A&E Firm Helps Ensure
Priority Handling for Critical Apps

Cisco Application Visibility and Control (AVC) Solution
anchors firm's centralized network management strategy.

EXECUTIVE SUMMARY

Customer Name: HDR, Inc.

HDR

Industry: Architecture and Engineering

Location: Headquartered in Omaha, Nebraska, with more than 185 offices around the world

Number of Employees: 8000

Technology Partner: Sirius Computer Solutions

BUSINESS CHALLENGE
- Help ensure bandwidth availability and performance of mission-critical applications in data-rich, media-rich environment
- Centrally troubleshoot and resolve network problems

NETWORK SOLUTION
- Gain real-time visibility and control of network and application performance

BUSINESS RESULTS
- Prioritized performance and assured user quality of experience (QoE) for business applications by priority
- Easy, rapid resolution of network problems
- Enhanced user productivity

Business Challenge

HDR is a global, employee-owned firm that provides engineering, architecture, construction management, and related services. Founded in 1917 and headquartered in Omaha, Nebraska, the company employs more than 8000 professionals at more than 185 locations in the United States, Canada, and abroad. HDR has completed projects ranging from interstate highways and hydroelectric plants to healthcare campuses, government centers, and specialized research institutions in some 60 countries.

The variety of HDR's services and the nature of its industry require a network that is both efficient and versatile. Most of the company's projects are both massive and complex. Many take years to complete. For example, HDR led the team providing design and construction support services for the Hoover Dam Bypass. The project involved 17 HDR offices and took more than five years from the awarding of the contract to completion.

According to Jim Graves, HDR's senior network engineer and network engineering supervisor, most of the company's projects are also heavily collaborative. Typically, HDR might be one of six or more partners working together onsite through the design, engineering, and building phases. Very often, as was the case with the Hoover Dam bypass, part of HDR's role is to design and manage the IT used by the collaborating companies during development of the project. Each project site becomes, in effect, an extension of HDR's network.

One challenge, says Graves, is helping enable the partners to work together efficiently while also keeping each one's data private and secure. In addition, the architecture, engineering, design, modeling, project management, and other specialized applications used by HDR and its partner companies pose network performance issues of a high order. "Applications like Bentley's ProjectWise Information Management and Project Collaboration and Autodesk's Revit Building Information Modeling are the lifeblood of our company," says Graves. "But they generate very large files and they're extremely sensitive to network latency."

At the same time, project files are often being worked on simultaneously in different locations, for example, on a development site in China as well as at HDR offices in North America. Exacting version control in real time is imperative, and that takes a lot of bandwidth as well as traffic management. "This company is driven by data like no other place I've ever worked," says Graves.

HDR's architectural and engineering services are billed by the hour on each project, he says. So making architects and engineers wait for two to four hours to download the files they need to do their work is unacceptable. Monitoring and managing network traffic to help ensure that critical applications get priority is of paramount importance, even while HDR employees are asking for and Graves and his team are hustling to provide more and more in the way of communication and collaborative applications and capabilities, from video and social media to wireless and more.

> "If we can't monitor and troubleshoot network operations moment by moment, we can't guarantee the delivery and performance of the applications that are critical to the company's success. Our Cisco application visibility and control capabilities tell us who's using what, where, and when on the network."
>
> — Jim Graves, Senior Network Engineer and Network Engineering Supervisor, HDR, Inc.

Network Solution

Over the years HDR's network team has put in place a number of technologies to accelerate, optimize, and more effectively manage network traffic control and performance. Because, as Graves says, "in networking, distance kills performance," they have installed caching and WAN accelerators at key remote and network edge locations to shorten the delay for long-distance file transfers. They have used the Cisco Unified Computing System™ (UCS®) data center platform to virtualize not only the network but servers as well, moving from a saturated backplane to a distributed network and storage access model. "Our data center is more than 70 percent virtualized, which provides rapid response and flexibility along with improved cost-effectiveness of data operations," says Graves. They have used Cisco IOS® Netflow technology to plan and monitor network traffic. And they have deployed Cisco Medianet capabilities to scale and enhance performance and quality of user experience (QoE) for voice, video, and rich-media services.

But to help ensure priority network support for and performance of HDR's mission-critical applications over the company's far-flung network, no tool is more important or effective than Cisco® Application Visibility and Control (AVC) and the complementary capabilities of Cisco Medianet. Available in Cisco Integrated Services Routers Second Generation (ISR G2s) and Cisco Aggregation Service Routers (ASRs), Cisco AVC provides application-level classification, monitoring, and traffic control to improve business-critical application performance, facilitate capacity management and planning, and reduce network operating costs.

Cisco AVC examines network traffic at the deepest level to ascertain the signature of each data stream. Its classification engine can recognize more than 1000 protocols and applications, including web-based and other difficult-to-classify applications and protocols. Network managers can configure the network to apply appropriate quality of service (QoS) levels for each application or traffic type with a given protocol, as discerned by Cisco AVC's analysis.

For the high-capacity AVC capabilities needed at the network's head end, the HDR team has replaced its Cisco 7600 Aggregation Routers with two Cisco ASR 1004 Aggregation Services Routers in the Omaha data center. Meanwhile, they are deploying Cisco ISR G2 2900 and 3900 Series Integrated Services routers with Cisco AVC at more than 200 remote locations. The routers are also equipped with Cisco Medianet capabilities to identify voice and video traffic as well as various mobile devices, and adjust ports and settings accordingly in real time.

Business Results

HDR, Inc. employs some 93 IT staff in its Omaha headquarters, mostly developers and project managers. Another 171 provide mostly desktop and server support at the company's 185-plus offices. Jim Graves's network team of just 10 people, working from Omaha, are responsible for the performance of the network that links all those locations and of the applications that flow over the network. To do the job, absolute application and bandwidth visibility and control are essential. That is what the team gets from Cisco AVC and Medianet.

"If we can't monitor and troubleshoot network operations moment by moment, we can't guarantee the delivery and performance of the applications that are critical to the company's success. Our Cisco application visibility and control capabilities tell us who's using what, where, and when on the network." says Graves.

"In turn, that knowledge enables us to meet our service-level agreements by matching quality of service with the highest-priority traffic: our engineering, design, and project management applications, voice, and video."

Graves and his team also use Cisco AVC and complementary tools to troubleshoot and quickly resolve problems before they escalate. "If we get one complaint call from a particular location, we can look and see what's going on right now, whether it's jitter, traffic jams, whatever," he says, "and we can head off the problem before we get 10 or 20 more calls."

Finally, the Cisco solutions also allow the network management team in Omaha to provide more visibility and control to their IT colleagues at the branch locations, an important trend if not a requirement for a company with plans to continue to expand and add numerous offices and distributed network resources on the far side of the world from Omaha, Nebraska.

PRODUCT LIST

- Cisco 1004 Aggregation Service Routers (ASRs)
- Cisco Integrated Services Routers Second Generation (ISR G2s), 2900 and 3900 Series
- Cisco Medianet
- Cisco Application Visibility and Control (AVC)

For More Information

To find out more about Cisco Aggregation Service Routers, go to: http://www.cisco.com/go/asr. To find out more about Cisco Integrated Services Routers Second Generation, go to: http://www.cisco.com/go/isrg2. To find out more about Cisco Application Visibility and Control, go to: http://www.cisco.com/go/avc.

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