

## Remote Communications

There are two ways to provide communications to remote locations, satellite or cellular. Which one should be used depends on a number of factors and will literally require a detailed knowledge of the area to be supported. For example a satellite dish will require a clear line of site to the southern sky, including no trees or mountains in the way. Cellular communication will require that a signal, even a weak one is available. A Yagi antenna, amplifiers and repeater can provide reliable cell service to a supported area, providing there is at least minimal cell service to the supported area. Note that cellular devices (phones, tablets, etc) can only be used within a limited “rebroadcast range”.

**Starting with the satellite:** One way to guarantee remote, affordable communications is via HughesNet (now owned by Dish) Satellite. Latency tests will have to be done to see if their \$19.95 phone addition has any benefit over a free Skype Account, or with an incoming phone number, available for \$2.95 monthly. In any situation, the satellite signal has to be made available for use by Internet connected devices. This requires that a wireless router be connected to the satellite modem. The router should use an external antenna so that the equipment can be kept under lock-and-key. If a land line or a viable single phone connection is available, then a cell to Internet phone connection is advisable as Rangers and Hosts could use the land line via their cell phone (with and app) over the phone connection. This use-your-cell-phone would allow us to keep the equipment under lock-and-key. All access is password protected.

**Extension Cords:** Additionally, the Satellite Connection can be shared up to distances of 5 miles (manufacturers specs, untested). This can be accomplished in two ways: 1<sup>st</sup> dish to dish if there is a clear line-of-site, or 2<sup>nd</sup>, with reduced distances, through through trees. Both of these solutions can be purchased for under \$400. This becomes an attractive alternative as it would allow multiple locations to share a single HughesNet account. It also will allow a Satellite to be setup in a location where it has a clear line-of-site view of the Southern Sky uninhibited by trees and mountains. Think of this like a repeater to the world.

Using a standard HughesNet Satellite Dish (about \$300) will require “pointing” when moved. Not a big deal, and free once a year, if it will be used at a Host or semi-permanent site. If no one is available or there is no time, for example for fire use, a self-pointing satellite may be a better option. While it would require a clear view of the Southern sky, Internet communications would be nearly immediately available as soon as the Micki was dropped in. The drawback to this is the cost of the unit, about \$5000.

We should not get locked into one idea. For example, could a single Micki with a self-pointing satellite be dropped onto a high spot and connected via one of the solutions above, to as many locations as required?

I believe that a small inventory, using a plugin style plan, would allow a very cost effective solution to our remote communications requirements.

**Remote Cell Service:** If some kind of cell service is within remote range, a a combination of Cell Phone Signal Boosters, Amplifiers and Repeaters may be used to provide cell service to a limited area (50' x 50'). Where this differs from satellite service is that it simply rebroadcasts service to existing cell

devices and each has its own contract for the services available to individual users. We just bring in the signal, not any services. If it is desirable to provide Internet wireless in the area, this can be accommodated via a MiFi box. This can provide Internet Service to multiple devices without dependency on specific providers. Be advised that this needs to be tested. Even when a phone has absolutely no signal, one may be there. A rule of thumb, are there any “hot spots” nearby where you see any signal.

Most remote areas seem to be covered mainly by Verizon. We have, and use a Verizon MiFi box.

**CAUTION:** Most remote areas will only support 3G service or less. Verizon sells only MiFi boxes with 4G support and **THEY WILL NOT WORK WHEN ONLY 3G OR LESS IS AVAILABLE.** You have to find a MiFi Router that can support the range of cell service that is available at the location you wish to support.

**CAUTION:** When you select a Cell Solution for your area, you must be careful that it matches the services available from the cellular provider.

**Internet Recommendations:** If Internet services are for a very limited number of people who are aware that there is a limited and metered amount of usages (download bandwidth) available, caution should be used. In general, you will only have 10GB Max available for a MiFi hotspot. Satellite up to 50/50 GB divided into prime-time and off peak time-frames. If you are providing “public” WiFi to visitors, the router purchased must be able to prevent the downloading of streaming media and other high-bandwidth usage. This will also require some programming.

**HTHH** will provide the programming of the routers required to restrict access types, so stop sweating. Wondering what is HTHH? **High Tech Hosts Hotspot.**

**Cell Service Recommendations:** If cell service is available, but unreliable, the decision then becomes simple, do you want to have reliable (best it can be) cell service available? If you do want to provide cell service, then carefully consider who will be using it before installing MiFi. Bear in mind, that these services can be restricted via passwords. For example, cell service could be provided for visitors while MiFi could be restricted to use by the camp host and visiting Rangers, aware of limitations

**Public Use Communications:** Before I start, these can be revenue producing, the choices are up to the location management. If it is desirable to provide both cell and Internet services to a public area such as a campground, the better long term solution, in our opinion, is to use both a Satellite with restricted access (streaming not allowed) and a cell solution as we described above. There is no monthly fee for repeating cell service and fairly large bandwidth plans available for limited monthly cost.

**Television support.** Probably a requirement for Hosts, it may be a welcome addition for firefighters as well. It is also a viable solution for getting the latest news and information, including live fire reports and video of a fires progress. Lets use those news helicopters.

**Note:** that mounting will be accommodated for these units on the Micki.

### **Recommended Equipment**

HughsNet Satellite Dish (Buy equipment recommended)

\$299.99 @ [HughesNet](#)

4 Plans available: recommend max 50GB/50GB monthly	\$79.95 @ <a href="#">HughNet</a>
Phone Plan (requires testing) monthly	\$19.95 @ <a href="#">HughNet</a>
Wireless Router with external antenna (still deciding)	\$300.00
Sat/land line Phone to-and-from cell phones	\$84.95 @ <a href="#">Panasonic</a>
Extension Cord (clear line of site between dishes)	\$379.99 @ <a href="#">RadioLabs</a>
Extension Cord (through the trees)	\$499.95 @ <a href="#">RadioLabs</a>
<a href="#">DataStorm Self Pointing Satellites</a> (Needs more research)	\$5000 + Monthly Fees (Estimate)