Chicago Stays Poised and Prepared for Any Emergency with Satellite

In the wake of modern disasters, major cities across the U.S. are realizing a new danger beyond physical devastation — the sudden loss of communications infrastructure. When terrestrial networks go down, a community can be left crippled and unable to respond to its citizens or provide for their safety.

The city of Chicago has spearheaded a major effort to keep communications alive when disaster strikes. It turned to technology solutions provider MorganFranklin and iDirect Government Technologies (iGT) to develop a satellite-based emergency response network. The city's Unified Command System equips emergency response vehicles with voice, video and data access to handle 911 calls, receive and transmit live video feeds and keep Chicago connected and in control.

iDIRECT GOVERNMENT TECHNOLOGIES

A Satellite Lifeline

Up and Running

In 2002, Chicago took steps to ensure it was prepared for virtually any scenario that could threaten its ability to respond to a major crisis. The city drafted plans for an emergency backup network to overcome the vulnerability of terrestrial networks. A key objective would be to enable Chicago's Office of Emergency Management & Communications (OEMC), one of the largest 911 emergency facilities in the U.S., to function seamlessly at all times, with the ability to remotely operate from any location via satellite. The network would also need to provide incident command and coordination support for major disasters and large-scale events via communication-enabled mobile vehicles

To get the job done, Chicago planners hired MorganFranklin, a professional services and solutions provider to government and business leaders on financial, operational and IT issues. MorganFranklin built the Unified Command System based on a dedicated satellite hub and a mobile vehicle serving as the communications gateway for satellite services.

Today, the Unified Command System supports 92 channels for 911 call traffic, eight channels for private police and fire use and an additional 23 channels for general-purpose calls.

Main Technical Work Area — Unified Command Vehicle

By redirecting 911 calls via satellite-based IP broadband to the Unified Command Vehicle (UCV), Chicago's OEMC can remotely coordinate rescue efforts and dispatch police, fire and EMS units. During a disaster, the UCV can also provide satellite-based backup for the city's entire 911 call volume from any location, acting as a mobile communications gateway for a temporary base of operations.

Extending the Line of Sight

In 2007, the network's initial deployment caught the attention of the Chicago Fire Department (CFD). The CFD wanted to use the network to transmit live video, providing firemen with extra eyes and ears on the ground. With video transmission, CFD is able to more accurately assess an emergency, giving response teams the necessary edge to expand their reach and react more efficiently.

In order to add three CFD vehicles to the Unified Command System, MorganFranklin needed to upgrade the satellite infrastructure from a single-user dedicated link to a multi-user shared network capable of supporting several vehicles operating at once. To build out the network, MorganFranklin turned to iDirect Government Technologies. iGT's satellite IP platform ensures that multiple users can share a network without experiencing sacrifices in quality due to larger volumes of data and voice traffic.

"Since this network formed the backbone of Chicago's Unified Command System, it was critical for it to operate as reliably and efficiently as possible," says David Beering, Managing Director of Advanced Networks at MorganFranklin. "The iGT platform was the best choice for supporting mission-critical connectivity on a shared network without any compromise in quality."

Like the UCV, the CFD command vehicles are deployed during major city emergencies or events to ensure the security and safety of Chicagoans. All four vehicles are connected with Chicago's city-wide camera system to receive and transmit real-time video. Not only can each vehicle transmit its own live camera feed, but it can also receive live video from stationary cameras anywhere on the city's system.

Inside the UCV

The Unified Command Vehicle (UCV) was designed to support all of the city of Chicago's 911 call volume from any remote location. By redirecting 911 call traffic across the satellite network, the vehicle serves as the voice and data gateway for call processing and Computer-Aided Dispatch (CAD). Here are some highlights of its technical capabilities:

- End-to-end dedicated IP network with fully integrated Voice over IP (VOIP) capabilities
- Two fully equipped dispatch stations able to receive 911 calls onboard
- 32 onboard LCD screens with a studio-quality digital video distribution system
- Two cellular IP networks
- IP-based voice and video conferencing systems
- Ku-Band satellite link between vehicle and OEMC 911 Center
- Fully-equipped MPEG-2/DVB video broadcast system that can operate simultaneously with the IP network

A Network with Maximum Mobility

When a situation dictates, these vehicles can engage the satellite system to support multiple voice channels or access the city's data network to respond more efficiently to emergencies. The network has already proven its value by facilitating city response during major events, including the Air and Water Show, Taste of Chicago and President Obama's acceptance speech.

An Eye from the Sky

In August of 2008, MorganFranklin and the CFD engineered a unique helicopter video relay system. Each CFD search and rescue helicopter is now capable of transmitting live video feeds to the command vehicles. Once ground vehicles receive video from a helicopter, they can utilize the satellite network to retransmit the feed anywhere they need, including Chicago's OEMC, or a temporary base of operations during a disaster.

Thanks to the satellite network, the CFD now possesses a highly mobile means of delivering live helicopter video, irrespective of fixed terrestrial infrastructure. If necessary, a CFD helicopter/vehicle team can be deployed anywhere in the country to deliver video over satellite to support large-scale events or emergencies.

The City that Works

Today, the city of Chicago carries on its spirit of progress and preparedness. Thanks to the advanced capabilities of the iGT satellite platform, the Second City has successfully delivered a first for the nation's emergency response industry.

Dispatch Position

Shared Capacity

The iGT satellite IP platform provided the perfect solution for expanding the Unified Command System with additional vehicles. iGT's platform features advanced Quality of Service (QoS) technology that allows multiple users to operate seamlessly on a shared network. Chicago's fleet of command vehicles won't have to sacrifice quality for quantity when dealing with increased data volume or voice traffic on the network.

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