

National Instruments ramps up network performance while slashing costs

Cisco SD-WAN brings global users 30 times the bandwidth at one-third of the price.



National Instruments

Industry

Technology/Manufacturing

Location

Austin, Texas

Number of employees

7000+

Website

www.ni.com

When engineers and scientists around the world need automated test and automated measurement solutions, they turn to National Instruments (NI). But how does a successful global enterprise keep up with steadily growing demand without busting its IT budget? For NI, the answer was rethinking the corporate and branch network.

The high costs of complexity

NI's quality and diversity have made it the clear leader in its market, serving more than 35,000 companies and generating annual revenues of over \$1.2 billion. As the company has grown, however, the IT environment, and especially the corporate wide-area network (WAN), had become a victim of that success.

Like many multinational enterprises, NI's WAN is the nervous system connecting a wide range of activities (sales, R&D, manufacturing, contact centers) at its 88 sites worldwide. If the WAN is underperforming, even at just a few key sites, the business and customers will feel it.

A team in Texas, for example, would push out a new software release, and their counterparts in China wouldn't receive it for hours because the WAN was so congested. Employees using collaboration tools, especially for audio and video conferencing, faced sluggish, sometimes almost unusable applications. Different NI teams found themselves competing with each other for a share of limited bandwidth and growing

increasingly frustrated. But the traditional response to growing demand—throwing more MPLS bandwidth at the problem—had become untenable.

“Our bandwidth requirements were growing by 10 to 25 percent every year, and our budget just couldn't keep up,” says Luis Castillo, global network team manager. “Part of the problem was that these sites can have very different requirements. R&D shops need lots of bandwidth. One site may have a special customer that requires unique segmentation and security. Our contact centers need to support mission-critical voice services. All of that is dependent on the WAN, which means escalating complexity and constantly growing costs.”

Castillo's team tried implementing call admission control. They stretched quality of service (QoS) mechanisms as far as they could go. They used the lowest quality codecs for streaming video. They even asked employees to share workstations for videoconferences. In the end though, these efforts made an already-complicated architecture even more complex, without solving the underlying bandwidth problem.

There had to be a way to improve capacity and performance of the global network, without taking on huge new costs. Enter the Cisco® SD-WAN solution.

“With Cisco SD-WAN, we've reduced our MPLS spending by 25 percent while increasing bandwidth by 3075 percent.”

Luis Castillo

global network team manager, National Instruments

Reimagining the WAN

Cisco SD-WAN powered by Viptela gives NI a single, simple solution for escalating WAN costs and complexity. It brings software-defined networking intelligence and centralized policy control to automatically optimize traffic and application performance across the WAN. And it allows NI to transport large amounts of network traffic over lower-cost Internet connections instead of expensive MPLS links.

That shift alone has made a huge bottom-line difference, reducing MPLS bandwidth costs by an average of 64 percent per site. Just as valuable is the dramatic improvement in the user experience at NI sites around the world.

“Today, I no longer have an office with 80 people doing all sorts of different jobs and IT workloads, all competing for a 10-Megabit circuit,” says Castillo. “I can categorize traffic by function and type, and send backup traffic over the Internet under a service-level agreement (SLA). We’ve eliminated that bandwidth bottleneck on our MPLS circuits.”

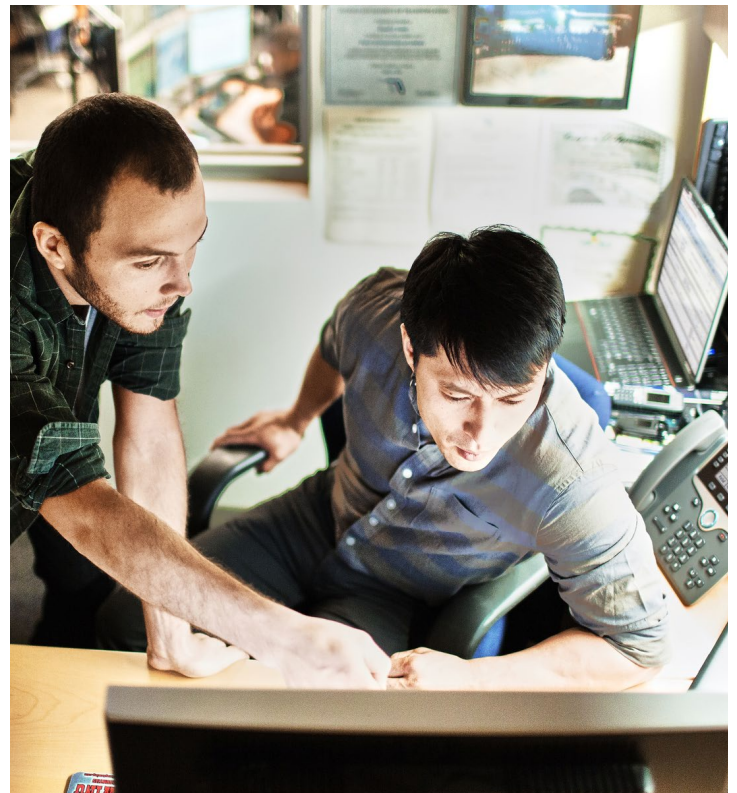
NI is still in the midst of its SD-WAN journey, connecting just 36 percent of its worldwide locations. But the project has already reduced overall MPLS spending by 25 percent—a net savings of nearly \$450,000 in 2018 alone. More important for NI’s users and customers: at each SD-WAN location, the solution has increased average bandwidth by an incredible 3075 percent. That’s the equivalent of commuting to work on a congested toll bridge that supports 50 cars per minute one day, and finding yourself on a bridge that supports 1500 cars per minute the next.

“Having more bandwidth at these sites not only makes things faster, it means that our WAN issues aren’t impacting business operations,” says Castillo. “Software updates that used to take eight hours to replicate across the network now take 10 minutes. We don’t have to bother with call admission control or limiting video quality or the other measures we had to take to deal

with bandwidth constraints. We have been unbelievably impressed with the performance, reaching numbers we’ve never been able to before, while at the same time reducing costs like never before.”

Simpler, more stable connectivity

The shift to a universal SD-WAN solution, instead of manually configuring each site’s transport connectivity on a case-by-case basis, has made NI’s environment much simpler to manage. Where Castillo’s team used to wrestle with dozens of overlay networks for all the different sites and business activities, they are now adopting a single, standardized WAN solution.



“Before, we were completely unable to enforce standards,” says Castillo. “That drives up complexity, drives up the time it takes to troubleshoot problems, and drives up failures, outages, and firefighting. With SD-WAN, it’s tremendously easy to deploy these sites.”

Driving out complexity across the global network has also improved stability. Despite undertaking a major change to the network architecture, Castillo’s team has had just 15 trouble tickets total related to the SD-WAN solution. For 14 of those, the issue wasn’t even SD-WAN; it was another device in the infrastructure that couldn’t handle the higher traffic load because the network was consuming traffic so much more efficiently. Castillo credits much of that success to working with Cisco Services.

“We chose this solution for its flexibility, but the risk of something that flexible is that it’s easy to paint yourself into a corner,” he says. “Cisco Services made sure that didn’t happen. Their design guidance helped us develop the network architecture so we could meet our needs and move forward in a very stable way. The experience that Cisco Services has with these kinds of deployments, the foresight they bring on the issues we might encounter, is what gave us that stability and helped us accelerate our deployment. We’re already seeing great value from our SD-WAN investment, and Cisco Services has helped us reap these benefits faster.”

For more information

Please visit the [SD-WAN site](#) to learn more.

Learn more about [Cisco Services for SD-WAN](#).

Read additional [DNA customer success stories](#).

Products and Solutions

Cisco Services:

- Advise and Implement Services for SD-WAN

Enterprise Networking:

- SD-WAN Routing & Management:
 - vEdge-1000
 - vEdge-2000
 - vEdge-5000
 - vManage

Software:

- DNA Advantage