

CASE STUDY

A NATIONAL PUBLIC SAFETY AGENCY MODERNIZES EMERGENCY LOCATION SERVICES WITH PERTSOL iLOCATOR



INTRODUCTION

A national emergency communications authority in the Asia-Pacific region launched a modernization initiative to strengthen emergency caller location capabilities across evolving 4G and 5G telecom networks.

The organization supports nationwide police, fire, ambulance, and public safety operations serving over 70 million citizens across metropolitan cities, highways, industrial zones, and remote regional areas.

Handling millions of emergency interactions annually across multiple telecom operators, the authority required reliable real-time caller location visibility to support faster emergency dispatch, improved responder coordination, and future-ready public safety communications operations.

CHALLENGES

Operating a nationwide emergency communications environment across multiple telecom networks introduced several operational and technical challenges impacting emergency response effectiveness, location accuracy, multi-operator interoperability, and the transition toward a scalable cloud-based emergency location platform.

Legacy Emergency Location Infrastructure Limitations

The existing emergency location environment relied on fragmented operator-dependent systems with limited scalability, interoperability, and operational visibility, creating complexity across emergency location workflows.

Increasing Demand for Accurate Emergency Caller Positioning

Emergency responders frequently encountered situations where callers were unable to accurately communicate their location, particularly across:

- ✓ Highways and transportation corridors,
- ✓ Densely populated urban areas,
- ✓ Industrial zones,
- ✓ And remote regional locations.

Traditional network-based location methods often lacked the precision required for rapid emergency dispatch and response coordination.

Multi-Operator and Multi-Network Complexity

The authority required reliable emergency location interoperability across multiple Mobile Network Operators (MNOs) supporting both 4G and evolving 5G network environments.

The platform needed to support:

- ✓ Real-time emergency positioning workflows,
- ✓ NI-LR and MT-LR procedures,
- ✓ AML correlation,
- ✓ And standards-aligned telecom signaling integration.

Transition Toward Cloud-Based Emergency Services Infrastructure

The organization planned to modernize its emergency location infrastructure through a geo-redundant Microsoft Azure-based deployment model supporting high availability, disaster recovery readiness, scalable emergency traffic handling, and simplified lifecycle management.

Need for Real-Time Operational Visibility

The authority required greater visibility into emergency location transactions, positioning workflows, telecom signaling procedures, and system health monitoring to improve operational assurance and troubleshooting efficiency.

Future Readiness for 5G Emergency Positioning

As regional telecom operators accelerated 5G deployments, the organization required a future-ready platform capable of supporting evolving 5G positioning technologies and next-generation public safety communications requirements.

WHY THEY CHOOSE PERTSOL

The organization selected PertSol based on its expertise in delivering telecom-grade Location-Based Services and emergency communications platforms for complex operator and public safety environments.

PertSol's iLocator platform provides a centralized and standards-compliant architecture capable of supporting advanced emergency positioning workflows across both 4G and 5G networks while enabling scalable Microsoft Azure-based deployment models.

The platform's hybrid telecom-cloud architecture enables secure telecom signaling integration alongside containerized application services, analytics, and orchestration frameworks, supporting both operational resiliency and future scalability.

PertSol's experience in deploying carrier-grade telecom and emergency services solutions provided the organization with a reliable technology partner capable of supporting long-term modernization objectives and evolving public safety communication requirements.

SOLUTION

Solution Implemented: PertSol iLocator – Emergency Location Information Service Platform

PertSol deployed an Emergency Location Information Service architecture integrating 4G GMLC, E-SMLC, 5G GMLC, and 5G LMF capabilities within a Microsoft Azure-based deployment environment to support real-time emergency caller positioning across multi-operator 4G and 5G telecom networks.

KEY COMPONENTS AND CAPABILITIES IMPLEMENTED

Centralized Multi-Operator Emergency Location Framework

Deployment of a centralized emergency location platform capable of supporting simultaneous integration with multiple mobile network operators while providing unified emergency location management and orchestration.

Integrated 4G and 5G Positioning Architecture

Implementation of advanced positioning capabilities supporting:

- ✔ 4G GMLC and E-SMLC positioning workflows
- ✔ 5G GMLC and LMF-based positioning procedures
- ✔ Emergency NI-LR and MT-LR workflows
- ✔ Standards-aligned telecom signaling and positioning interfaces

Intelligent Multi-Method Positioning Engine

Deployment of an intelligent positioning framework supporting multiple location determination methods including:

- ✔ Cell ID
- ✔ E-CID
- ✔ A-GNSS
- ✔ OTDOA
- ✔ 5G NR-based positioning

The platform dynamically selected and optimized positioning methods based on network conditions, UE capabilities, and location availability.

ELS/AML Integration and Location Correlation

Integrated handset-derived emergency location data, including Google Emergency Location Service (ELS) and AML inputs, with network-based positioning workflows to improve emergency caller location precision and operational reliability.

Hybrid Telecom-Cloud Deployment Architecture

Deployment of a hybrid architecture combining telecom signaling infrastructure with containerized application and orchestration services hosted within Microsoft Azure.

- ✔ Telecom-grade signaling reliability,
- ✔ Cloud-native scalability,
- ✔ Lifecycle management,
- ✔ And resilient emergency service operations.

High Availability and Disaster Recovery Framework

Implementation of a resilient deployment architecture supporting geo-redundancy, failover mechanisms, scalable emergency traffic handling, and continuous service availability for mission-critical operations.

Centralized Monitoring and Operational Analytics

Deployment of centralized operational visibility capabilities providing transaction traceability, positioning workflow monitoring, signaling visibility, request and response logging, system health monitoring, and operational analytics.

Secure Telecom and Application Integration

Secure integration with mobile core networks, emergency services applications, AML systems, and operational platforms through encrypted telecom and cloud-native interfaces.

RESULTS

- ✔ Near real-time emergency caller location retrieval enables faster dispatch coordination across nationwide emergency response operations.
- ✔ Successfully processed over 18 million emergency location transactions annually across 4 nationwide telecom operators and multiple public safety response agencies.
- ✔ Improved caller location precision to within 5–15 meters in AML-supported scenarios, significantly improving emergency dispatch accuracy compared to legacy network-only positioning methods.
- ✔ Delivered geo-redundant Microsoft Azure deployment architecture engineered for 99.99% service availability with active failover support across dual regional deployment zones.
- ✔ Reduced emergency response coordination delays by up to 40% through centralized monitoring, real-time positioning visibility, and automated multi-network location orchestration.

KEY HIGHLIGHTS

Challenge	Solution Approach	Operational Impact
Low accuracy from legacy network-only location methods	Integrated AML with advanced 4G/5G positioning workflows	Improved caller location precision to within 5–15 meters
Multi-operator interoperability challenges	Enabled integration across 4 nationwide telecom operators	Reliable emergency location retrieval across networks
Delays in emergency dispatch coordination	Enabled near real-time location retrieval within seconds	Faster emergency response and dispatch efficiency
Need for resilient emergency services infrastructure	Hybrid Microsoft Azure telecom-cloud deployment model	Improved scalability and operational resiliency
Need for accurate emergency caller positioning	Deployed geo-redundant Microsoft Azure architecture	99.99% service availability with active failover support
Limited operational visibility and monitoring	Implemented centralized monitoring and transaction analytics	Improved troubleshooting and operational oversight
Increasing emergency traffic volumes	Deployed scalable hybrid telecom-cloud ELIS platform	Supported over 18 million annual location transactions

“Every emergency call begins with one critical question: Where is the person who needs help? Advanced location intelligence answers that question in real time, enabling faster dispatch and more effective emergency response.”