



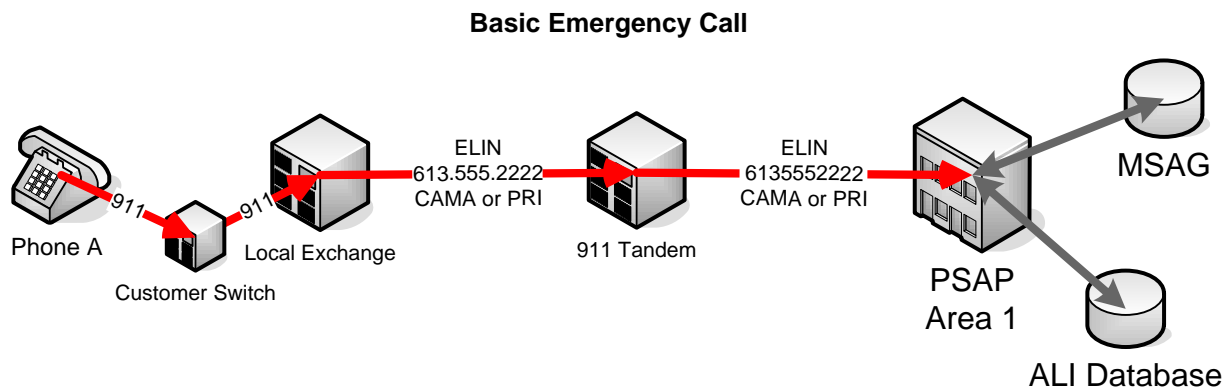
## NetVanta Unified Communications Technical Note

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# Overview of 911 and Enhanced 911

## Emergency Service Overview

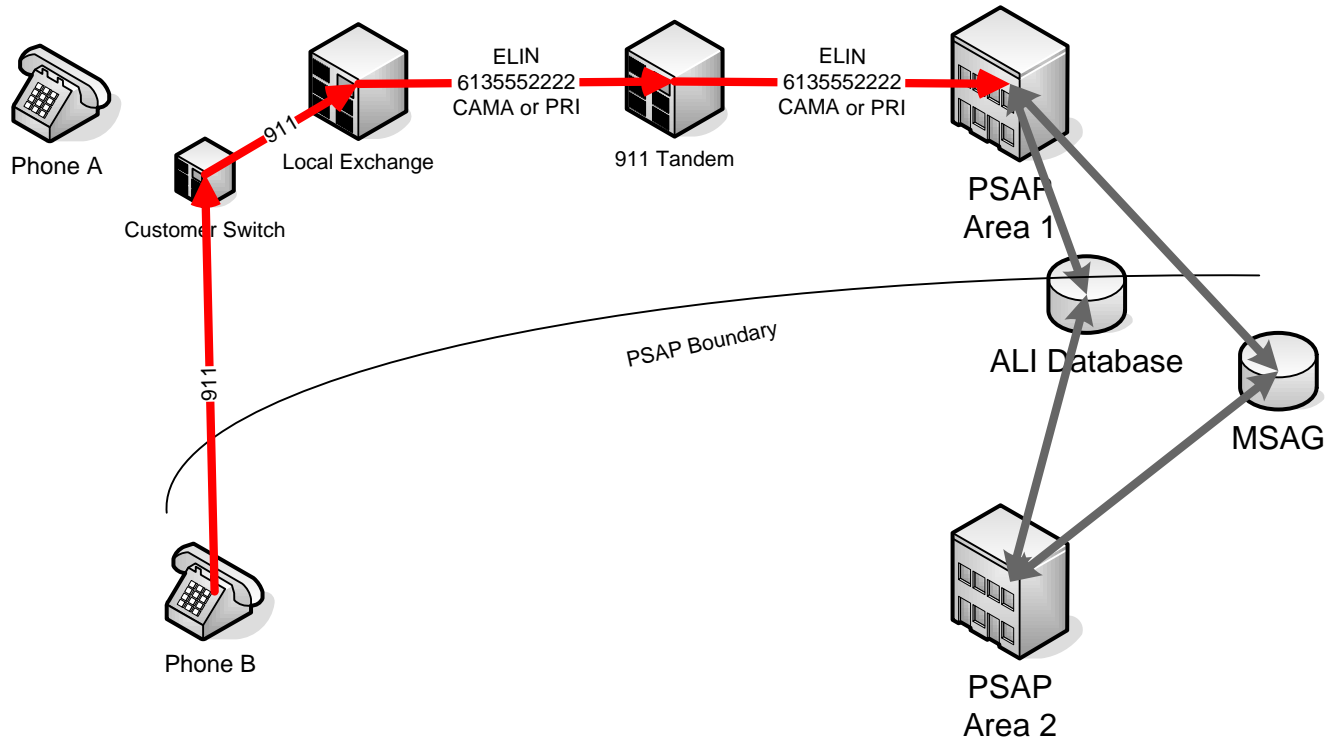
The diagram below shows a simple 911 call, in this case a call from a residential or small business location. In this example the phone is connected using an analog trunk to the local exchange (telephone switch). When someone dials 911, the exchange routes the call to a 911 tandem. In that call, the Emergency Location Identification Number (ELIN) is transmitted using CAMA or PRI trunks. The importance of the ELIN is that it is the number that the emergency services providers call to speak to the person who made the 911 call. The ELIN is also used to pull location information out of the Automatic Location Information (ALI) and Master Street Address Guide (MSAG) databases.



The call is routed to the PSAP where an emergency operator takes the call. The operator is provided with the ELIN and location information from the ALI and MSAG databases. This can be used to provide more customer information, such as maps.

The first complication arises when a 911 call comes from an organization that has a building complex. If there is only one phone number for the organization, the ELIN/ALI Database most likely only provides the main building or corporate address. In the example below, when Phone B dials 911, the call is routed based on the ELIN to the Area 1 PSAP, which is not the correct one. Furthermore the information pulled from the ALI / MSAG database is that for Phone A's location.

## Misdirected Emergency Call



These examples illustrate that there are two main aspects to handling an emergency call:

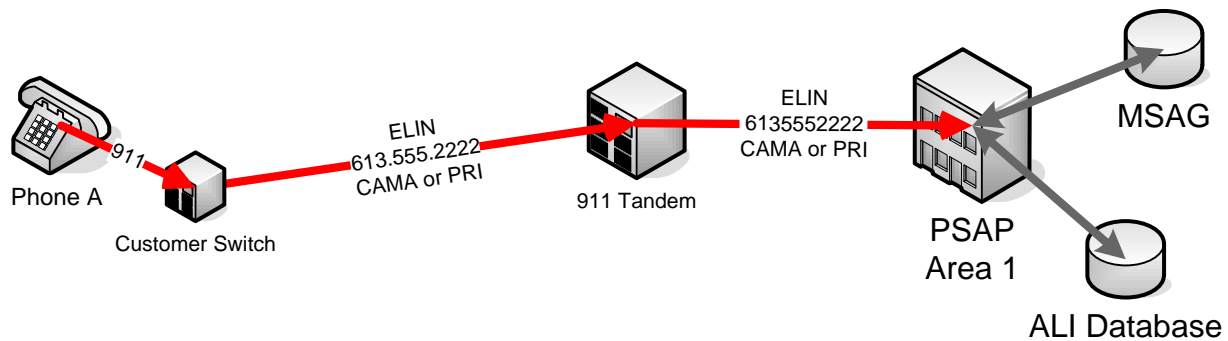
- Emergency Call Routing.
- Ensuring ALI/MSAG database accuracy so that the correct information is retrieved.

## Emergency Call Routing

When an emergency call is presented to a local exchange over a standard analog trunk, the exchange extends the call to the 911 Tandem and provides it with the ELIN of record for that trunk (customer phone line). If the customer has a trunk group, or is using a T1 interface, the ELIN provided is the main number for the premises since, in general, incoming calls to the enterprise can only be made to the main number. As described above, if there is only one location and an individual can be located with this information, that is all that is required.

Solving the problem of a misdirected emergency call and generally allowing for different ELINs to be presented to the PSAP requires the removal of the local exchange.

## Enhanced Emergency Call



The customer switch communicates directly with the 911 Tandem and provides the ELIN information using CAMA or PRI trunks.

## Glossary

### Local Exchange

A telephone switch that provides services to local customers. Also may be known as a Class 5 switch.

### ALI - Automatic Location Information

Information that ties an ELIN to a location and is used to route emergency calls from that ELIN to the correct local PSAP.

### ANI - Automatic Number Identification

The number sent over the telephone trunk and is presented at the receiving end.

### CAMA - Centralized Automated Message Accounting

An analog phone trunk that connects directly to an E911 selective router, bypassing the PSTN.

### DID - Direct Inward Dial

A telephone number that may be used to dial into your telephone system.

### ELIN - Emergency Location Identification Number

A phone number that routes the emergency call to the local PSAP, and which the PSAP can use to call back the emergency caller. The PSAP might need to call the number if the emergency call is cut off, or if the PSAP needs additional information after normally ending the emergency call.

## **Emergency Call**

A call made to the local emergency number, such as 911.

## **Emergency Caller**

The person who places the emergency call. The caller might require help for a personal emergency, or might be reporting a more general emergency (fire, theft, accident, and so forth).

## **ERL - Emergency Response Location**

The area from which an emergency call is placed. This is not necessarily the location of the emergency. If an emergency caller is reporting a general emergency, the actual emergency might be in a different area.

## **ESZ - Emergency service zone**

The area covered by a given PSAP. This area usually includes several police and fire departments. For example, a city and its suburbs might be serviced by one PSAP.

Each ESZ is assigned a unique emergency service number (ESN) to identify it.

## **MSAG - Master Street Address Guide**

A database listing of all valid street address ranges within a community. The contents are typically managed by a local government organization.

## **NENA - National Emergency Number Association**

The organization that recommends data and file formats for ALI definitions and other emergency call requirements in the United States.

## **PSAP - Public Safety Answering Point**

The organization that receives emergency calls. The PSAP talks to the emergency caller and notifies the appropriate public service organizations (such as police, fire, or ambulance) of the emergency and its location.