Astaro · www.astaro.com · info@astaro.com
Bau 33a, Amalienbadstraße 36, 76227 Karlsruhe, Germany
Three New England Executive Park, Burlington MA, 01803 USA

Pikes Peak BOCES - Firewall Saves Rural School Districts Money on Internet Access and Keeps Out Attackers

A multi-faceted firewall, with technology from two emerging companies, enables seven rural Colorado school districts to cut their monthly Internet access charges, to block all unauthorized access into the network and to block Web sites students aren't allowed to access.

Based in Colorado Springs, Colorado, the Pikes Peak Board of Cooperative Educational Services (Pikes Peak BOCES), a not-for-profit cooperative, enables about 22 school districts to pool monies and share a variety of resources, such as special education teachers and systems administrators.

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Since telecommunications charges for Internet access are astronomical for schools on the plains and some types of communications lines might not be available, Pikes Peak BOCES acts as a service provider enabling seven rural school districts to connect their local area networks to the Internet via a third-party high-speed network.

Network access for these school district's 25 servers and 2,000 desktops, used by 5,000 students, consists of both a 7 megabit DSL line and a T1 (with public IP) to the Internet.

Robert Cox, technology consultant for Pikes Peak BOCES, says that his organization provides an invaluable network service that these school districts couldn't afford to do and, moreover, don't have the expertise for it – that is network security.

Since the Pikes Peak BOCES network consists of several different autonomous networks, from nine different locations, a firewall, which acts as a secure gateway in and out of the Internet, controls the exposure the different networks have to each other. It keeps each school's network from attacking each other, from attacking the Pikes Peak BOCES' network, as well has keeping out attackers from the Internet.

With the number of computers accessing the Internet, Cox needed the firewall to perform other functions, such as Web content filtering, and proxy caching to reduce bandwidth.

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He initially thought about using a dedicated hardware-based firewall rather than running software on a server. Cox says, **"Products from Checkpoint and some others proved too expensive for us.** The Microsoft Proxy server, the ISA server, couldn't handle a network our size."

Finally, Cox focused on a Linux-based product that could turn an inexpensive server into an all-purpose security device. The Astaro Security Linux, from Astaro Corp., of Burlington, Massachusetts, handles the firewall, the Web content filtering, the e-mail blocking, virus protection, and the bandwidth management. He installed the product on a $1,500 off-the-shelf, Pentium 3 server with 512 megabytes of RAM.

The security appliance acts as a firewall to control the way all of the different platform Web servers, which Pike Peak's BOCES manages, are exposed to the Internet. For example, Cox and his team can watch the Astaro logs work in real time and see various attempts to attack or exploit any software vulnerabilities. Cox says, "This capability prevents attackers from trying to take advantage of Web server software we don't want exposed to the Internet."

"... the software security appliance helped to save some school districts more than ***$1,200*** *a month on Internet access..."*

Astaro Security Linux is bundled with technology licensed by Cobion of Kassel, Germany providing the don't-miss-a-Web-site content filtering capability. The filter blocks spam and can block access to websites containing objectionable content. The filter draws upon a URL database of some 15 million entries that are based on 2.1 billion previously analyzed web pages generated from a global data center with 1,000 servers that continuously update the database with 100,000 new entries daily. Each Astaro software security appliance automatically runs the users surfing requests against these content filters through a URL cache, which is updated with new URLs by this content filtering service. New sites not yet classified are automatically scheduled for indexing and are added to the database within 24 hours.

With help from Astaro's technical support team, Cox adjusted the URL filtering categories so that each school district could have its own content filtering profile. Cox says "The product was catching more than what some school districts wanted. That was a good thing." All school systems decided to filter pornography; so no one can bypass the Pike Peak BOCES' security. He adds, "Some of the schools with martial arts classes wanted to allow weapons and use supervision of students as the ultimate filter. For example, if a marital art's site is blocked because it sells knives, then the students wouldn't be able to order their uniforms." Astaro does provide a whitelist inclusion

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capability so that select websites within a blocked category could be configured to be allowed through.

Astaro's own technology enables Pike Peak BOCES to filter and to block e-mail carrying attachments infected with file types known to carry viruses, such as executables and visual basic scripts. Astaro's anti-virus technology allows for scanning of infected content in e-mail, as well. Cox put the software security appliance to task during an outbreak of the Klez virus, which corrupt files stored on a network. He says, "**We blocked about 400 infected e-mail messages a day**. The $3,500 yearly license fee for the Astaro software paid for itself based on this event alone. If the virus got hold of our network, we would've been done for."

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Conserving and allocating bandwidth has enabled Pike Peak BOCES to lower its own network costs and pass the savings onto the school's districts. For example, Astaro's quality of service (QoS) feature prevents certain school districts from monopolizing the available bandwidth. Cox says, "This is how we controlled file sharing programs such as Napster. We make them too slow to use." Based on a cost justification for 2002, he says that all of the features in **the software security appliance helped to save some school districts more than $1,200 a month on Internet access,** not including the content filtering or the firewall.

In addition to features such as a firewall, a software security appliance needs to be reliable, to be easy to maintain, and always be current. If the appliance server hardware fails, Cox says he can install the Astaro software on a similar server within 20 minutes. Since the Astaro software contains its own IP address, it functions as a self-contained entity capable of automatically making its own updates, such as patches and new virus signatures. Cox has set up the software to e-mail him a backup configuration file every night. He says, "This way I always have a backup CD of the latest version of the Astaro software ready if I need to re-install it. What more can you ask for?"

