ViTrust: making mission-critical mobile broadband a reality today
Opening up new possibilities

Every second counts in an emergency. It’s critical that emergency services can respond quickly and have the right information to rapidly assess the situation and take action. LTE enables real-time video and broadband data services that greatly enhance the situational awareness for first responders.

LTE opens up a new vista of communications possibilities for rescue missions and disaster recovery situations. It can also enhance the day-to-day operational efficiency of public safety agencies with new applications for surveillance, real-time database access and remote medical assistance.

- Group communication including push-to-video
- Real-time video
- Database lookup and reporting
- Remote monitoring
- Location and mapping
- Control room applications
Deploy LTE the way you want

Public safety operators have different requirements and different resources. With Nokia, you can deploy your LTE mission-critical network to match your situation, such as operational and capital budgets, available spectrum, existing commercial operator network availability and expected revenues. Nokia LTE solutions offer many options to suit any deployment schedule and offer an evolutionary path to meet your future needs.

Dedicated public safety network
Public safety operator deploys private LTE radio access and core network infrastructure solely to provide public safety services and applications over mobile broadband.

Hybrid solution
Public safety operator has a network and/or spectrum sharing agreement with a commercial mobile network operator. The public safety operator may also implement a dedicated LTE network in key locations, while using the commercial network in other areas.

Fully commercial operator network based
Commercial mobile operator provides the full network and all services for public safety users based on a negotiated service level agreement and price.

Mobile virtual network operator (MVNO)
Public safety operator uses commercial mobile network infrastructure instead of deploying own network, but operates its own subscriber database, applications and billing services.
LTE is ready for public safety today. Nokia is at the forefront of 3GPP standardization of public safety specific features.

The Nokia ViTrust end-to-end solution provides the resiliency as well as network, device and application security capabilities that mission-critical communications needs. We provide reliable service availability with redundant and robust products, scalable architecture, user and service prioritization as well as temporary coverage options for peak load situations and remote areas.

**Focused on public safety requirements**

**End-to-end Security**
- Network protection at any layer (RAN, IP/MPLS, microwave and optical)
- Application encryption
- User and device security
- Firewalls, access control, authentication and authorization
- Remote device management

**Network and Service Availability**
- Deployable systems to fill network coverage shortfalls
- Fallback to direct device-to-device communication to extend coverage
- Microwave link reliability with adaptive modulation
- MPLS-based fast recovery and multi-fault resiliency
- Geo-and hot control redundancy of key network elements
- Enhanced power backup systems

**Traffic and user prioritization**
- Policy Management
- QoS-capable backhaul and radio networks
- Traffic engineering
- User differentiation based on 3GPP standard QCIs
- Load balancing and admission control
Nokia ViTrust Public Safety end-to-end solution
End-to-end security, high reliability and quality of service
# Nokia ViTrust Public Safety end-to-end solution

End-to-end security, high reliability and quality of service

## Public Safety devices
Easy to use, convenient to carry rugged devices capable of withstanding environmental issues. The devices have a pre-integrated client application for capabilities such as push-to-video, push-to-talk and location tracking and meet stringent public safety security requirements.

## Radio access
The Nokia portfolio includes LTE Flexi Zone Small Cells and AirScale Base Station for reliable coverage and capacity indoors and outdoors.

## Core network
Core solutions that can scale to meet the network requirements: compact units to serve deployable and small networks, mid-sized core for full network deployments, and data center solutions for nationwide networks.

## Compact LTE solutions
Small cell and macro cell LTE solutions with integrated core can operate without backhaul access and can be transported in a regular-sized vehicle to establish coverage in remote areas. The most compact can be carried in a backpack.

## Backhaul network
IP/MPLS backhaul with integrated packet microwave and optical transport infrastructure helps meet diverse connectivity needs. The shared-services approach offers deployment flexibility. The infrastructure supports evolution to software defined networking (SDN) solutions.

## Public Safety group communications applications
Aligned with 3GPP and ready for MC-PTT 3GPP Release 13, the Nokia Group Communications solution includes client application, server application and dispatch and management console. Offering push-to-talk, alert messaging, location tracking and innovative push-to-video for group communications.

Management systems: Manage any component of the public safety network, as well as end-to-end network, device and end-user management. The solution meets the operational and budget constraints of small operators.

Professional services: Nokia experts provide a full range of services from consulting, network design, implementation and integration, to optimization and network management.
Nokia is your trusted partner

Moving to LTE may seem like a technology leap for public safety agencies.

A partner that understands mission-critical requirements and the evolution of technology and services is vital to ensure the best planning and implementation of your transition to LTE for public safety.

Nokia is that trusted partner. We offer deep expertise that goes beyond just the technology. We have a history of helping commercial operators to move from legacy technologies to today’s LTE networks. We are also actively supporting them on their journey to 5G.

Nokia ViTrust, our LTE end-to-end approach and standards-based solutions combined with a comprehensive service portfolio help you safely adopt broadband technologies that meet your specific public safety deployment needs. We are also working with public safety agencies to build resilient networks and to manage them reliably and efficiently.

Nokia has a 60-year history of working with government customers such as security agencies and other governmental departments. More than 110 organizations across the globe have chosen Nokia IP, optical, microwave, or 4G LTE technology for their mission-critical networks.
About Nokia

Nokia is a global leader in the technologies that connect people and things. Powered by the innovation of Bell Labs and Nokia Technologies, the company is at the forefront of creating and licensing the technologies that are increasingly at the heart of our connected lives.

With state-of-the-art software, hardware and services for any type of network, Nokia is uniquely positioned to help communication service providers, governments, and large enterprises deliver on the promise of 5G, the Cloud and the Internet of Things. [http://nokia.com](http://nokia.com)

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