Packet Basics

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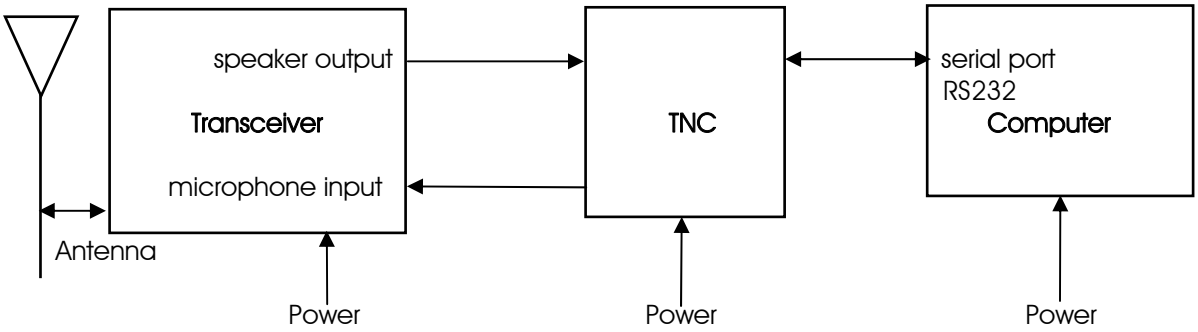

Software

A terminal program is needed to control the data going to and from the TNC and radio. Hyper Terminal, which is supplied with windows works well. Set Hyper Terminal for the com port you are using, which is usually COM1, the speed at which the com port works, which is usually 9600 bps, Data bits = 8, Parity = none, Stop bits = 1. After you complete the settings, save them as "Packet."

There are two communication speeds that are used in Packet Radio 1200 Baud or 9600 Baud. Set the computer serial port to the speed of the computer serial port, usually 9600 Baud. Set the packet system speed to 1200 or 9600 Baud. ABAUD refers to the computer to TNC (serial port), and HBAUD refers to the RADIO or ON-AIR Baud rate (data speed).

Packet Operation

Switch the transceiver ON and turn the volume up a quarter turn or just above the "9:00 o'clock position." Make sure the squelch is not set too tight. The squelch should be set to a position where the transceiver is quiet. The squelch is set in a similar manner that you would use for voice operation. When first turned on, the TNC you may display garbled text on the screen. This is usually because the terminal to TNC baud rate is not set to the same parameters. Some TNC's will do a "search" mode to find the proper settings.

Perform a "control C" **[Ctrl C]** (press Ctrl and the letter C at the same time) to place the TNC into the command (cmd:) mode. This is where all commands are made to and from the TNC. Any command that is typed while in the "cmd: mode is received by the TNC as a direct order. These codes can vary with TNC's.

Once in the command mode, press the [Enter] key. Each time the [Enter] key is pressed a "cmd:" prompt should appear on the screen. This is an indication that the computer has control (command) of the TNC.

All commands must be followed by the [Enter] key.

The next step will be to set the station call sign into the TNC. At the cmd: prompt, type:
MY *(your call sign)*

Test the TNC to see if the station call sign is set into the TNC. To do so, type:
MY

The screen should display a response from the TNC with:
MYCALL *(your call sign)*

MYCALL NOCALL indicates that a call sign has never been set, or the internal memory battery has been disconnected or is dead.

To enter your call sign type:
MY *(your call sign)*

The TNC should respond with:
MYCALL *(your call sign)*

This indicates that the computer and TNC are communicating properly. If there is no response after typing MY, then try typing:
ECHO ON

The :cmd: should appear on the screen again, with a message similar to the following:
ECHO was OFF

If the computer is displaying double letters, (for example; MMYY CCAALLLL), this indicates that the ECHO command should be turned OFF. Type the following:
ECHO OFF

The TNC should respond with:
ECHO was ON

Below are some commands that should be made active:
ECHO ON (normal) or ECHO OFF (if double letters are displayed)
MONITOR ON
MCOM ON
MCON OFF (to display only packets addressed to you) or MCON ON (to display all packets)
MRPT ON

If the RS-232 interface cable is wired using the RTS, CTS, Txd, Rxd, and Signal Ground leads, then set the XFLO command OFF. If the RTS, and CTS signals were not used, then make sure the XFLO command is ON.

Note: TNC's have 3 modes of operation: Command, Converse and Transparent. You must remain aware of which mode the TNC is in at any current moment!

Command Mode

In the COMMAND mode, the TNC will interpret data received from the keyboard as a command to process data, not as data to transmit.

When you are in the command mode, the screen will display:
cmd:

Convers (Conversation) Mode

In the CONVERS mode, the TNC will interpret data received from the keyboard as data to be transmitted. Most TNC's will automatically switch to the CONVERS mode after a connection has been established. When you are in the COMMAND mode, you can switch to the CONVERS mode by giving the command:
CONVERS or **K**

If you are in CONVERS mode and want to switch to COMMAND mode, type:
[Ctrl] C

Monitoring or Calling CQ

If you turn the MONITOR command on, you will see other packet stations you your screen. You will see two call signs at the beginning of each packet separated by a ">" The first station is the station that is sending the packet. The second is the station receiving the packet.

To call CQ, you must be in the CONVERS mode, so that the data received from the keyboard will be interpreted as data to be transmitted.

To enter the CONVERS mode, type:
CONVERS or **K**

Anything you type at this point, will be transmitted.

Example:
W2XYZ CQ CQ CQ

If a station wants to connect to you, they will type the CONNECT W2XYZ command

To return to the COMMAND mode, type:
[Ctrl] C

Packet Direct

The most common frequency for packet communications is 145.010 mhz at 1200 Baud.

Begin in the command mode:
[Ctrl] C

Enter your call sign into the TNC
MY *(your call sign)*

Test that the TNC has received you call sign:
MY

The screen should display a response from the TNC with:
MYCALL *(your call sign)*

To connect directly to W2XYZ, assuming you both have a direct path:
CONNECT W2XYZ or C W2XYZ

If the TNC receives an acknowledgement of connection it will display:
*** CONNECTED TO W2XYZ

Once connected, the TNC should automatically switch to conversation mode (CONVERS). You can type in text, then press enter to send. You should automatically receive text from the station you are connected to.

When you have completed your conversation, you need to get back to COMMAND mode to sign off.

To get back to COMMAND mode, type:
[Ctrl] C

To disconnect, type:
DISCONNECT or **D**

The TNC should respond with:
*** DISCONNECTED

Network NODES

"Nodes" are a vast improvement to the original "digi" scheme. They have gone through many evolutions, starting with the original NETROM, to it's clones TheNET, G8BPQ and MSYS, and finally onto a newer networking protocol called FlexNet. All nodes on Long Island, and most in the surrounding area, now employ the newer faster intelligent FlexNet protocol. Other networking protocols such as ROSE and FPAC never existed in our local area, while use of TCP/IP has faded greatly.

Note, while NETROM and it's clones called a Network Node simply a "NODE" FlexNet, which was developed in Germany called them "DIGI's" based upon the German name for a "Digital Repeater". A "FlexNet DIGI" Is what we call a "NODE", not the "digi" described in the digipeating section.

Many packet radio "NODES" connected to the worldwide network exist Long Island:

WA2PNU (145.070 MHz, at 1200 Baud, Huntington)
(M or C WA2PNU-4 for BBS)

NY2LI-8 (145.03 MHz, at 1200 Baud, Hauppauge)

NY2LI (145.05 MHz, at 1200 Baud, Yaphank)

N2NEI (145.07 MHz, at 1200 Baud, Southampton)
(M or C N2NEI-4 for BBS)

K1IMD-2 (144.99 MHz, at 1200 baud, Jamesport)
(M or C N2NEI-4 for BBS)

KC2COJ (145.05 MHz, at 1200 baud, Far Rockaway)
(M OR C KC2COJ-4 for BBS)
(C KC2COJ-1 for TCP/IP Router)

NY2S (145.09 MHz, at 1200 baud, Lynbrook)
(M or C NY2S-4 for BBS)

Frequencies from 144.91 to 145.09 MHz on 2 M, and 441.00 to 441.10 MHz on 70 CM bands are set aside for packet use. There is some additional activity in the 145.59 to 145.69 MHz segment too.

Connecting through a Node

1) To connect to W2XYZ thru node WA2PNU, assuming both stations are listening to WA2PNU node:
C W2XYZ V WA2PNU

2) To connect to W2XYZ thru node NY2LI, assuming your listening to WA2PNU node and W2XYZ is listening to NY2LI node:
C W2XYZ V WA2PNU NY2LI

3) To connect to W2XYZ thru distant node K2JFK (Clay NY), assuming your listening to WA2PNU and W2XYZ is in Clay NY listening to node K2JFK:
C W2XYZ V WA2PNU K2JFK

4) Above examples are from a disconnected state. You can connect first to your local node, C WA2PNU, and then the WA2PNU call can be deleted from the previous examples, such as:
1) C W2XYZ 2) C W2XYZ V NY2LI 3) C W2XYZ V K2JFK

5) To find out what node W2XYZ is monitoring, on an ARRL section by section basis, you connect to any node within that section, and then do a "find".

Example:
F W2XYZ

6) "A" command on any FlexNet will give a manually built list of nodes with geographic locations. Some sites have newer updates than others. "D" gives the machine made <D>estination list, showing callsigns, SSID range, and "round trip times" of other nodes. The D list will always be up to date! Nodes with RTT's under 1000 should be easily connected to, over about 1000 means the path may be dropping out due to propagation conditions.

Example (with your radio set to 145.07 MHz):
C WB2CIK

*** CONNECTED to WB2CIK
PC/FlexNet V3.3g West Hills, LI, NY, USA
1200 baud 145.07 9600 baud 145.59
SysOp John C Papson WB2CIK @ WA2PNU
"C WB2CIK-15" to reach me at home keyboard
<C>onnect <D>estinations <F>ind <H>elp <I>nfo <MH>eard <P>orts <Q>uit <U>sers
<A> for Callsign vs Location Table <M>ail will connect to the nearest BBS

Disconnecting from a Node

Q for <Q>uit on FlexNet nodes, remember command is B for <B>ye on FBB BBS's!

Example of a Connection to Node and Sending Mail through a BBS

1. Set your call sign

cmd:my wb2lua
MYCALL was NOCALL

cmd:my
MYCALL WB2LUA

2. Connect to the nearest Network Node

cmd:c wa2pnu

cmd:*** CONNECTED to WA2PNU
PC/FlexNet V3.3g
Welcome to the WA2PNU Flexnet-Digi node located at Huntington, Suffolk County,
NY [FN30gu] It is operating as part of the USA Eastnet FlexNet Network,
serving the Central Long Island area of the NYC/LI Region.
<LO> for local and additional info.

<M> or <C WA2PNU-4> to connect the PBBS.

<D> for available Destinations.
<A> for info on Destination calls.
<H> for Command Summary and Command Explanations in detail.
<I> for System and Additional Information.

=>m

*** connected to WA2PNU-4
[FBB-7.00i-AB1FHMRX$]

WA2PNU BBS, QTH FN30GU.
Hello ???, you are now on channel 1.
Here are 318 active messages, 26868 is last message and
26848 is the last you have listed.

Assigned channels:
Ch. 1 (FLEX) : WB2LUA-0 - Wed 03/03/10 20:57
via : WA2PNU-2

This is your first contact with this BBS.
Please enter your first-name :John
City (without ZIP-code !) :11768
Please enter your Home BBS :WA2PNU
Please enter your ZIP code :11768
Thank you...

*** Welcome to the Larkfield Amateur Radio Club (LARK) ***
*** PBBS at Huntington, Suffolk County, NY [FN30gu] ***
*** serving the Central Long Island area of the NLI Region ***

(1) WA2PNU BBS (H for help) >

3. Receive Private mail

(1) WA2PNU BBS (H for help) >

rp wb2lua-0
From : N2PQJ
To : WB2LUA
Type/status : PN
Date/time : 02-Mar 14:02
BID (MID) : 26846_WA2PNU
Message # : 26846
Title : Test Message

(This message has been read 1 times so far in this BBS.)

Test from N2PQJ at 1300 local 03/03/10
/ex

--- End of messsage #26846 to WB2LUA from N2PQJ ---

3. Send Private mail

(1) WA2PNU BBS (H for help) >
sp kc2ojo
Routing (from WP) to WA2PNU.#NLI.NY.USA.NOAM.
Enter the title for this message to KC2OJO :
test
Enter the text for the message, end with Ctrl-Z or /EX on a blank line) :
test from tonight's meeting
/ex
WA2PNU-4>FBB:26869 P 28 KC2OJO WB2LUA 100303 test

Mid: 26869_WA2PNU Size: 28 bytes

4. Disconnect

[Cntrl C]
cmd: D

Example of a Connection to Node and to another Station

1. Set your call sign

cmd:my wb2lua
MYCALL was NOCALL

cmd:my
MYCALL WB2LUA

2. Connect to the nearest Network Node

cmd:c wa2pnu

cmd:*** CONNECTED to WA2PNU
PC/FlexNet V3.3g
Welcome to the WA2PNU Flexnet-Digi node located at Huntington, Suffolk County,
NY [FN30gu] It is operating as part of the USA Eastnet FlexNet Network,
serving the Central Long Island area of the NYC/LI Region.
<LO> for local and additional info.

<M> or <C WA2PNU-4> to connect the PBBS.

<D> for available Destinations.
<A> for info on Destination calls.
<H> for Command Summary and Command Explanations in detail.
<I> for System and Additional Information.

=>m

*** connected to WA2PNU-4
[FBB-7.00i-AB1FHMRX$]
WA2PNU BBS, QTH FN30GU.
Hello ???, you are now on channel 1.
Here are 318 active messages, 26868 is last message and
26848 is the last you have listed.

Assigned channels:
Ch. 1   (FLEX) : WB2LUA-0 - Wed 03/03/10 20:57
  via : WA2PNU-2

=>c n2pqj
link setup...q

=>
73! *** connect request:N2PQJ VIA WA2PNU-2

hello
WA2PNU>N2PQJ:hello

N2PQJ>WA2PNU:hi john-how is everyone?

3. Disconnect

[Cntrl C]
cmd: D
73!

Example of a Connection to Node and to another Node

1. Set your call sign

cmd:my wb2lua
MYCALL was NOCALL

cmd:my
MYCALL WB2LUA

2. Connect to the nearest Network Node

cmd:c wa2pnu

cmd:*** CONNECTED to WA2PNU
PC/FlexNet V3.3g
Welcome to the WA2PNU Flexnet-Digi node located at Huntington, Suffolk County, NY [FN30gu] It is operating as part of the USA Eastnet FlexNet Network, serving the Central Long Island area of the NYC/LI Region.
<LO> for local and additional info.

<M> or <C WA2PNU-4> to connect the PBBS.

<D> for available Destinations.
<A> for info on Destination calls.
<H> for Command Summary and Command Explanations in detail.
<I> for System and Additional Information.

=>c kc2coj
link setup...
*** connected to KC2COJ
PC/FlexNet V3.3g
Welcome to the KC2COJ Flexnet-Digi node located at Far Rockaway, Queens County, NY [FN30co]. It is operating as part of the USA Eastnet Amprnet Network, serving the Kings, Queens, Nassau County areas of NYC/LI region.
<LO> for local and additional info.

=>

3. Disconnect

[Cntrl C]
cmd: D
73!