

# ZyXEL



ZyXEL adds wireless access and unified threat management to the curriculum at St Joseph's Primary School





St Joseph's Primary School

“One of the school's development plan objectives was to embed ICT throughout the curriculum and our wireless network has played a huge role in helping us meet that goal. In fact, we're using wireless everywhere up from reception classes to Year 6.”

**Juanita Dunlop Head Teacher of St Joseph's**

## Overview

### Challenges:

- Internet access was confined to the ICT suite and the teacher's staffroom
- The log-in process for classes in the ICT suite was extremely slow due to poor network configuration
- The speed of the network was slow, making it time-consuming for pupils and teachers to save files and images
- The school needed a secure wireless network that only students and staff could access
- The solution had to be installed without having an impact on students and staff

### Benefits:

- The new robust and scalable wireless network has been configured to provide maximum security protection with minimum system configuration required from staff
- Students and teachers can access the Internet from anywhere they like on the school grounds giving them more flexibility and improved quality teaching time than before
- The school was able to meet one of its development plan objectives which was to embed ICT throughout the school's curriculum

### ZyXEL wireless solution for 205 student primary school:

- 9x ZyXEL NWA 3100 wireless access point
- 10x ZyXEL G170S wireless network cards
- 1x ZyXEL 35 UTM firewall
- 2x ZyXEL ES-3124 layer 2 plus Ethernet switches
- 2x ZyXEL ES-3124PWR power over Ethernet switches
- 14x ZyAssure support packs

## About St Joseph's Primary School

St Joseph's Primary School is located in Bracknell, Berkshire. It is a state-primary school with approximately 205 students. Although the school had Internet access and provided students and teachers with access to PCs and laptops in fixed locations, it wanted to improve and upgrade its current infrastructure so that students and staff would have the most up-to-date technology to help make their studies a success.



## The challenge

St Joseph's had a number of PCs & laptops spread around the school to allow both staff and students to have access to the Internet. The majority of these were in the central ICT suite at the school, which was the main area where students and teachers would go to access computers for classes and to prepare for upcoming lessons. However, teachers could also access the Internet using their laptops in the school's staffroom.

The school had a 2Mbps link to the Internet but because of the way the network had been set up, as data was transferred from the school across the Internet or vice versa, it had to travel through hubs which meant that the school was only getting about 40% of their actual bandwidth. While this wasn't affecting the students' ability to surf the Internet, when a whole class of children tried to sign into the PCs in the ICT suite at once, the

process would be extremely slow and many students could not sign in at all. The ageing equipment in place was also having an affect on network speed. In addition, although teachers were able to access email via an off-site Microsoft Exchange service using Outlook, students had no access to email.

St Joseph's was keen to implement a wireless network which would free students and staff from always having to be in the ICT suite if they wanted to use a computer for school work, researching on the Internet or for email. A wireless network would enable students and staff to be able to do all this from anywhere on the school grounds. However, it was important that the entire installation was completed quickly with no disruption to students or staff.





Enabling wireless in the ICT suite

## The Solution

ZyXEL, in conjunction with reseller partner J Brands, spent several days on site at the school assessing the IT infrastructure needs. From this analysis it was decided that the school would be provided with a wireless network utilising an 802.11a/b/g system, created by using an end-to-end selection of ZyXEL's products. This would be completed over a three to four day period during an agreed school holiday so as not to interrupt classes.

In order for the school to go wireless, ZyXEL provided them with a variety of products including nine wireless access points; ten wireless cards for the school's laptops; four switches; fourteen ZyAssure support packs, ZyXEL's support service, on the access points and switches.

However, before any work could begin ZyXEL worked with its reseller partner to undertake a wireless and cabling site survey to establish where the wireless access points should be located in order to provide optimum coverage, as well as to discover the power and data cable requirements for implementing the proposed wireless system. The survey also had to make note of the building layouts and any relevant structural characteristics that would impact the project, as well as any health and safety issues that needed to be considered before the project commenced.

After the findings of the survey were analysed, the first step was to lay the foundations for the new wireless network. This meant installing new cabling throughout the school so that the wireless equipment could be plugged into it. The CAT5 cabling chosen also supported faster data throughput speeds so that the network would operate as quickly as possible.

*"J Brand, the reseller involved in the project, was very efficient and they took care to finish everything to a high standard - even tidying up our old wiring system for us," said Juanita Dunlop, Head Teacher at St Joseph's. "Both J Brand and ZyXEL have exceeded our expectations in terms of the level of service they have provided us."*

Once the cabling was installed, nine NWA 3100 wireless access points were deployed throughout the grounds in order to meet the school's requirement of having wireless access campus wide. The wireless access points were powered by ZyXEL ES-3124PWR Power over Ethernet switches, with each switch installed into existing cabinets located throughout the school, with the exception of the ICT suite where a new and larger 9U (a "U" is a unit of measurement used to describe the height of devices in a server rack. One "rack unit" is 4.44cm high) cabinet was placed.



Book research in the library

## Keeping the Network Secure

In order for the new wireless network to stay protected, a ZyXEL 35 Unified Threat Management firewall device (UTM) was installed and connected between the school's LAN infrastructure and the Internet router. As an all-in-one security device, the firewall monitored incoming and outgoing network traffic and protected the school against a variety of potential security threats. For example, as well as providing anti-spam and anti-virus protection, its content filtering functionality allowed the staff to block access to websites that they didn't want pupils to visit, as well as intrusion detection and prevention which blocked the use of applications such as instant messaging and peer-to-peer file sharing. As St Joseph's did not have any onsite technical staff, the device was configured so that no further alterations to the network settings would be required.

*"Understanding St Joseph's unique requirements and needs were essential to making the project a success. For example, when designing and implementing their wireless network we had to make sure that all the equipment was configured to provide maximum protection with minimum intervention," said Lee Marsden, sales manager, ZyXEL. "By setting their firewall in transparent mode we were able to ensure that all of the school's network traffic would be analysed for potential security threats such as viruses and worms, but would require no ongoing management from staff."*

Once the infrastructure for the wireless network was installed, the school's PCs and teacher's laptops needed to be updated in order to take advantage of the new wireless network. ZyXEL G170S wireless cards were installed into any laptops that were not capable of accessing the new wireless network.

ZyXEL supported the project by providing pre-sales support working in conjunction with the reseller to deploy the solution.

Once the installation was complete, ZyXEL, in conjunction with J Brands, provided a user guide and demonstration to explain how the new devices and network worked to ensure that St Joseph's would receive the proper support at all times. In addition, all of the installed equipment is covered by ZyXEL's two year manufacturer warranty and the school is receiving ZyXEL's ZyAssure service and support packs which means that they have access to 24 hour technical support as well as same business day replacement of equipment, so that the school will never be without its network. A copy of the configuration settings for all devices at the time of install has been stored on ZyXEL's corporate network, so that in the event of a device failure this configuration can be used during the restore, giving peace of mind to St Joseph's staff, and means that they will never have to hire a dedicated IT team.





Bring teaching outside of the classroom

## Bringing the Benefits of Wireless to Life

Since the wireless network was installed, students and teachers have found it much more convenient to use the Internet, demand for the laptops has grown significantly and the number of people using the network has risen. One of the reasons for this has been that the general accessibility of the Internet has increased due to the new wireless network, allowing students to use laptops in the playground, whilst teachers can work anywhere they like instead of being confined to the ICT lab or staff room.

*"Prior to the solution, we found that the teachers weren't using the Internet as often as they would have liked to, but now the teachers find that the extensive variety of resources available on the Internet supports pupils' learning and helps them to plan effective, relevant lessons," said Juanita Dunlop, Head Teacher at St Joseph's. "Now it is much easier to integrate ICT activities into lessons which makes them so much more enjoyable for the students and has opened up group work to different areas of the school. Since the installation, we've also found that teachers are using much more of the school grounds to prepare and teach their lessons even taking the lessons outside in the garden."*

The success of the new wireless infrastructure has meant

that ICT now forms an integral part of the school. The new infrastructure has doubled the throughput speed of the network and Internet access is much faster than it was previously. ICT also supports the lessons conducted at the school, extending the learning of the children. For example, pupils now look forward to being taught lessons on fractions in groups; where before the slow speed of the network meant that group work was difficult and frustrating. Students are also able to do grammar activities using interactive materials on the BBC website as well as using the Internet extensively for research based activities. Staff have found that the new ICT environment has not only helped to ensure the pace of their lessons is easily maintained but that it has played a significant role in the improved motivation and behaviour of the children.



Using wireless for group working out of the classroom

## ZyXEL Helps Meet School's Development Plan for ICT

*"One of the school's development plan objectives was to embed ICT throughout the curriculum and our wireless network has played a huge role in helping us meet that goal. In fact, we're using wireless everywhere up from reception classes to Year 6," continued Juanita Dunlop. "It's also been lovely to see that the children are enjoying working on the laptops a lot more now that the speed has improved and they are not getting frustrated by slow connections. We've also been pleased that the solution has given teachers so much flexibility and has even allowed them to bring the classroom outdoors to effectively utilise our outdoor learning environment."*

Feedback from the students themselves has also been **extremely positive**: *"There are now a lot less wires and we don't need to search for the network anymore - we can just get onto the Internet everywhere," commented Alex and Cameron, Year 6 pupils at the school. "We also like that it makes learning fun because we can search for things and learn about them on the Internet which we couldn't do before when we were only writing in our school books. The Internet is a lot more reliable and doesn't break down anymore and it only takes about five seconds to start your machine up at the beginning of the lesson so we don't have to spend time waiting."*

The increased speed and robustness of the new network has also provided the foundations to support the school's ICT needs in the future, including the safe introduction of email accounts to students. ZyXEL has also gone the extra mile to ensure that St Joseph's ICT infrastructure is "future-proofed" by providing an additional wireless access point for a new open teaching area extension to the school which is currently being built, as well as providing extra wireless cards in case the new laptops the school is soon to purchase do not have wireless access.

According to Marsden, feedback from the staff and students at St Joseph's has been extremely positive. *"The students and staff are extremely pleased with the freedom the new wireless network has given them. In particular, the teachers love it because they can now freely walk around the school with their laptops and still connect to the Internet or check their email instead of being tethered to one spot. However, the best feedback we've had is that the students and staff now feel assured that they have a safe and secure wireless infrastructure that will grow alongside the school and continue to meet their ICT needs over the years to come."*

## **About ZyXEL Communications**

ZyXEL Communications Corp. (TSE: 2391), headquartered in Hsinchu, Taiwan, is the world's leading residential gateway provider and was recently ranked as Taiwan's First "Green Enterprise," and the second best "Green" Company in Asia (2007 CG watch, Asian Corporate Governance Association). ZyXEL's comprehensive Internet Protocol-based (IP) networking solutions include access multiplexers, customer premise equipment, Internet security and Wireless LAN equipment, enabling high-performance network services for SOHO, small to mid-sized businesses and service providers. ZyXEL works closely with worldwide network equipment vendors, telecommunications companies, ISPs, and other major businesses. For more information, visit the company's website at <http://www.zyxel.com>

# **ZyXEL**