

Mustang Engineering Corrals WAN Costs with Juniper WAN Acceleration Solutions

**Organization:**

Mustang Engineering

Industry:

Oil and Gas Services

Challenge:

Improve application response time to engineers and designers working in remote offices with critical engineering applications, e-mail, and other business applications.

Solution:

Juniper Networks WX and WXC application acceleration platforms

Benefits:

- Provide engineers in remote offices with higher levels of application availability and response time for intensive engineering applications, Windows file services and Microsoft Exchange
- Make more efficient use of available WAN bandwidth and overcome latency on remote connections to maximize WAN investment
- Centrally manage the WAN while improving visibility into the network

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Brady Brown
Network Administrator
Mustang Engineering

As an international oil and gas engineering and project management firm, Houston-based Mustang Engineering must work fluidly from offices across the country and around the globe. Mustang provides services ranging from design and construction management of offshore oil and gas structures and onshore production facilities to the design and inspection of pipeline projects. To give “Mustangers” in offices around the United States and the United Kingdom speedy, reliable access to heavy-duty engineering applications, e-mail and shared files in its data center, Mustang relies on Juniper Networks WAN optimization and application acceleration platforms.

Mustang first deployed Juniper WXC application acceleration platforms more than two years ago to enhance communication, collaboration and file sharing between offices in the Houston metropolitan area. Since that initial deployment, the Juniper WXC platforms have become a prerequisite for WAN connectivity whenever a new office comes online.

The Juniper solutions were introduced to Mustang when engineers and designers in a second Houston-area office were experiencing response time problems when accessing bandwidth-intensive engineering applications like AutoCAD, as well as common business applications like e-mail, that were centralized in the company's Houston headquarters. The few miles separating the offices had a significant impact on application performance. As a workaround, project staff members began to store critical files locally so that they would be immediately available when needed – a strategy that was not acceptable for Mustang.

Brady Brown and Keith Wingate, both network administrators at Mustang Engineering, were tasked with solving the problem. They considered adding a local backup system to the second Houston office, but the solution proved too costly. Plus, it wouldn't scale efficiently as the fast-growing company opened additional offices. Brown and Wingate knew the company needed an affordable solution that would solve their immediate problems and could grow along with the company.

Brown and Wingate turned to Accudata Systems, their Houston-based IT consulting firm and strategic partner, to explore other options. First they looked at file caching and acceleration products, but quickly decided that traditional file caching was ultimately impractical since Mustangers work with a wide variety of large files on a regular basis, and IT couldn't anticipate which files needed to be cached ahead of time for optimal performance. Further research led them to WAN acceleration technology, which not only addressed the shortcomings of file caching, but also delivered the best performance with the greatest flexibility both now and in the future. The team put Juniper Networks on the shortlist and installed the Juniper platforms as part of a pilot project between the two Houston locations. The rest, as they say, is history.

"The Mustang IT team was facing increasing challenges with respect to latency, application response time, and control over valuable, available bandwidth," says Chris Laney, account manager at Accudata, a Juniper Elite partner. "They required a long-term solution from a vendor with a proven track record for delivering best-of-breed solutions to growing, enterprise clients. The Juniper WXC product line was the right solution to address Mustang's key issues, and it furnished their internal clients throughout the world with first-class application availability and response."

The Solution

The Juniper WX and WXC application acceleration platforms improve application performance over the WAN by eliminating redundant transmissions, accelerating TCP and application-specific protocols, prioritizing and allocating access to bandwidth, and ensuring high availability at sites with multiple WAN links.

"At Mustang, our engineers work with large design and specification files from remote offices," says Wingate. The Juniper WXC platforms have reduced WAN traffic an average of 50 percent per week, delivering significant improvements in application availability and response for key engineering tools like AutoCAD and Intools, an engineering specifications database. Remote users have also seen LAN-like performance when accessing centralized Microsoft Exchange servers or utilizing the Microsoft CIFS file sharing protocol; according to Wingate, users have experienced a 5x performance improvement thanks to the WXC platforms.

Juniper's powerful compression and caching techniques have helped Mustang make more efficient use of its available WAN bandwidth, which has allowed the company to avoid costly WAN upgrades. Molecular Sequence Reduction™ (MSR™), the flagship compression algorithm employed by the WX and WXC platforms, recognizes repeated

data patterns and replaces them with labels before forwarding them across WAN links, dramatically reducing WAN traffic volumes. The MSR technology benefits a broad range of applications, including both short, chatty applications such as HTTP, as well as larger data patterns, such as Word files and e-mail attachments.

The Network Sequence Caching technology, supported by the WXC platforms, provides even more dramatic bandwidth efficiencies. Like MSR compression, sequence caching identifies patterns at the IP layer and replaces them with a label for transmission across the WAN. But unlike MSR, which operates entirely in memory, sequence caching uses hard drives to retain and recognize these patterns. Sequence caching focuses on larger patterns than MSR and is able to detect these patterns even when they are separated by hundreds of gigabytes of other data and have occurred days or even weeks earlier.

Wingate notes that the acceleration benefits of the MSR and sequence caching technologies are particularly noticeable on T-1 connections, but they've also seen strong performance increases on 45 Mbps T-3 connections, which have high latency. "When we use the WXC platform with the high-bandwidth circuits, we get a good performance increase because of the caching," says Wingate.

Brown adds that, although Mustang had ruled out traditional file caching as inflexible, they quickly recognized that the WXC platform's sequence caching implementation would adapt to users' changing work patterns. "One day an engineer or designer in a remote office might work on one client project and then tomorrow he might work on two completely different client projects," says Brown. "The engineers don't use the same files over

and over, which means that file-caching solutions wouldn't work because we don't know in advance which files people want to use. Juniper is much more transparent. We turn it on, and it goes."

In addition to the MSR and sequence caching technologies, the WX and WXC platforms also feature an Application Flow Acceleration™ (AppFlow™) technique that speeds the performance of key applications that are especially impacted by WAN latency: the Messaging Application Programming Interface (MAPI) used by Microsoft Exchange, the Common Internet File System (CIFS) used by Windows file services, and HTTP for Web applications. The AppFlow technology accelerates these chatty applications by pipelining the data blocks and web objects, delivering a three- to 100-fold improvement in application performance.

To reduce the impact of latency on the WAN links, the WX platforms also include unique Packet Flow Acceleration™ (PFA™) technologies that accelerate TCP-based application performance over the WAN. The PFA technologies include Active Flow Pipelining, which improves TCP performance by terminating TCP connections locally and using a more efficient transport for sending data over the WAN between WX platforms, improving application performance on high-latency connections.

Currently, Mustang has WXC 500 platforms in its Wilmington, DE, Greenville, SC, Martinez, CA, Monroe, LA, and London offices. The Houston headquarters, meanwhile, features a WXC Stack – a configuration that pairs a WX 100 with two WXC 500 platforms to provide high-performance 155 Mbps throughput speeds and 3 TB of disk space to support the sequence caching function.

The Benefits

The improved application response times enabled by the WX and WXC platforms have improved productivity and enabled the Mustang IT team to maintain control over WAN costs. In addition, the easy, centralized administration and flexibility has made the Juniper WXC platforms efficient to own and operate.

- Improved Application Response Time:** The Mustang IT team was able to improve application response times while maintaining control over the available WAN bandwidth. How did Wingate and Brown know the solution was working? User complaints about network performance were eliminated as engineers in remote offices began working productively with the centralized business applications. “The users never applauded the speed increase,” says Brown, “but when we took the appliances offline briefly for a software upgrade, the phone calls started again, and people were asking why the network was so slow. It was a case of not knowing what they had until it was missing. As soon as the WXC platforms went back online, everyone said the network was fine and the phone calls stopped.”
- Keep Telecom Costs in Check:** Mustang has been able to avoid additional investments in telecom bandwidth because of the compression and caching features of the WX and WXC platforms. In addition, the application acceleration platforms help meet an increasingly difficult challenge that can't be fixed by simply adding more bandwidth: the increased latency that comes with cross-country or global WAN connections.

- Easy Management:** With a small IT support team and offices spread across the world, the ability to centrally manage the wide-area network is critical. Brown appreciates the increased network visibility granted through the WX Central Management System™ (WX CMS™) software. “You can look at one screen and see what everyone is doing – the Top 10 list, which sites have best compression results, which links have the best acceleration going, and much more,” says Brown. “We can easily drill down into the detailed information as well.” Brown also uses the WX CMS software to generate regular reports for Mustang’s executive team, so that IT can demonstrate the business value of the WAN investment.

Accudata’s Laney praises the WX CMS as well. “Juniper’s Centralized Management System added a very intuitive interface for deployment, configuration, and management, which helped decrease implementation time and costs,” he says. “Juniper’s local account management team and J-TAC support have continued to provide timely and reliable response to questions and concerns from Mustang throughout the implementation and post-implementation process.”



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