iGOV TECHNOLOGIES DELIVERS SMALLER, LIGHTER TACTICAL COMPUTING SOLUTION

INDUSTRY
INFORMATION TECHNOLOGY

LOCATION
RESTON, VIRGINIA

KEY CHALLENGES
- Reduce the weight and size of a tactical mobile computing system for easier transportation.
- Reduce power consumption to survive in rugged, extreme environments.
- Reduce complexity of building and managing systems in field environments.

SOLUTION
iGov Technologies replaced network attached storage in its tactical network platforms with a hyper-converged infrastructure solution based on VMware Virtual SAN storage. This reduced weight by more than 75 percent, increased performance by 10 times, and extended battery life from 18 minutes to 2 hours.

BUSINESS BENEFITS
- Product weight decrease from 620 to 170 lbs
- Reduced shipping size 48,000 to 6,900 cubic inches
- Increased IOPS performance by 10x
- Reduced storage build process from 9 hours to 23 minutes

An important customer in the federal government asked iGov Technologies, a tactical C4I systems integrator, to build a new version of its tactical network platform that would be much smaller and lighter but also more powerful and energy-efficient. By replacing network-attached storage modules with server-attached storage virtualized under the VMware Virtual SAN™ solution, iGov reduced the product's weight by 75 percent, improved storage performance by 10 times, and extended battery runtime from 18 minutes to 2 hours.

As a leading C4I systems integrator, iGov Technologies builds mobile, ruggedized communication, networking and computing solutions for rapid global deployment and reliable operation in austere environments. Its products include a family of tactical communications, ISR and network platforms that provide critical information exchange for U.S. military forces operating around the world. Headquartered in Reston, Virginia with an 82,000 square feet Integration Facility in Tampa, FL, iGov employs a talented, diverse, and experienced workforce.

The Challenge

iGov's tactical network platforms have been, and currently are, successfully deployed in conflict theaters around the world. Available in a modular range of sizes and capacities, they support the full spectrum of tactical command and control communications, mission planning, and decision support with onboard services that include email, Radio over IP, full-motion video, web services, and Microsoft Office.

When one of iGov's government customers asked for an even more portable version of the product—one that was much lighter, more compact, and able to run far longer on less power—iGov was faced with a challenge. "When we first saw the new requirements, we thought this was going to be impossible," says Kirk Johnson, Systems Engineering Manager at iGov.

The existing product used conventional rack-mount servers running VMware vSphere® software and the VMware vCenter Server® management solution to virtualize and manage the computing environment. A separate module of redundant network-attached disk arrays provided storage. One possibility for meeting the new requirements was to eliminate the separate storage module, replacing the rack-mount servers with compact modular hardware and virtualizing shared onboard storage using VMware Virtual SAN technology.

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"We got IOPS that were 10 times faster than our old storage. We almost fell out of our chairs when we saw the performance from this tiny little server running Virtual SAN. It was staggering. The numbers were just unbelievable."

TOM LYNOTT,
SOFTWARE ENGINEERING MANAGER,
IGOV TECHNOLOGIES

VMWARE FOOTPRINT
• VMware Virtual SAN
• VMware vSphere
• VMware vCenter Server
• VMware vSphere PowerCLI

APPLICATIONS VIRTUALIZED
• Microsoft Exchange
• Microsoft SharePoint 2013
• Microsoft Exchange 2013
• Microsoft SQL Server 2012 R2
• Microsoft SCCM 2012 R2

The Solution

The breakthrough design recommendation came from iGov's VMware Technical Account Manager (TAM), whose longstanding relationship with the company afforded a deep understanding of its products, customers, and the challenges of their mission. "Our TAM organized a meeting with the Virtual SAN product team," Tom Lynott, Software Engineering Manager says. "They gave us an introduction to the technology and its capabilities, and we took it from there."

iGov engineers experimented with several leading lines of compact server systems, configuring each with multiple onboard storage drives and installing the Virtual SAN solution to create a shared storage pool. Virtual SAN software is radically simple enterprise-class storage for VMware hyper-converged infrastructure solutions. Uniquely embedded in the hypervisor, Virtual SAN software delivers flash-optimized, high-performance storage, leveraging commodity x86 components that elastically scale to lower TCO by up to 50 percent

Unfortunately, none of the existing servers had sufficient processing power to run the converged system at target performance levels. That changed when a visiting manufacturer, a developer of military mission solutions, saw test results and committed to building a more capable server.

"We work very closely with a large portfolio of OEMs. Our partner developed a converged module with VMware-certified hardware giving us all the performance we needed to run Virtual SAN on these little boxes," Lynott says. "That let us go from a traditional 19-inch rack-mount server down to a very compact 12-pound cube that can fit in a duffle bag."

Business Benefits

Chuck Reiche, iGov's Vice President of Business Development, said, "This new approach is the next step in the evolution of DoD command and control systems. It's hard to argue with the SWAP+C, scalability, security, and performance benefits of virtual storage and hyper-converged infrastructure. iGov has a long history of rapidly transferring/transforming emerging technologies into capable tactical systems. Our partnership with companies like VMWare are what make this possible."

When the iGov team assembled the first tactical network system using the compact servers and VMware Virtual SAN storage, the system came in well below the government's size and weight targets. "We took an older model with the separate storage module and put it on the scales," Johnson says. "Packed to ship, it weighed 620 pounds and took up 48,000 cubic inches. Our new model with Virtual SAN cut that down to 170 pounds and 6,900 cubic inches."

The smallest tactical network system can now be hand-carried on a commercial flight by a single person and stowed in a normal overhead compartment.

The real surprise came when iGov fired up the new systems for performance testing. "That's when we first realized just how fast our new Virtual SAN solution was," Lynott says. "We got IOPS that were probably 10 times faster than our old storage solution. We almost fell out of our chairs when we saw the performance from this tiny little server running Virtual SAN. It was staggering. The numbers we got were just unbelievable."

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Being smaller and lighter, the new model also uses significantly less power, a critical consideration for field systems that normally depend on generators. "The uptime we now get on battery power is over 2 hours," Johnson says. "Our old systems would only give us 18 minutes. If you were out in the desert and your generator ran out of gas, you had 18 minutes to get it refueled and restarted. It really was just enough power to execute a graceful shutdown. Now the warfighters have the ability to keep operating until power can be restored. It is a significant new capability."

Looking Ahead

With the success of its redesigned tactical network product line, iGov is now replacing some legacy conventional storage with hyper-converged infrastructure, based on the VMware Virtual SAN solution, including some based on conventional rack-mount server systems. "Our customers see what we've done with this small, deployable system and they are very interested. We're recommending Virtual SAN in most small form factor systems now."

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