

The Pentagon Joint Enterprise Defense Infrastructure (JEDI) Cloud Computing Contract Overview

What It Is and How the Process Deviated from Normal

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The Joint Enterprise Defense Infrastructure Cloud contract is a \$10 billion contract to provide cloud services to the Pentagon for the next ten years. The Department of Defense contracting process is highly regulated and standardized, but in this instance, abnormalities drew out the process and added complexities making this contract worth another look.

What is the cloud and why is it important?

The “cloud,” specifically the public cloud refers to the practice of having server resources managed and made available by a third-party company over the internet. The practice of using the cloud contrasts with having server resources in house or renting data center space. To quote a definition offered by Amazon, “‘Cloud Computing’ refers 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. Cloud computing is an alternative to traditional ‘on-premises’ information technology resources, which require users to plan, procure, manage, and maintain physical computing resources (i.e., servers).” Common examples of cloud providers include Amazon Web Services, Microsoft Azure, Google Cloud Platform, Alibaba Cloud, IBM Cloud, and Digital Ocean. While the specific resources available from each provider differ, most platforms offer storage, compute, web hosting, serverless functions, databases, and virtual servers. Each platform offers slightly different features such as AWS with Ground Station, a managed satellite communication service or Azure with Bing Spell Check. Migrating to the cloud has become

increasingly common with companies finding increased reliability, shorter time to market, reduced complexity, and cost savings.

Global Network of AWS Regions

The AWS Cloud spans 76 Availability Zones within 24 geographic regions around the world, with announced plans for nine more Availability Zones and three more AWS Regions in Indonesia, Japan, and Spain.



Azure regions

Azure has more global regions than any other cloud provider—offering the scale needed to bring applications closer to users around the world, preserving data residency, and offering comprehensive compliance and resiliency options for customers.

58 regions worldwide 140 available in 140 countries



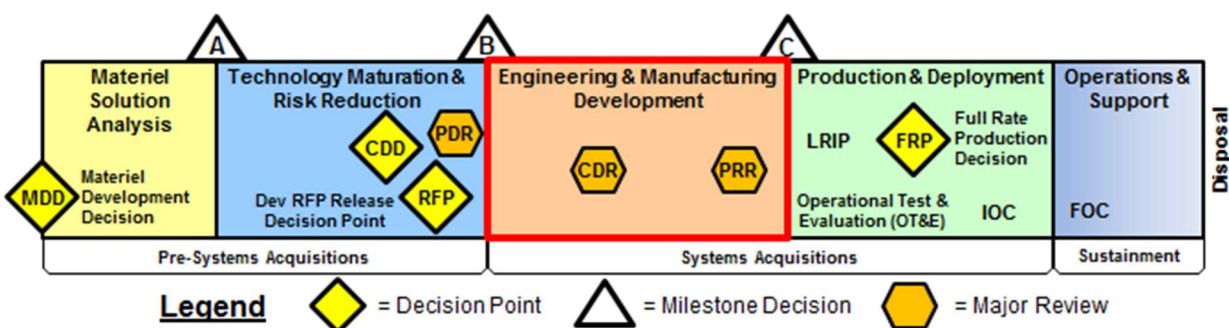
The cloud offers extremely high availability and disaster resilience. With resources spread across the globe, the cloud enables companies to position resources closer to consumers. AWS offers 76 Availability Zones in 24 regions, 7 more Availability Zones and 2 more regions since March. Similarly, Azure offers 58 regions.

AWS is the largest cloud provider with a 48% market share. Azure, the second largest has a 15.5% market share. While AWS may not be the first thing in people's minds when they think of Amazon, it comprises a majority of Amazon's profits. Originally created as an internal service before being released to the public in 2006, AWS now provides 12.5% of Amazon's revenue, and 71% of operating profits. AWS has a 48% market share and grew revenue by 34% in the final quarter of 2019.

Azure, with a 15.5% market share, grew 64% in Q2 2020, listing commercial cloud revenue as \$12.5 billion, a number that includes more than just Azure. Like AWS, Azure started as an internal service and later became public. Azure began in the mid-2000s as an attempt to catch up with Amazon. Azure was not released to the public until February 2010.

The JEDI cloud computing contract has a face value of up to \$10 billion over the next ten years, but the value goes beyond the simple dollar amount. By winning the JEDI contract the winner will have the opportunity to prove that they are cleared and certified to handle sensitive data up to the top secret level. Being certified to handle up to top secret data will give the winner an advantage when bidding on other government contracts. Given the difficulties that can arise when migrating between clouds, the contract winner will be at a distinct advantage in 10 years when the contract expires and it is time for the next one. The contract does address the issue of migration; however, the incumbent will still likely have an advantage. Outside of government, the contract remains a major opportunity to build public trust and earn customer confidence.

How the Process Works



Department of Defense acquisitions all follow a consistent process through which they are purchased. The acquisition process has five major phases and is implemented by DoD Instruction 5000.02 "Operation of the Adaptive Acquisition Framework." The process begins with the Materiel Solution Analysis (MSA) phase. The MSA phase focuses on fully exploring the need for a capability and assessing possible solutions. The Analysis of Alternatives is conducted at this stage in the process to evaluate other potential solutions that could meet the capability need. Following the MSA phase is the Technology Maturation & Risk Reduction (TMRR) Phase. The TMRR Phase works on refining requirements and develops system prototypes. The Engineering & Manufacturing Development (EMD) Phase comes next in the process. The EMD phase finishes development and finalizes the system design. The phase also includes developing an affordable, efficient manufacturing process. At this phase, reliability, availability, maintainability, and sustainment should be demonstrated. The next and next to last phase of the process is the Production & Deployment (PD) Phase. The PD phase scales the solution producing it at scale. Solution production usually overlaps with the beginning of deployment. The final phase is the Operations & Support (OS) Phase. During the OS phase the system is actively used to provide the needed capability. The phase includes support necessary to use and sustain the system. The line between this phase and the PD phase can start to blur a bit because support of the system often starts as soon as the system is fielded.

Contracting, a process of its own, occurs during the TMRR phase. Contracting breaks into four phases, Phase 1: Planning for Procurement, Phase 2: Solicitation, Phase 3: Evaluation, and finally Phase 4: Contract Award.

The Pentagon put out a request for contract bids for the JEDI cloud on July 26th, 2018.

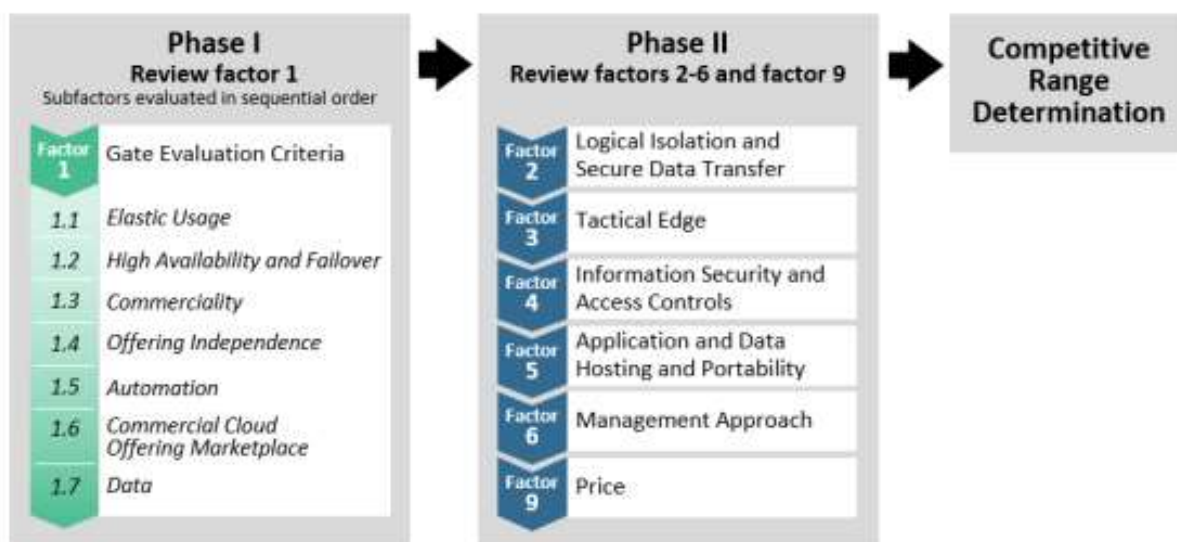
The Pentagon was looking for a cloud that met a litany of requirements relating to features, security, and performance. The eight primary objectives that the cloud solution had to achieve included:

1. Available and Resilient Services
2. Globally Accessible
3. Centralized Management and Distributed Control
4. Ease of Use
5. Commercial Parity
6. Modern and Elastic Computing, Storage and Network Infrastructure
7. Fortified Security
8. Advance Data Analytics

To quote from the contract award announcement, “The JEDI Cloud contract will provide enterprise level, commercial Infrastructure as a Service (IaaS) and Platform as a Service (PaaS) to support Department of Defense business and mission operations.”

The JEDI contract involved competition between most of the major cloud providers with Amazon, IBM, Oracle America, Microsoft, and Google all expressing interest. Google dropped out early on in October of 2018, a mere three months after the request for proposals was released. On the issue, a Google spokesperson said “While we are working to support the US government with our cloud in many areas, we are not bidding on the JEDI contract because first, we couldn’t be assured that it would align with our AI Principles and second, we

determined that there were portions of the contract that were out of scope with our current government certifications,” at the time. The withdrawal from the contract came on the heels of protests over Google’s involvement in Project Maven. The protest included a letter signed by thousands of employees addressed to Sundar Pichai, the CEO of Google, claiming “We believe that Google should not be in the business of war.” As of April 10, 2019, the Pentagon announced Amazon AWS and Microsoft Azure as the only two offerors who satisfied the Request for Proposal’s gate criteria. The gate criteria included elastic usage, high availability and failover, commerciality, offering independence, automation, commercial cloud offering marketplace, and data.



How the process deviated from normal

Microsoft was awarded the contract on October 28th, 2019. The contract award announcement on the DoD website said, “Microsoft Corporation, Redmond, Washington, has been awarded a firm-fixed-price, indefinite-delivery/indefinite-quantity contract with a ceiling value of \$10,000,000,000 over a period of 10 years, if all options are exercised.” To briefly

explain this, the JEDI contract has a minimum value of only \$1 million and the maximum value is \$10 billion. The contract is split up into a two-year base period with three option periods, 3 years, 3 years, and 2 years, that can be exercised. The contract has a low guaranteed minimum and gives the DoD multiple opportunities to end the contract if necessary.

Unfortunately, the contract process did not stop with the award, and this is not the first irregularity in the process. Amazon has submitted a protest alleging that the contract was awarded for improper reasons. Other companies complained of contract irregularities even before the proposals were due. Both Oracle and IBM protested that the contract was set to be awarded to a single company. Both protests were denied by the Government Accountability Office. Ralph O. White, the managing associate general counsel for procurement law said, “The agency reasonably determined that a single-award approach is in the government’s best interest for various reasons, including national security concerns, as the statute allows.” Deborah Hellinger, an Oracle spokesman said in a statement that the company “believes that both the warfighter and the taxpayer benefit most from a rigorous and truly competitive process. We remain undeterred in our commitment to bring tremendous value and flexibility to our customers, including the Department of Defense.”

Oracle was not content with the decision and so it filed a protest in court on December 6th 2018. In the words of Oracle Senior Vice President Ken Glueck, “Oracle filed its protest on JEDI with the Court of Federal Claims. The technology industry is innovating around next-generation cloud at an unprecedented pace and JEDI as currently envisioned virtually assures DoD will be locked into legacy cloud for a decade or more. The single-award approach is contrary to well-established procurement requirements and is out of sync with industry’s multi-

cloud strategy, which promotes constant competition, fosters rapid innovation and lowers prices.” The protest expanded Oracle’s allegations of wrong doing.

In the court filing, Oracle presented four main questions,”1) Whether DoD violated the statutory prohibition on single source awards by attempting to recast the JEDI contract and its technology refresh provisions as seeking only ‘Services for which prices are established in the contract for the specific tasks to be performed.’ 2) Whether DoD violated applicable law by failing to ‘give preference to making multiple [IDIQ [Indefinite-Delivery/Indefinite-Quantity]] awards’ to the ‘maximum extent practicable.’ 3) Whether DoD’s imposition of the three challenged gate criteria (Subfactors 1.2 [High Availability and Failover], 1.1 [Elastic Usage], and 1.6 [Commercial Cloud Offering Marketplace]) violates statutory and regulatory proscriptions governing qualification requirements, barring unduly restrictive specifications, and limiting DoD’s authority. 4) Whether the CO’s determination that the participation of heavily-conflicted former government officials had no impact on the procurement’s integrity and the CO’s failure to investigate AWS’ rehiring of [Deap] Ubhi violate procurement law or otherwise lack a rational basis.”

On July 19, 2019, Eric G. Bruggink, a Senior Judge, issued the conclusion that “Because the court finds that Gate Criteria 1.2 [High Availability and Failover] is enforceable, and because Oracle concedes that it could not meet that criteria at the time of proposal submission, we conclude that it cannot demonstrate prejudice as a result of any other possible errors. Plaintiff’s motion for judgment on the administrative record is therefore denied. Defendant’s and intervenor’s respective cross-motions for judgment on the administrative record are granted. The Clerk is directed to enter judgment for defendant. No costs.”

To focus in for a moment on the decision to award the contract to a single vendor. Indefinite-Delivery/Indefinite-Quantity contracts are ideally awarded to more than one company. The preference for making multiple awards for such contracts is made clear in the Federal Acquisition Regulation handbook (FAR) Part 16 Subpart 500 section (a). To quote it “(a) This subpart prescribes policies and procedures for making awards of indefinite-delivery contracts and establishes a preference for making multiple awards of indefinite-quantity contracts.” With this in mind, the contract had to obtain an exception from Ellen Lord, the Under Secretary of Defense for Acquisition and Sustainment. *The Determination and Findings (D&F) for Authority to Award a Task Order Contract to a Single Source* focused on explaining the clauses for maintaining competitive prices that are included in the contract and that the prices for firm, fixed price task orders or delivery orders for services are established in the contract. Despite getting the necessary exemption, work arounds like this highlight the larger issue of how the practice of granting exemptions for indefinite-delivery/indefinite-quantity contracts has become much more of the norm rather than the exception.

In its legal protest, Oracle cites three employees that it believes had conflicts of interest and improperly influenced the decision-making process. The officials in question included Tony DeMartino, Deep Ubhi, and Victor Gavin. Tony DeMartino consulted for AWS before he joined the department of defense. He was prohibited from participating in matters “where one of the entities for whom you served as a consultant during the last year is or represents a party to the matter,” but Oracle alleged that Mr. DeMartino continued to work on matters related to the JEDI contract. The Contracting Officer (CO) evaluated the situation concluding that “he [Tony DeMartino] did not have ‘input or involvement in the reviewing or drafting of the draft

solicitation package, the Acquisition Strategy, Business Case Analysis, or other pre-decisional sensitive documents relative to the JEDI Cloud acquisition.”

Deap Ubhi is the most frequently mentioned employee with an alleged conflict of interests. Mr. Ubhi previously worked for Amazon AWS before working for the Pentagon. After leaving the Pentagon, he returned to work for Amazon which has raised eyebrows. To make things look even worse, Mr. Ubhi on January 30th, 2017 tweeted, “Once an Amazonian, always an Amazonian. Proud today. Thank you, @JeffBezos,” in reference to an article about Jeff Bezos promising to fight President Trump’s immigration ban. Mr. Ubhi was not prohibited from participating in the procurement because more than a year had passed since he had been employed by Amazon. On October 31, 2017, he recused himself from the process because he claimed Amazon had entered into partnership discussions with TableHero, a startup he had founded. At the time the CO looked into Mr. Ubhi’s involvement in the process finding that he did not negatively impact the integrity of the procurement because his impartiality restriction had been lifted, he recused himself promptly when necessary, and his participation was limited. Mr. Ubhi was found to have lied about his contact with AWS and Amazon’s interest in Tablehero, his startup. Deap Ubhi had applied for employment with AWS as early as April 26, 2017. He made a verbal commitment to rejoin AWS on October 4, 2017. On employment forms he misrepresented that he had communicated with his employer’s ethics officer to confirm he was permitted to have employment discussions with AWS and he didn’t have any restrictions from handling specific matters if employed by Amazon. Mr. Ubhi accepted a formal offer of employment with AWS on October 27th, 2017, four days before he recused himself, resigning shortly later. The CO conducted an extensive re-evaluation of the situation and came to the

conclusion that Mr. Ubhi had violated the requirement to avoid conflicts of interest, but he had not provided AWS with any sensitive source selection or proposal information. The CO did not find any quid pro quo given that Deap had expressed interest in returning to work for AWS before he began working on the JEDI Cloud procurement and given the standard employment package he was offered. Mr. Ubhi was found to have not been involved when critical decisions were made and his Slack message history with co-workers did not reveal an obvious bias. The conclusion was reached that even if he had attempted to introduce bias, it would not have worked because he lacked technical expertise needed to “substantively influence the JEDI Cloud procurement.” His attempts to influence the procurement were limited, and all key decisions were both made after Mr. Ubhi had recused himself and were “vetted by numerous DoD personal to ensure that the JEDI Cloud RFP truly reflects DoD’s requirement.” Mr. Ubhi’s actions were found to be unethical and improper. The CO closed with “[e]ven though I find that Mr. Ubhi violated FAR 3.101-1 and may have violated 18 U.S.C. § 208 and its implementing regulations, I determine that there is no impact on the pending award or selection of a contractor in accordance with FAR 3.104-7.”

The third accused official was Victor Gavin, a former Deputy Assistant Secretary of the Navy for C41 and Space Programs. Mr. Gavin discussed plans for future employment with defense contractors with the Navy ethics counsel in summer of 2017. He began talking with an AWS recruiter in the fall of 2017. Victor attended two meetings relating to the process, one of which on October 5th, 2017 related to sharing the Navy’s experience with cloud services with the Cloud Executive Steering Group. The other meeting on April 5th, 2018 discussed the draft Acquisition Strategy. Mr. Gavin interviewed with AWS on January 15th, 2018, 4 days after he

requested to be excluded from matters concerning AWS. Mr. Gavin accepted a job with AWS starting with them on June 18th, 2018 as a Principal in Federal Technology and Business Development. He did have conversations relating to the JEDI contract after the beginning of his employment with AWS, but they are described as informal and containing “only general input on acquisition practices and the Navy[’s] cloud usage.” On July 26th AWS implemented an information firewall prohibiting Mr. Gavin from “disclosing any non-public information about DoD’s JEDI procurement (were he to have any) to any AWS employee” and Mr. Gavin agreed to comply. The CO opined that Mr. Gavin’s “attendance at the April 5th, 2018 meeting may have constituted” personal and substantial participation in the JEDI Cloud procurement, but that his attendance at the October 5th, 2017 meeting did not. The CO concluded, “The CO decided that Mr. Gavin violated FAR 3.101-1, and possibly 18 U.S.C. § 208 (2012), but that his involvement did not taint the procurement. The CO specifically found that he had limited access to the draft Acquisition Strategy and did not furnish any input on the document; he did not disclose any competitively useful nonpublic information; he did not obtain or disclose other bid information to AWS; and he did not introduce bias into the meetings he attended.” In short, “she concluded that it had not received any competitively useful information or unfair advantage through Mr. Gavin.”

What were the deciding factors?

The proposals were evaluated based on the following nine enumerated factors:

- Factor 1: Gate Evaluation Criteria

- Factor 2: Logical Isolation and Secure Data Transfer
- Factor 3: Tactical Edge
- Factor 4: Information Security and Access Controls
- Factor 5: Application and Data Hosting and Portability
- Factor 6: Management and TO 001
- Factor 7: Small Business Participation Approach
- Factor 8: Demonstration
- Factor 9: Price

Offerors were required to meet an “Acceptable” rating for all of the sub-criteria in Factor 1 before they were considered for the contract. The remaining factors ranked in descending order of importance were “Factor 2, Factor 3, Factor 4, Factor 5, Factor 8, Factor 6, and Factor 7,” and Factor 9, price was considered less important than the other non-price factors. Factors 7 and 8 were only evaluated once an offeror was considered to be competitive. To quote more information about price, “Price will become increasingly more important as the rating for each of the non-price factor ratings become increasingly equal. When the offerors within the competitive range are considered essentially equal in terms of technical capability, or when price is so significantly high as to diminish the value of the technical superiority to the Government, price may become the determining factor for the award.” In short, the Government is looking for the proposal that best meets the needs of the government and delivers the best value. Beyond the surface level, we don’t know the details of what each company proposed or what prices they quoted. Without knowing more details we don’t know what the deciding factors between the two companies were or even how competitive the

proposals were. By and large, Amazon was favored to win the contract given their greater market share. One point frequently raised is that Amazon has previous experience with handling classified data at the top secret level while Microsoft only recently received the certification. Amazon has provided Classified Cloud Services (C2S) to the CIA since 2013. Both offerors have current government focused offerings and their public cloud offerings are competitive.

Why Amazon is challenging the decision

Now that the contract has been awarded, Amazon has filed a post-award bid protest alleging “political influence” biased the award decision and that there were “clear deficiencies” in the evaluation stage. Post-award protests are not actually all out of the ordinary, for example IBM submitted a protest when Amazon won the CIA cloud computing contract in June 2013.

In the protest, Amazon alleges that President Trump’s influence on the process was improper. To quote Andy Jassy, AWS Chief Executive, “I think when you have a sitting president who’s willing to publicly show his disdain for a company and the leader of a company, it’s very difficult for government agencies including the DoD to make an objective decision without fear of reprisal.” For context, during an event on July 18th, 2019 The President said:

“And we’re getting tremendous, really, complaints from other companies and from great companies. Some of the greatest companies in the world are complaining about it, having to do with Amazon and the Department of Defense.

And I will be asking them to look at it very closely to see what's going on because I have had very few things where there's been such complaining. Not only complaining from the media — or at least asking questions about it from the media — but complaining from different companies like Microsoft and Oracle and IBM. Great companies are complaining about it. So, we're going to take a look at it. We'll take a very strong look at it."

AWS's complaint asserts a total seven counts wrong with the process. Count I and II allege that DoD failed to evaluate the competing AWS and Microsoft proposals in accordance with the terms of the RFP. Count III challenges the express terms of the solicitation itself, arguing that DoD's failure to identify "past performance" as an evaluation metric was contrary to applicable regulations and unfairly prejudicial to AWS. Count IV claims that the errors alleged in Counts I, II, and III cumulatively led to an irrational decision as to which proposal represented the best value for DoD. In Counts V through VII, AWS pivots to the allegation that the entire JEDI Cloud procurement process was biased against AWS, largely on public statements and tweets by President Trump.

The court awarded Amazon a Preliminary Injunction on February 13, 2020. The Injunction came one day before the system was planned to go live, forcing work on the contract to stop. The injunction was awarded based on allegations that Microsoft listed a non-compliant storage solution for Price Scenario 6. The court decided that Amazon would probably be able to demonstrate that the DoD erred in the contract award decision and on that basis granted the injunction. The Pentagon filed for a voluntary remand on March 12th, 2020, in order to re-evaluate the contract decision. Amazon opposed this motion to remand, but Microsoft did not

oppose. Granted on April 18th 2020, the remand gives the pentagon 120 days, until August 17th 2020, to reevaluate the award decision. The “DoD wishes to reconsider its evaluation of the technical aspects of Price Scenario 6, and intends to issue a solicitation amendment and to accept limited proposal revisions addressing the offerors’ technical approach to that price scenario. Proposal revisions on remand will be constrained by the storage solutions and unit prices contained in offerors’ final proposal revisions . . . DoD also wishes to reconsider its evaluation of the offerors’ online marketplace offerings and may conduct clarifications with the offerors relating to the availability of marketplace offerings. Finally, DoD wishes to reconsider its award decision in response to the other technical challenges presented by AWS.”

Since motion to remand began, the Department of Defense Inspector General released a comprehensive “Report on the Joint Enterprise Defense Infrastructure (JEDI) Cloud Procurement.” The report reviewed the allegations that errors were made in the selection process, specifically, the report “reviewed whether:

- the DoD’s decision to award the JEDI Cloud Indefinite Delivery/Indefinite Quantity contract to a single contractor was consistent with applicable acquisition standards;
- the JEDI Cloud Request for Proposals was consistent with applicable acquisition standards;
- the DoD followed DoD and Federal standards, DoD Source Selection Procedures and Request for Proposals, Sections M1 – Basis for Award and M2 – Evaluation Process during the source selection process;

- the disclosure of source selection information and Microsoft's proprietary information after the JEDI Cloud contract award violated the Federal Acquisition Regulation or DoD policy; and,
- the JEDI Cloud contract source selection was improperly influenced, including alleged influence from the White House."

Additionally, the allegations of ethical misconduct were investigated. The report is clear that the "review did not assess the appropriateness of the DoD's award of the JEDI Cloud contract to Microsoft rather than AWS. We did not review the merits of the contractors' proposals or DoD's technical or price evaluations; rather, we reviewed the source selection process and whether it was in compliance with applicable statutes, policies, and the evaluation process described in the Request for Proposals, and also whether it was influenced by outside pressure."

The report concludes that the choice to award the contract to a single source was within applicable standards and that the requirements listed in the Request for Proposal were "reasonable and based on approved requirements, essential cloud capabilities, DoD cloud security policy, and the Federal risk and Authorization Management Program guidance." The report does note that source selection and proprietary Microsoft information was disclosed to Amazon soon after the award was made. Suggestions to prevent these issues in the future included developing new policies for extremely large acquisitions and requiring training for officials handling sensitive acquisitions related matters.

The report notes that due to "presidential communications privilege," some witnesses could not be interviewed. Despite the perception of bias in the process, the report claims "we believe the evidence we received showed that the DoD personnel who evaluated the contract

proposals and awarded Microsoft the JEDI Cloud contract were not pressured regarding their decision on the award of the contract by any DoD leaders more senior to them, who may have communicated with the White House.”

The report looks at a total of seven allegations of ethical misconduct including Mr. Ubhi, Mr. DeMartino, and Mr. Gavin, adding Mr. Daigle, Ms. Donnelly, Secretary Mattis, and Ms. Cummings. Only Mr. Ubhi and Ms. Cummings had allegations substantiated against them.

Conclusion

The voluntary remand is still on going, so the following is posturing at best. The potential outcomes can be simplified to three main options, 1) maintain the award to Microsoft, 2) switch to AWS, or 3) split the award. Upholding the decision seems likely.

Azure did not oppose the motion to remand the case to the Department of Defense, a move that seems to indicate Microsoft remains confident that even with the updated pricing information they will be selected. Splitting the contract is possible, but could be further complicated if Oracle or IBM attempt to pursue further legal action after the decision to select a single source was upheld. Making the switch to AWS is possible. While the inspector general did not find evidence of bias against Amazon in the process, the updated Scenario 6 storage pricing numbers could change the decision. What ever the decision ends up being, the remand process will end come August.

Process Notes

When I first started writing the paper, I found that I relied heavily on commercial news sources. Once I had established a basic knowledge of the topic, I branched out into the technical summaries produced for the government, reports, and legal documents. In the end, many of these summaries and legal documents referenced many of the same news articles that I started with. I found a few academic sources on this topic, but overall, I didn't find much. I could have done more with academic sources on federal acquisitions, but I decided that was not the direction I wanted to go. In the end, the Report on the Joint Enterprise Defense Infrastructure Cloud Procurement beat me to some of the analysis I had wanted to do, but that is one of the challenges of working on a current and still evolving topic.

Bibliography

16.500 Scope of Subpart. | Acquisition.GOV. <https://www.acquisition.gov/content/16500-scope-subpart>. Accessed 15 Apr. 2020.

“Acquisition Professional’s C.A.S.T.L.E. Guide.” *Federal News Network*, <https://federalnewsnetwork.com/wp-content/uploads/2017/09/Acquisition-Professionals-CASTLE-Guide-Draft.pdf>. Accessed 5 May 2020.

“Amazon: Global Net Revenue by Product 2019.” *Statista*. *www.statista.com*, <https://www.statista.com/statistics/672747/amazons-consolidated-net-revenue-by-segment/>. Accessed 13 Apr. 2020.

“Amazon Web Services (AWS) - Cloud Computing Services.” *Amazon Web Services, Inc.* *aws.amazon.com*, <https://aws.amazon.com/>. Accessed 15 Mar. 2020.

“Amazon Web Services Wins Again In Battle To Build The CIA Cloud.” *TechCrunch*.

techcrunch.com, <http://social.techcrunch.com/2013/10/07/amazon-web-services-wins-again-in-battle-to-build-the-cia-and-nsa-cloud/>. Accessed 15 Mar. 2020.

Azure Regions | Microsoft Azure. azure.microsoft.com, <https://azure.microsoft.com/en-us/global-infrastructure/regions/>. Accessed 5 May 2020.

Beta.SAM.Gov.

https://beta.sam.gov/opp/3860a4f4fe9d9ffc31e722ece82a143c/view?index=opp&sort=-relevance&page=1&keywords=JEDI&opp_response_date_filter_model=%7B%22dateRange%22:%7B%22startDate%22:%22%22,%22endDate%22:%22%22%7D%7D&date_filter_index=0&inactive_filter_values=false. Accessed 12 Apr. 2020.

Bid Protest Court of Federal Claims Temporary Restraining Order. United States Court of Federal Claims, https://context-cdn.washingtonpost.com/notes/prod/default/documents/84cbc3ca-b503-400e-9c28-ed79b77e594f/note/4afb1a63-58c6-40fc-a9e6-39dda29f9b26.pdf?tid=lk_inline_manual_2&itid=lk_inline_manual_2. Accessed 15 Mar. 2020.

Bid Protest Redacted Document 26. 9 Dec. 2019. *Document 26*, <https://www.courthousenews.com/wp-content/uploads/2019/12/amazon-trump-cafc.pdf>.

Bur, Jessie. “Oracle Takes JEDI Protest to Federal Court.” *Federal Times*, 11 Dec. 2018. *www.federaltimes.com*, <https://www.federaltimes.com/acquisition/2018/12/10/oracle-takes-jedi-protest-to-federal-court/>.

Campbell-Smith, Patricia. *Public Version of 203 ORDER Granting 177 Motion to Remand Issued under Seal on April 17, 2020*. <https://www.courtlistener.com/recap/gov.uscourts.uscfc.40037/gov.uscourts.uscfc.40037.205.0.pdf>. Accessed 7 May 2020.

Chan, Rosalie. “Google Drops out of Contention for a \$10 Billion Defense Contract Because It Could Conflict with Its Corporate Values.” *Business Insider*. www.businessinsider.com,

<https://www.businessinsider.com/google-drops-out-of-10-billion-jedi-contract-bid-2018-10>.

Accessed 15 Mar. 2020.

Conger, Kate, and Cade Metz. “‘I Could Solve Most of Your Problems’: Eric Schmidt’s Pentagon Offensive.” *The New York Times*, 2 May 2020. *NYTimes.com*,

<https://www.nytimes.com/2020/05/02/technology/eric-schmidt-pentagon-google.html>.

“Contracts for October 25, 2019.” *U.S. DEPARTMENT OF DEFENSE*. www.defense.gov,

<https://www.defense.gov/Newsroom/Contracts/Contract/Article/1999639//>. Accessed 15 Mar.

2020.

Defense Information Systems Agency. *Department of Defense Cloud Computing Security*

Requirements Guide. 6 Mar. 2017, [https://dl.dod.cyber.mil/wp-](https://dl.dod.cyber.mil/wp-content/uploads/cloud/pdf/Cloud_Computing_SRG_v1r3.pdf#page=29)

[content/uploads/cloud/pdf/Cloud_Computing_SRG_v1r3.pdf#page=29](https://dl.dod.cyber.mil/wp-content/uploads/cloud/pdf/Cloud_Computing_SRG_v1r3.pdf#page=29).

Department of Defense Chief Information Officer. *JEDI: Understanding the Warfighting*

Requirements for DoD Enterprise Cloud. <https://media.defense.gov/2019/Aug/08/2002168542/->

[1/-1/1/UNDERSTANDING-THE-WARFIGHTING-REQUIREMENTS-FOR-DOD-](https://media.defense.gov/2019/Aug/08/2002168542/-1/-1/1/UNDERSTANDING-THE-WARFIGHTING-REQUIREMENTS-FOR-DOD-)

[ENTERPRISE-CLOUD-FINAL-08AUG2019.PDF](https://media.defense.gov/2019/Aug/08/2002168542/-1/-1/1/UNDERSTANDING-THE-WARFIGHTING-REQUIREMENTS-FOR-DOD-ENTERPRISE-CLOUD-FINAL-08AUG2019.PDF). Accessed 6 May 2020.

Dignan, Larry. “Microsoft’s Q2 Surges, Commercial Cloud Hits \$50 Billion Annual Run Rate, Azure

Revenue up 62%.” *ZDNet*. www.zdnet.com, [https://www.zdnet.com/article/microsofts-q2-surges-](https://www.zdnet.com/article/microsofts-q2-surges-commercial-cloud-hits-50-billion-annual-run-rate-azure-revenue-up-62/)

[commercial-cloud-hits-50-billion-annual-run-rate-azure-revenue-up-62/](https://www.zdnet.com/article/microsofts-q2-surges-commercial-cloud-hits-50-billion-annual-run-rate-azure-revenue-up-62/). Accessed 5 May 2020.

Directory of Azure Cloud Services | Microsoft Azure. azure.microsoft.com,

<https://azure.microsoft.com/en-us/services/>. Accessed 5 May 2020.

“Docket for AMAZON WEB SERVICES, INC. v. United States, 1:19-Cv-01796 -

CourtListener.Com.” *CourtListener*. www.courtlistener.com,

<https://www.courtlistener.com/docket/16507495/amazon-web-services-inc-v-united-states/>.

Accessed 7 May 2020.

DoD Officials Describe Plan for Cloud Acquisition Program. YouTube,

<https://www.youtube.com/watch?v=QXnl9y3jqwg>. Accessed 6 May 2020.

“Gartner Says Worldwide IaaS Public Cloud Services Market Grew 31.3% in 2018.” *Gartner*.

www.gartner.com, [https://www.gartner.com/en/newsroom/press-releases/2019-07-29-gartner-](https://www.gartner.com/en/newsroom/press-releases/2019-07-29-gartner-says-worldwide-iaas-public-cloud-services-market-grew-31point3-percent-in-2018)

[says-worldwide-iaas-public-cloud-services-market-grew-31point3-percent-in-2018](https://www.gartner.com/en/newsroom/press-releases/2019-07-29-gartner-says-worldwide-iaas-public-cloud-services-market-grew-31point3-percent-in-2018). Accessed 13

Apr. 2020.

“Google Drops Out of Pentagon’s \$10 Billion Cloud Competition.” *Bloomberg.Com*, 8 Oct. 2018.

www.bloomberg.com, [https://www.bloomberg.com/news/articles/2018-10-08/google-drops-out-](https://www.bloomberg.com/news/articles/2018-10-08/google-drops-out-of-pentagon-s-10-billion-cloud-competition)
[of-pentagon-s-10-billion-cloud-competition](https://www.bloomberg.com/news/articles/2018-10-08/google-drops-out-of-pentagon-s-10-billion-cloud-competition).

Greene, Jay, et al. “Amazon Will Challenge Pentagon’s Award of \$10 Billion JEDI Contract to

Microsoft.” *Washington Post*. www.washingtonpost.com,

[https://www.washingtonpost.com/business/2019/11/14/amazon-will-challenge-pentagons-award-](https://www.washingtonpost.com/business/2019/11/14/amazon-will-challenge-pentagons-award-billion-jedi-contract-microsoft/)
[billion-jedi-contract-microsoft/](https://www.washingtonpost.com/business/2019/11/14/amazon-will-challenge-pentagons-award-billion-jedi-contract-microsoft/). Accessed 15 Mar. 2020.

---. “Amazon’s Formal Challenge to Huge Pentagon Award Uses Videos That Mark Potential

Influence Exerted by Trump.” *Washington Post*. www.washingtonpost.com,

[https://www.washingtonpost.com/technology/2019/11/22/amazon-files-protest-pentagons-](https://www.washingtonpost.com/technology/2019/11/22/amazon-files-protest-pentagons-billion-jedi-award-under-seal/)
[billion-jedi-award-under-seal/](https://www.washingtonpost.com/technology/2019/11/22/amazon-files-protest-pentagons-billion-jedi-award-under-seal/). Accessed 14 Apr. 2020.

Gregg, Aaron. “GAO Axes IBM’s Bid Protest, Teeing up a Court Battle over Pentagon’s \$10 Billion

Cloud Effort.” *Washington Post*. www.washingtonpost.com,

<https://www.washingtonpost.com/business/2018/12/12/gao-axes-ibms-bid-protest-teeing-up-court-battle-over-pentagons-billion-cloud-effort/>. Accessed 15 Mar. 2020.

Gregg, Aaron, closeAaron GreggReporter covering the defense industry, government

contractorsEmailEmailBioBioFollowFollowChristian Davenport closeChristian

DavenportReporter covering the defense, et al. “GAO Strikes down Oracle’s Bid Protest, Clearing the Way for Pentagon’s \$10 Billion Cloud Effort.” *Washington Post*.

www.washingtonpost.com, <https://www.washingtonpost.com/business/2018/11/14/gao-strikes-down-oracles-bid-protest-clearing-way-pentagons-billion-cloud-effort/>. Accessed 15 Mar. 2020.

Gregg, Aaron, closeAaron GreggReporter covering the defense industry, and government

contractorsEmailEmailBioBioFollowFollowJay Greene closeJay GreeneReporter focused on

technology coverage in the Pacific Northwest EmailEmailBioBioFollowFollow. “Trump Says Pentagon’s \$10 Billion Cloud Contract Should Be Investigated. Again.” *Washington Post*.

www.washingtonpost.com, <https://www.washingtonpost.com/business/2019/07/18/trump-says-pentagons-billion-cloud-contract-should-be-investigated-again/>. Accessed 15 Mar. 2020.

“Here’s the Argument That Won Amazon an Injunction against Microsoft’s JEDI Win.”

SiliconANGLE, 7 Mar. 2020. *siliconangle.com*, <https://siliconangle.com/2020/03/07/heres-argument-won-amazon-injunction-microsofts-jedi-win/>.

“How AWS Came to Be.” *TechCrunch*. *techcrunch.com*,

<http://social.techcrunch.com/2016/07/02/andy-jassys-brief-history-of-the-genesis-of-aws/>.

Accessed 15 Mar. 2020.

IBM Challenges CIA Amazon Contract. Government Accountability Office, 6 June 2013. B-

407073.3; B-407073.4; B-407073.5; B-407073.6, <https://www.gao.gov/assets/660/655241.pdf>.

IN THE UNITED STATES COURT OF FEDERAL CLAIMS BID PROTEST. Microsoft, 10 Feb. 2020, <https://www.courtlistener.com/recap/gov.uscourts.uscfc.40037/gov.uscourts.uscfc.40037.153.08.pdf>.

industry, Aaron Gregg close Aaron Gregg Reporter covering the defense, and government contractors Email Email Bio Bio Follow Follow. “Judge’s Order Halting JEDI Work Just the Latest Roadblock in Defense Dept.’s Frustrating Journey.” *Washington Post*. www.washingtonpost.com, <https://www.washingtonpost.com/business/2020/02/13/court-orders-pentagon-halt-work-microsofts-jedi-cloud-contract-after-amazon-protests/>. Accessed 7 May 2020.

JEDI: One Year in the Pentagon’s Push for a Revolutionary Cloud. www.nextgov.com, <https://www.nextgov.com/feature/jedi-contract/>. Accessed 15 Mar. 2020.

JEDI Program Aims to Boost Military Lethality, Readiness. YouTube, <https://www.youtube.com/watch?v=7PJe61xNbAQ>. Accessed 6 May 2020.

Joint Enterprise Defense Infrastructure (JEDI) Cloud Statement of Objectives (SOO) as of 26 July 2018. DEPT OF DEFENSE, 26 July 2018, https://beta.sam.gov/api/prod/opps/v3/opportunities/resources/files/9283ca4f1d895893346235548a631d39/download?api_key=null&token=.

“Materiel Solution Analysis (MSA) Phase.” *AcqNotes*. acqnotes.com, <http://acqnotes.com/acqnote/acquisitions/materiel-solutions-analysis-phase>. Accessed 5 May 2020.

Nakashima, Ellen, et al. “Pentagon’s Inspector General Finds No Evidence of Undue Influence in \$10 Billion Cloud Computing Contract.” *Washington Post*. www.washingtonpost.com, <https://www.washingtonpost.com/national-security/pentagons-inspector-general-finds-no->

[evidence-of-undue-influence-in-10-billion-cloud-computing-contract/2020/04/15/9b6e4f42-7f08-11ea-9040-68981f488eed_story.html](https://www.federalcourts.gov/evidence-of-undue-influence-in-10-billion-cloud-computing-contract/2020/04/15/9b6e4f42-7f08-11ea-9040-68981f488eed_story.html). Accessed 7 May 2020.

Oracle America JEDI Contract Pre-Award Bid Protest Decision. United States Court of Federal Claims, 29 July 2019, https://ecf.cofc.uscourts.gov/cgi-bin/show_public_doc?2018cv1880-102-0.

Oracle Big Protest. 12 Feb. 2019, <https://washingtontechnology.com/blogs/editors-notebook/2019/02/~media/BE703D48BD8C4D198C08BFDB5A4598D3.ashx>. Case 1:18-cv-01880-EGB, Document 59.

Oracle Protest Decision. <https://www.gao.gov/assets/700/695586.pdf>. Accessed 26 Apr. 2020.

Pentagon Asks to Remand Part of JEDI Cloud Computing Decision. *www.washingtonpost.com*, <https://www.washingtonpost.com/context/pentagon-asks-to-remand-part-of-jedi-cloud-computing-decision/2ef69ee7-2e8c-4d75-b395-0770d12a676a/>. Accessed 15 Mar. 2020.

Peters, Heidi M. “Amazon Protest of the Department of Defense’s JEDI Cloud Contract Award to Microsoft.” *Congressional Research Service*, p. 3.

---. *The Department of Defense’s JEDI Cloud Program*. p. 24.

“Phase 1: Planning for Procurement.” *AcqNotes*. *acqnotes.com*, <http://acqnotes.com/acqnote/careerfields/phase-1-planning-for-procurement>. Accessed 7 May 2020.

“Remarks by President Trump and Prime Minister Rutte of the Netherlands Before Bilateral Meeting.” *The White House*. *www.whitehouse.gov*, <https://www.whitehouse.gov/briefings-statements/remarks-president-trump-prime-minister-rutte-netherlands-bilateral-meeting/>. Accessed 14 Apr. 2020.

Schooner, Steven L. *Indefinite-Delivery/Indefinite-Quantity Contracts: Time to Correlate Practice and Policy?* SSRN Scholarly Paper, ID 3241013, Social Science Research Network, 1 Sept. 2018. *papers.ssrn.com*, doi:[10.2139/ssrn.3241013](https://doi.org/10.2139/ssrn.3241013).

Schwartz, Moshe. "Defense Acquisitions: How DOD Acquires Weapon Systems and Recent Efforts to Reform the Process." *Congressional Research Service*, p. 21.

Shane, Scott, and Daisuke Wakabayashi. "'The Business of War': Google Employees Protest Work for the Pentagon." *The New York Times*, 4 Apr. 2018. *NYTimes.com*, <https://www.nytimes.com/2018/04/04/technology/google-letter-ceo-pentagon-project.html>.

"Technology Maturation & Risk Reduction (TMRR) Phase." *AcqNotes*. *acqnotes.com*, <http://acqnotes.com/acqnote/acquisitions/technology-development-phase>. Accessed 6 May 2020.

"The JEDI Cloud Procurement Has Officially Gotten Weird." *Washington Business Journal*. *www.bizjournals.com*, <https://www.bizjournals.com/washington/news/2018/08/21/secret-dossier-greek-philosophy-vanity-fair-the.html>. Accessed 26 Apr. 2020.

"Trump Says He Will 'Look at' Pentagon JEDI Contract." *Washington Post*. *www.washingtonpost.com*, https://www.washingtonpost.com/video/politics/trump-says-he-will-look-at-pentagon-jedi-contract/2019/07/18/782ebec5-3f7a-4923-aa24-8d96ece7b8b1_video.html. Accessed 15 Mar. 2020.

Tung, Liam. "Google: Here's Why We're Pulling out of Pentagon's \$10bn JEDI Cloud Race." *ZDNet*. *www.zdnet.com*, <https://www.zdnet.com/article/google-heres-why-were-pulling-out-of-pentagons-10bn-jedi-cloud-race/>. Accessed 15 Mar. 2020.

U.S. Department of Defense Inspector General. *Report On The Joint Enterprise Defense Infrastructure (JEDI) Cloud Procurement*. 13 Apr. 2020, <https://media.defense.gov/2020/Apr/15/2002281438/-1/->

[1/1/REPORT%20ON%20THE%20JOINT%20ENTERPRISE%20DEFENSE%20INFRASTRUCTURE%20\(JEDI\)%20CLOUD%20PROCUREMENT%20DODIG-2020-079.PDF](#). Report No.

DODIG-2020-079.

What Is Microsoft Azure? <https://www.datamation.com/cloud-computing/microsoft-azure.html>.

Accessed 5 May 2020.

“Why DoD May Have given Amazon Every Reason to Protest JEDI.” *Federal News Network*, 18

Dec. 2019. *federalnewsnetwork.com*, <https://federalnewsnetwork.com/defense-main/2019/12/why-dod-may-have-given-amazon-every-reason-to-protest-jedi/>.

“Why the Pentagon’s \$10 Billion JEDI Deal Has Cloud Companies Going Nuts.” *TechCrunch*.

techcrunch.com, <http://social.techcrunch.com/2018/09/15/why-the-pentagons-10-billion-jedi-deal-has-cloud-companies-going-nuts/>. Accessed 15 Mar. 2020.