Disaster Management: Communications Solutions for First Responders

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Advancing a Connected World

iDIRECT

Communications Solutions for First Responders

Disasters can occur anytime and anywhere. Whether the emergency is caused by an act of nature or an act of man, the ability to set up and maintain communications throughout the situation is critical for a successful disaster relief effort.

This white paper looks at the communications networks that first responders can use to ensure their organizations are up to the task of coordinating and providing needed relief services in any emergency situation.

Assume the Worst Case Scenario

First responders face two major communications obstacles during any type of catastrophic event. First, heavily damaged or destroyed terrestrial networks often throw entire regions into a complete communications blackout. Second, even if a part of the existing infrastructure is operational, available lines quickly become oversubscribed by heavy traffic volume, making communications through them cumbersome or impossible. In either case, committed bi-directional communications is required for coordinating relief efforts across wide geographic areas where quick response times are the key to success.

Response teams and their command centers need to be in constant contact regardless of location or access to traditional communications support. Equipment must work in the worst situations, and be easy to configure, maintain and transport. Additionally, employed systems must support any required applications, including voice, data and video.

In sum, the ideal disaster relief communications system must be able to do all of the following:

- Bypass traditional networks
- Easily scale to meet growing needs during the relief effort
- Quickly extend its reach to any geographical location
- Offer user-friendly configuration, management and maintenance
- Provide a small footprint for easy transport
- Support any mix of voice, data and video applications
- Require minimal power

Advances in satellite technology, make leveraging an IP-based broadband over satellite solution ideal for first responders or any organization that requires communications access in an inhospitable environment.

Not only do today's satellite solutions operate independently of the terrestrial infrastructure, they also support the full array of broadband applications including voice, data and video services. Additionally, solutions on the market today are rugged, flexible, and can be quickly activated under any conditions, anywhere in the world.

Enhanced Redundancy and Mobility

In planning disaster management services and in responding to specific emergency situations, first responders face several unique challenges. First, they have to protect their own primary emergency response systems from a potential catastrophic event. Second, they need extended mobility if a response effort is in a geographically distant location or covers an unusually large area.

In response to these challenges, iDirect has recently introduced the following new features that provide system wide satellite redundancy and extended mobility for operations in the field.

- Geographic hub redundancy
- Itinerant terminals
- COMS on the Move

Geographic hub redundancy addresses concerns for continuity of operations in the unlikely event that a disaster strikes at the relief organization's headquarters. Itinerant terminals and COMS on the Move add another layer of mobility for relief operations that have to move through multiple satellite communities or operate outside of their satellite footprint.

Geographic Hub Redundancy

Because disasters cannot be predicted and can occur anywhere, centralized operations at the primary teleport hub are at potential risk, as are remote sites, which depend on the teleport hub for communications access in the field. If a catastrophic event strikes at the organization's headquarters, iDirect's geographic hub redundancy provides a failsafe and guarantees complete system redundancy under the worst case scenario.

Organizations can set up a secondary hub at any location distant from the primary hub. A dedicated terrestrial link connects the two sites and the secondary hub is updated in real-time ensuring that all mission critical information is accurately mirrored at the secondary location. If the primary hub goes down for any reason, the secondary hub detects the failure and automatically picks up operations to ensure seamless functionality.

The entire system, at the primary and secondary location, is managed by iDirect's global network management system, which detects, coordinates and transfers operations to the secondary hub if needed.

Itinerant Terminals and COMS on the Move

By definition disaster relief operations are mobile operations. Whether the response effort involves traveling long distances in a contiguous disaster relief area or setting up new operations in a geographically remote location, field teams need to be assured that their communications system will provide seamless connectivity at any location.

While satellite enables continuous service across a wide geographic area, there are times when a relief operation must be set up outside of an organization's satellite footprint. Or, in another scenario, there are times when a single disaster relief effort must cover an enormous geographic area, which will cross several satellite communities while field teams are on the move.

Relief organizations can use different remote terminals to support communications in a different satellite community or they can engage in the time consuming task of reconfiguring their remote access terminals for the new service area. Either option is cumbersome, expensive and particularly difficult for non-technical field teams.

The iDirect system offers a much more viable solution through its (Global NMS which facilitates) itinerant terminals and COMS on the Move.

In the first case, as the term "itinerant" suggests, the remote access terminals can move from place to place and are not bound by any particular satellite footprint. When an operation is set up in a new satellite community, the iDirect Global NMS system allows network operators to simultaneously transfer dedicated IP addresses from one satellite footprint to another satellite footprint for all of the remote access terminals that will be used to support the new operation. Importantly, network operators can do this from a centralized location at a moment's notice.

In the second case, iDirect's Comms on the Move (COTM) provides seamless connectivity literally anywhere in the world. Whether a field team is traveling by truck, ship or plane, the remote access router is intelligent enough to sense when communications is moving out of satellite range and, using automatic beam switchover, it will handoff operations to the next satellite community. This greatly reduces equipment needs and ensures critical communications flexibility.
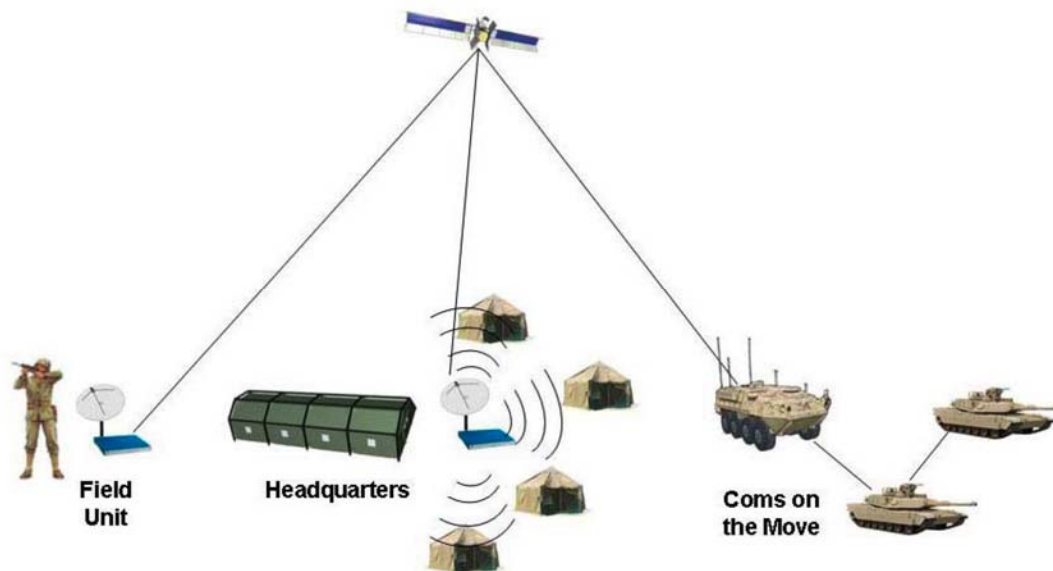
Both of these features are completely integrated into the iDirect platform and functionality can be added to all remote locations via a software upgrade.
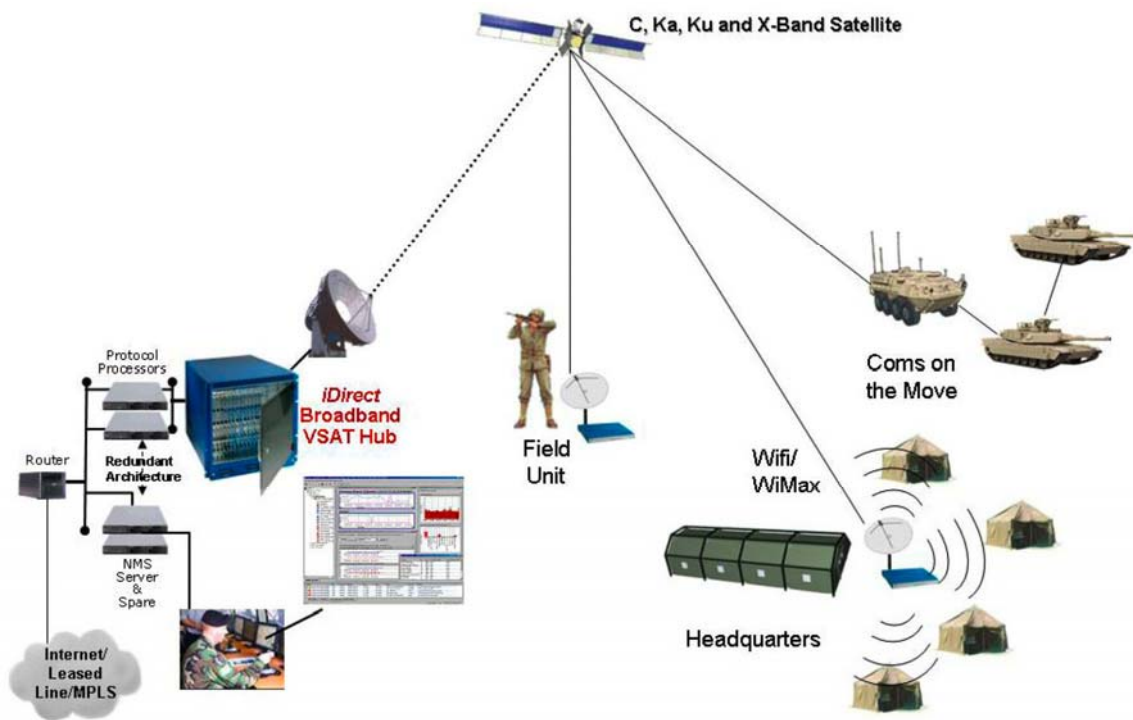
iDirect Solution

iDirect provides high-speed IP communications via satellite that is completely independent from the terrestrial infrastructure. First response, medical or any emergency team can have full communications capabilities, whether the emergency team is in a densely populated urban area where the infrastructure is damaged, or a remote and isolated location where no infrastructure exists.

A single iDirect hub chassis installed at the agency headquarters can support relief operations at any location and across a wide geographic footprint. From this location network operators can configure, monitor and control all remote access sites, and even customize services to meet individual site requirements.

In the field, portable satellite routers, which only weigh 10 lbs, including the power supply, can be easily transported and instantly deployed under any conditions. Each compact satellite router includes a satellite modem, IP router, TCP optimization over satellite, QoS/prioritization and optional AES encryption. The routers are user-friendly and reliable, enabling field teams with little or no technical expertise to easily set up and activate the system from any location.

The system's centralized management combined with user-friendly and easily deployed satellite routers allows response teams to quickly adapt to any emergency situation where systems and services must be transported and configured on the fly.

As a pure IP-over-satellite solution, the system delivers a complete portfolio of broadband access services over the air. Any mix of voice, data and video applications is fully supported and iDirect's industry leading QoS/prioritization and TCP/IP optimization over satellite ensure carrier-class performance for delay sensitive traffic such as voice and video.

Conclusion

The iDirect system operates independently of traditional networks to provide end-to-end high speed connectivity over the air for all voice, data and video applications. It's the ideal communications solution for disaster relief organizations that need to deliver fast, effective emergency response services anywhere, anytime and under any conditions.

Further, by leveraging the inherent flexibility and intelligence of IP networks, iDirect is able to address the unique challenges that disaster relief organizations face in serving their various constituencies. New features that ensure system-wide redundancy and extended mobility significantly strengthen the ability of disaster relief organizations to respond to any emergency situation.