D-Link®

Case Study

Network Switching Solutions

Customer Profile:

Abington Senior High School offers a networking course that prepares students with the necessary skills to pass the Cisco Certified Networking Exam (CCNA). The school is located in a Northern suburb of Philadelphia and has 1,967 enrolled students. One of the students in the course, Robert Verderame, helped launch a cloud computing initiative featuring a D-Link switch that fit perfectly into their Cisco-dominated topology.

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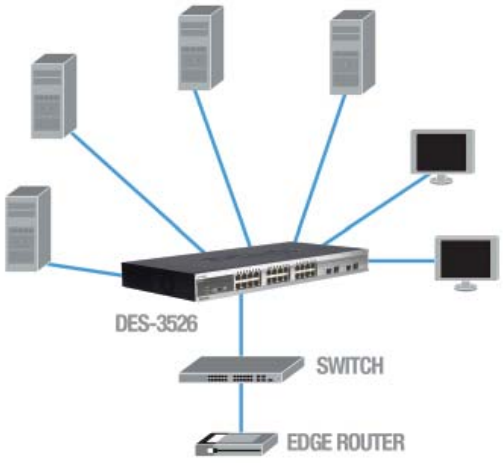
-Dave Daubenspeck,
Course Instructor

High School Networking Class Builds Virtual Computing Grid from Old Computers with D-Link® DES-3526 Switch

The Challenges

The Abington Senior High School networking course found some unique networking challenges within their Cisco® network that could be solved with a new switch and a grid computing configuration. For the purposes here, "grid computing," describes a cluster of computers connected via Ethernet, which share resources to perform large tasks.

The project began when the course's students discussed switching and network applications. "Our class decided to create a cluster of computers powerful enough [when using their combined resources] to run the Windows 7 beta release as a virtual machine," said Robert Verderame, one of the students. "However, in order to leverage out-dated hardware, we'd run it as one instance across four computers." Verderame has his own business, Verderame Design Firm, which offers website design and web application programming services.



The DES-3526 skillfully manages traffic moving through the distributed computing grid, directing all WAN packets to the gateway router. Several VLANs implemented in the grid allow for separate clusters on the same switch - increasing the bandwidth and reliabilty of each LAN.

Originally, the class tried to use an older switch but it didn't work out. The switch was a "home" model that did not come with QoS features, RADIUS authentication or VLAN capabilities. The class is primarily a Cisco shop, yet the course instructor, Dave Daubenspeck, and Verderame decided the situation would be a good opportunity to explore different vendor switches and a new approach to command line interfaces.

The classroom had a switch made by a D-Link competitor, but the switch didn't have two 1GB trunk ports. "If we used that one, we'd have to connect different switches together using 100Mbps ports," explained Verderame. "If we were running a virtual OS, for example, it wouldn't be an acceptable rate for transmitting lots of data, especially if we were trying to add many virtual operating systems."

The hardware the class was connecting into the Ethernet cluster was approximately five to eight years old, with a maximum of 512MB RAM on each machine and 400MHz per processor.

The Solution

The class opted for a D-Link DES-3526 Managed 24-Port switch. It was easy to install, fit perfectly into their rack, and integrated well with their existing Cisco and 3Com® equipment. "Once we added the D-Link switch, we saw a vast improvement from the previous switch we were using," said Verderame. "The Web management configuration panel for the D-Link had some great diagnostic tools for visualizing traffic, CPU usage and VLANs. According to the course instructor, Dave Daubenspeck, "The web management utility was intuitive and easy to use, with features comparable to our other switches. The students were able to perform the same configurations, normally accomplished through the command-line interface, and view the switch from a different perspective." We could break it into smaller clusters. Using the switch's link aggregation feature, we could create up to six port trunk groups with a potential bit rate of 8000 Mbps, allowing for faster data transmission between switches."

The D-Link switch is connected to the rest of their classroom network via 100Mbps point-to-point connections. Fifteen total users - mainly students - operate the equipment.

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DES-3526 - Managed 24-Port 10/100 Stackable L2 Switch, 2 Gigabit Copper Ports, 2 Combo SFP

- 8.8Gbps Switching Capacity
- 8000 MAC Address Table
- Stackable Up to 32 Units

The class primarily uses the command line interface with the switch, because that's how they've been trained with their other equipment. "The D-Link interface is much more intuitive when compared to our other equipment interfaces," said Verderame. "I like the fact that there isn't a hierarchy. With other competitor's switches, users must enter different passwords to gain access to higher levels of configurability. The D-Link switch provides global administration abilities with just one password." The D-Link switch is connected to the rest of their classroom network via 100Mbps point-to-point connections. Fifteen total users - mainly students - operate the equipment.

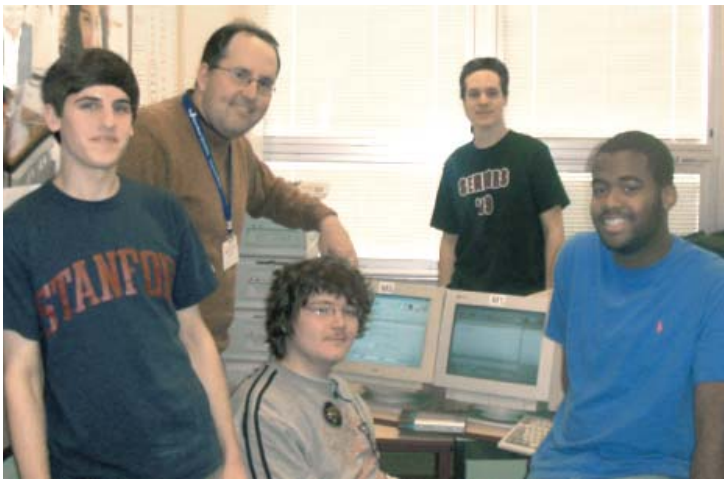
Verderame compares it to the SAN concept popular with businesses, except their equipment is connected via Ethernet rather than Fibre Channel or some other high-speed wiring. "A cluster like ours could be used by businesses for storing files or streaming video," he explained.

The complete installation of the switch took less than an hour. They just needed to find a place for it on the rack, configure it and run it through some tests.

Future Plans

"We haven't used our D-Link switch to its full potential yet," continued Verderame. "Our class eventually wants to run two or more virtual servers in the grid, adding new hardware to increase performance. We know that the DES-3526 will scale with our needs, connecting it all together without any additional configuration."

Verderame's instructor, Dave Daubenspeck, has been very pleased with the D-Link equipment and its ease-of-use. "It's meshing nicely with the setup that we already have," he said. "We're playing around with VLANs and trunking, and seeing how that all works with multi-vendor products."



From left to right: Robert Verderame, with teacher Dave Daubenspeck and networking students Roy Sellers, Kyle McGrogan, and Mike Walker, evaluate a D-Link DES-3526 in the distributed computing grid, a cluster of high performance computer servers.

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