Utility Optimizes WAN to Centralize File and Print Services at Low Cost

American Water expands centralization strategy with Cisco Wide Area Application Services at core, remote branches.

EXECUTIVE SUMMARY

Customer Name: American Water

Industry: Utilities

Location: Headquarters in Voorhees, New Jersey, with some 350 facilities in 30 states in the United States and in Canada

Number of Employees: 7,000

BUSINESS CHALLENGE

- Centralize file and print services without increasing operating costs
- Increase WAN capacity to handle additional centralized services and applications without expanding infrastructure or IT staff
- Maximize existing WAN bandwidth investment before adding more bandwidth

NETWORK SOLUTION

- Optimize existing WAN by adding Cisco WAAS appliances at core, WAAS modules/appliances at remote sites

BUSINESS RESULTS

- Efficient, centralized file and print services that are transparent to users
- Wide area optimization of ERP, CRM, and other enterprise applications

TECHNOLOGY PARTNER

- Insight

Business Challenge

The largest publicly traded water utility in the United States, American Water operates both state-regulated and nonregulated, market-based water treatment and distribution services. Altogether, the 125-year-old company provides high-quality water and wastewater services to approximately 15 million people in more than 30 states and parts of Canada.

The company's WAN links some 300 locations, including its corporate headquarters in Voorhees, New Jersey, primary and backup data centers, about 275 branch or remote offices, and various production facilities, treatment plants, and other facilities. Two call centers house 500 to 600 workers each, and a number of sites host a few hundred users, but many sites are staffed by 50 or fewer users; some are equipped simply with access control and surveillance cameras for security. Almost all are connected by Multiprotocol Label Switching (MPLS) services. Applications that operate over the network include Lotus Notes and Microsoft Office, file and print services, and enterprise resource planning and customer information management suites, data replication, critical operations risk management, access control, and surveillance.

American Water's first, limited deployment of WAN optimization took place in 2008, when data replication requirements between its primary and backup data centers were overloading the 50-megabit connection between the two. By adding Cisco® 7341 Wide Area Application Engine (WAE) appliances at both sites, the company's IT managers achieved two- to three-times greater throughput over the same circuits. Still in use, those appliances are now providing 300 to 450-megabit throughput over an improved 150-megabit Ethernet connection.

In 2010, as a growing volume of lab data and other files was hampering network performance, employees at the company's branch locations started to complain of long download times and other deficiencies in application services.

"Our employees work with big documents and large amounts of data and financial information," says Rob Raffaele, enterprise infrastructure architect at American Water. "To speed up movement of those files from one site to another, or from office to data center and back, we traditionally installed more file servers in the field, to bring the files closer to the employees.

"But that was contrary to our IT strategy, which is to centralize applications and computing and storage resources in our data center and reduce operating expenses."

Network Solution

As an alternative, maximizing the value of the company's network through a broader deployment of WAN optimization would be consistent with American Water's corporate strategy. But the deployment would have to meet a few specific requirements in addition to optimizing the network.

"Beyond the cost of the equipment we would be adding, we had to be concerned about the operating costs," says Raffaele. Would the deployment require the purchase of additional circuits? Beyond the deployment itself, would operating and maintaining the additional infrastructure put pressure on current IT staff resources or require new hires or new expertise in-house?

"So-called 'seamless integration' is more than a matter of having the new equipment work with what you have," says Raffaele. "It also has to be easy to deploy and easy to maintain."

The infrastructure architect and his colleagues conducted an informal comparison, in their own lab, of Cisco WAAS and competing WAN optimization solutions. All the products offered similar performance, according to Raffaele. But the team chose Cisco WAAS for a few compelling reasons.

> "We wanted to double our WAN's capacity. Our reporting shows that we're doing that and more. Where WAAS is installed, the network's effective capacity is running two to two-and-a-half times what it was before WAAS."
>
> **— Rob Raffaele, Enterprise Infrastructure Architect, American Water**

"We liked the flexibility," he says. "Because Cisco offers WAAS in various forms, from software to appliances, we saw that we could deploy it to fit the requirements of each site." About three-quarters of the company's sites are small enough that a WAAS module for Cisco Integrated Services Routers was all that was needed, while more powerful WAAS appliances, together with Cisco Application Control Engines, handle the optimization workload at American Water's data centers and larger IT installations.

Another key advantage that they saw in Cisco WAAS, as Raffaele explains, is its transparency to the network and integration with other network services native to the Cisco IOS® software, notably quality of service (QoS) management. "We have a very mature QoS policy at the router edge of our network," he says, "which meshes with our carrier service levels. We didn't want to make any changes to that."

The third reason that Raffaele and his colleagues chose Cisco WAAS: it offered the ease of deployment and management that they were looking for. Requiring no manual configuration (it is typically software-activated at the router level) and centrally manageable and upgradable, Cisco WAAS places little if any additional burden on American Water's IT staff.

The company started its deployment of Cisco WAAS in August 2010 at the core of American Water's network: the production and backup data centers, management infrastructure, and six service locations, including the main IT facility and two call centers. That part of the project was finished by mid-November, and in early 2011, the company began adding WAAS at remote offices. As of spring 2012, nearly half of the company's 200 sites served by MPLS were equipped with WAAS, and Raffaele is confident that most will be optimized by the end of 2013.

Business Results

"We designed our WAAS deployment with a specific goal in mind," says Raffaele. "We wanted to double our WAN's capacity. Our reporting shows that we're doing that and more. Where WAAS is installed, the network's effective capacity is running two to two-and-a-half times what it was before WAAS."

With that capacity, Raffaele says, American Water's IT staff is withdrawing file and print services from the field and centralizing them in the data center, just as planned. And yet the change is transparent to users on the network. "We're getting very positive responses from users," he says. "The file and print services 'feel' local to them."

Meanwhile, American Water has embarked on a much larger business transformation, starting with the deployment of the company's new suite of enterprise resource planning and customer relationship management applications from SAP, scheduled to go live in August 2012. From an IT perspective, the idea is to centralize those and other applications and services, including disk replication, at the data center level.

"With WAAS," says Raffaele, "we can do it all without major hardware additions or expansions of our WAN. Doing more with the infrastructure we have: that's the whole idea."

PRODUCT LIST

- Cisco 7341 and 7371 Wide Area Application Engines (WAEs)
- Cisco 4710 Application Control Engine (ACE) Appliances
- Cisco 502 and 522 Wide Area Application Engine (WAE) Modules for Cisco Integrated Services Routers (ISRs)
- Cisco WAAS Service Ready Engine (SRE) 900 Modules for Cisco Integrated Services Routers Generation 2 (ISR G2s)

For More Information

To find out more about Cisco Wide Area Application Services, go to: http://www.cisco.com/go/waas.

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