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WHITE PAPER

KEEPING PACE WITH EVOLVING MISSIONS

Why More Government Agencies and Universities
Look to Enterprise IT Service Providers

Executive Summary

Every government agency operates with a mission statement. We believe it's safe to say that your agency mission statement does not include language along the lines of:

"...build, manage, and scale as necessary our communications network, while constantly monitoring it to ensure operational continuity, application performance, secure storage and dissemination of proprietary information, and regulatory compliance."

Agencies depend on their networks and IT teams to help them fulfill their missions, as well as provide a platform for improving how they function. Just like commercial entities, agency IT personnel tasks include making sure that daily operations flow, and that network technologies are used to help increase productivity, protect assets and control costs. All while maintaining budget and ensuring critical skills are available when and where they should be.

The foundation to a successful agency/professional services provider is an honest relationship in which the provider has proved that they can deploy people with the experience, "smart hands" and creative approach to problem solving needed to get short-term or long-term projects through their respective.

Engaging professional services from a network provider can help cash-strapped, resource-limited organizations and their supporting IT teams reach service goals, budgetary guidelines and deadlines. The ability to efficiently ramp up, then ramp down resources without affecting headcount and operational costs is a common scenario.

Generally, the challenges of implementing new technologies combined with maintaining security, addressing evolving regulations, and meeting day-to-day workloads compounds operational headaches. The demands placed on agency IT teams and their networks often exceed what their counterparts in enterprise faced. As a result, network service providers have elevated their best practices

to align with what were once agency-specific levels, inclusive of professional services offers.

A trusted partnership is the foundation of a successful agency/professional services provider relationship. In these relationships, the provider has proved it can deploy people with the experience, "smart hands" and creative approach to problem solving needed to push short- or long-term projects through their respective lifecycles. Being easy to work with is extremely important. Ultimately, what agency staffs want is for the system simply to work as expected and desired, without having to worry about it.

In this white paper, we discuss some of the key factors affecting today's government agency IT teams, some specific areas where engaging professional services providers can be valuable — for example faster implementation of new, cost-saving technology, empowering virtual teams staffed with precisely the right people, and the opportunity to lower cost of operation while improving service — and what to look for in a professional services partner. And while we focus on government agencies, a great deal of what is discussed is applicable to research and education organizations as well.

Introduction

The evolution of the commercial Internet and its off-shoots (e-commerce, collaboration, data and application centralization, etc.) have advanced the IT functions from backroom caretakers of centralized mainframes and internal networks to the forefront of the organization. They are now expected to spur process improvements and efficiencies, drive revenue, and enable free flow of information throughout the organization's private networks while also supporting mobility and secure communications through public networks and Clouds.

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Internet history has taught us that technology can shape processes but, in the end, what matters most are the people and funding that enable and support technology innovation and application. Outsourced professional services that include consulting and implementation, network monitoring and management, and on-site technical support services can be a welcome addition to the agency IT team.

The Line Between Government and Enterprise IT Approaches is Blurring

The reach of the Internet and websites that serve a steadily increasing number of people at any moment can help drive mission success (including reaching milestones) and cut costs. For example, in 2010 Kansas passed Senate Bill 572 authorizing the Chief Information Technology Architect (CITA) to “evaluate the feasibility of information technology consolidation opportunities.”¹ Among the goals of this effort are improving government and employee productivity, improving government interaction with businesses and citizens and reducing cost of IT operations while enabling more functionality. The National Broadband Plan expands these goals, with the government supporting national broadband network build-out based on estimated return on investment reaching well into hundreds of billions of dollars. The Plan sets a 2020 target for its six initial goals.²

The high-level goals of both these missions could, with minor alteration, be applied in almost any enterprise. Network consolidation simplifies management. Collaboration technologies such as video conferencing help extend productivity of virtual teams dispersed throughout an agency’s many locations. Additional cost reductions can be realized by consolidating data centers, with virtualization technologies resulting in further reductions in capital outlays. Adopting SIP trunking sets the stage for a full IP-based communication of voice, video and data — a true unified communications (UC) environment.

Targeting Challenges and Solutions

There is a wide spectrum of technological challenges that comes into play, and following are a few key areas that are important to keep in mind when determining which areas of expertise you are probably going to need help with.

The Cloud

Cloud computing, although still maturing, offers technology that can streamline operations and reduce expenses. A case in point is an initiative called Intelligence Community IT Enterprise (ICITE), which began in 2012. According to Information Week, the effort is primarily aimed at establishing shared services among the Big Five Intelligence Agencies (the CIA, the Defense Intelligence Agency, the National Geospatial-Intelligence Agency, the National Reconnaissance Office and the National Security Agency) as well as the balance of intelligence agencies that form the intelligence community. Savings of 25 percent are expected to come from lower labor costs (both staff and contractor) and volume deals on software and hardware over the next five years. While protecting the mission, the project seeks to create easier sharing and analysis of Big Data as well as better protection of information. Al Tarasuik, CIO U.S. Intelligence Community, remarked that, to meet these objectives, “we’re bringing in some commercial cloud capabilities and use a provider’s business processes, with the provider driving those.”³

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-Al Tarasuik, CIO U.S. Intelligence Community

CIOs in commercial and non-commercial entities are looking to optimize network performance and design while leveraging Cloud-based, shared services to find cost-cutting opportunities and respond to the changing behavior of their users.

Cybersecurity

For most government agencies, the importance of security can be measured in the value of information being protected and in operational continuity. In some instances, lives are at stake. It's difficult for companies that specialize in security to stay ahead of hackers, and apparently impossible for agencies, universities and enterprises. The volume of attacks increases each year, and the sophistication and purpose of attacks morphs as well. Denial of Service (DoS) and, more specifically, Distributed Denial of Service (DDoS) attacks have, to date, garnered the most attention because they manifest themselves by creating an easily observed problem — the website or server simply can't cope with the flood of activity and slows or stalls entirely. Internet Service Providers (ISPs) that have global network visibility, and offer managed security services, have the ability to head-off DDoS attacks before they hit by monitoring network traffic and correlating Security Information and Event Management (SIEM) technologies to track known bots and identify new, anomalous network events as they arise.

The vast majority of public and private sector organizations simply don't have that sweeping visibility. And, as discussed earlier, with multiple daily challenges to cope with, keeping pace with cybersecurity is difficult if not impossible.

What has come to light recently are much stealthier attacks that don't disrupt operations — advanced persistent threats (APTs). In these attacks, malware that has most likely been introduced into a computer (and subsequently the network) invisibly sends data to the cybercriminal, often without detection for years. A recent example is Red October. Brought to the world's attention by Kaspersky Labs, Red October malware targets government organizations, scientific research organizations, embassies, and consulates.⁴ It took five

years to detect Red October, which gives insight into just how clever the attackers are and how difficult it is for IT teams, even those with high security awareness and relatively recent training, to combat cyberattacks and simultaneously respond to the needs of their organization. It also begs the question: What malware is in your networks right now that you don't know about?

Big Data, Mobility and Collaboration

The ability to get to data and use applications from wherever you are has changed how business gets done, how research is conducted and how colleagues in all disciplines (commercial and non-commercial) exchange information and thoughts.

The sheer volume of data, in all its structured and unstructured forms, puts tremendous stress on networks and add to IT's challenges of optimizing network performance and ensuring continuity of operations. Consider these Big Data examples:

- Research teams studying particle physics. Data produced by the Large Hadron Collider at CERN (approximately 25 petabytes per year) is carried over global networks to the more than 150 computing centers that make up the computing grid.⁵
- The Magellan Project. The goal of Magellan, a project funded through the U.S. Department of Energy (DOE) Office of Advanced Scientific Computing Research (ASCR), was to investigate the potential role of cloud computing in addressing the computing needs for the DOE Office of Science, particularly related to serving the needs of mid-range computing and future data-intensive computing workloads.⁶
- Drones, the increasing go-to weapon in combat. "The Air Force has more drones and more sensors collecting more data than it has humans to interpret what the electronic tea leaves say."⁷

What these examples make clear is that data sets well beyond conception by most people only a few years ago are now being generated, transported and analyzed 24/7/365 by organizations of all types, scattered around

the globe. The IT teams that support these efforts need to be always on, always monitoring and always innovating to keep pace with the demands of Big Data. And this is just the start. The Internet of Things, encompassing machine-to-machine (M2M) data transfer, will result in so much data that it's difficult to speculate how much the volume of data will be in only a few years.

These are just a few of the similarities between agencies and enterprises. To sum up, government agencies and departments are transitioning their approach to become more like enterprises because economic pressure dictates it happens, that much is certain. But they are also taking a page from the playbook of enterprises that have proved that the networks they rely on are capable of delivering the performance — including the security, flexibility and reliability — that agencies demand. The network services providers enabling those networks are crafting solutions and building the skillsets that government entities need. And, ultimately, every organization seeks to run as efficiently as possible, even if it results in eliminating staff positions and back-filling those skills with outsourced talent.

But, They Still Aren't Identical

The business model for agencies and universities is transforming to look more like enterprises, but it's important to keep in mind that non-commercial entities have unique needs and visions. Traditionally, agencies have been mandated to run their networks with tighter security and reliability than commercial entities. That's still true for the most part.

Let's not forget that the Internet began as a DARPA-sponsored project, one that demonstrated exceptional vision long before "thinking outside the box" was a common expression. We can trace that project to Internet², the government-funded network and software development research program that seeks to enable global collaboration among universities.

Let's not forget that the Internet began as a DARPA-sponsored project, one that demonstrated exceptional vision long before "thinking outside the box" was a common expression. We can trace that project to Internet², the government-funded network and software development research program that seeks to enable global collaboration among universities. A significant part of that network R&D is better transport of Big Data, particularly in areas such as genome research and e-medicine, and collaboration among federal agencies and college economists studying financial markets.⁸

Budgetary constraints can dictate priorities, but agencies still are less risk-averse than enterprises. In some areas, such as technology innovation applied to first responders and the military, the potential benefits justify negative ROI, even over the long haul. And because they are more willing to embark on experimental projects, agencies and universities need even more innovative thinking, a willingness to fail and overcome those failures. When it comes to communications networks, developers looking to elevate what's economic to what's ideal can turn to agency IT teams and ask: If you had no constraints, how would your network look and operate?

When Outsourcing Makes Sense

Most government agencies have experience with outsourcing; more and more are considering doing so. Being able to budget against the consistent cost of outsourced personnel and shifting daily supervision of people to the service provider can ease management responsibilities for agency executives. But there's more to consider than making sure the agency is staying focused on the mission and running within budget. Professional services providers can help in the following broad areas:

Consulting and Implementation

Building networks that support complex, modern communications calls for a variety of skills and "in the trenches" experience. ISPs can leverage the expertise they've acquired building, operating and securing their own networks, as well as those of government

and enterprise clients, when designing and deploying new networks. That experience is essential in forward-looking implementations as well, such as data center consolidations.

Network Monitoring and Management

With network operations centers staffed around the clock, service providers have a depth of visibility into network activity that enables superior security and real-time performance optimization. Cost control can be realized as well, since the network service provider takes on capital outlay for the facilities and depreciation of equipment.

Professional service providers can be evaluated by gauging the breadth and quality of services offered and the experience they create

In-Field Support

With so much buzz generated by Cloud computing, virtualization and “Everything-as-a-Service,” it’s important not to lose sight of the fact that networks are dependent on fiber optic cable and the routers, servers and other equipment that comprise network infrastructure. Network service providers that have teams of technicians available wherever your network footprint reaches can put “smart hands” into action when and where they’re needed.

A professional services provider can quickly bring in people who were not anticipated to be needed. With the agility to reach into the enterprise’s pool of IT resources — much more rapidly than hiring and with full confidence that the person called in is right for the task — projects can stay on track better, and there’s potential that involving that new person, who will have unique perspective, will fuel unique solutions.

What to Look For in a Provider

Every IT project RFP has an area in which the specific skills required for the project are defined; that’s a

fairly simple, yet not to be underestimated, part of the specifications. However, being easy to work with is hard to define and quantify, even though it is a critical factor in a successful outcome. Why? We believe the answer is that agency staff and university researchers really just want to focus on their mission, not the technologies that support the mission. Being easy to work with means meeting expectations, along with having the foundational requirements for working in a government agency. The provider should be able to add value by bringing these more tangible characteristics to the table:

- A purpose-built suite of defined, proven services. In addition to network design, implementation and ongoing operations capabilities, some providers can also offer security and collaboration services, colocation and data center services, and even contact center services. Network operation center (NOC) technicians with a solid problem-solving track record are a must.
- People with security clearances at appropriate levels. This is fairly obvious, but nonetheless not to be taken for granted. If not already cleared, the time required to go through the process could derail your schedule.
- Transparency and auditability. This is part of the “easy to work with” element in the relationship. Regular reporting and accountability are essential as is a comprehensive service level agreement (SLA).
- True network diversity and management. Equipment fails. Hurricanes, snowstorms and earthquakes occur. A thoughtful continuity of operations/disaster recovery strategy is essential, and part of the plan will rest on the ability of the network provider to ensure physical route diversity as well as real-time traffic rerouting across the network footprint.
- Other, less tangible characteristics are vital as well, such as:
 - True partnership. While every service provider wants to work as much as possible, for as much money as possible, a provider that has the conviction to tell you that they are not the right company for the job, and

even recommend a competitor, is worth listening to. They might not be the right fit now, but could be in the future.

- Flexibility. Your provider needs to know how to work in an agency environment, lead or be subordinate to the agency's IT team, system integrators or other providers involved in the work. Furthermore, they should be comfortable with providing as much, or as little, of their offering based on what you need.
- Mentoring. Wouldn't it be great if the service provider was willing to transfer knowledge to your team? They should be.
- Deep, comprehensive knowledge. The professional services group you work with should be able to offer advice as well as hands-on network architecture and engineering, migration, and project management. You should be able to access network monitoring and management, to the extent you want. Smart hands in the field and smart people in support are also very important.

Conclusion

The network should be an afterthought for agency as well as research and education staff. Their focus needs to be on the mission (or their project) and what they can do to improve processes and service. In light of shrinking budgets, staff reductions, and how improving service performance can help control operational costs while supporting greater productivity of personnel throughout the organization, finding IT resources that complement your staff can help you stay focused on, and succeed in, your mission.

In essence, professional service providers can be evaluated by gauging the breadth and quality of services offered and the experience they create. The security, operational integrity, innovation, scalability and economics that all IT organizations now demand have inspired professional services providers to elevate their best practices. Fortunately and somewhat ironically, that evolution in the public sector has enabled providers to better meet agency and university network and IT staff requirements.

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