

Q: How is Sandia National Labs leveraging VDI to support research collaboration with universities and industry and promote opportunities for partnerships?

A: Sandia has a summer student intern program that hires students from universities to perform work respective to their field of study. During the last two years, many of the summer student interns use a VDI desktop to perform this work as opposed to a physical desktop. This allows the programs to save money from purchasing a full PC to be used for only a short time. Many of the students have still be unable to use our VDI solution due to the availability of applications, since our current production service is non-persistent. Now that we are introducing our new persistent offering using Unidesk layering, we anticipate growth in this area.

Sandia uses VDI to perform contract work remotely. VDI allows them to perform this work without needing to use Government furnished property. Sandia has collaborated with Lockheed Martin on VDI implementation, sharing best practices and lessons learned.

Q: How has VDI improved scientific research productivity and performance at Sandia National Labs?

A: One of the main benefits of VDI is that customers do not need to apply patches to their own desktops. Since patches are automatically applied, this allows members of our workforce to continue their work without interruption. Because we are still early in our implementation, we have not experienced this at large scale.

Q: How has VDI transformed the way Sandia operates both from a mission effectiveness and business perspective?

A: We are currently testing methods of allowing customers with very specific mission needs a way to separate that work from our regular network using Virtual Desktops in enclaves. This allows users to perform work in the enclave then connect back to a VDI session on the network to do regular tasks such as web browsing, email, and timecards. They can also do their regular tasks on the normal network and connect to virtual desktops in the enclave to do their mission work. While we are in the very early stages of testing this, we see great potential for this with several different mission customers. This will mitigate compromise via phishing, malware, and targeted attacks.

From a business perspective, we have done cost projections that show an overall cost savings of 25% over 5 years, but this is very dependent upon adoption of the service. For this reason, we continue to offer new solutions that will increase adoption. The mission work I just referred to is one example. We are also piloting a persistent VDI solution using Undiesk layering in order to allow users greater customization than they had with our non-persistent solution. User experience and marketing our solution continues to be one of our largest focus efforts because we feel this will directly contribute to adoption.

Q: How did Sandia National Labs leverage VDI to address the full value of key trends like user mobility, personalization, quick deployment, high performance and security?

A: We allow secure remote access to VDI , enabling the use of a mobile desktop solution. The use of a mobile desktop is part of Sandia's mobile strategy and we will be looking for additional features and products to leverage desktop or desktop applications to enable mobility. We have also deployed zero clients to several

of our conference rooms, allowing users to connect to a VDI session to access data or collaborative technologies without needing to bring a laptop or have a physical desktop managed by the conference room owner.

For personalization, we utilize the profile solution built into the VDI software we use in order to maintain personalization settings over our non-persistent desktops. We do not store data on VDI desktops. With our new persistent solution, there will be no need for profiles to roam from machine to another. For quick deployment, we have built a custom solution that integrates all of the associated systems and approval processes so it is seamless to the end user.

For high performance, one of our VDI teams is currently testing GPU graphics capabilities in both a dedicated and shared methods.

Q: How has the need for technology innovation brought Sandia IT to the forefront of advanced computing capability?

Sandia is a research and development laboratory. This culture holds true in IT as well. As a result, there are several innovations we are making in IT. I will summarize a few that may be of interest to this audience.

- Bromium – Bromium vSentry is a product that uses a “micro virtual” hardware layer hypervisor to isolate and contain untrusted websites and applications from the host OS, network, and memory. Instead of using a sandbox or disk, it uses hardware to isolate, which is thought to be more secure. It also uses LAVA real time monitoring to log unusual activity for use by incident responders. Sandia evaluated the product for our environment. We have piloted the software, and are making a determination about whether to use this or other tools like it in our environment. (Source: Nick Georgieff)
- GPON - Sandia’s Gigabit Passive Optical Network, or GPON, infrastructure was named one of the 100 best innovations of 2013 by Popular Science magazine. Deemed the world’s largest fiber-optic LAN, it connects 265 building and 13,000 network ports using half-inch fiber-optic single mode cable that can transfer voice, data, and video using the same infrastructure. Before this, we would have to replace generation after generation of copper cable, which was very expensive. The new infrastructure is low-maintenance and long lived, allowing focus to shift from maintenance and upgrades to allowing new capabilities. While lots of people are moving to a subscriber-based PON structure, Sandia was one of the first to do so. The centralized control of major network components allows us to take advantage of media as well as other capabilities. We tend to outgrow enterprise class architectures and needed a solution that could be scaled out to be as big as we are. (Source: Steve Gossage)
- Collaboration using Microsoft Lync – Sandia led the National Nuclear Security Administration (NNSA) complex-wide effort for Lync federation. We have the largest federated Lync installation in all of DOE in terms of federated partners. This allows users at several different sites among the complex as well as industry partners to collaborate real-time using Lync’s chat, voice, and video capabilities. Lync capabilities are being introduced to specialized conference room equipment that integrates Lync. Efforts are underway to integrate Lync with existing IP based videoconference systems to enable local and cross-site collaboration. (Source: Scott Stephens)
- Cloud Services – The goal of cloud services is a one stop shop where customers can make requests for computing resources via a single portal. The correct resources will be delivered based on automated logic. While “cloud” is not a new innovation, it is innovative in the public sector (this audience) due to the policy, rigor, security controls, and in some cases regulation that are not present to the same degree in the private sector. (Source: Andrew Clark)

Q: Even though the 22 individual national labs and the Department of Energy as a whole continue to operate independently of one another – how has VDI helped to unify IT throughout the DOE?

Our DOE oversight office uses our Virtual desktops to access Sandia systems to which they need access. While we are early in our VDI deployment, we are further along than most other national labs or DOE partners. We have shared experiences and lessons learned with several other labs in addition to a DOE site at Hanford. Many of the challenges we face are similar and many of them are unique. As more sites deploy VDI solutions and technology evolves to allow the realization of benefits at a reasonable cost, I believe we will see more areas to integrate the actual solutions. NNSA has explored mobility initiatives that have included VDI components, in which I was involved. Efforts execute such initiatives has not yet occurred at a level which we have been involved.