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By

Lane F. Cooper and Susan Aluise

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In the brave new world of network-centric warfare, getting the right information to the right people at the right time, empowering them to make the best operational decisions in real time and making sure that everyone is on the same page and working off the same version of the facts is critical to success. To attain the valuable but elusive goal of situational awareness, operational commands need to be able to leverage their information resources and effectively manage their networks. And it's not about bits and bytes -- it's about sharing and managing information.

But a network, however functional and powerful, is only as good as its ability to accomplish its primary mission: enabling fast, secure, reliable exchange of information to give U.S. forces a shared awareness of the battle space, empowering commanders in the field to make better decisions. And for that, you need to be able to monitor and manage the networks to ensure that they're performing as they should.

Networks in Hostile Environments

The I Marine Expeditionary Force (MEF), a Marine Air-Ground Task Force, has found the task of analyzing and managing network performance in some tough environments far more efficient through the use of real-time monitoring tools from Austin, Texas-based SolarWinds.

In the beginning, I MEF used monitoring tools such as HP OpenView, What'sUp Gold or other open source solutions to monitor and analyze network performance, said Gunnery Sergeant Les Timmons, who works on I MEF's garrison and tactical networks, supporting units that go out on ships or are forward deployed to Iraq and Afghanistan.

But these tools were not robust or detailed enough to support the operational decisions made on a network that was constantly changing.

Because there was no solid data to look back on, it was difficult to measure performance over the course of a year, six months -- even over the course of a few weeks.

"We were spending a lot of time trying to pin down quality of service issues, especially when we employed more IP-based Voice and Video Systems on top of a very complex data infrastructure," Timmons explained. To remedy the problem, I MEF purchased SolarWinds Engineer's Toolset, Orion Network Performance Monitor (version 9) with an Orion Network Traffic Analyzer and Orion VoIP Monitor, now known as Orion IP SLA Manager.

One significant improvement, according to Timmons, was time saved by narrowing troubleshooting issues, reporting how those links are performing so I MEF can better leverage their assets in support of the battle staff and the war fighter on the move.

"I was extremely impressed with how it allowed us to manage our campus networks

more effectively, to see the traffic just coming in and out of the firewalls -- what's getting to the firewall being blocked," Timmons said. "And, if a large conversation was unnecessary or using too much bandwidth, we could pinpoint it and eliminate it, or reschedule that job for a different timeslot."

For I MEF, the largest metric to be considered is time and the number of job calls -- the ability to get necessary services from one side of the world to the other, to connect back to the continental U.S. using an effective, understandable, secure voice phone call or video teleconference. SolarWinds offerings are "absolutely valid tools for improving it," Timmons said.

Gaining Institutional Memory

The biggest improvement might well be the ability for new units that are rotating in to be able to have performance data on the networks from Day One. In the old days, when units would rotate out after six months, a year, or 18 months, the new units would have to come in and start from scratch analyzing the network.

"That took a lot of time and effort to figure out what's actually on the network, what's the status of security policies, what are the weak links in my network?" Timmons said. "The time savings -- just being able to do an effective turnover and deal with the incoming unit, keywords on the network -- it's fully documented. That was probably our biggest time savings with turnover of responsibility."

At several sites, there typically would be two enclaves -- 150 devices on one and close to 250 on the other. With the number of users ranging anywhere from 2,000 to

3,000, time was a huge factor. "And there is constant change," Timmons said.

Bases close down, men move from one place to another. Being able to plan according to what they were seeing with the current data architecture was critical. "We are able to see exactly what's happening with the network as it comes up instead of trying to get it up, and then trying to measure its effectiveness," he said.

Among the mission-critical applications I MEF must support is video teleconferencing, especially between the command staffs and joint entities. "For example, my commander would have video teleconferences with all the other commanders in theatre back to Baghdad," Timmons said. "And you know that you absolutely could not drop that session. The toughest thing to do is accept the fact that you have a problem on your side of the network. But the information gleaned from SolarWinds data helped pinpoint the origin of dropped calls."

But now that they've done the basic configurations to allow Simple Network Management Protocol (SNMP) to work along those data circuits, they could pinpoint a problem and mitigate it before it happened the next time. "Because, the General doesn't want to be dropped off a telephone for any reason," Timmons said. "Especially, when he's got the Theater Commander on the other end."

There's also value for smaller bases with 100 or 200 people that are pretty much out there on their own. "It was imperative that they have crossed communication with that command element -- they're receiving re-supply, things like that," Timmons said. "We were able to monitor and help those as well." Since multiple agencies had to be able

to see the same data -- and be able to report from one agency to a higher agency if a version is not working -- they were able to mitigate a lot of those issues based on trends that they were seeing in the data.

While similar challenges crop up in other large enterprises, for I MEF, the physical environment is yet another challenge that must be managed effectively. "Whether it's extreme heat or extreme cold, our HVAC systems were imperative," Timmons said. "So, power had to be right, the AC/heating, whatever it is, had to be spot on or we would lose systems quickly."

The SolarWinds solutions not only helped I MEF to monitor the condition of that power source, but also to bring back metrics, for example, on the average temperature of a certain device so that we could investigate.

"This tool is going to take us so much further than we thought we could go with it," Timmons said.

"We are starting to show that we can customize what different people see

according to their needs, so they're not getting blown away by a thousand different things on a web page. If they need a very simplified tool, if they need a very robust tool that's going to give them a whole lot of statistical data, we can customize it however they need to see it."

The next step toward optimizing the use of I MEF's existing resources will be enhancing the training. "I think training is going to be the key," Timmons said. "Most of the units already have these tools out there." Now that I MEF is adding additional SolarWinds applications (they're now using Orion Network Configuration Manager) training people on different administrative roles is becoming increasingly important.

And the business case might well be best stated in its basic value proposition: "Instead of trying to send out one marine with a laptop, patch cable and say 'hey, you've got 15 places to go and have this done in the next five hours', we are able to manage and configure from our desktops."

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