This document describes the "end state" that has been reached after a migration from legacy TDM circuit-switched telephony, and the legacy E9-1-1 system built to support it, to an all IP-based communication system with a corresponding IP-based Emergency Services IP network. To get to this "end state" it is critical to understand the following underlying assumptions:

- (1) All calls entering the ESInet are SIP based. Gateways, if needed, are outside of, or on the edge of, the ESInet. Calls that are IP based, but use a protocol other than SIP or are not fully i3 compliant, will be interworked to i3 compliant SIP prior to being presented to the ESInet.
    - o **Access Network Providers aka Originating Service Providers (OSPs)** – Moving to SIP to send the call to the ESINet
    - o **NG9-1-1 Service Providers** – Establish the gateways (if needed) to enable communication of non-SIP calls to the ESInet
    - o **Other Integrators** – There may be instances where a legacy 9-1-1 provider or other entity serves as an aggregator or intermediary for calls coming to the ESINet. In this case, they would be the entity that the NG9-1-1 Service Provider would be working with until the relationship with the OSPs is established and calls are sent directly by the OSP to the ESInet
- (2) Access Network Providers (e.g., cable providers, DSL providers, fiber network providers, WiMax providers, Long Term Evolution (LTE) wireless carriers, etc.) have installed, provisioned and operated some kind of location function for their networks. Location functions are critical for 9-1-1 calls originating on an IP network because it provides a 9-1-1 valid location to IP clients that bundle their location in the SIP signaling to the ESInet.
    - o **Access Network Providers** – setting up the location function for their network, will require testing with the NG9-1-1 Service Provider to confirm that it works with the ESInet
- (3) All calls entering the ESInet will normally have location (which might be coarse, e.g., cell site/sector location in civic or geo-coordinate format) in the signaling with the call.
    - o **Access Network Providers** – will need to test w/ NG9-1-1 Service Providers to ensure that the location is being passed on to the ESINet correctly
    - o **NG9-1-1 Service Providers –** Will need to test w/ each Access Network Provider and ensure reporting to ANPs when calls are not providing location to the ESInet.
- (4) 9-1-1 authorities have transitioned from the tabular Master Street Address Guide (MSAG) and Emergency Service Numbers (ESNs) to a Geographic Information System (GIS) based Location Validation Function (LVF) and Emergency Call Routing Function (ECRF).
    - o **9-1-1 Authorities** – Work with GIS Data Providers to develop and maintain GIS based data required to support the ECRF and LVF.
    - o **NG9-1-1 Service Providers** – If interim steps are used during the transition, ensure that there is an coordinated transition from using a legacy MSAG to the use of an ECRF and LVF that is supported by GIS

- (5) 9-1-1 authorities have sufficiently accurate and complete GIS data, which are used to provision the LVF and ECRF. A change to the 9-1-1Authority's GIS system automatically propagates to the ECRF and LVF and affects routing.
  - **9-1-1 Authorities** – Develop procedures for maintaining and updating GIS data, provisioning updates to the ESInet, and if necessary, coordinating with external GIS Data Providers.
- (6) All civic locations will be validated by the access network against the LVF prior to an emergency call being placed. This is analogous to MSAG validation
  - **9-1-1 Authorities** – This depends on GIS data being available for use in a LVF
  - **NG9-1-1 Service Providers** -
- (7) Periodic revalidation of civic location against the LVF will be performed to assure that location remains valid as changes in the GIS system that affect existing civic locations are made.
  - **NG9-1-1 Service Providers** – Will be responsible for the revalidation against the LVF, and to notify related parties of any discrepancies
  - **Access Network Providers, 9-1-1 Authorities and GIS Data Providers** – Those providing civic locations to the ESInet will need to be prepared for any changes to "VALID" or "INVALID" records.
- (8) Since the legacy circuit-switched TDM network will very likely continue to be used for the foreseeable future (both wireline and wireless), the i3 architecture defines a Legacy Network Gateway (LNG) to interface between the legacy network and the ESInet/NGCS.
  - **NG9-1-1 Service Providers** – Configure and Legacy Network Gateways to enable access from circuit-switched TDM networks to the ESInet. Work with access network providers as they transition away from the TDM network to ensure connectivity to the ESInet
  - **Access Network Providers** – Coordinate with ESInet providers when switching from TDM networks to ensure that ESInet connectivity is maintained
- (9) Transition to i3 is complete when the existing SR and ALI are no longer used within a jurisdiction. Even after that time, some PSAPs may not have upgraded to i3. The i3 architecture describes a Legacy PSAP Gateway (LPG) to interface between the ESInet/NGCS and a legacy PSAP. The LPG supports the delivery of an emergency call through the ESInet to a legacy PSAP as well as the transfer of an emergency call from/to an i3 PSAP to/from a legacy PSAP.
  - **9-1-1 Authorities** – Select a NG9-1-1 Service Provider and transition to them from the legacy 9-1-1 Service Provider
  - **Legacy 9-1-1 Service Providers** – Ensure a smooth transition from the legacy selective routers and ALI
- (10) Federal, State and local laws, regulations and rules may need to be modified to support NG9-1-1 system deployment.
- (11) While NG9-1-1 is based on protocols that are international, and are designed to allow visitors and equipment not of North American origin to work with NG9-1-1, the specific protocol mechanisms, especially interworking of legacy telecom and ESInet/NGCS protocols is North American-specific and may not be applicable in other areas.