

June 21, 2023

Federal Trade Commission
600 Pennsylvania Avenue NW
Washington, DC 20580

Comment submitted electronically via <https://www.regulations.gov>

Re: Solicitation for Public Comments on the Business Practices of Cloud Computing Providers, Document ID FTC-2023-0028-0001

Dear Commissioners:

The undersigned civil society organizations are writing in response to the Federal Trade Commission's Solicitation for Public Comments on the Business Practices of Cloud Computing Providers.¹

We write to convey our concerns about the unchecked consolidation of power over cloud computing infrastructure by a few corporations. In this response, we focus on the unfair business practices used by the most dominant cloud computing vendor—Amazon's subsidiary Amazon Web Services (AWS)—and the harmful implications for innovators, entrepreneurs, consumers, and our public services that rely on cloud computing. We urge the FTC to use its extensive legal authorities to rein in Amazon's abuses of power, starting with legal action against AWS and new regulations to ensure fairness and good governance in the cloud computing industry.

Cloud computing, which refers to the on-demand provision of various information technology (IT) services through the internet,² is central to the modern global economy and one of the most lucrative segments in the technology sector. From e-commerce retailers and social media platforms to streaming-on-demand-video and office software suites, digital markets increasingly rely on third-party cloud services to store, process, analyze, and deliver vast amounts of data.³

¹ Federal Trade Comm'n, FTC Seeks Comment on Business Practices of Cloud Computing Providers that Could Impact Competition and Data Security (Mar. 22, 2023), <https://www.ftc.gov/news-events/news/press-releases/2023/03/ftc-seeks-comment-business-practices-cloud-computing-providers-could-impact-competition-data>.

² The National Institute of Standards and Technology (NIST) describes three models of cloud computing services: Software as a Service (SaaS), Platform as a Service (PaaS), and Infrastructure as a Service (IaaS). A cloud client's control and responsibility over specific aspects of the service vary across the models. *The NIST Definition of Cloud Computing*, NIST (Sept. 2011), <https://csrc.nist.gov/publications/detail/sp/800-145/final>. Public IaaS and PaaS services account for most of the cloud market. Amy Sarah John, *In Q3 2022, Amazon, Microsoft, and Google own 66% share of the cloud infrastructure market, finds Synergy Research*, Wire19 (Oct. 31, 2022), <https://wire19.com/amazon-microsoft-and-google-cloud-infrastructure-market/>.

³ Adam Selipsky, the Chief Executive Officer of Amazon Web Services, Inc., recently stated that 10 percent of the world's IT has already migrated to the cloud. Justin Pope, *AWS Chief Says Amazon's Most Profitable Segment Is Just Getting Started*, The Motley Fool (July 7, 2022), <https://www.fool.com/investing/2022/07/07/aws-chief-says-amazons-most-profitable-segment-is/>. As another example, in one company's survey that targeted nearly 2,800 professionals in security and IT management in 17 countries, 30% of respondents stated that 41-60% of their data is stored in the external cloud and 22% indicated more than 60% is stored there. 2022 Thales Data Threat Report (Feb. 2022), Thales Group, <https://mb.cision.com/Public/20506/3530950/b55a39d9e52a4074.pdf>.

Public agencies are also increasingly dependent on cloud services; the largest cloud provider, Amazon Web Services, touts that more than 7,500 government agencies use it.⁴

Cloud computing is also fueling breakthroughs in artificial intelligence technologies that require enormous computational power and data storage,⁵ such as the generative online AI bots that are widely sparking awe and unease over their potentially transformative impacts across society.⁶ In other words, the cloud is playing a crucial infrastructure role in the development of AI. Thus, the ability of corporations in the cloud market to concentrate control, deploy unfair tactics, engage in self-preferencing and other manipulative conduct, and take other exploitative actions contrary to the public interest has far reaching consequences for the future of technology.

A common thread among this diverse array of cloud users is that they are meeting their IT needs through external firms possessing the massive capital required to build and maintain the physical and virtual infrastructure for cloud services. However, these users have few choices when selecting a provider, and as a result, little ability to negotiate terms or make choices that prioritize clean energy, interoperability, security, or a company's human rights record, for example. Barriers to entry into the cloud computing market are quite high⁷: few companies have the resources to construct data centers and then pay their ongoing operating expenses like high energy bills, purchase or lease the underlying land, navigate regulatory approvals and obtain legal permits, hire and train cadres of IT professionals, and so forth. The companies that possess the means are giant technology incumbents—which subsequently profit from early-mover benefits and network effects as more and more users and developers use them and become locked-into their cloud services, while prospective competitors struggle to gain traction.

Notably, the cloud market in the U.S. has consolidated to just three companies: Amazon's subsidiary AWS, Microsoft Azure, and Google Cloud Platform.⁸ Among them, AWS is by far the most dominant, controlling as much as 45 percent of the market according to some estimates⁹—more than those of its next two competitors, Microsoft and Google, combined. For Amazon, cloud computing is its most lucrative arm; it is so profitable that in 2021, AWS

⁴ Amazon Web Services, *The Trusted Cloud for Government* (accessed June 14, 2023), <https://aws.amazon.com/government-education/government/>.

⁵ Andrew Lohn and Micah Musser, *How Much Longer Can Computing Power Drive Artificial Intelligence Progress?*, Center for Security and Emerging Technology, Georgetown University (Jan. 2022), <https://cset.georgetown.edu/publication/ai-and-compute/>.

⁶ See, e.g., Lina Khan, *We Must Regulate A.I. Here's How.*, N.Y. Times (May 3, 2023), <https://www.nytimes.com/2023/05/03/opinion/ai-lina-khan-ftc-technology.html>.

⁷ See, e.g., House Judiciary Committee Subcommittee on Antitrust, Commercial, and Administrative Law, *Investigation of Competition in Digital Markets: Majority Staff Report and Recommendations, Part I* (Oct. 2020), <https://www.govinfo.gov/content/pkg/CPRT-117HPRT47832/pdf/CPRT-117HPRT47832.pdf>; Carnegie Endowment for International Peace, *Effects of Cloud Market Concentration* (accessed June 12, 2023), <https://cloud.carnegieendowment.org/cloud-governance-issues/effects-of-cloud-market-concentration/>.

⁸ Felix Richter, *Big Three Dominate the Global Cloud Market*, Statista (Apr. 28, 2023) <https://www.statista.com/chart/18819/worldwide-market-share-of-leading-cloud-infrastructure-service-providers/>.

⁹ Tom Krazit, *AWS has avoided antitrust scrutiny so far. Here's how that could change.*, Protocol (Feb. 12, 2021), <https://www.protocol.com/enterprise/aws-amazon-cloud-antitrust>.

accounted for 13 percent of Amazon's overall revenue but generated 74 percent of Amazon's total operating profits, or \$18.5 billion.¹⁰

It is this backdrop against which we must evaluate the anticompetitive practices that Amazon leverages to further grow its dominance in cloud computing—as well as other areas in which Amazon and its other subsidiaries are market participants. The business tactics that we urge the FTC to investigate and remedy include high vendor switching costs that lead to data lock-in, self-preferencing, and use of commercial metrics and customer meta-data to obtain uniquely valuable insights into other market participants.

In particular, we ask the FTC to examine reported complaints about the unfair ways in which AWS operates, including AWS's self-serving positioning of its own services in the AWS Management Console ahead of competing third-party services,¹¹ a lack of interoperability standards for cloud providers, and AWS's reliance on multi-year long-term contracts and egress fees to raise the costs and hassle of switching cloud providers.¹² Examples of direct and indirect egress costs include higher charges for AWS clients to extract their data for transfer compared to the extreme ease and convenience of importing it into AWS's cloud. Thus the time, expense, and technical expertise demanded by a change in cloud providers can be daunting, even for large firms. As one technology CEO put it, "When you check in to the public cloud, it is like checking in to Hotel California: You check in and never check out, because that cost is ginormous."¹³

The ways in which Amazon reportedly exploits the troves of commercial and client data available to AWS, in order to gain unfair advantages over its own cloud customers and to squash the competition, are ripe for FTC investigation and action as well. The AWS data at Amazon's disposal need not be other companies' proprietary data to be valuable; the wealth of data at high risk of abuse and exploitation includes metrics information *about* customers' usage of AWS, such as changes in public demand for storage and computing services, rate of requests to specific databases, the size of databases, and types of requests.

For instance, Netflix and Disney+ are AWS customers, as many members of the public were reminded when large-scale AWS outages disrupted their streaming access.¹⁴ Aside from the obvious systemic risks when consolidation in cloud computing leads to single points of failure,

¹⁰ Aran Ali, *AWS: Powering the Internet and Amazon's Profits*, Visual Capitalist (July 10, 2022), <https://www.visualcapitalist.com/aws-powering-the-internet-and-amazons-profits/>; Justin Pope, *AWS Chief Says Amazon's Most Profitable Segment Is Just Getting Started*, The Motley Fool (July 7, 2022), <https://www.fool.com/investing/2022/07/07/aws-chief-says-amazons-most-profitable-segment-is/>.

¹¹ See, e.g., Tom Krazit, *AWS has avoided antitrust scrutiny so far. Here's how that could change.*, Protocol (Feb. 12, 2021), <https://www.protocol.com/enterprise/aws-amazon-cloud-antitrust>; Anonymous, Public Comment ID FTC-2023-0028-0024 (May 23, 2023), <https://www.regulations.gov/comment/FTC-2023-0028-0024>.

¹² See, e.g., Darian Wilkin, Public Comment ID FTC-2023-0028-0002 (Mar. 22, 2023), <https://www.regulations.gov/comment/FTC-2023-0028-0002>; Anonymous, Public Comment ID FTC-2023-0028-0010 (Apr. 4, 2023), <https://www.regulations.gov/comment/FTC-2023-0028-0010>.

¹³ Tom Krazit, *HPE's CEO Antonio Neri: Why cloud computing is like the Hotel California*, Protocol (Aug. 6, 2020), <https://www.protocol.com/enterprise/hpe-cloud-computing-hotel-california>.

¹⁴ *US Amazon web services outage hits Netflix, Slack, Ring and Doordash*, The Guardian (Dec. 15, 2021), <https://www.theguardian.com/technology/2021/dec/15/amazon-down-web-services-outage-netflix-slack-ring-doordash-latest>.

AWS's dominance means that Amazon is also amassing unparalleled levels of sensitive data and metrics about streaming-on-demand-video competitors' performance and popularity among users. That kind of information would be irresistible to Amazon when making decisions about rival Amazon Prime Video offerings. Furthermore, any Amazon corporate policy supposedly prohibiting its executives from using internal AWS data and metrics to promote Amazon's other products and lines of business should be considered in light of press investigations¹⁵ and associated congressional inquiries¹⁶ reporting that Amazon exploited non-public data of third-party sellers, in violation of its formal policy, to rig its e-commerce platform in favor of Amazon's private label.

Known examples abound of Amazon reportedly cross-leveraging its AWS segment to dominate other spaces, from mergers and acquisitions to Amazon's private label product launches against competing retailers. These examples include:

- AWS's recent announcement of its new Bedrock cloud marketplace that will host AI models,¹⁷ including AWS's own Titan AI models—which raises self-preferencing concerns as well as bundling and tying concerns;
- In a bid to build a "digital front door" to health care,¹⁸ Amazon's recent acquisition of One Medical, which offers virtual and in-person clinical services as well as electronic health record software used by clinicians that uses AWS infrastructure¹⁹—a rich source of sensitive medical data²⁰ that Amazon could also exploit to train its own AI models;
- Amazon's exploitation of AWS data to build its digital advertising business²¹;

¹⁵ Dana Mattioli, *Amazon Scooped Up Data From Its Own Sellers to Launch Competing Products*, Wall Street Journal (Apr. 23, 2020), <https://www.wsj.com/articles/amazon-scooped-up-data-from-its-own-sellers-to-launch-competing-products-11587650015>; Aditya Kalra and Steve Stecklow, *Amazon copied products and rigged search results to promote its own brands, documents show*, Reuters (Oct. 13, 2021), <https://www.reuters.com/investigates/special-report/amazon-india-rigging/>.

¹⁶ See, e.g., House Judiciary Committee, Criminal Referral to Attorney General Merrick Garland (Mar. 9, 2022), https://democrats-judiciary.house.gov/uploadedfiles/hjc_referral_--_amazon.pdf.

¹⁷ Jordan Novet, *Amazon CEO Andy Jassy says 'really good' A.I. models take 'billions of dollars' to train*, CNBC (Apr. 13, 2023), <https://www.cnbc.com/2023/04/13/aws-launches-bedrock-generative-ai-service-titan-llms.html>.

¹⁸ Lizzy Lawrence, *An Amazonified One Medical may be too convenient for customers to resist*, Protocol (July 26, 2022), <https://www.protocol.com/workplace/amazon-one-medical-health-data>.

¹⁹ Kate Kaye, *Amazon's virtual-real hybrid data and AI play*, Protocol (July 21, 2022), <https://www.protocol.com/newsletters/protocol-enterprise/enterprise-software-repair-amazon-medical>.

²⁰ As FTC Commissioners Bedoya and Slaughter warned, "When you hear a company tell you that they will abide by HIPAA, it does not mean that they cannot use your data for other purposes. Rather, it means they must simply remove from that data certain markers that would tie that data back to you." Statement of Commissioner Alvaro M. Bedoya Joined by Commissioner Rebecca Kelly Slaughter Regarding Amazon.com, Inc.'s Acquisition of iLife Healthcare, Inc., FTC (Feb. 27, 2023), https://www.ftc.gov/system/files/ftc_gov/pdf/2210191amazononemedicalambstmt.pdf.

²¹ Karina Montoya, *Amazon Exploits its Cloud Monopoly to Build Advertising Business*, Open Markets Institute (Sept. 9, 2022), <https://www.openmarketsinstitute.org/publications/amazon-exploits-its-cloud-monopoly-to-build-advertising-business>.

- Press reports that AWS enables Amazon to make early assessments of start-up businesses and then decide which of them to acquire or invest in based on their usage of AWS services—information that is not available to venture capital firms and other investment companies²²;
- Amazon's \$350 million acquisition of a small company developing specialized chips for cloud computing, in 2016, ensuring that competitors would not have access to the company's innovative chip technology²³; and
- Press reports of "strip-mining" where Amazon uses clients' AWS performance to identify which to co-opt, such as the Elasticsearch tool²⁴ that Amazon copied as Amazon Elastic and the MongoDB tool²⁵ that Amazon imitated in its DocumentDB tool. As one industry leader explained,²⁶ AWS "hijacks open source APIs and places them on top of its own proprietary solutions, siphoning off customers from the open source project"—which also further ties those customers to AWS's infrastructure and discourages innovators from contributing open source applications.²⁷

Far from being merely a cloud infrastructure company, AWS operates across multiple layers and faces strong incentives to self-preference Amazon services across all of them. And Amazon is counting on AWS's monopolistic dominance in cloud computing—and its unabashed eagerness to cross-leverage its power in this and other markets to dominate new ones—to make these exploitative strategies even more successful.

That dominance must not be allowed to persist and grow unchecked, especially given the stakes for the future of cloud computing and therefore all the other industries that rely on it. We appreciate the FTC's attention to these emerging issues and now call on the agency to take regulatory and enforcement actions in response. In addition to investigating Amazon's abuses of power, the FTC should champion an approach that prioritizes: deconcentrating the cloud computing sector; addressing unfair practices that a few powerful cloud providers are employing to the detriment of consumers, innovators, entrepreneurs, and the public; and ensuring we have cloud computing infrastructure that facilitates innovation and serves the public interest.

²² Alistair Barr, *Amazon finds startup investments in the 'cloud'*, Reuters (Nov. 9, 2011), <https://www.reuters.com/article/amazon-cloud-idUSN1E7A727Q20111109>.

²³ Janakiram MSV, *How An Acquisition Made By Amazon In 2016 Became Company's Secret Sauce*, Forbes (Mar. 10, 2019), <https://www.forbes.com/sites/janakirammsv/2019/03/10/how-an-acquisition-made-by-amazon-in-2016-became-companys-secret-sauce/>.

²⁴ Daisuke Wakabayashi, *Prime Leverage: How Amazon Wields Power in the Technology World*, N.Y. Times (Dec. 15, 2019), <https://www.nytimes.com/2019/12/15/technology/amazon-aws-cloud-competition.html>.

²⁵ Steven Melendez, *AWS launches MongoDB competitor amid criticism over Amazon's in-house products.*, Fast Company (Jan. 10, 2019), <https://www.fastcompany.com/90290754/aws-launches-mongodb-competitor-amid-criticism-over-amazons-in-house-products>.

²⁶ Comments by Salil Deshpande at FTC's Online Panel Discussion on Cloud Computing: Taking Stock and Looking Ahead (May 11, 2023), <https://www.ftc.gov/news-events/events/2023/05/cloud-computing-taking-stock-looking-ahead>.

²⁷ Gerald Berk and AnnaLee Saxenian, *Rethinking Antitrust for the Cloud Era*, Public Comment ID FTC-2023-0028-0012 (Apr. 4, 2023), <https://www.regulations.gov/comment/FTC-2023-0028-0012>.

Thank you for considering our views. We look forward to offering our assistance and collaborating with you as you further engage in this important work.

Sincerely,

Athena Coalition
American Economic Liberties Project
Center for Digital Democracy
Demand Progress Education Fund
Economic Security Project
Good Jobs First
Institute for Local Self-Reliance
Liberation in a Generation
Main Street Alliance
NextGen Competition
Open Markets Institute
Public Citizen
The Revolving Door Project