Staying In Touch Offshore

Global Marine Networks' Guide To Blue Water Cruising Communications

How to stay in touch with the family, friends and information you need through radio and satellite voice, email and Internet services while at sea - a fast, fun and friendly overview.

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Offshore… Yet In Touch

You are heading offshore…how do you stay in touch with family, friends, work?

Global Marine Networks started on the water. Back in the 1990's, our founders were living on a sailboat and were some of the very first to use HF Radios and PACTOR modems to stay in touch via email. Then the satellite revolution came, at first in fits and starts, then with voice and data connections that were unimaginable just a few years before, changing the way boaters stay in touch.

Whether you're a salty live-aboard, an occasional offshore adventurer, or you spend more time thinking about your boat than being on it, here's our primer on the communications that you need to stay in touch.

Of course, in the end every cruiser's situation is unique and therefore needs vary between cruisers, and even trip to trip. Once you have a grounding in the options, contact one of the marine satellite communications specialists who can help you pull together the right combination of equipment, service and software for you.

Types of Communications

While you are on the water, the people you will want and need to communicate with can be divided into two groups:

1) **Other boaters and boating services** - radio is very good for many of these

2) **Friends, family and work back home** - satellite communications are best for these

The two are not 100% exclusive; sometimes you'll want to call ahead to a marina using their standard phone number. Sometimes your friends and family are in radio contact.

Separately, there are two very different ways to communicate. Each has its advantages, and some equipment and service are better for one over another:

1) **Voice calling** - speaking with others directly for the immediacy of two-way conversation.

2) **Data communications** - *email, weather data and even Internet* are available to cruisers today for prices that most everyone can afford; and with an ever widening array of services. And with the advent of the Apple iPad and tablet computing, people who would have never thought of bringing a laptop on board can find themselves quickly and easily staying connected through email.

Radio Communications

For boating communications, the tried and true options of VHF and HF radios will likely always be critical to the success and pleasure of boating life.

VHF Radio

VHF Radio works well when in coastal and inland waters. The radio frequencies used are designed for more local communications and so by nature you can only access those in your general vicinity.

Handheld and fixed models are widely available at all price and quality levels, and both have their places. When a radio is mounted on your boat, it's nice to know where it is at all times. However, many find the convenience of using a handheld radio wherever you are, or taking it off the boat can trump the inconvenience of misplacing your radio under a pile of towels.

Use VHF radio for local distress calls (please get me off this sandbar), hailing a passing ship (can you see me?) or to communicate with local marinas (do you have a slip available?), bridge tenders (when is the next bridge opening?), and so forth. VHF radios can also be used to receive local weather radio broadcasts, where available.

HF (Shortwave) Radio

HF radio has an important place in our communications mix. It is a great way to stay in touch with the cruising friends you will meet along the way that may be traveling in the opposite direction. Plus, the social nets on the HF Radio are where you hear important information about your destination such as the current check-in procedures, when the grocery has fresh produce, or when the hardware store is open.

Until satellite communication became more affordable the HF Radio was state-of-the-art for weather information and email, as painful as it was using the required PACTOR modems. The problem is that in order to receive weather info and/or email you are at the mercy of the ionosphere, which bounces the signals, and the time of day when broadcasts are scheduled. Schedules can be inconvenient; and, poor propagation renders the HF Radio useless at times, often when you most need it.

Also, unless your contacts are other boaters or dedicated ham radio hobbyists, HF radio is useless for dialing phone numbers.

Satellite Communications

For both voice calling and data services such as email, weather data and web access, satellite communications are the de facto choice for today's boater. As people have become accustomed to always-on connectivity on land, they have carried that expectation over to their life on the water as well, and equipment and service providers have expanded their product offerings to meet that demand. Now there's a solution for everyone from the weekend sailor with a handheld satellite phone for voice calling to the yacht customer seamlessly running their business from their boat through satellite broadband terminals.
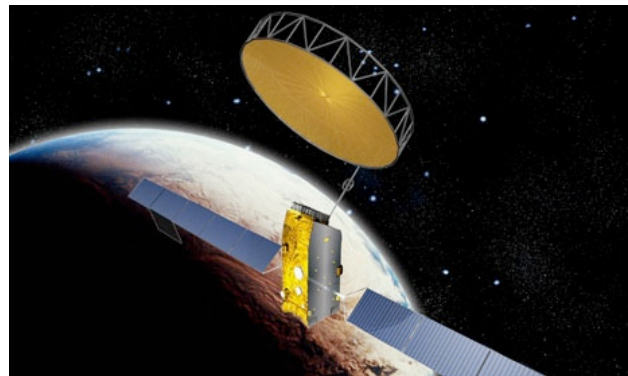
HF Radio vs Satellite Phones
HF radios remain valuable for the reasons we've already discussed, so what are the advantages of satellite phones?

Feature	Advantages of Satellite Phones vs HF Radios
Cost	It is much less expensive to purchase a satellite phone plus several years of airtime than it is to purchase a new Marine Single Side Band Radio System.
Portability	Handheld satellite phones are portable, and can be taken on shore or in an overboard bag.
Distress Calling	Satellite phones can access emergency response services such as 9-1-1, 999, 505 (details vary by provider)
Text Messages	Satellite phones can receive free incoming text messages
Voice Calling	Satellite phones work seamlessly with land-based phones.
Anytime Access	No contention, scheduling or atmospheric interference with satellite phones.
Data Services - Email, Web, Weather	Much faster data services let you get all of your email and a wider range of weather than with HF radios.
Installation	HF Radios more difficult and time consuming to get a good signal.

Types of Satellite Services

Voice Services
The ability to call a land-based phone is one of the primary advantages of a satellite phone. Voice quality varies by provider, but is consistently equal to land-based mobile phone quality.

When selecting a phone it is important to note that each satellite system handles their phone numbering and dialing slightly differently. For example, Iridium has its own International prefix as if it were its own country, making all calls to non-Iridium destinations like calling another country. Incoming calls to both Iridium and Inmarsat phones can be very expensive to the calling party. Because of this, several services offer ways to handle this - either to reduce cost or simplify dialing. Other providers, such as Globalstar, assign numbers based on the country of a nearby gateway, so you may get a local number, simplifying making and receiving calls

Voicemail, Call-forwarding and other voice services common to mobile phones are often available on satellite phones, but check with your preferred satellite provider if a specific feature is important to you to verify availability.

Satellite Phone Email
Email is the most efficient and convenient way for a cruiser to stay in touch with others for several reasons:
1. A single message can easily be sent to dozens of recipients.
2. Email doesn't need to schedule a time to call in advance.
3. You don't need to sit around and wait for a call to come in, just check email when it's convenient.
4. Some satellite email providers will send SMS notifications to your satellite phone when a new email message arrives, so you know when to check your email.
5. Email gets you weather data - many satellite phone services can receive GRIB files over a handheld satellite phone.
6. Blogging services can be easily updated with the push of a single button

Satellite Phone Email Service

A satellite phone email service with compression will maximize your airtime use saving you time and money. There are several email services, and while all of them are better than trying to use email over satellite as if you were at home, matching the available features to your needs will pay off in a better experience.

Many cruisers think they can use webmail, but simply logging into a common webmail site like hotmail.com can take up to 4.4MBs without compression, making webmail virtually impossible - this amount of data would take over 4 hours to load on an Iridium handheld phone.

Using standard email clients such as Outlook are also problematic as email protocols require many "back and forth" data transfers which are slow and hog data over satellite networks.

Several satellite providers offer "free" email service tied to their airtime. For infrequent use, this can be a good value. However, assess these offers carefully as the "free" email services only work when using expensive airtime. Subscription-based services can be accessed using standard Internet access, such as the marina Wi-Fi connection. The few dollars/month you'll pay to a subscription service can certainly save you on hundreds of dollars in airtime a month.

Email Service Features	Advantages
Setup	Should install drivers and setup your computer or tablet
Independent of Satellite Airtime	Allows you to save money on airtime by accessing your email from Wi-Fi, cellular or other non-satellite connections
Compression	Should accelerate email transfers an average of 10-20 times
Mid-file restart	Restarts from where it left off in the case of a dropped call, saving you airtime.
Attachment Support	Lets attachments come in, not available in all services
Attachment Quarantine	Quarantine large emails for downloading later on a faster and more affordable connection
SMS notification	Receive notifications of new messages via satellite SMS
Compatibility	Does the service support your computer or tablet operating system? Not all providers support Mac, Linux or iPads.

Web Browsing

If your requirements include a need for web browsing (if you are home schooling children, need to stay connected to the office website, ordering boat parts or coordinating repairs) then you will want to consider a system that provides higher bandwidth connection. Satellite broadband systems make web browsing both more feasible and more economical, even if the hardware costs up front are greater.

Satellite broadband offerings for the recreational cruiser come from the following:
• Inmarsat FleetBroadband
• Iridium OpenPort/Pilot
• KVH Mini-VSAT
• Thuraya IP (regional)

Each has its advantages regarding pricing, performance and coverage; however some things are common.

With broadband systems you pay for the satellite connection in terms of megabytes of data transferred. When you purchase an airtime plan you can select the speed at which you wish to browse.

Satellite System	Uncompressed Data Speeds
Inmarsat FleetBroadband	150-400 kbps (depends on hardware and service plan)
Iridium OpenPort	9.6-128 kbps (depends on service plan, with some variability in speed)
Globalstar	9.6 kbps
Iridium Handheld Phones	2.4 kbps
Inmarsat IsatPhone Pro	2.4 kbps potential, 1.3 as tested

Web Browsing (continued)
It is important to note that uncompressed rates can be increased through various hardware and software services like caching and web compression, giving effective rates that are 3-5 times faster on average for web browsing and 10-20 times faster for email transfers.

Also note that generally there is a tradeoff to be made: providers charge much less per megabyte for data with broadband services, but the equipment price and service commitment go up so that the total price paid may be higher, even if the cost of a single megabyte is much better with a high-speed service than a low-speed service.

Even if you are using a broadband system you still want a satellite phone email service with compression for all the same reasons as with a handheld satellite phone system, to save you airtime charges. In addition, you will need a service that provides web browsing with compression. Here's why:

Let's say that we have a hotmail account that we want to access during our trip. In order to check the email account, we must load the hotmail homepage and then the login screen. Without compression, the hotmail homepage is approximately 3.98 Mbytes in size and the login screen is about 284 kbytes. A standard fleet broadband airtime plan carries a cost of about $10 per Mbyte. This translates into about $43 to login to the hotmail account. By adding a service that offers web browsing with 3-5x compression you can reduce the size of the hotmail homepage to approximately 619 kbytes and the login page to about 60 kbytes; that reduces the cost to approximately $6.60. So, if you must browse then browse with compression.

You may have noticed that even with compression, using a webmail based email account can be expensive. With the right satellite phone email service you can reduce that email login check to around 200 bytes, at a cost of less then $0.01 USD.

Protecting Yourself from Bill Shock
Broadband systems generally offer an ethernet port and an open pipe to the Internet. This seems to be convenient until your computer performs an automatic Windows update and downloads 130 MB at $10.00 USD per MB. To prevent runaway airtime bills you will want a satellite firewall that blocks traffic except for compressed email, web and weather. One model also generates a Wi-Fi hotspot to allow easy connection with computers and iPads. This can save you from the "bill shock" of thousands of dollars in unwanted data transfers.

For a more detailed look at satellite broadband systems, feel free to take a look at our Ultimate Guide to Affordable Satellite Broadband for Cruisers. It details the different systems, usage examples, and breaks down costs to help you get the best deal in airtime and hardware.

Weather/Oceanographic Data

Weather services are an important and much-debated topic worth researching independently. Our advice is that many of the same considerations that apply to

satellite email apply to weather - compression, ease of use and reliability are paramount. Services like WeatherNet can save much more airtime through compression than the service itself costs.

Satellite Equipment

Hardware Options

You should consider the array of choices depending on your budget and needs, but hardware configuration will come down to three basic alternatives:

1. Handheld Satellite Phones
2. Handheld Satellite Phones with external antenna or docking station
3. Permanently installed Terminals

Handheld satellite phones are the least expensive option, and for weekend users may be all that is required. But any cruiser can appreciate that the weather doesn't always lend itself to standing on the deck. The external antenna will enhance the quality of your connection, with fewer dropped calls. This, in the end, saves money in airtime and makes it much more convenient to use the system. Imagine trying to connect, standing on deck with your phone and your laptop, in a storm.

A **docking station** provides a convenient housing for the satellite phone so that it is not rolling all over the place when connected to the external antenna. The external antenna connects to the docking station and the satellite phone sits in the docking station. Get a docking station with a privacy handset for more convenience so that when making voice calls you do not need to physically remove the phone from the dock. Of course, you can still remove the handheld phone from the dock for portability.

Permanently installed terminals can attach to standard and cordless phones, allowing for more portability on the boat. Not all permanently installed terminals are satellite broadband devices. Those that are, such as Iridium OpenPort and Inmarsat FleetBroadband, also allow for the faster data speeds required for web browsing.

Handheld Satellite Phones for Email and Voice
The handheld satellite phones limit service to mostly voice, e-mail, and weather with only occasional web browsing. Handheld phones are just not practical for frequent web browsing because of the slow speed of the connection. Most cruisers choose to purchase a handheld satellite phone (the Iridium 9555 and the Inmarsat IsatPhone Pro are the most popular) with their low hardware costs and reasonable airtime rates, plus it is easy to toss in the ditch bag should an emergency require such an act.

Permanently Installed Terminals for Satellite Broadband and Voice
Some cruisers choose Iridium OpenPort or Inmarsat FleetBroadband terminals for the convenience of having web browsing. While very limited web-browsing is possible on the narrowband services with handheld phones, the process is frustrating. Satellite broadband terminals, particularly when used with appropriate software and hardware, can be compared to a standard web connection at home. Broadband systems are four to 100 times faster than handheld satellite phone data services, and about 8 times less expensive for data when considering per megabyte fees. Of course, because of the greater speeds, it is easy to spend more in total dollars with a broadband data service. Satellite Broadband hardware is only somewhat more expensive than handheld phones with docking kits and external antennas. An Iridium OpenPort system, for example, is about eight times less expensive for data and four to 50 times faster on average depending on the service plan.

Handheld Sample Setup

While your exact configuration should be worked out with a qualified satellite dealer, we have provided two common configurations below.

Sample Setup #1
Basic Voice, Email Service and Weather
If your requirements are limited to mostly voice calls and email, with little or no web browsing needs, then consider purchasing a handheld satellite phone along with an external antenna, low loss coaxial cable, a docking station, a satellite firewall/Wi-Fi hotspot and a satellite phone email service that provides compression. Both Iridium and Inmarsat handhelds have merit; the Iridium has faster data service with lower per MB (not per minute) service pricing, the IsatPhone has a lower hardware cost and lower voice minute pricing.

To maximize airtime use and minimize connect timeout errors you want an Optimizer satellite firewall and Wi-Fi hotspot. This device simplifies your setup by eliminating compatibility problems with USB adapter cables. In addition, it has a built-in firewall that automatically blocks unwanted data transfers (like operating system updates or adobe updates) and only allows your email to get through.

Required:
- Satellite Phone such as Iridium Extreme or 9555, or Inmarsat IsatPhone)
- Airtime SIM card that is data-enabled
- Airtime plan
- Computer or Tablet (e.g. iPad; Tablets require Wi-Fi Hotspot)

Optional (but highly recommended):
- External Antenna with Low Loss (<3db) coaxial cable
- Docking Station – if using a handheld satphone
- Satellite Firewall / Wi-Fi Hotspot (e.g. GMN Optimizer)
- Satellite Phone Email Service with compression
- Internet Web Browsing Service with compression (if needed)

A satellite Wi-Fi Router is a new way to connect to a satellite signal, and also enables iPads and iPhones.

Broadband Sample Setup

Voice, Email, Weather and Web
There's nothing like the convenience of the web when you need it. Whether it's for news, boat operations, work, home-schooling, or just the convenience of anytime/anywhere data, satellite broadband service is attractive, and not much more expensive than a handheld solution, if you use it wisely.

For a satellite broadband solution, the equipment comes with the external antenna and most of the below-decks equipment that you need. Inmarsat FleetBroadband devices are the most popular, but Iridium OpenPort is less expensive for the hardware and has other advantages: airtime is charged differently, allowing you to check email for much less than with FleetBroadband, and initial connectivity issues have been largely overcome by Iridium.

Both devices use ethernet connections for the web, making the Optimizer satellite firewall and Wi-Fi hotspot important for several reasons:
1) Providing Wi-Fi for convenience and compatibility with Apple iOS devices.
2) Creating an impermeable firewall to avoid "bill shock"
3) Enabling GPS tracking services using your device's GPS chip and a compatible tracking service.
4) Compression and acceleration to save on data transfer costs.

Required:
• Satellite broadband terminal (Inmarsat FleetBroadband or Iridium OpenPort)
• Airtime SIM card that is data-enabled
• Airtime plan
• Computer or Tablet (e.g. iPad; Tablets require Wi-Fi Hotspot)

Optional (but highly recommended):
• Satellite Firewall / Wi-Fi Hotspot (e.g. GMN Optimizer)
• Satellite Phone Email Service with compression
• Internet Web Browsing Service with compression (if needed)

Further Information

Blue Water Communication is now easier and more affordable than ever. Consider consulting with an experienced satellite communications specialist to help you select the equipment and services that match your cruising requirements.

Global Marine Networks is an experienced specialist with extensive personal experience living on the water, and a long history developing products as a retailer and value-added reseller for all major satellite carriers.

Request a consultation for a custom solution for your exact situation.

About Global Marine Networks

Global Marine Networks (GMN), the leaders in advancing satellite data speeds and services, helps Fixed and Mobile Satellite Services providers and their customers by offering the industry's fastest, most reliable and easy-to-use E-mail, web, and other hardware and software services to maritime, oil and gas, first responder and business continuity users. The company's products include XGate high-speed satellite email, WeatherNet weather and oceanographic data software, and vessel tracking systems. Ship to shore network management solutions are sold by GMN under the RedPort Global brand name at http://www.redportglobal.com and as white-label solutions for the world's premier satellite data service providers.

GMN has numerous awards and certifications for technical innovation and holds pending patents on its products. For more information on how GMN is Making Airtime Count™ - whether ship to shore, or in remote or emergency communications environments visit www.globalmarinenet.com.

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