

Satellite Internet for RV'ing

We have had sat Internet for about 4 years now, as we are retired and travel for extended periods of time, we find it a convenient way to keep in contact with our family and friends, pay bills, listen to local radio stations back home and generally keep current on what's going on around the world.

Sat Internet vs. wifi

Although a growing number of campgrounds in North America have wifi capabilities, we have found that there is a wide variation in the quality of these connections from excellent to unusable. This is due in part by the computer knowledge (or lack of) of the campground owners and also due in part by the users overloading the connection by downloading excessively in campgrounds where the connection is via satellite (see FAP below). If your requirement to use the Internet is not critical, then a bad wifi connection is not a problem, but if you have to pay a bill or send an E-mail NOW, then it can be frustrating. We wanted a reliable connection to get on-line anywhere we travel, so satellite Internet was a better alternative to campground wifi.

Systems

There are a number of satellite Internet providers and systems available on the market for Rvers. All are common in that time is purchased by suppliers on geosynchronous satellites in orbit and then you purchase a plan from your supplier that is suitable for your needs.

There are a number of options available on the hardware side varying in cost and complexity. I will outline the systems that I am familiar with and use (which also is the most commonly used by Rvers), that is the equipment and Internet supplied by Hughes and it's resellers and installers.

Dishes mounted on a Tripod vs. Automatic Dishes

Tripod systems

A number of Hughes resellers in the US and Canada offer tripod equipment where the sat dish is mounted on a surveyor's tripod and the dish is pointed to the satellite on a similar fashion to TV dishes. The procedure for erecting the dish is relatively simple once you have done it a few times (it's like purchasing a new tent, the first time it takes about 2 hours to erect, after a while you can do it in less than 30 minutes).

The procedure is:

- Obtain the satellite parameters (azimuth, elevation and skew) from your computer using your current location (latitude and longitude from your GPS (or a mapping programs such as Streets and Trips) or the zip code at your current location if in the US.
- Check to see you you have a clear view of the satellite by using a compass and inclinometer using the azimuth and elevation gotten above (important if your are in a treed area or an area with other interferences, for example buildings).
- Erect the tripod and dish and connect the coaxial cable between the tripod and your RV
- Level the tripod using a bubble level.
- Set the dish to the point approximately to the satellite by setting the elevation and skew settings on the dish and then pointing the dish to the azimuth required using your compass.
- Go into the RV and turn on your satellite modem and use the Hughes program on your computer to display a signal strength (which also displayed on the OPI on the dish, an OPI is a more sophisticated version of a “satellite finder” used for aiming a TV dish, it's supplied with the tripod system).
- Go out to the dish and first aim the dish to find the satellite by scanning back and forward in the area where your compass said the satellite was (the azimuth).
- Once you get a reasonable signal strength, adjust the elevation and skew to maximize the signal strength, then go back to the azimuth and maximize the signal strength again. You may have to do a couple of iterations to peak the signal.
- Once you get a reasonable signal (varies by satellite, but generally better than 60), go back to the computer,the signal strength screen should indicate that the signal is “locked”.
- Go through the computer “cross pol” test to confirm that you are correctly aimed, if you are aimed correctly, wait for all 4 lights on the Hughes modem to light up after the “handshaking” process with the satellite is completed, then you are on-line!

The above sounds complicated, but once you go through it a few times it becomes routine to the point that even for one night stops we erect the dish. It takes just over 30 minutes to get on-line, I know this fairly precisely because there also is a LNB on the dish for our sat TV, and the TV receiver counts the time between when the power goes in the receiver and the time it sees it's satellite (more on his technology called “bird on a wire or “BOW” later).

This is a picture of our dish:



In terms of cost, a tripod system can be purchased for about \$1400 complete, with the only additions I have purchased since being a device called “The Claw” [Link to The Claw](#) to securely anchor the tripod in the case of heavy winds (ours blew over in Mexico causing damage to the dish and LNB) and the BOW attachment to allow Satellite TV reception and Internet on the same dish (see below). I also bought an accurate compass called a Suunto Tandem to accurately point the dish: [Link to Suunto Tandem](#)

There is a bit of a controversy out there regarding tripods, as Hughes (who supplies the Internet service) does not officially recognize tripod use, they only supply and install fixed dishes for home use. My understanding is that part of the reason is a perceived US liability issue regarding microwave emissions. The transmitter on the dish emits 1 or 2 watts (depending on the model) of microwave radiation aimed at the satellite. There is a small safety concern if you stand in front of the dish (minimized by the fact that the transmitter automatically shuts off if the receive signal is lost). Considering that the current microwave ovens have over 1,000 watts of power (how many folks check for leakage?) and cell phones are used in close proximity to the ear, it doesn't seem to be significant. If you read and follow the instructions provided (and ensure that the dish is 5 ft. above the ground), there should not be a problem. I was fortunate that my dish supplier gave a half day training course and I am “qualified” to install these systems. There must be multiple thousands of tripod users out there, I don't think there is a problem.

Automatic Dishes

Automatic dishes, as the name suggests, are virtually automatic, they mount to the top of your RV and when you get to your campsite (after checking for obstacles like trees in the path between the dish and the satellite), you push a button or two and in a few minutes the dish finds the satellite and you are on-line.

The cost for this convenience can be upwards of \$6,000. The advantages are obvious with a couple of potential downsides compared to the tripod:

- Since the dish is mounted to the RV, you can't avoid tree obstruction as easily as with a tripod with 50 ft. of coaxial cable that can be moved around to avoid obstacles.
- If you don't take time to learn all the details about how an automatic system works, you may have problems in fringe satellite areas when manual “tweaking” may be required to get on-line. I have seen this (and helped) with a couple of folks with automatic dishes

Satellite TV and Internet on the same Dish (BOW)

For those of us that want Satellite TV reception on the road as well as Internet, a useful attachment that is mounted on the satellite dish is a BOW.



This gadget mounts onto the side of the Satellite LNB and it allows you to receive TV signals from a different satellite while the dish is aimed at the Internet satellite, thus saving the requirement to pack two separate dishes in the RV. Once you aim the dish for the Internet sat (and adjust the BOW the first time), the BOW is automatically aimed for the sat that carries the TV signals. You still have to carry a sat receiver and subscribe to a service though. The BOW is usable on both tripods and automatic dishes and different BOWS can be purchased for Canadian (Star Choice and Expressvu) and US (Direct TV and Dish) services.

Monthly Plans for Internet Service

When you look for an equipment supplier, it's important to deal with a reseller or installer who can provide you with after-sale service and help. In addition, it's critical to deal with someone that can arrange a satellite switch for you if you plan to travel extensively. Hughes will not provide this capability if you deal directly with them as they assume you are operating a fixed dish (and therefore won't need to switch satellites). We switch satellites twice per year, we use one satellite in the winter (SatMex5) which has a range from southern Ontario to as far south as the Guatemala border, G16 is used in the summer which will take us into the north about as far as we want to go. If we only headed to (say) Arizona in the winter, then G16 would be suitable year around.

The installer or reseller deals with Hughes for you and arranges for your account to be set up, in Canada the reseller also collects the monthly fee.

In Canada our current monthly charge (November 2008) is \$89.95, that gives you up to 375 MB of downloading per day with an additional 3 hour time window overnight where there is no limits on downloads (suitable for software updates, streaming video etc.). If you exceed the download limit your download speed is severely restricted for up to 24 hours (the policy is called FAP or fair access policy which exists to share the limited satellite resources). This level is more than sufficient for your needs although the limit won't allow continuous video streaming etc. In the 4 years we have had the service, we haven't been "FAPPED" once. If you really need additional downloading capability, more expensive monthly plan are available.

More resources:

Resellers/Installers

Canada:

Tech Mobile (for tripods and automatic dishes) : [Link to Tech Mobile](#)

Galaxy Broadband: [Link to Galaxy Broadband](#)

USA:

Bill Adams (for Motosat automatic dishes): [Link to Bill Adams](#)

Motosat Corporation (manufacturer of automatic dishes): [Link to Motosat](#)

Maxwell satellite (for tripods): [Link to Maxwell sat](#)

Datastorm users (a website with great information on this topic): [Link to Datastorm users](#)