

# Tips to Choosing the Right Satellite Phones for Your Organization



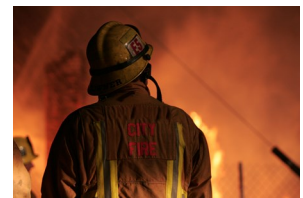
## WHERE DO I START WHEN CHOOSING MY PHONES?

There are several things to consider when starting the satellite phone decision making process. There are differing opinions on which satellite phone is 'best', so understandably one can easily get confused and lost in these opinions. Deciding which network will serve your purposes is more important than which actual phone you choose. Satellite phones are fixed or portable devices.

Satellite phones provide communications where there are no other options; in remote areas, in places where landlines are unreliable and during and after all sorts of disasters. Satellite phone users have evolved and changed over time; in the past satellite phones were tools used almost exclusively by the military or government. Today satellite phones are often used in a variety of public and private sectors including:



- Military
- US federal government
- National governments
- State and local governments
- Non-governmental organizations
- Enterprise organizations
- Humanitarian organizations
- Relief organizations
- Adventurers/extreme explorers



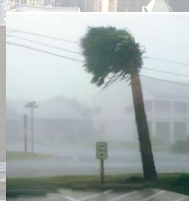
Satellite end-users are very diverse and include groups such as:

- Aviation
- Border patrol
- Construction (remote)
- Defense
- Emergency workers
- Enterprise
- Forestry
- Globe-trotting individuals
- Government
- Heavy equipment
- Lone workers
- Maritime
- Military
- Mining
- Oil and gas
- Storm chasers
- Transportation
- Utilities
- Weather reporters



Given the variety of situations in which you may be using your phone, here are some questions to help guide your decision;

- Who will be using the phone/terminal?
- What do we need to do with the phone?
- When do I need the service to work (daily or seasonally)?
- Where do I need the phone/terminal to work?
- Is this essential communication or occasional?
- Where will our calls go to and come from?
- Will I be in one location or traveling?
- If traveling, will it be regional or global?



**NEXT: Technical Considerations**

# TECHNICAL THINGS TO CONSIDER

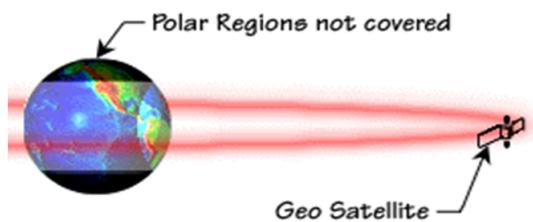
There are a number of things to keep in mind when choosing your satellite network and phones. If you have answered the questions on the previous page you are well on your way to making a good decision.

It is important to understand that your satellite phones' performance will be based on the constellation type, the network, and their coverage. These factors will contribute to your decision of which phones to buy. Here are some technical things to consider. (GlobaFone's SatCom 101 white paper expands on these topics).

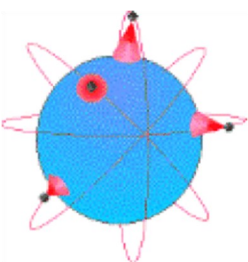
## The constellation type determines a lot

The type of constellation is important to your decision and the geography where you plan to use your phones has a lot to do with which solution you ultimately choose.

GEO-Stationary constellation satellites orbit the earth at an altitude of about 23,000 miles. A GEO system can cover a very large portion of the earth with one satellite; if a satellite is above the equator for example, it will cover about 1/3 of the globe, except the poles. Keep in mind that your location can impact coverage: the farther north or south from the equator you are means your antenna will need to point lower in the sky, closer to the horizon in order to 'see' the satellite. That means buildings, hills, trees and mountains can obstruct the view and interrupt the signal. This may also hinder your ability to use a GEO while mobile because as you move, your antenna must continue to point at the satellite.

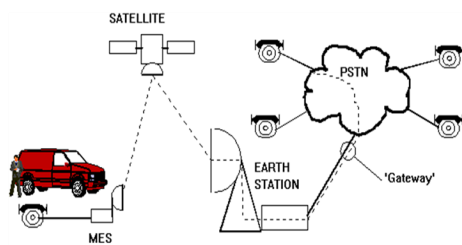


This satellite is 23,000 miles above the earth

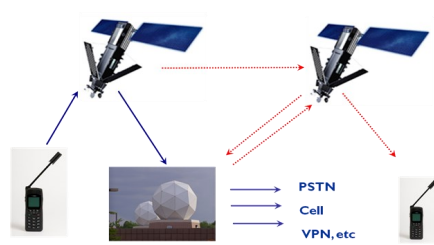


A Low-Earth Orbit (LEO) system has multiple satellites flying overhead meaning that there will almost always be at least one satellite overhead so antenna pointing is not as critical to successful use. Buildings, trees, and landscape can affect connectivity, but given that these systems have the ability to hand-off calls from one satellite to the next, the risk of obstructed views is far lower than on a GEO system. LEO systems tend to be inferior in terms of providing high-speed data connectivity because the smaller antennas required for voice calls simply cannot handle the bandwidth required for data. GEO systems definitely have the advantage when considering data.

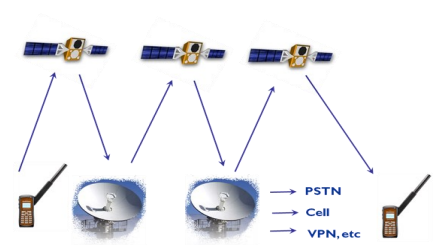
Here are typical call paths for GEO and LEO systems, showing the call routing:



A GEO system sends the call from the handset to the satellite, then to a ground station. From there it can be routed into the land or cell phone systems or back to another satellite phone or data terminal.



A LEO system sends the call from handset to satellite to the gateway into the phone network. Calls that need to travel long distances are handed from satellite to satellite arrive at the gateway, then get routed onward. Calls to another satellite phone go back to the satellite and relay to the handset.



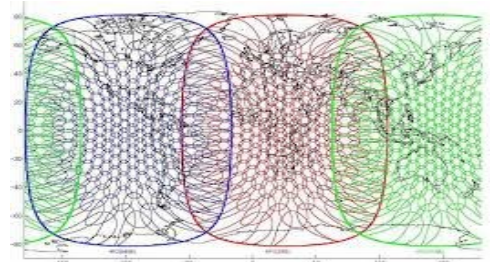
LEO systems can have different architectures. This one has a similar call route but if a call is going a long distance, it will be handed from satellites to gateways repeatedly until it reaches the destination. This type of system is called a 'bent pipe'.

**Next: Networks**

# SATELLITE NETWORK COVERAGE

## GEO-STATIONARY SYSTEMS

Inmarsat's three I-4 satellites cover almost the entire globe. The satellites are in orbit 23,000 miles above the equator right in the middle of each oval pictured here. Note that as you move north or south of the equator, the circles (called spot beams) become elongated, due to the curvature of the earth. This is the reason that your antenna angle gets lower, and may decrease your coverage. You will need to be mindful of this angle to keep obstructions out of your line of sight of the satellite. Inmarsat offers set pre-paid and post-paid plans.



## THURAYA

Thuraya began commercial service in 2001, offering phones that includes GSM 900/1900 with roaming on 350 cellular partners. This means you can use a Thuraya phone around the world in cellular mode and then in remote areas in satellite mode. Thuraya coverage includes Europe, the Middle East, Asia, Australia and parts of Africa. The award-winning SatSleeve enables user to make and receive calls and data on their compatible Smart phones. Thuraya has set pre-paid and post-paid rate plans



## LOW-EARTH ORBIT SYSTEMS



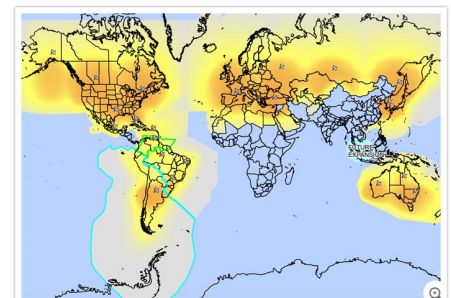
Iridium launched service in 1998 and emerged from bankruptcy, restarting service in 2001. Iridium has over 650,000 subscribers using their voice and data solutions, making them the largest satellite operator. Iridium licenses their technology to their network of over 250 VAMs, VARs and Service Partners. The products and solutions that these partners build give Iridium the widest array of offerings. Iridium will begin launching their second generation constellation called **NEXT**, starting in 2015, with service expected to start up in 2017. Iridium is the only network with complete global coverage and under which your provider can bundle and pool airtime and create custom plans.



## Globalstar

Globalstar launched service in 2000 re-launched in 2004. Globalstar is the first MSS operator to complete the launch of a second generation satellite constellation and their GEN2 constellation is now the most advanced in the world. Globalstar's goal is to bring more products and services to the mass markets; Globalstar's SPoT personal satellite messengers and the SPoT Global Phone are available in retail stores around the world today. Globalstar has set pre-paid and post-paid plans with pooling available.

Voice coverage >



**Next: How to choose**

# WHICH PHONE IS RIGHT FOR MY ORGANIZATION?

The difference in networks and constellations mean that some phones will perform better under certain conditions. Recall the earlier questions and refer to the four options—keep in mind these are general guidelines are designed to help you choose a satellite phone for voice and light data usage. There are higher bandwidth solutions if your focus is data services.

## Why you would choose **Inmarsat**:

- **Location:** Close to the equator/locations with clear view to the satellite.
- **Handset Price:** \$800-\$1,000
- **Service pricing:**
  - \$40-\$50/month
  - \$.90—\$1.20/minute for calls, depends on plan
- **Pre-Paid service:** Yes
- **Tracking?** Yes.
- **SOS notification?** Yes.
- **Battery Life:**
  - 8 hr talk and 160 hr standby



iSAT Phone Pro



iSAT Phone Pro II

The available phones are the iSATPhone Pro & iSATPhone Pro II  
iSAT phones are a great option for those who want a lower cost alternative to iridium

## Why you would choose **Iridium**:

- **Location:** Anywhere on the planet
- **Handset Price:** \$1,200-\$1,400
- **Service pricing:**
  - \$50, basic, plans additional
  - \$1.30/min average, depends on plan
- **Pre-paid service:** Yes
- **Tracking?** Yes.9575
- **SOS notification?** Yes. 9575
- **Battery Life:**
  - 4 hr talk and 30 hr standby



9575



Dock 9555

The available phones are the 9555 and the 9575. There are fixed-site phones and docks available.

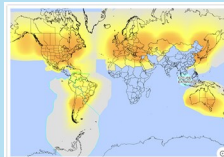
Choose Iridium for global coverage, a variety of options for handsets, accessories and rate plans



Fixed-Site

## Why you would choose **Globalstar**:

- **Location:** Within coverage area
- **Handset Price:** \$499 -\$699
- **Service pricing:**
  - \$25-\$150/month
  - \$.50-2.50/min effective rate, based on the plan
- **Pre-paid service:** Yes
- **Tracking?** No
- **SOS notification?** No
- **Battery Life:**
  - 4 hr talk and 36hr standby



GSP 1700



GSP 2900

The available phones are handheld GSP-1700 and the fixed GSP 2900

Globalstar is a great low cost solution for those who want a no-frills kind of phone

## Why you would choose **Thuraya**:

- **Location:** Within coverage area (Europe/Asia)
- **Handset Price:** \$850-\$1,200 (XT dual)
- **Service pricing:**
  - \$40-\$200/month
  - \$1.49-1.69/min
- **Pre-paid service:** Yes
- **Tracking?** Partial
- **SOS notification?** No
- **Battery Life:**
  - 6 hr talk and 80 hr standby



SatSleeve

The XT and XT dual (GSM1900) offer GSM cellular roaming and SatSleeve enables your device to work as a satellite phone.



Thuraya XT