Federal Data Center Consolidation Initiative

Department of the Treasury Data Center Consolidation Plan

September 2011 Update

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1 Introduction

The Treasury Data Center Consolidation Plan has been prepared in response to direction from the Office of Management and Budget (OMB) for the Federal Data Center Consolidation Initiative (FDCCI). This version updates the plan sent in FY2010 to OMB.

Treasury anticipates downward pressure on spending will continue as part of deficit reduction efforts. Because information technology (IT) is approximately one-quarter of Treasury's discretionary budget, the Department continues to emphasize the need to reduce spending on IT infrastructure (data centers, storage and networks). At the beginning of the FDCCI, Treasury Bureaus hosted administrative and mission applications at 55ⁱ different facilities across the country. The number of data center facilities and associated IT infrastructure assets represent opportunities to collaborate across the Department; Bureau-specific IT infrastructure is not defensible if private, commercial, or federal cloud services can meet requirements at reduced costs.

Treasury's ability to successfully consolidate its data center facilities and adapt to lower budget levels is contingent on the following:

- 1. Shared Infrastructure Services
 - The successful management of a Department wide network that can be scaled efficiently to address changes in network traffic
 - Successful implementation of identity management systems that meet requirements specified by Federal Identity, Credential, and Access Management (FICAM), Homeland Security Presidential Directive 12 (HSPD-12), and the Office of Management and Budget memorandum M-11-11
- 2. Modifying mission systems to meet statutory requirements (ex: Dodd-Frank Act and the Affordable Care Act.)

Treasury's DCCI Working Group will coordinate efforts to address these challenges. The FDCCI required review of all systems and software assets will afford Treasury the opportunity to employ more cost-effective commercial IT offerings, improve information and systems security, foster more inter-Bureau information sharing, and make contributions to Administration efforts that reduce Federal spending.

2 Agency Goals for Data Center Consolidation

Based on cost modeling analysis, Treasury has updated its goals to reflect metrics that may better inform IT investment decisions by management.

2.1 Cost Efficiencies

Consolidation of facilities and infrastructure will increase Treasury's economies of scale and associated buying power, and reduce the overhead associated with operating multiple instances of common facilities and services.

2.1.1 Primary Measures

The following represents specific quantitative targets that Treasury will use to manage investments across the Department over the next four years:

- Increase virtualization: Based on the FDCCI cost model, Treasury has updated its calculation for virtualization to virtual OS/total OS from the 2010 calculation, which used virtual hosts/total servers (where total servers equals physical servers plus virtual hosts). While this measure varies significantly across Treasury Bureaus (calculation ranges from 16% to over 90%), the Bureaus that constitute the main consolidation points all exceed 25%. Treasury is targeting an overall agency goal of 50% by 2015.
- **Decrease the number of servers**: Treasury reported 7,537ⁱⁱ servers in the 2011 inventory, which included 715 virtual hosts. Based on this most recent inventory, Treasury projects an inventory of 4,441 servers by 2015 (same as that reported in the 2010 plan), or an average reduction of 774 servers per year.
- **Decrease data center demand for square footage**: Based on current estimates, Treasury expects to reduce demand for space by an average of 22,000 square feet each year through 2015.

The above targets were developed as part of the cost modeling analysis done in conjunction with the Federal DCCI Task Force. Those cost models indicated that reduction in physical assets produced increases in capacity/cost efficiencies for management of space and IT services.

2.1.2 Secondary Measures

While primary measures will be a focus for investment management decisions, Treasury will also monitor the number of data centers. Based on current estimates, Treasury expects to decommission 2-3 data centers each year through 2015.

2.2 Service Quality

The areas below represent outcomes that Treasury expects to realize through DCCI, but may not be easily addressed with quantitative measures. Treasury's DCCI Working Group will develop more quantifiable targets for future DCCI Plan updates, to the extent feasible.

• Improved performance, reliability, and availability of services – Treasury will entrust its data processing requirements to entities that have the expertise, processes, and resources necessary to provide those services reliably and consistently.

- Increased security Consolidation of data centers reduces the risk of unintended access to data in lower tier centers or labs by leveraging the expertise of proven data center service providers and reducing the opportunity for unauthorized physical access.
- Reduced energy dependence As indicated in Treasury's 2010 Plan, tracking energy measures consistently is challenging. Treasury will report energy measures when practical in an effort to align with other Department-wide programs and administration initiatives for Green IT and Real Property Management.

3 Shared Service Strategy

By implementing a shared services strategy, agencies can reduce the demand for services that can drive increases in infrastructure. Treasury will specifically focus on the following implementations that embody the following characteristics:

- 1. Reflect IT applications/services used commonly across the federal government and the private sector.
- 2. Provide economies of scale that do not negatively impact the performance of Bureau mission and business operations.
- 3. Are operated by a Bureau that has the proven capability and resources to do so.

Focus on the shared services above will provide Treasury an opportunity to establish best practices that can later support additional efforts to reduce its facility and infrastructure footprint.

3.1 Shared Infrastructure Services

Treasury will prioritize those services that directly impact enterprise use of its infrastructure.

- Network Management (TNET): Treasury is at a turning point in the management of its wide area network in that transition from the legacy network architecture is now complete.
 Following IRS managing the transition from TCS to TNET, Treasury is now taking over management of the WAN infrastructure. With the TNET Program Management Office (PMO) functions transitioning back to Department Offices (DO), Treasury is now leading the continuous improvement of the program as new data services are introduced to the network, and as the convergence of voice, video, and data communications occurs.
- Identity and Access Management (IDAM): Treasury has issued Personal Identity Verification (PIV) cards to approximately 90% of its staff. In conjunction with card issuance, Treasury plans to implement a service that will allow the Department to synchronize across its authoritative sources for identity management. This provides a platform to expand and enhance access management across the Treasury Department. Treasury has leveraged FICAM architecture as published from OMB.

3.2 Shared Business Services

The services below, several of which were originally mentioned in Treasury's 2010 DCCI plan, will continue to drive consolidation of business services within Treasury.

- **Bureau of Public Debt's (BPD) Administrative Resources Center (ARC)**: BPD-ARC provides financial management, HR, Investment Accounting, Procurement, and Travel services for numerous customer agencies.
- **HR Connect (HRC) Line of Business**: HRC offers HR systems as a line of business for all federal agencies.
- Enterprise Content Management (ECM) / SharePoint 2010: ECM encompasses applications that transcend Treasury organizations, including FOIA, records management, paper

reduction, correspondence tracking, collaboration, evidence management, and case management. Treasury will seek to use the platform to support collaboration with groups outside of Treasury and within the broader financial regulatory community.

- **BDNA**: This is an agency-wide tool that can track installation of hardware (physical and virtual) and software assets. Regular reporting of IT assets allows Treasury to identify opportunities for strategic sourcing opportunities.
- **Treasury.gov**: Treasury will continue to evaluate consolidation of agency websites similar to those moved to the Treasury.gov website (SIGTARP.gov, MyMoney.gov, TIGTA.gov, and IRSOversightBoard.treasury.gov). Treasury, the first cabinet level agency to move its website to a cloud hosting environment, has saved over 13% in monthly costs versus the prior legacy hosting solution.

4 Agency Approach, Rationale and Timeline

Treasury's plan prioritizes efforts and related objectives amongst several efforts:

- Improve reliability of shared infrastructure services for TNET and identity management
- Establish major consolidation points amongst Bureaus with common requirements
- Execute migration to target hosting environments

Every step requires significant planning and coordination across all IT disciplines (i.e. engineering, project management, acquisition, vendor management, budgeting).

While asset counts have been updated, this approach remains largely unchanged from Treasury's last DCCI plan submission – reflecting Treasury's intent to focus on consolidation activities in Bureaus that hold the majority of Treasury's IT assets.

4.1 Progress at Major Consolidation Points

Treasury has identified major points of consolidation amongst those Bureaus that have:

- The resources to address both TNET and consolidation
- An immediate demand from legislation that presents an opportunity for consolidation

4.1.1 Internal Revenue Service (IRS)

The IRS expects completion of its consolidation efforts to continue through FY 2015. This consolidation effort will result in the following impact points:

- 34% of Treasury data centers from June 2011 (18 data centers)
- 59% of Treasury physical servers and virtual hosts in June 2011 (4,410 mainframes, physical servers, and virtual hosts)
- 1 data center closed through June 2011

4.1.2 Fiscal IT: Financial Management Service (FMS) and Bureau of Public Debt (BPD)

Fiscal IT (FMS and BPD) are currently consolidating their infrastructure and data center operations. This consolidation effort will result in the following impact points:

- 11% of Treasury data centers from June 2011 (6 data centers)
- 19% of Treasury physical servers and virtual hosts in June 2011 (1,469 mainframes, physical servers, and virtual hosts)
- 0 data centers closed through June 2011
- 2 data centers closed through September 2011

4.1.3 Departmental Offices (DO) and Dodd-Frank Act Organizations

The recent legislation created new organizations supported by Treasury, including:

- Financial Stability Oversight Council (FSOC)
- Office of Financial Research (OFR)

Treasury will use the standup of these organizations to identify a hosting environment that will encompass each of them and DO. Initial discussions on IT for the new organizations are underway, but plans are pending the assignment of resources to the new organizations.

- 17% of Treasury data centers from June 2011 (9 data centers)
- 6% of Treasury physical servers and virtual hosts in June 2011 (440 mainframes, physical servers, and virtual hosts)
- 1 data center closed through June 2011

4.1.4 Office of the Comptroller of the Currency (OCC)

The aforementioned Dodd-Frank legislation also directed the consolidation of OCC and OTS into a single organization. Following this legislation, business operations have been consolidated as of July 2011. OCC is evaluating their current infrastructure and data center needs.

- 9% of Treasury data centers from June 2011 (5 data centers)
- 8% of Treasury physical servers and virtual hosts in June 2011 (640 mainframes, physical servers, and virtual hosts)

4.2 Migration to Target Hosting Environments

Cost benefit analyses and timing of migration opportunities will determine destinations for Treasury infrastructure. For example, in FY2011, Treasury will explore opportunities to consolidate infrastructure services at smaller Bureaus, such as infrastructure for the Financial Crimes Enforcement Network (FinCEN) and the Community Development Financial Institutions (CDFI) Fund using some of the options described below.

4.2.1 Treasury Private Cloud

Treasury intends to designate a limited number of data centers based on performance, capacity, and geographical distribution across several regions of the country, as "Department data centers." The current Bureau owners of these data centers are anticipated to offer Infrastructure As A Service (IAAS), Platform As A Service (PAAS), and Software As A Service (SAAS). As the owners of assets within the data centers, they will address all related technology support issues. Bureaus receiving services from the designated Treasury data centers will pay for those services consistent with Treasury financial management policies, franchise fund legislation, and the Economy Act.

Migration into a Treasury Private Cloud can begin after IRS and Fiscal IT have established operations sufficient to allow them to act as market-competitive service providers to other Bureaus. Due to the complex nature of the consolidations, Treasury will not initiate migration of Bureaus to a Treasury private cloud until after the completion of consolidations within IRS and Fiscal IT.

4.2.2 Commercial / Federal Cloud

Although many requirements necessitate the use of Treasury data centers, commercial and federal cloud options will continue to evolve and meet or exceed current requirements in the

future. For example, the successful commercial hosting of Treasury.gov serves as an indicator that the commercial cloud may service future demands for email and data storage.

Treasury will explore increased roles for commercial cloud services, especially as it sets up the new organizations from the Dodd-Frank Act. Based on the experiences with these services (i.e. email, data storage, collaboration tools), other Bureaus can make informed decisions on the increased use of commercial services within their environments. While Bureaus can pursue commercial cloud services, performance will be dependent on TNET; migration should follow only after establishing appropriate network Service Level Agreements (SLAs).

4.2.3 Private Data Centers ("In-House" Infrastructure)

The Department will work with Bureaus to include virtualization within their infrastructure investments during FY2013 and FY2014. The Mint, DO, and the Alcohol and Tobacco Tax and Trade Bureau have already made considerable progress with virtualization. Migration to virtualized private data centers depends on availability of resources –some of which will likely be involved in improving TNET.

4.2.4 Exceptions to Consolidation Approach

Due to unique operational constraints, negligible benefits, or performance requirements, the plan excludes the following environments at this time until later assessments show sufficient return for the inclusion:

- Operations established between Treasury and Fiscal Agents (Federal Reserve Banks) and Financial Agents (commercial institutions)
- Supervisory Control and Data Acquisition (SCADA) applications employed by the Bureau of Engraving and Printing (BEP) and the Mint that by design must be located with their associated machinery
- Separate, but small, data centers that support Treasury's Inspector General (IG) organizations

24 data centers from FRB, Commercial Banks, BEP, Mint, and IG are categorized as exceptions, but data will continue to be collected from these environments to maintain our assessments.

4.3 Timeline

Based on the experience of other agencies with data center consolidation and expected life spans of data centersⁱⁱⁱ, Treasury expects the consolidation activities described in this plan to take between 5 - 10 years. The following graphic represents an optimal schedule of major activities necessary to achieve goals of Treasury's DCCI plan. Savings referred to below represent only those from energy and space.

Figure 1 - High Level Timeline

	Q3-4 FY2010	Q1-2 FY2011	Q3-4 FY2011	Q1-2 FY2012	Q3-4 FY2012	Q1-4 FY2013	Q1-4 FY2014	Q1-4 FY2015
Governance	♦ August 30 th Plan	DCCI Plan	Plan Re-orgar or FY 2014 Subm	Afrastructure 2013 submission ize all other invest ission (if necessary Submit Infrastruc Investments with in acquisition risks an Submit telecom in support improved	ments) ture nfo on d milestone vestments	based on statu private cloud c	infrastructure is of TNET and opportunities	
Consolidation Points In Progress				IRS				
			Fiscal IT				ivate cloud (I	
Consolidation Points as a result of Financial Reform		DO/FSOC/	OFR/SIGTARP			SAAS) from	consolidatio	n points
					OCC			
Future Consolidations	and con	npare measu	FIGTA, TTB, Find res amongst tai llize as appropr	rget hosting		int, IG, CDFI, ⁻ iCEN: mitigat g		
							IG, CDFI, TIGT grate infrastri e	
Major Dependencies	Establish n	ew SLA's with	TNET vendor	Implement ne SLA's	w TNET			
Agency Savings		0		ent required for major asury organizations Potential savings from using r capacity from consolidati		-		
Agency Utilization	Efficiency	ratios likely f	to improve	Ratios may plateau/decr due to exces capacity		Ratio	s likely to imp	irove

The following tables specify activities for each data center in accordance with the high level timeline and Treasury's approach and rationale for consolidation. These targets need to be validated through both technical feasibility analysis and cost-benefit analysis.

igure 2 – Closed Data Centers as of September 2011
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No.	Data Center	Agency Component	Location	Action to be Taken	Action Taken during Fiscal Year
1	Vienna - TCS	DO	Vienna, VA	Closed	2010
2	500 N Capitol/RAS Headquarters	IRS	Washington, DC	Closed	2011
3	CAPS	Fiscal IT	Mineral Wells, WV	Consolidate within Fiscal IT	2011
4	PROC	Fiscal IT	Philadelphia, PA	Consolidate within Fiscal IT	2011

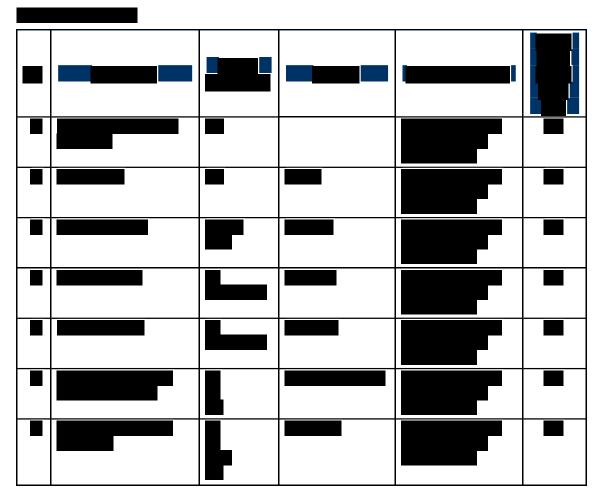
No.	Data Center	Agency Component	Location	Action to be Taken	Action Taken during Fiscal Year
5	HROC	Fiscal IT	Hyattsville, MD	Consolidate within Fiscal IT	2012
6	Andover Campus	IRS	Andover, MA	Consolidate within IRS	2012
7	Brookhaven Campus	IRS	Holtsville, NY	Consolidate within IRS	2012
8	NCFB	IRS	Lanham, MD	Consolidate within IRS	2012
9	Philadelphia Campus	IRS	Philadelphia, PA	Consolidate within IRS	2012
10	DC - OTS	occ	Washington, DC	Consolidate within OCC	2012

Figure 3 – Scheduled for Closure as of Se	ptember 2011
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No.	Data Center	Agency Component	Location	Action to be Taken	Action Taken during Fiscal Year



No.	Data Center	Agency Component	Location	Action to be Taken	Action Taken during Fiscal Year

Federal Data Center Consolidation Initiative

No.	Data Center	Agency Component	Location	Action to be Taken	Action Taken during Fiscal Year

5 Agency Governance Framework for Data Center Consolidation

The Department's Deputy Secretary will provide the executive sponsorship and endorsement of the Treasury DCCI program. The Treasury CIO Council will formulate, promote, monitor, and assess the agency's efforts through a Treasury DCCI Working Group.

Overall program reporting and strategic direction of the Treasury DCCI plan will reside with the Treasury Chief Information Officer, who will work collaboratively with Bureau officials who are charged with developing Bureau-specific business cases for consolidation and executing specific elements of the program.

Optimal use of existing processes is critical as Treasury anticipates significant competition for infrastructure resources and assets. DCCI efforts must be coordinated and prioritized amongst demands for new infrastructure from several major programs (including but not limited to):

- Shared Infrastructure Services
 - TNET
 - IDAM
- Statutory Requirements
 - Bank Secrecy Act
 - Affordable Care Act in conjunction with IRS Tax Modernization
 - Dodd-Frank Act

To best address the timely resolution of competing priorities, Treasury will rely on existing governance processes for IT investment management within each Bureau and the Department. In support of this effort – and as mentioned in Treasury's 2010 DCCI Plan - Treasury has disaggregated its IT infrastructure investment to more accurately reflect Bureau level management of infrastructure and corresponding activities for DCCI. Existing processes will be augmented by integrating OCIO guidance with that issued by the Department for Green IT and Real Property.

5.1 Cost-Benefit Analysis

As mentioned under Agency Goals, Treasury worked with GSA and the FDCCI Task Force to create a cost model to understand how to best approach consolidation to address cost savings. From that analysis, Treasury updated its goals to reflect a focus on reduction of its IT server footprint, as evidenced by reduced server counts, increased virtualization, and released square footage. Treasury will prioritize consolidations that can best impact those measures as those efforts are the most likely to release resources for application elsewhere, while also budgeting for increased demands on network infrastructure.

5.2 Risk Management and Mitigation

Bureaus will track risks associated with DCCI activities within their respective infrastructure investments. Treasury's DCCI Working Group will maintain a separate list of risks on Treasury's overall approach to DCCI and Treasury's ability to achieve its desired goals.

5.3 Acquisition Management

Treasury will modify existing contracts (e.g., TNET) as appropriate to engineer its infrastructure and support DCCI objectives. Existing investment governance will review use of new contracts, such as those in support of commercial cloud service offerings, in support of DCCI. Treasury's DCCI Working Group will coordinate sharing of hosting requirements across Treasury to identify consolidation opportunities across Treasury Bureaus.

5.4 Communications Strategy

The Department will evaluate use of the 300A and 300B mechanisms for communicating progress on DCCI in lieu of investment roadmaps mentioned in last year's submission. This approach takes advantage of existing investment management at the Bureaus. The Treasury DCCI Working Group will maintain a master schedule for all Treasury data centers and report progress to the Treasury CIO Council and the Federal DCCI Task Force.

In addition to the master schedule, Treasury will better align reporting of measures and savings to be on the same fiscal year schedule. This year's DCCI inventory submission (June 30, 2011) reported data center closures as per calendar year. Heretofore, DCCI data center closures and budget submission projected savings will be forecast based on the end of the fiscal year (September 30th).

6 Progress

6.1 FDCCI Consolidation Progress

Consolidation Progress							
Department Name	Departm	nent of t	he Treas	sury			
	Closed Target Closure Numbers		5				
	4Q10	4Q11	4Q12	4Q13	4Q14	4Q15	Total Planned Closures
Consolidation Targets Facilities \geq 100 sq. ft.							
Reported in June 2011 Asset Inventory	1	3	6	3	0	2	15

The closure targets are projected against calendar years as per past reporting practices for the FDCCI Task Force. Based on the Treasury's 2010 plan targets, Treasury targeted a closure of 2 data centers. As of September 2011, Treasury has closed 3 data centers in 2011.

In regards to reducing demand for space from data centers, Treasury targeted a reduction of 10,906 sq. ft. associated with the closure of the 2 originally targeted data centers. Based on the closure of 3 data centers, Treasury has reduced square footage by 15,896 in 2011.

In regards to reducing servers, Treasury in the 2010 plan targeted a 2011 inventory count of 7,084. Results from the 2011 inventory show $6,822^{iv}$.

6.2 Cost Savings

Treasury has not yet reviewed Department savings for FY2011. Treasury did not previously outline expected savings for the DCCI effort and thus did not have any savings targets to meet. Treasury's PMO is working with Treasury Bureaus to gather expected savings, realized savings, and to further understand all consolidation cost components.

Based on Exhibit 53's for FY2012^v and FY2013^{vi} budgets, Treasury expects to see a reduction in spending on infrastructure mainframes and servers of \$206.9 million over FY2012 and FY2013, as compared to amounts submitted for FY2011. This includes the additional infrastructure expenditures required to implement the Affordable Care Act. Treasury expects to see increased spending on telecommunications of \$46.4 million over FY2012 and FY2013, as compared to amounts submitted for FY2011. Overall, Treasury expects to see a reduction in IT infrastructure spending of approximately \$160 million from FY2012 to FY2013, as compared to amounts submitted for FY2011.

Along with the Exhibit 53 monitoring effort, Treasury will augment its budgetary review to encourage reporting of DCCI savings in the OMB budget submissions. Several Bureaus included DCCI savings in their BY2013 OMB budget submissions. Both BPD and FMS (Fiscal IT) will see savings from their combined data center consolidation effort: BPD will realize specific savings of \$0.470 million in FY2012, and \$1.870 million in FY2013; FMS will realize specific savings of \$0.685 million in FY2012, and \$6.044 million in FY2013. These efforts contribute to overall projected savings of \$32 million per year through infrastructure consolidation, as reported by FMS and BPD in their FY2012 budget submissions. IRS has submitted savings from virtualization and data center consolidation as part of their \$45 million cost reduction for increasing operational efficiencies.

For comparison, Treasury used the FDCCI Cost Model to provide alternative perspectives on potential savings. Using moderate assumptions, the FDCCI cost model projects \$5,764,206 in FY2011 savings due to DCCI efforts.

approximately 60 years.

ⁱ Treasury has 55 data center facilities and server rooms housed with an additional 14 facilities in Commercial Banks or Federal Reserve Banks.

^{II} The 7,537 servers include inventory counts for mainframes, physical servers, and virtual hosts. ^{III} From Gartner presentation held at GSA in August, 2010, expected life span of data centers is

^{iv} Based on Treasury's comparison of each year's inventory data definition format, the 6,822 does not include virtual hosts. With virtual hosts, the actual count for comparison with the 2010 inventory is 7,537. Treasury will work with the FDCCI Task Force and within its working group to establish more consistent processes for estimating inventory counts.

^v The FY2012 Exhibit 53 data for the ITI MSSS and ITT TSS investments were pulled from the June 2011 OMB submission.

^{vi} For FY2013 and beyond, the consolidated infrastructure investments, ITI MSSS and ITT TSS, will no longer exist for Treasury; instead each Bureau will manage their own infrastructure investments. The FY2013 Exhibit 53 data reflects the Treasury submission to OMB on September 12, 2011; this data may have further updates due to OMB Passback.