

JANET & YHMAN

Jeff James looks back at the work to connect the University to SuperJANET4.

On Tuesday 6 February 2001, months of carefully-planned preparation work was completed when ISS staff transferred the connection of The University of Leeds, together with the rest of YHMAN, to SuperJANET4 (the latest version of the National Academic Backbone Network).

History

The Joint Academic NETWORK (JANET) was formed in April 1984, and at the time served approximately 50 institutions with access links running at 2.4Kbit/s and 9.6Kbit/s. By the beginning of the 1990s access links had grown to 64Kbit/s and 2Mbit/s with a backbone core running at 8Mbit/s. During the same period the addition of polytechnics and colleges resulted in the original 50 sites growing to over 200 connected institutions.

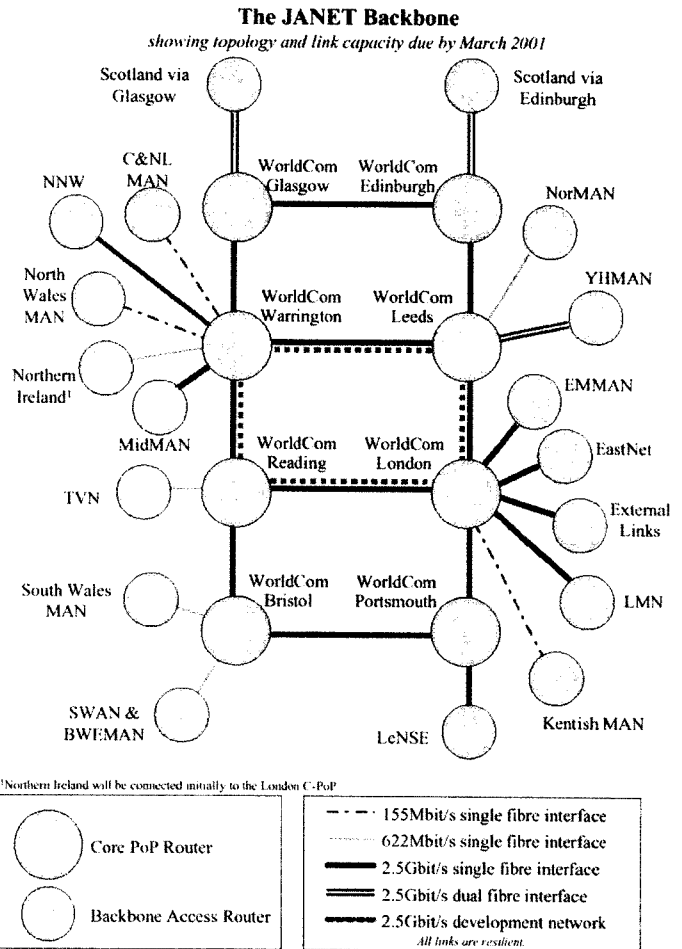
The combination of new telecommunications carriers entering the UK market, the development of broadband services and a successful bid for funding by the Joint Information System Committee (JISC, funded by the UK Higher and Further Education Funding Councils), resulted in the creation of SuperJANET. UKERNA (United Kingdom Education & Research Networking Association) manages the operation and development of JANET under a Service Level Agreement from JISC.

SuperJANET was proposed in 1989, and the contract signed in November 1992. It provided a national ATM wide area network based on optical fibres, to 14 sites at 34Mbit/s and to another 50 sites at 10Mbit/s using BT's SMDS (Switched Multi-megabit Data Service).

SuperJANET II took over in 1995 with the aim of significantly increasing the spread of JANET and creating a number of Metropolitan Area Networks (MANs). Over the next few years, around 12 MANs were created, including the Yorkshire & Humberside MAN (YHMAN).

For SuperJANET III a 155Mbit/s ATM backbone was installed between a central ring of ATM switches in the cities of London, Bristol, Manchester and Leeds. Access to this backbone was via 34Mbit/s and 155Mbit/s links to "Backbone Edge Nodes" from which connections to MANs and other sites were made.

By 31 March 2001 the move to SuperJANET4 will be complete, connecting over 700 Higher Education (HE) and Further Education (FE) sites across the UK, via a core national academic network, operating at 2.5Gbit/s.



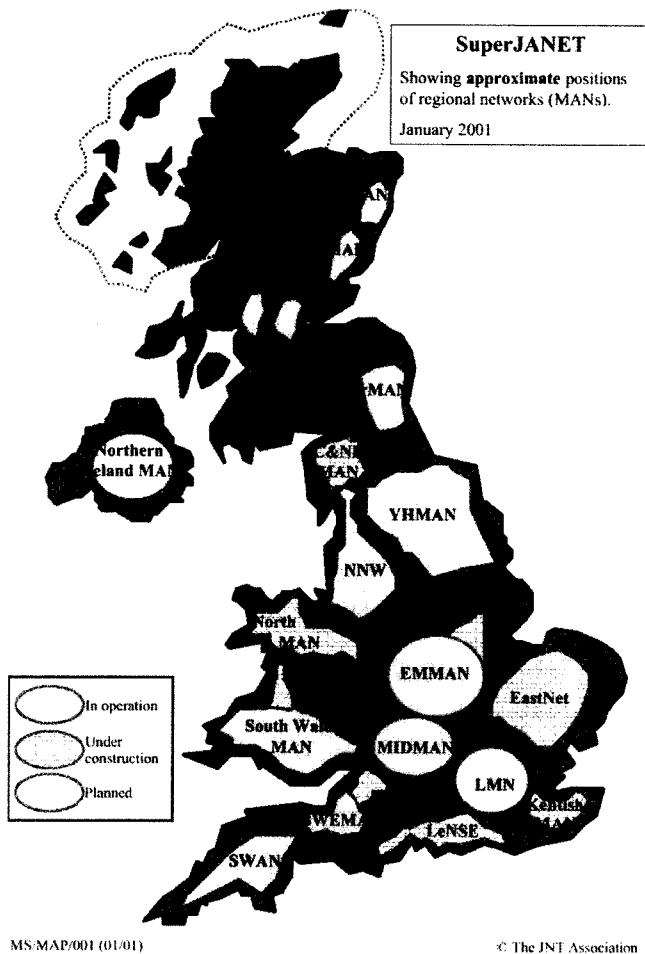
MANs & YHMAN

Over the past few years the most significant change to SuperJANET has been the development of Metropolitan Area Networks as a means of delivering services to JANET sites. The MANs provide the backbone of a regional information and knowledge network to underpin increased collaboration between education, business, government and the wider community.

UKERNA currently list 20 Metropolitan Area Networks at their website, with varying acronyms. My favourites are NorMAN (Northern) and FaTMAN (Fife and Tayside).

The University of Leeds operates and manages the regional network in Yorkshire & Humberside, on behalf of YHMAN Ltd. This network currently connects all 9 Universities in the region together with their affiliated sites, and a consortium of 17 FE colleges in North Yorkshire &

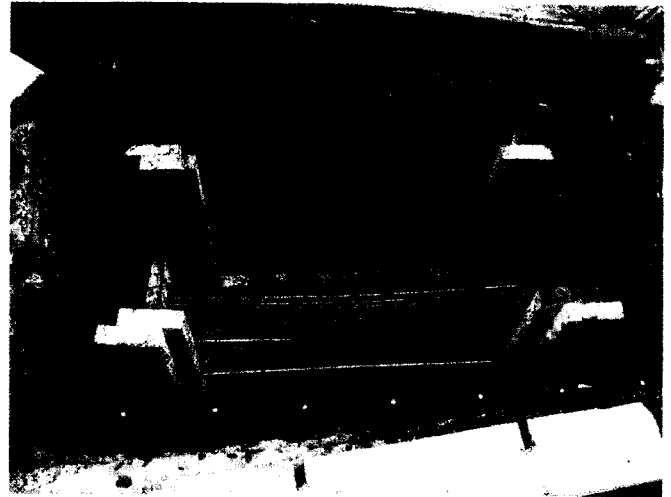
JANET & YHMAN



Humberside/North Lincolnshire (LiNM consortium). There are plans to incorporate another 8 FE colleges in South Yorkshire (SYNE consortium) and 18 FE colleges in West Yorkshire (WYINX consortium) by the end of this year.

The move to SuperJANET4

On Monday 19 June 2000, UKERNA announced that the contract to supply the SuperJANET4 backbone had been signed with WorldCom. University of Leeds' preparations began in July last year. WorldCom started the protracted process of installing fibres on the Leeds campus in autumn 2000. This necessitated construction work, including the creation of a new inspection pit, laying of new tube ducts and core drilling through walls. Once completed new fibres were laid and terminated at a primary and backup location in ISS' communications rooms.



A large UKERNA router (Cisco GSR 12016) was installed in the primary communications rooms to form the MAN/SJ4 interface. Fibres were installed to connect the 1Gbit interface to the existing YHMAN router.

Finally, earlier this year ISS staff installed new hardware, and upgraded software to support the move to SuperJANET4.

In total the ISS project plan covered a period of 135 days!

The Future

SuperJANET4 promises a highly reliable core network based on a topology of 8 Core routers on telco premises throughout the UK, including one in the City of Leeds. Currently utilizing a 2.5Gbit/s core national network, there are plans to move to a 20Gbit/s core network by 2002. SuperJANET4 provides a 2.5Gbit/s connection to the YHMAN, although hardware currently restricts the usable bandwidth to 1Gbit/s. Comparing this to the 155Mbit/s bandwidth of the SuperJANET III core network demonstrates the huge increase in available bandwidth.

Over the next few months University of Leeds' staff, acting as the operators of YHMAN, will submit proposals for distributing this increased bandwidth to users of the MAN, using funds allocated by JISC.

Useful references

<http://www.superjanet4.net/>
<http://www.jisc.ac.uk/>
<http://www.ukerna.ac.uk>