MOBILE BROWSERS AND CLOUD GAMING MARKET INVESTIGATION

WP6: Cloud gaming services: nature of competition and requirements for native apps on mobile devices

05 July 2024

CMA
Competition & Markets Authority

This is one of a series of consultative working papers which will be published during the course of the investigation. This paper should be read alongside the Issues Statement published on 13 December 2022 and other working papers published.

These papers do not form the inquiry group's provisional decision report. The group is carrying forward its information-gathering and analysis and will proceed to prepare its provisional decision report, which is currently scheduled for publication in October 2024, taking into consideration responses to the consultation on the Issues Statement and responses to the working papers as well as other submissions made to us.

Parties wishing to comment on this paper should send their comments to browsersandcloud@cma.gov.uk by **29th July 2024**.

Contents

1.   Introduction

1.1   Cloud Gaming Services are consumer-facing services which allow video game content to be streamed over the internet from powerful gaming hardware in a data centre to be displayed on a user's choice of supported device. The issues statement for this market investigation (MI) set out that this investigation is considering whether 'Apple's App Store policies effectively ban cloud gaming services from the App Store and whether this weakens competition in the distribution of cloud gaming'.[1]

1.2   This working paper sets out our emerging thinking on the extent to which access to Cloud Gaming Services on mobile devices is being impeded and the impact that this has on competition in the supply of Cloud Gaming Services. This paper considers both Apple's policies for the App Store and Google's policies for the Play Store.

1.3   In particular, in this paper, we consider:

(a)   The rules that Apple and Google each apply to the distribution of Cloud Gaming Services through their app stores.

(b)   The extent to which Apple's or Google's policies could weaken competition in the supply of Cloud Gaming Services.

1.4   This working paper sets out our emerging thinking on these issues. At this stage we have not identified or concluded whether there is an adverse effect on competition arising in the relevant markets.

1.5   The remainder of this paper is structured as follows:

(a)   Section 2 provides an overview of the nature of competition in Cloud Gaming Services, particularly on mobile devices.

(b)   Section 3 sets out our emerging thinking on the appropriate market definition based on the evidence seen so far.

(c)   Section 4 sets out how Apple's and Google's app store policies apply to Cloud Gaming Services.

(d)   Section 5 sets out our emerging thinking on the impact of app store policies on Cloud Gaming Services.

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[1] Issues statement, paragraphs 49-52.

2. Nature of competition in Cloud Gaming Services

2.1 The purpose of this section is to describe the industry in which the supply of Cloud Gaming Services takes place, how market participants interact in it and key competitive dynamics. These factors are relevant for our emerging thinking on the appropriate market definition for the analysis of the issues set out above in the introduction.

2.2 The remainder of this section sets out:

(a) A description of Cloud Gaming Services and how they differ from 'traditional' (local/downloadable) gaming.

(b) Key market participants in the supply of Cloud Gaming Services.

(c) A description of the main monetisation models of Cloud Gaming Services Providers ('CGSPs').

(d) The different distribution channels for Cloud Gaming Services and the relevance of mobile devices.

(e) Expectations for how Cloud Gaming Services (in general and specifically on mobile devices) may develop in the future.

Cloud Gaming Services

2.3 Cloud Gaming Services are consumer-facing services which allow video game content to be streamed over the internet from powerful gaming hardware in a data centre to be displayed on a user's choice of supported device. Cloud gaming allows users to play technologically intensive games on devices that have smaller interfaces, less storage and less computing power - such as mobile devices.[2]

2.4 Cloud gaming can be distributed via PC, console, smart TV, tablet and mobile devices.[3] Users play the same game running on a server in a data centre, regardless of the device that they are playing on.[4] However, game compatibility and feature support, as well as whether a game is delivered natively or through web apps, vary across device types. A user can sign-up to a CGSP with a single account that they can use to play across all available types of device (ie there is not a separate subscription for each type of device). Typically, CGSPs are available across most of the available distribution channels.

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[2] CMA (2023), Anticipated acquisition by Microsoft of Activision Blizzard, Inc. Final report, paragraph 4.32.
[3] CMA (2023), Anticipated acquisition by Microsoft of Activision Blizzard, Inc. Final report, paragraph 20.
[4] CMA (2023), Anticipated acquisition by Microsoft of Activision Blizzard, Inc. Final report, paragraph 5.43.

2.5   Cloud gaming differs from 'traditional gaming' (ie games which are downloaded and run on the local user device, such as mobile devices, PCs and consoles). Users of traditional gaming are limited by the storage and processing capacity of the device.[5]

2.6   Traditional gaming is device-centric (as opposed to device-agnostic) because developers write a version of the game specifically for each mobile operating system.[6] Therefore, users are limited to playing games available for their device operating system. Traditional games on mobile are typically casual, with simple graphics and gameplay.

2.7   There are several benefits of Cloud Gaming Services compared to traditional gaming (ie downloaded and installed games) including:

   (a)   Processing games on the cloud rather than locally on device means that gaming is not limited by the processing and storage capacity of the device, which allows for higher quality, richer graphics and more complex games even on older/lower end devices.[7]

   (b)   More variety and choice for mobile users, who can access a wider range of genres and titles than are typically developed for mobile devices, such as AAA[8] games, simulation games, and strategy games.[9]

   (c)   Users being able to start gameplay without needing to wait for the game or updates to download onto the device.[10,11]

   (d)   The capability for cross-device & cross-platform play. For example, players can play and save their progress on one device or platform and pick up and resume from where they left off on another device. This also allows users to play with or against other players across different devices and platforms enhancing the social aspect of gaming.[12]

   (e)   Enhanced accessibility and convenience of mobile gaming as users can play anytime and anywhere without being limited by device capabilities.[13,14]

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[5] CMA (2023), Anticipated acquisition by Microsoft of Activision Blizzard, Inc. Final report, paragraph 4.32.
[6] CMA (2023), Anticipated acquisition by Microsoft of Activision Blizzard, Inc. Provisional findings report, paragraphs 5.112 and 8.50.
[7] Responses to CMA's information requests [✕].
[8] 'AAA' is a loosely defined term used to denote the most popular, costly and/or graphically intense games in the gaming industry. CMA (2023) Anticipated acquisition by Microsoft of Activision Blizzard, Inc. Final report, paragraph 16.
[9] Responses to the CMA's information requests [✕].
[10] CMA (2023), Anticipated acquisition by Microsoft of Activision Blizzard, Inc. Final report, paragraph 4.34.
[11] [✕] response to CMA's information request [✕].
[12] [✕] response to CMA's information request [✕].
[13] [✕] response to CMA's information request [✕].
[14] Newzoo, a gaming industry research firm, reported that in its 2022 Global Cloud Gaming Report, the most popular feature among existing cloud gaming users was 'only' needing good internet service to play games. [✕] response to CMA's information request [✕].

(f)   Less demand for device storage and computing resources needed to play games,[15] which may in turn facilitate better battery life and better general performance of the user's device by outsourcing complex processing to hardware in a datacentre.[16]

(g)   Lower costs for game developers, as games are accessible across a wide range of device hardware. In most cases, game developers do not need to modify their games at all to be able to offer them within a cloud-based service (absent restrictions like those requiring the use of the operating system provider's payment processing service).[17]

2.8   The relative importance of some of these advantages were highlighted in a party's internal presentation (dated July 2022) providing insights from a survey of cloud gamers (published in Newzoo's Global Cloud Gaming Report 2021) detailing why they enjoy playing games on cloud services:[18]

(a)   34% of those surveyed (overall across multiple countries) stated 'Only requires a good internet service'.

(b)   31% of those surveyed stated 'Can play PC/console games while on the go'.

(c)   30% of those surveyed stated 'Can play the same games across multiple devices' and 'Easily hop on and off to play'.

(d)   27% of those surveyed stated 'Can play games that current hardware wouldn't allow'.

2.9   However, there are also disadvantages of Cloud Gaming Services compared to traditional gaming, including:[19]

(a)   The game experience relies on the quality of the internet connection between the user and the server (where a poor internet connection could cause the game to lag).

(b)   During times of high usage, a user might have to queue for access to a cloud gaming server.

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[15] [✂] response to CMA's information request [✂].
[16] [✂] response to CMA's information request [✂].
[17] [✂] response to CMA's information request [✂].
[18] [✂] response to CMA's information request [✂].
[19] [✂] response to CMA's information request [✂].

Cloud Gaming Service Providers

2.10   We describe several established CGSPs below,[20] all of which offer Cloud Gaming Services on mobile devices (except for Sony Playstation Plus)[21]:

(a) **Microsoft Cloud Gaming (beta)**[22] (formally Microsoft xCloud). Microsoft offers cloud gaming as part of the Xbox Game Pass Ultimate as a multi-game subscription model (defined in the following section). It also supports some free to play games such as Fortnite for users with a free Microsoft account. The service uses current generation console hardware to stream console games from the Game Pass Ultimate game library. It is available across several devices including Xbox consoles, PCs, mobiles, and smart TVs.[23]

(b) **NVIDIA GeForce NOW**. NVIDIA GeForce NOW provides streaming services for PC games using high-end hardware on its servers, building on its strengths as a gaming hardware supplier. Its service offers one free and two premium tiers,[24] with premium tiers providing improved performance, priority server access, and longer session lengths. It uses a bring-your-own-game model (defined in the following section) where consumers use the service to access games already owned on PC storefronts such as Steam, Epic Games Stores, EA Origin, Ubisoft Connect and GOG.[25] It is available across several devices including PCs, mobiles and smart TVs.[26]

(c) **Amazon Luna**. Luna is Amazon's game streaming service. It streams PC games and has primarily a multi-game subscription model. Amazon Prime customers can access a rotating catalogue of games for free and customers can subscribe, for a monthly fee, to different 'channels' to access additional catalogues of games. The current channels are Luna+, Ubisoft+, and Jackbox. It also has a bring-your-own-game element where customers can buy individual Ubisoft games.[27] Luna first launched in the US in March 2022, and subsequently launched in the UK, Germany, and Canada in March 2023.[28] Luna is available across several devices including PCs, mobiles, and smart TVs.[29]

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[20] 'Established' CGSPs are defined as those included in the monthly average user shares of supply for 2021–2022 in the CMA's final report on the anticipated acquisition by Microsoft of Activision Blizzard, Inc, tables 8.1 to 8.4.
[21] CMA (2023), Anticipated acquisition by Microsoft of Activision Blizzard, Inc. Final report, paragraph 8.79.
[22] Xbox Cloud Gaming (Beta) | Xbox, accessed on 19 June 2024.
[23] 'xCloud – ways to play', accessed on 19 June 2024.
[24] 'NVIDIA GeForce NOW memberships', accessed on 19 June 2024.
[25] 'Play Your Games Anywhere | GeForce NOW | NVIDIA', accessed on 19 June 2024.
[26] 'GeForce NOW system requirements', accessed on 19 June 2024.
[27] 'Jackbox games on Amazon Luna' and 'Jackbox games support', accessed on 19 June 2024.
[28] 'Amazon Luna Blog', accessed on 19 June 2024.
[29] 'Luna – getting started', accessed on 19 June 2024.

(d) **Sony PlayStation Plus**.[30] PlayStation Plus provides access to a large catalogue of games,[31] but its cloud gaming component is currently limited in the titles it can offer, as the cloud infrastructure uses older console hardware.[32] PlayStation Plus is currently only available on PlayStation consoles and Windows PCs.[33] [✂],[34] [✂].[35] Sony has submitted that some of the technical challenges to bringing its PS Plus' cloud gaming component to mobile devices were:[36]

    (i) The PlayStation user interface ('UI') is not currently tailored to the mobile experience. Certain buttons or text in games which have been designed by publishers to be legible and usable on console (and in some instances PC) are, in Sony's estimation, not suitable for mobile devices.

    (ii) Sony would need further support for physical devices, like PlayStation's handheld controllers, to be fully compatible with the mobile experience. Sony said that this is particularly difficult.

(e) **Boosteroid.** Boosteroid offers streaming of PC games using a bring-your-own-game model. It has only one paid tier available through a monthly or annual subscription. It is available in Europe, Latin America, and North America, operating 18 data centres where its hardware is deployed, and across several devices including PCs, mobiles and smart TVs.[37]

2.11 There are also several smaller[38] CGSPs including:

(a) **Antstream.** Antstream specifically offers retro, arcade-style games.[39] It has over 1300 games available to play on its platform.[40] Antstream offers a free trial period, with players subsequently moving onto a paid subscription tier.[41] Antstream is currently available on PC, Xbox, Android, and iOS. On Android, Antstream uses a native app; it uses a web app on iOS, though it has been working with Apple to offer its app natively on the iOS App Store from 27 June 2024.[42]

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[30] CMA(2023), Anticipated acquisition by Microsoft of Activision Blizzard, Inc. Final report, paragraph 8.80.
[31] PlayStation Plus games, accessed on 19 June 2024.
[32] CMA (2023), Anticipated acquisition by Microsoft of Activision Blizzard, Inc. Final report, paragraph 8.79(d).
[33] 'PS Plus – what you need', accessed on 19 June 2024.
[34] [✂] response to CMA's information request [✂].
[35] [✂] submission to the CMA [✂].
[36] Sony's response to CMA's information request [✂].
[37] CMA (2023), Anticipated acquisition by Microsoft of Activision Blizzard, Inc. Final report, paragraph 8.79(e).
[38] 'Smaller' CGSPs are defined as those excluded from the monthly average user shares of supply for 2021–2022 in the CMA's final report on the anticipated acquisition by Microsoft of Activision Blizzard, Inc, tables 8.1 to 8.4.
[39] What is Antstream Arcade? – Antstream Arcade, accessed on 19 June 2024.
[40] Antstream Arcade: Play over 1300 Classic Retro Video Games, accessed on 19 June 2024.
[41] Note of the CMA's meeting with Antstream [✂].
[42] 'Antstream: The first cloud gaming service to officially launch on App Store ' - Games Press, accessed on 19 June 2024.

(b) **Blacknut.** Blacknut is a provider offering cloud gaming through a multi-game subscription model.[43] It submitted that it is also planning to add different models such as bring-your-own-game and free-to-play offerings (defined in the following section).[44] However, it offers a very limited number of AAA games.[45] We have not received sufficient evidence of its size to consider it as a key global competitor alongside those mentioned above. However, we note its growth ambitions as evidenced by a recent investment from Square Enix and availability on Smart TVs.[46]

(c) **Netease.**[47] Netease is a Chinese game publisher. It has a cloud gaming web app[48] and a native app on iOS[49], however we understand it serves only the Chinese market.

(d) **Netflix.** Netflix has a nascent presence in the TV and PC cloud gaming space [✂][50] [✂][51] [✂].[52]

(e) **Utomik.**[53] Utomik is a gaming subscription service that offers both traditional gaming and cloud gaming. It operates a multi-game subscription model and has three different subscription tiers, one which only includes traditional games and two of which also include its cloud gaming service Utomik Cloud, 'Personal +Cloud' for 1 user and 'Family + Cloud' for up to 4 users[54]. Utomik Cloud is available on PC, TVs and as a native app on Android devices.

2.12 A further provider is **Shadow**[55] which is primarily a virtual desktop service, giving users remote access to high-powered Windows PCs through the cloud, using the 'Shadow PC' app. We have not regarded Shadow as a CGSP because the PCs that it provides access to can be used for non-gaming tasks as well, and users can install whichever software and game libraries they already have.[56] Shadow is available on browsers, PC, iOS and Android, as well as on smart TVs.[57] Shadow has native apps on both Android and iOS.[58,59] Shadow told us that its iOS app was previously removed by Apple from the Apple App Store as Apple considered it

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[43] We note that Blacknut also has a significant B2B offering. See Blacknut.biz, accessed on 19 June 2024.

[44] CMA (2023), Anticipated acquisition by Microsoft of Activision Blizzard, Inc. Final report, paragraph 8.81(a).

[45] 'Blacknut Games', accessed on 19 June 2024.

[46] See Square Enix looks to the future with strategic investment in cloud gaming pioneer Blacknut and Blacknut for LG TV, accessed on 17 April 2024.

[47] NetEase launches its own cloud gaming platform in beta | GamesIndustry.biz, accessed on 19 June 2024.

[48] 网易云游戏_网易官方云游戏平台_海量游戏即点即玩_cg.163.com accessed on 19 June 2024.

[49] App Store 上的'网易云游戏-《永劫无间》回阳引玩法上线' (apple.com) accessed on 19 June 2024.

[50] [✂] response to CMA's information request [✂].

[51] [✂].

[52] Note of CMA's meeting with [✂].

[53] All Games Utomik - Subscribe & Play Now!, accessed on 19 June 2024.

[54] Utomik Cloud accessed on 19 June 2024.

[55] Shadow: Unmatched Cloud Gaming & Professional Cloud PC Services, accessed on 19 June 2024.

[56] Shadow PC gaming: Features, accessed on 19 June 2024.

[57] Shadow PC gaming: Features, accessed on 19 June 2024.

[58] Shadow PC on the App Store, accessed on 19 June 2024.

[59] Shadow PC - Apps on Google Play, accessed on 19 June 2024.

to be in violation of its App Review Guideline 4.2.7, which restricts remote desktop clients and prohibits 'thin clients' for cloud-based apps.[60,61] However Shadow argued that the app acts as a 'generic mirror' and not 'a mirror of specific software or services', and so does not fall under the criteria of apps to which the guideline applies. Subsequently the app was reinstated onto the Apple App Store.[62]

2.13   We have received evidence from two CGSPs which used to provide Cloud Gaming Services on mobile but no longer do so:

(a)   **Google Stadia**: Google Stadia closed down in January 2023. Google Stadia was a Cloud Gaming Service that offered streaming of PC games using a Linux OS. It included a free and premium tier, and both buy-to-play and multi-game subscription features.[63]

(b)   **Facebook Gaming App**: Meta's Facebook Gaming app closed down in October 2022.[64]

(i)   [✂].[65]

2.14   **Apple** does not offer Cloud Gaming Services. However, Apple does offer **Apple Arcade**, a multi-game subscription service that offers access to over 200 games for a monthly fee. Apple Arcade exclusively offers traditional games. Apple submitted that it has no plans to offer Apple Arcade as a cloud gaming service. [66,67,68]

2.15   Apple also distributes individual games as native apps through the App Store. Apple recently introduced higher end 'AAA' games on the App Store. In September 2023, Apple announced that four console games would be available as native apps on its new iPhone 15 Pro[69], and that the phone's upgraded hardware provides smoother graphics and immersive gaming experiences allowing it to support these games. We have considered how this may affect Apple's incentives with respect to Cloud Gaming Services iOS native apps:

(a)   Cloud gaming services allow users to access a wide catalogue of games via an app and as such provide an alternative to downloading individual games from the App Store. While Apple does not offer a Cloud Gaming Service, it may consider CGSPs as competitors to the App Store in the distribution of games on mobile devices, particularly high-performance games that were

[60] Apple's App Review Guidelines.
[61] Shadow's response to the CMA's information request [✂].
[62] Shadow's response to the CMA's information request [✂].
[63] CMA (2023), Anticipated acquisition by Microsoft of Activision Blizzard, Inc. Final report, paragraph 8.80.
[64] Facebook is shutting down its standalone Gaming App | CNN Business, accessed on 20 June 2024.
[65] [✂] response to the CMA's information request [✂].
[66] 'Apple Arcade UK', accessed on 19 June 2024.
[67] Apple describes Apple Arcade as family friendly and notes that it does not include ads or allow in-app purchases.
[68] Apple's response to the CMA's information request [✂].
[69] Apple unveils iPhone 15 Pro and iPhone 15 Pro Max - Apple, accessed on 19 June 2024.

previously only available on consoles and PC. As a result, Apple may have the incentive to prevent the growth of Cloud Gaming Services on mobile devices, in order to protect the App Store's position in distributing games on iOS devices. An Apple internal document shows that [✂].[70] [✂].[71]

(b) Apple's main source of revenue is sales of devices, particularly the iPhone,[72] which dominates sales of higher priced devices.[73] The importance of hardware sales means that it is in Apple's interest to encourage users to access content on their devices in a way that makes use of the high-spec technology in Apple devices.[74] Cloud gaming services allow users to play technologically intense games on devices that may lack the processing power or storage capacity to support them. This reduces the need for advanced mobile device hardware, such as Apple's iPhone 15 Pro, to play these types of games, which could weaken demand for Apple's devices, and reduce Apple's revenue from hardware.

Main monetisation models adopted by CGSPs

2.16 CGSPs adopt a range of monetisation models.[75] All of the CGSPs that submitted evidence to us currently offer a subscription-based model for access to their servers (and some offer a free tier with advertising for this purpose). Different subscription models include:

(a) **Traditional buy-to-play model**: Users pay a one-time fee to purchase a game and can only play it on that platform (eg Google Stadia which closed down in January 2023).

(b) **Bring-your-own-game model**: Users pay a regular subscription fee for access to cloud gaming servers and can play games bought in third-party storefronts, such as Steam and Epic Games Store (eg NVIDIA GeForceNow and Boosteroid).

(c) **Free-to-play offerings**: These are monetised through advertising revenue and in-game transactions (eg Meta's Facebook Gaming app which closed down in October 2022).

(d) **Multi-game subscription services**: Users pay a subscription fee for access to gaming servers and a catalogue of games (eg Amazon Luna, Microsoft xCloud, and Blacknut).

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[70] Apple's response to CMA's information request [✂].
[71] [✂] response to information putback, [✂].
[72] CMA's Mobile Ecosystem Market Study (MEMS) final report, paragraph 2.35.
[73] MEMS final report, paragraph 3.47.
[74] MEMS final report, paragraph 2.39.
[75] CMA (2023) Anticipated acquisition by Microsoft of Activision Blizzard, Inc. Final report, paragraph 4.35.

2.17   In-game transactions by users of cloud gaming can be an important way for game developers to monetise their product,[76] although this differs across providers. Some CGSPs require game developers to use their payment systems for processing in-game transactions and charge a commission on these payments.[77, 78] While some other CGSPs do not process in-game transactions and thus do not receive any related revenues.[79, 80]

Distribution of Cloud Gaming Services on mobile devices

2.18   All CGSPs who submitted evidence to the CMA as part of this MI indicated that Cloud Gaming Services on mobile devices is an important distribution channel for the development and growth of Cloud Gaming Services. CGSPs indicated that Cloud Gaming Services on mobile is important because: (i) it has a different 'use case' to cloud gaming on other devices (such as being able to play on the go); (ii) it allows users to play across all device types (which is one of the main advantages of Cloud Gaming Services); and (iii) it expands demand for Cloud Gaming Services as it can access a different subset of consumers. For example:

(a)   Amazon stated that while cloud gaming is a recent trend that is still in nascent stages of development, Luna considers that all deployment methods (eg TV, PC, tablet and mobile) are important for user uptake of a cloud gaming service.[81]

(a)   A CGSP stated that cloud gaming on mobile devices was particularly attractive to gamers as it meant that (i) gamers could access the same content anywhere across devices; (ii) gamers could move from title-specific games to subscription services (as in the music and film industries) and (iii) gamers benefited by saving significant amounts of device space (as processing takes place in the cloud).[82]

(b)   Google stated that 'the promise of cloud-gaming is access to interactive entertainment on any connected screen. Mobile is a particularly important aspect of cloud gaming, because one of the principal advantages of cloud gaming for users is that games can easily be played across a range of different devices, including consoles and mobile devices. Access to mobile devices is therefore a critical factor to offering a successful cloud gaming experience to users.'[83]

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[76] An example of an in-game transaction is extra levels that a user can unlock by digital purchase, see: In-Game Purchases | Pegi Public Site, accessed by the CMA on 27 June 2024
[77] [✗] response to CMA's information request [✗].
[78] [✗] response to CMA's information request [✗].
[79] [✗] response to CMA's information request [✗].
[80] Note of CMA's meeting with [✗].
[81] Amazon's response to CMA's information request [✗].
[82] [✗] response to CMA's information request [✗].
[83] Google's response to CMA's information request [✗].

(c) A party's internal document indicated that one of gamers' top needs for cloud gaming was that 'I want to be able to game on-the-go […]'.[84] Mobile devices and tablets are the only means by which gamers can do this (ie it is not possible to play on the go using consoles, PC or TV).

(d) A CGSP said that mobile device access was critical if it was to compete more broadly in gaming. It stated that 'most users interact with its products on mobile devices, despite the constraints Apple places on its gaming business'.[85] Furthermore, the CGSP said that the 'vast majority' of daily users of games on its app [✂] accessed these games through the Android operating system (as compared to [✂] on the web). However, it also stated that Android users represented only a small part of the overall gaming user base.[86]

(e) Another CGSP considers cloud content streaming as 'particularly relevant' for mobile devices. This CGSP sees mobile gaming as now 'dwarfing' PC and console gaming, continuing to grow rapidly. This CGSP considers consumer adoption of mobile devices in cloud gaming (rather than PC or console) as key to its incentive to invest in cloud gaming.[87]

(f) Microsoft stated that distribution is crucial to the incentives to invest and innovate in cloud gaming and that mobile is by far the way to reach the largest number of gamers. Microsoft considers that the Apple App Store is currently the only effective way to reach users of iOS devices, which is one of only two mobile platforms and the one that reaches the most valuable users, thus access to iOS and the App Store is absolutely necessary to reach users at scale.[88]

(g) NVIDIA stated that approximately [✂] of all GeForce NOW active users access GeForce NOW on mobile devices. NVIDIA said that while game publishers are realising the potential of cloud gaming on mobile devices, not all publishers have the resources to create versions of games tailored to be run on mobile devices. By making their games available on cloud gaming services like NVIDIA's GeForce NOW, the publishers can expand the reach of their games to these additional client devices 'with little effort on their part.' NVIDIA sees the hardware-agnostic nature of cloud gaming as a key way that high-quality games can become more affordable for consumers.[89]

2.19 On mobile devices, there are two ways for users to access cloud gaming content:

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[84] [✂] response to CMA's information request [✂].
[85] [✂] response to CMA's information request [✂].
[86] [✂] response to CMA's information request [✂].
[87] [✂] response to CMA's information request [✂].
[88] Microsoft's response to CMA's information request [✂].
[89] NVIDIA's response to CMA's information request [✂].

(a) On a native app: that is, apps written to run on a specific operating system and, as such, interact directly with elements of the operating system in order to provide relevant features and functionality.[90]

(b) On a web app: that is, applications built using common standards based on the open web and are designed to operate through a web browser (rather than being specific to an operating system).[91] A progressive web app (PWA) is a type of web app that creates an experience that is much more comparable to a native app than more conventional web apps would offer.[92]

2.20 The main way that native apps are distributed on mobile devices is through app stores.[93] This differs across iOS and Android ecosystems:

(a) On iOS the only approved mobile app store available is Apple's App Store, as Apple does not allow any other stores on its devices. Apple also does not allow users to 'sideload' native apps onto its devices[94] – which is where a user downloads a native app directly from a developer's website through a browser or via peer-to-peer transfer.[95]

(b) On Android devices, the largest app store is Google's Play Store which is generally pre-installed on Android devices[96] and accounts for 90–100% of native app downloads on Android devices,[97] although other third-party app stores are available.[98] Sideloading of native apps is possible on Android devices, although the CMA's Mobile Ecosystems Market Study (MEMS) report concluded that sideloading is fairly limited in practice due to the long process users have to follow to sideload an app including warnings of the potential security risks[99] which may put many users off proceeding.[100,101]

2.21 Apple and Google have adopted different policies in the past in relation to the distribution of Cloud Gaming Services as native apps:

(a) iOS: As set out further in paragraph 4.5 below, prior to 25 January 2024, Apple's App Review Guideline 4.9 required each streaming game to be submitted to the App Store as an individual app. There were no Cloud Gaming Services iOS native apps in the UK and it was only possible for users to access cloud gaming on iOS through web apps. Some CGSPs told

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[90] MEMS final report, paragraph 2.6.
[91] MEMS final report, paragraph 2.8.
[92] MEMS final report, paragraph 5.58.
[93] MEMS final report, paragraph 4.5.
[94] MEMS final report, paragraph 4.141.
[95] MEMS final report, paragraph 4.56.
[96] MEMS final report, paragraph 2.22.
[97] MEMS final report, paragraph 4.35.
[98] MEMS final report, paragraphs 4.8 and 4.66.
[99] MEMS final report, paragraph 4.208.
[100] MEMS final report, paragraph 7.48.
[101] MEMS final report, paragraph 4.56.

us Apple's previous Guideline 4.9 amounted to a de facto ban on Cloud Gaming Services being offered as a native app on iOS (paragraph 4.5(a)). On 25 January 2024, Apple stated publicly that 'developers can now submit a single app with the capability to stream all of the games offered in their catalog'.[102]

(b)   On Android: Users can download Cloud Gaming Services native apps through the Google Play Store and competing app stores on Android (eg Samsung Galaxy Store). Users can also access cloud gaming through a web app.

2.22   Further explanation of the extent to which web apps and native apps may be substitutable for the purpose of users accessing Cloud Gaming Services on mobile devices is set out in paragraphs 3.14 – 3.16 below.

Future development of Cloud Gaming Services

2.23   In this section, we present evidence that suggests that Cloud Gaming Services(both in general and on mobile devices) are likely to continue to grow significantly. CGSPs remain optimistic about the growth of Cloud Gaming Services despite acknowledging that there are several technical limitations of Cloud Gaming Services on mobile devices. While growth of Cloud Gaming Services on mobile may not have been as high as previously forecast, Cloud Gaming Services are expected to more than double in the next few years (both in terms of users and revenue).

2.24   In the Microsoft/Activision decision, the CMA found that there was clear consensus among third party respondents that cloud gaming users and revenue will increase substantially in the next few years.[103] The CMA expected competition in this market to continue to be dynamic and unpredictable, with significant uncertainty in the way that the market may develop in the future.[104] Although it was difficult to predict exactly how big cloud gaming will eventually become, the evidence supported the conclusion that it is a growing and promising market in which several market participants are investing considerable amounts.[105]

2.25   During the course of this MI, CGSPs stated that they were generally optimistic about the future growth prospects of cloud gaming (both in general and on mobile devices). However, they cautioned that future growth was not guaranteed and relied on the loosening of Apple's restrictions, better monetisation of Cloud

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[102] Apple introduces new options worldwide for streaming game services and apps that provide access to mini apps and games - Latest News - Apple Developer, accessed on 20 June 2024.
[103] CMA (2023), Anticipated acquisition by Microsoft of Activision Blizzard, Inc. Final report, paragraphs 8.14–8.52 and 8.59.
[104] CMA (2023), Anticipated acquisition by Microsoft of Activision Blizzard, Inc. Final report, paragraph 11.86.
[105] CMA (2023), Anticipated acquisition by Microsoft of Activision Blizzard, Inc. Final report, paragraph 8.57.

Gaming Services native apps, and the overcoming of existing technical constraints.

(a) Amazon submitted that the cloud gaming market, while still nascent, held much potential for continuing innovation and development. Amazon underlined the interchangeable nature of cloud gaming in terms of its complementarity with other forms of gaming across consoles, PCs and mobile devices.[106]

(b) A party [✂] stated that game streaming would play an important role in the future of the gaming industry. This party stated it expected a shift towards streaming, including on mobile devices, in the next 3–5 years on the basis of (i) a spread of low-latency internet connectivity; (ii) continuing improvement in cloud graphics processing unit capabilities; (iii) the shift in favour of subscription models and (iv) the move of game publishers to a direct-to-consumer model.[107]

(c) A CGSP emphasised that cloud gaming on mobile devices was an attractive business proposition in light of the powerful graphics and interactive functionality that the cloud offers. It suggested that cloud gaming services rendered gaming device hardware less important than before, since individuals can access the game provider's high-performance servers from their smartphone or tablet. Cloud gaming services therefore offered both serious gamers and more casual users access to high-quality gaming experiences on mobile devices. Further, the CGSP stated that 'the success of a gaming product depends for the most part on its ability to offer (i) consumers a high-quality gaming experience; (ii) developers the ability to reach consumers likely to engage with their content; and (iii) developers the ability to monetise their work'. [108]

(d) Microsoft pointed to cloud gaming holding much potential for future growth. However, Microsoft also highlighted the lack of Cloud Gaming Services native apps on iOS (entirely) and fully functional apps on the Google Play Store (where it only operates a 'consumption only' native app) as being a challenge.[109]

(e) A CGSP's view was that at present, in-game transactions occurring in other domains (eg web apps or third-party app stores) were cross-subsidising the

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[106] Amazon's response to CMA's information request [✂].
[107] [✂] response to CMA's information request [✂].
[108] [✂] response to CMA's information request [✂].
[109] Microsoft's response to CMA's information request [✂].

growth of cloud gaming on mobile devices, and whether this could continue indefinitely was unclear.[110,111]

(f) NVIDIA submitted that cloud gaming services have gained momentum in recent years and could be poised for 'significant, rapid growth, with great benefits to consumers and innovation' if there is 'fair and effective access to essential ecosystems like iOS and Android'. NVIDIA stated that while technological barriers were rapidly being overcome, gamers unable to purchase 'top-of-the-line' gaming hardware would reap the benefits of being able to access high-end games from any device through cloud gaming services, with convenience, ease of use and economies of scale driving this impact.[112]

(g) Intel had considered potentially entering the market as a CGSP, but ultimately decided against it.[113] Nonetheless, Intel was more optimistic about the future potential of cloud gaming. Intel submitted that it believes cloud gaming is likely to grow as the technology matures, initially driven by growth in non-mobile device markets (eg PCs) and subsequently in mobile device markets after a 'critical mass' is reached.[114]

(h) A CGSP stated that Apple's restrictions on Cloud Gaming Services native apps on iOS, and potentially Google's limitations on the full functionality of such apps on the Play Store, were barriers to cloud gaming realising its full potential.[115]

2.26 Some parties identified certain technical limitations that may impact the deployment of cloud gaming on mobile devices:

(a) Microsoft identified these limitations as:[116]

(i) Screen size: mobile devices have smaller screens than PC and consoles.

(ii) Game Controls: there is a lack of standardised input methods and controllers for mobile devices.

(iii) Network quality, consistency and bandwidth: streaming games to mobile devices is highly dependent on the quality, consistency and bandwidth of internet connection, which can be variable depending on

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[110] [✂] response to CMA's information request [✂].
[111] [✂] response to CMA's information request [✂].
[112] NVIDIA's response to CMA's information request [✂].
[113] Intel's response to CMA's information request [✂].
[114] Intel's response to CMA's information request [✂].
[115] [✂] response to CMA's information request [✂].
[116] Microsoft's response to CMA's information request [✂].

location, time and provider, and can cause issues such as buffering and disconnection.

(iv) Limited battery life and storage capacity of mobile devices: this can limit the duration and variety of cloud gaming sessions.

(b) NVIDIA also noted that to bring PC games to mobile devices there is a need for continued investments to improve user experience such as better touchpad support and text sizing, as PC games are designed to be played on devices with larger screens.[117]

2.27 In its submissions to us, Apple cited two sources regarding the future development of Cloud Gaming Services:[118]

(a) Apple submitted Newzoo's 2024 Global Games Market Report, highlighting that it stated that cloud gaming growth was slower than previously forecast and that the market was 'not without its share of challenges'. Apple also stated that the report made clear that mobile was not a focus area for cloud gaming, whether in terms of future growth or more generally.

(b) Apple cited the CMA's Microsoft/Activision final report which stated that 'cloud gaming is a nascent and fast-moving segment in the gaming industry', as it is 'a market that has emerged only in recent years'. Apple also highlighted that Microsoft had stated that '[c]loud gaming is small and uncertain to succeed. It [is] a new and immature technology which faces significant challenges' and that cloud gaming 'remains unproven as a customer proposition and the available evidence did not indicate in any manner that this is likely to change anytime soon'.

2.28 In this context we note that Newzoo's 2024 Global Games Market Report (submitted by Apple) predicted that Cloud Gaming Services will grow considerably in the next few years. This report set out an expectation that over the next three years (2023 to 2026) paying users worldwide will increase from 39.6m to 85.1m, and spending will increase from $3bn to $7.2bn[119].

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[117] Nvidia's response to CMA's information request [✂].
[118] Apple's response to CMA's information request [✂].
[119] Newzoo, Global Games Report Market January 2024, p4, submitted by Apple [✂].

3.   Market definition

3.1   Market definition is the process to identify the boundaries within which competition occurs for particular goods and services, such as which firms compete for which customers' business.

3.2   Defining the market can help to focus on the sources of any market power and provides a framework for the assessment of the effects on competition of features of a market.[120] In doing so, the CMA may conclude that the market should be defined more widely or more narrowly than the goods and services or areas of supply set out in the terms of reference.[121]

3.3   The composition of a relevant market is usually determined by the degree of demand substitutability, meaning the extent to which particular goods and services are seen as substitutes by consumers. However, where relevant, the CMA will also consider supply-side factors, meaning the extent to which firms supplying non-substitute products have the capabilities and assets to redirect production to goods and services that would be substitutes for those in the market.

3.4   The CMA's Market Investigation Guidelines explain that market definition is a useful tool but not an end in itself, and identifying the relevant market involves an element of judgement. The boundaries of the market do not determine the outcome of our competitive assessment of a market in any mechanistic way. The competitive assessment takes into account any relevant constraints from outside the market, segmentation within it, or other ways in which some constraints are more important than others.[122] Further, market definition and the assessment of competition are not distinct chronological stages of an investigation but rather are overlapping and continuous pieces of work, which often feed into each other.[123]

3.5   Our starting point for assessing market definition is the set of products and services identified in the terms of reference for this investigation, namely the 'distribution of cloud gaming services through app stores on mobile devices (and the supply of related ancillary goods and services) in the United Kingdom'.[124]

3.6   Given Apple's App Store policies were the original focus of this investigation, the analysis of the relevant market below has been conducted from the perspective of the distribution of Cloud Gaming Services through native apps to iOS users. We

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[120] CC3 (Revised), Guidelines for market investigations: Their role, procedures, assessment and remedies, paragraph 132

[121] CC3 (Revised), Guidelines for market investigations: Their role, procedures, assessment and remedies, paragraphs 26 and 131.

[122] CC3 (Revised), Guidelines for market investigations: Their role, procedures, assessment and remedies, paragraph 133.

[123] CC3 (Revised), Guidelines for market investigations: Their role, procedures, assessment and remedies, paragraphs 94–95

[124] Terms of reference for this market investigation

have not yet conducted an equivalent market definition exercise for the distribution of Cloud Gaming Services to Android users.

The provision of a platform to developers for the distribution of Cloud Gaming Services native apps to iOS users

Product market definition

3.7   For the relevant market in which Apple is active in connection with the distribution of Cloud Gaming Services, the focal product is the provision of a platform to developers for the distribution of Cloud Gaming Services native apps to iOS users. We start with this focal product as Cloud Gaming Services are the focus of this MI.

3.8   As noted in paragraph 2.20 above, the only way for a user to access a native app on iOS devices is to download the app from an app store.

3.9   App stores are a gateway between mobile device users and app developers. That is, they are a way for: (i) app developers to distribute their products and services to users; and (ii) users to find and install native apps and engage with the products and services of app developers. As app stores serve to connect two different customer groups – users and app developers, they are a two-sided platform.[125]

3.10   Two sided platforms are relevant for market definition to the extent that the two sides can be part of the same, or separate, market(s). In this case, the focal product is on the 'app developer' side, as the issue we are investigating is the terms on which Apple provides developers with access to the Apple App Store.

3.11   The focal product is the provision of a platform to developers for the distribution of Cloud Gaming Services native apps to iOS users (ie a market that has only very recently introduced a Cloud Gaming Services iOS native app) on the basis that:

(a)   Apple's previous App Review Guidelines (see paragraph 4.5) prevented the distribution of Cloud Gaming Services as native apps on iOS. Absent that restriction, it would in principle have been possible to distribute such apps on iOS - as is the case on Android (eg via the Google Play Store given that Google has no equivalent restriction in place).

(b)   We have heard from some CGSPs that they submitted native apps offering Cloud Gaming Services to Apple to review under its App Store review process, but these were rejected – demonstrating a feasible product would have existed but for Apple's previous App Store policies.

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[125] MEMS final report, paragraph 4.2.

(c)   Antstream launched a cloud gaming services native iOS app on 27 June 2024.[126]

3.12   On the supply-side, there is no possibility for firms to establish alternative app stores on iOS devices in the UK, as Apple does not allow this.[127]

3.13   Therefore, in this section, we focus on the potential competitive constraints on the demand-side for each of the following alternative distribution channels:

(a)   The potential constraint from distributing via web apps on iOS devices.

(b)   The potential constraint from distributing via app stores on alternative devices.

(c)   The potential constraint from distributing via non-mobile devices (eg PC, console, TV, tablet).

The potential constraint from distributing via web apps on iOS devices

3.14   A large number of CGSPs submitted that the Apple App Store is an important distribution channel and web apps (including both web apps and progressive web apps) are not an adequate substitute for native apps on iOS. This is largely due to: (i) a lack of user discoverability and accessibility for web apps; and (ii) web apps having more limited functionality (eg less user control over audio input, a lack of touch controls, higher latency).

(a)   Microsoft emphasised the discoverability and accessibility limitations of web apps as being a major hurdle. Microsoft submitted that 'both discovering and accessing the web-app is far more complex than simply downloading a native app from an app store, such that most gamers do not undertake (or complete) it'. As an example, Microsoft cited Epic Games' Fortnite offering, which had attracted significantly fewer viewers on Microsoft's cloud gaming service than when it was previously available as a native app on the Apple App Store. [128,129]

(b)   Another CGSP noted that web apps may offer more limited functionality.[130] It stated that other limitations of web apps could include slower speeds, limited

[126] Antstream Arcade on the App Store (apple.com), accessed on 28 June 2024.
[127] About alternative app distribution in the European Union – Apple Support (UK), accessed on 19 June 2024.
[128] Microsoft's response to CMA's information request [✂].
[129] In January 2024, in response to Apple's introduction of major changes to its App Review Guidelines, Epic Games announced plans to launch the Epic Games Store on iOS in the European Union: Epic Games Store and Fortnite are coming to iPhones in 2024 - The Verge.
[130] The CGSP provided some examples of this reduced functionality: '(i) syncing: a native app syncs in the background providing a seamless customer experience; iOS progressive Web Apps cannot enable easy syncing, (ii) push notifications: iOS progressive Web Apps do not support web push notifications, which means that apps cannot target customers in a personalised way, (iii) limits on offline storage, which is a key limitation (Safari limits this to a 50MB cache

offline functionality and the lack of equivalent push notification options compared to native apps. These technical obstacles can result in a lack of an ability to inform customers of new features and content, receive customer comments via app store reviews, or be included in app store app ranks and recommendations, which ultimately may lead to reduced discoverability.[131,132]

(c) NVIDIA pointed to its cloud gaming web app having several limitations relative to a native app:[133]

(i) Less control over gameplay video streaming to the client device.

(ii) Lack of functionality enabling NVIDIA to include its own Quality of Service (QoS) features[134] in the web app.

(iii) Less control over audio routing (leading to poorer sound quality).

(iv) More limited device and operating system support.

(v) More limited game controller support.

(vi) Lack of gamepad haptics (such as gamepad vibration).

(vii) Less control over touch inputs.

(viii) More limited display choices in full-screen mode.

(ix) Limited integration with the software keyboard.

(x) Unable to support tvOS on the Apple TV (because the Apple TV does not include the Safari browser).

(xi) A number of bugs not afflicting native apps (eg NVIDIA said it had needed to address controller disconnection bugs, limitations around the number of slices per frame for video refresh, and audio distortion bugs in Safari in iOS 14.2, although Apple subsequently addressed these in iOS 14.3).

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for audiobooks, despite the fact that an audiobook is usually several 100 MBs even at the lowest quality setting). [✂] The CGSP has elected not to release a Web App version of its service on iOS, which is partly due to these limitations.' [✂] response to CMA's information request [✂].

[131] [✂] response to CMA's information request [✂].

[132] [✂] response to CMA's information request [✂].

[133] NVIDIA's response to CMA's information request [✂].

[134] NVIDIA defined Quality of Service as follows: 'Quality of Service (QoS) refers generally to features used in optimizing network traffic and other features that improve overall quality of experience during gameplay. Optimizing network traffic includes improving network traffic prioritization, bandwidth allotment, and video quality. Improvements to quality of experience during gameplay include: responsiveness to touch input and where touch input is accepted (browsers reject touches in certain areas of the screen); full hardware keyboard, mouse, and gamepad support; improved latency and how many frames per second the user is seeing, including support of games running at 120fps (frames per second); support for high dynamic range (HDR) games; and improved installation experience. Optimization for these QoS features is not available in a browser-based solution.' NVIDIA's response to CMA's information request [✂].

(d)   A CGSP submitted that:

(i)   Apple's outright ban on playable content within its app on iOS was a key barrier to the commercial success of the venture.[135] The CGSP argued that there were no viable app distribution alternatives to native apps on iOS, stating that 'The mobile browser is not a sufficiently viable alternative to reaching users that prefer cloud-based gameplay on a native app.'[136]

(ii)   Apple's WebKit restriction (the requirement for all mobile browsers on iOS to use Apple's browser engine, WebKit) led to a degraded user experience on iOS browsers, including for cloud gaming iOS web apps. This undermined the promise of cloud gaming in terms of offering users access to high-quality games anywhere through their mobile devices.[137]

(iii)   Apple's restrictions were 'designed to counter any threat to Apple's App Store dominance and ensure that the App Store remains the main distribution channel for apps on iOS'.[138]

(e)   A party stated that Apple's restrictions, and in particular the WebKit restriction, significantly constrained web app functionality on iOS:[139,140]

(i)   This party stated that unlike native iOS apps, its web app [✂] could not hide the iOS system status bar on top of the screen (showing device signal strength, battery level, and time).

(ii)   As opposed to native iOS apps which are automatically added to the device home screen following downloads, the party's web app was required to provide instructions to users for addition to the home screen.

(iii)   The party's web app was unable to send push notifications to users' home screens or lock screens, because WebKit did not support this.

(iv)   Users were prevented from connecting the party's game controllers via Bluetooth, as Apple only supported specific Bluetooth controllers for web apps.

(f)   A CGSP submitted that web apps were not comparable to native apps as they were subject to (i) a more complicated discoverability and user acquisition process, (ii) poorer performance in terms of the user interface and

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[135] [✂] response to CMA's information request [✂].
[136] [✂] response to CMA's information request [✂].
[137] [✂] response to CMA's information request [✂].
[138] [✂] response to CMA's information request [✂].
[139] [✂] response to CMA's information request [✂].
[140] [✂] response to CMA's information request [✂].

streaming (driven by browser limitations) and (iii) more cumbersome processes for notifications and updates.[141]

(g) Gamestream stated that web apps can be a good alternative to native apps if they are adequately supported, but they have limitations in terms of poorer resolution (owing to limited browser support) and slightly higher latency.[142]

(h) Sony stated that a web app was likely to offer a less responsive and smooth user experience due to technical constraints (limited control over network transport, video decoding and rendering).[143]

(i) [✁].[144]

3.15 Game developers also submitted that web apps were inferior to native apps, mainly because of (i) more limited functionality (eg limited network control and video decoding power, suboptimal use of device functionality) leading to a lower quality user experience and reduced user engagement; and (ii) a greater reliance on web technology leading to lower flexibility and memory constraints.

(a) A game developer stated that it would not consider developing web apps as these were unlikely to be able to rival the quality of user experience offered by its native gaming apps.[145]

(b) A game developer suggested that native apps enjoyed the following advantages over web apps: (i) letting user set up their preferences which would allow customised content (including geography specific content) and enhanced user engagement, (ii) full use of the functionality of mobile devices, leading to a more interactive and 'fun' user experience, (iii) reduced effort on the part of users to participate in games, and (iv) the ability to operate offline. (it stated that apps can efficiently work offline by self-managing with updates as soon as a network connection is available, making gaming possible even without a reliable signal) and reiterated the limitations of web apps arising from Apple's WebKit restriction, poorer functionality and more bugs on iOS.[146]

(c) Epic Games stated that web apps were characterised by several limitations relative to native apps, including (i) memory limitations (contributing to slower download speeds), (ii) a common dependence on Web Assembly, a language that runs natively in browsers but which relies on 'a 'virtual machine' – virtual environment that simulates the functionality of a computer

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[141] [✁] response to CMA's information request [✁].
[142] Gamestream's response to CMA's information request [✁].
[143] Sony's response to CMA's information request [✁].
[144] [✁] response to CMA's information request [✁].
[145] [✁] response to CMA's information request [✁].
[146] [✁] response to CMA's information request [✁].

– which itself consumes a significant amount of memory, further limiting the memory available to the Web App', (iii) lower efficiency in reading underlying code, leading to increased latency and poorer performance and (iv) the fact that the 'infrastructure (servers, availability of server space, etc.) required for streaming apps to reach a similar scale as a native app running on a user's device may prove both technically and financially inefficient or prohibitive', in turn driving higher prices and subscription charges for end users.[147]

(d) Ubisoft submitted that web apps were constrained relative to native apps due to greater latency issues and as they relied heavily on web technology (eg websocket, http, xmlhttprequest) as opposed to being able to benefit from full device functionality.[148]

3.16 Our emerging view is that the distribution of native apps on iOS devices is in a separate market to the distribution of web apps on iOS devices.

The potential constraint from distributing via app stores on alternative devices (ie on Android devices)

3.17 The CMA's MEMS report concluded that there was limited customer switching between iOS and Android[149] and users typically did not multi-home between iOS and Android devices.[150] The CMA concluded that there was limited effective competition between iOS and Android mobile devices, on the basis that:[151]

(a) Mobile devices are broadly segmented into higher priced and lower priced devices, with Apple only offering higher priced devices and Android devices making up all lower priced devices: iOS smartphone devices account for 77% of devices sold for over £300 in 2021 and Android devices account for 100% of devices sold for less than £300.

(b) There are low switching rates between operating systems (due to several barriers to switching):

(i) A small proportion of buyers switch between mobile devices with different operating systems and the proportion switching from iOS to Android is smaller than those switching from Android to iOS.[152]

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[147] Epic Games's response to CMA's information request [✂].
[148] Ubisoft's response to CMA's information request [✂].
[149] MEMS final report, paragraph 3.82.
[150] MEMS final report, paragraph 3.39.
[151] MEMS final report, paragraph 3.177.
[152] MEMS final report, paragraph 3.82.

(ii)   A consumer survey[153] conducted during the CMA's MEMS report concluded that 8% of iOS users' previous phone was an Android device and 5% of Android smartphone users switched from iOS.

(c)   Users typically do not multi-home across mobile operating systems.[154] Most users appear to only have smartphones that use one operating system – 80% of users appear to only use one smartphone and evidence suggests that even when users are purchasing an additional smartphone, it is normally one using the same operating system.[155]

3.18   Therefore, app developers generally consider that they need to list on both iOS and Android app stores as each provides unique access to a large number of mobile device users.

3.19   Our emerging thinking is that native app distribution on iOS devices is in a separate market to native app distribution via alternative app stores (which are only currently available on Android devices, such as the Google Play Store or Samsung Galaxy Store).

The potential constraint from distributing via non-mobile devices (eg PC, console, TV, tablet)

3.20   As set out in paragraphs 3.17 – 3.21, alternative distribution channels are a complement to distribution of CGSP native apps (ie native apps on mobile devices), rather than a substitute, as all deployment methods (eg TV, PC, tablet, mobile) are important to user uptake of a cloud gaming service. The evidence available to date suggests that Cloud Gaming Services on non-mobile devices is not a credible substitute to the distribution of Cloud Gaming Services on mobile devices. Cloud Gaming Services on mobile devices have a unique use case (such as being able to play on the go and being able to play across all device types) and Cloud Gaming Services on mobile devices could provide access to a different subset of consumers.

3.21   Our emerging thinking is that the distribution of native apps on iOS devices is in a separate market to the distribution of apps via alternative devices (eg PCs, laptops, gaming consoles).

[153] Accent (2022), 'Consumer purchasing behaviour in the UK smartphone market for the CMA's Mobile Ecosystems Market Study', p62.
[154] MEMS final report, paragraph 3.39.
[155] MEMS final report, paragraph 3.39.

Geographic market definition

3.22   Our emerging thinking is that, for the purposes of this investigation, the geographic market is at least as wide as the UK.

3.23   This is on the basis that the UK Apple App Store is the only distribution channel that UK iOS users are able to use to download Native Apps:

(a)   The Apple App Store has jurisdiction-specific digital storefronts. The UK Apple App store has a different library of native apps than the Apple App Store in other jurisdictions.[156]

(b)   Native apps are geo-restricted based on the iOS user's location. UK iOS users are not able to access the Apple App Store in other jurisdictions.[157]

(c)   UK iOS users are unable to access Cloud Gaming Service native apps that may become available on alternative app stores in the EU.[158]

(d)   Therefore, CGSPs have unique access to UK iOS users through the UK Apple App Store.

Supply of Cloud Gaming Services

3.24   In this section, we have particular regard to the Microsoft/Activision decision, which found a market for the 'supply of Cloud Gaming Services in the UK'. The evidence received in this investigation thus far is consistent with that indicated in the public Microsoft/Activision decision.

Product market definition

3.25   For the relevant market in which CGSPs are active, our focal product is the supply of Cloud Gaming Services.

3.26   We consider below the potential competitive constraints that may exist in relation to this focal product, from the supply of 'traditional' (local/downloaded) gaming on mobile, console and PC.

3.27   In Microsoft/Activision, the CMA's assessment of the product market found that the 'supply of cloud gaming services' should be a separate market (ie separate from traditional gaming):[159]

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[156] How to Change Apple App Store Country in 2024 - TechNadu, accessed on 21 June 2024.
[157] How to Change Apple App Store Country in 2024 - TechNadu, accessed on 21 June 2024.
[158] Apple announces changes to iOS, Safari, and the App Store in the European Union - Apple (UK), accessed on 21 June 2024.
[159] CMA (2023), Anticipated acquisition by Microsoft of Activision Blizzard, Inc. Final report, paragraphs 5.82–5.97.

(a) On the demand side:

(i) Firms solely focused on bringing mobile-quality games to cloud are not a meaningful constraint on cloud gaming services that provide console- or PC-quality games.

(ii) Cloud gaming allows consumers to play high performance games on lower-powered devices, removing the need to pay upfront cost for expensive hardware, making cloud gaming attractive to a new pool of consumers.

(iii) Consumers consider different factors important for cloud gaming compared to consoles or PCs.

(iv) Trying games before downloading is not the primary reason people are interested in cloud gaming. Cloud gaming fundamentally changes the way and type of games played.

(v) Patterns of use of cloud gaming across devices varied between CGSPs, with one stating that the majority of its users were not using high-end PCs and were new to gaming.

(b) On the supply-side:

(i) Cloud gaming services are very different to traditional gaming. Cloud gaming services require access to cloud infrastructure that is capable of running high performance games and offering a low-latency experience. Traditional gaming requires manufacture, distribution and ongoing support of physical devices.

(ii) CGSPs' internal documents considered other CGSPs as their closest competitors, rather than traditional gaming companies. In particular, internal documents from a gaming company that offered both traditional gaming and cloud gaming discussed cloud gaming separately from traditional gaming.

3.28 Our emerging thinking is that, for the purposes of this investigation, traditional gaming does not pose a significant competitive constraint on the supply of Cloud Gaming Services and therefore is not part of the same market.

Geographic market definition

3.29 In Microsoft/Activision, the CMA's assessment of the geographic market found that the appropriate market was 'the market for cloud gaming services in the UK'. While there are multi-national features to the market (such as CGSPs being multi-national and the content available is generally the same across the countries

where their services are available), there was evidence of regional variations in supply and demand.[160]

(a) On the demand side:[161]

(i) The CMA found that users can only use cloud gaming services that are available in the country in which they are located, as providers can typically restrict usage by IP address, and there are differences in the availability of services across countries.

(ii) Providers may still price differentiate based on customer location, since customers are unable to easily switch to cloud gaming services operating in other countries if the price of the UK service increases.

(b) On the supply side:[162]

(i) To provide a low latency gaming experience, CGSPs must have servers located in a data centre close to the customer. This creates a barrier to geographic expansion as a CGSP must first invest in or gain access to national or regional data centres before expanding their service to a new location.

3.30 Our emerging thinking is that, for the purposes of this investigation, the geographic market is at least as wide as the UK.

Emerging findings on market definition

3.31 Our emerging thinking with respect to market definition is that:

(a) The relevant market in which Apple is active (in connection with the distribution of Cloud Gaming Services) is likely to be as least as wide as the provision of a platform to developers for the distribution of Cloud Gaming Services native apps to iOS users in the UK.

(b) The market may comprise the provision of a platform to developers for the distribution of native apps on iOS devices in the UK. As this working paper considers Apple's conduct in relation to Cloud Gaming Services, the analysis of the relevant market above has been conducted from the perspective of CGSPs - although the underlying considerations may not differ according to the type of native app distributed on the App Store, given as set out in paragraph 3.18 above, the App Store provides unique access to a large

[160] CMA (2023), Anticipated acquisition by Microsoft of Activision Blizzard, Inc. Final report, paragraph 5.108 & 5.107.
[161] CMA (2023), Anticipated acquisition by Microsoft of Activision Blizzard, Inc. Final report, paragraphs 5.104–5.105.
[162] CMA (2023), Anticipated acquisition by Microsoft of Activision Blizzard, Inc. Final report, paragraph 5.106.

number of mobile device users and therefore all developers who wish to distribute native apps to iOS users must do so through the App Store.

(c)   The relevant market on which CGSPs are active is the supply of Cloud Gaming Services in the UK.

3.32   As noted above, we have not yet conducted a market definition exercise for the markets in which Google is active (in connection with the distribution of Cloud Gaming Services native apps to Android users).[163]

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[163]Although see paragraphs 3.3-3.15 of the following document: Notice of intention to accept binding commitments offered by Alphabet Inc, Google Ireland Limited, Google UK Limited and Google LLC in relation to Google Play's rules which oblige app developers offering digital content to use Google's own billing system for in-app purchases.

4. The application of Apple's and Google's app store policies to Cloud Gaming Services

4.1 This section considers:

(a) Apple's App Review Guidelines that apply to the operation of Cloud Gaming Services as native apps on the App Store; and the impact these policies may have on the development of such apps;

(b) Google's Play Store rules that apply to the operation of Cloud Gaming Services as native apps on the Play Store; and the impact these policies may have on the development of such apps; and

(c) CGSPs' views regarding Apple's Guidelines and Google's Play Store rules.

Apple's App Review Guidelines

Overview of App Store rules for Cloud Gaming Services native apps

4.2 Apple requires every app developer seeking to distribute a native app to users through its App Store to adhere to Apple's App Review Guidelines (and submit their native app to Apple through an 'app review' process).[164]

4.3 As noted in the CMA's MEMS report, the App Store is the only route for native apps to be distributed on iOS devices.[165] The CMA's MEMS report concluded that Apple's control over its mobile ecosystem allows it to set the 'rules of the game' for app developers, who rely on its App Store to reach customers and have limited ability to negotiate over terms, and that App Store policies and guidelines may have had the effect of restricting the emergence of cloud gaming services on iOS devices.[166]

4.4 Apple regularly updates its App Review Guidelines and describes them as a 'living document'.[167] On 25 January 2024, Apple announced major worldwide changes to its Guidelines (Apple's 'revised Guidelines'), which Apple states will enable CGSPs to offer iOS native apps (these changes include the deletion of the previous Guideline 4.9 and an amendment of Guideline 4.7).[168] Apple recently introduced further updates to the revised Guidelines on 5 March 2024 and 5 April

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[164] App Review Guidelines - Apple Developer, accessed on 19 June 2024.
[165] MEMS final report, paragraph 4.34.
[166] MEMS final report, paragraphs 6.220–6.231 and paragraph 6.260.
[167] App Review Guidelines - Apple Developer, accessed on 19 June 2024.
[168] Apple's announcement on 25 January 2024 is available here and a note clarifying the changes to its Guidelines is available here, with a tracker highlighting the changes available here, accessed on 19 June 2024.

2024[169] and Apple also informed the CMA that it may introduce further changes in the future.[170]

4.5   Prior to January 2024, Apple's Guidelines contained at least two guidelines that appear to have created a de facto ban on Cloud Gaming Services as a native app on iOS – which have since been removed from the current version of the App Review Guidelines:[171]

(a)   Previous Guideline 4.9[172] required each streaming game to be submitted to the App Store as an individual app.[173] The guideline prevented CGSPs from offering a native app on iOS with access to multiple streaming games.

(i)   Prior to Apple's Guideline changes, a number of CGSPs considered this to be a significant barrier to developing an iOS Cloud Gaming Services native app, as offering access to a variety of streaming games through a single catalogue app is fundamental to the appeal of cloud gaming, both from an app developer and a user experience perspective.[174]

(ii)   We consider that evidence from an internal document submitted by Apple during the CMA's MEMS report suggests that [✂].[175]

(b)   Previous Guideline 4.7 precluded apps where code distribution was the 'main purpose' and the code was offered in a 'store or store-like interface'[176]:

(i)   Some CGSPs submitted to the CMA that this previous Guideline was a major barrier for CGSPs seeking to offer cloud gaming as a native app on iOS.[177]

(ii)   In particular, this requirement caused issues for Cloud Gaming Services native apps which tend to offer a number of games within a single app. One CGSP submitted that the code distribution restriction was used to prevent mobile gaming on iOS.[178]

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[169] Please see Apple's announcements on 5 March 2024 and 5 April 2024 and a tracker of the changes (accessed on 19 June 2024). These further changes do not appear to impact cloud gaming.

[170] [✂] Apple also informed CMA that it may introduce further changes to Guideline 4.7 in the future, if it deems it necessary to improve user security or privacy: Note of CMA's meeting with Apple [✂].

[171] Issues statement, paragraph 52: 'We propose to focus our investigation on whether Apple's App Store policies effectively ban cloud gaming services from the App Store and whether this weakens competition in the distribution of cloud gaming.'

[172] Guideline 4.9 of Apple's previous Guidelines (June 2023 version), accessed on 4 March 2024. A tracker highlighting the changes is available here (accessed on 19 June 2024).

[173] Guideline 4.9 of Apple's previous Guidelines (June 2023 version), accessed on 4 March 2024. A tracker highlighting the changes is available here (accessed on 19 June 2024).

[174] Responses to CMA's information requests [✂].

[175] Apple's response to CMA's information request [✂]. [✂] Apple's internal document [✂].

[176] Guideline 4.7 of Apple's previous Guidelines (June 2023 version), accessed on 4 March 2024. A tracker highlighting the changes is available here (accessed on 19 June 2024).

[177] [✂] response to CMA's information request [✂]; [✂] response to CMA's information request [✂].

[178] [✂] response to CMA's information request [✂].

4.6   Previous Guideline 4.9 has been deleted in its entirety from the current version of the App Review Guidelines. Apple's revised Guidelines include a substantially amended Guideline 4.7 that no longer restricts code distribution, however it retains the in-app payments requirement for game streaming apps (in Guideline 4.7.1, which reiterates Apple's In-App Purchase (IAP) requirement in Guideline 3.1.1[179] (paragraph 4.10)).

4.7   Apple has stated publicly that '[d]evelopers can now submit a single app with the capability to stream all of the games offered in their catalog'.[180] Nevertheless, there appears to be significant uncertainty on the part of at least one CGSP about how Apple may apply its Guidelines in the future.[181] In particular, there are other aspects of the Guidelines which refer to technical requirements for apps that appear to be at odds with the nature of cloud gaming apps, as explained further in paragraphs 4.25 – 4.36 below.

4.8   Prior to Apple's amendment of the Guidelines in January 2024, there were no Cloud Gaming Services native apps available on iOS in the UK.

4.9   Apple requires the use of its in-app payment systems for in-app transactions (paragraph 4.10). In the context of a gaming app, this may relate to a subscription or a payment for a specific item or 'add-on' (eg a bespoke coin or weapon) to be used within a game.

Apple's submissions

4.10   In response to questions in this market investigation, Apple stated that with respect to Guideline 3.1.1 (Apple's IAP requirement[182]), which all the large CGSPs submitted is particularly restrictive for cloud gaming native apps on iOS (paragraphs 4.25 – 4.36), there is no basis for treating streaming apps differently to other apps.[183] As a result, any iOS Cloud Gaming Services native app and/or any games hosted within such an app must use Apple's IAP system for all digital content offered within the app.[184]

4.11   Apple does not consider that Cloud Gaming Services native apps qualify as 'Reader' apps under Guideline 3.1.3(a), which enables specific app types (magazines, newspapers, books, audio, music, and video) to allow users to

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[179] App Review Guidelines - Apple Developer accessed on 19 June 2024. It is worth noting that Apple's conduct in relation to the distribution of apps on iOS and iPadOS devices in the UK, in particular, the terms and conditions governing app developers' access to Apple's App Store, are the subject of a separate investigation under the Competition Act 1998: Investigation into Apple AppStore - GOV.UK (www.gov.uk). This is not considered further in this paper.
[180] Apple introduces new options worldwide for streaming game services and apps that provide access to mini apps and games - Latest News - Apple Developer, accessed on 19 June 2024.
[181] [✗] response to the CMA's information request [✗].
[182] App Review Guidelines - Apple Developer accessed on 19 June 2024.
[183] Apple's response to CMA's information request [✗].
[184] Apple's response to CMA's information request [✗].

access previously purchased content or content subscriptions, to avoid the application of Guideline 3.1.1.[185] Apple's justification for this is that unlike these specified app types, cloud gaming apps 'do not involve the passive consumption of content acquired elsewhere and therefore are not appropriate for inclusion within the Reader guideline'.[186]

4.12 Apple's Guideline 3.1.1 also requires CGSPs to pay a commission to Apple on in-app payments in relation to digital goods, content, or services offered for sale within the app. This is generally set at 30%, although in certain instances, including for subscriptions past the first year and for small businesses, it is 15%.[187]

4.13 Apple stated that it applies the IAP requirement to all CGSPs, regardless of whether they:[188]

(a) process in-game transactions on their cloud gaming service; or

(b) do not process in-game transactions on their cloud gaming service because these transactions take place directly between the user and the game developer.

4.14 When asked about the IAP requirement, Apple stated that '[it] is a long-standing principle of the App Store and Apple's relationship with developers that developers are responsible for the content and features of their apps, even if third-parties contribute to that content. Schedule 2 of the DPLA[189] provides that the developer has sole responsibility for any and all claims, suits, liabilities, losses, damages, costs and expenses arising from, or attributable to, a developer's app and/or use of the app by an end user.'[190]

4.15 With respect to the commission paid as a result of the IAP requirement, Apple stated that it would remit relevant revenues to CGSPs and it was the responsibility of CGSPs to set the terms and arrangements for how they distribute to game developers whose games they hosted on their cloud gaming services apps.[191]

4.16 Apple has submitted that its guideline changes are a sufficiently clear signal to CGSPs that Cloud Gaming Services native apps are now allowed on iOS.[192] In particular, Apple submitted that revised Guideline 4.7[193] overrides technical restrictions in its other guidelines that may otherwise restrict Cloud Gaming

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[185] Apple's response to CMA's information request [✂].
[186] Apple's response to CMA's information request [✂].
[187] Apple's response to CMA's information request [✂].
[188] Apple's response to CMA's information request [✂].
[189] This refers to Apple's Developer Program License Agreement.
[190] Apple's response to CMA's information request [✂].
[191] Apple's response to CMA's information request [✂].
[192] Apple's response to CMA's information request [✂].
[193] Apple's revised Guideline 4.7 applies to specific content types: cloud gaming services, mini-games and chatbots – and allows apps to offer software not embedded in the binary: App Review Guidelines - Apple Developer, accessed on 19 June 2024.

Services native apps on the App Store (the only example provided by Apple being Guideline 4.2.7), [194] but that revised Guideline 4.7 would not override other guidelines that apply to all apps (including Apple's IAP requirement in Guideline 3.1.1). Apple stated that the intent and practical application of Guideline 4.7 is that cloud gaming services apps are treated in the same way as other apps offered on the App Store and must therefore comply with the Guidelines. [195]

4.17 Apple stated that since its announcement, it has [✂]. [196]

(a) Apple stated that it had not issued any specific communication to CGSPs on its revised Guidelines, on the grounds that: [197]

(i) Apple believes that the wording of the revised Guideline 4.7 is sufficiently clear on its face; and

(ii) Apple's public announcement on 25 January 2024 regarding its guideline changes [198] expressly stated that it would be introducing new options for apps globally to deliver in-app experiences to users, including streaming games, and that developers will now be able to submit a single app with the capability to stream all of the games offered in their catalogue.

4.18 As regards other Apple Guidelines that CGSPs identified as being restrictive (paragraphs 4.25 – 4.36), Apple provided the following rationale: [199]

(a) Guideline 2.1 ('App Completeness'): Apple stated that this ensures that apps offered on the App Store function correctly and do not crash unexpectedly. This applies equally to game streaming apps and the game apps within its catalogue.

(b) Guideline 2.5.2 (requiring apps to be 'self-contained in their bundles'): Apple stated that the intention of this guideline is to prevent developers from delivering new features to their app after it has been approved by App Review. In other words, this guideline prevents developers from circumventing App Review and adding unreviewed features to their apps. With respect to game streaming apps, Apple explained that this means that apps offering streaming game services cannot change the functionality of their app (as distinct from the streaming games within the app) through executable code from outside of the app binary.

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[194] Note of CMA's meeting with Apple [✂].
[195] Apple's response to CMA's information request [✂].
[196] Apple's response to CMA's information request [✂].
[197] Apple's response to CMA's information request [✂].
[198] Apple's announcement on 25 January 2024 is available here and a note clarifying the changes to its Guidelines is available here, with a tracker highlighting the changes available here, accessed on 19 June 2024.
[199] Apple's response to CMA's information request [✂].

(c)   Guideline 2.5.6 (Apple's WebKit restriction): Apple stated that if a game streaming app or games within that app contain an in-app browser, they will need to comply with this guideline. Apple submitted that the security and other reasons for requiring the use of WebKit have been explained in detail and apply equally to all apps that browse the web. (See also 'WP2 - The requirement for browsers operating on iOS devices to use Apple's WebKit browser engine').

(d)   Guideline 3.1.2(a) on permissible uses for subscriptions: Apple stated that this guideline applies equally to game streaming apps. The third bullet point of guideline 3.1.2(a) provides specifically for the use of the same subscription across third-party apps and services to allow for streaming games to offer one subscription to access all the games in the catalogue.

(e)   Guideline 3.2.2 (on unacceptable business model issues, including 3.2.2(i) on not creating an interface for displaying third-party apps): Apple stated there is no basis for treating game streaming apps differently to other apps with respect to such potential harms. This guideline therefore applies equally to game streaming apps and the games offered within their catalogues.

(f)   Guideline 4.2.2 (on minimum functionality): Apple stated that this guideline provides that apps cannot be primarily marketing materials unless they are catalogues. Apple further stated that in this guideline, 'catalogue' means a list of physical goods for sale, not a catalogue of digital games, so this guideline has no bearing on streaming game services, which provide digital content.

(g)   Guideline 4.2.7 (requirements for remote desktop clients, including a restriction on thin clients for cloud-based apps): Apple stated that 4.2.7 does not apply to game streaming apps, as cloud streaming services do not connect via a user-owned host device like a personal computer or dedicated gaming console.

(h)   Guideline 4.7.5 (Apple's age rating restriction for game streaming apps): Apple stated that the purpose of this guideline is to ensure that parents are aware of the nature of content that could be exposed to their children. It submitted that this guideline is important to address long-standing concerns related to user safety, in particular those related to children. Apple explained that the same requirement does not apply to other apps that stream passive content (such as TV shows, music or movies apps), as it is clear to parents that such streaming apps will include a variety of programming content that includes more adult content. This is not necessarily the case with game streaming apps, which may be marketed much more heavily towards children.

Google's Play Store rules

4.19   Cloud Gaming Services native apps on the Play Store that chose to offer in-game transactions are subject to the same requirements as all app developers on the Play Store selling access to in-app digital content or services to use Google Play's billing system (the Google Play billing requirement).[200] In submissions to the CMA, Google emphasised that this requirement applied equally to all native apps offering Cloud Gaming Services that list on the Play Store.[201]

4.20   The Google Play billing requirement has been the subject of a separate investigation under the Competition Act 1998 and the CMA published a notice of intention to accept commitments in this investigation in April 2023.[202] This document sets out that Google has offered commitments to the CMA as a proposal to address the CMA's competition concerns in that investigation, through which Play Store app developers offering in-app digital content and services to UK users would be able to offer an alternative billing system, either alongside (User Choice Billing) or as an alternative to Google Play's billing system (Developer Only Billing).[203] This working paper does not refer to the potential commitments further, and sets out an analysis of Google's Play billing requirement as it currently applies in the UK.

4.21   In connection with the Google Play billing requirement, Google currently permits all Play Store apps to operate on a 'consumption only' basis (ie with no in-game transactions or subscriptions) – which means that content cannot be purchased within the app.[204]

4.22   Google also currently requires CGSPs to pay a Google Play service fee based on a percentage of the purchase price or digital purchases in their app.[205] Google's public documents state that: 'Of the developers who are subject to a service fee, 99% qualify for a fee of 15% or less'.[206]

4.23   Google submitted that, 'like other apps', it offers Cloud Gaming Services native apps on the Play Store 'considerable flexibility in how they offer their content to users, including in relation to monetization'.[207] Google explained that cloud gaming apps on the Play Store could choose to operate with in-game transactions (eg NVIDIA's GeForce NOW app), in which case it would be required to use Google Play's billing system, or as 'consumption only' apps (ie with no in-game

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[200] Google's response to CMA's information request [✂].
[201] Google's response to CMA's information request [✂].
[202] The CMA's notice of intention to accept commitments offered by Google.
[203] The CMA's notice of intention to accept commitments, paragraphs 1.8–1.9
[204] This is referenced in the CMA's notice of intention to accept commitments, paragraph 2.17.
[205] See Google's Policy education and app requirements, accessed on 19 June 2024.
[206] See Google's Policy education and app requirements, 'How much is the service fee?', accessed on 19 June 2024
[207] Google's response to CMA's information request [✂].

transactions or subscriptions, eg Microsoft's app).[208] Although Google does not appear to be enforcing this for all CGSPs currently.[209]

4.24 To date, we have not requested specific submissions from Google in relation to how its Google Play billing may have an impact on the development of native apps for Cloud Gaming Services.

CGSPs' views regarding app distribution through the Apple App Store and the Google Play Store

4.25 As discussed in paragraph 4.7, CGSPs have a number of concerns about the application of Apple's App Review Guidelines (and, to a lesser extent, Google's Play Billing requirement).

Microsoft

Apple's App Review Guidelines

4.26 On iOS, Microsoft offers its cloud gaming service only through a web app.[210] Microsoft submitted to the CMA that in 2019 (ie well in advance of Apple's recent Guideline changes) that it had developed an iOS Cloud Gaming Services native app, but Apple had not allowed this app on iOS, so Microsoft had been restricted to offering only a cloud gaming web app on iOS.[211]

4.27 Notwithstanding the recent changes to Apple's Guidelines in January 2024 (paragraph 4.6), Microsoft perceived that several other rules in Apple's Guidelines continue to limit Microsoft's ability to distribute and operate a cloud gaming iOS native app:[212]

(a) Guideline 2.1 requires app testing on-device for bugs and stability prior to submission, however in combination with Apple's requirement for in-app browser functionality on Safari and the IAP restriction (Guideline 3.1.1), Microsoft considers that this entails a high risk of rejection.

(b) Guideline 2.5.2 continues to prohibit apps that read or write data outside their designated containers and in Microsoft's view effectively precludes iOS Cloud Gaming Services native apps.

(c) Guideline 2.5.6 is Apple's WebKit restriction, which requires apps with browser functionality to use Apple's WebKit browser engine and prevents

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[208] Google's response to CMA's information request [✂].
[209] For example, users can make in-game transactions that do not use Google's Play billing system on NVIDIA's GeForce NOW Google Play Store native app. (NVIDIA's response to the CMA's information request [✂]).
[210] Microsoft's response to CMA's information request [✂].
[211] Microsoft's response to CMA's information request [✂]; note of CMA's meeting with Microsoft [✂].
[212] Microsoft's response to CMA's information request [✂].

CGSPs/app developers outside the EU from applying for an entitlement to use other browser engines.

(d)   Guideline 3.1.2(a) allows apps to offer a single subscription but mandates any third-party apps and services offering such a subscription should be downloaded through the App Store and Microsoft submits effectively forbids a subscription-only model.

(e)   Guideline 3.2.2(i) prohibits app developers from creating interfaces for displaying third-party apps, extensions of plug-ins or general-interest collections, which in Microsoft's view could preclude Cloud Gaming Services native apps.

(f)   Guideline 4.2/4.2.2 prohibits apps that are 'not particularly useful, unique, or 'app-like'' and 'content aggregators' and creates the risk that Apple may reject Cloud Gaming Services native apps on the grounds of a lack of minimum functionality without acknowledging the value of their offering.

(g)   Guideline 4.2.7(e) specifically prohibits thin clients for cloud-based apps and effectively precludes Cloud Gaming Services native apps according to Microsoft, notwithstanding Apple's position that Guideline 4.7 overrules this restriction in the context of cloud gaming apps, per paragraph 4.15.

(h)   Guideline 4.7.5 requires cloud gaming apps to share the age rating of the highest age-rated content available in the app, which in Microsoft's view could significantly curtail the potential market for Cloud Gaming Services native apps, as such an app could be rated as being unsuitable for children despite many games within the app being suitable for children.

4.28   Microsoft also submitted that Apple's IAP requirement for cloud gaming apps (Guidelines 3.1.1 and 4.7.1) and the multiplatform rule (Guideline 3.1.3(b)) were key barriers to Microsoft being able to consider offering an iOS Cloud Gaming Services native app, for the following reasons:[213]

(a)   Guidelines 3.1.1 and 4.7.1 require all in-game transactions in iOS Cloud Gaming Services native apps to use Apple's IAP. Guideline 3.1.1(a) reinforces these guidelines by preventing developers outside the EU (ie including UK CGSPs) from applying to be permitted to link outside the app/game to enable the purchase of digital products or services for UK apps.

(b)   Microsoft cannot comply with these guidelines both for technical reasons (it has no way to enable third-party game developers to recode their games to implement Apple's IAP) and economic reasons (such recoding would in any event be costly, and further, the 30% commission payable to Apple in relation

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to in-app transactions makes it less attractive for Microsoft to effectively monetise its cloud gaming service offering).

(c) Microsoft noted that the costs and time required for implementing Apple's IAP across all the games it offers through its cloud gaming service would be 'prohibitive'. Microsoft submitted to the CMA that it could not quantify these costs as many of these games were from third-party developers, only some of whom may have the capability and capacity required to make the change. Microsoft therefore stated that 'It is difficult to estimate how much it would cost, and how long it would take, to implement Apple's In-App Purchase across the games offered via Xbox Cloud Gaming (Beta).'[214]

(d) According to Microsoft, Apple's requirement for any in-game transactions enabled on other platforms to also be enabled in a (hypothetical) iOS Cloud Gaming Services native app using Apple's IAP (Guideline 3.1.3(b) on multiplatform services) is also restrictive for the same reasons set out in paragraphs 4.27(a) – (c) directly above.

4.29   [✂].[215]

Google's Play Store policies

4.30   In relation to Android devices, Microsoft confirmed that its cloud gaming app on the Google Play Store was 'consumption only'. This is operationalised by disabling the relevant in-game transaction code from the standard version of the Microsoft app.[216]

4.31   Microsoft also stated that its underlying justification for having a 'consumption only' Play Store app was that Google's Play billing requirement made in-app purchases unviable, for the same technical and economic reasons applying to Apple's IAP as set out in paragraph 4.27(b).[217] Microsoft also stated that there were disadvantages to operating as a consumption only app on the Play Store, because it cannot monetise the app and it leads to a 'broken user experience'.[218]

NVIDIA

Apple's App Review Guidelines

4.32   NVIDIA explained how Apple's rule on in-app payments (Guideline 3.1.1) and Guideline 3.2.2 (which prohibits app developers from creating interfaces for

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[214] Microsoft's response to CMA's information request [✂].
[215] [✂] response to CMA's information request [✂].
[216] Microsoft's response to CMA's information request [✂].
[217] Microsoft's response to CMA's information request [✂].
[218] Note of CMA's meeting with Microsoft [✂].

displaying third-party apps, extensions of plug-ins or general-interest collections) and Guideline 4.2.7 (restricting remote desktop clients) all limit its ability to offer a cloud gaming iOS native app. NVIDIA stated that this is because:

(a) It does not process in-game transactions or receive any related revenue, as its users interact directly with game publishers.[219] NVIDIA GeForce NOW operates a 'bring-your-own games' model offering subscribers the ability to log into various game platforms and use games they already own. [✂].[220]

(b) The commission payable to Apple on in-app payments makes an iOS Cloud Gaming Services native app economically unviable from NVIDIA's perspective (separately to the technical difficulties involves in implementing it).[221] [✂].[222]

(c) Guideline 4.2.7 (which restricts remote desktop clients and prohibits thin clients for cloud-based apps) may continue to prevent NVIDIA launching an iOS native app.[223] [✂].[224]

4.33 NVIDIA does not currently have plans to launch a cloud gaming iOS native app.[225]

Google's Play Store policies

4.34 NVIDIA submitted that users can make in-game transactions that do not use Google's Play billing system on NVIDIA's GeForce NOW Google Play Store native app.[226]

A CGSP [✂]

4.35 A CGSP currently offers a web app for cloud gaming on iOS iPhones, iPads and select Android phones, called [✂].[227] This CGSP previously identified two aspects of Apple's Guidelines that limit cloud gaming operating as a native app on iOS: Guideline 3.1.1 (Apple's IAP restriction)[228] and Guideline 3.2.2 (which prohibits app developers from creating interfaces for displaying third-party apps, extensions of plug-ins or general-interest collections, which could preclude Cloud Gaming

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[219] NVIDIA's response to CMA's information request [✂].
[220] NVIDIA's response to CMA's information request [✂].
[221] NVIDIA's response to CMA's information request [✂].
[222] Note of CMA's meeting with NVIDIA [✂].
[223] NVIDIA's response to CMA's information request [✂].
[224] [✂] NVIDIA's response to CMA's information request [✂].
[225] NVIDIA's response to CMA's information request [✂].
[226] NVIDIA's response to CMA's information request [✂].
[227] [✂] response to CMA's information request [✂].
[228] For example, the first bullet under Apple's Guideline 3.1.1 states that 'If you want to unlock features or functionality within your app, (by way of example: subscriptions, in-game currencies, game levels, access to premium content, or unlocking a full version), you must use in-app purchase.' (App Review Guidelines - Apple Developer, accessed on 19 June 2024).

Services native apps).[229,230] The CGSP considers that these are still limitations, notwithstanding Apple's recent Guideline changes.[231]

4.36   [✂].[232]

4.37   [✂].[233]

Antstream

4.38   Antstream, a relatively small cloud gaming provider,[234] launched a cloud gaming services native iOS app on 27 June 2024. [235] Antstream already offers an Android native app.[236]

4.39   Antstream is a UK-based CGSP specialising in more 'retro' (older style) games.[237] Thus, Antstream's product offering differs from that of Amazon, Microsoft and NVIDIA (paragraphs 2.10 – 2.11). Antstream stated that it had a positive experience engaging with Apple to bring an iOS native app.[238]

4.40   Antstream noted that most of the games it offered were 'self contained' in that the games had no additional downloadable features.[239] In some cases, Antstream offers additional content external to the original game.[240] That said, Antstream also submitted that it offers some modern games, so that it would not necessarily find it easier to comply with Apple's Guidelines than other CGSPs.[241]

4.41   Antstream stated that it did not consider any of the Guidelines as potentially restricting an iOS Cloud Gaming Services native app.[242]

4.42   In particular, Antstream did not regard Apple's rules on in-app payments as being a constraint for iOS Cloud Gaming Services native apps and that it planned to comply with this rule when it introduced app subscription options and/or in-app payments.[243] Antstream noted that that it does not need to negotiate with multiple

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[229] [✂] response to the CMA's information request [✂].
[230] The key restriction under Guideline 3.2.2 appears to be 3.2.2(i): 'Creating an interface for displaying third-party apps, extensions, or plug-ins similar to the App Store or as a general-interest collection.' (App Review Guidelines - Apple Developer)
[231] [✂] response to the CMA's information request [✂].
[232] [✂] response to the CMA's information request [✂].
[233] [✂] response to the CMA's information request [✂].
[234] 'Smaller' CGSPs are defined as those excluded from the monthly average user shares of supply for 2021–2022 in Tables 8.1 to 8.4 in the CMA's final report on the anticipated acquisition by Microsoft of Activision Blizzard, Inc. 'Given [Antstream] focuses on much older, niche content, [the CMA does not] consider it as a competitor in the market for cloud gaming services offering the latest high-performance games.' Anticipated acquisition by Microsoft of Activision Blizzard, Inc. Final report, paragraph 8.81(f).
[235] Antstream Arcade on the App Store, accessed on 28 June 2024.
[236] Antstream Arcade Games – Apps on Google Play, accessed on 19 June 2024.
[237] Antstream Arcade, accessed on 19 June 2024.
[238] Note of the CMA's meeting with Antstream [✂].
[239] Note of the CMA's meeting with Antstream [✂].
[240] Note of the CMA's meeting with Antstream [✂].
[241] Note of the CMA's meeting with Antstream [✂].
[242] Note of the CMA's meeting with Antstream [✂].
[243] Note of the CMA's meeting with Antstream [✂].

game developers, and therefore it was able to structure its model to accommodate Apple's requirement.[244] Antstream also noted that it was not set up to process in-game transactions itself. [245]

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244 Note of the CMA's meeting with Antstream [✂].
245 Note of the CMA's meeting with Antstream [✂].

5. Impact of Apple's and Google's app store policies on Cloud Gaming Services

5.1 The theory of harm that we are considering as the market investigation progresses is as follows:

(a) Apple and/or Google may have market power in the provision to developers of platforms for the distribution of Cloud Gaming Services native apps to iOS users (and Android users, respectively). Because of this market power Apple (in respect of the App Store) and Google (in respect of the Play Store) are able to unilaterally set rules regarding the access to each respective market.

(b) Apple's and Google's app store policies in relation to cloud gaming apps could preclude or limit the extent to which Cloud Gaming Services are available on mobile devices and in turn, restrict competition in the supply of Cloud Gaming Services.

Apple

5.2 Evidence from CGSPs suggests that larger CGSPs in particular continue to view multiple App Store Guidelines as being a potential barrier to iOS Cloud Gaming Services native apps:

(a) Submissions from major CGSPs suggest that they consider that Apple's Guidelines may continue to limit Cloud Gaming Services operating as native apps through the App Store (paragraphs 4.25 – 4.36) and they are unaware that Apple considers Guideline 4.7 overrules other relevant Guidelines in the context of such apps (paragraph 4.15). There is also uncertainty about how Apple may seek to change its Guidelines in the future. This evidence appears to contradict Apple's submission that its revised Guidelines and its public announcement on 25 January 2024 make its position sufficiently clear to CGSPs.

(b) Leading CGSPs have also suggested that Apple's IAP requirement (Guidelines 3.1.1 and 4.7.1), is a barrier to cloud gaming apps, both from a technical and an economic standpoint. In particular, Apple's IAP requirement may be restricting the ability of CGSPs to offer a native iOS app because, in the case of many games, it would require costly redeveloping of 'streamed' games which are intended to operate on a multi-platform basis and the commission payable to Apple on in-game transactions may reduce the economic viability of Cloud Gaming Services native apps.[246]

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[246] See paragraphs 4.25 – 4.36.

5.3 Our emerging thinking on the extent to which Apple's policies may limit competition in relation to the supply of Cloud Gaming Services is that:

(a) Mobile devices are an important use case for Cloud Gaming Services (as mobile devices allow users to play on the go and without mobile devices users cannot play across all device types) and can provide access to a unique and different subset of consumers.[247]

(b) App stores are an important distribution channel and web apps are inferior to native apps for Cloud Gaming Services due to: (i) a lack of user discoverability and accessibility; and (ii) web apps having more limited functionality (eg less user control over audio input, a lack of touch controls, higher latency).[248]

(c) Apple's IAP requirement and the uncertainty around Apple's implementation of its revised guidelines (in combination with the potential for Apple to introduce future guideline changes) may be contributing to a reluctance to develop Cloud Gaming Services iOS native apps. We are only aware of one CGSP (Antstream) that has launched a Cloud Gaming Services iOS native app on the Apple App Store (paragraph 4.37). The evidence set out above indicates that there is unlikely to be a significant expansion of Cloud Gaming Services as iOS native apps.

Google

5.4 Fewer concerns have been raised in relation to Cloud Gaming Services operating as native apps on the Google Play Store. In part, this is because Google's rules have historically differed (and have not banned Cloud Gaming Services outright in the way that previous iterations of Apple's App Store rules have).

5.5 There are a number of active Cloud Gaming Services native apps on the Play Store. However:

(a) The Google Play billing requirement may apply to in-game transactions in cloud gaming apps (although there appears to be some ambiguity in this respect).

(b) Google has permitted certain Cloud Gaming Services native apps to operate on a consumption-only basis. As noted above, some concerns have been raised that: (i) consumption-only apps might feature less prominently compared to apps offering in-game transactions on app stores generally; and

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[247] See paragraph 2.18.
[248] See paragraphs 2.20 and 3.14 – 3.16.

(ii) a CGSP is not able to monetise the app and/or it leads to an inferior user experience.