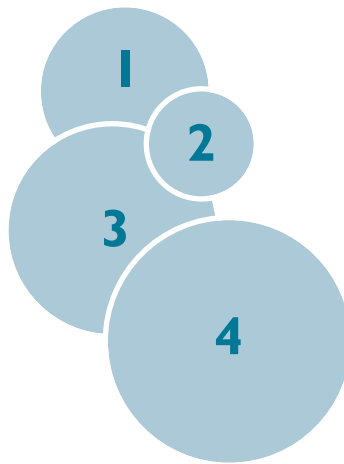




KPSN **Report** 2009

**Kent
Public
Service
Network**

Cover images



- 1.** Tenterden Gateway
Courtesy EIS
- 2.** Boughton-Monchelsea Primary School
Courtesy EIS
- 3.** Canterbury Cathedral
Courtesy KCC
- 4.** Ramsgate Harbour
Courtesy Visit Britain

KPSN Report 2009

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Introduction

Kent Public Service Network

KPSN Report 2009

The Kent Public Service Network (KPSN) celebrates a year of fruitful partnership between diverse agencies. Four new Partners have joined KPSN, network usage has increased by 62% and users in schools, councils and health agencies have been impressed by solid reliability. We have upgraded the network capacity and services while working within the £7M annual budget.

In only 15 months KPSN has connected 1088 sites and over 250,000 users. Network capacity, reliability and flexibility are all considerably improved over previous networks. Users rightly expect KPSN to work without fuss.

The major challenges faced in the implementation of any large network were overcome and KPSN is stable and reliable. Improving service delivery to the general public is central to KPSN thinking and is a focus for 2010.

There is national interest in the public service collaboration which formed KPSN and in our journey towards a single Public Sector Network for Kent. KPSN supports the Total Place initiative by efficiently delivering local services through shared agencies such as Gateways. Discussions with Fire and Rescue, Higher and Further Education, Health and other stakeholders have proved very interesting and have highlighted areas where services are duplicated.

Our challenge is to enable Partners to further improve public service delivery – despite financial constraints. KPSN is fundamental to supporting the public sector's response to difficult times. We need to deliver more for less!



Colin Carmichael
Chair, KPSN Executive Board

Summary

Kent Public Service Network

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Kent's public sector agencies increasingly share a broadband network, the KPSN, which reduces costs and enables services to be shared, irrespective of location. KPSN provides up to fifty times the capacity of the networks it replaces and delivers high reliability and security.

As an example, Police headquarters now has a 100 Mbps connection that replaces a 2 Mbps feed, enabling large files to be exchanged without delay at a similar cost to the previous commercial service. KPSN can provide this good value because:

- ▲ Police HQ has a short connection to the Maidstone KPSN point of presence.
- ▲ KPSN can utilise lower price connections due to the network design.
- ▲ The cost of the KPSN backbone network is shared over 1000 sites.

This pattern of providing high-capacity connections at lower cost than agencies could purchase individually is repeated across all parts of Kent including District Councils, KCC and Schools.

Business delivery requires high capacity and reliability. For the last three years, KPSN availability has exceeded the target 99.9%, which is a considerable achievement. KPSN Partners' Internet usage increased by 62% last year, which was well above the 37% growth measured in 2008. KPSN thus has a major challenge in expanding capacity to match Partners' demand for broadband services.

Business delivery by Partners is increasingly focusing on shared services which require a common infrastructure so that one Partner's application can be used by any other; or indeed by other local authorities nationally.

Where we did not fully meet our targets

The transition period lasted much longer than planned and the last few were not connected until in August 2009.

It has also proved difficult on occasion to improve the service quickly and find innovative solutions, which has not helped Partners to respond to the rate of change expected by the public.

Management actions to identify and resolve delivery issues include:

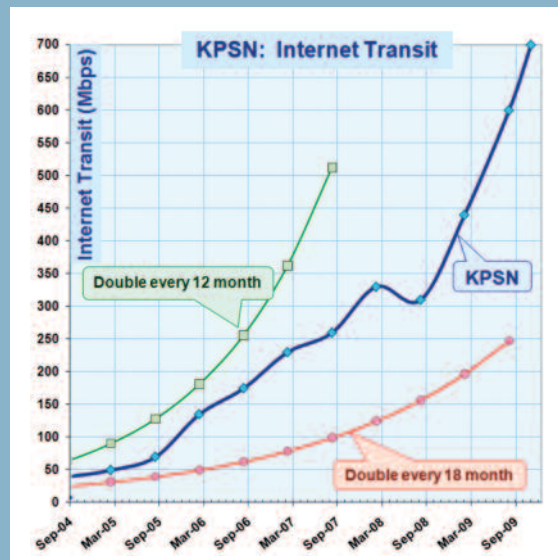
- ▲ The monthly Supplier Report has been developed to reflect service delivery more accurately.
- ▲ The escalation of issues where required is being improved.
- ▲ The Lessons Learnt Workshops in July resulted in a Service Improvement Programme.
- ▲ A Post Implementation Report was commissioned, which reported to the Management Board.

Summary

KPSN Response to Pressures on Public Services

The KPSN priorities reflect two major pressures:

- ▲ **Pressure on budgets.** KPSN will examine every part of its service to ensure that it offers the best value for money. Sound ICT infrastructure will enable cost savings across the public sector; for instance by reducing travel.
- ▲ **Rapidly growing demand for broadband services.** KPSN use grew by 62% in the year to December 2009. The public, pupils and staff all expect broadband services to be fast and reliable. KPSN must continue to service this increasing demand.



KPSN Priorities for 2010

The Annual Plan will expand on these priorities and establish how they will be achieved.

- ▲ Enable Partners to develop cost-effective business delivery strategies to deliver services more efficiently to the citizens of the region. Shared services will be a vital strategy.
- ▲ Further develop innovative KPSN services appropriate to Partners' business requirements and ensure a quick and effective response to changes in business need.
- ▲ Contribute to the Regeneration Framework, particularly the potential for public investment in digital infrastructure to support private use where appropriate.
- ▲ Understand and scope Partners' increasing demand for broadband data, voice and video services including support for Unified Communications.
- ▲ Track and respond to national agendas including:
 - The Government ICT Strategy recently published by the Cabinet Office; with the Next Generation Access, Total Place and Digital Britain initiatives.
 - The Museums, Libraries and Archives (MLA) national aspirations.
 - Schools future broadband requirements from April 2011.
- ▲ Collaborate with public-sector stakeholders:
 - Expand the use made of KPSN by Kent Connects Partners.
 - Address the communications needs of rural communities.
 - Discuss areas of synergy with Fire and Rescue, Police and the Health economy.
 - With Higher and Further Education in Kent, develop a shared infrastructure.
 - Explore synergies with the wider public sector agencies across the SE region.
- ▲ Ensure that KPSN contributes to reducing energy usage and carbon emissions.
- ▲ Conduct a detailed review of all KPSN broadband services against Partner requirements, particularly to ensure best value for money. Reducing unit cost is essential to KPSN sustainability.
- ▲ Communicate the KPSN vision and operational strategy to stakeholders and interested parties both within Kent and nationally.

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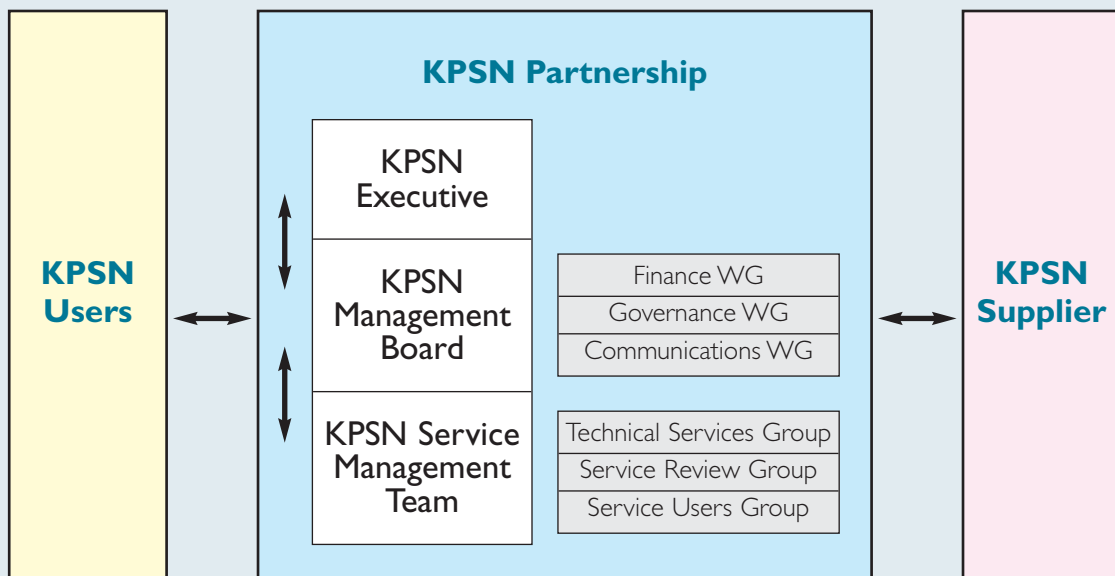
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Governance

We are very pleased to report that Dover District Council, Maidstone Borough Council, Sevenoaks District Council and Tonbridge and Malling Borough Council became KPSN Partners in 2009. Other stakeholders have expressed their interest and KPSN hopes to grow in 2010.

Benefits that can result from collaboration between KPSN Partners include:

- ▲ Public access to local government services from Gateway, Library or Children’s Centre.
- ▲ Sharing council back-office systems across agencies, enabled by a common infrastructure.
- ▲ Neighbouring colleges, schools and libraries efficiently sharing KPSN connections.



The governance structure is shown above, all activity and direction being controlled by the KPSN Partners.

- ▲ The KPSN Executive defines the strategic direction and is the owner of the partnership under a mandate from the Kent and Medway Chief Executives Board.
- ▲ Each Partner sits on the KPSN Management Board which manages the service and delivery strategies for the KPSN Partnership. Three Working Groups consider Finance, Governance and Communications aspects and make recommendations to the Board.
- ▲ The Service Management Team controls operational delivery. Since April, groups have been formed to examine in detail technical strategy and to review service delivery based on Unisys' Monthly Report. The Service User Group meets to ensure that Partner business activities are fully supported by KPSN. These groups report to the SMT. Each group has established its structure and way of working and has now settled into business as usual.
- ▲ Unisys is represented on all appropriate groups.

These groups meet regularly and have aligned meeting dates with other related activities including Kent Connects. KPSN is introducing improved escalation procedures between groups.

KPSN Report 2009

Business Delivery

Awards

During 2009 KPSN was entered for a number of awards. The details and how we got on are as follows:

- ▲ **E-Government National Awards 2009**
 - E-Government Excellence: Shared Services – **WINNER**
- ▲ **BCS & Computing UK Industry Awards 2009**
 - Project Excellence – **Finalist**
- ▲ **2009 Local Government IT Excellence Awards**
 - Sustainable ICT - **Unsuccessful**
- ▲ **GC Awards 2009**
 - Shared Services – **Finalist**



Gateways

KPSN fully supports the Gateways initiative and has been chosen as the communication service to enable the Gateways' shared services. Currently KPSN has connected each Gateway as it has opened, with support for both voice and data applications. In the future it is hoped that Gateways will also house wider Public Sector agencies such as NHS and the DWP which will use KPSN for access back to their own services.

Government Connect Secure Extranet

Working with Kent Connects Partners, KPSN delivered one of the first aggregated connections in the UK to central government services via GCSx. This project entailed providing two secure connections into the GCSx network via the KPSN nodes based in Maidstone and Canterbury instead of a connection into every Partner. This saved Partners a considerable amount of money and also provided resilient connections.

Kent & Medway Regional Data Centre (KMRDC)

Data Centres is another service that KPSN now supports. The Kent Connects Partnership commissioned, along with Kent County Council and Medway Council, the creation of the KMRDC. The data centre is based at Medway Council's offices in Gun Wharf. It is a Partnership resource that is available, via KCC and Medway, for Public Sector use. Access to data centre services is via KPSN high speed, resilient connections. At the present time Northgate is using this service to provide their learning platform for the Building Schools for the Future programme in Kent.

KPSN aims to respond positively when Partners' business requires a change in infrastructure services. Opportunities will often arise where using KPSN can benefit the wider Partnership by reducing costs through better use of the infrastructure and aggregating services at the centre, or at a Partner location.

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Communications

- ▲ KPSN was officially launched in Westminster in November, chaired by Colin Carmichael, Chair KPSN Executive Board.
- ▲ Keynote Speakers were:
 - Citizenship in the 21st Century: Addressing the Digital Challenge
Peter Gilroy OBE, *Chief Executive, Kent County Council*
 - Total Place and Public Sector Transformation
Helen Bailey, *Director Public Service, HM Treasury*
 - The Role of the Private Sector Partner
Rob Chapman, *VP & MD Unisys UK*
- ▲ A booklet explaining how JANET can be used by local authorities was written by staff from Kent, the East of England RBC and JANET and was launched at BETT 2009.
- ▲ KPSN performance data has been used in a report from the National Education Network to central government and UK local authorities.
- ▲ The new KPSN web site went live in Autumn 2009 www.kpsn.net.

KPSN
kent public service network

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News and Awards
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Kent's Public Service Network - joining Kent's public services together

Welcome to KPSN - Kent's Public Service Network.

Local authorities in Kent & Medway are working together to develop a shared ICT platform to deliver bespoke services to partner organisations.

If you would like further information about KPSN, please email Enquire.KPSN@kent.gov.uk

Services	Latest News
New services	Winner - e-Government National Awards 2009 2010-02-04 15:42:08
	KPSN launched at Westminster 2009-11-26 10:35:00


Partners

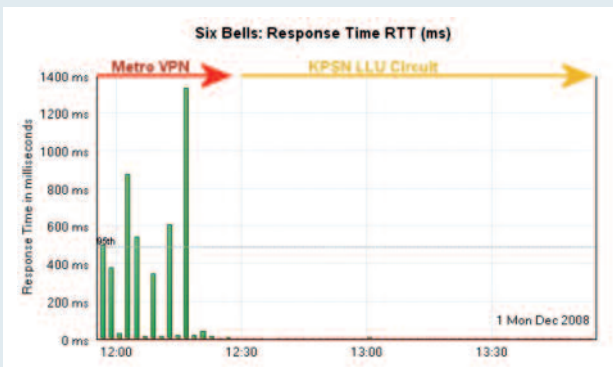
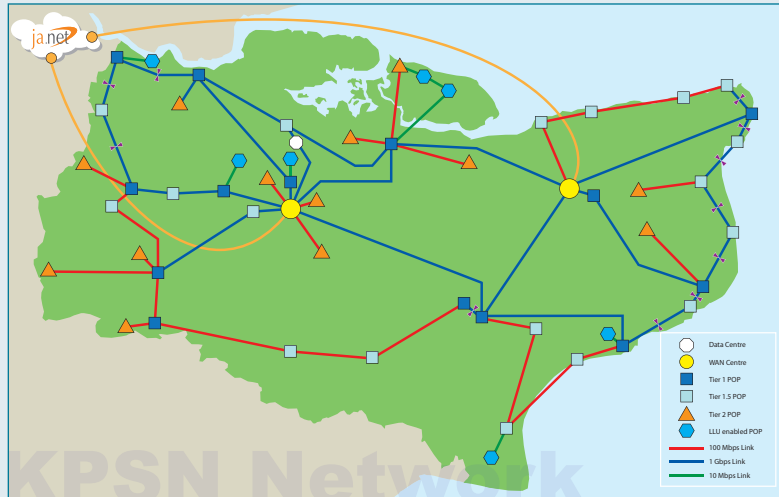
- Canterbury City Council
- Dover District Council
- Kent Connects
- Kent County Council
- Thanet District Council
- Tonbridge & Malling Borough Council
- Maidstone Borough Council
- Sevenoaks District Council
- Kent LA and Independant Schools
- Unisys

KPSN Report 2009

Infrastructure Development

In the first year of operation, KPSN has invested in several service enhancements:

- ▲ Network performance monitoring has been improved through the implementation of NetQoS which provides detailed information on traffic types and volumes.
- ▲ Eleven links have been upgraded from 100 Mbps to 1 Gbps as a result of rapidly increasing demand. These are marked with a  on the map.
- ▲ The Regional Data Centre in Medway Council offices was opened in autumn 2009, with dual resilient connections to KPSN at Maidstone and Chatham.
- ▲ JANET upgraded their regional network entry points from 2.5 Gbps to 10 Gbps. Traffic, including universities, had risen to 1.8 Gbps, and the links were upgraded to support continued growth and so that either link could take the full traffic should one fail.
- ▲ KPSN is fully compliant with the government's secure extranet, the first aggregated network in the UK to gain this level of security certification for every Partner.



Circuit Latency

This chart shows circuit latency before and after KPSN.

At 12:30 pm a new LLU circuit replaced a Metro VPN circuit. The latency dropped from around 800 ms to 6 ms.

This low latency will support any data type including voice and videoconferencing.

KPSN Report 2009

Commercial and Contractual Activity

The KPSN project requires accurate service monitoring, billing and accounting:

- ▲ Legal and commercial risk assessment of the Remedies Directive and its impact on the KPSN partnership is being undertaken.
- ▲ Meetings with BT identified areas where the cost of backbone circuits could be reduced and savings of nearly £200k over the project have been made. Other areas are being identified for similar detailed scrutiny.
- ▲ The KPSN monitoring system has ensured that system upgrades are ordered at the optimum time, balancing service delivery and cost.
- ▲ Supplier billing on over 1000 circuits has been examined in detail. Work is ongoing to reduce the time required by both the supplier and KPSN, while maintaining transparency of costs.

Ensuring Best Service Delivery

Since KPSN was designed over two years ago, a number of anticipated Partner sites have closed and others opened. Some low-cost technologies, such as LLU, have been shown to be more effective than expected (See **Appendix 2**) and BT has introduced new services and pricing structures. It is important that we test the KPSN service against Partners' developing requirements.

KPSN is now generally in 'business as usual' mode and service levels can be more closely matched with Partner requirements. This is a good time to ensure that all aspects of the KPSN service represent best value for money.

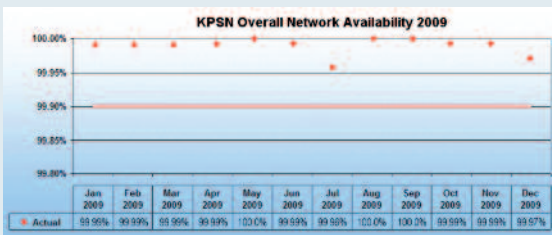
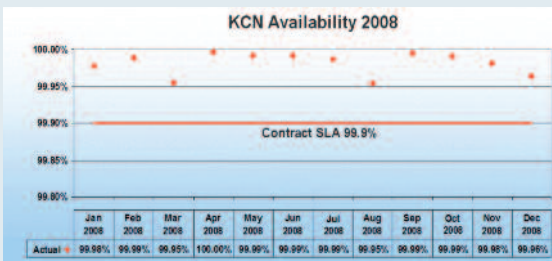
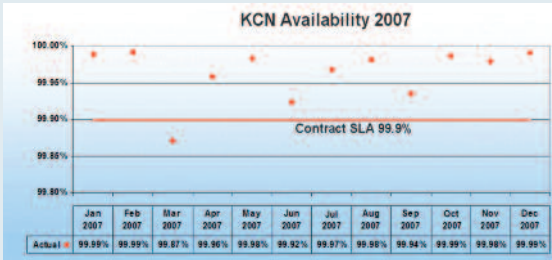
KPSN will conduct a detailed review of all broadband services to ensure that they meet Partner requirements and continue to offer the best value available in all parts of Kent.

Review questions could include:

- ▲ Is the scale and design of the network infrastructure optimal?
 - Are Partner's requirements best matched by the current edge circuits?
 - Does each Partner receive the service it requires from the backbone network?
 - Will growth in demand exceed the end-to-end capacity available?
 - Are we ready for voice and video conferencing?
 - Is KPSN compliant with reducing energy and carbon footprint agendas?
- ▲ Are all aspects of the KPSN service of appropriate quality, or is variation required?
 - Are all aspects of the service wrap required and delivered in the most efficient way?
 - Are new services required?
 - How should services be delivered? By a Partner, the supplier or a third party?
- ▲ In what ways should we further develop KPSN?
 - How can KPSN better serve current Partners?
 - What is required to attract new Partners?
 - What would be different in a true public sector network for Kent or the Region?
 - How does KPSN fit the Government ICT Strategy?

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KPSN Performance



Reliability

KPSN users have an expectation that access to applications and the Internet will be responsive and 'always-on'. The Partner Service Desks have worked closely with Unisys to establish a reliable service and to resolve issues as quickly as possible. The monthly service review meetings are based on a detailed supplier report. Service availability is monitored continuously 24x7 and reported by Unisys monthly, as shown here.

Faults caused by factors outside Unisys' control (typically local power cuts or maintenance) are excluded. Availability has improved markedly over the past three years and is now always above the SLA of 99.9%, with an average for the last year of 99.98%. Unisys, BT and Updata are to be congratulated for delivering a highly reliable service.

Copper Connections – LLU

Before KPSN, the experience with copper-based circuits such as ADSL was variable, although some did give reasonable service. KPSN uses the

more recent Local Loop Unbundling (LLU) technology over copper which has a tighter technical specification and a well defined SLA. The 254 LLU circuits in KPSN were surveyed as part of a national project with JANET and the results summarised in **Appendix 2**.

The conclusion is that LLU provides a reliable and cost effective method of connecting establishments at up to 3.5 km from the telephone exchange. There are capacity limitations and not all locations will be suitable, but LLU provides the potential for cost saving in some cases.

Wireless Connections

Over 120 wireless point-to-point circuits are used by KPSN, which have proved reliable and effective in nearly all cases. Average availability is somewhat below that of fibre, partly due to issues such as tree growth, and one or two wireless links have been replaced with fibre. The KPSN wireless supplier NCS endeavours to fix faults remotely, or to visit locations on the same day as a fault is reported which minimises disruption. Wireless presents excellent value where conditions suit.

Wireless links are sometimes used for very difficult locations, where fibre might cost tens of thousands to install. KPSN, with NCS, has learnt a great deal about difficult wireless paths and how to provide the best service possible. Remote monitoring often means that faults are logged by the Partner service desk and fixed by NCS before the establishment notices a problem.

Appendices

Appendix I – JANET Internet Transit

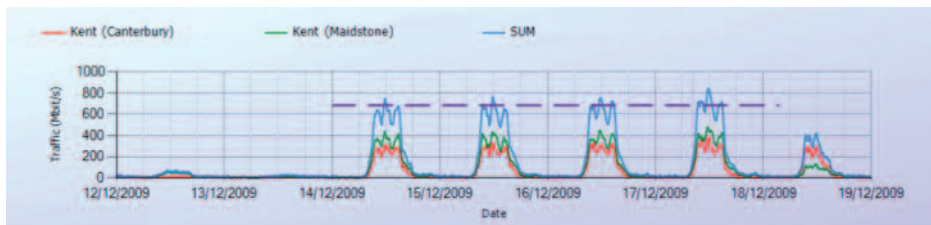
Demand for Internet transit is increasing rapidly. Total Internet transit on the last week of the December term is compared with that in 2008 and in 2007.

From this and other data we can see that total Internet transit usage has increased at about 62% this year. This rate of increase is corroborated by the 15 month usage graph below. Over 2008, the growth was about 37% although strictly comparable data is not available.

The increase in Internet transit is partly due to higher numbers of locations, but the majority of the increase is in business demand by pupils, officers and the public.

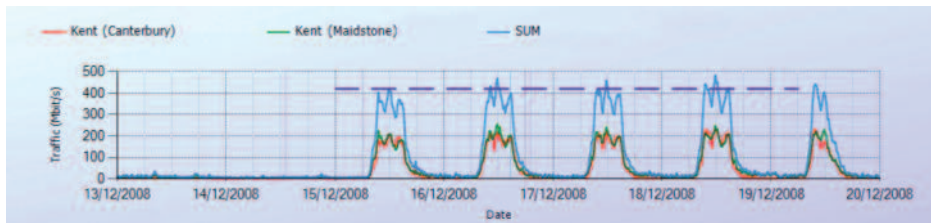
Internet Transit end of December 2009 – annual growth of 62%

Over the last five days of the school term, 95th percentile bandwidth averaged 680 Mbps.



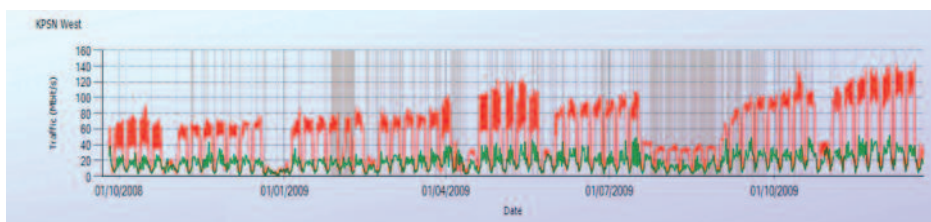
Internet Transit end of December 2008 – annual growth of 37%

Over the last five days of the school term, 95th percentile bandwidth averaged 420 Mbps.

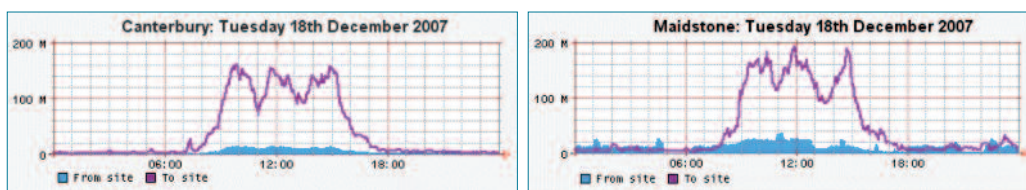


Maidstone Internet – October 2008 to December 2009

(Readings averaged over 24 hrs)



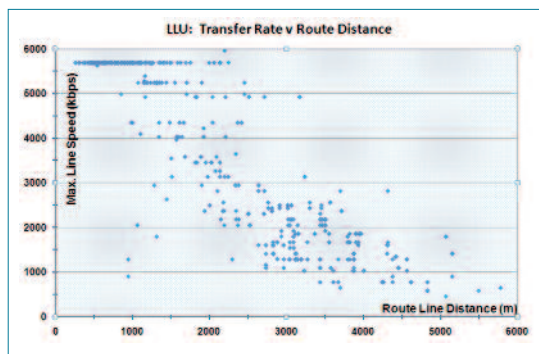
Internet Transit December 2007 – aggregated bandwidth 305 Mbps



Appendix 2 – Review of LLU Circuits

Before KPSN, the experience of using telephone copper circuits for carrying broadband data had not been encouraging. While broadband is delivered to households using copper, the service provides variable speed and can take days to repair. A council office may have a hundred or more employees, a web site used for financial transactions and use broadband for telephony. Reliability and rapid repair times are therefore vital.

Unisys proposed that Local Loop Unbundled (LLU) circuits were used by 254 KPSN establishments with low capacity requirements. The university network manager JANET commissioned a case study from KPSN as part of a national evaluation of LLU in educational and local government settings. The full case study is available on the JANET web site. www.ja.net



LLU 'Speed'

This graph shows the transfer rates measured against the total circuit length for all KPSN LLU locations.

As the distance from the telephone exchange increases, the transfer rate reduces, but it is sufficient for small business use and is good value.

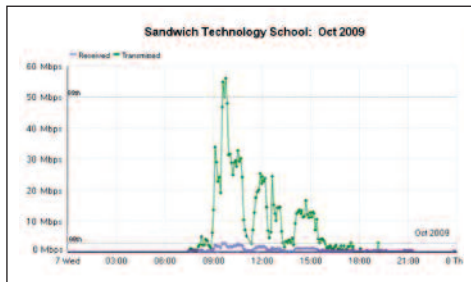
2 Mbps (2000 Kbps on the chart) is a very useful broadband 'speed', suitable for small offices and potentially also small schools.

Conclusions for LLU in Kent

- ▲ LLU technology, when used within its design range, delivers broadband effectively for small sites and is one of the least expensive connection methods.
- ▲ Not all sites are suitable for LLU, but in nearly all cases there is an alternative technology in the KPSN catalogue.
- ▲ Care is required to use LLU technology within its limitations and to test circuits before acceptance.
- ▲ At a distance of 3.5 km from the telephone exchange (true copper length), the typical transfer rate available in Kent with LLU is 2 Mbps, which suits many small sites.
- ▲ Several copper pairs can be joined for higher capacity.
- ▲ Reliability of LLU is better than ADSL, although the fix times are longer than for fibre.
- ▲ Up to around 12 Mbps, LLU circuits are much cheaper than fibre circuits. KPSN Partners may wish to review whether greater use of LLU should be made, possibly as a response to budget pressures.
- ▲ The implementation of further LLU PoPs should be considered. Replacing around seven fibre circuits with LLU repays the cost of the PoP over five years.
- ▲ However some LLU PoPs in KPSN do not appear to have sufficient use to justify their cost, although the addition of new Partners may make them viable in the future.
- ▲ Where an establishment requires more than 12 Mbps, and the rate of growth is taken into account, fibre is generally the more appropriate carrier. A second installation cost after a year or two could balance out any saving in rental.

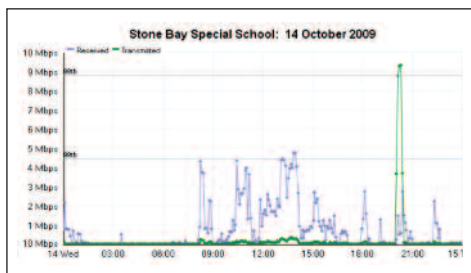
Appendix 3 – Edge Site Bandwidth

KPSN Partner establishments use bandwidth in different ways. Schools use mainly Internet transit and download more than they upload. Councils have a more symmetric use, often because the general public is accessing web sites or web-based applications. The graph for the Police shows that high capacity is also required for the rapid exchange of large files.



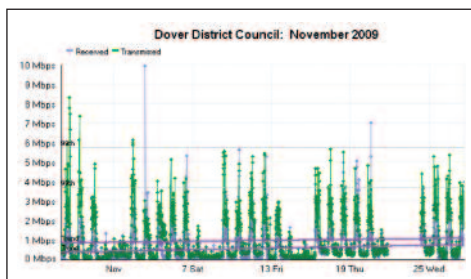
Sandwich Technology School

A large secondary school with substantial Internet usage, illustrating why the carrier fibre was recently upgraded to 100 Mbps. KPSN is currently considering the installation of 1 Gbps fibre circuits to two schools that need to interconnect their local area networks via KPSN.



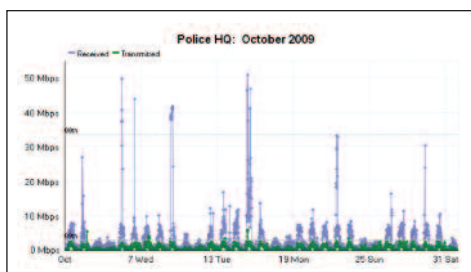
Stone Bay Special School

This small special school is already using more bandwidth than the government minimum recommendation of 2 Mbps. On average, most primary schools use less bandwidth than Stone Bay, but this does indicate the possible scale of future school requirements.



Dover District Council – Nov. 2009

Dover District Council is using up to four times the bandwidth available from the 2 Mbps link used up to October 2007. In general District Councils' use is symmetric, i.e. upstream and downstream use is similar (blue and green lines). District Councils use KPSN over the whole 24 hour period due to public access.



Kent Police HQ – October 2009

While the bandwidth required by Kent Police for administration activity reaches 12 Mbps regularly, occasional peak requirements up to 50 Mbps can also easily be met by KPSN.

Appendix 4: Case Studies

Whitstable and Tonbridge



Tonbridge & Malling Borough Council

Tonbridge & Malling Borough Council (TMBC) faced problems with insufficient bandwidth for our WAN services to Tonbridge Castle and Leisure Centre sites and we were frustrated by the prohibitive pricing structures offered by service providers.

As a member of the Kent Connects partnership we welcomed the transition to the Kent Public Service Network (KPSN) because it opened up the opportunity to join the KPSN as a full partner and obtain high speed, high quality and resilient services for our WAN links while containing costs.

In December 2008 we initiated the process of replacing our existing links which ran at speeds ranging from 0.5 Mbps to 4 Mbps. Our new 100 Mbps data links eventually went live in September 2009 and we will soon migrate our voice circuits from MegaStream to further reduce costs.



The increased bandwidth has significantly improved our WAN services and has also facilitated a new Gateway at Tonbridge Castle, in conjunction with Kent County Council, to deliver council and community services with a number of partners and transform service delivery to our customers.

It is pleasing to have delivered these improvements while making annual cost savings around £16k.

Whitstable Super Cluster

Canterbury City Council, KCC Libraries and Schools have collaborated to build a high capacity solution in five locations in Whitstable.

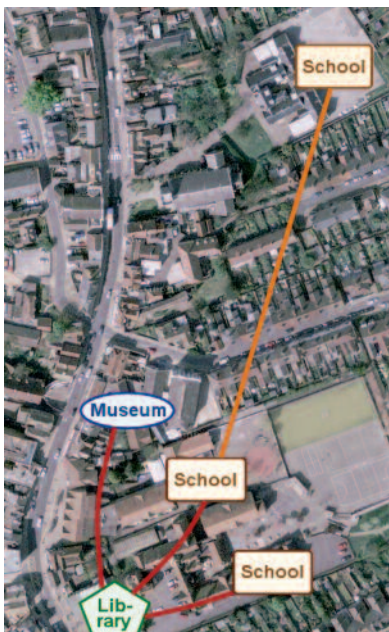
The library has been selected as the host for three schools and the museum.

A 100 Mbps fibre feed has been installed in the library, enabling multi-media use and video conferencing. The two nearby schools and the museum are connected using local fibre (dark fibre) connections for high reliability and to reduce operating cost.

The more distant school, with two roads in between, is connected using a wireless link.

Even within the first year this solution has a lower cost than providing a BT fibre connection to each establishment.

Some establishments could have chosen lower cost (but lower capacity) individual connections; however the total cost over the project period, including upgrades would have been higher and an opportunity missed.



Partners



KPSN Report 2009

www.kpsn.net



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