NG911 technology

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What is NG911 technically? (One-slide version)

- Successor (replacement) for circuit-switched technology
- Same user interface (dial 9-1-1), different back end
  - Internet protocols (IP)
  - COTS technology: IP, RTP, SIP, XML, HTTP, ...
  - Location information generated locally at terminal
    - GPS or network-based information
  - Full support of stationary, nomadic and mobile devices
  - Any number of media streams, with dynamic addition and deletion
  - Capability-based call routing (e.g., language, media capabilities)
    - e.g., supports American Sign Language as language tag

IETF and NENA standards

- "phone BCP" (draft-ietf-ecrit-phonebcp-16)
- PSAPs MUST support RTT and video:
  - BCP: ED-76 Endpoints supporting real-time text MUST use [RFC4103]. The expectations for emergency service support for the real-time text medium are described in [RFC5194], Section 7.1.
  - It must be possible to place an emergency call using ToIP and it must be possible to use a relay service to route a call. The emergency service provider is assumed to be using the emergency text medium in its equipment as the emergency service provider follows the user’s willingness to use the SMS medium to communicate with the emergency service provider. The use of relay services is not the responsibility of the emergency service provider.
  - Text gateway must be able to route real-time text calls to emergency services when any of the recognized emergency numbers that support text communications for the country or region are called, e.g., “911” in the USA and “112” in Europe. A text gateway and call center will route text calls to emergency services.

Real-Time Text

- RTT refresher:
  - (typically) one character at a time
  - Immediate upon entry
  - Bi-directional (full duplex)
- Technology: [RFC 4103] (Internet standard)
- Just another media session in SIP session
- Negotiated by both sides
  - Caller: “I support real-time text”
  - Callee: “Great – so do I”

Video in NG911

- Allow calls directly to PSAP
- Bridge in VRS

SMS

- SMS as transitional technology
- Challenges:
  - SMS is not reliable but better than nothing
  - Delivery can be delayed
  - SMS don’t include caller location information
- SMS are datagrams → need to maintain session to same call taker
- Requirements:
  - All wireless carriers need to implement h11 routing
  - If indirect, gateway providers would need to upgrade protocols
  - Phone number to location mapping or in-band protocol
Non-audio media well integrated into NG911
- "first class participants"

SMS challenging requires large-scale mobile system modification
- special-purpose clients may be easier

Transition video, relay services and RTT to NG911 early
- avoid building transient conversion infrastructure