For submission to BEREC by 24 April 2024

Context and Introduction

Google welcomes the opportunity to submit comments regarding the Body of European Regulators for Electronic Communications (BEREC) public consultation on the draft "BEREC Report on Cloud and Edge Computing Services" [BoR (24) 52] (hereinafter referred to as the "Cloud Report").

At the outset, we commend BEREC on working to provide an exhaustive assessment of the cloud and edge computing services market and dynamics. Achieving a proper understanding of this market – and how it relates to the telecommunications services market – is critical, especially given ongoing discussions in Europe to assess the adequacy of regulations applicable to cloud and edge computing services providers. In particular, Google appreciates, and agrees with, BEREC's observation that "[c]loud and edge computing services can enable the development of innovative applications that have the potential to improve the quality of life of the citizens, support economic growth and enhance the competitiveness of business. Therefore, the EU economic competitiveness relies on the provision of the services in healthy and trusted markets." To this end, we believe it is important that regulators in the EU not reach an incorrect conclusion about the level of "convergence" that exists between cloud/edge computing services and telecommunications services, which is currently fueling claims of an unlevel playing field and demands for expansion of telecommunications regulations to be applied to cloud service providers. This conclusion would be inconsistent with the facts of the market, and serve to undermine Europe's broader interest in digital transformation as reflected in its Digital Decade programme.

We also appreciate BEREC's efforts to consider challenges to competition in the market for cloud, as well as the stated interest in promoting interoperability and an open cloud environment. We note in our comments some of the most concerning issues in this regard, including unfair software licensing issues that are currently under review. We would welcome working with BEREC and other relevant European regulators to address these issues.

Comments

Chapters 1 & 2 (Introduction & Cloud and Edge Services)

A central thrust of the Cloud Report is the perception that the boundaries between electronic communications networks and services (ECN/S) and cloud/edge computing services have blurred to such an extent that the services have "converged." We believe that this claim of convergence is overstated. Indeed, given the broad use of cloud services horizontally across

many sectors (e.g., energy, health, finance), the same logic applied in virtually any other industry would support similar assertions of convergence across those industries as well, resulting in untenable claims to regulate cloud computing across industries. The fact is that cloud computing is an *enabling* technology that is revolutionizing many different industries, not erasing their boundaries.

The Cloud Report identifies as indicia of convergence, the fact that "connectivity is required for the provision of cloud computing and networks are being virtualized with the help of cloud computing" and that "this trend is meant to be exacerbated as new edge computing services and network as a service (NaaS) solutions enter the market."

However, beyond these assertions of convergence, the draft Cloud Report does not undertake a comparison across the breadth of services that ECN/S providers and cloud/edge computing service providers offer. Had the report done so, it would be difficult to reach any conclusion other than that these continue to be distinct industries and services, as they have been historically.

To demonstrate, in the case of Google Cloud, we offer over 150 products and services allowing customers to build, deploy, and manage applications on our scalable, world-class infrastructure. These are spread across the following categories:

1. **AI and machine learning** – including a fully managed AI platform (Vertex AI), providing access to Gemini and over 130 foundation models; contact center AI; conversational AI products; and AI-powered code generation, recommendations, and completion.
2. **Compute** – including providing access to customizable virtual machines; tools to deploy, scale, and manage containers with Google Kubernetes Engine or Cloud Run; and tools for migrating applications without rewriting code.
3. **Storage** – including capabilities to store any type and any amount of data as well as to transfer data with online and offline transfer solutions.
4. **Databases** – including access to Cloud SQL, a fully-managed database service; tools to scale enterprise workloads and build generative AI apps with AlloyDB for PostgreSQL; and tools to improve performance and scale such as Spanner.
5. **Data analytics** – including tools to run analytics at scale such as BigQuery; tools like Dataflow to ingest, process, and analyze event streams in real time to make data more useful; and business intelligence platforms like Looker.
6. **Networking** – including tools to protect applications and websites against denial of service and web attacks, such as Cloud Armor; tools to quickly and securely scale web and video content delivery, such as Cloud CDN; and tools to explore hybrid connectivity options, including VPN, peering, and enterprise support.
7. **Developer tools** – including tools to write, debug, and run cloud-native applications, locally or in the cloud, such as Cloud Code; tools to continuously build, test, and deploy

software across all languages and in multiple environments, such as Cloud Build, and tools to deploy pre-built solution templates including dynamic websites, load balanced VMs, and three tier web apps.

8. **Security** – including tools to understand threat actors and potential attack vectors, such as Mandiant Threat Intelligence and Mandiant Consulting Services; and tools to detect, investigate, and respond to threats faster, such as Chronicle Security Operations.

We offer these products and services to customers in virtually every industry, including retail, consumer packaged goods, healthcare and life sciences, financial services, telecommunications, media and entertainment, gaming, manufacturing, supply chain and logistics, and public sector.

The Cloud Report provides no evidence that all of these products and services are now also being offered by telecoms providers. Nor does the Cloud Report provide evidence that all of the products and services offered by ECN/S providers can now be supplied by cloud/edge computing services providers. Without clear evidence to this effect, a conclusion of industry "convergence" is difficult to sustain.

Chapter 4 (Cloud Market Characteristics)

We appreciate BEREC's focus on the importance of an open cloud ecosystem for customers, preventing and reducing lock-in effects.

At Google Cloud, we have always built for and promoted an open ecosystem that supports customer choices - through commitments to multi-cloud, portability and open source. We have promoted fair and open licensing for our customers since the start of the cloud. We were the first to launch a multi-cloud infrastructure service and give customers solutions to enable their multi-cloud strategies (e.g., Anthos). Our cloud technology is built on open source and we have been a major contributor to the global open source community products (e.g., Kubernetes). We continue our industry-leading role to enable free choice for customers – indeed, we were the first of the major providers to end exit fees for customers who wish to end use of our services to move to another provider.

Ensuring that the market continues to be open and vibrant requires scrutiny of practices designed to disrupt competition. We are concerned in particular about unfair software licensing practices in the cloud market by other providers. Specifically, some providers enforce restrictive software licensing terms on their customers - such as European institutions and businesses - and create commercial and technical lock-in effects. This makes it very difficult for organizations to choose other competing cloud providers. Through these practices, legacy software providers are leveraging their market dominance in productivity software and on-premise operating systems to create a new dominant position in cloud. Punitive pricing applies when customers attempt to take workloads from legacy software to another cloud

provider. Aggressive tying and bundling practices - connected with discount, pre-installation practices or bundled free service offers - facilitate an environment that locks-in customers in unwanted or unneeded cloud services next to the aspired productivity tool or software. These unfair practices have real world implications on cloud customers, users and providers across the board. According to conservative estimates by a new economic report by Prof. Jenny (OECD Chair of Competition Committee), such practices can **cost over €560 million per year to European businesses alone (which translates to nearly 30% surcharge in price).** Indeed, BEREC's draft Cloud Report correctly flags these kinds of concerns (see p. 25) as an example of improper leverage of market power.

Where concerns of this type exist – as reflected in the complaint of CISPE, an association of European cloud providers – we share them and fully support the European Commission's timely engagement on the matter via existing competition law tools.

Chapter 5 (Interoperability and Standards)

We appreciate BERECs observation that the cloud adoption process in Europe is still in a phase of important growth, with European enterprises across different sectors still moving forward with - or even still developing - their cloud journey. Given that most cloud customers have only used cloud services for a limited period so far, it is not surprising that stakeholders see switching as an issue for the coming years. However, Google Cloud works closely with customers - for example in the financial sector under existing regulatory guidance as well as incoming DORA legislation - to support their business continuity and exit planning when adopting cloud solutions.

BEREC calls out a complex migration process with barriers to switching. The complexity of switching from one cloud provider to another is as much a function of the architecture or services used as the cloud provider themselves. For example, a platform built on the Kubernetes container system will be easier to migrate than one using a proprietary service that is only offered by one cloud provider. Switching IT platforms always has a cost and barriers, even when on-premise. These issues can in some cases be forestalled at the outset by choosing, building and configuring services in a way that facilitates migration later.

Regarding the list of barriers presented under 5.2.1 we would like to emphasize important details that are not yet reflected in the considerations. The economic complexity of offers - supposedly hindering the comparison among different providers - is second to the market barrier of unfair licensing practices by certain cloud providers in Europe. Where customers have identified an economically more valuable service offer compared to the provider of their existing legacy software IT, contractual licencing practices make it difficult and costly to move to a competing offer. The complex web of licensing restrictions includes picking and choosing who their customers can work with and how; charging 5x the cost if customers decide to use certain competitors' clouds; and limiting interoperability of must-have software with

competitors' cloud infrastructure. These and other restrictions have no technical basis and may impose a 300% cost increase to customers. In contrast, the cost for customers to migrate data out of a cloud provider is normally minimal. Please see also our comments under Chapter 4, flagging a CISPE presentation of the issue and a complaint already launched.

BEREC calls out pricing practices under Section 5.2.2, stating insurmountable egress fees as a barrier effect. This is not the case for us: GCP continues our leading role to enable free choice for customers. We were the first of the major providers to end exit fees for customers who wish to end use of our services to move to another provider.

Under the on-demand model for cloud usage, customers benefit from either extreme flexibility and granularity in pricing if they want it, or longer-term certainty and fixed pricing if they prefer that. Compared to the pricing practices of most telecom operators - without the possibility of buying a broadband connection for a day via a web portal with a credit card - customers have a tremendous freedom of choice regarding cloud services and related costs. We would encourage BEREC to recognise in its final draft report the much more extensive freedom of choice enjoyed by customers of the cloud, especially as compared to customers of telecommunications services.

Knowledge and skills of personnel are a relevant factor to enable switching. We offer trainings and skill boosts to support knowledge building of EU industry entities. This includes dedicated GCP public resources to help developers understand differences between cloud providers.

Chapter 6 (Cloud and Electronic Communications Interplay)

The Cloud Report properly notes that "cloud providers and network operators search for collaboration" and that "partnerships allow cloud providers and ECN/S benefit from the know-how and experience in their respective areas." Further, "the complementary nature between cloud and connectivity is generally fostering the cooperation between ECN/S and cloud providers, driven by the mutual supply of services and commercial partnerships." In Google's experience, this is the collaborative dynamic that has characterized the relationship to telecommunications providers. The concerns hinted at in the report about "increasing competition" are limited and speculative.

For instance, Google partners with telecom operators to deploy submarine cables - the backbone of the global Internet. Over 95 percent of international data flows over submarine cables. Google is an investor in a number of international submarine cables connecting Europe to the rest of world, including **Havfrue** (linking Ireland-Denmark-US), **Dunant** (France-US), **Grace Hopper** (Spain-UK-US), **Equiano** (Portugal-Nigeria-Togo-Saint Helena-South Africa), **Blue** (Italy-France-Greece-Israel), and most recently **Nuvem** (Portugal-Bermuda-US). Google also supports European submarine cable systems owned by other operators through its lease of capacity on such systems. We appreciated the opportunity to share this information with BEREC under the consultation for the Report on the General Authorisation and Related

Frameworks for International Submarine Connectivity in January 2024.

A diverse ecosystem of co-investment and partnerships exists today that has evolved as the participation of technology companies has increased. Rather than trending towards single ownership, Google's cables are often enabled by partnerships. This includes telecommunication providers such as Orange (as the French landing partner for Dunant), Alcatel Submarine Networks headquartered in France (for the Equiano cable connecting Portugal to points along the West Coast of Africa) and various partners such as Société d'infrastructures numériques (SIN), CSquared, and the West Indian Ocean Cable Company (WIOCC). Partnerships such as these not only contribute to a more resilient subsea cable ecosystem, but strengthen Telco positions themselves and reinforce their "international leadership position" (Orange press release, Oct. 12, 2018).

Beside investing in complementary infrastructure, technology companies from Google Cloud to France's OVH and others also help the telecom sector because their services can support telcos in managing their networks more effectively, and more cheaply - to reduce network costs and improve performance.

For example, our partnership with Vodafone and Cardinality has enabled a centralized "data ocean" to provide a unified, shareable cloud data layer to generate insights which allows Vodafone to update its network faster, more dynamically, and more efficiently. It gives Vodafone eight billion data points per day that improves network-related decisions, and enables use of smart planning for cheaper, more effective network rollouts.

With our partnership with Vodafone and Nokia, an Anomaly Detection Service product is being rolled out across Vodafone's pan-European network. This quickly detects and troubleshoots irregularities, such as mobile site congestion and interference, and unexpected latency, that can impact customer service quality.

Looking ahead, we see the future of the telecom ecosystem and its relation with cloud providers and CAPs generally being about "Unlocking the AI-enabled Telco": it will be about telecom operators benefiting from innovation by technology companies like Google to manage their networks, and their businesses, better. As ECS/ECNs harness the full potential of gen AI to drive value across their organizations, gen AI assistants will play critical roles, augmenting human capabilities with powerful data analysis, pattern recognition, and recommendations, helping to streamline processes and transform customer and employee experiences. Gen AI agents have a critical role to play to support telecom operators in several key areas: Automating network operations (where networks can self-optimize, self-heal, and proactively adapt to changing conditions, delivering new levels of reliability and efficiency for telecom providers); Accelerating field services to maintain network quality and boost preventive maintenance; Improving customer care by using AI in contact centers, as well as in sales and marketing.

In sum, the long term evolution of the telecom value chain is about cloud service providers

increasingly bringing innovative applications to support telecom operators, not compete with them. It is a symbiotic ecosystem, which BEREC regulators, policymakers and other stakeholders should welcome and encourage.

Chapter 7 (Regulatory Considerations)

The Cloud Report states that "due to the current and expected evolution of new digital services, the boundary between ECN/S and the cloud services provided (most of them, currently out of scope of regulation) becomes more and more blurred" and urges a re-examination of the the ECN/S definition in the EECC to determine "if it is sufficiently future proof and clear enough to guarantee legal certainty in the context of services convergence." As we note earlier, this claim of "services convergence" is overstated and any effort to expand the definition of ECN/S to subsume cloud services at large will be deeply destabilizing and will undermine Europe's interest in growing strong, healthy cloud services and ECN/S markets.

Indeed, the Cloud Report effectively confirms that there is no significant problem in competition or elsewhere – beyond speculative future risks – that such an approach could even potentially address. For example, the Cloud Report states that "there is a risk that big tech leverage their privileged market position in digital services such as cloud into adjacent markets, including electronic communications. *However, migration is still at an early stage, technical solutions and standardization are still being developed and experiences may significantly differ.*" Similarly, with respect to the relationships between ECN/S providers and cloud providers with respect to edge services, the Cloud Report provides that the "mutual agreements between network operators and cloud providers do not inherently pose a threat to competition and are beneficial for both parties."

Against this backdrop, it is unclear, at best, what policy problem could be addressed by upending the definition of ECN/S (and within that, of public and private ECN/S) that by the Cloud Report's own recognition has "served its purpose in the context of traditional services but also with internet-based services." Meanwhile, what is clear is that such an approach would invite significant additional overlapping and duplicative regulation into the cloud services (as well as into the telecommunications services market if the claimed "convergence" results in even-handed porting of cloud regulation into the telecommunications services market as well as vice versa). The Cloud Report recognizes in Chapter 2 and Annex I just some of the regulation that exists with respect to cloud services, spanning from AI to interoperability to cybersecurity (and major additional regulations like the Digital Operational Resilience Act, NIS2 and the initiative of EUCS are not reflected). Expanding the definition of ECN/S (or erasing the distinctions within that definition of public and private networks) would add more regulatory burden, and further complicate concerns about regulatory jurisdiction and oversight, without contributing any ostensible benefits to the citizens and businesses of the European Union.

Conclusion

Google would be pleased to engage in further discussions with BEREC on any of the points made in this report. As BEREC continues to monitor the electronic communications sector and adjacent markets, we believe it is crucial to keep in mind the clear and helpful explanation of the technical principles of the layered Internet expressed in its 2022 report on the Internet ecosystem, and the multi-layered and mutually beneficial partnerships between telecoms operators and cloud/edge computing service providers.

While this ecosystem continues to evolve fast, talk of the blurring of boundaries between certain service categories like cloud and ECS, even of convergence, is at best premature, and in our view, largely unfounded. This is certainly the case when considering harm, where no market failure has been observed so far, that would warrant regulatory scrutiny and concerns. What is generally happening is the ongoing development of a series of interactions between the infrastructure and application layers, with a number of parallel sub-markets *interdependent* of each other, but not *competing* with each other.

Throughout this mutually beneficial evolution and appearance of new business models and solutions, the Internet has remained a highly distributed, hence resilient, 'network of networks', supported by several layers of infrastructure and applications, characterized by constant innovation secured thanks to the open character of the Internet. Ultimately, this ecosystem delivers ever-better services with enhanced experience for users - consumers - citizens.