

## IP in Paradise

### Globecomm Optimizes Backhaul for the Caribbean's Largest Mobile Carrier

It's a tough job, but somebody has to do it. Since its founding in 2001, the Digicel Group has become the largest mobile carrier in the Caribbean and has extended service into Central America and Pacific Islands including Samoa, Tonga and Fiji. If you are in a tropical paradise and make a mobile call, chances are that Digicel is carrying it.

The chances are equally good that Globecomm has made the international leg of that call possible and has optimized your use of bandwidth, too.



#### Mastering Satellite Technology

When Digicel began its expansion drive, it was careful to select technology partners that could go the distance. For international links to its growing group of networks, that meant Globecomm. "Our first assignment was a satellite terminal for E1 trunking over C-Band from their GSM switch in Jamaica," says Gerard Johnston, Globecomm's Vice President for the Americas. "It aggregated all the international traffic on the Jamaica network. It was robust, reliable single-carrier per channel (SCPC) infrastructure, and we went on to build it for them in markets like Trinidad, Aruba, and St. Lucia."

As Digicel's territory expanded, so did the range of technology that Globecomm provided. "As they entered Central America, where the land masses were bigger, we began integrating their base station backhaul networks," says Johnston. "We put C-Band VSAT networks into Guyana and Suriname, but it was still SCPC providing a guaranteed data rate among base stations."

When Digicel targeted Panama for network growth, Globecomm proposed what it thought was a better idea. Globecomm suggested abandoning the tried-and-true SCPC technology for an all-IP demand-assigned TDMA network design. The reason? SCPC uses fixed-capacity links, which can

be a poor match for the dynamic bandwidth usage of a mobile network. Switching to demand-assignment would sharply reduce bandwidth requirements, Globecomm promised, while ensuring a high quality of service.

#### Reasonable Doubt

"We were very interested in the new technology," says Stephen Curran, Digicel's Network Design Director. "But we had to be sure it would perform as advertised. We were not willing to sacrifice customer experience for the sake of cost."

There was no question, however, that the potential cost savings were attractive. "If you are putting a satellite link into the middle of a city to handle all the traffic from a terrestrial network, then SCPC makes perfect sense," says Gerard Johnston. "But if you use satellite in place of a terrestrial network to serve base stations in remote locations, trunking E1s is grossly inefficient. There are only a few peak hours a day when you get your money's worth from the link."

It took many discussions, proposals and trade-off analyses, but Digicel ultimately accepted Globecomm's recommendations and guarantees. Work began in 2008 on designing, integrating and installing all-IP C-Band links for an 8-site network in Panama capable of backhauling voice, SMS and EDGE data to the in-country hub, which would continue to use SCPC for the aggregated international traffic.



"The design is actually a hybrid," says Jaime Rodriguez, Globecomm's Senior Director for the Americas. "One thing about mobile traffic: it's really dynamic. In a TDMA design, the remotes share a pool of satellite bandwidth with the hub. This saves money and provides great flexibility. But there is always the possibility that one or two of the circuits will get really busy and soak up most

of the bandwidth, starving the other remotes. So we designed the system to let Digicel remotely reconfigure any remote to an SCPC circuit. If one part of the service area is spectacularly successful, it shouldn't bring down the whole network."

### Into the Wilderness

When describing Digicel's service areas in Central America, "remote" is not just technical jargon. Reaching some sites required travel in a chartered plane and canoe, with a long walk at the end. "It was incredibly difficult getting equipment into some of these locations," says Rodriguez. "We're talking about antennas, racks of equipment and outdoor enclosures, everything designed to use the minimum power, because generators are the only source of electricity." Globecom's work with Digicel ultimately led it to supply a modem with an integrated heat-exchanger that uses only 100 watts of power, making it possible to rely on solar panels to handle part of the load.



"At one site, our engineer Orlando Jimenes was riding shotgun with a Cessna pilot when the plane overshot the runway. It went crashing into bushes and trees, and stopped just ten feet short of a river. Orland was injured. But what was he going to do? No plane, no hospital. So he and the pilot hiked one hour to the site, did the installation and waited until the next day for a plane to pick them up. We were very glad to get him back."

The Panama network was completed in March 2009 and the hybrid TDMA/SCPC design rapidly proved its value. "The Globecom solution optimizes bandwidth without affecting quality," says Digicel's Curran. "It allows us to provide more cost-effective service in remote rural areas, increasing our coverage footprint. We are looking forward to working with Globecom to introduce new technology such as carrier-in-carrier to take the process even further."

### Extending the Value

After growing explosively since the beginning of the decade, Digicel is working to consolidate and optimize its infrastructure. "By retrofitting new technology into their existing networks," says Gerard Johnston, "we can slash their bandwidth requirements by nearly 40%, which would make a real difference on the bottom line." In addition to systems design and integration, Globecom monitors the network from its Network Operations Center in Hauppauge in order to continuously optimize its performance.

"It's been a consistent story for years," says Johnston. "We won our first job with Digicel because we were more creative than the other guy. It was in Jamaica, right in Hurricane Alley, and the specification called for a big 16m antenna. By assembling best-of-breed technologies, we were able to build an earth station with very high wind resistance for less money."

High value at competitive cost is a legacy of Globecom's investments in skilled people, engineering processes and its own infrastructure. "Digicel demands not just good technology but creative solutions to their business challenges," says Globecom Chairman and CEO Dave Hershberg. "We're proud to deliver."



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