



Case Study

IPSTAR Disaster Recovery and Emergency Communications

China Broadband Satellite Network (CBSN) and IPSTAR Join Forces to Link Earthquake-Devastated Communities and First Responders to the World

Communication outage caused by unexpected disasters can occur in short notice, and oftentimes without warning. The time it takes to restore damaged telecommunication lines due to disasters may require days or even weeks, leaving first responders crippled and communities isolated without access to reliable communications. The lack of operable terrestrial infrastructure severely impedes the situational awareness, and most importantly, the relief and recovery efforts of the first responders.

Even established and sophisticated ground infrastructures, like phone lines and cable systems, can be entirely knocked down or damaged from an unanticipated disaster – rendering previously trusted communication

services useless. This devastation was experienced at the recent May 2008 earthquake which heavily struck the industrial province of Sichuan in China.

Unlike terrestrial networks, satellites are completely immune to catastrophic events such as earthquakes, typhoons and landslides. Satellite platforms, like IPSTAR, can step-in to fill the communication, command and control gaps as a result of crippled terrestrial lines. The IPSTAR product and solution portfolio is designed to meet the precise needs of first responders in putting communication networks back on line in the event of natural or man-made disasters.

Challenge

- Implement a complete communication system in disaster-affected areas where most wired infrastructure have been destroyed
- Quickly provide a cost-effective satellite link for search and rescue operation between first responders and command centers

Solution

- Deploy disaster recovery and emergency communication solution via IPSTAR satellite backhaul
- Establish broadband Internet access via satellite – including VoIP, SNG and SCADA networks – to scale up relief efforts and situational awareness

Benefits

- **Terrestrial Infrastructure Backup**
IPSTAR offers additional bandwidth to divert the traffic of congested networks and provides backup in the case of terrestrial line outages.
- **Temporary Network Solution**
IPSTAR delivers flexible, short-term solution for getting the necessary information in and out of a disaster-affected area.
- **Rapid Deployment**
IPSTAR quickly recovers damaged communication networks.
- **Nationwide Coverage and Quality of Service (QoS)**
IPSTAR provides nationwide coverage, and consistent QoS regardless of location and terrain barriers.

Facts and Figures:

- 100 IPSTAR user terminals deployed in the aftermath of the earthquake
- 20 temporary residential areas provided with VoIP
- 10 hydrological sites built in Tangjiashan Lake monitored by SCADA via IPSTAR
- 10 major TV channels used broadband Internet via IPSTAR and delivered on-site news broadcasting via satellite
- 2 IPSTAR user terminals installed at the command center in Chengdu, providing video broadcasting and VoIP services for armies, rescue teams and earthquake victims



The Situation

The May 2008 earthquake that hit Sichuan in the western part of China led to a great loss of lives. Aside from this devastation brought by the catastrophic event, the earthquake also damaged billions worth of properties in the province, including telecommunication infrastructure.

The devastating 8-magnitude earthquake destroyed switching centers, mobile stations, underground cables, fiber optic networks and electrical poles – contributing to at least more than a billion USD in telecommunication damages. The earthquake cut the telecommunication link of Sichuan, resulting to the delay of rescue efforts, while neighboring provinces experienced network congestion after the disaster because of the drastic increase in system traffic.

The Solution

Within hours after the tragic event, IPSTAR user terminals were deployed by CBSN in heavily affected areas to provide broadband Internet, Voice over Internet Protocol (VoIP), Satellite News Gathering (SNG), and Supervisory Control and Data Acquisition (SCADA) services. IPSTAR was used to assist relief mission teams on their search and rescue operations, and to keep them updated on the extent of damage caused by the earthquake. It also helped reunite families, reconnect communities, and let the world witness the devastation of the disaster – also the many acts of heroism.

For many disaster survivors and first responders, IPSTAR served as the only source of communications in the hours, days, and weeks following the event – providing connectivity that terrestrial networks could no longer provide after the Sichuan earthquake.

Proof-of-Concept

The IPSTAR disaster recovery and emergency communication solution employs a small-sized antenna and a low-power consumption user terminal, making it possible for first responders to use solar panels as the main power source and a battery system for backup. Most IPSTAR networks deployed in disaster-hit areas uses power generators to keep the system running during the lengthy electricity outage in Sichuan.

Specially designed for rugged environments, IPSTAR is also suitable for continuous, heavy-duty and unmanned operations in the field. The IPSTAR user terminal has a rugged enclosure, air ventilation and anti-dust features to withstand the harsh terrains of Sichuan. With compact and robust design, it was easily deployed – either for indoor or outdoor use – in the badly hit areas of the province.

The IPSTAR user terminal also supports Adaptive Coding and Modulation (ACM) for seamless, reliable operation under the most severe weather conditions – especially during the heavy rainstorms

that followed a few days after the earthquake. With the combination of advanced power adjustment and bandwidth-efficient waveforms, ACM automatically adjusts the user terminal's modulation, coding and gain in response to the changing link conditions in Sichuan.

The IPSTAR satellite platform was chosen by CBSN as the preferred cost-effective solution in providing reliable voice, video and data communication services for first responders of the Sichuan earthquake. In the aftermath of the disaster, over 100 IPSTAR user terminals were deployed for CBSN's relief efforts – providing earthquake victims with telephone service, media reporters with broadband Internet and on-site SNG network, and hydrologists with real-time disaster monitoring data.

About IPSTAR

THAICOM-4 (IPSTAR) is the world's largest and most advanced commercial satellite serving up to 10 million users in Asia-Pacific. The breadth of the satellite's geographical reach in the region – covering an area inhabited by 4 billion people or roughly 60 percent of the world's population – positions IPSTAR as the preferred gateway in 14 countries across Asia-Pacific. IPSTAR has achieved a critical milestone in its pursuit to bridge the digital divide in the region. With a combined 100,000 subscribers in Australia and New Zealand alone and still growing, IPSTAR has become the single largest VSAT network operator in both countries. Across the region, IPSTAR has sold nearly a quarter of a million user terminals.

For more information, visit www.ipstar.com.

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