Address.	

<i>Term</i>	<i>Definition</i>	<i>N)ew U)pdate</i>
<b><i>Civic To MSAG Translation</i></b>	<p>Translations consist of processes, tables or rules that can be used to:</p> <ul style="list-style-type: none"> <li>• Translate a Civic Address from/to an MSAG-format address.</li> <li>• Translate a Postal Address from/to an MSAG-format address.</li> <li>• Translate Landmark from/to an MSAG-format address (e.g. Empire State Building ---→ 350 5<sup>TH</sup> AVE).</li> </ul> <p>A civic address may need to be translated so that the data is consistent to the format within the existing PSAP equipment and processes (i.e., CAD, mapping, CPE).</p>	
<b><i>Class of Service</i></b>	A designation of the type of telephone service, e.g. residential, business, centrex, coin, PBX, wireless.	
<b><i>Client ID</i></b>	An identifier for an instance of a Location Object (Geo Location, Civic Location or both) that is stored in a LIS.	
<b><i>Code Division Multiple Access (CDMA)</i></b>	A digital radio interface utilized by some North American PCS carriers.	

<i>Term</i>	<i>Definition</i>	<i>N)ew U)pdate</i>
<b>CODEC (Coder/DECoder or Compression/DECompression)</b>	<p>In communications engineering, the term <i>codec</i> is used in reference to integrated circuits, or chips that perform data conversion. In this context, the term is an acronym for “<b>coder/decoder.</b>” This type of codec combines analog-to-digital conversion and digital-to-analog conversion functions in a single chip. In personal and business computing applications, the most common use for such a device is in a modem.</p> <p>The term <i>codec</i> is also an acronym that stands for “<b>compression/decompression.</b>” A codec is an algorithm, or specialized computer program, that reduces the number of bytes consumed by large files and programs. In order to minimize the amount of storage space required for a complicated file, such as a video, compression is used. Compression works by eliminating redundancies in data. Compression can be done for any kind of file, including text, programs, images, audio, video, and virtual reality (VR). Compression can reduce the size of a file by a factor of 100 or more in some cases. For example, a 15-megabyte video might be reduced to 150 kilobytes. The uncompressed file would be far too large to download from the Web in a reasonable length of time, but the compressed file could usually be downloaded in a few seconds. For viewing, a <i>decompression</i> algorithm, which “undoes” the compression, would have to be used.</p>	
<b>Code Point</b>	A code for a requested QoS action used in the Diffserv QoS mechanism on an IP network. The code point is sent in the TOS field of an IP packet.	N

<i>Term</i>	<i>Definition</i>	<i>N)ew U)pdate</i>
<b><i>Coercion</i></b>	<p>The intimidation of a victim to compel the individual to do some act against his or her will by the use of psychological pressure, physical force, or threats. The crime of intentionally and unlawfully restraining another's freedom by threatening to commit a crime, accusing the victim of a crime, disclosing any secret that would seriously impair the victim's reputation in the community, or by performing or refusing to perform an official action lawfully requested by the victim, or by causing an official to do so.</p> <p>A defense asserted in a criminal prosecution that a person who committed a crime did not do so of his or her own free will, but only because the individual was compelled by another through the use of physical force or threat of immediate serious bodily injury or death.</p>	
<b><i>Collaborative software</i></b>	(also referred to as groupware or workware support systems) is software designed to help people involved in a common task achieve their goals. Collaborative software is the basis for <u>computer supported cooperative work</u> .	
<b><i>Commercial Call Center</i></b>	A privately operated call center, which answers emergency and/or non-emergency calls.	
<b><i>Common Language Location Identifier (CLLI)</i></b>	An 11-character code assigned to a central office to designate the physical location and area served. Characters 1-4 designate the rate center location, characters 5-6 designate the state code, characters 7-8 identify the central office, and characters 9-11 specify the equipment type.	
<b><i>Common (or Shared) Trunk Group</i></b>	A trunk group that carries calls that originates from more than one service type or more than one carrier.	
<b><i>Communication Assistant (CA)</i></b>	The third party in a text-based relay call.	
<b><i>Communications Impaired</i></b>	A person who is deaf, hearing impaired, or speech impaired that requires use of assistive telecommunications technology.	

<b><i>Term</i></b>	<b><i>Definition</i></b>	<b><i>N)ew U)pdate</i></b>
<b><i>Communications Service Provider (CSP)</i></b>	An entity that provides the services and signaling to support communication services for one or more endpoints. These services might include any combination of voice, video and/or data communications between users, or services provided by the CSP to an end user. The CSP may or may not be the provider of the access or transport network.	
<b><i>Communications Services Providers</i></b>	This term is used generically to refer to any and all providers of telecommunications services that may be used to generate a 9-1-1 call, and who would interconnect in any fashion to the 9-1-1 network. CSPs include wireline ILECs and CLECs, Wireless Service Providers, VoIP Service Providers, operators of large PBXs and any other entity providing telecommunications services to the general public.	
<b><i>Company Identifier (ID) 1</i></b>	A 3-5 character identifier, that distinguishes the entity providing voice service (e.g., Wireline, Wireless, VoIP, PBX, etc.) to the end user. The company identifier registry is maintained by NENA in a nationally accessible data base.	
<b><i>Company Identifier (ID) 2</i></b>	(see Data Provider)	
<b><i>Competitive Data Base Provider</i></b>	A company that offers telephone subscriber data base services in competition to an Incumbent Local Exchange Carrier (ILEC). This company is usually an unregulated entity.	
<b><i>Competitive Local Exchange Carrier (CLEC)</i></b>	(see Local Exchange Carrier (LEC))	
<b><i>Completion</i></b>	Date and time stamp when Data Base Management System Provider's Data Rep has corrected and updated all ALI data bases.	
<b><i>Completion Date</i></b>	Applies to the Service Provider's service order process date that does the physical disconnection of dial tone by the Donor Company and the physical connection of dial tone by the Recipient Company to an end user. The expectation is that the completion date should be the due date on the service order.	
<b><i>Computer Aided Dispatch (CAD)</i></b>	A computer based system, which aids PSAP Telecommunicators by automating selected dispatching and record keeping activities.	

<i>Term</i>	<i>Definition</i>	<i>N)ew U)pdate</i>
<b><i>Computer Telephone Integration (CTI)</i></b>	Integrating telephone function into a computing device.	
<b><i>Conference Transfer</i></b>	The capability to bridge a third party onto an existing call. Also known as three-way calling.	
<b><i>Confidence/ Uncertainty</i></b>	<p><u>Confidence</u>: The mathematically derived statistical estimate indicating how sure the measuring system is that the wireless Phase 2 location data estimate is accurate, within the bounds defined by the Uncertainty value. This is expressed as a percentage, such as 90%, or 45% etc. The specific value is not representative of the accuracy of the PDE locating system.</p> <p><u>Uncertainty</u>: The mathematically derived statistical estimate, expressed in meters, indicating the size of the area used in the calculation of Confidence. The specific value IS NOT representative of the accuracy of the PDE locating system.</p> <p><u>NOTE</u>: Because of the differences in the way that location vendors have implemented their technologies, the resulting Confidence &amp; Uncertainty values cannot be viewed consistently across multiple carriers.          Example (not indicative of any particular company):          Wireless Service Provider “A” sends the following C&amp;U 90%, 115 meters          Wireless Service Provider “B” sends the following C&amp;U 80%, 115 meters</p>	
<b><i>Congestion Control</i></b>	A method of controlling traffic when there are insufficient resources to meet demand, for example more requests for calls than there are trunks. It may be achieved by rejecting requests, and/or diverting calls.	
<b><i>Consolidated PSAP</i></b>	A facility where one or more Public Safety Agencies choose to operate as a single 9-1-1 entity.	
<b><i>Constant Bit Rate (CBR)</i></b>	A service class, where the bit rate is fixed, i.e., the traffic is not burst. Examples are voice and uncompressed video.	

<b><i>Term</i></b>	<b><i>Definition</i></b>	<b><i>N)ew U)pdate</i></b>
<b><i>Contaminated Number Pooling</i></b>	The practice of recovering full NPA-NXX's or thousands blocks of NPA-NXX's from Local Exchange Carriers who do not utilize the majority of numbers within the NXX block of 10,000 numbers. The unused numbers are assigned to other LECs. The numbers utilized within the pooled 1,000 blocks must be ported back to the LEC who is the Service Provider for the active numbers.	
<b><i>Contingency Routing Number (CRN)</i></b>	A 24x7 PSAP emergency number, or a routing number associated with a national or default call center.	
<b><i>Continuity of Operations</i></b>	The ability to continue operations during and after a major disaster.	
<b><i>Coordinate Based Routing</i></b>	The process of using a Coordinate Routing Data Base (CRDB) to perform selective routing on a 9-1-1 call based on the X, Y coordinates from which the call originated. The X, Y coordinates respectively represent the longitude & latitude of a position. The CRDB provides a translation between a given position expressed in X, Y coordinates, to an Emergency Services Zone, by determining the ESZ in which the coordinates are located.	
<b><i>Credential Authority</i></b>	An authority responsible for supporting the infrastructure to assign and revoke electronic digital certificates to i2 network entities.	
<b><i>Credible TIP</i></b>	A report from a confidential and anonymous tipster that contains information sufficient for law enforcement to initiate an investigation, obtain corroborating evidence, and possibly effect a felony arrest.	
<b><i>Critical Issues Forum (CIF)</i></b>	Periodic events presented as a public service, focusing on emerging and significant topics in emergency communications. CIFs typically provide one to three day workshops featuring industry experts.	
<b><i>Currency</i></b>	Being fully trained, tested and up-to-date regarding a specific assignment. A measure of readiness.	
<b><i>Customer Comments</i></b>	Supplementary information useful in dispatching, provided in conjunction with ALI displays.	

<b><i>Term</i></b>	<b><i>Definition</i></b>	<b><i>N)ew U)pdate</i></b>
<b><i>Customer Premise Equipment (CPE)</i></b>	Communications or terminal equipment located in the customer's facilities – Terminal equipment at a PSAP.	
<b><i>Cutover</i></b>	The activation of a new telephone call processing or switching system.	
<b><i>Data Attribute</i></b>	Descriptive information about features or elements contained in a database.	
<b><i>Data Base</i></b>	An organized collection of information, typically stored in computer systems, comprised of fields, records (data) and indexes. In 9-1-1, such data bases include MSAG, telephone number/ESN, and telephone customer records.	
<b><i>Database Administrator</i></b>	An agent of a 9-1-1 Authority who maintains address databases on behalf of a set of PSAPs.	
<b><i>Database Administrator Supervisor</i></b>	An agent of a 9-1-1 Authority who supervises Database Administrators.	
<b><i>Data Base Management System (DBMS)</i></b>	A system of manual procedures and computer programs used to create, store and update the data required to provide Selective Routing and/or Automatic Location Identification for E9-1-1 systems.	
<b><i>Data Base Management System Provider</i></b>	Entity providing Selective Routing (SR) and/or Automatic Location Identification (ALI) data services.	
<b><i>Data Bit</i></b>	A binary digit, either a zero (0) or a one (1).	
<b><i>Data Bit Free Run</i></b>	A binary digit, either zero (0) or a one (1). The operating condition of a clock in which the location oscillator is not locked to an external synchronization reference, and is using no storage techniques to sustain its operating frequency.	
<b><i>Data Communications Equipment (DCE)</i></b>	The designation for RS-232 and EIA/TIA-574 serial communication devices such as modems. Data Communications Equipment (DCE) typically connects to Data Terminal Equipment (DTE).	
<b><i>Data Exchange</i></b>	The process of exchanging 9-1-1 data between Service Providers and the Data Base Management System Provider.	

<b><i>Term</i></b>	<b><i>Definition</i></b>	<b><i>N)ew U)pdate</i></b>
<b><i>Datagram</i></b>	Nate Wilcox: “a self-contained, independent entity of data carrying sufficient information to be routed from the source to the destination computer without reliance on earlier exchanges between this source and destination computer and the transporting network.”	
<b><i>Data Over Cable Service Interface Specifications (DOCSIS)</i></b>	The name given to the specifications for residential cable Internet Access	
<b><i>Data Processing Day</i></b>	The day in which processing of a given service order update occurs.	
<b><i>Data Provider</i></b>	A 3-5 character identifier, that distinguishes the source of the ALI record information (e.g., service provider/reseller/private switch owner). A.K.A. Company Identifier (ID) 2.	
<b><i>Data Synchronization</i></b>	Keeping multiple datasets in coherence with one another to maintain data integrity.	
<b><i>Data Terminal Equipment (DTE)</i></b>	The designation for RS-232 and EIA/TIA-574 serial terminal devices such as data terminals or PCs. Data Terminal Equipment (DTE) typically connects to Data Communications Equipment (DCE).	
<b><i>Deaf</i></b>	Partially or completely lacking in the sense of hearing. When referencing the Deaf community, this refers to people who use American Sign Language as a primary means of communication.	
<b><i>Deaf-Blind</i></b>	A term used to describe a person in whom hearing loss and vision impairment combine to interfere with his/her ability to function effectively in life. S/he may have either total or partial loss of both senses, or one or the other.	
<b><i>Decaying</i></b>	Directions from positive to negative, relative to the starting points, whose transient amplitudes decay with time in a ringwave pattern. These transients are typically caused by sources internal to the PSAP (motor, lighting and inductive loads, etc.) (Ref. NENA 04-001)	

<b><i>Term</i></b>	<b><i>Definition</i></b>	<b><i>N)ew U)pdate</i></b>
<b><i>Decibel</i></b>	A unit for expressing the relative intensity of sounds on a scale from zero for the average least perceptible sound (near total silence) to about 130 for the average pain level. A sound 10 times more powerful than 0dB is 10 dB. A sound 100 times more powerful than near total silence is 20 dB. A sound 1,000 times more powerful than near total silence is 30 dB. In normal, non-laboratory situations an average human ear can only detect a change of at least 3 db.	
<b><i>Dedicated Trunk</i></b>	A telephone circuit used for a single purpose; such as transmission of 9-1-1 calls.	
<b><i>Default Route</i></b>	The routing condition that occurs when a 9-1-1 call arrives at a switching or routing point with insufficient data to allow normal routing to the correct PSAP.	
<b><i>Default Routing</i></b>	The capability to route a 9-1-1 call to a designated (default) PSAP when the incoming 9-1-1 call cannot be selectively routed due to an ANI/KEY failure or other cause.	
<b><i>Definitive Civic Address</i></b>	In the context of location information to support IP based emergency services: An address that can be resolved into a local MSAG valid address, will yield a route to the correct PSAP when used to route an emergency call, and is bound to a specific VoIP end-point.	
<b><i>Delay</i></b>	Anything that is done to delay transmission of the packets such as protocol conversion, queuing, etc.	
<b><i>Delegate Credential Authorities</i></b>	A delegate credential authority issues certificates, which are derived from Valid Emergency Services Authority (VESA) certification. It is responsible for issuing certificates to the operators of network entities that utilize VESA certificates for the exchange of authenticated data on the i2-defined interfaces. Examples of delegate credential authorities may be PSAP operators, state emergency authorities, or regional 9-1-1 service providers.	
<b><i>Delta MSAG</i></b>	The Delta MSAG is a file of incremental changes to the MSAG. The changes are applied in the order that they are presented, to either the last updated version of the MSAG or a current Baseline of the MSAG, whichever is more recent.	

<b><i>Term</i></b>	<b><i>Definition</i></b>	<b><i>N)ew U)update</i></b>
<b><i>Denial of Service Attack</i></b>	A type of cyber attack intended to overwhelm the resources of the target and deny the ability of legitimate users of the target the normal service the target provides.	N
<b><i>Department of Justice (DOJ)</i></b>	A branch of the Federal Government legislated to oversee compliance of Title II of the ADA.	
<b><i>Dereference</i></b>	The act of exchanging a reference to an item by its value. Used primarily with a Location URI. The dereference operation uses a protocol such as SIP or HELD to obtain a location value (PIDF-LO).	N
<b><i>Derived Voice Lines</i></b>	The VoDSL voice lines are derived from the data portion of the ADSL line. The phone numbers associated with the derived lines are assigned out of the Class 5 switch that the VoDSL Gateway connects to.	
<b><i>Dial Tone First</i></b>	The provision of dial tone to enable a caller to originate and complete 9-1-1 calls from public telephones without inserting a coin or any other device. Also known as coin-free dialing.	
<b><i>Diffserv</i></b>	A quality of service mechanism for IP networks characterized by a code in a field of a Packet called a “Code Point” and a “Per hop Behavior”	N
<b><i>Digital Subscriber Line (DSL)</i></b>	A “last mile” solution that uses existing telephony infrastructure to deliver high speed broadband access. DSL standards are administered by the DSL Forum ( <a href="http://dslforum.org/">http://dslforum.org/</a> ).	
<b><i>Digital Subscriber Line Access Multiplexer (DSLAM)</i></b>	A digital subscriber line access multiplexer (DSLAM) delivers exceptionally high-speed data transmission over existing copper telephone lines. A DSLAM separates the voice-frequency signals from the high-speed data traffic and controls and routes digital subscriber line (xDSL) traffic between the subscriber’s end-user equipment (router, modem, or network interface card [NIC]) and the network service provider’s network.  Reprinted Courtesy of International Engineering Consortium (IEC) <a href="http://www.iec.org/online/tutorials/dslam/">http://www.iec.org/online/tutorials/dslam/</a>	

<b><i>Term</i></b>	<b><i>Definition</i></b>	<b><i>N)ew U)pdate</i></b>
<b><i>Direct [and equal] Access</i></b>	The ability to TTY calls without relying on an outside relay service or third party services.	
<b><i>Direct Connect</i></b>	A method of connecting a TTY directly into the phone line. When using direct connect, you can dial directly from the keyboard and use auto-answer features.	
<b><i>Direct Dispatch</i></b>	The performance of 9-1-1 call answering and dispatching by personnel at the primary PSAP.	
<b><i>Direct Inward Dialing (DID)</i></b>	The ability for a caller outside a company to call an internal extension without having to pass through a switchboard operator or attendant at the MLTS.	
<b><i>Directory Number (DN)</i></b>	A dialable 10-digit telephone number associated with a telephone subscriber or call destination.	
<b><i>Disaster</i></b>	Any event which can cause a significant disruption to emergency calling capability.	
<b><i>Disaster Recovery</i></b>	A specific set of procedures designed to reduce the damaging consequences of unexpected events resulting in the loss of 9-1-1 capabilities.	
<b><i>Discrepancies</i></b>	A Service Provider term used to describe subscriber records that do not match the MSAG and are referred to an error file or report for resolution.	
<b><i>Discrete Multi Tone (DMT)</i></b>	The transmission medium for ADSL.	
<b><i>Disk Operating System (DOS)</i></b>	A personal computer operating system which manages the computer's resources.	
<b><i>Diverse Routing</i></b>	The practice of routing circuits along different physical paths in order to prevent total loss of 9-1-1 service in the event of a facility failure.	
<b><i>Domain (or Domain Name)</i></b>	The domain name (hostname) of an agency or element in an ESInet. See Domain Name System (DNS)	N
<b><i>Domain Name Server (DNS)</i></b>	Used in the Internet today to resolve domain names. The input to a DNS is a domain name (e.g., elcordia.com); the response is the IP address of the domain. The DNS allows people to use easy to remember text-based addresses and the DNS translates those names into routable IP addresses.	
<b><i>Domain Name System (DNS)</i></b>	A globally distributed database for the resolution of host names to numeric IP addresses.	

<b><i>Term</i></b>	<b><i>Definition</i></b>	<b><i>N)ew U)pdate</i></b>
<b><i>Donor Company</i></b>	The Service Provider currently responsible for an end user's telephone service prior to the migration of the telephone number to another Service Provider.	
<b><i>Dual Tone Multi-Frequency (DTMF)</i></b>	The transmission of a selected number or symbol (*, #) via the generation of a specific pair of tones when that number's or symbol's button on a push button telephone is pressed. Also known as Touch-Tone™. The tones are audible and transmitted within the voice band.	
<b><i>Dynamic Host Configuration Protocol (DHCP)</i></b>	A widely used configuration protocol that allows a host to acquire configuration information from a visited network and, in particular, an IP address.	
<b><i>Dynamic Host Configuration Protocol Server (DHCP)</i></b>	The Dynamic Host Configuration Protocol (DHCP) is a set of rules used by a communications device (such as a computer, router or networking adapter) to allow the device to request and obtain an Internet address from a server which has a list of addresses available for assignment.	
<b><i>Dynamic Host Control Protocol</i></b>	Assignment of an IP address to a client from a host that is only viable during any one established session.	
<b><i>E.164 number</i></b>	E.164 is an international numbering plan for public telephone systems in which each assigned number contains a country code (CC), a national destination code (NDC), and a subscriber number (SN). There can be up to 15 digits in an E.164 number. The E.164 plan was originally developed by the International Telecommunication Union (ITU).	
<b><i>Echo</i></b>	Return of transmitted data.	
<b><i>Education Advisory Board (EAB)</i></b>	Appointed by the NENA President, members of the EAB provide the NENA Executive Board with committee support in defining and developing NENA's educational mission.	
<b><i>Electrical Sub Station</i></b>	A power station found along the track area of electrified railroads used to aid in the power requirements and distribution of the rail system. Substations are normally fenced off for safety however access can be gained. All equipment in the substation is electrified with high voltage.	

<b><i>Term</i></b>	<b><i>Definition</i></b>	<b><i>N)ew U)pdate</i></b>
<b><i>Electronic Industry Association (EIA)</i></b>	U.S. trade organization that issues its own standards and contributes to the American National Standards Institute.	
<b><i>Electronic Key Telephone System (E-Key)</i></b>	A multi-line telephone system which utilizes stored program control technology instead of KSU's and KTU's.	
<b><i>Electro-Luminescent Display (ELD)</i></b>	A type of video display which creates images of graphics or text by direct conversion of electrical energy into light. An alternative to the Cathode Ray Tube (CRT).	
<b><i>Electronic Industry Association (EIA)</i></b>	A trade organization of manufacturers that sets standards for use of its member companies conducts education programs and lobbies in Washington for its members' collective prosperity. Also associated with the Telecommunications Industry Association (TIA).	
<b><i>Element Identifier</i></b>	A logical name used to represent physical implementation of a functional element or set of functional elements as a single addressable unit. The form of an element identifier is a hostname.	N
<b><i>Emergency Alert Systems (EAS)</i></b>	Radio or television based broadcast of emergency event information.	
<b><i>Emergency Call</i></b>	A telephone request for public safety agency emergency services which requires immediate action to save a life, to report a fire or to stop a crime. May include other situations as determined locally.	
<b><i>Emergency Call Routing Function (ECRF)</i></b>	A functional element in an ESInet which is a LoST protocol server where location information (either civic address or geo-coordinates) and a Service URN serve as input to a mapping function that returns a URI used to route an emergency call toward the appropriate PSAP for the caller's location or towards a responder agency.	U
<b><i>Emergency Call Session Control Function (E-CSCF)</i></b>	The entity in the IMS core network that handles certain aspects of emergency sessions, e.g. routing of emergency requests to the correct emergency center or PSAP.	

<b><i>Term</i></b>	<b><i>Definition</i></b>	<b><i>N)ew U)pdate</i></b>
<b><i>Emergency Communications Center (ECC)</i></b>	A set of call takers operating under common management which receives emergency calls for service and asynchronous event notifications and processes those calls and events according to a specified operational policy.	
<b><i>Emergency Event</i></b>	An asynchronous communications notification which is a single communication message to a PSAP that results in a defined action by a call taker but does not have a human at the origination end and where no two way media streams are established.	N
<b><i>Emergency Location Identification Number (ELIN)</i></b>	A valid North American Numbering Plan format telephone number, assigned to the MLTS Operator by the appropriate authority that is used to route the call to a PSAP and is used to retrieve the ALI for the PSAP. The ELIN may be the same number as the ANI. The North American Numbering Plan number may in some cases not be a dialable number.	
<b><i>Emergency Medical Service (EMS)</i></b>	Fire, hospital, poison control, etc. response centers.	
<b><i>Emergency Message (EM) Circuits</i></b>	The special service circuits used to carry 9-1-1 calls to the PSAP.	
<b><i>Emergency Notification Systems (ENS)</i></b>	General category for any systems used to notify persons of an emergency. May include changeable message signs, sirens, telephone and other media.	
<b><i>Emergency Response Location (ERL)</i></b>	A location to which a 9-1-1 emergency response team may be dispatched. The location should be specific enough to provide a reasonable opportunity for the emergency response team to quickly locate a caller anywhere within it.	
<b><i>Emergency Ring Back</i></b>	The capability of a PSAP attendant to ring the telephone on a held circuit. Requires Calling Party Hold. Also known as re-ring. (A Basic 9-1-1 feature)	
<b><i>Emergency Routing Data Base (ERDB)</i></b>	The ERDB contains routing information associated with each Emergency Service Zone (ESZ) in a serving area. It supports the boundary definitions for ESZs and the mapping of civic address or geo-spatial coordinate location information to a particular ESZ.	

<b><i>Term</i></b>	<b><i>Definition</i></b>	<b><i>N)ew U)pdate</i></b>
<b><i>Emergency Routing Data Base (ERDB) Operator</i></b>	An operator that supports the real time routing server (ERDB) that can resolve location information to emergency service zone route at the request of a VPC.	
<b><i>Emergency Service Central Office Number (ESCO)</i></b>	The information delivered to the PSAP when there is an ANI failure between the end office and the 9-1-1 Control Office. When ANI is not available, the 9-1-1 call is default routed and the ANI display at the PSAP will be “911-0TTT” (or 911-TTTT) with TTT identifying the incoming trunk group.	
<b><i>Emergency Service Number (ESN)</i></b>	A 3-5 digit number that represents one or more ESZs. An ESN is defined as one of two types: Administrative ESN and Routing ESN (Refer to definitions elsewhere in this document.)	
<b><i>Emergency Service Number (ESN)/ Emergency Service Zone (ESZ)</i></b>	An ESN is 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).	
<b><i>Emergency Service Zone (ESZ)</i></b>	A geographical area that represents a unique combination of emergency service agencies (e.g., Law Enforcement, Fire and Emergency Medical Service) that are within a specified 9-1-1 governing authority’s jurisdiction. An ESZ can be represented by an Emergency Service Number (ESN) to identify the ESZ. (Refer to ESN)	
<b><i>Emergency Service Zone Routing Data Base (ERDB)</i></b>	The ERDB contains routing information associated with each Emergency Service Zone (ESZ) in a serving area. It supports the boundary definitions for ESZs and the mapping of civic address or geo-spatial coordinate location information to a particular ESZ.	
<b><i>Emergency Service Zone Routing Data Base (ERDB) Operator</i></b>	The entity that operates the ERDB serving a defined geographic area.	

<i>Term</i>	<i>Definition</i>	<i>N)ew U)pdate</i>
<b><i>Emergency Services Gateway (ESGW)</i></b>	The Emergency Services Gateway (ESGW) is the signaling and media interworking point between the IP domain and conventional trunks to the E9-1-1 SR that use either Multi-Frequency [MF] or Signaling System #7 [SS7] signaling. The ESGW uses the routing information provided in the received call setup signaling to select the appropriate trunk (group) and proceeds to signal call setup toward the SR using the ESQK to represent the Calling Party Number/Automatic Number Identification (ANI) information.	
<b><i>Emergency Services Gateway (ESGW) Operator</i></b>	Operates emergency service gateway(s).	
<b><i>Emergency Services Interconnection Forum (ESIF)</i></b>	An open, technical/operational forum, under the auspices of the Alliance For Telecommunications Industry Solutions, with the voluntary participation of interested parties to identify and resolve recognized 9-1-1 interconnection issues. The interest of all members will be served by observing the principles of openness, fairness, consensus, and due process. ESIF will liaise with standards and governmental organizations to apprise them of its deliberations and decisions. Discussions will be focused on the FCC’s Wireless Phase I and II mandates, and into other areas of emergency services interconnection.” Please refer to: <a href="http://www.atis.org/esif/index.asp">http://www.atis.org/esif/index.asp</a>	
<b><i>Emergency Services IP Network (ESInet)</i></b>	An ESInet is a managed IP network that is used for emergency services communications, and which can be shared by all public safety agencies. It provides the IP transport infrastructure upon which independent application platforms and core functional processes can be deployed, including, but not restricted to, those necessary for providing NG9-1-1 services. ESInets may be constructed from a mix of dedicated and shared facilities. ESInets may be interconnected at local, regional, state, federal, national and international levels to form an IP-based inter-network (network of networks).	U

<i>Term</i>	<i>Definition</i>	<i>New Update</i>
<b><i>Emergency Services Query Key (ESQK)</i></b>	The ESQK identifies a call instance at a VPC, and is associated with a particular SR/ESN combination. The ESQK is delivered to the E9-1-1 SR and as the calling number/ANI for the call 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 delivered by the SR to the PSAP as the calling number/ANI for the call, and is subsequently used by the PSAP to request ALI information for the call. The ALI database includes the ESQK in location requests sent to the VPC. The ESQK is used by the VPC as a key to look up the location object and other call information associated with an emergency call instance. The ESQK is expected to be a ten-digit North American Numbering Plan Number.	
<b><i>Emergency Services Routing Digit (ESRD)</i></b>	Either a 10-digit North American Numbering plan or non-NANPA number that uniquely identifies a base station, cell site, or sector that is used to route wireless emergency calls through the network. The ESRD may also be used to retrieve the associated ALI data with the call. These numbers can be dialable or non-dialable.	
<b><i>Emergency Services Routing Key (ESRK)</i></b>	Either a 10-digit North American Numbering plan or non-NANPA number that uniquely identifies a wireless emergency call, is used to route the call through the network, and used to retrieve the associated ALI data. These numbers can be dialable or non-dialable.	
<b><i>Emergency Services Routing Number (ESRN)</i></b>	The ESRN is used by the Call Server/Routing Proxy to route an emergency call to the correct ESGW, and by the ESGW to select the desired path to the appropriate SR for the call. The ESRN is expected to be a ten-digit North American Numbering Plan Number.	
<b><i>Emergency Services Routing Proxy (ESRP)</i></b>	An i3 functional element which is a SIP proxy server that selects the next hop routing within the ESInet based on location and policy. There is an ESRP on the edge of the ESInet. There is usually an ESRP at the entrance to an NG9-1-1 PSAP. There may be one or more intermediate ESRPs between them.	
<b><i>Emergency Service (ES) Trunks</i></b>	Message trunks capable of providing ANI, connecting the serving central office of the 9-1-1 calling party and the designated E9-1-1 Control Office.	

<b><i>Term</i></b>	<b><i>Definition</i></b>	<b><i>N)ew U)pdate</i></b>
<b><i>Emergency Stand Alone (ESA)</i></b>	A feature within a remote switching unit (RSU) which allows for independent operation of the remote whenever the links between the host and remote are disabled. Based on translations the features are downloaded from the host to the remote prior to the failure.	
<b><i>Emergency Telecommunications (EMTEL)</i></b>	<p>The concept of EMTEL addresses a broad spectrum of aspects related to the provisioning of telecommunications services in emergency situations. Emergency situations may range from a narrow perspective of an individual being in a state of personal emergency (with need to make an emergency call due to sudden illness, traffic accident, outbreak of fire in the home...) to a very broad perspective of serious disruptions to the functioning of society (viz. disaster situations due to events or processes such as earthquakes, floods, large scale terrorist attacks, etc.).</p> <p>The concept also covers the telecommunications needs of society's dedicated resources for ensuring public safety; including police forces, fire fighting units, ambulance services and other health and medical services, as well as civil defense services. The telecommunications needs of such services have until now been satisfied by dedicated networks and equipment, often different for different services, but with modern technology it is possible to increasingly integrate such services with the public telecommunications services.</p> <p>Terrestrial and satellite radio/TV broadcasting and Internet services provide means for dissemination of information to the general public, in particular in hazardous and disaster situations. Telecommunications means may also be increasingly used as parts of various community functions such as health services (e.g. remote patient monitoring to reduce need for hospitalization).</p>	
<b><i>Emergency Telephone Notification Systems (ETNS)</i></b>	Specific category for a system that uses the telephone – in conjunction with other elements – including computer based hardware and software to notify persons of an emergency.	



<i><b>Term</b></i>	<i><b>Definition</b></i>	<i><b>N)ew U)pdate</b></i>
<i><b>Emerging Technologies</b></i>	New technologies and network to deliver communications.	
<i><b>End Office</b></i>	(see Central Office (CO)).	
<i><b>End User</b></i>	The 9-1-1 caller.	
<i><b>End User Move Indicator (EUMI)</b></i>	A field in the Local Service Request (LSR) form that indicates the end user (subscriber) is changing Service Address during the porting process.	
<i><b>English Language Translation (ELT)</b></i>	<p>An ELT is an alphanumeric description of the primary Law Enforcement, Fire and Emergency Medical Service agencies associated with a given Emergency Services Zone/Number. The ELT (also known as an “agency file” or “tell tale” in some systems) includes the name of the first-responder agency, and may include their station number (for dispatch purposes) and telephone number. Examples:</p> <ul style="list-style-type: none"> <li>• ESN 123 translates to: &lt;County&gt; Sheriff, &lt;County&gt; Fire, &lt;County&gt; EMS</li> <li>• ESN 130 translates to &lt;City&gt; Police, &lt;City&gt; Fire Station 57, &lt;County&gt; EMS</li> <li>• ESN 135 translates to &lt;City&gt; Police 6<sup>th</sup> Precinct, &lt;City&gt; Fire Station 22, &lt;City&gt; EMS</li> </ul> <p>(Where the element “&lt;County&gt;” or “&lt;City&gt;” is replaced with the actual County or City name.)</p> <p>Some 9-1-1 systems support more than three agencies. In those cases, the ELT may contain additional listings for Advanced Life Support (Paramedics and Mobile Intensive Care Units), Medevac helicopter services, State or Marine Police, etc.</p>	

<i><b>Term</b></i>	<i><b>Definition</b></i>	<i><b>N)ew U)pdate</b></i>
<i><b>Enhanced 9-1-1 (E9-1-1)</b></i>	A telephone system which includes network switching, data base and Public Safety Answering Point premise elements capable of providing automatic location identification data, selective routing, selective transfer, fixed transfer, and a call back number. The term also includes any enhanced 9-1-1 service so designated by the Federal Communications Commission in its Report and Order in WC Docket Nos. 04-36 and 05-196, or any successor proceeding.	
<i><b>Enhanced 9-1-1 (E9-1-1) Control Office</b></i>	The Central Office 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. Also known as 9-1-1 Selective Routing Tandem or Selective Router.	

<i>Term</i>	<i>Definition</i>	<i>N)ew U)pdate</i>
<b><i>Enhanced 9-1-1 System Service Provider (E9-1-ISSP)</i></b>	<p>An E9-1-1 System Service Provider (E9-1-ISSP) provides systems and support necessary to enable 9-1-1 calling for one or more Public Safety Answering Points (PSAPs) in a specific geographic area. It is typically, but not always, an Incumbent Local Exchange Carrier (ILEC).</p> <p>This includes:</p> <ul style="list-style-type: none"> <li>• A method of interconnection for all telecommunications providers including but not limited to the wireline, wireless, and VoIP carriers</li> <li>• A method and mechanism for routing a 9-1-1 call to the Public Safety Answering Point (PSAP) with no degradation in service regardless of the technology used to originate the call</li> <li>• A method to provide accurate location information for an emergency caller to a PSAP and if required, to other emergency response agencies</li> <li>• Installation of PSAP call handling equipment and training of PSAP personnel when contracted to do so</li> <li>• Coordinating with PSAP authorities and other telecommunications entities for troubleshooting and on issues involving contingency planning, disaster mitigation and recovery</li> </ul>	
<b><i>Enhanced 9-1-1 (E9-1-1) Tandem Office</i></b>	(see Enhanced 9-1-1 Control Office)	
<b><i>Enhanced Data rates for GSM Evolution (EDGE)</i></b>	EDGE is a digital mobile phone technology which acts as a bolt-on enhancement to 2G and 2.5G General Packet Radio Service (GPRS) networks.	
<b><i>Enterprise Network</i></b>	A large network connecting major points in a company or other organizations not part of the public telecommunications infrastructure.	
<b><i>Enumeration</i></b>	A type of data element whose value is one of a specified set of labels or names. For example, one could have an enumeration whose possible values are selected from the set “Online”, “Offline” and “Maintenance”	

<b><i>Term</i></b>	<b><i>Definition</i></b>	<b><i>N)ew U)pdate</i></b>
<b><i>Environmental Services Research Institute (ESRI)</i></b>	Software developer of geographical information system (GIS) software and technology.	
<b><i>Essex</i></b>	(see Centrex)	
<b><i>Ethernet</i></b>	A popular local area data communication network, which accepts transmissions from computers and terminals.	
<b><i>European Telecommunications Standards Institute (ETSI)</i></b>	ETSI is an independent, non-profit organization, whose mission is to produce telecommunications standards for today and for the future. Based in Sophia Antipolis (France), ETSI is officially responsible for standardization of Information and Communication Technologies (ICT) within Europe. These technologies include telecommunications, broadcasting and related areas such as intelligent transportation and medical electronics.	
<b><i>Exchange</i></b>	A defined area, served by one or more telephone central offices, within which a Local Exchange Carrier furnishes service.	
<b><i>Exempt Lines</i></b>	Access lines not subject to 9-1-1 charges.	
<b><i>Failed Migrate Record</i></b>	A Function of Change (M) migrate transaction record sent to the E9-1-1 DBMS by the Recipient Company which fails to process because the DBMS E9-1-1 record is still locked.	
<b><i>Family abduction</i></b>	A family abduction occurs when, in violation of a custody order, a decree, or other legitimate custodial rights, a member of the child's family, or someone acting on behalf of a family member, takes or fails to return a child.	
<b><i>Fast Busy</i></b>	(see Reorder Tone)	
<b><i>Fast Busy Tone</i></b>	Also, Recorder Tone. An audible tone of 120 interrupts per minute (IPM) returned to the calling party to indicate the call cannot be processed through the network. (57-001)	
<b><i>Feature</i></b>	Abstraction of real world phenomena	

<b><i>Term</i></b>	<b><i>Definition</i></b>	<b><i>N)ew U)pdate</i></b>
<b><i>Feature Group D (FGD)</i></b>	An MF signaling protocol, originally developed to support equal access to long distance services, capable of carrying one or two ten-digit telephone numbers.	
<b><i>File Transfer Protocol (FTP)</i></b>	A widely accepted, and readily available, means of communication, designed specifically to move data files between computer systems over an IP network.	
<b><i>Fixed Transfer</i></b>	The capability of a PSAP attendant to transfer a 9-1-1 call to a pre-determined location by activating a single button.	
<b><i>Fixed/Static</i></b>	Refers to an IP end-point that cannot move, is always in same location and always accesses a network from the same point.	
<b><i>Footprint</i></b>	The geographic area covered by a particular wireless cell or cell sector.	
<b><i>Force</i></b>	Threats of serious harm to, or physical restraint against, that person or another person; and/or by means of any scheme, plan, or pattern intended to cause the person to believe that, if the person did not perform such labor or services, that person or another person would suffer serious harm or physical restraint; or by means of the abuse or threatened abuse of law or the legal process,	
<b><i>Forced Disconnect</i></b>	The capability of a PSAP attendant to disconnect a 9-1-1 call even if the calling party remains off-hook. Used to prevent overloading of 9-1-1 trunks.	
<b><i>Foreign Exchange Service (FX)</i></b>	A telephone line switched in an exchange or central office other than the exchange or central office area in which the telephone is located.	
<b><i>Frame Relay</i></b>	A dedicated digital transport service that routes information via switched packets. It is defined in ANSI data link level T 1.618.	
<b><i>Fraud</i></b>	A false representation of a matter of fact—whether by words or by conduct, by false or misleading allegations, or by concealment of what should have been disclosed—that deceives and is intended to deceive another so that the individual will act upon it to her or his legal injury.	

<i>Term</i>	<i>Definition</i>	<i>N)ew U)pdate</i>
<i>Free Run</i>	The operating condition of a clock in which the local oscillator is not locked to an external synchronization reference, and is using no storage techniques to sustain its operating frequency. (Ref. NENA 04-002)	
<i>Frequency division duplex (FDD)</i>	<p>FDD is the application of frequency-division multiple access (access technology that is used by radio systems to share the radio spectrum) to separate outward and return signals. The uplink and downlink sub-bands are said to be separated by the “frequency offset”.</p> <p>Frequency division duplex is much more efficient in the case of symmetric traffic. In this case TDD tends to waste bandwidth during switchover from transmit to receive, has greater inherent latency, and may require more complex, more power-hungry circuitry.</p> <p>Another advantage of FDD is that it makes radio planning easier and more efficient since base stations do not “hear” each other (as they transmit and receive in different sub-bands) and therefore will normally not interfere each other. With TDD systems, care must be taken to keep guard bands between neighboring base stations (which decreases spectral efficiency) or to synchronize base stations so they will transmit and receive at the same time (which increases network complexity and therefore cost, and reduces bandwidth allocation flexibility as all base stations and sectors will be forced to use the same uplink/downlink ratio)</p>	
<i>From Header</i>	A SIP header that describes the caller’s notion of its own identity (Address of Record). From is generally not treated as reliable unless it is protected by an Identity header	N
<i>Ng.711 a-law</i>	An ITU-T Recommendation for an audio codec for telephony in non-North American regions	N
<i>g.711 mu-law</i>	An ITU-T Recommendation for an audio codec for telephony in the North American region	N

<b><i>Term</i></b>	<b><i>Definition</i></b>	<b><i>N)ew U)pdate</i></b>
<b><i>Gateway</i></b>	The Point at which a circuit-switched call is encoded and repackaged into IP packets – Equipment that provides interconnection between two networks with different communications protocols; two examples are packet assembler/disassemblers and protocol converters. Gateways operate at the 4 <sup>th</sup> through 7 <sup>th</sup> layers of the Open Systems Interconnection model.	
<b><i>Gateway Mobile Location Center (GMLC/MLC)</i></b>	The GMLC serves as the point of interface to the GSM wireless network for the Emergency Services Network. The GMLC serves as the entity which retrieves, forwards, stores and controls position data within the location network. It receives Position Information from the wireless network, forwards it to the Emergency Service Network upon request and coordinates requests for position update.	
<b><i>General Packet Radio Service (GPRS)</i></b>	GPRS is a mobile data service available to users of GSM mobile phones. It is often described as “2.5G”, that is, a technology between the second (2G) and third (3G) generations of mobile telephony. It provides moderate speed data transfer, by using unused TDMA channels in the GSM network. Originally there was some thought to extend GPRS to cover other standards, but instead those networks are being converted to use the GSM standard, so that is the only kind of network where GPRS is in use. GPRS is integrated into GSM standards releases starting with Release 97 and onwards. First it was standardized by ETSI but now that effort has been handed onto the 3GPP.	
<b><i>Generic Digit Parameter (GDP)</i></b>	Identifies the type of address to be presented in calls set up or additional numeric data relevant to supplementary services such as LNP or E9-1-1.	
<b><i>Geocoding</i></b>	Translation of one form of location into another, typically a civic address into an x, y coordinate.	
<b><i>Geographic Number Portability (GNP)</i></b>	A form of telephone number portability, where a telephone number may be ported outside its originally assigned rate center (e.g., across LATA boundaries, or to another state). This is different from Local Number Portability (LNP) where the telephone number must be reused within the same rate center.	

<b><i>Term</i></b>	<b><i>Definition</i></b>	<b><i>N)ew U)pdate</i></b>
<b><i>Geographic Information System (GIS)</i></b>	A computer software system that enables one to visualize geographic aspects of a body of data. It contains the ability to translate implicit geographic data (such as a street address) into an explicit map location. It has the ability to query and analyze data in order to receive the results in the form of a map. It also can be used to graphically display coordinates on a map i.e. Latitude/Longitude from a wireless 9-1-1 call.	
<b><i>Geo Location</i></b>	Latitude, longitude, elevation, and the datum which identifies the coordinate system used. For the i2 solution it is expected that geo location information will be formatted using the World Geodetic System 1984 (WGS841) datum.	
<b><i>geoShape Element</i></b>	One of a list of shapes defined originally by the IETF and standardized by the Open Geospatial Consortium that can be found in a PIDF-LO. Includes point, circle, ellipse, arc band, polygon and 3D versions of same	N
<b><i>Geospatial</i></b>	Data Accurately references to a precise location on the earth's surface.	
<b><i>GIS (Geographic Information System)</i></b>	A system for capturing, storing, displaying, analyzing and managing data and associated attributes which are spatially referenced.	
<b><i>Global Positioning System (GPS)</i></b>	A satellite based Location Determination Technology (LDT).	
<b><i>GR303</i></b>	A Telcordia standard for communicating from a central office to a remote line module.	
<b><i>Grade Crossing</i></b>	Where rail systems cross road networks at the same grade or level (i.e., without a bridge or tunnel to separate them).	
<b><i>Grade of Service</i></b>	The probability (P), expressed as a decimal fraction, of a telephone call being blocked. P.01 is the grade of service reflecting the probability that one call out of one hundred during the average busy hour will be blocked. P.01 is the minimum recommended Grade of Service for 9-1-1 trunk groups.	
<b><i>Global Standard for Mobile Communications (GSM)</i></b>	International standard digital radio interface utilized by some North American PCS carriers.	

<b><i>Term</i></b>	<b><i>Definition</i></b>	<b><i>N)ew U)pdate</i></b>
<b><i>Groupe Speciale Mobile (GSM)</i></b>	Global System for Mobile Communications. The predominant digital telephone service technology outside the United States, with some services within the United States. The radio interface is either in the 9—MHZ or 1.8GHZ band.	
<b><i>H.264</i></b>	A video codec, defined by ITU-T in common use today for real time two way video	N
<b><i>H.323</i></b>	Specified in International Telecommunications Union-Telecommunications (ITU-T) specification H.323, the specification for transmitting multimedia (voice, video, and data) across a network, and is used in some VoIP architectures.	
<b><i>Hard of Hearing</i></b>	The term “hard of hearing” refers to those who have some hearing, are able to use it for communication purposes, and who reasonably comfortable doing so. A hard of hearing person, in audiological terms, may have a mild to moderate hearing loss.	
<b><i>Health Insurance Portability and Accountability Act (HIPAA)</i></b>	Federal regulation protecting patients from unauthorized disclosure of medical information.	
<b><i>Hearing Carry Over (HCO)</i></b>	A method which utilizes both voice and text communications on the same call, allowing a person who is speech impaired to listen to the other party’s conversation and respond by typing via a TTY or other means of text communications.	
<b><i>HELD</i></b>	A video codec, defined by ITU-T in common use today for real time two way video	N
<b><i>Hertz</i></b>	Hertz (abbreviated Hz) is a unit of frequency (of change in state or cycle in a sound wave, alternating current, or other cyclical waveform) of one cycle per second. It replaces the earlier term; cycle per second (cps). In acoustic sound, the range of average human hearing is from 20 Hz to roughly 20 kHz (20 thousand Hertz). The pitch of middle C on a piano is 263 Hz.	
<b><i>High Bit Rate Digital Subscriber Line (HDSL)</i></b>	A bi-directional T1 or DS1 service for the local loop, but restricted to being served from Carrier Service Area, probably at less than two miles from the subscriber.	

<b><i>Term</i></b>	<b><i>Definition</i></b>	<b><i>N)ew U)pdate</i></b>
<b><i>Highway Call Box</i></b>	A telephone enclosed in a box and placed along a highway that allows a motorist to summon emergency and non-emergency assistance.	
<b><i>Home Subscriber Server (HSS)</i></b>	A common functional entity to both the circuit switched and packet switched mobile domains in 3GPP/3GPP2. The HSS is the master database for a given user. It is the entity containing the subscription-related information to support the network entities actually handling calls/sessions.	
<b><i>Host Mobility</i></b>	Powerful IP new routing capability that allows a device to move to another host network and still be identified.	
<b><i>Host Switch</i></b>	An end office with an internal controller or intelligent process used to complete calls. A host switch controls the function of a remote switch unit (RSU) via a central “control” or “processor” resident within the host switch.	
<b><i>Human Trafficking</i></b>	All acts involved in the transport, harboring, or sale of persons within national or across international borders through coercion, kidnapping, deception, or fraud for the purpose of placing persons in situations of forced labor or services such as domestic servitude, factor or agricultural work; or Sex trafficking in any commercial sex act induced by force, fraud, or coercion. It is always considered a severe form of trafficking if the person induced to perform the sexual act is under the age of majority, regardless of whether the elements of force, fraud or coercion are involved.	
<b><i>Hypertext Transport Protocol (HTTP)</i></b>	Hypertext Transport protocol typically used between a web client and a web server that transports HTML and/or XML. Often used as a transport for SOAP.	
<b><i>I3Public Safety Answering Point (i3 PSAP)</i></b>	A PSAP that is capable of receiving IP-based signaling for delivery of emergency calls and for originating calls and is conformant to NENA specifications for such PSAPs.	
<b><i>IANA Registry</i></b>	A registry maintained by the Internet Assigned Number Authority, usually at the behest of the IETF	N

<b><i>Term</i></b>	<b><i>Definition</i></b>	<b><i>N)ew U)date</i></b>
<b><i>Idle Circuit Tone Application</i></b>	A feature which applies a distinctive tone toward the PSAP attendant to distinguish between calls that have been abandoned before the attendant answers, and calls where the caller is unable or unwilling to speak.	
<b><i>Implementation and Coordination Office (ICO)</i></b>	National 9-1-1 Implementation and Coordination Office, previously known as the National 9-1-1 Program Office, currently jointly operated by NHTSA and the National Telecommunication Information Administration which was created and funded by the ENHANCE 9-1-1 Act of 2004. ( <a href="http://www.e-911ico.gov">http://www.e-911ico.gov</a> )	
<b><i>Impulse Transient</i></b>	A high energy unidirectional voltage or current impulse resembling a “spike” which is typically caused by sources external to the PSAP (lightning, grid switching, etc.). (Ref. NENA 04-001)	
<b><i>Incident</i></b>	A real world occurrence such as a heart attack, car crash or a building fire for which one or more calls may be received.	N
<b><i>Incident Commander</i></b>	Title that identifies the individual responsible for a specific incident or event.	
<b><i>Incident Tracking Identifier</i></b>	An identifier assigned by the first element which declares an incident. Incident Tracking Identifiers are globally unique.	U
<b><i>Incumbent Local Exchange Carrier (ILEC)</i></b>	A telephone company that had the initial telephone company franchise in an area.	
<b><i>INFO</i></b>	A SIP transaction used to pass information from the caller to the called party	N
<b><i>Instant Call Recorder</i></b>	A device that allows the user to instantly playback all (or portions of) a call for service to clarify or validate what was heard by the operator to what was said by the caller. Also called and Instant Recall recorder.	
<b><i>Instant Messaging (IM)</i></b>	A method of communication generally using text where more than a character at a time is sent between parties nearly instantaneously	N
<b><i>Instant Playback Recorder</i></b>	(see Recall Recorder)	
<b><i>Institute of Electrical and Electronic Engineers (IEEE)</i></b>	A publishing and standards making body responsible for many telecom and computing standards.	

<b><i>Term</i></b>	<b><i>Definition</i></b>	<b><i>N)ew U)pdate</i></b>
<b><i>Integrated Access Device (IAD)</i></b>	Replaces the standard DSL modem at the customer premises. Typically has a built-in standard DMT based DSL modem, an Ethernet Interface for the PC or any other data device and anywhere from 4 to 12 analog ports for phones.	
<b><i>Integrated Services Digital Network (ISDN)</i></b>	International standard for a public communication network to handle circuit-switched digital voice, circuit-switched data, and packet-switched data.	
<b><i>Integrated Service Digital Network Digital Subscriber Line (ISDL)</i></b>	A digital interface providing multiple channels for simultaneous functions between the network and CPE	
<b><i>Integrated Services Digital Network User Part (ISUP)</i></b>	A message protocol to support call set up and release for interoffice voice call connections over SS7 Signaling.	
<b><i>Integrated TTY</i></b>	Integrated TTY refers to TTY functionality that has been integrated within a computer work station. This may be found within the 9-1-1 telephony system or interfaced in a CAD (computer aided dispatch) system.	
<b><i>Intelligent Network</i></b>	A telecommunications network that has functions and controls distributed at various nodes on and off the network, enabling great flexibility in transport. This is an SS7 network that includes components such as SSP (Signal Switching Point), STP (Signal Transfer Point), and SCP (Service Control Point or Switch Control Point – depending on the reference you read).	
<b><i>Intelligent Transport System (ITS)</i></b>	Multi-disciplined plan, under the jurisdiction of the U.S. Dept. of Transportation, to improve traffic flow.	
<b><i>Intelligent Workstation (IWS)</i></b>	Computer based 9-1-1 answering position equipment that includes computer telephony integration.	
<b><i>Interactive Voice Response (IVR)</i></b>	A computer system accessible by registered users utilized to identify the Service Provider and 24 X 7 access number for telephone numbers which have been ported or pooled.	
<b><i>Inter-center testing</i></b>	This is a testing mechanism by which call takers make test calls to other PSAP's to test their proficiency.	
<b><i>Interim Number Portability (INP)</i></b>	The practice of moving a customer to a new carrier using a new telephone number, with the old telephone number forwarded to the new telephone number.	

<i>Term</i>	<i>Definition</i>	<i>N)ew U)pdate</i>
<b><i>Inter-local Services Agreement</i></b>	An agreement among governmental jurisdictions or privately owned systems, or both, within a specified area to share 9-1-1 system costs, maintenance responsibilities, and other considerations.	
<b><i>Inter-Range-Instrumentation Group (IRIG)</i></b>	This group, in 1959, proposed a series of time code formats now known as IRIG or NASA time codes. (Ref. NENA 04-002)	
<b><i>Inter-Tandem Transfer</i></b>	The capability of transferring a call over the 9-1-1 network from a PSAP served by one 9-1-1 tandem to a PSAP served by a different 9-1-1 tandem.	
<b><i>Internal Clock</i></b>	A time-of-day reference source for timing information in equipment or systems. (Ref. NENA 04-002)	
<b><i>International Multimedia Teleconferencing Consortium (IMTC)</i></b>	VoIP Forum	
<b><i>International Telecommunications Union – Telecommunications (ITU-T)</i></b>	International standards body for all communications services.	
<b><i>International Telecommunications Union – Development (ITU-D)</i></b>	The ITU-D is responsible for creating policies, regulation and providing training programs and financial strategies in developing countries. The mission of the ITU-D is to facilitate and enhance telecommunication development worldwide by offering, organizing and coordinating technical cooperation and assistance activities.	
<b><i>International Telecommunications Union – Radiocommunications (ITU-R)</i></b>	The ITU-R plays a vital role in the management of the radio-frequency spectrum and satellite orbits, finite natural resources which are increasingly in demand from a large number of services such as fixed, mobile, broadcasting, amateur, space research, meteorology, global positioning systems, environmental monitoring and, last but not least, those communication services that ensure safety of life at sea and in the skies.	

<b><i>Term</i></b>	<b><i>Definition</i></b>	<b><i>N)ew U)pdate</i></b>
<b><i>Internet Architecture Board (IAB)</i></b>	<p>The IAB is the committee charged with oversight of the technical and engineering development of the Internet by the Internet Society (ISOC). It oversees a number of Task Forces, of which the most important are the Internet Engineering Task Force (IETF) and the Internet Research Task Force (IRTF).</p> <p>The body which eventually became the IAB was originally formed by the United States Department of Defense's Defense Advanced Research Projects Agency under the name Internet Configuration Control Board in 1979; it eventually became the Internet Advisory Board in September, 1984, and then the Internet Activities Board in May, 1986 (the name was changed, while keeping the same acronym). It finally became the <i>Internet Architecture Board</i>, under ISOC, in January, 1992, as part of the Internet's transition from a U.S.-government entity to an international, public entity.</p>	
<b><i>Internet Assigned Numbers Authority (IANA)</i></b>	IANA is the entity that oversees global IP address allocation; DNS root zone management, and other Internet protocol assignments.	
<b><i>Internet Corporation Assigned Names and Numbers (ICANN)</i></b>	Emerging authority for public domain addresses and URL's.	
<b><i>Internet Engineering Steering Group (IESG)</i></b>	The IESG is a body composed of the Internet Engineering Task Force Chair and Area Directors.	
<b><i>Internet Engineering Task Force (IETF)</i></b>	Lead standard setting authority for internet protocols.	
<b><i>Internet Protocol (IP)</i></b>	The method by which data is sent from one computer to another on the Internet or other networks.	
<b><i>Internet Protocol Access Network (IP Access Network)</i></b>	The network in which the first IP address is assigned to an end-point. For residential networks the creation and supply of an access network may require the co-operation of several different providers. For example an ISP may lease lines and DSLAM capacity from an existing telephony provider, in such a circumstance both entities are required in the providing of an access network.	

<b><i>Term</i></b>	<b><i>Definition</i></b>	<b><i>N)ew U)date</i></b>
<b><i>Internet Protocol Address (IP Address)</i></b>	A 32-bit address assigned to hosts using TCP/IP. An IP address belongs to one of five classes (A, B, C, D, or E) and is written as 4 octets separated by periods (dotted decimal format). Each address consists of a network number, an optional sub network number, and a host number. The network and sub network numbers together are used for routing, while the host number is used to address an individual host within the network or sub network.	
<b><i>Internet Protocol Client (IP Client)</i></b>	Used to refer to the IP endpoint communications equipment or application that is used to originate a voice, video or text request for emergency services (e.g., by calling 9-1-1). The term IP device or IP endpoint may also be used.	
<b><i>Internet Protocol-Connectivity Access Network (IP-CAN)</i></b>	The collection of network entities and interfaces that provides the underlying IP transport connectivity between the user endpoint and the IMS entities.	
<b><i>Internet Protocol-Coordination Ad-Hoc Committee (IP-COAD)</i></b>	One of the major challenges facing VoIP services is the lack of technical standards in place that allow customers to initialize calls to the proper 9-1-1 call center in an emergency. To respond to these VoIP challenges, ATIS' Emergency Services Interconnection Forum (ESIF) recently launched a new "IP Coordination Ad Hoc Committee" to contribute to the planning, development, and architectural design of an overall IP-based Enhanced 9-1-1 (E9-1-1) system.	
<b><i>Internet Protocol Endpoint (IP Endpoint)</i></b>	See IP Client	
<b><i>Internet Protocol Multimedia Subsystem (IMS)</i></b>	The IP Multimedia Subsystem comprises all 3GPP/3GPP2 core network elements providing IP multimedia services comprising audio, video, text, chat, etc. and a combination of any or all of them delivered over the packet switched domain.	

<b><i>Term</i></b>	<b><i>Definition</i></b>	<b><i>N)ew U)pdate</i></b>
<b><i>Internet Protocol Private Branch Exchange (IPBX (or IP PBX)</i></b>	An IP PBX is a private branch exchange (telephone switching system within an enterprise) that switches calls between VoIP (Voice over Internet Protocol or IP) users on local lines while allowing all users to share a certain number of external phone lines. The typical IP PBX can also switch calls between a VoIP user and a traditional telephone user, or between two traditional telephone users in the same way that a conventional PBX does. The abbreviation may appear in various texts as IP-PBX, IP/PBX, or IPPBX.	
<b><i>Internet Protocol Relay Service (IP Relay Service)</i></b>	A call center service similar to VRS that provides a third party communications relay between Internet texting users (mobile or stationary) and voice telephone users.	
<b><i>Internet Protocol Security (IPSec)</i></b>	IPSec is the next-generation network layer crypto platform. IPSec can be found on routers, firewalls, and client desktops	
<b><i>Internet Protocol Telephony (IP Telephony)</i></b>	A general term for the technologies that use the IP's packet-switched connections to exchange voice, fax, and other forms of information that have traditionally been carried over the dedicated Circuit-Switched (CS) connections of the PSTN. The IP address may change each time the user logs on.	
<b><i>Internet Service Provider (ISP)</i></b>	Company that provides Internet access to other companies and individuals	
<b><i>Internet Society (ISOC)</i></b>	ISOC is a professional membership society with more than 100 organizations and over 20,000 individual members in over 180 countries. It provides leadership in addressing issues that confront the future of the Internet, and is the organization home for the groups responsible for Internet infrastructure standards, including the Internet Engineering Task Force (IETF) and the Internet Architecture Board (IAB).	
<b><i>Internet Telephone Service Provider (ITSP)</i></b>	An ITSP offers an Internet data service for making telephone calls using Voice over Internet Protocol technology. Most ITSPs use SIP or H.323 (although H.323 use is declining) for transmitting telephone calls as IP data packets. Customers may use old plain telephones with an analog telephone adaptor (ATA) providing RJ-11 to Ethernet connection.	

<b><i>Term</i></b>	<b><i>Definition</i></b>	<b><i>N)ew U)pdate</i></b>
<b><i>Internet Telephony Service Provider (ITSP)</i></b>	A Company providing Internet based telephony services	
<b><i>International Telecommunications Union (ITU)</i></b>	The telecommunications agency of the United Nations established to provide worldwide standard communications practices and procedures. Formerly CCITT	
<b><i>Interoperability</i></b>	The capability for disparate systems to work together.	
<b><i>Interpretalk</i></b>	A brand name telephonic language interpreter service.	
<b><i>Interrogating-CSCF</i></b>	The entity in the IMS core network that is mainly the contact point within an operator's network for all IMS connections destined to a subscriber of that network operator, or a roaming subscriber currently located within that network operator's service area.	
<b><i>Interworking</i></b>	Concept where systems or components from different origins or companies, running on different hardware and operating systems, working together to perform some tasks using common standard network procedure or protocol.	
<b><i>Intra-center testing</i></b>	This is a testing mechanism by which call takers make test calls from position to position within the Center utilizing the internal telephony system.	
<b><i>INVITE</i></b>	A SIP transaction used to initiate a session	N
<b><i>ISDN PSAP</i></b>	(see Public Safety Answering Point)	
<b><i>Jack (RJ-11)</i></b>	Standard 4-wire connector for phone lines.	
<b><i>Jitter</i></b>	Packets arriving at a non consistent rate due to a type of distortion caused by the variation of a signal from its reference that can cause data transmission errors, particularly at high speeds.	
<b><i>Join, Joining</i></b>	The process of linking table records by matching data field values common to both tables.	
<b><i>Jurisdiction</i></b>	A government agency that has contracted for Enhanced 9-1-1 service. This may be a county, a city, a COG, or a 9-1-1 Area.	
<b><i>Jurisdiction 9-1-1 Administrator or Jurisdiction 9-1-1 Coordinator</i></b>	An individual appointed by the 9-1-1 Governing Authority or 9-1-1 Authority to oversee or exercise executive control over a particular 9-1-1 System.	

<b><i>Term</i></b>	<b><i>Definition</i></b>	<b><i>N)ew U)pdte</i></b>
<b><i>Jurisdiction Database Coordinator or Jurisdiction MSAG Coordinator</i></b>	The individual with the 9-1-1 Governing Authority or 9-1-1 Authority who has responsibility for all daily maintenance of the 9-1-1 database, to include, but not limited to MSAG maintenance, 9-1-1 Inquiry resolution, notifying SPs of address changes or corrections for a resident. This could be a county/parish or city government, a special 9-1-1 or Emergency Communications District, a Council of Governments or other similar body.	
<b><i>Jurisdictional Address</i></b>	An MSAG valid address for the physical location of a subscriber access line, which has been assigned by the jurisdiction's local addressing authority; i.e., planning department, zoning department, etc. and is used for 9-1-1 emergency dispatching purposes.	
<b><i>Key Pulse (KP)</i></b>	An MF signaling tone (digit)	
<b><i>Key Service Unit (KSU)</i></b>	Equipment which provides ringing, lamp voltages, conference, etc. for multi-line key telephone sets.	
<b><i>Key Telephone System (KTS)</i></b>	A type of Multiple-line Telephone System designed to provide shared access to several outside lines through buttons, or keys, typically offering identified access lines with direct line appearance or termination on a given telephone set.	
<b><i>Key Telephone Unit (KTU)</i></b>	A unit mounted in a KSU, required per line, providing key telephone control functions. E.g. hold, lamp, common ringing.	
<b><i>Landline</i></b>	Colloquial term for the Public Switched Telephone Network access via an actual copper or fiber optic transmission line that travels underground or on telephone poles. Used to differentiate the "wireless" connectivity of a cellular or PCS system.	
<b><i>Landmark Location</i></b>	Landmark locations can be Civic Addresses but are generally the names of buildings or other commonly known recognized places (e.g., The Empire State Building, The Alamo, etc.) or the name by which a prominent feature is publicly known.	

<b><i>Term</i></b>	<b><i>Definition</i></b>	<b><i>N)ew U)pdte</i></b>
<b><i>Last Routing Option (LRO)</i></b>	The LRO is sent by the VPC to the Call Server/Routing Proxy and provides the Call Server/Routing Proxy with a “last chance” destination for the call. The LRO may be the Contingency Routing Number (CRN), which is a 24x7 PSAP emergency number, or it may contain a routing number associated with a national or default call center. The content of the LRO will depend on the condition that resulted in the providing of the LRO. Ultimately the usage of LRO routing data for call delivery is based on logic internal to the Call Server/Routing Proxy.	
<b><i>LATA Switching Systems Generic Requirements (LSSGR)</i></b>	A set of Telcordia (formerly Bellcore) specifications defining the requirements of LATA switching systems.	
<b><i>Layer</i></b>	A spatial dataset containing a common feature type. Layers are also referred to as themes.	
<b><i>Layer-2 Tunneling Protocol (L2TP)</i></b>	Allows Point to Point Protocol (PPP) sessions to be tunneled over IP and ATM networks	
<b><i>Legacy Gateway</i></b>	A signaling and media interconnection point between callers in legacy wireline/wireless originating networks and the i3 architecture, so that i3 PSAPs are able to receive emergency calls from such legacy networks.	
<b><i>Legacy PSAP</i></b>	A PSAP that cannot process calls received via i3-defined call interfaces (IP-based calls) and still requires the use of CAMA or ISDN trunk technology for delivery of 9-1-1 emergency calls	
<b><i>Legacy PSAP Gateway (LPG)</i></b>	An NG9-1-1 Functional Element which provides an interface between an ESInet and an un-upgraded PSAP	N
<b><i>Light Emitting Diode (LED)</i></b>	Lamps used for display of information. Commonly used on telephone sets to indicate line status.	
<b><i>Line Digital to Trunk (PSAP) (LDT)</i></b>	A type of Multi Frequency (MF) trunk interface that requires the PSAP equipment to dip the ALI data base.	
<b><i>Liquid Crystal Display (LCD)</i></b>	A type of video display that creates images of graphics or text by aligning liquid crystals so that they reflect light. An alternative to the Cathode Ray Tube (CRT).	
<b><i>Local Access and Transport Area (LATA)</i></b>	The geographical areas within which a local telephone company offers telecommunications services.	

<b><i>Term</i></b>	<b><i>Definition</i></b>	<b><i>N)ew U)pdate</i></b>
<b><i>Local Area Network (LAN)</i></b>	A transmission network encompassing a limited area, such as a single building or several buildings in close proximity.	
<b><i>Local Exchange Carrier (LEC)</i></b>	A Telecommunications Carrier (TC) under the state/local Public Utilities Act that provide local exchange telecommunications services. Also known as Incumbent Local Exchange Carriers (ILECs), Alternate Local Exchange Carriers (ALECs), Competitive Local Exchange Carriers (CLECs), Competitive Access Providers (CAPs), Certified Local Exchange Carriers (CLECs), and Local Service Providers (LSPs).	
<b><i>Local Exchange Routing Guide (LERG)</i></b>	A data base which defines inter-exchange call routing in the North American Public Switched Telephone Network. It associates NPA/NXX's with their appropriate network elements.	
<b><i>Local Loop</i></b>	A physical facility between a customer's network interface and the local serving central office. The most common form of local loop is a pair of wires.	
<b><i>Local Notification</i></b>	A system capability whereby a call to 9-1-1 from a MLTS extension is directed through the 9-1-1 Network to a Public Safety Answering Point and simultaneously notifies an attendant or designated personnel to identify the location of the telephone that has dialed 9-1-1.	
<b><i>Local Number Portability (LNP)</i></b>	A process by which a telephone number may be reassigned from one Local Exchange Carrier to another.	
<b><i>Local Number Portability Administration Center (NPAC) Data Base</i></b>	The eight (8) regional Number Portability Administration Center Data Bases which contain current Service Provider switching specific information about TNs involved in porting activity.	
<b><i>Local Operational MSAG</i></b>	A Local Operational MSAG is maintained in a format other than the recommended standard set forth in NENA 02-010 and 02-011. This format may consist of variances to the standard MSAG such as unparsed and concatenated fields for directional, street name, and suffix. (See Standard MSAG and MSAG Address)	

<b><i>Term</i></b>	<b><i>Definition</i></b>	<b><i>N)ew U)pdate</i></b>
<b><i>Local Service Management System (LSMS) Data Base</i></b>	The LSP owned network data base which holds downloaded ported number information. The NPAC SMS (service management system) downloads information to the LSMS; the LSMS supplies porting data to the SCP (service control point) used for the routing of telephone calls.	
<b><i>Local Service Office (LSO)</i></b>	The central office (CO) from which a subscriber is served. [see <i>Serving Central Office, Central Office (CO)</i> ]	
<b><i>Location</i></b>	In the context of location information to support IP based emergency services: The physical position of VoIP end-point expressed in either civic or geodetic form. A spot on the planet where something is; a particular place or position. Oxford Dictionary, Oxford University Press, 2009.	
<b><i>Location Acquisition</i></b>	In the context of location information to support IP based emergency services: Refers to the way in which a network determined location is provided to the network entity responsible for inserting the location information into the context of an emergency call. Location information may be pushed to the network entity by the LIS, or pulled by the network entity from the LIS. The network entity may be the target, or it may be some other routing node such as a proxy or call-server.	
<b><i>Location-aware</i></b>	In the context of location information to support IP based emergency services: Used to describe IP endpoint devices that are location-capable and that have acquired location information, either with network assistance or by self-determination.	
<b><i>Location By-Reference</i></b>	An identifier that when referenced in the correct manner by an authenticated and authorized entity will yield the location of an IP end-point. An example of a location reference is a URI.	
<b><i>Location By-Value</i></b>	In the context of location information to support IP based emergency services: A PIDF-LO containing the location of an IP end-point that can be attributed to a specific point in time.	

<i><b>Term</b></i>	<i><b>Definition</b></i>	<i><b>N)ew U)pdate</b></i>
<i><b>Location-capable</b></i>	Used to describe IP devices that are capable of requesting, acquiring, and storing location information as well as including this information in a PIDF-LO when originating an emergency call.	
<i><b>Location Conveyance</b></i>	Refers to the act of transporting location information with an emergency call.	
<i><b>Location Data Security</b></i>	A process to ensure that a relatively high degree of security for correctness of information, integrity, and authorization of access, authenticity/secrecy, and accuracy of information. The intent of the NENA i2 solution is to provide functional equivalency to the existing network services in an IP-based environment, and this includes ensuring that the location information is valid and secure.	
<i><b>Location Dependability</b></i>	In the context of location information to support IP based emergency services: Reflects the level of trust that a receiving node has in the quality and authenticity of the location information being provided.	
<i><b>Location Determination</b></i>	In the context of location information to support IP based emergency services: Act of using measurements taken from the access network to calculate or otherwise discover the physical location of a device.	
<i><b>Location Determination and Acquisition Functions</b></i>	Location determination includes the functions necessary to accurately and automatically (without input from the user) determine the position of the IP device and associate that location information uniquely with that device. Location acquisition refers to the functions necessary to make that location information available to the device on request, or to make that location information available to a Proxy acting on behalf of that device so that location information can be used for emergency calling.	
<i><b>Location Determination Technology (LDT)</b></i>	A system which computes the x and y coordinates of a wireless 9-1-1 caller.	

<b><i>Term</i></b>	<b><i>Definition</i></b>	<b><i>N)ew U)pdate</i></b>
<b><i>Location Estimate</i></b>	In the context of location information to support IP based emergency services: The approximate physical position of an IP end-point expressed in either civic or geodetic form usually accompanied by a degree of uncertainty. The degree of uncertainty may be expressed by a reduction in precision. For civic locations this equates to the number of fields specified while for geodetic locations it equates to the definition of an area or volume specified as a shape.	
<b><i>Location-incapable</i></b>	Used to describe IP devices that are not capable of requesting, acquiring, or storing location information. This includes most current IP devices.	
<b><i>Location Information</i></b>	The actual geo or civic location data independent of its containers, protocols or reference mechanisms.	
<b><i>Location Information Element (LIE)</i></b>	A protocol container for either or both of: <ul style="list-style-type: none"> <li>• one Location Key (LK)</li> <li>• one Presence Information Data Format (PIDF) document</li> </ul>	
<b><i>Location Information Server (LIS)</i></b>	A Location Information Server (LIS) is a functional entity that provides locations of endpoints. A LIS can provide Location-by-Reference, or Location-by-Value, and, if the latter, in geo or civic forms. A LIS can be queried by an endpoint for its own location, or by another entity for the location of an endpoint. In either case, the LIS receives a unique identifier that represents the endpoint, for example an IP address, circuit-ID or MAC address, and returns the location (value or reference) associated with that identifier. The LIS is also the entity that provides the dereferencing service, exchanging a location reference for a location value.	
<b><i>Location Information Server (LIS) Operator</i></b>	Operates the LIS associated with the IP access network used by the callers.	
<b><i>Location Information Server Identifier (LIS-ID)</i></b>	An identifier for the LIS in which the location object (LO) is stored.	

<i>Term</i>	<i>Definition</i>	<i>N)ew U)pdate</i>
<b><i>Location Interwork Function (LIF)</i></b>	The functional component of a Legacy Network Gateway which is responsible for taking the appropriate information from the incoming signaling (i.e., calling number/ANI, ESRK, cell site/sector) and using it to acquire location information that can be used to route the emergency call and to provide location information to the PSAP. In a Legacy PSAP Gateway, this functional component takes the information from an ALI query and uses it to obtain location from a LIS.	N
<b><i>Location Key (LK)</i></b>	An object that uniquely identifies an instance of a LO that is stored/managed by a LIS on behalf of a VoIP endpoint. The Location Key must contain: <ul style="list-style-type: none"> <li>• <b>LIS-ID</b> – an identifier for the LIS in which the LO is stored.</li> <li>• <b>Client ID</b> – an identifier for an instance of a LO (Geo Location, Civic Location or both) that is stored in a LIS.</li> </ul>	
<b><i>Location Object (LO)</i></b>	The LO is used to refer to the current position of a VoIP endpoint that originates an emergency call. The LO is expected to be formatted as a Presence Information Document Format – Location Object (PIDF-LO) as defined by the IETF in draft-ietf-geopriv-pidf-lo-03[8]. The PIDF-LO may be: <ul style="list-style-type: none"> <li>• <b>Geo location</b> – latitude, longitude, elevation, and the datum which identifies the coordinate system used. For the i2 solution it is expected that geo location information will be formatted using the World Geodetic System 1984 (WGS84) datum.</li> <li>• <b>Civic location</b> – a set of elements that describe detailed street address information.</li> </ul>	
<b><i>Location Query Function (LQF)</i></b>	Uses a dereferencing protocol (SIP or HTTP) to exchange a location reference (LbyR) for location information (LbyV).	

<b><i>Term</i></b>	<b><i>Definition</i></b>	<b><i>N)ew U)pdate</i></b>
<b><i>Location Recipient</i></b>	In the context of location information to support IP based emergency services: A location recipient is the consumer of location information. This may be the target, the PSAP, the VPC or any other node that uses location information when it is provided.	
<b><i>Location Retrieval Function (LRF)</i></b>	The IMS associated functional entity that handles the retrieval of location information for the emergency caller including, where required, interim location information, initial location information and updated location information. The LRF may interact with a separate RDF or contain an integrated RDF in order to obtain routing information for an emergency call.	
<b><i>Location to Service Translation (LoST) Protocol</i></b>	A protocol that takes location information and a Service URN and returns a URI. Used generally for location-based call routing. In NG9-1-1, used as the protocol for the ECRF and LVF.	
<b><i>Location-unaware</i></b>	Used to describe IP devices that are location-capable but that have not been able to successfully acquire location information, either with network assistance or by self-determination.	
<b><i>Location URI</i></b>	A URI which, when dereferenced, yields a location value in the form of a PIDF-LO. Location-by-reference in NG9-1-1 is represented by a Location URI.	N
<b><i>Location Validation</i></b>	Refers to the action of ensuring that a civic address can be used to discern a route to a PSAP.	
<b><i>Logging Recorder</i></b>	A device that records, stores and is capable of playing back all communication media within the domain to which it is assigned. Media can include, but is not limited to voice, radio, text and network elements involved with routing a 9-1-1 call. Logging recorders should have the capability to simultaneously record from several sources.	U
<b><i>Login</i></b>	The process of identifying and authenticating oneself to a computer, ACD or E9-1-1 attendant position system.	

<b><i>Term</i></b>	<b><i>Definition</i></b>	<b><i>N)ew U)pdate</i></b>
<b><i>Loopback</i></b>	A type of diagnostic test in which a transmitted signal is returned to the transmitting device and then compared to the original signal.	
<b><i>Lost otherwise missing</i></b>	A child's whereabouts are unknown to the child's caretaker and this causes the caretaker to be alarmed for at least 1 hour and try to locate the child, under one of two conditions: (1) the child was trying to get home or make contact with the caretaker but was unable to do so because the child was lost, stranded, or injured; or (2) the child was too young to know how to return home or make contact with the caretaker.	
<b><i>Main Station</i></b>	(see Access Line)	
<b><i>Management Information System (MIS)</i></b>	A program that collects, stores and collates data into reports enabling interpretation and evaluation of performance, trends, traffic capacities, etc.	
<b><i>Manual Transfer</i></b>	The capability of a PSAP attendant to transfer a 9-1-1 call to another location by manually dialing the destination number or speed dialing code.	
<b><i>Mapping</i></b>	The act of determining a value in one domain from a value in another domain. For example, mapping a location to the URI of a PSAP that serves that location using the LoST protocol.	N
<b><i>Master Clock</i></b>	An accurate timing device that generates synchronization signals to control other clocks or equipment. (Ref. NENA 04-002)	
<b><i>Master Street Address Guide (MSAG)</i></b>	A data base of street names and house number ranges within their associated communities defining Emergency Service Zones (ESZs) and their associated Emergency Service Numbers (ESNs) to enable proper routing of 9-1-1 calls.	

<b><i>Term</i></b>	<b><i>Definition</i></b>	<b><i>N)ew U)pdate</i></b>
<b><i>Master Street Address Guide (MSAG) Address</i></b>	<p>Address recognized by Public Safety for the dispatch of emergency first responders. It is an absolute and unique address in that variants for directions, street spelling, street suffixes, and community names are not allowed. It is preferred that MSAG Addresses be in Civic Address format. The community name associated with this address format is assigned by the Addressing Authority in cooperation with the 9-1-1 Administrator and may or may not be the same as the community name assigned by the USPS.</p> <p>MSAG addresses are used to route 9-1-1 calls and for ALI display.</p> <p>NOTE: MSAG Address data format is not standardized throughout the country. This is generally attributed to legacy system limitations that have been continued as operational practices on the part of 9-1-1 administrative entities. This fact gives rise to the need for two subtending MSAG definitions. (See Standard MSAG and Local Operational MSAG.)</p>	
<b><i>Master Street Address Guide (MSAG) Administrator</i></b>	The organizational entity responsible for maintaining a specific set of MSAG data in order to keep it relevant and up-to-date. The MSAG Administrator is the final authority on MSAG accuracy and works with the appropriate 9-1-1 Administrator to maintain integrity of the data.	
<b><i>Master Street Address Guide (MSAG) Consumer</i></b>	Identifies appropriate organizational entities that have an accepted need for the MSAG in order to support E9-1-1 (e.g., DBMSPS, SPs, Wireless, VDBs, ERDBs, VSPs).	
<b><i>Master Street Address Guide (MSAG) Discrepancy</i></b>	An MSAG Discrepancy is defined as a record being retrieved from ALI during an actual E9-1-1 call with incorrect information because an MSAG field was incorrect. For example, incorrect ESN assignment or transposition of numbers, incorrect house number ranges, odd/even indicator.	
<b><i>Master Street Address Guide (MSAG) Error</i></b>	An MSAG error is defined as a hard error from DBMS service order processing or a manual update that failed to meet the MSAG specifications.	

<i>Term</i>	<i>Definition</i>	<i>N)ew U)pdate</i>
<b><i>Master Street Address Guide (MSAG) FTP Client</i></b>	Describes the system which connects to the MSAG FTP Server in order to retrieve MSAG data files. Throughout this document the MSAG FTP Client will referred to as the “FTP client”.	
<b><i>Master Street Address Guide (MSAG) FTP Interface</i></b>	Utilizes the SFTP protocol that has been implemented on one or more managed file servers, which enables the transfer of MSAG data files to authorized MSAG consumers.	
<b><i>Master Street Address Guide (MSAG) FTP Server</i></b>	The system that the MSAG Source organization uses for distributing MSAG data files to necessary recipients. MSAG data files may be distributed on several servers with each server responsible for enforcing user authentication processes for any MSAG FTP Client system. Throughout this document the MSAG FTP Server will referred to as the “FTP server”.	
<b><i>Master Street Address Guide (MSAG) Operator</i></b>	Typically the Database Management System Provider (DBMSP). Works in conjunction with 9-1-1 Administrator to provide and maintain the database equipment and infrastructure that supports the access and retrieval of the MSAG data by authorized parties	
<b><i>Master Street Address Guide (MSAG) Source</i></b>	Represents a recognized supplier of MSAG files, which may be the MSAG Administrator, or an authorized MSAG Operator. The MSAG Source is typically the E9-1-1 System Service Provider, but may be the 9-1-1 Administrator’s MSAG Administrator.	
<b><i>Mechanical Dialer</i></b>	(see Automatic Alarm and Automatic Alerting Device)	

<i>Term</i>	<i>Definition</i>	<i>N)ew U)pdate</i>
<b><i>Media Gateway Control Protocol (MGCP)</i></b>	In computing, MGCP is a protocol used within a Voice over IP system. MGCP is an internal protocol used within a distributed system that can appear to the outside world as a single VoIP gateway. This system is composed of a Call Agent, at least one “media gateway” (MG) that performs the conversion of media signals between circuits and packets, and at least one “signaling gateway” (SG) when connected to the PSTN. MGCP is a client-server protocol, used by telephony providers in order to have more control over subscribers, contrary to the Session Initiation Protocol (SIP) or H.323 that are peer-to-peer protocols. However, MGCP and SIP can be combined in some cases.	
<b><i>Mediation</i></b>	A service that provides a uniform appearance to a service consumer for a set of services with a disparate set of service interfaces.	
<b><i>MESSAGE</i></b>	A SIP method which passes information, often an Instant Message, between endpoints in the body of the SIP message	N
<b><i>Message Encryption</i></b>	Message encryption is a process of disguising a message in such a way as to hide its substance.	
<b><i>Message Integrity</i></b>	Message integrity mechanisms provide protection against unauthorized message modifications.	
<b><i>Micro-Cell</i></b>	Commonly used to describe PCS cells due to their much smaller footprint compared to a Cellular cell.	
<b><i>Migrate</i></b>	The term used to describe the inward transaction the Recipient Company submits to the 9-1-1 Data Base Management System Provider that signifies movement of telephone service from a Donor Service Provider.	
<b><i>Milepost</i></b>	A unique identifier for a location along a rail line or highway identified by the owner of the track or governmental authority, as applicable.	
<b><i>Millisecond (ms)</i></b>	One-thousandth of a second (0.001 s)	
<b><i>Misroute</i></b>	An E9-1-1 call routed to an incorrect PSAP due to a network discrepancy; i.e., wrong ESN in selective routing data base, incorrect switch translations.	

<b><i>Term</i></b>	<b><i>Definition</i></b>	<b><i>N)ew U)pdate</i></b>
<b><i>Mobile</i></b>	In the context of location information to support IP based emergency services: A user is said to be mobile if they are able to change access points while preserving all existing sessions and services regardless of who is providing the access network, and their location may be definitively represented by a geographic co-ordinates but only indicatively represented by a civic address.	
<b><i>Mobile Competence Centre (MCC)</i></b>	The Mobile Competence Centre (MCC) provides support to the 3 <sup>rd</sup> Generation Partnership Project (3GPP), as well as to ETSI's Technical Committee projects.  MCC combines voluntary resources with funded resources, all of which are located at the ETSI Headquarters in Sophia Antipolis, southern France. Some experts have been provided by the 3GPP Partners; the remaining team members are paid for from the MCC budget.	
<b><i>Mobile Directory Number (MDN)</i></b>	The telephone number dialed to reach a wireless telephone.	
<b><i>Mobile Identified Number (MIN)</i></b>	A 34-bit binary number that a wireless handset transmits to identify itself to the wireless network.	
<b><i>Mobile Position Center (MPC)</i></b>	The MPC serves as the point of interface to the ANSI wireless network for the Emergency Services Network. The MPC serves as the entity which retrieves, forwards, stores and controls position data within the location network. It can select the PDE(s) to use in position determination and forwards the position to the requesting entity or stores it for subsequent retrieval. In the case of a PDE with autonomous determination capability, the MPC receives and stores the position estimation for subsequent retrieval. The MPC may restrict access to position information (e.g., require that the MS be engaged in an emergency service call or only release position information to authorized nodes.)	

<b><i>Term</i></b>	<b><i>Definition</i></b>	<b><i>N)ew U)pdate</i></b>
<b><i>Mobile Station (MS)</i></b>	The Mobile Station is the end user making the emergency services call. In Phase 2 it is up to the location terminology in the wireless network to locate the Mobile Subscriber's handset so that the Position Information may be passed to the Emergency Services Network.	
<b><i>Mobile Switching Center (MSC)</i></b>	The wireless equivalent of a Central Office, which provides switching functions from wireless calls.	
<b><i>Mobile Switching Center Trunk Alternate Route</i></b>	The routing condition that occurs when all trunks from the MSC to SR are <i>out of service</i> and calls need to be routed to the PSAP. The scenario represents an MSC to SR trunk <i>failure</i> condition versus an all trunks <i>busy</i> condition. (57-001)	
<b><i>Mobile Switching Center Default Route</i></b>	The routing condition that occurs when a) a wireless 9-1-1 call arrives at an MSC with insufficient data to allow normal routing to the correct PSAP, or b) all dedicated MSC to SR trunks, primary and secondary routes, are out of service (i.e., trunk <i>failure</i> condition).(57-001)	
<b><i>Mobile Switching Center Trunk Overflow</i></b>	The routing condition that occurs when all trunks from the MSC to the SR are busy with calls and additional calls need to be routed to the PSAP. Wireless call volume exceeds available MSC to SR trunk capacity. (57-001)	
<b><i>Mobile Switching Office (MSO)</i></b>	(see Mobile Switching Center (MSC))	
<b><i>Modem</i></b>	An interface device which allows digital data signals to be transmitted over analog telephone lines.	
<b><i>Multi-Frequency (MF)</i></b>	A type of in-band signaling used on analog interoffice and 9-1-1 trunks.	

<b><i>Term</i></b>	<b><i>Definition</i></b>	<b><i>N)ew U)pdate</i></b>
<b><i>Multi-Line Telephone System (MLTS)</i></b>	A system comprised of common control unit(s), telephone sets, control hardware and software and adjunct systems used to support the capabilities outlined herein. This includes network and premises based systems. E.g., Centrex, VoIP, as well as PBX, Hybrid, and Key Telephone Systems (as classified by the FCC under Part 68 Requirements) and includes systems owned or leased by governmental agencies and non-profit entities, as well as for profit businesses.	
<b><i>Multi-Line Telephone System (MLTS) Operator</i></b>	The entity responsible for ensuring that a 9-1-1 call placed from an MLTS is transmitted and received in accordance with this legislation regardless of the MLTS technology used to generate the call. The MLTS Operator may be the MLTS Manager or a third-party acting on behalf of the MLTS Manager.	
<b><i>Multi-Line Telephone System (MLTS) Manager</i></b>	The entity authorized to implement an MLTS, either through purchase or lease of an MLTS or the purchasing of MLTS services, as the means by which to make 9-1-1 calls.	
<b><i>MultiMedia Telecommunications Association (MMTA)</i></b>	MMTA focuses on the convergence of communications and computing. Providing an open forum for the development of global markets, MMTA strives to ensure a high level of competency and creativity in the delivery of new technology-based solutions to the business community. In the fall of 2000, MMTA was integrated into TIA.	
<b><i>Multi-Protocol Label Switching (MPLS)</i></b>	A mechanism that allows network administrators to perform a measure of traffic engineering within their networks.	
<b><i>Multi Protocol Over ATM (MPOA)</i></b>	A specification that enables ATM services to be integrated with existing local-area networks (LANs) that use Ethernet, token-ring or TCP/IP protocols. The goal of MPOA is to allow different LANs to send packets to each other via an ATM backbone.	
<b><i>Namespace Name</i></b>	The full-form name of a namespace. For example, “ <i>Library Of Congress Catalogue Number</i> ” or “ <i>urn:oasis names:tc:emergency:cap:1.1</i> ” (the XML namespace name assigned to the OASIS Common Alerting Protocol schema definitions).	

<b><i>Term</i></b>	<b><i>Definition</i></b>	<b><i>N)ew U)pdte</i></b>
<b><i>Namespace Qualifier</i></b>	A short-form synonym of a namespace name. It is used together with an object identity to make explicit the defining (parent) namespace of the identity. We will then say that the identity is <i>namespace-qualified</i> . For example, LCCN is used for the “ <i>Library Of Congress Catalogue Number</i> ” namespace.	
<b><i>Namespace Prefix</i></b>	The equivalent of <i>namespace qualifier</i> in XML – a short-form synonym for a <i>namespace URI</i> .	
<b><i>Namespace Uniform Resource Identifier (URI)</i></b>	The XML specific <i>namespace name</i> .	
<b><i>National Emergency Management System (NIMS)</i></b>	Homeland Security Presidential Directive-5, issued on 28 February 2003, directed the Secretary of Homeland Security to develop and administer a National Incident Management System (NIMS). NIMS provides a consistent nationwide template to enable all government, private-sector, and nongovernmental organizations to work together during domestic incidents.	
<b><i>National Emergency Number Association(NENA)</i></b>	The National Emergency Number Association is a not-for-profit corporation established in 1982 to further the goal of “One Nation-One Number.” NENA is a networking source and promotes research, planning and training. NENA strives to educate, set standards and provide certification programs, legislative representation and technical assistance for implementing and managing 9-1-1 systems.	
<b><i>Nationally Recognized Testing Laboratory (NRTL)</i></b>	Any of several testing laboratories recognized in the United States in accordance with industry and municipal standards.	
<b><i>Network Access Identifier (NAI)</i></b>	An identifier commonly used to tie a user to a specific realm.	
<b><i>Network Access Server (NAS)</i></b>	A device that controls access to a network or to an ISP. It is an access gateway between an external communications network and an internal network.	

<i>Term</i>	<i>Definition</i>	<i>N)ew U)pdate</i>
<i>Network Address Translation (NAT)</i>	In computer networking, the process of <b>network address translation (NAT, also known as network masquerading or IP-masquerading)</b> involves re-writing the source and/or destination addresses of IP packets as they pass through a router or firewall. Most systems using NAT do so in order to enable multiple hosts on a private network to access the Internet using a single public IP address.	
<i>Network Element Security</i>	Describes methods for securing any layer 3 device in an IP network – including routers and some switches. This includes both physical and IT related security practices.	
<i>Network Layers Model</i>	The OSI, or Open System Interconnection, model defines a networking framework for implementing protocols in seven layers. Control is passed from one layer to the next, starting at the application layer in one station, and proceeding to the bottom layer, over the channel to the next station and back up the hierarchy. In ascending order the layers are: physical, data link, network, transport, session, presentation, and application.	
<i>Network Layer Security</i>	This is security deployed by layer 3 devices that prevent attacks aimed at terminating network services. This includes firewalls, ACL's and other network related devices and techniques for threat mitigation.	
<i>Network Location Determination</i>	In the context of location information to support IP based emergency services: Refers to the mechanism and data that a network entity can use to ascertain the whereabouts of a terminal in the access network such that the location can be specified in a valid PIDF-LO.	
<i>Network Reliability Council (NRC)</i>	A study group made up of experts in the field of networks as they relate to Public Safety Systems charged with assessing the reliability of the network and to make recommendations concerning service quality.	
<i>Network Time Protocol (NTP)</i>	A powerful utility for synchronizing system clocks over a TCP/IP network.	

<b><i>Term</i></b>	<b><i>Definition</i></b>	<b><i>N)ew U)pdate</i></b>
<b><i>Next Generation 9-1-1 (NG9-1-1)</i></b>	<p>NG9-1-1 is an IP-based system comprised of managed IP-based networks (ESInets), functional elements (applications), and databases that replicate traditional E9-1-1 features and functions and provide additional capabilities. NG9-1-1 is designed to provide access to emergency services from all connected communications sources, and provide multimedia data capabilities for PSAPs and other emergency service organizations.</p> <p><a href="http://www.nena.org/sites/default/files/NG9-1-1%20Definition%20Final%201.1.pdf">http://www.nena.org/sites/default/files/NG9-1-1%20Definition%20Final%201.1.pdf</a></p> <p>NOTE: It is recognized that there will be a multi-year transition to NG9-1-1 beginning as early as 2010. See the NENA list of FAQs related to NG9-1-1 for more details.</p>	U
<b><i>NG9-1-1 Specific Interwork Function (NIF)</i></b>	The functional component of a Legacy Network Gateway or Legacy PSAP Gateway which provides NG9-1-1-specific processing of the call not provided by an off-the-shelf protocol interwork gateway.	N
<b><i>Next Hop</i></b>	The next element in a routing path. For example, the next router in an IP network, or the next SIP proxy server in a SIP signaling path.	U
<b><i>No Record Found (NRF)</i></b>	A condition where no ALI information is available for display at the PSAP.	
<b><i>Nomadic</i></b>	In the context of location information to support IP based emergency services: A user is said to be nomadic if they are constrained within an access network such that their location can be represented as a definitive civic address for that network attachment. The user may move from one network attachment to another but cannot maintain a session during that move. If the user is able to move outside the definitive civic address without losing network attachment then the user is considered to be mobile, not nomadic.	

<b><i>Term</i></b>	<b><i>Definition</i></b>	<b><i>N)ew U)update</i></b>
<b><i>Nomadic VoIP Call</i></b>	Call generated by a VoIP user other than their originally provisioned fixed location using the terminal equipment from that location (i.e.: VoIP handset, laptop, VoIP terminal, PC).	
<b><i>Non-blocking</i></b>	A switching network designed to complete all call attempts.	
<b><i>Non Call-Path Associated Signaling (NCAS)</i></b>	A method for delivery of wireless 9-1-1 calls in which the Mobile Directory Number and other call associated data are passed from the Mobile Switching Center to the PSAP outside the voice path.	
<b><i>Non-family Abduction</i></b>	A non-family perpetrator takes a child by the use of physical force or threat of bodily harm or detains a child for at least 1 hour in an isolated place.	
<b><i>Non-Selective Routing</i></b>	The routing of 9-1-1 calls based on the NXX or trunk group.	
<b><i>North American Numbering Plan</i></b>	Use of 10 digit dialing in the format of a 3 digit NPA followed by 3 digit NXX and 4 digit line number. NPA-NXX-XXXX.	
<b><i>North American Numbering Plan Administration</i></b>	The agency that tracks assignment of Area Codes and Central Office Codes.	
<b><i>Notifier</i></b>	An element in an asynchronous event notification mechanism that transmits events	N
<b><i>NOTIFY</i></b>	A SIP method used to send a notification to a subscriber of the occurrence of an asynchronous event.	N
<b><i>Not In Service (NIS)</i></b>	A telephone line state that informs the caller that the number dialed is no longer in service.	
<b><i>NPAC – Interactive Voice Response (IVR) System</i></b>	Porting data is available throughout the U.S. from the NPAC data base via IVR access. Throughout the 02-011 document, referral to access porting data, DOES NOT MEAN IVR ACCESS.	
<b><i>Numbering Plan Area (NPA)</i></b>	An established three-digit area code for a particular calling area where the first position is any number 2 through 9 and the last two (2) positions are 0 through 9.	
<b><i>Number Pooling</i></b>	The current practice of assigning blocks of telephone numbers to Local Exchange Carriers in blocks of 1,000 instead of a full NPA-NXX with 10,000 telephone numbers.	

<i>Term</i>	<i>Definition</i>	<i>N)ew U)pdate</i>
<b><i>Numbering Plan Digit (NPD)</i></b>	A component of the traditional 8-digit 9-1-1 signaling protocol between the Enhanced 9-1-1 Control Office and the PSAP CPE. Identifies 1 of 4 possible area codes.	
<b><i>Numbering Plan Digits (NPD)</i></b>	Part of the North American telephone numbering scheme. This is also known as the Area Code or Numbering Plan Area (NPA).	
<b><i>NXX</i></b>	A three-digit code in which N is any digit 2 through 9 and X is any digit 0 through 9. Typically used in describing the “Exchange Code” fields of a North American Numbering Plan telephone number. The full numbering system is in the format of “Area Code” + “Exchange Code” + “Line Number” or NPA-NXX-XXXX. A central office will have one or more area and exchange codes.	
<b><i>NYNEX Information Publication (NIP)</i></b>	Information published by the NYNEX telephone company (now part of Bell Atlantic).	
<b><i>On-Time-Point</i></b>	The leading edge of a pulse which occurs coincident with the beginning of a second.  (Ref. NENA 04-002)	
<b><i>Open Systems Interconnection (OSI)</i></b>	A 7-layer hierarchical reference model structure developed by the International Standards Organization for defining, specifying, and relating communications protocols; not a standard or a protocol;  Layer Description – (7) Application Provides interface with network users, (6) Presentation Performs format and code conversion, (5) Session Manages connections for application programs, (4) Transport Ensures end-to-end delivery, (3) Network Handles network addressing and routing, (2) Data Link Performs local addressing and error detection and (1) Physical Includes physical signaling and interfaces	

<b><i>Term</i></b>	<b><i>Definition</i></b>	<b><i>N)ew U)pdate</i></b>
<b><i>Operations Development Conference (ODC)</i></b>	A working conference, the ODC is designed to help 9-1-1 professionals improve the 9-1-1 system, as well as their own 9-1-1 center operations and management. NENA's Operations Committee comprised of several topic-specific committees, works throughout the year on the development of recommended 9-1-1 System Operations Standards and Operations Information Documents. Much of the direction, agendas, and scope of the topic-specific committees for the year are established at this conference. The ODC provides an opportunity for attendees to discuss and evaluate pressing 9-1-1 issues and emerging trends with other 9-1-1 professionals from across the USA, Canada, and Mexico in face-to-face meetings.	
<b><i>OPTIONS</i></b>	A SIP method used to request the SIP protocol options supported by an endpoint.	N
<b><i>Order of Authority</i></b>	A formal order by the state or local authority which authorizes public agencies or public safety agencies to provide 9-1-1 service in a geographical area.	
<b><i>Originating Carrier</i></b>	An entity that provides telecommunications services to the end user.	
<b><i>Originating ESInet</i></b>	The first emergency services network in the call flow. Originating networks (those initiating 9-1-1 calls) deliver their emergency calls to this network. An originating ESInet will make routing decisions and may forward the emergency call to another ESInet for routing to the PSAP.	
<b><i>Originating ESRP</i></b>	The first routing element inside the ESInet. It receives calls from the BCF at the edge of the ESInet.	N
<b><i>Originating Switchhook Status Indication</i></b>	An audible and/or visible indication of the status of a calling party being held. (A Basic 9-1-1 feature)	
<b><i>Origination Network</i></b>	The network which originates a 9-1-1 call. Includes the access network and the calling network. Typically operated by carriers or other service providers.	
<b><i>Oscillatory</i></b>	A transient comprised of various impulse transients with alternating characteristics. (Ref. NENA 04-001)	

<b>Term</b>	<b>Definition</b>	<b>N)ew U)pdate</b>
<b>Otolaryngologist</b>	A physician specialized in diagnosing diseases of the head and neck especially those involving the ears, nose, and throat (ENT).	
<b>Overflow</b>	The routing condition that occurs when all trunks from the originating network element (e.g. LEC end office, ESGW, PBX) to the SR are busy with calls and additional calls need to be routed to the PSAP. Call volume exceeds available end office to SR trunk capacity. The term “overflow” refers to the treatment a call receives and may include routing to announcements and/or all-trunks-busy tones, or b) all dedicated end office to SR trunks, primary and secondary routes, are out of service (i.e. trunk <i>failure</i> condition).	
<b>P.01 Grade of Service</b>	(see Grade of Service.)	
<b>Packet</b>	Logical grouping of information that includes a header containing control information and (usually) user data. Packets are most often used to refer to network layer units of data. The terms <i>datagram</i> , <i>frame</i> , <i>message</i> , and <i>segment</i> are also used to describe logical information groupings at various layers of the OSI reference model and in various technology circles	
<b>Packet-Switched Data Networks</b>	In telecommunications, packet-switching is now-dominant communications paradigm, in which packets (units of information carriage) are individually routed between nodes over data links which might be shared by many other nodes. In packet switched networks, such as the Internet, the data is split up into packets, each labeled with the complete destination address and routed individually.	
<b>Per Hop Behaviors (PHB)</b>	The action a router takes for a packet marked with a specific code point in the Diffserv QoS mechanism in IP networks	N
<b>Permanent Virtual Circuit (PVC)</b>	Permanent or semi-permanent links that are configured in a packet network. A PVC follows a fixed path through a network.	
<b>Personal Communications Service (PCS)</b>	A Commercial Mobile Radio Service using cellular radio networks, but distinct from cellular wireless in its frequencies and communications options.	

<b><i>Term</i></b>	<b><i>Definition</i></b>	<b><i>N)ew U)pdate</i></b>
<b><i>Personal Digital Assistant (PDA)</i></b>	Small, handheld device used to store address book information, telephone numbers, personal contacts and other personal information.	
<b><i>Phonetic Alphabet</i></b>	Words and names used to clarify the letter used. (Example: A=alpha or Adam, B=bravo or boy).	
<b><i>Pilot Number</i></b>	A telephone customer's main account number, lead number, main listed number, or billing account.	
<b><i>Point-to-Point Protocol (PPP)</i></b>	A protocol that is used to establish a network link over a dedicated channel. It is widely used for internet access. PPP is modular in design and can support different authentication protocols.	
<b><i>Point-to-Point Protocol over Asynchronous Transfer Mode (ATM) (PPPoA)</i></b>	A specific binding that allows PPP to be used for ATM links. PPPoA is used for DSL networks.	
<b><i>Point-to-Point Protocol over Ethernet (PPPoE)</i></b>	A specific binding that allows PPP to be used for Ethernet networks links. PPPoE is used for DSL networks.	
<b><i>Policy Routing Function (PRF)</i></b>	That functional component of an Emergency Services Routing Proxy that determines the next hop in the SIP signaling path using the policy of the nominal next element determined by querying the ECRF with the location of the caller.  A database function that analyzes and applies ESInet or PSAP state elements to route calls, based on policy information associated with the next-hop.	U
<b><i>Policy Editor</i></b>	A tool to edit policy in a user-friendly way.	N
<b><i>Policy Store</i></b>	A functional element in the ESInet that stores policy documents/rules.	U
<b><i>Polygon</i></b>	A shape that is closed, i.e.: circle, square, triangle or any derivative thereof.	

<i><b>Term</b></i>	<i><b>Definition</b></i>	<i><b>N)ew U)pdate</b></i>
<i><b>Position Determining Entity (PDE)</b></i>	The PDE determines the precise position or geographic location of a wireless terminal when the MS starts a call or while the MS is engaged in a call. Each PDE supports one or more position determining technologies. Multiple PDEs may service the coverage area of an MPC and multiple PDEs may serve the same coverage area of an MPC utilizing different positioning determining technologies. (PDE is synonymous with Location Determination Technology (LDT))	
<i><b>Position Identifier</b></i>	A pulse in the IRIG time code which has a predetermined duration and rate that is used to identify location of time code information. (Ref. NENA 04-002)	
<i><b>Postal Address</b></i>	Address recognized and used by the United States Postal Service (USPS) for delivery of mail. It may be an address with a house number and street name or may also consist of other USPS acceptable delivery options such as rural route information such as Army Post Office (APO), or Fleet Post Office (FPO). Postal addressing may contain variants of abbreviations (Avenue or Ave, Street or St, Route or Rt) that the Postal Service recognizes as acceptable postal addresses. Postal addresses reflect the name of the community assigned by the USPS to the correct zip code.	
<i><b>PRACK</b></i>	A SIP message used to reliably acknowledge receipt of an otherwise unreliable message transmission.	N
<i><b>Pre-programmed message</b></i>	Pre-programmed messages refer to TTY message that may be programmed into some models of standalone or integrated TTYs that allows the call taker to transmit the message within a minimum number of keystrokes or mouse clicks.	
<i><b>Prelingual Deafness</b></i>	The loss of hearing before the development of language skills.	

<b><i>Term</i></b>	<b><i>Definition</i></b>	<b><i>N)ew U)pdate</i></b>
<b><i>Presence</i></b>	“Presence” or presence information, conveys the ability and willingness of a user to communicate with other users on a network, across a set of devices. IETF RFC 2778 defines a model and terminology for describing systems that provide presence information. In that model, a presence service is a system that accepts, stores, and distributes presence information to interested parties.	
<b><i>Presence Information Data Format (PIDF)</i></b>	The Presence Information Data Format is specified in IETF RFC 3863; it provides a common presence data format for Presence protocols, and also defines a new media type. A presence protocol is a protocol for providing a presence service over the Internet or any IP network.	
<b><i>Presence Information Data Format – Location Object (PIDF-LO)</i></b>	Provides a flexible and versatile means to represent location information in a SIP header using an XML schema.	
<b><i>Primary ISDN PSAP</i></b>	(see Primary Public Safety Answering Point)	
<b><i>Primary Public Safety Answering Point (PSAP)</i></b>	A PSAP to which 9-1-1 calls are routed directly from the 9-1-1 Control Office. (see Public Safety Answering Point)	
<b><i>Primary Rate ISDN (PRI)</i></b>	A non-switched digital service which utilizes DS1 level 1.544 mbps digital carrier full duplex technology and standards to transport multiple 64 kbps clear channels from an originating ISDN equipped central office switch over a point to point facility to a terminating ISDN equipped customer location. PRI utilizes a full duplex 1.544 mbps DS1 level circuit sectioned into twenty-four (24) individual 64 kbps clear channels. Bearer services and circuit control are comprised of twenty-three (23) 64 kbps B-channels and one (1) 64 kbps D-channel totaling to the 1.544 mbps level.	
<b><i>Primary Rate Interface (PRI)</i></b>	A bundle of ISDN circuits with 23 B channels at 64 Kbps and one D channel equivalent to one T1 link.	

<b><i>Term</i></b>	<b><i>Definition</i></b>	<b><i>N)ew U)pdate</i></b>
<b><i>Private 9-1-1 Emergency Answering Point</i></b>	An answering point operated by non-public safety entities with functional alternative and adequate means of signaling and directing response to emergencies. Includes training to individuals intercepting call for assistance that is in accordance with applicable local emergency telecommunications requirements. Private 9-1-1 Emergency Answering Points are an adjunct to public safety response and as such must provide incident reporting to the public safety emergency response centers per local requirements.	
<b><i>Private Branch Exchange (PBX)</i></b>	A private telephone switch that is connected to the Public Switched Telephone Network.	
<b><i>Private Switch 9-1-1 (PS/9-1-1)</i></b>	A private telephone system which includes network, switching and data base elements capable of providing ANI (ELIN) and ALI (ERL). Designed to use in emergency situations to notify Public Safety personnel of the specific location of a 9-1-1 caller utilizing a Telephone Station connected to a private telephone network.	
<b><i>Private Switch ALI (PSALI)</i></b>	A service option which provides Enhanced 9-1-1 features for telephone stations behind private switches. E.g. PBXs.	
<b><i>Project ALERT</i></b>	America's Law Enforcement Retiree Team for MEC cases	
<b><i>Protocol</i></b>	A set of rules or conventions that govern the format and relative timing of data in a communications network. There are three basic types of protocols: character-oriented, byte-oriented, and bit-oriented. The protocols for data communications cover such things as framing, error handling, transparency, and line control.	
<b><i>Protocol Interworking Function (PIF)</i></b>	That functional component of a Legacy Network Gateway or Legacy PSAP Gateway that interworks legacy PSTN signaling such as ISUP or CAMA with SIP signaling.	N
<b><i>Provider Selection</i></b>	New IP routing capability that allows a device to select its provider.	

<b><i>Term</i></b>	<b><i>Definition</i></b>	<b><i>N)ew U)pdate</i></b>
<b><i>Provisioning Service provider (PSP)</i></b>	The component in an ESInet functional element that implements the provider side of a SPML interface used for provisioning	N
<b><i>Proxy</i></b>	An entity in a call path that is an intermediary, and not an endpoint. Most message contents are copies (proxied) from one side of the proxy to the other, but the proxy may modify some elements, make a routing decision, or reject the call.	
<b><i>Proxy Call Session Control Function (P-CSCF)</i></b>	The P-CSCF is the first contact point for the user equipment (UE) within the IMS core network. For an IMS-based emergency call, the P-CSCF detects the emergency call and forwards it to an E-CSCF.	
<b><i>Proxy Operator</i></b>	Operates proxy server(s).	
<b><i>Proxy or Proxy Server/Policy and Routing Server</i></b>	“A policy and routing server in the context of SIP is a proxy server, an intermediary entity that acts as both a server and a client for the purpose of making requests on behalf of other clients. A proxy server primarily plays the role of routing, which means its job is to ensure that a request is sent to another entity “closer” to the targeted user. Proxies are also useful for enforcing policy (for example, making sure a user is allowed to make a call). A proxy interprets, and, if necessary, rewrites specific parts of a request message before forwarding it.” (Refer to IETF RFC 3261[5].) It can be a policy/routing element in other protocols.	
<b><i>PSAP Credentialing Agency (PCA)</i></b>	The root authority designated to issue and revoke security credentials (in the form of an X.509 certificate) to authorized 9-1-1 agencies in an ESInet.	N
<b><i>Pseudo Automatic Location Identification (pALI)</i></b>	An ALI record associated with a pANI, configured to provide the location of the wireless cell or sector and information about its coverage or serving area (footprint).	
<b><i>Pseudo Automatic Number Identification (pANI)</i></b>	A telephone number used to support routing of wireless 9-1-1 calls. It may identify a wireless cell, cell sector or PSAP to which the call should be routed. Also known as routing number.	

<b><i>Term</i></b>	<b><i>Definition</i></b>	<b><i>N)ew U)pdate</i></b>
<b><i>Public Agency</i></b>	A state or any unit of local government or special purpose district located in whole or in part within a state, which provides police, fire-fighting, medical or other emergency services or has authority to do so.	
<b><i>Public Review Period</i></b>	A period of time in which a draft document is posted to the NENA web site for review by all NENA members and any non-members who wish to comment regarding the content of the draft document.	
<b><i>Public Safety Agency</i></b>	An entity that provides fire fighting, law enforcement, emergency medical or other emergency service.	
<b><i>Public Safety Answering Point (PSAP)</i></b>	Public Safety Answering Point (PSAP): An entity operating under common management which receives 9-1-1 calls from a defined geographic area and processes those calls according to a specific operational policy.	U
<b><i>Public Safety Answering Point (PSAP) Manager</i></b>	An agent of a PSAP who defines policy for a PSAP.	
<b><i>Public Safety Answering Point (PSAP) Operators</i></b>	Operates the Public Safety Answering Points in a particular county, state, or other regional jurisdiction.	
<b><i>Public Safety Answering Point (PSAP) Uniform Resource Identifier (URI)</i></b>	A form of a name or address that denotes a PSAP and is used over an IP network.	
<b><i>Public Service Announcement (PSA)</i></b>	Announcement of events, emergency information and other public interest information on public and private media (radio, television, print) at no cost to the requesting agency (usually).	
<b><i>Public Switched Telephone Network (PSTN)</i></b>	The network of equipment, lines, and controls assembled to establish communication paths between calling and called parties in North America.	
<b><i>Pulse Width Coded</i></b>	Modulation of a carrier by the digital representation of an analog signal. (Ref. NENA 04-002)	
<b><i>Q or QQ</i></b>	Indicates a question	

<i>Term</i>	<i>Definition</i>	<i>N)ew U)pdate</i>
<b><i>Qualified Communication Assistant</i></b>	An individual who must have competent skills in typing, grammar, spelling, interpretation of typewritten ASL, and familiarity with hearing and speech disability cultures, languages and etiquette. Cas must possess clear and articulate voice communications. [FCC 47 C.F.R. § 64.604 (a)(1)(ii)]	
Qualified Interpreter	An individual who interprets effectively, accurately, and impartially, both receptively and expressively, between American Sign Language and spoken English.	
Qualifier Transliterater	An individual who transliterates effectively, accurately, and impartially, both receptively and expressively, between English-based sign language and spoken English.	
<b><i>Quality Assurance Program</i></b>	System that facilitates review and evaluation of work product. Information is used to validate effectiveness of training and evaluate need for additional training or other corrective action.	
<b><i>Quality of Service (QoS)</i></b>	As related to data transmission a measurement of latency, packet loss and jitter.	
<b><i>Queue</i></b>	A stored arrangement of calls or data waiting to be processed	
<b><i>Queuing</i></b>	Queuing is an automated process by which call are presented in a predefined sequence to a call taker.	
<b><i>Radio Frequency (RF)</i></b>	Self explanatory.	
<b><i>Railroad Electrical Sub Station</i></b>	A power station found along the track area of electrified railroads used to aid in the power requirements and distribution of the rail system. Substations are normally fenced off for safety however access can be gained. All equipment in the substation is electrified with high voltage.	
<b><i>Railroad Milepost</i></b>	A unique identifier for a location along a rail line or highway identified by the owner of the track or governmental authority, as applicable.	
<b><i>Railroad Special Agent/Railroad Police Officer</i></b>	A peace officer who is commissioned in his or her state of legal residence or state of primary employment and employed by a railroad to enforce state laws for the protection of railroad property, personnel, passengers, and/or cargo.	

<b><i>Term</i></b>	<b><i>Definition</i></b>	<b><i>N)ew U)pdate</i></b>
<b><i>Railroad Trespasser</i></b>	Railroads are predominately privately owned. Any person on railroad property not at a public grade crossing or with permission of the railroad is considered to be trespassing on private property. (See section 8.4 for further explanation of trespasser.)	
<b><i>Rate Center</i></b>	A geographically specified area used for determining mileage and/or usage dependent rates in the Public Switched Telephone Network.	
<b><i>Real-Time</i></b>	The availability of information at the exact time it is occurring.	
<b><i>Real Time Protocol (RTP)</i></b>	An IP protocol used to transport media (voice, video, text) which has a real time constraint.	
<b><i>Real Time Text (RTT)</i></b>	Text transmission that is character at a time, as in TTY.	N
<b><i>Real-time Transport Control Protocol (RTCP)</i></b>	<p>RTCP is a sister protocol of RTP and provides out-of-band control information for an RTP flow. It partners RTP in the delivery and packaging of multimedia data, but does not transport any data itself. It is used periodically to transmit control packets to participants in a streaming multimedia session. The primary function of RTCP is to provide feedback on the quality of service being provided by RTP.</p> <p>It gathers statistics on a media connection and information such as bytes sent, packets sent, lost packets, jitter, feedback and round trip delay. An application may use this information to increase the quality of service perhaps by limiting flow, or maybe using a low compression codec instead of a high compression codec. RTCP is used for Quality of Service (QoS) reporting.</p>	
<b><i>Real-Time Transport Protocol (RTP)</i></b>	A network protocol used to carry packetized audio and video traffic over an IP network that helps ensure that packets get delivered in a timely way.	

<b><i>Term</i></b>	<b><i>Definition</i></b>	<b><i>N)ew U)pdate</i></b>
<b><i>Recall Recorder</i></b>	A voice-band audio recorder which records to and plays from a media that may not be permanent (such as tape loop, fixed disk or RAM). Recall recorders are typically associated with each operator position for the purpose of recording and playing back their most recent conversations. Also known as Call Check or Instant Playback Recorder.	
<b><i>Receipt</i></b>	Date and time stamp when document either entered into an electronic tracking system by the jurisdiction or service provider.	
<b><i>Recipient Company</i></b>	The new Service Provider responsible for the end users telephone service and E9-1-1 data after the migration of the telephone number from a Donor Service Provider.	
<b><i>Redirect Operator</i></b>	Operates redirect server(s).	
<b><i>Redirect Server/Call Relay Server</i></b>	In the context of SIP, a call relay server is a redirect server UA server that generates (3xx) redirect responses to requests it receives, redirecting the client to contact an alternate set of Uniform Resource Identifiers (URIs). (Refer to IETF RFC 3261[5].) This may be an H.323 Gatekeeper for implementations that use ITU H.323 architectures.	
<b><i>Redundancy</i></b>	Duplication of components, running in parallel, to increase reliability; A backup system (either a device or a connection) that serves in the event of primary system failure.	
<b><i>REFER</i></b>	A SIP method that is used as part of a transfer operation to refer a call to another endpoint	N
<b><i>REFER/Replaces</i></b>	Use of the SIP REFER method together with a Replaces header as part of a transfer operation to indicate that a new leg is to be created that replaces an existing call leg.	N
<b><i>Referred</i></b>	Date and time stamp when the Data Base Management System Provider's Data Rep determines it is necessary to forward the request to another entity.	
<b><i>Regional Access Network Provider (RANP)</i></b>	The entity that provides wide area DSL coverage. The RANP provides logical links to an ISP in the form of ATM PVCs, L2TP tunnels, or IP routed traffic.	

<i>Term</i>	<i>Definition</i>	<i>N)ew U)pdate</i>
<b>REGISTER</b>	A SIP method that is used to communicate the availability and address of an endpoint to the proxy server that directs incoming calls.	N
<b>Registry</b>	A registry is a single place for keeping valid data values associated with a specific XML data element.	
<b>reINVITE</b>	A SIP INVITE transaction within an established session used to change the parameters of a call.	N
<b>Rejected</b>	Date and time stamp a request is denied by the recipient.	
<b>Remote Authentication Dial-In User Service (RADIUS)</b>	The attributes for conveying access network ownership and location information based on a civic and geospatial location format	
<b>Remote Call Forwarding</b>	As utilized within Interim Number Portability, a permanent call forwarding feature that allows a call to one Directory Number to be automatically advanced to a Directory Number of another Local Exchange Carrier.	
<b>Remote Switch Units (RSU)</b>	A small switching system that is located at a remote point from a host switch. All or most of its call processing capability is obtained from an electronic type host office. The remote is connected to the host by umbilical circuits providing message and signal handling capabilities.	
<b>Reorder Tone</b>	An audible tone of 120 interrupts per minute (ipm) returned to the calling party to indicate the call cannot be processed through the network. Sometimes referred to as fast busy.	
<b>Representational State Transfer (REST)</b>	An interface that transmits domain-specific data over HTTP without an additional messaging layer such as SOAP or session tracking via HTTP cookies.	
<b>Request for Comment (RFC)</b>	A method by which standard setting bodies receive input from interested parties outside of the working group.	
<b>RequestURI</b>	That part of a SIP message that indicates where the call is being routed towards. SIP Proxy servers commonly change the Request ID (“retargeting”) to route a call towards the intended recipient.	N
<b>Re-Ring</b>	(see Emergency Ring Back)	

<i><b>Term</b></i>	<i><b>Definition</b></i>	<i><b>N)ew U)pdate</b></i>
<i><b>Resource Priority</b></i>	A header used on SIP calls to indicate priority that proxy servers give to specific calls.	N
<i><b>Resource Reservation Protocol (RSVP)</b></i>	Protocol that supports the reservation of resources across an IP network.	
<i><b>Response Agency</b></i>	The public safety agency having legal or consensual obligation to respond to a call for service.	
<i><b>Retrieval Key</b></i>	A 10-digit number that is used to uniquely identify an emergency call for the purpose of retrieving the ALI record by the PSAP.	
<i><b>ReverseGeocode</b></i>	The process of converting a geo form of location (X,Y) to a civic (street address) form.	N
<i><b>Rights Management</b></i>	Specifying the access rights by an entity (agent or agency) to a particular document, data element, or service	N
<i><b>Ringback Tone</b></i>	A tone returned to the caller to indicate that a call is being processed.	
<i><b>RJ-11</b></i>	A standard jack for handset and other devices connecting to a twisted pair.	
<i><b>Roaming</b></i>	Roaming: means gaining network access through a service provider other than the one that the subscriber purchases service from, or outside the subscriber's home service territory.	
<i><b>Root Discovery Operator (RDO)</b></i>	The operator that supports the well known root database from which the URI (Uniform Resource Identifier) of the correct VDB or ERDB can be determined based on regional location information.	
<i><b>Route Diversity</b></i>	(see Diverse Routing)	

<b><i>Term</i></b>	<b><i>Definition</i></b>	<b><i>N)ew U)pdate</i></b>
<b><i>Router</i></b>	<ul style="list-style-type: none"> <li>• An interface device between two networks that selects the best route to complete the call even if there are several networks between the originating network and the destination</li> <li>• A device that provides network management capabilities (e.g., load balancing, network partitioning, usage statistics, communications priority and troubleshooting tools) that help network managers to detect and correct problems</li> <li>• An intelligent device that forwards data packets from one local area network (LAN) to another and that selects the most expedient route based on traffic load, line speeds, costs, or network failures to complete the call</li> </ul>	
<b><i>Routing Determination Function (RDF)</i></b>	The IMS-associated functional entity, which may be integrated in a Location Server (e.g. GMLC) or in an LRF and provides the proper outgoing address to the E-CSCF for routing the emergency request towards a PSAP. It can interact with a location functional entity (e.g. GMLC) to manage ESQK allocation and management and deliver location information to the PSAP.	
<b><i>Routing Emergency Service Number (ESN)</i></b>	The 3-5 position Emergency Service Number (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. (Refer to Administrative ESN)	
<b><i>Routing Number</i></b>	(see Pseudo Automatic Number Identification (pANI))	
<b><i>Routing Number Authority (RNA)</i></b>	An authority responsible for distributing ranges of numbers to network operators for the purposes of call routing and query steering.	
<b><i>RS-232C</i></b>	An electrical and mechanical standard for the serial transfer of digital information between digital systems, such as computers, printers or communications equipment.	

<b><i>Term</i></b>	<b><i>Definition</i></b>	<b><i>N)ew U)pdate</i></b>
<b><i>Runaways</i></b>	A runaway is when a child leave home without permission and stays away overnight; or a child 14 years old or younger (or older and mentally incompetent) who is away from home chooses not to return when supposed to and stays away overnight; or a child 15 years old or older who is away from home chooses not to return and stays away two nights.	
<b><i>Satellite Offices</i></b>	Typically auxiliary work sites set up and used by a single employer. Satellite offices are not necessarily geographically convenient or designed specifically for telework use.	
<b><i>Scheme</i></b>	The part of a URI that indicates the protocol. For example, the scheme in the URI sip:john@example.com is “sip”	N
<b><i>Secondary ISDN Public Safety Answering Point</i></b>	(see Secondary Public Safety Answering Point)	
<b><i>Secondary Public Safety Answering Point</i></b>	A PSAP to which 9-1-1 calls are transferred from a Primary PSAP. (See Public Safety Answering Point)	
<b><i>Security Posture</i></b>	An event that represents a downstream entity’s current security state (normal, under attack, ...).	N
<b><i>Selective Router</i></b>	(see Enhanced 9-1-1 Control Office)	
<b><i>Selective Router (SR) Operators</i></b>	Operates the Selective Router(s) corresponding to specific local exchange areas.	
<b><i>Selective Routing (SR)</i></b>	The process by which 9-1-1 calls/messages are routed to the appropriate PSAP or other designated destination, based on the caller’s location information, and may also be impacted by other factors, such as time of day, call type, etc. Location may be provided in the form of an MSAG-valid civic address or in the form of geo coordinates (longitude and latitude). Location may be conveyed to the system that performs the selective routing function in the form of ANI or pseudo-ANI associated with a pre-loaded ALI database record (in Legacy 9-1-1 systems), or in real time in the form of a Presence Information Data Format – Location Object (PIDF-LO) (in NG9-1-1 systems) or whatever forms are developed as 9-1-1 continues to evolve.	

<b><i>Term</i></b>	<b><i>Definition</i></b>	<b><i>N)ew U)pdate</i></b>
<b><i>Selective Routing Data Base (SRDB)</i></b>	The routing table that contains telephone number to ESN relationships which determines the routing of 9-1-1 calls.	
<b><i>Selective Transfer</i></b>	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 ESN of the caller.	
<b><i>Sensor</i></b>	An entity/device capable of observing a phenomenon and returning an observed value.	
<b><i>Server</i></b>	In information technology, a server is a computer program that provides services to other computer programs (and their users) in the same or other computers. The computer that a server program runs in is also frequently referred to as a server (though it may be used for other purposes as well).	
<b><i>Server</i></b>	<ul style="list-style-type: none"> <li>• On a local area network, the computer that runs the administrative software to control access to the network. The server makes network resources available to the workstations</li> <li>• Node or software program that provides services to clients</li> <li>• In network addressing, a concentrator, data switch, or host computer being accessed</li> <li>• In a synchronous packet assembler/disassemble (PAD), a device that assigns remote devices to a logical multipoint host line</li> </ul>	
<b><i>Service Access Points</i></b>	Specifies the network address of the processing entity that exposes the service interface. There may be more than one such address corresponding to various “flavors” of the service such as the different <i>bindings</i> under which the service is made available. Bindings are used to define the access mechanism used when a service is invoked (e.g., SOAP/HTTP, JMS/Messaging, and CORBA IIOP).	
<b><i>Service Address</i></b>	The physical location of a subscriber access line. Service Address is the recommended address for 9-1-1 use. (May be different from the listed address or billing address)	

<b><i>Term</i></b>	<b><i>Definition</i></b>	<b><i>N)ew U)pdate</i></b>
<b><i>Service Boundary</i></b>	A polygon in a GIS system, SIF, ECRF or other ESInet element that indicates the area a particular agency or element serves.	N
<b><i>Service Composition</i></b>	Used to bring together multiple services to satisfy more complex or higher-level needs.	
<b><i>Service Level Agreement (SLA)</i></b>	A contract between a service provider and the end user, which stipulates and commits the service provider to a required level of service.	
<b><i>Service Order</i></b>	Local Exchange Carrier document used for additions, changes or removals of telephone service.	
<b><i>Service Order Input (SOI)</i></b>	Service Order Input is a file of completed service order updates that is sent to the DBMSP by all SP's.	
<b><i>Service Provider</i></b>	An entity providing one or more of the following 9-1-1 elements: network, CPE, or data base service.	
<b><i>Service Provider Identifier (SPID)</i></b>	A four (4) character, numeric service provider identification code assigned by the National Exchange Carrier Association (NECA) to Local Exchange Carriers. It does not include resellers, private switch owners or others not acting as LEC's who are sending customer's transaction record data to the 9-1-1 data bases.	
<b><i>Service Registry</i></b>	A logically centralized directory of services. The registry provides a central place where service providers can publish new services and service consumers can discover those services.	
<b><i>Service Type</i></b>	A broad definition to describe different originating networks types. Examples are wireless, wire line, cable, IP, etc. Calls can be classified by their service type	
<b><i>Service Uniform Resource Name (Service URN)</i></b>	A URN with "service" as the first component supplied as an input in a LoST request to an ECRF to indicate which service boundaries to consider when determining a response. A service URN is also used to mark a call as an emergency call.	U
<b><i>Serving Central Office</i></b>	The central office (CO) from which a subscriber is served. (see Central Office (CO))	

<b><i>Term</i></b>	<b><i>Definition</i></b>	<b><i>N)ew U)pdate</i></b>
<b><i>Serving-CSCF (S-CSCF)</i></b>	The S-CSCF is the entity in the IMS core network that handles the session states.	
<b><i>Serving Public Safety Answering Point</i></b>	The PSAP to which call would normally be routed. (57-001)	
<b><i>Session Border Control</i></b>	A commonly available functional element that provides security, NAT traversal, protocol repair and other functions to VoIP signaling such as SIP. A component of a Border Control Function	N
<b><i>Session Initiation Protocol (SIP)</i></b>	An IETF defined protocol (RFC3261) that defines a method for establishing multimedia sessions over the Internet. Used as the call signaling protocol in VoIP, i2 and i3	
<b><i>Shared Residential MLTS Service</i></b>	The use of a MLTS to provide service to residential facilities even if the service is not delineated for purposes of billing. For purposes of the definition, residential facilities shall be liberally construed to mean single family and multi-family facilities including Extended Care Facilities and Dormitories.	
<b><i>Shared Telecommunications Services</i></b>	Includes the provision of telecommunications and information management services and equipment within a used group located in discrete private premises in building complexes, campuses, or high-rise buildings, by a commercial shared services provider or by a user association, through privately owned customer premises equipment and associated data processing and information management services, and includes the provision of connections to the facilities of a local exchange and to interexchange telecommunications companies.	
<b><i>Short Message Service (SMS)</i></b>	A service typically provided by mobile carriers that sends short (160 characters or fewer) messages to an endpoint. SMS is often fast, but is not real time.	

<b><i>Term</i></b>	<b><i>Definition</i></b>	<b><i>N)ew U)pdate</i></b>
<b><i>Signaling Connection Control Part (SCCP)</i></b>	SCCP is the protocol used at the transport layer for TCAP-based services such as freephone (800/888), calling card, local number portability, wireless roaming, and personal communication services (PCS). SCCP also provides the means by which an STP can perform global title translation (GTT), a procedure by which the destination signaling point and subsystem number (SSN) is determined from digits (i.e., the global title) present in the signaling message.	
<b><i>Signaling System 7 (SS7)/Common Channel Signaling 7 (CCS7)</i></b>	An out-of-band signaling system used to provide basic routing information, call set-up and other call termination functions. Signaling is removed from the voice channel itself and put on a separate data network. Also known as Common Channel Signaling No. 7 (CCS7).	
<b><i>Signature Control</i></b>	A means to control the output of a time code signal based on the sync or lock status of the PSAP master clock. (Ref. NENA 04-002)	
<b><i>Simple Network Management protocol (SNMP)</i></b>	A protocol defined by the IETF used for managing devices on an IP network.	
<b><i>Simple Network Time Protocol (SNTP)</i></b>	A utility for synchronizing system clocks over a TCP/IP network. This protocol is similar to NTP and is used when the ultimate performance of the full NTP implementation is not needed.	
<b><i>Simple Object Access Protocol (SOAP)</i></b>	SOAP is a protocol for exchanging XML-based messages over a computer network, normally using HTTP. SOAP forms the foundation layer of the Web services stack, providing a basic messaging framework that more abstract layers can build on.	
<b><i>Simple Transversal of User Datagram Protocol (UDP) Network Address Translation (NATs) (STUN)</i></b>	A protocol for assisting devices behind a NAT firewall or router with their packet routing.	
<b><i>Simulated Facility Group (SFG)</i></b>	A Facility Group is a set of trunks established for a particular transport purpose to which incoming calls are routed. When this is simulated, this is a form of call blocking for congestion control.	

<b><i>Term</i></b>	<b><i>Definition</i></b>	<b><i>N)ew U)pdate</i></b>
<b><i>Single Point of Failure</i></b>	A hardware or software component or sub-system which experiences a failure causing more than 50% of the total system to fail. (Ref. NENA 04-001 Reliability Objectives)	
<b><i>Small Office/Home Office (SOHO)</i></b>	Describes a small office or home office with few occupants, often just one.	
<b><i>Smart Cards</i></b>	A credit-card-like object that contains a processor and memory, and is typically used to carry credentials for an agent in an authentication system. A smart card may be one factor in a 2 or 3 factor authentication system and is “something you have”	N
<b><i>Smuggling</i></b>	Every act whereby an immigrant is assisted in crossing international borders and this crossing is not endorsed by the government of the receiving state, neither implicitly nor explicitly.	
<b><i>Society of Automotive Engineers (SAE)</i></b>	U.S. based engineering standard body for the automotive industry.	
<b><i>Sockets</i></b>	A method for communication between two applications in a network. The socket is defined as “the endpoint in a connection”.	
<b><i>Soft Permanent Virtual Circuit (SPVC)</i></b>	A Soft PVC is a user-to-user connection in which the user-to-network connections are PVCs, but all or part of the cross-network connection is an SVC and does not need to be configured at every hop across the ATM network (as would be the case for a PVC).	
<b><i>SOS URN</i></b>	A service URN starting with “urn:service:sos” which is used to mark calls as emergency calls as they traverse an IP network.	N
<b><i>Source Data Base</i></b>	The data base maintained by each Service Provider which provides customer telephone number and location information for the initial load and ongoing updates to the ALI data base held by the Data Base Management System Provider.	
<b><i>Spatial</i></b>	Relating to, occupying, or having the character of space. Geographic Information Systems store spatial data in regional databases. See Geospatial.	

<b><i>Term</i></b>	<b><i>Definition</i></b>	<b><i>N)ew U)pdate</i></b>
<b><i>Speech Impairment</i></b>	Speech Impairment is a communications disorder, such as stuttering, impaired articulation, language impairment or a voice impairment, which adversely affects a person's ability to articulate speech clearly.	
<b><i>Spike Masking</i></b>	The "spike" is a rapid increase in the number of call attempts to the telephone network. When the network's capacity is reached, all call attempts beyond when can be carried are blocked or "masked" (i.e., you can't see them because they are being carried).	
<b><i>Splash Ringing</i></b>	The capability to provide an audible signal simultaneously with trunk seizure on an incoming 9-1-1 call.	
<b><i>SSH File Transfer Protocol (SFTP)</i></b>	A network protocol that provides file transfer and manipulation functionality over any reliable data stream. It is typically used with the SSH-2 protocol to provide secure file transfer.	
<b><i>Stand Alone Data Base</i></b>	A data base system created, maintained and located at a 9-1-1 Jurisdiction.	
<b><i>Standard Master Street Address Guide (MSAG)</i></b>	An MSAG maintained in accordance with the data fields as recommended in NENA standards 02-010 and 02-011. (See MSAG Address and Local Operational MSAG)	
<b><i>Standard Operating Procedure (SOP)</i></b>	A written directive that provides a guideline for carrying out an activity. The guideline may be made mandatory by including terms such as "shall" rather than "should" or "must" rather than "may".	
<b><i>Standards Advisory Committee (SAC)</i></b>	The Standards Advisory Committee consists of representatives from both NENA Technical and Operations Committees. The SAC advises the NENA Executive Board that the NENA processes have been followed during the document approval process	
<b><i>Standards Development Organization (SDO)</i></b>	An entity whose primary activities are developing, coordinating, promulgating, revising, amending, reissuing, interpreting, or otherwise maintaining standards that address the interests of a wide base of users outside the standards development organization.	
<b><i>Start (ST)</i></b>	An MF signaling tone (digit).	

<i>Term</i>	<i>Definition</i>	<i>N)ew U)pdate</i>
<b><i>Start Bit</i></b>	In asynchronous transmission, the first element in each character that prepares the receiving device to recognize the incoming information.	
<b><i>Start Prime (STP)</i></b>	An MF signaling tone (digit)	
<b><i>Station Identification</i></b>	A telephone number dialable from the public switched network, which provides sufficient information to permit a return call by the Public Safety Answering Point to the caller or a telephone nearby the caller.	
<b><i>Stop Bit</i></b>	In asynchronous transmission, the last transmitted element in each character, which permits the receiver to come to an idle condition before accepting another character.	
<b><i>Straight Binary Seconds (SBS)</i></b>	A binary number that appears in the IRIG time code which represents the total number of seconds since midnight. (Ref. NENA 04-002)	
<b><i>Stranded Unlock Record</i></b>	A record in the E9-1-1 data base unlocked by the Donor Company via a Function of Change (U) unlock transaction record for more than seven (7) days for which a migrate order has not been sent by the Recipient Company. Once unlocked, a record remains unlocked until a (M) migrate record is received, or the systems permissive migrate transaction time has expired and no other changes shall be made to the record.	

<b><i>Term</i></b>	<b><i>Definition</i></b>	<b><i>N)ew U)date</i></b>
<b><i>Stream Control Transport Protocol (SCTP)</i></b>	<p>SCTP is defined by IETF RFC2960 as the transport layer to carry signaling messages over IP networks. SCTP/T is just one of the many products in the Adax Protocol Software (APS) SIGTRAN suite that has been designed for Convergence, Wireless and Intelligent Networks. Compliant with IETF RFC2960 and RFC3309, SCTP/T (SCTP for Telephony) is implemented in the OS kernel. SCTP/T provides a transport signaling framework for IP networks that enhances the speed and capability of SSCS/HSL and can be deployed over T1/E1, Ethernet and ATM OC3 physical media interfaces.</p> <p>In addition to the services specified in IETF RFC2960, Adax SCTP/T also provides a transport framework with levels of service quality and reliability as those expected from a Public Switched Telephony Network (PSTN).</p>	
<b><i>SUBSCRIBE/NOTIFY</i></b>	The two actions in an asynchronous event notification system. The subscription is the request to receive notifications of the events. The Notify is the notification of the event itself. Also refers to the SIP methods used for this purpose.	N
<b><i>Subscriber Database (SDB)</i></b>	A database operated by a carrier or other service provider which supplies the “Additional Call” data object. The SDB dereferences the URI passed in a Call-Info header and returns the AdditionalCall XML object.	N
<b><i>SubjectAltName</i></b>	A field in an X.509c digital certificate which typically contains identifying information for the entity issued the certificate. In an ESInet, SubjectAltName contains an agent or agency ID	N
<b><i>Successful ALI Queries</i></b>	The sum of all ALI Queries less No Record Finds, Misroutes, MSAG Discrepancies, and ALI Discrepancies.	
<b><i>Switched Virtual Circuit (SVC)</i></b>	A network connection initiated by signaling at a UNI, where the originator specifies the destination address.	

<b><i>Term</i></b>	<b><i>Definition</i></b>	<b><i>N)ew U)pdate</i></b>
<b><i>Symmetrical Digital Subscriber Line (SDSL)</i></b>	A technology that allows more data to be sent over existing copper telephone lines. It is called symmetric because it supports the same data rates for upstream and downstream traffic.	
<b><i>Sync</i></b>	Abbreviation for synchronized or synchronization.	
<b><i>Synchronization</i></b>	In the context of timing, synchronization means to bring clocks or data streams into phase so they agree with the PSAP master clock. (Ref. NENA 04-002)	
<b><i>Synchronous Optical NETWORK (SONET)</i></b>	High speed digital transport over fiber optic networks using synchronous protocol.	
<b><i>System</i></b>	A system is the hardware, software and databases necessary for NG9-1-1.	N
<b><i>System Network Architecture (SNA)</i></b>	IBM's standard network architecture describing logical structure, formats, protocols and operational sequences for transmitting information between software and hardware devices.	
<b><i>System Provider</i></b>	(see Service Provider)	
<b><i>T1</i></b>	<p>The T1 (or T-1) carrier is the most commonly used digital transmission service in the United States, Canada, and Japan. In these countries, it consists of 24 separate channels using pulse code modulation (PCM) signals with time-division multiplexing (TDM) at an overall rate of 1.544 million bits per second (Mbps). T1 lines originally used copper wire but now also include optical and wireless media. A T1 Outstate System has been developed for longer distances between cities.</p> <p>It is common for an Internet access provider to be connected to the Internet as a point-of-presence (POP) on a T1 line owned by a major telephone network. Many businesses also use T1 lines to connect to an Internet access provider.</p>	
<b><i>Tag</i></b>	A unique label that precedes the data for the data element associated with the tag.	
<b><i>Tag Data</i></b>	A method of identifying data elements of varying lengths within a data record.	

<b><i>Term</i></b>	<b><i>Definition</i></b>	<b><i>N)ew U)pdate</i></b>
<b><i>Tag Data Record</i></b>	A record of varying length comprised of pre-defined tag labels and their associated data elements.	
<b><i>Tandem Central Office (Tandem CO)</i></b>	(see Enhanced 9-1-1 Control Office)	
<b><i>Target</i></b>	The IP endpoint to which location is attributed.	
<b><i>TDD/TTY Detector</i></b>	Any device that automatically detects TDD/TTY tones and audibly and/or visually notifies the calltaker.	
<b><i>Team Adam</i></b>	NCMEC on site emergency response team for abduction cases	
<b><i>Technical Advisory (TA)</i></b>	A document describing Telcordia's preliminary view of proposed requirements for products, interfaces, technologies or services.	
<b><i>Technical Assistance (TA)</i></b>	Technical Assistance document issued by the U.S. Department of Justice (US DOJ) to assist agencies in achieving compliance with regulations.	
<b><i>Technical Information Document (TID)</i></b>	NENA White Paper.	
<b><i>Technical Reference (TR)</i></b>	A Telcordia document that spells out detailed specification for product or service development.	
<b><i>Technical Requirements Document (TRD)</i></b>	NENA Technical Requirements Document, developed by a Technical Committee, is used as basis for a NENA Technical Committee or outside Standards Development Organization (SDO) to develop formal industry accepted standards or guidelines.	
<b><i>Telecommunication Technology Committee (TTC)</i></b>	A Japanese committee whose purpose is to contribute to standardization in the field of telecommunications by establishing protocols and standards for telecommunications networks and terminal equipment, etc as well as to disseminate those standards.	
<b><i>Telecommunications Device for the Deaf (TDD)</i></b>	Also known as TTY. (see Teletypewriter (TTY))	
<b><i>Telecommunications Industry Association (TIA)</i></b>	A lobbying and trade association, the result of the merger of the USTA (United States Telephone Association) and the EIA (Electronic Industries Association).	

<b><i>Term</i></b>	<b><i>Definition</i></b>	<b><i>N)ew U)pdate</i></b>
<b><i>Telecommunications Relay Service (TRS)</i></b>	A federally mandated service provided by states that provides communication relay between TTY users and voice telephone users, via a third party, for communications assistance.	
<b><i>Telecommunications Service Provider (TSP)</i></b>	A business that provides voice or data transmission services. These services are provided over a telecommunications network that transmits any combination of voice, video and/or data between users. A TSP could be, but is not limited to, a Local Exchange Carrier (LEC), a wireless telecommunications provider, a Commercial Mobile Radio Service provider, or a PBX service provider.	
<b><i>Telecommunications Technology Association (TTA)</i></b>	Telecommunications Technology Association was founded as a voluntary standards body and has established a total of 450 standards in telecommunications fields. Its main aim is to enhance the Korean national infrastructure of telecommunication systems.	
<b><i>Telecommunicator</i></b>	Person employed by a PSAP and/or an EMD Service Provider qualified to answer incoming emergency telephone calls and provide for the appropriate emergency response either directly or through communication with the appropriate PSAP.	U
<b><i>Telematics</i></b>	The mechanisms that support the acquisition of telemetry data and action based upon it.	
<b><i>Telemetry</i></b>	Telemetry is a technology that allows the remote measurement and reporting of information of interest to a system designer or operator; e.g., doctor monitoring pacemaker functionality.	
<b><i>Telephone Service Priority (TSP)</i></b>	A procedure used by a telephone company to establish priorities in deciding which lines and trunks to restore subsequent to an outage. Generally, the highest priority goes to federal law enforcement and military usage, with local emergency services (including 9-1-1) and medical facilities following. Established by the National Communications System Office.	

<b><i>Term</i></b>	<b><i>Definition</i></b>	<b><i>N)ew U)pdate</i></b>
<b><i>Teletypewriter (TTY)</i></b>	Also known as TDD. A device capable of information interchange between compatible units using a dial up or private-line telephone network connections as the transmission medium. ASCII or Baudot codes are used by these units. (per EIA PN-1663)	
<b><i>Telework</i></b>	A work arrangement in which employees work at any time or place that allows them to accomplish their work in an effective and efficient manner.	
<b><i>Temporary Residence</i></b>	The use of MLTS to provide temporary occupancy in a facility such as dormitories, hotel/motel, health care and nursing homes, or other similar facilities.	
<b><i>Terminating ESRP</i></b>	The last ESRP for a call in an ESInet, and typically chooses a queue of call takers to answer the call.	N
<b><i>Text Telephone</i></b>	Another term for TDD/TTY	
<b><i>Third Generation Partnership Project 2 (3GPP2)</i></b>	A collaborative third generation (3G) telecommunications specifications-setting project comprised of interests from the Americas and Asia developing global specifications for Mobile Application Protocol (MAP) “Wireless Radio-telecommunication Intersystem Operations” network evolution to 3G. The project is focused on global specifications for the radio transmission technologies supported by MAP and the wireless IP core networks, together known as the cdma2000 <sup>®</sup> family of standards.	
<b><i>Third party Emergency Medical Dispatch Service Provider</i></b>	Entity other than a PSAP, (2 <sup>nd</sup> PSAP or private/commercial center) who provides Emergency Medical Dispatch services to callers/clients.	N
<b><i>Three-Way Calling</i></b>	(see Conference Transfer)	
<b><i>Throwaway</i></b>	A Throwaway is a child asked or told to leave home by a parent or other household adult and the child is out of the household overnight; or a child who is away from home is prevented from returning home by a parent or other household adult.	
<b><i>Time Code</i></b>	A series of pulses or characters which represent a digit such as a 4. The location of a particular binary digit in the code defines its meaning, 4 hours, 4 minutes or 4 seconds. (Ref. NENA 04-002)	

<b><i>Term</i></b>	<b><i>Definition</i></b>	<b><i>N)ew U)pdate</i></b>
<b><i>Time Difference of Arrival (TDOA)</i></b>	A terrestrial Location Determination Technology (LDT) that computes a transmitter's location based upon the times a signal is received at multiple receivers.	
<b><i>Time Division Duplex Mode (TDD)</i></b>	This is using TDM access to separate outward and return signals in which the bandwidth used can be variable based on the requirements of the data being transmitted.	
<b><i>Time Division Multiple Access (TDMA)</i></b>	A digital radio interface utilized by some North American PCS carriers.	
<b><i>Time Division Multiplexing (TDM)</i></b>	A digital multiplexing technique for combining a number of signals into a single transmission facility by interweaving pieces from each source into separate time slots.	
<b><i>Time Sync Status Character</i></b>	A specific character location in the ASCII time code data stream which changes dependent on the lock or unlock status of the PSAP master clock to its source. (Ref. NENA 04-002)	
<b><i>Tipsoft</i></b>	A brand name of tip management software.	
<b><i>Tipster</i></b>	A confidential informant who reports information regarding criminal activity, including human trafficking activity, to a Crime Stoppers' telephone tip line, or who reports such information electronically through an internet website or text messaging system designated for anonymous Crime Stoppers tips.	
<b><i>Token</i></b>	A physical device that displays a multidigit number used as part of an authentication system ("something you have"). Also, a set of bits that represent some data, permission or state which is meaningful to the recipient, but not necessarily the sender.	N
<b><i>Token Ring</i></b>	Local area network architecture originally developed by IBM. Later standardized by ISSS as 802.5. Transmission on the network is governed by the possession of a "token" or specific octet of data. A station may only transmit when it receives the token.	
<b><i>Topology</i></b>	Spatial relationships between connecting or adjacent features in a geographic information system data layer.	

<b><i>Term</i></b>	<b><i>Definition</i></b>	<b><i>N)ew U)odate</i></b>
<b><i>Traceable UTC Source</i></b>	Traceable sources of UTC time are available from various time services of the National Institute of Standards and Technology (NIST) and US Naval Observatory (USNO). These services include telephone dial-up, low and high frequency radio transmissions, and Global Positioning System (GPS). (Ref. NENA 04-002)	
<b><i>Transaction Capabilities Application Port (TCAP)</i></b>	TCAP is an application protocol used to connect to an external data base, perform a query of the data base and retrieve information. The information or data retrieved is then sent back in the form of a TCAP message to the signaling point that requested it. It may reside upon the SS7 protocol stack or TCP/IP stack.	
<b><i>Transcoding</i></b>	Translating a media stream from one codec to another. For example, translating Baudot tones detected in a G.711 encoded audio stream to T.140 real time text	N
<b><i>Transfer</i></b>	A feature which allows the PSAP Telecommunicator to redirect a 9-1-1 call to another location.	
<b><i>Transfer Key</i></b>	A key which is programmed to dial a telephone number, a selective routing transfer code, or a speed dial code to accomplish the transfer of calls.	
<b><i>Transient</i></b>	A random disturbance of normal voltage with a very short time duration (<8.3ms) that occurs on the power source or data/signal/telecommunications conductors.	
<b><i>Transient Voltage Surge Suppression (TVSS)</i></b>	Devices designed to protect critical PSAP equipment from transients induced on powering and data/signal/telecommunications conductors. (Ref. NENA 04-001)	
<b><i>Transmission Control Protocol (TCP)</i></b>	A communications protocol linking different computer platforms across networks. TCP/IP functions at the 3 <sup>rd</sup> and 4 <sup>th</sup> levels of the open system integration model.	

<b><i>Term</i></b>	<b><i>Definition</i></b>	<b><i>N)ew U)pdate</i></b>
<b><i>Transmission Control Protocol/Internet Protocol (TCP/IP)</i></b>	A layered set of protocols used to connect dissimilar computers together. The TCP part of this provides the transport service required by the application layer. The TCP layers in the two host computers that are sending data will communicate to each other to insure reliable data packet transport. The IP part of this provides the service user to deliver the datagram to its destination. This layer provides the routing through the network and the error messages should the datagram be undeliverable.	
<b><i>Transport Control Protocol (TCP)</i></b>	The end to end reliability protocol that recognizes and corrects lower layer errors caused by connectionless networks.	
<b><i>Transport Facility</i></b>	An analog or digital circuit that connects switches and/or networks together. In this document, this refers to a digital trunk that carries calls between either the carrier network and the SR, or the SR and the PSAP.	
<b><i>Trespasser</i></b>	Railroads are predominately privately owned. Any person on railroad property not at a public grade crossing or with permission of the railroad is considered to be trespassing on private property. (See section 8.4 for further explanation of trespasser.)	
<b><i>Trunk</i></b>	Typically, a communication path between central office switches, or between the 9-1-1 Control Office and the PSAP.	
<b><i>Trunk Alternate Route</i></b>	The routing condition that occurs when all trunks from the end office to SR are <i>out of service</i> . The scenario represents an end office to SR trunk <i>failure</i> condition versus an <i>all trunks busy</i> condition.	
<b><i>Trunk Group</i></b>	One or more trunks terminated at the same two points.	
<b><i>Trunk Seizure</i></b>	The point in time at which a 9-1-1 call is assigned to a trunk and acknowledgment is provided by the equipment at the distant end.	
<b><i>TTY Protocol</i></b>	TTY protocol refers to the use of unique abbreviations used to control the flow of conversation. The use of TTY protocols is critical to effective TTY communications.	

<b><i>Term</i></b>	<b><i>Definition</i></b>	<b><i>N)ew U)pdate</i></b>
<b><i>Unavailable Bit Rate (UBR)</i></b>	A service call where the bit rate available in the network is not guaranteed to the user. The network does not provide flow control handshaking with the user.	
<b><i>Uncertainty</i></b>	(See Confidence/Uncertainty)	
<b><i>Underwriters Laboratories (UL)</i></b>	One of several United States nationally recognized testing laboratories (NRTL) whose testing specifications have been adopted as de facto industry standards.	
<b><i>Uniform Resource Identifier (URI)</i></b>	A predictable formatting of text used to identify a resource on a network (usually the Internet) OR A string of characters that must follow prescribed syntaxes such as URL, URN... <u>Note</u> Version 1.1 of the XML namespaces recommendation uses IRIs (Internationalized Resource Identifiers) instead of URIs. However, because version 1.1 is not yet a full recommendation [February, 2003] and because the IRI RFC [11] is not yet complete, this document continues to refer to URIs instead of IRIs.	
<b><i>Uniform Resource Locator (URL)</i></b>	A URL is a URI specifically used for describing and navigating to a resource (e.g. <a href="http://www.nena.org">http://www.nena.org</a> )	
<b><i>Uninterruptible Power Supply (UPS)</i></b>	A backup system designed to provide continuous power in the event of a commercial power failure or fluctuation.	
<b><i>Universal Coordinated Time (UTC)</i></b>	Also known as Zulu or GMT. Time provided by National Institute of Standards and Technology (NIST) and United States Naval Observatory (USNC).	
<b><i>Universal Resource Name</i></b>	Uniform Resource Identifiers (URIs) that use the <i>urn</i> scheme, and are intended to serve as persistent, location-independent resource names.	
<b><i>Universal Terrestrial Radio Access (UTRA)</i></b>	UTRA is a standard for 3G mobile communications services being specified by 3GPP. The radio access components of UTRA are based on direct-spread wideband code-division multiple access (WCDMA) and hybrid time-division (TDCDMA) access methods that have been designed for 3G frequency efficiency, mobility, and QoS requirements.	

<i><b>Term</b></i>	<i><b>Definition</b></i>	<i><b>N)ew U)pdate</b></i>
<i><b>Unlock</b></i>	The action required by a 9-1-1 Data Base Management System Provider, upon notification from a Donor Company, that makes the end user's telephone number record available for the Recipient Company to replace the customer details and Company ID.	
<i><b>UPDATE</b></i>	A SIP method used to update parameters in a call not yet established	N
<i><b>User Agent (UA)</b></i>	As defined for SIP in IETF RFC 3261[5], the User Agent represents an endpoint in the IP domain, a logical entity that can act as both a user agent client (UAC) that sends requests, and as user agent server (UAS) responding to requests.	
<i><b>User Agent Client (UAC)</b></i>	Refer to IETF RFC 3261 for the following definition. "A user agent client is a logical entity that creates a new request, and then uses the client transaction state machinery to send it. The role of UAC lasts only for the duration of that transaction. In other words, if a piece of software initiates a request, it acts as a UAC for the duration of that transaction. If it receives a request later, it assumes the role of a user agent server for the processing of that transaction."	
<i><b>User Agent Server (UAS)</b></i>	Refer to IETF RFC 3261 for the following definition. "A user agent server is a logical entity that generates a response to a SIP request. The response accepts, rejects, or redirects the request. This role lasts only for the duration of that transaction. In other words, if a piece of software responds to a request, it acts as a UAS for the duration of that transaction. If it generates a request later, it assumes the role of a user agent client for the processing of that transaction."	

<i>Term</i>	<i>Definition</i>	<i>N)ew U)pdate</i>
<b><i>User Datagram Protocol (UDP)</i></b>	One of several core protocols commonly used on the Internet. Used by programs on networked computers to send short messages, called datagrams, between one another. UDP is a lightweight message protocol, compared to TCP, is stateless and more efficient at handling lots of short messages from many clients compared to other protocols like TCP. Because UDP is widely used, and also since it has no guaranteed delivery mechanism built in, it is also referred to as Universal Datagram Protocol, and as Unreliable Datagram Protocol.	
<b><i>User Equipment (UE)</i></b>	A device allowing a user access to network services.	
<b><i>V0 Interface</i></b>	<b>LIS to VoIP Endpoint.</b> The V0 interface is used to provide a means for a VoIP endpoint to receive information corresponding to a pre-determined location.	
<b><i>V1 Interface</i></b>	<b>VoIP Endpoint to Call Server/Proxy.</b> The V1 interface is between the VoIP Endpoint and the Call Server within the VSP's network.	
<b><i>V2 Interface</i></b>	<b>Call Server/Proxy to VPC.</b> The V2 interface is used to request emergency call routing information when the Call Server/Routing Proxy/Redirect Server is a separate element from the VPC.	
<b><i>V3 Interface</i></b>	<b>LIS to VPC (Optional).</b> The V3 interface provides a means for the VPC to obtain the emergency caller's location.	
<b><i>V4 Interface</i></b>	<b>Call Server/Routing Proxy to ESGW.</b> The V4 interface is used to forward the call to the appropriate ESGW.	
<b><i>V5 Interface</i></b>	<b>Call Server to Redirect Server.</b> The V5 interface is defined as a SIP interface to a Redirect Server so it supports a subset of the SIP specification.	
<b><i>V6 Interface</i></b>	<b>Call Server to Routing Proxy.</b> The V6 interface is defined as a SIP interface to a Routing Proxy.	

<i>Term</i>	<i>Definition</i>	<i>N)ew U)pdate</i>
<i>V7 Interface</i>	<p><b>Location Validation Interface.</b> The V7 interface is used by the LIS provider to request validation of a given Civic Location as compared with the MSAG-based data stored in the VDB. A location validation request includes at least the civic location. The response includes an indication of whether or not the Civic Location is a valid address recognized by the MSAG, and may include error/diagnostic information to assist in resolving problems. The interface should be able to support individual location validation requests sent one at a time for validation processing.</p> <p>The V7 interface is a web server that is described by a WSDL (Web Service Description Language). More information can be found at <a href="http://www.nena.org/xml_schemas/nena.htm">http://www.nena.org/xml_schemas/nena.htm</a> under NENA Schemas, Release 4.1, I2, Schemas and WSDLs.</p>	
<i>V8 Interface</i>	<p><b>VPC to ERDB.</b> The V8 interface supports queries from the VPC to the ERDB. The VPC sends location information for the emergency caller to the ERDB to obtain routing information (ESRN), and other information to help in selection of an appropriate ESQK for the call and to support the delivery of call/location information in response to ALI database requests.</p> <p>The V8 interface is a web server that is described by a WSDL (Web Service Description Language). More information can be found at <a href="http://www.nena.org/xml_schemas/nena.htm">http://www.nena.org/xml_schemas/nena.htm</a> under NENA Schemas, Release 4.1, I2, Schemas and WSDLs.</p>	
<i>V9 Interface</i>	<p><b>LIS/VPC to Root Discovery Operator.</b> The V9 interface allows a VEP/LIS or VPC to discover the appropriate VDB/ERDB.</p>	

<i>Term</i>	<i>Definition</i>	<i>N)ew U)pdate</i>
<b><i>Valid Emergency Services Authority (VESA)</i></b>	This organization is the root source of all certificates. It is responsible for identifying and issuing certificates either directly to end using entities or through delegate credential authorities. It is responsible for ensuring that any delegate credential authority that it identifies is properly qualified and operating with sufficient security and legitimacy to perform this role. Where VESA issues certificates directly to end users, it also has the responsibilities of a delegate credential authority in those cases.	
<b><i>Valid XML instance document</i></b>	The instance document satisfies the structural, content type and constraints established by its associated schema (document definition).	
<b><i>Validation Data Base (VDB)</i></b>	The VDB contains information that describes the current, valid civic address space defined by the Emergency Services Network Provider's MSAG. Validation against this database ensures that the address is a real address (i.e., the address exists) but does not ensure that it is the location of the caller.	
<b><i>Validation Data Base (VDB) Operator</i></b>	An operator that provides location information validation services to LIS operators and other users.	
<b><i>Variable Bit Rate non-real Time (VBRnrt)</i></b>	A service where the transmission rate varies over time incorporating the concept of bandwidth on demand.	
<b><i>Variable Bit Rate real-time (VBRrt)</i></b>	A service where the transmission rate varies over time incorporating the concept of bandwidth on demand.	
<b><i>V-E2 Interface</i></b>	<b>VPC to ALI DB.</b> The V-E2 interface uses the E2+ protocol as defined in NENA Standards 05-001[13], with modifications required for support of i2.	
<b><i>Version 4 of the Internet Protocol</i></b>	The transmission of voice as packets of data, using the protocol originally developed for the Internet.	
<b><i>VESA Certificate</i></b>	This is the certification provided by a VESA that clearly identifies the end user is properly qualified and operating with sufficient security and legitimacy to perform its role. Presumably it can be used in a variety of situation including secure web based transactions and exchange of data from one point to another on the network. Generally, the process of checking certification occurs in the background and the end user receives either a pass or a fail.	

<i>Term</i>	<i>Definition</i>	<i>N)ew U)pdate</i>
<b><i>Victim</i></b>	Also known as the trafficked person, trafficking victim or witness – refers to the individual who was subjected to trafficking and is now participating in the criminal justice system as a witness for the government against the trafficker.	
<b><i>Video Interpreter (VI)</i></b>	The third party in a relayed call for Video Relay Services (VRS) using sign language interpreting and/or signed or oral transliteration.	
<b><i>Videophone Remote Interpreting (VRI)</i></b>	An interactive video teleconferencing system that utilizes a Sign Language Interpreter at a call center to interpret between sign language users and non-sign language users through video-conferencing equipment. This differs from VRS in that the hearing and deaf parties can be present in the same room. Additionally, VRI is <b>not</b> regulated or reimbursable by the FCC and costs are incurred by party hiring the VRI service.	
<b><i>Video Relay Service (VRS)</i></b>	A service provided by common carriers and other vendors that provides third party communication relay between video telephone users using Internet connections and videophone or webcam and voice telephone users. Such services are located in call centers around the country.	
<b><i>Virtual Circuit (VC)</i></b>	A packet-based communications link between two devices that emulates a dedicated physical circuit.	
<b><i>Virtual Circuit Identifier (VCI)</i></b>	Part of the addressing information used in an ATM frame that identifies a particular virtual path.	
<b><i>Virtual Facility Group (VFG)</i></b>	One or more trunks terminated at the same two points and used internally within a switch. When referred to as E9-1-1VFG, it relates to the E9-1-1 Control Office switch. (From 03-007)	
<b><i>Virtual LAN (VLAN)</i></b>	A logical grouping of ports and endpoints such that all ports and endpoints in the VLAN appear to be on the same physical (or extended) LAN segment even though they may be geographically separated.	

<b><i>Term</i></b>	<b><i>Definition</i></b>	<b><i>N)ew U)pdate</i></b>
<b><i>Virtual Office, Virtual PSAP</i></b>	A fully functional worksite that is not bound to a specific location but is portable and scalable, connecting employees to the work process in the most advantageous setting, rather than employees having to come to a central office to connect to the work process.	
<b><i>Virtual Path Identifier (VPI)</i></b>	Part of the addressing information used in an ATM frame that identifies a particular virtual path.	
<b><i>Virtual Private Network (VPN)</i></b>	A virtual private network (VPN) is a network that uses a public telecommunication infrastructure, such as the Internet, to provide remote offices or individual users with secure access to their organization's network	
<b><i>Virtual Worker, Virtual Workforce</i></b>	Employees who consistently work at home or at a remote location with no designated work space or equipment provided at a central office.	
<b><i>Voice Carry Over (VCO)</i></b>	A method which utilizes both voice and text communications on the same call, allowing a person who is hearing impaired to speak directly to the other party and receive response via a TTY or other means for text communications.	
<b><i>Voice over Asynchronous Transfer Mode (VoATM)</i></b>	A technology that has its root in the development of broadband ISDN. It integrates the multiplexing and switching functions and allows communications between devices	
<b><i>Voice over Digital Subscriber Link (VoDSL)</i></b>	Enabling digital voice transmission identical to voice over internet protocol but using digital subscriber services as the transport.	
<b><i>Voice over Frame Relay (VoFR)</i></b>	A high-speed communications technology used to connect voice applications. It is a way of sending information over a wide area network (WAN) that divides the information into frames or packets. Each frame has a label that the network uses to decide the destination of the frame.	
<b><i>Voice over Internet Protocol (VoIP) Positioning Center (VPC)</i></b>	The element that provides routing information to support the routing of VoIP emergency calls, and cooperates in delivering location information to the PSAP over the existing ALI DB infrastructure. The VPC supports access to the routing data in the ERDB.	

<b><i>Term</i></b>	<b><i>Definition</i></b>	<b><i>N)ew U)pdate</i></b>
<b><i>Voice over Internet Protocol (VoIP) Service Provider (VSP)</i></b>	Operates the network service and equipment that provides call processing for Voice over IP subscribers.	
<b><i>Voice over Internet Protocol, Voice over IP (VoIP)</i></b>	Provides distinct packetized voice information in digital format using the Internet Protocol. The IP address assigned to the user's telephone number may be static or dynamic.	
<b><i>Voice over Packet (VoP)</i></b>	Packetized voice communication over a data network.	
<b><i>Voice over the Internet</i></b>	Transmit voice with varying consistency depending on overall traffic and engineering of the Internet circuits.	
<b><i>Voice Service Provider (VSP)</i></b>	Operates the network equipment that provides call processing for Voice over Internet Protocol subscribers.	
<b><i>VoIP Endpoint (VEP)</i></b>	The endpoint IP Device that is used to originate an emergency call.	
<b><i>VoIP Positioning Center (VPC)</i></b>	The VoIP Positioning Center (VPC) is the element that provides routing information to support the routing of VoIP emergency calls, and cooperates in delivering location information to the PSAP over the existing ALI DB infrastructure. The VPC supports access to the routing data in the ERDB.	
<b><i>VPC Operator</i></b>	Operates VPC network element(s).	
<b><i>Web</i></b>	World Wide Web or Internet.	
<b><i>Web service</i></b>	A self-contained, self-describing, modular application that can be published, located, and invoked across the Web. Web services perform functions that can be anything from simple requests to complicated business processes	

<i>Term</i>	<i>Definition</i>	<i>N)ew U)pdate</i>
<b>Web Service Description Language (WSDL)</b>	<p>The Web Services Description Language (WSDL) is an XML-based language used to describe the services a business offers and to provide a way for individuals and other businesses to access those services electronically. WSDL is the cornerstone of the Universal Description, Discovery, and Integration (UDDI) initiative spearheaded by Microsoft, IBM, and ARIBA. UDDI is an XML-based registry for businesses worldwide, which enables businesses to list themselves and their services on the Internet. WSDL is the language used to do this.</p> <p>WSDL is derived from Microsoft’s Simple Object Access Protocol (SOAP) and IBM’s Network Accessible Service Specification Language (NASSL). WSDL replaces both NASSL and SOAP as the means of expressing business services in the UDDI registry.</p>	
<b>Well-formed XML instance document</b>	The instance document satisfies XML syntax rules	
<b>Wide Area Network (WAN)</b>	Network using common carrier-provided lines that covers and extended geographical area.	
<b>Wireless</b>	Means any Commercial Mobile Radio Service (CMRS) that falls under the FCC’s Docket 94-102 requirement for wireless enhanced 9-1-1 service.	
<b>Wireless Access Point (WAP)</b>	<p><a href="http://en.wikipedia.org/wiki/Wireless_access_point">http://en.wikipedia.org/wiki/Wireless_access_point</a>, provides the following definition: “In <u>computer networking</u>, a <b>wireless access point (WAP or AP)</b> is a device that connects wireless communication devices together to form a <u>wireless network</u>. The WAP usually connects to a <u>wired network</u>, and can relay data between wireless devices and wired devices. Several WAPs can link together to form a larger network that allows “<u>roaming</u>”. (In contrast, a network where the client devices manage themselves – without the need for any access points – becomes an <u>ad-hoc network</u>.) Wireless access points have IP addresses for configuration.”</p> <p>Refer also to <a href="http://www.ieee802.org/11/">http://www.ieee802.org/11/</a></p>	
<b>Wireless Fidelity (WiFi)</b>	A common name for IEEE 802.11 wireless broadband access networks.	

<b><i>Term</i></b>	<b><i>Definition</i></b>	<b><i>N)ew U)pdate</i></b>
<b><i>Wireless Local Loop</i></b>	A “local loop” is a telephone company’s distribution of PSTN connectivity to end users within a small (e.g., less than one square mile) geographic area. When that connectivity is done via two-way radio transmission that is a “wireless local loop”.	
<b><i>Wireless Network Controller (WNC)</i></b>	A wireless network controller manages a group of wireless access points in a wireless LAN. In this type of network the wireless network controller is able to control wireless access point hand-overs to improve the overall performance of the network.	
<b><i>Wireless Phase I</i></b>	Required by FCC Report and Order 96-264 pursuant to Notice of Proposed Rulemaking (NPRM) 94-102. The delivery of a wireless 9-1-1 call with callback number and identification of the cell-tower from which the call originated. Call routing is usually determined by cell-sector.	
<b><i>Wireless Phase II</i></b>	Required by FCC Report and Order 96-264 pursuant to Notice of Proposed Rulemaking (NPRM) 94-102. The delivery of a wireless 9-1-1 call with Phase I requirements plus location of the caller within 125 meters 67% of the time and Selective Routing based upon those coordinates. Subsequent FCC rulings have redefined the accuracy requirements.	
<b><i>Wireless Service Provider (WSP)</i></b>	Cellular, satellite or other radio based telephony or data transport commercial entity.	
<b><i>Wireless Telecommunications</i></b>	The family of Telecommunications services under the heading of Commercial Mobile Radio Service. Includes Cellular, Personal Communications Services (PCS), Mobile Satellite Services (MSS) and Enhanced Specialized Mobile Radio (ESMR).	
<b><i>Withdrawn</i></b>	Date and time stamp a request is cancelled by the originator.	
<b><i>Working Group (WG)</i></b>	A group of people formed to discuss and develop a response to a particular issue. The response may result in a Standard, an Information Document, Technical Requirements Document or Liaison	

<i>Term</i>	<i>Definition</i>	<i>N)ew U)pdate</i>
<b>Workspace</b>	The physical building area where work is normally performed. This is a net square footage measurement which includes hallways, conference rooms, rest rooms, and break rooms but does not include wall thickness, shafts, heating/ventilating/air conditioning equipment spaces, mechanical/electrical spaces or similar areas where employees do not normally have acc	
<b>Worldwide Interoperability for Microwave Access (WiMAX)</b>	A brand name and a certification mark for IEEE 802.16 compliant products.	
<b>World Wide Web (WWW)</b>	The public internet.	
<b>XSD Profile</b>	A profile of SPML-based provisioning describing the use of XML and an XSD as a data model.	
<b>eXtensible Markup Language (XML)</b>	An internet specification for web documents that enables tags to be used that provide functionality beyond that in Hyper Text Markup Language (HTML). Its reference is its ability to allow information of indeterminate length to be transmitted to a PSAP call taker or dispatcher versus the current restriction that requires information to fit the parameters of pre-defined fields.	
<b>eXtensible Markup Language (XML) instance document</b>	An XML document that conforms to a given schema, as a specific instance of that schema.	
<b>eXtensible Markup Language (XML) Schema</b>	The formal document definition (structure, content type and constraints) describing a class of XML instance documents. There are various XML schema languages, but in this document, all schemas are assumed to be defined using the W3C XML Schema definition language [5].	
<b>X,y</b>	Shorthand expression for coordinates that identify a specific location in two dimensions representing latitude and longitude.	
<b>X.25</b>	Defined network layer protocol that is used in packet-data switching to establish, maintain, and clear virtual circuit connections between an ISDN terminal and a destination in the packet-switched network	

### 3 Acronyms

<i>Acronym</i>	<i>Definition</i>	<i>N)ew U)date</i>
<b>3GPP</b>	3 <sup>RD</sup> Generation Partner Project	
<b>3GPP2</b>	3 <sup>rd</sup> Generation Partnership Project 2	
<b>A&amp;E</b>	Architectural and Engineering	
<b>AAA</b>	Authorization, Admission and Accounting	N
<b>AAR</b>	Association of American Railroads	
<b>ABNF</b>	Augmented Backus-Naur Form	N
<b>ACB</b>	All Circuits Busy	
<b>ACCDEN</b>	Access Denied	
<b>ACD</b>	Automatic Call Distribution, Automatic Call Distributor	
<b>ACK</b>	Acknowledgement	N
<b>ACM</b>	Address Complete Message	N
<b>ACN</b>	Automatic Collision Notification	
<b>ADA</b>	Americans with Disabilities Act	
<b>ADEA</b>	Age Discrimination in Employment Act	
<b>ADSL</b>	Asymmetrical Digital Subscriber Line	
<b>AEAN</b>	Alternate Emergency Access Number	
<b>AES</b>	Advanced Encryption Standard	
<b>AHJ</b>	Authority Having Jurisdiction	
<b>AIP</b>	Access Infrastructure Provider	
<b>ALE</b>	Access Location Entity	
<b>ALEC</b>	Alternate Local Exchange Carrier	
<b>ALI</b>	Automatic Location Identification	
<b>ALI DB</b>	Automatic Location Identification Database	
<b>AMPS</b>	Advanced Mobile Phone Service	
<b>AMR</b>	Adaptive Multi Rate (codec)	N
<b>AMR-WB</b>	Adaptive Multi Rate (codec) – Wide Band	N
<b>ANI</b>	Automatic Number Identification	
<b>ANI/ALI</b>	Automatic Number Identification/Automatic Location Identification	
<b>ANS</b>	American National Standard	
<b>ANSI</b>	American National Standards Institute	
<b>AOA</b>	Angle of Arrival	
<b>AoR</b>	Address of Record	
<b>APCO</b>	Association of Public Safety Communications Officials	
<b>API</b>	Application Programming Interface	
<b>APU</b>	Answering Position Unit	
<b>AQS</b>	NENA ALI Query Service	
<b>AQSI</b>	ALI Query Services Interface	
<b>ARES</b>	Amateur Radio Emergency Service	

<b>ARIB</b>	Association of Radio Industries and Businesses	
<b>ARP</b>	Address resolution Protocol	
<b>ASCII</b>	American Standard Code for Information Exchange	
<b>ASL</b>	American Sign Language	
<b>ASLARRA</b>	American Short Line and Regional Railroad Association	
<b>ASP</b>	Application Service Provider	
<b>ASRR</b>	Average Sector Radius Range	
<b>ATA</b>	Analog Terminal Adapter	
<b>ATIS</b>	Alliance for Telecommunications Industry Solutions	
<b>ATIS-ESIF</b>	Alliance for Telecommunications Industry Solutions – Emergency Services Interconnection Forum	N
<b>ATM</b>	Asynchronous Transfer Mode	
<b>AVL</b>	Automatic Vehicle Location	
<b>B2BUA</b>	Back to Back User Agent	
<b>BASK</b>	Binary Amplitude Shift Key	
<b>BCD</b>	Binary Coded Decimal	
<b>BCF</b>	Border Control Function	
<b>BellCore</b>	Bell Communications Research	
<b>BISACS</b>	Building Information Services and Control System	N
<b>BLI</b>	Busy Line Interrupt	
<b>BLV</b>	Busy Line Verification	
<b>BOC</b>	Bell Operating Company	
<b>BOOTP</b>	Bootstrap Protocol	
<b>BP</b>	Best Practice	
<b>BPL</b>	Broadband Over Power Lines	
<b>BRAS</b>	Broadband Remote Access Server	
<b>BRI</b>	Basic Rate Interface	
<b>BTS</b>	Bureau of Transportation Statistics	
<b>BUI</b>	Building Unit Identifier	
<b>C-TAG</b>	The innermost VLAN tag as defined in IEEE 802.1ad	
<b>CA</b>	Communications Assistant, Certificate Authority	U
<b>CAD</b>	Computer Aided Dispatch	
<b>CAMA</b>	Centralized Automatic Message Accounting	
<b>CAP</b>	Competitive Access Provider, Common Alerting Protocol	U
<b>CART</b>	Child Abduction Response Team	
<b>CAS</b>	Call-path Associated Signaling, Channel Associated Signaling	
<b>CBA</b>	Cost Benefits Analysis	
<b>CBN</b>	Call Back Number	
<b>CBR</b>	Constant Bit Rate	
<b>CCA</b>	Cost Comparison Analysis	
<b>CCH</b>	Computerized Criminal History	
<b>CCS</b>	Common Channel Signaling or Hundred Call Seconds	

<b>CCSA</b>	China Communications Standards Association	
<b>CCS7</b>	Common Channel Signaling 7	
<b>CDE</b>	Continuing Dispatch Education	N
<b>CDMA</b>	Code Division Multiple Access	
<b>CdPN</b>	Called Party Number	
<b>CDR</b>	Call Detail Record	
<b>CERT</b>	Community Emergency Response Team	N
<b>CFS</b>	Consolidated Firearms System	
<b>CGI</b>	Common Gateway Interface	
<b>CGL</b>	Calling Geodetic Location Parameter	
<b>CgPN</b>	Calling Party Number	
<b>CHGN</b>	Charge Number Parameter	
<b>CID</b>	Company Identification/Identifier	
<b>cid</b>	Content Indirection	N
<b>CIDB</b>	Call Information Database	N
<b>CIF</b>	Critical Issues Forum	
<b>CII</b>	Criminal Identification and Investigation	
<b>CISC</b>	Canadian Radio-Television and Telecommunications Commission Interconnection Steering Committee	
<b>CJIC</b>	Criminal Justice Information System	
<b>CLEC</b>	Competitive Local Exchange Carrier or Certified Local Exchange Carrier	
<b>CLID</b>	Calling Line Identification	
<b>CLLI</b>	Common Language Location Identifier	
<b>CMRS</b>	Commercial Mobile Radio Service	
<b>CMTS</b>	Cable Modem Termination System	
<b>CO</b>	Central Office	
<b>CODEc</b>	Coder/EDCoder or Compression/DECompression	
<b>COG</b>	Council of Government	
<b>COLT</b>	Cell on Light Truck	
<b>CONUS</b>	Continental United States	
<b>COOP</b>	Continuity of Operations Plan	N
<b>CoS</b>	Class of Service	
<b>COW</b>	Cell on Wheels	
<b>CPAS</b>	Cellular Priority Access Service	
<b>CpCAT</b>	Calling Party CATegory	
<b>CPE</b>	Customer Premise Equipment	
<b>CPN</b>	Calling Party Number Parameter	
<b>CPU</b>	Central Processing Unit	
<b>CRDB</b>	Coordinate Routing Data Base	
<b>CRL</b>	Certificate Revocation List	
<b>CRM</b>	Committee Resource Manager	
<b>CRN</b>	Contingency Routing Number	

<b><i>CRT</i></b>	Cathode Ray Tube	
<b><i>CRTC</i></b>	Canadian Radio-television and Telecommunications Commission	
<b><i>CS</i></b>	Circuit Switched	N
<b><i>CSCF</i></b>	Call Session Control Function	
<b><i>CSP</i></b>	Communications Services Provider	
<b><i>CTI</i></b>	Computer Telephone Integration	
<b><i>CTIA</i></b>	Cellular Telephone Industry Association	
<b><i>CTX-IP</i></b>	Centrex-based Internet Protocol	
<b><i>CW</i></b>	Call Waiting	
<b><i>dB</i></b>	Decibels	
<b><i>DB</i></b>	Deaf-Blind	
<b><i>DBMS</i></b>	Data Base Management System	
<b><i>DBMSP</i></b>	Data base Management System Provider	
<b><i>DCE</i></b>	Data Communications Equipment	
<b><i>DHCP</i></b>	Dynamic Host Control Protocol (i2) Dynamic Host Configuration Protocol	
<b><i>DHHS</i></b>	United States Department of Health and Human Services	
<b><i>DHS</i></b>	United States Department of Homeland Security	
<b><i>DID</i></b>	Direct Inward Dialing	
<b><i>DMS</i></b>	Data Management System	
<b><i>dMSID</i></b>	Default Mobile Station Identity	
<b><i>DMST</i></b>	Domestic Minor Sex Trafficking	
<b><i>DMT</i></b>	Discrete Multi Tone	
<b><i>DN</i></b>	Directory Number	
<b><i>DNS</i></b>	Domain Name Server (or Service or System)	
<b><i>DOCSIS</i></b>	Data over Cable Service Interface Specification	
<b><i>DoD</i></b>	Department of Defense	
<b><i>DOD</i></b>	Direct Outward Dialing	
<b><i>DOE</i></b>	United States Department of Energy	
<b><i>DOJ</i></b>	United States Department of Justice	
<b><i>DOL</i></b>	United States Department of Labor	
<b><i>DoS</i></b>	Denial of Service	
<b><i>DOS</i></b>	Disk Operating System	
<b><i>DOT</i></b>	Department of Transportation	
<b><i>DP</i></b>	Dial Pulse	
<b><i>DRP</i></b>	Disaster Recovery Plan	
<b><i>DSL</i></b>	Digital Subscriber Line	
<b><i>DSLAM</i></b>	Digital Subscriber Line Access Multiplexer	
<b><i>DSP</i></b>	Digital Signal Processing	
<b><i>DTE</i></b>	Data Terminal Equipment	
<b><i>DTMF</i></b>	Dual Tone Multi-Frequency	
<b><i>DVROS</i></b>	Domestic Violence Restraining Order System	
<b><i>E9-1-1</i></b>	Enhanced 9-1-1	

<b><i>E9-1-1M</i></b>	Mobile E9-1-1, Mobile Emergency Service	
<b><i>EAB</i></b>	Education Advisory Board	
<b><i>EAS</i></b>	Emergency Alert Systems	
<b><i>ECOM</i></b>	Essential Communications During Emergencies	
<b><i>ECR</i></b>	Emergency Call Register	
<b><i>ECRF</i></b>	Emergency Call Routing Function	
<b><i>ecrit</i></b>	Emergency Context Resolution In the Internet	
<b><i>E-CSCF</i></b>	Emergency Call Session Control Function	
<b><i>EDGE</i></b>	Enhanced Data rates for GSM Evolution	
<b><i>EDXL</i></b>	Emergency Data eXchange Language	N
<b><i>EEOC</i></b>	Equal Employment Opportunity Commission	
<b><i>EENA</i></b>	European Emergency Number Association	
<b><i>EFM</i></b>	Ethernet in the First Mile	
<b><i>EIA</i></b>	Electronic Industry Association	
<b><i>EIA RS-232</i></b>	Electronic Industry Alliance Recommended Standard 232 (serial interface)	
<b><i>EISI</i></b>	Emergency Information Services Interface	
<b><i>ELA</i></b>	Emergency Line Access	
<b><i>ELD</i></b>	Electro-Luminescent Display	
<b><i>ELIN</i></b>	Emergency Location Identification Number	
<b><i>ELT</i></b>	English Language Translation	
<b><i>EM</i></b>	Emergency Message	
<b><i>EMD</i></b>	Emergency Medical Dispatcher	N
<b><i>EMS</i></b>	Emergency Medical Service	
<b><i>EMT</i></b>	Emergency Medical Technician	
<b><i>EMTEL</i></b>	Emergency Telecommunications	
<b><i>ENS</i></b>	Emergency Notification Systems	
<b><i>EO</i></b>	End Office	
<b><i>EOC</i></b>	Emergency Operations Center	
<b><i>EPAD</i></b>	Emergency Provider Access Directory	
<b><i>EPRM</i></b>	Erasable Programmable Read-Only Memory	
<b><i>EPZ</i></b>	Emergency Planning Zone	
<b><i>ERDB</i></b>	Emergency Services Zone Routing Database	
<b><i>ERL</i></b>	Emergency Response Location	
<b><i>ES</i></b>	Emergency Service	
<b><i>ESA</i></b>	Emergency Stand Alone	
<b><i>ESC</i></b>	Emergency Services Call	
<b><i>ESCO</i></b>	Emergency Service Central Office	
<b><i>ESGW</i></b>	Emergency Services Gateway	
<b><i>ESIF</i></b>	Emergency Services Interconnection Forum	
<b><i>ESInet</i></b>	Emergency Services IP Network	
<b><i>ESME</i></b>	Emergency Services Message Entity	

<b>ESMI</b>	Emergency Services Messaging Interface	
<b>ESMR</b>	Enhanced Specialized Mobile Radio	
<b>ESN</b>	Emergency Service Number, Electronic Serial Number, Emergency Service Network	
<b>ESNE</b>	Emergency Services Network Entity/Element	
<b>ESNet</b>	Emergency Services Network	
<b>ESNI</b>	Emergency Services Network Interfaces	
<b>ESQK</b>	Emergency Services Query Key	
<b>ESP</b>	Emergency Services Provider, or Emergency Services Protocol	
<b>ESRD</b>	Emergency Services Routing Digit	
<b>ESRI</b>	Environmental Services Research Incorporated	
<b>ESRK</b>	Emergency Services Routing Key	
<b>ESRN</b>	Emergency Services Routing Number/Name	
<b>ESRP</b>	Emergency Services Routing Proxy	
<b>ESZ</b>	Emergency Services Zone (same as ESN)	
<b>ETA</b>	Estimated Time of Arrival	
<b>ETB</b>	Emergency Transport Backup	
<b>ETNS</b>	Emergency Telephone Notification System	
<b>ETSI</b>	European Telecommunications Standards Institute	
<b>EUMI</b>	End User Move Indicator	
<b>EVRC</b>	Enhanced Variable Rate Narrowband Codec	N
<b>EVRC-WB</b>	Enhanced Variable Rate Wideband Codec	N
<b>FAA</b>	Federal Aviation Administration	
<b>FAQ</b>	Frequently Asked Questions	
<b>FBI</b>	Federal Bureau of Investigation	
<b>FCC</b>	Federal Communications Commission	
<b>FDD</b>	Frequency Division Duplex	
<b>FDDI</b>	Fiber Optic interface	
<b>FE</b>	Functional Entity	
<b>FG-D</b>	Feature Group D	
<b>FGDC</b>	Federal Geographic Data Committee	
<b>FHA</b>	United States Federal Highway Administration	
<b>FLSA</b>	Fair Labor Standards Act	
<b>FMLA</b>	Family and Medical Leave Act	
<b>FOC</b>	Function of Change	
<b>FQDN</b>	Fully Qualified Domain Name	
<b>FRA</b>	United States Federal Railway Administration	
<b>FTP</b>	File Transfer Protocol	
<b>FTTA</b>	Fiber To The Access	
<b>FTHH</b>	Fiber To The Home	
<b>FTTP</b>	Fiber To The Premises	
<b>FX</b>	Foreign Exchange	

<b>GA</b>	Go ahead	
<b>GAP</b>	Global Address Parameter	
<b>GA SK</b>	Go Ahead Stop Keying (Go Ahead or Ready to Hang Up)	
<b>GDP</b>	Generic Digit Parameter	
<b>geopriv</b>	Geolocation and Privacy	
<b>GeoRSS</b>	Geodetic Really Simple Syndication	N
<b>Geoshape</b>	Geodetic Shape	N
<b>GETS</b>	Government Emergency Telecommunications Service	
<b>GHC911</b>	Greater Harris County 9-1-1 Network	
<b>GIS</b>	Geographic Information Systems	
<b>GML</b>	Geographic Markup Language	
<b>GMLC</b>	Gateway Mobile Location Center (MLC)	
<b>GMT</b>	Greenwich Mean Time	
<b>GNP</b>	Geographic Number Portability	
<b>GOS</b>	Grade of Service	
<b>GPOSDIR</b>	GeoPositionDirective INVOKE (see JSTD-036)	
<b>Gposdir</b>	GeoPositionDirective RETURN RESULT (see JSTD-036)	
<b>GPOSREQ</b>	GeoPositionRequest INVOKE (see JSTD-036)	
<b>gposreq</b>	GeoPositionRequest RETURN RESULT (see JSTD-036)	
<b>GPRS</b>	General Packet Radio Service	
<b>GPS</b>	Global Positioning System	
<b>GR-2945</b>	Telcordia Year 2000: Systems and Interfaces General Requirements Document	
<b>GSM</b>	Global Standard for Mobile Communication	
<b>GUID</b>	Globally Unique Identifier	
<b>HCO</b>	Hearing Carry Over	
<b>HELD</b>	HTTP-Enabled Location Delivery protocol	
<b>HFC</b>	Hybrid Fiber Coax	
<b>HDSL</b>	High bit rate Digital Subscriber Line	
<b>HDTV</b>	High-Definition Television	
<b>HID</b>	Hardware Identity	
<b>HIPAA</b>	Health Insurance Portability and Accountability Act	
<b>HLR</b>	Home Location Register (see ANSI-41)	
<b>HOH</b>	Hard of Hearing	
<b>HRRC</b>	Houston Rescue and Restore Coalition	
<b>HSPD</b>	Homeland Security Presidential Directive	
<b>HSS</b>	Home Subscriber Server	
<b>HTML</b>	Hyper Text Markup Language	
<b>HTRA</b>	Human Trafficking Rescue Alliance	
<b>HTTP</b>	Hyper Text Transfer Protocol	
<b>HVAC</b>	Heating Ventilation and Air Conditioning	
<b>Hz</b>	Hertz	

<b><i>i2</i></b>	NENA 08-001 Interim VoIP Architecture for Enhanced 9-1-1 Services (i2)	
<b><i>IAB</i></b>	Internet Architecture Board	
<b><i>IAD</i></b>	Integrated Access Device	
<b><i>IAM</i></b>	Initial Address Message	
<b><i>IANA</i></b>	Internet Assigned Numbers Authority	
<b><i>ICANN</i></b>	Internet Corporation Assigned Names and Numbers	
<b><i>ICE</i></b>	Immigration Customs Enforcement	
<b><i>ICO</i></b>	National 9-1-1 Implementation and Coordination Office	
<b><i>ICR/IRR</i></b>	Instant Call Recorder/Instant Recall Recorder	
<b><i>ICS</i></b>	Incident Command System	
<b><i>ID</i></b>	Identified	
<b><i>IDP</i></b>	Identity Provider	N
<b><i>IEEE</i></b>	Institute of Electrical and Electronics Engineers	
<b><i>IESG</i></b>	Internet Engineering Steering Group	
<b><i>IETF</i></b>	Internet Engineering Task Force	
<b><i>IID</i></b>	Incident Identification	
<b><i>ILEC</i></b>	Incumbent Local Exchange Carrier	
<b><i>IM</i></b>	Instant Messaging	
<b><i>IMEI</i></b>	International Mobile Equipment Identity	
<b><i>IMS</i></b>	IP Multimedia Subsystem	
<b><i>IMSI</i></b>	International Mobile Station Identity	
<b><i>IMTC</i></b>	International Multimedia Teleconferencing Consortium	
<b><i>IN</i></b>	Intelligent Network	
<b><i>INP</i></b>	Interim Number Portability	
<b><i>IP</i></b>	Internet Protocol	
<b><i>IPBX (or IP-PBX)</i></b>	Internet Protocol Private Branch Exchange	
<b><i>IP-CAN</i></b>	IP Connectivity Access Network	
<b><i>IP-COAD</i></b>	Internet Protocol-Coordination Ad-Hoc Committee	
<b><i>IPI</i></b>	Imagery and Geospatial Plans and Policy Branch	
<b><i>ipm</i></b>	Interrupts per minute	
<b><i>IpoE</i></b>	Internet Protocol over Ethernet	
<b><i>IP PSAP</i></b>	Internet Protocol Public Safety Answering Point	
<b><i>IP Relay</i></b>	Internet Protocol Relay	
<b><i>IPSec</i></b>	Internet Protocol Security	
<b><i>Ipv4</i></b>	Version 4 of the Internet Protocol	
<b><i>IRIG</i></b>	Inter-Range Instrumentation Group	
<b><i>ISDL</i></b>	ISDN Digital Subscriber Line	
<b><i>ISDN</i></b>	Integrated Services Digital Network	
<b><i>ISOC</i></b>	Internet Society	
<b><i>ISP</i></b>	Internet Service Provider	
<b><i>ISUP</i></b>	Integrated Services Digital Network User Part	

<b>ITS</b>	Intelligent Transportation System	
<b>ITSP</b>	Internet Telephone Service Provider	
<b>ITU</b>	International Telecommunications Union	
<b>ITU-D</b>	International Telecommunications Union – Development	
<b>ITU-R</b>	International Telecommunications Union – Radiocommunications	
<b>ITU-T</b>	International Telecommunications Union – Telecommunications	
<b>IVR</b>	Interactive Voice Response	
<b>IWS</b>	Intelligent Workstation	
<b>J CM</b>	Joint Committee Meeting	
<b>KP</b>	Key Pulse	
<b>KSU</b>	Key Service Unit	
<b>KTS</b>	Key Telephone System	
<b>KTU</b>	Key Telephone Unit	
<b>LAENS</b>	Large Area Emergency Notification System	
<b>L2TP</b>	Layer-2 Tunneling Protocol	
<b>LAN</b>	Local Area Network	
<b>LATA</b>	Local Access and Transport Area	
<b>LCD</b>	Liquid Crystal Display	
<b>LCR</b>	Least Cost Routing	
<b>LDAP</b>	Lightweight Directory Access Protocol	
<b>LDT</b>	Location Determination Technology or Line Digital to Trunk	
<b>LEC</b>	Local Exchange Carrier	
<b>LED</b>	Light Emitting Diode	
<b>LERG</b>	Local Exchange Routing Guide	
<b>LIE</b>	Location Information Element	
<b>LIF</b>	Location Interwork Function	N
<b>LIS</b>	Location Information Server	
<b>LIS-ID</b>	Location Information Server Identifier	
<b>LK</b>	Location Key	
<b>LLDP-MED</b>	Link Layer Discovery Protocol Media Endpoint Discovery	
<b>LNP</b>	Local Number Portability	
<b>LO</b>	Location Object	
<b>LOCREQ</b>	Location Request	
<b>LoST</b>	Location to Service Translation	
<b>LPN</b>	Local Public Safety Number	
<b>LRF</b>	Location Retrieval Function	
<b>LRO</b>	Last Routing Option	
<b>LSMS</b>	Local Service Management System	
<b>LSO</b>	Local Serving Office	
<b>LSP</b>	Local Service Provider	
<b>LSR</b>	Local Service Request	

<b>LSSGR</b>	LATA Switching Systems Generic Requirements	
<b>LTD</b>	Long Term Definition	
<b>LVF</b>	Location Validation Function	
<b>MapInfo</b>	Mobile Information (see JSTD-036) (MapInfo is a trademark registered name!)	
<b>MCC</b>	Mobile Competence Centre	
<b>MDC</b>	Mobile Data Communications	
<b>MDF</b>	Main Distribution Frame	
<b>MDN</b>	Mobile Directory Number	
<b>MDT</b>	Mobile Data Terminal	
<b>MEC</b>	Missing and Exploited Children	
<b>MEID</b>	Mobile Equipment Identity	
<b>MEP</b>	Message Exchange Pattern	
<b>MF</b>	Multi-Frequency	
<b>MGCP</b>	Media Gateway Control Protocol	
<b>MIB</b>	Management Information Base	N
<b>MIN</b>	Mobile Identified Number, Mobile Identification Number	
<b>MLP</b>	Mobile Location Protocol	
<b>MIS</b>	Management Information System	
<b>MLTS</b>	Multi-Line Telephone System	
<b>MMTA</b>	MultiMedia Telecommunications Association	
<b>MOA</b>	Memorandum of Agreement	
<b>MOU</b>	Memorandum of Understanding	
<b>MP</b>	Mobile Phone	
<b>MPC</b>	Mobile Positioning Center	
<b>MPCAP</b>	Mobile Positioning Capability (see JSTD-036)	
<b>MPLS</b>	Multi-Protocol Label Switching	
<b>MPOA</b>	Multi-Protocol Over ATM	
<b>ms</b>	Milliseconds	
<b>MS</b>	Mobile Station	
<b>MSA</b>	Metropolitan Statistical Area	
<b>MSC</b>	Mobile Switching Center	
<b>MSAG</b>	Master Street Address Guide	
<b>MSC</b>	Mobile Switching Center	
<b>MSID</b>	Mobile Station Identity	
<b>MSISDN</b>	Mobile Station ISDN Number	
<b>MSO</b>	Mobile Switching Office	
<b>MSRN</b>	Mobile Station Routing Number	
<b>MSRP</b>	Message Session Relay Protocol	N
<b>MSS</b>	Mobile Satellite Services	
<b>MTA</b>	Multimedia Terminal Adapter	
<b>MTID</b>	Mobile Terminal Identity	

<b><i>MTP</i></b>	Message Transfer Point	
<b><i>MTSO</i></b>	Mobile Telephone Switching Office	
<b><i>NAD83</i></b>	North American Datum 83	
<b><i>NAED</i></b>	National Academies of Emergency Dispatch	
<b><i>NAI</i></b>	Network Access Identifier	
<b><i>NANP</i></b>	North American Numbering Plan	
<b><i>NANPA</i></b>	North American Numbering Plan Administration	
<b><i>NARUC</i></b>	National Association of Regulatory Utility Commissioners	
<b><i>NAS</i></b>	Network Access Server	
<b><i>NASAR</i></b>	National Association of Search and Rescue	
<b><i>NASNA</i></b>	National Association of State 9-1-1 Administrators	
<b><i>NAT</i></b>	Network Address Translation	
<b><i>NBMA</i></b>	Non-Broadcast Multiple Access	
<b><i>NCAS</i></b>	Non Call-path Associated Signaling	
<b><i>NCIC</i></b>	National Crime Enforcement Center, National Crime Information Center	
<b><i>NCMEC</i></b>	National Center for Missing and Exploited Children	
<b><i>NECA</i></b>	National Exchange Carrier Association	
<b><i>NENA</i></b>	National Emergency Number Association	
<b><i>NFPA</i></b>	National Fire Protection Association	
<b><i>NGA</i></b>	United States National Geospatial Intelligence Agency	
<b><i>NG9-1-1</i></b>	Next Generation 9-1-1	
<b><i>NGES</i></b>	Next Generation Emergency Services	
<b><i>NGESN</i></b>	Next Generation Emergency Services Network	
<b><i>NGN</i></b>	Next Generation Network	
<b><i>NGO</i></b>	Non-Governmental Organization	
<b><i>NHTRC</i></b>	National Human Trafficking Resource Hotline	
<b><i>NHTSA</i></b>	National Highway Traffic Safety Administration, United States Department of Transportation	
<b><i>NID</i></b>	Network Interface Device	
<b><i>NIF</i></b>	NG9-1-1 Specific Interwork Function	N
<b><i>NIMS</i></b>	National Incident Management System	
<b><i>NIP</i></b>	NYNEX Information Publication	
<b><i>NIS</i></b>	Not In Service	
<b><i>NIST</i></b>	National Institute of Standards and Technology	
<b><i>NLSI</i></b>	National Lighting Safety Institute	N
<b><i>NMC</i></b>	9-1-1 Malicious Content	N
<b><i>NNSA</i></b>	United States National Nuclear Security Administration	
<b><i>NOCC</i></b>	Network Operations Control Center (for wireless carriers)	
<b><i>NORAD</i></b>	North American Aerospace Defense Command	
<b><i>NPA</i></b>	Numbering Plan Area	
<b><i>NPAC</i></b>	Number Portability/Pooling Administration Center	
<b><i>NPD</i></b>	Numbering Plan Digit	

<b><i>NPRM</i></b>	Notice of Proposed Rulemaking	
<b><i>NRC</i></b>	National Reliability Council	
<b><i>NRIC</i></b>	Network Reliability and Interoperability Council	
<b><i>NRF</i></b>	No Record Found	
<b><i>NRS</i></b>	NENA Registry System	
<b><i>NRTL</i></b>	National Recognized Testing Laboratory	
<b><i>NSI</i></b>	Non-Service Initialized (as in phones)	
<b><i>NSP</i></b>	Network Service Provider	
<b><i>NTIA</i></b>	National Telecommunications and Information Administration, United States Department of Commerce	
<b><i>NTP</i></b>	Network Time Protocol	
<b><i>NTSB</i></b>	United States National Transportation Safety Board	
<b><i>NXX</i></b>	Telephone Numbering Code for Exchange Code or Telephone exchange code	
<b><i>OASIS</i></b>	Organization for the Advancement of Structured Information Standards	
<b><i>OCN</i></b>	Operating Company Number	
<b><i>ODC</i></b>	Operations Development Conference	
<b><i>OEM</i></b>	Original Equipment Manufacturer	
<b><i>OID</i></b>	Operations Information Document	
<b><i>OGC</i></b>	Open Geospatial Consortium	N
<b><i>OLI</i></b>	Originating Line Identification parameter	
<b><i>OMA</i></b>	Open Mobile Alliance	
<b><i>ORD</i></b>	Operations Requirement Document	N
<b><i>ORR</i></b>	Office of Refugee and Resettlement	
<b><i>ORREQ</i></b>	Origination Request Invoke (see JSTD-036)	
<b><i>Orreq</i></b>	Origination Request RETURN RESULT (see JSTD-036)	
<b><i>OSI</i></b>	Open Systems Interconnection	
<b><i>OST</i></b>	United States Office of Secure Transportation	
<b><i>P.01</i></b>	Probability of one (1) call in one (100) hundred calls being blocked	
<b><i>PAI</i></b>	P-Asserted-Identity	N
<b><i>pALI</i></b>	Pseudo Automatic Location Identification	
<b><i>PAM</i></b>	PSAP to ALI Message specification	
<b><i>PAN</i></b>	Personal Area Network	
<b><i>PAP</i></b>	Prohibited Armed Persons	
<b><i>pANI</i></b>	Pseudo Automatic Number Identification	
<b><i>PAS</i></b>	Priority Access Service	
<b><i>PBX</i></b>	Private Branch Exchange	
<b><i>PCA</i></b>	PSAP Credentialing Agency	
<b><i>P-CBN</i></b>	PSAP Call Back Number	
<b><i>PCIA</i></b>	Personal Communications Industry Association	
<b><i>PCS</i></b>	Personal Communications Service	
<b><i>PCSC</i></b>	Personal Communications Switching Center	

<b><i>P-CSCF</i></b>	Proxy Call Session Control Function	
<b><i>PDA</i></b>	Personal Digital Assistant	
<b><i>PDE</i></b>	Position Determining Entity	
<b><i>PDOP</i></b>	Position Dilution of Precision	
<b><i>Pesn</i></b>	Pseudo Electronic Serial Number	
<b><i>PGID</i></b>	Paging Identity	
<b><i>PHB</i></b>	Per Hop Behaviors	N
<b><i>PIDF</i></b>	Presence Information Data Format	
<b><i>PIDF-LO</i></b>	Presence Information Data Format – Location Objects	
<b><i>PIF</i></b>	Protocol Interworking Function	N
<b><i>PIO</i></b>	Public Information Office	
<b><i>PKI</i></b>	Public Key Infrastructure	
<b><i>PMI</i></b>	Project Management Institute	
<b><i>PMP</i></b>	Project Management Professional	
<b><i>POC</i></b>	Point of Contact	
<b><i>PON</i></b>	Passive Optical Network	
<b><i>POS</i></b>	Packet Over SONET	
<b><i>PPP</i></b>	Point-to-Point Protocol	
<b><i>PPPoA</i></b>	Point-to-Point Protocol over ATM	
<b><i>PPPoE</i></b>	Point-to-Point Protocol over Ethernet	
<b><i>PRF</i></b>	Policy Routing Function	
<b><i>PRI</i></b>	Primary Rate Interface/ISDN	
<b><i>PSA</i></b>	Public Safety Agency, Public Service Announcement	
<b><i>PSALI</i></b>	Private Switch ALI	
<b><i>PSAP</i></b>	Public Safety Answering Point or Primary Public Safety Answering Point	
<b><i>PSAP-ECR</i></b>	Public Safety Answering Point – Emergency Call Register	
<b><i>PSO</i></b>	Provisioning Service Object	N
<b><i>PSQM</i></b>	Perceptual Speech Quality Measurements	
<b><i>PSP</i></b>	Provisioning Service Provider	N
<b><i>PSTN</i></b>	Public Switched Telephone Network	
<b><i>PTSC</i></b>	Packet Technologies and Services Committee (ATIS Standards Committees)	
<b><i>PUC</i></b>	Public Utility Commission	
<b><i>PVC</i></b>	Permanent Virtual Circuit	
<b><i>Q or QQ</i></b>	Indicates a question	
<b><i>QoS</i></b>	Quality of Service	
<b><i>RA</i></b>	Requesting Authority	N
<b><i>RACES</i></b>	Radio Amateur Civil Emergency Service	
<b><i>RADIUS</i></b>	Remote Authentication Dial-In User Service	
<b><i>RANP</i></b>	Regional Access Network Provider	
<b><i>RAS</i></b>	Remote Access Server	
<b><i>RBAC</i></b>	Role Based Access Control profile	

<b>RCC</b>	Remote Call Center or Rate Center Consolidation	
<b>RDF</b>	Routing Determination Function	
<b>RDO</b>	Root Discovery Operator	
<b>REL</b>	Release (message)	N
<b>REST</b>	Representational State Transfer	
<b>RF</b>	Radio Frequency	
<b>RFC</b>	Request for Comments	
<b>RFI</b>	Request for Information	
<b>RFP</b>	Request for Proposal	
<b>RFQ</b>	Request for Quote	
<b>RG</b>	Response Gateway, Routing Gateway	
<b>RLC</b>	Release Complete (message)	N
<b>RMS</b>	Records Management System	
<b>RNA</b>	Routing Number Authority	
<b>ROHC</b>	Robust Header Compression	N
<b>ROI</b>	Return on Investment	
<b>ROM</b>	Rough Order of Magnitude	
<b>ROUTREQ</b>	Route Request (see ANSI-41)	
<b>RPC</b>	Remote Procedure Call	
<b>RSU</b>	Remote Switching Unit	
<b>RSVP</b>	Resource Reservation Protocol	
<b>RTCP</b>	Real Time Control Protocol	
<b>RTP</b>	Real Time Transport Protocol	
<b>RTSP</b>	Real Time Streaming Protocol	
<b>RTT</b>	Real Time Text	N
<b>SAC</b>	Standards Advisory Committee	
<b>SAE</b>	Society of Automotive Engineers	
<b>SAML</b>	Security Assertion Markup Language	
<b>SBC</b>	Session Border Control	
<b>SBS</b>	Straight Binary Seconds	
<b>SC</b>	Service Consumer	
<b>SCCP</b>	Signaling Connection Control Part	
<b>SCP</b>	Service Control Point (see ANSI-41) or Switching Control Point	
<b>S-CSCF</b>	Serving Call Session Control Function	
<b>SCTP</b>	Stream Control Transport Protocol	
<b>SDES</b>	Session Description protocol Security Descriptions	N
<b>SDO</b>	Standards Development Organization	
<b>SDP</b>	Session Description Protocol	
<b>SDSL</b>	Symmetrical Digital Subscriber Line	
<b>SFG</b>	Simulated Facility Group	
<b>SFTP</b>	Secure Shell File Transfer Protocol	
<b>SHA</b>	Secure Hash Algorithm	

<b>SIF</b>	Signaling Information Field, Spatial Information Function	U
<b>SIO</b>	Service Information Octet	
<b>SIP</b>	Session Initiation Protocol	
<b>SK</b>	Stop keying	
<b>SKSK</b>	Stop keying, stop keying. Officially ends a TDD conversation	
<b>SLA</b>	Service Level Agreement	
<b>S/MIME</b>	Secure Multipurpose Internet Mail Extensions	
<b>SMDPP</b>	SMS Delivery Point to Point INVOKE (see ANSI-41)	
<b>SME</b>	Subject Matter Experts	
<b>SMS</b>	Short Message Service	
<b>SMTP</b>	Simple Mail Transfer Protocol	
<b>SNA</b>	System Network Architecture	
<b>SNL</b>	Sandia National Laboratories	
<b>SNR</b>	Signal to Noise Ratio	
<b>SNTP</b>	Simple Network Time Protocol	
<b>SOA</b>	Service Oriented Architecture	
<b>SOAP</b>	Simple Object Assess Protocol	
<b>SOG</b>	Standard Operating Guidelines	
<b>SOHO</b>	Small Office/Home Office	
<b>SOI</b>	Service Order Input	
<b>SONET</b>	Synchronous Optical NETwork	
<b>SOP</b>	Standard Operating Procedures	
<b>SP</b>	Service Provider	
<b>SPCS</b>	State Plane Coordinate Systems	
<b>SPID</b>	Service Provider Identifier	
<b>SPML</b>	Service Provisioning Markup Language	
<b>SPVC</b>	Soft Permanent Virtual Circuit	
<b>SR</b>	Selective Routing, Selective Router [a.k.a., E9-1-1 Tandem, or E9-1-1 Control Office]	
<b>SRDB</b>	Selective Routing Data Base	
<b>SRTP</b>	Secure Real Time Protocol	N
<b>SRV</b>	Service (a DNS record type)	N
<b>SS</b>	Serving System	
<b>SS-ECR</b>	Serving System – Emergency Call Register	
<b>SSH</b>	Secure Shell	
<b>SSH-2</b>	Secure Shell, Version 2	
<b>SSP</b>	Signal Switching Point	
<b>SS7</b>	Signaling System 7	
<b>ST</b>	Start	
<b>S-TAG</b>	The outermost VLAN tag as defined in IEEE 802.1ad	
<b>STCP</b>	Stream Control Transport Protocol	
<b>STP</b>	Start Prime or Signal Transfer Point	

<b>STUN</b>	Simple Transversal of Universal Datagram Protocol (UDP) Network Address Translations (NATs)	
<b>SVC</b>	Switched Virtual Circuit	
<b>TA</b>	Technical Advisory (published by Bellcore) or Technical Assistance	
<b>TC</b>	Telecommunications Carrier	
<b>TCAD</b>	Technical Committee Administrative Document	
<b>TCAP</b>	Transaction Capabilities Application Part	
<b>TCP</b>	Transport/Transmission Control Protocol	
<b>TCP/IP</b>	Transmission Control Protocol/Internet Protocol	
<b>TCU</b>	Telematics Control Unit	
<b>TDC</b>	Technical Development Conference	
<b>TDD</b>	Telecommunications Device for the Deaf or Time Division Duplex Mode	
<b>TDD-TTY</b>	Telephone Device for the Deaf-Teletypewriter (Text Telephone)	
<b>TDM</b>	Time Division Multiplexing	
<b>TDMA</b>	Time Division Multiple Access	
<b>TDOA</b>	Time Difference of Arrival	
<b>TELCO</b>	Telephone Company	
<b>TIA</b>	Telecommunications Industry Association	
<b>TID</b>	Technical Information Document (published by NENA) or Technical Issues Director	
<b>TLDN</b>	Temporary Long Distance Number	
<b>TLS</b>	Transport Layer Security	
<b>TLT</b>	Technical Lead Team	
<b>TMSI</b>	Temporary Mobile Station Number	
<b>TN</b>	Telephone Number	
<b>TOPS</b>	Technology and Operations Council	N
<b>TR</b>	Technical Reference (published by Bellcore)	
<b>TR45</b>	TIA Engineering Committee on Mobile and Personal Communications Standards	
<b>TR 45.2</b>	Telecommunications Industry Association Subcommittee responsible for “Wireless Intersystem Technology – Mobile and Personal Communications Standards”	
<b>TRD</b>	Technical Requirements Document	
<b>TRS</b>	Telecommunications Relay Service	
<b>TSD</b>	Technical Standards Document	
<b>TSP</b>	Telephone Service Priority or Telecommunications Service Provider, Telematics Service Provider	
<b>TTA</b>	Telecommunications Technology Association	
<b>TTC</b>	Telecommunication Technology Committee, or Time to Completion	
<b>TTL</b>	Transistor to Transistor Logic	
<b>TTY</b>	Teletypewriter (a.k.a. TDD, Telecommunications Device for the Deaf and Hard-of-Hearing)	