Briefing Overview

- 9-1-1 call routing today
- NG 9-1-1 call routing
- Policy Based Routing
- Discussion and Questions
9-1-1 Call Routing Today

9-1-1 Call Switch

End-Office Switch

Selective Router

Alternate Answer Switch

PSAP A

PSAP B

PSAP C

Tandem-Tandem Trunk
NG 9-1-1 Connectivity

Every PSAP in state

Every PSAP in Region

PSAP MPLS

LTE

CAPSNET

SD-WAN ESI.net for PNSP

SD-WAN ESI.net for RNSP

PNSP Data Centers

RNSP Data Centers

9-1-1 Traffic

March 2020
**9-1-1 traffic routing with NG 9-1-1**

**Definitions**

- **ESRP** - Emergency Services Routing Proxy essentially replaces the selective routers in NG 9-1-1.
- **ECRF** - Emergency Call Routing Function is the functional element where caller location and routing information for that call is stored (think GIS)
- **LDB** – Location Data Base server retains all of the current information, functionality, and interfaces of today’s ALI and can utilize the new protocols required in an NG 9-1-1 deployment
- **LNG** – Legacy Network Gateway – performs specific interworking functions to support ingress of non-i3 calls into the i3 network
- **PRF** – The Policy Routing Function is where default, alternate, contingent, and emergency routes are located. The PRF is the specific functionality regarding 9-1-1 traffic routes
9-1-1 Traffic Routing with NG 9-1-1 (Wireline and non-Nomadic VoIP)

Policy Routing Function
- PSAP has ability to determine the policy – Such as:
  - What happens to wireline call with Hwy address?
  - What happens when there is no civic address?
  - “Call type” can determine call routing

At this point, the packet has the information needed to route the call to the correct PSAP
9-1-1 traffic routing with NG 9-1-1 (Wireless and Nomadic VoIP)

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Policy Based Routing

• Sets policy rules for normal call delivery and alternate routing
• Sets policy rules for incident based call delivery
• Provides ability to define routing based on operational need
• Requires input from the PSAP

Key: Policy is based on capabilities that align with operational need
• Today, number of CAMA trunks, selective router, and the CPE determine what happens with the call
• With Next Gen 9-1-1, Policy Routing Function and CPE determine what happens with call
• Policy based routing
  • CPE has the ability to return the state of the CPE position to the NG 9-1-1 system
  • When all 4 positions are busy – return busy, or route call to another PSAP, or place call in queue, or …
  • When line rings with no answer – time out, or route call to another PSAP, or ….
• PSAP has the ability to change routing policy
• Prime maintains policy for entire state and shares policy with region
• Alternate answer PSAP and transfers can be to any PSAP (or multiple PSAPs) in the state
• Not limited by region boundaries
• Policy based routing can be upon request, or dynamic
Today: alternate answer is limited to a single PSAP connected to your selective router

With NG 9-1-1, your alternate PSAP can be any PSAP in the state

Larger PSAPs can select multiple alternate answer locations

Alternate answer locations can vary based on operational need
  • Time of day
  • Number of dispatchers
  • Multiple PSAPs based on operational need
Policy Based Routing: Incident Based

- Can define incident based policy routing
  - Planned events
  - Disasters
  - Local incidents
- Incident based routing can be pre-planned
- For unplanned events, incident based routing can be in near real time, likely within hours
**Next Gen 9-1-1 Components**

- **ESRP** - Emergency Services Routing Proxy essentially replaces the selective routers in NG 9-1-1
- **ECRF** - Emergency Call Routing Function is the functional element where caller location and routing information for that call is stored
- **PRF** – The Policy Routing Function is where default, alternate, contingent, and emergency routes are located. The PRF is the specific functionality regarding 9-1-1 traffic routes
- **ALI DB service** - The Automatic Location Information DataBase is being used to route calls in a legacy system
- **LDB** – Location Data Base server retains all of the current information, functionality, and interfaces of today’s ALI and can utilize the new protocols required in an NG 9-1-1 deployment
- **LIS** – Location Information Server will transition the ALI database transition into the ESInet / NG 9-1-1 core
- **LVF** - The ECRF connects to the LIS to determine location and validates it through a Location Validation Function (LVF)
- **LSRG** – Legacy Selective Router Gateway
- **LNG** – Legacy Network Gateway - performs specific interworking functions to support ingress of non-i3 calls into the i3 network
- **LPG** – Legacy PSAP Gateway