

Pushing Through the Bottlenecks

Network upgrades can help ensure that your business isn't crippled by performance issues.

By Karen D. Schwartz



Photo: NIcholas McIntosh

Matt Byrnes of Ameritox uses a SAN to replicate data between two sites.

When Matt Byrnes began planning the network infrastructure for his company's new lab in Greensboro, N.C., he didn't have to look far for good advice about making the network as scalable and problem-free as possible. Byrnes, manager of infrastructure planning and architecture at pain medication monitoring company Ameritox, only had to look to other sites in the company for a road map of what to duplicate and what infrastructure could be improved upon.

In some locations, he says, "the switches had limitations, we didn't have the redundancy we needed and there was no way to segment traffic. Studying that network really helped us **develop a network infrastructure** for our new lab that runs smoothly and provides growth."

To avoid performance bottlenecks, slow connections and outages, you must understand the problems that affect network performance and mitigate them. To tackle these issues, consider these recommendations.

Prioritize network traffic: A network is just a network, right? Not when it's expected to serve different populations and different purposes. Ameritox's Byrnes, for example, wanted to ensure the new Greensboro lab network was adequately equipped to handle both load-testing and production and development traffic. He chose to deploy the **Cisco 3750E** series switch at the core, which has a 64 gigabits-per-second backplane. The new lab also has 10Gbps Ethernet uplinks to its distribution stacks, which are using **Cisco 3560** switches for its workstations.

The Greensboro lab uses **HP LeftHand's P4500** 10.8 terabyte SAS virtualization SAN solution for development and testing. Ameritox uses SAN-to-SAN replication to migrate data between the two sites, and eventually, plans to replicate the data from one SAN to another using the SAN as the engine instead of an intermediary device. With this setup, the IT staff can load-balance against both the servers and the SAN without disrupting production traffic, Byrnes explains.

Prevent performance bottlenecks: Faced with the prospect of managing additional branches along with supporting a new Voice over IP system, South Carolina Federal Credit Union, which has 20 locations throughout the state, found itself with slower-than-acceptable transmission and significant performance bottlenecks. The solution, says Chief Technology Officer Brad Williams, was to upgrade the network from its Layer 2 infrastructure, segment it more effectively, and build in redundancy.

For five signs your network needs an upgrade, go to biztechmagazine.com/310net.

Since late last year, Williams' team has taken the network from Layer 2 frame relay to Layer 3 by deploying **Brocade BigIron RX-16** switches and **Brocade NetIron MLX-32** switches in the main data center and **Brocade FastIron SuperX** switches at the branches. The result is a fast, reliable, secure Ethernet infrastructure with built-in redundancy.

Reduce painfully slow connections: Veracity Networks found out the hard way how frustrating slow connections can be. The company was working to provide network connections to about 150 businesses in St. George, Utah, in

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concert with a telecom provider, using **AdTran's Total Access** 5000 series Ethernet-based multiservice access and aggregation platform.

While the AdTran equipment was working well, Chief Technical Officer Chris Modesitt suspected the copper pairs weren't up to spec. To find out, the company used **Network Instruments'** ADSL2+ tester and, within about a month, had gleaned the pertinent information to fix the problem.

are two major reasons nearly half of midsize companies will put their money into network security technologies this year.

SOURCE: Enterprise Strategy Group

Limit haphazard network growth: Most networks start out making sense for the environment, but organizational growth, new projects, new technologies and new priorities can quickly create chaos, leading to inefficiencies and confusion of functions. That's exactly the situation Byrnes wanted to avoid with Ameritox's new Greensboro lab.

In the new lab, Byrnes made sure to use higher-capacity Cisco 3750E stackable switches with a backplane table, which provides full redundancy and significant scalability.

Find the right technology for the job: Technology marches forward, and often, existing network infrastructures aren't up to the task. Many organizations, for example, have implemented VoIP, which can cause jitter and latency because of prioritization and bandwidth issues. To help avoid this issue, South Carolina Federal Credit Union moved from a Layer 2 to a segmented Layer 3 architecture, which defines routes for all traffic.

Additionally, its new Brocade switches include Quality of Service (QoS), which gives voice packets priority over data packets, along with good call clarity and quality, especially at times when the network is most heavily used, Williams explains. Finally, the switches are also enabled with Power over Ethernet, which allows the credit union to place VoIP phones anywhere they can drop an Ethernet cable.

Revamp your maxed-out network: When a company implements a major new service or gets a significant influx of demand, the existing network may simply not be up to the task. In that case, a major overhaul is needed. That's exactly what happened to Veracity Networks, which owns and operates a fiber-optic network in Provo, Utah, serving about 20,000 customers.

When the company decided to roll out Internet Protocol Television to its user base, it soon became clear that its existing single-gigabit backbone simply was not adequate.

"We needed to be able to push 2Gb to 3Gb at any given time through the entire backbone," Modesitt says. To handle the demand, the IT team upgraded its networking infrastructure to a Layer 3 Brocade-based fully redundant 10Gb backbone, expected to expand to as much as 40Gb by next year.

BizTech Quick Poll

Are network bottlenecks significantly impeding business productivity?

6% Yes, it's a real problem.

47% Not at all

31% A little, but nothing too noticeable

14% We would prefer a faster network, but we can handle it.

2% Don't know

SOURCE: CDW poll of 395 BizTech readers