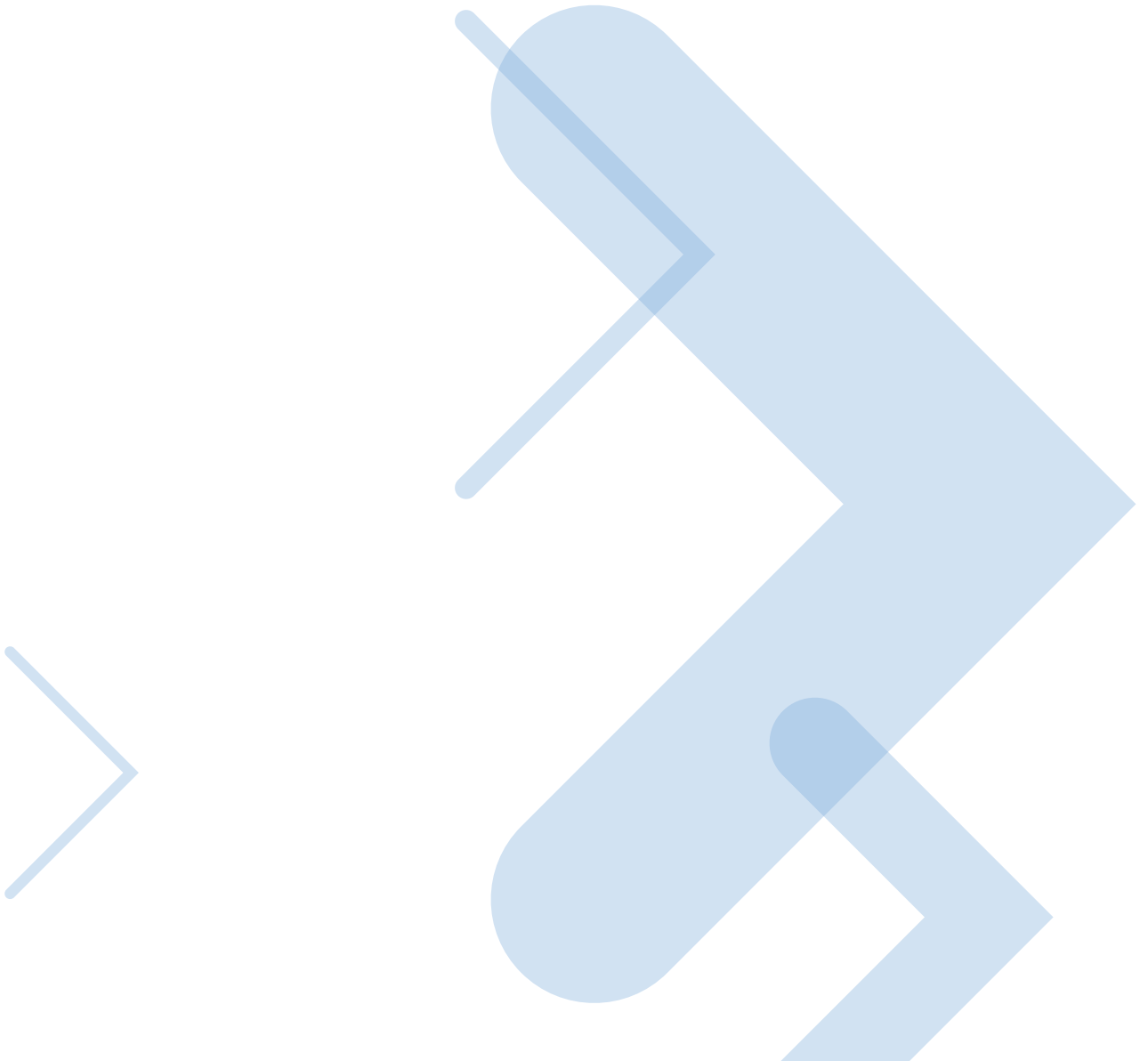




# Incident Scene, Event and Disaster Management

More Effective Response with Wireless Broadband  
and Rugged Devices



## Contents

- 2** Executive Summary
- 3** Homeland Security Goals for Data Communication
- 4** Motorola's Incident Scene, Event and Disaster Management Data Solution
- 5** What's In It for Responders and Commanders?
- 6** Disaster Management Scenario
- 8** Solution Components
- 9** Why Purchase This Solution?

# Executive Overview



Public safety agencies have historically relied primarily on voice communication with some use of data. Today, large repositories of vital data are available at all levels. Public safety organizations are demanding the ability to have this information available at every incident.

## Homeland Security Goals — Interoperability, Flexibility and Situational Awareness

The Department of Homeland Security stresses interoperability, flexibility and situational awareness in its statements on communications requirements, specifically:

- Heightened Data Interoperability: While voice remains a focus, text data, image, video and multimedia are often an additional mode or form needed for a given situation. Interoperability of data communications has assumed increasing importance.
- Flexibility: Responders must have data communications on scene, as well as away from the scene, for command control and information to complete their missions.
- Wireless Broadband Data: Wireless broadband data means high-speed sharing of text, images and video; as well as the availability of IP-based collaboration applications.

## Broadband Advancements — Streaming Video, Geo-location and Collaboration Tools

Advances in broadband technology make it possible to take the next step beyond essential voice and limited data communication to delivering broadband data, including text, images, streaming video, geo-location and collaboration tools to the incident/event scene. More and more public safety officials recognize the superior situational awareness that broadband data gives to commanders to deliver the right resources and decisions to the right places at the right time.

## Motorola's Incident Scene, Event and Disaster Management Data Solution — an Affordable First Step

Motorola has a broadband solution that delivers data, video and images when and where it's needed on a deployable mesh network, with or without a fixed back-end communications infrastructure. Based on Internet Protocol (IP) technology, Motorola's Incident Scene, Event and Disaster Management Data solution assures highly interoperable, reliable broadband data communication, and represents an affordable first step toward a permanent mesh network.

"We host many large events at our world-class venues in Wake County and we needed a solution to better protect our residents and guests, without having to increase the size of the security detail."

– John Higgins, IT Assistant Director, Wake County, NC

# Homeland Security Goals for Data Communication



The Department of Homeland Security has articulated a vision for public safety communications that demands increased interoperability, flexibility and situational awareness at the command and responder levels.

It broadens communications requirements beyond mission critical voice to include data, image, video and multimedia that require high-speed broadband communications.

## Heightened Data Interoperability

The Homeland Security requirements for communications interoperability include:

- "...the ability of public safety agencies to talk across disciplines and jurisdictions" via voice, data, image, video, or multimedia that include multiple forms of information."
- "...the ability to communicate and share information as authorized when it is needed, where it is needed, and in a mode or form that allows the practitioners to effectively use it."

While voice remains a focus, text data, image, video and multimedia are often an additional mode or form needed for a given situation. Interoperability of data communications has assumed increasing importance.

## Flexibility

Since an emergency event or incident can happen anywhere, responders must have data communications on the scene, as well as away from the scene, for command control and information to complete their missions. Homeland Security requirements have, therefore, recognized the need for temporary networks that can form automatically on-scene among first responders, and can add new responders, such as ambulances, police units, firefighting and EMS apparatus, and members of local, state and federal agencies, as they arrive.

Temporary networks must be able to integrate with larger temporary or fixed networks, but need to be independent of fixed infrastructure in case the latter is disabled. Because incident scenes often expand as incidents develop, temporary networks need to be capable of expanding easily with the scene.

## Wireless Broadband Data

Wireless broadband data means high-speed sharing of text, images and video, as well as the availability of IP-based collaboration applications.

The Homeland Security requirements say that:

*Commanders, supervisors, medical staff, etc., can make more intelligent decisions more efficiently with data from field personnel. Similarly, personnel entering a burning building armed with information about the building, such as contents, locations of stairwells, hallways, etc., can also perform their duties more efficiently.*

In other words, the availability of wireless broadband data means heightened situational awareness for commanders and responders.

"With the stadium in the heart of downtown Detroit, we needed a solution that would boost officials' situational awareness at entrances and exits to the grounds. Motorola's solution allowed our officers to monitor a large area and population right from their laptops, while remaining in their dispatched areas."

– **Derrick Miller, Chief Information Officer for the City of Detroit**

# Motorola's Incident Scene, Event and Disaster Management Data Solution



Conforming to Homeland Security requirements, Motorola has a wireless broadband solution that delivers data, video and images when and where needed with or without fixed back-end communications infrastructure.

The solution deploys a wireless broadband tactical mesh network to the incident scene with an outfitted Incident Command Vehicle, deployable cameras and video monitors, and hand-held and mobile devices. It also backhauls data from centralized local, state and federal databases and provides incident management applications for collaboration between responders and commanders.

Motorola's Incident Scene, Event and Disaster Management solution assures highly interoperable, reliable broadband data communication. It also represents an affordable first step toward wide-area broadband mesh networks.

## Motorola's Solution:

- Deploys a tactical broadband mesh network that is self-forming.
- Outfits an Incident Command Vehicle as a local command center and hub for broadband communications.

- The mesh network supports arriving responders from the police, the fire department, and arriving local, state and federal officials. It ensures responders access to broadband data and video intelligence.
- It backhauls to command centers, central databases, fixed networks and other sources of critical data.
- It also provides collaboration applications for white-boarding, messaging and file sharing.
- Uses IP-enabled applications so that responders from different jurisdictions/agencies can share vital data and applications easily at the incident scene.
- Self-heals and continues to operate if one component of the network is destroyed by re-routing communication through wireless routers located in each device on the network. Any member of the network can serve as a backup router if other members are disabled.

<b>REQUIREMENT</b>	<b>MOTOROLA SOLUTION</b>
<b>Heightened Data</b>	<ul style="list-style-type: none"><li>• Uses IP standard for data sharing so that devices—handsets, laptops, cameras, etc.—that are IP-enabled can share data.</li></ul>
<b>Interoperability</b>	<ul style="list-style-type: none"><li>• Uses IP-enabled applications so that responders from different jurisdictions/agencies can share vital data and applications easily at the incident scene.</li></ul>
<b>Solution Flexibility</b>	<ul style="list-style-type: none"><li>• Can be deployed as needed for incidents such as fires, crime scenes, explosions, terror incidents and large public events, etc.</li><li>• It works with or without back-end fixed infrastructure and can be expanded instantly to accommodate additional responders.</li><li>• Self-heals if network elements are destroyed</li></ul>
<b>Wireless Broadband Data Usage</b>	<ul style="list-style-type: none"><li>• Provides broadband data, including text, images, video and collaboration applications.</li></ul>

# What's In It for Responders and Commanders?



Motorola's broadband data solution delivers immediate value to the responders at the incident scene and to commanders at event management centers. Motorola's solution...

## Improves Situational Awareness

Responders and commanders get real-time information (e.g., streaming video) as opposed to someone talking to them about what happened. Officials and commanders can manage and coordinate all responses more effectively because their situational awareness is improved. Fast and efficient resource deployment is assured. The visual aspect (streaming video and other images like maps, blueprints, whiteboard drawings, etc.) helps reduce miscommunication.

## Acts as a Force Multiplier

During a time of restrained budgets when it is difficult to hire more officers, public safety commanders can still have more "eyes" at the incident scene. Video pictures taken at the scene of a fire or other emergency sites are used to monitor situations without requiring extra personnel as on-scene observers. Motorola's solution uses deployable streaming video pods to get a real-time 360-degree view of the scene.

## Is Flexible

Motorola's solution can handle incidents/events, from fires to special events like football games and conventions, to traffic pileups, to acts of terror.

The solution projects reliable broadband communication where you need it, when you need it, with or without the presence of back-end fixed communication infrastructure. The network provides easy scalability as the incident develops. It can maintain communications as a stand-alone network when fixed communication infrastructure is destroyed or inoperable.

## Provides Data Interoperability Using IP Technology

Motorola's solution uses IP technology to empower interoperability at the Layer 3 level. This means that any text data, video, image or application that can run on IP, can be shared by all the responders and commanders at the scene and in central command centers. For example, responders and commanders can move streaming video of a fire or bomb threat to differing IP technology platforms. They can run collaborative incident management applications that allow them to share maps and blueprints, make notes and drawings of deployment strategies on maps/blueprints by using whiteboard technology. Because of IP-enabled applications, it is also easier to share data with state and federal officials.

## Provides an Affordable Starting Step for Mesh Networking Technology

You start with a technology platform that provides a mesh network at the incident scene, but is an independent component of a larger technology platform that can include a full-scale, fixed mesh network later.

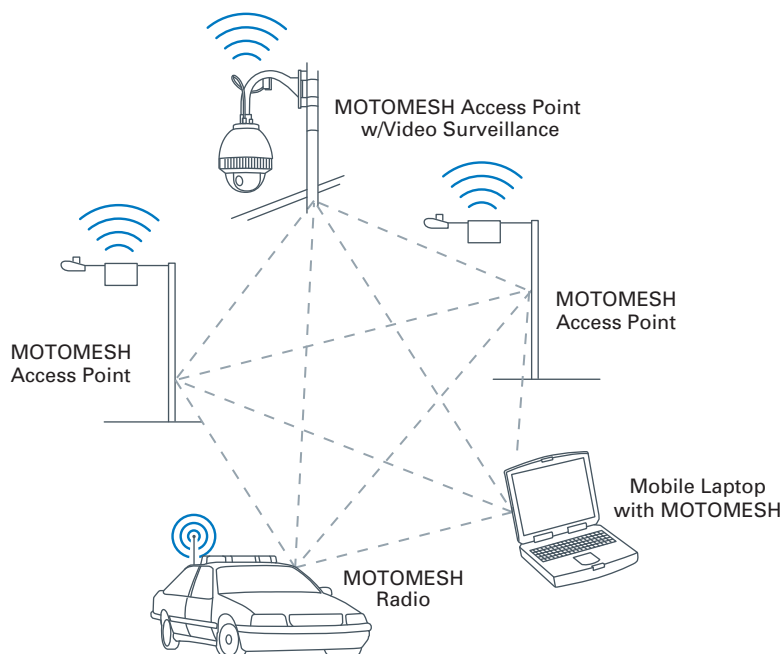
## MESH NETWORKS

Each element of a mesh network—like a handset, laptop computer, mobile device, video pod, IAN pod, etc.—is a node.

A node sends and receives messages and also is a router of messages for its neighbors. Through the routing process, a piece of data finds its way to its destination, passing through intermediate nodes.

If one pathway is destroyed or overcrowded, a mesh network automatically re-routes the data through another path.

The more nodes in a mesh network, the stronger it is, so that when additional responders arrive on scene, the network just gets better.



# Disaster Management Scenario



According to findings of a national survey of 200 public safety officials and first responders by Motorola and the Association of Public-Safety Communications Officials International (APCO), the ability to respond to a natural disaster is the top concern of 65 percent of the officials, far surpassing crime and terrorism concerns.

Natural disasters happen in a number of different ways; a large scale hurricane, powerful localized storms that create tornados and flash floods, earthquakes, and wildfires. Whatever the situation, first responders need a communications network that is flexible, easily deployable, and can be quickly established without the presence of a fixed infrastructure because disasters can happen anytime and anywhere.

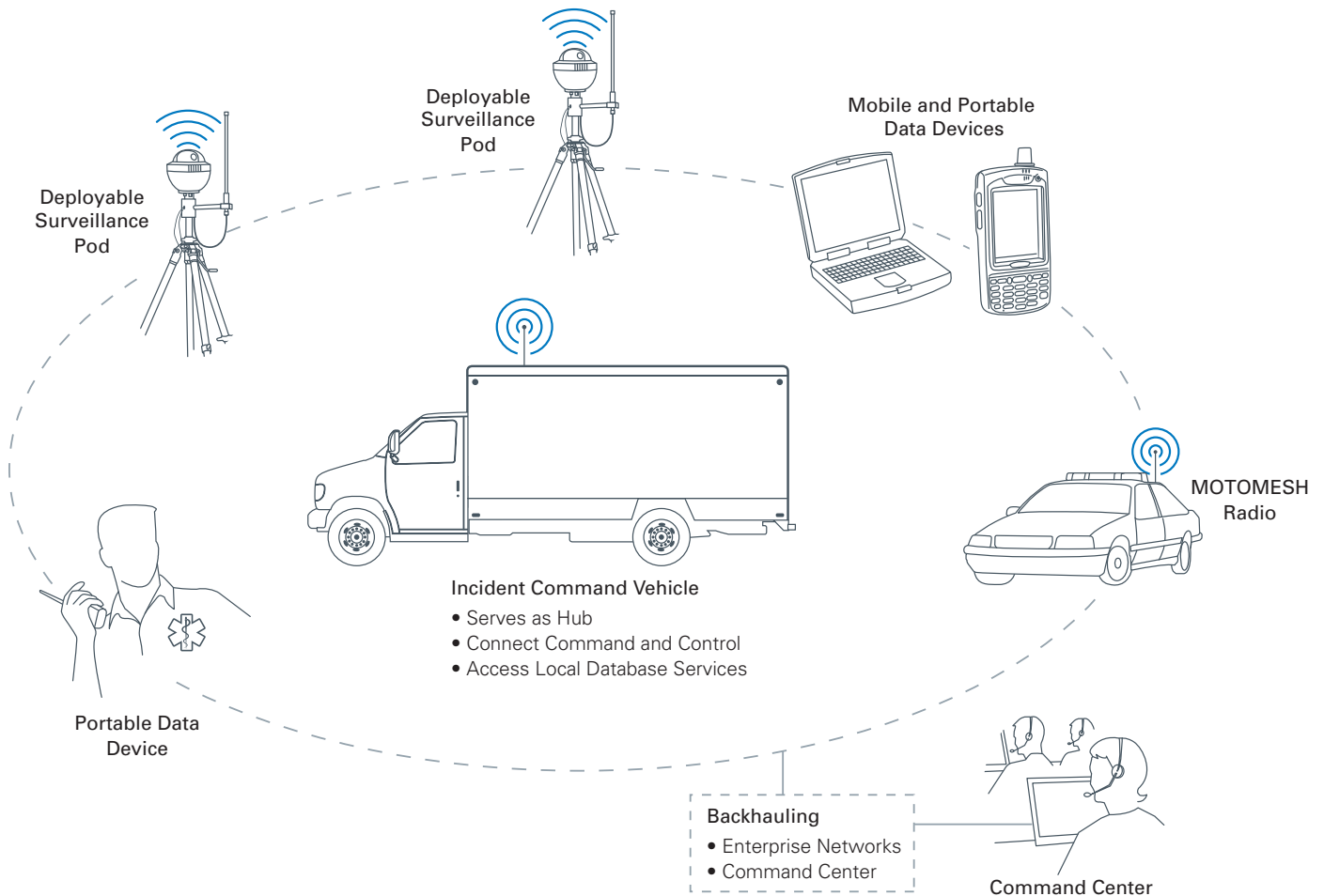
## Seamless Communication

When the first police, firefighters, EMS, and federal agencies arrive on scene to manage the disaster situation, they can instantly share data using a self-forming peer to peer mesh network.

Shared information might include assets on the scene, location and status updates, traffic conditions, maps and deployment diagrams. As each new public safety vehicle or person with a handheld or portable device arrives, the mesh network senses their presence and adds them to the network.

As the disaster situation evolves from management and evacuation to a search and rescue and clean-up effort, the Incident Command Vehicle becomes the support and backbone for the data network complete with links to local and remote commanders, so everyone knows what is happening in real time.

The Incident Command Vehicle deploys tripods containing high-resolution video cameras controlled remotely from the vehicle, or even from a remote command center. These tripods give a 360-degree, adjustable view of the scene to commanders. The same deployable cameras contain mesh network routers to extend the range of the network and provide redundancy in case some network elements are destroyed.





## Backhauling Data

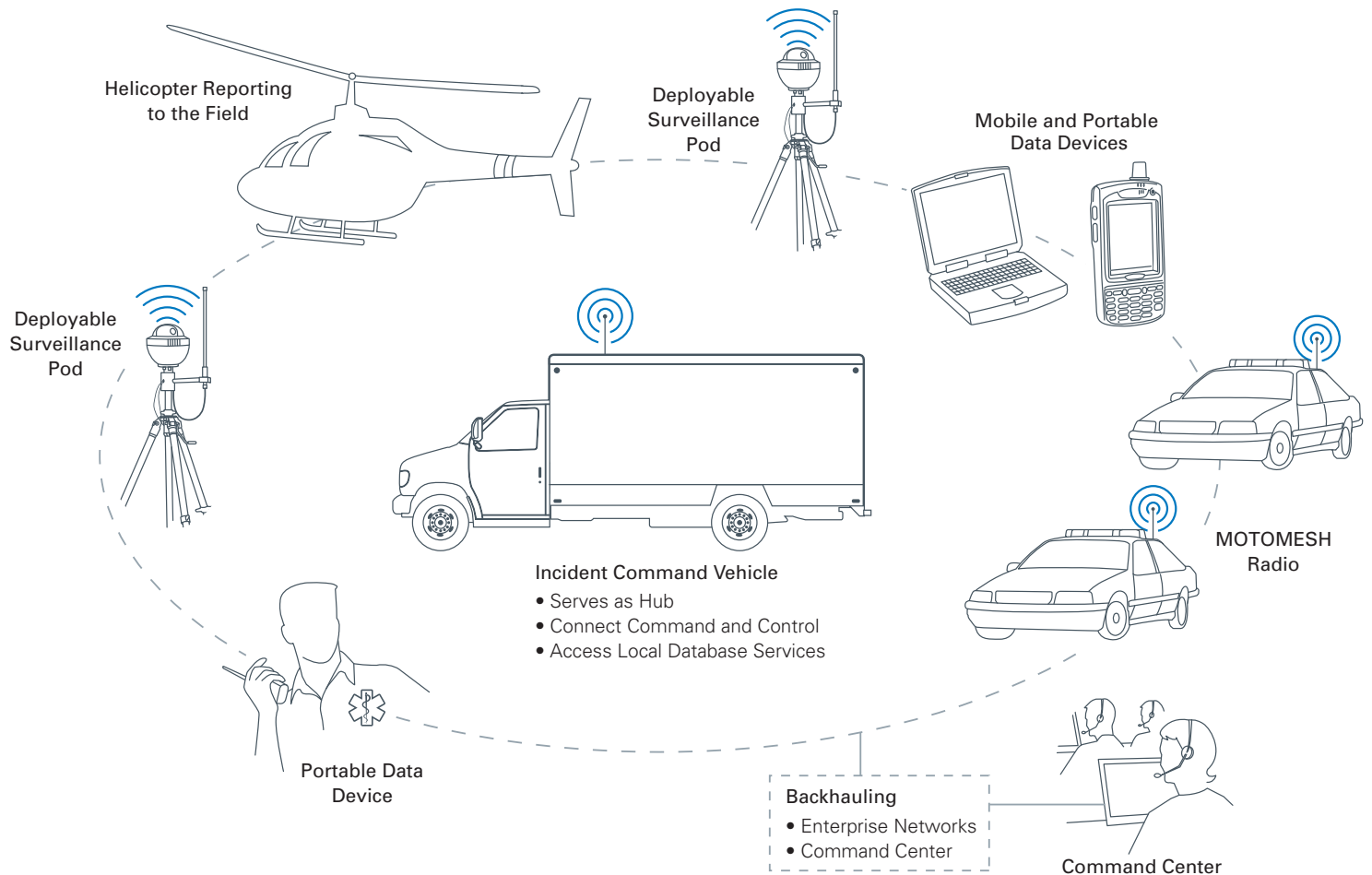
The Incident Command Vehicle allows first responders to backhaul data from the disaster scene network when not within a normal coverage area. Backhaul options include:

- MOTOMESH™ can use existing mesh networks
- Canopy® works with wireless IP bridges
- Satellite supports both shared and dedicated satellite communications
- Public Wireless Carrier

Backhaul links the disaster scene network to remote commanders, networks, and databases that include public safety back office systems, record management systems, hazmat databases, and the Internet. Backhauling means responders can get information like building floor plans, video feeds from other

locations, satellite images of the affected areas, and access to workforce collaboration tools.

Using collaboration capabilities such as whiteboards, messaging, and file sharing, remote commanders can cooperate in real time with local commanders and first responders to direct response tactics at the disaster scene. Within minutes, an incident commander could retrieve a detailed map of the area from a remote database, place it on a white board, make drawings to show a suggested deployment strategy, and share it with other commanders over the network on their rugged notebooks and handheld devices. Additionally, incident scene commanders can use asset tracking applications and RFID technologies to manage on scene vehicles and people for quicker deployment of resources and more efficient evacuations of citizens.



# Networks, Devices, Applications and Services

The Incident Scene, Event and Disaster Management Data solution integrates a number of Motorola and third-party components to address the unique configuration needs of each community. A solution might include some of the following components.

## Key Solution Elements

**Location Tracking Applications** — Location of people and assets required for effective incident scene management

**Collaboration and Conferencing Tools** — Planning, communication, and conferencing include white-boarding, sharing files, and data integration with other applications

**Data File Transmissions, Reports** — Live streaming video, mug shots, maps, large data files, back office databases

**Event, Data, Multimedia logging** — Video, data instructions, messaging

## Key Devices

**Network Devices** — Network to support on scene infrastructure

- *MOTOMESH™ Solo*
- *MOTOMESH™ Duo*
- *MOTOMESH™ Quattro*

**Network Devices** — Network to support backhaul to remote networks and facilities

- *MOTOMESH™ Solo*
- *MOTOMESH™ Duo*
- *MOTOMESH™ Quattro*
- *Point-to-Point*
- *Canopy®*
- *Multi-Net Mobility™*
- *Public Wireless Carrier*

## Mobile & Fixed Video Devices and Applications

- *Mesh Camera* — Mesh enabled wireless video surveillance platform
- *Mobile Video Sharing* — Real-time video streaming
- *DigitalPatroller® DP2* — Digital in-car video system
- *Motorola Partner Applications* — Content distribution, integrated management, archiving, storage

## Data Devices

- *ML910™* — Rugged notebook
- *MW810* — Mobile workstation
- *MC 70 and MC 9000 series* — Handheld portable computing devices

# Why Purchase This Solution?

## 1. Broadband data is a requirement for increased safety of first responders and the communities they serve.

The Department of Homeland Security has made it clear that broadband data, including text, images and video, is a critical piece of the public safety communications puzzle—to provide enhanced situational awareness to commanders and responders alike. Increased situational awareness provides for a better planned response, resulting in increased safety for both the first responders and the community at large.

## 2. Motorola has an affordable, tactical solution for Incident Scene, Event and disaster Management.

Public safety officials, commanders and responders need broadband data to respond to incidents and events, but budgets remain flat. Motorola's Incident Scene, Event and Disaster Management Data solution affordably provides broadband data at the incident scene. You can project its tactical, broadband mesh network and data capabilities to the incident scene when and where needed, without fixed communication infrastructure.

And Motorola's Incident Scene and Event Management solution uses IP technology to empower interoperability at the Layer 2/Layer 3 level.

## 3. Motorola's solution works with your current infrastructure and provides a solid bridge to the future.

If your community is already protected by a fixed broadband mesh network, Motorola's solution adds flexibility to the network and provides backup when critical parts of the fixed network are destroyed. If your community has no access to broadband data now, Motorola's Incident Scene, Event and Disaster Management solution provides access affordably, and assures a solid bridge to fixed broadband mesh networks added later.

**To learn more, call your local salesperson or dial 1-800-367-2346.**

"We live in a world now where catastrophic events occur, whether man-made or natural. Our priority is to take care of our citizens first and foremost, and in the 21st, we should be able to do that. We had great support from the private sector and Motorola was one of them in a big way."

– Chief Jack Colley, Governor's Division of Emergency Management, State of Texas

# **MOTOA<sup>4</sup>**

## *Mission Critical Portfolio*

### ***Technology That's Second Nature™***

The Incident Scene, Event and Disaster Management Data solutions are part of the MOTOA4 Mission Critical Portfolio of products that offer seamless connectivity between first responders. Motorola puts real-time information in the hands of public safety personnel to provide better information that enables better decisions for better outcomes. It's Technology That's Second Nature™.

For more information on the MOTOA4 portfolio and Motorola's commitment to the public safety industry, please visit our website at **[www.motorola.com/secondnature](http://www.motorola.com/secondnature)** or contact your local Motorola representative.



**MOTOROLA**

Motorola, Inc.  
1301 E. Algonquin Road  
Schaumburg, Illinois, 60196, U.S.A.  
[www.motorola.com/secondnature](http://www.motorola.com/secondnature)  
1-800-367-2346

MOTOROLA and the Stylized M Logo are registered in the U.S. Patent and Trademark Office. All other product or service names are the property of their respective owners.  
© Motorola, Inc. 2008

RO-99-2109A