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Dennis Schweikhardt
Communications and Infrastructure Manager

Spokane Public School District Deploys BIG-IP Link Controller To Ensure That Students, Parents, Teachers and Administrators Stay Connected



Industry:

Education

Challenges:

- Lack of high availability for 30,000+ students
- Bandwidth saturation and related costs
- Complexities of Border Gateway Protocol

Solution:

BIG-IP Link Controller

Benefits:

- Bandwidth control and improved bandwidth scalability
- Elimination of complaints about response times
- High availability

Overview

Spokane Public School District wanted the best technology to ensure that their site traffic was directed over the best possible link and ISP (Internet Service Provider). They also wished to maintain the highest Internet quality, service and speed for students, parents and teachers, reduce bandwidth costs, and eliminate the deployment barriers and costs of multi-homing via Border Gateway Protocol (BGP). F5’s BIG-IP Link Controller, an integrated load balancing product, prove to be the ideal solution for the District, successfully managing both incoming and outgoing site traffic, directing users over the best link, and completely eliminating previous complaints about site accessibility and speed.

Challenge

The Spokane Public School District leverages the public network in many ways, including hosting an Internet site with district and school information for teachers, parents and employees while providing Internet access to the outside world for 30,000 plus students. Each K-12 institution and higher agency hooks up to the Internet through what’s called the K20 network, which includes four T1 copper lines arriving from around the state.

The District’s commitment to leveraging the best technology to ensure that their network and

applications reliably operate at peak performance is one of their highest priorities.

“From a communication standpoint, uptime is job #1,” said Dennis Schweikhardt, Communications and Infrastructure Manager for the Spokane Public School District. “We rely on our infrastructure so much that if you bring down a site, you bring down the applications others rely upon as well impacting tens of thousands of kids relying on the Internet to get the information they need.”

One of the key challenges facing the District was the issue of bandwidth saturation. “You could see our utilization (of the Internet) go from almost nothing at 8:30 in the morning to ramping up to 6MB, where it would hover until school let out,” stated Schweikhardt. “We needed to increase capacity. We also wanted to provide high availability and failover as well – if the ISP is down, we’re down.”

The District looked at increasing their bandwidth by going to a multi-homing type of scenario – essentially bringing in a second pipe from another carrier. Multihoming means that a site has more than one WAN link or access gateway to the Internet. This establishes another path for traffic to flow in and out of the data center in the event that one link fails.





Initially, the District looked at a BGP (Border Gateway Patrol) solution to meet their multi-homing requirements. While BGP is a core technology for routing IP packets through the Internet, it was not well suited for this particular task.

“There were issues with BGP, in the sense that it wasn’t as granular as we’d like; we couldn’t control our traffic the way we wanted. It also had a fairly steep learning curve as well.”

BGP can also be complex to troubleshoot – which often means contracting with outside experts with extensive BGP skill sets. BGP also makes it difficult for businesses to control the traffic the way they want in order to best fit their goals.

Solution

In order to build a long-term multi-homing solution and to also address its traffic management issues, the District chose the BIG-IP Link Controller from F5. The controller is an integrated loadbalancing product that replaces legacy routing protocols with faster, more flexible intelligent switching technology. Schweikhardt oversaw the deployment of the controller, which was designed to manage both incoming and outgoing site traffic, and to direct users over the best link.

“In addition to increasing our bandwidth, and adding failover, we also wanted to deploy a caching solution,” said Schweikhardt. “A kid

in a third grade class at one school will likely go to a similar site as another kid in another class. We knew we could cache those pages and save on bandwidth usage. Link Controller integrated easily with our caching product.”

Deployed between their firewalls and routers, the product regularly measures the health and capacity of each connection at a site. Bandwidth, performance and health of ISPs were automatically measured; each user was then directed down the best possible link.

The BIG-IP Link Controller provided immediate benefits, including:

- **Bandwidth control** that solved the District’s bandwidth scalability problems
- **High availability** to assure users stayed connected through immediate ISP failover
- **Improved performance** by directing users across the fastest link to avoid congested bandwidth
- **Reduced management and support** by providing a greatly simplified multi-homing architecture
- **Happier, more productive users** – complaints about site response time completely disappeared. But ultimately, the District’s primary goal was to increase bandwidth capacity with more intelligent use of that

bandwidth.

“Link Controller let us see into our bandwidth usage and control it better,” said Schweikhardt. “I think the thing that really makes a big difference to us is not only the disaster recovery capability, but also the fact that we can control things ourselves - the flexibility of adding bandwidth is now almost instantaneous. If we want to change our rate plan, for example, I can just call them (the ISP) and it just happens. We can control how much we use, and limit it. We’re also no longer getting complaints about response time from end users.”

For a school district with nearly 15,000 computers trying to pull data in from around the world at any one time, and trying to smartly load balance that incoming flood across multiple ISPs, the BIG-IP Link Controller does its job quietly, elegantly, and consistently.

“It’s seamless, it’s invisible, it was easy to set up, and the ISPs don’t have to get involved in any way, shape or form,” stated Schweikhardt. “It just runs, and we don’t have to worry about it. And by having the cache integrated as well, and having the failover ability, we don’t have the ISP service outages anymore. Not that we had a lot anyway – but it doesn’t take a lot to become a serious annoyance. We’re extremely happy with this solution.”

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