ja.net

JANET
Report

2007/08

CONTENTS

FOREWORD

Supporting UK competitiveness and learning by delivering information and communication technology services to enable research and education.

For the UK to remain competitive in the global knowledge economy, an accessible, flexible and resilient information and communications infrastructure is essential. JANET is a world class network, employing the latest optical technology, and has become a mission critical asset for all involved in education, training and research. As the volume of traffic on JANET grows year on year, and with the constant emergence of new technologies, the network is continually being updated to meet the requirements of over 18 million users throughout the UK.

Proactive interaction with the education and research community enables JANET(UK) to respond effectively to the rapidly evolving technological landscape and so to support UK education and research strategic objectives effectively. JANET(UK) will continue to push the boundaries of network engineering and explore ways in which the network can widen its reach beyond the traditional classroom, research laboratory or lecture theatre setting. Focused and relevant development will be all the more important as we enter a time of challenge to public finances. The benefits of technology in enabling teaching, learning and research to be delivered in an effective and cost effective way will be increasingly important. JANET(UK) is committed to playing its part to achieve this.

At the heart of JANET(UK)'s strategy is a strong development and delivery relationship with commercial partners. This strategic approach has meant that JANET can provide significant value and is an exemplar of a successful shared service, a form of delivery being adopted increasingly across the public sector. In the past year examples of networking collaborations with other public sector bodies in Wales and the West Midlands have reinforced JANET(UK)'s commitment to greater efficiency through sharing, and JANET(UK) has been recognised for its outstanding success as a shared service by winning the Shared Services category of two national awards – the e-Government National Awards and the Government Computing Awards for Innovation. JANET(UK) will continue to use its expertise and experience to guide future policy and strategy in this area.

This report records the activities of JANET(UK) during 2007-8. Changing our trading name to JANET(UK) in 2007 has proved to have been a highly effective move, creating a stronger and more unified brand aligned with our well established products and services. Our move into new purpose built offices, at Lumen House on the Harwell Science and Innovation Campus, has also been of significant benefit, making available facilities with a collaborative work environment to support our continued drive to provide a premium service to all JANET customers.

Tim Marshall
Chief Executive Officer, JANET(UK)

A STEP AHEAD

JANET is one of the world's leading research and education networks, with 18 million potential users drawn from a vast pool of disciplines. Simple e-mails must share bandwidth with videoconferences, VoIP telephone calls and massive amounts of data, and each application is entitled to the same high standards of accessibility, security, integrity and speed.

JANET's infrastructure and support services have been specifically devised to maximise the use that our community can make of the network regardless of the nature of their individual missions. The network continues to be stable and reliable and throughout the year has operated at a minimum of 99.7% availability to each end site, at the same time handling the increasing volumes of traffic traversing the network to other JANET sites and to the wider Internet. This year traffic over JANET reached 5Gbit/s to Europe over the connection with GÉANT, the pan-European data communications network; 10Gbit/s to Internet connections in the rest of the world; and 14Gbit/s to LINX (the London Internet Exchange) through which it connects to the Internet in the UK.

The JANET backbone is easily scalable to 40Gbit/s per circuit, meaning bandwidth can be increased cost-effectively and complexity kept to a minimum. JANET is the first European National Research and Education Network to install 40Gbit/s technology: work is underway to upgrade the existing JANET core from 10Gbit/s to 40Gbit/s technology, to be completed by the end of January 2009.

AUTHENTICATION & AUTHORISATION

JANET(UK)'s **Server Certificate Service** has exceeded expectations since its launch in 2006. The JANET Report 2007 stated that 'potentially the demand could reach more than a thousand server certificates' and over 4000 certificates have now been issued. The service has been in considerable demand as certificates are required for every resource provider and every identity provider for the UK Access Management Federation.

The **UK Access Management Federation** exists as a means of authenticating and authorising individual learners' access to appropriate content and services, and is operated by JANET(UK) on behalf of all education sectors across the UK. Nearly 500 members have now joined; membership increased by 143 to 493 in the May-July quarter alone. A big driver behind its ever-growing take-up is the availability of educational software and content from service providers that include the BBC, Microsoft and Science Direct. At least 72% of the content services procured by JISC Collections are available within the federation; already over 80% of Becta's schools Learning Platform providers have deployed federation technology; and JANET(UK) is in discussions with other public sector bodies, including the NHS Libraries, National Library for Health and members of the museums and libraries communities, regarding widening participation of the federation.

As well as simplified access to electronic resources, other reasons why organisations join the federation include improvement in privacy protection for students and teachers; security improvements in moving away from legacy authentication systems such as IP address based checks; and the fact that the federation is free at the point of use for educational organisations and service providers.

The most widely-used technology within the federation is **Shibboleth**, an open source software package that lets organisations make informed authorisation decisions for individual access to protected online resources. Amongst JANET services at present JISCmail, the JVCS Booking Service, JVCS OnDemand and the Access Grid® booking service are all Shibboleth-enabled, and this will also be included as a requirement for new and future JANET services where applicable.

In the context of JANET Roaming, the UK's implementation of eduroam, JANET(UK) has now been a partner in the **OpenSEA Alliance** for a year, helping to deliver a cross platform, open source 802.1x supplicant which will help organisations manage secure access to their networks. JANET(UK) has a member on the Project Management Committee and the board; its role in the project is to test and assess the supplicant's suitability for deployment and to represent the views of the educational community in its development. The Alliance is set to invest in further development of features for the supplicant in line with the specification that JANET-connected organisations helped to define last year.

NETWORK ACCESS

JANET(UK) is working in three key areas of network access. In **Mobile IP** (which allows a device to retain its IP address as it undocks from one network and reconnects to another), a trial programme touches on such diverse areas as IPTV, VoIP and network access provision to mountain rescue teams. Meanwhile a programme of investigations has been launched in the area of **Local Loop Unbundling** (opening up the telephone exchange to other types of technology) aimed at bringing some of its advantages to the provision of JANET connectivity. Finally, five JANET sites are participating in the **location awareness** programme, in which information extracted by wireless networks about the client nodes that use them can be exploited to provide richer, more relevant content and new classes of application to the roaming user.

OPTICAL DEVELOPMENT PROGRAMME

JANET(UK)'s Optical Development Programme is a group of related projects that ties together several different research areas in the area of optical networking. Topics range from network engineering projects that examine details of transmission technologies and how they might be deployed and controlled to deliver services within JANET, to case studies looking at ways in which circuit oriented services such as JANET Lightpath are being managed alongside the JANET IP service within organisations' networks.

FURTHER EDUCATION AND SPECIALIST COLLEGES

The Learning & Skills Council is funding the capital costs of upgraded JANET connections for all 376 FE and Sixth Form Colleges in England. JANET(UK) has implemented a programme of upgrades to all colleges who request one, region by region, throughout 2008. This will result in bandwidths up to 100Mbit/s and will result in much faster and more efficient connections. The Colleges will also make a contribution to the recurrent costs of this upgrade.

JANET(UK) works closely with the Learning & Skills Council to ensure provision is meeting community need, and additional services such as Moodle hosting via the JANET Web Hosting Service and JANET txt have been developed as a result of feedback from the FE community.

JANET TXT

The JANET txt service has been taken up by almost 130 JANET-connected organisations since its launch in May 2007. Users include HE institutions, FE colleges, PCDL providers and community-based projects, highlighting the broad appeal of the service. Usage levels are growing steadily and nearly 1.5 million messages have already been purchased.

The service has a multitude of administrative applications. Notifications of EMA payments for college students proved useful during recent postal strikes and during a recent teachers' strike SMS was used as a key communication tool for teachers, parents, guardians and administrators. Leeds Metropolitan University used the service to send a welcome message to each of its almost 7000 new undergraduates at the start of the academic year. A key impact has been the application of text messaging for development and mentoring purposes, particularly with special needs students and vulnerable adults.

An SMS integration module for JANET txt within the Moodle Virtual Learning Environment, MoodleMobile, was launched in June this year and has proved very popular across the community. MoodleMobile has received an overwhelmingly positive response from across the range of Moodle users.

Authentication & Authorisation
www.ja.net/middleware

JANET txt
www.ja.net/services/janet-txt.html

Network Access
www.ja.net/network-access

OpenSEA Alliance
www.openseaalliance.org

Optical Development Programme
www.ja.net/development/optical-networking

Server Certificate Service
www.ja.net/scs

UK Access Management Federation
www.ukfederation.org

SECURITY AND REGULATION

Preserving both the security of our users and their privacy and legitimate access to web resources is more and more an issue in today's climate.

SECURITY

JANET CSIRT (Computer Security Incident Response Team) exists to ensure the present and future security of JANET and its customers. Criminal activity such as phishing (fraudulent attempts to acquire sensitive information such as users' network, bank account and credit card details), unsolicited bulk e-mail (otherwise known as spam) and botnets is a growing network menace. JANET CSIRT works with JANET sites indicated as the potential source to clear up any infected systems, and is working with one of the larger Internet Relay Chat networks to track down and remove botnet nodes on JANET.

An upgrade of hardware on the JANET infrastructure this year has enabled an improvement in the collection of Netflow data, which is a key weapon in the detection of malware and allows JANET CSIRT to be more proactive in detecting possible harmful or otherwise unwanted traffic on JANET.

Despite this, the range of threats continues to grow. For example, in June a non-JANET agency informed JANET CSIRT of the potential compromise of a web site management engine being used by a number of JANET organisations. JANET CSIRT worked with the agency and the affected JANET connections to resolve this issue. In July, organisations at all levels across JANET were affected by a vulnerability in the software of a non-JANET organisation which could lead to server certificates with easily guessable keys being used in the UK Federation. JANET CSIRT tracked a number of vulnerable certificates, contacted affected sites and asked them to submit new certificates.

JANET CSIRT also works actively with both UK and European law enforcement agencies to aid their investigations, acting as a conduit between the agencies and the JANET community.

REGULATION

JANET(UK) works with the wider community to formulate regulation and governance that ensures the Internet remains a suitable infrastructure for education, research, business and society.

Many JANET sites were concerned that the new offence of supplying tools likely to be used to commit offences under the Computer Misuse Act could accidentally criminalise many research, teaching and development activities. JANET(UK) discussed these concerns with the Home Office and Crown Prosecution Service, and the latter has published guidance to prosecutors clarifying the lawful status of such activities.

JANET(UK) is contributing to the UK preparations for the Internet Governance Forum in Hyderabad (3-6 December), which will act as a forum for policy dialogue on global issues of Internet governance. This year the company also sponsored a joint British Computer Society/JANET Thought Leadership Debate on Responsibilities for Internet Safety, which concluded that everyone, from users to regulators, has a part to play, and that attempts to assign sole responsibility for safety to ISPs, vendors, governments or law enforcement are likely both to be unsuccessful and to create risks to the network's function and users' privacy. The Byron review on Personal Internet Safety, to which JANET(UK) made a written submission, came to a similar conclusion.

JANET(UK) is also involved in discussions on content regulation. Through its membership of the Funding Council of the Internet Watch Foundation it contributes to the Foundation's aim of reducing the availability of illegal content online. Members have also met with representatives of rightsholder organisations to explain the enforcement of copyright law by JANET and its connected organisations, and are facilitating an anonymous survey of current practice.

To ensure that the operation of JANET remains lawful the JANET Acceptable Use Policy has been revised to clarify some areas that had caused confusion and to reflect new case law. JANET(UK) has also developed a Policy and legal agreement under which network researchers can use data about JANET traffic while protecting the privacy of users and respecting the law.

CSIRT
www.ja.net/csirt
JANET Policy Documents
www.ja.net/services/publications/policy-documents.html
Regulation
www.ja.net/legal

SUPPORTING RESEARCH

JANET's fundamental mission is to support UK education and research. The research sector is a major user community on the network, needing to transmit large volumes of possibly delay-sensitive data, and there is also a need for separate networks for research and development to be established over JANET. An array of specialised services on JANET is tailored to this sector's requirements.

JANET LIGHTPATH

The JANET Lightpath service has fully replaced the UKLight service of old, to meet the growing needs of the UK research communities for dedicated end-to-end network capacity. Circuit or lightpath capacities can be set within a range of a few tens of Mbit/s to a full 10Gbit/s, according to user requirements, and lightpaths can also be extended internationally. Researchers from a range of disciplines including physics, astronomy and high-end computing deploy lightpaths for such applications as high capacity file transfer, remote real-time visualisation, and computational steering.

Five projects have applied for a total of thirteen lightpaths and over half of these have already been implemented. At the end of 2007, JANET Lightpath helped connect four of Europe's biggest radio astronomy facilities using high-bandwidth point-to-point circuits. The four telescopes – located in Medicina, Italy; Torun, Poland; and Jodrell Bank and Cambridge in the UK – can now track transient events right at the edge of the known universe.

A 10Gbit/s lightpath is in place between the Rutherford Appleton Laboratory in Oxfordshire and CERN on the Swiss/French border, being used by particle physicists working on the Large Hadron Collider to transport large quantities of data. Another 10Gbit/s lightpath is in place between the Daresbury Laboratory in north-west England and a research laboratory in Frankfurt, Germany, linking the HPCx computing facility at Daresbury with similar facilities in several other European countries. Each one of these facilities contributes a proportion of its computing resources to a common pool from which researchers can then bid for resources to undertake particularly computationally-intensive projects. These projects can involve a wide range of disciplines such as estimating the accuracy of weather forecasts, drug design and exploring the interactions of sub-nuclear particles.
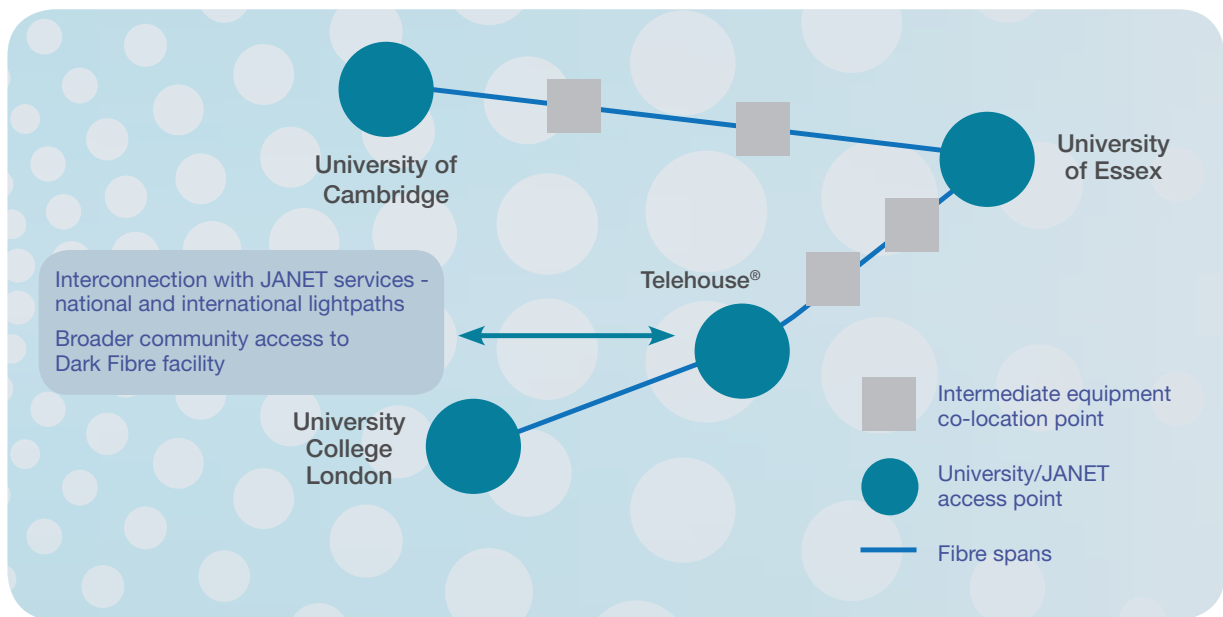

Image courtesy of Jodrell Bank, University of Manchester

JANET AURORA

JANET Aurora is a dark fibre network that supports research on photonics and optical systems. One of the largest test-beds for optical networking research in Europe, it enables a wide range of projects that hitherto have been impossible on existing research network infrastructures. The research groups interconnected by JANET Aurora's 350km of fibre have a broad range of interests, ranging from investigating new photonic components to how optical networks could provide dynamic capacity on demand to high-end grid and e-Research applications. There are also projects looking at optical burst and packet switching, which might be extended from laboratory work to wider area trials, and at congestion on wired/wireless next generation networks. These may be precursors to new architectures and patterns of use for future optical networks such as JANET.

JISC has recently approved a further £2.7m funding for JANET Aurora. This will enable the dark-fibre infrastructure to be connected to the Photonics research groups at the Universities of Aston and Southampton, and extend the operating period of the enlarged network to April 2011.

University of Cambridge

University of Essex

Interconnection with JANET services - national and international lightpaths

Broader community access to Dark Fibre facility

Telehouse®

University College London

Intermediate equipment co-location point

University/JANET access point

Fibre spans

JANET Aurora
www.ja.net/aurora
JANET Lightpath
www.ja.net/lightpath

ENRICHING LEARNING

JANET does not just support education and research in the UK. Many of its services actively add value to the learning process.

JANET COLLABORATE

JANET Collaborate exists to encourage opportunities for collaboration, especially using videoconferencing technology, with basic tools available for use across the UK education community. Its pilot launched in October 2007 to provide a focus for discussion and form the foundation for a full collaboration service.

In May JANET Collaborate teamed up with Parliament's Education Service to offer a new interactive videoconferencing programme for Primary and Secondary schools. The first of the hour-long Parliament videoconference sessions focused on the issue of Prison Reform, bringing to life the role of Parliament both historically and in the present time. The conferences included the opportunity for students to communicate directly with members of the House of Commons or House of Lords.

During the workshop, the children were encouraged to engage with both characters, played by costumed actors, and to ask questions before being led into a debate on the issues surrounding the prison system and its purpose. Each workshop was concluded by a member of the House of Commons or House of Lords, who discussed the role of Parliament in relation to this issue.

JANET Collaborate's new VC Partners programme also helps schools and colleges find another partner school or college to videoconference with on any topic or age group.

The pilot was completed in July 2008 and a full report is in preparation. The prototype continues to be used by over 1000 members from the FE, Schools and Content Providers communities.

NLN MATERIALS

Funded by the LSC and available free to authorised organisations, the NLN Materials are small, flexible bite-sized learning objects primarily aimed at the 14 -19 sector. They are not whole courses but are designed to support a wide range of subject and topic areas. All the materials have been trialled by tutors and students and tested for accessibility at the Royal National College of the Blind in Hereford.

In October 2007 a new NLN Materials Service was launched which rationalised and simplified access to the NLN Materials for all sectors via one site, **www.nln.ac.uk**. The service represents one of the most substantial and wide-ranging collections of e-learning materials in the UK and is managed by JANET(UK) in partnership with the LSC. The release of the service, with its improved accessibility, has been enthusiastically received and to date just under 2,500 organisations have registered to use the service. Its range of new features and enhancements include collection creation, powerful search and browse, and easy import into virtual learning environments or immediate use on CD, DVD or intranets. Further enhancements are planned for the next year.

VIDEOCONFERENCING

The number of users of JVCS (the JANET Videoconferencing Service) continues to increase at a steady rate. Of around 4700 venues registered for JVCS, 3400 are schools. To date there have been over 17,000 schools videoconferences via JVCS, 2000 in the last quarter alone.

As videoconferencing increases in popularity in all sectors of the JANET community, so it becomes ever more important to keep the equipment as state of the art as possible. JANET(UK) has launched and completed an EU procurement to supply and maintain additional JANET core videoconferencing equipment through a single supplier. The contract forms a framework agreement that JANET(UK) will use for initial purchase and a phased replacement of the existing core equipment over the next few years.

The Welsh Video Network (WVN), one of the most advanced H.323 based videoconferencing networks in Europe, is investing a further £2.2m to deliver high definition videoconferencing to all HE institutions and FE colleges in Wales. WVN, managed by JANET(UK) and operated by Swansea University in collaboration with Aberystwyth University, has over 150 studios supporting all Welsh HE institutions and FE colleges together with a number of other public sector sites. The videoconferencing system will be the first in the industry to offer a switchable Welsh language interface. The project will also deliver new videoconferencing infrastructure equipment, data collaboration tools and centralised management systems.

ACCESS GRID

There are now 307 registered Access Grid® nodes in the UK. A working group set up by JANET(UK), the AGSC (Access Grid® Support Centre) and a group of Access Grid® users to investigate traffic flows has resulted in much improved server and network traffic monitoring. Demonstrating the broad reach of Access Grid®, at one end of the academic scale the Magic project has 15 universities using Access Grid® to deliver regular maths lectures with each other, and at the other a number of primary schools have installed Access Grid® as an alternative to costly non-standards compliant software for an eOutreach project.

MEDIA-RICH CONTENT

April 2008 saw the culmination of months of planning on the part of Loughborough University's IT and Media Services departments and its student union TV station, leading to the IPTV broadcast of the 2008 Real Varsity rugby match against Team Bath. As well as pleasing sporting aficionados, the event served to demonstrate the university's excellence in sport – and hence the underlying business benefits to any JANET connected organisation that uses this technology – and also the possibilities of the JANET backbone's high-speed, multicast-enabled infrastructure. The event set a benchmark for future streaming multimedia productions, both academic and non-academic, within the JANET community.

Meanwhile early work is underway with the BBC to understand how BBC content may be better provided on JANET. JANET(UK) is currently working with a number of student-focused IPTV-based projects, including INUK's Unibox TV and the Open Student Television Network (OSTN); and also with organisations such as the Institution of Engineering and Technology to deliver scholarly lectures. JANET(UK) and OSTN have signed a memorandum of understanding to enable the provision of OSTN to the JANET community on a trial basis. JANET users will have full access to OSTN's current package of IPTV channels and, if successful, this early work may pave the way for a future OSTN UK service, providing UK student-produced content for the JANET community.

JANET(UK) has formed an IPTV Special Interest Group whose role will be to help understand how JANET-connected organisations are dealing with IPTV in their organisational strategies, and in turn what JANET(UK) needs to do to support this. The group will help develop a JANET IPTV Strategy that will focus on both the technical and copyright issues associated with IPTV.

Access Grid
www.ja.net/agsc
IPTV
www.ja.net/iptv
JANET Collaborate
www.janetcollaborate.ac.uk
NLN Materials
www.nln.ac.uk
Videoconferencing
www.ja.net/video

PART OF THE GLOBAL NETWORK

JANET services the UK's education and research community but that is just part of a much larger community worldwide. To help its relationship with this community and to explore new avenues of cooperation, JANET(UK) has recently appointed a new Head, International Relations who took up the post in May 2008.

TERENA

JANET representatives regularly attend meetings of TERENA, the Trans-European Research and Education Networking Association, and contribute to various development projects through the TERENA Task Forces including Mobility (focusing on authentication, authorisation and mobile computing), Next Generation Networking and Public Relations.

At September's TF-Mobility meeting there was a great deal of interest in the OpenSEA Alliance, its 802.1x supplicant and JANET(UK)'s role in OpenSEA. The group is now working to determine the TERENA community's supplicant requirements and this will feed into OpenSEA development.

There is also increasing interest in Network Admission Control technologies, particularly with respect to their implications for eduroam. A JANET(UK) representative was selected to represent the eduroam community within the Trusted Computing Group's Trusted Network Connect (TNC) working group to work on a solution to this problem. TNC is a widely deployed and open protocol for Network Admission Control.

TF-Mobility's main focus of effort remains eduGAIN, a technology intended to confederate national education and research federations. The experimental eduGAIN infrastructure is progressing towards a pilot service under the purview of DANTE.

GÉANT

JANET is one of the 34 national and education networks connected across Europe by GÉANT2, the pan-European network and associated development programme. The proposal for the next version of the network, GÉANT3, has recently been draw up by the consortium of the 34 networks and submitted to the European Commission for funding in the Framework 7 programme. JANET(UK) will be leading one of the major development areas within GÉANT3: development of AAI (Authentication & Authorisation Infrastructure) services across Europe. It will also take leading roles in a number of other strategic development activities, ranging from those dealing with the engineering aspects of how the new GÉANT3 network will be built to supporting development of research and education networking in less advanced regions. GÉANT3, if approved by the European Commission, will start in March 2009.

WORKING WITH OTHER PUBLIC SECTOR NETWORKS

As well as directly serving the education and research sector in the UK, JANET has a close working relationship with other public sector networks that maximises the benefits of this shared service to the greatest possible userbase.

PSBA NETWORK

JANET(UK) was fully involved in the specification and procurement of the PSBA Network (the Public Sector Broadband Aggregation Network), the Welsh Assembly Government's £74m initiative which will initially interconnect over one thousand public sector sites across Wales. In so doing it delivers JANET services to higher and further education across the country. The PSBA Network is a resilient core across Wales, connected to the JANET backbone at two separate locations within Cardiff, running initially at 2.5Gbit/s. It replaces the North Wales and South Wales MANs.

Besides providing the full range of JANET services for higher and further education over the PSBA Network, JANET continues to provide local government in Wales with access to the global Internet and to other education networks across the UK.

Collaboration is second nature within education and research, and the PSBA Network should prove an ideal vehicle to continue this. For example, thought is now being given to how the PSBA Network might foster collaboration between tertiary education and health within Wales, complementing the N3/JANET Gateway.
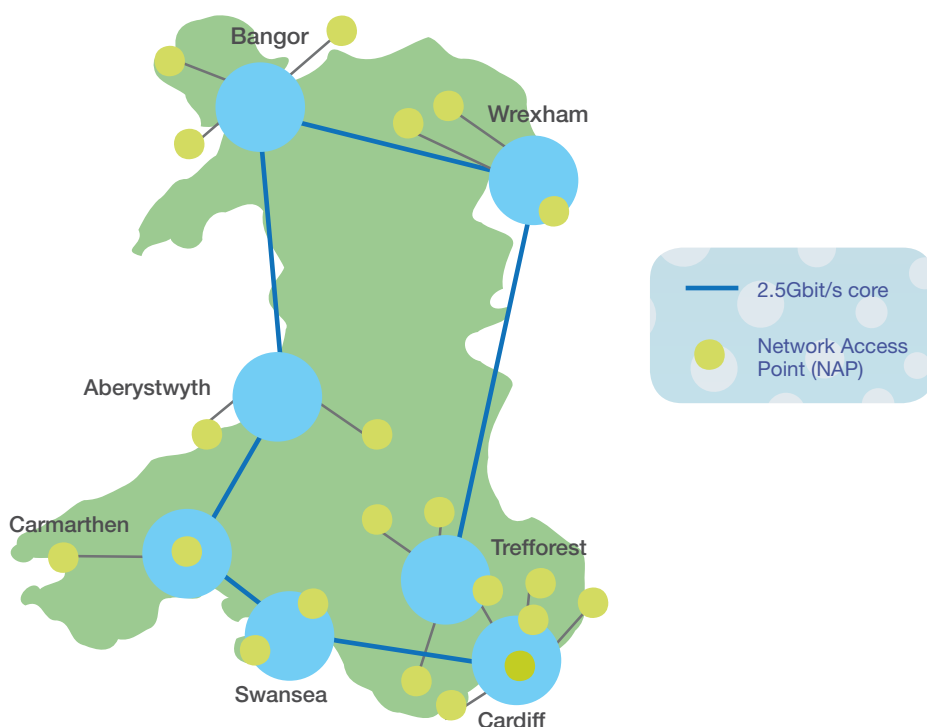
WEST MIDLANDS REGIONAL NETWORK

JANET(UK) is resuming direct responsibility for providing JANET connectivity in the West Midlands, upon expiry of the MidMAN consortium of universities' contract with JANET(UK) at the end of September 2008. This has led to JANET(UK) re-procuring a completely new regional network.

From the outset this new network was planned to be capable of meeting local government requirements alongside those of the higher and further education sector. In this way, existing collaboration within the education community in the region can continue to develop and each local authority's constituency can take advantage of the power and cost-effectiveness of JANET backbone services. In return the financial contributions made by local government to the regional network offsets part of the new network's cost. Thirteen of the fourteen local authorities in the region have formally opted to join in this way and the fourteenth has indicated its intention to do so in 2009.

This high-bandwidth transmission IP network spanning the entire West Midlands region is now in service, thanks in very large part to productive collaboration throughout the procurement and network roll-out
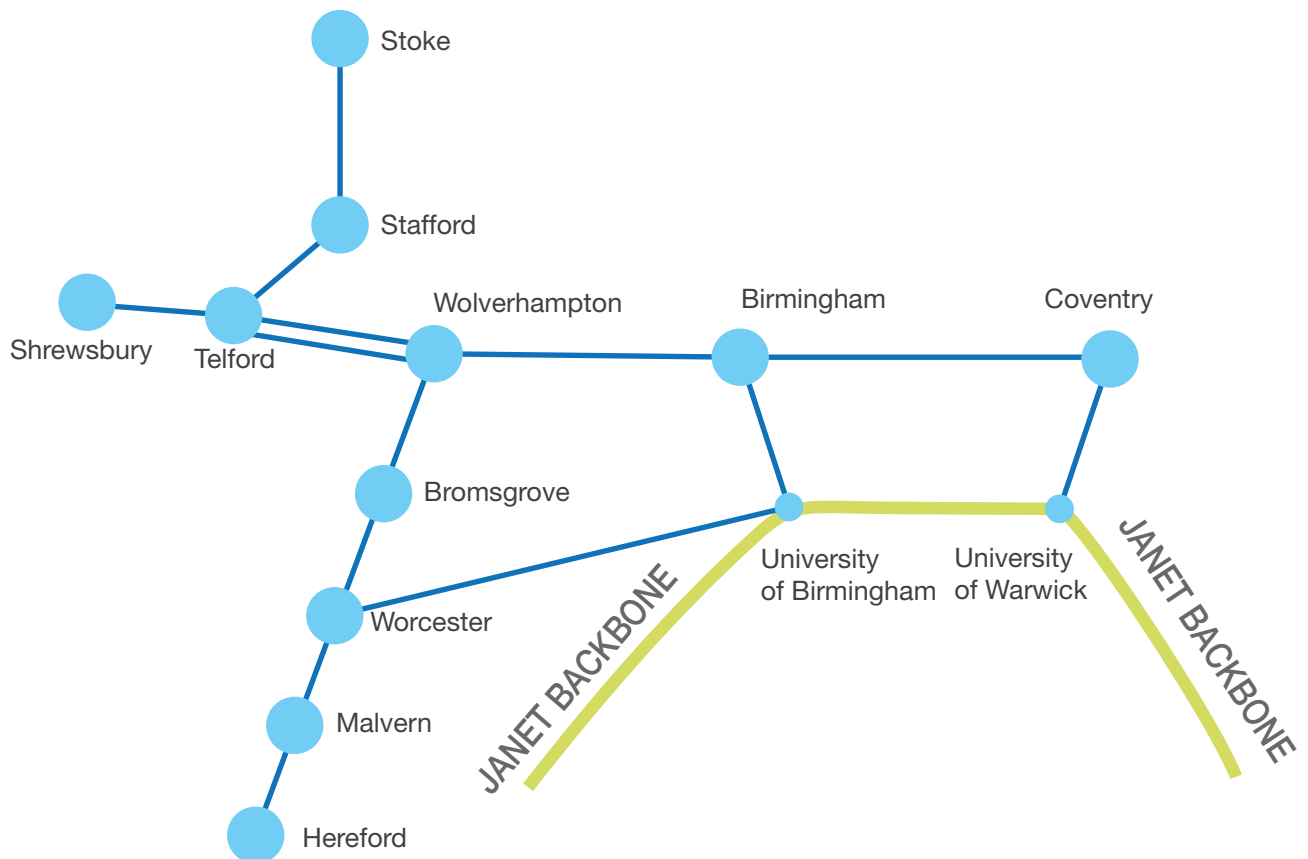
NHS CONNECTING FOR HEALTH

A pilot gateway between the NHS network N3 and JANET went into operation in October 2007. Its purpose is to facilitate interworking between the NHS and education and research sectors in a variety of ways, from providing more cost-effective access to university facilities by staff and students when working or studying at NHS premises (and vice versa) through to more effective collaboration via videoconferencing and similar services. It also supports national initiatives such as the Research Capability Programme, aimed at improving access to NHS data for clinical research, and the development of NHS and academic partnerships and Academic Health Science Centres.

Six early adopter projects are now underway. **The University of Bristol and University of West of England** are trying out access to the Citrix service for the Medical School via N3 rather than their own leased lines. The partners in the **CETL4HealthNE Partnership** are using H.323 videoconferencing between university and NHS sites through JVCS. The **University of Birmingham**'s Division of Primary Care, Public and Occupational Health allows access to a secure website for the collection of research data from GP practices across the country. Meanwhile the gateway is providing NHS staff with high-bandwidth access to the **Wellcome Trust Sanger Institute**'s DECIPHER database, aimed at increasing knowledge of sub-microscopic chromosomal imbalance; the **University of Edinburgh** aims to improve access to the Medical School's Virtual Learning Environment and library services by students on clinical placement in NHS Lothian and elsewhere in Scotland; and the **University of York** is allowing access by NHS sites to its York interactive website as part of the Improved Access to Psychological Therapies programme, developed by the University with the Department of Health.

As a result of these activities, NHS Connecting for Health (the agency with the primary role of delivering the National Programme for IT to the NHS) and JANET(UK) have agreed to develop the pilot into a permanent and resilient gateway between the two networks. Further collaboration will also continue across a number of fronts.

THE NATIONAL EDUCATION NETWORK

JANET(UK) has continued to work with the ten Regional Broadband Consortia (the RBCs) throughout England and with Becta in the development of the National Education Network (the NEN). The NEN is the name given to a set of education content services, advisory services and related standards which together provide learners in schools with safe, secure and high quality access to relevant education ICT services.

NEN services are provided principally by the RBCs, each tailoring its service offering to its regional client base of local authority children's services. These are underpinned by a number of national services provided by JANET. The most significant are secure high-bandwidth interconnectivity of the individual RBC networks (and their analogues in Scotland, Wales and Northern Ireland), connectivity onwards to the global Internet, and use by schools of the JANET Videoconferencing Service. The pilot of JANET Collaborate has also attracted wide interest.

Besides providing services, JANET(UK) has been an active participant in the work of the various technical and management groups operating under the NEN umbrella. Particular efforts during this period have been in the areas of large-scale content delivery and in helping this sector move to the use of the UK Access Management Federation.

JANET(UK) also sits on the NEN Governing Council, which was created in the spring of 2008 to provide a framework for the ongoing development of the NEN portfolio of activities.

PERSONAL & COMMUNITY DEVELOPMENT LEARNING

Over the last three years the Learning and Skills Council has funded JANET primary connections for PCDL (Personal & Community Development Learning) purposes, focused on enabling or enhancing e-learning for Adult Learning that was provided by local authorities. Nineteen local authorities to date have taken up increases in bandwidth, typically by utilising 100Mbit/s bearer circuits, and authorities which did not take up the initial JANET offering are now requesting connectivity as the advantages of being a member of the JANET community are becoming more widely understood. Local authorities have taken up JANET txt and other services and a number are interested in participating in the JANET Talk trial.

NHS Connecting for Health
www.nhs-he.org.uk
National Education Network
www.nen.gov.uk
Personal and Community Development Learning
www.ja.net/pcdl

SUPPORTING JANET SERVICES

The JANET web site is the first introduction many new users have to JANET(UK) and is the first point of call for those looking for information. The site underwent a complete re-design in November to increase its navigability and to improve the quality and relevance of the content.

TRAINING

Training has been a successful growth area for JANET(UK) this year. The JANET Training team has successfully launched EdLab®, a new online learning and collaboration facility designed to support the JANET community by providing online content and collaboration tools on topics relating to academic networking. Just over 250 users registered in the first two months of operation. This was mainly due to its being used to deliver Networkshop Online (see below) and the publication of all video clips of the conference presentation on the site. Work will continue to develop this facility and increase the materials available, and online course support has been launched for many of the courses.

The JANET Training team continues to run a portfolio of courses across the country. Two one day courses were launched at the beginning of the year on topics relating to the UK Access Management Federation: 'Introduction to the UK Federation' and 'Implementing Shibboleth at your Organisation'. Both of these courses are led by individuals working at the forefront of the roll-out of the UK federation and actively involved in supporting organisations in this area.

EVENTS

This year's Networkshop® conference, Networkshop 36, was held at Strathclyde University in Glasgow, returning to the city where Networkshop began in 1977. Topics for the 326 delegates included VoIP, network engineering and security, digital video broadcasting over the Internet, Mobile IP and Location Awareness trials, the use of lightpaths in research in the JANET community, the 802.1x supplicant, network technology development, IPTV and Shibboleth.

Delegates this year were given access to Networkshop Online, a secure online area letting them listen to interviews with the session chairs, view videos of parallel sessions they had missed or download the audio to an MP3 player, start discussions prior to the conference, share materials of interest, and more.

JANET Events
www.ja.net/events

JANET Publications
www.ja.net/publications

JANET Training
www.ja.net/training

JANET PUBLICATIONS 2007-2008

Case studies

- FreeRADIUS v2.02 at the University of Sussex

Factsheets

- Factsheet Compendium 2007

- JANET Netsight

- Wireless Networks: Health and Safety Issues and Recommendations

Services

- Introduction to JANET

JANET Services

- JANET Supporting Research

- Federated Access Management for Schools

- Network Access Strategy 2007

Technical Guides

- IEEE 802.1X

- QoS on JANET

Technical Documentation

- JANET IP QoS Policy Framework

- JANET QoS – Suggested DSCP Marking Scheme

- IPv6 Management Briefing Document

- WiMAX Briefing

Other

- JANET Development Programme

JANET(UK) manages the operation and development of JANET, the United Kingdom's education and research network, on behalf of the combined UK Higher and Further Education Funding Councils represented by JISC (Joint Information Systems Committee).

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