Official Newsletter of the Palm Beach Packet Group, Inc

WHITE NOISE

Volume 11, Number 3 March 1999

PACKET RADIO IN EUROPE

by Bill Manley KB4XE

The following from the FPAC list server was provided by John Green WB4MOZ. It offers insight into amateur packet communication networks in Europe as written to the list server by Ulrich Hilsinger DH0GHU.

Notice that, while we in Florida are now employing the FPAC network software which originated in Europe, the Europeans are using as system called FlexNet. Also note that their links are implemented using 23cm equipment, where as ours are on 220 and UHF. However it should also be noted that personal internet communications in Europe are less common than in the US and there amateur radio operators have built high speed wireless links to accomplish what we now do via the internet. Read Ulrich's communication and discover the exciting developments by amateurs in Europe.

-o-

Subject: FPAC/FlexNet - Informations
Date: Fri, 12 Feb 1999 11:31:32 +0100
From: UHILSING@CIP.RZ.FH-OFFENBURG.DE
Reply-To: fpac@lantz.com
To: fpac@lantz.com

Dear Readers of this list,

Unfortunately I haven't read my emails for some days, so I was not able to answer to some of your questions in time.

There were several questions and statements.

One of the themes were BUGS. Surely, there are also bugs in FlexNet. BUT :If a new release becomes official, it has tested a long time before! For example, one of the biggest nodes in southwest Germany is testing beta versions since many months now (RMNC/FlexNet software, not PC/... in this case). The author of the FlexNet software himself has set up a little network at his home, where he runs a RMNC node and several PC/FlexNet nodes. So he can detect heavy bugs even before giving the beta versions to his testers. When RMNC/FlexNet V3.2a was released some years ago, there were not enough tests done : Many nodes started resetting even several times a day. Since, this never happened again (3.2b, 3.3a-h). There were few versions with minor bugs, but now, some nodes are running nearly a full year without any reset.

Another question was about how the routing is realized. Let me try to explain it in several steps.

Usually, you know to which nodes you want to set up a link. So, first of all, note that FlexNet is NOT looking for node-broadcast, and doesn't take all nodes it can HEAR into its link table. That's the first big advantage with NetRom-Systems (exception : TheNet Node and XNET , which are using INP3, do it the same way : The link must be set by the sysop). To set up a link is easy : You just have to say to the node, that , for example, a link to DB0XYZ is at Port n. Now, the node starts testing the link. If the neighbour is a FlexNet neighbour (in other cases, you even can configure the node in a way he knows it is not a FlexNet neighbour, but at least he makes RTT checks), he will set up an internode connection to this neighbour, and he starts making RTT measurements (in steps of 100ms).

Now let me draw a little network map :

DB0A----DB0B----DB0C----DB0D

Each of those nodes only has links to his direct neighbours configured by the Sysop, that's the same thing as with FPAC : You also define a link to the neighbour, in the case of netrom even with some more information (ROSE-Routing address) DB0C knows it has a link to DB0D and a link to DB0B. Both are working. Now, DB0B measures the link time to DB0C, and DB0C "says" to DB0B that it knows a route (it doesn't say WHICH route) to DB0D with the RTT x.DB0B takes this time, adds it to the link time of the DB0B-DB0C-link (in reality, the used formula is a bit more difficult). It reports all those times to DB0A, which uses the same procedure to update his destinations table. If the delay time is greater than around 3000, it will not continue to transmit this callsign. Now, DB0D fails due to any reason (no current, sysop's doing some work, etc).In this case, DB0C knows very fast, that DB0D failed. I will delete DB0D from his routing table, and this information is transmitted very fast through the network, so this node will disappear very fast.

Now, there's another alternative :

```
<old network---DB0C----DB0D
                 |        |
               DB0E-----DB0F
```

Now, only DB0C-DB0D fails due to a failed transmitter. Short after, DB0C will know, that there's a secure route via DB0E and DB0F.

Or: DB0C-DB0D becomes very slow due to QRM or due to a technical problem (perhaps temperature drift of a bad transceiver?). As soon as DB0C-DB0E-DB0F will become faster, the traffic will be routed to this new way! So even if the "usual" route works, the network load will be shared to several links. That's a feature which actually doesn't seem to exist in FPAC.

Actually, the number of nodes which is known here is around 600. Sometimes it was even around 650. Nearly ALL nodes can be connected. At least that's the case here, but the network is working very well (Only HTS-free Point-to-point links, usually running at 23cm bands or higher with speeds from 9600 bit/s half duplex to 76800 bit/s full duplex). The network load is unimportant. Some links have a data throughput of more than 100kB per minute, there , the load by routing is not important. At slower links, it seems that FlexNet doesn't produce as much internode communication traffic as at fast links, that's something I don't know exactly, but it seems to be so - at least, FlexNet even works with slow 1200 bit/s links. For example, the FlexNet network now was extended to major parts of France, there, they still use 1k2 links, sometimes even not point-to-point:). There, they also have around 600 nodes available if they are near to the higher speed part of the network (if the node is far away, the number of destinations is decreasing), but the network load by internode traffic still stays low, they absolutely have no problems with the load produced by the routing (there even was a 1k2 frequency in the north of Paris where a total of 5 or 6 links was running, there was still enough capacity left for users... hi). So, the network load is surely not a problem, even with 2560 nodes it would work (perhaps there would be memory problems at RMNC nodes? I don't know, impossible to test it, we don't have so many nodes here, hi. The next generation of RMNC hardware (32bit RISC architecture, allowing >5Mbit/s) surely has much more memory than the actual version ;-).

The big advantages of this routing are :
- it takes care of the network load
- the sysop only needs to know the callsigns of his link partners, he doesn't has to care about the rest of the network. For example, if I connect to DB0BLN Berlin (600km away from here), my local node (F6KFG) could route it in two ways : the first going to the north (approximately Frankfurt-Giessen- Hochsauerland (100km east of the Ruhr area)-Harz-Berlin, all those links except the last one are running at

White Noise is published by the Palm Beach Packet Group, Inc.

The PBPG can be reached by mail at

Palm Beach Packet Group
PO Box 16471
West Palm Beach, Fl. 33416-6471

Web site

http://www.qsl.net/pbpg

19200 bit/s or 76800 bit/s), or some other alternatives to the north. All those connections would first go to DB0ORT which is the northern link partner of F6KFG. The other way would be to go to the southeast, via Munich, to the north again, OK-land, and there northward to Berlin. There are even more routes, how to set up all that at a FPAC node? There are some big nodes where, for some destinations, surely 3-4 links would be alternatives.

So, in the case of having a BIG network, which has many alternative routes, and where a lot of traffic is going through, which makes the load being changed regularly (=rtt changes), a routing such as used by FlexNet is surely the better one. It even cares at least a bit about the network load at a distant point of the network, or about the link qualities which have effects to the RTT. FPAC can't, as it don't know which way has the best round trip time. BUT: If you design your network in a way that it has a clear structure, FPAC surely does a good job too. Unfortunately, the experiences with FPAC in France are not very good, due to a lot of bad configured nodes, many destinations are unavailable. As I'm visiting the network often, I often had those problems : Often, I got error messages such as "no route known" or "link not working", but if I was connecting manually by hopping from node to node, the link was working well! And often, it was the only existing link. And I think that's the major problem: EVERY node in a FPAC or ROSE network has to have a correctly set up routing table, which even considers how a connection has to be routed for a very distant part of the network. I even could imagine that this would work in Germany, all links are coordinated by one person (around 1400 up to now if I'm not wrong), so it perhaps would work, if ALL links would be running. But the fun would stop at the border of those countries where everybody can set up his own node without common coordination. Also, every new link can make changes necessary, for example, a year ago or so, a new high speed link node (two links at 6cm with 76800 bit/s) was opened in central DL which is interconnecting two central nodes: Since, most of the traffic is taking other routes than before, as they are faster now! Who wants to configure hundreds of nodes every month due to new links?

There was another point someone was talking about: You used the pro-number-routing argument , that often, node calls are changing, so a routing address would be better. You tried to tell it to the FlexNet guys. I know, sometimes their answers are not very diplomatic :), but I understand why they say NO: It is absolutely uncommon here that a node changes its callsign. In DL, and many other countries in Europe, the nodes don't use personal callsigns, but specially assigned call-signs (in Germany, mostly DB0... - Callsigns, in Austria, OE.X.., etc) or club callsigns. Most nodes are not operated by a single person, but by clubs ,and most nodes are not installed at the sysop's home, but at a remote side. Especially here, in Germany, which has a difficult geographical situation, often sites of the Deutsche Telekom AG are used, or other good sites. Especially here in Germany, that's important as we do NO linking below 23cm, so the sites must be good enough for GHz connections.

And please don't forget: YOU are used to use X.121 addresses, but here, nobody is. Such changes would be very unpopular. Nobody has problems with the actual system.

Another part of the discussion was handling the path problem as it appears on the frequency. Please note that ALLWAYS the FlexNet node callsign appears as the callsign which is transmitting on the frequency. For example, if I don't connect to the local node, but directly to the user DL1XYZ at the node DB0ABC, I just have to send C DL1XYZ via F6KFG DB0ABC to my TNC. At DB0ABC, there will be a frame fm DH0GHU to DL1XYZ via F6KFG DB0ABC* ctrl SABM + appearing. Even better, for the path transparence :If F6KFG has the SSID range 0-1, and I access it via the port which has the SSID 1 assigned, I can still use F6KFG on my side, but at DB0ABC, there will appear :fm DH0GHU to DL1XYZ via F6KFG-1 DB0ABC* ctrl SABM + So the distant station only has to take this path to connect to me later. I think FPAC does it the same way, it only replaces the distant callsign by the distant address (port-specific, too, if I am not wrong). So it is impossible for FlexNet to use a wrong callsign - the node callsigns always appears correctly. By the way: If I connect manually to F6KFG, there to DB0ABC, and then toDL1XYZ, still the same path will be contained in the frame .

I hope those explanations will help a little bit to understand it better.

The FlexNet "interna" is not very easy to understand for those which never were working with, such as FPAC still is a "strange thing" for those which were never working with. By the way, in opposition to some others, I still consider FPAC (Linux, at least) to be a good network software. It is surely better than the original netrom protocol used at BPQ, TheNet, NOS, etc. So I think, it's not a bad choice to use it as network system, as it is not bad to use FlexNet, TheNet Node or XNET which are the most popular systems here in Europe. The only problem with FPAC is that it has to be set up very well, but if the sysops exchanges network informations quickly, this should not be a problem. FPAC is still a young software, and a lot has been done during the last years, especially now with the new Linux version. So, some should really stop to say : "Don't use that software, it is bad. "None of

those network systems are bad. Those which are still flaming, should stop it as soon as possible.

I hope I haven't forgot to answer a question, and I hope, all answers were correct. They were not very detailed, but I think that would make this message being a bit too long, and I'm not a member of the FlexNet group, so I don't want to write things I'm not 100% sure about. Look at N5PVL's homepage, he has some links to more informations.

If you have some more questions, feel free to ask me in a personal mail(answer could come some days later), I think this discussion shouldn't continue at this list.

73,
Ulrich dh0ghu @db0cz.#bw.deu.eu
(well, at least packet radio addressing is not using names of Australian animals, Barry..hi)
dh0ghu@qsl.net
http://www.qsl.net/dh0ghu

p.s. I need packet routes to
-> N5PVL's FlexNet node and his FPAC neighbours
-> to the other FPAC networks installed in the US and Australia.
This for updating a network node database used by a software called "HamMap" which up to now shows about 12000 nodes all over the world at maps.

p.p.s. if you want to visit the FlexNet network, you have several internet gateways to connect to, f.ex. HB9F (go to HB9F-14 then to HB9IAP-13), DB0FHO(connect to DB0NDR for FlexNet), ON0KUL (go to ON0LVN for FlexNet), and others. Please note that some of those gateways are not connected very well to the network, or at points were the network is not working as well as it should...

WE ARE ON THE INTERNET

Bill Manley KB4XE

The Palm Beach Packet Group has established a presence on the internet. Look for our web page at

http://www.qsl.net/pbpg

You will find interesting pages about the PBPG, or switch sites, past issues of the *White Noise*, and links to other sites of interest. At the time of writing, the site is new and under construction (aren't they all!).

PALM BEACH PACKET GROUP MINUTES

February 11,1999

BROUGHT TO ORDER

The meeting was brought to order at 19:30 hrs by President Doug (WB4KGY). Introductions of guests and new members were made and members did self- introductions.

TREASURERS REPORT

Treasurer Marvin (KD2CK) reported that as of November 30th, the treasury stood at $4511.65, with $496.83 in the Checking Account

TECHNICAL COMMITTEE REPORT

Doug (WB4KGY) reported no troubles to our knowledge at the West Palm Beach Switch. Doug and John (WB4MOZ) reported happy and successful hunting at the Miami Hamboree, landing a 330 VA UPS which will serve admirably at a FPAC installation.

OLD BUSINESS

White Noise was mailed February 10.

The Polo Shirts have arrived and been distributed. Again, thanks to Marv (KD2CK) for the persistence in getting this job taken care of.

Two more books have been added to our group's lending library, both from the 1980 PLENARY Assembly of the ITT and dealing with Data Communications Networks. This includes X.1 through X.225. Thank you Tom (K4GFG) for the donation.

Doug (WB4KGY) also discussed the APRS Tower Site for Belle Glade. It will require 250 feet of hard line out of club inventory. A TED's shed is there for our use with two feet of rack space. The US Sugar tower in Lake Harbor is delayed due to a serious traffic accident involving the US Sugar VP handling the arrangements.

FPAC Southern expansion, long desired is now in the resurrection process. Doug & John met with Frank (W3AKI) and 10 others on this subject while at the Miami Hamfest. This is looking positive. On Hamfest Sunday, John (WB4MOZ) and Doug (WB4KGY) met with Carl (W9ZGU) and John (KN4HX) who agreed to update the Hollywood Node to FPAC, necessary for the Dade Switch to have backbone connectivity north on the backbone.

WORKSHOP

There was a workshop presented by Mike Michaels (K2GPI), assisted by Bob (WD9ATM) covering early developments in the field of Television.

ADJOURNMENT

The meeting was adjourned at 20:25 hrs.

Broward Amateur Radio Digital Society

February 20, 1999

As expected, Jim, WA4CSQ, brought his sense of humor and seemingly total recall of history to his filter program. He had only 7 slides but covered a lot of information. The goal was to describe where all this pole and zero stuff comes from and what do you do with it when you have it. Just where do the filter component values come from? He did this and described some interesting problems that pop up when you try to implement filters into production in the 50s.

After coffee, Carl, W9ZGU, told us about the 3-hour APRS demo at the Orlando Hamfest. Carl saw the new Kenwood TH-D7A, which is a radio with a built in TNC and the VC-H1, which is a slow scan camera and viewing screen that can attach to the D7. The D7 can be attached to a GPS so you can have a portable tracker. There is a lot of Internet traffic on these two new products.

Norm, W2JUP, told us about the PSK31 program. This is a new digital mode that is apparently very resistant to interference. It is aimed at RTTY like keyboarding. It uses a Sound Blaster board for it's in out to the radio and is a free download. By Sunday morning, three of the attendees at the Saturday meeting downloaded and tried it out.

The March 20th program will be the second part of Jim's filter program. This will be the question and answer part of his program. I know I have a few questions.

Bob, N4CU

ARTICLES FOR *WHITE NOISE*

The Palm Beach Packet Group accepts articles from other clubs and individuals wishing to have them published in the *White Noise.* This is offered as a gratis service for those not otherwise having publication services at their disposal. Article content should be amateur radio related, including all operating modes, applications including computer, experiences, announcements and reports of meetings. Advertising is not accepted.

We reserve editorial privileges regarding content, spelling, punctuation and structure as well as the decision to publish or not. Articles can not be returned.

Email your copy to:
bmanley@gate.net
Or By Packet to:
KB4XE @WB4TEM.#BCR.FL.US.NOAM