

Getting 'Smart' About Government Cloud

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Executive Summary

- **Getting ‘smart’ about government cloud**
 - In October 2018, the Trump administration released its ‘Cloud Smart’ strategy to promote adoption of commercial cloud technologies and reduce barriers to implementation
 - Federal agencies spent a combined \$4.3 billion on cloud services in fiscal 2018; BGOV projects that figure to exceed \$5 billion in fiscal 2019
 - Although late to the game, the Pentagon is making up for lost time with two multibillion dollar cloud contracts, JEDI and DEOS, on the way
 - Investment in cloud computing enables other technologies, such as digital services and artificial intelligence
- **Breaking down the American AI strategy with Daniel Castro**
 - The American AI Initiative represents a key step toward promoting investment and innovation in AI technologies
 - The plan lacks key details about funding and implementation

Notes: JEDI = Joint Enterprise Defense Infrastructure, DEOS = Defense Enterprise Office Solutions

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About the Presenters



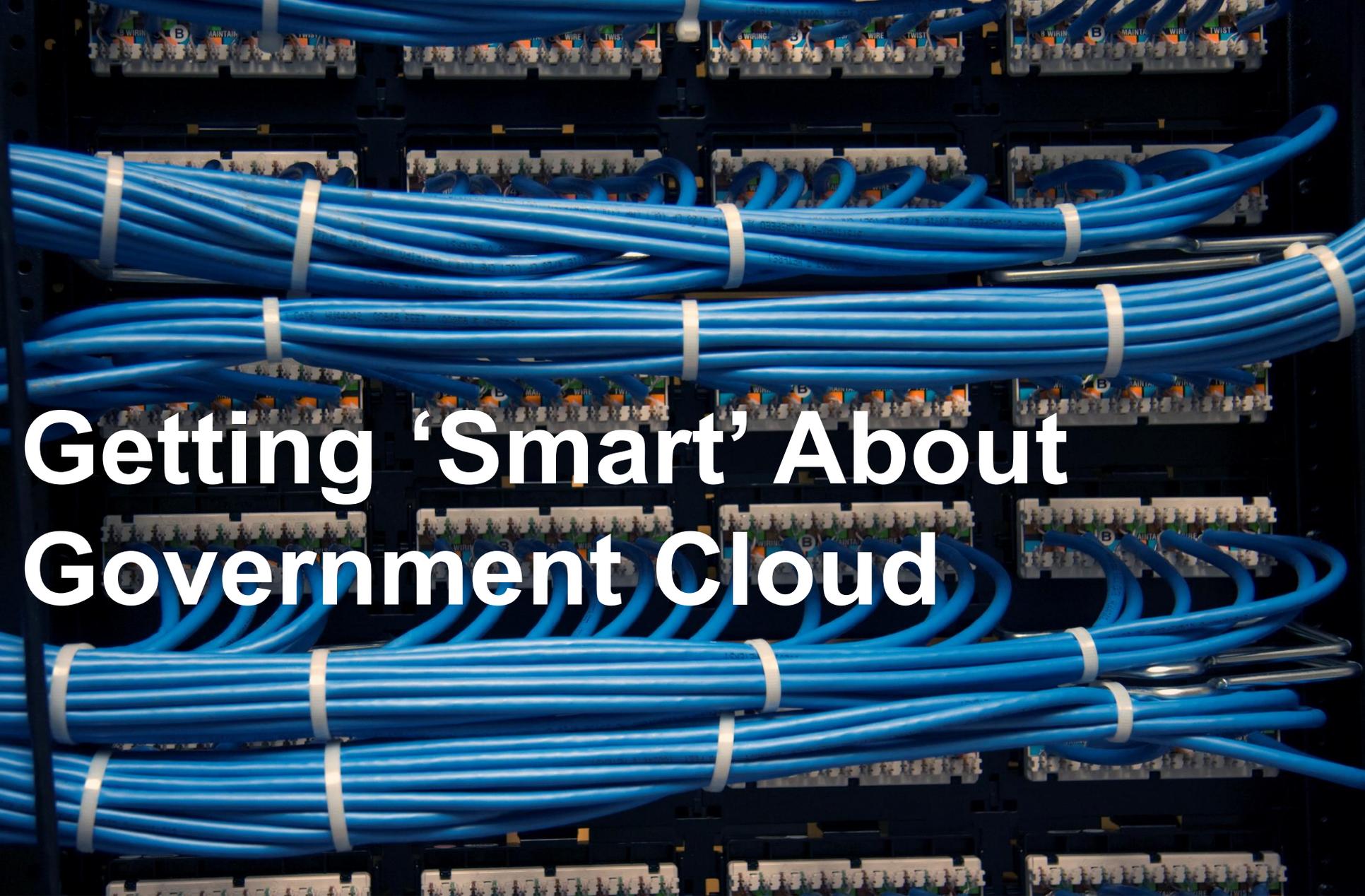
Chris Cornillie is a federal market analyst with Bloomberg Government, focusing on information technology, cybersecurity, cloud, and modernization. Prior to joining Bloomberg, he was an analyst with Gartner, where he advised C-suite clients on best practices in information security. He has a bachelor's degree from the University of Illinois and a master's degree from the University of Chicago.

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Daniel Castro is vice president at the Information Technology and Innovation Foundation (ITIF) and director of ITIF's Center for Data Innovation. Castro previously worked as an IT analyst at the Government Accountability Office (GAO) where he audited IT security and management controls at various government agencies. He contributed to GAO reports on the state of information security at a variety of federal agencies, including the Securities and Exchange Commission and the Federal Deposit Insurance Corporation. In addition, Castro was a visiting scientist at the Software Engineering Institute in Pittsburgh, PA, where he developed virtual training simulations to provide clients with hands-on training of the latest information security tools. He has a B.S. in foreign service from Georgetown University and an M.S. in information security technology and management from Carnegie Mellon University.

Follow him on Twitter at [@CastroTech](https://twitter.com/CastroTech)



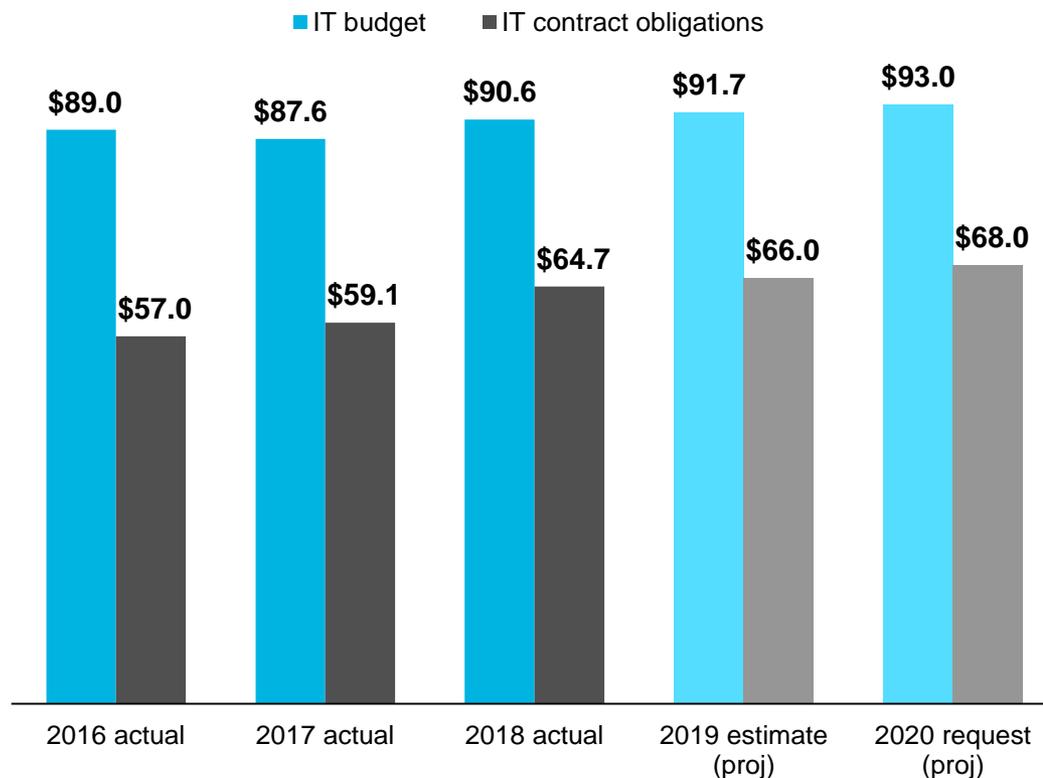
Getting 'Smart' About Government Cloud

Photo credit: Federal Communications Commission (enhanced)

IT Budget and Contracting Trends

Federal IT market showing strong growth in fiscal 2019 and beyond

IT budget and contracting obligations for fiscal years 2016 through 2020 (projected); dollars in billions



- BGOV projects a \$93 billion IT budget in fiscal 2020
- Operations & Maintenance (O&M) accounts for about 80 percent of IT budgets
- Federal agencies spent \$64.7 billion on unclassified IT contracts in fiscal 2018
- IT contract spending is growing by almost 5 percent per year
- Investment in modernization and emerging technologies driving additional growth

Notes: Precise figures for the classified IT budget are unavailable. The five-year CAGR for federal IT spending is 5.6 percent. IT contract obligations are unclassified spending reported to the Federal Procurement Data System, as defined by General Services Administration

Sources: [BGOV Contracts Intelligence Tool](#), [White House Fiscal 2019 Budget Request: IT Appendix](#),

What Is ‘Cloud Computing’?

- **Cloud computing according to NIST:**
 - “A model for enabling ubiquitous, convenient, on-demand network access to a shared pool of configurable computing resources (e.g., networks, servers, storage, applications, and services) that can be rapidly provisioned and released with minimal management effort or service provider interaction.”
- **Deployment models**
 - **Private** – Cloud infrastructure deployed on-premises of the organization or group of organizations
 - **Public** – Cloud infrastructure owned and managed by a third-party cloud service provider
 - **Hybrid** – Cloud infrastructure includes on-site and third-party resources linked via common standards and technologies that enable data sharing and application portability
- **Service models**
 - **Infrastructure as a Service (IaaS)** – Provision of processing, storage, networks, and computing resources by a third party, where the customer controls operating systems and applications.
 - **Platform as a Service (PaaS)** – Provision of customer-built or acquired applications, programming languages, tools, and libraries on infrastructure managed by a third party.
 - **Software as a Service (SaaS)** – Use of software tools or services developed by a third party and supported by third-party infrastructure through a web interface.

Source: [National Institute of Standards and Technologies](#), “The Definition of Cloud Computing”

Getting 'Smart' About Government Cloud

- **What is 'Cloud Smart'?**
 - The federal government's cloud computing strategy released in October 2018
 - Builds on the 2010 'Cloud First' strategy
 - Pushes federal agencies to go beyond data center consolidation and explore commercial cloud services
- **What challenges does 'Cloud Smart' help to solve?**
 - Agencies were not taking full advantage of the benefits of elastic computing
 - Government cybersecurity tools and processes were not designed with the cloud in mind
 - Agencies are not equipped to negotiate favorable service level agreements or adopt a "pay-as-you-go" model
 - The federal IT workforce currently lacks the skills and training to take full advantage of cloud computing



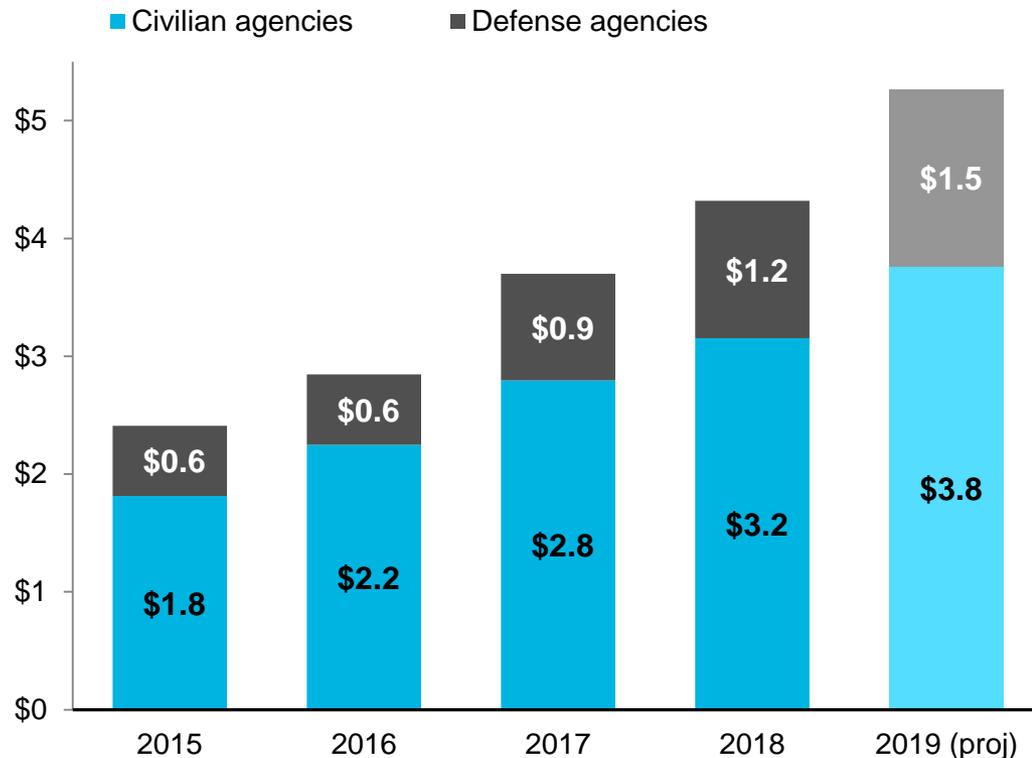
Federal Cloud Computing Strategy

Source: [Cloud Smart Strategy](#)

Cloud Computing Spending

Federal cloud spending is taking off as agencies embrace commercial cloud

Cloud Services obligations by agency in fiscal years 2015 through 2019 (projected); dollars in billions



- Federal agencies spent a combined \$4.3 billion on cloud computing in fiscal 2018
- That figure is projected to surpass \$5 billion in fiscal 2019
- Cloud spending is growing by 19 percent (CAGR) in civilian agencies and 28 percent at DOD
- In FY18, the largest cloud contracts were the CMS Virtual Data Center, SEWP V, OASIS, and Schedule 70
- Two multibillion-dollar Pentagon cloud contracts, JEDI and DEOS, have yet to be awarded

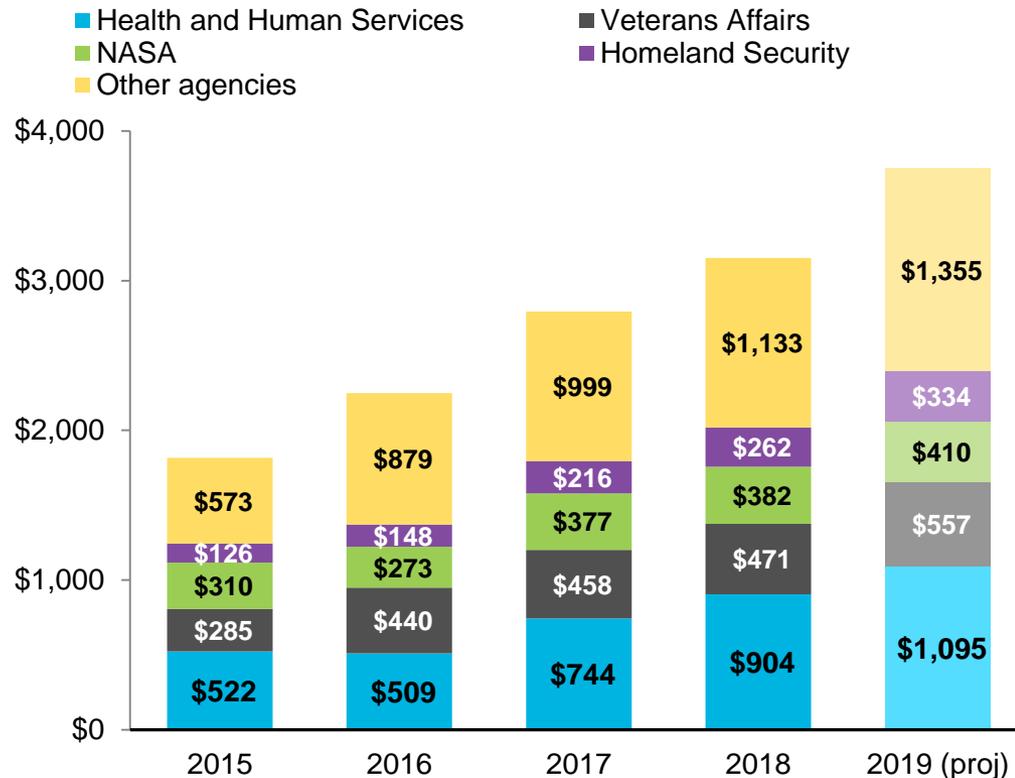
Notes: "Cloud Services" is a BGOV analyst-defined market that captures all unclassified spending on on-premises and commercial cloud infrastructure, platforms, and software, as well as cloud migration and other support services.

Sources: [BGOV Contracts Intelligence Tool](#)

Civilian Cloud Spending

Federal cloud spending is taking off as agencies embrace commercial cloud

Civilian cloud services obligations by agency in fiscal years 2015 through 2019 (projected); dollars in millions



- Civilian agencies spent a combined \$3.2 billion on cloud services in fiscal 2018
- That figure is projected to rise to \$3.8 billion in fiscal 2019
- DHS, DOJ, State, FAA, USDA, and others are embarking on enterprise IT modernizations
- Centers for Medicare and Medicaid Services (CMS) Virtual Data Center was the largest cloud contract governmentwide in fiscal 2018

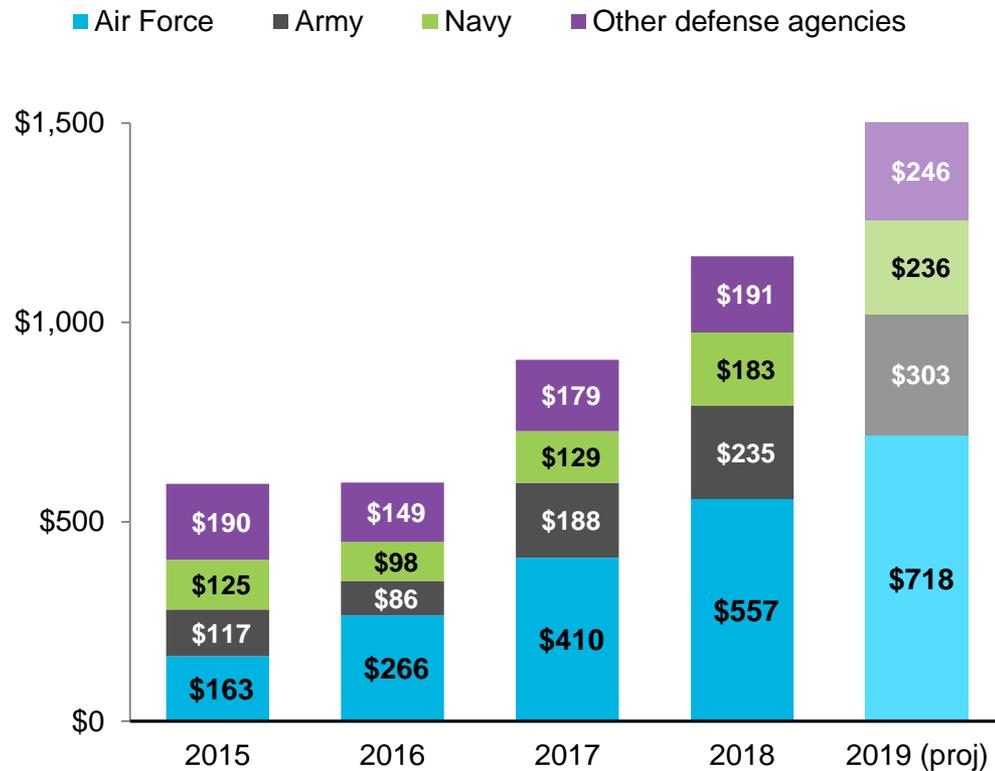
Notes: "Cloud Services" is a BGOV analyst-defined market that captures all unclassified spending on on-premises and commercial cloud infrastructure, platforms, and software, as well as cloud migration and other support services.

Sources: [BGOV Contracts Intelligence Tool](#)

Pentagon Cloud Spending

A late adopter of cloud computing, the Pentagon is rapidly making up for lost time

Pentagon cloud services obligations by agency in fiscal years 2015 through 2019 (projected); dollars in millions



- DOD spent \$1.2 billion on cloud computing in fiscal 2018
- That figure is projected to surpass \$1.5 billion in fiscal 2019
- ‘Fourth Estate’ agencies currently migrating workloads to MilCloud 2.0
- Vast majority of DOD cloud programs are “private” cloud
- \$10 billion JEDI cloud program to serve as the “pathfinder” for commercial cloud adoption

Notes: “Cloud Services” is a BGOV analyst-defined market that captures all unclassified spending on on-premises and commercial cloud infrastructure, platforms, and software, as well as cloud migration and other support services.

Sources: [BGOV Contracts Intelligence Tool](#)

The Pentagon's Cloud Strategy

• Types of cloud programs

- “General purpose” cloud – JEDI is the general purpose cloud, comprising the bulk of DOD’s IaaS needs
- “Fit-for-purpose” clouds – Programs that deliver specialized capabilities
 - MilCloud 2.0
 - SaaS programs (e.g., DEOS)
- Additional data center consolidation

• Cloud capabilities sought

- More cost-effective computing power on-demand
- Improved data analytics and machine learning
- Data-rich applications available at the tactical edge (i.e., “fog computing”)

The Pentagon's Cloud Strategy Diagram

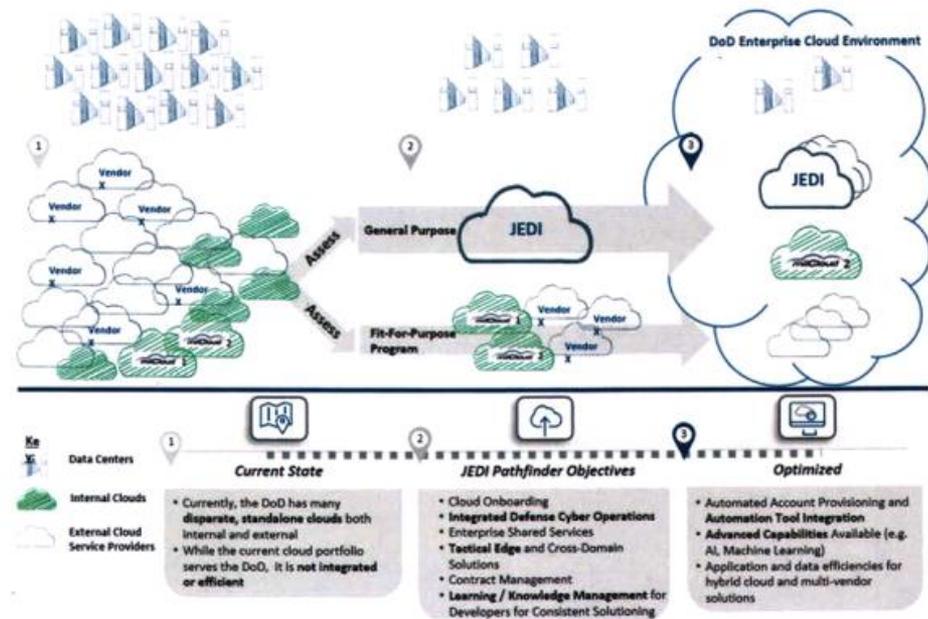


Figure 1: DoD Pathfinder to Hybrid Cloud Environments and Multiple Vendors

Top Cloud Vendors and Contracts

CMS's Virtual Data Center is the federal government's largest cloud contract

Top Cloud Vendors, FY 2018	Obligations
Perspecta Inc. (multiple agencies)	\$379 million
General Dynamics Corp. (multiple agencies)	\$271 million
Science Applications International Corp. (multiple agencies)	\$241 million
T-Rex Consulting Corp. (Census Bureau)	\$227 million
Leidos Holdings Inc. (multiple agencies)	\$184 million
Peraton Inc. (NASA)	\$176 million
By Light Professional IT Services Inc. (Veterans Affairs)	\$135 million
Four Points Technology LLC (multiple agencies)	\$124 million
AT&T Inc. (multiple agencies)	\$110 million
Carahsoft Technology Corp. (multiple agencies)	\$94 million

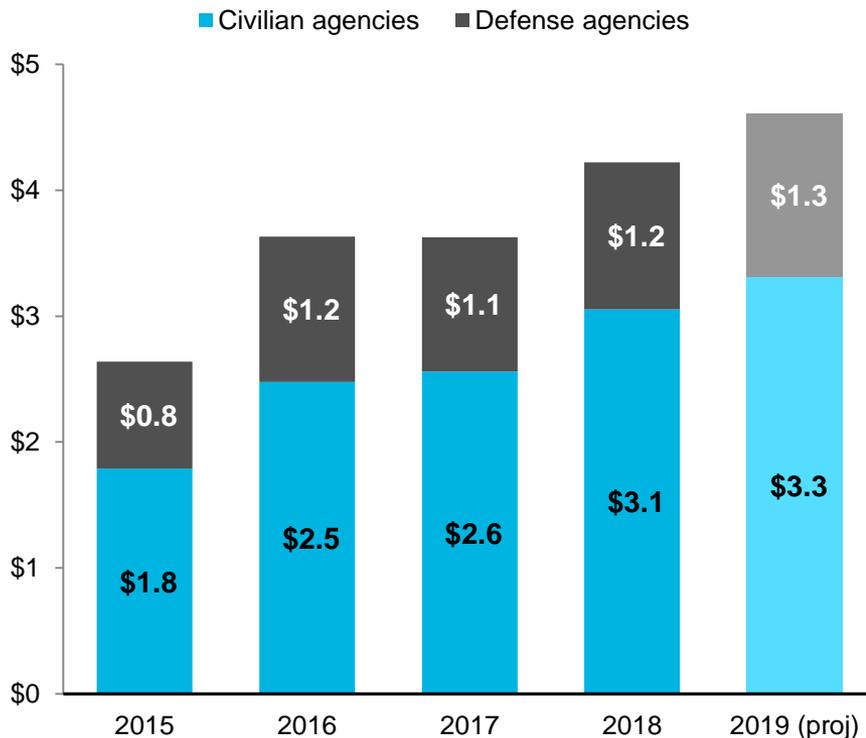
Top Cloud Contracts, FY 2018	Obligations
CMS Virtual Data Center (VDC) (multiple vendors)	\$635 million
SEWP V (multiple vendors)	\$300 million
OASIS Small Business (multiple vendors)	\$265 million
Schedule IT-70 (multiple vendors)	\$244 million
Multi-Tiered Acquisition Framework for Systems Engineering and Integration (T-Rex)	\$227 million
Space Communications Networks Services Contract (Peraton)	\$176 million
Transformation 21 Total Technology Next Generation (T4NG) (multiple vendors)	\$124 million
Omnibus Multi-Discipline Engineering Services (OMES) II (SAIC)	\$124 million
CIO-SP3 Large Business (multiple vendors)	\$110 million
OASIS Large Business (multiple vendors)	\$99 million

Source: Bloomberg Government data

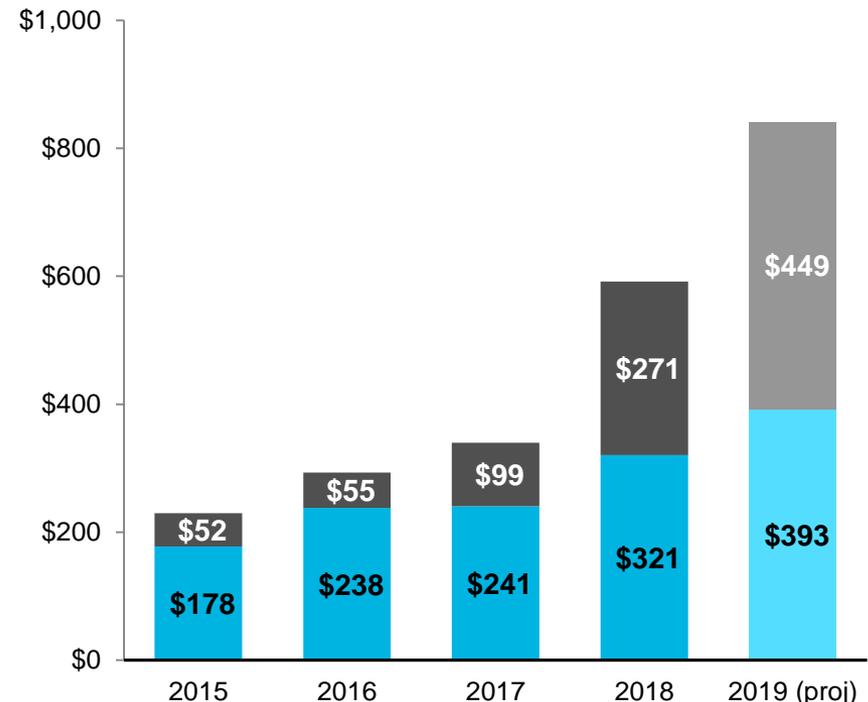
Investment in Cloud-Adjacent Technologies

Cloud computing is a key enabling technology for digital services and artificial intelligence

Digital services obligations in civilian and defense agencies in fiscal years 2015 through 2019 (projected); dollars in billions



Artificial intelligence obligations in civilian and defense agencies in fiscal years 2015 through 2019 (projected); dollars in millions



Notes: "Digital Services" is a BGOV analyst-defined market that captures all unclassified spending on providing web- and mobile-based government services, including web development, DevOps, customer relationship management, e-government. "Artificial Intelligence" is a BGOV analyst-defined market that captures all unclassified spending projects related to artificial intelligence, machine learning, deep learning, neural networks, and self-driving vehicles.

Source: Bloomberg Government data

Cloud Forecast

- **Top active cloud procurements**

- **Joint Enterprise Defense Infrastructure (JEDI)** – Acquisition delayed; Oracle sued the Pentagon over conflicts of interest; decision expected by end of FY 2019
- **Defense Enterprise Office Solutions (DEOS)** – RFQ released 1/31; to be competed by GSA on Schedule 70; award expected by the end of FY 2019
- **DHS Enterprise Cloud Migration and Data Center Optimization** – RFI released 2/19; hybrid/multi-cloud migration strategy, multiple awards expected; awards expected by the end of FY 2019
- **FBI Cloud Computing Services** – RFI released 2/16; BGOV estimates it could be worth \$300 million; RFP expected in Q3 2019
- **NOAA National Mission IT Services (NMITS)** – Industry day held in November 2018; \$2.5 billion BPA to be competed on Schedule 70; RFQ expected Q2 2019, awards expected Q2 2020

- **Expiring cloud contracts and task orders up for recompetete**

- 1525 contracts that agencies use to acquire cloud computing services will expire between now and the end of FY 2020
 - Subscribers can view them by [clicking here](#)
- 1778 cloud-related task orders, which to-date have generated \$8.7 billion, will expire between now and the end of FY 2020
 - Subscribers can view them by [clicking here](#)

The image shows the interior of the U.S. Capitol dome, viewed from a low angle looking up. The dome's intricate architectural details, including the central fresco and the surrounding tiers of windows and sculptures, are clearly visible. In the foreground, the dark silhouette of a statue stands on a pedestal, looking towards the center of the dome. The lighting is dramatic, with light streaming in from the windows, creating a sense of depth and grandeur.

Breaking Down the American AI Initiative

With Daniel Castro
Director, Center for
Data Innovation



Photo credit: U.S. Architect of the Capitol

What the US AI Strategy Does (and Doesn't Do)

Goal	Included	Not Included
Increase data, skills, and R&D	Make government data and computing resources available, prioritize federal worker training program for AI, and prioritize AI R&D.	New funding for data, training, or R&D. New data sharing models. New digitization efforts. Policies for data divide. H-1B visa caps. Expanding CS programs. Fellowships for AI PhDs. NSF policy on robotics to replace workers. R&D tax credit.
Accelerate public sector adoption		Increase AI pilots in government. Develop domain-specific AI communities of practice. Make AI strategic initiative in CIO Council. Share best practices with state and local. Prioritize AI in DoD and defense spending.
Accelerate private sector adoption		Create sector-specific AI strategies. Coordinate government-academia-industry partnerships in key fields like precision medicine. Provide state funding for AI industry development.
Protect digital free trade	Create an action plan to protect U.S. advantage in AI.	Oppose cross-border data flows and source code disclosure. Not impose export restrictions on AI.
Foster innovation-friendly regulations	Within 180 days provide guidance for regulation of AI.	Reject overly stringent federal data protection rules, encourage rules allowing data collection. Focus on safety and accountability over transparency and explainability.
Protect workers		Implement workforce training and adjustment policies.

Q&A

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Related Analysis

- [The Federal IT Market Grew by 10 Percent in Fiscal 2018](#)
- [JEDI Will Be the Focal Point of Pentagon Multi-Cloud Strategy](#)
- [DHS Unveils Enterprise Multi-Vendor, Multi-Cloud Strategy](#)
- [Trump Issues an American AI Initiative That's Short on Details, Funding](#)

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Additional Resources from CDI

Reports

- **Why the United States Needs a National AI Strategy and What It Should Look Like** (datainnovation.org)
- **How Policymakers Can Foster Algorithmic Accountability** (datainnovation.org)
- **How to Reform Worker-Training and Adjustment Policies for an Era of Technological Change** (itif.org)



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