Pennine Camphill Community College: Improving network efficiency for small organisations

Summary
Ideal for any small organisation, Pennine Camphill Community College found an open-source solution to an overloaded network that, at the same time, solved issues surrounding e-safety and e-security. Its solution increased the efficiency and flexibility of the network, saving money, staff time and providing a more environmentally friendly option.

About Pennine Camphill Community College
Pennine Camphill Community College offers young people with moderate to severe and complex learning disabilities the opportunity to develop skills for the next stages of their lives. The College has residential and day students aged between 16 and 20 on admission. In total, there are 60 staff and 40 students. The College consists of five residential houses, two teaching blocks and one main administration office.

The challenge
Pennine Camphill was running out of network space. ‘Collisions’ produced by too many machines logging in brought down the network, including its administration, which proved a difficult problem for William Taylor, Vice Principal, to resolve. The problem was becoming more critical as the College adopted a management information system (MIS) dependant on the network. The same network is used for both staff and students so problems affected the whole College. One solution would have been to purchase multiple switches to separate out traffic and run a higher-level network. However, at around £800 per switch, this was too expensive and can often lead to problems with equipment connecting to the new network.
The activity
When the firewall went down, the initial plan was just to rebuild it. However, research uncovered Untangle, an open-source network gateway that could replace it. Untangle provides a number of applications in a free-of-charge download that can manage a network and provide a number of security products, such anti-spam and anti-virus filters.

William downloaded Untangle on to a number of boxes to split up the network and reduce the number of collisions. He also signed up to some of the commercial add-ons, as this was still cheaper than buying extra hardware. He put in cut-down versions of Untangle around the switches on site. There is now an Untangle box between each of the residential houses, the teaching blocks and the administration office and the main network, effectively creating an individual network between each site.

The outcomes
The result was the creation of an easy-to-run, flexible and efficient network. William found that Untangle was more intuitive than the previous software and that it could run on the desktop instead of requiring two network cards, as other firewalls require: "It installs itself. It doesn't have to go on a formatted machine and you can put other software on the machine as well, such as NTOP." NTOP is another open-source programme that can identify machines taking up too much bandwidth.

As Untangle means that each part of the College site effectively has its own network, William can therefore shut down a part of it without affecting the whole system. This means it is less stressful for William when there are problems, as the unaffected parts of the network can remain functional, making it easier for William to meet his targets for keeping staff and students online. "It's all discrete, problems in one area don't affect everyone else," he says, resulting in less downtime.

William can also better manage the network as he can use the web filter to allow a percentage of bandwidth per software. For example, he can limit the use of audio and video websites like YouTube that may take up a lot of bandwidth.

The only issue was in the transition, when work had to be done to clear caches and reset machines, but the affect was temporary. William advised that, "once it's been running a week, no one notices they're on a different network."

The impact
Saves money
"[We have] saved a couple of thousand on what we were going to do – use propriety software to look at network performance monitoring tools," says William. He has avoided the cost implications of upgrading to a larger network, using "a software solution for what would have been additional hardware costs."

Commercial options can charge a lot for the same service. William says: "They may at one point have been more reliable and better but I'm to be convinced there is any point in buying any of the big names where you're just paying more for it."

Saves time
The new system has freed up time for William as maintenance is cut down. William no longer has to check the logs every day. Instead, he only checks them if there has been
a problem.

Untangle updates itself, saving William time on updating each machine individually. In particular, the automatic update on the spam filter saves him time: "Every week I had to go in and look at the stats and see which mailboxes were being targeted the most, move around the licences if it was necessary and then come back out and monitor it again. With the spam filter on Untangle now, it just does it, everybody is covered, there’s no limit to the number of machines and licences...so that works quite effectively."

Had the College bought the hardware to expand the network, William would have had to manage the extra switches, giving him extra work. There is still one high-level switch that detects collisions, but it can now detect which area is causing the problem, which cuts down on the time it takes to fix.

Addresses e-safety and e-security
The web filter enhances the security of the network by blocking viruses, spam and other malware. It is now all handled centrally via the Untangle box, which makes it easier for William to manage. The result is that spam "has gone down to about 10% of the level the College had".

The College’s responsibility to keep the students safe online is also enhanced, as William now has the flexibility to create different usage policies for staff and students. Each area within the College has its own firewall so William can set different rules for every area, meaning that staff in the administration office can have access to websites that are blocked in the residential areas. Similarly, social websites can be made available in teaching areas when being used for learning but banned from the residential areas. “It’s a way of zoning your network,” William says. File-sharing websites can also be blocked to prevent illegal downloading.

Uses sustainable methods
Untangle was downloaded on to equipment that was considered near its end of life. Usually, equipment is replaced every three to four years but Untangle works on the older equipment, providing a sustainable solution.

Useful links
Pennine Camphill Community College
Untangle

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