
HOW TO CHOOSE A
SATELLITE
FOR YOUR PUBLIC
SAFETY AGENCY

BY BASE CAMP CONNECT



PUBLIC SAFETY SATELLITE COMMUNICATION



Critical information is lost when communications fail in an emergency: that creates delays and confusion that put your team and the public in danger. [According to a recent poll we conducted, a whopping 81% of Emergency Managers encountered failures during an emergency.](#) Because networks are subject to several types of failures during disasters, we see a trend with our customers to use some type of satellite solution as a backup communication system.

Given the wide variety of products on the market that come in different form factors, with different capabilities, and different pricing, we made this e-Book to guide you through the different options available. Please note that every solution presented below can be connected to the BaseCamp to provide phone and data connections when landline and/or mobile networks are unavailable. To learn more about our portable communications go-kit, [click here](#).



Let's start with a table summarizing the most common options we encounter with public safety agencies. In the following sections, you will find more detailed information on each option.

| | SATELLITE PHONES | BGAN | AUTO-DEPLOYABLE FLYAWAY | SATELLITE TRAILER | FIXED DISH |
|--------------------------------|--------------------------|---|---|---|---|
| ACQUISITION COST (US\$) | \$800 - \$1800 | \$2,175-\$5,250 | \$17,000 - \$23,000 | \$32,000 - \$35,000 | \$1,350 - \$5,500 |
| SERVICE COST PLAN | \$0.92 - \$1.16/minute | Pre-Paid \$1,467 - \$5,639 (valid 365 days) | Public Safety= \$280-\$1,650/month Enterprise= \$399-\$1,299/month | Public Safety= \$280-\$1,650/month Enterprise= \$399-\$1,299/month | Public Safety=\$280-\$1,650/month Enterprise= \$399-\$1,299/month |
| DATA SPEED | - | Class 1= 492 Kbps Down-load x 492 Kbps Upload Class 2= 464 Kbps Down-load x 448 Kbps Upload Class 3= 384 Kbps Down-load x 240 Kbps Upload | Between 3 Mbps download x 1 Mbps upload and 20 Mbps download x 5 Mbps upload | Between 3 Mbps download x 1 Mbps upload and 20 Mbps download x 5 Mbps upload | Between 3 Mbps download x 1 Mbps upload and 20 Mbps download x 5 Mbps upload |
| DEPLOYMENT TIME | 1 minute | 2-3 minutes | 10 minutes | 5 minutes | - |
| PROS | Very portable | Very portable, easy to use | Much more data, faster, lower cost per Megabyte | Much more data, faster, lower cost per Megabyte | Automatic failover |
| CONS | Lack of data, voice only | Cost per Megabyte is higher | Size and weight | Need a vehicle to move the trailer | Not portable |

** Please note that these prices are solely for informational purposes and may change at any time. These service plans are available in the US, and might be different in other countries.*

SATELLITE PHONES

Satellite phones are one of the cheapest options for public safety agencies. You can buy an [entry-level phone for about \\$800](#) that will be the equivalent of having a DECT cordless phone. You can also [pay up to \\$1,495 for a satellite phone that will be ruggedized, shock/water resistant](#). For less than \$200 more you can get a ruggedized satellite phone that allows you to establish a push to talk network with other similar phones. The main benefits of the PTT option are that there are no per-minute costs for use and that you can communicate instantly with one or more PTT phones anywhere within the established talkgroup. Talkgroups can be used at almost any global location.



A monthly plan can be purchased (10, 100, 200 minutes) with costs varying between \$50-\$150/month (Note that every extra minute will cost you \$1.16). If recurring charges are not your thing, you can go with a prepaid card for as little as \$145, prices vary depending on the number of minutes you purchase. [Click here to get an overview of an Iridium Service Plan.](#)

Although price might be the greatest advantage of this option, the biggest drawback is data capacity: A satellite phone provides a connection of 9.6KB per second, which is extremely slow by today's standards. A classic dial-up Internet connection in comparison is about 56KB per second.

Our opinion

You should opt for a satellite phone if you need a very portable solution for voice communication only, and you don't really care about data.

How it works with a BaseCampConnect

[If you have an Inmarsat, Globalstar, or Iridium phone and its dock, connect it to the landline port of the BaseCamp](#) to contact all the extensions connected to the system (fixed and portable phones, radios) simply by dialing their extension number. This does not use minutes from your monthly or pre-paid plan but still allows you to continue making external calls and receive them on your international number. This also provides a backhaul network for the BaseCamp, allowing to work in a closed/secure environment with the network link (SAT Phone) outside. Practical in foul weather/high wind/cold temperature for example.

BGAN PORTABLE TERMINALS

BGAN portable satellites are very popular in emergency management given their small size, rapid deployability, and relatively low cost of acquisition. Unlike satellite phones, BGAN terminals provide both high-speed Internet and voice. It's a very good option if you need to connect a laptop, tablet, smartphone or any other wireless device.

The data rate of your BGAN service corresponds to the class of BGAN terminal that you are using: The three different classes of BGAN terminal are listed below:

CLASS 1

492 Kbps Download / 492 Kbps Upload

CLASS 2

464 Kbps Download / 448 Kbps Upload

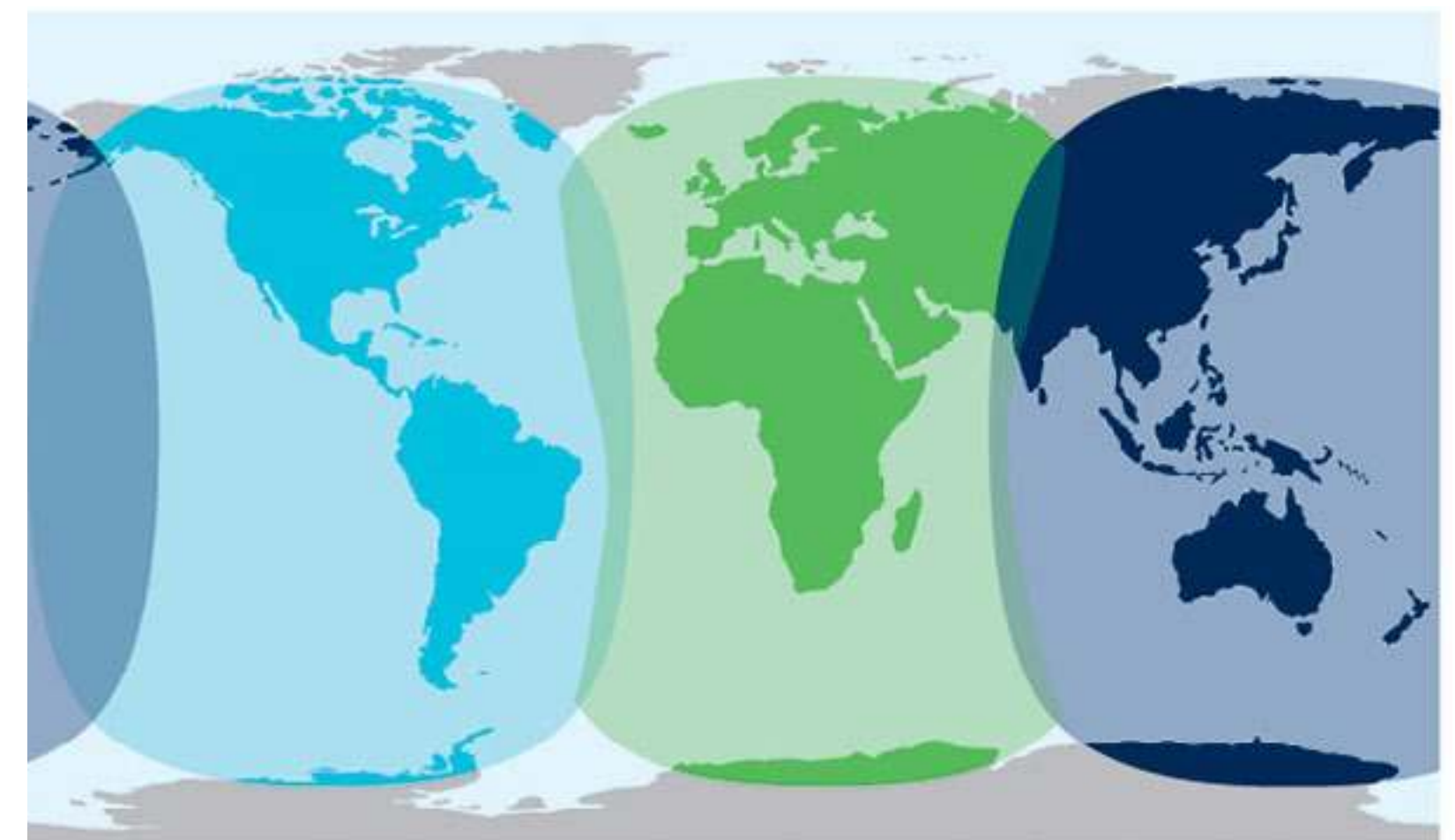
CLASS 3

348 Kbps Download / 240 Kbps Upload

Public safety agencies generally opt for Class 2 BGANs because they provide sufficient bandwidth and connectivity speed for emergency response but cost much less (+/- ½) than a class 1 terminal. Class 1 BGAN terminals are primarily used for news broadcasts and video conferencing. Experienced BGAN solutions experts can greatly help to choose the best option according to budget and speed requirements.

BGAN terminals are typically pointed by the end-user in just a couple of minutes using the audible beeping tone that lets you know when you are "seeing" the satellite. When the tone turns from a fast beeping into a solid tone you have successfully pointed the device.

BGAN terminals all connect to the **Inmarsat BGAN satellite constellation**; these four geostationary satellites offer seamless coverage except for the extreme north and south poles, as shown on the the picture on the right.



— BGAN PORTABLE TERMINALS

A BGAN terminal is very easy to setup and only needs about 2-3 minutes to be operational. If you're the curious type, read the following guide, [How to setup/point a BGAN](#). Here are 3 of the most popular BGAN options we encounter with public safety customers:

Explorer 510

The smallest of the product line, this BGAN terminal costs about \$2,200. 11 devices can simultaneously connect to the Internet and make phone calls from smartphones using the WiFi connection.



Hughes 9202

For about \$600 more than the Explorer 510, this BGAN terminal can also be used with any corded or cordless phone to make calls to fixed and mobile phones worldwide for only \$0.99/minute. This works out to a lower voice calling cost than using a smartphone for WiFi calling like with the Explorer, which makes the extra acquisition cost worthwhile for some.



— BGAN PORTABLE TERMINALS

MCD-4800 - The Football

Priced at around \$13,000, this antenna is a completely auto-pointing terminal that finds the satellite and registers with the network with just the touch of a single button. The [MCD-4800](#) has over 5 hours of on-board battery life, it is completely autonomous and provides a 100-meter range Wi-Fi Hotspot, along with Ethernet and analog phone ports. The biggest differentiating feature of this unit is that it does not need to be aimed and can be used in both stationary and in-motion mode.

Now on to service plans: If you don't know where to start, the 100 Megabytes Prepaid plan might be a good option. For about \$525, you will have 100 Mb of pre-paid data throughput that is valid for 90 days. Overages above the included throughput is \$6,99 per Megabyte. The second most popular plan for public safety agencies is the 300 Megabytes pre-paid plan. This plan is valid for one year, so it is a budgetable amount that can be purchased each year at a cost of \$1,467. If there is a significant event that uses more than this amount, odds are good that there may be State or Federal disaster funding available for reimbursement. To see all other available plans, [click here](#).



Our opinion

A good option for portable rapid deploy data and voice without the acquisition cost of a large dish.

How it works with the BaseCamp Connect

Simply connect the terminal to the BCC via Ethernet. The BaseCamp-Connect's WAN port will use the BGAN's network automatically

AUTO-DEPLOYABLE PORTABLE VSAT (Very Small Aperture Terminal) DISH

This is the most popular option for organizations needing to support larger teams with voice and data for longer periods. Internet speed will vary between 3 Mbps download X 1 Mbps upload and 20 Mbps download X 5 Mbps upload depending on antenna size (.98 meter – 1.2 meters) and BUC Wattage. Flyaway VSAT systems costs from \$20,000 to \$23,000, generally speaking, the larger the dish and more powerful the transmitter (BUC), the more data that it can receive and transmit. Most Emergency management agencies prefer to purchase the 1.2 meter systems even if they only require the lower rated service right now, in order maximize the value of their investment by gaining future scalability as their needs grow.

Monthly service plans vary depending on service speed and the amount of gigabytes of data transfer needed each month. For Enterprise customers, the entry-level plan starts at around \$400/month for 3 Gigabytes and plans are available that include up to 50 Gb/month. For “badged” Public Safety / Emergency Management organizations, there’s a quite unique feature we really like: plans that start at \$280/month and include up to [10 calendar days of unlimited use](#) every month, with any additional days payable upon usage.



AUTO-DEPLOYABLE PORTABLE VSAT (Very Small Aperture Terminal) DISH

There are many service options to add to VSAT service plans, like Voice over IP, Red Phone, and 'dual matrix', which provisions the service to 2 different satellites at the same time, so that if you simply push a button on the controller the antenna will swing around to another location and establish a new connection with a different satellite. This provides continuity of service in the event of a line of sight issue, satellite outage, teleport outage, or even an outage with an Internet backbone router. The two satellites are serviced by different teleports on the East and West coasts that are completely unrelated to each other. Dual Matrix service adds 20% to the cost of any service plan. For a full list of options and service plans, [click here](#).



How it works with a BaseCamp Connect

As with the BGANs, the BaseCampConnect uses the network access through the WAN port. Set-up time is slightly longer than BGANs, so plan on an extra 5-10 minutes to be fully operational.

Our opinion

VSAT offers more bandwidth at lower costs than BGAN, but in a less portable format. If you have the budget for a VSAT antenna and need to support more than just a couple of users, this is the best solution for Emergency Managers. This is the satellite solution that covers 99% of our customers' needs. And the Public Safety Agencies, the 10-day unlimited use plans come in very handy when tackling an emergency requiring a large workforce using the SAT signal.

SATELLITE TRAILER

Satellite trailers provide a half-mile (0.82 Kilometer) wireless access point for any in-range wireless devices only five minutes after parking.

As with the auto-deployable Flyaway system, the price varies (between \$32,000 and \$35,000) depending on dish size. You can also add a 4 stroke Honda generator for a minimal cost (around \$1,000). The service plans are exactly the same as the ones described in the auto-deployable Flyaway dish section.



Our opinion

This is a great option when you don't have any other vehicle to fix a dish or because your mobile command post's roof is already full.

FIXED DISH

This option is used as a communication backup for an Emergency Operations Center (EOC), a 911 center, and the likes. The greatest advantage of having this type of satellite is that it can ensure a seamless automatic failover in case of landline and/or mobile network failure. Paired with battery packs or a generator, it can work for prolonged periods/during long outages.

Acquisition prices vary between \$1,350 and \$5,500 depending on the bandwidth and speed needed/wanted. Service plans are the same as listed above but a router also needs to be purchased. NOTE: it normally takes 1/2 days before the service plan is activated, so you shouldn't wait for a crisis to have a plan (not to mention there's a chance you won't be able to contact your service provider if a major incident happens).



Our opinion

Although the acquisition of a fixed dish as a communication backup is often seen as an optional expense, see it as paying for insurance. In other words, it assures you to have up and running communications in times where you'll need it the most.

NEXT STEP

Now that you're more familiar with the different satellite solutions available on the market, here are three questions you need to ask yourself before buying:

1 How and when do you plan to use the satellite?

2 What do you want to use it for (videos, voice, text message, etc.)?

3 What kind of budget can you put on the acquisition & recurring charges?

At [BaseCampConnect](#), we're here to help. If you want to discuss your emergency communications needs, **call us at 855-900-3539**.

RESOURCE CENTER



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Watch a 2-minute Demo

BASE CAMP CONNECT

Rapidly Deployable Communications



BaseCamp Connect is for emergency managers who need to bridge communication gaps in the field, regardless of which networks fail or which mutual aid partner shows up to help out.

In 5 minutes flat, without training, Base Camp Connect ensures continuity by connecting you to multiple networks, including FirstNet, and eliminates the risk of losing communications.

Unlike other Emergency Communication solutions that are either expensive, require extensive training, must be programmed or are fragmentary, BaseCamp is the only emergency go-kit that is complete, intuitive, and truly portable for use in the most dangerous emergencies.

[WATCH A 2-MINUTE DEMO](#)