

XROUTER NETWORK STRATEGY

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14 December 2003

Following investigations into rather poor reliability with the connectivity with the existing XROUTER network.

I have been working with a group of sysops to try and come up with some suggestions for an improved strategy for managing the XROUTER network.

This is mainly aimed at the UK where there has always been a strong and reasonably well organised NetRom network that needs to be integrated, but the strategy could be applied to any such area where a local mixed internet/radio network of say up to 100/150 nodes wishing to manage that network and still provide overseas connectivity.

The general aim is to maintain a strong national network with access to as many overseas gateways as practical. I think its been generally agreed it is not practical to form a world wide netrom/ax25 network simply because of the practical limits of the nodes table size.

A top practical limit would seem to be around 250 and as currently I would estimate there to be 150/200 total UK entries I'm suggesting a reasonable mix would be to have as many UK nodes as possible with the rest the main gateways or direct partners of the UK nodes included in the list.

I'm mainly aiming this at controlling internet links but as you will see it's basically along existing lines so I would not expect many changes to be required to existing local radio routing.

To achieve this I'm suggesting a two tier approach and generally implemented in 2 stages.

STAGE 1

First a lower background level of routing based on Mark KB2TXP 's suggestions using the following basic parameters.

MAXTT=5000

MAXHOPS=2

QUALITY=50

MINQUAL=49

Initially I suggest that these are set for all internet links. The idea behind these is to limit the TIME domain to 2 hops so that neighbours and their neighbours are visible.

With a similar restriction for the QUALITY domain though this is not so precise.

Implementing these changes should result in an initially smaller nodes table but without restricting direct connectivity to any neighbouring stations.

This would remain the level of routing for overseas links.

I would advise implementing this first and letting things settle and checking that things are functioning before implementing stage 2.

STAGE 2

The second tier of routing would follow conventional NetRom practise and only be applied to other UK stations following a similar strategy.

This is important as although we don't want to restrict the ability to connect to any node, if a second tier connection is opened to a station following for example a policy of allocating high RQ your nodes list may be swamped with unwanted entries and those will be passed on to your neighbours.

My proposed values for this second tier are these.

MAXTT=5000
MAXHOPS=3 or 4

QUALITY=100
MINQUAL=10

The thinking behind these values is to strengthen the UK's internal network allowing nodes that are 3/4 hops away to be 'visible'. Even with relatively few nodes following the strategy, access to most of the UK is already possible.

These values aren't absolutely rigid and can be varied a little (+-20) to fine tune routing in a particular area but unless there are specific reasons I would advise sticking to the values if the node is involved in more than one link. If a node is happy just to be a spur with a single link to a particular node then the RQ value could be as high as you wish as it will not affect routing to others in the network.

It is quite important to agree and implement equal values at each end of a link, where possible, to achieve reciprocity.

I agree with Gordon's ZL2ARN's recent comments regarding MAXNODES it is important for several reasons not to run the node with its table full, as doing so does make the network very unpredictable and unreliable.

This strategy has tried to treat both TIME and QUALITY domains in a roughly similar way. It is important that BOTH domains are set up to route logically.

Although time domain routing may give reliable connections between XRs and take care of itself most of the time, if this routing fails for any reason then XR seems to fall back to using the simpler RQ routing so it's important that this is set up to be reasonably logical as well as being essential for those of us that that don't exist in the time domain.

This strategy is mainly aimed at the interconnected XROUTER network within the UK which requires more management with its two domains, but where XROUTERS interface with other nodes such as Linuxnode, BPQ, TheNet, then with a little common sense using similar values of RQ and MINQUAL should allow routing at the second tier level to be implemented as most Linuxnodes I've looked at already employ a similar strategy although precise control does not seem so easy as with XROUTER.

LOCKED ROUTE PATHS
XRNODES file

Just a last point,

I have noticed a move away from using 'locked' routes between neighbours which I would still recommend.

I think this may be due to a tendency to simply delete the XRNODES file thus deleting locked routes. I've started a policy of creating a text file called ROUTES containing the full locked routes entries with their associated parameters that can be edited and used to load in any changed parameters with the command

LOADNODES ROUTES

a file might look like this

```
-----  
ROUTE ADD GB7CIP-5 1 250 ! 4 2000 255 0 0  
ROUTE ADD GB7SXE-3 4 120 ! 4 3000 255 0 0  
ROUTE ADD GB7CIP-5 3 15 ! 4 3000 255 0 0  
ROUTE ADD G1SSL-1 3 100 ! 4 5000 255 5000 2  
-----
```

The params for each entry are
<port><qual><locked flag><maxframe><frack><paclen><maxtt><maxhops>

This makes it easier to change things without rebooting.

Several nodes, listed below, with existing internet links have already implemented this strategy as a trial so any of their neighbours are ideally placed to try out the strategy. Many thanks to those sysops and others who have given their time to try things out.

G4FLY-1:FLY
G4GUN-3:WITNEY
G6HJP-3:FIELD
G0CNG-8:BLOX

If anyone has any comments or queries about a particular problem drop me a line, and I'll take a look at the situation as its quite difficult to provide a strategy that covers every possibility. But in general we have noticed a great improvement in nodes lists and routing reliability since implementing the strategy.

73 de Bryan
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