

Internet
Into one of my
Commercial Gigabit switches

Fedora core 8 Linux
Tnos VK7HDM-6
44.136.224.32 vk7hdm.ampr.org
203.55.215.233 Tnos.ddmcomputers.com

Ports
Telnet, www, ftp, axip, axudp, ax25, pop3,
smtp, converse server
Linked to Xrouter and Fpac Node FBB
BBS
Ax25 port 147.575 1200Baud

Debian 4 Linux
FBB BBS VK7HDM-9
Rose node and Fpac node VK7HDM-4
203.55.215.234 port 6300
Laptop.ddmcomputers.com port 6300
Telnet, ax25, axip, axudp

DxSpider VK7HDM-2 Port 7300

Ax25 port 147.575 1200baud
Ax25 port 434.150 9600baud

Xrouter VK7HDM-7

gw-vk7hdm.ampr.org 44.136.224.44
Xrouter.ddmcomputers.com
203.55.215.230
Telnet, www, ftp, chat, Ax25, axip, axudp

Ax25 port 147.575 1200Baud
Linked to Tnos and Fbb and Fpac node

Packet seems to offer something different from other facets of Amateur Radio, yet it can be used for everything from a local QSO to a DX contact thousands of miles away, for electronic mail, message transmission, emergency communications, Dx Spotting or just plain tinkering in the world of digital communications. It presents a new challenge for those tired of the QRM on the low bands, a new mode for those already on FM, and a better, faster means of message handling for those on RTTY. Packet is for the rag chewer, the traffic handler, the experimenter, and the casual operator.

A ham can get involved very easily with relatively small out-of-pocket expenses. All you need is a transceiver, a computer, and a TNC or sound card and a simple soundcard modem and software. A two-meter rig is preferred, since that's where most of the packet activity is located. You probably already have the rig and the computer, so all you need to buy is the TNC or build a soundcard interface, which costs anywhere from \$10 to \$150 second-hand or from \$300 new, or build a soundcard modem for about \$10.

TNC

The TNC, the Terminal Node Controller, is a "little black box" that's wired between the computer and the radio. It contains software for controlling the outgoing and incoming transmissions for your station and a modem that converts the data from the computer into AFSK tones for transmission and changes the tones that are received by the radio into data for the computer. The TNC modem works much like a modem that's used to connect your computer to the telephone lines. It's a simple matter of wiring up a plug and a couple of jacks to become fully operational on packet.

Soundcard Modem

If you prefer to use the soundcard modem instead of a TNC, you'll need special software for your computer to replace the software in the TNC. Either method works equally well.

The soundcard modem is just 2 line transformers 600 ohms 600ohms and a transistor and or a relay to control TX on the radio.

Packet is communications between people either direct or indirect. You can work "keyboard to keyboard" or use electronic mailboxes or bulletin board systems to leave messages. Due to the error checking by the TNC, all of it is error free, too. (That is, as error free as the person at the keyboard types it!) As the data is received it's continuously checked for errors, and it isn't accepted unless it's correct. You don't miss the information if it has errors, however, because the information is resent until it is correctly received.

The data that is to be transmitted is collected in the TNC and sent as bursts, or packets, of information, hence the name. Each packet has the call sign or address of who it's going to, who it's coming from and the route between the two stations included, along with the data and error checking. Since up to 256 characters can be included in each packet, more than three lines of text can be sent in a matter of a

couple of seconds. There is also plenty of time between packets for several stations to be using the same frequency at the same time.

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 connector's 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, winpack, 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, flexnet under winpack, agw packet engine for soundcard modems. Read the instructions carefully for setting up the program on your computer.

The packet system at VK7HDM

I have several systems running all doing different thing.

Machine1. I have Tnos running on Fedora core 8 Linux.

Machine 2. FBB BBS fpac and rose node and DxSpider running on the same machine Debian 4.0 another flavour of Linux

Machine 3. I have xrouter running on dos 6.22

Machine 4. UI-view Aprs (when Running)

Tnos

TCPIP over radio

Will do the following mode; standard ax25 packet, telnet, ftp, pop3, SMTP, converse server, axip and axudp links to other systems

AXIP links take and wrap it into an internet packet and send it to another system some where in the world where they system unwraps the ax25 packet and then retransmits the packet onto rf to the destination station.

AXUDP do the same as above but use udp packets to wrap the standard ax25 packet into.

Telnet is just a terminal log in that you can do from windows or using programs like putty.

You can log into tnos read mail join the converse bridge connect to other station via one of the links.

FTP is a file transfer method and you can exchange file using the ftp server on tnos

Pop3 is the email side of things this is how you would come and get email from tnos over radio or the internet.

SMTP this server is how you would send email out of your email software to Tnos.

Converse Bridge or server this is a round table keyboard chat system where you log into one of the rooms or channels and chat with who ever is in the channel or room with you.

AXIP and AXUDP Links are the way my system is linked to other systems all over the world this is a closed system i.e. you cannot just make a link to another station both system operators have to agree to the link and them set it up between them. This make is only available to amateurs only keeping others out.

My Tnos system Call sign VK7HDM-6

Ampr.org address Vk7hdm.ampr.org 44.136.224.32
Commercial Address tnos.ddmcomputers.com 203.55.215.233
You can connect to tnos

Ax25 packet on 147.575Mhz 1200baud
Ax25 packet on 434.150Mhz 9600Baud (turned off at moment)

From Internet

Telnet to tnos.ddmcomputers.com or 203.55.215.233
ftp to tnos.ddmcomputers.com or 203.55.215.233
www to tnos.ddmcomputers.com or 203.55.215.233
pop3 to tnos.ddmcomputers.com or 203.55.215.233
SMTP to tnos.ddmcomputers.com or 203.55.215.233

From Radio using other than ax25

www to vk7hdm.ampr.org or 44.136.224.32
ftp to vk7hdm.ampr.org or 44.136.224.32

www to vk7hdm.ampr.org or 44.136.224.32
pop3 to vk7hdm.ampr.org or 44.136.224.32
SMTP to vk7hdm.ampr.org or 44.136.224.32

To get email via ampr.org from my system you would use your call sign
@vk7hdm.ampr.org
This would have to be set up by me first.
My Tnos system is also linked to all my other systems via my LAN connections

FBB BBS call sign VK7HDM-9

This is a standard ax25 packet BBS store and forward message and file system

Here you can exchange packet mail with other stations all over the world
Leave file for others to use and lots of other fun stuff.

You can connect to FBB BBS, Fpac or rose node

Ax25 packet on 147.575Mhz 1200baud
Ax25 packet on 434.150Mhz 9600Baud (turned off at moment)

Telnet to laptop.ddmcomputers.com Port 6300

Xrouter

TCPIP over radio

Will do the following mode; standard ax25 packet, telnet, ftp, Chat server, axip and
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FTP is a file transfer method and you can exchange file using the ftp server on tnos

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My Xrouter system Call sign VK7HDM-7

Ampr.org address gw-vk7hdm.ampr.org 44.136.224.44
Commercial Address xrouter.ddmcomputers.com 203.55.215.233
You can connect to xrouter

Ax25 packet on 147.575Mhz 1200baud
Ax25 Packet on 434.150Mhz 9600baud(turned off at moment)

From Internet

Telnet to xrouter.ddmcomputers.com or 203.55.215.230
ftp to xrouter.ddmcomputers.com or 203.55.215.230
www to xrouter.ddmcomputers.com or 203.55.215.230

From Radio using other than ax25

www to gw-vk7hdm.ampr.org or 44.136.224.44
ftp to gw-vk7hdm.ampr.org or 44.136.224.44
www to gw-vk7hdm.ampr.org or 44.136.224.44

DXSpider

What is a DX Cluster?

A DX Cluster is a means for Amateur (Ham) Radio operators to tell each other, in realtime, about DX stations (other interesting or rare Amateur Radio stations all over the world).

To quote what is probably the most comprehensive source of DX Cluster related information, the DX PacketCluster WebNet, a Cluster is:-

One station is set up with PacketCluster and is linked to one or more other stations who have installed the software. These nodes when connected are called a cluster. Clusters are connected to clusters, expanding the network. Individual users connect to the nodes on a frequency different from what the node stations are linked on. Users are capable of announcing DX spots and related announcements, send personal talk messages, send and receive mail messages, search and retrieve archived data, and access data from information databases among its many features.

A DX Cluster is a packet node where DX chasers on any band or mode can post rare or interesting stations that they have worked or heard. Of course other people are doing the same thing too, so you can find new DX as well as telling others about the stations you have worked. Clusters tend to be linked to each other so that the amount of people using them is increased, thereby increasing the amount of posted DX. Other information can be found on clusters such as on-line call books, mail etc. You can talk to other stations connected to the cluster network too, in real time, whether at the node you are logged into or on another node connected to the network. You can also use converse mode, where several stations can talk to each other in the same way. Of course, the DX is still posted to you all the while!

So what is DXSpider?

PacketCluster nodes have been around since roughly 1985. The original PacketCluster idea came from Dick Newell, AK1A, and ran under DOS. In about 1992 Dick stopped the development of the PacketCluster software for amateur radio. Many systems are still using this relatively old DOS software today.

There are several new compatible cluster programs around now, including DXSpider. DXSpider is a clone of PacketCluster software that runs under several operating systems including Linux and Windows. Linux is fast becoming the choice for amateur radio stations because of it's flexibility, reliability and the lack of the memory limitations of DOS. Linux supports multitasking and is also multiuser. It has support for AX25, ROSE, NetROM and TCPIP built in, making it the ideal choice for amateur radio. It is also totally free!

DXSpider was conceived and begun in 1998 by Dirk Koopman, G1TLH as an exercise in perl programming. It has developed rapidly and today is a very powerful cluster program. It was designed to be totally compatible with the AK1A program, although several commands have been extended to improve functionality.

AX25 logins.

Simplicity itself. The usual **CONNECT** command will log you straight into the cluster and you will not have to do anything else. Obviously, you will have to connect to the correct callsign. Some nodes use an SSID with their call so you would have to add that.

Examples:

```
connect vk7hdm-2
```

[Netrom logins.](#)

There are several possibilities here, dependant on how the sysop has configured his system. If you are connecting via netrom then you are most probably connecting from another station. Listing the nodes in that station with the **NODES** command will tell you what callsign or netrom alias to connect to. Then just issue the connect command from there. It is possible that the netrom alias may connect you to a node with an alias for the cluster, such as DXC. Just type this and you will be connected.

Example:

```
connect hdmidxc
```

[2.3 Telnet logins.](#)

With telnet connections, the source callsign is not seen by DXSpider, so you will be asked to login with your callsign. To telnet to DXSpider, you would connect to a specific port. There is no standard at the moment for a cluster telnet port but ask the sysop if you are unsure.

Example:

```
telnet laptop.ddmcomputers.com 7300
```

All the above are possible ways of connecting to a DXSpider cluster. You may have some or all of these available to you. There may be one or two additional ways to connect dependant on the network local to you. However I am sure you get the idea.

[2.4 Logouts.](#)

Logging out can be done by simply issuing the standard **BYE** command.

You could also send a disconnect if you are using AX25, or a **CLOSE** command if you are connected via telnet. If you do not log out gracefully using one of the above commands, you may find you are unable to get a full connect next time. This may also happen if a netrom connection drops. You may get connected, but nothing else will happen because the program thinks you are still connected and will not let you connect twice under the same call. However you could reconnect by adding a number to the end of your call, for example VK7OTC-2. This can be done by either altering your MYCALL setting in the TNC or by altering your program configuration.

[Receiving DX.](#)

As we have already said, it is possible just to connect to the cluster and you will receive spots automatically. However, you may wish to check on spots just posted. Maybe you wish to see if a particular band is open or if a certain callsign is active, perhaps a DXpedition. The command to do this is **SHOW/DX**. Without any other

arguments, this command will output the last 10 spots posted. It is possible to look at more than this, for example the last 20 or 50 spots, by adding the number to the command. You can make it even more specific by adding a band in either wavelength or frequency, and/or any additional information such as QSL details.

Examples:

```
show/dx  
show/dx 5  
show/dx 20
```

will show the last 10, 5 and 20 spots received by the cluster respectively.

Examples

```
show/dx on 20m  
show/dx 10 on 20m  
show/dx 20 on 20m
```

will show the last 5, 10 or 20 spots on 20 metres only.

It is also possible to check for certain callsigns, or fragments of callsigns in the same way.

Examples:

```
show/dx g0vgs  
show/dx 10 g0vgs
```

would show the last 5 or 10 dx spots containing the callsign g0vgs.

You can check for DX by offset and also by specifying a comment to search for.

Examples:

```
show/dx 30-40  
show/dx 14000-14033  
show/dx iota
```

would show the spots that arrived between 30 and 40 spots ago and any spots with the word *iota* in the comment field. The case of the comment is not important.

Checking DX posted on a certain day is possible too. All you have to do here is to specify how many days ago it was like this ...

Example:

```
show/dx day 30
```

It is of course possible to specify multiple arguments.

Example:

```
show/dx 20 prefix 9a on vhf day 30
```

This would show the last 20 spots posted by or about calls with the prefix 9a on vhf 30 days ago.

As you can see the **SHOW/DX** command is very flexible, so if you are not sure whether something will work or not, try it and see! More information can be found in the Command Set section.

Posting DX.

To post DX you use the **DX** command. The syntax is shown below.

Example:

```
dx (frequency) (callsign) (remarks)
```

Where frequency is in kilohertz and the callsign is the callsign of the station you have worked or heard, (ie not your own callsign!). The remarks section allows you to add information like the operators name or perhaps a location. Actually DXSpider will allow the frequency and callsign fields to be entered in any order.

Example:

```
dx 14004 pa3ezl OP Aurelio 599
```

In fact, all the following will give the same result...

```
dx 14004 pa3ezl OP Aurelio 599  
dx pa3ezl 14004 OP Aurelio 599  
dx pa3ezl 14.004 OP Aurelio 599
```

This posting, or callout as it is known, will be forwarded to all other connected stations both at the cluster you are connected to and other active clusters in the network. The callout will also be sent to you as proof of receipt.

This is a typical output from my Dxspider after somebody has connected to it

```
DX de IK1EGC: 70027.0 GB3CFG    bcn hrd in jn35          1133Z  
DX de EA1EUI: 21210.0 AM8IL    5/9 SPAIN                1133Z  
DX de DM2LL: 21011.9 A61Q      1134Z  
DX de OH2LRE: 50102.0 ON7GB    KP20IF<ES>JO21IA        1133Z KP20  
DX de DG2LBF: 28477.0 GB8LMI    5/9 EU99 qsl M3zyz      1134Z  
DX de 9A5ST: 50126.6 DJ0VZ      1135Z JN83  
DX de OZ2PJ: 50510.0 OZ8ON     cqcq sstv                1135Z
```

DX de EA1QL:	21210.0	AM8IL	loud Lobos Isl	1135Z
DX de EA7TR:	28448.5	9A73AA	5/9 in malaga south spain now	1135Z
DX de 6K5AQY:	21009.0	A71EM		1133Z
DX de UA0DC:	3799.0	RW0QA	cq cq	1135Z
DX de EC7ABV:	14018.0	AM8IL	also 21210	1141Z
DX de DS2GOO:	14045.0	BT1OH	cq cq	1135Z
DX de VR2DXA:	14083.0	VR2008O	rtty cq	1135Z
DX de JA2FJP:	21012.0	A61Q	CQCQ	1136Z
DX de JK6MXY:	18074.0	AP2TN	CQ.CQ	1136Z
DX de 9A5ST:	50153.0	LY/G1MFG		1137Z JN83

Information from
www.dxcluster.org
 Ian Maude, G0VGS
 Danny Moss VK7HDM
 Larry Kenney, WB9LOZ