

Appendix A: Demand for cloud services and how customers purchase cloud services

Introduction

- A.1 This appendix provides the evidence we have gathered in relation to:
- (a) the demand for cloud services;
 - (b) customers' purchasing channels and mechanisms; and
 - (c) the main providers of cloud services.

The demand for cloud services

Public cloud customers

- A.2 Cloud services are increasingly important inputs to many businesses and organisations across the UK economy. They support most sectors, including communications, manufacturing, retail, hospitality and financial services as well as public and voluntary sector bodies. Without cloud services, many digital businesses providing services to consumers would not be able to function in the way they do today.
- A.3 Evidence we have seen from cloud providers shows that there is a large number of customers of cloud services in the UK. These customers are present in a range of different industries. Some of these industries have specialised use cases due to regulatory requirements (eg financial services) or prescribed procurement rules (as in the public sector).
- A.4 AWS, Microsoft and Google supplied customer level data which included revenue and industry categorisation. The categories provided by each provider were based on their own reporting and therefore do not align with each other – some providers supplied more granular categories or different groupings of industries to others.
- A.5 Nevertheless, our analysis of revenue across categories allowed us to observe that customers in financial services, IT or software services, public sector and retail are important categories.

A.6 Customers also vary in terms of their size. Evidence from cloud providers shows that a small number of high-spend customers are responsible for a significant proportion of providers' UK revenue and a large number of low-spend customers are responsible for a small proportion of their revenue. In particular, the top 10% of customers account for a very large majority of revenues and the top 1% account for over half of revenues.¹

Growth in demand for cloud services

A.7 Since AWS launched its IaaS offering in 2006, the cloud services landscape has expanded significantly with various providers operating at both the IaaS and PaaS level. This expansion has seen a proliferation of services and products offered by providers. For example, AWS' portfolio is now comprised of over 200 individual services and products, including compute, storage, databases, analytics, networking, mobile, developer tools, management tools, internet of things and security.²

A.8 To better understand how cloud services may develop in the future, we have looked at trends in customer spending, cloud provider revenue and data centre capacity.

Customer spending

A.9 Gartner regularly forecasts growth in worldwide end-user spending,³ and we have seen evidence that providers use these forecasts for market monitoring. Gartner forecasts that worldwide spending on all public cloud services will grow from \$561 billion in 2023 to \$825 billion in 2025.⁴

A.10 Gartner forecasts that worldwide IaaS spending will increase from \$143 billion in 2023 to \$232 billion in 2025 and that PaaS spending will increase from \$143 billion in 2023 to \$212 billion in 2025.⁵ We have noted that this forecast covers products and services beyond public cloud infrastructure services as defined in this market investigation (including SaaS, Cloud Business Process Services, and Cloud Desktop-as-a-Service).

¹ Responses to the CMA's information requests [§<].

² [Overview of Amazon Web Services - Overview of Amazon Web Services](#), accessed 13 March 2024.

³ For example: [Gartner Forecasts Worldwide Public Cloud End-User Spending to Grow 18% in 2021](#) and [Gartner Forecasts Worldwide Public Cloud End-User Spending to Reach Nearly \\$500 Billion in 2022](#), accessed 10 February 2024.

⁴ [Gartner Forecasts Worldwide Public Cloud End-User Spending to Surpass \\$675 Billion in 2024](#), accessed 28 August 2024.

⁵ [Gartner Forecasts Worldwide Public Cloud End-User Spending to Surpass \\$675 Billion in 2024](#), accessed 28 August 2024.

Cloud provider revenue

- A.11 Global forecasts we have received from cloud providers also show that demand for cloud services will continue to grow. In particular, the internal analysis of one cloud provider shows that it expects year-on-year revenue growth from its cloud services (which is likely to include SaaS) to continue [redacted].^{6 7}
- A.12 Table 2.1 sets out the estimated UK revenue from IaaS and PaaS in the UK from 2020 to 2023. It was calculated from 11 companies' UK IaaS and PaaS revenues between 2020 and 2023,⁸ and an estimate of the remainder of UK revenues associated with IaaS and PaaS using Synergy and IDC data.⁹

Table A.1: UK IaaS and PaaS revenues, 2020-2023 (£ billion)

	2020	2021	2022	£ billion 2023	% Annual growth
IaaS	2.4	3.0	4.3	5.1	29.3
PaaS	1.4	2.0	3.0	3.8	39.0
IaaS and PaaS	3.8	4.9	7.3	9.0	33.1

Source: CMA analysis of data from IaaS and PaaS providers, IDC and Synergy

- A.13 Table 1.1 shows that in the UK, the revenues for IaaS and PaaS grew from £3.8 billion in 2020 to £9.0 billion in 2023. This represented an average annual growth rate of 33.1% per year. IaaS revenues were higher in the UK in 2023 at £5.1 billion compared to PaaS revenues which were at £3.8 billion. PaaS revenues had a higher annual growth rate between 2020 and 2023 of 39.0% compared to 29.3% for IaaS.
- A.14 We have seen evidence of some new developments in cloud services that may drive how the cloud is used in the future.
- A.15 First, analysts have identified the rise of what they termed as 'industry cloud platforms' or 'vertical clouds' as a key trend driving cloud spending.¹⁰ Industry cloud platforms combine a provider's IaaS, PaaS and SaaS capabilities into a whole-product offering which targets the industry-specific needs of customers.¹¹ For example, Microsoft offers industry-specific cloud solutions for the healthcare, financial services, non-profit, retail and government sectors, amongst others.¹²
- A.16 Gartner predicts that 'by 2027, more than 70% of enterprises will use industry cloud platforms to accelerate their business initiatives, up from less than 15% in

⁶ [redacted] response to the CMA's information request [redacted].

⁷ [redacted] response to the CMA's information request [redacted].

⁸ The 11 companies were: [redacted].

⁹ See Appendix D for more explanation of methodology.

¹⁰ [The future of cloud is industry specific - KPMG Global](#) and [Gartner Forecasts Worldwide Public Cloud End-User Spending to Reach \\$679 Billion in 2024](#), accessed 10 February 2024.

¹¹ [Gartner Forecasts Worldwide Public Cloud End-User Spending to Reach \\$679 Billion in 2024](#), accessed 10 February 2024.

¹² [Microsoft Industry Clouds](#), accessed 10 February 2024.

2023'.¹³ If this trend continues then it may influence competitive dynamics based on the strengths of each cloud provider's industry focused solutions.

- A.17 Second, there is evidence of an increased deployment of serverless computing and serverless architectures including function-as-a-service (FaaS) and backend-as-a-service (BaaS).
- A.18 Since the serverless model abstracts away all the infrastructure and provisioning related to an application, customers only focus on developing the applications, rather than the scaling and provisioning of the underlying infrastructure, which is automatically scaled up or down based on the application traffic.
- A.19 Gartner predicts that, due to the 'simplicity' and reduced overhead of lowered infrastructure maintenance, 'half of global enterprises will have deployed FaaS by 2025, up from only 20% in 2020'.¹⁴
- A.20 Consistent with this, Microsoft service's (Azure Functions) UK customer base grew by 96% between 2019 and 2022.¹⁵
- A.21 Third, the emergence of services related to artificial intelligence (AI) has also spurred growth in cloud services. We consider this topic in the section on the impact of AI on cloud services within the Chapter 3.

Data centre capacity

- A.22 We have considered cloud providers' current and forecast data centre capacity. If providers forecast increases in capacity, then this would be consistent with an expectation among them that demand for cloud services will continue to increase.
- A.23 Figure 2.1 shows the total data centre capacity for Europe (European Economic Area + UK) and the UK in megawatts (MW) for the period 2020 to 2026. This is based on MW as we understand that this is the industry standard metric and includes actual capacity for the period 2020 to 2023 and forecast capacity for 2024 to 2026.¹⁶ This is based on data from AWS, Microsoft, Google, IBM Oracle and some smaller IaaS providers that serve UK customers.¹⁷

¹³ [Gartner Forecasts Worldwide Public Cloud End-User Spending to Reach \\$679 Billion in 2024](#), accessed 10 February 2024.

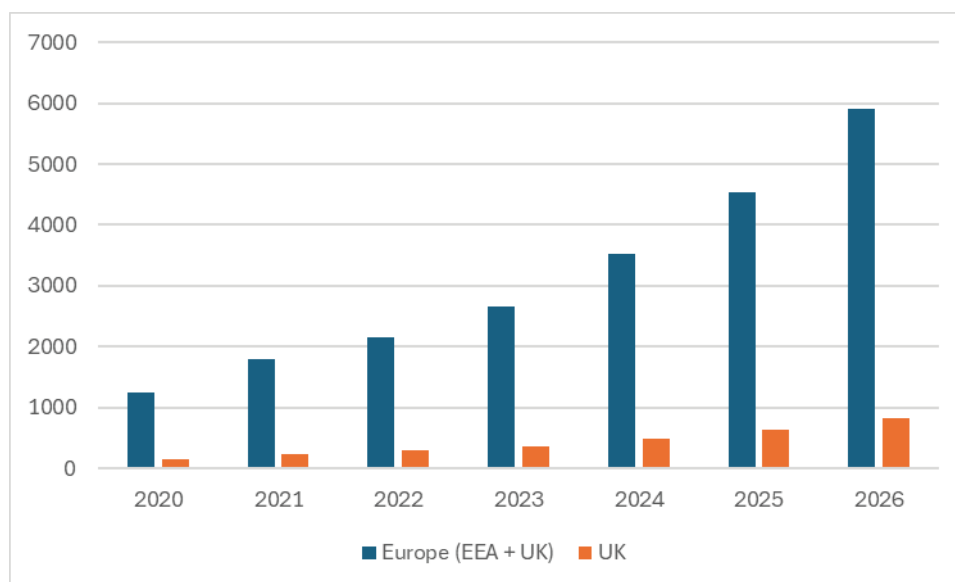
¹⁴ [The CIO's Guide to Serverless Computing](#), Gartner accessed 12 September 2024. Also see [The Rise of Serverless Computing, Communications of the ACM, Published December 2019, Volume 62 no.12](#).

¹⁵ Microsoft's response to Ofcom's information request [redacted].

¹⁶ See Appendix D for a discussion of the data including relevant caveats.

¹⁷ Centerprise, Coreweave, Digital Ocean, Hyve and Wasabi. Responses to the CMA's information requests [redacted].

Figure A.1: Total data centre capacity for Europe and the UK in MW, 2020-2026



Source: CMA analysis of cloud provider data.

A.24 The data shows that data centre capacity has increased significantly since 2020 and is forecasted to increase substantially in the near future.

How customers purchase cloud services

A.25 The ways in which services are purchased can influence the nature of competition. In particular, where purchases are individually negotiated, the details of these negotiations can influence the competitive process as customers may vary in their needs and their ability to negotiate and providers may tailor their negotiating strategies to particular customers. We describe below the channels through which customers purchase cloud services and (where relevant) how contracts are negotiated.

Purchase channels

A.26 Customers purchase cloud services from all the main providers through competitive tenders, bilateral negotiations, from a provider's online portal or marketplace, or through suppliers of professional services, including authorised resellers.¹⁸ Providers have submitted that different customers favour different ways of sourcing cloud services.¹⁹

¹⁸ Responses to Ofcom's information requests [3<]; Responses to the CMA's information requests [3<].

¹⁹ The evidence from providers suggests that the purchase channel favoured by different types of customers is not affected by whether said customers are existing or new. Namely, a customer who chooses to procure cloud services through bilateral negotiations will most often renegotiate their contract when the latter comes to term. Similarly, providers submitted that public bodies tend to use tenders (existing and new customers) and that customers who buy cloud services from providers' online portals on a PAYG basis, just purchase the amount of cloud they need when they need it.

- A.27 A minority of customers carry out competitive tenders: these are particularly prevalent among public sector customers which often have specific requirements on how to procure IT services.²⁰ Tenders are less frequent in the private sector, although one provider said that large companies will typically use competitive tenders to procure either all or some of their cloud services - especially when they are first sourcing them.²¹
- A.28 Large enterprise customers – for example, classified by one provider as those with an estimated spend of over £1 million per year,²² - generally procure cloud services through bilateral negotiations with providers.²³ A cloud provider said that this allows a range of customers, including those with higher spend rates, to secure bespoke contracts tailored to their needs.²⁴
- A.29 Smaller enterprise customers are more likely to purchase cloud services directly from providers through their online portals,²⁵ and/or their marketplaces.^{26,27} These customers generally pay for cloud services on a pay-as-you-go basis, paying the providers' listed prices.²⁸ In addition, a cloud provider said that small and medium-sized customers often acquire cloud services through listed prices or bilateral negotiations.²⁹
- A.30 Some customers purchase cloud services through resellers: these are a network of partners authorised to resell cloud services from providers.³⁰
- (a) Resellers often independently negotiate prices with their customers, owning the billing and contractual relationship with them.³¹ Customers who choose resellers tend to require additional technical services (eg IT consulting and support with cloud migration),³² and may be in an early stage in defining their need for cloud services.³³
- (b) One provider said that small and medium sized business are more likely to engage with its partners for services, as opposed to purchasing cloud

²⁰ Responses to Ofcom's information requests [redacted].

²¹ [redacted] response to Ofcom's information request [redacted].

²² [redacted] response to the CMA's information request [redacted].

²³ [redacted] response to the CMA's information request [redacted]; [redacted] response to Ofcom's information request [redacted]; [redacted] response to the CMA's information request [redacted].

²⁴ [redacted] response to the CMA's information request [redacted].

²⁵ Online portals refer to the provider's website where customers can purchase cloud services at listed prices.

²⁶ Marketplaces are an online platform, where cloud providers and ISVs can offer services to customers, which run on the underlying infrastructure of the provider offering that marketplace. Both Google and Microsoft said customers can procure cloud services through their marketplaces.

²⁷ [redacted] response to the CMA's information request [redacted].

²⁸ [redacted] response to the CMA's information request [redacted].

²⁹ [redacted] response to the CMA's information request [redacted].

³⁰ Responses to Ofcom's information requests [redacted].

³¹ Responses to Ofcom's information requests [redacted].

³² [redacted] response to Ofcom's information request [redacted].

³³ [redacted] response to Ofcom's information request [redacted].

services directly,³⁴ which may reflect the fact that smaller businesses are less likely to have large in-house IT capabilities.

- (c) [X] also said that many customers obtain their cloud services through a combination of direct and partner relationships, depending on their circumstances and workloads.³⁵
- (d) Some providers offer incentive programmes to resellers to promote sales of certain services; for example, [X] offers payments for hitting certain sales thresholds,³⁶ and [X] offers discounts for resellers purchasing its cloud services.³⁷

A.31 Evidence we have seen shows that:

- (a) providers sell the large majority of their cloud services directly to customers (ie using their online portals or through bilateral negotiations);
- (b) there are some notable exceptions, such as one provider, for whom a substantial proportion of sales come through sell partners or resellers;³⁸ and
- (c) for most providers, sales through marketplaces,³⁹ constitute only a small percentage of their estimated UK sales by revenue.

Contract negotiations

A.32 We describe below the types of contracts customers enter into and the process of contract negotiation by enterprise customers.

Types of contracts

A.33 There are two main types of contracts that customers can enter into when purchasing cloud services: customer agreements and enterprise agreements.

- (a) Customer agreements are the standard contracts cloud providers offer through their online marketplaces. When customers have a customer agreement, they typically assume the cloud provider's listed terms and prices. Several cloud providers said that the vast majority of customers are on this type of contract and so do not negotiate additional terms.⁴⁰

³⁴ [X] response to the CMA's information request [X].

³⁵ [X] response to Ofcom's information request [X].

³⁶ [X] response to Ofcom's information request [X].

³⁷ [X] response to Ofcom's information request [X].

³⁸ [X] response to the CMA's information request [X].

³⁹ See footnote 26 for a definition of marketplaces.

⁴⁰ Responses to the CMA's information requests [X]; [X] response to Ofcom's information request [X].

(b) Enterprise agreements, which are individually negotiated, are generally reserved for larger customers with higher spending.⁴¹ [X] submitted that they contain commonly requested terms such as invoicing and regulatory compliance commitments.⁴²

A.34 Several cloud providers said that UK customers maintain a single contractual relationship with them for the cloud services they deploy.⁴³ There are exceptions to this though:

(a) [X] said if a large customer has affiliates or subsidiaries then each may have separate agreements and billing accounts.⁴⁴

(b) [X] said that customers may, in limited instances, want separate contracts for different projects or for teams in different geographies who require isolated accounts for security purposes. This concerns mostly large customers in the banking and financial sector.⁴⁵

A.35 Evidence from cloud providers showed that only a minority of customers negotiate their contracts.⁴⁶ For example, a cloud provider submitted a breakdown of the proportion of its UK customers who contracted its cloud services at listed prices vis-à-vis those who did so through competitive tenders or bilateral negotiations and hence were more likely to negotiate bespoke contractual terms. This showed that less than 5% of the provider's customers in 2022 negotiated contracts bilaterally or through competitive tenders. However, these customers accounted for over 75% of the provider's UK revenue in 2022.⁴⁷

A.36 In summary, most customers have standard contracts that have been agreed without negotiation. Some larger customers either engage in bilateral negotiations or tenders and are able to negotiate terms that depart from standard contracts.

How contracts are renegotiated

A.37 One cloud provider said that contracts are often renegotiated at the end of a customer's contract period,⁴⁸ although another cloud provider said that renegotiations can also occur during the contract term if the customer's circumstances or requirements change or if there is a change in the regulatory environment.⁴⁹ One cloud provider said that either the customer will approach it to discuss an early renewal or it would reach out to the customer to discuss whether

⁴¹ [X] response to the CMA's information request [X].

⁴² [X] response to the CMA's information request [X].

⁴³ Responses to the CMA's information requests [X].

⁴⁴ [X] response to the CMA's information request [X].

⁴⁵ [X] response to the CMA's information request [X].

⁴⁶ Responses to the CMA's information requests [X]; [X] response to Ofcom's information request [X].

⁴⁷ [X] response to the CMA's information request [X].

⁴⁸ [X] response to Ofcom's information request [X].

⁴⁹ [X] response to Ofcom's information request [X].

the customer would be interested in a renewal,⁵⁰ whereas others said they would typically renegotiate at the customer's request.⁵¹

A.38 Most providers said that they do not differentiate between new and existing customers and that the renegotiation process for ongoing contracts is broadly similar to that for new contracts.⁵² [redacted] said that both existing and new customers are eligible for the same discounts and customers who renegotiate the same overall terms upon the expiry of their original contract are not charged higher prices.⁵³

A.39 Two providers said that renewing customers may get particular benefits:

(a) A cloud provider said that, as renewing customers have spent more time using its cloud service, the commercial terms will likely better reflect their requirements.⁵⁴

(b) [redacted] said that, while it prefers to keep the same terms, further discounts based on the usage of its cloud services may be offered upon renewal of an existing contract.⁵⁵

A.40 We asked large customers of cloud services about whether they had ever renegotiated their contracts with public cloud providers and whether the terms of the contract improved, worsened or remained broadly the same as part of any renegotiation.⁵⁶

A.41 In response, many of the customers we spoke to said they had renegotiated their contracts for cloud services in the past, many of them in the previous three years.⁵⁷ Their responses indicate that the outcome of these renegotiations often depends on whether customers can commit to higher spending. In particular:

(a) Many customers renegotiated improved terms with at least one of the providers they source cloud services from.⁵⁸ This included:

(i) Improved terms consisting primarily of more sizeable discounts, driven by increases in customers' spending commitments.⁵⁹ For example one customer said that – based on its own experience dealing with AWS – if customers are unable to commit to increased levels in spend, there is a

⁵⁰ [redacted] response to Ofcom's information request [redacted].

⁵¹ [redacted] response to the CMA's information request [redacted]; [redacted] response to Ofcom's information request [redacted].

⁵² Responses to the CMA's information requests [redacted]; Responses to Ofcom's information requests [redacted].

⁵³ [redacted] response to Ofcom's information request [redacted].

⁵⁴ [redacted] response to the CMA's information request [redacted].

⁵⁵ [redacted] response to the CMA's information request [redacted].

⁵⁶ We classified large customers as those with over £5m revenue. To the extent that a provider did not have customers generating over £5m worth of revenue, we used their top 10 customers

⁵⁷ [redacted].

⁵⁸ [redacted].

⁵⁹ [redacted].

real risk that their provider would not offer a like-for-like agreement, particularly in terms of the discount available.⁶⁰

- (ii) An increased discount even if other terms worsened after renegotiation,⁶¹ or more favourable payment terms with a provider even if they were still worse than those offered by other suppliers and third party vendors.⁶²
 - (iii) Improved non-price commercial terms (eg features, services, liabilities), from leveraging the potential use of new technology (eg generative AI),⁶³ or innovations in the cloud industry.⁶⁴
- (b) In a few cases customers said that some of their terms had worsened upon renegotiation.⁶⁵ For example, one customer cited price list increases and reduced discounts, while another customer said its cloud provider had made enterprise support conditional on purchasing a more expensive support package the customer did not need as the cloud provider was no longer offering the support package that it previously provided.
- (c) In fewer cases customers said that their contract terms had remained broadly the same after renegotiation.⁶⁶ For example, one customer said its discount level was reduced after the renegotiation and a minimum spend commitment was introduced. However, its provider compensated it by offering additional cloud credits linked directly to targets for the number of workloads the customer migrated to the provider's platform within a specified timeframe.⁶⁷ One customer said that on renewal its provider tried to raise costs, but it was able to push back against this price increase.⁶⁸

Main providers

A.42 In this section, we provide an overview of the main providers of cloud services in the UK. We also include independent software vendors (ISVs) which supply PaaS and do not own any of the underlying raw computing services.⁶⁹

⁶⁰ [redacted] response to the CMA's information request [redacted].

⁶¹ [redacted].

⁶² Responses to the CMA's information requests [redacted].

⁶³ [redacted] response to the CMA's information request [redacted].

⁶⁴ [redacted] response to the CMA's information request [redacted].

⁶⁵ Responses to the CMA's information requests [redacted].

⁶⁶ Responses to the CMA's information requests [redacted].

⁶⁷ [redacted] response to the CMA's information request [redacted].

⁶⁸ [redacted] response to the CMA's information request [redacted].

⁶⁹ The cloud providers and ISVs also offer SaaS services, which are not included in the reference made by Ofcom.

Cloud providers in the UK

- A.43 AWS was the first provider to supply cloud services in 2006 using infrastructure that it had developed initially to support its online retail business.⁷⁰ Microsoft made Microsoft Azure generally available in 2010,⁷¹ and Google made Google Cloud generally available in 2011.⁷²
- A.44 As set out in the section on Market structure and concentration in the Chapter 7, AWS, Microsoft, Google, IBM and Oracle are the largest vertically integrated cloud providers in the UK by revenue.
- A.45 As well as setting out relevant information on each of these providers, we have also considered evidence on their business strategies, including their pricing strategies and their customer base. We have also considered analyst reports and customers' views on each provider.
- A.46 This provides context to our wider analysis: in particular, understanding the history, business strategies and relative strengths and weaknesses of different providers allows us to properly understand competitive dynamics and as such feeds into our assessment of the extent of any market power as well as into the four theories of harm outlined in our issues statement.

Amazon Web Services (AWS)

- A.47 AWS is a subsidiary of Amazon and started providing cloud services in 2006.⁷³
- A.48 AWS' first cloud service was Amazon S3(TM), a storage service.⁷⁴ It has subsequently expanded to offer a large number of IaaS and PaaS services. AWS describes itself as 'the world's most comprehensive and broadly adopted cloud, offering over 200 fully featured services from data centers globally'.⁷⁵
- A.49 AWS lists its top product categories as compute, storage, database, networking and content delivery, analytics, machine learning and security, identity and compliance.⁷⁶ Of these, [redacted] accounted for [redacted] public cloud revenue in both the UK and globally in 2022. The next largest category is [redacted] with [redacted] in both the UK and globally in 2022.⁷⁷

⁷⁰ About AWS, accessed 10 February 2024.

⁷¹ Windows Azure Platform Now Generally Available in 21 Countries, accessed 11 February 2024.

⁷² The History of Google Cloud Platform, accessed 11 February 2024.

⁷³ About AWS, accessed 10 February 2024.

⁷⁴ Amazon Web Services Launches, accessed 10 February 2024.

⁷⁵ What is AWS? Cloud Computing with AWS, accessed 10 February 2024.

⁷⁶ Cloud Products, accessed 10 February 2024.

⁷⁷ [redacted] response to the CMA's information request [redacted].

- A.50 AWS serves several countries and territories across the world, and this is based on more than 30 geographic regions; it has announced plans to expand to four more 'AWS regions'.⁷⁸
- A.51 Amazon, the parent company of AWS, is also active in online retail (eg amazon.co.uk), entertainment (eg Amazon Prime Video, Audible, Amazon Music), devices and services (eg Alexa, Fire Tablets) and delivery and logistics.⁷⁹ AWS provides solutions to some other Amazon business such as Amazon Prime Video.⁸⁰
- A.52 Amazon categorises its operations into North America, International and AWS.⁸¹ Amazon's total global revenue was \$575 billion in 2023 with AWS accounting for 16% of that revenue (\$91 billion).⁸² This figure has increased from 10% in 2017 with AWS revenue growing at a compound average growth rate of 32% per year over the same period.⁸³

Public cloud strategy and views of customers

Evidence from AWS

- A.53 AWS said that its 'overarching business strategy' is to 'work backwards' from 'what would be most attractive to the customer'.⁸⁴ AWS also said that the competition it faces provides it with strong incentives to innovate and that, given its overarching business strategy, this innovation is customer focused. In particular:
- (a) AWS said that, given the competition it faces, it 'needs to keep innovating to attract and retain customers'⁸⁵ and that it had 'regularly introduced new services and thousands of new features in existing services each year' as well as continuously improving 'the quality and security of its offerings'.⁸⁶
 - (b) AWS said that due to the 'speed at which things change', 'the guiding principle behind the development of AWS' offer is iterative innovation'. AWS said that this allows it 'to continuously consider what AWS' customers may

⁷⁸ [Global Infrastructure](#), accessed 10 February 2024.

⁷⁹ [Amazon: What We Do](#), accessed 10 February 2024.

⁸⁰ [Prime Video Case Study](#), accessed 10 February 2024.

⁸¹ The AWS segment consists of amounts earned from global sales of compute, storage, database and other services for start-ups, enterprises, government agencies and academic institutions. These first two categories primarily consist of amounts earned from retail sales and advertising and subscription services. [Amazon 2023 Form 10-K](#), accessed 10 February 2024.

⁸² [Amazon 2023 Form 10-K](#), page 24.

⁸³ CMA analysis of Amazon's reported accounts: [Amazon 2023 Form 10-K](#), page 24; [Amazon 2017 Form 10-K](#), page 25.

⁸⁴ AWS response to the CMA's information request [3<].

⁸⁵ AWS' response to Ofcom's information request [3<].

⁸⁶ AWS response to the CMA's information request [3<].

want or need and drives it to constantly innovate and develop new products and services'.⁸⁷

- (c) AWS said that it 'remains close to customers and focuses on elements it knows they will value over the long-term (eg, performance, security, breadth and depth of features and functionality, and cost performance of AWS' cloud services)'.⁸⁸

A.54 AWS said that its services are typically priced on a pay-as-you-go basis.⁸⁹ AWS said that its pricing strategy is to set 'its prices to ensure its offerings compete effectively with alternatives available to customers'.⁹⁰ AWS said it seeks to 'continually lower customers' costs where possible through price reductions over the long run to stay competitive [...] and to provide a cost-effective proposition'.⁹¹

A.55 AWS also offers a free tier like other providers, and AWS said that this 'enables many customers to benefit from certain AWS' services free of charge for a certain amount of time or usage'.⁹²

A.56 AWS said that its customers comprise 'a variety of types' such as 'start-ups, mid-market companies, established enterprises, governments, and academic organisations' and 'span a wide range of industries'.⁹³

A.57 We asked each of the main cloud providers to list their understanding of the factors UK customers value the most when choosing them as a provider. In response, AWS said that there are a number of reasons why customers may decide to use it including:⁹⁴

- (a) Innovation – AWS said that customers can focus their efforts on innovating and developing applications that differentiate their business and transform customer experiences instead of focusing on the underlying infrastructure.
- (b) Resources – AWS said customers can quickly increase resources as they need them.
- (c) Elasticity – AWS said that customers can instantly scale up or down along with the needs of their business, which also reduces cost and improves the customer's ability to meet their user's demands.

⁸⁷ AWS also said that it 'focuses on customer needs and prioritises efficient utilisation of resources and time to market. What AWS builds is driven by what customers tell AWS. Some novel offerings were created in response to a single customer's needs, but once developed, can be used to also benefit other customers.' AWS response to Ofcom's information request [§<]. AWS response to the CMA's information request [§<].

⁸⁸ AWS response to Ofcom's information request [§<].

⁸⁹ AWS response to Ofcom's information request [§<].

⁹⁰ AWS response to Ofcom's information request [§<].

⁹¹ AWS response to the CMA's information request [§<].

⁹² AWS response to Ofcom's information request [§<].

⁹³ AWS response to Ofcom's information request [§<].

⁹⁴ AWS response to the CMA's information request [§<].

- (d) Flexibility – AWS said that customers can use AWS’ services in combination with their on-premises IT infrastructure (eg, hybrid) and with other cloud and IT services providers (eg, multi-cloud).
- (e) Global reach – AWS said that customers can use AWS to deploy globally quickly.
- (f) Cost savings – AWS said that customers can trade capital expense for variable expense and only pay for IT as they consume it.

Evidence from AWS’ internal documents

A.58 The [redacted] submitted by AWS show that, when setting prices for its cloud products and services, [redacted]. The documents sometimes discuss [redacted].⁹⁵

A.59 Internal documents indicate AI, investments in infrastructure, improvements in technologies and analytics, as the main changes in the near future. In particular, in its [redacted], AWS identified the ‘biggest opportunities and needle-movers’ for its cloud business, as:

- (a) [redacted].
- (b) [redacted].
- (c) [redacted].
- (d) [redacted].
- (e) [redacted].
- (f) [redacted].
- (g) [redacted].⁹⁶

A.60 In the same [redacted], AWS identified ‘the most important things for the [cloud] business to get delivered or done in 2024’. [redacted]. The listed priorities were:

- (a) [redacted].
- (b) [redacted].
- (c) [redacted].
- (d) [redacted].⁹⁷

⁹⁵ AWS response to the CMA’s information requests [redacted].

⁹⁶ AWS response to the CMA’s information request [redacted].

⁹⁷ AWS response to the CMA’s information request [redacted].

A.61 A late 2023 [redacted] document from AWS suggested that the [redacted]. In said document, [redacted].⁹⁸

Evidence from analyst reports, customers and competitors

A.62 AWS is identified in analyst reports as being the leading cloud provider. One analyst said that not only is AWS the leader, but it is managing to keep ahead of the pack and is differentiating by investing in hardware.⁹⁹

A.63 More generally based on our review of analyst reports:¹⁰⁰

(a) AWS is identified as having strengths in areas such as: the breadth and depth of its capabilities; its strong ecosystem; its high level of innovation; its high brand awareness with customers; and its investments in hardware that has boosted compute capabilities.

(b) AWS is identified as having weaknesses such as: eroding customer relationships by focusing on the short term especially around contract renewal; a relatively weak strategy to support customers seeking multi-cloud¹⁰¹ and 'sovereign solutions'; its usability (eg lack of quality service documentation) and costs, such as egress fees; its connection with Amazon means it has lost some retail business; and its open source offering which is less of a priority for AWS compared to other providers.

A.64 We asked large customers to rate the suitability of a list of public cloud providers¹⁰² as alternatives to their main public cloud provider¹⁰³ based on their perception or any direct experience. We have noted that in asking about whether a cloud provider is a suitable alternative to the customer's main provider this does not capture that some cloud providers may not be suitable as a main provider, but be a suitable alternative for some workloads. In some cases cloud providers may exert at least some competitive constraint based on an offering targeted at certain market segments.

A.65 AWS was the main provider for many of the customers we spoke to and, among other customers, most identified AWS as an effective or fully effective alternative. These customers generally identified AWS as being effective or very effective as

⁹⁸ AWS response to the CMA's information request [redacted].

⁹⁹ Responses to the CMA's information requests [redacted].

¹⁰⁰ [redacted] response to the CMA's information request [redacted].

¹⁰¹ The analyst report notes that 'AWS shows little incentive or interest in pursuing meaningful multi-cloud strategies on behalf of its customers'. [redacted] response to the CMA's information request [redacted].

¹⁰² The list provided included: AWS, Microsoft, Google, Oracle, IBM, OVHcloud, Alibaba and 'other'.

¹⁰³ This was self-identified based on revenue spend.

an alternative due to reasons such as its wide range of products and services.¹⁰⁴ One customer did not consider AWS as an alternative due to [REDACTED].¹⁰⁵

- A.66 Competitors have described AWS as a cloud provider particularly strong with startups and digital natives. Namely:
- (a) A submission from a cloud provider stated that AWS' customer base is skewed towards digital native companies, being particularly strong with startups.¹⁰⁶
 - (b) A September 2023 document from one provider discussing [REDACTED]. In the same document, the provider said that [REDACTED].¹⁰⁷
 - (c) One provider said that AWS had 'begun to offer some industry-focused products, such as AWS for Financial Services, AWS for Health, and AWS for Retail. AWS has strong offerings across IaaS, in database, and Edge computing'.¹⁰⁸ [REDACTED] said that AWS was generally 'a preferred IaaS provider for digital native ISVs'.¹⁰⁹
- A.67 One provider identified AWS' strengths as its 'breadth of available IaaS and PaaS services with maturity relative to competitors; their large partner ecosystem which includes thousands of SaaS and PaaS vendors in the largest SaaS/PaaS marketplace and an extensive network of system integrators and managed service providers'. The only AWS' weakness mentioned was its 'lack of multi-cloud support'.¹¹⁰
- A.68 A provider's analysis in the provision of data analytics services identified the following strengths and weaknesses for AWS:
- (a) Strengths: AWS is seen as more innovative, with multiple customers prioritizing innovation and 'disrupter-mentality' as key drivers for choosing AWS ([REDACTED]); AWS ProServe's approach to technical support and the long-tail cloud journey considered extremely beneficial; AWS' competitive pricing and its offering of the most flexible packaging and credits with limited restrictions.
 - (b) Weaknesses: AWS is described as 'challenging for newcomers', particularly for those customers with low-code/no-code capabilities; AWS' customer support was described as responsive but lacking the skills to support specific

¹⁰⁴ [REDACTED].

¹⁰⁵ [REDACTED] response to the CMA's information request [REDACTED].

¹⁰⁶ [REDACTED] response to the CMA's information request [REDACTED].

¹⁰⁷ [REDACTED] response to the CMA's information request [REDACTED].

¹⁰⁸ [REDACTED] response to the CMA's information request [REDACTED].

¹⁰⁹ [REDACTED] response to the CMA's information request [REDACTED].

¹¹⁰ [REDACTED] response to the CMA's information request [REDACTED].

areas; AWS' pricing model was seen as complex and difficult to understand, which made it difficult for customers to budget for costs.¹¹¹

Microsoft

- A.69 Microsoft started providing cloud services in 2008 through Windows Azure.¹¹² This was originally designed for developers to deploy apps in the cloud and was thus a PaaS product.¹¹³
- A.70 Microsoft made Windows Azure more widely available in 2010,¹¹⁴ and subsequently expanded to offer a large number of IaaS, PaaS and SaaS services. Microsoft's website describes Azure as a cloud platform with 'more than 200 products and cloud services'.¹¹⁵
- A.71 In 2022, Azure's top product category was compute which accounted for around [redacted] of its revenue both in the UK and globally. The next largest category was storage which accounted for around [redacted] of its revenue both in the UK and globally.¹¹⁶
- A.72 Microsoft's website lists over 70 regions where Azure is either available or coming soon.¹¹⁷
- A.73 Microsoft is also active in a range of other products and services and organises its services and products into three operating segments: Productivity and Business Processes (eg Office 365, LinkedIn), Intelligent Cloud (eg cloud services, enterprise services) and More Personal Computing (eg Windows operating system, search and news advertising).¹¹⁸
- A.74 Microsoft's total global revenue was \$212 billion in its 2023 financial year¹¹⁹ with Microsoft's Intelligent Cloud segment, which includes Azure, accounting for 41% of that revenue (\$88 billion).¹²⁰ This figure has increased from 28% in 2017 with Microsoft's Intelligent Cloud segment revenue growing at a compound average growth rate of 21% per year during that period.¹²¹

¹¹¹ [redacted] response to the CMA's information request [redacted].

¹¹² [About Microsoft - Stories](#), accessed 11 February 2024.

¹¹³ [Microsoft launches Windows Azure - Stories](#), accessed 11 February 2024.

¹¹⁴ [Windows Azure Platform Now Generally Available in 21 Countries](#), accessed 11 February 2024.

¹¹⁵ [What is Azure—Microsoft Cloud Services](#), accessed 11 February 2024.

¹¹⁶ [redacted] response to the CMA's information request [redacted].

¹¹⁷ [Choose the Right Azure Region for You](#), accessed 11 February 2024.

¹¹⁸ [Segment Information - Microsoft Investor Relations](#) accessed 11 February 2024.

¹¹⁹ 1 July 2022 to 30 June 2023.

¹²⁰ CMA analysis of [Microsoft FY23 Form 10-K](#), page 45.

¹²¹ CMA analysis of [Microsoft FY23 Form 10-K](#), page 45; [Microsoft FY18 Form 10-K](#), page 35.

Public cloud strategy and views of customers

Evidence from Microsoft

- A.75 Microsoft said that it discusses customers' business requirements and illustrates 'how Microsoft's solutions could align with their operations'.¹²² Microsoft also said that it has a unit 'dedicated to facilitating customers with their project rollouts' and 'committed to maximising customer utilisation of the platform and optimising customer experiences and platform usage'.¹²³ Further, Microsoft said that it 'invests heavily in assisting customers transition to the cloud'. Microsoft said this included through 'technical support, information tools and discount programs to aid migration'.¹²⁴
- A.76 Microsoft said that a large number of customers pay for its services on a pay-as-you-go-basis. Microsoft said that these 'prices are "metered" differently, depending on the nature of the service'.¹²⁵ Microsoft said that its pricing strategy is 'to ensure that its prices are competitive with the comparable services offered by key competitors, including for example AWS, GCP and ISVs (eg Snowflake)'.¹²⁶
- A.77 In relation to IaaS, Microsoft said that it 'considers itself [redacted] because prices for these services are typically set by reference to [redacted]'.¹²⁷ In relation to PaaS, Microsoft said that it 'takes a "market based" approach which considers the incremental value the service provides to customers as well as the price charged by competitors for similar services'.¹²⁸
- A.78 Microsoft also said that its approach is dependent on whether the product/service is comparable to the products/services of other providers, where it will refer to the public prices of comparable products/services,¹²⁹ or an innovative product/service on the 'rare' occasions where there is no directly comparable product/service.
- A.79 On the latter Microsoft said that [redacted] and [redacted].¹³⁰
- A.80 Despite these differences, Microsoft said that its pricing policy is either constrained by competitor pricing for directly comparable cloud services or by a long run incentive to develop the market for certain nascent cloud services'.¹³¹

¹²² Microsoft's response to the CMA's information request [redacted].

¹²³ Microsoft's response to the CMA's information request [redacted].

¹²⁴ Microsoft's response to the CMA's information request [redacted].

¹²⁵ Microsoft gave the examples of 'Azure Blob Storage is priced on a per gigabyte basis while Azure Compute is priced on a per hour or per month basis depending on the compute power of the virtual machine.' Microsoft's response to Ofcom's information request [redacted].

¹²⁶ Microsoft's response to the CMA's information request [redacted].

¹²⁷ Microsoft's response to the CMA's information request [redacted].

¹²⁸ Microsoft's response to the CMA's information request [redacted].

¹²⁹ Microsoft's response to Ofcom's information request [redacted].

¹³⁰ Microsoft's response to Ofcom's information request [redacted].

¹³¹ Microsoft's response to Ofcom's information request [redacted].

- A.81 Microsoft also said that, like others, it ‘offers credits to encourage customers to try Azure’. Microsoft said that this is because it ‘knows that customers have a lot of choices when it comes to cloud computing services’ and ‘Azure credits provide customers with a no cost path to explore and test Microsoft’s service’.¹³²
- A.82 Microsoft said that it targets all customers and it has a range of customers based on type (eg public vs private sector),¹³³ size (eg large enterprise customers to start-ups),¹³⁴ and in terms of industries.¹³⁵
- A.83 When asked to list its understanding of the factors that UK customers value the most when choosing Microsoft over other cloud providers, Microsoft said that ‘there is no standard scenario when customers choose between cloud providers’ so no uniform/standard set of factors.¹³⁶
- A.84 Microsoft said that it had identified the following non-exhaustive factors as important in driving new customers and customer retention: security, brand trust, compliance (eg with regulatory / technical requirements), cost, hybrid scenarios, ease of migration, efficiency and up time, and availability of advanced cloud features such as analytics and AI’.¹³⁷

Evidence from Microsoft’s internal documents

- A.85 Internal documents from Microsoft discussed the different phases customers of cloud go through and highlighted the objective to lead in the AI segment. In an Azure planning document for the FY24, Microsoft projected that its global cloud infrastructure business would increase [redacted]% YoY in FY24 and noted that [redacted]. The same document identified [redacted]:
- (a) [redacted].
- (b) [redacted].
- (c) [redacted].¹³⁸
- A.86 In a March 2024 document discussing [redacted].¹³⁹ ¹⁴⁰ ¹⁴¹

¹³² Microsoft said that [redacted]. Microsoft’s response to Ofcom’s information request [redacted].

¹³³ Microsoft’s response to the CMA’s information request [redacted].

¹³⁴ Microsoft’s response to the CMA’s information request [redacted]; Microsoft’s response to Ofcom’s information request [redacted].

¹³⁵ Microsoft’s response to the CMA’s information request [redacted].

¹³⁶ For example, Microsoft said [redacted] whereas Microsoft said [redacted] Microsoft’s response to the CMA’s information request [redacted].

¹³⁷ Microsoft’s response to the CMA’s information request [redacted].

¹³⁸ Microsoft’s response to the CMA’s information request [redacted].

¹³⁹ [redacted].

¹⁴⁰ Tier 1 workloads were described by Microsoft as ‘Workloads that are most critical to our customers’ core businesses processes, including mission critical and cutting-edge/AI workloads’

¹⁴¹ Microsoft’s response to the CMA’s information request [redacted].

- A.87 In a June 2023 fiscal update to Microsoft’s board of directors, [REDACTED]
- (a) [REDACTED]
 - (b) [REDACTED].¹⁴²
- A.88 In a November 2023 memo [REDACTED]
- (a) [REDACTED].
 - (b) [REDACTED].
 - (c) [REDACTED].¹⁴³
- A.89 Microsoft’s internal documents show that [REDACTED].¹⁴⁴ For example:
- (a) The same November 2023 [REDACTED].¹⁴⁵
 - (b) In a November 2023 [REDACTED].¹⁴⁶
 - (c) A January 2024 Finance Review, discussed how [REDACTED].^{147 148}
- A.90 There is some evidence that Microsoft is using its strength in the supply of access to FMs to attract digital natives to its cloud, a customer demographic it was not traditionally strong with.¹⁴⁹ In particular, an internal comment on a March 2023 Microsoft document states that [REDACTED]. This idea is reiterated later in the document, where Microsoft is [REDACTED]. Another document warned that [REDACTED].¹⁵⁰
- Evidence from analyst reports, customers and competitors*
- A.91 Microsoft is identified by analyst reports as being the second leading provider overall behind AWS. One analyst said that Microsoft is closing the gap on AWS both globally and particularly in Europe.¹⁵¹
- A.92 More generally based on our review of analyst reports:¹⁵²
- (a) Microsoft is identified as having strengths in areas such as: the breadth of its capabilities and its complementary ecosystems partners; its early

¹⁴² Microsoft’s response to the CMA’s information request [REDACTED].

¹⁴³ Microsoft’s response to the CMA’s information request [REDACTED].

¹⁴⁴ Microsoft’s response to the CMA’s information request [REDACTED].

¹⁴⁵ Microsoft’s response to the CMA’s information request [REDACTED].

¹⁴⁶ Microsoft’s response to the CMA’s information request [REDACTED].

¹⁴⁷ Reporting in ‘constant currency’ means that a company is reporting their financial performance without the effects of exchange rate fluctuations. This method allows for a clearer comparison of financial results across different periods by isolating operational performance from currency movements.

¹⁴⁸ Microsoft’s response to the CMA’s information request [REDACTED].

¹⁴⁹ See Chapter 3 role of AI section

¹⁵⁰ Microsoft’s response to the CMA’s information request [REDACTED].

¹⁵¹ [REDACTED] response to the CMA’s information request [REDACTED].

¹⁵² [REDACTED] response to the CMA’s information request [REDACTED].

differentiated position in broad segments such as telecom, healthcare, manufacturing, retail and financial services; its hybrid and multi-cloud offering; its powerful and diverse platform with a distinct advantage due to Microsoft 365 and Windows products; its success in attracting developers; being well placed to attract further customers/workloads due to the large number of Windows workloads still on premises; and being well placed to leverage long standing customer relationships.

- (b) Microsoft is identified as having weaknesses such as: past security issues and a lack of innovation; opaque costs – eg due to poor cost management capabilities; ‘punitive licensing’ – eg when products not used on Azure; high profile outages; needing more wireless communications capabilities and compute instance types; and lack of visibility into Azure’s capabilities.

A.93 Microsoft was the main provider for many customers we spoke to and among other customers most identified Microsoft as an effective or fully effective alternative. These customers generally considered Microsoft’s offering to be similar to or equally as effective as that of AWS (who was the main provider for most of the customers),¹⁵³ although a few said Microsoft’s offering was slightly less advanced/extensive when compared to AWS’ offering.¹⁵⁴

A.94 Customers considered that it had a weaker offering in specific sectors [redacted],¹⁵⁵ lack of direct engagement and complex solution integrations in some cases,¹⁵⁶ and a more limited PaaS offering and poorer experience with account management.¹⁵⁷

A.95 Competitors submitted that Microsoft is the strongest with enterprise customers, with two cloud providers suggesting that this is due to its licensing practices:

- (a) One provider submitted that ‘Microsoft Azure is strong across use cases, including hybrid and multi-cloud. Azure is strong across customer sizes, mainly addressing the small and midsize businesses (SMB) segment through its global partner channel and enterprise customers through direct sales’. The provider added that ‘Azure has strategic partnerships with IT incumbents and industry vertical leaders, as well as digital-native companies’.¹⁵⁸
- (b) A cloud provider submitted that ‘although Microsoft’s customers operate in a range of different industries and are of different types, consistent with Microsoft’s anti-competitive leveraging strategy, Microsoft appears to have

¹⁵³ Responses to the CMA’s information requests [redacted].

¹⁵⁴ Responses to the CMA’s information requests [redacted].

¹⁵⁵ Responses to the CMA’s information requests [redacted].

¹⁵⁶ [redacted] response to the CMA’s information request [redacted].

¹⁵⁷ [redacted] response to the CMA’s information request [redacted].

¹⁵⁸ [redacted] response to the CMA’s information request [redacted].

had greatest success winning traditional enterprise customers, ie those with on-premises footprints migrating to the cloud'.¹⁵⁹

- (c) Similarly, one provider said that 'Microsoft leverages its dominant position in "must-have" software to artificially make their cloud offerings more popular amongst customers using their legacy products, driving customers to also use their cloud services offerings'.¹⁶⁰

A.96 A cloud services provider's analysis in the provision of data analytics services identified the following strengths and weaknesses for Microsoft:

- (a) Strengths: Microsoft was described as easy to use, especially for those with prior experience with Microsoft products, giving it the edge with 'citizen developers'; Microsoft's marketing works and most customers stated Microsoft is a good partner and have favourable opinions of their sales teams, account managers and support; Microsoft's relationship with OpenAI increased their thought-leadership and innovation perceptions.
- (b) Weaknesses: some customers were concerned about the stability of Azure, especially in Europe; Some users found that the cost of using Microsoft Azure can be more expensive than other cloud providers and that it can be difficult to track and manage costs; Microsoft was perceived by some customers as a legacy software provider and not as innovative as other cloud providers, excluding AI; Service Level Agreement is not consistent; Some customers saw Microsoft's leveraging of O365 to win Azure sales as 'poor behaviour'%.¹⁶¹

Google

A.97 Google started providing cloud services in 2008 when it previewed the Google App Engine, a platform enabling businesses to develop applications (PaaS) and then launched Google Storage for Developers in 2010.¹⁶² Initially only being available to developers, it became more widely available in 2011¹⁶³ and expanded to offer a large number of IaaS, PaaS and SaaS services. Google Cloud's website identifies it as having over 150 products.¹⁶⁴

A.98 Google Cloud is available in over 200 countries and territories based on 40 regions. It has announced plans to continue expanding in eight regions.¹⁶⁵

¹⁵⁹ [redacted] response to the CMA's information request [redacted].

¹⁶⁰ [redacted] response to the CMA's information request [redacted].

¹⁶¹ [redacted] response to the CMA's information request [redacted].

¹⁶² [Google App Engine Blog: Introducing Google App Engine + our new blog](#) accessed 11 February 2024 [Google Storage for Developers: A Preview - The official Google Code blog](#) accessed 11 February 2024.

¹⁶³ [The History of Google Cloud Platform](#), accessed 11 February 2024.

¹⁶⁴ [Cloud Computing Services](#), accessed 11 February 2024.

¹⁶⁵ [Global Locations - Regions & Zones](#), accessed 11 February 2024.

- A.99 Google is also active in a range of other products and services including digital advertising and products and services relating to mobile ecosystems.¹⁶⁶ Google runs some of its own products and services (eg Google Search) on the same infrastructure as Google Cloud.¹⁶⁷
- A.100 Alphabet, the parent company of Google, organises its operations into three segments: Google Services (eg advertising, Google Maps, YouTube), Google Cloud (eg Google Cloud Platform, Google Workspace collaboration tools) and Other Bets (combination of all other services).^{168,169}
- A.101 Alphabet's total global revenue was \$307 billion in 2023 with Google Cloud, which includes Google Cloud Platform, accounting for 11% of that revenue (\$33 billion).¹⁷⁰ This figure has increased from 4% in 2017 with Alphabet's Google Cloud segment revenue growing at a compound average growth rate of 42% during that period.¹⁷¹

Public cloud strategy and views of customers

Evidence from Google

- A.102 Google has said that it is a 'challenger' as its market share (globally and in the UK) is closer to smaller players (eg Oracle, IBM) than to AWS and Microsoft.¹⁷² Google said that this affects how it competes and its strategy. For example, Google said that it is often 'seeking to compete to be the second or even third provider' as most customers already use either 'AWS (particularly for digital native) or Microsoft (particularly for traditional enterprise customers)'.¹⁷³ Google said that this means it is particularly important for Google to show it adds value to customers and meets their needs and to make switching and the use of multi-cloud workloads as easy as possible for potential new and existing customers.¹⁷⁴
- A.103 Google said that it has four global objectives focused on: growing its cloud business, including attracting the 'largest enterprises and fastest growing digital natives'; developing and launching 'new products that meet evolving customer

¹⁶⁶ For example, see the CMA's Online Platforms and digital advertising market study final report at [Final report](#) and the CMA's Mobile ecosystems market study final report at [Final report](#).

¹⁶⁷ [What is Cloud Computing?](#) accessed 11 February 2024 and [Google to migrate parts of YouTube to Google Cloud](#), accessed 11 February 2024.

¹⁶⁸ According to Alphabet, revenues from Other Bets are generated primarily from the sale of health technology and internet services.

¹⁶⁹ [Alphabet announces first quarter 2022 results](#), accessed 11 February 2024.

¹⁷⁰ [Alphabet 2023 Form 10-K](#), page 35.

¹⁷¹ CMA analysis of [Alphabet 2023 Form 10-K](#), page 35; [Alphabet 2019 Form 10-K](#), page 61.

¹⁷² Google's response to the CMA's information request [[3<](#)].

¹⁷³ Google's response to the CMA's information request [[3<](#)].

¹⁷⁴ Google's response to the CMA's information request [[3<](#)].

needs'; 'offering differentiated customer services and developer experiences'; and building a robust enterprise cloud organisation.¹⁷⁵

A.104 Google said that it focuses on 'designing new products/features' based on 'anticipating customers' evolving demands' and focusing on its 'differentiating strengths'.¹⁷⁶ Google provided two specific examples of this:

(a) Google said it has improved 'security features [redacted]' and it is focusing on developing its offering in this area.¹⁷⁷

(b) Google said that it recognises 'that customers can only unlock the full potential of cloud computing if they are able to deploy their workloads and data flexibly across environments'. Google said this means offering multi-cloud is a 'key pillar' of its global strategy.¹⁷⁸

A.105 Google said that it generally has a pay-as-you-go pricing structure whereby products are priced based on usage.¹⁷⁹ Google said that its pricing strategy [redacted]. Google said it also [redacted].¹⁸⁰

A.106 Google also said that its 'pricing, discounting and free credits allow customers to test [its] products for free before they commit to using [Google Cloud Platform's] services more extensively or migrate workloads away from on-premises or other cloud environments'.¹⁸¹

A.107 Google said its [redacted] retaining [redacted].¹⁸² Despite this, Google said that it [redacted].¹⁸³

A.108 When asked to list its understanding of the factors that UK customers value the most when choosing Google over other cloud providers, Google said that the factors the customers consider generally depend on their specific business needs. However, it also said that its customers 'particularly value' Google's.¹⁸⁴

(a) 'Innovative product and services offering, optimised for multi-cloud'. Google said that it 'believes that one of the primary reasons' is its 'range of products

¹⁷⁵ For example, attracting developing and retaining high-performing employees. Google's response to the CMA's information request [redacted].

¹⁷⁶ Google's response to the CMA's information request [redacted].

¹⁷⁷ Google said an example of its efforts here is Google Cloud Firewall Plus which it recently added to its 'suite of security solutions to give users best-in-class threat protection.' Google's response to the CMA's information request [redacted].

¹⁷⁸ Google said this is why it 'has pioneered technologies such as BigQuery Omni and Anthos, both of which are agnostic of the underlying technology' (ie technology that can work across different public clouds and on-premise). Google also said that '[i]n the past three months alone, Google has introduced the next evolution of Kubernetes to help customers scale new workloads with containers, announced BigQuery Studio to provide customers with a unified interface to perform data tasks across different cloud environments, and launched Cross-Cloud Network which is an open networking platform that enables connectivity between cloud and on-premises environments.' Google's response to the CMA's information request [redacted].

¹⁷⁹ Google's response to the CMA's information request [redacted].

¹⁸⁰ Google's response to Ofcom's information request [redacted].

¹⁸¹ Google's response to Ofcom's information request [redacted].

¹⁸² Google's response to the CMA's information request [redacted].

¹⁸³ Google's response to Ofcom's information request [redacted].

¹⁸⁴ Google's response to the CMA's information request [redacted].

and services [...] that can be deployed in a multi-cloud environment'. Google also specifically said its 'multi-cloud enabled data analytics products' (eg Big Query Omni) as an area 'valued by our UK customers'.

- (b) Security and resilience. Google said that 'another key reason' it is chosen is its 'ability to offer high levels of security at scale'.
- (c) Commercial proposition and being a strategic business partner. For example, Google said that it dedicates 'time and resources to understanding our customers' needs so that we can act as a strategic and trusted partner'. Google also said that it 'adopts a flexible and transparent approach to contracts, offering customers, irrespective of size, the opportunity to negotiate contract terms, including volume/committed spend discounts, to meet their individual business and/or legal requirements'.

Evidence from Google's internal documents

A.109 Internal documents from Google noted as areas of focus: AI, startups, public sector customers and developing a network of resellers and partners.

A.110 The product roadmaps submitted by Google show that Google categorises its launches into the following types:

(a) [REDACTED].

(b) [REDACTED].¹⁸⁵

A.111 In a December 2023 presentation detailing its Go To Market (GTM) strategy for the UK and Ireland for the FY24, Google noted that its cloud business had experienced [REDACTED]. The same document identified GCP's strategic priorities for the FY24:

(a) [REDACTED].

(b) [REDACTED].

(c) [REDACTED].

(d) [REDACTED].

(e) [REDACTED].¹⁸⁶

¹⁸⁵ Google's response to the CMA's information request [REDACTED].

¹⁸⁶ Google's response to the CMA's information request [REDACTED].

A.112 In a September 2023 [internal document], Google identified the [] pillars to its Cloud strategy. These pillars had [X]. The [X] pillars were:

- (a) [X].
- (b) [X].
- (c) [X].
- (d) [X]
- (e) [X]¹⁸⁷

A.113 In a December 2023 presentation conducting a competitor analysis for the provision of data analytics services, Google described the strengths and weaknesses of its offering in this space, as identified by customers. These are listed in the table below:

Table A.1: Google's strengths and weaknesses in the provision of data analytics services

<i>Strengths</i>	<i>Weaknesses</i>
[X]	[X]
[X]	[X]
[X]	[X]
[X]	[X]
[X]	[X]
[X]	[X]

Source: [X].

A.114 The internal document referenced above, described [X]. The document then outlined [X]

- (a) [X].
- (b) [X].
- (c) [X].
- (d) [X].¹⁸⁸

A.115 Overall, Google's internal documents describe the supply of AI-related services as impacting Google's position in the wider market for public cloud services. For

¹⁸⁷ Google's response to the CMA's information request [X].

¹⁸⁸ Google's response to the CMA's information request [X].

example, in the internal document referenced above, Google stated that it [redacted]. The same document then cautioned that [redacted]. Google concluded that [redacted].¹⁸⁹

A.116 Google's strong market position in the provision of accelerated compute is helping it target [redacted]. For example, in its internal document, Google noted that [redacted].¹⁹⁰

Evidence from analyst reports, customers and competitors

A.117 Google is described as being a smaller cloud provider than AWS and Microsoft in the analyst reports we have seen, although these reports also recognise that it is expanding its capabilities across IaaS and PaaS and that in some areas it has been influencing the rest of the industry (eg Kubernetes).¹⁹¹

A.118 While one of the analyst reports said that Google was making revenue gains, two of the analyst reports said that Google is sustaining large operating losses to try and win share.¹⁹²

A.119 More generally based on our review of analyst reports:¹⁹³

- (a) Google is identified as having strengths in areas such as: its offerings in sovereign cloud, multi-/hybrid-cloud through Anthos and data insights and analytics and AI; its sales execution; its ability to attract cloud native applications; its ability to offer its services globally; its industry-focused solutions; and its storage and network capabilities.
- (b) Google is identified as having weaknesses such as: its recent increases in price (despite its history of aggressive pricing relative to competitors); a lack of strategic clarity in some areas (eg around its multi-cloud offering); a relatively weak position with enterprise customers; some customers having trust concerns (eg around privacy); and a lack of differentiation compared to rivals.

A.120 One provider submitted that 'Google Cloud (GCP) has a focus on businesses and governments' and 'addresses both large enterprise and SMB customers'. The 'SMB customers are mostly served through channel partners' but 'GCP's partner ecosystem is not as extensive as Microsoft and AWS'. [redacted] added that 'GCP is generally a secondary provider for its customers' and 'GCP offers multi-cloud solutions with Oracle and Microsoft'. While [redacted] perceived Google's offerings to be 'relatively less established than AWS and Azure', '[Google's] features and

¹⁸⁹ Google's response to the CMA's information request [redacted].

¹⁹⁰ Google's response to the CMA's information request [redacted].

¹⁹¹ Kubernetes, also known as K8s, is an open-source system for automating deployment, scaling and management of containerised applications. It groups containers that make up an application into logical units for easy management and discovery.

¹⁹² [redacted] response to the CMA's information request [redacted].

¹⁹³ [redacted] response to the CMA's information request [redacted].

functions are generally on par with its competitors'. Finally, [redacted] said that 'Google has made significant investments in AI'.¹⁹⁴

- A.121 We asked large customers to rate the suitability of a list of public cloud providers as alternatives to their main public cloud provider (see paragraph A.64 above). Google was the main provider for a small number of customers we spoke to and among other customers some identified Google as an effective alternative, but most identified it as neither an effective nor ineffective alternative with a medium average rating.
- A.122 The most common reasons for customers not seeing Google as having an effective offering were that it did not have as advanced or as broad a range of functionality / features / services as the customers' main providers (AWS or Microsoft),¹⁹⁵ or having no direct experience of Google's offering or a lack of internal skills to use Google's cloud services.¹⁹⁶

IBM

- A.123 IBM first started providing SaaS services around 2008. It has subsequently expanded to provide a range of IaaS, PaaS and SaaS products.¹⁹⁷ IBM's website identifies it as having over 170 products,¹⁹⁸ and that it is active in 10 regions.¹⁹⁹ IBM cloud business had total UK revenues of [£70-80 million] in 2023.
- A.124 IBM also has an offering, IBM Cloud Satellite, through which it provides certain cloud services on other public clouds and on-premises.²⁰⁰ IBM is also active in hardware for on-premises solutions.²⁰¹

Public cloud strategy and views of customers

Evidence from IBM

- A.125 IBM said that its 'strategic areas' include:
- (a) Hybrid multi-cloud. IBM said that it offers 'a range of hybrid multi-cloud solutions'²⁰² which are available across IBM's public cloud, a customers' private cloud or data centres of other public cloud providers.²⁰³

¹⁹⁴ [redacted] response to the CMA's information request [redacted].

¹⁹⁵ Responses to the CMA's information requests [redacted].

¹⁹⁶ Responses to the CMA's information requests [redacted].

¹⁹⁷ [What is IBM Cloud? Services Offered, Features & Pricing](#), accessed 11 February 2024.

¹⁹⁸ [Cloud Products - IBM](#) accessed 11 February 2024.

¹⁹⁹ [Locations for resource deployment - IBM Cloud Docs](#), accessed 11 February 2024.

²⁰⁰ [IBM Cloud Satellite](#), accessed 11 February 2024.

²⁰¹ [Enterprise Business Server Solutions - IBM](#), accessed 11 February 2024.

²⁰² [IBM's response to the Issues statement](#) issued 17 October 2023, paragraph 1.2.

²⁰³ IBM's response to the CMA's information request [redacted].

- (b) Regulated industries. IBM said that it is ‘open to work with any industry but has a stronger presence in certain industries’.²⁰⁴ IBM said this is because ‘IBM can build foundations with inherent regulation, security, and controls that lower risk and accelerate time to value’.²⁰⁵
- (c) Digital transformation. IBM said that [redacted] IBM has a proven track record of proactively solving multi-dimensional technical challenges including those affecting legacy or proprietary technologies that carry an extra degree of risk when they are being adapted in any way, shape, or form’.²⁰⁶

A.126 [redacted]²⁰⁷

Evidence from IBM’s internal documents

A.127 Internal documents from IBM noted several critical buying factors for its cloud business, including resiliency, performance, security, compliance and total cost of ownership and highlighted as sales targets: regulated industries, enterprises, performance intensive customers and ecosystems.

A.128 IBM identified several competitive factors. [redacted] strategy [redacted]²⁰⁸

A.129 [redacted] IBM’s [redacted]

- (a) [redacted]
- (b) [redacted]
- (c) [redacted]
- (d) [redacted]²⁰⁹

A.130 [redacted].^{210 211}

Evidence from analyst reports, customers and competitors

A.131 IBM is identified as being a smaller provider when compared to both the largest, AWS and Microsoft, but also Google. In particular, one of the analyst reports said that ‘IBM has shifted its emphasis away from trying to keep pace with the

²⁰⁴ IBM said that it [redacted]. IBM’s response to Ofcom’s information request [redacted].

²⁰⁵ IBM’s response to Ofcom’s information request [redacted].

²⁰⁶ IBM’s response to Ofcom’s information request [redacted].

²⁰⁷ IBM’s response to Ofcom’s information request [redacted].

²⁰⁸ IBM’s response to the CMA’s information request [redacted].

²⁰⁹ IBM’s response to the CMA’s information request [redacted].

²¹⁰ IBM’s response to the CMA’s information request [redacted].

²¹¹ IBM’s response to the CMA’s information request [redacted].

hyperscalers toward a more systematic focus on key sectors [...]. This approach recognises the reality that IBM can't compete with the leaders on every front'.²¹²

A.132 More generally based on our review of analyst reports:²¹³

- (a) IBM is identified as having strengths in areas such as: its focused strategy on regulated industries; its capabilities relative to other providers around certain workloads such as mainframe workloads focused on testing and development; its container management software and its multi-cloud/hybrid cloud offering;²¹⁴ its security offerings and data integration components; and its price/performance offering.
- (b) IBM is identified as having weaknesses such as: its historic reliability issues impacting on customer confidence; its sovereign cloud offering which is less comprehensive than some other providers; its relatively low market profile and the lack of a strong third-party ecosystem; and its limited number of data centres internationally with some variation of available services;

A.133 We asked large customers to rate the suitability of a list of public cloud providers as alternatives to their main public cloud provider. IBM was not the main provider for any of the customers we spoke to.

A.134 Amongst other customers none scored IBM highly as an effective alternative with most customers identifying it as ineffective or very ineffective alternative.

A.135 The two main reasons given were that IBM has more limited services or capabilities compared to larger providers,²¹⁵ and a lack of any experience or knowledge of IBM's offering on the part of the customer.²¹⁶

A.136 Competitors generally did not comment on IBM. One provider described IBM as a 'mid-scale provider' whose customers 'operate in a wide range of industries and sectors'. It was also noted that IBM had 'invested in the development of AI chips to compete against incumbent chip designers as well as other [cloud providers] and chips startups'.²¹⁷

Oracle

A.137 Oracle entered cloud services with Oracle Cloud Infrastructure (OCI) in 2016 and has expanded to provide a wide range of services across IaaS, PaaS and

²¹² IBM's response to the CMA's information request [redacted].

²¹³ IBM's response to the CMA's information request [redacted].

²¹⁴ One analyst described this as its ability to accommodate vendor-neutral cloud strategies. IBM's response to the CMA's information request [redacted].

²¹⁵ Responses to the CMA's information requests [redacted].

²¹⁶ Responses to the CMA's information requests [redacted].

²¹⁷ [redacted] response to the CMA's information request [redacted].

SaaS.²¹⁸ Oracle's website identifies OCI as having over 100 services and that it is active in 48 commercial and government regions.²¹⁹ Oracle cloud business had total UK revenues in IaaS and PaaS of [£80-90 million] in 2023.²²⁰ In 2022, Oracle's top product category was databases which accounted for around [3%] of its revenue in the UK. The next largest category was compute which accounted for [2%].²²¹

- A.138 Oracle has historically been the 'world's largest' database management company²²² and is also active in on-premises solutions (both hardware and software).²²³

Public cloud strategy and views of customers

Evidence from Oracle

- A.139 Oracle said that it has 'facilitated a multi-cloud strategy to help customers take advantage of each [providers'] architectural innovations, even when that innovation creates fundamental differences in engineering'. Oracle said that in part this is facilitated via a 'strategic partnership' with Microsoft.²²⁴
- A.140 Oracle also said that it is differentiated from other providers because it optimises for speed and performance,²²⁵ and because it is designed to provide better security.²²⁶
- A.141 Oracle said that it typically charges 'a prepaid fee that is decremented as the Oracle Cloud Infrastructure (OCI) services are consumed by the customer over a stated time period'.²²⁷ Oracle, like others, offers a free trial and free credits to attract new cloud customers, this is done via 'Oracle Cloud Free Tier'.²²⁸
- A.142 In relation to its customer base, Oracle said that it has customers of 'many sizes across a range of industries, government agencies, educational institutions and resellers'. Oracle also said that it had recently purchased a leading provider of digital information systems used within hospitals and health systems and Oracle's new healthcare business unit plans to accelerate that work of that provider.²²⁹

²¹⁸ [Oracle Cloud Infrastructure Platform Overview](#), accessed 11 February 2024.

²¹⁹ [Public Cloud Regions and Data Centres - Oracle](#), accessed 11 February 2024.

²²⁰ Financial year ending 31 May 2023.

²²¹ Oracle's response to the CMA's information request [3%]. [2%].

²²² [About Oracle](#), accessed 11 February 2024.

²²³ [Hardware - Oracle](#), accessed 11 February 2024.

²²⁴ [Oracle's response to the Issues statement](#) issued 17 October 2023 and [Oracle's distinct approach on hybrid and multicloud](#).

²²⁵ [Oracle's response to the Issues statement](#) issued 17 October 2023.

²²⁶ Oracle's response to Ofcom's information request [3%].

²²⁷ Oracle's response to the CMA's information request [3%].

²²⁸ [Cloud Free Tier - Oracle](#).

²²⁹ Oracle's response to Ofcom's information request [3%].

A.143 When asked to list its understanding of the factors that UK customers value the most when choosing Oracle rather than other cloud providers, Oracle provided the following reasons:²³⁰

- (a) Ease of migration to Oracle from on premises infrastructures when compared to other cloud providers.
- (b) Oracle's lack of fees charged when moving data in or out of Oracle Cloud Infrastructure.
- (c) Oracle's innovations such as 'off box virtualisation' for complete instance isolation and RDMA networking for compute intensive workloads.
- (d) Oracle's security which is built in, on by default and available for no extra charge.
- (e) Oracle's superior price / performance when compared to larger providers.
- (f) Oracle's support for Hybrid Cloud deployments²³¹ and multi-cloud deployments.²³²

Evidence from Oracle's internal documents

A.144 Internal documents from Oracle show a focus on AI and multi-cloud.

A.145 In a January 2024 'All Hands' presentation on its cloud platform, Oracle stated that 'its best year to deliver was great [redacted]. The presentation primarily looked at Oracle's position in the AI space, stating that Oracle is focusing on [redacted]':

- (a) [redacted].
- (b) [redacted].
- (c) [redacted].²³³

A.146 In the same January 2024 presentation referenced above, Oracle provided a 'multi-cloud update' noting that 'multi-cloud strategies are becoming the new normal' which is 'eliminating reliance on a single cloud provider'. Oracle then discussed its collaboration with Microsoft, whereby Oracle database services on OCI can be delivered in Microsoft Azure data centres. Oracle database services can also be deployed, managed and monitored through Azure Portal and APIs, as

²³⁰ Oracle's response to the CMA's information request [redacted].

²³¹ Oracle said that with 'Oracle the customer has a wide range of deployment options. Customers can run an entire OCI region from within their own datacentre, move on premises VMware environments to the public cloud regions, or deliver OCI services like Exadata and roving edge right to the site of the work needed.'

²³² Oracle said its 'low latency interconnects like the one with Microsoft Azure which facilitate a multi-cloud architectural approach' was an example of this.

²³³ Oracle's response to the CMA's information request [redacted].

well as combined with a choice of Azure services. The same document stated that 'migration [to the cloud] has been challenging', as [redacted].²³⁴

A.147 In a 2023 presentation discussing the OCI Roadmap, Oracle stated that 'OCI is built ground up for all workloads' including AI/ML Workloads, Infra Heavy Workloads, Enterprise Applications and Private Cloud. Oracle noted that its cloud offers the 'best-in-class cloud performance, reliability/security, and flexibility'. Oracle identified a series of factors helping it drive innovation in the product areas of 'network', 'compute' and 'storage':

- (a) Network: hyperscale non-blocking network and cluster networking
- (b) Compute: hardware refreshes for AI and High-Performance Computing and Flexible infrastructure.
- (c) Storage: high performance at the best price and enterprise capabilities at cloud scale.²³⁵

A.148 In a January 2024 competitive analysis of compute-related services, Oracle assessed how its cloud offering compared to that of AWS, Azure and Google Cloud concluding that:

- (a) OCI Compute sizing is simpler than competitors', as AWS, Azure and (mostly) Google Cloud have fixed size compute. In contrast, with OCI customers can select their processor (Intel, AMD, or Arm) and then customise the number of OCPUs (cores), the memory and any additional I/O performance.
- (b) OCI Compute discounting is simpler than competitors', as some of hyperscalers' discounting plans (eg reserved instances and saving plans) require customers to 'guess their workload one or three years in advance' and risk 'leaving a customer significantly indebted to AWS, Azure or Google for resources that cannot be effectively used'.
- (c) OCI compute is the same price in all regions, while the price for all services changes per region in AWS, Azure and Google Cloud.
- (d) OCI offers sovereign regions and government regions. OCI services in the government region are the same as in the commercial realm, while AWS and Azure almost always charge a premium for services in their government regions.²³⁶

²³⁴ Oracle's response to the CMA's information request [redacted].

²³⁵ Oracle's response to the CMA's information request [redacted].

²³⁶ Oracle's response to the CMA's information request [redacted].

Evidence from analyst reports, customers and competitors

- A.149 Analysts say that Oracle is a smaller provider when compared to both the largest, AWS and Microsoft, but also Google.²³⁷ In particular, one of the analyst reports said that the Oracle's approach 'implicitly recognizes [sic] that hyperscaler status is out of reach for [Oracle]'.²³⁸
- A.150 More generally based on our review of analyst reports:²³⁹
- (a) Oracle is identified as having strengths in areas such as: its position in databases; its innovation in areas of emerging enterprise needs including sovereign cloud; its improving capabilities that bring it closer to the larger providers; its market momentum (ie increases in revenue) and its enticements around pricing and fees such as first 10TB of data egress being free.
 - (b) Oracle is identified as having weaknesses such as: gaps in its offering; a perception that it is database focused and thus not seen as an IaaS provider by many users; a negative perception among some customers due to its past tough enforcement (eg of its IP rights) and inconsistent sales and support; not being positioned for adoption by all customers, but aimed at large enterprise customers with established IT expertise; and an immature ecosystem.
- A.151 We asked large customers to rate the suitability of a list of public cloud providers as alternatives to their main public cloud provider; Oracle was not the main provider for any of the customers we spoke to. No other customers identified Oracle as an effective alternative to their main provider and most identified it as an ineffective or very ineffective alternative.
- A.152 The main reasons customers gave were that Oracle is, or is perceived to be, behind the largest providers in relation to factors such as breadth of service, capabilities, etc.²⁴⁰ Some customers also cited a lack of experience with Oracle.²⁴¹
- A.153 Two cloud providers submitted that Oracle has fuelled its cloud business by leveraging its legacy incumbency in on-premises business, especially in databases.²⁴² One of these cloud providers added that 'in particular, Oracle seeks to drive on-premises customers towards migrating their database workloads to Oracle Cloud Infrastructure by offering discounts on existing licences, such that it

²³⁷ [redacted] response to the CMA's information request [redacted].

²³⁸ [redacted] response to the CMA's information request [redacted].

²³⁹ [redacted] response to the CMA's information request [redacted].

²⁴⁰ Responses to the CMA's information requests [redacted].

²⁴¹ Responses to the CMA's information requests [redacted].

²⁴² Responses to the CMA's information requests [redacted].

would cost these customers far more to migrate their existing workloads to rival [cloud providers]’.

- A.154 Two cloud providers said that Oracle’s Cloud Infrastructure is ‘relatively less mature’²⁴³ and ‘less expansive’²⁴⁴ than that of competitors. However, they recognised that ‘Oracle IaaS and PaaS revenue has grown significantly in the past 1-2 years’²⁴⁵ and that ‘Oracle [has sought] to demonstrate value to customers through a differentiated offering, especially for hybrid, multi-cloud and dedicated cloud use cases’.²⁴⁶
- A.155 One provider submitted that ‘similar to other providers, Oracle has worked aggressively to expand its range of AI and machine learning products and services with management continuing to highlight its technical differentiation for AI workloads’. For example, ‘Oracle was ahead of [redacted] in striking a partnership with Nvidia and implementing Nvidia’s H100 GPUs in Oracle’s compute instances and has also invested heavily in the development of its in-house chips such as the Ampere A1 Compute’. Additionally, ‘Oracle has been successful in its efforts to win AI workloads, having signed more than \$4 billion in capacity deals for model training in the quarter ending 30 June 2023’.²⁴⁷

Other providers

- A.156 There are also a range of smaller providers offering IaaS and PaaS products, such as OVHcloud and Scaleway.
- (a) AWS provided a list of providers that have begun offering cloud services and said that both the number and size of these competitors are rapidly increasing.²⁴⁸ For example, AWS said that there has been recent entry by providers (who may be considered SaaS providers)²⁴⁹ entering to offer what some would label as IaaS/PaaS services and making significant inroads.²⁵⁰
- (b) Similarly, Microsoft said that in recent years many providers of cloud services have emerged by focusing on certain customer groups or functionalities, include some focused on providing access to basic infrastructure at a low cost.²⁵¹

²⁴³ [redacted] response to the CMA’s information request [redacted].

²⁴⁴ [redacted] response to the CMA’s information request [redacted].

²⁴⁵ [redacted] response to the CMA’s information request [redacted].

²⁴⁶ [redacted] response to the CMA’s information request [redacted].

²⁴⁷ [redacted] response to the CMA’s information request [redacted].

²⁴⁸ [AWS response to the Issues Statement](#), paragraphs 9 to 10.

²⁴⁹ AWS said that it does not agree with the terms IaaS and PaaS as it does not believe that these distinctions reflect the actual competitive dynamics for cloud and other IT services.

²⁵⁰ AWS’ response to the CMA’s information request [redacted].

²⁵¹ Examples provided by Microsoft included CoreWeave and Paperspace who have offerings focused on AI workloads and Scaleway which is focused on providing cloud services to small businesses by offering very cheap cloud instances. [Microsoft response to Ofcom’s Interim Report](#), Annex 1, paragraphs 27 to 32.

A.157 While there are smaller providers active in the UK, we note that:

- (a) Of the analyst reports (which were global rather than UK focused) we reviewed:
 - (i) One did not identify any of these smaller players.²⁵²
 - (ii) One identified OVHcloud as a ‘major player’ and in the same grouping as Oracle and IBM (AWS, Microsoft and Google were identified as ‘leaders’). More generally it identified DigitalOcean, Akami, Vultr and Zadara as ‘contenders’. The report indicates that these players have a much smaller presence than any of the main providers outlined above.²⁵³
 - (iii) One identified OVHcloud, Salesforce and SAP as ‘contenders and in the same grouping as Oracle and IBM (AWS and Microsoft were identified as ‘leaders’ and Google as a ‘strong performer’). An additional provider, Rackspace Technology, was identified as a ‘challenger’.²⁵⁴
- (b) When asked about alternatives to their main provider (see paragraph A.64 above) none of the large customers we spoke to identified OVHcloud as a suitable alternative,²⁵⁵ or identified any of the other providers set in the analyst reports. Only one ‘other’ public cloud provider ([redacted]) was identified by a customer and was not rated as an effective alternative.²⁵⁶

A.158 There are other cloud providers who may have a large presence globally such as Alibaba, Huawei and Tencent and all of these have been identified as a competitor by at least one major UK cloud provider.²⁵⁷ However, these providers have not been identified as suitable alternatives to the main providers by UK customers we have spoken to.²⁵⁸

²⁵² Although it did identify Alibaba, Huawei and Tencent, we discuss these providers at paragraph 2.145. [redacted] response to the CMA’s information request [redacted].

²⁵³ [redacted] response to the CMA’s information request [redacted].

²⁵⁴ [redacted] response to the CMA’s information request [redacted].

²⁵⁵ Amongst customers OVHcloud’s average rating rounded to 1. Reasons for OVHcloud being identified as an ineffective alternative included a lack of experience or knowledge of OVHcloud’s offering (Responses to the CMA’s information requests [redacted]) and that OVHcloud has more limited services or capabilities compared to larger providers. Responses to the CMA’s information requests [redacted].

²⁵⁶ [redacted] response to the CMA’s information request [redacted].

²⁵⁷ Responses to the CMA’s information requests [redacted]; [redacted] response to Ofcom’s information request [redacted].

²⁵⁸ For example, Alibaba received an average rating that rounded to 1 and was not identified by any customer as an effective alternative. Reasons for these ratings or not providing a rating included a lack of experience or knowledge of Alibaba’s offering (Responses to the CMA’s information requests [redacted]), that using Alibaba would be a supply chain risk or not appropriate (eg for data sovereignty or security reasons. Responses to the CMA’s information requests [redacted], that Alibaba has more limited services or capabilities compared to larger providers. Responses to the CMA’s information requests [redacted] and that they are only considered for demand relating to China. Responses to the CMA’s information requests [redacted].

Independent Software Vendors (ISVs)

- A.159 ISVs are suppliers of cloud services, typically PaaS and/or SaaS which do not usually own the underlying infrastructure or supply IaaS.²⁵⁹
- A.160 There are many ISVs present in the UK providing PaaS. Our share of supply analysis suggests that ISVs accounted for up to 39.9% of UK PaaS revenue in 2023. They compete in specific product categories rather than across the entire range of PaaS products. Examples of ISVs include:
- (a) VMware (now part of Broadcom) - founded in 1998,²⁶⁰ it specialises in providing virtualisation technology which allows users to run multiple operating systems, as virtual machines, on a single physical machine.²⁶¹ Its services are currently available on a range of cloud providers.²⁶²
 - (b) MongoDB - founded in 2007, it specialises in database management and document databases.²⁶³ MongoDB provides a service Atlas which gives developers the ability to run their databases across several cloud providers and provides them with access to a range of features and tools, enabling users to access, query and analyse data.²⁶⁴ Given this, its services are available across a range of cloud providers.²⁶⁵
 - (c) Snowflake - founded in 2012,²⁶⁶ it specialises in providing data warehouses (SaaS offering) which provides users with the ability to store and access structured and unstructured data. Snowflake also offers a 'cloud data platform' which is capable of supporting multiple data workloads from data warehousing to data engineering, across several cloud providers.²⁶⁷ Given this, its services are available across a range of cloud providers.²⁶⁸
 - (d) Yugabyte - founded in 2016, it specialises in providing database technology. The YugabyteDB offering provides customers with open-source distributed databases (typically used to store data across multiple sites) and access to

²⁵⁹ There are some exceptions to this – for example, Salesforce is an ISV but operates its own infrastructure.

²⁶⁰ [VMware, Inc. - Company Profile](#).

²⁶¹ [What is virtualization technology & virtual machine?](#)

²⁶² [Provider Search and Hosted VMware - VMware Cloud on AWS](#).

²⁶³ [About Us - Our Story - MongoDB](#).

²⁶⁴ [MongoDB Atlas - Multi-cloud Developer Data Platform and Advantages Of MongoDB](#).

²⁶⁵ [MongoDB Atlas on AWS—Partner Solution, MongoDB Atlas on Azure and MongoDB Atlas - Google Cloud](#).

²⁶⁶ [The Snowflake Story - TechStory](#)

²⁶⁷ [The Data Cloud Explained](#).

²⁶⁸ [Snowflake Cloud Partners](#).

enterprise database features.²⁶⁹ Its services are currently available on a range of cloud providers.²⁷⁰

- A.161 As ISVs do not usually own the underlying infrastructure, they tend to rely on cloud providers as an input to their own cloud services. That is, they may use cloud providers' IaaS as an input to develop and offer their own PaaS and/or SaaS.
- A.162 As such, within our analysis we have often considered ISVs as akin to customers of cloud providers' IaaS offerings. For example, in our market definition assessment, when considering IaaS and demand-side substitutability, we have considered ISVs alongside other customers. Similarly, when gathering evidence in relation to the four theories of harm outlined in our issues statement,²⁷¹ we have, where relevant, sought evidence from ISVs as customers as well as non-ISV customers.
- A.163 In some contexts, we have also considered the extent to which ISVs may act as competitors to the main cloud providers in relation to their PaaS offerings. For example, MongoDB offers database and management and document databases and, although their capabilities may differ,²⁷² so do AWS (DocumentDB),²⁷³ and Microsoft (CosmosDB).²⁷⁴ Therefore, in any assessment of market power in relation to PaaS services it is important to consider ISVs as well as the cloud providers outlined in the previous section.
- A.164 In other situations, an ISV's product may be a complement to a cloud provider's wider offering. This is the case if an ISV offers a PaaS or SaaS service where a cloud provider does not have an equivalent offering, thereby allowing customers to use the ISV's product alongside the services offered by a cloud provider. More generally, the number of ISV PaaS offerings available within a cloud provider's ecosystem may influence customers' choice of cloud provider.
- A.165 Finally, ISVs and cloud providers may also have a relationship as ISVs may rely on cloud providers as a distributor of their services. This could be through the cloud providers directly selling an ISV's services, offering ISVs a platform through which to sell their services (such as a marketplace) or access to customers.
- A.166 We assess ISVs and other smaller providers' position in the market further in Chapter 3.

²⁶⁹ [About Yugabyte and YugabyteDB—the Distributed SQL Database.](#)

²⁷⁰ [YugabyteDB on Amazon Web Services, YugabyteDB on Google Cloud and YugabyteDB on Microsoft Azure.](#)

²⁷¹ [Issues statement.](#)

²⁷² [For example, MongoDB vs. DocumentDB: A Comprehensive NoSQL Database Comparison.](#)

²⁷³ [Amazon DocumentDB \(with MongoDB compatibility\).](#)

²⁷⁴ [Azure Cosmos DB for NoSQL.](#)