

Reports from Regional Networks for UKMMG Meeting of 25 January 2006

NWMAN: David Stedham

Cable & Wireless have finally succeeded with the final microwave link upgrade and at the time of writing the MAN is 100% upgraded and working reliably.

Welsh Assembly Government has now given us permission to migrate sites onto the Lifelong Learning Network (LLN). This is likely to happen in the next six months so that the contract with C&W can be allowed to expire at the end of the year. The most likely topology will be that Logicalis will install a LLN access router in each microwave-connected college to replace the radio link. Colleges will retain their current NWMAN-managed site router to give us a monitoring point and allow us to manage the Welsh Video Network connections.

AbMAN: John Linn

AbMAN, as part of its technical development, is running a mini- networkshop on the morning of the 24th Jan 06 with short talks by folk from various AbMAN institutes.

The AbMAN IPv6 development uses IPv6 natively to JANET for unicast but multicast is tunneled over JANET. The traffic level is low. Two institute, Aberdeen University and SEERAD Fisheries Research Services, MARLAB, are connected and progressing their own IPv6 development work.

AbMAN core router procurement is progressing with the Operational Requirement document almost finalised.

EaStMAN: George Howat

The main core (Cisco 6509) equipment on EaStMAN has been upgraded from MSFC2/SFM to the Sup720 with PFCB; 1 and 10 Gigabit Ethernet modules have or are having DFC3Bs installed. The upgrade's purpose is to support SJ5, to improve resilience and data transport between RNEPs, to enable the first phase of 10Gbps routing across EaStMAN and to deliver items such as MPLS switching in hardware. The EaStMAN core is now dualled ready for SuperJANET5 and the two 2.5Gbps POS modules have been purchased and installed. Difficulties were experienced in the Sup720 rollout which delayed the final configuration. However, by the end of January we should have the two RNEPs connected by 20Gbps over two diverse fibre pairs, with passive CWDM equipment to resiliently connect the LES circuit support equipment.

The procurement of more EaStMAN fibre is beginning, the purpose being to improve resilience in the city core.

UKlight is now installed at King's Buildings, and awaiting final configuration from the NOSC. Discussions are taking place with potential customers.

YHMAN: Ed Carter

A single wavelength (DWDM via ADVA FSP2000 equipment) on each inter-POP link supports 2x1G Ethernet for our Production Internet Service - a four ring core, each ring connecting two Cisco 4507 Ethernet Switch POPs to two Cisco 6509 central routers providing the SJ4 interconnect. The two 6509 have appropriate Supervisor revisions ready for SJ5 10G POS interface delivery through the UKERNA central purchase.

A new 34Mbps circuit has been introduced YHMAN (LeedsMet-to-Scarborough) and a new POP at Hull University Scarborough Campus to delivery (initially) 10ME to each of the two Scarborough colleges. A resilient radio link back to Hull is being investigated as part of a ring connecting the Scarborough POP.

We have had one (possibly two) prolonged outages wrt the new FE upgraded 10ME access links where these have been delivered as Megastream Ethernet and not point-to-point Ethernet. This appears to be down to supplier incompetence in the maintenance of full-duplex service across mixed infrastructure hardware/software.

A second wavelength directly connecting Leeds University Campus Network to Leeds SAN equipment based at Sheffield University has been delivered and we are looking at similar partnerships between YHMAN universities for backup and disaster recovery.

A second wavelength is being progressed to deliver UKLight service from the Leeds interconnect to York.

Hull City Council have extended their 4Mbps ACL service subscription to take 30Mbps delivered over 100ME for Schools and the LA.

Roll-out to ACL continues.

YHMAN is progressing access bandwidth upgrades for the region's HE colleges.

YHMAN is negotiating with UKERNA/MCI regarding the SJ5 collector arc cable installation seeking diversity with the YHMAN core service routes and to provide additional YHMAN core resilience.

YHMAN PoP sites have been upgraded with UPS, remote power management and out-of-band access.

YHMAN is looking at resilience connections for institutions and additional POP resilience by developing 2nd physically separate locations at each POP.

Kent MAN: David Hayling.

Kent MAN (KM) purchased four Cisco 6509 with Supervisor 720 BXL cards a year ago. We have since then been running an IPv4 multicast RP on the 6509 that is connected to the BAR, and a multicast beacon was connected to one of the other 6509, all was well. As all of our connected sites have only single connections to KM we use static routes on our PoP routes to inject routes into OSPF for our customers.

Until recently no connected institute within Kent MAN had requested to peer with our RP. UKC has now and while trying to arrange this connection Laura McDonnell (a member of my staff) has discovered that Cisco 6509 WITH Sup720 are NOT compliant with RFC3618, whereas Sup2 and Sup2a were compliant.

To quote Laura:

“Multicast-MSDP peering

In order to discover multicast sources from other domains, MSDP peering must be setup. This will use reverse path forwarding checks when attempting to decide whether to accept source active messages from other msdp peers, thus allowing sites to host their own Rendezvous Point.

The original [non RFC3618] MSDP rules state that BGP or MBGP must be running otherwise the RPF check fails. The RFC3618 permits the use of an Interior Gateway Routing Protocol for the reverse path forwarding check.

The Kentish MAN currently uses ospf as the interior routing protocol and therefore negates the need to use BGP or MBGP and relies on the equipment to be compliant with this RFC3618.

The routers being used to configure msdp peering by the Kentish MAN are Cisco Catalyst 6509 with Supervisor Engine 720 but unfortunately it has been discovered that the Sup720s are not compliant with the RFC3618, however this is not the case with all Cisco equipment as I believe the code was rewritten for the Sup720s and this RFC appears to have been overlooked.

There is currently a TAC case open with Cisco regarding this issue but until this is resolved all sites trying to msdp peer with other domains using sup720s and IGP for the rpf check will be unable to do so.”

The TAC case was not opened by Kent MAN, we found this out by hear say and do not know who opened it.

MidMAN: James Hendry

REGIONAL NETWORK REPROCUREMENT

- The West Midlands Networking Company Ltd (WMNC Ltd) has identified the successful preferred supplier for the reprocurement of the regional network.
- As usual in these things, this choice of preferred supplier is subject to caveats (e.g. successful contract agreement).
- Throughout the WMNC Ltd reprocurement, MidMAN assisted WMNC Ltd as necessary (e.g. technical).

MidMAN REPLACEMENT

- The WMNC Ltd reprocurement of the regional network is not the reprocurement of the MidMAN replacement.
- For MidMAN the interesting work now commences to demonstrate that detailed MidMAN replacement requirements (and these inter-alia reflect necessary SuperJANET5 features) are met by the reprocured regional network.
- To this end, the associated MidMAN due diligence task is about to commence.
- UKERNA has been updated on the status of the MidMAN replacement (in particular its interaction with initial SuperJANET5 connectivity).

MPLS

- MPLS implementation on the current regional network is underway.
- It is anticipated that this work will be completed (successfully) by end of January 2006.

DISASTER RECOVERY PLANNING

- As noted in the previous report, MidMAN recently hosted a Disaster Recovery Planning event for its HEIs to facilitate discussion on potential collaborative approaches in this area of HEI activity.
- The major outcome from the meeting was general agreement to collaborate (both in the sense of investigating possible collaborative approaches such as InTechnology, as highlighted in the recent UKERNA announcement, and in exchanging practical information on the approaches to DRP being adopted within HEIs).

GOVERNANCE

- The MidMAN Management Group is reviewing its governance arrangements (currently a Consortium, set up in 1998) to identify whether or not an alternative arrangement could now be more appropriate.

SWERN: Kit Powell

We are in the process (notice issued 6 December 2006) of carrying out an OJEC Restricted procurement of replacement inter-PoP circuits.

We have appointed a full-time Network Engineer (on secondment for three years from UWE), and a part-time Admin Support Officer based at the University of Plymouth to assist existing SWERN administrative staff.

Our circuit installations, mostly for ACL/WEA, but also B-end moves) are being severely affected by very long BT installation times.

WNL (running the SWMAN and LLNW): Roger Williams

The reliability of the SWMAN continues to improve now we are approaching our reprocurement! Breaks in the public power supply are starting to feature as a significant cause of outages.

The decision has been taken to migrate the SWMAN onto the Welsh Assembly Government's LLNW network and detailed planning has started on how the core SWMAN links can be replaced by the equivalent LLNW links, starting with Aberystwyth's.

For financial reasons, we need to re-engineer the (very expensive) SWMAN links to our outposts in rural Wales and we are exploring the possibilities of connecting them onto the LLNW via the nearest Local Authority access point (which would then become a SWMAN PoP Site).

Our access to SJ5 will now be via the LLNW which will be re-engineered to include the second RNEP. To date, we have not yet been contacted for any SJ5 site surveys.

The ministerial decision on the proposed all-Wales public sector network (which would replace LLNW, NWMAN & SWMAN) has been postponed to late JAN 06 "for more consultations".

NorMAN: Jason Bain

NorMAN is running an OJEU process to procure additional 1Gbps links from 2nd entry points at each HE institution back to RNEP 2. We have ordered Cisco 7609 routers (with 2xSup720s & 2.5Gbps POS cards) for each RNEP. They will be interconnected with 2 diversely routed 10Gbps Ethernet links (with 1Gbps backup connected via a different line-card). These will support SuperJANET5 and permit us to deploy new services such as MPLS & IPv6. We're about to order 7604 Sup32 based routers for each NorMAN HE entry point to replace some old Cat 3550 switches. We hope to establish a PoP on Teesside during Summer 2006.

We're looking to deploy some CWDM kit on a pair of rented fibres on Tyneside: this is a route where fibre is in short supply (and expensive!) and

we would like to run concurrent services to make better use of this scarce resource. We're struggling to find a suitable procurement vehicle for this equipment, as we really don't want to run another tender process.

We're handling a steady trickle of new connections and circuit upgrades (ACLs and FE colleges), but we're experiencing what I think is an unusual level of supplier incompetence.

George Howat, Colin Cooper and I met with Thus in late November to discuss their proposed changes to the delivery of LES type services. We've promised to write up our account and send a note around the list.

LeNSE: Mike Byrne

There's been no change to the LeNSE network since our last meeting. As far as the SJ5 project is concerned, LeNSE already connects to SJ4 using a 2.5G POS link. We plan to create new SJ5 RNEPs at Southampton (primary) and Aldershot (secondary). For this our suppliers (Neos Networks) need to purchase an OC48 module for the Southampton GSR. Once live on SJ5, we will relocate the existing OC48 module into the GSR at Aldershot. The LeNSE backbone is configured as a ring, so we can easily make use of the dual RNEPs. The main problem for us is that LeNSE operates on a Cisco MPLS network, and the lack of support (at the time) for MVPNs meant that we had to use a special arrangement for transporting IP multicast into SJ4. We understand that by procuring the right type of OC48 module (an 'engine 3') we should solve the IPmc issue when going to SJ5. Otherwise, we're starting to plan our procurement project to replace the LeNSE network service by Sept 2007.

NIRAN: Chris Kelly

1. Performance

NIRAN has now entered its second year of operation, having been established in November 2004. The network is continuing to perform to a high standard, specifically maintaining an average 99.96% uptime for all circuits.

2. Management

In addition to the NIRAN company structure and governance, which comprises the voluntary services of a Board of Directors and supporting management advisory committee, NIRAN has appointed a full-time Network Co-ordinator (Chris Kelly).

The Co-ordinator provides a variety of services to NIRAN, including contract and budget management, business and technical development, public relations and marketing, website development and management, preparing company policy and business documentation, and acting as Company secretary.

3. New Members

Two new members joined NIRAN/JANET during 2005, the NICIS project and the NI Schools' C2K network, bringing the total connections to twenty-six. The C2K people have requested an upgrade from 10M to a 100M circuit, suggesting some longer-term commitment to NIRAN/JANET connectivity.

4. NIRAN SJ5 Resilience

Prior to considering funding the NI side of the SuperJANET5 Dual Entry points proposal, the Department for Employment and Learning [DEL] asked NIRAN to prepare a formal Economic Appraisal on the options, including the "do nothing" option, and corresponding cost-benefits.

The NIRAN Coordinator consequently exercised much effort in the last quarter of 2005 in preparing the Economic Appraisal in the fashion of the Department's greenbook. The completed document was delivered to the DEL in December 2005 and NIRAN anticipates a response soon on funding.

5. NI-RoI Cross-Border Connectivity

The project to provide connectivity and promote cross-border collaboration in learning, teaching, and research between the North West parts of Northern Ireland and the Republic of Ireland, [known as the NIBEST project], is at an advanced stage. Responses to the OJEC tender are expected soon from interested Telcos.

It is likely that this will comprise a 1Gigabit Ether circuit between the North West NIRAN PoP in Derry and the HEAnet PoP in Letterkenny, Donegal. The main purpose will be to "leak" the HEAnet routes to NIRAN and NIRAN routes to HEAnet. The link will not be used to allow fallback for HEAnet nor NIRAN traffic.

NNW: Tim Robinson

Publicity

NNW has appointed one of its members, UCLan, to provide PR support. The purpose is to raise the profile of NNW across the region with senior staff at member institutions and with customers. A two year work plan has been proposed. Initial outcomes will include

- . A regular printed newsletter - issue 1 was distributed before Christmas.
- . A glossy Annual report - this is currently at the printers
- . A redesigned web site - this went live with about 50% of the final content last week

Primary Connections

In RPAN year 2004/5 NNW made changes to 4 primary connections. Since Sumer 2005 new and upgraded links have been made to 62 primary

connections! The number of primary connections that NNW provides peaked at 99 with TBR actively trying to find number 100.

FE Upgrades

Following substantial delays introduced by the LSC funding crisis and the interference of the NW Adit in the procurement process the physical upgrading of the links to 49 FE Colleges has been progressing well, if a little slowly where BT were the sub contractor to our telcos (NTL, Telewest, Thus and Your Communications). Delays are now down to the usual asbestos and way leave issues. Upgrades to 45 out of the 49 colleges are installed.

ACL

NNW is installing connections on behalf of UKERNA to 10 Adult & Community Learning locations. Eight of these are now live, with two awaiting way-leave.

WEA

NNW is providing 3 links to WEA locations as part of the WEA rollout.

SJ5

NNW's plan for a redesign of its network to meet the requirements of SJ5 are progressing well. A five year plan using HEFCE SJ5 funding, RSPAN surplus, NNW and member funds, to move from a 1 Gbps core over telco circuits to a 10 Gbps fully redundant core over telco owned but NNW lit dark fibre is underway. The network will be based on a diamond with links between major locations at Manchester, Preston, Liverpool and Stoke/Keele. At each location there will be two PoPs, with fully redundant routing.

Dark fibre is already used by NNW in Manchester and Liverpool. Dark fibre circuits from Daresbury to Manchester, Warrington and Liverpool are either in service or on order. It is not anticipated that there will be problems obtaining dark fibre on other links. The dark fibre will be either lit directly from our Cisco 6500 switch routers or using xWDM kit. NNW has experience of successfully using Transmode CWDM kit to light dark fibre between Manchester and Jodrell Bank.

All member institutions will have two discrete 1 Gbps links from separate PoPs. Consideration will be given to providing resilience to FE customers when funding is available. The NNW end of circuits delivered over NTL's EtherVPN is already dual hosted at Manchester and Daresbury. The Daresbury link will move to Preston when the SJ5-RNEP is installed there.

1 Gbps E Reliability Issues

NNW continues to have some reliability issues with 1 Gbps E circuits provided over dedicated dark fibre (i.e. as LES-1000 equivalent with mid-point regeneration). The ADVA kit used by our telco seems unreliable. The telco in question is reassessing light budgets and switching to an approach where links are not regenerated but driven point to point using ULH cards.

