Opening Remarks for the 35th Annual Federal Networks Conference

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By Warren Suss

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Good Morning!

Welcome to the 35th Federal Networks Conference. I would like to say, "Welcome to the 35th *annual* Federal Networks Conference", but we had to skip 2021 due to the Covid epidemic.

A lot has changed in our federal network community since our last conference on February 26th and 27th, 2020, but our fundamental objectives remain the same. The government and military members of our community are still focused on improving the ways they leverage information technologies to support the diverse missions of our nation's departments, agencies and programs, lately under the banner of "IT Modernization".   Industry is still focused on doing a better job than the competition in winning contracts to help the government modernize. The changes over the past two and a half years that I'd like to cover today open up new possibilities for achieving IT modernization. These changes have redefined important characteristics of the end user government environment, introduced new paradigms for network contract competition, and created a tipping point in some of the most important technologies that the government will turn to in achieving IT modernization.

Let's get specific.

One big change began by early 2020, days after our last conference, when, to keep the government in business after the pandemic hit, the federal IT community turned telework from an aspiration with some early successes to a government-wide reality.   One agency IT executive explained to me that he has seen a dramatic improvement in user experience in his agency related to the ease of scheduling and conducting meetings using commercial collaboration technologies. This encouraged him to make changes to his agency's network architecture to achieve the dual objectives of optimizing user experience and saving on operating costs by reducing his agency's reliance on legacy voice and video teleconferencing infrastructure.

I'd like to focus most of my remarks this morning on another change over the last two and a half years: Federal IT executives on both the civil agency and Department of Defense sides have accelerated their shift to commercial cloud services.

There have been lots of detours and bumps on the road to the cloud, but there have been important underlying structural factors that have delayed widespread commercial cloud adoption, many of which have little to do with the government and a lot to do with the nature of the beast that we call the cloud. The time consuming, technically

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challenging, and high-cost process of virtualizing legacy government applications not only slowed down the implementation of the Cloud First strategy but led to the growing realization that the promised benefits of moving from a CapEx data center environment to an OpEx commercial cloud environment were, in many cases, offset by the costs of getting there.

In part due to greater use of the cloud during the pandemic, there's a growing sophistication on the part of government IT decision-makers about the plusses and minuses of cloud services as well as a better understanding of how to get from here to there. As much as the government relies heavily on the system integrators and professional services firms to help with cloud strategies and cloud migration, there's a growing cadre of cloud experts in the government, with the scars to prove it. Government IT initiatives only succeed when the government gets to the realization that, though they can turn to industry for all kinds of technology, all kinds of engineering support, and all kinds of strategic and tactical guidance, they can't outsource their brains.

Most important, the government has shifted from thinking about the cloud as a way to get out of the data center business to a growing understanding that cloud services can help do a better job supporting the mission. More mature Artificial Intelligence and Machine Learning technologies now offer a more credible promise of helping agencies transform massive amounts of data into valuable, actionable information to improve operational effectiveness and efficiency.

I'd like to spend a few minutes looking at two examples of programs that stand to benefit from the new generation of commercial cloud services and cloud competition: the Defense Department's Joint All-Domain Command and Control (JADC2) initiative and the VA and Defense Health Agency's (DHA) transition to an integrated Electronic Health Record.

The non-partisan Congressional Research Service highlights the centrality of cloud technologies in accomplishing JADC2 Objectives. Their latest summary, published in January, states that:

"JADC2 envisions providing a cloud-like environment for the Joint force to share intelligence, surveillance, and reconnaissance data, transmitting across many communications networks, to enable faster decisionmaking.... Senior DOD leaders have stated that access to data and information will be critical in the future operating environment. In addition, these leaders have stated that to challenge potential peer adversaries, a multidomain approach is required... The Joint All-Domain Operations concept, thus, provides commanders access to information to allow for simultaneous and sequential operations using surprise and the rapid and continuous integration of capabilities across all domains— to try to gain physical and psychological advantages and influence and control over the operational environment."

Now it's clear that sensor integration, analysis, and decision-support technologies are central to JADC2, but it's just as clear that cloud technologies, including commercial cloud services, are at a tipping point to becoming the best way to achieve near-instantaneous processing and sharing of actionable JADC2 information anytime, anywhere around the globe. Likewise, the Joint Warfighter Cloud Capability (JWCC) acquisition will provide an opportunity to leverage up to

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$9 billion worth of industry competition to deliver cost effective commercial cloud Infrastructure-as-a-Service (IaaS), Platform-as-a-Service (PaaS), and Software-as-a-Service (SaaS) in support of JADC2 initiatives across the Department, with particular emphasis on Combatant Commands and the Fourth Estate.

The VA is another example of an agency that is approaching a tipping point in cloud adoption to support critical mission objectives. The VA Enterprise Cloud Solutions Office is on the way to migrating a third of the VA's 1,000 major applications by the end of Fiscal Year 2024. But for the VA, like for the DoD JAD-C2 initiative, migrating applications to the cloud is the means to an end, not the ultimate objective. The big payoff for the VA, working in close collaboration with the Defense Health Agency (DHA), is to deliver improved health outcomes for our nation's Veterans and active-duty military. This is the central focus of the VA Electronic Health Records Modernization (EHRM) initiative. On the one hand, EHRM will help the VA and Military Health System (MHS) manage one of the largest set of records in the nation on health diagnoses, procedures and outcomes. When combined with their genomic information and other research data bases, this information can be analyzed and accessed by government, academic, and commercial researchers to help VA and MHS professionals determine which treatments work best and to improve the consistency, efficiency, operational effectiveness and patient experience of the nation's largest health system.

Clearly, the move to the cloud itself won't be enough to accomplish JAD-C2 or VA EHRM objectives. If done right, the accelerated move to the cloud will speed the development of solutions by providing greater IT resource flexibility, saving costs, and delivering improved operational platforms. But just because we're at a commercial cloud adoption tipping point, doesn't mean we're going to get there quickly or easily. Just because you're at a tipping point, doesn't mean you're going to tip.

In grad school, we used to talk about a milk bottle function. You may remember the rectangular glass milk bottles with rounded corners. If you lay one of those bottles on its side and slowly try to tip it over to the next side, you have a physical representation of a tipping point. It turns out that this is one of the most notoriously difficult functions to model. So, after more than a decade of anticipating the government's move to the cloud, I'm not going to stand here and tell you that I know the timing or rate of acceleration of the move. But I can tell you some of the prerequisites for success, and they're not yet all in place. I can talk about what the government and industry, working together, need to do to succeed because we have some pretty good models that we can turn to.

My favorite model for a federal network program is GSA's decades-long success story in delivering better, more cost-effective next-generation network services to agencies across the government with FTS2000, FTS2001, Networx, and the current EIS contracts. There are three basic ingredients at the heart of GSA's success on these programs. First, they aggregate demand. The US Government is one of the biggest customers in the world, but if every agency, sub-agency, office and program goes out on its own to buy network, IT or cloud services, the government won't be able to maximize competition to get the best quality technology at the best prices. GSA has saved the government billions of dollars through demand aggregation, but that's only one ingredient in GSA's thirty-plus years of success. Another is

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what I'll call contract commoditization. In other words, GSA has made a major investment in designing contract vehicles that create a reasonably level playing field to allow for aggressive task order competitions under an umbrella IDIQ contract while encouraging vendors to compete based on the quality of their technical offerings and engineering solutions, as well as on price. The third ingredient in GSA's success could be called homework. I'm talking about their significant investment in analysis of the latest network technologies combined with an extensive dialog with their customers and their industry partners to make sure that each generation of network contract vehicles gives the government the technology they need, allows for apples-to-apples comparisons between competitive offerings, and stays aligned with industry's ongoing technical enhancements to keep the government from ending up on a technological side track or a marketplace dead end.

But there are serious challenges to applying this model of success – aggregation, contract commoditization, and homework – to getting the federal cloud marketplace to tip into high gear. In large part, it comes down to the question of what will it take to really support the missions on programs like JADC2 and EHRM. Both programs require flexible, real-time access across the enterprise to tremendous computing capacity and enormous amounts of data, whether it's for data collection, analysis, or operational support. JAD C2 won't live up the "All Domain", the "AD" in its name, if the Army, Navy, Air Force and Marines keep their information in separate silos any more than the EHRM program will succeed if each VA or MHS hospital, research facility, or operational support organization keeps its information in separate silos.

The commercial cloud marketplace, at its current stage of evolution, presents some structural barriers to breaking through silos. One huge barrier for most Cloud Service Providers is egress fees, which make users pay heavily to move data back and forth from the cloud. As long as egress fees remain a built-in component of most Cloud Service Provider (CSP) business models, either single vendor solutions across the entire enterprise or hybrid technologies will be needed to be cost-effective in meeting mission objectives for programs like JADC2 and EHRM.

A second barrier is a widely held belief that the only way to move to the cloud is to pick one integrator and one cloud vendor. This may work for smaller applications or programs, but there's no way it will ever work with enormous, complex, enterprise-level initiatives like JADC2 and EHRM. We need architectures, operational concepts, and development processes that stimulate meaningful competition among the best and brightest from the broadest range of professional and technology service providers to deliver on the promise of key initiatives like JADC2 and EHRM.

A third barrier has to do with tools. In order to ensure effective defensive cyber operations and network management for programs as critical and sensitive as JADC2 and EHRM, agencies need effective cyber and network management tools, and these tools need to operate at the enterprise level. But most of the tools available today directly from the CSPs are CSP specific, with some capabilities to extend into hybrid and multi-cloud environments.

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So between egress fees, marketplace perceptions, and tool limitations, the government will have a difficult time applying GSA's proven formula for success – aggregation, contract commoditization, and homework – to the commercial cloud marketplace at this stage of its evolution.

There's no simple answer to this dilemma, but we can't walk away from the tremendous opportunity to leverage the IT industry's fastest growing segment to help address some of our government's biggest challenges. Part of the answer, at this stage of the evolution of the cloud marketplace, is to narrow our focus. When we talk about cloud, we're talking about three separate types of services – Infrastructure-as-a-Service (IaaS), Platform-as-a-Service (PaaS), and Software-as-a-Service (SaaS). Software-as-a-Service is, almost by definition, difficult to commoditize. It consists of unique software products that have either been virtualized to be delivered from the cloud or that have been developed from scratch as unique cloud services. Platform-as-a-Service has a degree of substitutability between PaaS vendors, but if a user has already invested on developing an application on one platform, the time, costs, and technical challenges involved in porting it to another platform often outweigh the advantages of shifting to another cloud vendor.

We're much more likely to achieve success by initially narrowing our focus on Infrastructure-as-a-Service, where cloud-based storage and processing offerings are much more commodity-like, switching costs are relatively minor, and interoperability in either hybrid or multi-cloud environments is less challenging. If we keep our focus on IaaS, we're much more likely to achieve the benefits we're looking for at the enterprise level, and we can leave PaaS and SaaS choices to the component and program levels, as long as they comply with enterprise architecture guidelines.

The most effective way to address these barriers, though, is to figure out the best way to leverage the resources and talents of industry and government to address these barriers head-on. A sizable segment of industry has already emerged to overcome the limitations imposed by egress fees. This includes an array of hybrid cloud services, tools, and processes. To address the perception that the only way to get to the cloud is with a single integrator and a single CSP, we need the government and industry to showcase counter examples to demonstrate that the best and brightest from government can work with the best and brightest from industry to achieve meaningful multi-cloud solutions. And initiatives like Thunderdome hold the promise of addressing the challenge of developing toolsets that can solve the big league cyber and network management challenges of programs at the scale, complexity, and national importance of JADC2 and EHRM.

 This is only an outline of where we need to go with some of our most exciting technologies to support some of our government's most important mission objectives. We'll need all the creativity and commitment of both industry and government to fill in the details.

Thank you

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