

## Engineering Firm Accelerates Application Delivery to Remote Users, Increases SAN Scalability

Michael Baker Corporation accelerates CAD/Content Management applications with Cisco WAAS; deploys scalable Cisco MDS SAN.

| EXECUTIVE SUMMARY   |
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| <p><b>MICHAEL BAKER CORPORATION</b></p> <ul style="list-style-type: none"> <li>• <b>Industry:</b> Civil and Energy Engineering Professional Services</li> <li>• <b>Location:</b> Moon Township, Pennsylvania</li> <li>• <b>Number of Employees:</b> 4500</li> </ul>   |
| <p><b>BUSINESS CHALLENGE</b></p> <ul style="list-style-type: none"> <li>• Limited bandwidth at local offices</li> <li>• Needed increased performance for Bentley ProjectWise Content Management System over WAN</li> <li>• High cost of operating servers in several remote offices to enable LAN-like performance</li> <li>• Storage switching solution did not scale</li> </ul>   |
| <p><b>NETWORK SOLUTION</b></p> <ul style="list-style-type: none"> <li>• Optimize WAN to accelerate application delivery while maintaining centralized IT</li> <li>• Upgrade SAN network scaling to higher capacity while reducing costs</li> </ul>  |
| <p><b>BUSINESS RESULTS</b></p> <ul style="list-style-type: none"> <li>• Approximate US\$4,000 to \$7,000 monthly bandwidth savings</li> <li>• Approximately over US\$1 million savings in 18 months through increased remote worker billable hours and less downtime</li> <li>• 269 percent return on investment (ROI) in 18 months</li> <li>• Scalable SAN architecture provides expandability options for current and future use including replication and disaster recovery</li> </ul> |

### Business Challenge

Headquartered in Moon Township, Pennsylvania, Michael Baker Corporation provides professional services for its engineering, operations, and maintenance services worldwide, spanning the complete life cycle of infrastructure and managed asset projects. The firm was founded in 1940 by Michael Baker Jr. and maintains 50 offices in the United States that focus on a number of disciplines that include everything from transportation (bridges and highways) to geo-special information technology and mapping for clients such as the Federal Emergency Management Association (FEMA). The firm also has eight international locations that are mainly focused in the energy sector and include offshore areas such as the Gulf of Mexico where Baker operates and manages oil and gas production facilities on behalf of clients.

The firm's primary co-located data center is in the Washington, DC area, where all of Michael Baker's Web servers and 70 percent of its applications are housed. The company also has smaller data centers in Moon Township, Pennsylvania and Alexandria, Virginia. The infrastructure group at Michael Baker

was tasked by senior management with centralizing IT operations for better utilization, with the goal of lowering costs and enabling the organization to cross-utilize offices. For example, instead of moving 20 engineers from multiple locations across the United States to work on a project in Utah, the company would have the ability to leverage engineers, more favorably located in Cleveland, who are not currently being utilized.

When Jeremy Gill, vice president of information technology at Baker, and his team began centrally deploying applications that included ProjectWise Content Management software by Bentley, they soon discovered there was noticeable degradation on their Multiprotocol Label Switching (MPLS) WAN when transmitting over their T1, OC3, and DS3 lines that greatly compromised the application performance to which users had been accustomed.

**“Since upgrading to WAAS, we have been able to reduce our costs through more efficient collaboration. On a specific project, this translates to over US\$1million approximately in net benefits and 269 percent ROI over 18 months.”**

—Jeremy Gill, Vice President of Information Technology, Michael Baker Corporation

“One of the main drivers for our upgrade was ProjectWise, a client server application compatible with Microsoft Office files that allows us to utilize offices and staff everywhere in our network and centrally manage from our primary data center,” says Gill. “Because ProjectWise requires users to transfer an entire file from the data center to the user’s desk, we quickly found that when we attempted to centralize, our performance was far less than expected, and we saw a considerable increase in time to open a file. We have several remote offices that are connected via a T1 where the application performance was unacceptable, and we ended up having to spread out data in disparate locations, which defeated the purpose of centralization.”

On the storage side of the business, Baker had deployed SAN technology to handle their general storage, as well as for failover and load balancing. The firm had been using a fibre channel switch solution from a competing vendor in their main data center that was not scaling.

“One of the biggest problems we came across with our SAN was that the fiber channel switches were not expandable and we were running out of fiber ports, which prevented us from adding any more EXS hosts,” says Jeff Gill, a project manager on the team responsible for storage. “The lack of expandability was definitely a problem for us and we began looking at a more expandable, scalable solution that would give us all the ports we need presently and in the future.”

### **Network Solution**

Gill and his team began evaluating WAN and storage solutions from several vendors, including Cisco®, with four basic criteria that included price, technology, compatibility with the existing Baker network and infrastructure, and support. In addition to upgrading their network, Gill and his team also needed the ability to monitor their entire infrastructure from a centralized location, and needed the assurance that whatever WAN solution they selected would not break the monitoring functionality.

The team selected Cisco Wide Area Application Services (WAAS) for use on Cisco NME-WAE-502 network module embedded in the Cisco Integrated Services Router (ISR) 2811, two Cisco WAE 7326 appliances for their primary data center and larger offices, and Cisco WAE 512 and 612 appliances for larger offices. On the storage side, they selected Cisco MDS 9216 Multilayer Fabric Switches.

“We were already a Cisco shop and had achieved great results with Cisco switches at two of our SAN locations with no issues, so it was an obvious choice for us to upgrade to the MDS 9216’s for their ability to link our data centers and give us expandability options for our VMware hosts,” says Gill. “The overall SAN upgrade and WAN deployment went extremely well, and we were assisted by Cisco Advanced Services to aid us in the design and initial deployment. We also had tremendous support from our local systems engineers and Cisco’s Technical Assistance Center.

The Cisco Fabric manager made it very easy for us to make changes and over all management of SAN.”

Gill says he and his team are using the quality of service (QOS) capabilities of the newly optimized WAN on the MPLS side, and the transparency of the WAAS has been significant.

“It was important that the devices we put in place were transparent to our users,” says Gill. “The only changes anyone noticed were faster application delivery times. Implementing WAAS also did not break our functionality at any point during implementation. Because we monitor a number of infrastructure items including servers, routers, switches from our centralized data center, having monitoring capabilities remain consistent during the upgrade was critical.”

With respect to price and compatibility, Gill says Cisco WAAS has enabled them to cut costs significantly, especially at the smaller sites.

“It was important for us to be able to cut our prices, especially at the smaller sites that were using the 2800 ISRs,” says Gill. “There was compatibility with the integrator module blades that we were able to simply plug in without having to employ a secondary device, so the footprint savings and cost savings of not having to purchase additional equipment were the main drivers for us.”

Gill says manageability of the new infrastructure was the initial result from the newly optimized WAN and storage upgrade.

“Our previous storage switches from another vendor were often a challenge when it came to managing them, and we were always having to go back and re-learn what we did,” says Gill. “The Cisco MDS’ were very intuitive and easy to understand. Our comfort level with the technology, knowing the devices are going to be easy to manage, and that we have the additional functionality that we will need down the road really added to the overall Cisco experience.”

## **Business Results**

According to Gill, upgrading to WAAS accelerated application delivery, especially for ProjectWise, a key application for the Baker business.

“Immediately following the upgrade to the WAAS devices, traffic began routing through at speeds that were on par with LAN speeds at the local offices, as if the data was working off a local network and not coming from a central location,” says Gill. “I’m no longer receiving calls with complaints from users that application delivery is slow.”

Since rolling out Cisco WAAS, Gill says he and his team has minimized WAN bandwidth expenses, seeing up to 85 percent bandwidth savings just from the ProjectWise CAD application alone.

“ProjectWise is a widely used program for Baker, and at certain locations ProjectWise is the only application used,” says Gill. “We are seeing an average of 70 percent bandwidth savings, and at sites where ProjectWise is used almost exclusively, we are seeing up to 85 percent savings.”

Gill says bandwidth for Baker’s e-mail system has also decreased.

“We have Novell GroupWise e-mail servers in every office, and the transfer of data between all the different offices was resulting in up to 90 percent WAN circuit consumption,” says Gill. “Now that we have the ability to do backups across the newly optimized WAN, we’re seeing WAN bandwidth consumption reductions of up to 30 percent. All these savings gave us anywhere from US\$4,000 to \$7,000 savings per month.”

The ability to optimize Baker's human assets has been another result from the upgrade, according to Gill.

"Naturally, one of the biggest pluses for us has been optimizing our employee's utilization while lowering our infrastructure costs," says Gill. "Much of our business hinges on the billability of our employees and a streamlined overhead. Since upgrading to WAAS, we have been able to reduce our costs through more efficient collaboration. On a specific project, this translates to over US\$1million approximately in net benefits and 269 percent ROI over 18 months.

### Next Steps

As Gill and his team look to the future of the Baker IT infrastructure, disaster recovery plans are on the forefront of their minds.

"At this point we are looking into extending our disaster recovery capabilities into a complete site, setting up more of a duplicate system for business continuity," says Gill. "With what we have in our upgraded SAN and the Cisco MDS' we could actually create this site today and build a second data center, possibly bringing data online through replication. We also see a huge gain in the present and down the road with the WAAS devices we've just deployed. WAAS will be critical once we move to that point in time to build out our disaster recovery plan."

#### PRODUCT LIST

##### Cisco Application Networking Services:

- Cisco Wide Area Application Services (WAAS)
- Cisco WAE-7326
- Cisco ISR 2811
- Cisco NME-WAE-502
- Cisco WAE 512
- Cisco WAE 612
- Cisco MDS 9216 Multilayer Fabric Switches

### For More Information

To find out more about Cisco WAAS, please visit <http://www.cisco.com/go/waas>.



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