Solution Brief:

Emergency Backup for Mobile Backhaul

Today, mobile services are universal and are, in many countries, the only form of communication. Moreover, it has completely replaced traditional terrestrial phone services as the preferred means of deploying rural communications. With such reliance on mobile services, it is not surprising that many governments are now requiring mobile operators to provide emergency response vehicles and disaster recovery plans to ensure that services will be maintained in case of disaster.

Satellite communications has long been considered an ideal medium for disaster recovery services. Its ubiquitous nature allows it to be deployed anywhere, anytime and provide near instantaneous connectivity or service re-establishment. Many operators have opted for emergency response vehicles which travel to troubled areas and provide emergency communication services via satellite-based backhaul. Since the need for emergency response is typically in a single region/area, the mobile operators subscribe to a minimal amount of satellite bandwidth, which is then dynamically allocated on an on-demand basis to the emergency response vehicles. These same vehicles are also deployed by mobile operators to temporarily augment services for special events where there is increased demand for bandwidth.

A new trend is for mobile operators to establish backup capabilities over satellite at fixed points in the network. Using the same bandwidth on demand principles, these fixed points can be returned to operation within seconds of detecting outages in the backhaul network.

This is especially useful for remote locations to which it would otherwise be difficult to travel. Areas prone to floods, rock slides, or factors limiting access to vehicles are typical examples of where fixed mobile recovery is being deployed.

To fully leverage the expense of satellite bandwidth, some mobile operators are using their satellite bandwidth to support remote or rural towns, villages and settlements. In case of emergency, such bandwidth can be re-routed to support more critical infrastructure backup, such as BSC to MSC connectivity, Media Gateway or other communications. This solution enables the satellite bandwidth allocated to the recovery system to generate revenue, rather than sitting idle, which can offset the OPEX of such a regional recovery solution.

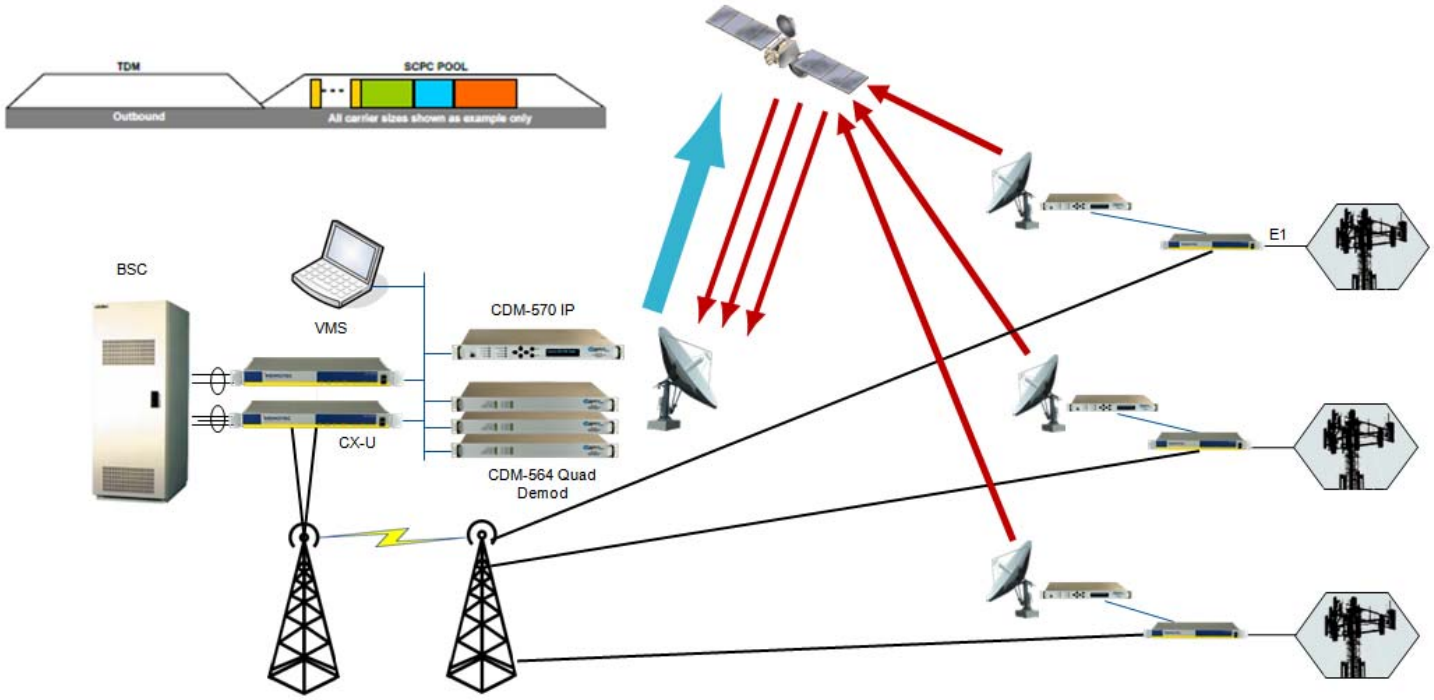
Comtech EF Data Solution

Our solution combines three distinct Comtech EF Data and Memotec product lines to deliver a fully automated on-demand emergency backup for mobile backhaul.

The Vipersat Management System (VMS) provides a scalable dynamic SCPC (dSCPC) capacity management solution that facilitates bandwidth sharing, automates space segment allocation and allows for establishment of efficient, low latency, low jitter SCPC links. The VMS manages one or more “pools” of available bandwidth and allows SCPC carriers to be setup, torn down and resized dynamically within the pools. VMS and our modems enable a variety of antenna sizes, power, modulation and forward error correction combinations to be utilized, ensuring that satellite links are always operating at optimum efficiency using minimum bandwidth. A single Vipersat-powered network can be used to support vehicle mounted mobile recovery and/or fixed satellite backup sites ranging from a few kbps to multi-Mbps as required by the application or backup demand. Further, a single Vipersat system can be deployed to provide backup services for many operators or across many geographical locations.

The Memotec CX-U Series brings together a flexible access device and cellular backhaul traffic optimization, offering a variety of backhaul interfaces and transmission options. The CX-U RAN Optimizer transparently connects between the BTS/BSC and the transmission network facility, reducing the amount of backhaul bandwidth required to support mobile services by up to 50%. Special capabilities designed into the CX-U Series have made it the optimal platform to support and control emergency backup for mobile backhaul. In addition to optimizing and bandwidth reducing the ABIS traffic, the CX-U Series provides three other important capabilities. Firstly, in a special “bypass mode” the CX-U simply monitors the link status without providing any optimization. Secondly, upon detecting outages in the network, it controlling the switch over to the satellite backup and immediately launches the Abis optimization to reduce the backhaul bandwidth, Finally, it synchronizes its internal clock to the incoming primary reference clock from the network so that if the terrestrial network is lost, the internal clock failover takes over and maintains a stable clock reference for the Radio Access Network (RAN) virtually indefinitely.

Cumulatively, our modems, the VMS and the CX-U Series provide a scalable solution for emergency backup on demand for 2G and 2.5G GSM networks.



How it Works

In support of fixed backhaul backup mode, the Memotec CX-U Series is placed in-line with the terrestrial network E1 in a “bypass mode” where it monitors the condition/status of the terrestrial E1 links and forwards the synchronization clock received from the terrestrial network. The bypass mode is nonintrusive on the normal E1 operation, and will not interfere with network operation even if power is removed from the CX-U. When the CX-U detects a failure on the terrestrial link, it takes over the synchronization function and delivers the synchronization reference clock to the RAN and initiates the switch over to the satellite system. The satellite modem detects the traffic from the CX-U and requests the VMS to setup the backup circuits. The VMS immediately allocates the configured bandwidth and sets up the backup link. The CX-U will optimize the GSM traffic it receives from the BTS and transmit it across the Vipersat-powered network to the peer CX-U at the BSC side, thereby re-establishing the connection. When the CX-U detects the restoral of the terrestrial service, it immediately re-directs the traffic to the restored link and falls back into “bypass mode”. The VMS tears down the satellite link and returns the bandwidth to the pool of available bandwidth. Special note: Both the BSC and the BTS must include software capable of supporting high delay links to utilize this functionality.

Comtech EF Data is the recognized global leader in satellite bandwidth efficiency and link optimization. Our infrastructure products are deployed by mobile operators globally to support satellite-based emergency backup of backhaul circuits. Contact us to learn more about how our market-leading technologies can reduce OPEX/CAPEX and increase throughput for your fixed and mobile/transportable satellite-based backhaul applications.

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