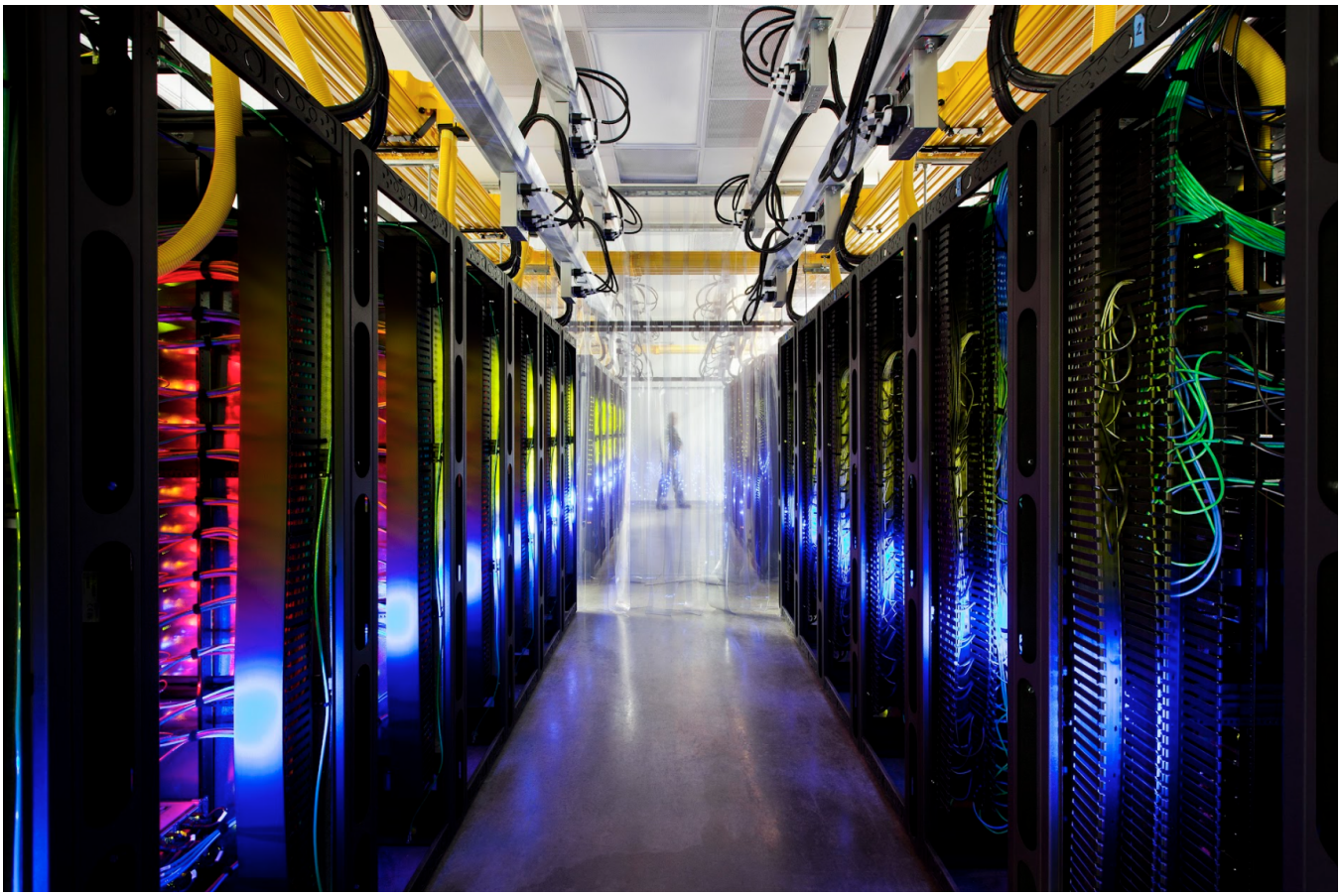
Google Cloud Whitepaper
January 2023

Data Portability and Interoperability



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Disclaimer

This whitepaper applies to Google Cloud products described at cloud.google.com. The content contained herein is correct as of January 2023 and represents the status quo as of the time it was written. Google's security policies and systems may change going forward, as we continually improve protection for our customers.

1. Introduction

At Google Cloud, we want our customers to have the choice, flexibility, and openness they need to build the most optimal solutions that solve their business problems as they grow and evolve. Our design principles embody our fundamental belief in a secure, open approach to cloud computing, and we see the ability for customers to maintain control over their data as being a vital component of this. **Data portability** - the ability for a customer to easily transfer Customer Data from one Cloud Service Provider (CSP) to another - allows customers to build flexibility and operational resilience into the design of their cloud architectures, and ensure the highest level of adaptability and scalability for when their business needs change.

This whitepaper highlights the key advantages of data portability and how Google Cloud's long-standing commitment to open cloud principles has resulted in the development of products and services that build on this philosophy to provide portability, scalability, consistent management, and the ability to unlock insights from Customer Data regardless of where it resides. We also discuss regulatory changes in the area of data portability, and Google's membership to SWIPO (Switching Cloud Providers and Porting Data) and its adherence to the SWIPO Data Portability Codes of Conduct for Infrastructure as a Service (IaaS) and Software as a Service (SaaS).

In this whitepaper we discuss the portability of Customer Data, which is defined as data provided by or on behalf of a customer or its end users via Google Cloud services under the account, or data submitted, stored, sent or received by or on behalf of the customer or its end users via Google Workspace or Cloud Identity under the account. For a more detailed description of other types of data processed by Google Cloud, refer to the Google Cloud Privacy Notice.

It is important to note that while this whitepaper provides information on the tools and resources offered by Google Cloud, we are a provider of cloud services and we are not in a position to offer our customers legal advice.

2. Google Cloud's Commitment to Data Portability

At Google Cloud, our cloud design principles start with a deep belief that a secure, open cloud approach will best serve our customers - so we aim to meet their needs rather than try to match them to ours. Our goal is to offer customers the maximum amount of flexibility to run their businesses how they want. To do this, we encourage a multicloud, hybrid architecture designed to quickly adapt as their organization evolves. We offer a number of services to facilitate this - from our managed application platform (Anthos), to our fully-managed, serverless data warehouse (BigQuery Omni) - allowing customers to harness the power of data and AI through our open APIs, machine learning services, and analytics engines on any of the major cloud platforms.

Our belief in an open approach also extends to our commitment to open source. At Google Cloud, open source is at the core of our infrastructure, processes, and culture. Participation in these communities is vital to our productivity. Google Cloud is the #1 contributor to the Cloud Native Computing Foundation - an open source development community - with 50%+ of code commits. We also demonstrate our commitment by contributing to projects like Kubernetes, TensorFlow, Go, and many more. More than anything else, we believe that customers should use our services because they love us, not because they are locked in.

To ensure our customers know exactly what our data portability commitments are, we clarify them in our contract terms. Our Enterprise Privacy Commitments detail how customers own and control their data, and can take their Customer Data out of Google Workspace and Google Cloud services should they decide to switch to other platforms or store and process it on their own premises. We include data portability commitments in our data processing terms for both Google Workspace and Google Cloud services, and continually work to enhance the robustness of our data export capabilities.

Google has attested to a number of international standards pertaining to interoperability and compatibility including, CSA STAR V4, NIST Publications (800-53, 800-171, 800-34), and ISO Standards (27701, 27110, 22301, 27018, 27017, 27001, 9001). Customers can access these publicly available documentation via our Compliance Resource Center and the Compliance Reports Manager.

3. Benefits of Data Portability

Data portability is facilitated through common technical standards that allow for the exporting of Customer Data in a way that can be readily uploaded and utilized across different platforms, including other CSPs. This portability provides customers with several advantages - from providing flexibility on how workloads can be structured and reducing third-party concentration risk, to increasing operational resilience in the event of an outage. Data portability also enables customers to gain access to new and emerging cloud technologies with minimal friction or barriers, which is a key attraction for customers seeking to increase their utilization of cloud services.

Importantly, data portability enables customers to break free from being locked into a single cloud provider where they don't have the ability to easily change providers, adopt a multicloud or hybrid cloud strategy, or migrate back to on-premise environments as needed. We believe that this has the potential to create downstream impacts for customers by limiting their ability to choose the most appropriate services for their needs and disrupting the growth of thriving digital ecosystems.

In this section, we'll provide some further detail on the key advantages of data portability.

3.1. Resilience

Operational resilience can be significantly strengthened through the implementation of a hybrid or multicloud approach. This is particularly the case for a multicloud architecture where a customer uses cloud computing services from multiple CSPs to run their applications. According to a recent survey, multicloud strategies have already been implemented by over 80%

of enterprises, allowing customers to transform how they operate their business to become more efficient and better meet their technical needs. Data portability facilitates the distribution of applications and Customer Data across multiple cloud environments, significantly reducing the risk of unplanned downtime or outages through removing a single point of failure. As a result, an outage in one cloud won't necessarily impact services in other clouds, and if your primary cloud provider goes down, your computing needs can be routed to another cloud that's ready to go.

Data portability also allows customers to avoid lock-in and reliance on a single-cloud stack. In the cloud space, vendor lock-in occurs when there are excessive costs or complexities associated with moving Customer Data from one service provider to another. Lock in may also be exacerbated by restrictive or discriminatory licensing models, which may include the requirement to license software from a single vendor. At Google Cloud we believe that survivability requirements cannot be fully addressed with a single proprietary cloud solution. Through utilizing open standards, customers can leverage data portability to escape the limitations that come with dealing with proprietary tools and systems provided in a single-cloud environment, and can move Customer Data between CSPs as needed.

Irrespective of the size and complexity of an organization, an open cloud ensures development and operational consistency across environments and effective management of infrastructure, apps, and Customer Data across the organization. Google Cloud's open cloud approach brings Google Cloud services to different physical locations such as on-premises data centers, other public clouds, and "edge" locations such as retail stores or telecommunications towers. At the same time, the open cloud approach leaves the governance and evolution of the services to Google Cloud.

An open cloud approach also allows for exit planning in the unlikely situation that Google Cloud is no longer able to provide a service. Although generally speaking our support of exit plans assumes that the exit from Google Cloud takes place over a period of several months, we can also support stressed exit scenarios.

As part of an exit scenario, Google Cloud supports customers through:

- Our commitment to open source and the fact that many of our products and services are available in open source versions - meaning they can be run on-premise or on other CSPs.
- Our commitment to common standards and the ability for applications to be hosted on virtual machines or containers that can be replicated by alternative services on-premise or on other CSPs.
- Our Anthos multicloud management product, which allows customers to run and manage a range of services across other CSPs in the same way as they do on Google Cloud.
- Our Terraformer tool, which allows customers to create infrastructure as artifacts that describe existing resources and their properties in order to prepare for automated implementation in target environments to support the transfer of outsourced services to alternative providers.

3.2. Flexibility

Data portability allows for significant flexibility by allowing customers to choose from numerous CSP's and match specific features and capabilities to optimize workloads in the cloud. These can be based on identified business needs including speed, performance, cost, reliability, geographical location, or security and compliance requirements. This level of flexibility is facilitated through **interoperability**, a term which is used to describe the ability for different systems to interact and work together. For CSPs, interoperability refers to the ability for cloud services and customer systems to understand each other's APIs, configurations, authentication and Customer Data formats. In the era of the distributed cloud, openness and interoperability empower faster innovation, tighter security, and freedom from vendor lock-in.

As part of Google Cloud's commitment to the open cloud, we build customer solutions on top of the open source stack. By doing this, we make applications, Customer Data, and entire workflows easily portable between clouds as necessary and when it makes business sense. We help customers build and scale quickly, even if their developers work across multiple environments. We also work with customers who are still largely on-premises, and those who operate in multiple cloud environments at once.

We have created a run-anywhere Kubernetes platform with a Google Cloud-backed control plane for consistent management at scale, allowing customers to manage containerized applications anywhere. We also empower customers to unlock insights from their data, regardless of where it resides, using our best-in-class analytics artificial intelligence and machine learning capabilities. Further, our security tools help ensure that customers can meet their policy requirements, protect critical assets and keep vital services running - even across multiple clouds.

Google Cloud has taken several steps that reflect its commitment to meeting the needs of customers by providing choice, flexibility, and openness:

- Developing Anthos, our hybrid, and multi-cloud container platform
- Developing BigQuery Omni, our multi-cloud analytics service
- Collaborating with the open-source community to develop Google Cloud services on open-source technology and,
- Advancing solutions that promote interoperability, and creating new technologies for, and contributing to the open source ecosystem.

Google Cloud's commitment to the open cloud also provides additional agility and flexibility as applications and Customer Data can exist in various locations and can be kept there - or moved as needed. Through Anthos - Google Cloud's managed application platform - workloads can be built and deployed wherever you need them, with the ability to modernize apps and establish operational consistency across them quickly and efficiently.

With all this in mind, our view at Google Cloud is that multicloud and hybrid cloud approaches, coupled with open-source technology adoption, enable IT teams to take full advantage of the best that cloud has to offer.

We provide customers with the tools to enable seamless migration and exit / export pathways. Customers using our Google Cloud services can access and export Customer Data throughout the duration of the contract and during the post-termination transition term. Customers can export Customer Data from Google Cloud services in a number of industry standard formats. For example:

- Google Kubernetes Engine is a managed, production-ready environment that allows portability across different clouds as well as on premises environments.
- Migrate for Anthos allows customers to move and convert workloads directly into containers in Google Kubernetes Engine.
- Customers can export/import an entire VM image in the form of a .tar archive.

Google Workspace customers are able to access and export Customer data throughout the duration of the contract and the transition term. More information is available on our Google Account help page. In addition, Data Export is a feature that makes it easy to export and download a copy of Customer Data securely from our services.

4. Data Portability and Regulation

In recent years we have seen an increased focus from regulators around the globe in the area of data portability, with a number of countries including the USA, Japan, France, and the Netherlands either enacting legislation covering the topic or examining the issue in more detail. One of the most extensive legislative regimes exists in the European Union (EU), which has addressed the area of data portability through the Free Flow of Non-Personal Data Regulation.

Article 6 of the Regulation encourages the development of voluntary Data Portability Codes of Conduct, and SWIPO, a multi-stakeholder group facilitated by the European Commission, was established to develop the Codes to provide guidance on the Article's proper application. Google Cloud is a member of SWIPO and supports this initiative.

SWIPO has developed Data Portability Codes of Conduct that guide the relationship between customers and CSPs to ensure customers are able to effectively migrate their Customer Data from one cloud provider to another. Two Codes have currently been developed - one which addresses IaaS services and one for SaaS services. Google Cloud has declared adherence to the SWIPO Data Portability Codes and we have published our Transparency Statement which includes a detailed mapping of Google Cloud's ability to meet specific data portability requirements, together with the Google Workspace and Google Cloud services that enable this.

Google Cloud has been a leader in promoting fair and open licensing for our customers since the start of the cloud revolution. We were an early mover in launching a multicloud infrastructure service

(allowing customers to run workloads across multiple clouds), a multicloud data warehouse (allowing customers to manage data across multiple clouds), and digital sovereignty offerings in Europe.

We are committed to addressing customers' needs for portability and interoperability, and promoting openness to drive innovation. We provide organizations with tools to view, delete, download, and transfer their content. Google Cloud customers fully control their data and have the ability to take it out of Google Workspace and Google Cloud should they decide to switch to other platforms and/or store and process it on their own premises.

5. Conclusion

At Google Cloud, we support customers by providing data portability and interoperability options through our open cloud approach. We are committed to enabling customers to establish optimal solutions that do not lock them into a single-cloud stack, and we provide contractual commitments to ensure that customers can maintain control over their data.

We see the immense value that can be unlocked through the development of open cloud architectures that take advantage of data portability, and we support customers embracing multicloud and hybrid cloud approaches. Above everything else, we believe that an open cloud can meet the diverse needs of organizations across the globe, and can provide customers with choice, flexibility, and openness. This is why our customers trust Google Cloud to solve their biggest challenges and most pressing business problems, and why they have the confidence that no matter how their situation evolves in the future, Google Cloud will help them to adapt and thrive.