



REGIONAL BROADBAND CONSORTIA BRING VALUE TO ENGLISH SCHOOLS

A white paper compiled by Datamonitor

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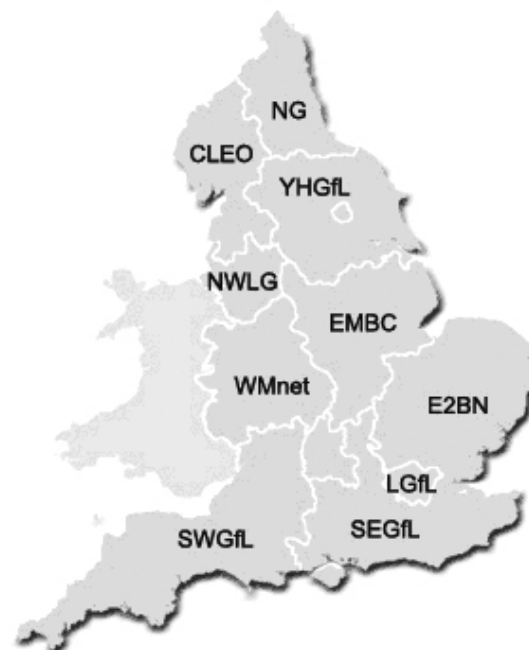
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INTRODUCTION

To improve cost efficiencies and increase roll-out consistency of broadband in English schools, ten regional broadband consortia were created across England, servicing 139 of the 150 local education authorities which in turn serve over 22,000 schools:

- ▶ **CLEO:** Cumbria Lancashire Education Online (www.cleo.net.uk)
- ▶ **EMBC:** East Midlands Broadband Consortium (www.embc.org.uk)
- ▶ **E2BN:** East of England Broadband Network (www.e2bn.org.uk)
- ▶ **LGfL:** London Grid for Learning (www.lgfl.net)
- ▶ **NG:** Northern Grid (www.northerngrid.org)
- ▶ **NWLG:** North West Learning Grid (www.nwlg.org)
- ▶ **SEGfL:** South East Grid for Learning (www.segfl.org.uk)
- ▶ **SWGfL:** South West Grid for Learning (www.swgfl.org.uk)
- ▶ **WMnet:** West Midlands Regional Broadband Consortium (www.wmnet.org.uk)
- ▶ **YHGfL:** Yorkshire & Humberside Grid for Learning (www.yhgfl.net)

Regional Broadband Consortia (RBCs)



If these regional broadband consortia did not exist, each local authority would be forced to replicate much of the organisational infrastructure and resources of a full-scale, regional consortium. Clearly, this would be ineffective in terms of overall:

Deployment and running costs: with savings on individual projects ranging from 10-60% through economies of scale, RBCs make strong financial sense to stretch limited educational budgets.

Inter-operability and rollout efficiency: as the nation's over 25,000 schools work ever more closely together, interoperability has come to the fore. RBCs help schools to do this more quickly and effectively.

Consistency of systems and outcomes facilitating faster, better application rollout: to meet National Education Network targets, as well as those set out at a regional and LA level, central coordination is essential to success. Now, as these targets are further converging at a national level, cooperation in terms of secure access and consistent data structures are even more essential.

The goal of this paper is to demonstrate how the Regional Broadband Consortia (RBC) as individuals and a group consistently deliver these benefits to educational and local authority institutions.

LOWER DEPLOYMENT & RUNNING COSTS

Lower maintenance costs for the core network

Core networks managed by RBCs benefit from greater standardisation across the network, driving lower maintenance costs. At the same time, the sheer scale of each consortium allows it to negotiate better terms on maintenance contracts.

For example, Easynet, a service provider supporting several of the RBCs, estimates that RBCs can deliver substantial savings on both initial connectivity and on-going rental, helping schools to get savings on both their capital and operating expenditure.

Individual RBCs confirm these kinds of results, with solid savings demonstrated by Northern Grid, Yorkshire and Humber Grid and London Grid amongst others. Please note that the figures that follow in this piece are derived by the grids themselves and that some grids have different approaches to quantifying their successes. Further information about these calculations is available from the individual grids upon request.

RBC focus: Northern Grid for Learning

Lower core network charges mean greater savings: In 2001, the core network charges across all partner Local Authorities were £670k p.a. Any institution seeking to replicate this core network infrastructure on its own would face technology costs alone of £200k p.a.

Re-negotiating this contract over three years, the combined power of the Northern Grid RBC has driven down core network charges to £359k p.a., resulting in a net saving of £311k p.a. or £44k p.a. per Local Authority. In real terms, this would result in nearly £1mn in total over three years.

Cheaper, safer connections: the cost for broadband connectivity has been reduced. Use of new broadband technologies is delivering savings of more than £3k per school. Access to the Learning Platform, anti-virus and anti-spam protection and fully resilient, hardware solutions with full back up and disaster recovery is less than £1.2k per primary school. Across all schools, the average cost is £2 per pupil per month for all services. This is less than an average household would pay just for a home broadband connection. Schools and LAs also benefit from reduced hassle, as the Grid provides a full managed service.

Yielding substantial savings across supporting technologies: Northern Grid alone saves its constituencies an average of £6.25mn p.a.

Service required

100Meg Secure Internet
Transit delivered through resilient access circuits

Price through RBC model

£15,000 connection
£25,000 annual rental

Retail price from ISP

£ 28,000 connection
£ 77,000 annual rental

LOWER DEPLOYMENT & RUNNING COST

RBC focus: London Grid for Learning

Strong overall savings: While it can sometimes be difficult to estimate exact savings as one needs to compare like-for-like services, London Grid has estimated that it has saved participating schools in excess of £20m p.a. since 2002, or £120m thus far. That said, as LGfL pointed out, broadband has changed a lot over that period. In 2001, broadband meant a much slower connection with greater latency and downtime. Beyond savings, one of the key benefits of central coordination has been assisting schools with each technological transition.

A far-reaching, resilient network: Participating schools also benefit from faster service, with minimal downtime. The result of regional cooperation through London Grid has been to help create a 10Gbps regional network with over 20 resiliently linked nodes, from which fibre is run to 2,600 schools at varying speeds to suit the needs of different age groups. Of the 410 secondary schools, half are on 10MBit and half are on 100 MBit. Of the 2,170 primary / special schools, half are on 5 MBit and half on 10Mbit.

Cheaper, safer connections: the cost for access to the Learning Platform, anti-virus and anti-spam protection and fully resilient, hardware solutions with full back up and disaster recovery is less than £1.2k per school. This represents a saving of more than £3k per school.

RBC focus: Yorkshire and Humberside Grid for Learning (YHGfL)

Faster, cheaper connectivity: In 2005-06 connectivity cost £1,448,000 (£1,616,700 at 2008-09 prices) for the regional grid and support services with non-resilient connections varying from 2mb to 100mb. Towards the end of 2006-07 and beginning of 2007-08 service redesign and re-procurement took place. As a result, in 2008-09 the authorities are paying £884k for the same service but all have a 100mb resilient connection - a saving of £732,700 in this year alone, along with a much enhanced service. Set up costs to achieve this saving were around £530k, already recovered from savings.

Reduced last mile costs

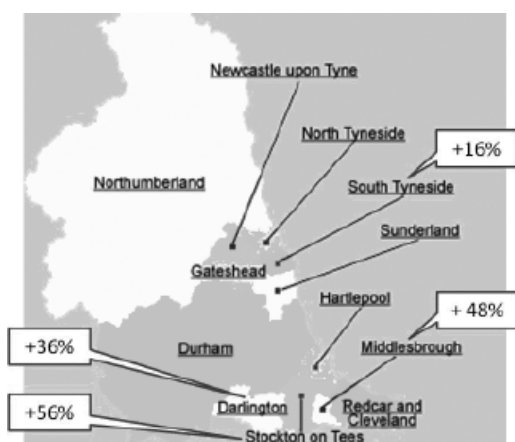
Individually, schools have limited clout in negotiating last mile tariffs. As in the case of core network costs, educational institutions participating in regional broadband consortia have greater power with service providers shielding them from both higher upfront costs and surprise price increases in last mile procurement.



LOWER DEPLOYMENT & RUNNING COSTS

RBC focus: Northern Grid for Learning

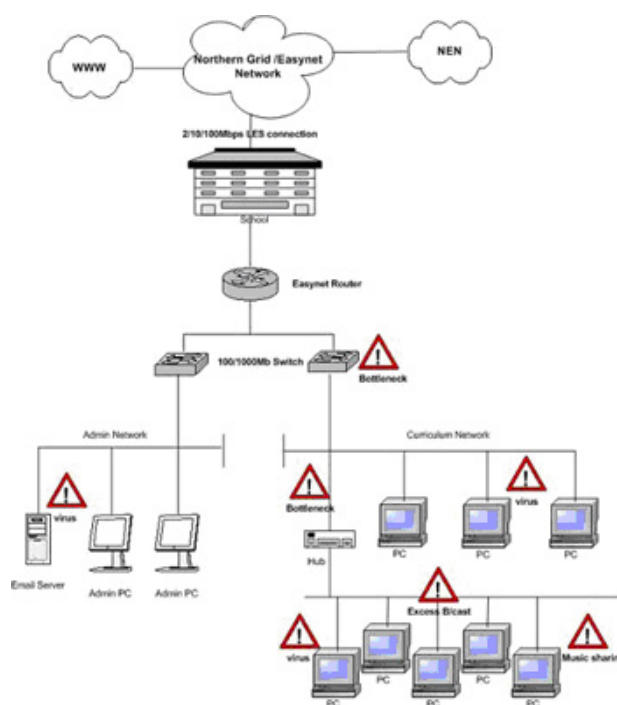
Protection from price increases means greater financial consistency and security: By negotiating a new contract, Northern Grid has improved the terms and conditions for schools. The contract has also already protected last mile users from a BT price rise totaling £352k p.a. The increased last mile costs for each of Northern Grid's participants would have been:



- ▶ **Middlesbrough:** 48% increase
- ▶ **South Tyneside:** 16% increase
- ▶ **Darlington:** 36% increase
- ▶ **Stockton:** 56% increase

Source: Northern Grid for Learning

As well as cheaper, faster connections: The network's hub and spoke design has facilitated attractive last mile charges for schools at an average of £3k for 10mbs and an average of £10.5k for 100mbs. The diagram that follows represents a simplified view of how this very complex network works.



Source: Easynet and Northern Grid for Learning

In contrast with the original old technology broadband connections at £8.5k for 2mbs, this represents substantial improvements with 5x faster speed as well as cost savings and a total net savings of £1.3 mn p.a.

RBC focus: London Grid for Learning

Pooled buying capabilities also mean better, as well as cheaper, service in the last mile: by procuring the fibre connections for all 2,600 London schools collectively, the RBC has become BT's largest end customer anywhere, for this type of service, and hence has commanded special attention in terms of service quality and value for money.

LOWER DEPLOYMENT & RUNNING COSTS

Economies of scale in buying products

Affiliation with RBCs also enables schools to leverage the power of the consortium in buying related software, hardware and services products that are more school-specific. Beyond cost savings, closer ties with other participating schools through the consortium lets educational institutions share in the collective experience of the group, seek advice from peers and establish the foundations for best practice. This inter-institutional collaboration helps schools to provide more consistent computer-assisted and multimedia curriculums and thus a higher overall standard of education.

RBC focus: general

While schools order hardware and software solutions separately from the consortia, having the backing of these larger buying groups has meant savings of 25-30% on average, according to Becta. RBCs and group buying have saved schools on regional procurements, such as for learning platforms (see the London Grid example, “Lower Deployment & Running Costs”) and digital content.

RBC focus: Yorkshire and Humberside Grid for Learning

YHGfL has negotiated significant savings on a variety of applications, ranging from security to video conferencing to specialised musical learning applications. Specific examples include:

Anti spam software: licences have been provided for 886 schools between November 2003 and April 2008. At the time they expire the licences will have been held for an average of 4.5 years, at 50p per licence per year. Comparing this against the best commercial offering (including educational discount of 75% and 5 year pricing) the price equates to £3.12 per licence per year at a cost of more than £790,000. Purchasing this software via YHGfL has saved around £676,000 or about £135,300 per year.

Learning platform: since 2005, schools have purchased Netmedia through the framework agreement negotiated by YHGfL, rising to more than 290 primary schools and more than 40 secondary schools in 2008. This framework agreement includes discounts of more than £100 per primary and more than £250 per secondary, partly dependent on school size. Using typical regional school sizes, this equates to a saving of around £127,200 over the three years, or an average of more than £42,400 per year.

RBC focus: London Grid for Learning

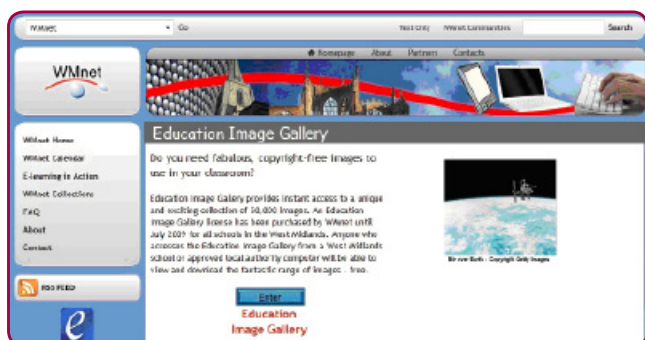
LGfL achieves discounts of 80-90%, when licensing, and hosting premium digital content for all 33 local authorities, compared to the cost of schools purchasing the same content individually. Centralised hosting and authentication also removes an administrative and technical burden from schools, allowing them to focus more closely on the 1 mn students the London regional broadband consortium serves.

By removing and replacing the cost of selling to 2,500 schools to a single sale, LGfL typically licenses premium content for the whole region at one-tenth of the cost which each school would pay individually. LGfL allocates c.£500K for this p.a. And hence the estimated retail value is ten times this.

LOWER DEPLOYMENT & RUNNING COSTS

RBC focus: WMnet

All 2,500 schools in the West Midlands now have access to the education image gallery, an online resource of 50,000 copyright-cleared images through the Becta-funded initiative, JISC collections for schools. Demonstrating the power of group buying, estimated savings are £510k.



Source: West Midlands regional broadband consortium

Projects consistently delivered on or before schedule, securely and to budget

There is a real challenge for educational institutions in balancing comparatively limited individual budgets with the need to protect pupils from dangerous or illicit content and the systems themselves from multiple different types of access by both long-term and ad hoc users seeking to connect to the school's network. The situation is compounded by on-going media reports denigrating the government's ability to meet project timelines and highlighting budget over-runs. One of the more exciting things about regional broadband consortia is that they have one of the best records of all publicly funded ICT projects for delivering projects above specifications, on time and within budget.

RBC focus: Northern Grid for Learning

Delivering consistent uptime: The Northern Grid for Learning has a "state of the art," network which is "fit for purpose". The local education authority partnerships and aggregation has enabled a cost effective and managed broadband network to be delivered to all partner local education authorities and their schools. The integrated and aggregated design across the region has improved the performance, reliability and resilience of the network. Since the network went live in June 2007, there has been no down time and the network has delivered 100% capacity for all users for a total of 645 days up to the end of March 2009.

All local authorities are highly satisfied with the performance and reliability of the network. These views have been gained during individual LA visits.

"One of the more exciting things about regional broadband consortia is that they have one of the best records of all publicly funded ICT projects for delivering projects above specifications, on time and within budget."

MORE EFFICIENT, SECURE ROLLOUT

RBC focus: North West Learning Grid

Centralising applications in a single data bank speeds rollout and fostering of best practice: The North West Learning Grid and the City Learning Centres of Manchester and Salford have teamed up to provide the initial financing for the National Digital Resource Bank which catalogues a variety of educational resources in a wiki-like format. See <http://www.nwlg.org/pdf/NDRB%20FAQs.pdf> for more details.

RBC focus: London Grid for Learning

More consistent data and network security systems and policies across each RBC make for safer, faster roll-out due to greater standardisation

- ▶ **Data Security:** recent publicised losses of personal data and corresponding advice from Becta presents LAs and schools with formidable challenges which the RBC is addressing in both policy and the development of security products such as two-factor authentication, secure remote access and a secure on-line document exchange service.
- ▶ **Network Security:** The RBC consistently achieves the Becta ISP Accreditation standard, and does so in one process, avoiding need for the same process to happen 33 times, if LAs worked separately.

Other programs of interest include:

- ▶ **E2BN's training programs:** One important area of support by the consortia generally is in providing training and best practice policy support to schools and teachers. E2BN offers programs in cutting edge topics like social networking, animated curriculum production and online publishing to help schools and teachers to better use the latest technologies in a secure fashion.
- ▶ **SWGFL's BOB:** a listing of educational blogs helping teachers and schools to keep up-to-date on the latest educational and ICT trends.



GREATER CONSISTENCY OF SYSTEMS FACILITATING FASTER, BETTER APPLICATION ROLLOUT

Project savings & investments create opportunities for better, richer applications in schools

With over 25,000 schools in England, there is substantial pressure on individual schools to maximise the power of computer applications and the internet in the classroom. However, only 39% of teachers use digital learning resources created by others, according to BECTA. At the same time, those schools that do have the luxury of in-house IT departments tend to design them primarily to ensure the greatest network uptime possible, as opposed to focusing on the pedagogic needs of the classroom. As a result, individual schools often find it difficult to identify the best solutions for them. Participation in broadband consortia promotes both the sharing of solutions which can benefit from standardisation across the consortium (e.g. admissions or testing), as well as providing a chance to discuss with peers which applications are best based on actual experience of use in the classroom.

RBC focus: London Grid for Learning

Central coordination creates other opportunities for collaboration in education, such as London Grid's Pan-London admissions register: now established as a respected and 'safe set of hands' the RBC provides other services for education including the Pan-London admissions register (achieving one place per child, for all children instead of some parents holding multiple places in several neighbouring boroughs), and on-line admissions. See www.eadmissions.org.uk for more details.

RBC focus: South East Grid for Learning

Unlocking archives: SEGfL has been a leader in enabling access to archives and film for its member schools. 'Unlocking archives,' a collaboration by the National Archives, British Film Institute, English Heritage and SEGfL, is its latest project to help bring editing and re-purposing applications of archival material from participants to teachers and pupils. An online tool lets users select digitised audio and visual archive assets and edit and reorder them as they wish. They can then replay, store, share, and export results with 'drag and drop' tools.

GREATER CONSISTENCY OF SYSTEMS FACILITATING FASTER, BETTER APPLICATION ROLLOUT

RBC focus: safety successes

- ▶ Recognising safety challenges, South West Grid supports a range of best practice collaborations between schools: 61% of UK teachers find e-safety in the classroom difficult to maintain. South West Grid is using its scale and experience to provide e-safety conferences, podcasts and literature to help teachers better protect their pupils and identify best practice. Its site also takes into account a range of stakeholders from parents to pupils to teachers in a dedicated forum section for ease of discussion. See <http://www.swgfl.org.uk/safety/default.asp> for more details.
- ▶ Northern Grid shares its e-safety resources with schools across the country: NG has developed a high reputation for supporting schools and LAs in developing an understanding and awareness of safeguarding issues. Its resources are available on the NG portal – www.northerngrid.org and nationally through the national e-safety NEN site – www.nen.gov.uk
- ▶ A regional forensic software solution is saving schools over 50% vs. Individual school costs.

RBC focus: West Midlands Regional Broadband Consortium

Creating hardware-independent whiteboard applications for schools: building on efforts by constituent LAs, such as Herefordshire, Dudley and Stoke, the goal of the 'interactive whiteboard project' is to help increase the effectiveness of the use of whiteboards in the classroom - an under-utilised technology asset in some cases, which can benefit greatly from broadband access. See <http://www.wmnet.org.uk/14.cfm> for more details.

The NEN also helps individual RBC's to deliver more consistent outcomes

Built upon JANET infrastructure to Becta approved standards, the NEN is a private, dedicated learning broadband network. It brings together a community of diverse education users, providing a connecting interface for all Learning Grids in the UK and their partners. The NEN allows them to quickly and cost effectively share information, collaborate, contribute to best practice and access high quality resources. It also allows reliable and scalable access to communications technologies, such as video conferencing.



SUMMARY: ON-TIME, ON BUDGET, EXCEEDING EXPECTATIONS AND CONTINUING TO DRIVE THE EDUCATIONAL AGENDA FORWARD

The original goal of the RBCs at their inception in 1999 / 2000 was to ensure that English schools had high-capacity broadband connections. Over the last decade, RBCs have gone beyond this to deliver a much wider array of benefits to their constituencies. From lower deployment and running costs to increased efficiency and consistency of systems, regional broadband consortia in England deliver strong results across the country, including::

- ▶ **Driving down both deployment and running costs;**
- ▶ **Speeding project delivery time, while enhancing security;**
- ▶ **Increasing systems' consistency;**
- ▶ **Helping to roll-out applications better and faster.**



Owing to these on-going successes, RBCs will continue to play a strong role in helping to drive the future plans of the individual schools, LAs, RBCs and the overall national education strategy by meeting both practical needs and upcoming targets, including:

By 2009: “provide a national repository of digital resources that enables access to shared resources by LAs, schools and colleges.” Related challenges for individual RBCs and LAs include:

- ▶ Ensuring efforts to build individual repositories, such as that created by the Northwest Learning Grid, fit back into the national agenda in terms of data structures and standards.
- ▶ Supporting the searchability of this content for fast and accurate access by all types of users.
- ▶ Streamlining content: schools, LAs and RBCs all have reams of great information, but much of this information is not fully indexed and can be redundant with that held by other sources. Information in rapidly changing areas such as technology core courses or modern history will also need special attention, as their timeliness is crucial to ensuring their accuracy. Efforts at all levels of the educational system will be required to support this.

SUMMARY: ON-TIME, ON BUDGET, EXCEEDING EXPECTATIONS AND CONTINUING TO DRIVE THE EDUCATIONAL AGENDA FORWARD

By 2010: “challenge all local authorities to have in place policies, practices and infrastructure which are consistent with the safeguarding of children in a digital age...” Related challenges for individual RBCs and LAs include:

- ▶ The need to work with a range of technology partners at local, regional and national levels to:
 - ▶ ensure appropriate access, clear understanding across all existing and emerging access points (from desktops / laptops to USB memory sticks to mobiles to securing wireless LANs)
 - ▶ identify points of physical / process failure in policies from the banal such as ensuring passwords are protected and not left on post it notes by PCs to creating age specific Internet search and access restrictions to allow students access to age-appropriate content.



By 2011: “...implement identity provision for all students and staff to enable single sign-on, secure access to local, regional and national education resources and services.” Related challenges for individual RBCs and LAs include:

- ▶ As with the security requirements for 2010, controlling access across all kinds of devices and to change as students grow older and can access more mature content.
- ▶ Supporting the mobility of access as students and staff move between different roles and schools on a consistent national basis.

By 2012: “...implement secure and effective data sharing between appropriate information systems, ensuring integrity of data and maximizing working flexibility.” Related challenges for individual RBCs and LAs include:

- ▶ Continued cooperation across all levels, with an effort to creating best practice programs and providing additional support for laggards to increase national consistency and improve overall outcomes.
- ▶ Successful achievement of earlier security and data repository efforts.

Source: National Education Network Development 2009-2014