

Small School, Big Tech



By Andrew Schwab

I am an IT Lone Ranger. I wear many hats. I teach kids about computers. I go to CALPADS trainings. I sit in on management meetings. I keep ten-year-old desktops running and I plan for E-Rate. I'm pretty much IT. Well, except for Danny Silva, one of those tech-savvy teachers that can run interference with users, train teachers and make the PA system and projectors work. Every Lone Ranger needs a Tonto, and together Danny and I have done our best to bring big tech to our small school. We've been fortunate to have the support of our administration along the way.

Some of the challenges we face as a small rural district of 550 students are likely all too familiar. They include funding for technology, a plan, technical skills, time, student access to computers and the Internet, network security, centralized storage, bandwidth, and, oh, did I mention bandwidth? Over the past seven years, we've managed to address most of these challenges in some cost saving and creative ways.

We increased student access to technology through the use of Windows Server 2003 terminal services and the repurposing of old (and obsolete) hardware as classroom student computers. We tried several thin client configurations before finally set-

tling on a free solution from 2X.com that allowed us to run one thin client operating system across a diverse set of desktop hardware.

We built a gigabit network backbone on HP Procurve, eliminating annual hardware and software support costs. I wanted to build services on top of a solid network foundation that would not be at the mercy of fickle budgetary cycles. HP's free lifetime hardware and software support fit the bill. Not to mention that Procurves were cheaper than Cisco products. That meant we could deploy more PoE and gigabit ports with the same budget than had we stayed with Cisco. I let my CCNA expire and haven't looked back.

When it came to security, we fell into our current solution while looking for a web filter. We were having issues with our county-provided web-filter solution and had no local control of the settings. Web 2.0 sites that worked one day would be blocked the next, and we got tired of having to ask nicely to have them unblocked. I did a Google search, found a product called Untangle, downloaded it, installed it on an old desktop and was filtering the Internet in a few hours. It was easy to configure and included additional features like intrusion detection, protocol control, Quality of Service, VPN access, anti-virus





and spam filtering. All these features in one GUI console, running on one box. Needless to say, we dropped the county web-filter service soon after.

When we upgraded our Internet connection to a 100Mbps Opt-e-man circuit last year (bandwidth!), we needed a firewall. Not having a Cisco security appliance laying around, I flipped the Untangle server (now running on a Dell PowerEdge 1850) into firewall mode, and it's been running like a champ ever since. We ended up purchasing support from Untangle, but, the free features out of the box were a great place to start.

On the storage front we started out with a Dell 745n NAS server. When that filled up, we attached a Drobo with four 500Gb drives and moved noncritical files over to it. The Drobo is a nice little device, but it's not very fast. The next evolution of storage for us was in backups. My computer class built a system using Intel desktop parts. We installed six 1Tb hard drives and used the FreeNAS operating system to turn the box into an iSCSI server. We put the FreeNAS box in a building far away from the server room and

then mounted it over the network on the backup server. It's basically a poor man's SAN. Having managed an HP SAN before, this is easier. We'll be retiring the eight-year-old 745n over summer once we build in some redundancy with two FreeNAS boxes front ended by a pair of virtualized Windows File Servers running DFS.

Most recently, we migrated off of Exchange 2007 and onto Google Apps for Education. Having administered Exchange going back to the version 5.5 days, I did not make this decision lightly. But in the end I had to ask myself, was my time best spent worrying about an Exchange server or should I be more focused on integrating technology into the classroom? I like that Google Apps for Education is so easy to administer that even Danny can do it. It also comes with collaboration and communication built in, is fairly intuitive, and requires no client. No more Outlook!

By far, our biggest challenge moving forward is our student classroom computers. Software, we can get for free; but no matter how hard I try, I can't seem to find

free hardware. Thin clients were going to be our salvation as we trickled down computers into the classrooms. Unfortunately, the web has changed. Where a thin client was fine for doing Internet research and writing reports in Office five years ago, the multi-media rich interactive web of today does not work in the thin client environment. What's a small school to do?

Well, our small school is going netbooks. Yes, iPads are hot right now and everyone is buying them. We'll pilot some as well, I'm sure. But iPads are all about apps, and apps cost money. We've spent years moving away from apps and to the Web. Netbooks have the full Internet. We can buy almost two netbooks for every one iPad. Our netbooks run Jim Klein's ubermix. It's free and comes with thousands of free apps. Ubermix netbooks are so easy to manage, teachers can do it. As Lone Rangers, Danny and I deployed 80 netbooks to two classrooms in a day and a half. Most of that time was spent unboxing and setting up the carts. I haven't had a netbook-related call yet. They just work; and if for some reason they don't, the teacher can reset them in five minutes. They don't have to be locked down and controlled. Kids can explore and learn on them. They have keyboards. They can print. At \$284, they are affordable. If you're a small school and are thinking about a one-to-one program, check out the ubermix at goo.gl/Kqtlq.

Hopefully, I've given you some ideas of what is possible for small schools to achieve with limited resources and a little outside the box thinking. If you would like to follow along with Danny and I as we continue to bring big tech to our small school, please checkout our Small School Big Tech Podcast at <http://smallschoolbigtech.com/>. ■

Andrew Schwab is the IT Director for the Le Grand Union High School District. He has worked with the district since 2003 and has been known to consult from time to time. He is currently finishing up the Administrative Services Credential program at CSU Stanislaus and was recently accepted into the CETPA CCTO Mentor Program. In his spare time, he co-hosts a podcast about schools and tech. He can be reached at aschwab@lghs.k12.ca.us.