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Final Copy of Case Study

Status:
Laureate

Year:
2013

Organization Name:
Centers for Disease Control and Prevention (CDC) Group: Informatics Research & Development Activity (IRDA), Public Health Surveillance & Informatics Program Office, Office of Surveillance, Epidemiology, and Laboratory Services (OSELS)

Organization URL:
www.phiresearchlab.org

Project Name:
Public Health Informatics Research Cloud

Please select the category in which you are submitting your entry:
Human Services

Please provide an overview of the nominated project. Describe the problem it was intended to solve, the technology or approach used, how it was innovative and any technical or other challenges that had to be overcome for successful implementation and adoption. (In 300 words or less.)

The Informatics Research and Development Activity (IRDA) office at the CDC is completely devoted to research and development, supporting CDC's researchers and their needs regarding testing of different technologies and approaches prior to deployment. Before virtualizing with VMware, CDC faced many challenges in public health technology (informatics) research and development. Software testing and evaluation was an extremely regimented process; testing different software products could often take months and that was if resources were available and the request was approved. It was an intensive process to test

different configurations of software to see which one really worked best for the organization's specific needs; this required significant time, funds and resources to be used. To address this challenge, IRDA created the Public Health Informatics Research Cloud (PHIRC), a secure private cloud, built using VMware's virtualization, security and automation solutions. This implementation created a safe environment for IRDA's researchers to test different technologies and approaches, which was isolated from CDC's production LAN; they call this their protected sandbox. It is truly changing the way CDC researchers work, providing the agency agility and enabling rapid deployment of new technologies. Central to the protected sandbox solution is VMware vSphere 5, the industry-leading virtualization platform for building cloud infrastructures, and VMware View, a desktop virtualization solution that simplifies IT manageability and control, while delivering the highest fidelity end-user experience across devices and networks.

When was this project implemented or last updated? (Please specify month and year.) Has it incorporated new technologies and/or other innovations since its initial deployment? (In 300 words or less.)

The R&D lab was created in 2007; the direct mission was to assist one of CDC's national centers in testing new applications and technologies using VMware Workstation on powerful laptops. 1.5 years later, the lab transitioned to a couple of freestanding servers for internal and external projects using ESX and LabManager without the benefit of shared storage. Under the leadership of Dr. Savel, the lab's direction changed in 2010 to become a resource for the entire agency and the public health community. Late in 2010, the lab received CDC's security certification, and in early 2011 the lab acquired new enterprise-level servers, switches, and a SAN interconnected via 10 GB fiber. Our new equipment allowed us to utilize vMotion, HA, and DRS to balance our workload and reduce downtime. We implemented a backup appliance to archive off valuable lab manager projects for future reference; we also implemented a cutting-edge security solution that incorporates vShield to protect VMs at the virtual layer, allowing us to meet our C&A requirements using one solution versus several applications/appliances. The Lab has gained an advantage by using cutting-edge technology, allowing us to offer an array of services to numerous clients with a small footprint and staff. As we look to transition to vCloud Director, we purchased Service Manager to be ahead of the curve to offer self-service features and faster implementation times. These additions help us understand our environment for improved troubleshooting and faster performance. vCenter Operations Manager will be a key to success in identifying trouble areas while improving our private cloud services. Our goal to improve public health and be a resource for the community allows us openness to new technologies and ideas that will benefit the lab, CDC, and public health community.

Is implementation of the project complete? If no, please describe the project's phases and which phase the project is now in. (In 300 words or less.)

Yes, the implementation of this project is complete and the secure private cloud is fully operational and in use by various programs within the CDC. The next phase of the project is to enhance the offering by further reducing the provisioning time for virtual infrastructure through the use of VMware's cloud automation solutions.

Please provide at least one example of how the technology project has benefited a specific individual or organization. Feel free to include personal quotes from individuals who have directly benefited from the work. (In 300 words or less.)

The PHIRC has grown from a departmental function within CDC to a true agency-wide technology support organization that enables robust collaboration and outstanding results across CDC. The PHIRC has already supported over 100 engagements, collaborating with 25 different programs across CDC. In addition to reducing the time to deployment for research teams from an average of 6 months to 1-2 weeks, this program has estimated that they provide CDC approximately $15,500 of cost avoidance per engagement. Significant soft costs are also delivered because IT purchases are being made with research-based data, which reduces the risk of realizing a costly mistake post-purchase. For example, IRDA assisted CDC's National Center for Chronic Disease Prevention and Health Promotion, to evaluate a new national resource on Chronic Kidney Diseases. The lab was a very efficient solution to facilitate testing of the web resource, as it provided a safe, private environment where CDC staff and public health partners could examine, tweak, and comment on it, pre-launch. The lab environment allowed users to explore the resource and make sure it worked the way they had envisioned, and make any fixes and improvements before it went live.

Would this project be considered an innovation, a best practice or other notable advancement that could be adopted by or tailored for other organizations and uses? If yes, please describe that here. (In 300 words or less.)

Absolutely the accomplishments achieved from this project are no small feat, as IRDA is the only entity in CDC that is dedicated to enhancing public health program activities with its unique and agency-wide informatics R&D resources. To date, 25 different programs within CDC have been positively impacted by the PHIRC -- this is an excellent example of a best practice project that could be adopted by other organizations. This dynamic and agile solution has enabled

CDC researchers and developers to think out of the box and try things they were not able to try before; it is truly changing the way they work. CDC has saved significant time and money while also nurturing and enabling more innovative programs. Most importantly, of course, is the overall improvement in service to the public's health. The time and money reductions, along with cross-cutting collaboration, all work together to support the agency's mission, creating the expertise, information, and tools that people and communities need to protect their health.

If there are any other details that the judges should know about this project, please note them here. (In 300 words or less.)

The PHIRC provides three major areas of support to CDC: 1. Software testing: This was previously a painful process to go through. With the lab, researchers now have access to secured, virtual desktops, and they have administrative rights, so they can efficiently and easily test different software and see which solution works best. This has reduced the process from 6 months to a few weeks. In addition to the dramatic improvement in flexibility and speed, this also saves a lot of money and increases confidence in the IT solution chosen after the testing. 2. Alternative analysis: Researchers can now undertake true alternative analysis of different configurations for technology solutions without requiring redundant infrastructure. By testing different approaches prior to deployment, organizations within CDC are saving money and time and it helps them make the most appropriate choice for all the right reasons. 3. Web portals, web applications, etc.: Organizations can create a prototype in the lab, get feedback quickly, test and tweak the site or the application, and check for any mistakes or glitches that can now be corrected before launching. Projects can be provisioned within 1-2 hours, and as we upgrade to new VMware solutions, such as vCloud Director, this will be even faster.