



Case Study

IPSTAR Backhaul and Disaster Communications

Thai Operator AIS Deploys Femtocell Service on IPSTAR Platform for Emergency Communications

Telecommunication facilities have become an essential part of our everyday lives and the need for communications becomes especially crucial during disaster situations. However communication facilities are among the vital infrastructure also to become damaged during big disaster situations such as floods, landslides, earthquakes and typhoons. Ground based telecom facilities such as telephony, mobile systems and cable links get easily damaged during such situations no

matter how well designed or sophisticated they are.

A rapid re-establishment of telecom facilities becomes essential not only for the victims to communicate with the outside world, but also for the first responders and disaster recovery personnel for proper coordination of their activities. Communications based on satellite platforms are well suited for immediate deployment in emergency situations as they are immune to disaster

events. IPSTAR can step in to fill the gap in communication facilities formed by the result of crippled terrestrial links. The IPSTAR product and solution portfolio is designed to meet the precise needs of putting communication networks back on line in the event of any natural or man-made disasters.

Challenge

- Provide mobile service coverage in disaster hit areas where network infrastructures have become inoperable.
- No electricity available due to disaster

Solution

- Use Femtocell service as a solution for deployment of mobile phone service
- Femtocells are low powered devices which can be powered by solar panels or small generators
- Femtocells have small form factor and rapid deployment is possible

Benefits

- **Rapid Deployment**
IPSTAR quickly recovers damaged communication networks.
- **Plug and Play**
IPSTAR can be deployed on a plug and play basis with Femtocells with immediate availability of mobile service coverage.
- **Rugged Features**
IPSTAR user terminal has a rugged enclosure, air ventilation and anti-dust features.
- **Reliable Communications**
IPSTAR user terminal also supports Adaptive Coding and Modulation (ACM) for seamless, reliable operation under the most severe weather conditions.



The Situation

A tropical depression dumped unusually heavy rains in Southern Thailand in early November of 2010 that triggered flooding in 11 out of 14 southern provinces, also resulting in landslides in several areas. The official damage report by the Department of Disaster Prevention and Mitigation said the disaster had affected 292,744 people in 79,902 households in the south. Communication facilities, highways, railway lines, and electricity supply were disrupted, and a total of 56 people lost their lives.

Hat Yai, the largest city in southern Thailand bore the brunt of the floods with 80 percent of urban areas and 30,000 households affected, and 10,000 residents stranded in their homes. The people were trapped in their flooded homes, with tap water, electricity and land-line telephones cut off. Mobile phone systems were also severely affected, with 400 Base Transceiver Stations (BTS), almost 50% of AIS capacity in Southern Thailand, rendered inoperable. In the aftermath of the floods, several provinces such as Surat Thani were affected by landslides which also damaged the mobile service infrastructure there.

The Solution

IPSTAR joined forces with AIS to provide emergency mobile phone service in the disaster hit areas using MVV (Mobile VSAT

Vehicle) equipped with Femtocell Access Point (AP). A Femtocell AP is a small cellular base station which works on plug and play basis. It supports a small number of concurrent voice calls and was originally intended for indoor use in areas with bad network coverage. However because of its ease of use and fast deployment capability, it has been adapted for use with the IPSTAR platform to provide mobile phone coverage in remote areas or disaster zones.

Equipped with a Femtocell, the MVV became a moving mobile base station which served flood hit areas in Hat Yai city during 4-8 November, 2010 and landslide hit areas in Pakmark sub-district of Surat Thani during 16-18 November, 2010. The MVV was also equipped with a Wi-Fi AP and a VOIP phone. All equipments were powered with electricity generated by a dynamo connected to the running MVV engine. Residents having mobile phone handsets could make calls immediately after getting coverage; whereas people without handsets could make use of the VOIP phone. Several people with laptops in the business district of Hat Yai also made use of the Wi-Fi to access Internet. The Femtocell service is estimated to have benefited hundreds of people in Hat Yai and Surat Thani. In Pakmark, Surat Thani the MVV was stationed at a local school and security forces deployed for rescue operations also made use of

the communication facilities. The MVV was moved from place to place according to coverage needs and its deployment was stopped after coverage was restored through BTS towers.

Proof-of-Concept

The IPSTAR platform coupled with Femtocells from mobile service providers such as AIS can be a highly effective medium for providing emergency communication facilities in areas hit by disasters. Small sized portable satellite antennas and low power consumption user terminals can be employed. The Femtocell devices itself are also low power consuming and the whole system can be easily run using solar panels with battery backup or small generators.

The Femtocells do not require any configuration in the field and start working immediately after connecting to the Internet. Whereas setting up a usual cellular service BTS station takes days or even weeks, a Femtocell station can be setup within one hour. Being the same size as a simple Wi-Fi AP, the Femtocell is also highly mobile and has very small space requirements. The combination of IPSTAR and Femtocell is ideal for deployment in disaster hit areas or remote parts of a country where telecommunication facilities are unavailable.

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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