

INTRODUCTION TO PACKET RADIO - PART 2

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GETTING ON THE AIR WITH PACKET

In the first part of this series I told you, in general terms, what packet radio was all about. Now I'm going to tell you how to get on the air, make a QSO, and become familiar with your packet station. Whether you're new to packet, have been involved for just a short time, or are one of the "old timers", this series should help all of you. Even if you don't yet have equipment to get on the air, you should keep this series of articles handy for future use. I'll bet you'll be joining us soon!

The equipment that's needed to get on the air with packet is a transceiver, a computer or terminal, and a TNC - a terminal node controller - the little black box I talked about in [part 1](#). Or, if you're using a computer, not just a terminal, you can use special software and a small packet modem instead of a TNC. You need a special modem, though, not one that's used to connect your computer to the telephone line. The tones used for packet are different than those used on the phone.

I highly recommend that you start with a 2 meter transceiver. There is packet activity on 220, 440 and HF, but 2 meters is where most of the action is and that's the best place to start.

When you buy a TNC or packet modem and take it out of the box, you'll find a cable supplied for connecting it to the radio, but you'll have to attach the appropriate mic and speaker jack connectors for the radio you're going to use. You'll have to furnish the cable that connects the TNC to your computer or terminal. In most cases, the TNC or modem is connected to the standard RS-232 communications port of the computer. On a PC this port is called a serial or COM port. On other systems it may be referred to as a telecommunications port or telephone port. You can make up the cable that goes between the TNC and computer yourself, or you can purchase it at a local computer store. As an option, you may be able to purchase one or both of the needed cables from the manufacturer of your TNC with the appropriate connectors factory installed for your particular radio and computer. The operating manuals that are supplied with TNCs and modems have a good description of the cabling needed for the various computers. Please read the introduction and set up procedures for your particular TNC or packet modem very carefully. Most companies have supplied excellent manuals, and you shouldn't have any trouble figuring out your particular set up from the information supplied in the manual.

Once you have everything connected as described above, you've completed the hardware phase of the installation. Now you need to turn your attention to software. If you're using a TNC, you'll need a terminal or communications program for your computer. Any software used for a telephone modem, such as Procomm or the Windows Terminal program, will work well for packet. There are also many special programs that have been developed specifically for packet radio use, such as PC PACRATT, MFJCOM, PAKET, PacketGold, TPK, etc. If you're using the small modem instead of a TNC, you'll need to use the special packet software written for the modem, such as Baycom. Read the instructions carefully for

setting up the program on your computer.

No matter what software you use, you'll have to specify the communications port you'll be using and set the baud rate (data rate) and data parameters for that port. (Note: There are two baud rates associated with your packet station: 1-the baud rate between your computer and TNC and 2-the baud rate of the packets on the air. Here I am discussing the first of these baud rates. The second will be discussed in [part 3](#) of this series.) Refer to the manual or help information for the specific program you've chosen, to set the baud rate and data parameters. The baud rate of your computer must match the baud rate of your TNC. Some TNCs will automatically set their baud rate to match the computer. Other TNCs have software commands or switches for setting the baud rate. Again, you'll need to refer to your manual for specific instructions. When setting the data parameters, 8-N-1 is normally used: 8 data bits, no parity, 1 stop bit. But like the baud rate, the computer and TNC parameters must match.

Now I need to point out the various levels of communicating you can do from the keyboard. First, you can communicate with your computer for setting up your software program; second, you can communicate with the TNC or packet software; and third, you can send data over the radio. It's very important that you know which level you're in when working packet. You need to know where your keystrokes are going! If you're not using a TNC, you will have to figure out the difference between software set up and software usage. This is explained in the program instructions.

Once you have your communications program or packet software up and running, you can move on to the next step. If you're using a TNC, you now need to set it up. First, turn it on. You should get a "greeting" or sign on message from the TNC on your screen showing the manufacturer's name, the software version, a date, etc. If you see a bunch of gibberish, such as &tf\$d.h#sxn, it means that the parameters of the TNC and computer don't agree and you'll have to make adjustments. If you don't see a "greeting" or the gibberish, check your cables and connections. Make sure that you have everything connected properly, that the right wires are on the right pins, and so on.

Next, do a "control C" (press the CNTL and the letter C simultaneously); this puts the TNC in COMMAND mode, the level where you communicate directly with the TNC from the keyboard. You should see "cmd:" on your screen. Enter:

```
MYCALL ----
```

with your callsign in place of the dashed lines, such as:

```
MYCALL WB9LOZ
```

followed by a carriage return <CR>. (The carriage return key is labeled "Enter" or "Return" on most keyboards.) All commands must be followed by a <CR>. This sets into the TNC memory the call that you're going to use on the air. Now if you type:

```
MYCALL <CR>
```

it should respond with your callsign. If it does, you've proven that the computer to TNC link is working fine. If you do not see anything on the screen when you type, blindly enter the following:

```
ECHO ON <CR>
```

If you see two of everything that you type, such as MMYCCAALLL, enter:

```
ECHO OFF <CR>
```

Now enter the following commands:

```
MONITOR ON <CR>
```

```
MRPT ON <CR>
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For those using packet software and a modem instead of a TNC, you should have already entered your callsign in the configuration file during the set up procedure. If you have not, refer to the software instructions for preparing the configuration file for your station. Also note that with this software, you don't enter Control C to go into command mode. You simply use the ESC (Escape) key prior to entering each command.

You're now ready to go on the air! Turn on your radio, make sure the volume is turned up about a third of a turn (about the "10 or 11 o'clock" position) and make sure the squelch is set. It should be at the point where the background noise disappears, just as it would be set for a voice QSO. Tune the receiver to any odd numbered frequency between 144.91 and 145.09 or 145.61 and 145.79 MHz and set the rig for simplex operation. You might have to tune around for a frequency with activity in your area. Watch your screen. You should soon be seeing the packets that are being sent over the air by other stations.

Let's look at what you might see. You should see something similar to this:

```
WB9LOZ > W6PW-3: The meeting will be held at 8:00 pm.
```

This shows a packet being sent by WB9LOZ to W6PW-3. Watch for callsigns with asterisks next to them in packets that look like this:

```
WB9LOZ > W6PW-3,W6PW-1*: The meeting will be held at 8:00 pm.
```

The asterisk indicates that you're receiving the packet from W6PW-1, not the originating station, WB9LOZ. The packets are being digitally repeated, or digipeated, by W6PW-1. The station that's doing the digipeating is called a digipeater. You'll also note that some stations are using names or a series of letters rather than callsigns. You might see something like SFW, BERKLY, or BLUE. These are packet stations set up to operate as nodes. The stations are usually located in higher locations, and they're installed to make connections to other stations easier. They often use a name or letters, called an alias, that identify their location. They send both their alias and callsign at 10 minute intervals to identify themselves and to be legal. (Both digipeaters and nodes will be discussed in detail in a later part of this series.)

You'll also notice that some callsigns have a trailing number attached to them. On packet you can have up to 16 different stations on the air at the same time using the same callsign. That's where the numbers at the end of the callsign come into play. The calls W6PW, W6PW-1, W6PW-2, W6PW-3, W6PW-4 and W6PW-5 are all individual stations operating under the same station license. A callsign without a number is the same as -0. These numbers are called Secondary Station IDs or SSIDs, and are used to differentiate between the various stations. There should never be more than one station using the same callsign and SSID on the air at the same time.

Now that you're familiar with what you might see on packet, you're ready to make your first packet QSO! If you're using a TNC, make sure it's still in command mode. (Remember, it's Control-C.) Watch for a familiar call on the screen or note calls you see frequently. Be sure to note whether or not a digipeater is being used. When the station you want to contact is finished with his QSO, enter the command:

```
C ---- or  
C ---- V ----
```

(depending on whether or not a digipeater is needed) followed by <CR>. Replace the

dashed lines after the "C" with the call of the station you want to contact and the dashed lines after the "V" with the digipeater call, if needed. Don't forget the SSID if the call has one. The C means CONNECT and the V means VIA. Example:

C WB9LOZ V W6PW-1

means connect to WB9LOZ via W6PW-1. If you're successful, you should soon see "*** CONNECTED TO (callsign)" on your screen and your first packet QSO is underway!

You have now entered the third level of communications, called CONVERSE mode, and this is where you communicate from the keyboard to the radio. Anything you type on the keyboard will be transmitted over the air as a packet every time you hit a <CR> and it will appear on the other station's screen. Anything sent by the other station will be transmitted to you and will appear on your screen.

When you're finished with your QSO, be sure to do a CONTROL C to get back into command mode on your TNC, or hit the ESC key if using the packet software, then enter D to disconnect from the other station. You'll see "DISCONNECTED" on the screen. If you get connected to a station but you don't receive a response, you might have reached an unattended station or a node. Don't despair, disconnect and try someone else.

You're on the way now to lots of packet fun and adventure! If you are still having problems at this point, contact a friend that has some experience on packet and ask for help. The initial set up of the computer, TNC, software and radio is probably the biggest stumbling block in packet. Any experienced packet operator will be happy to help you get through this process to get you on the air.



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