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INFORMATION TECHNOLOGY

Sustained Management Attention to the Implementation of FITARA Is Needed to Better Manage Acquisitions and Operations

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

GAO Highlights

Highlights of [GAO-17-686T](#), a testimony before the Subcommittees on Government Operations and Information Technology, Committee on Oversight and Government Reform, House of Representatives

Why GAO Did This Study

The federal government plans to invest almost \$96 billion on IT in fiscal year 2018. Historically, these investments have too often failed, incurred cost overruns and schedule slippages, or contributed little to mission-related outcomes. Accordingly, in December 2014, Congress enacted FITARA, aimed at improving agencies' acquisitions of IT. Further, in February 2015, GAO added improving the management of IT acquisitions and operations to its high-risk list.

This statement summarizes agencies' progress in improving the management of IT acquisitions and operations. This statement is based on GAO prior and recently published reports on (1) data center consolidation, (2) risk levels of major investments as reported on OMB's IT Dashboard, (3) implementation of incremental development practices, and (4) management of software licenses.

What GAO Recommends

From fiscal years 2010 through 2015, GAO made about 800 recommendations to OMB and federal agencies to address shortcomings in IT acquisitions and operations, and included recommendations to improve the oversight and execution of the data center consolidation initiative, the accuracy and reliability of the Dashboard, incremental development policies, and software license management. Most agencies agreed with GAO's recommendations or had no comments. In addition, in fiscal year 2016, GAO made about 200 new recommendations in this area. GAO will continue to monitor agencies' implementation of these recommendations.

View [GAO-17-686T](#). For more information, contact David A. Powner at (202) 512-9286 or pownerd@gao.gov.

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What GAO Found

The Office of Management and Budget (OMB) and federal agencies have taken steps to improve information technology (IT) through a series of initiatives, and as of May 2017, had fully implemented about 47 percent of the approximately 800 related GAO recommendations. However, additional actions are needed.

- **Consolidating data centers.** OMB launched an initiative in 2010 to reduce data centers, which was reinforced by the Federal Information Technology Acquisition Reform Act (FITARA) in 2014. GAO reported in May 2017 that agencies had closed 4,388 of the 9,995 total data centers, and had plans to close a total of 5,597 through fiscal year 2019. As a result, agencies reportedly saved or avoided about \$2.3 billion through August 2016. However, out of the 23 agencies that submitted required strategic plans, only 7 had addressed all required elements. GAO recommended that agencies complete their plans to optimize their data centers and achieve cost savings and ensure reported cost savings are consistent across reporting mechanisms. Most agencies agreed with the recommendations.
- **Enhancing transparency.** OMB's IT Dashboard provides information on major investments at federal agencies, including ratings from Chief Information Officers that should reflect the level of risk facing an investment. GAO reported in June 2016 that agencies had not fully considered risks when rating their investments on the Dashboard. In particular, of the 95 investments reviewed, GAO's assessments of risks matched the ratings 22 times, showed more risk 60 times, and showed less risk 13 times. GAO recommended that agencies improve the quality and frequency of their ratings. Most agencies generally agreed with or did not comment on the recommendations.
- **Implementing incremental development.** OMB has emphasized the need for agencies to deliver investments in smaller parts, or increments, in order to reduce risk and deliver capabilities more quickly. Since 2012, OMB has required investments to deliver functionality every 6 months. In August 2016, GAO reported that while 22 agencies had reported that about 64 percent of 469 active software development projects planned to deliver usable functionality every 6 months for fiscal year 2016, the other 36 percent of the projects did not. Further, for 7 selected agencies, GAO identified differences in the percentages of software projects reported to GAO as delivering functionality every 6 months, compared to what was reported on the Dashboard. GAO made recommendations to agencies and OMB to improve the reporting of incremental data on the Dashboard. Most agencies agreed or did not comment on the recommendations.
- **Managing software licenses.** Effective management of software licenses can help avoid purchasing too many licenses that result in unused software. In May 2014, GAO reported that better management of licenses was needed to achieve savings. Specifically, only two agencies had comprehensive license inventories. GAO recommended that agencies regularly track and maintain a comprehensive inventory and analyze that data to identify opportunities to reduce costs and better inform decision making. Most agencies generally agreed with the recommendations or had no comments; as of May 2017, 4 agencies had made progress in implementing them.

Chairmen Meadows and Hurd, Ranking Members Connolly and Kelly, and Members of the Subcommittees:

I am pleased to be here today to discuss opportunities for federal agencies to improve the acquisition of information technology (IT). As you know, the effective and efficient acquisition of IT has been a long-standing challenge in the federal government. In particular, the federal government has spent billions of dollars on failed and poorly performing IT investments, which often suffered from ineffective management. Recognizing the importance of government-wide acquisition of IT, in December 2014, Congress enacted federal IT acquisition reform legislation (commonly referred to as the Federal Information Technology Acquisition Reform Act, or FITARA).¹

In addition, in February 2015, we added improving the management of IT acquisitions and operations to our list of high-risk areas for the federal government.² We recently issued an update to our high-risk report and determined that, while progress has been made in addressing the high-risk area of IT acquisitions and operations, significant work remains to be completed.³ For example, as of May 2017, the Office of Management and Budget (OMB) and agencies had implemented 380 (or about 47 percent) of the 803 open recommendations that we had made from fiscal years 2010 through 2015 related to IT acquisitions and operations.

My statement today discusses agencies' progress in improving the management of IT acquisitions and operations. This statement is based on our prior and recently published reports that discuss (1) data center consolidation, (2) risk levels of major investments as reported on OMB's IT Dashboard, (3) implementation of incremental development practices, and (4) and management of software licenses. A more detailed discussion of the objectives, scope, and methodology for this work is

¹Carl Levin and Howard P. 'Buck' McKeon National Defense Authorization Act for Fiscal Year 2015, Pub. L. No. 113-291, div. A, title VIII, subtitle D, 128 Stat. 3292, 3438-3450 (Dec. 19, 2014).

²GAO, *High-Risk Series: An Update*, [GAO-15-290](#) (Washington, D.C.: Feb. 11, 2015). GAO maintains a high-risk program to focus attention on government operations that it identifies as high risk due to their greater vulnerabilities to fraud, waste, abuse, and mismanagement or the need for transformation to address economy, efficiency, or effectiveness challenges.

³GAO, *High-Risk Series: Progress on Many High-Risk Areas, While Substantial Efforts Needed on Others*, [GAO-17-317](#) (Washington, D.C.: Feb. 15, 2017).

included in each of the reports that are cited throughout this statement. In addition, related to the current status of federal agencies' CIO position, we reviewed publically available data and verified that data with agencies.

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

Background

According to the President's budget, the federal government plans to invest more than \$96 billion on IT in fiscal year 2018—the largest amount ever. However, as we have previously reported, investments in federal IT too often result in failed projects that incur cost overruns and schedule slippages, while contributing little to the desired mission-related outcomes. For example:

- The Department of Veterans Affairs' Scheduling Replacement Project was terminated in September 2009 after spending an estimated \$127 million over 9 years.⁴
- The tri-agency⁵ National Polar-orbiting Operational Environmental Satellite System was halted in February 2010 by the White House's Office of Science and Technology Policy after the program spent 16 years and almost \$5 billion.⁶

⁴GAO, *Information Technology: Management Improvements Are Essential to VA's Second Effort to Replace Its Outpatient Scheduling System*, [GAO-10-579](#) (Washington, D.C.: May 27, 2010).

⁵The weather satellite program was managed by the National Oceanic and Atmospheric Administration, the Department of Defense, and the National Aeronautics and Space Administration.

⁶See, for example, GAO, *Polar-Orbiting Environmental Satellites: With Costs Increasing and Data Continuity at Risk, Improvements Needed in Tri-agency Decision Making*, [GAO-09-564](#) (Washington, D.C.: June 17, 2009) and *Environmental Satellites: Polar-Orbiting Satellite Acquisition Faces Delays; Decisions Needed on Whether and How to Ensure Climate Data Continuity*, [GAO-08-518](#) (Washington, D.C.: May 16, 2008).

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- The Department of Homeland Security's Secure Border Initiative Network program was ended in January 2011, after the department obligated more than \$1 billion for the program.⁷
 - The Office of Personnel Management's Retirement Systems Modernization program was canceled in February 2011, after spending approximately \$231 million on the agency's third attempt to automate the processing of federal employee retirement claims.⁸
 - The Department of Veterans Affairs' Financial and Logistics Integrated Technology Enterprise program was intended to be delivered by 2014 at a total estimated cost of \$609 million, but was terminated in October 2011.⁹
 - The Department of Defense's Expeditionary Combat Support System was canceled in December 2012 after spending more than a billion dollars and failing to deploy within 5 years of initially obligating funds.¹⁰

Our past work found that these and other failed IT projects often suffered from a lack of disciplined and effective management, such as project planning, requirements definition, and program oversight and governance. In many instances, agencies had not consistently applied best practices that are critical to successfully acquiring IT.

⁷See, for example, GAO, *Secure Border Initiative: DHS Needs to Strengthen Management and Oversight of Its Prime Contractor*, [GAO-11-6](#) (Washington, D.C.: Oct. 18, 2010); *Secure Border Initiative: DHS Needs to Reconsider Its Proposed Investment in Key Technology Program*, [GAO-10-340](#) (Washington, D.C.: May 5, 2010); and *Secure Border Initiative: DHS Needs to Address Testing and Performance Limitations That Place Key Technology Program at Risk*, [GAO-10-158](#) (Washington, D.C.: Jan. 29, 2010).

⁸See, for example, GAO, *Office of Personnel Management: Retirement Modernization Planning and Management Shortcomings Need to Be Addressed*, [GAO-09-529](#) (Washington, D.C.: Apr. 21, 2009) and *Office of Personnel Management: Improvements Needed to Ensure Successful Retirement Systems Modernization*, [GAO-08-345](#) (Washington, D.C.: Jan. 31, 2008).

⁹GAO, *Information Technology: Actions Needed to Fully Establish Program Management Capability for VA's Financial and Logistics Initiative*, [GAO-10-40](#) (Washington, D.C.: Oct. 26, 2009).

¹⁰GAO, *DOD Financial Management: Implementation Weaknesses in Army and Air Force Business Systems Could Jeopardize DOD's Auditability Goals*, [GAO-12-134](#) (Washington, D.C.: Feb. 28, 2012) and *DOD Business Transformation: Improved Management Oversight of Business System Modernization Efforts Needed*, [GAO-11-53](#) (Washington, D.C.: Oct. 7, 2010).

Federal IT projects have also failed due to a lack of oversight and governance. Executive-level governance and oversight across the government has often been ineffective, specifically from chief information officers (CIO). For example, we have reported that some CIOs' authority was limited because they did not have the authority to review and approve the entire agency IT portfolio.¹¹

FITARACan Improve Agencies' Management of IT

Recognizing the severity of issues related to the government-wide management of IT, FITARA was enacted in December 2014. The law was intended to improve agencies' acquisitions of IT and enable Congress to monitor agencies' progress and hold them accountable for reducing duplication and achieving cost savings. FITARA includes specific requirements related to seven areas.¹²

- **Federal data center consolidation initiative (FDCCI).** Agencies are required to provide OMB with a data center inventory, a strategy for consolidating and optimizing their data centers (to include planned cost savings), and quarterly updates on progress made. The law also requires OMB to develop a goal for how much is to be saved through this initiative, and provide annual reports on cost savings achieved.
- **Enhanced transparency and improved risk management.** OMB and covered agencies are to make detailed information on federal IT investments publicly available, and agency CIOs are to categorize their IT investments by level of risk. Additionally, in the case of major IT investments¹³ rated as high risk for 4 consecutive quarters, the law

¹¹GAO, *Federal Chief Information Officers: Opportunities Exist to Improve Role in Information Technology Management*, [GAO-11-634](#) (Washington, D.C.: Sept. 15, 2011).

¹²The provisions apply to the agencies covered by the Chief Financial Officers Act of 1990, 31 U.S.C. § 901(b). These agencies are the Departments of Agriculture, Commerce, Defense, Education, Energy, Health and Human Services, Homeland Security, Housing and Urban Development, Justice, Labor, State, the Interior, the Treasury, Transportation, and Veterans Affairs; the Environmental Protection Agency, General Services Administration, National Aeronautics and Space Administration, National Science Foundation, Nuclear Regulatory Commission, Office of Personnel Management, Small Business Administration, Social Security Administration, and U.S. Agency for International Development. However, FITARA has generally limited application to the Department of Defense.

¹³Major IT investment means a system or an acquisition requiring special management attention because it has significant program or policy implications; high executive visibility; high development, operating, or maintenance costs; an unusual funding mechanism; or is defined as major by the agency's capital planning and investment control process.

requires that the agency CIO and the investment's program manager conduct a review aimed at identifying and addressing the causes of the risk.

- **Agency CIO authority enhancements.** CIOs at covered agencies are required to (1) approve the IT budget requests of their respective agencies, (2) certify that OMB's incremental development guidance is being adequately implemented for IT investments, (3) review and approve contracts for IT, and (4) approve the appointment of other agency employees with the title of CIO. See appendix I for details on the current status of federal CIOs.
- **Portfolio review.** Agencies are to annually review IT investment portfolios in order to, among other things, increase efficiency and effectiveness and identify potential waste and duplication. In establishing the process associated with such portfolio reviews, the law requires OMB to develop standardized performance metrics, to include cost savings, and to submit quarterly reports to Congress on cost savings.
- **Expansion of training and use of IT acquisition cadres.** Agencies are to update their acquisition human capital plans to address supporting the timely and effective acquisition of IT. In doing so, the law calls for agencies to consider, among other things, establishing IT acquisition cadres or developing agreements with other agencies that have such cadres.
- **Government-wide software purchasing program.** The General Services Administration is to develop a strategic sourcing initiative to enhance government-wide acquisition and management of software. In doing so, the law requires that, to the maximum extent practicable, the General Services Administration should allow for the purchase of a software license agreement that is available for use by all executive branch agencies as a single user.¹⁴
- **Maximizing the benefit of the Federal Strategic Sourcing Initiative.**¹⁵ Federal agencies are required to compare their

¹⁴The Making Electronic Government Accountable by Yielding Tangible Efficiencies Act of 2016, or the "MEGABYTE Act" further enhances CIOs management of software licenses by requiring agency CIOs to establish an agency software licensing policy and a comprehensive software license inventory to track and maintain licenses, among other requirements. Pub. L. No. 114-210 (July 29, 2016); 130 Stat. 824.

¹⁵The Federal Strategic Sourcing Initiative is a program established by the General Services Administration and the Department of the Treasury to address government-wide opportunities to strategically source commonly purchased goods and services and eliminate duplication of efforts across agencies.

purchases of services and supplies to what is offered under the Federal Strategic Sourcing Initiative. OMB is also required to issue regulations related to the initiative.

In June 2015, OMB released guidance describing how agencies are to implement FITARA.¹⁶ This guidance is intended to, among other things:

- assist agencies in aligning their IT resources with statutory requirements;
- establish government-wide IT management controls that will meet the law's requirements, while providing agencies with flexibility to adapt to unique agency processes and requirements;
- clarify the CIO's role and strengthen the relationship between agency CIOs and bureau CIOs; and
- strengthen CIO accountability for IT costs, schedules, performance, and security.

The guidance identified several actions that agencies were to take to establish a basic set of roles and responsibilities (referred to as the common baseline) for CIOs and other senior agency officials, which were needed to implement the authorities described in the law. For example, agencies were required to conduct a self-assessment and submit a plan describing the changes they intended to make to ensure that common baseline responsibilities were implemented. Agencies were to submit their plans to OMB's Office of E-Government and Information Technology by August 15, 2015, and make portions of the plans publicly available on agency websites no later than 30 days after OMB approval. As of November 2016, all agencies had made their plans publicly available.

In addition, in August 2016, OMB released guidance intended to, among other things, define a framework for achieving the data center consolidation and optimization requirements of FITARA.¹⁷ The guidance includes requirements for agencies to:

¹⁶OMB, *Management and Oversight of Federal Information Technology*, Memorandum M-15-14 (Washington, D.C.: June 10, 2015).

¹⁷OMB, *Data Center Optimization Initiative (DCOI)*, Memorandum M-16-19 (Washington D.C.: Aug. 1, 2016).

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- maintain complete inventories of all data center facilities owned, operated, or maintained by or on behalf of the agency;
 - develop cost savings targets for fiscal years 2016 through 2018 and report any actual realized cost savings; and
 - measure progress toward meeting optimization metrics on a quarterly basis.

The guidance also directs agencies to develop a data center consolidation and optimization strategic plan that defines the agency's data center strategy for fiscal years 2016, 2017, and 2018. This strategy is to include, among other things, a statement from the agency CIO stating whether the agency has complied with all data center reporting requirements in FITARA. Further, the guidance indicates that OMB is to maintain a public dashboard that will display consolidation-related costs savings and optimization performance information for the agencies.

IT Acquisitions and Operations Identified by GAO as a High-Risk Area

In February 2015, we introduced a new government-wide high-risk area, *Improving the Management of IT Acquisitions and Operations*.¹⁸ This area highlighted several critical IT initiatives in need of additional congressional oversight, including (1) reviews of troubled projects; (2) efforts to increase the use of incremental development; (3) efforts to provide transparency relative to the cost, schedule, and risk levels for major IT investments; (4) reviews of agencies' operational investments; (5) data center consolidation; and (6) efforts to streamline agencies' portfolios of IT investments. We noted that implementation of these initiatives was inconsistent and more work remained to demonstrate progress in achieving IT acquisition and operation outcomes.

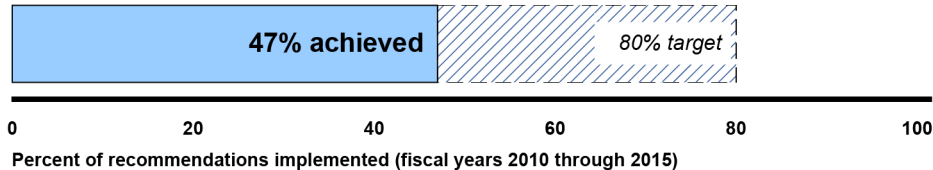
Further, our February 2015 high-risk report stated that, beyond implementing FITARA, OMB and agencies needed to continue to implement our prior recommendations in order to improve their ability to effectively and efficiently invest in IT. Specifically, from fiscal years 2010 through 2015, we made 803 recommendations to OMB and federal agencies to address shortcomings in IT acquisitions and operations. These recommendations included many to improve the implementation of the aforementioned six critical IT initiatives and other government-wide, cross-cutting efforts. We stressed that OMB and agencies should demonstrate government-wide progress in the management of IT

¹⁸[GAO-15-290](#).

investments by, among other things, implementing at least 80 percent of our recommendations related to managing IT acquisitions and operations within 4 years.

In February 2017, we issued an update to our high-risk series and reported that, while progress had been made in improving the management of IT acquisitions and operations, significant work still remained to be completed.¹⁹ For example, as of May 2017, OMB and the agencies had fully implemented 380 (or about 47 percent) of the 803 recommendations. This was a 24 percent increase compared to the percentage we reported as being fully implemented in 2015. Figure 1 summarizes the progress that OMB and the agencies had made in addressing our recommendations, as compared to the 80 percent target, as of May 2017.

Figure 1: Summary of the Office of Management and Budget's and Federal Agencies' Progress in Addressing GAO's Recommendations, as of May 2017



Source: Office of Management and Budget and agency data. | GAO-17-686T

In addition, in fiscal year 2016, we made 202 new recommendations, thus further reinforcing the need for OMB and agencies to address the shortcomings in IT acquisitions and operations. Also, beyond addressing our prior recommendations, our 2017 high-risk update noted the importance of OMB and federal agencies continuing to expeditiously implement the requirements of FITARA.

To further explore the challenges and opportunities to improve federal IT acquisitions and operations, we convened a forum on September 14, 2016, to explore challenges and opportunities for CIOs to improve federal IT acquisitions and operations—with the goal of better informing policymakers and government leadership.²⁰ Forum participants, which

¹⁹GAO-17-317.

²⁰GAO, *Information Technology: Opportunities for Improving Acquisitions and Operations*, GAO-17-251SP (Washington, D.C.: Apr. 11, 2017).

included 13 current and former federal agency CIOs, members of Congress, and private sector IT executives, identified key actions related to seven topics: (1) strengthening FITARA, (2) improving CIO authorities, (3) budget formulation, (4) governance, (5) workforce, (6) operations, and (7) transition planning. A summary of the key actions, by topic area, identified during the forum is provided in figure 2.

Figure 2: Key Actions, by Topic Area, Identified by Forum Participants to Improve Information Technology Acquisitions and Operations

STRENGTHENING FITARA'S IMPACT	• Congressional oversight could be more aggressive • Office of Management and Budget (OMB) may need to strengthen its role • The Department of Defense should be required to implement all provisions of the Federal Information Technology Acquisition Reform Act (FITARA)
IMPROVING CIO AUTHORITIES	• Have the Chief Information Officers (CIO) Council play an enhanced role in improving authorities • Implement collaborative governance • Evolve the role of the CIO to enable change • Focus on cybersecurity to change existing cultures
BUDGET FORMULATION	• Use information technology (IT) spend plans to improve budgets • Examine agency programs to capture additional IT spending • Simplify the definition of IT • Work more closely with procurement organizations • Work with congressional committees to explore budgeting flexibilities
GOVERNANCE	• Obtain support from agency leadership • Enhance governance at OMB and agencies • Use security authorities to enhance governance • Strengthen oversight for IT purchased as a service • Buy more and develop less • Evolve procurement processes to align with new technologies
WORKFORCE	• Attract more qualified CIOs by appealing to key missions • Have the Federal CIO play a more active role in attracting agency CIOs • Give CIOs more human resource flexibilities • Focus on attracting and investing in a more holistic IT workforce • Better integrate private sector talent into the IT workforce
OPERATIONS	• Use a strategic approach for legacy system migration • Migrate more services to the cloud • Implement strategies to mitigate the impact on jobs when closing data centers
TRANSITION PLANNING	• Convey IT and cyber issues early to leadership • Encourage Congress to focus on IT and cybersecurity at confirmation hearings • Ensure that IT and cyber issues are OMB priorities • Ensure GAO plays a role highlighting its work and expertise

Source: GAO analysis. | GAO-17-686T

In addition, in January 2017, the Federal CIO Council concluded that differing levels of authority over IT-related investments and spending

have led to inconsistencies in how IT is executed from agency to agency. According to the Council, for those agencies where the CIO has broad authority to manage all IT investments, great progress has been made to streamline and modernize the federal agency's footprint. For the others, where agency CIOs are only able to control pieces of the total IT footprint, it has been harder to achieve improvements.²¹

The Federal Government Has Current Efforts to Improve IT

The administration has initiated two efforts aimed at improving federal IT. Specifically, in March 2017, it established the Office of American Innovation to, among other things, improve federal government operations and services, and modernize federal IT. The office is to consult with both OMB and the Office of Science and Technology Policy on policies and plans intended to improve government operations and services, improve the quality of life for Americans, and spur job creation.²²

In May 2017, the administration also established the American Technology Council to help transform and modernize federal IT and how the government uses and delivers digital services. The President is the chairman of this council, and the Federal CIO and the United States Digital Service²³ administrator are members.

Agencies Have Taken Steps to Improve IT Management, but Full Implementation of FITARA Is Needed

Agencies have taken steps to improve the management of IT acquisitions and operations by implementing key FITARA initiatives. However, agencies would be better positioned to fully implement the law and, thus, realize additional management improvements, if they addressed the numerous recommendations we have made aimed at improving data center consolidation, increasing transparency via OMB's IT Dashboard, implementing incremental development, and managing software licenses.

²¹CIO Council, *State of Federal Information Technology* (Washington, D.C.: January 2017).

²²The White House Office of Science and Technology Policy provides the President and others within the Executive office of the President with advice on the scientific, engineering, and technological aspects of the economy, national security, homeland security, health, foreign relations, the environment, and the technological recovery and use of resources, among other topics.

²³The United States Digital Service is an office within OMB which aims to improve the most important public-facing federal digital services.

Agencies Have Made Progress in Consolidating Data Centers, but Need to Take Action to Achieve Planned Cost Savings

One of the key initiatives to implement FITARA is data center consolidation. OMB established FDCCI in February 2010 to improve the efficiency, performance, and environmental footprint of federal data center activities and the enactment of FITARA reinforced the initiative. However, in a series of reports that we issued over the past 6 years, we noted that, while data center consolidation could potentially save the federal government billions of dollars, weaknesses existed in several areas, including agencies' data center consolidation plans and OMB's tracking and reporting on related cost savings.²⁴ In these reports, we made a total of 141 recommendations to OMB and 24 agencies to improve the execution and oversight of the initiative. Most agencies and OMB agreed with our recommendations or had no comments. As of May 2017, 75 of our recommendations remained open.

Also, in May 2017, we reported²⁵ that the 24 agencies²⁶ participating in FDCCI collectively had made progress on their data center closure efforts. Specifically, as of August 2016, these agencies had identified a total of 9,995 data centers, of which they reported having closed 4,388, and having plans to close a total of 5,597 data centers through fiscal year 2019. Notably, the Departments of Agriculture, Defense, the Interior, and the Treasury accounted for 84 percent of the completed closures.

²⁴GAO, *Data Center Optimization: Agencies Need to Complete Plans to Address Inconsistencies in Reported Savings*, [GAO-17-388](#) (Washington, D.C.: May 18, 2017); *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*, [GAO-14-713](#) (Washington, D.C.: Sept. 25, 2014); *Data Center Consolidation: Strengthened Oversight Needed to Achieve Cost Savings Goal*, [GAO-13-378](#) (Washington, D.C.: Apr. 23, 2013); *Data Center Consolidation: Agencies Making Progress on Efforts, but Inventories and Plans Need to Be Completed*, [GAO-12-742](#) (Washington, D.C.: July 19, 2012); and *Data Center Consolidation: Agencies Need to Complete Inventories and Plans to Achieve Expected Savings*, [GAO-11-565](#) (Washington, D.C.: July 19, 2011).

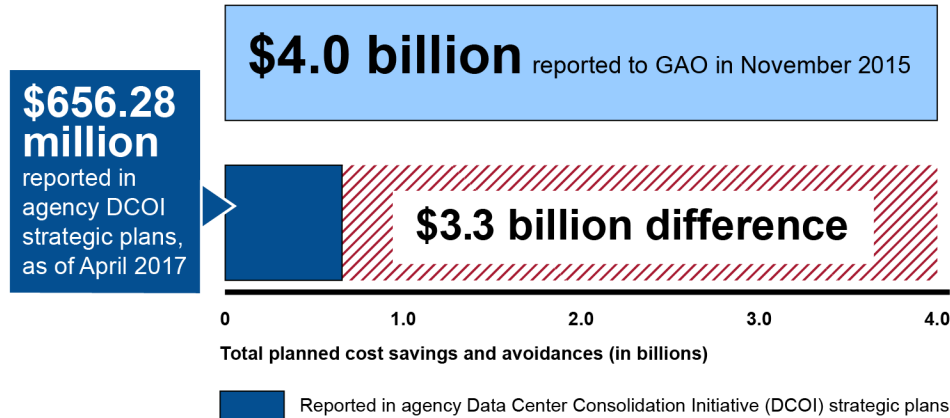
²⁵[GAO-17-388](#).

²⁶The 24 agencies that FITARA requires to participate in FDCCI are the Departments of Agriculture, Commerce, Defense, Education, Energy, Health and Human Services, Homeland Security, Housing and Urban Development, the Interior, Justice, Labor, State, Transportation, the Treasury, and Veterans Affairs; the Environmental Protection Agency; General Services Administration; National Aeronautics and Space Administration; National Science Foundation; Nuclear Regulatory Commission; Office of Personnel Management; Small Business Administration; Social Security Administration; and U.S. Agency for International Development.

In addition, 18 of the 24 agencies reported achieving about \$2.3 billion collectively in cost savings and avoidances from their data center consolidation and optimization efforts from fiscal year 2012 through August 2016. The Departments of Commerce, Defense, Homeland Security, and the Treasury accounted for approximately \$2.0 billion (or 87 percent) of the total.

Further, 23 agencies reported about \$656 million collectively in planned savings for fiscal years 2016 through 2018. This is about \$3.3 billion less than the estimated \$4.0 billion in planned savings for fiscal years 2016 through 2018 that agencies reported to us in November 2015. Figure 3 presents a comparison of the amounts of cost savings and avoidances reported by agencies to OMB and the amounts the agencies reported to us.

Figure 3: Comparison of Fiscal Years 2016-2018 Planned Cost Savings and Avoidances Reported to GAO in November 2015 versus Those Reported to the Office of Management and Budget in April 2017



Source: GAO analysis of agency data. | GAO-17-686T

As mentioned previously, FITARA required agencies to submit multi-year strategies to achieve the consolidation and optimization of their data centers no later than the end of fiscal year 2016. Among other things, this strategy was to include such information as data center consolidation and optimization metrics, and year-by-year calculations of investments and cost savings through October 1, 2018.

Further, OMB's August 2016 guidance on data center optimization contained additional information for how agencies are to implement the

strategic plan requirements of FITARA.²⁷ Specifically, the guidance stated that agency data center consolidation and optimization strategic plans are to include, among other things, planned and achieved performance levels for each optimization metric; calculations of target and actual agency-wide spending and cost savings on data centers; and historical cost savings and cost avoidances due to data center consolidation and optimization. OMB's guidance also stated that agencies were required to publicly post their strategic plans to their agency-owned digital strategy websites by September 30, 2016.

As of April 2017, only 7 of the 23 agencies that submitted their strategic plans—the Departments of Agriculture, Education, Homeland Security, and Housing and Urban Development; the General Services Administration; the National Science Foundation; and the Office of Personnel Management—had addressed all five elements required by the OMB memorandum implementing FITARA. The remaining 16 agencies either partially met or did not meet the requirements. For example, most agencies partially met or did not meet the requirements to provide information related to data center closures and cost savings metrics. The Department of Defense did not submit a plan and was rated as not meeting any of the requirements.

To better ensure that federal data center consolidation and optimization efforts improve governmental efficiency and achieve cost savings, in our May 2017 report, we recommended that 11 of the 24 agencies take action to ensure that the amounts of achieved data center cost savings and avoidances are consistent across all reporting mechanisms. We also recommended that 17 of the 24 agencies each take action to complete missing elements in their strategic plans and submit their plans to OMB in order to optimize their data centers and achieve cost savings. Twelve agencies agreed with our recommendations, 2 did not agree, and 10 agencies and OMB did not state whether they agreed or disagreed.

²⁷OMB, *Data Center Optimization Initiative (DCOI)*, Memorandum M-16-19 (Washington, D.C.: Aug. 1, 2016).

Risks Need to Be Fully Considered When Agencies Rate Their Major Investments on OMB's IT Dashboard

To facilitate transparency across the government in acquiring and managing IT investments, OMB established a public website—the IT Dashboard—to provide detailed information on major investments at 26 agencies, including ratings of their performance against cost and schedule targets. Among other things, agencies are to submit ratings from their CIOs, which, according to OMB's instructions, should reflect the level of risk facing an investment relative to that investment's ability to accomplish its goals. In this regard, FITARA includes a requirement for CIOs to categorize their major IT investment risks in accordance with OMB guidance.²⁸

Over the past 6 years, we have issued a series of reports about the Dashboard that noted both significant steps OMB has taken to enhance the oversight, transparency, and accountability of federal IT investments by creating its Dashboard, as well as concerns about the accuracy and reliability of the data.²⁹ In total, we have made 47 recommendations to OMB and federal agencies to help improve the accuracy and reliability of the information on the Dashboard and to increase its availability. Most agencies agreed with our recommendations or had no comments. As of May 2017, 17 of these recommendations have been implemented.

In June 2016, we determined that 13 of the 15 agencies selected for in-depth review had not fully considered risks when rating their major investments on the Dashboard. Specifically, our assessments of risk for 95 investments at the 15 selected agencies³⁰ matched the CIO ratings posted on the Dashboard 22 times, showed more risk 60 times, and

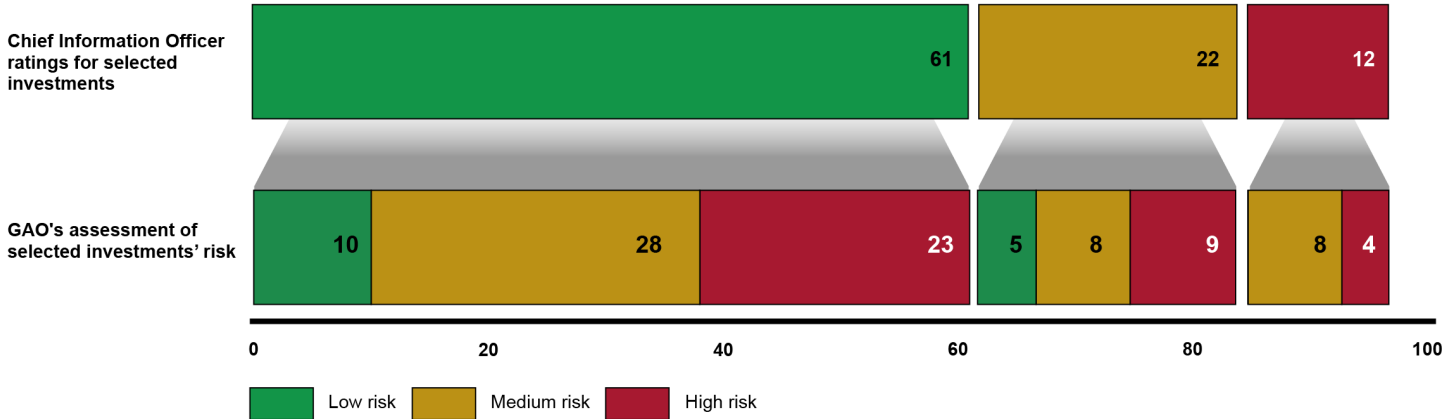
²⁸40 U.S.C. § 11302(c)(3)(C).

²⁹GAO, *IT Dashboard: Agencies Need to Fully Consider Risks When Rating Their Major Investments*, [GAO-16-494](#) (Washington, D.C.: June 2, 2016); *IT Dashboard: Agencies Are Managing Investment Risk, but Related Ratings Need to Be More Accurate and Available*, [GAO-14-64](#) (Washington, D.C.: Dec. 12, 2013); *IT Dashboard: Opportunities Exist to Improve Transparency and Oversight of Investment Risk at Select Agencies*, [GAO-13-98](#) (Washington, D.C.: Oct. 16, 2012); *IT Dashboard: Accuracy Has Improved, and Additional Efforts Are under Way to Better Inform Decision Making*, [GAO-12-210](#) (Washington, D.C.: Nov. 7, 2011); *Information Technology: OMB Has Made Improvements to Its Dashboard, but Further Work Is Needed by Agencies and OMB to Ensure Data Accuracy*, [GAO-11-262](#) (Washington, D.C.: Mar. 15, 2011); and *Information Technology: OMB's Dashboard Has Increased Transparency and Oversight, but Improvements Needed*, [GAO-10-701](#) (Washington, D.C.: July 16, 2010).

³⁰The 15 selected agencies were the Departments of Agriculture, Commerce, Defense, Education, Energy, Health and Human Services, Homeland Security, the Interior, State, Transportation, the Treasury, and Veterans Affairs; the Environmental Protection Agency; General Services Administration; and Social Security Administration.

showed less risk 13 times. Figure 4 summarizes how our assessments compared to the selected investments' CIO ratings.

Figure 4: Comparison of Selected Investments' April 2015 Chief Information Officer Ratings to GAO's Assessments



Source: GAO's assessment of data from the Office of Management and Budget's Information Technology Dashboard. | GAO-17-686T

Aside from the inherently judgmental nature of risk ratings, we identified three factors which contributed to differences between our assessments and the CIO ratings:

- Forty of the 95 CIO ratings were not updated during April 2015 (the month we conducted our review), which led to differences between our assessments and the CIOs' ratings. This underscores the importance of frequent rating updates, which help to ensure that the information on the Dashboard is timely and accurately reflects recent changes to investment status.
- Three agencies' rating processes spanned longer than 1 month. Longer processes mean that CIO ratings are based on older data, and may not reflect the current level of investment risk.
- Seven agencies' rating processes did not focus on active risks. According to OMB's guidance, CIO ratings should reflect the CIO's assessment of the risk and the investment's ability to accomplish its goals. CIO ratings that do not incorporate active risks increase the chance that ratings overstate the likelihood of investment success.

As a result, we concluded that the associated risk rating processes used by the 15 agencies were generally understating the level of an investment's risk, raising the likelihood that critical federal investments in IT are not receiving the appropriate levels of oversight.

To better ensure that the Dashboard ratings more accurately reflect risk, we recommended that the 15 agencies take actions to improve the quality and frequency of their CIO ratings. Twelve agencies generally agreed with or did not comment on the recommendations and three agencies disagreed, stating that their CIO ratings were adequate. However, we noted that weaknesses in these three agencies' processes still existed and that we continued to believe our recommendations were appropriate. As of May 2017, these recommendations have not yet been fully implemented.

Agencies Need to Increase Their Use of Incremental Development Practices

OMB has emphasized the need to deliver investments in smaller parts, or increments, in order to reduce risk, deliver capabilities more quickly, and facilitate the adoption of emerging technologies. In 2010, it called for agencies' major investments to deliver functionality every 12 months and, since 2012, every 6 months. Subsequently, FITARA codified a requirement that agency CIOs certify that IT investments are adequately implementing OMB's incremental development guidance.³¹

However, in May 2014, we reported³² that 66 of 89 selected investments at five major agencies³³ did not plan to deliver capabilities in 6-month cycles, and less than half of these investments planned to deliver functionality in 12-month cycles. We also reported that only one of the five agencies had complete incremental development policies. Accordingly, we recommended that OMB clarify its guidance on incremental development and that the selected agencies update their associated policies to comply with OMB's revised guidance (once made available), and consider the factors identified in our report when doing so.

Four of the six agencies agreed with our recommendations or had no comments, one agency partially agreed, and the remaining agency disagreed with the recommendations. The agency that disagreed did not believe that its recommendations should be dependent upon OMB taking action to update guidance. In response, we noted that only one of the

³¹40 U.S.C. § 11319(b)(1)(B)(ii).

³²GAO, *Information Technology: Agencies Need to Establish and Implement Incremental Development Policies*, [GAO-14-361](#) (Washington, D.C.: May 1, 2014).

³³These five agencies are the Departments of Defense, Health and Human Services, Homeland Security, Transportation, and Veterans Affairs.

recommendations to that agency depended upon OMB action, and we maintained that the action was warranted and could be implemented.

Subsequently, in August 2016, we reported³⁴ that agencies had not fully implemented incremental development practices for their software development projects. Specifically, we noted that, as of August 31, 2015, 22 federal agencies³⁵ had reported on the Dashboard that 300 of 469 active software development projects (approximately 64 percent) were planning to deliver usable functionality every 6 months for fiscal year 2016, as required by OMB guidance. Table 1 lists the total number and percent of federal software development projects for which agencies reported plans to deliver functionality every 6 months for fiscal year 2016.

³⁴GAO, *Information Technology Reform: Agencies Need to Increase Their Use of Incremental Development Practices*, [GAO-16-469](#) (Washington, D.C.: Aug. 16, 2016).

³⁵These 22 agencies are the Departments of Agriculture, Commerce, Defense, Education, Energy, Health and Human Services, Homeland Security, Housing and Urban Development, the Interior, Justice, Labor, State, Transportation, the Treasury, and Veterans Affairs; the Environmental Protection Agency, General Services Administration, National Archives and Records Administration, Office of Personnel Management, Small Business Administration, Social Security Administration, and U.S. Agency for International Development.

Table 1: Federal Agency Software Development Projects that Planned to Deliver Functionality Every 6 Months for Fiscal Year 2016, as Reported on the Office of Management and Budget's Information Technology (IT) Dashboard

Agency	Number of major IT investments	Number of projects associated with investments	Number of projects planning delivery of release every 6 months	Percent planning release every 6 months
Department of Veterans Affairs	10	95	95	100%
Department of Commerce	9	84	78	93%
Department of Health and Human Services	18	48	42	88%
Department of Education	12	14	11	79%
Department of the Treasury	12	28	18	64%
Department of Homeland Security	13	23	13	57%
Social Security Administration	9	24	12	50%
Department of Transportation	20	60	5	8%
Department of Defense	36	51	4	8%
All other federal agencies ^a	30	42	22	52%
Total	169	469	300	64%

Source: GAO analysis of Dashboard data as of August 31, 2015. | GAO-17-686T

^aThirteen additional agencies each reported having at least one major IT investment and a total of 20 or fewer projects. These agencies have been totaled together because calculating a percent of functionality delivered for each agency's small number of projects would not provide a reliable figure.

Regarding the remaining 169 projects (or 36 percent) that were reported as not planning to deliver functionality every 6 months, agencies provided a variety of explanations for not achieving that goal. These included project complexity, the lack of an established project release schedule, or that the project was not a software development project.

Further, in conducting an in-depth review of seven selected agencies' software development projects,³⁶ we determined that 45 percent of the projects delivered functionality every 6 months for fiscal year 2015 and 55 percent planned to do so in fiscal year 2016. However, significant differences existed between the delivery rates that the agencies reported to us and what they reported on the Dashboard. For example, for four agencies (the Departments of Commerce, Education, Health and Human Services, and Treasury), the percentage of delivery reported to us was at least 10 percentage points lower than what was reported on the

³⁶These seven agencies are the Departments of Commerce, Defense, Education, Health and Human Services, Homeland Security, Transportation, and the Treasury. These agencies were chosen because they reported a minimum of 12 investments that were at least 50 percent or more in development on the Dashboard for fiscal year 2015.

Dashboard. These differences were due to (1) our identification of fewer software development projects than agencies reported on the Dashboard and (2) the fact that information reported to us was generally more current than the information reported on the Dashboard.

We concluded that, by not having up-to-date information on the Dashboard about whether the project is a software development project and about the extent to which projects are delivering functionality, these seven agencies were at risk that OMB and key stakeholders may make decisions regarding the agencies' investments without the most current and accurate information. As such, we recommended that the seven selected agencies review major IT investment project data reported on the Dashboard and update the information as appropriate, ensuring that these data are consistent across all reporting channels.

Finally, while OMB has issued guidance requiring agency CIOs to certify that each major IT investment's plan for the current year adequately implements incremental development, only three agencies (the Departments of Commerce, Homeland Security, and Transportation) had defined processes and policies intended to ensure that the CIOs certify that major IT investments are adequately implementing incremental development.³⁷ Accordingly, we recommended that the remaining four agencies—the Departments of Defense, Education, Health and Human Services, and the Treasury—establish policies and processes for certifying that major IT investments adequately use incremental development.

The Departments of Education and Health and Human Services agreed with our recommendation, while the Department of Defense disagreed and stated that its existing policies address the use of incremental development. However, we noted that the department's policies did not comply with OMB's guidance and that we continued to believe our recommendation was appropriate. The Department of the Treasury did not comment on its recommendation.

In total, we have made 23 recommendations to OMB and agencies to improve their implementation of incremental development. As of May 2017, 17 of our recommendations remained open.

³⁷Office of Management and Budget, *FY2017 IT Budget— Capital Planning Guidance*.

Agencies Need to Better Manage Software Licenses to Achieve Savings

Federal agencies engage in thousands of software licensing agreements annually. The objective of software license management is to manage, control, and protect an organization's software assets. Effective management of these licenses can help avoid purchasing too many licenses, which can result in unused software, as well as too few licenses, which can result in noncompliance with license terms and cause the imposition of additional fees.

As part of its PortfolioStat initiative, OMB has developed policy that addresses software licenses. This policy requires agencies to conduct an annual, agency-wide IT portfolio review to, among other things, reduce commodity IT spending. Such areas of spending could include software licenses.

In May 2014, we reported on federal agencies' management of software licenses and determined that better management was needed to achieve significant savings government-wide.³⁸ In particular, 22 of the 24 major agencies did not have comprehensive license policies and only 2 had comprehensive license inventories. In addition, we identified five leading software license management practices, and the agencies' implementation of these practices varied.

As a result of agencies' mixed management of software licensing, agencies' oversight of software license spending was limited or lacking, thus, potentially leading to missed savings. However, the potential savings could be significant considering that, in fiscal year 2012, 1 major federal agency reported saving approximately \$181 million by consolidating its enterprise license agreements, even when its oversight process was ad hoc. Accordingly, we recommended that OMB issue needed guidance to agencies; we also made 135 recommendations to the 24 agencies to improve their policies and practices for managing licenses. Among other things, we recommended that the agencies regularly track and maintain a comprehensive inventory of software licenses and analyze the inventory to identify opportunities to reduce costs and better inform investment decision making.

Most agencies generally agreed with the recommendations or had no comments. As of May 2017, 123 of the recommendations had not been

³⁸GAO, *Federal Software Licenses: Better Management Needed to Achieve Significant Savings Government-Wide*, [GAO-14-413](#) (Washington, D.C.: May 22, 2014).

implemented, but 4 agencies had made progress. For example, three agencies—the Department of Education, General Services Administration, and U.S. Agency for International Development—regularly track and maintain a comprehensive inventory of software licenses. In addition, two of these agencies also analyze agency-wide software licensing data to identify opportunities to reduce costs and better inform investment decision making. The National Aeronautics and Space Administration uses its inventory to make decisions and reduce costs, but does not regularly track and maintain a comprehensive inventory. While the other agencies had not completed the actions associated with these recommendations, they had plans in place to do so. Table 2 reflects the extent to which agencies implemented recommendations in these areas.

Table 2: Agencies' Implementation of Software License Management Recommendations

Agency	Tracks and maintains a comprehensive inventory	Uses inventory to make decisions and reduce costs
Department of Agriculture	●	●
Department of Commerce	●	●
Department of Defense	●	●
Department of Education	●	●
Department of Energy	●	●
Department of Health and Human Services	●	●
Department of Homeland Security	●	●
Department of Housing and Urban Development	●	●
Department of Justice	●	●
Department of Labor	●	●
Department of State	●	●
Department of the Interior	●	●
Department of the Treasury	●	●
Department of Transportation	●	●
Department of Veterans Affairs	●	●
Environmental Protection Agency	●	●
General Services Administration	●	●
National Aeronautics and Space Administration	●	●
Nuclear Regulatory Commission	●	●
National Science Foundation	●	●
Office of Personnel Management	●	●
Small Business Administration	●	●
Social Security Administration	●	●
U.S. Agency for International Development	●	●

Key:

- Fully—the agency provided evidence that it fully addressed this recommendation
- Partially—the agency had plans to address this recommendation

Source: GAO analysis. | GAO-17-686T

In conclusion, with the enactment of FITARA, the federal government has an opportunity to improve the transparency and management of IT acquisitions and operations, and to strengthen the authority of CIOs to

provide needed direction and oversight. The forum we held also recommended that CIOs be given more authority, and noted the important role played by the Federal CIO.

Most agencies have taken steps to improve the management of IT acquisitions and operations by implementing key FITARA initiatives, including data center consolidation, efforts to increase transparency via OMB's IT Dashboard, incremental development, and management of software licenses; and they have continued to address recommendations we have made over the past several years. However, additional improvements are needed, and further efforts by OMB and federal agencies to implement our previous recommendations would better position them to fully implement FITARA.

To help ensure that these efforts succeed, OMB's and agencies' continued implementation of FITARA is essential. In addition, we will continue to monitor agencies' implementation of our previous recommendations.

Chairmen Meadows and Hurd, Ranking Members Connolly and Kelly, and Members of the Subcommittees, this completes my prepared statement. I would be pleased to respond to any questions that you may have at this time.

GAO Contacts and Staff

Acknowledgments

If you or your staffs have any questions about this testimony, please contact me at (202) 512-9286 or at pownerd@gao.gov. Individuals who made key contributions to this testimony are Kevin Walsh (Assistant Director), Chris Businsky, Rebecca Eyler, and Jessica Waselkow (Analyst in Charge).

Appendix I: Status of Federal Chief Information Officers

As of May 2017, 9 of the 25 federal CIO positions were filled by acting CIOs that do not permanently hold the position. Of the 9, 2 were career positions and the remaining positions require some form of appointment. Table 3 summarizes the status of the CIO position at the federal level.

Table 3: Status of Federal Chief Information Officer Positions, as of May 2017

Organization	Position type	Status
Federal government	Presidential appointment	Acting
Department of Agriculture	Career	Permanent
Department of Commerce	Appointment	Acting
Department of Defense	Career	Acting
Department of Education	Career	Permanent
Department of Energy	Appointment	Acting
Department of Health and Human Services	Career	Permanent
Department of Homeland Security	Presidential appointment	Permanent
Department of Housing and Urban Development	Appointment	Acting
Department of Justice	Career	Permanent
Department of Labor	Career	Permanent
Department of State	Career	Permanent
Department of the Interior	Career	Permanent
Department of the Treasury	Career	Permanent
Department of Transportation	Appointment	Acting
Department of Veterans Affairs	Presidential appointment with Senate confirmation	Acting
Environmental Protection Agency	Appointment	Acting
General Services Administration	Career	Permanent
National Aeronautics and Space Administration	Career	Permanent
National Science Foundation	Career	Acting
Nuclear Regulatory Commission	Career	Permanent
Office of Personnel Management	Career	Permanent
Small Business Administration	Career	Permanent
Social Security Administration	Appointment	Permanent
U.S. Agency for International Development	Career	Permanent

Key:

Presidential appointment with Senate confirmation = a political appointment made by the President with Senate confirmation

Presidential appointment = a political appointment made by the President, without Senate confirmation

Appointment = a political appointment generally made by the administration

Career = a non-political appointment made by the agency

Source: GAO analysis of agency documentation and the Government Publishing Office's "United States Government Policy and Supporting Positions (Plum Book)." | GAO-17-686T

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