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ADA Delivers Robust Internet Access for Web Applications

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Providing high-speed, economical, and reliable Internet access to all employees is a common challenge for IT managers in most life science organizations. The challenge increases when the same connection is also used to provide outside users with Web-based access to data and Applications.

The solution most companies take, to simply throw bandwidth at the problem — adding more capacity to existing Internet links — is not always economical. Besides, adding bandwidth does nothing to improve the reliability of the communication channel.

The American Diabetes Association (ADA) recently faced this problem and the approach it chose could serve as a model for other life science Organizations.

The ADA's network was designed like that of many companies with lots of remote offices. The ADA has 173 offices throughout the U.S. About 100 of these offices connected to the ADA's headquarters by Frame Relay connections. Rather than having Internet connections at every site, employees in these offices got their Internet access from a single T1 line in the headquarters office.

This is a fairly common configuration for a couple of reasons. First, it's more economical than paying for an Internet access line for each office. Second, it is easier to manage, with only one spam filter and one firewall (located in the headquarters office), rather than a hundred all scattered in remote offices. "If you have Internet presence in each office, there's no way to manage everything," says Rick Smith, director of ADA's technology solutions division. "With this approach, we can centrally manage the firewall and spam." And centralizing these security features is essential given the volume of traffic — over 50,000 messages exchanged per day.

Addressing the Increased Importance of the Link

Recently, the organization moved to a Web portal approach to give remote users (people in small remote offices, working from home, or traveling) access to their business applications like e-mail and some administrative systems. This was part of a plan to allow users to work from wherever they were located. "Work is an activity and no longer a place," says Smith. The move to the Web portal approach only increased the importance of the Internet connection. The link was now carrying all inbound traffic, including e-mail from outsiders, as well as requests from remote employees to access applications. Additionally, the link was still being used to support the Internet access of all the employees in the 100 offices on the ADA's Frame Relay network.

If this link went down, "the business of the organization would come to a halt," says Smith. At the same time, the amount of traffic that needed to be carried on the link was becoming an issue. Basically, the ADA was quickly outgrowing its T1 line's capacity.

Smith set out to increase the capacity of the connection while also providing some level of redundancy to ensure this vital conduit would always be available.

"We chose an approach that used not just multiple T1s, but multiple, diverse T1s," says Smith. The ADA now uses three T1 lines — two from AT&T and one from MCI (formerly known as WorldCom). The lines are bonded together (giving the ADA an aggregate 4.5 Mbps of Internet bandwidth) using a device call the WARP from FatPipe Networks.The WARP device sits between the routers that terminate each access line and the ADA's network. WARP aggregates the bandwidth and also performs load balancing of the traffic on all three lines. In addition, the WARP unit provides a fail-over feature that senses when a line has gone down and automatically reroutes packets to another line. (To be completely redundant, ADA uses a second, stand-by WARP unit to avoid a disruption of the Internet access.)

This approach of bonding multiple T1 lines from multiple Internet service providers is not that common. Most companies use a single provider, as multiple providers add complication.

One issue that the ADA had to deal with was DNS (Domain Name System) management. DNS is used to translate a common name for such things as a Web site or server to a specific IP address. For instance, whenever someone types a URL into a browser, a request goes out to a DNS server on the Internet to look up the IP address for that Web site. (Browsers typically cache this information so the next time a user goes to the same address, there is no need to look up the IP address.) Similarly, in corporate networks DNS is used so people can access servers or devices by common names (e.g., accounting_server or hallway_printer).

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The WARP units support something called SmartDNS, which automatically senses when a line has gone down and resolves any DNS issues associated with using different providers for access to the network.

All told, the combination of aggregating T1 lines from different providers has helped the ADA ensure that its employees will have the Internet performance and availability they desire.

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Providing access to data and applications through Web browsers is becoming increasingly popular and will only be more so as more life science companies move to Web-based services architectures.

What are you doing to address these issues? Drop me a line at Salvatore_Salamone@bio-itworld.com and let me know if you've got some interesting approaches to providing reliable and economical Internet access.