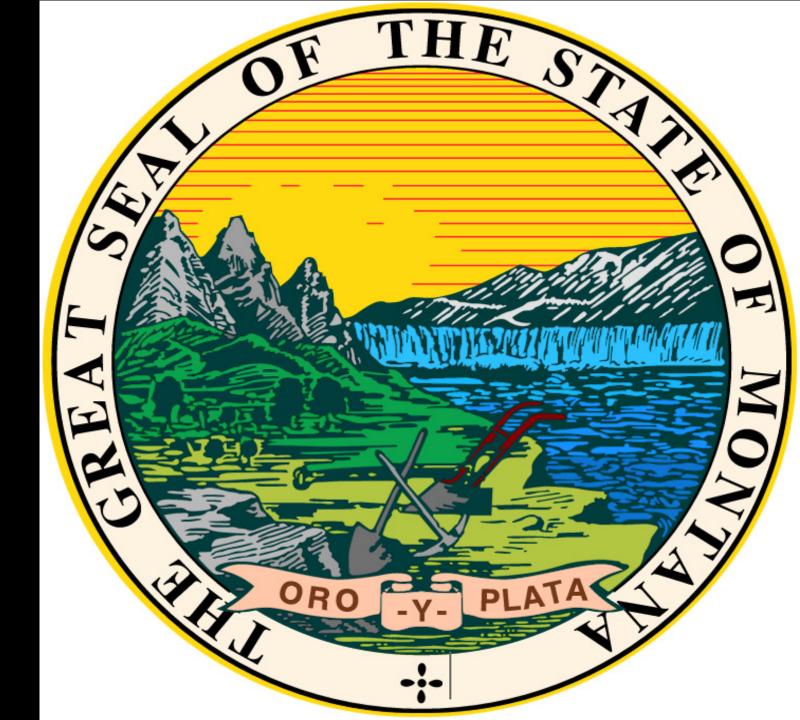
State of Montana NG9-1-1

Carlos Simmonds
Regional Manager - NGCS





<u>AGENDA</u>

- Introductions
- Company Overview
- Understanding the Terminology

NG9-1-1, NGCS & ESInet Before the PSAP, at the PSAP, Connecting to the PSAP

Legacy to Next Generation

Legacy E9-1-1 call routing

Why now?

Architecture of NG9-1-1 Network

The end state

• Where are we at now?

National view and Progress

How do we get there

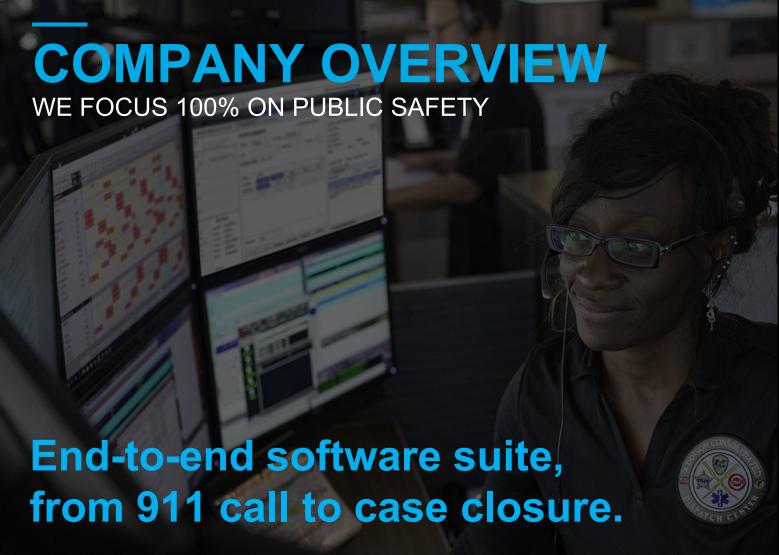
Motorola's foot print

Motorola Solution Overview

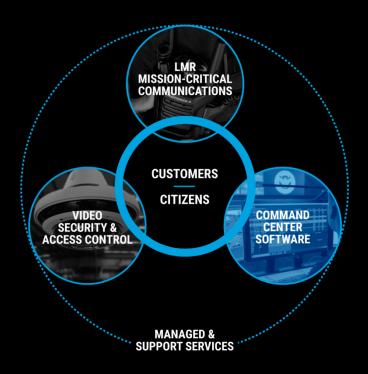
Key Functionality and Differentiators

- Considerations for an NGCS System
- Thank You





We build software for mission critical environments and enable the collaborations where every second matters. By allowing information to flow seamlessly from call to case closure, we reduce the strain on critical personnel and restore focus on the communities our customers serve.



End-to-end software suite designed for the

public safety workflow.

- Emergency Call Management
- Voice and Computer Aided Dispatch
- Real-Time Intelligence Operations
- Field Response & Reporting
- Records and Evidence Management
- Analysis and Investigations
- Jail and Inmate Management

MOTOROLA SOLUTIONS

COMMANDCENTRAL





Incident Awareness

Incident Management

Post-Incident Resolution

EMERGENCY CALL COMMUNITY ENGAGEMENT MANAGEMENT

VOICE & COMPUTER **AIDED DISPATCH**

REAL-TIME INTELLIGENCE OPERATIONS

RECORDS & EVIDENCE

JAIL & INMATE ANALYSIS & MANAGEMENT INVESTIGATION MANAGEMENT



Citizen

NGCS to 9-1-1 Call Taker



Dispatcher



Intelligence Analyst



Records **Specialist**



Crime Analyst



Corrections Officer

Cloud-enabled Unified communication & collaboration

PUBLIC SAFETY PLATFORM

Centralized public safety data Analytics & Al

COMPANY OVERVIEW

LISTENING TO CUSTOMERS IS IN OUR DNA

WHAT WE'VE HEARD

- NG9-1-1 table-stakes
 - Get off legacy selective routers
 - Ubiquitous 9-1-1 service
 - Improve location information = Faster response times
- Improve interoperability between PSAPs
 - Transfers
 - Disaster preparedness
- Updating GIS data viewed as a major task
 - Should not be a reason to not move to NG9-1-1
- Redundant, diverse last-mile network
 - Where possible, other options: Microwave, LTE, alternate routing, CC EBS



TERMINOLOGY (GETTING IT RIGHT): NG9-1-1, NGCS & ESInet

Next Generation 9-1-1 (NG9-1-1)

Refers to the 9-1-1 service infrastructure in the U.S. and Canada to improve public emergency communications services in a wireless, mobile society. NG9-1-1 enables the public to send text, images, video and data to the PSAP.

Next Generation Core Services (NGCS)

A group of products and services needed to process a 9-1-1 "call" in Next Generation (NG).

Emergency Service IP Network (ESInet)

The NG transport which can carry voice, data and multimedia. This includes traffic like CAD & radio.



Next Generation Core Services

- ✓ Support NENA's "Any device, anytime, anywhere"
- ✓ Accept 9-1-1 calls from all certified Originating Service Providers (OSPs)
- ✓ Geospatially route the 9-1-1 call to the appropriate PSAP
- ✓ Deliver the call to the PSAP's Call Handling system natively in IP with it's location
- ✓ Provided as a service model

THE DIFFERENCE: NGCS - ESINET

BEFORE THE PSAP

NG9-1-1 NGCS Call Routing

- Increased span of control (many customer defined routing policies available)
- More features and functionality (content, geospatial routing)
- Notification and service provider transparency
- Choice of routing provider

CONNECTING TO THE PSAP

ESInet (the Network)

- Improved resiliency and system availability
- ➤ Network improvements alternate routes, multiple carriers, fiber, LMR microwave backhaul
- Failover strategies call handling, call routing

NG9-1-1 IS REALIZED AT THE PSAP



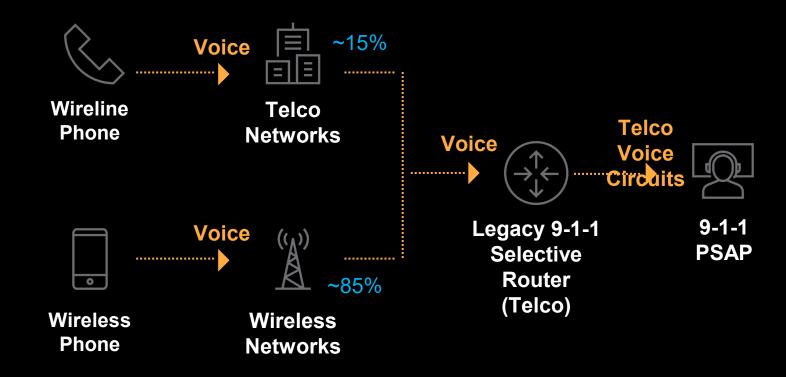
LEGACY TO NG9-1-1 WHY?



<u>Legacy 9-1-1</u>

<u>Network</u>

- Telco routes 9-1-1 calls to PSAPs
- Analog voice & basic location only
- 3rd party apps connect "over the top" to each PSAP
- Telco legacy selective routers will not support multimedia
- Geographically provided locally mostly by Telco's.



LEGACY ANALOG 9-1-1 NETWORK



No choice of providers.

LEGACY INFRASTRUCTURE...STILL IN USE TODAY

- ▶Telco 9-1-1 selective routing technology is over 40 years old.
- Designed for customer devices (land-line) not mobile
- Cell phone technology adapted to this original wire line 9-1-1 technology over 17 years ago.



WHY NG9-1-1 NOW? WHY THE SENSE OF URGENCY?

Call Delivery System Moving from Legacy to IP

LEGACY

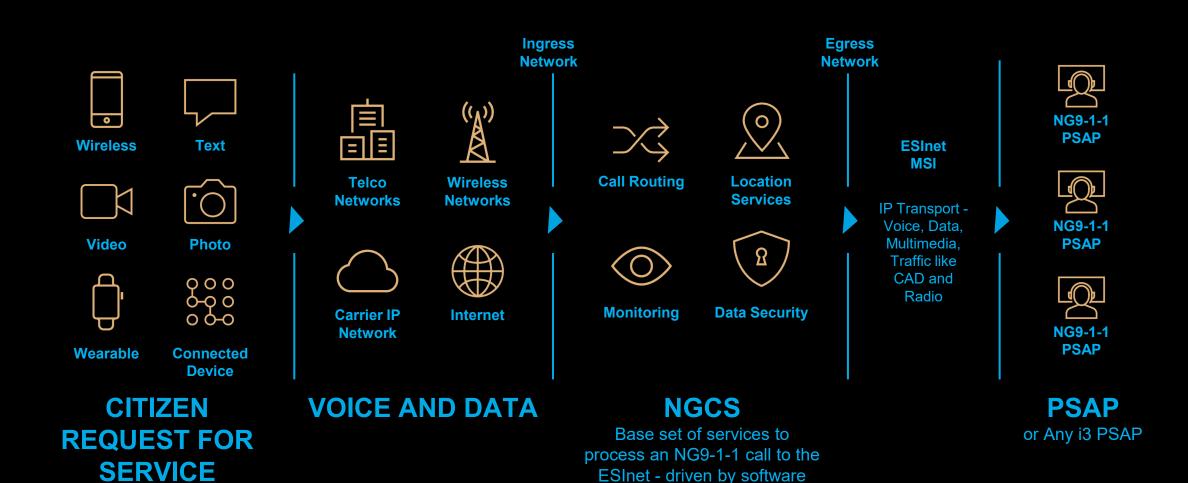
Voice/ANI Only Analog Trunks IP ESInet

- Analog 9-1-1 trunks and legacy selective routers are end of life. Not capable of delivering NG9-1-1 content.
- Need to replace legacy routers with IP routers delivering 9-1-1 request for service to PSAPs via IP/ESInet connections.
- Need capabilities to process new 9-1-1 data (text, video, pictures, telematics, IoT)
- Cost. Legacy provider and customer.

WITHOUT IP OR ESInet CONNECTION...
NO NG9-1-1



DELIVERING A NG9-1-1 REQUEST FOR SERVICE



New Types of Request for Assistance (not just voice calls)

intelligence



HIGH LEVEL ARCHITECTURE OF NG9-1-1 NETWORK

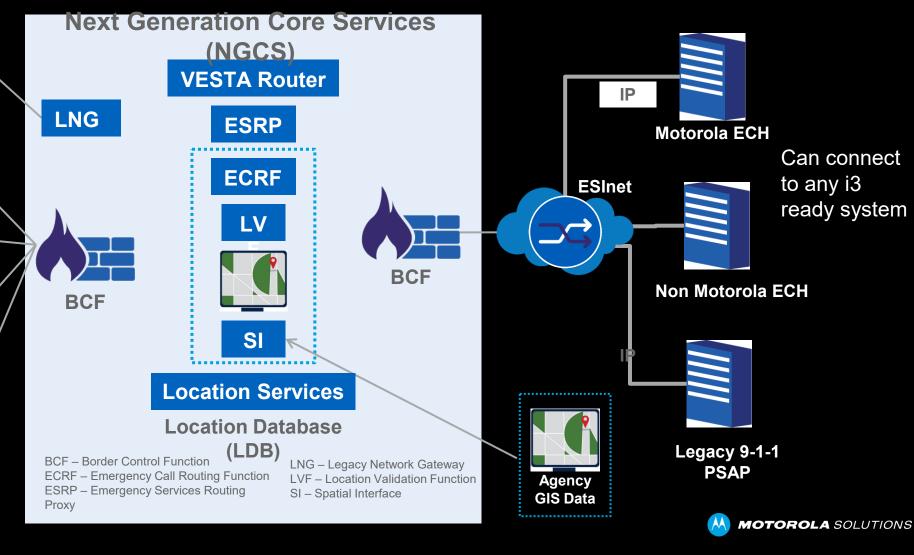
Legacy
Carrier
Networks

Carrier IP
Networks

Text
Messaging &
Multimedia

Internet of Things (IoT)

Telematics & Telemetrics



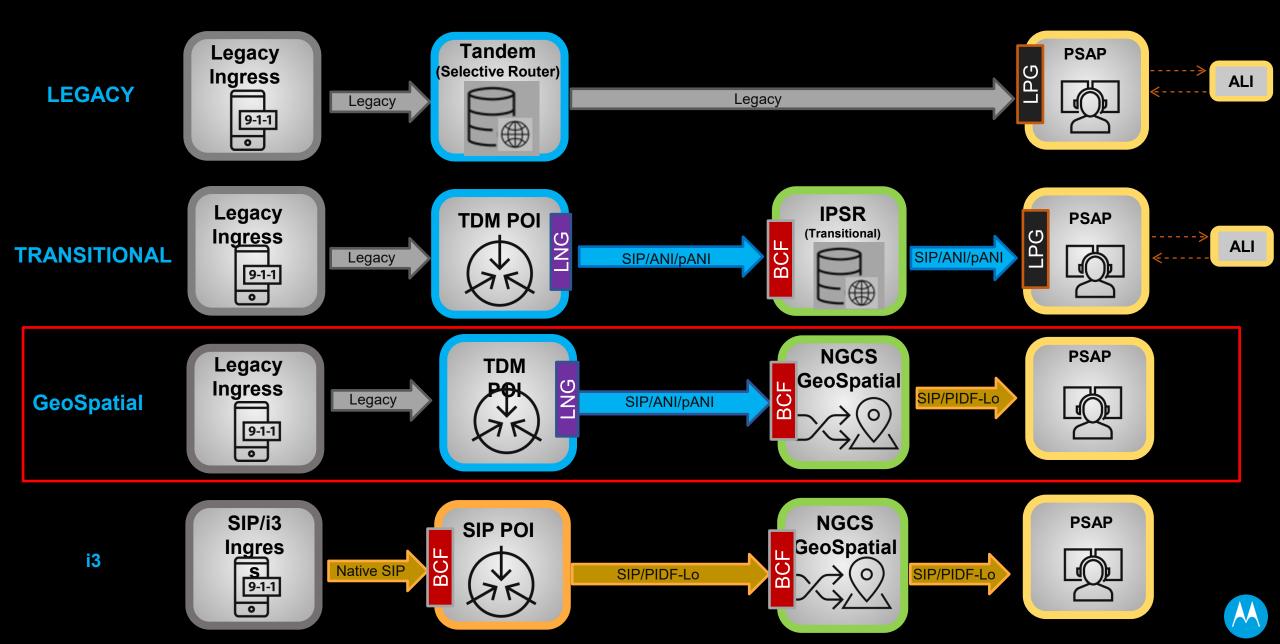


NG9-1-1 PROGRESS

NG9-1-1 deployment progress across much of the US

- Most states will have or be in the process of implementing NG9-1-1 in the next 12-18 months
- Most states are purchasing a statewide solution via RFP
 - Federal grant is stimulating the market (many RFPs in process)
 - 。 CARES act
 - ARPA ~\$906M for Montana
- A few states are purchasing via regional/county by county procurements
 - _o Texas, Florida, Maryland, Missouri, NY, Nevada, and a few others

TRANSITION



VESTA ROUTER DEPLOYMENTS

WHERE THE SOLUTION IS IN SERVICE





NG9-1-1 Deployment Facts

No two deployments are the same:

- Leverage customer provided assets (data centers, network, etc.)
- Split scope of work Scenarios
- Work with existing providers (location services)
- Use assets for the benefit of the customer and any adjacent regions
- Unique deployment configurations
- Collaborate with hosted call handling

Some Vesta NGCS projects:

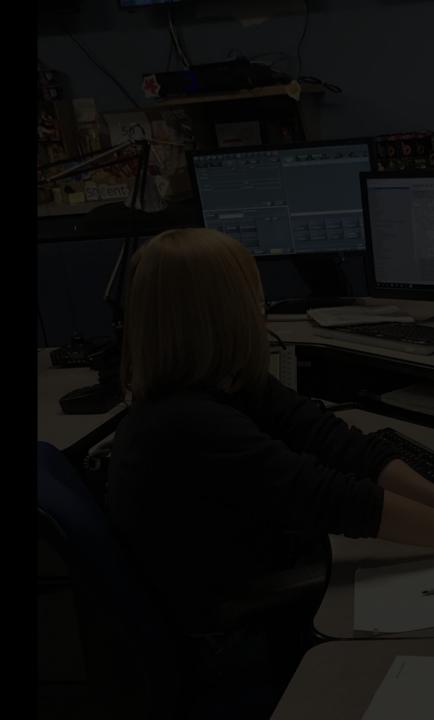
- TELUS British Columbia, Alberta,
 Saskatchewan
- State of Utah
- GHC greater Houston Area
- MARC greater Kansas City area (KS and MO)
- City of New York highest call volume
 PSAPs
- Many jurisdictions in FL, PA, MD, TX



VESTA ROUTER OVERVIEW SERVICE MODEL OFFERING

CUSTOMER ALIGNED SOLUTION

- Software as a Service (SaaS)
- Flexible approach Designed with the customer
- Purpose built solution scaled for market served
- Future proof upgrades included
- Transparent services always in the know



KEY FUNCTIONALITYOPERATIONAL AVAILABILITY - 99.999%

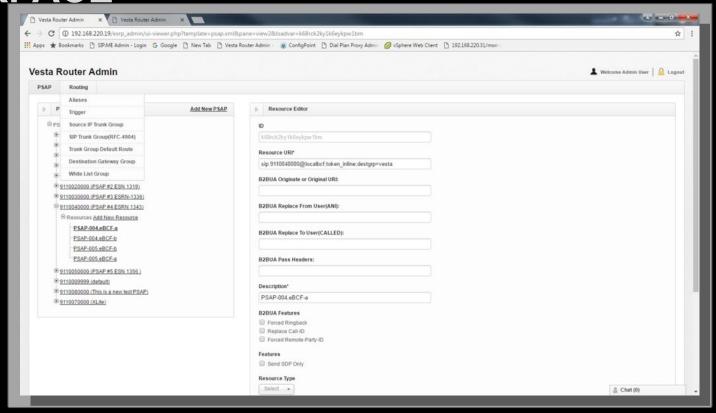
- Thoroughly tested platform prior to deployment
- Designed with no single points of failure
- Redundant, diverse call routing instances with load balancing
- VM technology providing snapshots for quick restoration
- Redundant and scalable ESInet using diverse MPLS networks
- Dedicated 9-1-1 NSOC monitoring with predictive trend analysis



KEY FUNCTIONALITY

ROUTING SERVICES INTERFACE

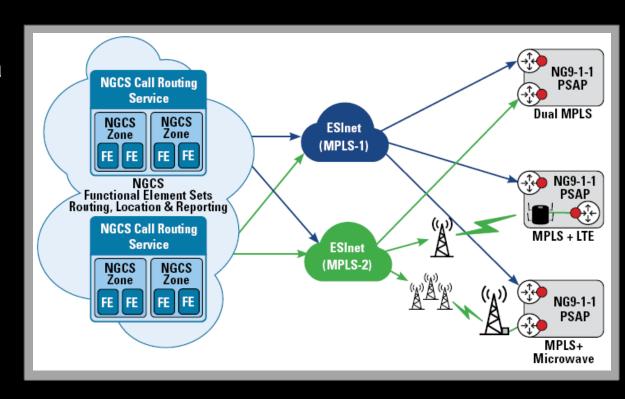
- Develop, implement custom policy routing rules for each agency
- Manage changes to routing policy as required or customer chooses rules from list
- Includes Event Logging Service





KEY FUNCTIONALITY ESINET: REDUNDANCY & DIVERSITY

- Redundant & diverse IP transport network delivering routed 9-1-1 calls from the NGCS Data Centers to the PSAP call handling systems
- Redundant network devices, no single point of failure
- Diverse network paths, routes and building entry (where available)
- Diverse carriers & network providers (where available)
 - Carrier-based MPLS
 - Statewide Digital Microwave System
 - Existing regional Motorola microwave





KEY DIFFERENTIATORS

ESINET

- Flexibility and options in network providers to provide redundancy and diversity from the NGCS data centers to PSAP (last mile).
- Leverage existing Montana microwave infrastructure to provide diverse connectivity to PSAPs.

LOCATION SERVICES

- Delivery of location with the call for Geospatial Routing
- Real Time Synchronization between the GIS Dataset and the Location Database data



CONSIDERATIONS FOR AN NGCS SOLUTION

- End-To-End Public Safety Network
- Managed Service Overlay Across Entire Solution
- Modular Deployment Models
- Provider Services and Manages All Hardware
- Provider Manages The Network
- Subscription-based Service

- Integration and Synergies With Other Applications Servicing the PSAP
- Evolution of Standards Included in the Subscription Service
- Execution and Management of Cyber Security Services
- Secure & Efficient Use of Citizen Input & Internet of Things Data



THANK YOU

