

**Satellite Solutions for
Emergency Relief and Disaster
Recovery Management**

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Advancing a Connected World



Introduction

Disasters can occur anytime and anywhere. Whether the emergency is 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.

A disaster relief team requires full communication capabilities, whether in a densely populated area where there is damage to the terrestrial infrastructure or an isolated location where there is minimal existing connectivity. Satellite is unaffected by terrestrial issues where damage to ground equipment can be widespread. Satellite also can provide redundancy and is easily deployed on short notice.

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

Phases of Disaster Management

When examining the communications requirements for effective disaster management it is important to define the challenges and needs of each phase. Depending on the phase in which the disaster relief efforts are in, the communication requirements are changing. This requires a flexible and scalable solution to support all essential applications.

The applicable phases of disaster management for communication solutions involve:

- Preparedness
- Response
- Recovery
- Reconstruction

If agencies have outlined emergency management communications plans prepared, they will be ready for whenever disaster strikes. Within hours of a disaster, First Responders and aid agencies will need an extremely mobile solution that can be easily deployed and quickly helps them establish the first lines of communication.

The first few weeks after a disaster usually deal with communication between aid agencies, people in the field reporting events as they happen, and supplying data, video and voice services where local communication is typically destroyed.

During the year following a disaster, regions need a robust and flexible solution to aid in reconstruction coordination. Communication needs can vary between agencies providing help with logistical coordination and establishing normal connectivity for offices, villages and cities and providing voice, data and Internet.

Preparedness

When disaster strikes immediate actions can be taken if relief agencies and aid organizations have outlined communications plans for internal and multi-agency coordination.

It is important that the aid agencies request advanced approval from the local government authorities to ensure satellite licenses and customs will not delay the transport and setup of relief communication equipment.

Preparedness can also include using satellite networks for prevention with real-time warning systems. For example, remotes at seismic stations, bottom pressure recorders and tide gauges can detect earthquakes and monitor tsunamis.

Response

The first response effort usually takes up to a couple of weeks after the disaster strikes and is characterized by small teams exploring the area to discover the state of the survivors and infrastructure that remains. This phase is mostly search and rescue and to fulfill emergency services and basic humanitarian needs. First responders face many obstacles during this phase and keeping two-way communication is critical between response teams and their command centers. Heavily damaged or destroyed terrestrial networks often throw entire regions into a complete communications blackout. Even if a part of the existing infrastructure is operational, available lines quickly become oversubscribed by heavy traffic volume, making communications through them intermittent or impossible. In either case, committed bi-directional communications is required to coordinate relief efforts across wide geographic areas where quick response times are the key to success.

The satellite equipment used during this phase must ideally meet a range of requirements:

- Bypass traditional networks
- Easily scale to meet growing needs during the relief effort
- Quickly deploy to any geographical location
- Offer user-friendly configuration, management and maintenance requiring little technical expertise in the field
- Highly reliable and easy to transport
- Support high bandwidth for any mix of voice, data and video applications
- Require minimal or alternative source of power
- Ensure data security with built-in encryption
- Support central management

Recovery

After the immediate danger and basic needs are addressed, recovery efforts will build semi-permanent accommodations, temporary offices, and medical centers to aid victims. The communication capabilities will need to scale quickly and become more permanent while mobile groups will still need portable communications and power to provide service to other locations within the vicinity.

The applications will involve administrative work, voice calls, assessments of relief supplies, and uploading reports, sharing imagery and seismic data.

Higher speed communications with enhanced application support are needed for:

- Supporting higher speeds for more sophisticated applications such as VPN, multicasting, telemedicine, large file transfers, VoIP, internet browsing, emails
- Advanced IP Routing
- Security for sensitive information and transactions
- Quality of Service (QoS) management
- Advanced network management capabilities
- Easy reconfiguration and simple operation

Reconstruction

As permanent development and reconstruction begin, the relief agencies requirements for communications become more formalized and complex. As reconstruction can take years to develop, the relief communication network will need to grow to support more workers and more business critical applications like videoconferencing, VPN, file transfer, VoIP and Internet access. A hierarchy of offices will develop and a flexible infrastructure must be maintained to accommodate offices that are more permanent and field offices that still need portability.

The type of those applications used basically remain the same; only the size of the bandwidth and equipment required will have to scale to support the increased communication needs.

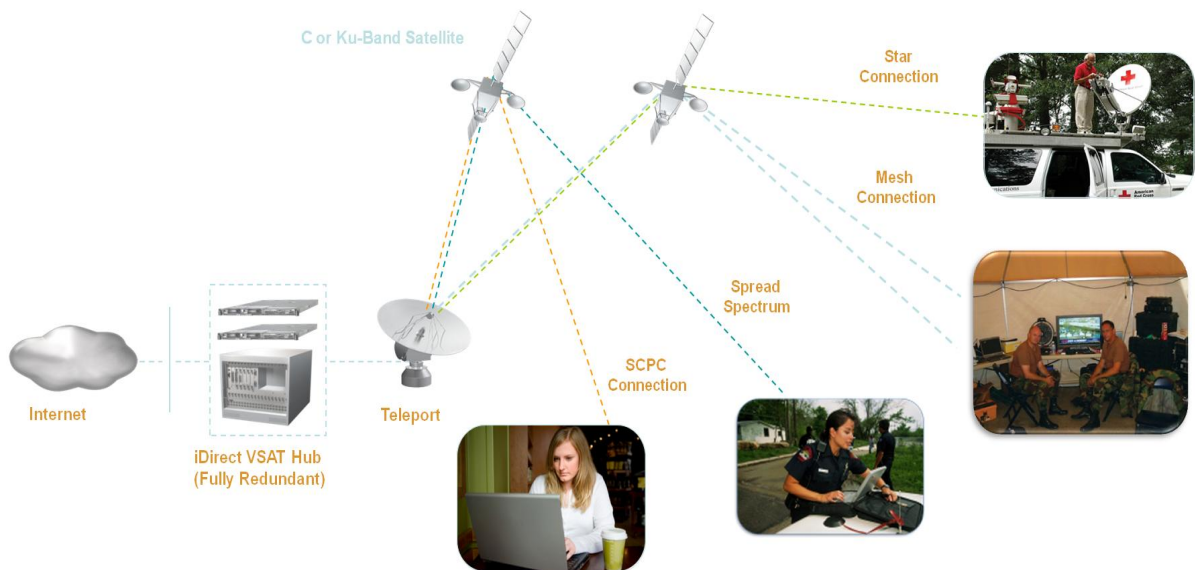
Benefits of Satellite and the iDirect Solution

Success in emergency relief and disaster recovery is measured by quick response times and the ability to establish real-time connectivity. Satellite communication networks are quickly deployable and provide the backbone for the rescue and support initiatives during time of crisis. iDirect's field tested emergency relief and disaster recovery solution provides immediate communications access in an inhospitable environment.

With iDirect's global satellite IP networks, the first response, medical or any emergency team will have full communications capabilities with voice, data and video, 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.

The iDirect Intelligent Platform™ integrates advanced technology into iDirect's portfolio of satellite hubs, routers and network management software to address the complex requirements of each phase during the disaster management. The modular nature and inherent scalability of the Intelligent Platform delivers maximum flexibility to anticipate diverse operational and technical needs regardless of bandwidth requirements, application, satellite band or topology.

iDirect's Intelligent Platform™



iDirect's solution addresses all the needs and requirements that Disaster Relief Organizations are looking for:

- **Flexibility and Scalability:** iDirect's universal satellite hub enables the highest quality connectivity. A single iDirect hub chassis installed at the agency headquarters or temporary location can support relief operations at any location and across a wide geographic footprint regardless of bandwidth requirement, application, satellite band or network topology.
- **Fast Deployment:** With iDirect's industry leading Network Management System, iVantage™ Organizations have centralized configuration and management capabilities that dramatically simplify the set-up and operation of multiple satellite networks on the fly. The hub system and NMS can be easily replicated at a secondary location to provide complete hub redundancy. With the help of iVantage the hub operation between primary and secondary can be easily coordinated and transferred if required providing a complete solution for geographic hub redundancy.
- **Portability and Easy Installation:** The iDirect router equipment which only weighs 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.
- **Mobility:** 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.

Global Ku-or C-band coverage can be achieved with iDirect's Global NMS and Automatic Beam Switching (ABS). With ABS relief vehicles equipped with iDirect remotes can be moved across satellite footprints, maintaining seamless connectivity with no need for manual intervention by field technicians. A simple Global NMS enables the Organization or Operator to manage each travelling remote, ensuring a consistent connection as it passes through separate networks around the world.

iDirect's Spread Spectrum technology enables first responders on the move to use extremely small antennas by enabling the spreading of the carrier signal during transmission and receiving so that the power levels do not cause interference with adjacent satellites.

- **Industrialized Equipment:** iDirect has a family of hub chassis, line cards and remotes that are tested in accordance with MIL-STD 810F test procedures for operation and storage under harsh conditions. Created by the US government, the MIL-STD 810F standard specifies test procedures to measure levels of operational and storage durability under harsh environmental conditions. iDirect's MIL-STD 810F equipment is tested in accordance of the standard for temperature, humidity, altitude, shock and vibration.
- **Dynamic bandwidth management:** As the demand for more bandwidth grows through the disaster recovery phases, iDirect's sophisticated Group Quality of Service feature can support the increasing requirements for more end user applications. Organizations can segment bandwidth across multiple field deployments and prioritize allocation according to each location's dynamic requirements, all while protecting minimum CIR and QoS settings for high-priority traffic from mission-critical sites.
- **Security in all environments:** iDirect provides two-way encryption that meets military and commercial needs. AES security is optional throughout the iDirect product family providing secure transmission of IP data. Additional optional features like military-grade TRANSEC and FIPS compliance provide higher levels of security even for mission critical government deployments.

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 features of its Intelligent Platform, iDirect is able to address the unique challenges that disaster relief organizations face in serving various constituencies. These features ensure system-wide redundancy, extreme flexibility and scalability, fast deployment and extended mobility significantly and further strengthen the ability of disaster relief organizations to respond to any emergency situation throughout all phases of disaster recovery management.