March 2022

DATA CENTER OPTIMIZATION

Agencies Continue to Report Mixed Progress against OMB's Targets

Accessible Version

GAO Highlight

DATA CENTER OPTIMIZATION

Agencies Continue to Report Mixed Progress against OMB's Targets

Why GAO Did This Study

In December 2014, Congress enacted federal IT acquisition reform legislation known as FITARA, which included provisions related to ongoing federal data center consolidation efforts. The high cost and low utilization led OMB to establish a coordinated, government-wide effort to improve the efficiency, performance, and environmental footprint of federal data center activities. OMB's Federal Chief Information Officer launched DCOI to build on prior efforts by requiring, among other things, that agencies consolidate inefficient infrastructure, optimize existing facilities, and transition to more efficient infrastructure, such as cloud services.

Congress included a provision in FITARA for GAO to annually review agencies' data center inventories and strategies. This report addresses (1) agencies' progress on data center closures and the related savings that have been achieved, and agencies' plans for future closures and savings; and (2) agencies' progress against OMB's data center optimization targets.

GAO reviewed the 24 DCOI agencies data center inventories as of June and August 2021, including their reported cost savings documentation and data center optimization strategic plans, and interviewed relevant agency officials

What GAO Recommends

GAO reiterates that agencies need to address the 25 recommendations previously made to them that have not yet been implemented. Of the 24 DCOI agencies and OMB, six agreed with the information presented in the report, eight neither agreed nor disagreed, and 11 had no comments.
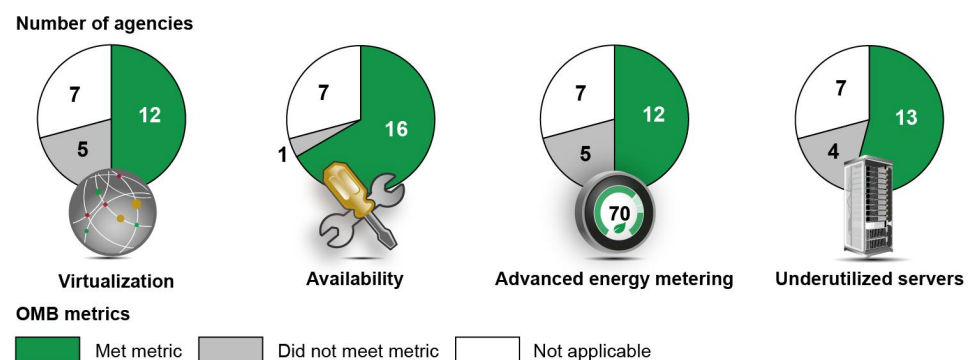
What GAO Found

In fiscal year 2020, 24 federal agencies closed a total of 96 data centers. As of August 2021, the agencies closed 51 data centers in fiscal year 2021, with 29 additional planned closures through the end of the fiscal year. Moreover, all 24 agencies met their related cost savings goals for fiscal year 2020, identifying $875.10 million in cost savings. Agencies also planned to meet their cost savings goals for fiscal year 2021, and as of August 2021 had identified $335.88 million in cost savings. As of August 2021, agencies expected to realize a cumulative total of $6.6 billion in cost savings and avoidances from fiscal years 2012 through 2021. However, closures and savings are expected to slow in the future according to agencies' Data Center Optimization Initiative (DCOI) strategic plans. For example, seven agencies reported that they plan to close 83 data centers in fiscal year 2022 through 2025, and save a total of $46.32 Million.

In addition, in fiscal year 2021 the DCOI agencies reported mixed progress against Office of Management and Budget's (OMB) four data center optimization targets for virtualization, data center availability, advance energy metering, and underutilized servers. (See figure) Seven agencies had completed their optimization efforts or had been granted exemptions by OMB; therefore, reporting on optimization metrics for these agencies was not applicable.

Agencies did not meet all of their targets for various reasons, including technical and budget constraints. GAO has made 126 recommendations since 2016 to help agencies meet their DCOI targets, and the agencies have implemented 101 of them. Until agencies fully address all previous GAO recommendations to meet their optimization performance targets, they are unlikely to fully realize the expected benefits, including cost savings from DCOI.

Agency-Reported Progress towards Meeting Office of Management and Budget (OMB) Data Center Optimization Targets, as of August 2021

Number of agencies

Virtualization: 12, 5, 7
Availability: 16, 1, 7
Advanced energy metering: 12, 5, 7 (70)
Underutilized servers: 13, 4, 7

OMB metrics

■ Met metric   ■ Did not meet metric   □ Not applicable

Source: GAO analysis of data from OMB's Information Technology Dashboard. | GAO-22-105118

United States Government Accountability Office

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Abbreviations

CIO	chief information officer
DCOI	Data Center Optimization Initiative
DHS	Department of Homeland Security
EPA	Environmental Protection Agency
FDCCI	Federal Data Center Consolidation Initiative
FITARA	Federal Information Technology Acquisition Reform Act
GSA	General Services Administration
HHS	Department of Health and Human Services
HUD	Department of Housing and Urban Development

NASA	National Aeronautics and Space Administration
NSF	National Science Foundation
NRC	Nuclear Regulatory Commission
OMB	Office of Management and Budget
SBA	Small Business Administration
SSA	Social Security Administration
USAID	U.S. Agency for International Development
VA	Department of Veterans Affairs

March 8, 2022

Congressional Committees

As federal agencies have increased their use of data processing and storage resources, the costs for maintaining the data centers that provide those resources have also increased. To reduce data center duplication and costs, the Office of Management and Budget's (OMB) Federal Chief Information Officer (CIO) launched two initiatives. The first initiative—the Federal Data Center Consolidation Initiative (FDCCI)—started in 2010 and aimed to reduce the number of data centers that were outdated or duplicative. The second initiative—the Data Center Optimization Initiative (DCOI)—was announced in August 2016 and superseded the previous initiative.[1] DCOI shifted the focus to optimizing agencies' remaining data centers by requiring, among other things, that agencies consolidate inefficient infrastructure, optimize existing facilities, and transition to more efficient infrastructure, such as cloud services.[2]

Congress has emphasized the importance of reforming the government-wide management of IT and, in December 2014, enacted Federal Information Technology Acquisition Reform provisions (commonly referred to as FITARA) as a part of the Carl Levin and Howard P. 'Buck' McKeon National Defense Authorization Act for Fiscal Year 2015.[3]

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[1]OMB, Data Center Optimization Initiative (DCOI), Memorandum M-16-19 (Washington, D.C.: Aug. 1, 2016).

[2]According to the National Institute of Standards and Technology, cloud services provide one or more capabilities via the cloud computing model. The cloud computing model enables ubiquitous, convenient, on-demand network access to a shared pool of configurable computing resources (e.g., networks, servers, storage, applications, and services).

[3]Pub. L. No. 113-291, division A, title VIII, subtitle D, 128 Stat. 3292, 3438 (Dec. 19, 2014). The original sunset date for the data center provisions of FITARA has been extended to October 1, 2022. 44 U.S.C. 3601 note.

Among the requirements related to federal data center consolidation, the act required:[4]

- Covered departments and agencies (agencies)[5] to report annually to OMB about their federal data center inventories and strategies to achieve consolidation, including yearly calculations of investments and cost savings.[6]

- OMB to develop goals for the amount of planned cost savings and optimization improvements that agencies are to achieve through FDCCI. OMB is to make the goals publicly available and compare progress against the goals.

In addition to these requirements, FITARA included a provision for GAO to annually review and verify the quality and completeness of federal data center inventories and consolidation strategies submitted by covered agencies. Our specific objectives for this review were to determine (1) agencies' progress on data center closures and the related savings that have been achieved, and agencies' plans for future closures and savings; and (2) agencies' progress against OMB's data center optimization targets.

To address the first objective, we obtained and analyzed data center inventory documentation from the 24 DCOI agencies available as of June

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[4]Pub. L. No. 113-291 § 834, 128 Stat. 3444–3448 (44 U.S.C. 3601 note). Unless otherwise noted, these requirements apply to the 24 agencies specified in section 834 (corresponding to those agencies covered by the Chief Financial Officers Act of 1990. 31 U.S.C. § 901(b)).

[5]The 24 agencies that are required to participate in the Data Center Optimization 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; and 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. These are the same agencies covered by FITARA's data center consolidation provisions.

[6]In lieu of submitting a data center inventory and strategy, the Department of Defense could submit this information as part of a defense-wide plan and report on cost savings, as required under §§ 2867(b)(2) and 2867(d) of the *National Defense Authorization Act for Fiscal Year 2012*.

and August 2021.[7] We used these analyses to identify the agencies' reported data center closures for fiscal year 2020 and from the start of fiscal year 2021 through August 2021. We also identified the agencies' planned future closures from September 2021 through the end of fiscal year 2025. We compared the agencies' completed and planned closures to their fiscal year 2021 consolidation goals, as documented in their DCOI strategic plans.

To verify the quality, completeness, and reliability of the agencies' data center inventories, we compared the information from our analysis on completed and planned data center closures to similar information OMB reported on its Federal IT Dashboard (IT Dashboard) and in agencies' DCOI strategic plans. We determined that the inventory data were sufficiently reliable to report on agencies' consolidation progress and planned closures.

To evaluate agencies' progress in and plans for achieving data center cost savings, we reviewed March and August 2021 cost savings and avoidance documentation[8] that the 24 DCOI agencies submitted in response to OMB's March 2013 PortfolioStat[9] and June 2019 data center initiative memorandums.[10] This documentation included the agencies' quarterly reports of cost savings and avoidances posted to their websites and discussed in their DCOI strategic plans.[11]

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[7]OMB collects agencies' data center inventory and cost savings on a quarterly basis, at the end of February, May, August, and November of each year. The November 2021 update was expected to include data for the full fiscal year and was available too late to be included in our review.

[8]Beginning in March 2013, OMB required agencies to report on both cost savings and cost avoidances. OMB defined cost savings as a reduction in actual expenditures below the projected level of costs to achieve a specific objective and defined a cost avoidance as the result of an action taken in the immediate time frame that will decrease costs in the future.

[9]Launched by OMB in 2012, PortfolioStat requires agencies to conduct an annual agency-wide IT portfolio review to, among other things, reduce commodity IT spending and demonstrate how their IT investments align with the agency's mission and business functions.

[10]OMB, *Fiscal Year 2013 PortfolioStat Guidance: Strengthening Federal IT Portfolio Management*, Memorandum M-13-09 (Washington, D.C.: Mar. 27, 2013); Memorandum M-16-19; and *Update to Data Center Optimization Initiative (DCOI)*, Memorandum M-19-19 (Washington, D.C.: June 25, 2019).

[11]We did not independently validate agencies' reported cost savings figures.

We determined cost savings achieved for fiscal year 2020 by adding agencies' reported savings and avoidances, as reported by May 2021.[12] To determine cost savings achieved for fiscal year 2021 and for the initiative overall, we used the August 2021 cost savings documentation. We added agencies' reported savings and avoidances from the start of fiscal year 2012 through August 2021, as found in the August 2021 quarterly reports posted to the agencies' digital strategy websites.[13] We identified by totaling the agencies' projected savings and avoidances for fiscal year 2021, as reported in their DCOI strategic plans.

To assess the quality, completeness, and reliability of each agency's data center consolidation cost savings information, we reviewed each agency's August 2021 quarterly cost savings report and DCOI strategic plan for errors and missing data, such as missing cost savings information. In addition, we compared agencies' reported cost savings and avoidances with data from our most recently issued report on data center consolidation.[14] Further, we obtained written responses from agency officials regarding the steps they took to ensure the accuracy and reliability of their cost savings data. Based on these actions, we determined that the data were sufficiently reliable to report on agencies' data center consolidation cost savings information.

To address the second objective, we assessed information on data center optimization efforts—both planned and achieved—for 17 of the 24 DCOI agencies,[15] as reported on OMB's IT Dashboard as of June and

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[12]We used the data agencies reported to OMB by June 2021 to ensure they had adequate time to identify their cost savings through the end of fiscal year 2020.

[13]Under FDCCI, which OMB launched in February 2010, agencies were required to begin immediately consolidating and closing data centers. However, current OMB guidance only requires agencies to report historical cost savings and avoidances realized since fiscal year 2012.

[14]GAO, *Data Center Optimization: Agencies Report Progress and Billions Saved, but OMB Needs to Improve Its Utilization Guidance,* GAO-21-212 (Washington, D.C.: Mar. 2021).

[15]Four agencies—the Departments of Education and Housing and Urban Development, and the General Services Administration and the U.S. Agency for International Development—reported that they did not own any data centers and, therefore, did not have a basis to measure and report on optimization progress. In addition, OMB's IT Dashboard indicated, as of September 2021, that the Department of Agriculture and Department of Homeland Security and the Environmental Protection Agency had completed their optimization efforts. Therefore, reporting on optimization metrics for these agencies is not applicable.

September 2021.[16] Specifically, we used the IT Dashboard information to identify how agencies' performed for fiscal year 2020 in achieving their optimization goals. We then compared the agencies' current optimization progress information to the agencies' fiscal year 2021 optimization targets, as documented on the IT Dashboard.[17]

To assess the reliability of the agencies' information about their progress in optimizing their data centers, as shown on OMB's IT Dashboard, we reviewed the information for errors or missing data; we also compared agencies' optimization progress information across multiple reporting quarters to identify any inconsistencies in their reported progress. In addition, we discussed with agency DCOI program officials the steps they took to ensure the accuracy and reliability of their reported progress. We determined the data were sufficiently complete and reliable to report on agencies' progress information. Appendix I provides a more detailed discussion of the objectives, scope, and methodology for our review.

We conducted this performance audit from March 2021 to February 2022 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.

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[16]The IT Dashboard is a public dashboard to display government-wide and agency-specific progress in areas such as planned and achieved data center closures, consolidation-related cost savings, and data center optimization performance information. The September 2021 update reported information collected from the agencies in August 2021.

[17]In June 2019, OMB announced four new optimization performance metrics: virtualization, data center availability, advanced energy metering, and server utilization.

Background

According to data submitted to OMB, federal agencies operated 432 data centers in 1998, 2,094 in July 2010, 5,607 in August 2016, and 5,916 in August 2018.[18] Operating such a large number of centers has been, and continues to be, a high cost to the agencies.[19] For example, in 2007, the Environmental Protection Agency (EPA) estimated that the annual cost for electricity to operate federal servers and data centers across the government was about $450 million. Further, according to the Department of Energy, a typical government data center can use 100 to 200 times as much energy as a commercial building.[20]

However, in 2009, OMB reported server utilization rates as low as 5 percent across the federal government's estimated 150,000 servers housed in these centers.[21] The high cost and low utilization led OMB to establish a coordinated, government-wide effort to improve the efficiency, performance, and environmental footprint of federal data center activities.

OMB subsequently launched FDCCI in 2010 to reduce the growing number of federal data centers. Among other things, under the initiative, OMB required agencies to consolidate inefficient infrastructure, optimize existing facilities, improve their security posture, and achieve cost savings. For example, each agency was required to maintain a complete inventory of all data center facilities owned, operated, or maintained by or on its behalf. Each agency also was to measure progress toward defined optimization performance metrics on a quarterly basis, as part of its data center inventory submission.

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[18]Between 1998 and 2016, OMB used several different definitions for a data center, which contributed to the increase in the number of centers reported.

[19]Costs include hardware, software, real estate, electricity, and heating and cooling.

[20]GAO, *Data Center Consolidation: Agencies Need to Complete Inventories and Plans to Achieve Expected Savings,* GAO-11-565 (Washington, D.C.: July 19, 2011).

[21]OMB, *Inventory of Federal Data Center Activity*, Budget Data Request No. 09-41 (Washington, D.C.: Aug. 10, 2009).

IT Acquisition Reform Law Enhanced Data Center Consolidation and Optimization Efforts

Recognizing the importance of reforming the government-wide management of IT, Congress enacted FITARA in December 2014. Among other things, FITARA required federal agencies to:[22]

- Submit to OMB a comprehensive inventory of the data centers owned, operated, or maintained by or on behalf of the agency.

- Submit a multi-year strategy to achieve the consolidation and optimization of the agency's data centers.[23] The strategy was to include performance metrics that were consistent with the government-wide data center consolidation and optimization metrics.

- Report to OMB on a quarterly basis, progress toward meeting government-wide data center consolidation and optimization metrics.

In addition, according to FITARA, the Administrator of the Office of Electronic Government within OMB was to, among other things:

- Establish metrics applicable to the consolidation and optimization of data centers (including server efficiency) and ensure that information related to agencies' progress toward meeting government-wide data center consolidation and optimization metrics was made available to the public in a timely manner.

- Develop and make publicly available no later than December 19, 2015, a goal (broken down by year) for the amount of planned cost savings and optimization improvements that were to be achieved through FDCCI; and, for each year thereafter until October 1, 2022,

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[22]Pub. L. No. 113-291 § 834, 128 Stat. 3444–3448 (44 U.S.C. 3601 note). Unless otherwise noted, these requirements apply to the 24 agencies specified in section 834 (corresponding to those agencies covered by the *Chief Financial Officers Act of 1990*. 31 U.S.C. § 901(b)).

[23]In lieu of submitting a data center inventory and strategy, the Department of Defense could submit this information as part of a defense-wide plan and report on cost savings, as required under §§ 2867(b)(2) and 2867(d) of the *National Defense Authorization Act for Fiscal Year 2012*.

compare reported cost savings and optimization improvements against those goals.[24]

OMB Established DCOI to Provide Oversight of FITARA Data Center Consolidation and Optimization Requirements

In August 2016, OMB issued Memorandum M-16-19, which established DCOI and included guidance on how to implement the data center consolidation and optimization provisions of FITARA.[25] In June 2019, OMB issued Memorandum M-19-19, which updated DCOI and redefined a data center as a purpose-built, physically separate, dedicated space that meets certain criteria.[26] The memorandum also directed agencies to focus their efforts on their tiered data centers and stop reporting on spaces not designed as data centers (i.e., non-tiered data centers) as part of their inventory.[27] The guidance outlined a process by which agencies could request, and OMB would approve, that these facilities no longer be reported.

Since 2016, we have reported on OMB's DCOI requirements for agencies and have made recommendations to improve OMB's oversight of DCOI.[28] In addition, since the enactment of FITARA, we have annually reviewed agencies' efforts to implement the data center provisions of FITARA and have published reports documenting the findings from each of these

[24]The original sunset date for the data center provisions of FITARA has been extended to October 1, 2022. 44 U.S.C. 3601 note.

[25]OMB, Memorandum M-16-19.

[26]OMB, Memorandum M-19-19. According to OMB Memorandum M-19-19 and related reporting instructions, a data center generally is a purpose-built, physically separate, and dedicated space that contains one or more racks of servers, mainframes, and/or high-performance computers; has a dedicated uninterruptable power supply and/or backup generator for prolonged power outages; and/or has a dedicated cooling system or zone. Agencies are to report facilities matching these criteria as tiered data centers.

[27]OMB derived the term "tiered" and its definition from the Uptime Institute's Tier Classification System. However, OMB notes that no specific certification is required in order for a data center to be considered tiered by OMB. According to OMB M-16-19, all data centers not marked as tiered should be considered non-tiered.

[28]GAO-21-212; GAO, *Data Center Consolidation: Agencies Making Progress, but Planned Savings Goals Need to Be Established [Reissued on March 4, 2016],* GAO-16-323 (Washington, D.C.: Mar. 3, 2016); *Data Center Consolidation: Reporting Can Be Improved to Reflect Substantial Planned Savings*

reviews.[29] We noted that while agencies were reporting progress towards DCOI data center closures, cost savings, and optimization goals, many agencies had incomplete optimization plans and were not meeting those goals.

Accordingly, we have made 126 recommendations that span fiscal years 2016 through 2021 to improve agencies' optimization plans and help them meet DCOI goals. As of December 2021, agencies had implemented 101 of the 126 recommendations; however, 25 recommendations had not yet been fully addressed. A summary of our previous reports and recommendations is found in appendix II.

Agencies Report Progress in Meeting Data Center Closures and Related Savings, and Plan Fewer Closings and Savings in the Future

Almost All Agencies Reported Meeting Data Center Closure Goals for Fiscal Year 2020

In fiscal year 2020, 23 of the 24 agencies participating in the Data Center Optimization Initiative (DCOI) reported that they had met or exceeded their DCOI closure goals. A single agency, the Department of Commerce, did not achieve its planned data center closure goals for fiscal year 2020. Commerce had initially targeted to close three data centers for fiscal year 2020. According to Commerce officials closed two data centers in fiscal year 2020 and closed the third data center in fiscal year 2021 due to COVID-19-related disruptions.

Collectively, agencies had expected to close 46 data centers in fiscal year 2020, and they actually closed 96.

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[29]GAO, *Data Center Optimization: Agencies Report Progress, but Oversight and Cybersecurity Risks Need to Be Addressed*, GAO-20-279 (Washington, D.C.: Mar. 5, 2020); GAO-19-241; *Data Center Optimization: Continued Agency Actions Needed to Meet Goals and Address Prior Recommendations,* GAO-18-264 (Washington, D.C.: May 23, 2018); *Data Center Optimization: Agencies Need to Address Challenges and Improve Progress to Achieve Cost Savings Goal,* GAO-17-448 (Washington, D.C.: Aug. 15, 2017); *Data Center Optimization: Agencies Need to Complete Plans to Address Inconsistencies in Reported Savings,* GAO-17-388 (Washington, D.C.: May 18, 2017); and GAO-16-323.

Figure 1 summarizes the status of agency reported data center closure goals for fiscal year 2020.

Figure 1: Agency-Reported Status of Office of Management and Budget (OMB) Fiscal Year 2020 Data Center Closure Goals
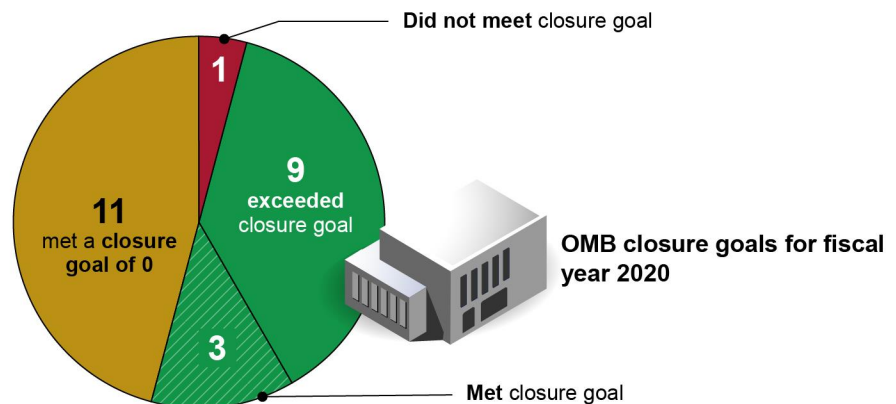
Source: GAO analysis of data from OMB's Information Technology Dashboard. | GAO-22-105118

Of the 24 agencies:

- Eleven reported that they did not plan to close any data centers in fiscal year 2020 and closed no data centers during the fiscal year.[30]

- Nine reported that they had exceeded their closure goals for the fiscal year. This included two agencies that had not planned to close any data centers.[31]

- Three met their closure goals.[32]

- One (Commerce) did not met its closure goal.

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[30]The agencies that had a goal of zero closures for fiscal year 2020 were the Department of Education, Homeland Security, Housing and Urban Development, and Environmental Protection Agency, General Services Administration, National Aeronautics and Space Administration, National Science Foundation, Nuclear Regulatory Commission, Small Business Administration, Social Security Administration, and the U.S. Agency for International Development.

[31]Those agencies were the Departments of Agriculture, Energy, Defense, Health and Human Services, Interior, Labor, State, Treasury, and Veterans Affairs. Labor and State had a goal of zero closures for fiscal year 2020.

[32]Those agencies were the Departments of Justice, Transportation, and Office of Personnel Management.

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All 24 DCOI Agencies Met or Plan to Meet OMB's Fiscal Year 2021 Data Center Closure Goals

In fiscal year 2021, all 24 agencies participating in DCOI reported that they met or plan to meet their fiscal year data center closure targets as of August 2021. Overall, the agencies surpassed their cumulative goal of closing 43 data centers during fiscal year 2021. Specifically, as of August 2021, the agencies had closed 51 data centers, with 29 additional closures planned in the future.

Of the 24 agencies:

- Seven reported that they had exceeded their closure goals for the fiscal year. This included three agencies that had not planned to close any data centers.[33]

- Three (the Departments of Defense, Veterans Affairs (VA), and the Environmental Protection Agency) reported that they had met their closure goals for the fiscal year.

- Two (the Departments of Energy[34] and Justice[35]) reported that they did not meet their closure goals but plan to meet them.

- Twelve reported that they did not plan to close any data centers in fiscal year 2021 and closed no data centers during the fiscal year.[36]

Table 1 details, for each of the 24 agencies, the number of data centers open at the start of fiscal year 2021, the agency's fiscal year 2021 closure

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[33]The agencies that had exceeded their closure goals for fiscal year 2021 are the Departments of Commerce, the Interior, Labor, State, the Treasury, and the National Aeronautics and Space Administration and Social Security Administration.

[34]The Department of Energy Office of the CIO stated that the organization still has some time to close out their data centers. Component offices typically wait until the fiscal year is over to confirm which data centers closed. The officials stated that this helps the department identify what targets to put in the strategic plan for the new fiscal year.

[35]Justice is migrating one closing data center to a service cloud provider. The migration began in fiscal year 2021; however, Justice delayed the final migration step into fiscal year 2022 to avoid conflict between final migration activities and the agency's fiscal year-end closeout activities.

[36]The agencies that had a goal of zero closures for fiscal year 2021 were the Departments of Agriculture, Education, Homeland Security, Health and Human Services, Housing and Urban Development, Transportation and General Services Administration, Office of Personnel Management, National Science Foundation, Nuclear Regulatory Commission, Small Business Administration, and the U.S. Agency for International Development.

goal, the number of data centers closed, the number planned for closure during the remainder of fiscal year 2021, and data center closures planned for fiscal years 2021 through 2025, as of August 2021.

Table 1: Agency-Reported Data Center Optimization Initiative (DCOI) Strategic Plan Fiscal Year (FY) 2021 Closure Goals and the Number of Data Centers Reported as Closed in FY 2021, as of August 2021

Agency	Open at start of FY21	DCOI FY21 closure goal	Closed as of August 2021	Additional planned FY21 closures	Additional Planned Closures FY22-FY25	Met or plans to meet FY 21 closure goal?
Department of Agriculture	2	0	0	0	0	Yes
Department of Commerce	30	2	3	2	1	Yes
Department of Defense	650	18	18	12	65	Yes
Department of Education	N/A	0	0	0	0	Yes
Department of Energy	94	5	4	5	0	Yes
Department of Health and Human Services	60	0	0	2	2	Yes
Department of Homeland Security	20	0	0	0	3	Yes
Department of Housing and Urban Development	3	0	0	0	0	Yes
Department of the Interior	54	2	3	0	4	Yes
Department of Justice	13	1	0	3	6	Yes
Department of Labor	10	0	3	0	0	Yes
Department of State	141	2	3	3	1	Yes
Department of Transportation	211	0	0	0	0	Yes
Department of the Treasury	110	1	3	0	0	Yes
Department of Veterans Affairs	287	11	11	2	0	Yes
Environmental Protection Agency	4	1	1	0	0	Yes
General Services Administration	4	0	0	0	0	Yes
National Aeronautics and Space Administration	19	0	1	0	0	Yes
National Science Foundation	1	0	0	0	0	Yes
Nuclear Regulatory Commission	3	0	0	0	0	Yes
Office of Personnel Management	2	0	0	0	1	Yes
Small Business Administration	8	0	0	0	0	Yes
Social Security Administration	12	0	1	0	0	Yes
U.S. Agency for International Development	N/A	0	0	0	0	Yes
Total	**1,738**	**43**	**51**	**29**	**83**	

Source: GAO analysis of agency data. | GAO-22-105118

All 24 Agencies Continued to Report Data Center-Related Cost Savings for Fiscal Year 2020

In fiscal year 2020, agencies participating in DCOI reported progress in achieving cost savings from data center-related activities.[37] Our previous report noted that, as of August 2020, the DCOI agencies planned to achieve $783.62 million in savings by the end of fiscal year 2020. As of May 2021, 18 of 24 agencies identified $875.10 million in cost savings for fiscal year 2020. The remaining six agencies had a cost savings goal of $0 and reported achieving no savings.[38] As of May 2021, all 24 agencies met or exceeded their cost savings goals for fiscal year 2020.

Figure 2 provides a summary of the number of agencies that exceeded, met, or did not meet their data center-related cost savings goals for fiscal year 2020.

Figure 2: Agency-Reported Office of Management and Budget (OMB) Status of Fiscal Year 2020 Data Center Related Cost Savings Goals
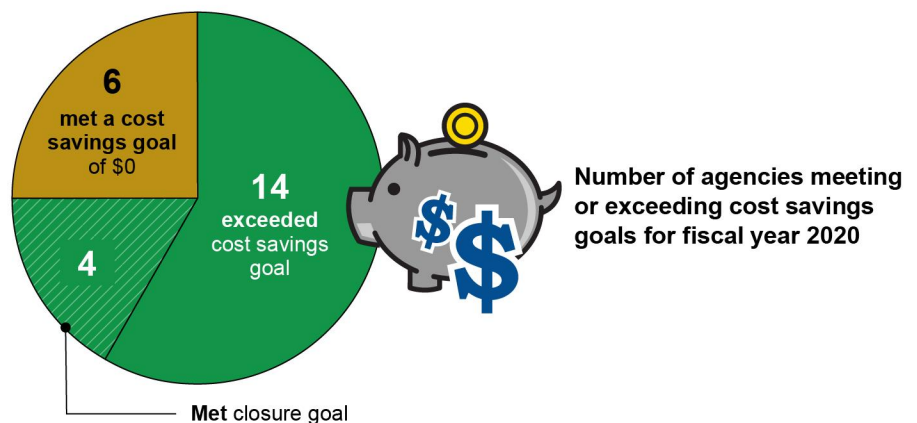
Source: GAO analysis of data from OMB's Information Technology Dashboard. | GAO-22-105118

[37]OMB Memorandum M-13-09 defines cost savings as a reduction in actual expenditures below the projected level of costs to achieve a specific objective and defines cost avoidances as results from an action taken in the immediate time frame that will decrease costs in the future.

[38]The agencies that had a savings goal of $0 for fiscal year 2020 were the Departments of Education, and Housing and Urban Development; and the Environmental Protection Agency, General Services Administration, National Science Foundation, and Nuclear Regulatory Commission.

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Of the 24 agencies reporting savings:

- Fourteen agencies exceeded their cost savings goals for fiscal year 2020.[39] Among those agencies, the Department of Commerce had a cost savings goal of $0, yet achieved $4 million. The combined savings from these 14 agencies was $645.10 million.

- Six agencies had a cost savings goal of $0 and achieved $0 in cost savings.[40]

- Four agencies—Departments of Defense, Homeland Security, Treasury, and the National Aeronautics and Space Administration— met their cost savings goal. The combined savings from these four agencies was $230 million.

Agencies Met or Exceeded Data Center-Related Cost Savings Goals for Fiscal Year 2021

Agencies that participate in DCOI cumulatively identified a total of $603.80 million in planned data center-related savings for fiscal year 2021 within their strategic plans. As of August 2021, 14 of the 24 agencies had realized $359.26 million in data center-related savings for fiscal year 2021.

Specifically, eight agencies have exceeded their target goal,[41] and 8 agencies had a goal of $0 and reported $0 for cost saving in fiscal 2021.[42] As of August 2021, seven agencies had not met their cost savings goals

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[39]The agencies that have exceeded their fiscal year 2020 cost savings goal were the Departments of Agriculture, Commerce, Energy, Health and Human Services, the Interior, Justice, Labor, State, Transportation, and Veterans Affairs; and the Office of Personnel Management, Small Business Administration, Social Security Administration, and the U.S. Agency for International Development.

[40]The agencies that had a savings goal of $0 for fiscal year 2020 were the Departments of Education, and Housing and Urban Development; and the Environmental Protection Agency, General Services Administration, National Science Foundation, and Nuclear Regulatory Commission.

[41]The agencies that exceeded their target cost savings goal for fiscal year 2021 were the Departments of Agriculture, Commerce, Defense, Energy, the Interior, Justice, and Labor; and the U.S. Agency for International Development (USAID).

[42]The agencies that had a savings goal of $0 for fiscal year 2021 were the Departments of Education and Housing and Urban Development; and the Environmental Protection Agency, General Services Administration, National Science Foundation, National Regulatory Commission, Office Personal Management, Small Business Administration.

for fiscal year 2021, but planned to achieve an additional $267.92 million in savings by the end of the fiscal year.[43]

Table 2 provides a breakdown of agencies' planned and achieved data center-related cost savings for fiscal year 2021, as of August 2021. It also shows the agencies' additional planned savings for fiscal year 2021, as reflected in their DCOI strategic plans and quarterly reporting.

[43]The agencies that plan to meet to their cost savings goal for fiscal year 2021 were the Departments of Homeland Security, Health Human Services, State, the Treasury, and Veteran Affairs, and Social Security Administration and National Aeronautics and Space Administration.

Table 2: Agency-Reported Data Center Optimization Initiative (DCOI) Planned and Achieved Cost Savings for Fiscal Year (FY) 2021, as of August 2021

Dollars in millions

Agency	DCOI planned savings	Achieved savings for FY 2021	Difference between planned and achieved
Department of Agriculture	2	10.69	8.689
Department of Commerce	1	4.89	3.89
Department of Defense	219.2	234.5	15.3
Department of Education	0	0	0
Department of Energy	.35	2.47	2.12
Department of Health and Human Services	6.5	0	(6.5)
Department of Homeland Security	2.22	.02	(2.2)
Department of Housing and Urban Development	0	0	0
Department of the Interior	1	1.259	.259
Department of Justice	.89	1.198	.308
Department of Labor	0	16.75	16.75
Department of State	94.4	32	62.4
Department of Transportation	.73	2.349	1.62
Department of the Treasury	17.50	17.50	17.50
Department of Veterans Affairs	7.8	5.91	(1.89)
Environmental Protection Agency	0	0	0
General Services Administration	0	0	0
National Aeronautics and Space Administration	0.206	0.17	(0.04)
National Science Foundation	0	0	0
Nuclear Regulatory Commission	0	0	0
Office of Personnel Management	0	0	0
Small Business Administration	0	0	0
Social Security Administration	250	0	(250)
U.S. Agency for International Development	0	6.173	6.173
Total	**$603.80**	**$335.88**	**$267.92**

Source: GAO analysis of agency data. | GAO-22-105118

Note: Numbers may not add due to rounding.

Agencies that planned but did not report achieving any cost savings provided various reasons for why they had not done so. For example:

- The Department of Homeland Security (DHS) Office of Chief Information Officer reports cost savings annually rather than quarterly because of the level of effort to collect commodity cost savings across the department's components. According to Department officials, the

last published cost savings amount was posted in November 2020, with the next annual cost savings reported on the DHS.gov Digital Strategy page in November 2021. Furthermore, officials anticipate reaching the fiscal year 2021 goal in November 2021 based on component projected savings reported in November 2020 for plans to reduce spending on specific services.

• Officials at the Department of Veteran Affairs Office of the CIO stated that the department would not meet its entire fiscal year 2021 cost savings in August. However, by September of 2021, they will meet the November OMB Integrated Data Collection deadline.

Agencies Have Planned Fewer Data Center Closures and Less Cost Savings under DCOI Initiative

In recent years, agencies have been planning for fewer data center closures. For example, 10 agencies had set a goal of zero closures for fiscal year 2019, 11 agencies reported a goal of zero closures in fiscal year 2020, and 12 agencies had zero planned closures in fiscal year 2021. Further, an additional seven agencies are not planning for future closures.

Looking at agencies' closure plans for fiscal year 2022 and beyond, eight agencies reported that they plan to close 83 data centers in fiscal year 2022 through 2025. Specifically, the Departments of Commerce, Defense, Health and Human Services, Homeland Security, Justice, and State plan to close 49 data centers in fiscal year 2022. In addition, two agencies, the Departments of Defense, and Interior plan to close 12 data centers in fiscal year 2023. No other agencies have planned closures. The reason for agencies not having planned closures varied.

• Officials from the National Aeronautics and Space Administration's (NASA) Office of the CIO stated that the agency does not have any future planned data center closures because it reached its total closure goal for the DCOI initiative.

• Officials from the Department of Agriculture's Office of the CIO stated that the agency does not have any planned closures because it had closed all data centers that were marked for closure as of June 2020. The agency is keeping two key mission facilities open, a production data center and its back-up.

• In addition, officials from the Department of Education, Department of Housing and Urban Development (HUD), General Services

Administration (GSA), and U.S. Agency for International Development (USAID) reported that they no longer own any data centers and therefore do not have to plan additional closures.

Agencies are also planning for less cost savings under the initiative. While agencies collectively planned to realize a cumulative total of $6.6 billion in cost savings and avoidances from fiscal years 2012 through 2021, expected savings are much lower in the future. For example, in fiscal year 2020, agencies expected to achieve a total of $783.62 million in cost savings, with eight agencies planning for zero cost savings. In fiscal year 2021, agencies were expected to achieve $603.80 million with 13 of the agencies planning for zero in cost savings. Looking ahead for fiscal years 2022 through 2025, seven of the 24 agencies are planning for a total of $46.32 million in planned cost savings, with 17 agencies planning for zero cost savings.

Agencies Continue to Report Mixed Progress against Optimization Metrics

FITARA required OMB to establish metrics to measure the optimization of agencies' use of their data centers, including, at a minimum, server efficiency. The act also required OMB to ensure that agencies' progress toward meeting those metrics is made available to the public.

Pursuant to this requirement, OMB developed performance measures that have been revised over time and reported agencies' progress against those measures on the IT Dashboard. Most recently, in 2019, OMB issued revised DCOI guidance that defined a set of four (three revised and one new) data center optimization metrics to replace the five previous metrics.

According to the OMB memorandum that published these changes, the new metrics were intended to focus optimization efforts in key areas where agencies can make meaningful improvements and achieve further cost savings through optimization.[44] Table 3 provides a description of the four current data center optimization metrics and how each metric is to be calculated.

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[44]OMB, Memorandum M-19-19.

Table 3: The Office of Management and Budget's (OMB) Four Data Center Optimization Initiative Metrics

Metric	Description	Applicable agency-owned data centers	How the metric is calculated
Virtualization	The number of servers and mainframes serving as a virtual host in an agency-managed data center.	Tiered data centers	Count of agency-reported servers and mainframes serving as virtual hosts.
Data center availability	Ratio of uptime to downtime in data centers.	Tiered data centers	Expected number of available hours minus unplanned downtime, divided by the expected available hours.
Advanced energy metering	The number of data centers with advanced energy metering covering the majority of their floor space.	Tiered data centers	Count of agency-reported data centers with advanced energy metering in place.
Underutilized servers	The number of underutilized production servers in federal data centers.	Tiered data centers	Count of agency-reported underutilized servers.

Source: OMB | GAO analysis of agency data | GAO-22-105118

According to OMB's June 2019 revised DCOI guidance, agencies are to focus their optimization efforts on their remaining open, agency-owned, tiered data centers. OMB also included in the guidance its plans to work with the agencies to set agency-specific optimization performance targets for each fiscal year. According to staff in OMB's Office of the Federal CIO, these targets are to be established by fiscal year and progress toward meeting them is shown on the IT Dashboard.

Agencies Reported Mixed Progress in Data Center Optimization for Fiscal Year 2020

As of September 2021, the 18 DCOI agencies with applicable data centers reported mixed progress in meeting OMB's fiscal year 2020 data center optimization targets. Of those 18 agencies, 15 reported meeting three or more targets at the end of fiscal year 2020.[45] Also, two agencies—Energy and Treasury—reported that they had met two targets, and one—the Department of Health and Human Services (HHS)—reported meeting one of the targets.

The remaining six agencies—Education, DHS, HUD, EPA, GSA, and USAID—reported that they did not have any applicable agency-owned data centers in their inventories and, therefore, did not have a basis to

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[45]The Departments of Agriculture, Commerce, Defense, the Interior, Justice, Labor, State, and Transportation; and NASA, the National Science Foundation, Nuclear Regulatory Commission, Office of Personnel Management, Small Business Administration, Social Security Administration and Veteran Affairs reported meeting three or more of the four optimization targets.

measure and report optimization progress. Figure 3 summarizes the DCOI agencies' progress in meeting fiscal year 2020 optimization targets.

Figure 3: Number of Agencies Meeting Each Fiscal Year 2020 Optimization Target

Number of agencies

| Virtualization | Availability | Advanced energy metering | Underutilized servers |

Office of Management and Budget (OMB) metrics

- Met metric
- Did not meet metric
- Not applicable
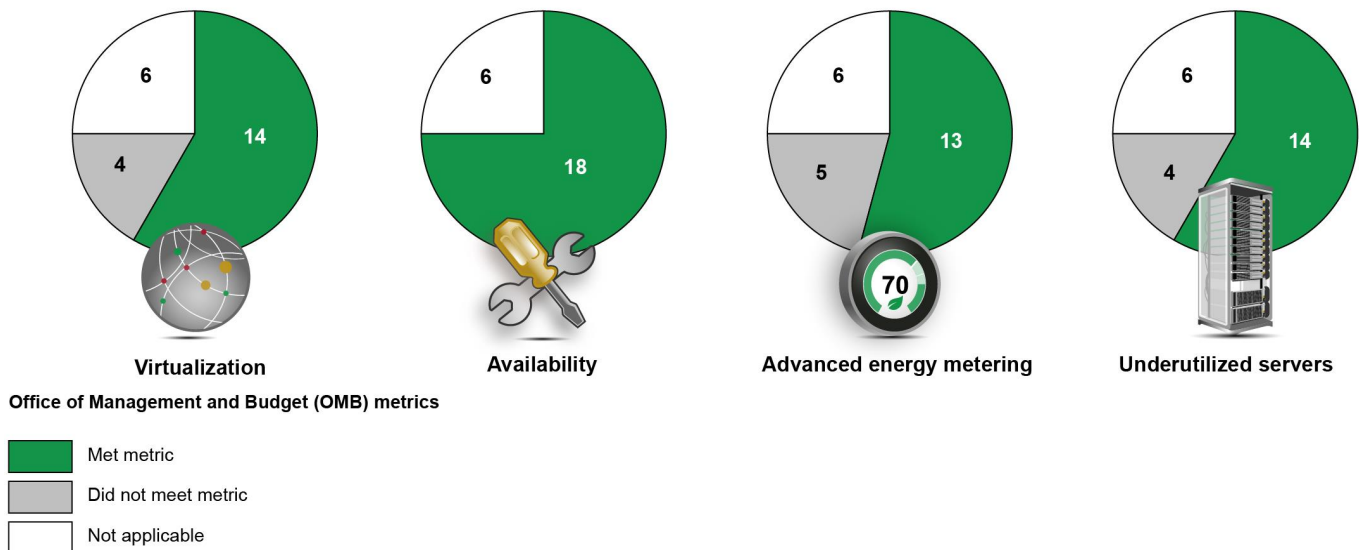
Source: GAO analysis of data from OMB's Information Technology Dashboard. | GAO-22-105118

The reasons agencies provided for not meeting their targets varied. For example:

- An HHS official reported that the department is focusing on a cloud strategy that involves less virtualization of physical servers. Once those cloud providers are removed from the inventory, as not agency owned, the server is not counted and the virtualization number is lowered making the target harder to achieve.

- Officials in the Small Business Administration (SBA) Office of the Chief Information Officer (CIO) reported that the agency did not meet its server utilization target due to inaccuracies in calculating average utilization, which impeded the agency's ability to find and remove underutilized servers. Furthermore, the agency measured server utilization as a combined metric with automated monitoring, making the target more difficult to achieve.

Agencies Reported Mixed Progress in Data Center Optimization for Fiscal Year 2021

Overall, agencies continued to report mixed progress in meeting their fiscal year 2021 optimization metrics as of August 2021. While the fiscal year was not complete as of August 2021, the number of agencies meeting their targets was lower than in fiscal year 2020. With regards to the data center optimization targets, in fiscal year 2021, 12 agencies reported that they met OMB's target for virtualization, 16 agencies reported that they met the target for availability,12 agencies reported that they had met the targets for advanced energy metering, and 13 agencies reported that they had met the targets for server utilization. Figure 4 summarizes the 24 agencies' progress in meeting each optimization target as of August 2021.

Figure 4: Progress toward Meeting Office of Management and Budget (OMB) Data Center Optimization Targets, as Reported by Federal Agencies as of August 2021

Number of agencies

Virtualization: 12, 7, 5
Availability: 16, 7, 1
Advanced energy metering: 12, 7, 5 (70)
Underutilized servers: 13, 7, 4

OMB metrics

- Met metric
- Did not meet metric
- Not applicable
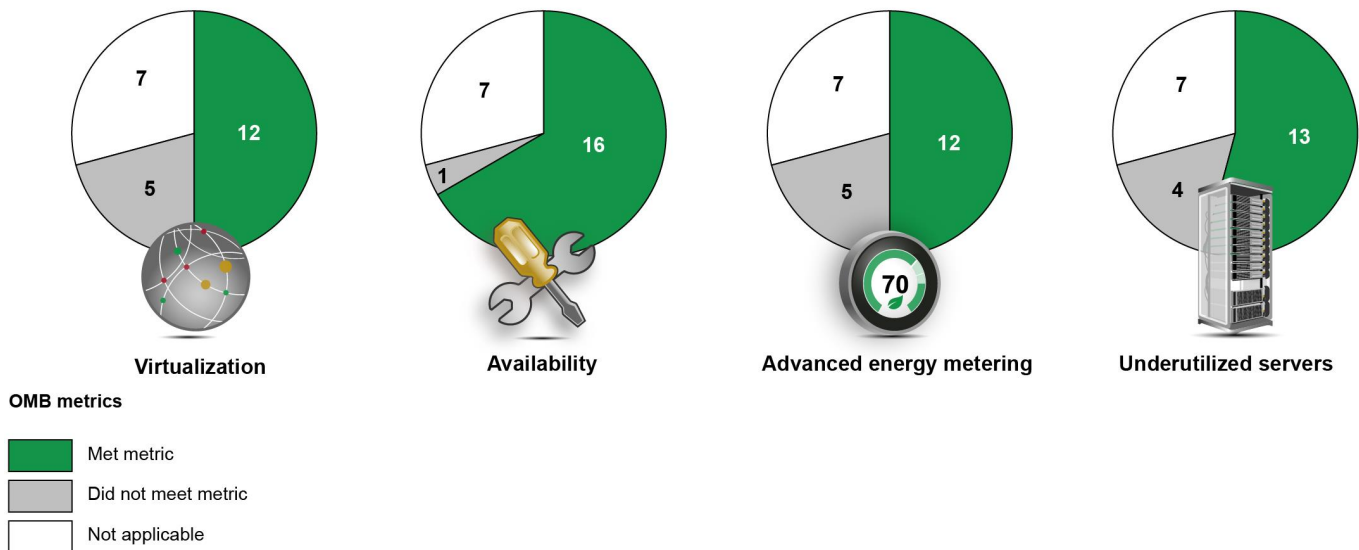
Source: GAO analysis of data from OMB's Information Technology Dashboard. | GAO-22-105118

In addition, individual agencies had mixed progress against their targets. Of the 17 agencies with a basis to report against OMB's optimization targets:[46]

- Nine reported that they met all four of their optimization targets.[47]

- Three reported that they met three of four targets.[48]

- Three reported that they met two targets.[49]

- Two reported that they met one target.[50]

Table 4 summarizes the progress of DCOI agencies in meeting each optimization target as of August 2021.

[46]As of September 2021, the IT Dashboard reported that the Departments of Agriculture, Education, Homeland Security, and Housing and Urban Development, and the Environmental Protection Agency, General Services Administration, and the U.S. Agency for International Development had completed their optimization efforts. Therefore, reporting on optimization metrics for these agencies is not applicable.

[47]As of September 2021, the IT Dashboard reported that the Departments of Commerce, the Interior, Justice, Labor, State, Transportation; and the National Aeronautics and Space Administration, Office of Personnel Management, and Social Security Administration met all four of their optimization targets.

[48]As of September 2021, the IT Dashboard reported that the Departments of the Treasury and Veterans Affairs; and the National Science Foundation met three of four optimization targets.

[49]As of September 2021, the IT Dashboard reported that the Department of Defense, Nuclear Regulation Commission, and Small Business Administration met two optimization targets.

[50]As of September 2021, the IT Dashboard reported that the Departments of Energy and Health and Human Services met one of the optimization targets.

Table 4: Agency-Reported Progress in Meeting Data Center Optimization Performance Targets Set by the Office of Management and Budget (OMB), as of August 2021

Agency	tualization	Availability	Advanced energy metering	Server utilization
Department of Agriculture[a]	NOT APPLICABLE—THE AGENCY DID NOT HAVE ANY AGENCY-OWNED DATA CENTERS OR ITS REMAINING CENTERS ARE EXEMPTED FROM OPTIMIZATION BY OMB.	NOT APPLICABLE—AGENCY DID NOT VE ANY AGENCY-ED DATA CENTERS R ITS REMAINING CENTERS ARE XEMPTED FROM MIZATION BY OMB.	NOT APPLICABLE—AGENCY DID NOT HAVE AGENCY-OWNED DATA CENTERS OR ITS AINING CENTERS ARE EXEMPTED FROM TIMIZATION BY OMB.	NOT APPLICABLE—E AGENCY DID NOT ANY AGENCY-OWNED TA CENTERS OR ITS AINING CENTERS ARE EXEMPTED FROM TIMIZATION BY OMB.
Department of Commerce	fully met-the agency's reported progress met or exceeded OMB's fiscal year 2021 target for the related metric.	fully met-the agency's reported progress met or exceeded OMB's fiscal year 2021 target for the related metric.	fully met-the agency's reported progress met or exceeded OMB's fiscal year 2021 target for the related metric.	fully met-the agency's reported progress met or exceeded OMB's fiscal year 2021 target for the related metric.
Department of Defense	not met—the agency's reported progress did not meet OMB's fiscal year 2021 target for the related metric.	fully met-the agency's reported progress met or exceeded OMB's fiscal year 2021 target for the related metric.	not met—the agency's reported progress did not meet OMB's fiscal year 2021 target for the related metric.	fully met-the agency's reported progress met or exceeded OMB's fiscal year 2021 target for the related metric.
Department of Education[a]	NOT APPLICABLE—THE AGENCY DID NOT HAVE ANY AGENCY-OWNED DATA CENTERS OR ITS REMAINING CENTERS ARE EXEMPTED FROM OPTIMIZATION BY OMB.	NOT APPLICABLE—THE AGENCY DID NOT HAVE ANY AGENCY-OWNED DATA CENTERS OR ITS REMAINING CENTERS ARE EXEMPTED FROM OPTIMIZATION BY OMB.	NOT APPLICABLE—THE AGENCY DID NOT HAVE ANY AGENCY-OWNED DATA CENTERS OR ITS REMAINING CENTERS ARE EXEMPTED FROM OPTIMIZATION BY OMB.	NOT APPLICABLE—THE AGENCY DID NOT HAVE ANY AGENCY-OWNED DATA CENTERS OR ITS REMAINING CENTERS ARE EXEMPTED FROM OPTIMIZATION BY OMB.
Department of Energy	not met—the agency's reported progress did not meet OMB's fiscal year 2021 target for the related metric.	fully met-the agency's reported progress met or exceeded OMB's fiscal year 2021 target for the related metric.	not met—the agency's reported progress did not meet OMB's fiscal year 2021 target for the related metric.	not met—the agency's reported progress did not meet OMB's fiscal year 2021 target for the related metric.
Department of Health and Human Services	not met—the agency's reported progress did not meet OMB's fiscal year	fully met-the agency's reported progress met or exceeded OMB's fiscal year 2021	not met—the agency's reported progress did not meet OMB's fiscal year 2021 target for the related metric.	not met—the agency's reported progress did not meet OMB's fiscal year 2021 target for the related metric.

	2021 target for the related metric.	target for the related metric.		
Department of Homeland Security[b]	NOT APPLICABLE— THE AGENCY DID NOT HAVE ANY AGENCY-OWNED DATA CENTERS OR ITS REMAINING CENTERS ARE EXEMPTED FROM OPTIMIZATION BY OMB.	NOT APPLICABLE—THE AGENCY DID NOT HAVE ANY AGENCY-OWNED DATA CENTERS OR ITS REMAINING CENTERS ARE EXEMPTED FROM OPTIMIZATION BY OMB.	NOT APPLICABLE— THE AGENCY DID NOT HAVE ANY AGENCY-OWNED DATA CENTERS OR ITS REMAINING CENTERS ARE EXEMPTED FROM OPTIMIZATION BY OMB.	NOT APPLICABLE— THE AGENCY DID NOT HAVE ANY AGENCY-OWNED DATA CENTERS OR ITS REMAINING CENTERS ARE EXEMPTED FROM OPTIMIZATION BY OMB.
Department of Housing and Urban Development[a]	NOT APPLICABLE— THE AGENCY DID NOT HAVE ANY AGENCY-OWNED DATA CENTERS OR ITS REMAINING CENTERS ARE EXEMPTED FROM OPTIMIZATION BY OMB.	NOT APPLICABLE—THE AGENCY DID NOT HAVE ANY AGENCY-OWNED DATA CENTERS OR ITS REMAINING CENTERS ARE EXEMPTED FROM OPTIMIZATION BY OMB.	NOT APPLICABLE— THE AGENCY DID NOT HAVE ANY AGENCY-OWNED DATA CENTERS OR ITS REMAINING CENTERS ARE EXEMPTED FROM OPTIMIZATION BY OMB.	NOT APPLICABLE—THE AGENCY DID NOT HAVE ANY AGENCY-OWNED DATA CENTERS OR ITS REMAINING CENTERS ARE EXEMPTED FROM OPTIMIZATION BY OMB.
Department of the Interior	fully met-the agency's reported progress met or exceeded OMB's fiscal year 2021 target for the related metric.	fully met-the agency's reported progress met or exceeded OMB's fiscal year 2021 target for the related metric.	fully met-the agency's reported progress met or exceeded OMB's fiscal year 2021 target for the related metric.	fully met-the agency's reported progress met or exceeded OMB's fiscal year 2021 target for the related metric.
Department of Justice	fully met-the agency's reported progress met or exceeded OMB's fiscal year 2021 target for the related metric.	fully met-the agency's reported progress met or exceeded OMB's fiscal year 2021 target for the related metric.	fully met-the agency's reported progress met or exceeded OMB's fiscal year 2021 target for the related metric.	fully met-the agency's reported progress met or exceeded OMB's fiscal year 2021 target for the related metric.
Department of Labor	fully met-the agency's reported progress met or exceeded OMB's fiscal year 2021 target for the related metric.	fully met-the agency's reported progress met or exceeded OMB's fiscal year 2021 target for the related metric.	fully met-the agency's reported progress met or exceeded OMB's fiscal year 2021 target for the related metric.	fully met-the agency's reported progress met or exceeded OMB's fiscal year 2021 target for the related metric.
Department of State	fully met-the agency's reported progress met or exceeded OMB's fiscal year 2021 target for the related metric.	fully met-the agency's reported progress met or exceeded OMB's fiscal year 2021 target for the related metric.	fully met-the agency's reported progress met or exceeded OMB's fiscal year 2021 target for the related metric.	fully met-the agency's reported progress met or exceeded OMB's fiscal year 2021 target for the related metric.
Department of Transportation	fully met-the agency's reported progress	fully met-the agency's reported	fully met-the agency's reported progress met	fully met-the agency's reported progress met

	met or exceeded OMB's fiscal year 2021 target for the related metric.	progress met or exceeded OMB's fiscal year 2021 target for the related metric.	or exceeded OMB's fiscal year 2021 target for the related metric.	or exceeded OMB's fiscal year 2021 target for the related metric.
Department of the Treasury	fully met-the agency's reported progress met or exceeded OMB's fiscal year 2021 target for the related metric.	fully met-the agency's reported progress met or exceeded OMB's fiscal year 2021 target for the related metric.	not met—the agency's reported progress did not meet OMB's fiscal year 2021 target for the related metric.	fully met-the agency's reported progress met or exceeded OMB's fiscal year 2021 target for the related metric.
Department of Veterans Affairs	fully met-the agency's reported progress met or exceeded OMB's fiscal year 2021 target for the related metric.	fully met-the agency's reported progress met or exceeded OMB's fiscal year 2021 target for the related metric.	not met—the agency's reported progress did not meet OMB's fiscal year 2021 target for the related metric.	fully met-the agency's reported progress met or exceeded OMB's fiscal year 2021 target for the related metric.
Environmental Protection Agency[a]	NOT APPLICABLE—THE AGENCY DID NOT HAVE ANY AGENCY-OWNED DATA CENTERS OR ITS REMAINING CENTERS ARE EXEMPTED FROM OPTIMIZATION BY OMB.	NOT APPLICABLE—THE AGENCY DID NOT HAVE ANY AGENCY-OWNED DATA CENTERS OR ITS REMAINING CENTERS ARE EXEMPTED FROM OPTIMIZATION BY OMB.	NOT APPLICABLE—THE AGENCY DID NOT HAVE ANY AGENCY-OWNED DATA CENTERS OR ITS REMAINING CENTERS ARE EXEMPTED FROM OPTIMIZATION BY OMB.	NOT APPLICABLE—THE AGENCY DID NOT HAVE ANY AGENCY-OWNED DATA CENTERS OR ITS REMAINING CENTERS ARE EXEMPTED FROM OPTIMIZATION BY OMB.
General Services Administration[a]	NOT APPLICABLE—THE AGENCY DID NOT HAVE ANY AGENCY-OWNED DATA CENTERS OR ITS REMAINING CENTERS ARE EXEMPTED FROM OPTIMIZATION BY OMB.	NOT APPLICABLE—THE AGENCY DID NOT HAVE ANY AGENCY-OWNED DATA CENTERS OR ITS REMAINING CENTERS ARE EXEMPTED FROM OPTIMIZATION BY OMB.	NOT APPLICABLE—THE AGENCY DID NOT HAVE ANY AGENCY-OWNED DATA CENTERS OR ITS REMAINING CENTERS ARE EXEMPTED FROM OPTIMIZATION BY OMB.	NOT APPLICABLE—THE AGENCY DID NOT HAVE ANY AGENCY-OWNED DATA CENTERS OR ITS REMAINING CENTERS ARE EXEMPTED FROM OPTIMIZATION BY OMB.
National Aeronautics and Space Administration	fully met-the agency's reported progress met or exceeded OMB's fiscal year 2021 target for the related metric.	fully met-the agency's reported progress met or exceeded OMB's fiscal year 2021 target for the related metric.	fully met-the agency's reported progress met or exceeded OMB's fiscal year 2021 target for the related metric.	fully met-the agency's reported progress met or exceeded OMB's fiscal year 2021 target for the related metric.
National Science Foundation	fully met-the agency's reported progress met or exceeded OMB's fiscal year 2021 target for the related metric.	fully met-the agency's reported progress met or exceeded OMB's fiscal year 2021	fully met-the agency's reported progress met or exceeded OMB's fiscal year 2021 target for the related metric.	not met—the agency's reported progress did not meet OMB's fiscal year 2021 target for the related metric.

	target for the related metric.			
Nuclear Regulatory Commission	not met—the agency's reported progress did not meet OMB's fiscal year 2021 target for the related metric.	not met—the agency's reported progress did not meet OMB's fiscal year 2021 target for the related metric.	fully met-the agency's reported progress met or exceeded OMB's fiscal year 2021 target for the related metric.	fully met-the agency's reported progress met or exceeded OMB's fiscal year 2021 target for the related metric.
Office of Personnel Management	fully met-the agency's reported progress met or exceeded OMB's fiscal year 2021 target for the related metric.	fully met-the agency's reported progress met or exceeded OMB's fiscal year 2021 target for the related metric.	fully met-the agency's reported progress met or exceeded OMB's fiscal year 2021 target for the related metric.	fully met-the agency's reported progress met or exceeded OMB's fiscal year 2021 target for the related metric.
Small Business Administration	not met—the agency's reported progress did not meet OMB's fiscal year 2021 target for the related metric.	fully met-the agency's reported progress met or exceeded OMB's fiscal year 2021 target for the related metric.	fully met-the agency's reported progress met or exceeded OMB's fiscal year 2021 target for the related metric.	not met—the agency's reported progress did not meet OMB's fiscal year 2021 target for the related metric.
Social Security Administration	fully met-the agency's reported progress met or exceeded OMB's fiscal year 2021 target for the related metric.	fully met-the agency's reported progress met or exceeded OMB's fiscal year 2021 target for the related metric.	fully met-the agency's reported progress met or exceeded OMB's fiscal year 2021 target for the related metric.	fully met-the agency's reported progress met or exceeded OMB's fiscal year 2021 target for the related metric.
U.S. Agency for International Development[a]	NOT APPLICABLE—THE AGENCY DID NOT HAVE ANY AGENCY-OWNED DATA CENTERS OR ITS REMAINING CENTERS ARE EXEMPTED FROM OPTIMIZATION BY OMB.	NOT APPLICABLE—THE AGENCY DID NOT HAVE ANY AGENCY-OWNED DATA CENTERS OR ITS REMAINING CENTERS ARE EXEMPTED FROM OPTIMIZATION BY OMB.	NOT APPLICABLE—THE AGENCY DID NOT HAVE ANY AGENCY-OWNED DATA CENTERS OR ITS REMAINING CENTERS ARE EXEMPTED FROM OPTIMIZATION BY OMB.	NOT APPLICABLE—THE AGENCY DID NOT HAVE ANY AGENCY-OWNED DATA CENTERS OR ITS REMAINING CENTERS ARE EXEMPTED FROM OPTIMIZATION BY OMB.

Source: GAO analysis of agency data. | GAO-22-105118

[a]For the optimization metrics, OMB's IT Dashboard displays this agency's progress against these metrics as being completed and no further work will be required in this area.

[b]All remaining agency-owned data centers have been granted optimization exemptions by OMB.

Multiple agencies reported meeting more optimization targets in fiscal year 2021 as compared to 2020. For example:

- Treasury met all three of its fiscal year 2021 optimization targets compared to two out of four targets at the end of fiscal year 2020.

- Justice met three of its four targets at the end of fiscal year 2020 and met all of its targets in fiscal year 2021.

However, the agencies that did not meet their targets provided multiple reasons for not meeting them. The reasons agency officials provided for not meeting the target varied. For example:

- The Nuclear Regulatory Commission (NRC) reported that it did not meet its virtualization metric due to increasing the density of their virtual servers by implementing higher-performing infrastructure. The agency reported that its new converged infrastructure hosts the same number of virtual servers in a significantly smaller footprint. The fiscal year 2022 targets have been adjusted to align its new infrastructure with the metric.

- SBA reported that it did not meet its virtualization metric due to technical constraints, such as not having the necessary amount of server infrastructure within their agency-owned data centers to virtualize older servers. SBA also reported that budgetary constraints impacted its ability to virtualize servers. For example, agency officials from the Office of the CIO stated that there was no available budget to virtualize older servers by migrating them to SBA's cloud computing environment. SBA has submitted a Technology Modernization Fund project request to consolidate further and modernize server infrastructure.

- HHS reported that it did not meet advance energy metering due to a change in the number of valid data centers counted to establish its energy metering target. HHS plans to update its target to reflect the number of applicable data centers and will continue efforts to meter all of their valid data centers.

We have previously made recommendations to address the issue of agencies not meeting their target metrics for optimization of their data centers.[51] Until agencies address the existing recommendations to meet their optimization performance targets, they are unlikely to fully realize the expected benefits, including cost savings.

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[51]GAO-20-279 and GAO-19-241.

Agency Comments

We provided a draft of this report to OMB and the 24 DCOI agencies for their review and comment. In response, a GAO liaison on OMB's Ethics Team stated via email that the agency had no comments on the draft report.

In addition, we received responses from the 24 agencies (to which we did not make recommendations). Six of the agencies stated that they agreed with the information presented in the report, eight agencies offered comments but did not state whether they agreed or disagreed with the report, and 10 agencies stated that they had no comments. Further, nine of the 24 agencies provided technical comments on the report, which we incorporated, as appropriate.

Specifically, six agencies agreed with the information presented in the report, as follows:

- Via email, an Audit Liaison Officer in the Office of the CIO at Agriculture stated that the agency generally agreed with the findings in the draft report and had no comments.

- An official responsible for overseeing GAO audits in Defense Office of Chief Information Officer stated via email that the agency concurred with the findings in the draft report and had no comments.

- Via email, an official responsible for overseeing GAO audits in Justice's Office of the CIO stated that the agency agreed with the draft report.

- Via email, an audit liaison responsible for overseeing GAO audits at NASA provided technical comments and concurred with their data.

- In written comments, USAID thanked us for the opportunity to respond to the draft report and noted that we had accurately reflected the fact that USAID does not have any data centers. USAID comments are reprinted in appendix IV.

- In written comments, VA stated that it generally concurred with the information and findings in the draft report. VA's comments are reprinted in appendix V.

In addition, eight of the 24 agencies provided comments, but did not state whether they agreed or disagreed with the draft report.

- Via email, an audit liaison in the Office of the Secretary at Commerce thanked us for the opportunity to review the draft report. Commerce also provided technical comments, which we incorporated, as appropriate.

- Via email, an official in the Office of the Chief Financial Officer at DHS thanked us for the opportunity to review the draft report. DHS also provided technical comments, which we incorporated, as appropriate.

- Via email, the Office of the Chief Information Officer at Interior provided technical comments, which we incorporated, as appropriate.

- Via email, an audit liaison in the Office of the Secretary at Transportation thanked us for the opportunity to review the draft and stated that Transportation would not be providing a written response. Transportation also provided technical comments, which we incorporated, as appropriate.

- Via email, the Chief Information Officer at Treasury provided technical comments, which we incorporated, as appropriate.

- Via email, an audit liaison in the Office of the Assistant Secretary for Policy at Labor thanked us for the opportunity to review the draft report. Labor also provided technical comments, which we incorporated, as appropriate.

- Via email, an audit liaison responsible for overseeing GAO audits at NASA thanked us for the opportunity to review the draft. NASA also provided technical comments, which we incorporated, as appropriate.

- Via email, NRC appreciated the opportunity to review the draft report. NRC also provided technical comments, which we incorporated, as appropriate.

- Via email, an audit liaison at OPM thanked us for the opportunity to review the draft. OPM also provided technical comments, which we incorporated, as appropriate.

- In written comments, SSA thanked us for the opportunity to review the draft report and stated that it was continuing to assess its current data center and information technology infrastructure footprint, expand the DCOI metrics, and map cost savings and cost avoidance to these efforts. The agency also provided technical comments, which we incorporated, as appropriate. SSA's comments are reprinted in appendix III.

Finally, via emails, officials of 10 agencies stated that they had no comments on the report. These agencies were Education, Energy, HHS, HUD, Labor, State, EPA, GSA, NSF, and SBA.

We are sending copies of this report to interested congressional committees, the Director of OMB, the secretaries and heads of the departments and agencies addressed in this report, and other interested parties. In addition, the report will be available at no charge on GAO's website at http://www.gao.gov. If you or your staffs have any questions about this report, please contact me at (202) 512-4456 or harriscc@gao.gov. Contact points for our Offices of Congressional Relations and Public Affairs may be found on the last page of this report. GAO staff who made major contributions to this report are listed in appendix VI.

Carol C. Harris
Director, Information Technology and Cybersecurity
Acquisition Management Issues

List of Committees

The Honorable Jack Reed
Chairman
The Honorable James M. Inhofe
Ranking Member
Committee on Armed Services
United States Senate

The Honorable Gary C. Peters
Chairman
The Honorable Rob Portman
Ranking Member
Committee on Homeland Security and Governmental Affairs
United States Senate

The Honorable Adam Smith
Chairman
The Honorable Mike Rogers
Ranking Member
Committee on Armed Services
House of Representatives

The Honorable Carolyn B. Maloney
Chairwoman
The Honorable James Comer
Ranking Member
Committee on Oversight and Reform
House of Representatives

Appendix I: Objectives, Scope, and Methodology

Our objectives for this review were to determine (1) agencies' progress on data center closures and the related savings that have been achieved, and agencies' plans for future closures and savings; and (2) agencies' progress against Office of Management and Budget's (OMB) data center optimization targets.

To address the first objective for data center closures, we obtained and analyzed June and August 2021 data center inventory documentation from the 24 departments and agencies[1] that participate in OMB's Data Center Optimization Initiative (DCOI).[2] Using the June 2021 inventory data, we identified the agencies' reported closures for fiscal year 2020.[3] Using the August 2021 inventory data, we identified the agencies' reported closures for fiscal year 2020 through August 2021, and we identified the agencies' planned future closures from September 2020 through the end of fiscal year 2025. We also compared agencies' completed and planned closures to their planned fiscal year 2021 consolidation goals, as documented in their DCOI strategic plans. OMB's guidance for developing agencies' DCOI strategic plans required agencies to report cumulative numbers for their planned and achieved data center closures. As a result, we calculated agencies' fiscal year 2021 goals from the data reported in DCOI plans.

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[1]The 24 agencies that are required to participate in the Data Center Optimization 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; and 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 the U.S. Agency for International Development.

[2]Agencies' data center optimization progress information displayed on OMB's IT Dashboard is updated by OMB on a quarterly basis based on data center inventory data collected from agencies at the end of February, May, August, and November of each year.

[3]We used the data agencies reported to OMB by March 2021 to ensure they had adequate time to identify their end-of-fiscal year closures.

To verify the quality, completeness, and reliability of each agency's data center inventory, we compared information on completed and planned data center closures to similar information reported on OMB's Federal IT Dashboard (IT Dashboard)—a public website that provides information on federal agencies' major IT investments.[4] We also checked for missing data and other errors, such as missing closure status information. In some of the cases identified, we followed up with agency officials to obtain further information. We determined that the data were sufficiently complete and reliable to report on agencies' consolidation progress and planned closures.

For cost savings and avoidances,[5] we obtained and analyzed March and August 2021 documentation from the 24 DCOI agencies. This documentation is required by OMB's March 2013 and June 2019 memorandums and included the agencies' quarterly reports of cost savings and avoidances posted to their digital strategy websites and their DCOI strategic plans.[6] To determine cost savings achieved for fiscal year 2021, we used the March 2021 cost savings documentation and totaled agencies' reported savings and avoidances.[7] To determine cost savings achieved for fiscal year 2021 and for the initiative overall, we used the August 2021 cost savings documentation and totaled agencies' reported savings and avoidances from the start of fiscal year 2012[8] through August 2021, as found in the August 2021 quarterly reports posted to the agencies' digital strategy websites.[9] To identify future planned savings,

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[4]We did not physically visit agencies' data center locations to verify their inventory totals.

[5]Beginning in March 2013, OMB required agencies to report on both cost savings and cost avoidances. OMB defines cost savings as a reduction in actual expenditures below the projected level of costs to achieve a specific objective and defines a cost avoidance as the result of an action taken in the immediate time frame that will decrease costs in the future.

[6]OMB, *Fiscal Year 2013 PortfolioStat Guidance: Strengthening Federal IT Portfolio Management*, Memorandum M-13-09 (Washington, D.C.: Mar. 27, 2013) and *Update to Data Center Optimization Initiative (DCOI)*, Memorandum M-19-19 (Washington, D.C.: June 25, 2019).

[7]We used the data agencies reported to OMB by March 2020 to ensure they had adequate time to identify their cost savings through the end of fiscal year 2019.

[8]Under the Federal Data Center Consolidation Initiative (FDCCI), which OMB launched in February 2010, agencies were required to begin closing data centers. However, current OMB guidance only requires agencies to report historical cost savings and avoidances realized since fiscal year 2012.

[9]We did not independently validate agencies' reported cost savings figures.

we totaled the agencies' projected savings and avoidances from fiscal years 2021 through 2022, as reported in their DCOI strategic plans.

To assess the quality, completeness, and reliability of each agency's data center consolidation cost savings information, we used the latest version of each agency's quarterly cost savings report and DCOI strategic plan as of August 2021. We also reviewed the quarterly reports and DCOI strategic plans for missing data and other errors, such as missing cost-savings information. In addition, we compared agencies' cost savings and avoidances with data from our most recent data center consolidation report.[10] Further, we obtained written responses from agency officials regarding the steps they took to ensure the accuracy and reliability of their cost savings data. As a result, we determined that the data were sufficiently complete and reliable to report on agencies' data center consolidation cost savings information.

For our second objective, we analyzed the June 2021 and August 2021 data center optimization progress information of the 17 DCOI agencies.[11] This progress information was obtained from the IT Dashboard.[12] We then compared the agencies' current optimization progress information to agencies' fiscal year 2021 optimization targets, as documented on the IT Dashboard.

To assess the reliability of agencies' optimization progress information on OMB's IT Dashboard, we reviewed the information for errors or missing data, such as progress information that was not available for certain metrics. We also compared agencies' optimization progress information across two reporting quarters to identify any inconsistencies in agencies' reported progress. We also followed up with the agencies to understand

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[10]GAO, *Data Center Optimization: Agencies Report Progress, but Oversight and Cybersecurity Risks Need to Be Addressed,* GAO-20-279 (Washington, D.C.: Mar. 5, 2020).

[11]Four agencies—the Departments of Education and Housing and Urban Development, and the General Services Administration and the U.S. Agency for International Development—reported that they do not own any data centers and, therefore, do not have a basis to measure and report on optimization progress. In addition, OMB's IT Dashboard indicated, as of September 2021, that the Department of Agriculture and Department of Homeland Security and the Environmental Protection Agency had completed their optimization efforts. Therefore, reporting on optimization metrics for these agencies is not applicable.

[12]Although the IT Dashboard shows that it was updated as of September 16, 2021, the data was collected from agencies through the August 2021 integrated data collection. Therefore, we report the progress information as of August 2021.

the steps they took to ensure that what they reported to OMB was accurate and reliable. As a result, we determined that the data were sufficiently complete and reliable to report on agencies' progress information for virtualization, availability, advanced energy metering, and server utilization.

We conducted this performance audit from March 2021 to March 2022 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.

Appendix II: GAO Previously Reported on Agencies' DCOI-Related Efforts

Since the enactment of the Federal Information Technology Acquisition Reform Act (FITARA) in December 2014, we have reviewed and verified the quality and completeness of each covered agency's inventory and Data Center Optimization Initiative (DCOI) strategy annually.[1] Accordingly, we have published six reports documenting the findings and recommendations from each of these reviews.[2] In addition, we have examined and reported on agencies' efforts to optimize their data centers, as well as the challenges encountered and successes achieved.[3] As of December 2021, agencies had implemented 101 of the 126 recommendations from these reports. However, the agencies had not fully implemented the other 25 recommendations.

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[1]The 24 agencies that are required to participate in the Data Center Optimization 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; and 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. These are the same agencies covered by FITARA's data center consolidation provisions.

[2]GAO, *Data Center Optimization: Agencies Report Progress and Billions Saved, but OMB Needs to Improve Its Utilization Guidance*, GAO-21-212 (Washington, D.C.: Mar. 4, 2021); *Data Center Optimization: Agencies Report Progress, but Oversight and Cybersecurity Risks Need to Be Addressed*, GAO-20-279 (Washington, D.C.: Mar. 5, 2020); *Data Center Optimization: Additional Agency Actions Needed to Meet OMB Goals*, GAO-19-241 (Washington, D.C.: Apr. 11, 2019); *Data Center Optimization: Continued Agency Actions Needed to Meet Goals and Address Prior Recommendations*, GAO-18-264 (Washington, D.C.: May 23, 2018); *Data Center Optimization: Agencies Need to Complete Plans to Address Inconsistencies in Reported Savings*, GAO-17-388 (Washington, D.C.: May 18, 2017); and *Data Center Consolidation: Agencies Making Progress, but Planned Savings Goals Need to Be Established* [Reissued on March 4, 2016], GAO-16-323 (Washington, D.C.: Mar. 3, 2016).

[3]GAO, *Data Center Optimization: Agencies Need to Address Challenges and Improve Progress to Achieve Cost Savings Goal*, GAO-17-448 (Washington, D.C.: Aug. 15, 2017).

March 2021 Report Addressed Progress Made in Billions and Emphasized the Need for OMB to Improve its Utilization Guidance

In March 2021, we reported almost all 24 agencies, met or planned to meet their closure and cost savings goals for fiscal years 2019 and 2020. In addition, the agencies reported that they expected to achieve 230 data center closures, resulting in $1.1 billion in savings, over the 2-year period. Agencies expected to realize a cumulative total of $6.24 billion in cost savings and avoidances from fiscal years 2012 through 2020.

Furthermore, all 24 agencies reported mixed progress against Office of Management and Budget's (OMB) data center optimization targets for fiscal year 2020. In June 2019, OMB revised the server utilization metric to direct agencies to develop their own definitions of underutilization, and then count their underutilized servers. As a result, agencies adopted widely varying definitions and were no longer required to report actual utilization, a key measure of server efficiency.

In addition, we reported that agencies have excluded approximately 4,500 data centers from their inventories since May 2019 due to a change in the definition of a data center. Specifically, in June 2019, OMB narrowed the definition of a data center to exclude certain facilities it had previously identified as having potential cybersecurity risks. We reported that each such facility provided a potential access point, and that unsecured access points could aid cyber-attacks. Accordingly, we recommended that OMB require agencies to report those facilities previously reported as data centers so that visibility of the risks of these facilities was retained.

As of September 2021, OMB has not taken action to address the recommendation. Overall, we have made 126 recommendations since 2016 to help agencies meet their DCOI goals, but agencies have not implemented 25.

March 2020 Report Discussed OMB's Revised DCOI Policy Weaknesses as DCOI is Extended to 2022

In March 2020, we reported that the 24 DCOI agencies continued to report mixed progress toward achieving OMB's goals for closing data centers and realizing the associated savings by September 2019.[4] Specifically, 23 of the 24 reported that they had met, or planned to meet, their fiscal year closure goals, and would close 286 facilities in doing so.

We noted that OMB issued revised guidance in June 2019 that narrowed the scope of the type of facilities that would be defined as a data center. This revision eliminated the reporting of over 2,000 facilities government-wide. We concluded that, without a requirement to report on these, important visibility would be diminished, including oversight of security risks.

In addition, 23 DCOI agencies reported that they had met, or planned to meet, OMB's fiscal year 2019 savings goal of $241.5 million. One agency did not complete a plan, but planned to do so in the future. Collectively, the agencies reported a total of $4.7 billion in cost savings from fiscal years 2012 through 2019.

Regarding data center optimization, the agencies reported progress in meeting OMB's three revised optimization metrics. Eight agencies reported that they met all three targets for the metrics GAO reviewed, five met two targets, and six met one target. In addition, one agency had not established any targets, and four agencies reported that they no longer owned any data centers.

However, we noted that, the data were not sufficiently reliable to report on a new fourth metric (availability) because of unexpected variances in the information reported by the agencies. We also determined that, in defining the optimization metrics, OMB had not included statistical universe parameters to enable determinations of progress. These metrics called for counts of the actual numbers of (1) virtualized servers, (2) data centers with advanced energy metering, and (3) underutilized servers; but the metrics did not include a count of the universe of all servers and all

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[4]GAO-20-279.

data centers. Accordingly, percentages could not be calculated to determine progress.

As a result of these findings, we made four recommendations to OMB to address weaknesses in the revised DCOI guidance. We also made four recommendations to three selected agencies to meet the data center cost savings and optimization performance metrics targets, as appropriate. As of December 2021, three of the eight recommendations had been fully implemented.

2019 Report Focused on Agencies' Progress as DCOI Neared Sunset in 2018

In April 2019, we reported that the 24 DCOI agencies continued to report mixed progress toward achieving OMB's goals for closing data centers and realizing the associated savings by September 2018.[5] Thirteen agencies reported that they had met, or had plans to meet, all of their OMB-assigned closure goals by the deadline. However, 11 agencies reported that they did not have plans to meet their goals.

In addition, 16 agencies reported that they had met, or planned to meet, their cost savings targets, for a total of $2.36 billion in cost savings for fiscal years 2016 through 2018. This is about $0.38 billion less than OMB's DCOI savings goal of $2.7 billion. This shortfall is the result of five agencies reporting less in planned cost savings and avoidances in their DCOI strategic plans as compared to the savings goals established for them by OMB. Three agencies did not have a cost savings target and did not report any achieved savings.

Regarding data center optimization, the 24 agencies reported limited progress in fiscal year 2018 against OMB's five optimization targets. In this regard, 12 agencies reported that they had met at least one target, while 10 reported that they had not met any of the targets. Two agencies stated that they did not have a basis to report on progress as they did not own any data centers.

Further, 20 agencies did not plan to meet all of OMB's fiscal year 2018 optimization goals. Specifically, only two agencies reported plans to meet

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[5]GAO-19-241.

all applicable targets, while six reported that they did not plan to meet any of the targets.

As a result of these findings, we recommended that 22 agencies take actions to meet the data center closure, cost savings, and optimization performance metrics targets, as appropriate. As of December 2021, 23 of the 36 recommendations had been fully implemented.

2018 Report Emphasized Need for Agencies to Address Prior Recommendations

In May 2018, we noted that the 24 agencies participating in DCOI reported mixed progress toward achieving OMB's goals for closing data centers by September 2018.[6] Over half of the agencies reported that they had either already met, or planned to meet, all of their OMB-assigned closure goals by the deadline. However, four agencies reported that they did not have plans to meet all of their assigned goals and two agencies were working with OMB to establish revised targets. With regard to agencies' progress in achieving cost savings, 20 agencies reported planned and achieved savings that totaled $1.62 billion for fiscal years 2016 through 2018. However, this total was approximately $1.12 billion less than OMB's DCOI savings goal of $2.7 billion.

In addition, the 24 agencies continued to report limited progress against OMB's five data center optimization targets, with one agency meeting four targets, one meeting three targets, six meeting either one or two targets, and 14 meeting none of their targets. Further, as of August 2017, most agencies reported that they were not planning to meet OMB's fiscal year 2018 optimization targets.

Because we had previously made a number of recommendations to OMB and the 24 DCOI agencies to help improve the reporting of data center-related cost savings and to achieve optimization targets, we did not make new recommendations in our May 2018 report, but indicated that we would continue to monitor the agencies' progress toward meeting OMB's DCOI goals.

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[6]GAO-18-264.

2017 Reports Focused on New DCOI Implementation

In May 2017, we reported that the agencies continued to report significant data center closures—totaling more than 4,300 through August 2016—with more than 1,200 additional centers planned for closure through fiscal year 2019.[7] The agencies also reported achieving about $2.3 billion in cost savings through August 2016. However, agencies' total planned cost savings for fiscal years 2016 through 2018 were more than $2 billion less than OMB's fiscal year 2018 cost savings goal of $2.7 billion.

In addition, our May 2017 report identified weaknesses in agencies' DCOI strategic plans.[8] Of the 23 agencies that had submitted their strategic plans at the time of our review, seven had addressed all of the five required elements of a strategic plan, as identified by OMB (such as providing information related to data center closures and cost savings metrics). The remaining 16 agencies that submitted their plans either partially met or did not meet the requirements.

Given these findings, we recommended that OMB improve its oversight of agencies' DCOI strategic plans and their reporting of cost savings and avoidances. We also recommended that 17 agencies complete the missing elements in their strategic plans, and that 11 agencies ensure the reporting of consistent cost savings and avoidance information to OMB. As of December 2020, all 30 recommendations had been fully addressed.

In a subsequent report that we issued in August 2017, we noted that 22 of the 24 agencies required to participate in the OMB DCOI had collectively reported limited progress against OMB's fiscal year 2018 performance targets for the five optimization metrics.[9] Specifically, for each of the five targets, no more than five agencies reported that they had met or exceeded that specific target.

In addition, we noted in the report that most agencies had not implemented automated monitoring tools to measure server utilization, as required by the end of fiscal year 2018. Specifically, four agencies

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[7]GAO-17-388.

[8]GAO-17-388.

[9]GAO-17-448.

reported that they had fully implemented such tools and 18 reported that they had not done so. Two agencies did not have a basis to report on progress because they did not have any agency-owned data centers.

Accordingly, we recommended that OMB formally document a requirement for agencies to include plans, as part of existing OMB reporting mechanisms, to implement automated monitoring tools at their agency-owned data centers. We also recommended that the 18 agencies without fully documented plans take action within existing OMB reporting mechanisms to complete plans describing how they intended to achieve OMB's requirement to implement automated monitoring tools at all agency-owned data centers by the end of fiscal year 2018. As of December 2021, all 30 recommendation had been fully implemented.

2016 Report Identifies Need for Agencies to Complete Cost Savings Goals and Improve Data Center Optimization

In a report that we issued in March 2016, we noted that agencies had reported significant data center closures—totaling more than 3,100 through fiscal year 2015—but fell short of OMB fiscal year 2015 consolidation goal. Agencies also reported significant consolidation cost savings and avoidances—totaling about $2.8 billion through fiscal year 2015. However, we pointed out that many agencies lacked complete cost savings goals for the next several years despite having closures planned.

In addition, we reported that 22 agencies had made limited progress against OMB's fiscal year 2015 data center optimization performance metrics, such as the utilization of data center facilities. Accordingly, we recommended that the agencies take action to complete their cost savings targets and improve optimization progress. As of December 2020, all 32 recommendations from this report were closed, but agencies had not fully addressed 17 of them due to OMB's changes to DCOI.

Appendix III: Comments from the Social Security Administration

SOCIAL SECURITY
Office of the Commissioner

January 12, 2022

Carol C. Harris
Director, Information Technology
  Acquisition Management Issues
United States Government Accountability Office
441 G Street, NW
Washington, DC 20548

Dear Director Harris:

Thank you for the opportunity to review the draft report "DATA CENTER OPTIMIZATION:
Agencies Continue to Report Mixed Progress against OMB's Targets" (GAO-21-105118).
At the Social Security Administration, we have embraced the Data Center Optimization Initiative
(DCOI) as a key element in managing our data centers. We continue to assess our current data
center and information technology infrastructure footprint, expand the DCOI metrics, and map
cost savings and cost avoidance to these efforts.

If you have any questions, please contact me at (410) 965-2611. Your staff may contact Trae
Sommer, Director of the Audit Liaison Staff, at (410) 965-9102.

Sincerely,

Scott Frey
Chief of Staff

SOCIAL SECURITY ADMINISTRATION   BALTIMORE, MD 21235-0001

Agency Comment Letter

Text of Appendix III: Comments from the Social Security Administration

Page 1

January 12, 2022

Carol C. Harris
Director, Information Technology Acquisition Management Issues
United States Government Accountability Office
441 G Street, NW
Washington, DC 20548

Dear Director Harris:

Thank you for the opportunity to review the draft report "DATA CENTER OPTIMIZATION: Agencies Continue to Report Mixed Progress against OMB's Targets" (GAO-21-105118).

At the Social Security Administration, we have embraced the Data Center Optimization Initiative (DCOI) as a key element in managing our data centers. We continue to assess our current data center and information technology infrastructure footprint, expand the DCOI metrics, and map cost savings and cost avoidance to these efforts.

If you have any questions, please contact me at (410) 965-2611. Your staff may contact Trae Sommer, Director of the Audit Liaison Staff, at (410) 965-9102.

Sincerely,
Scott Frey Chief of Staff

Appendix IV: Comments from the U.S. Agency for International Development

January 18, 2022

Carol C. Harris
Director, Information Technology Acquisition Management Issues
U.S. Government Accountability Office
441 G Street, N.W.
Washington, D.C. 20226

Re: GAO Draft Report (Engagement Code 105118) entitled "Data Center Optimization:
     Agencies Continue to Report Mixed Progress against OMB's Targets" (GAO-22-105118)

Dear Ms. Harris:

I am pleased to provide the formal response of the U.S. Agency for International
Development (USAID) to the draft report produced by the U.S. Government Accountability
Office (GAO) titled, GAO draft report entitled "Data Center Optimization: Agencies Continue to
Report Mixed Progress against OMB's Targets." (GAO-22-105118).

The GAO draft audit report accurately reflects the fact that USAID does not have any
data centers. Accordingly, there are no recommendations to USAID in the draft report.

I am transmitting this letter and the enclosed comments from USAID for inclusion in the
GAO's final report. Thank you for the opportunity to respond to the draft report, and for the
courtesies extended by your staff while conducting this engagement. We appreciate the
opportunity to participate in the complete and thorough evaluation of our Data Center
Optimization Initiative (DCOI) program.

Sincerely,

Colleen R. Allen
Assistant Administrator
Bureau for Management

Agency Comment Letter

Text of Appendix IV: Comments from the U.S. Agency for International Development

Page 1

January 18, 2022

Carol C. Harris
Director, Information Technology Acquisition Management Issues
U.S. Government Accountability Office
441 G Street, N.W.
Washington, D.C. 20226

Re: GAO Draft Report (Engagement Code 105118) entitled "Data Center Optimization: Agencies Continue to Report Mixed Progress against OMB's Targets" (GAO-22-105118)

Dear Ms. Harris:

I am pleased to provide the formal response of the U.S. Agency for International Development (USAID) to the draft report produced by the U.S. Government Accountability Office (GAO) titled, GAO draft report entitled "Data Center Optimization: Agencies Continue to Report Mixed Progress against OMB's Targets." (GAO-22-105118).

The GAO draft audit report accurately reflects the fact that USAID does not have any data centers. Accordingly, there are no recommendations to USAID in the draft report.

I am transmitting this letter and the enclosed comments from USAID for inclusion in the GAO's final report. Thank you for the opportunity to respond to the draft report, and for the courtesies extended by your staff while conducting this engagement. We appreciate the opportunity to participate in the complete and thorough evaluation of our Data Center Optimization Initiative (DCOI) program.

Sincerely,
Colleen R. Allen Assistant Administrator Bureau for Management

Appendix V: Comments from the Department of Veteran Affairs

DEPARTMENT OF VETERANS AFFAIRS
WASHINGTON

January 14, 2022

Ms. Carol C. Harris
Director
Information Technology and Cybersecurity Issues
U.S. Government Accountability Office
441 G Street, NW
Washington, DC 20548

Dear Ms. Harris:

The Department of Veterans Affairs (VA) has reviewed the Government Accountability Office's (GAO) draft report, *Data Center Optimization: Agencies Continue to Report Mixed Progress against OMB's Targets* (GAO-22-105118).

VA generally concurs with the information and findings contained in the draft report. Where VA is mentioned, GAO accurately describes the Department's efforts in fiscal year 2021 to optimize data centers in compliance with the Office of Management and Budget's (OMB) Data Center Optimization Initiative (DCOI) including: VA's progress toward achieving goals for data center closures; plans for future closures; cost savings; and progress against targets for OMB's data center optimization metrics.

VA remains committed to meeting data center closure and savings goals under DCOI and to continuing VA's progress optimizing the Department's data centers in compliance with OMB's DCOI guidance. VA appreciates the opportunity to review the draft report.

Sincerely,

Tanya J. Bradsher
Chief of Staff

Agency Comment Letter

Text of Appendix V: Comments from the Department of Veteran Affairs

Page 1

January 14, 2022

Ms. Carol C. Harris Director
Information Technology and Cybersecurity Issues
U.S. Government Accountability Office
441 G Street, NW
Washington, DC 20548

Dear Ms. Harris:

The Department of Veterans Affairs 0/A) has reviewed the Government Accountability Office•s (GAO) draft report, ***Data Center Optimization: Agencies Continue to Report Mixed Progress against OMB's Targets*** (GAO-22-105118).

VA generally concurs with the information and findings contained in the draft report. Where VA is mentioned, GAO accurately describes the Department's efforts in fiscal year 2021 to optimize data centers in compliance with the Office of Management and Budget's (0MB) Data Center Optimization Initiative (DCOI) including: VA's progress toward achieving goals for data center closures; plans for future closures; cost savings; and progress against targets for OMB's data center optimization metrics.

VA remains committed to meeting data center closure and savings goals under DCOI and to continuing VA's progress optimizing the Department's data centers in compliance with OMB's DCOI guidance. VA appreciates the opportunity to review the draft report.

Sincerely,
Tanya J. Bradsher Chief of Staff

Appendix VI: GAO Contact and Staff Acknowledgments

GAO Contact

Carol C. Harris, (202) 512-4456 or harriscc@gao.gov

Staff Acknowledgments

In addition to the contact named above, individuals making contributions to this report included Eric Winter (Assistant Director), Jonathan Wall (Analyst-in-Charge), Lamis Alabed, Chris Businsky, and Donna Epler.

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