

Federal Communications Commission Task Force on Optimal PSAP Architecture

Working Group 2:

Optimal Approach to NG911 Architecture Implementation by PSAPs

27 July 2015

Introduction

Since the late 1960's, the 9-1-1 system has been advancing and evolving throughout the United States with 9-1-1 standing as the sole number for notifying a public safety answering point (PSAP) that an emergency is occurring and a caller needs emergency assistance.

Introduction

The current system is based on the telephone network that existed in the 1970's and it was logical to use a feature known as "selective routing" to support the implementation of 9-1-1 calling nationwide through central offices. The ability to deliver call back information was derived utilizing "operator services" functionality.

Backed by Congress and Industry

Networks supporting 9-1-1 calling spread
across the nation.

Percentage of US population covered by 9-1-1

- 1976 – 17%
- 1979 – 26%
- 1987 – 50%
- 1999 – 93%
- Today – Approximately 96%

Source NENA, the National Emergency Number Association

Milestones in 9-1-1

- 1979
 - Nine states had enacted 9-1-1 legislation
 - 70 new systems per year
- 1999 – almost 89% had enhanced 9-1-1

Source NENA, the National Emergency Number Association

Circuit Switched Selective Routing for 9-1-1

- Norm for over forty years
- Routed through telephone company central office
- Customer devices rarely moved without administrative control
- Telephone numbers correlated to a physical dispatchable address

Cell phone technology

Although cell phone technology existed as early as 1973, it was not until mid-nineteen eighties that the next major step occurred in mobile phone technology with the First Generation (1G) fully automatic cellular networks introduction.

Wireless began the 9-1-1 Paradigm Shift

- 1983 – FCC approved first mobile phone
- 1985 – PSAPs receive calls from mobile devices
- As numbers became mobile with device
 - No longer able to receive call back and location information
 - Telephone number to dispatchable address correlation no longer valid

The 9-1-1 Paradigm Shift

- Mechanisms were developed to “force” mobile E9-1-1 into wired landline model
- This provided a stop gap measure
- Each ensuing technology advancement in cellular deployment widened the gap between the technology and the solution

Moving Rapidly Into the IP Evolution

- Forty year old switching systems across the United States teeter on edge of obsolescence while telecommunications nationally moves into the IP evolution
- IP networks are versatile and are the basis for delivering NG9-1-1 services

Next Generation 9-1-1

- Requirement for a clear understanding due to the rapid evolution of technology supporting 9-1-1
- A great deal written
- Lack of an overall comprehensive understanding and roadmap
- Requirement for a roadmap that will include a single resource for information to provide guidance to decision-makers

Question for Working Group 2

What is the optimal architecture for Next Generation 9-1-1?

Goal for Working Group 2

Assist decision-makers tasked with making choices for design and configuration of 9-1-1 systems to understand key decision factors as well as provide a broader understanding of the relevant impact of these decisions

Working Group 2 Questions

- What is the optimal architecture for NG9-1-1?
- Is there one “best and optimal design”?
- If so, what elements are required?
- If not, what combination of configurations are required?

Challenges to 9-1-1 Decision-makers

- List on previous slide is a subset of the questions
- Requirement to synthesize competing information with limited best practice guidance

What is Optimal Architecture?

- Working Group 2 believes there is not one best design and one best choice, but rather a number of options that can be chosen for “optimal architecture” of NG9-1-1 systems
- Working Group 2 intends to create a roadmap that details the components and potential configuration choices available to decision-makers

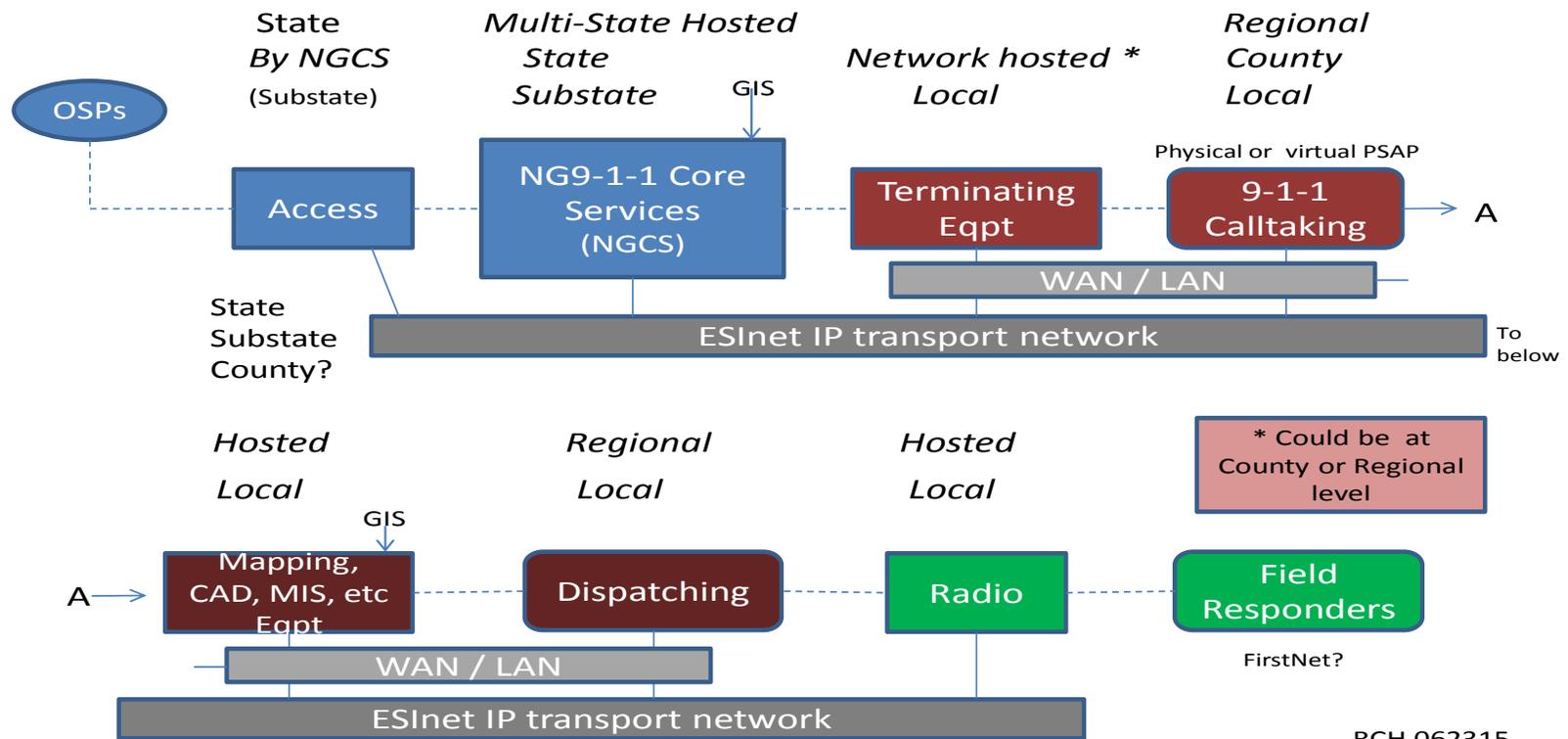
Working Group 2 Three Subgroups

- Access and NG9-1-1 Core Services
- PSAP CPE
 - Terminating Equipment
 - 9-1-1 Call-taking
 - Mapping
 - CAD
 - Dispatching
- Emergency Services IP Network (ESINET)

Working Group 2 Three Subgroups

- Each subgroup is tasked with research, analysis, and discussions pertaining to their subject area(s) and developing drafts of the anticipated final report sections and recommendations
- Working Group 2 holds weekly conference calls to discuss subgroup work

Configuration Options



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Access Subgroup

- Configuration options defined
- Work has started on evaluating pros and cons for each component and each `geographic' option (local, county, sub-state, state, multi-state)
- Work has started on report section text

PSAP CPE & Dispatch Subgroup

- Completed draft of report section 3 on current/legacy PSAP description and issues that need to be addressed in next generation deployments
- Working on report section 4 for next generation shared infrastructure deployment options and optimization assessments
- Assessing feasibility of developing quantitative scoring associated with each optimization factor to support quantitative comparative analysis

ESInet Subgroup

- Objective - Develop document defining optimal ESINET architecture
- ESINET as defined by NENA: "...the network, not the services that ride on the network"

ESInet Subgroup team scope

- Objective:
 - Architecture
 - Defined Uses
 - Operational Metrics
 - Legal / Regulatory
 - Security
 - Management & Governance

ESInet Subgroup tasks

- Define Optimal
- Document Assumptions
- Next Steps:
 - Cross sub-team meetings to collaborate / align direction
 - Draft initial 9-1-1 Service Optimization Reports
 - Develop document defining optimal ESINET architecture

Group 2 is Working to Identify

- Optimal Factors
- Core Components
- Designs of Optimal Architecture
- Configuration Variations
- Scenario Options Available
- Roadmap Guidance and Challenge to Decision-makers

Last Note from Working Group 2

- We have done a lot of work
- We have more work to do

Questions and/or Comments