Putting an Air Traffic Control Network Back Online
Satellite failure leads to a high-stakes race to restore service

Early on Saturday morning, June 17, 2017, alarms started going off in the Globecomm Network Operations Center (NOC) in Hauppauge, New York, USA. Among its responsibilities, the NOC monitored and managed a 43-site satellite network that carried radar and cockpit voice traffic for America's air traffic control system. In most cases, these satellite links were backups to land-based circuits, but in some, satellite was the primary link.

Nothing the operators did had any effect. It was as though the satellite linking those sites – SES's AMC-9 – had disappeared.

A call went out to John Flynn, Globecomm's vice president of global operations, waking him from a sound sleep. John drove into the NOC and, as he arrived, his phone rang again. It was SES calling with the news that AMC-9 had suffered a "significant anomaly" that took out its transponders and sent it slowly drifting out of its assigned orbital slot. Satellite failures are incredibly rare but when they happen, the impact can be big.

The Satellite Side of Air Traffic Control

John rapidly called in colleagues who knew the FAA network best: Luke Paternostro, director of customer and field services, and Kelcey Fredette, senior project engineer. The satellite network was a small part of a $1.7 billion contract awarded by the Federal Aviation Administration to Harris to upgrade its communications, reduce their cost and improve their performance. Globecomm was contracted to design and build the satellite portion, and then to manage it, as well as provide Tier One lifecycle support for the remote units and help desk support for the customer. That made them the resident experts on how to get the network up and running again.

"It doesn't matter if it's a backup or a primary circuit," said John Flynn. "Organizations use their backups all the time, even when there is no emergency. As far as we're concerned, every circuit is a primary circuit."

Owning the Problem

When several companies contribute to a technology solution and it goes wrong, the standard response is finger-pointing. "Hey, it's working at my end," people say. "It must be your problem!"

That is not a language spoken at Globecomm. "When something we're involved in breaks," says Kelcey Fredette, "we own it. We may be one small part of a much bigger thing, but we still own the problem. It's just the way we do things."

Globecomm convened conference calls, sometimes lasting all day, of engineers and managers at the FAA, Harris and SES. Together, they clarified the challenges and decided on the best solutions. The team's spirits lifted when Luke reported that, as part of the network buildout, Globecomm had written a disaster recovery plan for just this kind of emergency. It became the team's playbook for restoral.

"This was a serious crisis for our customers and potentially for air traffic safety," says Luke. "No question. But for us, it was just another day at the office. A customer calls with an emergency. We get on our gear and go put out the fire."

Nine Days and Counting

The recovery plan required SES to bring up the network on another of its satellites. This was something the satellite operator was doing for all its affected customers, and it required a juggling act of heroic proportions. At the same time, Globecomm shifted hub service to an antenna serving the new satellite, which required rapid changes in wiring, hardware and software configurations. The company also began dispatching field technicians to affected sites around the country to repoint antennas to the alternate satellite. The sites were physically secured, so Globecomm had to coordinate each visit with the FAA. And everything needed to be coordinated with Harris, which managed the overall network.

Despite the challenges, the team got four remote sites online on the new satellite within 24 hours of the first alarms. Many of the FAA's radar sites are in very remote locations, from mountaintops to islands, but it took only eight more days to reconnect all the remaining 33 sites knocked out by the loss of AMC-9.

Making the Difference

"Monitor and manage" are the words used to describe what Globecomm does for Harris and the FAA. But as these nine days in June made clear, management is not just about watching monitors and pushing buttons.

"We develop and maintain a really comprehensive overview of all the pieces of a network and how they fit together," says John Flynn. "When there's a crisis, that lets us respond fast and effectively. It's what 'managed service' is supposed to mean – we manage it to keep it working the way it is supposed to, and we manage it when the lights turn red and the alarms go off. That takes layers of capability that may not show on the surface: design and engineering, procurement, systems integration and operations, field service and support. It takes a willingness to plan ahead for emergencies to come. There are no shortcuts to doing it right." ■