



A Disaster-Recovery Plan For Local Municipalities Using Communication Satellite Facilities and Services



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This Paper Addresses:

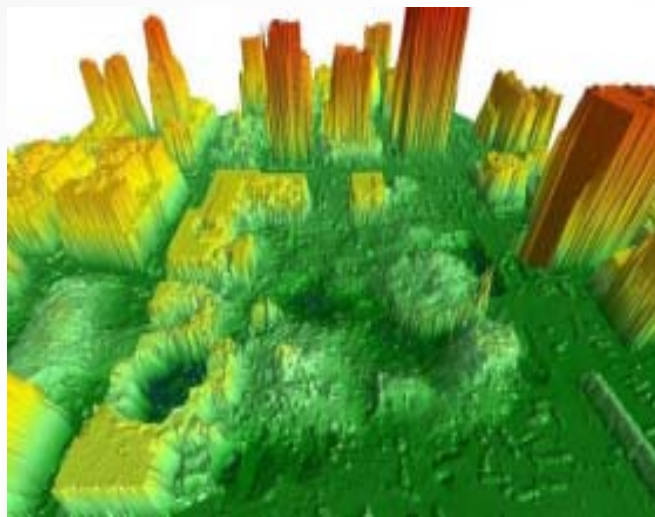
- Role of Satellites on September 11
- Communication Needs During Emergencies
- Satellite Systems Applicable to Disaster and Emergency Communications
- Satellite Assets and Services that Should be Included for Communications Backup



How Satellites Were Used on September 11, 2001

- Mobile Satellite Systems such as Globalstar and Iridium provided backup to terrestrial cellular and mobile systems
- On-site satellite uplinks ensured that news could be transmitted
- Satellites transmitted news to cable headends and directly to end users
- Satellite VSAT networks supported FEMA and commercial organizations

Remote Sensing Satellites Documented the Damage





Communications Vital During Emergency Situations

- Within emergency response community: police, fire, rescue, local government
- With State and local government and emergency management officials
- News and information to emergency community and the public



Review of Satellite Communications Capabilities

- Transmission of broadcasting: backhaul to cable headends; direct transmission such as DTH and satellite radio
- Satellite newsgathering and truck-mounted antennas
- VSAT networks
- Point-to-point Systems as Backup to Terrestrial Infrastructure

FEMA Satellite Truck

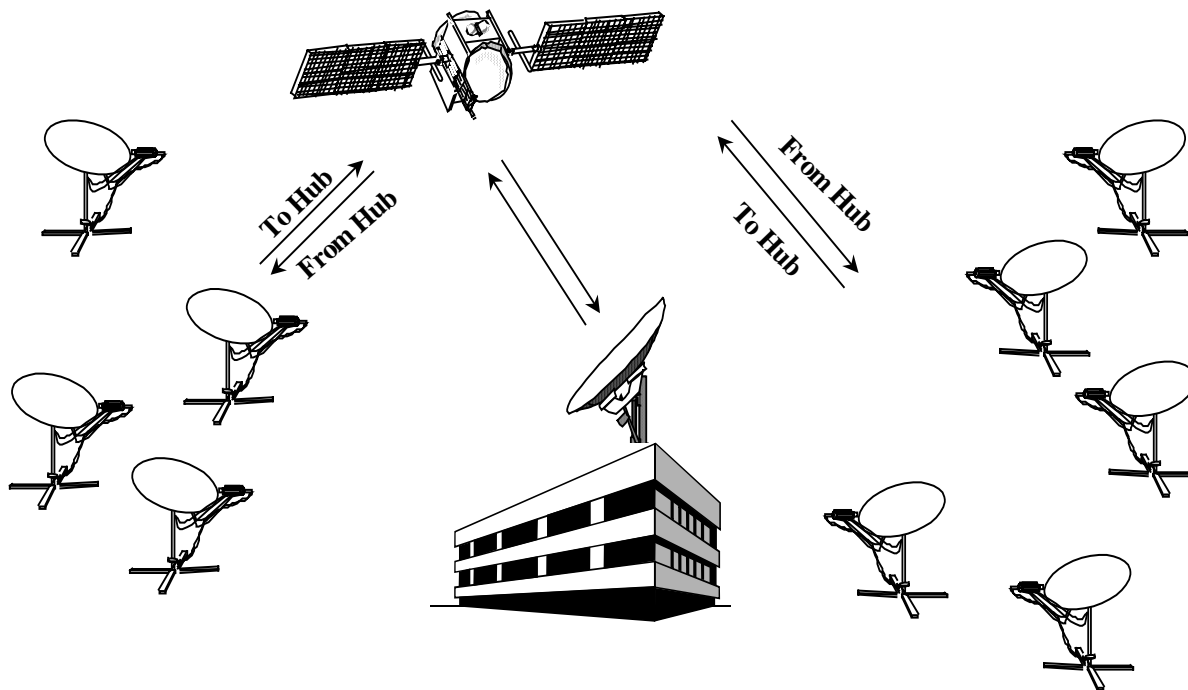




VSAT Networks: the organization's needs must be evaluated

- Permanently mounted or transportable
- Network topology: star versus mesh
- Fixed or demand assignment of resources
- Type of communications: voice, data, video
- Bandwidth required
- Capital and operating cost
- User needs
- Security requirements

VSAT Networks – Interactive Star Network





Point-to-Point VSAT Systems

- Provide internet connections to disaster areas, bypassing failed terrestrial connections
- Support paging and mobile networks
- Telemedicine links
- Video and audio conferencing with off-site experts

Mobile Satellite Systems

- Satellite-only
- Satellite/cellular
- Position-location capability
- Providers: Globalstar, Iridium, Inmarsat





Some Mobile Satellite Suppliers

<i>Supplier</i>	<i>Website</i>	<i>Equipment/Service Offered</i>
Globalstar	www.globalstar.com	Globalstar phones and services
Iridium	www.iridium.com	Iridium phones and services
Inmarsat	www.inmarsat.com	Inmarsat terminals and services
Globalstar USA	www.globalstarusa.com	Globalstar phones and service
Roadpost	www.roadpost.com	
Stratos	www.stratos.ca	Inmarsat primarily



Basic Set of Satellite Services for Emergency Backup

- Satellite Radio (XM or Sirius) receivers and DBS receiver(s) (EchoStar or DirecTV)
- VSAT/transportable back-up facilities or network
- Backup mobile communications systems: Globalstar, Iridium and/or Inmarsat phones



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