

Using Satellite Communications for Disaster Recovery, Part 2



By [Leo Wrobel](#)

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[Return to the article](#)

In the second installment of his informative series on disaster recovery, Leo A. Wrobel continues pulling together and applying his expert knowledge of control, communications, computers, and intelligence through technologies available to you today

Welcome back. We ended the [last article](#) with a promise to come back with more tips on how satellite communications can add immeasurably to your organization's capability to recover a disaster. This time, we include a few actual examples of successful uses for this communications technology as well as common configurations.

Why Use Satellite for Disaster Recovery?

Satellite is highly survivable in and of itself, both in terms of physical equipment as well as robustness of the technology itself. As I stated in Part I, satellite is essentially microwave radio aimed upward. As a wireless technology it is not susceptible to the notorious "backhoe fade" that often plagues today's communications-dependent organizations. Satellite is also independent of the terrestrial infrastructure. That could be significant since the communications systems in many Third World countries may leave much to be desired. The path diversity or physical redundancy of this medium pays dividends during normal operation, particularly in areas prone to frequent circuit outages. In addition, the equipment is becoming increasingly compact, with truck-mounted transmitters, or "uplinks," becoming commonplace.

Just as it was for the hapless time travelers I mentioned last time, such a link might become your only connection to a twenty-first century communications infrastructure in the event of a widespread event. Finally, some organizations use satellite for "surge capacity" when network conditions warrant. With I/P infrastructures becoming commonplace, it is easy to cycle up satellite links as an additional path when extra capacity is needed. This has the added benefit of testing or exercising your disaster recovery link on a regular basis. If the satellite link is used from time to time for overflow capability, you can be pretty much assured that it will work if a disaster occurs and it suddenly must become the primary path.

If you are in an area prone to widespread disasters, (hurricanes, tsunamis, earthquakes, and so on), satellites are worth a serious look. A couple of things to look out for are included in the issue of mobility. A few of my clients have learned some serious lessons in this regard. I won't name the clients, but can copy the lesson. One client was a large insurance company that had to respond to a series of devastating hurricanes in Florida. I never realized until then how important physical landmarks are to human beings who need to find their way around. Imagine several cities completely flattened and devoid of buildings, trees, road signs, and so on. Florida does not even have many hills. In this case the topography was a veritable moonscape and it was many weeks before claims could be processed for some of the affected populace.

So what became the ideal solution for the next series of hurricanes? Global Positioning Systems (GPS), which are based on satellite technology. It's a funny thing, but that "lady-in-the-box" that navigates us in the rental car will still know where she is after a hurricane. Her directions are based on V and H (vertical and horizontal) coordinates, not on physical landmarks. This means you will always be able to tell where your business is located to boot even if it's not there any more.

While we are talking about mobility, consider what it might be like to try to navigate downtown Los Angeles with a foot of glass and deep crevices in the streets. Or getting around the Gulf coast when all the bridges are out particularly to hundreds of miles of barrier islands. Before you buy into a satellite solution, no matter how good it is, ask the provider how he or she will get the equipment where it will be needed.

Who (and Which Services) Can Use Satellite for Recovery?

Satellites interoperate in numerous ways, including fixed location to fixed location, fixed location to mobile locations, point to multipoint locations, and mobile location to mobile location. The important consideration is that the communicating locations be within the coverage area, or "footprint," of the satellite ([see Figure 1](#)).



Figure 1 Sample footprint covering the continental United States

Types of Satellite Service

Satellite service comes in many sizes and shapes. The optimal configuration is determined by the dynamics of your business, and what you are backing up or recovering.

Fixed to Fixed configurations can be used to include command centers and "first responder" locations; sometimes also referred to as EMT (Executive Management Team) locations. From a recovery headquarters, other newly established fixed locations can be quickly provisioned and coordinated by satellite communications. These locations can include, for example, field operation sites, damaged site recovery teams, and hot sites.

Fixed to Mobile configurations, as the name implies, are satellite communications from fixed locations. These mobile configurations might involve insurance adjusters and damages appraisers, "CA" (catastrophe) teams, emergency medical units, and a host of other mobile resources.

Mobile to Mobile configurations can be used to help nomadic users interoperate with one another—for example, land-based terrestrial, maritime, and airborne recovery assets. All of them can sustain close communication by satellite because of the vastly reduced size of equipment and antennae in recent years. When one considers that satellite units are routinely affixed to shipping containers and UPS trucks these days, it is little wonder that they have evolved into numerous mobile platforms, each of which has distinct advantages in a disaster area.

Is All Telecommunications Traffic Suitable for Recovery via Satellite?

The answer varies, but it is usually "yes" with today's technology. When you think about it, satellite systems are designed to interoperate with numerous communications technologies because the satellite providers themselves serve everything from container ships to wi-fi hot spots to network television providers. Because as "general-purpose" communications media the providers have to be ready to traffic in whatever package the customer requires, significant expertise may exist in how to best transport your organization's data after a disaster. At worst, you may be only a "black box" away from a successful recovery. (By "black box" we mean some kind of transcoding or "crossbanding" equipment to take terrestrial-borne data and adapt it to satellite transmission.) More often, recovery planners are amazed to learn that packages and equipment already exist from the satellite providers themselves.

For example, don't be surprised if after describing the need to transport VoIP packets via satellite the provider says, *"We've got it. It's called a Feature Package 10 and here is what it costs."* Of course if "Feature Package 10" does not exist yet, it could be a prime opportunity for your provider to nail down its technical specifications and offer it to others. Chances are that if you need it, others do, too. That could be another sale opportunity for the provider, and something that you should use when bargaining for a solution.

Mobile Satellite Service

Even a general discussion of satellite service is not complete without an overview of Mobile Satellite Service, or MSS, which allows the use of portable satellite phones and data terminals. The equipment is often so small that even handheld satellite devices are becoming commonplace. In theory, at least, handheld satellite phones and broadband data terminals can provide virtual worldwide coverage. It does not take a whole lot of imagination to envision just how

handy this technology might be for command and control after a disaster

The use of MSS has a few disadvantages however. For instance, you generally need to be outside to use it because it requires a clear line of sight to the satellite. If it's a disaster, you will probably need a cigarette anyway if not something stronger. Seriously, however, there are already a few vendors tackling this problem by installing antennas on rooftops of enterprise customers and crossbanding equipment that converts a satellite link to POTS service, or two wire loop or ground start trunks that can connect to an inside phone, or PBX. With regard to the data devices unless the weather is really bad it is still possible to walk outside, download your email, and then come back in to read it in the comfort of your office. The important thing is to think these issues through in advance, be resourceful, and mull over where these various technologies fit into your plan.

Summary

With this in mind, we'll look at some hypothetical examples of winning satellite led recovery solutions in the next article in this series.

My thanks again to the [Global VSAT forum](#) and [Satellite Industry Association \(SIA\)](#) for their contributions to this article. If you are looking for a great reference and "easy read" on this topic, download or order the First Responder's Guide to Satellite Communications, published by the SIA.

Until next time, good luck in your planning efforts
