

DATA CENTERS AND THE CLOUD: IS THE GOVERNMENT OPTIMIZING NEW INFORMATION TECHNOLOGIES OPPORTUNITIES TO SAVE TAXPAYERS MONEY?

HEARING

BEFORE THE
SUBCOMMITTEE ON GOVERNMENT OPERATIONS
OF THE
COMMITTEE ON OVERSIGHT
AND GOVERNMENT REFORM
HOUSE OF REPRESENTATIVES
ONE HUNDRED THIRTEETH CONGRESS

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**DATA CENTERS AND THE CLOUD: IS THE
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Tuesday, May 14, 2013

HOUSE OF REPRESENTATIVES,
SUBCOMMITTEE ON GOVERNMENT OPERATIONS,
COMMITTEE ON OVERSIGHT AND GOVERNMENT REFORM,
Washington, D.C.

The subcommittee met, pursuant to call, at 2:49 p.m., in the Meese Conference Room in Mason Hall at George Mason University, 4379 Mason Pond Drive, Fairfax, Virginia, Hon. John Mica [chairman of the subcommittee] presiding.

Present: Representatives Mica and Connolly.

Staff Present: Alexia Ardolina, Assistant Clerk; Richard A. Beutel, Senior Counsel; and Mark D. Marin, Director of Oversight.

Mr. MICA. Well, good afternoon. I am Congressman John Mica. I am pleased to chair one of the Oversight and Reform subcommittees, which is Government Operations, and have the opportunity to be here today.

The Democrat leader of the subcommittee is the distinguished gentleman and Congressman from this district—I believe we are in his district—

Mr. CONNOLLY. Yes.

Mr. MICA. —Mr. Connolly. So, with that partnership, we have the responsibility to conduct various oversight hearings and look at government operations.

But today I call and convene the subcommittee hearing to order in this district. And the title of today's hearing is "Data Centers and the Cloud: Is the Government Optimizing New Information Technology Opportunities to Save Taxpayer Dollars?" And that is the subject.

And we are here, actually, at the request of the ranking member, Mr. Connolly. What we try to do is operate the panel in a bipartisan manner, and areas of interest or particular expertise, we like to highlight the priorities of Members. And Mr. Connolly has been very active and a leader in trying to consolidate some of the duplicative and costly data centers in the Federal Government. He has been on this issue before I got the opportunity to chair this subcommittee, so he has a long history. And it was one of his priority requests that we conduct the hearing. And, jointly, we decided that this would be a great place, Fairfax County, George Mason University, to have a field hearing here.

I apologize for the delay. My plane was on time, but, as I told Mr. Connolly, the traffic in northern Virginia is horrendous. In spite of my efforts to help with the rail connection to Dulles and all, we still have a ways to go. But we are delighted to be here.

The order of business—I will step out of order for just a second because we are here at a very distinguished university. If I could, maybe I could ask the ranking member to introduce the president of this university, and we could inject a few comments before we get to the business of the subcommittee.

Again, we are delighted to be here. I think it is great to come to a university setting. I don't know if we have students, professors, or others here, but it's an awesome opportunity. I see some of us may, in fact, be recorded. And, again, it is an actual hearing of Congress and part of our realtime work. So we are pleased to be here.

Would you do us the honors, Mr. Connolly?

Mr. CONNOLLY. I would. Thank you, Mr. Chairman. And thank you so much for being here. And we all apologize for our traffic, but when you were both the ranking member and the chairman of the Transportation and Infrastructure Committee, you were very sympathetic and supportive of our efforts to extend rail to Dulles Airport. And we want to thank you for your support, because you did get it, about how serious the congestion is here.

It is my privilege to introduce the president of George Mason University, Angel Cabrera. We just actually celebrated the installation ceremony for our new president. He comes to us after many years of serving in the southwest part of the United States in other academic endeavors, and we are delighted to have him here.

George Mason University is about a little over 40 years old now and in that 40-year time period has grown to become the largest single university in the Commonwealth of Virginia, which always surprises people at UVA, Mr. Jefferson's university, which is over 200 years old, and Virginia Tech, also a very large campus. So it just tells you a lot about what is going on in terms of academic programs here in northern Virginia. And it is a center of excellence, especially for the technology community, but for so many other things as well.

So welcome, President Cabrera.

Mr. CABRERA. Well, thank you so much.

Thank you, Mr. Chairman.

Mr. MICA. You might come over. I don't know, are these live right here?

Mr. CABRERA. Yes. Thank you so much, Chairman Mica and Congressman Connolly, for moving the business of Congress across the river. And I hope the air of Fairfax will make the meeting very, very productive.

I want to point out that even though we have a problem with physical transportation of vehicles, the transportation of bits through the Internet couldn't be any faster than it is in northern Virginia, which I think is one of the reasons why this is a perfect location to have this discussion.

I would also point out that we are, of course, in one of the most educated and one of the wealthiest counties in America. Those two things go hand-in-hand. And one of the reasons why this area has

become probably the world's hotbed for the Internet and for cloud computing and other information technologies is precisely because we have universities like George Mason that right now ranks in the top 200 of research universities in the world.

So it is a privilege to have you here. I wish you a very productive meeting. And thank you so much for having chosen George Mason University to conduct your business. Thank you.

Mr. MICA. Well, thank you. And, again, we are pleased to be here.

And we will proceed. We are a little bit late in beginning the proceedings, but the order of business will be as follows: I will start with an opening statement. I will yield to Mr. Connolly. Then we have two panels of witnesses. I will introduce the two panels. One is primarily government; the second looks like primarily private sector. We will proceed with questions after we have heard from the witnesses, the first two on the first panel and then the second panel.

So, with that, we will go ahead and proceed, and I will recognize myself to sort of set the stage and talk about the topic.

Today's hearing, actually, again, is the result of some of the work of the Democrat leader of the committee. Some several years ago, the GAO began some work and looked at some of the data center consolidations. In fact, today, coinciding with this hearing, there is the release of this report, "Data Center Consolidation: Strengthened Oversight Needed to Achieve Cost-Savings Goals." And the subject matter contained in this report will be discussed by the GAO representative.

But some of the background here is that GAO reports, in fact, that in fiscal year 2011 the government funded 622 separate human resources systems, costing \$2.4 billion; some 580 financial management systems, costing some \$2.7 billion; 777 supply chain management systems, costing some \$3.3 billion; and so the list continues. Most of these systems perform, unbelievably, the same function.

To address some of this wasteful duplication, and with much fanfare, the OMB, the Office of Management and Budget, rolled out a program in 2010 entitled the Federal Data Center Consolidation Initiative. Sometimes you will hear me refer to it as the FDCCI. But they trumpeted the fact that they thought that they could close 40 percent of the data centers by 2015 and save taxpayers a welcome \$3 billion. That would have meant that, in closing 1,253 of the 3,133 total Federal database centers, we could save that much money.

To accomplish this savings, 24 of the CFO Act agencies were tasked by the OMB to do several things: first of all, to conduct an initial inventory of data center assets by April 30th of 2010; and then, secondly, to develop a plan by June 30th, 2010; and report quarterly on their closures and savings via an online portal called data.gov.

Today, GAO has released the latest of its three reports, the one I referred to. In that report, we will find that the GAO uncovered the fact that the program was not being effectively implemented, unfortunately, and, also unfortunately, that taxpayers are not

going to recognize or realize the projected savings that were anticipated.

Specifically, OMB and the agencies, some of the findings—again, not mine, but theirs—were that the agencies were delinquent on finalizing their data consolidation, their migration plans. And, also, we have, I think, a chart up here that shows the cells in orange, and we see missing data in these cells, lots of question marks.

So we also found in that report that we lacked a basic system to track cost savings so that progress toward that \$300 billion cost-savings goal could be measured. GAO states, and let me quote them, “As of November 2012, the total savings to date had not been tracked but were believed to be, unfortunately, minimal.” Again, their commentary.

OMB recently announced its plan to roll up the FDCCI into its broader—a new process called PortfolioStat, potentially losing focus and motivation to carry out this much-behind consolidation of the original intended government data centers, again, consolidation.

At a time of fiscal austerity and tight budgets, it has never been more important for the Federal Government to drive efficiencies and cost savings through effective management of its information technology systems. It is absolutely essential that IT assets should be optimized to maximize the return on investments, reduce operational risk, and provide responsive services to its citizens.

We must, I believe, accelerate data center optimization by urging agencies to complete meaningful transition and consolidation plans for their data centers and, also, accurately track these savings.

And another thing that we are going to have to do is support broader transition to the cloud solutions for Federal IT resources and hopefully drive broader efficiencies in the use and deployment of IT data centers. We are going to hear from some of the private sector in here a little bit about how we might achieve some of that in our second panel.

So, with that sort of setting the stage for where we are in this hearing and, again, the review of what is taking place with this consolidation effort, let me now yield to the gentleman from Virginia, Mr. Connolly.

Mr. CONNOLLY. Thank you so much, Mr. Chairman. And thank you for your gracious willingness to have this field hearing here in the 11th District of Virginia at George Mason University. I have very much appreciated the spirit in which you and I have been able to work, beginning this year when this subcommittee was first formed. And my hat is off to you in terms of bipartisan cooperation and comity, and I thank you.

We have something like 3,100 data centers in the Federal Government, and that is an astounding number. It is a stovepipe kind of operation, and it is expensive and inefficient.

And what we are trying to do here is identify ways to optimize, you know, the purpose here, through private-sector cloud computing, through some remaining Federal data centers that may make sense, but to try to achieve efficiencies, especially right now when we are in budget contraction.

It is imperative for agencies to be able to expand their scope and to be able to try to replace through better deployment of technology lost dollars in their bottom line in terms of the budget. If we don't

do that, if we are not, you know, seized with a sense of urgency about that mission, then, you know, Federal agencies are going to have to do less with less. And that will not serve the American people very well.

And so this, while for some a dry topic, is really at the cutting edge of, can we organize ourselves in the Federal Government to replicate what the private sector has done in terms of the utilization of technology, better investments in technology, smarter investments in technology?

We have had hearings, as the chairman knows, on the Oversight and Government Reform Committee where it is estimated that, of the \$81-billion-a-year Federal information technology budget, perhaps as much as \$20 billion of it is spent in less-than-optimum ways, some of it maintaining very old legacy systems.

Now, the good news about that, as was pointed out in one of our hearings, was that the Chinese don't know how to hack into those legacy systems. So maybe that's an upside. But in terms of efficiency for the future and making sure that we're ready to go for the future, I'm not sure it's the kind of investment we want to be maintaining forever.

And so data center consolidation is one piece of a larger piece of Federal IT policy. And as the chairman indicated, I requested the GAO report—and we are going to hear about it today in testimony from Mr. Powner—on how are we doing. And you can see from this chart, as the chairman just pointed out, well, I wouldn't give us an A in terms of compliance with trying to consolidate and eliminate duplicative data centers.

For some agencies, it may just be that it is not a priority. For others, maybe they don't share the goal. But we have got to reach the OMB goal of 40 percent reduction, or consolidation, and we want to actually go way beyond that, because that still leaves us with 1,100 or 1,200 data centers, and it's not at all clear that we need all of them.

And so this is an important part of a larger picture. This bill that I introduced on data center consolidation is an entire title of what is known as the FITARA bill that Chairman Issa, Chairman Mica, myself, and Ranking Member Elijah Cummings have introduced in this Congress that would be the most comprehensive rewrite of Federal IT acquisition policy since—well, in 20 years. And so this is a vital piece of it, and that's what we're doing here today, to try to really focus on how can we do better at the Federal level. We need to do better.

So thank you all for being here.

And, again, Mr. Mica, thank you so much for having this hearing.

Mr. MICA. Again, pleased to be here.

And what we will do is, we have additional statements that Members may like to submit. And, also, if the public or anyone else is interested in submitting, it has to be done through a Member, so in this case it would be Mr. Connolly or another member of our subcommittee panel. But, without objection, the record will be left open for 7 days, with Mr. Connolly's concurrence.

Mr. MICA. And I also see that Facebook has a written statement that they would like to be entered into the record. Mr. Connolly asked that that be permitted.

Without objection, so ordered.

Mr. MICA. Now we will turn to our first panel of witnesses. And we have two distinguished panelists: Mr. David A. Powner, and he is the director of information technology management issues with the U.S. Government Accountability Office. We refer to it commonly as GAO. Then we have Mr. Bernard Mazer, and he is the Chief Information Officer of the Department of the Interior.

Now, I think we've got two more witness little plaques out there. And I'm not a happy camper, Mr. Connolly, that OMB and GSA have chosen not to provide us a witness this morning. And they are not going to squirm out of appearing before the panel, so we will schedule another hearing. It may not be here, but it will be in Washington. And we will call them in either voluntarily or however we have to do it, because we do—this is about saving taxpayers significant sums of money and achieving something that they set out to do. So we need answers, and we want it straight from those individuals involved.

Mr. CONNOLLY. Mr. Chairman?

Mr. MICA. Yes, Mr. Connolly.

Mr. CONNOLLY. I concur in your sense of disappointment with OMB. I conveyed my disappointment to folks at the White House directly and to OMB directly for their nonparticipation today.

None of that should, of course, detract from the fact that we are delighted to have the witnesses we do have.

Mr. MICA. Yes, and we'll start it, and we'll start it here in Fairfax at George Mason, and we'll get to the bottom of it. Sometimes it takes more time.

I understand last night, apparently in response to this hearing—and these hearings do actually make things happen, believe it or not—GSA, which is a no-show, updated their data posting from zero to 74 planned data centers closings on data.gov. So we sometimes can get some things moving along. And that's part of this process, is the constant oversight that we're responsible for in this important committee and subcommittee.

So those are the two witnesses we have from GAO and the Department of the Interior.

This is an investigative panel, and it is part of the procedures of the panel to swear in our witnesses. So I would ask you to stand, if you can, Mr. Powner and Mr. Mazer. Raise your right hand.

Do you solemnly swear or affirm that the testimony you are about to give and provide this subcommittee of Congress is the whole truth and nothing but the truth?

Mr. MAZER. Yes, I do.

Mr. POWNER. Yes, I do so solemnly swear.

Mr. MICA. Let the record reflect that the witnesses answered and responded in the affirmative.

So, with that, the way we proceed, for everyone's information, is first I will call on GAO's representative, Mr. Powner, and then Mr. Mazer, in that order.

And we have a little bit of extra time. We try to hold it to 5 minutes. If you have prepared information or background data that you

would like submitted to the record, just request it to the chair, and that will be accomplished.

So, with that, we welcome you.

And, Mr. Powner, first, you are recognized.

STATEMENT OF DAVID A. POWNER

Mr. POWNER. Chairman Mica, Ranking Member Connolly, we appreciate the opportunity to testify on the Federal Government's efforts to consolidate its data centers and to save taxpayers billions of dollars.

In a time when we hear too often about fraud, waste, and duplicative Federal programs, the Data Center Consolidation Initiative is an effort that is good government. Its goals are to reduce costs, increase current low-server utilization rates, and shift to more efficient computer platforms and technologies. The specific goals are very clear and aggressive: close 40 percent of the government's over 3,000 data centers and save the taxpayers \$3 billion.

This afternoon, we are releasing our third report on this initiative. The first two highlighted holes in agencies' inventories and plans and made recommendations to ensure that inventories were complete and that agency plans clearly had comprehensive schedules to close centers and associated cost savings.

For example, last summer, we reported that only three agencies had complete inventories: SSA, HUD, and the National Science Foundation. And only one agency had a completed plan, that being the Department of Commerce.

While incomplete, these plans still showed great opportunities for cost savings. For example, DOD claimed that it could save \$2.2 billion. In its recent budget submission, DOD plans to save \$575 million in fiscal year 2014 alone. And I think that is represented on your chart up there, fiscal year 2014.

This afternoon, I will provide a progress report on closure and cost-saving goals and recommendations to ensure progress continues. My comments will also address the importance of FITARA in this area.

Data center closures to date and those planned are promising. Four hundred centers were closed by the end of December, and another 400 are planned to be closed by September of this year, as your chart shows up there. And the plan is to close well over 1,000 centers by December 2015.

Despite impressive progress and visibility into the closure situation, this is not the case regarding progress and transparency toward the cost-savings goal of \$3 billion. In fact, OMB is not tracking cost savings. This lack of such data raises questions about the government's ability to meet its overall goal.

But let's be very clear on the cost savings issue: Closing over 800 centers should yield significant cost savings. The Department of Agriculture recently reported to the Appropriations Committee that it saved nearly \$50 million in fiscal year 2013. DHS is reporting \$20 million of savings in fiscal year 2013. And we've already discussed DOD's plans to save \$575 million in fiscal year 2014.

Now is not the time to take our foot off the accelerator regarding associated cost savings, and FITARA would be extremely helpful since it requires the tracking and reporting of cost savings.

OMB has recently integrated the data center effort with the broader PortfolioStat initiative and is in the process of revamping metrics in this area. OMB stated that its new goal is to close 40 percent of the non-core data centers and that additional metrics in areas like energy consumption are to be developed by the data center task force.

Folding the data center effort under this initiative is fine as long as the right metrics are in place, including cost savings, and that it provides the appropriate level of transparency. Mr. Chairman, having the right metrics and transparency moving forward is currently a big question mark.

Our recommendations are to track and annually report on key data center metrics, including cost savings to date, extend the time frame for achieving cost savings beyond the current 2015 horizon because significant savings will occur beyond that date, given where agencies are at today.

Regarding governance, we need better leadership out of OMB and the GSA program office if we expect the data center initiative to be successful. With OMB, this leadership starts with the Federal CIO. In addition, each CIO needs this to be one of their top priorities and at any point in time should be able to report on closures and cost savings to date and those planned for the next fiscal year. If these simple questions cannot be answered, we do not have adequate governance at the agency level.

And, finally, codifying the data center optimization consolidation effort the way FITARA does will ensure cost savings are tracked and reported and that this initiative will span multiple administrations.

I would also like to mention, Mr. Chairman, your comment about GSA's data changing, that really shows the importance of this committee's oversight. Your staff made a couple of key questions to GSA, and clearly we went from zero reported centers to 74 in a couple days. And having that reported is very important so that we can perform the appropriate oversight so, in fact, those 74 data centers do get closed, with their associated cost savings, and then we can think about optimizing the centers that remain open.

So this concludes my statement, Mr. Chairman and Ranking Member Connolly. Thank you for your leadership on this topic, and I look forward to answering your questions.

Mr. MICA. Thank you.

[Prepared statement of Mr. Powner follows:]



United States Government Accountability Office

Testimony

Before the Subcommittee on Government Operations
Committee on Oversight and Government Reform
House of Representatives

For Release on Delivery
Expected at 2:30 p.m. EDT
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DATA CENTER CONSOLIDATION

Strengthened Oversight Needed to Achieve Billions of Dollars in Savings

Statement of David A. Powner, Director
Information Technology Management Issues

GAO Highlights

Highlights of GAO-13-627T, a testimony before the Subcommittee on Government Operations, Committee on Oversight and Government Reform, House of Representatives

Why GAO Did This Study

In 2010, as focal point for information technology management across the government, OMB's Federal Chief Information Officer launched the Federal Data Center Consolidation Initiative—an effort to consolidate the growing number of federal data centers. In July 2011 and July 2012, GAO evaluated 24 agencies' progress and reported that nearly all of the agencies had not completed a data center inventory or consolidation plan and recommended that they do so.

GAO was asked to testify on its report being released today, that evaluated agencies' reported progress against OMB's planned consolidation and cost savings goals, and assessed the extent to which the oversight organizations put in place by OMB for the Federal Data Center Consolidation Initiative are adequately performing oversight of agencies' efforts to meet these goals. In this report, GAO assessed agencies' progress against OMB's goals, analyzed the execution of oversight roles and responsibilities, and interviewed OMB, GSA, and Data Center Consolidation Task Force officials about their efforts to oversee agencies' consolidation efforts.

What GAO Recommends

In its report, GAO recommended that OMB's Federal Chief Information Officer track and report on key performance measures, extend the time frame for achieving planned cost savings, and improve the execution of important oversight responsibilities. OMB agreed with two of GAO's recommendations and plans to evaluate the remaining recommendation related to extending the time frame.

View GAO-13-627T. For more information, contact David A. Pownier at (202) 512-9286 or pownierd@gao.gov.

May 2013

DATA CENTER CONSOLIDATION

Strengthened Oversight Needed to Achieve Billions of Dollars in Savings

What GAO Found

The 24 agencies participating in the Federal Data Center Consolidation Initiative made progress towards the Office of Management and Budget's (OMB) goal to close 40 percent, or 1,253 of the 3,133 total federal data centers, by the end of 2015, but OMB has not measured agencies' progress against its other goal of \$3 billion in cost savings by the end of 2015. Agencies closed 420 data centers by the end of December 2012, and have plans to close an additional 548 to reach 968 by December 2015—285 closures short of OMB's goal. OMB has not determined agencies' progress against its cost savings goal because, according to OMB staff, the agency has not determined a consistent and repeatable method for tracking cost savings. This lack of information makes it uncertain whether the \$3 billion in savings is achievable by the end of 2015. Until OMB tracks and reports on performance measures such as cost savings, it will be limited in its ability to oversee agencies' progress against key goals.

Pursuant to OMB direction, three organizations—the Data Center Consolidation Task Force, the General Services Administration (GSA) Program Management Office, and OMB—are responsible for federal data center consolidation oversight activities; while most activities are being performed, there are still several weaknesses in oversight. Specifically,

- While the Data Center Consolidation Task Force has established several initiatives to assist agencies in their consolidation efforts, such as holding monthly meetings to facilitate communication among agencies, it has not adequately overseen its peer review process for improving the quality of agencies' consolidation plans.
- The GSA Program Management Office has collected agencies' quarterly data center closure updates and made the information publicly available on an electronic dashboard for tracking consolidation progress, but it has not fully performed other oversight activities, such as conducting analyses of agencies' inventories and plans.
- OMB has implemented several initiatives to track agencies' consolidation progress, such as establishing requirements for agencies to update their plans and inventories yearly and to report quarterly on their consolidation progress. However, the agency has not approved the plans on the basis of their completeness or reported on progress against its goal of \$3 billion in cost savings.

The weaknesses in oversight of the data center consolidation initiative are due, in part, to OMB not ensuring that assigned responsibilities are being executed. Improved oversight could better position OMB to assess progress against its cost savings goal and minimize agencies' risk of not realizing expected cost savings.

In March 2013, OMB issued a memorandum that integrated the Federal Data Center Consolidation Initiative with the PortfolioStat initiative, which requires agencies to conduct annual reviews of its information technology investments and make decisions on eliminating duplication, among other things. The memorandum also made significant changes to the federal data center consolidation effort, including the initiative's reporting requirements and goals. Specifically, agencies are no longer required to submit the previously required consolidation plans and the memorandum does not identify a cost savings goal.

United States Government Accountability Office



Chairman Mica, Ranking Member Connolly, and Members of the Subcommittee:

I am pleased to be here today to discuss federal agencies' continuing efforts to consolidate their data centers. As federal agencies have modernized their information technology (IT) operations, put more of their services online, and increased their information security profiles, their need for computing power and data storage resources has resulted in a dramatic increase in the federal data centers and a corresponding increase in operational costs. In response, the Office of Management and Budget's (OMB) Federal Chief Information Officer (CIO) launched the Federal Data Center Consolidation Initiative (FDCCI) in 2010.

Over the past few years, we have reported and testified¹ on federal data center consolidation, noting that, while the initiative has the potential to provide billions of dollars in savings, improvements in the oversight of agencies' efforts are needed. For example, in July 2012, we reported on the progress the 24 participating federal departments and agencies² were making on this initiative and found that, while progress had been made, nearly all of the agencies had not yet completed a data center inventory or the consolidation plans needed to implement their consolidation initiatives.

¹GAO, *Information Technology: OMB and Agencies Need to Fully Implement Major Initiatives to Save Billions of Dollars*, GAO-13-297T (Washington, D.C.: Jan. 22, 2013); *Data Center Consolidation: Agencies Making Progress on Efforts, but Inventories and Plans Need to Be Completed*, GAO-12-742 (Washington, D.C.: July 19, 2012); *Information Technology Reform: Progress Made; More Needs to Be Done to Complete Actions and Measure Results*, GAO-12-745T (Washington, D.C.: May 24, 2012); *Information Technology Reform: Progress Made; More Needs to Be Done to Complete Actions and Measure Results*, GAO-12-461 (Washington, D.C.: Apr. 26, 2012); and *Data Center Consolidation: Agencies Need to Complete Inventories and Plans to Achieve Expected Savings*, GAO-11-565 (Washington, D.C.: July 19, 2011).

²The 24 major departments and agencies that participate in the Federal Data Center Consolidation Initiative are the Departments of Agriculture, Commerce, Defense, Education, Energy, Health and Human Services, Homeland Security, Housing and Urban Development, the Interior, Justice, Labor, State, Transportation, the Treasury, and Veterans Affairs; the Environmental Protection Agency, General Services Administration, National Aeronautics and Space Administration, National Science Foundation, Nuclear Regulatory Commission, Office of Personnel Management, Small Business Administration, Social Security Administration, and U.S. Agency for International Development.

You asked us to testify on our report being released today that evaluated agencies' reported progress against OMB's planned consolidation and cost savings goals and assessed the extent to which the oversight organizations put in place by OMB for FDCCI are adequately performing oversight of agencies' efforts to meet these goals.³ This report contains a detailed overview of our scope and methodology, including the steps we took to assess the quality of data that we relied on.

All work on which this testimony is based was performed in accordance with generally accepted government auditing standards. Those standards require that we plan and perform the audit to obtain sufficient, appropriate evidence to provide a reasonable basis for our findings and conclusions based on our audit objectives. We believe that the evidence obtained provides a reasonable basis for our findings and conclusions based on our audit objectives.

Background

Over the last 15 years, the federal government's increasing demand for IT has led to a dramatic rise in the number of federal data centers and a corresponding increase in operational costs. According to OMB, the federal government had 432 data centers in 1998 and more than 1,100 in 2009. Operating such a large number of centers is a significant cost to the federal government, including costs for hardware, software, real estate, and cooling. For example, according to the Environmental Protection Agency, the electricity cost to operate federal servers and data centers across the government is about \$450 million annually. According to the Department of Energy, data center spaces can consume 100 to 200 times more electricity than a standard office space. According to OMB, reported server utilization rates as low as 5 percent and limited reuse of data centers within or across agencies lend further credence to the need to restructure federal data center operations to improve efficiency and reduce costs.

³GAO, *Data Center Consolidation: Strengthened Oversight Needed to Achieve Cost Savings Goal*, GAO-13-378 (Washington, D.C.: Apr. 23, 2013).

OMB and the Federal CIO
Established the Federal
Data Center Consolidation
Initiative

Concerned about the size of the federal data center inventory and the potential to improve the efficiency, performance, and the environmental footprint of federal data center activities, OMB, under the direction of the Federal CIO, established FDCCI in February 2010. This initiative's four high-level goals are to

- promote the use of "green IT"⁴ by reducing the overall energy and real estate footprint of government data centers;
- reduce the cost of data center hardware, software, and operations;
- increase the overall IT security posture of the government; and
- shift IT investments to more efficient computing platforms and technologies.

As part of FDCCI, OMB required the 24 agencies to identify a senior, dedicated data center consolidation program manager to lead their agency's consolidation efforts. In addition, agencies were required to submit an asset inventory baseline and other documents that would result in a plan for consolidating their data centers. The asset inventory baseline was to contain detailed information on each data center and identify the consolidation approach to be taken for each one. It would serve as the foundation for developing the final data center consolidation plan. The data center consolidation plan would serve as a technical road map and approach for achieving the targets for infrastructure utilization, energy efficiency, and cost efficiency.

While OMB is primarily responsible for FDCCI, the agency designated two agency CIOs to be executive sponsors to lead the effort within the Federal CIO Council,⁵ the principal interagency forum to improve IT-related practices across the federal government. In addition, OMB identified two additional organizations to assist in managing and overseeing FDCCI:

⁴Green IT refers to environmentally sound computing practices that can include a variety of efforts, such as using energy efficient data centers, purchasing computers that meet certain environmental standards, and recycling obsolete electronics.

⁵As of February 2013, OMB had assigned one CIO from the Department of the Interior. Initially there had been two executive sponsors, but one resigned and OMB stated that they had no plans to fill the second position.

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- The GSA FDCCI Program Management Office is to support OMB in the planning, execution, management, and communications for FDCCI.
 - The Data Center Consolidation Task Force is comprised of the data center consolidation program managers from each agency. According to its charter, the Task Force is critical to supporting collaboration across the FDCCI agencies, including identifying and disseminating key pieces of information, solutions, and processes that will help agencies in their consolidation efforts.

In an effort to accelerate federal data center consolidation, OMB has directed agencies to use cloud computing⁶ as an approach to migrating or replacing systems with Internet-based services and resources. In December 2010, in its 25 Point IT Reform Plan,⁷ OMB identified cloud computing as having the potential to play a major part in achieving operational efficiencies in the federal government's IT environment. According to OMB, cloud computing brings a wide range of benefits, including that it is (1) economical—a low initial investment is required to begin and additional investment is needed only as system use increases, (2) flexible—computing capacity can be quickly and easily added or subtracted, and (3) fast—long procurements are eliminated, while providing a greater selection of available services. To help achieve these benefits, OMB issued a "Cloud First" policy that required federal agencies to increase their use of cloud computing whenever a secure, reliable, and cost-effective cloud solution exists.

We have previously reported that, while selected federal agencies had made progress in implementing cloud computing, they also faced challenges.⁸ For example, agencies identified cloud computing challenges related to meeting federal security requirements that are

⁶Cloud computing is an emerging form of delivering computing services via networks with the potential to provide IT services more quickly and at a lower cost. Among other things, it provides users with on-demand access to a shared and scalable pool of computing resources with minimal management effort or service provider interaction.

⁷OMB, *25 Point Implementation Plan to Reform Federal Information Technology Management* (Washington, D.C.: Dec. 9, 2010).

⁸GAO, *Information Technology Reform: Progress Made but Future Cloud Computing Efforts Should be Better Planned*, GAO-12-756 (Washington, D.C.: July 11, 2012) and *Information Security: Federal Guidance Needed to Address Control Issues with Implementing Cloud Computing*, GAO-10-513 (Washington, D.C.: May 27, 2010).

unique to government agencies, such as continuous monitoring and maintaining an inventory of systems. Agencies also noted that, because of the on-demand, scalable nature of cloud services, it can be difficult to define specific quantities and costs and, further, that these uncertainties make contracting and budgeting difficult due to the fluctuating costs associated with scalable and incremental cloud service procurements. Finally, agencies cited other challenges associated with obtaining guidance, and acquiring knowledge and expertise, among other things.

More recently, in March 2013, OMB issued a memorandum documenting the integration of FDCCI with the PortfolioStat initiative.⁹ Launched by OMB in March 2012, PortfolioStat requires agencies to conduct an annual agency-wide IT portfolio review to, among other things, reduce commodity IT¹⁰ spending, demonstrate how its IT investments align with the agency's mission and business functions, and make decisions on eliminating duplication.¹¹ OMB's March 2013 memorandum discusses OMB's efforts to further the PortfolioStat initiative by incorporating several changes, such as consolidating previously collected IT-related plans, reports, and data submissions. The memorandum also establishes new agency reporting requirements and related time frames. Specifically, agencies are no longer required to submit the data center consolidation plans previously required under FDCCI. Rather, agencies are to submit information to OMB via three primary means—an information resources management strategic plan,¹² an enterprise road map,¹³ and an integrated data collection channel.¹⁴

⁹OMB, *Fiscal Year 2013 PortfolioStat Guidance: Strengthening Federal IT Portfolio Management*, Memorandum M-13-09 (Washington, D.C.: Mar. 27, 2013).

¹⁰According to OMB, commodity IT includes services such as IT infrastructure (data centers, networks, desktop computers and mobile devices); enterprise IT systems (e-mail, collaboration tools, identity and access management, security, and web infrastructure); and business systems (finance, human resources, and other administrative functions).

¹¹OMB, *Implementing PortfolioStat*, Memorandum M-12-10 (Washington D.C.: Mar. 30, 2012).

¹²OMB, *Management of Federal Information Resources*, Circular A-130 (Washington, D.C.: Nov. 30, 2000). According to OMB Circular A-130, an agency's information resources management strategic plan should describe how information resources management activities help accomplish agency missions, and ensure that information resource management decisions are integrated with organizational planning, budget, procurement, financial management, human resources management, and program decisions.

GAO Has Previously
Reported on Significant
Weaknesses in Agencies'
Inventories and Plans

In July 2012, we issued a report on the status of FDCCI and found that, while agencies' 2011 inventories and plans had improved as compared to their 2010 submissions, significant weaknesses still remained.¹⁵ Specifically, while all 24 agencies reported on their inventories to some extent, only 3 had submitted a complete inventory.¹⁶ The remaining 21 agency submissions had weaknesses in several areas. For example, while most agencies provided complete information on their virtualization¹⁷ efforts, network storage, and physical servers, 18 agencies did not provide complete data center information, such as data center type, gross floor area, and target date for closure. In particular, several agencies fully reported on gross floor area and closure information, but partially reported data center costs. In addition, 17 agencies did not provide full information on their IT facilities and energy usage. For example, the Department of Labor partially reported on total data center IT power capacity and average data center electricity usage and did not report any information on total data center power capacity. We also noted that 3 agencies had submitted their inventory using an outdated format, in part, because OMB had not publicly posted its revised guidance. Figure 1 provides an assessment of the completeness of agencies' 2011 inventories, by key element.

¹³OMB, *Increasing Shared Approaches to Information Technology Services* (Washington, D.C.: May 2, 2012). The enterprise road map is to include a business and technology architecture, an IT asset inventory, a commodity IT consolidation plan, a line of business service plan, and an IT shared service plan.

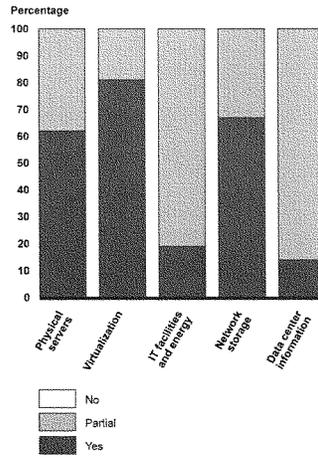
¹⁴The integrated data collection channel will be used by agencies to report structured information, such as progress in meeting IT strategic goals, objectives, and metrics, as well as cost savings and avoidances resulting from IT management actions.

¹⁵GAO-12-742.

¹⁶These agencies were the Department of Housing and Urban Development, the National Science Foundation, and the Social Security Administration.

¹⁷Virtualization is a technology that allows multiple, software-based machines with different operating systems, to run in isolation, side-by-side, on the same physical machine.

Figure 1: Twenty-one Agencies' Completion of Required Information for Data Center Inventory Key Elements, as of June 2011



Source: GAO analysis of agency data.

Officials from several agencies reported that some of the required information was unavailable at certain data center facilities. We reported that, because the continued progress of FDCCI is largely dependent on accomplishing goals built on the information provided by agency inventories, it will be important for agencies to continue to work on completing their inventories, thus providing a sound basis for their savings and utilization forecasts.

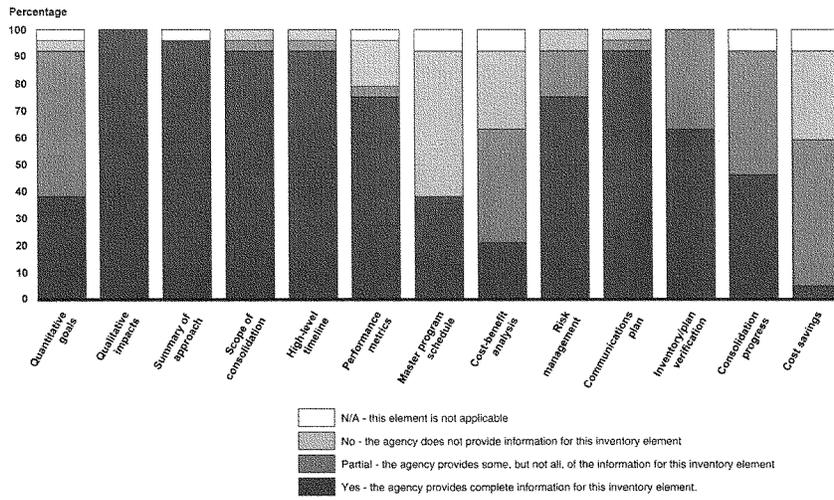
In addition, while all 24 agencies submitted consolidation plans to OMB, only 1 had submitted a complete plan.¹⁸ For the remaining 23 agencies, selected elements were missing from each plan. For example, among the

¹⁸This agency was the Department of Commerce.

24 agencies, all provided complete information on their qualitative impacts, and nearly all included a summary of the consolidation approach, a well-defined scope for data center consolidation, and a high-level timeline for consolidation efforts. However, most notably, 21 agencies did not fully report their expected cost savings; of those, 13 agencies provided partial cost savings information and 8 provided none. Among the reasons that this information was not included, a Department of Defense official told us that it was challenging to gather savings information from all the department's components, while a National Science Foundation official told us the information was not included because the agency had not yet realized any cost savings and so had nothing to report. Other significant weaknesses were that many agencies' consolidation plans did not include a full cost-benefit analysis that included aggregate year-by-year investment and cost savings calculations through fiscal year 2015, a complete master program schedule,¹⁹ and quantitative goals, such as complete savings and utilization forecasts. Figure 2 provides an assessment of the completeness of agencies' 2011 consolidation plans, by key element.

¹⁹A master program schedule was to be created for the entire agency, from the detailed implementation schedules provided by each of the data center managers as well as driven by related federal government activities (e.g., OMB reporting, budget submission, or beginning of a new fiscal year).

Figure 2: Twenty-four Agencies' Completion of Required Information for Data Center Consolidation Plan Key Elements, as of September 2011



Officials from several agencies reported that the plan information was still being developed. We concluded that, in the continued absence of completed consolidation plans, agencies are at risk of implementing their respective initiatives without a clear understanding of their current state and proposed end state and not being able to realize anticipated savings, improved infrastructure utilization, or energy efficiency.

We also found that while agencies were experiencing data center consolidation successes, they were also encountering challenges. While almost 20 areas of success were reported, the 2 most often cited focused on virtualization and cloud services as consolidation solutions, and working with other agencies and components to find consolidation opportunities. Further, while multiple challenges were reported, the two most common challenges were both specifically related to FDCCI data

reporting required by OMB; obtaining power usage information and providing a quality data center asset inventory.

We further reported that, to assist agencies with their data center consolidation efforts, OMB had sponsored the development of a FDCCI total cost of ownership model that was intended to help agencies refine their estimated costs for consolidation; however, agencies were not required to use the cost model as part of their cost estimating efforts. We stated that, until OMB requires agencies to use the model, agencies will likely continue to use a variety of methodologies and assumptions in establishing consolidation estimates, and it will remain difficult to summarize projections across agencies.

Accordingly, we reiterated our prior recommendation that agencies complete missing plan and inventory elements and made new recommendations to OMB to publically post guidance updates on the FDCCI website and to require agencies to use its cost model. OMB generally agreed with our recommendations and has since taken steps to address them. More specifically, OMB posted its 2012 guidance for updating data center inventories and plans, as well as guidance for reporting consolidation progress, to the FDCCI public website. Further, the website has been updated to provide prior guidance documents and OMB memoranda. In addition, OMB's 2012 consolidation plan guidance requires agencies to use the cost model as they develop their 2014 budget request.

Consolidation of Federal Data Centers is Under Way, but Initiative-wide Cost Savings Have Not Been Determined

We and other federal agencies²⁰ have documented the need for initiatives to develop performance measures to gauge progress. According to government and industry leading practices, performance measures should be measurable, outcome-oriented, and actively tracked and reported. For FDCCI, OMB originally established goals for data center closures and the expected cost savings. Specifically, OMB expected to consolidate approximately 40 percent of the total number of agency data centers and achieve \$3 billion in cost savings by the end of 2015, and established the means of measuring performance against those goals through several methods.

The 24 agencies have collectively made progress towards OMB's data center consolidation goal to close 40 percent, or approximately 1,253 of the 3,133 data centers, by the end of 2015. To track their progress, OMB requires agencies to report quarterly on their completed and planned performance against that goal via an online portal. After being reviewed for data quality and security concerns, the GSA FDCCI Program Management Office makes the performance information available on the federal website dedicated to providing the public with access to datasets developed by federal agencies, <http://data.gov>.

As of February 2013, agencies had collectively reported closing a total of 420 data centers by the end of December 2012,²¹ and were planning to close an additional 396 data centers—for a total of 816—by September 2013.²² While the number of data centers that agencies are planning to

²⁰GAO, *Aviation Weather: Agencies Need to Improve Performance Measurement and Fully Address Key Challenges*, GAO-10-843 (Washington, D.C.: Sept. 9, 2011); GAO, *NextGen Air Transportation System: FAA's Metrics Can Be Used to Report on Status of Individual Programs, but Not of Overall NextGen Implementation or Outcomes*, GAO-10-829 (Washington, D.C.: July 27, 2010); OMB, *Guide to the Program Assessment Rating Tool* (Washington, D.C.: January 2008); Department of the Navy, Office of the Chief Information Officer, *Guide for Developing and Using IT Performance Measurements* (Washington, D.C.: October 2001); and GSA, *Performance-Based Management: Eight Steps To Develop and Use Information Technology Performance Measures Effectively* (Washington, D.C.: 1996).

²¹Of the 24 agencies, 17 reported closing at least one data center by the end of December 2012. The remaining 7 agencies did not report closing any data centers during this time.

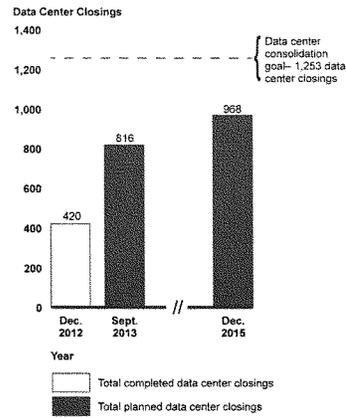
²²Of the 24 agencies, 19 reported plans to close at least one data center by the end of September 2013. The remaining 5 agencies did not report plans to close any data centers in this time frame.

close from October 2013 through December 2015 (the planned completion date of FDCCI) is not reported on <http://data.gov>, OMB's July 2012 quarterly report to Congress²³ on the status of federal IT reform efforts contains other information on agencies' data center closure plans. Among other things, the report states that agencies have collectively committed to closing a total of 968 data centers by the end of 2015. According to OMB staff from the Office of E-Government and Information Technology, this figure represents the number of commitments reported by agencies, as compared to the initiative's overall goal of closing 1,253 data centers by December 2015. The agencies have not identified the remaining 285 consolidation targets to achieve that goal. OMB's January 2013 quarterly report to Congress²⁴ does not provide any new information about either planned or completed agency data center closures. See figure 3 for a graphical depiction of agencies' progress against OMB's data center consolidation goal.

²³OMB, *Quarterly Report to Congress: Integrated, Efficient, and Effective Uses of Information Technology* (Washington, D.C.: July 30, 2012).

²⁴OMB, *Quarterly Report to Congress: Integrated, Efficient, and Effective Uses of Information Technology* (Washington, D.C.: Jan. 31, 2013).

Figure 3: Agencies' Progress against OMB's Data Center Consolidation Goal (as of February 2013)



Source: GAO analysis of OMB and GSA data.

However, OMB has not measured agencies' progress against the cost savings goal of \$3 billion by the end of 2015. According to a staff member from OMB's Office of E-Government and Information Technology, as of November 2012, the total savings to date had not been tracked but were believed to be minimal. The staff member added that, although data center consolidation involves reductions in costs for existing facilities and operations, it also requires investment in new and upgraded facilities and, as a result, any current savings are often offset by the reinvestment of those funds into ongoing consolidation efforts. Finally, the staff member stated that OMB recognizes the importance of tracking cost savings and is working to identify a consistent and repeatable method for tracking cost savings as part of the integration of FDCCI with PortfolioStat, but stated that there was no time frame for when this would occur.

The lack of initiative-wide cost savings data makes it unclear whether agencies will be able to achieve OMB's projected savings of \$3 billion by the end of 2015. In previous work, we found that agencies' cost savings

projections were incomplete and, in some cases, unreliable. Specifically, in July 2012,²⁵ we reported that most agencies had not reported their expected cost savings in their 2011 consolidation plans. Officials from several agencies reported that this information was still being developed. Notwithstanding these weaknesses, we found that agencies collectively reported anticipating about \$2.4 billion in cumulative cost savings by the end of 2015 (the planned completion date of FDCCI).²⁶ With less than 3 years remaining to the 2015 FDCCI deadline, almost all agencies still need to complete their inventories and consolidation plans and continue to identify additional targets for closure. Because closing facilities is a significant driver in realizing consolidation savings, the time required to realize planned cost savings will likely extend beyond the current 2015 time frame. With at least one agency not planning on realizing savings until after 2015 and other agencies having not yet reported on planned savings, there is an increased likelihood that agencies will either need more time to meet the overall FDCCI savings goal or that there are additional savings to be realized in years beyond 2015. Until OMB tracks cost savings data, the agency will be limited in its ability to determine whether or not FDCCI is on course toward achieving planned performance goals. Additionally, extending the horizon for realizing planned cost savings could provide OMB and FDCCI stakeholders with input and information on the benefits of consolidation beyond OMB's initial goal.

²⁵GAO-12-742.

²⁶One agency—the Department of Defense—estimated about \$2.2 billion in cost savings by the end of 2015, which accounts for about 92 percent of the total anticipated cost savings. However, the department's consolidation plan noted that their cost savings estimates do not account for any up-front costs associated with the consolidation effort.

Oversight of FDCCI is Not Being Performed in All Key Areas

We have previously reported that oversight and governance of major IT initiatives help to ensure that the initiatives meet their objectives and performance goals.²⁷ When an initiative is governed by multiple entities, the roles and responsibilities of those entities should be clearly defined and documented, including the responsibilities for coordination among those entities. We have further reported,²⁸ and OMB requires,²⁹ that an executive-level body be responsible for overseeing major IT initiatives. Among other things, we have reported that this body should have documented policies and procedures for management oversight of the initiative, regularly track progress against established performance goals, and take corrective actions as needed.

Oversight and governance of FDCCI is the responsibility of several organizations—the Task Force, the GSA FDCCI Program Management Office, and OMB. Roles and responsibilities for these organizations are documented in the Task Force charter and OMB memoranda, while others are described in OMB's January 2013 quarterly report to Congress or have been communicated by agency officials. See table 1 for a listing of the FDCCI oversight and governance entities and their key responsibilities.

²⁷GAO, *USDA Systems Modernization: Management and Oversight Improvements Are Needed*, GAO-11-586 (Washington, D.C.: July 20, 2011); *United States Coast Guard: Improvements Needed in Management and Oversight of Rescue System Acquisition*, GAO-06-623 (Washington, D.C.: May 31, 2006); and *Information Technology Investment Management: A Framework for Assessing and Improving Process Maturity*, GAO-04-394G (Washington, D.C.: March 2004).

²⁸GAO-11-586, GAO-06-623, and GAO-04-394G.

²⁹OMB, *Capital Programming Guide, V. 3.0, Supplement to OMB Circular A-11: Planning, Budgeting, and Acquisition of Capital Assets*, (Washington, D.C.: July 2012). The Capital Programming Guide is intended to help agencies effectively plan, procure, and use capital assets.

Table 1: Key Responsibilities of FDCCI Oversight and Governance Organizations

Organization	FDCCI responsibilities
Task Force	<ul style="list-style-type: none"> • Hold monthly meetings to facilitate communication between agencies • Communicate and coordinate agency best practices • Identify policy and implementation issues that could negatively impact agencies' abilities to meet their FDCCI goals • Assist agencies with development of their consolidation plans • Develop and manage the data center total cost of ownership model (GSA)^a • Develop an electronic governmentwide marketplace for data center availability (GSA and OMB) • Oversee the agency consolidation plan peer review process
GSA FDCCI Program Management Office	<ul style="list-style-type: none"> • Collect agencies' consolidation inventories and plans annually (inventories in June, plans in September) • Under OMB direction, collect and disseminate data related to the FDCCI closure updates • Provide ad-hoc and quarterly reports to OMB regarding agencies' reported consolidation updates • Maintain and update FDCCI-related online portals, such as http://CIO.gov and http://data.gov (i.e., the consolidation progress dashboard) • Develop and manage the data center total cost of ownership model (Task Force) • Provide agency support including technical assistance on the total cost of ownership model and clarifying inventory and plan requirements • Develop an electronic governmentwide marketplace for data center availability (Task Force and OMB) • Conduct analysis of FDCCI inventories and plans, including reviewing agencies' submissions for errors
OMB	<ul style="list-style-type: none"> • Establish and manage FDCCI • Provide Federal CIO policy and guidance to the initiative • Launch an electronic public dashboard to track consolidation progress • Develop an electronic governmentwide marketplace for data center availability (Task Force and GSA) • Approve federal agency consolidation plans • Report quarterly to the Senate and House Committees on Appropriations identifying the savings achieved by OMB's governmentwide IT reform effort, which includes FDCCI • Provide executive-level oversight of FDCCI

Source: GAO analysis of OMB data and agency interviews.

Note: Bold text indicates a responsibility that is shared with the entities indicated in parentheses.

^aThis model is intended to provide agencies with a comprehensive tool to help inform decision making, model paths, and the development of cost savings figures and funding needs.

The Task Force, the GSA FDCCI Program Management Office, and OMB have performed a wide range of FDCCI responsibilities. For example, the Task Force holds monthly meetings to, among other things, communicate and coordinate consolidation best practices and to identify policy and implementation issues that could negatively impact the ability of agencies to meet their goals. Further, the Task Force has assisted agencies with

the development of their consolidation plans by discussing lessons learned during its monthly meetings and disseminating new OMB guidance. GSA has collected responses to OMB-mandated document deliveries, including agencies' consolidation inventories and plans, on an annual basis. In addition, GSA has collected data related to FDCCI data center closure updates, disseminated the information publicly on the consolidation progress dashboard on <http://data.gov>, and provided ad hoc and quarterly updates to OMB regarding these data. Lastly, as the executive-level body, OMB issued FDCCI policies and guidance in a series of memoranda that, among other things, required agencies to provide an updated data center asset inventory at the end of every third quarter and an updated consolidation plan at the end of every fourth quarter. In addition, OMB launched a publicly available electronic dashboard to track and report on agencies' consolidation progress.

However, oversight of FDCCI is not being performed in other key areas. For example,

- The Task Force has not provided oversight of the agency consolidation peer review process. According to officials, the purpose of the peer review process is for agencies to get feedback on their consolidation plans and potential improvement suggestions from a partner agency with a data center environment of similar size and complexity. While the Task Force documented the agency pairings for 2011 and 2012 reviews, it did not provide agencies with guidance for executing their peer reviews, including information regarding the specific aspects of agency plans to be reviewed and the process for providing feedback. As a result, the peer review process did not ensure that significant weaknesses in agencies' plans were being identified. As previously mentioned, in July 2012, we reported³⁰ that all of the agencies' plans were incomplete except for one. In addition, we noted that three agencies had submitted their June 2011 inventory updates, a required component of consolidation documentation, in an incorrect format—an outdated template.
- The GSA FDCCI Program Management Office has not executed its responsibilities related to analyzing agencies' inventories and plans and reviewing these documents for errors. In July 2012, we reported on agencies' progress toward completing their inventories and plans

³⁰GAO-12-742.

and found that only three agencies had submitted a complete inventory and only one agency had submitted a complete plan, and that most agencies did not fully report cost savings information and eight agencies did not include any cost savings information.³¹ The lack of cost savings information is particularly important because, as previously noted, initiative-wide cost savings have not been determined—a shortcoming that could potentially be addressed if agencies had submitted complete plans that addressed cost savings realized, as required.

- Although OMB is the approval authority of agencies' consolidation plans, it has not approved agencies' submissions on the basis of their completeness. In an October 2010 memorandum, OMB stated that its approval of agencies' consolidation plans was in progress and would be completed by December 2010. However, OMB did not issue a subsequent memorandum indicating that it had approved agencies' plans, or an updated time frame for completing its review. This is important because, in July 2011 and July 2012, we reported that agencies' consolidation plans had significant weaknesses and that nearly all were incomplete.³²
- OMB has not reported on agencies' progress against its key performance goal of achieving \$3 billion in cost savings by the end of 2015. Although the 2012 Consolidated Appropriations Act included a provision directing OMB to submit quarterly progress reports to the Senate and House Appropriations Committees that identify savings achieved through governmentwide IT reform efforts,³³ OMB has not yet reported on cost savings realized for FDCCI. Instead, the agency's quarterly reports had only described planned FDCCI-related savings and stated that future reports will identify savings realized. As of the January 2013 report, no such savings have been reported.

These weaknesses in oversight are due, in part, to OMB not ensuring that assigned responsibilities are being executed. Improved oversight could better position OMB to assess progress against its cost savings goal and minimize agencies' risk of not realizing anticipated cost savings.

³¹GAO-12-742.

³²GAO-11-565 and GAO-12-742.

³³Consolidated Appropriations Act, 2012, Pub. L. No. 112-74, div. C, title II, 125 Stat. 786, 896 (2011).

Recent Integration with PortfolioStat Changes FDCCI, but Reporting Requirements and Goals Are Not Fully Defined

OMB's recent integration of FDCCI and PortfolioStat made significant changes to data center consolidation oversight and reporting requirements. According to OMB's March 2013 memorandum,³⁴ to more effectively measure the efficiency of an agency's data center assets, agency progress will no longer be measured solely by closures. Instead, agencies will also be measured by the extent to which their data centers are optimized for total cost of ownership by incorporating metrics for energy, facility, labor, and storage, among other things. In addition, OMB stated that the Task Force will categorize agencies' data center populations into two categories—core and non-core data centers—for which the memorandum does not provide specific definitions. Additionally, as previously discussed, agencies are no longer required to submit the data center consolidation plans previously required under FDCCI. Rather, agencies are to submit information to OMB via three primary means—an information resources management strategic plan, an enterprise road map, and an integrated data collection channel. Using these tools, an agency is to report on, among other things, its approach to optimizing its data centers; the state of its data center population, including the number of core and non-core data centers; the agency's progress on closures; and the extent to which an agency's data centers are optimized for total cost of ownership.

However, OMB's memorandum does not fully address the revised goals and reporting requirements of the combined initiative. Specifically, OMB stated that its new goal is to close 40 percent of non-core data centers but, as previously mentioned, the definitions for core and non-core data center were not provided. Therefore, the total number of data centers to be closed under OMB's revised goal cannot be determined. In addition, although OMB has indicated which performance measures it plans to use going forward, such as those related to data center energy and labor, it has not documented the specific metrics for agencies to report against. The memorandum indicates that these will be developed by the Task Force, but does not provide a time frame for when this will be completed. Lastly, although OMB has previously stated that PortfolioStat is expected to result in savings of approximately \$2.5 billion through 2015, its memorandum does not establish a new cost savings goal for FDCCI, nor does it refer to the previous goal of saving \$3 billion. Instead, OMB states that all cost savings goals previously associated with FDCCI will be

³⁴OMB Memorandum, M-13-09.

integrated into broader agency efforts to reshape their IT portfolios, but does not provide a revised savings estimate. The lack of a new cost savings goal will further limit OMB's ability to determine whether or not the new combined initiative is on course toward achieving its planned objectives.

In addition, several important oversight responsibilities related to data center consolidation have not been addressed. For example, with the elimination of the requirement to submit separate data center consolidation plans under the new combined initiative, the memorandum does not discuss whether either the Task Force or the GSA Program Management Office will continue to be used in their same oversight roles for review of agencies' documentation. In addition, while the memorandum discusses OMB's responsibility for reviewing agencies' draft strategic plans, it does not discuss the responsibility for approving them. In the absence of defined oversight assignments and responsibilities, it cannot be determined how OMB will have assurance that agencies' plans meet the revised program requirements and, moving forward, whether these plans support the goals of the combined initiative.

Implementation of Recommendations Could Help Ensure Improvements in Oversight

In our report being released today, we are making recommendations to better ensure that FDCCI achieves expected cost savings and to improve executive-level oversight of the initiative. Specifically, we are recommending that the Director of OMB direct the Federal CIO to

- track and annually report on key data center consolidation performance measures, such as the size of data centers being closed and cost savings to date;
- extend the time frame for achieving cost savings related to data center consolidation beyond the current 2015 horizon, to allow time to meet the initiative's planned cost savings goal; and
- establish a mechanism to ensure that the established responsibilities of designated data center consolidation oversight organizations are fully executed, including responsibility for the documentation and oversight of the peer review process, the review of agencies' updated consolidation inventories and plans, and approval of updated consolidation plans.

The Federal CIO stated that the agency concurred with the first and third recommendation. Regarding the second recommendation, OMB neither agreed nor disagreed. However, the Federal CIO stated that, as the

FDCCI and PortfolioStat initiatives proceed and continue to generate savings, OMB will consider whether updates to the current time frame are appropriate.

In summary, after more than 3 years into FDCCI, agencies have made progress in their efforts to close data centers. However, many key aspects of the integration of FDCCI and PortfolioStat, including new data center consolidation and cost savings goals, have not yet been defined. Further compounding this lack of clarity, total cost savings to date from data center consolidation efforts have not been determined, creating uncertainty as to whether OMB will be able to meet its original cost savings goal of \$3 billion by the end of 2015. In the absence of tracking and reporting on cost savings and additional time for agencies to achieve planned savings, OMB will be challenged in ensuring that the initiative, under this new direction, is meeting its established objectives.

Recognizing the importance of effective oversight of major IT initiatives, OMB directed that three oversight organizations—the Task Force, the GSA FDCCI Program Management Office, and OMB—be responsible for federal data center consolidation oversight activities. These organizations have performed a wide range of FDCCI responsibilities, including facilitating collaboration among agencies and developing tools to assist agencies in their consolidation efforts. However, other key oversight activities have not been performed. Most notably, the lack of formal guidance for consolidation plan peer review and approval increases the risk that missing elements will continue to go undetected and that agencies' efforts will not fully support OMB's goals. Further, OMB's March 2013 memorandum does not address whether the Task Force and GSA's Program Management Office will continue their oversight roles, which does not help to mitigate this risk. Finally, while OMB has put in place initiatives to track consolidation progress, consolidation inventories and plans are not being reviewed for errors and cost savings are not being tracked or reported. The collective importance of these activities to federal data center consolidation success reinforces the need for oversight responsibilities to be fulfilled in accordance with established requirements.

Chairman Mica, Ranking Member Connolly, and Members of the Subcommittee, this completes my prepared statement. I would be pleased to respond to any questions that you may have at this time.

**GAO Contact and
Staff
Acknowledgments**

If you or your staffs have any questions about this testimony, please contact me at (202) 512-9286 or at pownerd@gao.gov. Individuals who made key contributions to this testimony are Dave Hinchman (Assistant Director), Justin Booth, Nancy Glover, and Jonathan Ticehurst.

Mr. MICA. And we will hold the questions until we have heard from Mr. Mazer. And he is the Chief Information Officer at the Department of the Interior.

Welcome, sir, and you are recognized.

STATEMENT OF BERNARD MAZER

Mr. MAZER. Good afternoon, Chairman Mica and Ranking Minority Member Connolly. I would like to summarize my testimony and submit the full testimony for the record.

Mr. MICA. Without objection, we'll submit the additional data.

Mr. MAZER. My name is Bernard Mazer. I currently serve as the Chief Information Officer for the Department of the Interior. As a representative of the Federal CIO Council, I also serve as an executive sponsor of the Federal Data Center Consolidation Task Force.

Thank you for providing the opportunity to testify regarding cloud computing and optimization of data centers across the Federal Government.

The Federal Government information technology infrastructure is a massive collection of networks. In the span of 11 years, from 1998 to 2009, the number of Federal data centers drastically increased from 432 to more than 1,100. The result was an inefficient Federal data center population with unnecessary operations and maintenance costs.

To reverse this trend, OMB in February of 2010 launched the Federal Data Center Consolidation Initiative, referred to as FDCCI. A year later, in February 2011, the Federal Data Center Consolidation Task Force was chartered. The task force is comprised of agency representatives who are working together to share progress toward individual agency goals and the overall Federal goal of optimization and consolidation.

Today, the task force has contributed to the FDCCI by advising on policy and implementation; sharing information, best practices, and lessons learned; and by working with agencies to assess the benefits and challenges of cloud computing.

One of the critical roles of the task force has been to share best practices. For example, the Department of the Interior has launched an IT transformation initiative to consolidate IT infrastructure operations at the department level, including data center operations, in order to eliminate redundancy and speed the adoption of new technologies, such as the migration to cloud computing.

Information provided by the task force has helped evolve the FDCCI. Under the March 13th OMB memorandum on PortfolioStat, the FDCCI was formally integrated into PortfolioStat and shifted the FDCCI focus from consolidation to both optimizing core data centers and consolidating non-core data centers. Through PortfolioStat, agencies have already realized \$300 million in savings, some of which is attributed to data center consolidation.

The expected benefits of moving to the cloud can be great and are driving the transition from existing hosting environments that focus on managing servers to modern cloud-based environments. These benefits include improving service delivery to customers, modernizing computing capabilities, enhancing collaboration, and replacing legacy information technology infrastructure. Moreover,

as agencies refine their business processes during cloud migration, they can also realize significant cost savings.

The deployment of cloud tech computing also presents challenges, including culture and change management, data interoperability and portability, and the lack of expertise or experience in implementation of migrating to cloud-computing technologies.

Another challenge agencies have experienced is calculating cost savings related to optimization and consolidation. This requires calculation of a total cost of ownership which is much more comprehensive than just equipment or energy cost. That is why the task force, working with participating agencies and GSA and OMB, are developing a total-cost-of-ownership model. This model is now being used as a planning tool as agencies optimize and consolidate their data centers.

Agencies are at different stages of moving IT applications to the cloud and, in doing so, can leverage offerings from the Federal Risk and Authorization Management Program, known as FedRAMP, that provide a standardized approach to security for cloud products and services.

In conclusion, Federal agencies are continuing to make progress toward optimizing and consolidating data centers. Since launching the FDCCI, agencies have closed 484 data centers as of last week, with plans to close 855 by the end of the fiscal year 2013. The progress is being publicly tracked through data.gov.

FDCCI's integration into PortfolioStat is expected to strengthen the focus on tracking cost savings, increase the number of tracked metrics, facilitate collaboration across agencies, expedite implementation of best practices, and should result in a consistent method for tracking costs. All of this is expected to result in a more accurate assessment of the benefits of this initiative.

I am confident that cloud computing and data center consolidation has the potential to provide modernized IT at a significant cost savings. It is our job as chief information officers to provide the evidence of these benefits to the American people.

Chairman Mica, Ranking Member Connolly, this concludes my prepared statement, and I would be happy to answer any questions that you may have at this time.

[Prepared statement of Mr. Mazer follows:]

Testimony before the Subcommittee on Government Operations,
Committee on Oversight and Government Reform,
U.S. House of Representatives
May 14, 2013

**Benefits and Challenges of Cloud Computing
and the Optimization of Data Centers for the Federal
Government**



Bernard Mazer
Chief Information Officer
U.S. Department of the Interior

Introduction

Good afternoon Chairman Mica, Ranking Minority Member Connolly, and distinguished members of the Subcommittee. My name is Bernard Mazer and I currently serve as the Chief Information Officer for the U.S. Department of the Interior. As a representative of the Federal CIO Council, I also serve as an executive sponsor of the Federal Data Center Consolidation Task Force¹. Thank you for providing the opportunity to testify regarding the benefits and challenges of cloud computing and of the optimization of data centers across the Federal government.

The Federal Government's information technology (IT) infrastructure is a massive, heterogeneous collection of networks, unparalleled in private industry or other governmental organizations. In the span of 11 years, from 1998 to 2009, the number of Federal government data centers drastically increased from 432 at the time, to more than 1,100². During this time period, the Federal Government's spending on technology increased at a rate of 7% annually³, with little impetus to optimize, share, or rationalize IT infrastructure. The result was an inefficient Federal data center population, with unnecessary operation and maintenance costs, which requires capital that would be better spent on innovative activities that deliver better, more efficient services to the American people.

To reverse this trend, in February 2010, the Office of Management and Budget (OMB) launched the Federal Data Center Consolidation Initiative⁴ (FDCCI). By optimizing and consolidating redundant and wasteful data centers, the government will reduce the cost of data center hardware, software, and operations; shift IT investments to more efficient computing platforms such as cloud solutions; promote sustainability within our data centers and improve our nation's cybersecurity posture.

Since then, there has been a halt of net-new data centers being built. In fact, as of last week, agencies have closed 484 data centers⁵, with plans to close 855 by the end of fiscal year 2013, reducing the overall infrastructure footprint of the Federal Government.

The Federal Data Center Consolidation Initiative Task Force

The Federal CIO Council's Federal Data Center Consolidation Task Force, which I currently chair, was chartered in February 2011, subsequent to its inclusion in OMB's 25 Point Plan to Reform Federal IT⁶. The Task Force is comprised of agency representatives who are responsible for working together to share progress toward individual agency goals and the overall Federal goals of optimization and consolidation.

Today, the Task Force has contributed to the FDCCI by: (i) advising on FDCCI policy and implementation; (ii) sharing information, best practices, and lessons learned; and (iii) working with agencies to assess the benefits and challenges of cloud computing.

¹ OMB. (Dec. 9, 2010). *25 Point Implementation Plan to Reform Federal Information Technology Management*. Retrieved from www.whitehouse.gov

² OMB. (Feb. 26, 2010). *Federal Data Center Consolidation Initiative*. Retrieved from www.whitehouse.gov

³ OMB. The President's Budget for Fiscal Year 2014, Analytical Perspectives, Chapter 19. Retrieved from <http://www.whitehouse.gov/omb/budget>

⁴ OMB. (Feb. 26, 2010). *Federal Data Center Consolidation Initiative*. Retrieved from www.whitehouse.gov

⁵ See FDCCI Data Center Closings 2010-2013. Retrieved from www.Data.gov, May 2013

⁶ OMB. (Dec. 9, 2010). *25 Point Implementation Plan to Reform Federal Information Technology Management*. Retrieved from www.whitehouse.gov

Advising on FDCCI Policy and Implementation

One of the critical roles of the Task Force has been to relate the “boots on the ground” experience of optimization and consolidation to agencies and policymakers across the government. Given that the landscape of Federal IT infrastructure is at varying levels of maturity across the government, there is valuable insight to be gleaned from actual practices. For example, the Department of the Interior has launched an IT Transformation initiative to consolidate IT infrastructure operations at the Department-level, including data center operations, in order to eliminate redundancy and speed the adoption of new technologies, such as the migration to cloud computing. Our experiences, and the experiences of other agencies, help identify issues such as whether there are program gaps which can be addressed via policy or whether there are different criteria by which agencies can measure and document data center optimization and consolidation progress.

Information provided by the Task Force helped inform the evolution of the FDCCI, as recently outlined in the March 2013 OMB Memorandum on PortfolioStat (M-13-09).⁷ PortfolioStat, implemented by OMB in 2012, requires agencies to conduct annual agency-wide IT portfolio reviews, to reduce commodity IT spending, and demonstrate how IT investments align with an agency’s mission and business functions. The data gathered, with the assistance of the Task Force, in this process led to recognition that agencies should focus on an enterprise-wide approach to address all commodity IT, including data centers, in an integrated, comprehensive plan.

M-13-09 noted that, “Agencies with advanced IT portfolio management see eliminating duplication, such as closing duplicative data centers, as a means of optimizing computing power for the enterprise. These agencies have found that cloud computing is a more scalable and transparent way to provision IT services, giving agencies a viable enterprise alternative to major and often stove-piped, capital IT investments. By procuring technology “as-a-service,” agencies can quickly stand up enterprise IT solutions, paying only for what they need, and reducing duplication.” Through PortfolioStat, agencies have already realized nearly \$300 million in savings⁸, some of which is attributed to data center consolidation.

Under M-13-09, the FDCCI was formally integrated into PortfolioStat. Additionally, based on input provided by the Task Force which noted that focusing solely on consolidating data centers was not yielding optimal outcomes, M-13-09 shifted the FDCCI from having a singular focus on consolidation to a dual track focus: optimizing core data centers and consolidating non-core data centers. From the Task Force’s perspective, too many agencies were still treating their data centers as the end, rather than as the means, to deliver optimized infrastructure services, enabling agencies to meet their diverse missions. A data center exists to support mission delivery, and execution and optimizing these assets, which are central to these missions, was recognized in M-13-09.

Sharing Information, Best Practices, and Lessons Learned

Any complex, government-wide initiative needs a forum and group to serve as a community of practice, exchanging ideas from a variety of sources, learning from what works and what doesn’t, and, on a

⁷ OMB. (Mar. 27, 2013). *Fiscal Year 2013 PortfolioStat Guidance: Strengthening Federal IT Portfolio Management*. <http://www.whitehouse.gov/sites/default/files/omb/memoranda/2013/m-13-09.pdf>.

⁸ OMB. (Mar. 27, 2013). *PortfolioStat 2.0: Driving Better Management and Efficiency in Federal IT* blog post. Retrieved from www.whitehouse.gov

continual basis, assisting others to innovate, trying out novel ideas which improve outcomes and results. The Task Force is no different and I am extremely proud of the work done in this arena. Agencies have presented on a variety of topics, including consolidation planning, energy efficiency, application mapping, using cloud computing and deploying enterprise applications to drive optimization and consolidation. These are all available publicly on CIO.gov, the web platform of the Federal CIO Council.

Working with Agencies to Assess the Benefits and Challenges of Cloud Computing

The expected benefits from moving to the cloud can be great and are driving the transition from existing hosting environments that focus on managing servers to modern cloud-based environments. These benefits include: (i) improving service delivery to internal and external customers, (ii) modernizing computing capabilities, such as scalability, on demand provisioning, and resource pooling, (iii) enhancing collaboration within each agency and with external stakeholders, and (iv) replacing legacy IT infrastructure that is nearing the end of its useful lifespan. Moreover, as agencies refine their business processes during cloud migrations, they can also realize significant cost savings.

The deployment of cloud computing also presents challenges, including (i) culture and change management of users and customers who are not comfortable migrating from their existing hosting solutions; (ii) data interoperability and portability due to highly customized nature of many legacy IT systems; and (iii) a lack expertise or experience in implementation. The Task Force is helping address these challenges by providing ideas on ways to inform and educate existing system and business owners; pointing out ways agencies can assess legacy systems and highlighting the need to train existing staff on cloud technologies.

Another challenge agencies have experienced is calculating cost savings related to optimization and consolidation. Federal data centers are spread across agency missions, program and functions. In some cases, the costs of agency data centers are shared between different offices and contracts. Providing the total cost of ownership continues to be a challenge as it is much more comprehensive than just energy or equipment costs. That is why the Task Force worked with participating agencies, GSA, and OMB to develop a total cost of ownership model, based on agency-provided inventory data, built on best practices in the public and private sectors, and tailored to reflect the Federal Government's operational structure. The model is now being used as a planning tool as agencies optimize and consolidate their data centers.

In support of the Federal cloud-first policy, agencies are also leveraging cloud-based technologies to accelerate their consolidation efforts. Agencies are in different stages of moving IT applications to the cloud and in doing so can leverage offerings from the Federal Risk and Authorization Management Program (FedRAMP), a government-wide program that provides a standardized approach to security assessment, authorization, and continuous monitoring for cloud products and services.

Conclusion

Federal agencies are continuing to make progress towards optimizing and consolidating data centers. As of May 2013, 484 data centers have been reported closed and agencies are publicly tracking their consolidation progress through *Data.gov*, the Administration's platform to increase public access to high value, machine readable datasets generated by the Executive branch.

As discussed above, the FDCCI has been integrated into OMB's PortfolioStat program. This integration is expected to strengthen the focus on tracking cost savings, increase the number of tracked metrics, facilitate collaboration across agencies, expedite implementation of best practices seen across the private sector, and should result in a consistent and repeatable method for tracking costs. All this is expected to result in a more accurate assessment of the benefits to this initiative.

I am confident that cloud computing and data center consolidation has the potential to provide modernized IT at a significant cost savings. It is our job as CIO's to provide the evidence of these benefits to the American people.

Chairman Mica, Ranking Member Connolly, and Members of the Subcommittee, this concludes my prepared statement. I would be happy to answer any questions that you may have at this time.

Mr. MICA. Well, we'll go ahead with some questions.

And let me first ask our GAO representative, while one of the basic questions is that this whole project was projected to save \$3 billion, and I think that was by 2015, I think I quoted the report as saying that the savings to date had not been tracked but were believed to be minimal.

It seems pretty apparent now we're getting some data in as a result of this hearing. But do you think they're going to be able to approach the goal and meet the goal? Or what is your prediction now looking at—

Mr. POWNER. So a couple comments here.

If you look at the projected cost savings—at one time we had plans that were being updated; now those plans are off the table since this is being merged under PortfolioStat. But at one time we had about \$2.4 billion in very preliminary plans. Inventories weren't complete yet. \$2.2 billion of that came from DOD.

Now, there were some things where upfront costs needed to be considered. But if you look at this chart up here, the Ag and the DHS numbers, that comes from a report that goes to the appropriation committees. Those agencies are reporting already in fiscal year 2013 a savings.

And if you just project—I mean, 800 closures in DOD alone, \$575 million in fiscal year 2014 alone. Our thought is this: If you extend it beyond 2015 out to—and it's great to have these stretched goals near term, but I think \$3 billion is very realistic. And when this initiative was started, there was a goal of \$3 billion. At one time, OMB was talking about a \$5 billion cost savings, and they went back to \$3 billion.

So it's somewhere—who knows, really, where it is? But I think that's why you need good hard numbers on these closures. And if we have over 1,000 centers that we are closing, there has to be significant associated cost savings.

Mr. MICA. Uh-huh. Well, what's interesting, now entering on the scene we have this PortfolioStat. I'm wondering if the consolidation efforts were to merge with this new thing, is this all going by the wayside? Or do you see them as compatible?

Mr. POWNER. They're clearly compatible. So if you look at the PortfolioStat initiative—and that's something we looked at very closely for the Congress—PortfolioStat—

Mr. MICA. Tell me how that's going to work, how you see it working.

Mr. POWNER. Yeah, so what PortfolioStat is, that takes commodity IT, so you can think of it more as administrative systems, and it puts them in groupings, so HR systems, financial management systems, email systems?

And OMB has an initiative, which we highly commend their efforts on that, where they went to each of the agencies, and they identified about 100 opportunities at 24 major departments and agencies to save \$2.5 billion. Okay? And that was the first cut in PortfolioStat.

Now, clearly, when you start looking at consolidating commodity IT and moving to the cloud, there is a lot of overlap with data center consolidation. So movement to the cloud-based center consolidation, PortfolioStat, their shared service approaches—all these dif-

ferent terms that they have. But the bottom line on all of this, Mr. Chairman, is you have significant effort, PortfolioStat and \$2.5 billion in savings; data center consolidation, \$3 billion in savings.

They did some TechStat reviews looking at troubled projects. The committees looked at that. Chairman and Ranking Member Connolly, I know you've looked at a lot of the troubled projects. But there were \$3 billion in savings.

All of a sudden, you do the math real quickly, and there is \$7 billion or \$8 billion in savings that we could spend more appropriately on modernizing government IT operations and furthering our mission. So that's why these savings are very significant. If we do things much more efficiently and save a significant amount of money, it will be in the ballpark of, you know, \$7 billion to \$8 billion, \$9 billion.

Mr. MICA. Okay.

Now, there are three components to making this consolidation effort work, as I understand. One is supposed to be OMB and sort of its oversight; GSA, and they have a program management office involved; and then we have the task force.

Now, you said we need better leadership with sort of a general statement with the CIOs, but somehow some thing is lacking here. We don't even have OMB willing to come in today and testify.

I mean, please be frank with us. Has OMB dropped part of the ball, an important part of the ball, that is making this not work?

Mr. POWNER. So our report is fairly balanced here, Mr. Chairman—

Mr. MICA. No, no, just be honest. You don't have to be balanced.

Mr. POWNER. —OMB, GSA, and the task force, and they have done some things well.

OMB has actually set the goals well. And we've got the ball rolling on—

Mr. MICA. But they're not—

Mr. POWNER. —they're not driving it to closure.

GSA, they have a program office responsible for plans and inventories. Our work over there shows the plans and the inventories have not been complete. Okay? We've got agencies like DOT where FAA wasn't reporting their air traffic control facilities.

And then when you look at what Mr. Mazer is doing, I think he's done a great job with the task force and the like, but we pointed out the peer-review process was not where it needed to be.

So all three organizations we felt needed to do more from a leadership perspective.

Mr. MICA. Okay. And since we've got Mazer here, we'll pick on him a little. How can their effort be improved? And do you cite that here in the report?

Mr. POWNER. Yeah, we did cite that.

That was a time—so the task force was put in place to perform peer reviews of the various agencies. And we clearly made a very clear point that we thought there could be more peer review going across the agencies to help each other out.

And I commend Mr. Mazer for his efforts to date and for him being here and what he's done to date, but I also think that that task force can do better, similar to GSA and OMB.

Mr. MICA. Well, with that being said, Mr. Mazer, and as chair of the task force, where do you see, again, us going from here in your particular role? You're an important part of the equation.

Mr. MAZER. Chairman, where I see the role of the task force is—we appreciated GAO's examination of the overall FDCCI activities. In previous years, they were looking at the paucity of information populating what constitutes a data center.

We are going to take into earnest the incorporation of the peer-to-peer reviews. We had those in the past. It will keep agencies on course in terms of their schedules and in terms filling out their inventory.

The Federal Data Center Consolidation Initiative task force, as it's being integrated into PortfolioStat, it's really linked to the shared services activities that we're engaged upon, about looking at these duplicative business systems like HR and financial management systems. It's related to the TechStat activities that we're looking at.

What the Federal Data Center Consolidation Initiative is going to do is identify criteria for examining what will become core data centers and what will become non-core data centers. Non-core data centers, we're going to encourage those data centers either to move to the core data center or to move out into the cloud.

But we're following the approach of optimizing the portfolio, which includes applications—

Mr. MICA. Can you define a little bit better the core and the non-core, just for the record?

Mr. MAZER. Chairman Mica, core data centers are those that are capable of delivering enterprise or private-sector-like class services. They're reliable, they're secure, they're following green IT, and they have the capability to deliver a variety of services across an agency or across agencies.

Non-core data centers are activities that might be specific to a location or they might be supporting a particular scientific or monitoring-type of system. Many of the non-core data centers are, in effect, really small data centers. You could sometimes characterize them as closets, so they're 500 square feet or less, with a lot of cost inefficiencies about maintaining those.

So we're going to encourage those to move to the core. Or if they have applications, then we're going to look at the promise of moving those out into the cloud.

Mr. MICA. Okay.

Well, finally—and I want to give Mr. Connolly plenty of time—is there—now, we are considering, again, some update in legislation and are working together on that. Have you looked at that? Is there anything that we are missing that would give us the tools to move forward, from what you have seen, either on an agency basis, on the whole consolidation?

Maybe you've reviewed some of what we have proposed, but—and we want to pursue giving all the tools necessary to expedite this. And sometimes, you know, you have to have language that actually mandates certain actions because the agencies are so inclined to stay static and not take initiatives.

But maybe you could both quickly comment on, or briefly comment on anything you see.

Mr. POWNER. Yeah, so on FITARA and the data center optimization section, a couple key things that we're very supportive of the bill is in the area of tracking and reporting key metrics.

Not only do you want to track and report closures and cost savings—and that is very clear, because there are cost savings that need to be had—but you also have aspects of that bill that talk about optimization metrics, where you look at energy usage and those types of things, higher server utilization rates and that type of thing. So, obviously, you want both. You want the right metrics on closures and cost savings, but you want also the right metrics on optimizing what remains. And, clearly, I think that's something that the task force is charged to do going forward as part of the PortfolioStat.

So I see your bill being very consistent with the direction that the administration is going. What it does is it mandates, codifies it in law, and it will ensure that it will span multiple administrations. Because, regardless of whether you want to look at this in 2015 or not, this is a long-term initiative that will go beyond 2015.

Mr. MICA. Right.

Mr. MAZER. Chairman Mica, the administration I don't believe has a position yet on the bill, but I have examined the bill from a data center perspective, metrics perspective. A lot of those cost-tracking metrics are what the Federal Data Center Consolidation Initiative is looking at.

There are some things that we're looking at, about power usage effectiveness; we're looking at cost per operating system virtualization; we're looking at ratios of employees to the amount of servers; and we're also looking at facility and storage utilization.

One of the activities that I feel good about the Federal Data Center Consolidation Initiative is, as we're looking at metrics, or we're attempting to look at metrics and all that that have meaning and salience and trying to comport ourselves into the 21st-century information technology.

Mr. MICA. Great.

I am a little bit more frosted as we go on and not seeing the two other witnesses. We'll have to definitely reschedule that, and we may have to have at least one of the witnesses back.

Let me yield now to Mr. Connolly.

Mr. CONNOLLY. Thank you, Mr. Chairman.

And I think the answer I just heard to your question of, did we get it right on the FITARA bill we introduced, I thought I heard both Mr. Powner and Mr. Mazer say we got it absolutely right and don't change a word, it's perfect.

I want to thank our panel for being here.

Mr. Powner, you've had a chance to look at the legislation, which stands for Federal Information Technology Acquisition Reform Act, which I referred to in my opening statement. And I heard your answers to the chairman's question, that it does encapsulate some of the reforms we're trying to make, including what the task force is doing, and going even back to the 25-point plan that Vivek Kundra put out when he was CTO.

Can you elaborate just a little bit about what it might achieve and how, if that legislation could perhaps help us with better compliance and better metrics and data center consolidation?

Mr. POWNER. Well, I clearly think from a metrics point of view it will help significantly, because it makes it very clear that cost savings are significant and that has to be reported and tracked.

The other part of the bill that I think will help is CIO authority. This is a CIO issue in every department and agency. And, clearly, you know, it varies in terms of the progress and the reported cost savings that CIOs are currently making. You know, we're all trying to get to a position where IT is more effectively managed at \$80 billion, and we know that's understated based on some of the prior hearings that you've held. So I think in addition to the data center section, the CIO authority section also could play a significant role in moving the ball forward in this area.

Mr. CONNOLLY. At the moment, are you satisfied that OMB has consistent methods of evaluation to capture cost and cost savings with respect to data centers?

Mr. POWNER. No, I'm not—we're not. In fact, what OMB told us is that they were not tracking cost savings and that the savings were minimal. So if you're going to establish a goal of closures and cost savings, we need to then track that and ensure that we actually drive it to closure.

We have a lot of good plans in D.C. at times in the IT area; what we don't do is implement them completely. And, also, folks aren't held accountable to implement them completely. This is a prime example.

Mr. CONNOLLY. Well, if they're not tracking cost savings, what do they think the consolidation effort is for?

Mr. POWNER. That's a very good question, Mr. Chairman.

So we did not agree; that's why we made the recommendation in our report that cost savings needs to be front and center in terms of metrics. And we can talk about optimization goals and all this other stuff, but we're optimizing the stuff that remains. Okay?

All those closures, and even if those are all small wiring closets, 800 of them, there's a lot of money to be had with those. And if we get to a point where we have 1,100 or 1,200 centers, which would get to the 40 percent—

Mr. CONNOLLY. Can you refresh our memory, Mr. Powner, on how much these data centers expend, what it costs the taxpayers every year just on energy consumption?

Mr. POWNER. I don't have good numbers on that.

Mr. CONNOLLY. Would about \$450 million roughly sound right to you?

Mr. POWNER. I would have to get back to you on that, but likely even higher, though, if you start adding all the departments and agencies. You look at DOD alone and you look at their centers—

Mr. CONNOLLY. Yeah.

Mr. POWNER. And, frankly, they're reporting some numbers there that they probably would have missed. They don't have a complete inventory yet.

Mr. CONNOLLY. It underscores your frustration, Mr. Chairman, which I share. We've got to have some consistent measurement by OMB. And, for goodness' sake, obviously cost savings are part of the goal here, not the only goal, but a pretty important part of the goal.

And if they're not consistently measuring that or even seeing it as a significant factor in making the decision about to stay open, to close, to consolidate, then they're not with the program. And, certainly, they're not consistent with the legislation we've introduced.

Would that be a fair statement, Mr. Powner?

Mr. POWNER. Yeah, so if you look at the IT budget—we spend \$80 billion on IT in the Federal Government, and 70 percent of that is operations and maintenance, which includes data centers. And the challenge going forward is to take some of that O&M spend and move it into systems development and acquisition so we modernize the government and further the mission. But we spend a lot of money keeping the lights on, and if we can do it more efficiently in this example, or movement to the cloud, we need to do more of that.

Mr. CONNOLLY. Yeah. Absolutely.

Mr. MAZER, you are a constituent. I cannot imagine a better spokesperson for this whole subject than yourself, hailing, as you do, from Annandale.

But just a couple of questions. You chair the task force. What is the mandate of the task force?

Mr. MAZER. The mandate of the task force, it was initially chartered to provide information sharing, examining best practices, to examine activities like power usage effectiveness, and to follow and optimize—or to follow working with the agencies on the schedules and all that for closure on activity.

Mr. CONNOLLY. Okay, but there is a goal, an end goal, which is to promote this consolidation.

Mr. MAZER. It's to promote the consolidation. And it's also to promote—this task force, we had a year gap of the peer review. But when the peer reviews that we had going forth on all that was having one agency encouraging another agency to either follow the intention of the schedule or to follow intention with the scope or to look at the missing inventory elements that are a part of what a data center consists of.

Mr. CONNOLLY. What are some of—could you enumerate for us a little bit the process and the criteria used in the process for determining, or for helping to determine in that task force process, “You know, that sounds like an inefficiency. Ought to close, ought to consolidate, or go entirely to the private sector?” What are the criteria whereby you look at something going, “That's great, don't change a thing,” versus, “That's not so great, and maybe it ought to be closed?”

Mr. MAZER. Well, what we're looking at is, in terms of the—you know, initially the task force was chartered to reflect on best practices, and a reflection of noticing that we are having a problem coming to grips with what we have in our inventory. We started working on a series of metrics and all of that, in terms of criteria.

So some of the metrics that we're looking at are how much virtualizing we've done of the boxes. And we're establishing a standard for the U.S. Government. We're looking at metrics in terms of how much floor space that we're using. We're looking at metrics in terms of the energy costs that we are looking at and establishing a baseline there for those activities. We also are looking

at metrics in terms of what's the ratio of things that are out in the cloud as opposed to things that are actually to be put on premises.

And right now the task force is engaged in establishing these metrics as a baseline which will serve as the basis for when the PortfolioStat sessions start in the summer so that agencies will have a good apples-to-apples comparison of what costs are and what we should strive to.

Mr. CONNOLLY. I assume utilization is one of the criteria?

Mr. MAZER. Yes, sir. Utilization is a heavy criteria—one of the criteria. We've got about nine criteria. I'd be happy to submit for you a—

Mr. CONNOLLY. That would be very helpful, I think, to all of us here. Thank you.

Mr. CONNOLLY. Yeah, because I would think, in some ways, utilization alone could be a qualifier or disqualifier. I mean, if you find something grossly underutilized, it's a strong candidate for consolidation or elimination.

Mr. MAZER. Yes. Many of our servers are at 5 percent or 10 percent—

Mr. CONNOLLY. Yeah.

Mr. MAZER. —utilization, which does fit the—

Mr. CONNOLLY. I think that—could you repeat that? Because I'm not sure that's fully appreciated. When we're looking at data consolidation, it isn't because we're obsessed with smaller numbers. It is because we're looking at how efficient it is.

Mr. MAZER. Right. When the teams have gone out and done either using automated tools or on-site examination of the capacity of servers, many of them are woefully underutilized. There's more efficiency by putting multiple operating systems or applications on one particular server, particularly given the state of technology that it is today.

Mr. CONNOLLY. Right. Thank you.

And a final question for now. You mentioned FedRAMP. Could you just remind us all what FedRAMP is and give us a status as to where it is?

Mr. MAZER. The status I will defer to my colleagues from GSA, but I will tell you—

Mr. CONNOLLY. Yeah, but they're not here, Mr. Mazer.

Mr. MAZER. FedRAMP—well, what FedRAMP is looking at is, you know, the security is a very important issue concerning the U.S. Government and how do we protect our data and our content. And what we have done over the past 10 years, with the advent of the FISMA laws and all that, is really establish a set of controls. And if agencies can subscribe to those particular controls, whether it's, like, access, availability, those types of activities, then they're saying, okay, they're reasonably protected given the categorization of that security.

FedRAMP is a model where, if anyone can subscribe to these set of controls, then they can be delivering that particular service. So FedRAMP is a model that, let's say if a private-sector company says, "I'd be able to do something for you, the U.S. Government," they will follow the standards as promulgated by FedRAMP, and you'll have an independent auditor or a validator come in and say, "Yes, they're matching these controls."

And it actually establishes a common baseline, so rather than every agency doing its own set of, “I think the security should be this,” or, “I think the security should be that,” it subscribes to a standard baseline by which all private-sector companies should subscribe to.

Mr. CONNOLLY. So another way of putting it would be, Mr. Mazer, that what FedRAMP is designed to do is to set some common standards that people, other agencies buy in to. And that helps us in terms of the acquisition process because the private sector now doesn’t have to deal with 100 variations.

Mr. MAZER. Right. The private sector doesn’t have to divine the intentions of each individual agency.

Mr. CONNOLLY. And are we expected to finalize that process soon?

Mr. MAZER. The FedRAMP process is ongoing. There are a couple of, they call them—there’s an acronym; forgive me if I can’t break it out—3PAOs, that they are that qualified to look at a private-sector company as they are offering cloud services to the U.S. Government.

Mr. CONNOLLY. So can we expect something soon?

Mr. MAZER. There are three—as services, as agencies are migrating to the cloud, they will avail themselves of the FedRAMP. The private-sector companies will avail themselves of the FedRAMP.

Mr. CONNOLLY. But you are anticipating we will proceed with FedRAMP as planned?

Mr. MAZER. Yes, sir.

Mr. CONNOLLY. Thank you.

Thank you, Mr. Chairman.

Mr. MICA. Just a final question, a follow-up question. In your review, who is getting it right? Examples to look toward?

Mr. POWNER. Agencies that are getting it right?

Mr. MICA. Yeah.

Mr. POWNER. We can look at some of those agencies. You know, typically, DOD is the agency that we point a lot of flaws out when it comes to the IT management recently with the IT Dashboard. Obviously, there’s a lot of opportunity there for them to get it right.

I turn to Mr. Mazer’s organization, Interior; they’re at the top of the list. You know, GSA was a latecomer up there, as we mentioned. But you have a number—DHS is also a leader. I mean, they were planning on going from 43 to 2 at one time, and now their numbers are a little bit different. But DOD, DHS, and Interior are clearly leaders up there.

Mr. MICA. Okay.

Did you have anything else, Mr. Connolly?

Mr. CONNOLLY. Not at this time, Mr. Chairman.

Mr. MICA. Well, what we’re going to have to do is thank you for being with us. We’ll probably submit some additional questions to you from the committee. I didn’t get to all that I wanted answered.

Mr. MICA. And this is kind of a meat-and-potato hearing, as you fellow geeks would love this one, but—

Mr. CONNOLLY. All the acronyms.

Mr. MICA. Yes, exactly. Well, I have to sort through them. I kept going back to make certain I knew what they were talking about. And you’ve been doing this, focusing on this a lot more than I. But

very important. I mean, we're talking saving billions and actually much more efficiently operating.

Sometimes when I go back after we have done our hearings together, Gerry, we see the debt we're in and the situation we're in financially. If we could just start implementing these things on a fast track, we could—

Mr. CONNOLLY. Yeah.

Mr. MICA. —take that column of losses and get us into a much better fiscal condition.

Now, again, I thank you for coming.

I want to—particularly, we're going to ask Mr. Powner to probably come back when we have the other two witnesses, and maybe again you, too, Mr. Mazer. You could see how we have to have some other answers from OMB and GSA, who are not with us today.

So, at this time, again, I thank you. We'll excuse you, and I'll call up our second panel.

Our second panel of witnesses I will introduce as they're taking their seats.

We have Mr. Steve O'Keeffe, and he is the founder of MeriTalk. We have Ms. Teresa H. Carlson. She is the vice president, worldwide public sector, of Amazon Web Services. We have Mr. Kenyon Wells, vice president of U.S. Federal, CGI Federal.

Those are our three industry panel witnesses. I think this will be an interesting panel. I always think it's great to hear from the government witnesses, and we had two key witnesses here today who provided us with their perspective. But I think those from the outside that are involved in IT and also data center consolidation that they undertake for the private sector and the public sector, to get their on-the-ground, firsthand evaluation and provide that to our subcommittee today.

So, with that, I welcome again Mr. O'Keeffe, Ms. Carlson, and Mr. Wells.

As I indicated before, this is an investigative panel of Congress, so if you haven't done so, we're going to do it now. We're going to ask you to stand and be sworn in.

Do you swear that the testimony you are about to give before this subcommittee of Congress is the whole truth and nothing but the truth?

Mr. O'KEEFFE. Yes.

Ms. CARLSON. I do.

Mr. WELLS. Yes.

RPTS MCCONNELL

DCMN CRYSTAL

Mr. MICA. The witnesses have all answered in the affirmative. Let the record reflect that.

And again, welcome you. We are fairly informal today, but we're trying to make certain that—I read, pre-read some of your testimony. Some of it's pretty long, but if you can consolidate your points, and if you have additional information, certainly your whole testimony will be included in the record. And then we'll go through all three of you, and then we'll do the questions rather than after each witness testifies. So I'm looking forward to all three of your testimonies. I have read a little bit of Mr. O'Keeffe's, and welcome

him at this time, and recognize him. And thank you again for participating.

STATEMENT OF STEVE O'KEEFFE

Mr. O'KEEFFE. Thank you. Chairman Mica, Ranking Member Connolly, and members of the subcommittee, thank you for the opportunity to speak to you today. My name is Steve O'Keeffe and I am not the voice for the GEICO gecko, as has been asked before. I'm, in fact, the founder of MeriTalk, the Data Center and Cloud Computing Exchanges. These are public-private partnerships focused on delivering tangible increases in efficiency in government IT. I have spent more than 20 years listening to Federal IT leaders talk about their challenges, their opportunities, and their frustrations. You have already heard a lot of numbers here today, but I'd like to cut to what's really important: tangible savings. I'm afraid the Federal IT reform is like a bad reality TV show. There is no budget. The actors are powerless. The end is predictable. But somehow we still keep watching. We need to change the script.

As you've noted, it is sad that OMB and GSA are not here. So when Vivek Kundra announced FDCCI in February of 2010, we talked about this, OMB said that taxpayers would save between \$3 billion and \$5 billion by 2015. That's a lot of hamburgers. And so as we set tangible goals we need to report against those goals, and I think that's what this is all about.

Cloud, too, was billed as an IT budget crusher. Today we are 18 months from the FDCCI savings deadline, and we have no idea how much money we have saved the taxpayer, which is not right. I would argue we don't need to keep counting data centers. We need to understand how much we've saved, which agencies are doing it right, and what we need to do to accelerate savings. Let's get straight about this.

To help surface some answers MeriTalk recently released a new study, and I'm Ross Perot-style going to use some charts to illustrate.

Mr. O'KEEFFE. The study is called "FDCCI: The Big Squeeze," and it is based on a survey of the operators in the agencies. What we want to do is learn from people on the frontlines what's going on. So a couple of statistics.

Fifty-six percent of data center leads give their agencies a C grade or below on FDCCI. I think earlier Congressman Connolly asked if we were getting an A. It seems we're getting a C or below. I wouldn't be very excited if my children brought that grade home.

Only half of Feds believe their agency is on target to meet the FDCCI number of closures. Ironically in this case, one of the questions you asked earlier about electricity savings, Feds believe that power is a significant area where we're going to save a lot of money. But based on our meetings with Federal data center leads, we found that 1 in 20 data center executives have an understanding of what they pay for electricity. So that's a significant blind spot.

What about top obstacles? What we see is the Fed site, budget constraints, mission-owner objections, and the inability to consolidate applications as the biggest obstacles to progress, which gives me the impression that the model for the data center leads should

really be that beatings will continue until morale improves. They have no ability, they're not empowered to change the equation.

So it's great to point out what the challenges are, but let's go on the positive side and look at what we should do in order to remedy the situation. We call this our five-point plan.

And the points are, number one, don't hide. Our concern is that by merging FDCCI with PortfolioStat we are going to be gerrymandering the metrics. And so we are concerned about that. We need to set realistic goals in the open and publish real status on success and failures. And yes, failures if that's what transpired. OMB has a total cost of ownership model. I think Mr. Mazer referenced it. In this era of open government, why does OMB insist on keeping this a secret? Why not publish the TCO model so we can find out where the money is?

Number two, there is no money. Recognize that there is no new money to fund data center optimization. And so with that, we need to empower the CIOs to rationalize applications and maybe trust new approaches because we know the old ones have failed.

Number three, application rationalization. If you do not cut the number of applications, you will not cut the number of data centers. The Army is running over 100 operating systems because it has so many legacy platforms. I think GAO flagged this. Uncle Sam does not need 622 HR systems. I think we can all agree on that.

Four, marry IT and facilities. Wouldn't it seem logical that the data center lead should understand and own the budget for the total data center environment? GSA owns most of the facilities and pays the electricity bills. Why not publish the energy bills for each data center so we'd have a better sense for how to proceed? There are a series of new energy contracts out there, the energy savings performance contracts, and we'd like to see those moving forward more aggressively.

Five, public-private partnership, please. Why don't we recognize that government is not the only organization that operates data centers? We can learn a huge amount from industry. Organizations like NASDAQ have put forth data center consolidation optimization initiatives. Let's look at some of those metrics.

Now to cloud. The onramp to Federal cloud, FedRAMP, is horribly congested. We talked about problems with traffic earlier. In fact, you can hear the honking on the digital highway right now as software companies line up trying to get through cloud certification.

After almost a year in operation, GSA's FedRAMP team has only certified two cloud service providers. How are agencies supposed to move to cloud when there are only two applications? It's just not feasible. If the cost of FedRAMP certification and the delays outweigh the volume of business that solution providers receive from agencies, that industry will take another road. That said, cloud acquisition vehicles are sorely needed.

In closing, it's time to get real about Federal IT modernization. Are the agency CIOs really in charge, and therefore accountable for results? This question has very real implications for FITARA. Richard Spires' recent experience at Department of Homeland Security makes all CIOs question whether they have authority or not.

We are ready and willing to discuss our initiatives and recommendations. We look forward to working with you to deliver improved efficiency in Federal IT, and welcome any of your questions. Thank you for the opportunity to talk today.

Mr. MICA. Well, thank you. Thank you for your testimony and your candor.

[Prepared statement of Mr. O’Keeffe follows:]

Testimony of Stephen W.T. O’Keeffe
 Founder, MeriTalk
 Data Center Exchange and Cloud Computing Exchange

before the:
 House Committee on Oversight and Government Reform,
 Subcommittee on Government Operations

Hearing Titled:
 “Data Centers on the Cloud: Is the Government Optimizing New Information
 Technologies Opportunities to save Taxpayers Money?”

May 14, 2013, 2:30 p.m.

“FDCCI and Cloud – Show Me the Money”

Chairman Mica, Ranking Member Connolly, and Members of the Subcommittee, thank you for the opportunity to speak to you today. My name is Steve O’Keeffe and I am the founder of MeriTalk’s Data Center Exchange and Cloud Computing Exchange, public-private partnerships focused on cross pollinating best practices in Federal data center consolidation and cloud computing efforts. Our partnership includes Federal agencies and leading private-sector companies who work together collaboratively to move the ball forward on the Federal Data Center Consolidation Initiative (FDCCI) and cloud computing. In that role, I have spent years listening to Federal leads talk about successes and challenges, as well as to industry experts who provide the technology that makes it possible. On behalf of Data Center Exchange, Cloud Computing Exchange, its industry members and Federal thought leaders, we are pleased to be here today.

When Vivek Kundra announced the Federal Data Center Consolidation Initiative – FDCCI – in February 2010, OMB said that the Federal government owned 1,100 data centers¹. We were told that Uncle Sam’s power processors gulped 6 billion kWh of electricity in 2006 – and warned that power draw could double by 2011 without a “fundamental” shift in behavior². The bottom-line promise, \$3 billion in FDCCI savings by 2015³. Cloud was also billed as a IT budget crusher. Out of the \$80 billion in Federal IT spend, it is estimated that almost half goes to infrastructure. Notably, data centers occupy the most substantial portion of agencies’ infrastructures. So, looking for savings in the data centers makes a whole lot of sense.

Today, 18 months from the FDCCI savings deadline, we now have 2,713 data centers – yes that’s definitely an increase⁴. While cloud is in the forecast, it hasn’t changed the outlook. Now, let me be clear, the data center headcount is not simply a question of Feds finding mainframes under

¹ Office of Management and Budget, “Memorandum for Chief Information Officers: Federal Data Center Consolidation Initiative,” February 26, 2010

² Office of Management and Budget, “Memorandum for Chief Information Officers: Federal Data Center Consolidation Initiative,” February 26, 2010

³ *FCW*, “Hearing Set to Probe Data Center Progress,” May 6, 2013

⁴ Calculations based on Government Accountability Office, “Data Center Consolidation: Agencies Making Progress, but Inventories and Plans Need to Be Completed,” July 2012 and DATA.gov

the bed – OMB has changed the definition of what is a data center repeatedly since February of 2010. That sent Federal data center leads chasing their tails – counting and recounting to answer the multiple data calls.

So far, GSA tells us that we have shuttered 420 data centers⁵. The DATA.gov site – <http://1.usa.gov/XTr6Q> – gives us the longitude and latitude of the closed data centers, but it does not tell us how much money we have saved. As the FDCCI deadline looms large – again, it's less than 18 months away – now's a good time to get real about the bottom-line benefits. According to OMB's math, we need to close 780 more data centers by 2015⁶. We need to understand which agencies are doing it right and what do we need to do to accelerate savings.

FDCCI – The Big Squeeze

MeriTalk hosts a public-private community focused specifically on Federal data centers – the Data Center Exchange⁷. We meet with Feds regularly to understand their challenges and opportunities in FDCCI. On Monday, we released a new study based on feedback from Federal data center operators – “The FDCCI Big Squeeze”⁸. We would underline that the only way to achieve better results from Federal data center optimization is to listen to the Federal data center operators – they know their environments and they are very focused on doing the right thing by the tax payer.

Here's what the study tells us. Fifty-six percent of data center leads give their agencies a C grade or below for FDCCI. Seventy-one percent note they have closed some data centers, with an average of 31 data center closures per agency. Only half of Feds believe that their agency is on target to meet the target FDCCI number of closures – 1,200.

Considering the source for savings, Feds see energy bills as a top opportunity. This is a recurring theme in the Data Center Exchange's studies over the last three years. It's ironic, as given the separation of IT and facilities cost centers, 95 percent of Federal data center leads don't pay the electric bill – or even know what it costs. This is a major blind spot in the vision to save money from data center optimization. You'll note that OMB has dropped the discussion about power savings from its FDCCI platform.

So, what do the Feds tell us about obstacles? Let's consider the top three challenges. Mission-owner objections – that's interesting in light of the recent resignation of Richard Spires, former CIO at DHS – he ran into significant challenges trying to take control of IT from mission owners that had other ideas. The ramifications for FITARA are profound. If we do not support CIOs that try to stand up to mission owners and agency component CIOs, then what's the point in calling for CIO empowerment? There are 23 CIOs at USDA. What CIO will step over Richard Spires to enforce better IT management?

⁵ Steve O'Keefe, “My Cup of IT – IT Gerrymandering?” April 4, 2013

⁶ Calculations based on Government Accountability Office, “Data Center Consolidation: Agencies Making Progress, but Inventories and Plans Need to Be Completed,” July 2012 and DATA.gov

⁷ MeriTalk's Data Center Exchange, www.meritalk.com/dcx

⁸ MeriTalk, “The FDCCI Big Squeeze,” www.meritalk.com/fdcci-big-squeeze.php, May 13, 2013

The other top challenges are also telling and should be taken together. No budget for consolidation and inability to shut down and consolidate applications. Nothing comes from nothing. CIOs need to be able to prioritize applications and consolidate functionality – this goes back to GAO's report about 622 HR and 777 supply chain systems⁹. In this fiscal climate, think it's safe to say there is no new IT money. If agency CIOs can't rationalize applications, then there's no money to consolidate – which means there will be no cost savings. Something needs to give.

In the study, Feds point to DoD, DHS, and NOAA as leaders in data center optimization. A call out here to Darren Smith and the team at NOAA – they are blazing the trail in modernization and are one of the few agencies that know and manage their electricity bill. It's sad and ironic that Feds looked to DHS – and Richard Spiers leadership – as a model for change. Again, with Spiers out, what other CIO will step up to challenge the components and mission owners? Lessons for FITARA.

Recommendations – The Five-Point Plan

Here are the Data Center Exchange's recommendations for how to achieve better outcomes in data center optimization:

1. *Don't Hide* – Gerrymandering FDCCI to make it look like a success by combining it with PortfolioStat is not the way to go. Let's put the cards on the table – set realistic goals in the open and publish the real status on success and failure. OMB has a data center TCO model. In this era of open government, why is this model kept secret? Publish the model so that government and industry understand how we're keeping score
2. *No Money* – Recognize that there is no new money for data center optimization. Empower the CIO to rationalize applications – it's the only way to fund the path to make things better. Agency leadership and Congress need to support the CIO in the inevitable clashes with the mission owners and components
3. *Application Rationalization* – Touched on this above, but it bears another mention. We do not need 600 HR systems. Prioritization is the key to changing the value and financial equation
4. *Marry IT and Facilities* – One data center executive needs to understand and own the budget for total data center cost. GSA owns most of the facilities and pays the electricity bill. Why not publish the energy bills for each data center? How do we pick which data centers to close if we don't know what they cost to operate? Interesting to note that, according to Uptime Institute, 12 percent of data center operational cost is electricity¹⁰
5. *Public-Private Partnership* – MeriTalk champions public-private partnership. That said, we need more and deeper public-private collaboration. Why don't we recognize that government is not the only organization that operates data centers? There are existing definitions of what is a data center – why not embrace these rather than keep creating our own in government? Why not utilize industry standards, data center efficiency measurements – like Power Usage Effectiveness (PUE)? Leaders like Jake Wooley at the

⁹ Government Accountability Office, "Information Technology: Potentially Duplicative Investments Exist at the Department of Defense and Energy," February 17, 2012

¹⁰ Uptime Institute, www.uptimeinstitute.com

Department of Energy can help data center leads all over government spark new energy efficiencies. How long did it take NASDAQ to do its data center optimization? What steps did it take? How much money did it save? Is the mission exactly the same? No. But, can we learn a huge amount from industry? Absolutely yes

Cloud Congestion

Turning to cloud, the forecast is better than the weather. The onramp to cloud – FedRAMP – is horribly congested. GSA launched the program in June of 2012, and according to GSA’s site, today there are only two approved Cloud Service Providers¹¹. If the cost for FedRAMP certification – and the delays – outweigh the volume of business that solution providers receive from the agencies, industry will sidestep the process. That said, cloud acquisition vehicles are sorely needed. GSA needs to get real about the value of the process. Beware of OCI concerns – how can Cloud Service Providers also serve as Cloud Brokers – or 3PAOs? Is it true that GSA is looking to outsource the selection process for Cloud Brokers? Trying to distance yourself from the responsibility is not an answer.

There are a couple of silver linings. First, cloud email/collaboration. Google and Microsoft are competing hard – and splitting the spoils in cloud mail. This competition makes agencies the winners. Amazon and ServiceNow are winning in hosting non-essential, public-facing sites and service-desk applications. Interestingly, the specter of Amazon is forcing internal agency IT suppliers to cut their prices and improve services. Again, competition is good for agencies and the tax payer.

We’d like to see a better accounting of how cloud is saving money. MeriTalk worked with government and industry to build the Federal Cloud Computing Savings Calculator¹². Let’s put the programs into the calculator and sum the savings.

Conclusion

In closing, data center optimization and cloud migration are critical to improving Federal IT efficiency and enhancing services as well as enabling business agility. Let’s get real about who’s driving the bus on Federal IT modernization. Are the agency CIOs in charge – and therefore accountable for results? The efficiency of Federal IT is about much more than the \$80 billion budget – it plays a critical role in reinventing government and delivering better services to America. If we don’t assign real responsibility, the future will look much like the past – and America’s tax payers can’t afford that.

We are ready and willing to discuss our initiatives and recommendations. We look forward to working with you and the subcommittee to bring about additional improvements to Federal IT efficiency and FDCCI in the Federal government.

¹¹ General Services Administration, FedRAMP.gov

¹² MeriTalk Cloud Computing Savings Calculator, www.meritalk.com/savings-calculator.php

Mr. MICA. Let's turn next to Teresa Carlson, vice president for Amazon Web Services.

Welcome, and you're recognized.

STATEMENT OF TERESA CARLSON

Ms. CARLSON. Good afternoon, Chairman Mica and Ranking Member Connolly.

Mr. MICA. She is not coming in very loud.

Ms. CARLSON. Good afternoon, Chairman Mica and Ranking Member Connolly. My name is Teresa Carlson, and I'm the vice president, Amazon Web Services World Wide. Thank you very much for inviting me to testify today on the Federal data center optimization and transition to cloud computing, and to discuss how the U.S. Federal agencies can do more with less and to save taxpayer dollars. I'd like to submit my written testimony for the record.

Mr. MICA. Without objection, your entire statement will be part of the record.

Ms. CARLSON. Also, I wanted to thank the university for having us here today. I spent many, many Saturdays and Sundays here at swim meets with my sons, and it is in beautiful Fairfax County, and it is a beautiful day. So I really appreciate them having us here as well.

Companies that leverage Amazon Web Services in the commercial sector range from large enterprises, such as Bristol-Myers Squibb, Shell, NASDAQ, to innovative startups like Pinterest and Dropbox. Throughout the U.S. Federal Government, agencies and departments are adopting AWS for a wide range of technology infrastructure services and applications, to include groups like the U.S. National Institutes of Health, NASA's Jet Propulsion Laboratory, and the U.S. Department of the Navy, Navy, and the U.S. Securities & Exchange Commission.

AWS is passionately committed to sharing the benefits we can achieve as a cloud provider to Federal Government agencies, and our economies of scale have resulted in the rapid innovation of public cloud services and lowering the price for our customers. Specifically, we have lowered our cloud computing prices 31 times since 2006. Let me repeat, 31 times with no one pressuring us to lower those prices. We lowered those prices based on our savings and providing them back to the customer.

Given the proven secure and game-changing efficiencies of cloud computing, we believe that the FDCCI should be directly linked to the Office of Management and Budget's "Cloud First" policy in order to be truly successful in the data optimization model. While there is no doubt that since Federal Government workloads can continue to operate in government-owned data centers, there are a very large number of workloads that should be more suitable and efficiently managed in large-scale commercial cloud platforms. Therefore, the adoption of cloud computing services should be a central part of the Federal strategy.

One way to think about cloud computing is that instead of buying and owning and maintaining their own data centers or servers, Federal agencies can acquire technology resources and compute power and storage on an as-needed basis and dispose of it when it's

no longer needed. In fact, we have something called a Trusted Advisor service where we actively work with our customers to turn off servers when they're not being utilized, and they actually don't even have to worry about what their electric bill is because that's part of the service we provide and it's part of the pricing model, so they'll know that in real time. And users only pay for what they use by the compute hours, or storage-gigabyte, and they are not locked, they are not locked to any long-term contracts. They can choose long-term contracts, but they are not locked into anything like that.

There's many, many examples of Federal agencies that have begun to embrace the cloud. A couple I'd like to highlight for you today is NASA's Jet Propulsion Lab. When the Mars Space Lab, also known as the Curiosity, successfully landed last year, public cloud computing infrastructure from AWS was utilized in support of various aspects of the mission, including the public outreach around the landing itself, so that everyone in the United States and the world could enjoy that landing, as well as the data and image pipeline—the pipeline management dealing with all the new data streaming that was actually coming down from Mars. Tom Soderstrom, the CTO of NASA JPL, described it this way: JPL has leveraged cloud services to dramatically reduce IT costs, and in the process increasing their agility and decreased the time to science while enabling JPL to have complete flexibility when using those computing resources. In fact, we worked with them in a very short period of time to get that set that up. It did not take much for them to procure and set that up.

The U.S. Department of the Navy CIOs office recently initiated a pilot project to move unclassified data to the commercial cloud environment. The Secretary of the Navy's public-facing information portal is now on AWS, and they also have an initiative to work on a strategy to migrate all public-facing sites. And he's already said that—CIO Terry Halvorsen stated that the Department has achieved a 50 percent reduction in cost to operate this portal.

Let's imagine for a moment, if that level of cost savings could be applied to all Federal IT spending, how much money could that actually be? And I believe it's a lot more than those \$3 billion that were initially brought up.

The reality is that cost savings is only part of the picture and that what we think is a fundamental and clearly a need to transition to cloud computing and this will be a big part of the optimization for the data center consolidation. There are many companies out there that have already taken full advantage of that in a commercial site like Netflix to move their entire infrastructure to the cloud.

We think there is exciting opportunities out there to actually do a lot more with cloud services. We support what you've done already in both FITARA and FDCCI, and we appreciate having the opportunity today to speak to you and are prepared to answer any questions. Thank you again.

Mr. MICA. Well, thank you also.

[Prepared statement of Ms. Carlson follows:]



Testimony of

**Teresa Carlson, Vice President, World Wide Public Sector
Amazon Web Services**

At the Field Hearing

**“Data Centers on the Cloud: Is the Government Optimizing
New Information Technologies Opportunities to Save
Taxpayer Money?”**

**Before the Subcommittee on Government Operations, Committee on
Oversight and Government Reform
United States House of Representatives**

May 14, 2013

Good afternoon, Chairman Mica and Ranking Member Connolly, my name is Teresa Carlson, and I am Amazon Web Services' Vice President for World Wide Public Sector. On behalf of Amazon and our customers, thank you very much for inviting me to testify today on federal data center optimization and the transition to cloud computing, and to discuss how U.S. federal agencies can do more with less to save taxpayer money. It's a subject that I know this Subcommittee and the Oversight and Government Reform Committee are focused on, and we at Amazon are also quite passionate about helping our customers save money and innovate for less.

Amazon Web Services

As you may know, Amazon.com opened for business on the World Wide Web in July 1995 and today offers Earth's Biggest Selection. Amazon seeks to be Earth's most customer-centric company, where customers can find and discover anything they might want to buy online, and endeavors to offer our customers the lowest possible prices and the best possible services. Technology innovation has always driven Amazon's growth. As we expanded our offerings for retail customers, we also expanded customer segments.

After over a decade of building and running the highly scalable set of web applications and databases known as Amazon.com, the company realized that we had developed a core competency in operating massive scale technology infrastructure and datacenters. So, we embarked on a much broader mission of serving a new customer segment – including government agencies – with a platform of web services through our cloud computing business called Amazon Web Services (AWS).

In 2006, AWS began offering developer customers access to in-the-cloud infrastructure services based on Amazon's own back-end technology platform. Previously, businesses and government agencies only had an option of either making massive capital investments to build their own infrastructure or of contracting with a vendor for a fixed amount of datacenter capacity that they might or might not use. This choice meant either paying for wasted capacity or worrying about shortages, *i.e.*, that the capacity they forecasted was insufficient to keep pace with their growth. Businesses and government agencies spent a lot of time and money managing their own datacenters and co-location facilities, which meant time not spent on their core organizational missions of

providing products and services for their customers and citizens. In large part, these inefficiencies continue today, and as you are well aware, the U.S. federal government has struggled with this challenge for some time.

With AWS, government no longer needs to make massive, risky infrastructure investments in order to develop, launch, and run flexible, reliable, and scalable IT systems. AWS provides a highly reliable, scalable, secure, and low-cost infrastructure platform in the cloud that powers hundreds of thousands of enterprise, government, education, and startup organizations.

Companies that leverage AWS in the commercial sector range from large enterprises such as Bristol-Myers Squibb, Shell, and Nasdaq, to innovative start-ups like Pinterest and Dropbox. Throughout the U.S. federal government, agencies and departments are adopting AWS for a wide range of technology infrastructure services and applications including at the U.S. National Institutes of Health, NASA's Jet Propulsion Laboratory, the U.S. Department of the Navy, and the U.S. Securities and Exchange Commission. AWS also offers its dedicated *GovCloud* to U.S. government agencies and system integrator partners, allowing them to move more sensitive workloads into the cloud by addressing their specific compliance requirements, such as the International Traffic in Arms Regulations (ITAR).

Notably, Amazon.com, as the largest online retailer in the world, has itself adopted cloud computing services provided by AWS to enable rapid innovation and growth, to transform how we deliver our services to customers, and to lower our IT costs substantially. That is, Amazon's core retail business relies on cloud services provided by AWS.

AWS is passionately committed to sharing the benefits we can achieve as a cloud provider to federal government agencies, and our economies of scale have resulted in the rapid innovation of public cloud services and the lowering of pricing for our customers. Specifically, we have lowered our cloud service prices 31 times since 2006. *Let me repeat that: AWS has lowered its prices 31 times since 2006.*

Given the proven, secure, and game-changing efficiencies of cloud computing, we believe that the Federal Data Center Consolidation Initiative (FDCCI) should be directly linked to the Office of Management and Budget's "Cloud First" policy in order to be truly successful with data center optimization. While there is no doubt some Federal government workloads can and should continue to operate in government-owned datacenters, a large number of workloads are much more suitably and efficiently hosted in large-scale, commercial cloud platforms. Therefore, the adoption of cloud computing services should be a central part of the federal strategy to achieve greater cost reductions, more efficiency, and to spur more innovation throughout the federal government.

Cloud Computing

One way to think about cloud computing is that instead of buying, owning, and maintaining their own datacenters or servers, federal agencies can acquire technology resources such as compute power and storage on an as-needed basis, and dispose of it when it no longer is needed. Many industry experts refer to this as a "utility" model of obtaining and using IT capability, analogous how the government obtains access to water, gas, or electrical power. Users only pay for what they use – by the compute-hour or storage-gigabyte – and they are not locked into long-term contracts. *Let me repeat that too: using this model, federal agencies are not locked in to long-term contracts.* If a program is funded one year and then unfunded the next, or a pilot project or test program does not achieve its expected results, agencies no longer need to be tied to large, capital IT expenditures that cost tens of millions or even hundreds of millions of dollars.

There are a number of federal contract vehicles that are being structured to enable this approach and I'll highlight one that was announced recently: the U.S. Department of Interior Foundation Cloud Hosting Services

contract was competitively awarded by the Department's National Business Centre and the Acquisition Services Directorate to multiple vendors. The contract is uniquely structured to facilitate the evaluation and adoption of usage-based cloud computing services.

There are many examples of federal agencies that have begun to embrace the cloud and this new IT model. I'll highlight two in my testimony today. First, NASA's Jet Propulsion Laboratory (JPL) decided several years ago to use AWS's Infrastructure-as-a-Service (IaaS) offerings in support of the Mars Rover-related programs and had considerable success in doing so; AWS enabled the Rover program to run more efficiently. When the next major Mars mission, the Mars Space Lab (also known as Curiosity) successfully landed last year, public cloud computing infrastructure from AWS was utilized in support of various aspects of that mission, including public outreach around the landing itself as well as the data and image management pipeline dealing with all the new data streaming down from Mars. As Tom Soderstrom, the CTO of NASA JPL, has described, JPL has leveraged cloud services to dramatically reduce IT costs and, in the process, increased their agility and decreased the "time to science," while enabling JPL to have complete flexibility when using those computing resources.

Second, the U.S. Department of the Navy's CIO office recently initiated a pilot project to move unclassified data to a commercial hosting environment. The Secretary of the Navy's public-facing information portal is now hosted in the AWS cloud. As a result, in a recent blog post, the Navy CIO, Terry Halvorsen, stated that the Department "has achieved a 50 percent reduction in cost to operate the portal" because it was less expensive to use commercial cloud services than host the site in a government data center.

Let's imagine, for a moment, if that level of cost savings could be applied to all federal IT spending in the next decade?

Chairman Mica and Ranking Member Connolly, the benefits of cloud computing have been described before to the Subcommittee and Committee. Please allow me to summarize briefly those benefits to users for the purposes of today's field hearing:

- First, with cloud, IT users can trade capital expenditures for variable expenses. That is, users can pay only for what IT they actually consume, and only when they consume it.
- Second, with cloud, those variable expenses are lower than they would be if the user self-provided the IT service. With inherent economies of scale, the large-scale commercial cloud is simply more efficient than anything a particular user could build and operate for itself.
- Third, users don't need to guess their capacity needs. Before cloud, users risked the waste of buying too much IT capacity if demand were lower than guessed, or they risked dissatisfaction of their customers or citizens with shortages, if the users bought insufficient IT capacity to meet demand.
- Fourth, the speed and agility of user innovation is dramatically increased with cloud. Instead of waiting many weeks to obtain IT infrastructure, virtually unlimited capacity is available to users within minutes.
- Fifth, cloud computing allows a user's scarce technical talent to focus on its core mission, not on maintaining basic compute and storage infrastructure to support it. With the budget challenges that agencies face today, that focus is valuable now more than ever to government users.

Federal Data Center Optimization

Those benefits of cloud computing should be applied to the objective of reducing the number of data centers as intended under the FDCCI. Reducing the number of data centers in use by the federal government is a worthy and important goal. The cost savings that could come along with the closure of federal data centers could be substantial over time, whether it can indeed be \$3 Billion by the end of 2015 as is the previously stated goal noted in the most recent U.S. Government Accountability Office (GAO) report. But regardless of the total amount to be saved by data center reductions under FDCCI, shuttering underutilized data centers to save money is only part of the equation. The IT models that are used for the remaining federal agencies' data centers – whether it is 2,000, 1,000 or fewer – will ultimately determine the magnitude of overall cost savings and benefit to the federal government.

Even if in the next several years, the number of federal data centers is reduced to less than 2,000, if the IT models utilized for those data centers are still to invest tens of millions or even hundreds of millions in IT infrastructure, services and capital investments, then how much of possible cost savings will be left on the table? What other benefits will be sacrificed or unrealized?

The reality is that cost savings is only part of the picture and that is why we think that it's fundamental to clearly link the transition to cloud computing with federal data center consolidation in order to achieve the maximum benefits of federal data center optimization. Doing more with less has become a key public policy goal in Congress and it's one that we strongly agree with. That is what we have been committed to at AWS since the beginning. But, it's also about *innovating for less*. And that is where cloud computing excels more than any other IT model. That's why some businesses are now shifting their entire IT infrastructure to the cloud. Even enterprises that invested a lot previously in their IT infrastructure and became really good at it, decided that they could not achieve the same efficiencies and benefits – including the ability to innovate faster at a substantially reduced cost – as they could if they shifted to the cloud. *That same approach needs to be applied to the federal government.*

The bottom line is that there are some IT missions that federal agencies should no longer pursue on-premise or by using the old model of capital expenditures to build out IT infrastructure and have lots of people manage it. This brings me back to the Navy Department example that I referenced earlier. What Mr. Halverson, the Navy CIO decided, was that instead of being satisfied with the old model, he was going to innovate and use a new model, one that was more efficient, more flexible, more scalable, and every bit as secure – if not more secure -- than the old one. In his words: "The decision to host the data on a public Web server resulted from an analysis of several factors, including the type of data stored in the portal, the ease of access due to significantly faster response times, security, and cost."

Consider also the mission and business needs that were factors in NASA JPL's decision to utilize public cloud infrastructure. It wasn't just about cost savings, it was also about flexibility, scalability, security – and landing a rover on Mars is a pretty obvious example of "mission critical." The cloud has also enabled a new level of secure data sharing and collaboration with other research centers in the U.S. and around the globe. The cloud actually enables much tighter control over data access than sending datasets on hard disks or allowing arbitrary data downloads from around the globe. Finally, leveraging cloud computing also provided NASA JPL the option to use the infrastructure when they actually needed it, and to turn it off when they did not.

There are many other examples highlighting the benefits and opportunities of leveraging cloud computing to achieve significant and lasting "data center optimization" results for the federal government. But as exciting as the opportunities are, there continue to be obstacles in the way as well. And that is where I think that the Committee is playing a critical role. Without additional oversight and updates to federal IT acquisition processes, budget models, and IT procurement policy, it will be a struggle to achieve lasting results. That is why we

support the advancement of the Federal IT Acquisition Reform Act (FITARA), including the federal data center optimization and cloud computing provisions in the bill.

Federal IT Acquisition and FITARA

Chairman Mica and Ranking Member Connolly, as you have both pointed out on various occasions, the way government defines its requirements and acquires IT can be considered antiquated. Given the many benefits of adopting new IT models that I have described today, Amazon believes that a principal aim of federal IT acquisition reform legislation should be to facilitate federal government acquisition of cloud computing services.

Title I of the FITARA bill would give federal agency CIOs more authority and budget flexibility. Amazon supports this idea and we believe that it would lead to the adoption of more efficient solutions, including cloud computing, to the challenges faced by federal agencies. The TechAmerica Cloud Commission, which I was a member of, reached the same conclusion in 2011, recommending that "agencies should demonstrate flexibility in adapting procurement models to acquire cloud services and solutions. Congress and OMB should demonstrate flexibility in changing budget models to help agencies acquire cloud services and solutions." (*Cloud First, Cloud Fast: Recommendations for Innovation, Leadership and Job Creation*, TechAmerica Foundation, 2011.)

One area where CIOs should be given more authority and flexibility is with respect to spending models, specifically capital expenditures (CAPEX) versus operating expenditures (OPEX).

Given that much IT hardware and software has only a three-year lifecycle, we believe that agencies should be allowed to place capital funds into "Working Capital Funds" that preserve the funding for the agency to pay in multiple years for cloud computing services based on what they actually use. The current "use or lose" approach is a disincentive to saving money. Agencies should shift to paying only for what they use in OPEX, versus spending to stockpile servers, software, etc., because their budgets expire at the end of a fiscal year, in CAPEX. As the Software & Information Industry Association stated in its 2012 White Paper: "Cloud computing drives agencies away from purchasing IT in a way that requires capital expenditures and overhead, and toward an 'on demand' IT model that purchases IT services as it consumes them. Capital planning guidance must keep pace with this changing dynamic." (*Beyond the 25 Point Plan: A Roadmap to Implementing Cloud Computing and Reforming Federal IT*, Software & Information Industry Association, 2012.)

We agree and believe that FITARA could accelerate this change. We applaud the Committee for reporting a FITARA bill that includes language in Title III that establishes cloud service Working Capital Funds that "may preserve funding for cloud service transitions for a period not to exceed 5 years per appropriation."

Title II of the bill, on data center optimization, is also a crucial part of the legislation. In Section 203, we recommend including a direct link between the required plan for implementation of the Federal Data Center Optimization Initiative and OMB's Cloud First policy. As I described earlier in my testimony, data center optimization should not merely aim to reduce the number of federal data centers via the FDCCI. FITARA should clarify that using commercial cloud services is an equally valid way to comply with the data center consolidation mandates, because commercial service providers can make available more compute power and storage for a fraction of the cost based on what agencies actually use. Put another way, data center consolidation is a good start, but cloud computing fundamentally changes both the process and the output, thereby *optimizing* how government operates IT.

Thank you again for inviting me to testify today. I look forward to your questions.

Mr. MICA. And we'll turn now to our final witness on this panel, Mr. Kenyon Wells, vice president of U.S. Federal, CGI Federal. Welcome, and you are recognized.

STATEMENT OF KENYON WELLS

Mr. WELLS. Thank you. Thank you. Thank you, Chairman Mica, Congressman Connolly. Thank you very much for the opportunity to appear before you today. My name is Kenyon Wells, and I'm vice president at CGI Federal Incorporated, a global information technology and business process services firm. I'm honored to provide some thoughts today about ongoing efforts for Federal agencies to optimize their use of their data centers and move to greater use of cloud computing technology.

CGI applauds the subcommittee not only for its continued efforts to eliminate wasteful IT spending, but also for its recognition that continued investments in IT will save money, improve efficiency, and provide better services to U.S. citizens and businesses. In particular, CGI thanks the leadership of this subcommittee, as well as Chairman Issa, Ranking Member Cummings, and the full Oversight and Government Reform Committee for bringing many important issues to light with the introduction of H.R. 1232, the Federal Information Technology Acquisition Reform Act, and for the open and transparent manner in which that legislation was drafted.

In February of this year, CGI became just the second company to be granted a FedRAMP cloud security provisional authority to operate. CGI is now delivering more than \$100 million in secure cloud solutions to dozens of Federal programs, in addition to many other cloud implementations for State government and commercial clients. Based on these projects and discussions with other Federal agencies, CGI offers the following observations.

First, there is significant progress, but more can be done. There are two major drivers that lead to immediate cost savings for agencies in adopting cloud computing. One of these is the speed with which new systems can transition to go live in the cloud. For example, CGI worked with GSA to bring 30 systems live in less than 90 days. As a result, that agency program reduced their overall server footprint by 50 to 70 percent.

The other immediate cost-savings driver is that agencies only pay for the capacity they need. So instead of running data centers that continuously provide peak capacity that is always underutilized, CGI's cloud clients have significantly lowered day-to-day costs and pay only for added capacity when it's needed. These immediate savings are a great achievement, but longer term the consolidation of data centers and migration to the cloud are but a step in the journey towards Federal IT modernization and consolidation. These more holistic efforts will eventually deliver savings that dwarf the numbers we are talking about for FDCCI today.

Second observation. Cost savings are often difficult to quantify. A lot of what we are talking about here today, we have seen some of the reality as to why agencies struggle with it. And as the GAO report indicates, many agencies do struggle to determine just how much they save under consolidation initiatives. The challenges here are exacerbated by the lack of baseline IT costs on an agency-by-agency basis. Additionally, there are some initial costs associated

with moving the cloud computing or closing down data centers which can delay the initial cost savings even though an agency will save significantly in the long run.

Third, significant acquisition challenges exist. In discussions with numerous agencies on this topic, CGI has seen many that have struggled to modify their procurement methods when purchasing cloud services. Cloud computing not only represents a fundamental change in how IT services are delivered, but also how they are procured. A focus on using readily available contract vehicles could significantly accelerate cloud migration. Additionally, Congress and the administration could provide agencies with more freedom to enter into innovative agreements with industry to allow government to significantly reduce its upfront costs on the public-private partnership we're talking about.

Many of CGI's commercial and State government clients have entered into an agreement where CGI assumes the initial transition costs so those clients can start saving on day one. If the Federal Government wants to do more with less, then it should embrace new methods of contracting that shift that risk and upfront costs to industry partners.

Finally, strong leadership and interdepartmental cooperation increase the results from cloud. CGI commends DOD, DHS, and GSA for their collaboration as members of the Joint Authorization Board overseeing the FedRAMP program, which represents a significant and necessary step forward as the Federal Government looks to implement the cloud. FedRAMP's common-risk framework for all agencies is a critical piece of the puzzle that eliminates the needs for highly customized solutions that often hold no real extra benefit and severely increase cost.

Moving forward, FedRAMP's continuing monitoring process is more frequent and more detailed than those already in place at most Federal agencies, which will create more confidence in security around commercial providers who receive their P-ATO. This will be followed on by the new DHS-led efforts around continuous monitoring which will only help push this effort forward so that agencies and Congress know both what IT assets an agency has and how they're secured.

Thank you once again for the opportunity to participate in this important hearing. Since I'm a few seconds under, I'll add two additional things. One, thank you very much for holding this hearing here in my alma mater, though this campus looks very different than when I was here a couple of decades ago. And finally, since it is a few days from Mother's Day, I want to thank my mother and brother who surprised me by attending today, and thank her for making me come to this school and therefore be here. So I would look forward to any questions.

[Prepared statement of Mr. Wells follows:]

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**Written Testimony of Kenyon Wells
Vice President
CGI Federal Inc. (CGI)**

Prepared for
**The House Committee on Oversight and Government Reform
Subcommittee on Government Operations**

Field Hearing

May 14, 2013

Chairman Mica, Congressman Connolly, Members of the Subcommittee, thank you very much for the opportunity to appear before you today. My name is Kenyon Wells and I am a Vice President at CGI Federal Inc. (CGI), a global information technology and business process services firm. On behalf of my 69,000 colleagues at CGI, I am honored to provide some thoughts today about ongoing efforts of federal agencies to optimize use of their data centers and move to greater use of cloud computing technology.

CGI has partnered with its commercial and federal, state, and local government clients for more than 37 years on a wide array of technology projects. As a company, CGI has worked with more than 100 federal organizations, so like the members of this Subcommittee, CGI has observed patterns across government that aren't always visible within a specific agency given its focus on a single core mission. CGI takes very seriously its responsibility, not only to its individual clients, but also to the entire federal government and, as a result, CGI welcomes this opportunity to share its observations.

In February 2013, CGI became just the second company to be granted a Federal Risk and Authorization Management Program (FedRAMPSM) cloud security Provisional Authority to Operate (P-ATO). In addition, an independent, accredited third party assessment organization audited the implementation to ensure that security controls were in place and CGI's cloud would continue to meet the Federal Government's stringent security requirements.

CGI also is one of only three companies awarded positions on two key General Services Administration (GSA) government-wide cloud blanket purchase agreements (BPAs) for Infrastructure-as-a-Service (IaaS) and Email-as-a-Service. In addition, CGI's cloud clients include numerous state government and commercial entities. As a result, CGI has an ability to look across the Federal landscape as well as other markets to see how rapidly-evolving technology is transforming how enterprises and entire industries meet their mission. CGI is now delivering more than \$100 million in secure cloud solutions to agencies ranging from the Department of Homeland Security (DHS) to the Nuclear Regulatory Commission.

CGI applauds this Subcommittee not only for its continued efforts to eliminate wasteful IT spending, but also for its recognition that continued investment in IT will save money, improve efficiency, increase transparency, encourage innovation, and provide better service to U.S. citizens and businesses. In particular, CGI thanks the leadership of this Subcommittee as well as Chairman Issa and the full Oversight and Government Reform Committee for bringing many important issues to light with the introduction of H.R. 1232, the Federal Information Technology Acquisition Reform Act, and for the open and transparent manner in which the legislation was drafted.

In my testimony today, I will discuss some of CGI's specific experiences as a service provider of cloud computing, describe some of the barriers that stand in the way of faster adoption of new technologies and broader optimization efforts, and offer some recommendations for how government and industry can move beyond the cloud to collaborate on solutions that allow us to "do both more and better, but with less."

Cloud Computing Experience: Successes and Barriers

In October 2010, CGI was honored to be one of the 12 companies selected by the GSA to provide cloud services on the government-wide IaaS contract vehicle. Over the 10 months that followed, CGI's cloud computing environment underwent a rigorous evaluation process that resulted in receipt of a permanent "Authority to Operate" (ATO), allowing CGI to begin providing certified-secure cloud services to government agencies. In addition to meeting the technical and management requirements outlined in the contract, the ATO's Assessment and Accreditation process ensured that CGI met all of the necessary federal security requirements, including the Federal Information Security Management Act (FISMA). In September 2011, CGI was awarded the first competitively-bid task order under the IaaS vehicle by DHS to move all of the Department's public websites to the cloud. Since then, CGI has won a number of additional task orders under the same vehicle, including projects for the GSA's Office of Citizen Services and the National Archives and Records Administration (NARA). In each of these situations, CGI's clients were able to compete their task orders quickly under the IaaS vehicle and move forward with a contract award.

In June of 2012, CGI began moving through the FedRAMP process. Based on its FedRAMP experience as well as its cloud computing projects and discussions with numerous other federal agencies, CGI offers the following observations for consideration:

- **Cloud helps deliver real cost savings in the short-term.** There are two major drivers that lead to cost savings. The first cost savings driver is the speed at which new systems can transition and go live in the cloud. Traditionally, it would take at least six (6) months to launch a website or system, but with the cloud, that timeframe is dramatically reduced. For instance, CGI worked with the GSA to bring 30 systems live in less than 90 days. As a result, the GSA has reduced its server footprint by 50-70 percent. At DHS, the *RestoretheGulf.gov* and *StudyintheStates.dhs.gov* websites were deployed in CGI's secure public cloud just six (6) weeks after project kickoff. The second cost savings driver is that agencies only pay for the capacity that they need. So, instead of running data centers that continuously provide peak capacity, CGI's cloud clients have significantly lower day-to-day costs and pay only for added capacity when needed. For example, CGI stood ready to add more capacity to *Ready.Gov* as Hurricane Sandy moved up the coast. CGI actively monitored the situation and its cloud was able to handle this unprecedented increase in traffic with no performance issues or without any change or disruption to the user or citizen experience. With cloud, clients also have more control over costs. Under its contract with DHS, CGI notifies the Department when 80 percent of a monthly not-to-exceed dollar limit is reached and does not bill any costs beyond an approved threshold unless the contract is modified.
- **When migrating to the cloud, agencies can have confidence in strong security.** The number one cloud question federal agencies ask CGI is: "Is the cloud secure?" Having taken many agencies live in the cloud, CGI can answer, "yes," because its cloud is designed to meet federal

security requirements. Specifically, CGI's federal cloud was built to ensure that agencies have automated security management, greater redundancy, improved disaster recovery, and simplified security auditing. In addition, CGI has found that shifting public data to an external cloud has reduced agencies' risk of exposing internal data. As a result, considerable opportunity remains to increase government savings from the cloud while maintaining strong system security. CGI's federal cloud provides FISMA compliance for low and moderate impact systems, which represent 88 percent of federal agency systems.

- Strong leadership and inter-departmental cooperation increase the results from cloud.** CGI commends the Department of Defense (DoD), the DHS, and the GSA for their collaboration as members of the Joint Authorization Board (JAB) overseeing the FedRAMP program, which represents a significant and necessary step forward as the federal government looks to implement the cloud. FedRAMP's common risk framework for all agencies is a critical piece of the puzzle. Without this consistency, agencies would look for highly-customized solutions that often hold no real extra benefit and severely limit potential cost savings. In CGI's experience, FedRAMP security requirements to achieve a P-ATO are at least as strong as those under the IaaS contract vehicle or individual agency ATOs. Additionally, FedRAMP's continuous monitoring process is more frequent and detailed than those in place at most individual agencies, which should create more confidence in the security around commercial providers receiving their P-ATO. Finally, FedRAMP allows agencies to achieve additional savings through the elimination of redundant security assessments. The GSA estimates a savings of \$200,000 per authorization.
- Significant acquisition challenges exist.** In discussions with dozens of agencies on this topic, CGI has seen a wide variety of approaches to transitioning to the cloud. Although some agencies have moved into the cloud and used existing contract vehicles, many others have struggled to modify their procurement methods when purchasing cloud services. Cloud computing not only represents a fundamental change to how IT services are delivered, but how they are procured. The notion of paying for IT services in a more "elastic" fashion is very different from the traditional "firm fixed price" and "time-and-materials" contracts familiar to most government acquisition professionals. Additionally, many agencies could pursue lengthy procurement processes rather than using readily-available contract vehicles that could significantly accelerate cloud migration. In some cases, these agencies may actually look to build their own cloud computing environments "from scratch" instead of utilizing a certified commercial cloud solution. These efforts would significantly undercut the ability of federal agencies to achieve cost savings since this approach requires large investments in new infrastructure rather than leveraging similar investments already made by commercial providers.
- Cost savings are often difficult to quantify.** As the GAO report indicates, many agencies struggle to determine just how much they save due to certain modernization and consolidation initiatives. The challenges here are exacerbated by the lack of baseline IT costs on an agency by agency basis. Additionally, there are some initial costs associated with moving to cloud

computing or closing down data centers, which can significantly reduce and sometimes completely eliminate short run cost savings without sacrificing significant savings in the long run. Finally, for many departments and agencies, a FedRAMP cloud solution provides stronger security and additional services than the baseline application or service, so even if current baseline costs are known they often don't meet today's compliance and security requirements.

- **Agency Chief Information Officers (CIOs) lack the necessary authority to implement broad changes.** Many of the federal cloud implementations to date have been focused on migrating public facing content and email. However, the real savings will be achieved only when agencies more aggressively push their applications to the cloud. This shift will help accelerate the data center optimization effort and drive associated cost savings. From CGI's vantage point, many agency CIOs appear ready to push for more aggressive cloud efforts, but seem unable to override objections from individual program offices. Although CGI recognizes that there are often valid concerns associated with such cloud efforts, many of these concerns can and should be resolved so that agencies can take advantage of new technology.

Recommendations for Moving Forward

Several provisions in H.R. 1232 will help agencies move forward more aggressively. Expanded authority and accountability for agency CIOs will enable agencies to migrate IT infrastructure and applications more rapidly. An agency CIO with greater authority would have the opportunity to not only achieve some quick wins, but to think more broadly about how the entire agency can use cloud to improve efficiency, enhance security, and drive down costs. Rather than attempting to address individual pieces such as data center optimization, an agency CIO could look across the enterprise and drive savings through the entire IT portfolio.

Allowing for agency re-investment of data center optimization savings creates a powerful new incentive that will spur quicker and broader modernization efforts. Requiring agencies to conduct and maintain an inventory of all IT assets will not only enable better "baseline" data around IT spending to measure savings, but allow for better information security. Strengthening the acquisition workforce also will help to eliminate scenarios where traditional acquisition models are used when buying cloud services.

CGI respectfully submits that another piece of the puzzle is to encourage innovative contracting models that can help deliver more with less. Congress and the Administration should provide agencies with more freedom to enter into agreements with industry to allow government to significantly reduce its initial costs. Many of CGI's commercial and state government clients have entered into such agreements where CGI assumes the initial transition costs so that the client starts experiencing savings on Day One. However, since the 2009 sunset of the "Share in Savings" provision of the E-Government Act of 2002, federal agencies rarely have the ability to enter into this type of innovative agreement. If the federal government wants to do more with less, then it should embrace new methods of contracting that shift risk and initial costs to industry partners. Otherwise, given the tight federal budget

environment, there will continue to be a challenge around significant, short-term investments justified by long-term returns.

In closing, this fundamental shift in technology can enable a more effective, efficient, and transparent federal government. Movement to the cloud will result in lower IT costs and the ability to share software and services more widely across the federal enterprise.

Thank you once again for the opportunity to participate in this important hearing. I would be happy to answer any questions that the Committee may have.

Mr. MICA. Well, we have a lot of mothers to be thankful for. But it's nice to have some of your family with you, and a successful alumni return and be a witness today.

Interesting perspective from the private sector. Mr. O'Keeffe, your first—or your five-point recommendation seemed to differ a little bit from what I got out of Mr. Powner. I asked about the compatibility of what was going on with PortfolioStat, and it was interesting. I guess under PortfolioStat agencies are no longer required to submit the previously required consolidation plan and the memorandum does not identify a cost-savings goal. And you, of course, in your first recommendation said that's not the way to go. So I guess you differ a little bit with the testimony we had from GAO.

Mr. O'KEEFFE. I think it's very important to be consistent. If we said we were going to save—if we said we were going to save \$3 billion, or \$5 billion, or however many billion dollars it is—

Mr. MICA. Don't try to count.

Mr. O'KEEFFE. —don't keep changing the rules. So I think we just need to be consistent in terms of what we're doing. And I'm, again, also very interested to see this TCO model which Mr. Mazer talked about.

Mr. MICA. The secret TCO model.

Mr. O'KEEFFE. Right. I don't see why that wouldn't—this is an era of open government. Why can't we see the way the agencies are measuring or OMB is measuring efficiency?

Mr. MICA. We would have liked to ask that question to OMB today, but we will ask it at a future hearing.

Mr. CONNOLLY. In the spirit of open government they're not here.

Mr. MICA. Oh, and I have to—first of all, I have to compliment this panel, Mr. Connolly. My experience has been that it's been like pulling teeth to get anybody from the private sector to come before any of our investigative or oversight hearings. I mean, they run like scalded dogs from us because they're so afraid of the agencies coming down on them for some reason or participating with us. So I thank you. I think you are providing a very valuable public service and insight, and I think it's important that we hear from people who are dealing with government on a day-to-day basis, see how things work and don't work, and then make recommendations to us. Again, I thought, Mr. O'Keeffe, excellent points here.

Now, the other problem we have is, I think you highlighted in one of your recommendations—and GSA owns most of the facilities. I guess they pay the power bills and things like that. So there is not the accountability. There is no incentive. How do you change that now? And then we have pending legislation. I asked the question of the other panelists, do we need to do more to beef up the pending legislation?

So first I will ask that, then I have another question. Have you read any of the proposed legislation? I think some of you actually participated. It's a fairly open process. Will it resolve some of these issues? I don't think it's going to resolve that one.

Mr. O'KEEFFE. If I might, I mean, I think that the language of FITARA was great. But the message in terms of empowering the CIO, which is critical in terms of the success of the program, runs contrary to what we have seen from an experience standpoint. I

mentioned the experience with Richard Spires who recently was put on leave at Department of Homeland Security, and then resigned, very recently, and it just doesn't seem as though that there is real support for the CIOs to stand up against the components and the mission owners. And if that's the case, then, you know, given the experience with Richard Spires, I'm not sure other Federal CIOs are going to rush to stand up, because the support hasn't been there. So the language, I think, of FITARA is good, but I think we have to show that support.

Mr. MICA. Should we beef up the language and empower the CIO more or—

Mr. O'KEEFFE. I think we absolutely should empower the CIO more. But again, language is one thing, you know, it's actions which are going to be more important.

Mr. MICA. It's interesting, because actually some of my first work many years ago was looking at government organizations and restructuring governments, primarily local governments, and after some years of doing that, you know, we could write the best charter of government and guidelines and everything, and then you get lousy people, they couldn't implement. And sometimes you would have lacking legislative authority, or a charter, and you get people who are creative and innovative, and they could succeed.

So sometimes it's hard to craft that. But we want to make certain that we give them the tools to be able to do the job. So there is a disconnect between the facilities, the energy, things of that sort, so maybe there could be some change there. That's a tougher one, Mr. Connolly. I kind of think of things again that would empower a CIO to move forward.

The thing that drives you nuts with government, you've seen it, is people are making a decision, or then the lack with this FedRAMP and the certification of—well, for cloud participation. We are up to two, you say?

Ms. CARLSON. Yes, two.

Mr. MICA. And how long has that taken?

Mr. O'KEEFFE. Almost a year.

Mr. MICA. A year.

Ms. CARLSON. We've been going through the FedRAMP process. We are very close, but it's a very long process, and I do really appreciate what, you know, the FedRAMP office is doing, because security is obviously very important.

The one thing is, once it's there, they need to be able to utilize it, because as you begin to set more and more controls, every agency can stack and put more controls on top of the FedRAMP process, and you really don't have a FedRAMP process. You just have a FedRAMP process plus, plus, plus.

Mr. MICA. And it goes on and on.

Ms. CARLSON. And it goes on and on, and it never, you know, comes to fruition. And then I think the second thing is the "Cloud First" policy. In order for this to really make sense, I do think they need measurements, respect to what Steve was saying, they need measurements in there to say, here is the real process we've made toward "Cloud First," you know, around the application, consolidation effort as well, because you're only going to truly get there when you begin to take a look at what are those applications that

you've done? How are you looking at the total picture as actually the consolidation effort?

Mr. MICA. Does anybody know how many cloud certification requests are pending?

Mr. WELLS. There are over 80.

Mr. MICA. Over 80?

Mr. WELLS. Yes, and many of those were just in the last couple of months.

Mr. MICA. Okay.

Mr. WELLS. There were about 40 the beginning of December.

Mr. MICA. Okay, so a huge number. So we need to get, first of all, some stability in the certification process, and people certified, then some motivation, and some empowerment of those charged with this responsibility to move forward, and again, some accountability in the system.

Mr. WELLS. Yes.

Mr. MICA. I'm going down O'Keeffe's recommendations here. I thought it was a good summarization of some of the things that we needed. But do you not need 600 HR systems? That got me, because we started looking at Office of Personnel Management, and I think they have blown either a third of a billion or a half a billion dollars. And finally I was told—were any of you involved in that? No? Then they finally settled on a smaller contract after blowing lots of money and attempts, smaller contract, and then they discarded that.

Now I understand they are going back to almost hand processing. That's the Office of Personnel Management for the Federal Government. And then we've 600 HR systems on top of that. So I can't even begin to imagine how much we spend in sort of a mundane process, not that there aren't variations for background checks and all kinds of information to be combined.

The other thing is on retirement systems. That whole area, again, is just unbelievable money that's been spent, and I guess my comments were actually the hand processing for retirees is what they have gone back to, very costly. They just hired more and more personnel and abandoned IT as a solution. Is that—

Ms. CARLSON. The opportunity there, especially with cloud computing, is the ability to not have to spend millions of dollars to test out systems. So with the cloud computing model you can set up and design something in a very small way without spending a lot of money. And the minute that works you move it into the test adaptive environment, and then right from there you can move it into production and then scale it. So you don't have to build a system for complete scale and then try to deploy it.

So again, that's another opportunity because your cost, if you fail, you can fail fast, use those failures as understandings, and then recover, and you don't even have to throw away all that code. It actually can be utilized for the success that you need.

Mr. WELLS. And then taking that one step further, that makes sense, complete sense for custom application. But getting back to the retirement systems and the HR systems and all the other common systems that every agency has to use, moving toward software as a service, where you actually have a handful of applications that have been precertified and FedRAMP certified, that then agencies

don't have to start from scratch, they don't have to reinvent the wheel. They'll have a handful of those, so hopefully more than that, enough to make it a competitive market space, but something they know works so that at least we can streamline it.

Mr. MICA. A final question, and actually motivated by Ms. Carlson, is she had cited those that she felt were getting it right, and she talked about Jet Propulsion Lab, NASA, Navy. Are there good examples? I think it's always good to see who is doing things well and what steps they've taken, how they got to that success and—go ahead.

Mr. WELLS. I can add an additional one: Department of Homeland Security.

Mr. MICA. Which is stunning to me, because I think it's one of the loose cannons of Federal Government, but that's another matter.

Mr. WELLS. As was discussed earlier, has certain challenges, both based on the size and the politics involved, but there is some very good work being done there. And a couple of years ago they purposely went down their own data center consolidation into two large DC1, DC2 data centers, and more recently when they decided to embrace cloud, they decided to go two different routes. One, build a private cloud on site in government infrastructure, since so much of their stuff is so sensitive; and second, to conduct a procurement to select a government community cloud, an external provider who has all the appropriate certifications. We were lucky enough to win that contract.

Mr. MICA. Well, I'll have to go back and look at that, because I think almost all of our terrorist incidents, even the Boston, we still can't connect the dots. Maybe Homeland is doing a good job, but they haven't connected to State, and—I mean, other agencies. And it's very sensitive information. I don't know, but you're just talking about the practical implementation standpoint.

Mr. WELLS. Right. So, for example, they started with a couple of very small Web sites. They got comfortable with it, started adding more. Now all of DHS' public sector—

Mr. MICA. And it is a newer agency, so...

Mr. WELLS. Correct.

Mr. MICA. Mr. O'Keeffe, any—

Mr. O'KEEFFE. NOAA has also done a very good job, the weather guys.

Mr. MICA. NOAA.

Mr. O'KEEFFE. Have put forth, you know, excellent progress in terms of modernization

Mr. MICA. Just their IT. We still have a lot of people.

Mr. O'KEEFFE. They've consolidated a lot of their data centers. They've built a \$2.4 billion data center out in Martinsburg, West Virginia, and they are operating at tremendous levels in terms of energy efficiency and such.

Mr. MICA. Well, I could go on. I have a whole bunch of questions I would like to get. Let me let Mr. Connolly have a shot here. I went well over my time.

Mr. CONNOLLY. Thank you, Mr. Chairman. It was actually a very interesting line of questioning.

Ms. Carlson, in your prepared testimony, I would like to cite something you said, because, Mr. Chairman, I think it sort of encapsulates the whole challenge of cloud for the Federal Government. And you say, "One way to think about cloud computing is that instead of buying, owning, and maintaining their own data centers and servers, Federal agencies can acquire technology resources such as computing power and storage on an as-needed basis and dispose of it when it no longer is needed. Many industry experts refer to this as a utility model of obtaining and using IT capability analogous to how the government obtains access to water, gas or electrical power. Users to only pay for what they use."

That's a pretty commonsense model. What's your understanding of how the government looks at that? And, for example, the task force, to the extent you're aware of their process, are they also looking at junk the whole thing and go private sector using this model?

Ms. CARLSON. I think it's a very good question. I think some are really evaluating that, as they begin to look at this different heavy lifting that they're trying to do when they can have what I call more mission for the money. You know, why not utilize your dollars for the true mission and not worry about building out infrastructure and these tools? And it's a very common model that you use now, and, you know, hundreds of thousands of customers and 190 countries, that for government, it is still an "ah ha" moment when we actually show them that they can provision virtual machines like that on a portal. They just can't believe it.

And as Mr. Wells was saying, when that's configured in FedRAMP all they have to do is go provision it. They don't have to wait 6 months for the supply chain management. It's there and available. And it's very, I mean from a mission perspective, it's really a game changer for the U.S. Federal Government.

Mr. CONNOLLY. And I want to acknowledge that it may not always be appropriate, but it is an option that needs to be on the table.

Ms. CARLSON. That's correct. And we don't suggest that they just jump in. We suggest they take the opportunity to learn, because it is a big culture shift and we understand that. And the agencies that are getting there, it has taken them a little bit of time, but they're gradually moving more and more, and their really smart architects and engineers and research scientists now, are really—they enjoy the fact that they have capacity on demand as they need it and then they can shut it down. And they can see how much it costs. They can look at a portal and know immediately how much they're spending and the servers that aren't being utilized, and they can be turned off. And we help them with that. And that's really the key. We want them to be able to reduce costs so they can do more and to have all of the other components around security.

Mr. CONNOLLY. And I'm going to come back to that. Mr. Wells, you look like you wanted to talk to that point as well.

Mr. WELLS. We're in absolute agreement with this. And if you think about the overall Federal portfolio, what could go to the cloud, what can't, you know, under FISMA they have to categorize all of their applications low, moderate, or high. Low basically is, obviously, a system that, you know, doesn't have quite the same level

of barriers as the others. FISMA moderate means normally there is Privacy Act data in it. PII, the kind of stuff we're worried about for identity theft, HIPAA data, confidential but unclassified, confidential business information, regulatory data, stuff that you really don't want to get out. And there are a number of controls put in place, defined by NIST, to do that. Low and moderate together is 88 percent of the entire Federal portfolio; 12 percent is classified FISMA high. That 12 percent is normally national security or critical infrastructure protection, the stuff that—

Mr. CONNOLLY. I want to make sure we all understand what you just said. So what you're saying is that in data evaluation, 88 percent of the Federal market, in this market, would lend itself to private sector cloud computing.

Mr. WELLS. Correct. And that's for FISMA moderate. A FedRAMP FISMA moderate is a higher bar than a normal FISMA moderate. A normal FISMA moderate certification, as defined by NIST, has 252 controls. When the FedRAMP program sat down with all the different agencies to try to come up with what they would all accept, they ended up with 298 controls. And so it's a much higher bar, and they tried to get every agency to say, all right, what's the unique thing that you absolutely have to have. Fine, we'll incorporate that under the standard. But still many of those agencies will take that FedRAMP-certified infrastructure, or application, and they'll still want to do their own security checks on it again. That, I think, will be unnecessary as we go forward. Now, the FedRAMP process is still in the early stages.

Mr. CONNOLLY. Excuse me, but if they want to do that, for example, your services allow for that.

Mr. WELLS. Oh, absolutely, absolutely. That's a requirement.

Ms. CARLSON. In fact, we create a package and we make it very easy. And we sit down and they go through each and every control. And I actually might say that there's a lot of commercial companies that work and utilize that FISMA and FedRAMP process. We have many that say they go through the controls of the commercial company, because they think it is a Good Housekeeping seal of approval for security.

Mr. WELLS. It is the one area that I can say the Federal Government is probably ahead of the commercial sector from IT, and if the controls are followed and applied, it may not always be done in the most efficient method possible, but it is much more secure.

Mr. CONNOLLY. You mentioned, Ms. Carlson, JPL, and you said they achieved significant savings, dramatically saved IT costs, I think were your actual words.

Ms. CARLSON. Yes.

Mr. CONNOLLY. Could you just elaborate a little bit on that, because I think that's one of the things we're looking for—and I'm going to go back to Mr. O'Keefe, if I may, Mr. Chairman—to talk about cost savings. But we need models.

Ms. CARLSON. Yes.

Mr. CONNOLLY. Where you can look at the reluctant players and say, don't be so afraid. It works. And you will be the better off for it. Tell us a little bit about JPL, your experience with JPL.

Ms. CARLSON. Yes. So one quick thing about JPL is they were seeing a trend where their engineers and researchers were trying

to build their own OSs, their own operating systems, and it was highly inefficient. They were concerned about security. They knew that they were trying—they needed capacity when they needed it. So they started looking toward a cloud computing model to fulfill that. And then as a result, they gained a lot of knowledge over the last few years. But this one particular program that I talked about, and they can tell you the exact dollars better, but they said they paid 10 percent of the original cost by using a cloud computing model.

They also have talked about another major Mars program that they ran. The program manager told me, if it hadn't been for the utilization of cloud computing, they would have had to shut the program down, because the original Mars Curiosity kept going, but they didn't think that the little buggy would go very long, like 2 months, and it was still running around taking pictures after 6 months, 7 months. And all of that amazing data being streamed from Mars, they wanted the ability to take advantage of that for educators, researchers, but they couldn't store it, they couldn't manage it, it was very costly. So as a result, that was another reason they looked to cloud.

And I wanted to point out where we've seen the real push in cloud in the Federal Government is more on the program side, because the programs begin to say, I don't have enough money, like, I don't have enough money. So they look for options to keep their programs going, and then they begin to find that there are new realities out there of how they could deliver IT and really transform it. They think NASA JPL is a great example.

And another one is Health and Human Services that's doing across the board, and many of their agencies are utilizing cloud now, especially for open and transparent programs like the 1000 Genomes, the oxygen database, BioSense. They're starting to look for ways that they can provide citizen services that are effective, that again reduce cost, and be able to scale when they need to scale things.

Mr. CONNOLLY. And, Mr. Wells, you actually have, you are one of the two companies certified so far for—

Mr. WELLS. Correct.

Mr. CONNOLLY. —this activity. Presumably in your experience with Federal clients, you have also been able to identify significant cost savings for the client.

Mr. WELLS. Correct, and I think a lot of it comes back to what Teresa was just describing as far as the elasticity and that sort of thing. For example, I was mentioning the DHS Web sites earlier. One of those is FEMA.gov, and Ready.gov, which is their disaster preparedness site. And moving that into the cloud, out of one of their data centers, used to be that they had to build the infrastructure in their data center to the peak capacity they would ever think they would need. But when it's not hurricane season or when there is not a major disaster, they need less than a tenth of the power for those Web sites that they do need when there is a disaster.

So when Superstorm Sandy was coming ashore, the President held a press conference, and he said, go to Ready.gov, there is disaster preparedness information there, take a look at that. And that was up and running in our cloud and we instantly saw a huge

spike, nearly a hundredfold increase in the amount of activity on that. And the elasticity of the cloud allowed us to spin up those services and spin them back down a few days later when they weren't necessary.

Mr. CONNOLLY. That's a great example. I would think particularly applicable to you, Mr. Mica, coming from Florida, in terms of the spiking in hurricane season and then coming down.

Mr. WELLS. And one other cautionary aspect of that tale which I will throw out there is that at the same time we saw all of this incredible spike and people flooding to the site, the spike in the number of attacks on those sites—denial of services attacks, attempts at hacking, et cetera—spiked as well. And the people in our security operation centers were watching it and were having to do some things to make sure that there was no interruption in service. But coming back to even a public-facing Web site that most of the year may not seem so critical, for a brief period is absolutely mission critical. And it's a sad testament, but it's the world we live in, that as soon as people started paying attention to it, people started attacking it, but that is the case.

Mr. CONNOLLY. Sure. Yeah. Well, that's another hearing for us, cybersecurity, because it's an incredible problem.

Mr. O'Keeffe, I was really struck by your presentation, thank you. And I thought the point you made with Chairman Mica was an excellent one. It isn't, while hopefully we do have it right, I mean, the idea that we have 250-plus CIOs in 26 agencies tells you what you need to know in terms of accountability.

Mr. O'KEEFFE. Right.

Mr. CONNOLLY. And decision making. We have to change that. But that alone, and maybe hopefully legislatively we've got that right. Enumerating the authorities of powers of that designated CIO, even that doesn't necessarily solve the problem, because what you're getting at is a culture, and changing a culture is always difficult. What are the attributes, if we were to have a successful cultural change, in the CIO you would look for, given private sector experience in the Federal Government.

Mr. O'KEEFFE. Well, I think metrics are very, very important. The CIO is not an IT person. They are not putting together wires. They are not provisioning systems. This is a business professional. And so what we need to do is establish some real metrics.

I think that everybody is afraid of accountability, and so what we see is that people run away from coming up with any metrics at all. No metrics at all is better than any kind of metrics whatsoever because you are going to be held accountable for them. So I think we have to—let's look at the private sector. When we look at data center consolidation, whether it's NASDAQ, or Dow or whoever it may be, private sector organizations, they've done data center consolidations. And, you know, it's not a one-time operation. It's an ongoing operation. How long does it take to consolidate data centers or optimize data centers? How much does it cost? How much money do we have to put into the process in order to get something out of the process? Looking at things like PUE, it's another acronym, but it's a metric which shows the power efficiency of data centers.

I think what we need to have is a practical framework in order to move the ball forward. And we need to make sure that when we

commitments that we measure ourselves against those commitments. And sometimes we're going to fail, but let's be open about what's actually transpiring. So I think, you know, as far as the CIO role across agencies go, they need to have authority, and with authority, was it Spiderman said, with great power comes great responsibility.

Mr. CONNOLLY. Well, and one of the things I have heard from Mr. Spires and others who were CIOs, or are CIOs, from the private sector in the Federal Government, we need more flexibility and authority to award contracts, to make decisions about this system, not that system, close that, open that, you know, not dictatorial powers, but everything by committee means the path of least resistance, the least risky, but also the lowest payoff kind of outcome. And again, briefly, you might want to comment on that as well, in terms of the powers that we want to infuse CIOs with.

Mr. O'KEEFFE. I think you're exactly right. You know, a camel is a horse built by committee. And so in many circumstances what we see is a lot of different camels running around the Beltway. And so we need to be prepared to take, you know, to take some chances on new approaches, whether that's, you know, cloud computing or what you will. I think that the cholesterol that we see in programs like FedRAMP, the cure can be worse than the disease. So if we don't simplify what's going on, then we're never going to see any real progress.

Mr. CONNOLLY. And that's my final question, actually, about FedRAMP. By the way, I would say to you, Mr. Mica, that sometimes we're the problem. I mean, if you want to understand why we have a risk-averse culture in the Federal Government, Congress has to bear some responsibility here. The minute somebody makes a mistake, if somebody thinks there's political advantage in exploiting that mistake, we have a hearing and we haul you before Congress and we threaten you with subpoenas. Well, who the hell wants to take a risk and face all of that? And we know in the private sector, I spent 20 years in the IT world of the private sector, some things work and some things don't. And a lot of what is considered highly successful today started out failing. And it took a lot of, you know—and if private sector entities had not—if they had the tolerance for failure we've in the Federal Government, a lot of this would not have happened, I submit.

But final question. FedRAMP. The idea that there are 80 pending applications—and my guess is, by the way, there could have been more, people got discouraged.

Mr. O'KEEFFE. That's right.

Mr. CONNOLLY. Who wants to wait that long? And only two have been approved? What's your sense of the problem? What's the nature of the problem and what should we do to try to accelerate the certification process?

Mr. O'KEEFFE. I think perfection is the enemy of the good, and so we're trying to solve for every scenario, and that's just not practical. So we need to simplify the process. That's really it.

Ms. CARLSON. Yeah, I agree. I agree with that. I think it can evolve. I don't think it has to be perfect out of the gate. But I believe it's already, by the way, a very, very solid process. And they need to be confident in what they've developed already and get it

out there and try it. It doesn't mean that you can't come back around and hold the companies accountable once they've gotten the FedRAMP. They need to be able, which we do, we have to show that we're patching and doing everything appropriately.

But I believe they need to be confident in what they develop, and also the agencies probably need to get more involved because the FedRAMP office themselves is not going to be able to do everything, so the agencies are going to have to work with the FedRAMP office and the vendor to certify in an appropriate way, along with the three PAOs.

Mr. WELLS. I think the process is slowly getting better, just to say something positive out there. But it is important to remember that the FedRAMP requirement was in the end the result of something of a political process, again. The JAB wanted to make sure that this standard would be acceptable to all of the various agencies out there, so whenever someone would throw in a new barrier, they would add it to the list. So the bar is high. And the bar should be high. But if they had a little bit more authority, or there was agreement on, you know, amongst all the agencies that let's bring this down a couple of notches, it would streamline the process a great deal. But let's also recognize this is a brand new process with a brand new program that is, you know, trying to do something really groundbreaking across the entire Federal market space. So while I'd love for it to go better, I do want to give them some recognition that they're trying something very ambitious.

Mr. CONNOLLY. Very helpful. I want to join the chairman in thanking our panel. I think it's very thoughtful, very insightful.

I will add, though, and I know Mr. Mica shares this, there is no way Congress is going to continue to allow this process to go forward without cost saving being a major criterion. The idea that it's sort of incidental to the process and sometimes not even impacted at all is a stunning thing to learn in the current environment, and by the way, takes an efficiency off the table.

You know, you cited in your testimony, Ms. Carlson, that in some cases there could be 50 percent effectuated savings. Well, you know, in an \$80 billion IT budget, let's just project and extrapolate that out: 50 percent saving across the board means we've taken \$80 billion, not changed the appropriation one bit, but it's worth \$120 billion, I mean, in terms of its buying power and so forth.

But we're actually shrinking budgets, and so we've got to look for efficiencies, and I think the private sector is going to help us figure that out, because I don't know that left to our own devices we're going to do it.

Mr. O'KEEFE. Just one point. As far as appropriations go, one of the challenges is exactly on the Hill, inasmuch as if you look to close data centers and they're closed in specific people's districts, that's not real popular. So that's, you know, that's definitely a factor in this equation, right? If you try to close—you know, the whole point in closing data centers is you have to shut them. And if that data center is in a specific district, that can be a problem, so it can be somewhat of a circular discussion.

Mr. CONNOLLY. Mr. Chairman, I thank you so much for your indulgence, and thank you so much for holding this hearing.

Mr. MICA. Well, it is interesting, very educational for me. A couple of final points. I can't remember, I read several of these reports in some other background information, I guess one of the problems that was identified someplace, and maybe it was—I thought it was in GSA, they said that the quality of the people who are involved in evaluating some of these systems in all is not the level that they need, because some of these people, you know, they're buying paper clips and office supplies and stuff. And I know this is kind of touchy. Isn't GSA the one that's doing the certification, or responsible for it? Have you seen some of that or is that—anybody want to comment on it?

Ms. CARLSON. I mean, the individuals we have worked with, I don't agree with that. I think the individuals we've been working with in the FedRAMP process—

Mr. MICA. They get it?

Ms. CARLSON. Yeah, they are very good. And they have the three PAOs and they have been—I mean, they have been very professional. And like Mr. Wells says, this is a really important process, and they haven't put anyone in there that I don't feel has been competent.

Mr. MICA. The other thing too, Gerry, is we are asking people to dismantle sort of the standard operating safe procedure, buy a couple more hard drives, hire a few more people, as opposed to dismantling a lot of what they've got. And then of course Mr. O'Keeffe just said the politics of—I've tried FAA, I've tried some of the consolidation of the centers, like one in Florida, is like the, you know, every card in the world is pulled out to keep some things that are unnecessary in today's IT world, and computer and technology world. But it's very tough, so we end up being the problem.

Well, again, I think we've gotten some good testimony. Just fascinated hearing—I guess if Amazon could get a little bit more experience under their belt, maybe they could get certified. For a mom-and-pops startup, I understand the difficulty you're incurring. But we should look a little bit more at that if we could get—yeah, and if 88 percent, you know, we could probably take it down a few more notches. We're not risking the national treasury or secrets. We could have a little bit more efficiency in this process.

Well, again, I think it's most informative. I'm still disappointed we didn't have a couple of the key players here. We will convene another hearing, and we will talk to our leaders. If we have to bring them here voluntarily, we will; if we have to bring them involuntarily, we will. But we will have a follow-up hearing. I think it's very important.

Mr. CONNOLLY. Mr. Chairman, I also want to thank your staff. They have been very, very helpful and cooperative. We really appreciate it.

Mr. MICA. The beatings will not continue?

Mr. CONNOLLY. No more beatings.

Mr. MICA. The sequestration will be eliminated.

So thank you so much for joining us today and providing us with your testimony. Mr. Connolly, no further business? No further business before the Subcommittee on Government Operations. This hearing is adjourned.

[Whereupon, at 4:46 p.m., the subcommittee was adjourned.]

**TESTIMONY FOR THE RECORD
SUBMITTED BY FACEBOOK, INC.
U.S. HOUSE COMMITTEE ON OVERSIGHT
AND GOVERNMENT REFORM
SUBCOMMITTEE ON GOVERNMENT OPERATIONS
HEARING ENTITLED "DATA CENTERS AND THE CLOUD: IS THE
GOVERNMENT OPTIMIZING NEW INFORMATION TECHNOLOGIES
TO SAVE TAXPAYERS MONEY?"
MAY 14, 2013**

Facebook, Inc. ("Facebook") appreciates the opportunity to submit testimony for the record in connection with the U.S. House Committee on Oversight and Government Reform's Subcommittee on Government Operations hearing entitled "Data Centers and the Cloud: Is the Government Optimizing New Information Technologies to Save Taxpayers Money?"

Founded in 2004, Facebook's mission is to give people the power to share and make the world more open and connected. People use Facebook to stay connected with friends and family, to discover what's going on in the world, and to share and express what matters to them. As of March 2013, Facebook had a total of 1.11 billion monthly active users with 751 million of those users active on mobile. There are over 150 billion friend connections on Facebook. On average, users upload over 350 million photos per day. More than 240 billion photos have been shared on Facebook.

All of this data sharing takes a lot of server power, space, and capital. That is why Facebook took the initiative to build and create the most cost and energy efficient data centers possible. And to keep costs down, share best practices, and drive further innovation, we also open sourced our server hardware designs and established the Open Compute Foundation so that the industry as a whole can be more efficient. And, finally, we post efficiencies publicly to drive others to do the same.

Data Center Efficiencies

For organizations such as Facebook, data center efficiency – both for the data center building and for the IT equipment inside it – is a key issue. Over the last several years, we have worked hard to reduce the energy consumption of our data center and servers. In the process, we have reduced our energy consumption by approximately 38%, which in turn reduces operating expenses associated with energy and also reduces the environmental impact. We believe that many other organizations can achieve similar gains.

The impact of the above savings can be substantial. For a facility that can support 10 MW of IT equipment, the savings amount to several million dollars annually and tens of millions of dollars over the life of the facility. The reduction in greenhouse gas emissions is also substantial. Assuming average grid carbon intensity, greenhouse gas emissions from a 10 MW facility would be reduced by approximately 40% or 20,000 metric tons per year.

Until a few years ago, Facebook was using commodity servers in colocation facilities built and operated by other companies. Over the last few years, we have moved to a model where we design, build, and operate our own data centers, and use servers that are manufactured to our specifications. Other large companies in our sector are following a similar approach.

There are a few key principles underlying our designs that have allowed us to achieve high levels of efficiency. One of the most important is to separate the “hot aisles” from the “cold aisles” in the data center, ensuring that the hot air leaving the servers does not mix with cold air from the cooling system. This allows us to raise the operating temperature, which in turn allows us to rely almost exclusively on evaporative cooling instead of energy-intensive mechanical chillers. Together, all of these result in a much more efficient cooling system.

It is important to reduce the number of power conversion steps required to take medium-voltage AC power from the utility and convert it to the low-voltage DC power required by the electronic components inside the servers. It is also important to make the individual power conversion steps as efficient as possible. We use in-row battery cabinets distributed throughout the data center to avoid the double conversion required by typical backup power systems.

We have designed our servers to include only the hardware and features that are truly needed, eliminating a number of components that are included in most commodity servers. This includes “vanity” components such as the front bezel found on most servers that advertises the manufacturer, but serves no functional purpose (and in practice impedes air flow, causing fans to work harder to move air to cool the server, and thus wasting energy).

Running a small number of large data centers, instead of many smaller ones, can also help drive efficiency. Large facilities afford economies of scale, making it easier to achieve good PUE (power usage effectiveness) and WUE (water usage effectiveness), and also making it easier to manage the equipment in the facility. Virtualization technology can be helpful in consolidating diverse workloads from heterogeneous hardware silos onto homogeneous servers managed as a unit.

Finally, clean energy is an important part of our approach to making our data centers sustainable. Our data center in Luleå, Sweden, is powered by 100% clean hydropower. We also just announced a new site in Altoona, Iowa, where we are exploring the use of wind energy to power the facility. And we are working with our

server utilities at other locations to evaluate options for getting more clean energy into our power mix.

Spurring Progress

To drive industry, we open sourced our data center and server hardware designs, and established the Open Compute Foundation (www.opencompute.org) to provide a venue for the industry to collaborate on cost- and energy-efficient systems. Over the two years since Open Compute was started, dozens of organizations have joined and have been working together to develop and improve designs for servers, storage systems, and most recently networking equipment.

The Open Compute ecosystem now includes a variety of "solutions providers" -- i.e., companies that can work with customers interested in using open compute designs to achieve the same kinds of efficiencies that Facebook has. Current solutions providers include Hyve, Avnet, Penguin Computing, and ZT Systems. Recent customers include Rackspace and Riot Games.

It is important to measure how well we are doing. We also recognize that by voluntarily reporting our effectiveness, it may spur others to do so as well. To that end, we track a number of different metrics that pertain to data center and server efficiency. Two of the key metrics are PUE and WUE, both of which were developed by The Green Grid, an organization dedicated to improving the resource efficiency of data centers and business computing ecosystems.

PUE is the ratio of the total energy consumed by a data center to the energy consumed by the IT equipment inside the data center. It highlights the overhead imposed by the data center to provide cooling and backup power to the equipment inside it. A PUE of 1.0 means the data center imposes no overhead at all; a PUE of 2.0 means the data center imposes 100% overhead (for every kWh consumed by the IT equipment, the data center consumes an additional kWh). Surveys by the EPA and others indicate that most data centers operate with a PUE in the range of 1.5 to 3.0, with 2.0 being typical.

WUE measures the amount of water consumed by the facility as a function of the energy consumed by the IT equipment. It is difficult to assess the industry average for WUE, as only one company has reported WUE publicly.

In April of this year, we launched public real-time dashboards for PUE and WUE for our Prineville, OR, and Forest City, NC, data centers. These dashboards show PUE, WUE, and outside temperature and humidity every minute for the past day, and also provide a historical view over the past year. Reporting these metrics publicly makes it easy to compare across facilities, and also drives accountability. Our public dashboards can be found at these links:

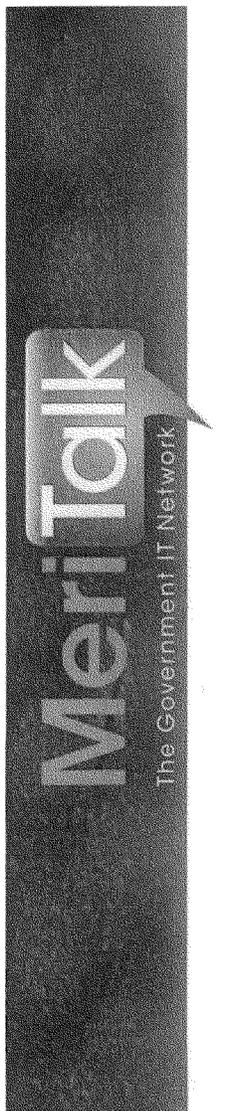
- https://www.facebook.com/prinevilleDataCenter/app_399244020173259
- https://www.facebook.com/ForestCityDataCenter/app_288655784601722

We plan to open source the code for these dashboards to make it easy for others to report publicly in the same way – and also to allow others to collaborate with us to improve the dashboards over time.

On both metrics, Facebook's data centers perform well. Our data centers have achieved a PUE of 1.09 over the last year, meaning that for every kWh going into our servers, we expend only another 0.09 kWh to provide cooling and backup power – much less than most data centers. In terms of WUE, our Prineville data center has achieved a WUE of 0.52 liters/kWh.

We are confident that as technology evolves and the industry continues to share best practices through the Open Compute project, Facebook will continue to drive the industry to create more efficient, cost-effective, and green data centers.

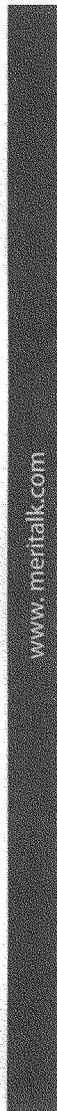
Again, Facebook appreciates this opportunity to submit testimony for the record. Should the Subcommittee have any questions or if Facebook can otherwise be of assistance, please do not hesitate to contact Greg Maurer at (202) 370-5133 or gregmaurer@fb.com.



The FDCCI Big Squeeze

May 13, 2013

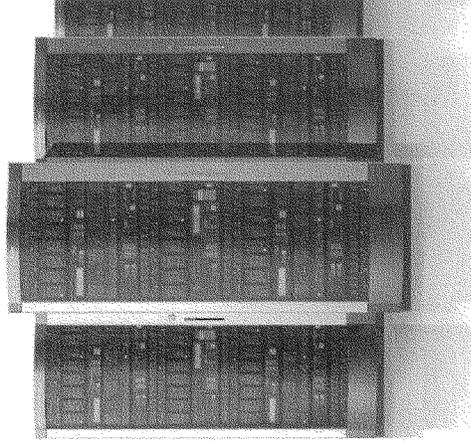
Underwritten by:



The Federal Data Center Consolidation Initiative (FDCCI) is a government-wide effort to reduce the complexity and costs associated with operating multiple data centers.

With the consolidation of data centers, agencies can save money and boost efficiency. So where are agencies with FDCCI efforts? Are we on track to close 1,200 data centers by 2015? Will our efforts pay off?

MeriTalk, on behalf of NetApp, surveyed 66 Federal IT professionals to check the pulse of Federal data center consolidation efforts. This study provides a midterm report on FDCCI, highlights successes to date, and identifies barriers still holding agencies back.



- According to Federal IT professionals, agencies are making consolidation progress:
 - Nearly three out of four Feds (71%) say their agency has closed data centers
 - According to Feds, an average of 31 data centers per agency have already been closed
- But, consolidation is not without challenges:
 - More than half (56%) of Feds graded their agency's consolidation efforts at 'C' or below
 - Only half (50%) of Feds believe their agency is on target to close 1,200 data centers by 2015
- Feds see benefits but are unsure of cost savings:
 - Feds see better use of IT staff (60%), reduced energy consumption (57%), and increased use of new platforms and technology (47%) as key benefits of consolidation
 - However, only 32 percent of agencies report quantifiable cost savings

Thank You

Erin Leahy – MeriTalk

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For more information and to download the study, please
visit: www.meritalk.com/fuCCI-big-squeeze.php



The Government IT Network

www.meritalk.com

Data Center "Statistics"

(NOTE: During the last few days, OMB and agencies made updates to Data.gov portal. This reflects the latest.)

Total Number of Data Centers		3,133	
OMB Goal - Number of Closures		40% or 1,253 (by 2015)	
Progress	<i>Closed</i> as of 4/26/2012	484 (420 as of Dec. 2012)	
	<i>Planned to be Closed</i> by Sep. 2013	Additional 371	571
	<i>Planned to be Closed</i> by Dec. 2014	Additional 200	
TOTAL (Closed or Planned to be Closed)		1055	
<i>Short of Goal</i>		198	
OMB Goal - Dollar Savings		\$3 billion (by 2015)	
Progress	Savings to Date as of Nov. 2012	"Minimal" (according to GAO's latest report)	
	Total Estimated Savings based on Agency Reports	\$640M (21% of Goal)	
<i>Short of Goal</i>		\$2.4 billion	

Statement for the Record of
Thomas A. Schatz
President, Citizens Against Government Waste
Before the House Committee on Oversight and Government Reform
Subcommittee on Government Operations

“Data Centers and the Cloud: Is the Government Optimizing New Information Technologies to Save Taxpayer Money?”

May 14, 2013

My name is Thomas A. Schatz, and I am president of Citizens Against Government Waste (CAGW). CAGW was founded in 1984 by the late industrialist J. Peter Grace and nationally-syndicated columnist Jack Anderson to build support for implementation of President Ronald Reagan’s Grace Commission recommendations and other waste-cutting proposals. Since its inception, CAGW has been at the forefront of the fight for efficiency, economy, and accountability in government. CAGW has more than one million members and supporters nationwide, and, over the past 28 years, it has helped save taxpayers \$1.2 trillion through the implementation of Grace Commission findings and other recommendations.

CAGW does not accept government funds. Eighty-five percent of the organization’s funding comes from individual contributors around the nation. Corporate and foundation gifts account for the remaining 15 percent.

CAGW’s mission reflects the interests of taxpayers. All citizens benefit when government programs work cost-effectively, when deficit spending is eliminated, and when government is held accountable. Not only will representative government benefit from the pursuit of these interests, but the country will prosper economically because government mismanagement, fiscal profligacy, and chronic deficits soak up private savings and crowd out the private investment necessary for long-term growth.

CAGW appreciates the committee's ongoing efforts to oversee IT expenditures, such as today's hearing, as well as your legislative initiatives.

It is no secret that wasteful spending is present throughout the federal government. Regardless of any particular department that one examines, there are billions of dollars worth of savings to be identified.

The Grace Commission duly noted the technological challenges facing the federal government. At the time of the commission's report, the average age of a government computer was 6.7 years; the average computer used by a U.S. business was three years old. Government computer systems were incompatible and required service technicians specifically trained to maintain the outdated equipment. The extra bodies added \$1 billion to the federal payroll over a three-year period.

The commission reported that in 1976, the Federal Aviation Administration paid \$4 million for new data terminal technology that was never installed. The Department of Transportation contracted in 1982 for computer related services at a cost of \$18 million, while its own computers were only being used at 20 percent of capacity. A study showed that updating the government's IT equipment could save \$22.6 billion over three years. In fact at that time, a five-year plan was underway to cure the government's technology woes.

By comparison, in the private sector, IBM's General Systems Division updated its computer technology, saving \$360,000 in the first six months after installation. And Boeing's new word processing system saved \$483,000 over a nine-month period.

While times have changed, there are still technological challenges, as well as new opportunities, facing the federal government. For example, a proactive federal IT initiative that

could produce billions of dollars in savings would be increasing the usage of cloud computing tools. Cloud computing enables organizations and individuals to access information without concern about the server's physical location; promising cheaper, faster, easier, more flexible, and more effective IT. Most organizations already utilize some form of cloud computing, whether their users are synchronizing web-enabled smartphones through their email provider, or obtaining information over the Internet.

These cloud services include public, private and shared service models, ranging from Email-as-a-Service (EaaS) and cloud-based web hosting to large scale Infrastructure-as-a-Service (IaaS). In the fall of 2011, Citizens Against Government Waste (CAGW) published issue briefs on cloud computing¹ and best practices for cloud procurement² to assist federal decision makers on cloud purchases, and in December 2012, published its 2012 Federal Cloud Review.³

On December 1, 2010, the General Services Administration (GSA) announced that it would become the first federal agency to deploy a cloud-based email system (EaaS). GSA anticipated saving up to \$15 million over five years with the new system.⁴ While GSA's Office of Inspector General has been unable to verify the expected savings due to inadequate cost analysis at the agency, it is the potential for savings such as these that has encouraged adoption of cloud computing strategies.⁵ On December 9, 2010, the Obama administration announced its

¹ Deborah Collier, "Cloud Computing 101: A Brief Introduction," Citizens Against Government Waste, September 2011.

² Deborah Collier, "Cloud Computing 201: Guidelines for Successful Cloud Investments," Citizens Against Government Waste, November 2011.

³ Deborah Collier, "2012 Federal Cloud Review," Citizens Against Government Waste, December 2012.

⁴ Steve Hoffman, "GSA Becomes First Federal Agency to Move Email to the Cloud Agencywide," U.S. General Services Administration, GSA #10694, December 1, 2010.

⁵ "Audit of GSA's Transition from Lotus Notes to the Cloud," Report Number A120131/O/F/F12004, Office of the Inspector General, U.S. General Services Administration, September 28, 2012.

25 Point Implementation Plan to Reform Federal Information Technology Management (25 Point Plan),⁶ encouraging federal agencies to quickly adopt cloud computing tools and to consider “cloud-first” when making new information technology (IT) purchases in order to manage information in a cost-effective manner.

Federal spending on cloud computing alone is expected to total \$11.2 billion between 2012 and 2017.⁷ While progress has been made in expanding cloud services, a July 11, 2012, Government Accountability Office (GAO) report indicated there are several roadblocks remaining in the path to full implementation and adoption.⁸ Among these challenges are meeting federal security requirements, obtaining guidance on deployment, acquiring internal cloud knowledge and expertise, certifying and accrediting vendors, ensuring data portability and interoperability, overcoming cultural barriers, and procuring services on a consumption or on-demand basis. Addressing these concerns is critical for successful cloud adoption by federal agencies.

Part of the administration’s 25 Point Plan included data center consolidation. In March 2011, the Government Accountability Office issued a report stating that the number of data centers had increased from 432 in 1998 to more than 2,000 in 2010.⁹ In February 2010, the Office of Management and Budget (OMB) and the federal Chief Information Officer (CIO) announced the Federal Data Center Consolidation Initiative, which is supposed to lead to the consolidation of 1,200 data centers by the end of 2015.¹⁰ If successful, the consolidation effort

⁶ “25 Point Implementation Plan to Reform Federal Information Technology Management,” U.S. Office of Management and Budget, December 9, 2010.

⁷ John K. Higgins, “Federal Cloud Adoption, Part 2: Raining Contracts,” *E-Commerce Times*, May 16, 2012.

⁸ “Information Technology Reform: Progress Made but Future Cloud Computing Efforts Should be Better Planned,” U.S. Government Accountability Office, GAO-12-756, July 11, 2012.

⁹ GAO-11-318SP, page 66.

¹⁰ Federal Data Center Consolidation Initiative (FDCCI) Data Center Closings 2010-2013, November 19, 2012.

should not only improve efficiency, but also reduce the cost of data center hardware, software purchases, maintenance, and center operations. As agencies increase their use of cloud computing tools and rely upon third party vendors for their data storage needs, further data center consolidation efforts may be possible, which would increase savings to taxpayers.

In March 2012, OMB initiated PortfolioStat, which is supposed to provide an evidence-based review of agency IT portfolios, including data on commodity IT investments, potential IT duplication, investments that do not appear to be well aligned to agency missions or business functions, and other key considerations and data within agency IT portfolios.¹¹ On March 13, 2013, *Federal Computer Week* reported that PortfolioStat would be extended to the Federal Data Center Consolidation Initiative, as part of the administration's effort to curb waste and inefficient spending.¹²

In order for PortfolioStat to be effective in the data center consolidation process, agency reporting must be more accurate and transparent than it has been through the IT Dashboard, which has been tracking the overall success of federal IT programs. In October 2012, the GAO found that over time, about 47 percent of the dashboard investments reviewed were rated by their agencies at the same rating in every rating period.¹³ In at least two agencies, the Department of Defense and the National Science Foundation, no IT investments were rated at high or moderate risk levels. Even though the DOD indicated that it did not have any projects at either high or moderate risk, in November 2012, the Air Force halted its \$1 billion Expeditionary Combat Support System project, mostly due to the estimated additional \$1 billion that would have been

¹¹ "Implementing PortfolioStat," Office of Management and Budget, OMB Directive M-12-10, March 30, 2012.

¹² Frank Konkel, "Data center initiative to become part of PortfolioStat," *Federal Computer Week*, March 13, 2013, <http://www.fcw.com/articles/2013/03/13/fdcci-portfoliostat.aspx>.

¹³ "Information Technology Dashboard: Opportunities Exist to Improve Transparency and Oversight of Investment Risk at Select Agencies," Government Accountability Office, GAO-13-98, October 16, 2012.

required in order to make the system operational.¹⁴ Ensuring that the data provided to tools such as the IT Dashboard and the PortfolioStat are current and accurate is critical to ensuring that taxpayer dollars are not being wasted on failing programs.

The government can effectively reduce the cost of federal IT by increased adoption of cloud computing strategies and tools, which will enable further data center consolidation efforts. However, a tight rein must be kept on the data reporting of the status of federal IT projects, including the data center consolidation effort through both the IT Dashboard and the PortfolioStat. Taxpayers should continue to keep a watchful eye on federal IT investments, particularly cloud computing and data center consolidation efforts.

I appreciate the opportunity to provide comments on data center consolidation and how cloud computing can help with these efforts. CAGW looks forward to further participation in the Committee's IT reform endeavors.

Thank you for the opportunity to provide this testimony.

¹⁴ Randall Stross, "Billion-Dollar Flop: Air Force Stumbles on Software Plan," *The New York Times*, December 8, 2012, http://www.nytimes.com/2012/12/09/technology/air-force-stumbles-over-software-modernization-project.html?_r=0.

Thomas A. Schatz

Thomas A. Schatz is president of Citizens Against Government Waste (CAGW) and its lobbying affiliate, the Council for Citizens Against Government Waste (CCAGW).

CAGW was founded by the late businessman J. Peter Grace and late Pulitzer Prize-winning columnist Jack Anderson in 1984 following the completion of President Ronald Reagan's Private Sector Survey on Cost Control (the Grace Commission). A 501(c)(3) nonprofit, nonpartisan educational organization, CAGW works to eliminate waste, fraud, abuse, and mismanagement in government and has more than one million members and supporters nationwide. According to official Office of Management and Budget and CAGW estimates, implementation of Grace Commission and other CAGW waste-cutting recommendations has helped save taxpayers \$1.08 trillion.

Mr. Schatz is a nationally-recognized spokesperson on government waste and has been interviewed on hundreds of radio talk shows from coast to coast. He is a regularly featured guest on national television news programs and local news broadcasts. His appearances include ABC's "Good Morning America," CBS's "60 Minutes," FOX News Channel's "The O'Reilly Factor," NBC's "Nightly News," and PBS's "The News Hour." He was a regularly featured guest on the "Pork Watch" segment of CNBC's "Squawk Box." His editorials on fiscal policy have appeared in publications nationwide, including *The New York Times* and *The Wall Street Journal*.

Mr. Schatz has testified numerous times on government waste issues before committees of the United States Senate and House of Representatives, as well as before state and local legislative and regulatory bodies.

During his 25 years with CAGW, Mr. Schatz has helped make CAGW a "leading government watchdog on fiscally conservative issues, like taxes and earmarks," according to *National Journal*. In his role as president of CCAGW, *The Hill* named him one of the "top 10 public interest lobbyists."

Prior to joining CAGW in 1986, Mr. Schatz spent six years as legislative director for Congressman Hamilton Fish Jr. and two years practicing law and lobbying.

Mr. Schatz holds a law degree from George Washington University and graduated With Honors from the State University of New York at Binghamton with a bachelor's degree in political science. He is married to Leslee Behar and has two daughters, Samantha and Alexandra.