

NETWORK SOLUTIONS

Parkside School:

Case Study for the implementation of structured LAN and WLAN infrastructure in a secondary and sixth form school.

Introduction:

This case study aims to describe the benefits of a secondary and sixth form school implementing a structured and well designed LAN and WLAN infrastructure and highlight why DIS should be considered and chosen as a long term partner to deliver these solutions.

The Partners:



Parkside is a full 11-18 secondary school created as part of the Bradford local education authority's reorganisation of schools. It was previously a middle school and latterly a secondary school. It opened in September 2000 with years 7, 8 and 9 with a plan to rebuild from the old 1970's building in a multi phased structure, adding a year at a time and culminating in a brand new school in 2006

Students are drawn from both rural and urban areas of Bradford and Keighley, but mainly from four local primary schools. The school is very popular and has been oversubscribed since it opened.

The school has been awarded Investors in People status. It has gained the Artsmark Gold award in recognition of its commitment to the performing arts. It is actively involved in the European Comenius project, with links to schools in Germany, Italy, Romania, Poland and Spain.

DIS Formed in 1983 specifically to supply specialist networking services to major UK VAR's and end users within the computer industry. They are specialists in the design and installation of Cabling Infrastructures, along with the design, Installation and Support of a wide range of Network Hardware solutions including: Wireless, Security, VPN, Voice and IP Communications

DIS has substantial Installation experience spanning some 24 years. With our own in house design and Engineering teams working on a daily basis within the Commercial, Retail, Manufacturing, Foods, Education, Health, Local Government, Home Office and Ministry of Defence Sectors.

DIS has held ISO9001.2000 Quality Management System accreditation since 1997 and works in partnership with it's sister company d2 Information Solutions who are specialists in providing IT Solutions for SME and mid-market companies, including server virtualisation, IT storage, server consolidation and data replication.

The Problems:

DIS became a technology partner to the school in 2002 and consulted on the installation of a network infrastructure to cope with the demands of an ever increasing and changing IT service. Bottlenecks, degraded performance and outages were causing great problems to the school and it's students, because it was a single, large, flat network.

Designing a Future Proof Solution:

DIS designed a new network solution that would provide optimum performance and ease of management. We provided a strategic design of the network based on how it would be at the end of the building process, and then rolled back the separate elements to accommodate the building plan with three main phases. As an initial, emergency measure, a VLAN router was installed and new configurations implemented. This immediately improved performance and security at the same time. As DIS moved forward we recommended the introduction of layer 3 core switching and a resilient Gigabit fibre backbone. The IT server room and offices were going to have to be moved on more than one occasion because of new building work, but DIS' design of the fibres and cabinets, and with project management, handled this with little or no disruption.

Specific Demands of a School:

As a network for a school, there is an upsurge in activity at the start of a lesson where users are logging in and retrieving files. There is another spike at the end of the lesson where work is being saved to the networks' storage servers and users log off from the active directory. Because of the network design, the wired and wireless infrastructure copes easily with the payload even when some of the servers are under heavy workload. This would not be the case with a standard "flat" network topology.

Resilience via the Spanning Tree protocol is required as every class registration is done over the network and critical examination sessions require 100% uptime and reliability. All of the schools departments and facilities utilise applications over the network today and this is only expected to increase in the future. Access Control, CCTV, Multimedia, Remote Work, Home Work, Tests and Educational Resources are all delivered via the network; therefore it is now the lifeblood of the school.

Going Wireless:

The main reasons behind the installation in early 2007 of a wireless network were to enable Internet access to sixth form students with their own laptops and to easily accommodate guest speakers with their own laptops in the conference suite. Because of our success at the school and track record of being wireless specialists throughout other sectors, DIS were consulted for this project and won the bid to deliver the new wireless network solution.

This has been very easy to achieve and has reduced the amount of workload on the IT department involved to give these users Internet access, which at the same time is still secure, monitored and controlled. All access to the internal network is limited to authorised areas and Internet usage is controlled and monitored via the IT team.



Technically Speaking (the five nines - 99.999% uptime):

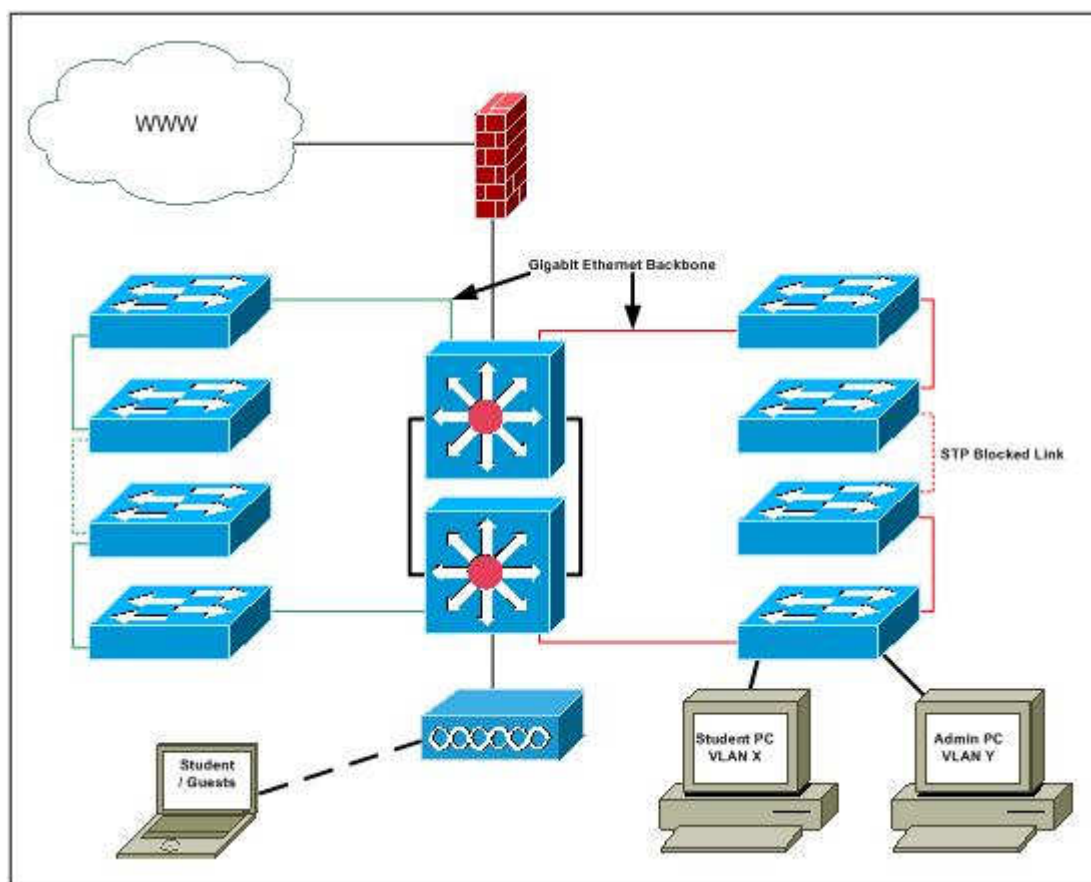
Technically the replacement network (installed 2004) uses VLAN and Spanning Tree technologies to offer separate “virtual” networks and routing failover so that any client on the network is secure and limited to accessing the services it has authority to use. There have been no network outages since DIS installed the Cisco 3750 series stack, forming a virtual chassis powered network.

The wireless addition has kept sixth formers happy and visiting users welcome the easy and fast access to the Internet. The Gigabit fibre channel resilient core network is ready to cope with any increase in numbers of users and additional future services that may be introduced. Parkside now has a trouble free, scalable network that is easy to manage, enabling the IT staff to get on with managing application service delivery and new projects instead of dealing with network problems.

Network Diagram

Below is a generic network diagram to show how the completed LAN and WLAN is designed at Parkside. Obviously for security, some of the detail has been removed. It does show the core switch virtual stack and the various network segments that run off that core. It shows the WLAN segment which is then routed to the proxy server/firewall and out to the Internet.

It also shows a student p.c. which accesses the Curriculum VLAN and a staff p.c. which is accessing the Admin VLAN. Both of these are physically on the same network, but on different virtual networks. They both access the same Internet service and the decision as to which services can be accessed is controlled by the network administrator as per the schools usage and security policies.



Recommendation:

John Ranklin and Brian Smith are in charge of the IT and Network services at Parkside and have found DIS very easy to work with on resolving their issues and installing and delivering the network infrastructure. They would recommend DIS to any other schools (and already have) and welcome enquiries directly to them.

Further Information and Contact Details:

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