

STATEMENT OF

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BEFORE THE

HOUSE COMMITTEE ON OVERSIGHT AND GOVERNMENT REFORM

SUBCOMMITTEE ON GOVERNMENT OPERATIONS

**"Data Centers and the Cloud, Part II: The Federal Government's Take
on Optimizing New Information Technologies Opportunities to Save
Taxpayers Money"**

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

Thank you for the opportunity to appear before you today to discuss GSA's role in the Federal Data Center Consolidation Initiative (FDCCI). We are fully committed to helping our agency partners achieve significant government-wide gains in efficiency and operational excellence through data center consolidation, and appreciate the Committee's leadership in ensuring the effectiveness of this important initiative.

Background

The Administration launched the Federal Data Center Consolidation Initiative (FDCCI) in 2010 to stem the large increase in federal data centers that had occurred over the past decade. Establishment of the FDCCI coincided with the initial drive to migrate federal IT infrastructure to cloud computing solutions, providing a framework for development of a baseline inventory that would enable agencies to make data-driven decisions about how to gain efficiencies and achieve cost savings within their IT infrastructure. Initially, four high level goals were defined:

- Promote the use of Green IT 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
- Shift IT investments to more efficient computing platforms and technologies

In February 2010, the then Federal CIO issued guidance requiring agencies to identify their existing data center assets and formulate detailed consolidation plans that include a roadmap and consolidation targets. Specific requirements include:

- Conduct an initial inventory of data center assets and provide a complete inventory update annually
- Formulate and maintain a data center consolidation plan that identifies centers for consolidation, opportunities for optimization through server virtualization or cloud computing, and incorporate this plan into annual agency budgets
- Prepare a high level roadmap to transition to the consolidated end state architecture

Over the past three years, these goals and requirements have evolved to shift emphasis toward portfolio management, as agencies work to optimize and consolidate their data center populations.

GSA Role

GSA's Office of Citizen Services and Innovative Technologies administers the inventory of agency assets, collects data from agencies, and supports the Federal CIO Council's Data Center Task Force (Task Force). We provide agencies with practical tools, templates and guidance to effectively plan and execute their strategies to consolidate and close data centers.

We also maintain the on-line data center inventory portal, and provide analytics to Office of Management and Budget (OMB) based on the inventory data submitted by agencies. Each agency is responsible for the quality and accuracy of the data they submit; agency Chief Information Officers (CIOs) are responsible for the validity of the inventory data submitted. We are responsible for reviewing agency inventories to identify missing information -- data fields that have not been completed. We do not verify or determine the extent to which the data provided accurately reflects an agency's actual assets. We coordinate closely with the Task Force members and OMB to help agencies achieve our shared objectives, and strive to meet emerging needs with on-going program improvements.

Inventory Reporting

Initially, OMB required agencies to report only data centers that were greater than 500 square feet in size and that met one of the tier data center classifications defined by the

Uptime Institute. Based on that definition, the first data center inventory, reported in October 2010, identified the data center asset baseline as 2,094 data centers. In December 2010, OMB issued the 25 Point Implementation Plan to Reform Federal Information Technology Management, which set a target for agencies to consolidate at least 800 data centers, which was approximately close 40% of agency reported data centers, by the end of 2015.

Once these initial results were examined, OMB determined that this approach did not capture a significant segment of agency infrastructure assets that could be consolidated and optimized. Data provided through April 30, 2013 indicated that more than 70% of agency data center assets are less than 500 square feet, with many of those assets 100 square feet or less. Although the individual budgets for these server 'closets' are low and often contain embedded costs in overall building utilities, in aggregate across government, the costs of these data centers are significant. To achieve meaningful and sustainable infrastructure optimization, it is critical that agencies plans include the consolidation of these smaller assets into large, core data centers that address broad agency needs, for example shared and enterprise services.

To address this gap, the data center definition was changed in late 2011 and officially clarified in March 2012. Under the FDCCI, a data center is now defined as "a closet, room, floor or building for the storage, management, and dissemination of data and information. Such a repository houses computer systems and associated components, such as database, application, and storage systems and data stores. A data center generally includes redundant or backup power supplies, redundant data communications connections, environmental controls (air conditioning, fire suppression) and special security devices housed in leased (including by cloud providers), owned, collocated, or stand-alone facilities.¹

As you would expect, this broader definition resulted in agencies identifying and reporting higher number of data centers. While this has created challenges in defining the government-wide inventory baseline, it provides a far more accurate view of each agency's enterprise assets, and enables more comprehensive portfolio analysis.

Agencies directly upload asset inventory information using standard templates to an on-line Inventory Portal that we developed to automate reporting and ensure

¹ This definition excludes facilities exclusively devoted to communications and network equipment (e.g., telephone exchanges and telecommunications rooms).

consistency. Agencies are responsible for data quality, accuracy, and completeness, and can review, correct and augment information as needed. As required by OMB, they must update closure information quarterly and their entire inventory on an annual basis. Each agency has access to its own information, but cannot access information of other agencies. The portal provides portfolio level transparency, enabling analysis and planning, both by agency managers and OMB. It gives OMB insight on government-wide asset inventory accuracy and completeness, which is critical to achieve optimization of the Federal IT enterprise.

Core Data Center Selection

The FDCCI has shifted from focusing strictly on closures to measuring efficiency of agency data centers in the context of overall agency IT portfolios. Based on the March 27, 2013 PortfolioStat memo from OMB, the FDCCI Task Force (Task Force) is categorizing agency data center populations into two categories: core and non-core. Core Data Centers are fundamental components of the agency's post consolidation environment. They will serve as primary consolidation points for enterprise IT services allowing the Department/Agency to achieve economies of scale and deliver the lowest possible Cost per Operating System per Hour (COSH). They are required to have sufficient power and cooling to support anticipated operations, appropriate redundancy to meet availability requirements, adequate space for anticipated growth, appropriate levels of physical security, support delivery of IT services for a diverse community of customers over a wide geographic area, and to comply with Federal and industry best practices for energy efficiency and operations.

These categories will encourage agencies to concentrate on optimizing their core centers across total cost of ownership metrics, while striving to reach the government-wide goal of closing 40% of non-core data centers.

In conjunction with the Task Force, GSA developed a tool to help agencies identify and select their core data centers. It defines nine draft criteria that are key attributes for core data centers. Using these criteria, in addition to other agency information, agencies are currently identifying their core data centers in this year's PortfolioStat process:

- Power usage effectiveness (PUE) must be lower than 3.0
- Data center must be metered for use of electricity
- Agency must have sufficient information to calculate a cost of operating system per hour (COSH) score

- Virtualization must be at least 40% - Virtualization is defined as a technology that allows multiple, software-based machines, with different operating systems, to run in isolation, side-by-side, on the same physical machine.
- There must be at least a ratio of 10 servers per full time equivalent (FTE)
- Power capacity must be at least 30 watts per square foot
- Facility utilization must be between 20% and 80% of the data center space
- Data center must meet at least the Tier One standards defined by the Uptime Institute
- Data center must be agency owned, leased or in the cloud

Total Cost of Ownership (TCO) Model

Under the guidance of the FDCCI Task Force, GSA also developed a Total Cost of Ownership (TCO) model to facilitate robust data analysis and optimization planning by agencies. It models alternative consolidation paths, supports development of projected and modeled cost savings figures and funding needs, and enables informed, data driven decision making. The model was first made available to agencies in early 2012 as a planning tool. Agencies were encouraged to use it and vet the business rules governing data normalization and processing. In addition, GAO reviewed the logic and business rules of the model. All 24 CFO Act agencies are now using the TCO model. Furthermore, the TCO Model is being migrated into a cloud-hosted application that agencies can easily access and use.

The primary TCO model's primary capabilities are:

- Aggregates data center costs and calculates the cost of delivering an operating system, whether virtual or physical. This allows agencies to compare data center costs to alternative hosting solutions and provides an overall snapshot of cost models.
- Provides information and analysis for CIOs to make educated, cost-based decisions on what data centers to optimize and consolidate, assess the impact of potential optimization and consolidation decisions, and to determine where to most cost effectively deploy applications across their portfolio.
- Provides an executive level dashboard for agencies to analyze different scenarios to calculate the potential return on consolidation/optimization investments – e.g. how much will increasing virtualization save the agency?

As recommended by commercial and public sector best practice, the TCO Model uses the operating system (OS) as the base commodity for measuring efficiency and cost. It breaks down costs associated with data center ownership to the cost per OS per hour

(COSH) level. Commoditization of data center resources at the OS level allows for direct, apples to apples comparison with other agencies and across agency sub-components, as well as with cloud-based Infrastructure, outsourcing and other infrastructure options. Agencies can make better, more informed consolidation and optimization decisions by using the TCO Model to analyze alternatives and associated projected costs. It enables agencies to weigh specific factors against a series of optimization and consolidation actions which, if taken, should enable improved mission service delivery.

As agencies have gained experience with the tool and its applicability to IT planning, they have requested updates and changes. GSA and the FDCCI Task Force's Configuration Change Control Board evaluate all change requests, and prioritize approved changes. The model has been modified and enhanced over time to reflect these recommendations.

Conclusion

The FDCCI has made significant strides identifying, analyzing and optimizing Federal data centers across government. To date, over 484 data centers have been closed, with another 855 scheduled for closure by the end of FY 13. Data Center consolidation is an important part of broader federal IT reform focused on optimizing investments and resulting operational efficiencies that improve mission results. GSA is providing valuable, practical tools and support to agencies that enable accurate, complete data center inventories and analysis. While there is much to be accomplished in the years ahead, we are assembling a more complete, accurate and transparent inventory of data center assets than has previously existed.

