Global Business Analytics Leader Reduces WAN Network Costs

SAS uses Performance Routing to help ensure top performance for business-critical communications, while controlling costs.

EXECUTIVE SUMMARY

SAS INSTITUTE INC.
- Business Analytics
- Cary, NC

BUSINESS CHALLENGE
- Control communications costs
- Improve employee productivity and efficiency
- Help ensure reliable, uninterrupted performance of communications services

NETWORK SOLUTION
- Cisco PfR solution enables SAS to load-balance Internet traffic to help control communications costs.
- Flexible Cisco PfR solution enables SAS to maximize performance of latency-sensitive network applications, and realize value in latent network bandwidth
- Easy-to-manage solution supports upgrades and configuration changes

BUSINESS RESULTS
- Reduced communications costs and virtually eliminated over-peak charges deliver return-on-investment of two months
- Automated application performance assurance and management helps employees collaborate more effectively over the Internet
- Flexible, scalable solution can change to support new services and applications

Business Challenge

Since its founding in 1976, SAS, the leader in business analytics software and services, has focused on delivering proven customer solutions that drive innovation and improve performance. The privately held company helps organizations across industries utilize data to solve complex business problems, better manage performance to meet objectives, foster growth, and manage change.

SAS is very much a global organization, with 400 offices worldwide, and customers in 118 countries. To deliver its services and power its key business operations, the company depends on the communications network based at its corporate headquarters.

"We have multiple Internet connections at our corporate HQ and a number of sites with partners, as well as remote access VPN services," says Steven Toy, IT Manager at SAS. "Our goal was to optimize our outbound Internet usage by cost, as well as utilizing under-used connections in situations where it made sense."

SAS was using the Border Gateway Protocol (BGP), which selects the best path through the Internet, by choosing the route that has to traverse the fewest autonomous systems. Although BGP is a popular standard, its limitations created some challenges for SAS.

"We tried manipulating BGP to do a better job of balancing the traffic outbound, but it was a fairly manual process, and it still wasn't doing a very good job of balancing the outbound traffic," says Toy. "In some cases, we were paying for overages and using more bandwidth than we were contracted for; and in other cases we were close to the limit on our Internet connections."

Cost control was not the only business challenge that SAS faced. The organization was also seeking ways to improve performance on latency-sensitive applications between its VPN endpoints and its corporate headquarters.

Network Solution

To address its needs for improved cost control and better network performance, SAS applied Cisco® Performance Routing (PfR) to the WAN infrastructure at its corporate headquarters. Cisco PfR enables the network to intelligently choose a path that meets the performance requirements for specific applications, as well as choose the appropriate resources to reduce operational costs. SAS was able to deploy PfR with minimal additional costs, because the solution takes advantage of the embedded Cisco IOS® Software intelligence in switches and routers, using the company's existing network.

"We were able to start with our investment in Cisco equipment, add a router to serve as a dedicated master controller, then simply activate the PfR features and functionality that we needed," says Toy.

Cisco PfR consists of border routers that connect SAS to the WAN, and a master controller application supported by Cisco IOS Software on a router. The border routers collect traffic and path information and send it to the master controller, which detects and enforces the company's requested service policies. SAS configured Cisco PfR to select an egress WAN path to intelligently load-balance traffic based on circuit costs, to reduce the company's overall communications expenses.

"We are utilizing the cost minimization feature," says Toy. "We examined the cost of each of our ISPs, and configured PfR, so that whenever we reach the point where we would start paying for overages, PfR will automatically offload that additional bandwidth to our less-utilized providers."

In situations where network performance is more critical than minimizing costs, SAS uses PfR to focus on minimizing latency.

"There are times when I would rather pay the cost of going to a better provider than to experience any kind of performance degradation, especially for latency-sensitive applications like WebEx," says Toy. "We have overrides in place so that when a network connection reaches a maximum level, PfR will offload other types of traffic before attempting to offload critical traffic. We have Active Probes set up in several locations throughout the network, and have identified applications where latency should be a higher priority than cost."

Cisco PfR was designed to be easily deployed with minimal configuration. SAS started by developing out a basic PfR configuration, then brought in its Cisco Certified Partner and other technical staff to refine and finalize its solution.

"We worked closely with our Cisco sales engineer, and we also collaborated with Cisco's PfR team to help us tweak the configuration," says Toy. "Some of our requirements were unique, so it was helpful to be able to work with the Cisco technical team to optimize our deployment."

SAS has found that Cisco PfR is not only effective at applying application routing based on performance, but is easy to manage and maintain.

"We have never had any network issues or outages associated with it, and since the master controller does not reside directly in the flow of traffic, we don't have to worry about it if we need to apply an upgrade," says Toy. "Traffic simply reverts back to the default setting during the short time we are upgrading."

> "The real benefit that Cisco PfR delivers is that it lets us simplify our network configuration and improve the performance, without having to do a lot of manual fine-tuning. There are several technologies operating behind the scenes, such as policy-based routing, that would be difficult to deploy without the front end that PfR provides. Our Cisco solution applies an easy-to-understand interface that helps to minimize all that complexity."
> — **Steven Toy, IT Manager, SAS**

Business Results

By helping SAS reduce its communications costs, the Cisco PfR solution enabled the company to realize a rapid return on its investment.

"The main component that we needed to add was a dedicated Cisco router to act as the master controller," says Toy. "Our ROI for the cost of that device was about two months, based on the reduced overage fees from one of our major Internet carriers. In the past, our BGP-based system primarily chose one service provider for outbound Internet traffic, and the others were very lightly utilized. Our Cisco solution provides a much better balance. Instead of using just one provider, we are using several cost-effective ones, and we saw a reduction in expenses."

In addition to cost savings, the SAS IT team has found that the Cisco solution makes it faster and easier to apply granular control over network traffic.

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Because the Cisco solution is easy to tailor to meet specific business needs, SAS can also take advantage of better business agility as it manages performance of a variety of network applications.

"Cisco PfR is very customizable, so we can optimize different traffic different ways and develop unique configurations for different types of traffic," says Toy. "WebEx is one example, and we are also focused on improving the latency between our VPN endpoints and our corporate headquarters."

If end-users report that performance of a particular network application is sub-par, SAS can quickly apply changes to help ensure that their Internet connection is optimal.

"Someone might complain that latency is high in a specific area, and we can utilize PfR to add that application or endpoint into the PfR performance measurements, and make some immediate improvements."

The Cisco solution plays a key role in helping SAS balance and manage network traffic throughout the entire organization.

"Working with PfR and Internet design in general, we really prefer Internet circuits that are very lightly utilized," says Toy. "We have found that the best way to do that is to have a large access circuit and a much smaller commit, and then allow bursting beyond that commit. PfR can really help you administer and manage the costs of having that kind of environment that provides additional headroom, so that you are not negatively impacted by unexpected traffic."

Next Steps

The Cisco PfR solution has been operational for more than a year, and SAS has begun exploring ways to expand the solution to make communication more efficient at its other sites around the globe.

"We are considering adding PfR to our larger sites that have multiple Internet connections that we would want to load balance," says Toy.

With its flexible, Cisco solution in place, SAS is confident that it will be able to continue to leverage its investment in Cisco technology to support not only its current requirements, but new services and applications for years to come.

For More Information

To learn more about the Cisco PfR solution, visit http://www.cisco.com/go/pfr or contact your authorized Cisco salesperson.

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