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The Role of Wide Area Network Optimization in the Federal Healthcare Environment

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Executive Summary

The quality of IT services on which federal health service providers depend directly impacts a broad cross section of Americans. Military service members and their families, as well as qualified veterans, make up a significant proportion of federal health care patients, and the realities of the military and veteran patient population illustrate the challenges faced by federal health care and services providers. Military and veteran health care serves millions of patients, dispersed around the globe and around the United States and its territories. This large, distributed community also has a diverse set of medical service needs, ranging from pre-natal care to battlefield shock-trauma to aging care.

The stresses of two wars—as well as problems in public health services such as drug testing and approval and pandemic disease response—has exposed cracks in the quality of these services. As a result, unprecedented media and policymaker attention to federal health care and services organizations has raised expectations for the performance of this sector of government activity. In this environment, getting the right information to the right people, at the right time, and at the right place can not only save taxpayer funds and step up the quality of care for federal patients, but also spell the difference between life and death. However, achieving the high levels of IT performance and interconnectivity necessary to effectively support federal health care and services is complicated by a number of factors, including the following:

- Federal healthcare organizations face severe funding constraints, including those organizations linked to the Department of Defense.
- Only about 8 percent of the nation's 5,000 hospitals and 17 percent of its 800,000 physicians currently use the electronic health record (EHR) systems.[1]
- Due to lack of interoperable EHRs, tests are duplicated, information is unavailable at the point of care and public health information is difficult to track.
- Federal healthcare organizations are equipped with legacy IT resources that are often many generations out of date.

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[1] http://www.ihe.net/Connectathon/upload/IHE_2010_NA_Connectathon_Conference_Federal_Health_Architecture_VSankaran.pdf

- Federal healthcare organizations are dispersed throughout the United States and the world.

These factors can inhibit the ability of federal health care and services organizations to effectively support their clinical and business operations with state-of-the-art IT. One of the infrastructure elements that links care providers, administrators, and patients across the federal healthcare services community are: wide area networks (WANs). Consequently, the WAN is emerging as a strategic asset in the federal health care and services community that supports:

- Organizations that are looking for ways enable information access for mobile and off-site care providers and administrators;
- Continuity of care for our wounded warriors and other citizen groups;
- Analysis and information sharing to track pandemics and disease;
- Agencies seeking both operational and cost efficiencies by consolidating clinical and business information processing infrastructures through virtualization; and
- Care providers and administrators exploring ways to facilitate telemedicine and collaboration to improve care delivery and speed up administrative processes.

In the federal health services community, specifically, there are a variety of dedicated and shared WANs that interconnect people, processes and technologies across the country. There is a growing consensus that the ability to deliver top quality health care and services quickly and without regard to geographic location is now inextricably tied to the performance of federal health services' IT infrastructure in general – and its WAN infrastructure in particular.

To explore the key considerations that should be addressed by officials tasked with harnessing technology to improve federal health care and services, the editors of BizTechReports.Com met with subject matter experts at San Francisco-based Riverbed Technology to gather key insights into emerging trends and best practices for WAN optimization within the federal healthcare community.

Introduction

As broadband resources become more affordable and widespread, the architecture of core enterprise information technology infrastructures is rapidly shifting from dependence on local area networks (LANs) to WANs. This trend is further advanced because private and public sector enterprises are increasingly adopting new technology-enabled operational strategies that allow organizations to decentralize management structures.

One sector of government that is looking to improve organizational performance by leveraging flexible and distributed access to enterprise IT resources is the federal health care and services community, a group of federal departments that are charged with providing health policy, public health, and patient care services, such as the Department of Veterans Affairs and the Department of Health and Human Services, and patient care agencies within federal departments, such as TRICARE in the Department of Defense (DoD) and the Indian Health Service (IHS) in the Department of the Interior (DoI).

The Federal Health Services Community Faces Challenges

A closer look at the Department of Veterans Affairs illustrates many of the IT infrastructure issues common to federal health services organizations. VA serves thousands of US military veterans and their dependents, encompassing a wide variety of medical, mental health, and benefits services. The department's Veterans Health Administration (VHA) delivers medical care and related services to veterans via a nationwide network over 250 offices and 200 clinical facilities. Services and benefits are provided through a nationwide network of over 1500 sites, including at least 153 hospitals, over 1000 clinics, 135 nursing homes, 47 residential rehabilitation treatment programs 209 readjustment counseling centers, 57 Veterans' benefits regional offices and 125 national cemeteries.

The Veterans Benefits Administration (VBA) administers education, rehabilitation, and other veterans' benefits programs through some 50 locations nationwide. Yet despite these far reaching mission responsibilities, VHA and VBA are still largely paper-based organizations.

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medical care and benefits infrastructure. Meanwhile, media attention to VA missteps and bureaucratic tangles have attracted the scrutiny of Congress, which has responded by increasing funding for the agency—and also by demanding better performance for the department.

"The Assistant Secretary for Information and Technology, Roger Baker, has a vision for leveraging technology to get VA on track," says Bill Hartwell, General Manager and Senior Director of the Federal Markets Division at San Francisco-based Riverbed. Baker's resume includes stints as a technology executive at General Dynamics and CACI and as CIO for the Department of Commerce.

"But he faces some big challenges," continues Hartwell, "even with increases in funding, VA's technology budget is very small, especially in comparison to the spend at DoD or Homeland Security. VA's existing IT infrastructure is old, with some applications and hardware dating back to the mainframe era. And VA facilities and patients are distributed all across the country."

Indeed, VA's problems—modest technology budgets, outdated but far-flung IT infrastructure, increasing caseloads—are echoed across the federal health services community.

Indeed, within a well-funded DoD, the TRICARE organization contends with these challenges—and more. TRICARE services upwards of 9.5 million patients across the globe, through a network of 59 military hospitals and over 800 medical and dental clinics, as well as through insurance-like coverage for patients who are outside of the military health care network. The scale and mission of TRICARE require that it interact seamlessly with the private sector health care community's clinical and business practices, which are increasingly technology-oriented. Other federal health services organizations are similarly expected to be interoperable with the private sector health care community.

Private and Public Sector Health Care, Common Features

Adherence to the health care industry's shifting technology norms presents another key challenge to CIOs in the federal health services community.

"In many ways, private sector and government health care providers face many of the same challenges as most corporations," explains Bob Gilbert, director of marketing at Riverbed. "They are

geographically dispersed, with many of the problems commonly associated with distributed IT infrastructures – including poor application performance over the WAN, costly remote servers, and difficulties backing up and securing data.

"But health care providers—in and out of government—also face their own unique challenges," Gilbert continues. "They need to control administrative costs while cutting over to a new regime of electronic health care records. They're already sharing critical medical files and images between locations. Meanwhile, security and privacy regulations such as HIPAA provide an added layer of complexity."

Riverbed has already found a niche in helping large private sector health care and medical enterprises optimize their WAN infrastructure by enabling data center consolidation, accelerate clinical and business applications, and reduce overall bandwidth costs.

A few promising small-scale efforts in the federal health care and services community are showing how these cash-strapped agencies can invest in improving the performance of their existing WANs. TRICARE, for example, has launched a few localized WAN optimization projects.VHA, meanwhile, has started to deploy WAN optimization in Region 1 (West) and Region 4 (East). VBA is proceeding somewhat more cautiously, with one proof-of-concept installation similar to a successful proof-of-concept project in the Customs and Border Patrol.

"That CBP experiment led directly to a major adoption of a WAN optimization strategy in the Department of Homeland Security," recounts Hartwell. "TRICARE and VA will see similar results with their modest WAN optimization: lower telecoms bills, for one, and better application performance, especially out on the edges in small and remote offices."

Hartwell points out that in addition to lower bandwidth costs and better application performance, federal health care and services providers can expect to save money via server consolidation.

"VBA could reduce from 50 servers to a fifth or even a tenth of that," maintains Hartwell. Indeed, the savings potential of WAN optimization has proven a compelling benefit for federal health care and services sector IT executives.

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and data center consolidation, especially in light of green and energy cost concerns, and that's a big draw to the technology," Hartwell observes. "Along those same lines, IT and other executives are also interested in lowering their telecoms bills and avoiding expensive bandwidth upgrades."

Application optimization also invites cost savings interest from federal health care and services sector IT executives. Often, optimizing application performance can forestall the need for more expensive application modification or development and procurement. "Code writing turns out to be an enormous portion of the spend on nearly any major systems integration project," says Hartwell.

A Vision of World Class Health Care Services

Down the road, Hartwell sees federal health care and services providers reclaiming bandwidth freed up by WAN optimization to directly improve service delivery to patients via a health care and services computing 'cloud,' albeit one that is made up of existing infrastructure elements, rather than a dedicated new installation.

One opportunity that federal health care and services providers could take advantage of on such an optimized cloud is video teleconferencing (VTC) and telemedicine. "Right now, veterans and military patients wait and wait to see a specialist or get access to unique diagnostic capabilities," laments Hartwell. "But imagine if that veteran undergoing rehabilitation could have access to just the right specialist across the country via VTC or a telemedicine facility. VTCs also would allow VA and TRICARE managers to conduct business in their home offices instead of through expensive travel and conferences."

Hartwell and Gilbert point out that WAN optimization offers other potential improvements in the quality of service delivery that are in tune with how top-quality medical professionals want to work and how their busy patients want to receive treatment. "WAN optimization has already proven it can make telework possible, even on networks that were never intended for mobile users," explains Hartwell. "This creates whole new opportunities for federal field care providers to go right to patients."

Gilbert points out that WAN optimization also increases the potential for connectivity with federal health care and services provider networks via the Web, and outside of the context of patient care in such areas as research and pandemic response.

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"Organizations like the National Institutes of Health and Centers for Disease Control have an ongoing need to collaborate, both internally and with outside academics," he explains. "The Bill and Melinda Gates Foundation and NIH have set the example with their worldwide program of HIV research conducted by a worldwide network of doctors and scientists."

Nonetheless, Gilbert is also enthusiastic about how WAN optimization can help create better patient outcomes. "Faster networks make a difference in life-or-death situations," he explains. "One of our military medicine customers used their network to transmit MRI scan files from a field hospital in Afghanistan back to specialists back home. On a legacy network, that file transfer took around 20 hours."

Conclusion

The WAN will play an increasingly vital role in meeting the mission-critical objectives of the federal health services community as departments and agencies leverage IT to improve service and patient care delivery.

Optimizing this infrastructure is therefore a rising priority for both operational and technology leaders in the federal health services sector. Advances WAN optimization provides opportunities to significantly improve the WAN performance without adding actual bandwidth, which is both expensive and complex. New best practices in WAN optimization offer an opportunity to improve performance, reduce costs and better support delivery of world-class health services and patient care.

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About Riverbed Technology

Riverbed Technology is the IT performance company. The Riverbed family of wide area network (WAN) optimization solutions liberates businesses from common IT constraints by increasing application performance, enabling consolidation, and providing enterprise-wide network and application visibility – all while eliminating the need to increase bandwidth, storage or servers.

Riverbed works with many government organizations, ranging from one of the world's largest navies that achieved "near-terrestrial" performance of its key Web applications on all of its ships, to the Defense Contract Management Agency (DCMA) that was able to consolidate its data centers. Dozens of government organizations have deployed Riverbed Steelhead products, ranging from small deployments to multi-site deployments with hundreds of appliances. These organizations have chosen Riverbed products to enable consolidation of global IT assets, speed data transfer for mobile field operations units, decrease backup and data replication times by up to 90 percent, and reduce bandwidth costs and utilization. Thousands of companies with distributed operations use Riverbed to make their IT infrastructure faster, less expensive and more responsive. Additional information about Riverbed (NASDAQ: RVBD) is available at www.riverbed.com.

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