Before the

U.S. COPYRIGHT OFFICE, LIBRARY OF CONGRESS

In the Matter of Exemption to Prohibition on Circumvention of Copyright Protection Systems for Access Control Technologies

Docket No. 2014-07

Comments of the Electronic Frontier Foundation

1.   Commenter Information

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The Electronic Frontier Foundation (EFF) is a member-supported, nonprofit public interest organization devoted to maintaining the traditional balance that copyright law strikes between the interests of copyright owners and the interests of the public. Founded in 1990, EFF represents over 25,000 dues-paying members, including consumers, hobbyists, artists, writers, computer programmers, entrepreneurs, students, teachers, and researchers, who are united in their reliance on a balanced copyright system that ensures adequate incentives for creative work while facilitating innovation and broad access to information in the digital age. In filing these comments, EFF represents the interests of gaming communities, archivists, and researchers who seek to preserve the functionality of video games abandoned by their manufacturer.

2.   Proposed Class Addressed

Proposed Class 23: **Abandoned Software—video games requiring server communication**

Literary works in the form of computer programs, where circumvention is undertaken for the purpose of restoring access to single-player or multiplayer video gaming on consoles, personal computers or personal handheld gaming devices when the developer and its agents have ceased to support such gaming.

We ask the Librarian to grant an exemption to the ban on circumventing access controls applied to copyrighted works, 17 U.S.C. § 1201(a)(1), for users who wish to modify lawfully acquired copies of computer programs for the purpose of continuing to play videogames that are no longer supported by the developer, and that require communication with a server. Such modifications may include, as necessary, eliminating checks to authentication servers for games where the developer or its agent has stopped operating such servers, or modifying access controls in the software that control access to multiplayer matchmaking servers so that users can switch to third-

party servers when the servers authorized by the developer are no longer operating. This exemption would serve player communities that wish to continue using their purchased games, as well as archivists, historians, and other academic researchers who preserve and study videogames and are currently inhibited by legal uncertainty because of § 1201(a)(1).

3.   Overview: The Problem of Abandoned Video Games

The class of copyrighted works for which we propose an exemption is videogames (interactive audiovisual works distributed as computer programs) that must communicate with a remote computer (a server) in order to enable core functionality, and that are no longer supported by the developer. These games may run on personal computers, game consoles, or handheld devices (specific to gaming or general-purpose). By "core functionality," we mean single-player or multiplayer play. By "no longer supported by the developer," we mean that the developer and its authorized agents have ceased to operate authentication or matchmaking servers.

"Multiplayer servers," in the context of this proposal, refers to servers that match players together to play competitive or cooperative games. For example, games such as Civilization 5 and Mario Kart Wii use matchmaking servers to enable multiplayer play. For such games, all or nearly all of the audiovisual content resides in the player's local copy of the game. This means that gameplay can be restored after matchmaking servers cease to operate by connecting lawful copies of the game to new servers. The proposed class is not intended to reach "persistent worlds," in which "the end-user is entering into a hosted world that remains static and intact when players have signed off."[1] Persistent worlds require "robust servers designed to host hundreds, if not thousands of simultaneous players," and cannot generally be re-created after a shutdown without the cooperation of the game's developer.[2] Thus, this proposed class would not include massively multiplayer online role-playing games (MMOs) such as World of Warcraft or EVE Online.[3] The proposed class also excludes games that reside entirely on a server, and that are played through a general-purpose Web browser.

Game server shutdowns affect all kinds of gaming platforms – from PCs to game consoles to smartphones and mobile devices.[4] The exemption should apply to all of these types of gaming devices.

A.   Defining Lack of Developer Support

Game shutdowns are very common. Electronic Arts regularly shuts down servers for games approximately a year and a half to two years after their release.[5] In 2010, for example, EA

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[1] Statement of Alex Handy, at 1-2 [hereinafter "Handy Statement"].

[2] *Id.*

[3] *Id.* at 2 ("For non-MMO games, preservation can be done entirely by player communities using the copies of a game that they own.").

[4] *See* Appendix A, List of 2014 Shutdowns.

[5] EA shutdown servers for 25 games in 2010. Michael Thompson, EA shuts down 25 game servers, including *Madden 09*, Ars Technica (Jan. 7, 2010) http://arstechnica.com/gaming/2010/01/ea-shuts-down-25-game-servers-including-madden-09/. It did the same in 2012 for another 14 games, Andrew Groen, *EA announces server shutdown for 14 games, citing dwindling player numbers*, Ars Technica (Mar. 19, 2012), http://arstechnica.com/gaming/news/2012/03/ea-announces-server-shutdown-for-14-games-citing-dwindling-player-numbers.ars and in 2014.

deactivated Madden '09, which had only been sold for a year and a half.[6] Indeed, many of these shutdowns affect sports games, which become "obsolete" more quickly because of yearly releases and roster updates.[7] In 2014, online services were disabled for over 150 games, and authentication services for some games have disappeared.[8]

Lack of developer or publisher support can often be identified by a statement from the developer announcing an end to multiplayer support or the servers being taken offline.[9] However, in some cases, a game may become unplayable (entirely or in multiplayer mode) without any announcement when the developer's servers are not maintained, and cease to function. Thus, a game should also be considered unsupported if multiplayer servers or gameplay are not accessible to all or nearly all players for a period of at least six months. Often, the times where community intervention is needed the most is when server support disappears without a formal announcement. Indeed, sometimes developers or publishers take down all game-related materials, making it impossible to verify that servers were shut down.[10]

A game that is subsequently re-released by the developer, or by a new rightsholder, is likely to have its authentication or matchmaking functions restored by changing the passwords, challenges, or communications protocols. In such instances, the game would no longer be abandoned and the exemption would not apply.

B.   Third Party Centralized Services and Multiplayer/Authentication Support

A recent trend that has exacerbated the effect of shutdowns on player communities is centralization of the server functions. Deactivation of servers on such platforms can spell the end of online play for many games at once. Gamespy, once a prolific operator of matchmaking servers, shut down a number of servers in 2012 without warning.[11] In May 2014, it announced that all of its servers would be shut down.[12] Many of the shutdowns that occurred in 2014 were caused by the dissolution of this third-party service provider who operated matchmaking servers for video games under contract with the game developers. Some developers migrated to other platforms, but others, like Nintendo and EA, did not restore multiplayer support for games that had used Gamespy servers.[13]

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[6] Thompson, *supra* note 5.

[7] Sports games make up a substantial percentage of games shutdown. *See* Appendix A, List of 2014 Shutdowns.

[8] *See id.*

[9] *See, e.g,* SteveHart, *Official Announcement from Rebellion's Senior Management on SE1 server issue*, Sniper Elite III Forum (Dec. 7, 2012), http://forum.sniperelite3.com/default.aspx?g=posts&t=2062#post14831.

[10] *See, e.g.*, Samit Sarkar, *2K Sports pulls MLB games offline, not renewing series for 2014 (update)*, Polygon (Jan. 6, 2014) http://www.polygon.com/2014/1/6/5281150/mlb-2k-games-webpages-pulled-offline-2k-sports.

[11] Phil Savage, *GameSpy shuts down multiplayer support for SWAT 4, Neverwinter Nights, and other classics*, PC Gamer (Dec. 10, 2012), http://www.pcgamer.com/2012/12/10/gamespy-shuts-down-multiplayer-support-for-swat-4-neverwinter-nights-and-other-classics/. *See also* SteveHart, *supra* note 9.

[12] *See* Christian Nutt, *GameSpy ceasing all hosted services this May,* Gamasutra (Apr. 3, 2014) http://www.gamasutra.com/view/news/214700/GameSpy_ceasing_all_hosted_services_this_May.php.

[13] *See Nintendo Wi-Fi Connection service for Nintendo DS and Wii has ended*, Nintendo: What's New (May 20, 2014) http://www.nintendo.com/whatsnew/detail/vyWpoM6CBIe6FjW8NIY7bvzOrgBURhzw. EA is also not continuing to provide support for games affected by the GameSpy shutdown. Mike Rose, *GameSpy services shutdown will affect 50 EA games*, Gamasutra (May 12, 2014), http://www.gamasutra.com/view/news/217475/Game Spy_services_shutdown_will_affect_50_EA_games.php.

Microsoft also announced that it would cease hosting its popular Games for Windows Live service, which also provided multiplayer support within games, in 2014.[14] Although Microsoft later reversed its decision, many developers began transitioning their games to avoid the uncertainty.[15] Many game developers fleeing shuttered platforms have been transitioning to Steamworks,[16] a platform for "matchmaking, achievements [and] anti-cheat technology."[17] However, games relying on Steamworks are also vulnerable to server shutdown. Although Valve, Steamworks' owner, shows no signs of shutting down the service, this kind of centralization is worrisome: the closure of one company can effectively send hundreds of games offline at once. The trend towards centralization, and the broader economics of the video game industry, with more online sales and more titles released by independent ("indie") developers, suggests that server shutdowns will continue.

4.   The Technological Protection Measure: Communication with Servers

The technological protection measures that control access to games come in a variety of different formats. Many games use a proprietary protocol to communicate between server and client, including Nintendo's Mario Kart or Konami's Metal Gear Online. In order to replicate the communications that the client expects to receive from the servers, gamers often must reverse-engineer the protocol. When the server is taken offline and there are no records of the specific communications used, this reverse-engineering can be a time-consuming process of guesswork. In a presentation at ToorCon in 2014, Joseph Tartaro and Matthew Halchyshak described their process of reverse-engineering Metal Gear Online's protocols with only client-side responses as taking multiple people 10 months of work.[18] This reverse-engineering was vital to allowing the Metal Gear Online community to play again.

In addition, many games "phone home" to a central server to check for the presence of an activation key. After the server goes offline, the ability to play the game at all is lost. As part of the process of creating servers for Metal Gear Online, Tartaro and Halchayshak eliminated certain checks from the server protocol, including SSL certificates and age checking.[19] A statement by a game enthusiast, attached hereto, describes a similar process for reverse-engineering the protocols for Technika 2 and Technika 3.[20]

Because replicating a server protocol requires applying secret information in order to access game functionality, or bypassing or removing cryptographic verification, server protocols may be technical measures that effectively control access to the work.[21] Often, players seeking to

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[14] Michael McWhertor, *Microsoft: Games for Windows Live service ending July 2014*, Polygon (Aug. 19, 2013), http://www.polygon.com/2013/8/19/4637694/microsoft-games-for-windows-live-service-ending-july-2014.

[15] *See* Matthew Kato, *The Games for Windows Live Exodus Continues*, GameInformer (June 19, 2014), http://www.gameinformer.com/b/news/archive/2014/06/19/games-for-windows-live-exodus-continues.aspx.

[16] Steven Wong, *Games for Windows Live is dying, we check the life support of game*s, Joystiq (Jan. 17, 2014), http://www.joystiq.com/2014/01/17/games-for-windows-live-is-dying-we-check-the-life-support-of-ga/.

[17] *Welcome to Steamworks,* Valve Business Solutions, http://www.steampowered.com/steamworks/ (last visited Feb. 5, 2015).

[18] Mr.Game20, *Toorcon: San Diego (2014) – Cyber Necromancy: Reverse Engineering Dead Protocols* (Oct. 30, 2014) https://www.youtube.com/watch?v=K4dyyLpMkQk.

[19] *Id.*

[20] Statement of John Doe [hereinafter "Doe Statement"].

[21] *See MDY Indus., LLC v. Blizzard Entm't, Inc.*, 629 F.3d 928, 954 (9th Cir. 2010) (Game server protocol that

connect to replacement servers will need to find security vulnerabilities and create a new version of the protocol that enables them to connect to clients without all of the original secret information. Players may also need to make changes to the game software in order to allow connection to new servers, as described below.

Despite the chilling effects of legal uncertainty, there have been some projects that successfully restored gameplay for abandoned games by replacing or bypassing shut-down servers. Many of these projects have been organized outside of the United States. In fact, companies have been created outside the United States to provide multiplayer servers for games no longer supported by their developers.[22] Some of the most successful projects are those that have successfully restored access to multiplayer play on older consoles. When Nintendo announced it would shut down WiFi play for the Wii and DS devices, users began analyzing network communications for Mario Kart in order to replace the servers.[23] The Wiimmfi project currently supports more than 14 games, including the still very popular Mario Kart Wii.[24] There is a similar project that supports the Nintendo DS.[25] Part of what allowed these projects to succeed was having enough time to monitor the network protocols and organize solutions before that network shut down, which may be more difficult if players feel that they are on uncertain legal ground.[26]

Longer running projects like XBConnect and OnlineConsoles use software to achieve matchmaking for obsolete consoles. XBConnect uses the local network play functionality in some games to allow for play over the Internet, often called "tunneling."[27] OnlineConsoles runs replacement servers for a number of consoles, including the Sega Dreamcast, the Gamecube, and the PlayStation 2.[28] OnlineConsoles "is currently the #1 resource for Dreamcast Online gaming on the Internet, and has been responsible for salvaging a majority of the Dreamcast's online functions for future generations to enjoy."[29] The Sega Dreamcast has a homebrew community that has devoted significant amounts of time and effort to reverse engineering and recreating servers for its games.[30]

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required client software to report on the contents of the computer's memory was an effective technical measure); *Davidson & Associates v. Jung*, 422 F.3d 630, 640-41 (8th Cir. 2005).

[22] For example, GameRanger, based in Australia, supports 500 games. GameRanger, http://www.gameranger.com/ (last visited Feb. 5, 2015).

[23] *See* Kyle Orland, *Hackers return some online gameplay to Wii, DS following Nintendo shutdown*, Ars Technica (May 21, 2014), http://arstechnica.com/gaming/2014/05/hackers-return-some-online-gameplay-to-wii-ds-following-nintendo-shutdown/; *see also Wiimmfi Project*, Custom Mario Kart Wiiki, http://wiki.tockdom.com/wiki/Wiimmfi_Project (as of Feb. 5, 2015, 21:52 GMT).

[24] Wiimm, *Wiimmfi Server*, Wii-Homebrew.com (Mar. 22, 2014), http://forum.wii-homebrew.com/index.php/Thread/51254-wiimmfi-server/?s=0283a78bfcd75248bbd43a69adb6d41b70e6919e (last visited Feb. 5, 2015).

[25] DWC Network Server Emulator, GitHub, https://github.com/polaris-/dwc_network_server_emulator (last visited Feb. 5, 2015).

[26] Thread:MKWii Server Project, MarioKartWii.com (Mar. 23, 2014), http://www.mariokartwii.com/threads/134892-MKWii-Server-Project (where posters reference analyzing traffic and submitting it to the project).

[27] *About Us*, Xbox Connect, http://www.xbconnect.com/index.php?topic=about (last visited Feb. 5, 2015).

[28] Online Consoles, http://onlineconsoles.com/ (last visited Feb. 5, 2015).

[29] *Id.*

[30] *See KallistiOS: Dreamcast™ Scene*, Cryptic Allusion Game Dev, http://gamedev.allusion.net/softprj/kos/scene.php (last visited Feb. 5, 2015).

There are also more specific server development projects for particular games, including the Japanese version of Resident Evil Outbreak,[31] FEAR: Combat,[32] Metal Gear Online,[33] Halo,[34] Technika 2 + 3,[35] and a number of older games. Many of these projects mention specifically that they do not encourage piracy and will only connect to otherwise unmodified versions of the game client.[36] In some cases, game developers or publishers have considered investigating community-supported options to preserve functionality for shut-down titles.[37]

Because player communities have successfully restored gameplay for a variety of different types of abandoned games, this exemption should not be limited to a specific platform or type of game (except for excluding MMOs, which cannot be readily restored without the developer's cooperation). Console games are often hit the hardest by server shutdowns,[38] because players have a limited set of options for connecting to alternate servers, and because console manufacturers sometimes shut down online play for all games on a console at the same time. Still, much of the activity surrounding restoration of play for abandoned games has occurred for PC games. Finally, general purpose mobile platforms, such as Android and iOS, have not seen significant game preservation projects yet, but given the success of game preservation on other platforms and the growth of mobile gaming,[39] improving legal certainty for mobile gaming restoration projects is likely to jumpstart such projects as well.

5.   **Noninfringing Uses: Modifying a Game to Enable Continued Play, Preservation, Research, or Study**

The computer programs described above are used for continued play, study, and to preserve them in a usable state for future generations. Modifying game software may involve the creation of a derivative work, in the form of a new version of the game that will play without a server authentication check or one that connects to new matchmaking servers. It may also involve the making of intermediate copies while reverse-engineering authentication mechanisms or server communication protocols. These copies and modifications are made in order to access the functionality of lawfully acquired software.[40] The four statutory factors of 17 U.S.C. § 107

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[31] Resident Evil Outbreak Server, http://wiki.obsrv.org/index.php?n=Server.FAQ (last visited Feb. 5, 2015).

[32] Fear Combat was made free in 2006, but the player community took over running servers after the Gamespy servers were shut down in 2012. *Brief Description*, Fear Combat, http://www.fearcombat.org/about.php (last visited Feb. 5, 2015).

[33] *Save MGO Forums*, SaveMGO.com, https://savemgo.com/forums/index.php?sid=a1eac99e37ef251a415bb59dcfe899b5 (last visited Feb. 5, 2015).

[34] *IMPORTANT: Halo and the shutdown of GameSpy (May 31, 2014)*, Halo Fixes (May 9, 2014), http://halo-fixes.findforum.net/t1-important-gamespy-is-shutting-down-on-may-31-2014 (last visited Feb. 5, 2015).

[35] Doe Statement.

[36] *See, e.g.*, *Outbreak Server FAQ*, Resident Evil Outbreak, http://wiki.obsrv.org/index.php?n=Server.FAQ (last visited Feb. 5, 2015) ("We will not tolerate piracy discussion…").

[37] *See* EA Staff, *Update on EA Titles Hosted on Gamespy*, EA: The Beat (May 9, 2014), http://www.ea.com/news/update-on-ea-titles-hosted-on-gamespy ("We are still investigating community-supported options to preserve online functionality for these titles, such as multiplayer").

[38] *See* Appendix A, List of 2014 Shutdowns.

[39] *See* Dean Takahashi, *Mobile games revenue will double by 2017 as growth spreads worldwide (exclusive),*VentureBeat (July 23, 2014), http://venturebeat.com/2014/07/23/mobile-games-revenue-will-double-by-2017-as-growth-spreads-worldwide-exclusive/.

[40] *Sega Enterprises, Ltd. v. Accolade, Inc*, 977 F.2d 1510, 1528 (9th Cir. 1992), *Sony Computer Entertainment v. Connectix Corp.*, 203 F.3d 596, 608 (9th Cir. 2000).

support a finding of fair use.

The first factor looks at whether the use "merely supersedes the objects of the original creation," or is transformative.[41] Over the years, a robust body of caselaw has developed recognizing uses of copyrighted work that enable greater access to information as fair uses. Some of these cases, notably *Sega Enterprises, Ltd. v. Accolade, Inc.*,[42] and *Sony Computer Entertainment v. Connectix Corp.*, deal specifically with research into functional aspects of software for the purpose of achieving interoperability with other software. Here, the purpose of the use is to enable lawful copies of game software to interoperate with new servers, and with copies used by other players. This is a favored purpose under copyright law.[43] Moreover, modifying a lawful, personal copy is noncommercial, which further supports fair use under the first factor.[44]

When evaluating the second factor, courts look to whether the work is expressive or functional.[45] Video games, like all computer programs, contain "many logical, structural, and visual display elements that are dictated by the function to be performed, by considerations of efficiency, or by external factors such as compatibility requirements and industry demands."[46] The fair use doctrine enables the manipulation and copying of software code in order to gain access to the ideas and functions embedded within it that are not protected by copyright, including server communication protocols.[47] Modifying a game to re-enable its functionality using a new server, or by disabling a server requirement, involves changing only functional aspects of the software, not expressive elements such as graphics or audio. Purely functional software code intended to inhibit interoperability carries only a thin copyright interest, which is overcome by the need to modify it to achieve interoperability.[48]

The third factor favors fair use (or is at least neutral) as long as the "quantity and value of the materials used are reasonable in relation to the purpose of the copying."[49] When modifying an abandoned game to restore functionality without the original authentication or matchmaking server, the exact amount of the work used may vary. However, in all cases, the amount used is the minimum needed in order to allow the game to be playable. The portion of a game that must be modified to enable play after server shutdown is a very small portion of the overall software. Thus, the third factor supports a finding of fair use.

The fourth factor takes into account the direct harms caused by a particular use on the market or the value of the work.[50] This factor also favors a finding of fair use. Circumventing server

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[41] *Campbell v. Acuff-Rose Music, Inc.*, 510 U.S. 569, 579 (1994).

[42] 977 F.2d 1510; 203 F.3d 596.

[43] *Sega,* 977 F.2d 1510, 1523-24 (9th Cir. 1992); *Sony* 203 F. 3d at 606-07.

[44] *Campbell*, 510 U.S.at 583-84.

[45] *Sega*, 977 F.2d at 1524.

[46] *Id.*

[47] *See Sony*, 203 F.3d at 602.

[48] *See Lexmark Int'l, Inc. v. Static Control Components, Inc.*, No. Civ.A. 02-571, 2007 WL 1485770, at *5 (E.D. Ky, Apr. 18, 2007).

[49] *Campbell*, 510 U.S. at 586-87; *see also Authors Guild, Inc. v. HathiTrust*, 755 F.3d 87, 98 (2d Cir. 2014); *Sega*, 977 F.2d at 1526; *Connectix*, 203 F.3d at 605-06; *Kelly v. Arriba Soft*, 336 F. 3d at 820-21; *Field v. Google Inc.*, 412 F. Supp. 2d 1106, 1120-21 (D. Nev. 2006).

[50] *Id.*, *Perfect 10*, 508 F.3d at 1167; *Sony*, 203 F.3d at 607-08.

authentication or running new multiplayer servers does not harm the market for an abandoned game and may in fact increase its value to forward-looking consumers who value the long-term playability of a game. In many cases, developers abandon a game when sales have already declined to the point where operating a server is no longer financially viable. Harm to the market for a work must vanish when the work is no longer sold.

6. Adverse Effects of the Prohibition on Circumvention: Preventing Preservation and Research; Destroying Players' Investment In Games.

Absent an exception, circumventing technological measures to access and provide servers for online games creates legal uncertainty. The possibility of circumvention liability has had significant chilling effects on two different, yet overlapping communities: gamers, who wish to play games that they lawfully own, and archivists, game preservationists and scholars.

Video games are a vital part of American cultural heritage and creativity.[51] Both old and new institutions have stepped up to the challenge of preserving both the video games of the past and the video games currently being produced. In 2012, the Museum of Modern Art acquired 14 video games and plans to acquire more.[52] The International Center for the History of Electronic Games (ICHEG) at the Strong Museum of Play has a vast collection of hardware, arcade games, and company archival items.[53] Other key archival sites include the Museum of Art and Digital Entertainment, which is devoted to the "preservation of videogame history and to educating the public as to how videogames are created"[54], and the Internet Archive's Internet Arcade project, which aims to preserve the arcade games of the early 1990s in a playable state.[55]

However, "preservation activities undertaken either by cultural institutions (museums, libraries) or individual researchers usually become literally impossible when developers cease support of the technical infrastructure required to maintain these games."[56] Keeping games playable is a central concern of the next generation of video game archivists and preservationists, either formally affiliated with institutions or working independently.

The threat of liability under §1201(a)(1) inhibits the archival and preservation community, in both its formal and informal guises. The DMCA's provision and its chilling effects "force repositories and researchers into the uncomfortable situation of considering unauthorized circumvention of copyright law in order to preserve or provide access to game and virtual world

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[51] Joseph Bernstein, *Meet the Men Trying to Immortalize Video Games*, BuzzFeed News (Oct. 27, 2014) http://www.buzzfeed.com/josephbernstein/meet-the-men-trying-to-immortalize-video-games#.akGjX0xAj (quoting Mike Mashon, Head of the Moving Image Section at the National Audio Visual Conservation Center).

[52] Paola Antonelli, *Video Games: 12 in the Collection, for Starters*, MOMA INSIDE/OUT (Nov. 29, 2012) http://www.moma.org/explore/inside_out/2012/11/29/video-games-14-in-the-collection-for-starters/ (describing video games as "a new category of artworks in MoMA's collection that we hope will grow in the future.").

[53] *Video and Other Electronic Game Collections*, The Strong: National Museum of Play, http://www.museumofplay.org/collections/video-and-other-electronic-game-collections (last visited Feb 5, 2015).

[54] *About Us*, The Museum of Art and Digital Entertainment: Oakland's Videogame Museum http://themade.org/what-are-we (last visited Feb. 5, 2015). *See also* Handy Statement.

[55] Statement of Jason Scott.

[56] Statement of Henry Lowood, at 1 [hereinafter "Lowood Statement"].

environments, data, and software."[57]

The inability to play older games or examine the context in which players used them (because the necessary servers have been shut down) inhibits scholarship and research as well.[58] Video games, like other forms of art and entertainment, are cultural artifacts worthy of study. Studying older games creates a critical discourse and literature, key to understanding the current medium. In addition, the elimination of servers often also destroys "documentation assembled by players in the game community," and makes it impossible to contact players.[59]

To some extent, the lost research opportunities are unquantifiable, but promoting research is an explicit goal of games preservationists.[60] It is much more difficult for game scholars to access older works due to a lack of playable archival copies, and archivists have less incentive to preserve games that are unplayable or only partially playable. Jerome McDonough, a professor who specializes in digital preservation, put it simply: "Digital media are inherently fragile and the ability to migrate games to new hardware/media is critical to any preservation activity we might take, whether through migration or emulation. [The] DMCA's technological protection measure language takes the difficult case of software preservation and transforms it into a fundamentally impossible case."[61] In the case of multiplayer games, it can be impossible for scholars to replicate the experience of playing the game, since communities often die when servers are deactivated. TL Taylor, an associate professor of media studies at MIT who studies digital gaming, notes that "[p]layers not only derive powerful connection to these cultural properties but, critically, to other players of the game."[62] She believes that preservation of player communities is "a critical component to situating ideas of a public good in the age of digital networks and leisure."[63] Henry Lowood, a university library curator who maintains archives of film and media, states that "[t]he cost [of lack of access] is not just lost game history, but lost cultural, technical and social history of the late-20th and early-21st centuries."[64]

To be clear, an exemption for academic and preservation use alone will not eliminate the adverse impacts of Section 1201(a)(1). Game preservation projects rely on players and amateur collectors to do a significant amount of the legwork involved in saving modern releases.[65] According to

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[57] *Id.* at 2.

[58] *See generally* Lowood Statement.

[59] *Id.*

[60] Jason Scott, *The Internet Archive*, ASCII by Jason Scott (Nov. 1, 2014) http://ascii.textfiles.com/archives/4419 ("And my hope is that [some users will] begin plotting out ways to use this stuff in research, in writing, and remixing these old games into understanding their contexts.").

[61] Email from Jerome McDonough, Associate Professor, Graduate School of Library and Information Science, University of Illinois, to Kendra Albert (July 30, 2014) (on file with petitioner).

[62] Statement of TL Taylor [hereinafter Taylor Statement].

[63] *Id.*

[64] Lowood Statement at 3.

[65] Handy Statement; Lowood Statement. *See also* David Gibson, comment on *Duke's Legacy: Video Game Source Disc Preservation at the Library of Congress*, The Signal: Digital Preservation (Aug. 6, 2014), http://blogs.loc.gov/digitalpreservation/2014/08/dukes-legacy-video-game-source-disc-preservation-at-the-library-of-congress/ ("I personally think that the modding community has done tremendous work in regards to software preservation and I truly believe that public institutions will only benefit from emplying [sic] some of the practices undertaken by the modding and emulation community as we develop preservation and access strategies for video games, specifically, and software, generally.")

Lowood, "every cultural institution that collects software or game-related collections owes a huge debt to the non-professional games community."[66]

Additionally, gamers want to be able to continue to play games they have lawfully purchased. While player communities have set up alternative servers for abandoned games, notably for the Nintendo Wii and DS,[67] many such efforts are inhibited by the threat of circumvention liability[68] and by some game companies' legal efforts to restrict reverse engineering.[69]

The likelihood of substantial adverse impact on gamers continues to increase because of the dynamics of the game industry. The last several years have seen the release of a number of games where even single-player play required online access. The game Assassin's Creed 2, released in 2009, became notorious for requiring a connection to a Ubisoft server and losing player progress if the connection was dropped.[70] Similar technology was also used for Splinter Cell: Conviction and Settlers 7.[71]

Although Ubisoft dropped its ambitious digital rights management plan in the face of consumer backlash, many current games require a server connection for all forms of play.[72] This will lead to more severe losses of functionality as games are abandoned by their developers.

Another troubling trend for the preservation and continued playability of games is the move to digital sales mediated by third parties, like Steam, PlayStation Network (PSN) or Xbox Live. In 2013, 53% of game sales were digital – up from 41% in 2012.[73] Although digital sales have

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[66] Lowood Statement at 2.

[67] Wiimfi Server, Wii-Homebrew.com, http://forum.wii-homebrew.com/board42-kreativitaet/ mkw-server-project-english/51254-wiimmfi-server/?s=0283a78bfcd75248bbd43a69adb6d41b70e6919e (last visited Feb. 5, 2015); DWC Network Server Emulator, GitHub https://github.com/polaris-/dwc_network_server_emulator (last visited Feb. 5, 2015).

[68] *See, e.g.*, *Jung*, 422 F.3d at 640.

[69] *See* Dan Reisinger, *PS3 Jailbreak Prompts Restraining Order from Sony*, CNET (Jan. 12, 2011), http://news.cnet.com/8301-13506_3-20028248-17.html?part=rss&subj=news&tag=2547-1_3-0-20 (describing legal threats by Sony against a well-known Playstation modder).

[70] Ben Kuchera, *Official explanation of controversial Assassin's Creed 2 DRM*, Ars Technica (Feb. 18, 2010), http://arstechnica.com/gaming/2010/02/ubisoft-details-drm/. In the face of consumer backlash, Ubisoft fixed the bug, then eliminated the always-on Internet requirement, and finally eliminated the need to connect to a Ubisoft server altogether. John Walker, *Ubisoft Scrapping Always-On DRM for PC Game*s, Rock Paper Shotgun (Sep. 5, 2012), http://www.rockpapershotgun.com/2012/09/05/ubisoft-scrapping-always-on-drm-for-pc-games/.

[71] Tom Senior, *Constant net connection no longer required for Ubisoft games*, PC Gamer (Dec. 31, 2010), http://www.pcgamer.com/2010/12/31/constant-net-connection-no-longer-required-for-ubisoft-games/.

[72] *See, e.g.*, Steven Bogos, *Blizzard Defends Always-Online For Diablo III: Reaper of Souls*, The Escapist (Nov. 13, 2013), http://www.escapistmagazine.com/news/view/129633-Blizzard-Defends-Always-Online-For-Diablo-III-Reaper-of-Souls; Wesley Yin-Poole, *Maxis attempts to explain why SimCity is always-online as players discover code for 20-min offline force-shutdown timer*, Eurogamer.net (March 18, 2013), http://www.eurogamer.net/articles/2013-03-18-maxis-attempts-to-explain-why-simcity-is-always-online-as-players-discover-code-for-20-min-force-shutdown-timer-for-offline; Jason Schreier, *Your Complete Guide to the SimCity Disaster*, Kotaku (Mar. 18, 2013), http://kotaku.com/5991077/your-complete-guide-to-the-simcity-disaster; Richard Guilford, *Ubisoft DRM Servers Shut Down PC Gamers Again*, Gaming Trend (Jan. 8, 2011), http://gamingtrend.com/2012/01/07/ubisoft-drm-servers-shut-down-pc-gamers-again/; James Newman, Best Before: Videogames, Supersession and Obsolescence 24 (2012); Nathan Grayson, *Valve Fixing Steam Offline to Run Indefinitely [Updated]*, Rock Paper Shotgun (Nov. 5, 2013), http://www.rockpapershotgun.com/2013/11/05/valve-fixing-steam-offline-to-run-indefinitely/.

[73] Entertainment Software Association, *Essential Facts About the Computer and Video Game Industry* (2014),

numerous advantages, and many consumers find them preferable to buying physical media, they introduce additional failure points into the games. Developers may run their own authentication servers, but games may also be required to "check in" with the platform the game was purchased from. This creates another set of servers that must continue to function for games to be playable.

Modern consoles also tend to be built assuming Internet connectivity, and thus have built-in authentication mechanisms. Microsoft's most recent console, the Xbox One, initially required the user to be connected to the Internet at all times, but after massive user backlash, the Xbox One now only needs an online connection for initial activation.[74] However, Albert Penello, Microsoft's director of product planning, suggested that an always-online requirement might be inevitable in future consoles.[75]

As games deactivate and servers shut down, the ability to modify authentication controls and start new servers is vital to preserving player communities. Communities can disperse quickly once gameplay becomes impossible. Removing uncertainty caused by the anti-circumvention provision will allow players to continue to explore and play games they already own, and help preservationists remove authentication mechanisms in order to preserve playability, so that future players and scholars may enjoy and learn from them.

7.   The Statutory Factors Support an Exemption

Removal of authentication mechanisms and restoration of multiplayer functionality to legally purchased games, which assists the archiving and preservation of cultural works, is exactly the type of behavior that this exemption process is meant to protect. There are few alternatives to taking actions that might circumvent technological protection mechanisms, either for individual users or for institutions interested in preserving video games for future generations.

Like previous exemptions that the Librarian has granted, this proposed exemption would "minimize the adverse effects on noninfringing uses by users of software protected by these access control measures while also minimizing the adverse effects on copyright owners."[76]

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http://www.theesa.com/wp-content/uploads/2014/10/ESA_EF_2014.pdf.

[74] Mike Rose, *Microsoft reflects on the Xbox One 'always-online' furor*, Gamasutra (Sep. 5, 2013), http://www.gamasutra.com/view/news/199663/Microsoft_reflects_on_the_Xbox_One_alwaysonline_furor.php.

[75] Revision3Games, *Microsoft on Xbox One's 180, Bundled Kinect, RAM, Digital Pre-Loading and more! Albert Penello @PAX*, YouTube (Sep. 5, 2013), https://www.youtube.com/watch?v=8QrZP0AmUvk (last visited Feb. 5, 2015).

[76] Exemption to Prohibition on Circumvention of Copyright Protection Systems for Access Control Technologies, 68 Fed. Reg. 62011, 62014 (Oct. 31, 2003).

A.   There are no effective alternatives for players interested in continuing to play the media that they already own.

The first factor is the availability for use of copyrighted works.[77] The server shutdowns described in sections 3 and 4, *supra*, have a significant impact on the availability for use of many games. There are two possible alternatives to authentication deactivation or multiplayer server creation – permission from developers or non-playable archive alternatives. Neither of these is a viable alternative.[78]

While a commercial operation with sufficient resources can sometimes license an abandoned game in its entirety for commercial use, this is difficult and resource-intensive,[79] and not feasible for informal player communities who simply want to continue playing the games they already own.

Licensing presents serious difficulties for even the largest archival and research institutions. In fact, as scholar James Newman has written, "a host of current industry practices actually exacerbate rather than solve problems facing preservation practitioners."[80] A well-known report on game preservation observed that "[w]hile obtaining the permission of the rights owner to make a preservation copy offers a potential path around this obstacle, securing these permissions is complicated by the existence of a large number of 'orphan works' in the field of computer games, and the great difficulties encountered in trying to track intellectual property rights ownership in an industry as volatile as the game software industry."[81] Due to poor record keeping practices by games companies, finding all rightsholders can be difficult or impossible.[82]

Licensing, even if it were readily achievable, cannot be considered an alternative to an exercise of fair use. The fair use of a copyrighted work is one that does *not* require permission from the rightsholder, whether or not effective technical measures are applied.[83]

The second potential alternative to circumvention is video capture or other non-play alternatives. This is often the fallback position for archives when a game is shut down.[84] However, this is not an optimal solution. Video capture does not replicate the experience of actually playing the

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[77] 17 U.S.C. 1201(a)(1)(C)(i).

[78] *See* Recommendation of the Register of Copyrights in RM 2005-11, *Rulemaking on Exemptions from Prohibition on Circumvention of Copyright Protection Systems for Access Control Technologies*, November 17, 2006 at 21-22 (first statutory factor involves examining alternatives to circumvention).

[79] *See* Charlie Hall, *Nostalgia is a powerful drug: How GoG.com is growing beyond a back catalog*, Polygon (July 21, 2014), http://www.polygon.com/2014/7/21/5913763/gog-com-back-catalog-new-releases (describing the difficulty of rereleasing old games, including finding original retail code and testing old game code on modern machines).

[80] James Newman, Best Before: Videogames, Supersession and Obsolescence 26 (2012) [hereinafter Newman].

[81] *See* Jerome McDonough, et al, *Preserving Virtual World Final Report*, 6 (2010), *available at* http://hdl.handle.net/2142/17097.

[82] Lowood Statement at 2; *see also* Taylor Statement.

[83] *See* 17 U.S.C. § 1201(c)(1) ("Nothing in this section shall affect rights, remedies, limitations, or defenses to copyright infringement, including fair use, under this title.").

[84] Interview with J.P. Dyson, Director, International Center for the History of Electronic Games, (July 11, 2014). He noted that in collaboration with the Royal Library of Denmark, ICHEG recorded video capture of play of Lego Universe before its servers were shut down.

game, and is of much less value to scholars, not to mention to players who have lawfully purchased a game and wish to continue to play.[85]

> B.   The exemption would increase the availability of works for nonprofit archival and preservation purposes.

The second statutory factor is the effect of the exemption on the availability for use of works for nonprofit archival, preservation, and educational purposes.[86] The ability to play abandoned games after server shutdown makes those games fully available for archival and preservation.

Like any other form of media, games should be preserved so that they can be understood and enjoyed far into the future. Already, many games beloved to previous generations are difficult to play without specialized equipment.[87] Game preservation projects have run up against this problem directly. According to the conclusions of a report put out by the Preserving Virtual Worlds project, "the Digital Millennium Copyright Act's prohibition on defeating technological protection measures makes it impossible for a library to create a preservation copy of games employing DRM and anti-copying measures."[88]

Often, traditional archival institutions rely on non-professionals to help with the archiving of videogames.[89] Given the magnitude of the art form, and the difficulties in preserving it, third party collectors and preservers are instrumental in assisting the preservation work of archival institutions.[90] Thus, an exemption usable only by formal archives would exclude collectors and enthusiastic players who are often essential to the preservation process.

> C.   The prohibition on circumvention makes criticism, scholarship, teaching and research more difficult.

The third factor is the impact that the prohibition on the circumvention of technological measures applied to copyrighted works has on criticism, comment, news reporting, teaching, scholarship, or research.[91] The impacts on preservation described above also harm scholarship and research: it is much more difficult for game scholars to access older works due to a lack of playable archival copies. This phenomenon is covered at length above.

In the case of multiplayer games, it can be impossible for scholars to replicate the experience of originally playing the game, since communities often die when servers are deactivated.[92] Sports games, because of their influence on real-life players and game tactics, may be particularly

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[85] Lowood Statement at 1-2.
[86] 17 U.S.C. 1201(a)(1)(C)(ii).
[87] *See generally* Newman.
[88] Jerome McDonough, et al, *Preserving Virtual World Final Report*, 6 (2010), *available at* https://www.ideals.illinois.edu/handle/2142/17097.
[89] James Newman, Best Before: Videogames, Supersession and Obsolescence 86 (2012).
[90] Handy Statement at 2-3; Lowood Statement at 2-3.
[91] 17 U.S.C. 1201(a)(1)(C)(iii).
[92] Interview with Jason Scott, Software Curator, Internet Archive, (Nov. 19, 2014). Interview with J.P. Dyson, Director, International Center for the History of Electronic Games, (July 11, 2014); *see generally* Celia Pearce, Communities of Play (2011) (describing a community's reaction to the shutdown of a multiplayer game server).

important objects of study.[93] Already, museums are beginning to create exhibitions focusing on sports games, such as the baseball game exhibit at the Museum of Art and Digital Entertainment.[94]

Additionally, older games can be instrumental in teaching the craft of game design and the theory behind game construction. Syllabi for game design classes include older games as examples for students.[95] There is not currently a strong culture of re-releasing older games,[96] so usually students or teachers who wish to understand older games must find ways to play the originals.

> D. Circumvention of access controls on games that developers have abandoned would have, if anything, a positive effect on the market value of the works.

The fourth factor is the effect of circumvention of technological measures on the market for or value of copyrighted works.[97] For most games where developers have discontinued support, there is no longer a significant market.[98] Authentication and multiplayer servers would be for people who already own a lawful copy. Consumers have expressed significant displeasure with the shutdown of multiplayer servers for games that they have purchased.[99] Allowing player communities to restore gameplay can increase the initial value of a game by protecting the consumer's investment.

Digital rights management and authentication schemes change regularly,[100] so circumventing authentication mechanisms for older games would be unlikely to result in increased ability to procure unauthorized copies of newer games. The same basic premise is true of client-server

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[93] *See* Chris Suellentrop, *Game Changer MMX: How videogames trained a generation of pro athletes to play a whole different kind of football*, WIRED (Feb. 2010), available at http://archive.wired.com/images/press/pdf/gamech anger.pdf

[94] Alex Handy, *Baseball Exhibit Opens Saturday!*, The Museum of Art and Digital Entertainment: Oakland's Videogame Museum (Oct. 30, 2014), http://themade.org/posts/835.

[95] *See*, *e,g,* Ian Bogost, *Game Design and Analysis Syllabus*, http://www.bogost.com/teaching/game_design_and_analysis.shtml (last visited Feb. 5, 2015).

[96] *Cf.* Dave Tach, *Digital Archeology: How Double Fine, Disney, LucasArts and Sony Resurrected Grim Fandango*, Polygon (Jan. 27, 2015), http://www.polygon.com/2015/1/27/7921837/grim-fandango-remastered-interview-double-fine-disney-lucasfilm-sony (describing the difficult and almost foreclosed process of re-mastering Grim Fandango, a widely acclaimed game originally released in 1998),

[97] 17 U.S.C. § 1201(a)(1)(C)(iv).

[98] EA's online service update explains that the older games no longer have the number of online players to justify maintaining servers up and running. *Online Service Updates,* Electronic Arts, http://www.ea.com/1/service-updates (last visited Feb. 5, 2015).

[99] *See Bassett v. Electronic Arts*, No. 1:13-cv-04208 (E.D.N.Y. filed July 24, 2013) (where plaintiff filed a class action against Electronic Arts for "retiring" servers for certain products too soon after their release date).

[100] *See, e.g.*, David Berlind, *Now that Microsoft's licensed DRM doesn't "Play For Sure," will any DRM do it? Ever?*, ZDNet (Nov. 7, 2006), http://www.zdnet.com/article/now-that-microsofts-licensed-drm-doesnt-play-for-sure-will-any-drm-do-it-ever/ (describing Microsoft dropping its previously endorsed DRM for music files); Roberto Baldwin, *New DRM Will Change the Words in Your E-Book*, Wired (June 6, 2013), http://www.wired.com/2013/06/new-ebook-drm/ (describing new DRM developed by German researchers for e-books); *EarthBound's Copy Protection*, EarthBound Central (May 14, 2011), http://earthboundcentral.com/2011/05/earthbounds-copy-protection/ (describing layers of DRM on a video game that subtly increase the difficulty to frustrate players of unauthorized copies, then freeze the game at the final boss and deletes all saves).

protocols, which often are unique to a generation of games.

Allowing players to run multiplayer servers for discontinued or unsupported games will not decrease the market for backward-compatible copies of newer games. Newer games, even sequels in the same series, usually have substantial changes in gameplay mechanics or story, and are not substitutes for older games.[101]

8.   Documentary Evidence

Please see the appendix filed with these comments.

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[101] *See generally* James Newman, Best Before: Videogames, Supersession and Obsolescence (2012).

The Museum of Art and Digital Entertainment
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To Whom It May Concern:

My name is Alex Handy. I am the founder and director of the Museum of Art and Digital Entertainment (The MADE), a non-profit, 501(c)(3) videogame museum located in downtown Oakland, California. We focus on the preservation of our digital heritage through playable exhibits of significant works, and inspiring the next generation of game developers through free classes, events and meetups on software development, art, audio design, and other topics.

My background is in journalism: I've worked for 15 years as a technology journalist; most of that time in the videogame industry. I have stood witness to the rise and demise of thousands of videogames and hundreds of companies in this fast-moving, high-stakes industry.

Whenever people asks how our museum works, I always tell them that we focus on making the games we exhibit playable, first. Imagine an art museum with the lights off, and you can get an idea of what a non-playable videogame museum would be like. Games must be played to be understood fully, and to fully preserve a game, its entire experience must be preserved. Practically, this means preserving the box the game came in, the manuals, the maps, the advertising inserts, and the original source medium for the game itself, be that a floppy disk, cassette tape, CD, DVD, or cartridge. It is a big job, and it's easy for bits to go missing before they come to the museum.

Starting in 1999, online play became a common component of many videogames. From the Sega Dreamcast onwards, console games have included online play as an almost standard option for most games. Home computers have included online play for over three decades, but the number of online playable PC games exploded from the late 90's on, as well. As such, the companies that produced the games began hosting servers for people to play on, as a (typically) free service for their customers.

The videogame industry is highly competitive. Development studios can be created, sold and vanish from the face of the Earth in the course of a few years. Platforms are cast aside every 5 to 7 years, leaving whole libraries of games abandoned. Because of the turbulent nature of the videogame industry, hundreds of titles have been left orphaned by their creators. And because online play has now become a common component of most videogames, most games are published with an unspoken countdown taking place inside the company hosting the game's online servers. When the timer hits zero, that game's servers are going offline because the game is no longer profitable for the company.

For some games, this means that they become a shadow of their former whole: they're missing chunks of experience, like a novel missing chapters, or a painting ripped in half. Other games are completely lost to time when their servers go offline, and cannot be played at all.

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There is a distinction to be made here, however, between massively multiplayer [MMO] games, and non-massively multiplayer games. For non-MMO games, preservation can be done entirely by player communities using the copies of a game that they own. For MMOs, however, preservation inherently involves the copyright holders.

MMOs, as they are called colloquially, are games in which the end-user is entering into a hosted world that remains static and intact when players have signed off. MMOs are based on robust servers designed to host hundreds, if not thousands of simultaneous players. These MMO worlds (World of Warcraft, Eve Online) are living, breathing creations, and can be likened to theme parks. Theme parks require care and tending, incur legal liabilities, and can charge admission on an on-going basis. They also feature live events, evolve over time, and require on-duty staff to run properly. MMOs have all of these things characteristics, as well.

Preserving MMOs is an entirely different endeavor from preserving games with matchmaking-based online play: The MADE is currently in the midst of preserving a virtual world, Habitat, considered to be the first graphical MMO. This effort has taken years, has involved the creators of the game, the original server code and hardware, and the owners of the original rights. Preserving an MMO server is like archaeology and anthropology. It is far more resource-intensive than preserving non-MMO online games.

Non-MMO online games can be likened to soccer, or a pickup game of baseball at the park. The servers they use are called matchmaking servers, a highly specialized, simple server that identifies players who are online and matches them up as opponents. A matchmaking server is the digital equivalent of an open field: they are just a place for everyone to meet up and play the game they already own. In the case of a sports game, for example, this metaphor becomes almost literal: players are meeting online to play baseball on a virtual field. In a soccer game, this might manifest as the player picking a team, connecting to the server, and then playing a match against an online opponent. The server might also keep track of rankings, results, replays, standings, friend lists, and other items that were supported originally by any given game. These servers can play host to very small numbers of players: 2 to 100 in an individual game or match.

Provided all players own a legitimate copy of the game, the "field" is the only thing missing when a game is orphaned. The images, sounds, game mechanics, etc. are primarily in the copy of the game software that the player owns, not on the server.

In many cases, supporting a game of this type with online play after it has been orphaned by its creators is something that can be done by a single person. One such person in Australia has single-handedly provided a method of playing over 700 games online, long after these games have become orphaned works (GameRanger). This allows players who purchased, say, the popular soccer videogame FIFA 2011 to continue to play online, long after its publisher has terminated online support for the game in order to boost the sales of FIFA 2015.

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Despite their similarities, there are distinct differences between yearly sports game releases, ranging from rosters, to features included, even to overall quality of the game as a whole. Just as in movies, or TV shows, quality varies from release to release. Thus, here in 2015, some people still prefer to play FIFA 2011 with their friends online, rather than, say, FIFA 2012, FIFA 2013, FIFA 2014 or FIFA 2015.

We believe players should have that right to play the game they legally purchased, even if they have to use a free third party service or free software product to do so. Provided no one is making money, fans should be able to bring their games back to full functionality when the rights owners refuse to do so.

When a community of players find that they enjoy a game enough to reboot its servers on their own, it is a pure labor of love. Replacing a dead server for a videogame through reverse engineering is no easy task. It requires an extreme level of passion from the developer. This is not the type of hobby someone tries for a weekend: it is an endeavour undertaken by people who have dedicated their entire lives to learning the craft of software development.

While it is complex, it is, also, entirely possible for a single person to undertake the effort, if they are talented enough. Given skill, the primary requirement is a deep love of the game being worked on. And this is exactly what has already happened with many games: very talented fans are spending hundreds of hours bringing these games back to full functionality, and doing it for no reward other than the ability to play the game themselves.

As such, efforts to preserve and revive defunct videogames by bypassing server checks or using new servers should be seen as endeavours of love and devotion by fans, not as works of infringement. They are the work of dedicated fans who wish to save the full experiences of their favorite games, long after the creators of those games have decided that doing so would be unprofitable.

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Statement of Jason Scott
February 6, 2015

My name is Jason Scott. I work at the Internet Archive, where I manage the software archiving and preservation projects. Recently, this has included the Internet Arcade, as well as a library of MS-DOS games.

The Internet Arcade is a web-based library of arcade (coin-operated) video games from the 1970s through to the 1990s, emulated in JSMAME, part of the JSMESS software package. Containing hundreds of games ranging through many different genres and styles, the Arcade provides research, comparison, and entertainment in the realm of the Video Game Arcade.

The game collection ranges from early "bronze-age" videogames, with black and white screens and simple sounds, through to large-scale games containing digitized voices, images and music. Most games are playable in some form, although some are useful more for verification of behavior or programming due to the intensity and requirements of their systems.

The MS-DOS collection includes action, strategy, adventure and other unique genres of game and entertainment software. Through the use of the EM-DOSBOX in-browser emulator, these programs are bootable and playable.

The Internet Archive is interested in continuing to digitize and make available games to the public. However, as we come up to more current operating systems, and more modern examples, authentication servers start becoming part of the picture. The problems start changing and begin to include DMCA §1201.

In the Windows 3.1 and Windows 95 era programs, by 1996 and 1997, we start seeing pretty coherent phone home schemes. Usually the company who produced the software will augment them with a phone number you can call or a code you get, but most of them want to use a server. And then over time, the companies get rid of the phone all together and they make the server a more important part.

In order to continue to preserve and archive these games as they start to rely on authentication servers, we will need to deactivate the server authentication mechanisms. Although we have not done this so far, it will become more important to do so in the near future.

Statement of John Doe
February 6, 2015

I am an IT professional, and I am submitting this statement anonymously. I modified my copy of an arcade-based rhythm game called DJMax Technika to connect to a new server when the original server was shut down, and I run a server that lets other people continue to play the game.

When Technika came out, it was one of the first arcade games that utilized a touch screen. I was a fan of the existing DJMax series. My hobby is restoring old arcade games. So, naturally, I was interested in how Technika ticked inside. I found a few security holes in Technika 2 (T2) and Technika 3 (T3), poked around a bit and started familiarizing myself with how the game's security worked, including the cipher format for the network services.

When I heard that the T3 network service was going to be shut down, I did some packet dumps from my machine talking to the real server a few times, recording the information sent between the game and the server. I knew they'd be useful. After the server shut down in December 2013, I started work on making my own server.

T2 is super easy to get working on any PC provided you have the hardware dongles. I disabled the encryption and started poking the game, getting it further and further, until I was able to play the entire game and set my DJ name.

It was exciting seeing the green "NET" icon light up for the first time! I documented a lot of what T2 did. At first I was just sending it static data via a Python script. After I got it sufficiently far enough, I started writing a server in the C# programming language and at the same time I finally figured out, by re-enabling encryption on T2 and lots of testing, how the encryption worked.

So literally the same night that I got encryption working correctly, I pointed my server at T3 until it became fully unlocked. That was my goal, as about 70% of the gameplay in T3 is locked without network access.

Anyway, I eventually got to the point where the server emulated most of the main features of the game (saving scores, unlocking levels, saving mission mode status, sending mission mode data to the client (thank you packet dumps for this!)) so I decided to let other people use it. At this point, I have around 80 Technika arcade machines from around the world connecting to my server and a website opened as well for general registration so people can change their options.

As a fan of many many music games, I don't like to see a really good music game die an unfair death. Pentavision, the company that made Technika, was bought by Neowiz because of another online game Pentavision made, and Neowiz killed Technika. I like Technika a lot -- the graphics are amazing, the music is fantastic. I just don't want it to die. Many arcades just turned off their Technika machines or sold them off when the network service went dark. No one played anymore. My server is keeping the lights on for a while longer.

Statement of Henry Lowood
February 6, 2015

I am writing as an individual in support of the DMCA exemption request for the purpose of restoring access to single-player or multiplayer video gaming on consoles, personal computers or personal handheld gaming devices when the developer and its agents have ceased to support such gaming. My opinions do not necessarily reflect those of Stanford University, my employer.

Q: Could you please describe how games preservation and archiving requires bypassing or defeating access controls built into the games?

Preservation activities undertaken either by cultural institutions (museums, libraries) or individual researchers usually become literally impossible when developers cease support of the technical infrastructure required to maintain these games. This statement is true for several reasons.

First, current digital preservation practices are universally predicated on data migration, which means the transfer of data from fragile, historical media to the robust technical systems that have been designed for digital preservation. Access to the original software and to the digital assets (maps, audio files, character animations, etc.) that make up a game or virtual environment is fundamentally important. If a game server is shut down without provisions being made for access to the original software, preservation is impossible.

Moreover, preservation without access to the software, both as data and as an executable program, becomes a meaningless activity. Since entry into most server-based games and virtual worlds requires an authentication procedure such as a login, after a server shuts down, the authentication procedure built into the software will be an obstacle for preservation or research activities. Without a circumvention of DMCA restrictions, processes such as authentication will block access by the repository or researchers, and they will be unable to activate the software.

Shutting down support for game or virtual world servers also destroys other positive aspects of these kinds of software that benefit preservation activities. Two examples are the social communities that exist around games and the digital assets and affordances that games provide for artistic expression. When access to a game shuts down, the player community dies with it. The emotional impact of such closures on a community can be observed in the video titled, "EA-Land: The Final Countdown (2008)," archived as part of the Archiving Virtual Worlds collection hosted by the Internet Archive (https://archive.org/details/EALand_FinalCountdown). However, there is also an impact on preservation efforts; with the shutting down of the system, documentation assembled by players in the game community disappears along with access to these witnesses. Several historical and preservation activities conducted by the How They Got Game project at Stanford (which I lead) have been predicated on contact with players in the

game world. If there is no access to the game world, it becomes impossible to work with the game community on preservation projects.

In addition, forms of artistic expression such as machinima (game-based movie-making) have imaginatively made use of settings and other resources uniquely available in game and virtual worlds. As an example, one technique employed by machinima-makers involves composition of character animations or maps/levels stored in databases associated with specific on-line games, such as *World of Warcraft.* If support for such a game ceases, the only method available to re-create this experience (as a preservation activity) will be to set up private or repository-supported servers, which currently is a DMCA violation.

All of the situations described above force repositories and researchers into the uncomfortable situation of considering unauthorized circumvention of copyright law in order to preserve or provide access to game and virtual world environments, data, and software. Without circumvention of current restrictions, many kinds of preservation and research projects effectively become impossible.

Q: Is getting permission from developers a reliable option for players or archivists who want to run multiplayer or circumvent authentication servers?

Based on my experience with preservation, archival and research projects, this approach is at best a short-term solution. Over the history of the software and game industries, most developers are short-lived and copyrights are transferred or lost through acquisitions and business failures. In the long term, it is often impossible for institutions or individuals to locate corporations or people who can sign off on the rights – or even know that they are the rights-holders. I have encountered considerable confusion among rights-holders concerning their ownership of copyrights, even in cases when I was confident that I had contacted the documented owner of those rights, and the owner was sympathetic with a request.

Q: How does the non-professional games community contribute to or assist professional archivists?

In a word: crucially. Every cultural institution that collects software or game-related collections owes a huge debt to the non-professional games community. The areas of activity in which this debt has accumulated include: (1) personal software collections that are transferred to repositories; (2) collections of documentation (screenshots, videos, developer documents, etc.; (3) emulator development; (4) documentation and reverse-engineering of game technologies, without which the understanding of game hardware, on-line systems, game software and actual play contexts would suffer greatly. This last point is particularly relevant with respect to on-line games for which developer support has ceased, because developer documentation often does not describe these complex game systems in great detail, or is not available. Players have stepped in to document how the software works, map the game worlds, identify key components of the software and how they operate, reveal hidden aspects of online games, etc. How players inspect,

explore and document game and virtual worlds has been a focus of my own historical games research and publication, and I can attest to the fact that much crucial historical information is lost when players no longer have access to a game system. Often, this information is important not only for historical understanding of game technologies and culture, but in order for cultural repositories to preserve and provide access to the games in their collections.

Q: How are older video games relevant to criticism, scholarship, teaching and research?

As in almost any scholarly discipline, historical study of the evolution of technologies, culture, social networks, design practices, and users is essential. With respect to this circumvention application, it may be useful to think of game worlds as social and cultural spaces enabled by a technical infrastructure. In other words, games are virtual worlds. Scholarship, teaching and research are concerned with the nature and histories of these virtual worlds as worlds, that is, as social communities with specific histories. They are also concerned with the structure of these worlds and the technical disciplines that create them, ranging from game design to computer programming. When access to a virtual world ceases with the ending of developer support, scholarly access to the historical world (events, activities, participants) represented by that game ends along with it. Moreover, researchers can no longer "get inside" the software, which inhibits efforts to understand the development of the technology. Critical-historical research about game worlds is greatly handicapped when access to these worlds ends. The cost is not just lost game history, but lost cultural, technical and social history of the late-20th and early-21st centuries.

Statement of T.L. Taylor

Associate Professor of Comparative Media Studies

February 5, 2015

I am writing in support of the Exemption for Circumvention Necessary To Run Game Software After the Developer's Authentication or Matchmaking Server Has Shut Down. I am a sociologist who has done extensive work on digital gaming, in particular researching player communities. I teach in a program where serious attention is given to understanding computer games a vibrant works of design, art, and culture. Allowing players, students, and scholars to continue to access and work with games where developer support has ceased is crucial in several ways.

Player communities. Much of what we've learned through the last 15 years of scholarship on digital gaming is that players are active, dedicated users of various titles even long after the works are supported by the original developers. Players not only derive powerful connection to these cultural properties but, critically, to other players of the game. While game companies regularly make practical choices to discontinue online services and facilitation mechanisms, player communities do not follow such trajectories. Gamers themselves often step in to try and fill in the gap, wanting to sustain their own communities through "labors of love" long after the original developers have moved onto other titles. An exemption that recognizes the value of the communities players develop around titles, and the efforts they make to sustain them after developer interest has waned, strikes me a critical component to situating ideas of a public good in the age of digital networks and leisure.

Educational value. The field of digital game design and study is still very much emerging and one of the key components to its continued growth is making sure the next generation of students are able to build on the tremendous work that has already been undertaken by developers. As educators, we face a fast moving space of digital products that quickly cycle in and out of the commercial market. Being able to ensure our students can leverage a rich base of knowledge about prior developments is crucial. The ability to explore old games, including seeing how a multiplayer function actually worked, is an incredibly valuable pedagogical tool.

Scholarship. Those of us who study the complex intersection of user experience and digital media face an ongoing challenge due to the ephemerality of much of the domain. In the same way we've seen the incredible value of archiving all kinds of material for historical analysis (from physical objects to the fantastic work of sites like the Internet Archive), much can still be done to facilitate the social and cultural analysis of technological objects after their original life cycle. The preservation of computer games includes not only making sure we can see their graphics or hear their sounds, but understand the complexity of their mechanics which, increasingly, means understanding multiplayer components. Playing together is not a trivial side aspect to digital gaming and this means that scholars need to be able to emulate conditions of original use as much as possible. Given the market life-cycle of most games, protection is needed to ensure research can continue on these artifacts even after developers have moved onto other ventures.

I believe the exemption proposed here offers a critical path to supporting a range of work that, far from harming any stakeholders, fosters the lively use, development, and scholarship of digital gaming.

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Game Server Shutdowns 2014

Game	Type of Play Ended	Publisher	Platform	Source
100 Classic Books	Multiplayer	Nintendo	Nintendo DS	https://www.nintendo.com/whatsnew/detail/vyWpoM6CBIe6FjW8NIY7bvzOrgBURhzw
Advance Wars: Days of Ruin	Multiplayer	Nintendo	Nintendo DS	https://www.nintendo.com/whatsnew/detail/vyWpoM6CBIe6FjW8NIY7bvzOrgBURhzw
Age of Booty	Multiplayer	Capcom	PS3	http://www.ign.com/articles/2014/05/12/capcoms-gamespy-plan-for-lost-planet-3-age-of-booty-more
Age of Empires Online	All Play	Microsoft	PC	http://www.ageofempires.com/blog/?p=1086
Animal Crossing: City Life	Multiplayer	Nintendo	Nintendo Wii	https://www.nintendo.com/whatsnew/detail/vyWpoM6CBIe6FjW8NIY7bvzOrgBURhzw
Animal Crossing: Wild World	Multiplayer	Nintendo	Nintendo DS	https://www.nintendo.com/whatsnew/detail/vyWpoM6CBIe6FjW8NIY7bvzOrgBURhzw
Armored Core V	Multiplayer	Bandai Namco Games	PS3, Xbox 360	https://www.facebook.com/armoredcore/posts/675455462518688?stream_ref=10
Avatar: The Game	Multiplayer	Ubisoft	PS3, Xbox 360	https://support.ubi.com/en-US/FAQ/35/2771/xbox-360-multiplayer-availability/kA030000000egiwCAA
Battalion Wars 2	Multiplayer	Nintendo	Nintendo Wii	https://www.nintendo.com/whatsnew/detail/vyWpoM6CBIe6FjW8NIY7bvzOrgBURhzw
Battlefield 1942	Multiplayer	Electronic Arts	PC and Mac	http://www.ea.com/1/service-updates
Battlefield 2	Multiplayer	Electronic Arts	PC	http://www.ea.com/1/service-updates
Battlefield 2: Modern Combat	Multiplayer	Electronic Arts	PS2	http://www.ea.com/1/service-updates
Battlefield 2142	Multiplayer	Electronic Arts	PC and Mac	http://www.ea.com/1/service-updates
Battlefield Vietnam	Multiplayer	Electronic Arts	PC	http://www.ea.com/1/service-updates
Bejeweled (r) 2	Multiplayer	Electronic Arts	Wii	http://www.ea.com/1/service-updates
Bookworm Heroes	Multiplayer	Electronic Arts	iOS	http://www.ea.com/1/service-updates

Bulletstorm	Multiplayer	Electronic Arts	PS3	http://www.ea.com/1/service-updates
Close Combat First to Fight	Online Services	2K	PC, Mac	http://support.2k.com/hc/en-us/articles/201967707-2K-Online-Server-Migration-from-GameSpy-Technology
Clubhouse Games	Multiplayer	Nintendo	Nintendo DS	https://www.nintendo.com/whatsnew/detail/vyWpoM6CBIe6FjW8NIY7bvzOrgBURhzw
Command & Conquer 3: Tiberium Wars	Multiplayer	Electronic Arts	PC and Mac	http://www.ea.com/1/service-updates
Command & Conquer: Generals	Multiplayer	Electronic Arts	PC and Mac	http://www.ea.com/1/service-updates
Command & Conquer: Red Alert 3	Multiplayer	Electronic Arts	PC and Mac	http://www.ea.com/1/service-updates
Crysis 2 for PC	Multiplayer	Electronic Arts	PC	http://www.ea.com/1/service-updates
Crysis for PC	Multiplayer	Electronic Arts	PC	http://www.ea.com/1/service-updates
Crysis Wars	Multiplayer	Electronic Arts	PC	http://www.ea.com/1/service-updates
Custom Robo Arena	Multiplayer	Nintendo	Nintendo DS	https://www.nintendo.com/whatsnew/detail/vyWpoM6CBIe6FjW8NIY7bvzOrgBURhzw
Diddy Kong Racing	Multiplayer	Nintendo	Nintendo DS	https://www.nintendo.com/whatsnew/detail/vyWpoM6CBIe6FjW8NIY7bvzOrgBURhzw
Dracula - Undead Awakening	Multiplayer	Electronic Arts	Wii	http://www.ea.com/1/service-updates
Dragon Quest IX: Sentinels of the Starry Skies	Multiplayer	Nintendo	Nintendo DS	https://www.nintendo.com/whatsnew/detail/vyWpoM6CBIe6FjW8NIY7bvzOrgBURhzw
Dragon Quest Monsters: Joker 2	Multiplayer	Nintendo	Nintendo DS	https://www.nintendo.com/whatsnew/detail/vyWpoM6CBIe6FjW8NIY7bvzOrgBURhzw
Dragon Sakura	Multiplayer	Electronic Arts	Nintendo DS	http://www.ea.com/1/service-updates
EA Sports 06	Multiplayer	Electronic Arts	PC	http://www.ea.com/1/service-updates
Endless Ocean	Multiplayer	Nintendo	Nintendo Wii	https://www.nintendo.com/whatsnew/detail/vyWpoM6CBIe6FjW8NIY7bvzOrgBURhzw

Endless Ocean 2: Adventures of the Deep	Multiplayer	Nintendo	Nintendo Wii	https://www.nintendo.com/whatsnew/detail/vyWpoM6CBIe6FjW8NIY7bvzOrgBURhzw
Excitebots: Trick Racing	Multiplayer	Nintendo	PC	https://www.nintendo.com/whatsnew/detail/vyWpoM6CBIe6FjW8NIY7bvzOrgBURhzw
F1 2002	Multiplayer	Electronic Arts	PC	http://www.ea.com/1/service-updates
FIFA Soccer 08 (KOR)	Multiplayer	Electronic Arts	Wii	http://www.ea.com/1/service-updates
FIFA Soccer 08	Multiplayer	Electronic Arts	Nintendo DS	http://www.ea.com/1/service-updates
FIFA Soccer 09	Multiplayer	Electronic Arts	Nintendo DS	http://www.ea.com/1/service-updates
FIFA Soccer 10	Multiplayer	Electronic Arts	Nintendo DS	http://www.ea.com/1/service-updates
FIFA Street 3	Multiplayer	Electronic Arts	Nintendo DS	http://www.ea.com/1/service-updates
Fire Emblem: Shadow Dragon	Multiplayer	Nintendo	Nintendo DS	https://www.nintendo.com/whatsnew/detail/vyWpoM6CBIe6FjW8NIY7bvzOrgBURhzw
Flock!	Multiplayer	Capcom	PS3	http://www.capcom-unity.com/brelston/blog/2014/05/12/gamespy-service-shutdown-update
Fortune Street	Multiplayer	Nintendo	Nintendo Wii	https://www.nintendo.com/whatsnew/detail/vyWpoM6CBIe6FjW8NIY7bvzOrgBURhzw
Fossil Fighters: Champions	Multiplayer	Nintendo	Nintendo DS	https://www.nintendo.com/whatsnew/detail/vyWpoM6CBIe6FjW8NIY7bvzOrgBURhzw
Full Spectrum Warrior: Ten Hammers	Multiplayer	Electronic Arts	PS2	http://www.ea.com/1/service-updates
Global Operations	Multiplayer	Electronic Arts	PC	http://www.ea.com/1/service-updates
Gran Turismo 5		Sony Computer Entertainment	PS3	http://www.gamespot.com/articles/gran-turismo-5-s-pre-online-shutdown-event-unlocks-gran-turismo-6-cars/1100-6419331/
GREEN DAY: ROCK BAND	Multiplayer	Electronic Arts	Nintendo Wii	http://www.ea.com/1/service-updates
James Bond: Nightfire	Multiplayer	Electronic Arts	PC	http://www.ea.com/1/service-updates

Jetfighter	Online Services	2K	PC	http://support.2k.com/hc/en-us/articles/201967707-2K-Online-Server-Migration-from-GameSpy-Technology
Jetfighter V: Homeland Protector	Online Services	2K	PC	http://support.2k.com/hc/en-us/articles/201967707-2K-Online-Server-Migration-from-GameSpy-Technology
Leadfoot	Online Services	2K	PC	http://support.2k.com/hc/en-us/articles/201967707-2K-Online-Server-Migration-from-GameSpy-Technology
Legend of Zelda: Phantom Hourglass	Multiplayer	Nintendo	Nintendo DS	https://www.nintendo.com/whatsnew/detail/vyWpoM6CBIe6FjW8NIY7bvzOrgBURhzw
Lord of Ultima™	Multiplayer	Electronic Arts	PC	http://www.ea.com/1/service-updates
Madden NFL 08	Multiplayer	Electronic Arts	Nintendo DS	http://www.ea.com/1/service-updates
Madden NFL 09	Multiplayer	Electronic Arts	Nintendo DS	http://www.ea.com/1/service-updates
Madden NFL 25	Multiplayer	Electronic Arts	iOS, Google Play, Amazon	http://www.ea.com/1/service-updates
MAG	All Play	Sony	PS3	http://www.gamespot.com/articles/gran-turismo-5-s-pre-online-shutdown-event-unlocks-gran-turismo-6-cars/1100-6419331/
Major League Baseball 2K13	Multiplayer	2K	PS3	http://www.polygon.com/2014/1/6/5281150/mlb-2k-games-webpages-pulled-offline-2k-sports
Major League Baseball 2K9 Fantasy All-Stars	Online Services	2K	DS	http://support.2k.com/hc/en-us/articles/201967707-2K-Online-Server-Migration-from-GameSpy-Technology
Mario Kart DS	Multiplayer	Nintendo	Nintendo DS	https://www.nintendo.com/whatsnew/detail/vyWpoM6CBIe6FjW8NIY7bvzOrgBURhzw
Mario Kart Wii	Multiplayer	Nintendo	Nintendo Wii	https://www.nintendo.com/whatsnew/detail/vyWpoM6CBIe6FjW8NIY7bvzOrgBURhzw

Mario Sports Mix	Multiplayer	Nintendo	Nintendo Wii	https://www.nintendo.com/whatsnew/detail/vyWpoM6CBIe6FjW8NIY7bvzOrgBURhzw
Mario Strikers Charged	Multiplayer	Nintendo	Nintendo Wii	https://www.nintendo.com/whatsnew/detail/vyWpoM6CBIe6FjW8NIY7bvzOrgBURhzw
Mario vs. Donkey Kong 2: March of the Minis	Multiplayer	Nintendo	Nintendo DS	https://www.nintendo.com/whatsnew/detail/vyWpoM6CBIe6FjW8NIY7bvzOrgBURhzw
Mario vs. Donkey Kong: Mini-Land Mayhem	Multiplayer	Nintendo	Nintendo DS	https://www.nintendo.com/whatsnew/detail/vyWpoM6CBIe6FjW8NIY7bvzOrgBURhzw
Mario vs. Donkey Kong: Minis March Again!	Multiplayer	Nintendo	Nintendo DS	https://www.nintendo.com/whatsnew/detail/vyWpoM6CBIe6FjW8NIY7bvzOrgBURhzw
Master of Orion III	Multiplayer	Electronic Arts	PC	http://www.ea.com/1/service-updates
Max Payne 3	Multiplayer	Rockstar	Mac	https://support.rockstargames.com/hc/en-us/articles/203102767-Effect-of-GameSpy-Closure-on-Past-Rockstar-Titles
Medal of Honor: Allied Assault	Multiplayer	Electronic Arts	PC and Mac	http://www.ea.com/1/service-updates
Metal Torrent	Multiplayer	Nintendo	Nintendo DS	https://www.nintendo.com/whatsnew/detail/vyWpoM6CBIe6FjW8NIY7bvzOrgBURhzw
Metroid Prime Hunters	Multiplayer	Nintendo	Nintendo DS	https://www.nintendo.com/whatsnew/detail/vyWpoM6CBIe6FjW8NIY7bvzOrgBURhzw
Midnight Club: Los Angeles	Multiplayer	Rockstar	PS3	https://support.rockstargames.com/hc/en-us/articles/203102767-Effect-of-GameSpy-Closure-on-Past-Rockstar-Titles
Midniight Club 3: Dub Edition	Mulitplayer	Rockstar		https://support.rockstargames.com/hc/en-us/articles/203102767-Effect-of-GameSpy-Closure-on-Past-Rockstar-Titles
MLB 12: The Show	Multiplayer	Sony Computer Enteratinament	PS3, Vita	http://forums.theshownation.com/showthread.php?t=22169

MLB Fantasy All-Stars	Online Services	2K	DS	http://support.2k.com/hc/en-us/articles/201967707-2K-Online-Server-Migration-from-GameSpy-Technology
Monopoly Bingo	Multiplayer	Electronic Arts	iOS, Google Play and Amazon	http://www.ea.com/1/service-updates
Monopoly Hotels	Multiplayer	Electronic Arts	iOS, Google Play and Amazon	http://www.ea.com/1/service-updates
Motionsports Adrenaline	Multiplayer	Ubisoft	PS3, XBox360	https://support.ubi.com/en-US/FAQ/35/3667/xbox-360-multiplayer-availability/kA030000000egiwCAA, https://support.ubi.com/en-US/FAQ/38/3667/ps3-multiplayer-availability/kA030000000egirCAA
MySims Party	Multiplayer	Electronic Arts	Wii	http://www.ea.com/1/service-updates
MySims Racing	Multiplayer	Electronic Arts	Nintendo DS	http://www.ea.com/1/service-updates
MySims SkyHeroes	Multiplayer	Electronic Arts	Wii, DS	http://www.ea.com/1/service-updates
NASCAR Sim Racing	Multiplayer	Electronic Arts	PC	http://www.ea.com/1/service-updates
NASCAR Thunder 2003	Multiplayer	Electronic Arts	PC	http://www.ea.com/1/service-updates
NASCAR Thunder 2004	Multiplayer	Electronic Arts	PC	http://www.ea.com/1/service-updates
NBA 2K10	Online Services	2K	Wii	http://support.2k.com/hc/en-us/articles/201967707-2K-Online-Server-Migration-from-GameSpy-Technology
NBA 2K13	Multiplayer	2K	PS3	http://www.thesixthaxis.com/2014/02/28/nba-2k13-online-servers-being-shut-down-at-the-end-of-march/
Need for Speed: Hot Pursuit 2	Multiplayer	Electronic Arts	PC	http://www.ea.com/1/service-updates
Need for Speed: ProStreet	Multiplayer	Electronic Arts	Nintendo DS	http://www.ea.com/1/service-updates
Need for Speed: Undercover	Multiplayer	Electronic Arts	Nintendo DS	http://www.ea.com/1/service-updates
Neverwinter Nights 2	Multiplayer	Electronic Arts	PC and Mac	http://www.ea.com/1/service-updates
Neverwinter Nights	Multiplayer	Electronic Arts	PC, Mac and Linux	http://www.ea.com/1/service-updates

NHL 2K10	Online Services	2K	Wii	http://support.2k.com/hc/en-us/articles/201967707-2K-Online-Server-Migration-from-GameSpy-Technology
Number Battle	Multiplayer	Nintendo	Nintendo DS	https://www.nintendo.com/whatsnew/detail/vyWpoM6CBIe6FjW8NIY7bvzOrgBURhzw
Personal Trainer: Walking	Multiplayer	Nintendo	Nintendo DS	https://www.nintendo.com/whatsnew/detail/vyWpoM6CBIe6FjW8NIY7bvzOrgBURhzw
Picross 3D	Multiplayer	Nintendo	Nintendo DS	https://www.nintendo.com/whatsnew/detail/vyWpoM6CBIe6FjW8NIY7bvzOrgBURhzw
Picross DS	Multiplayer	Nintendo	Nintendo DS	https://www.nintendo.com/whatsnew/detail/vyWpoM6CBIe6FjW8NIY7bvzOrgBURhzw
Planet Puzzle League	Multiplayer	Nintendo	Nintendo DS	https://www.nintendo.com/whatsnew/detail/vyWpoM6CBIe6FjW8NIY7bvzOrgBURhzw
Plants vs. Zombies™ Adventures	Multiplayer	Electronic Arts		http://www.ea.com/1/service-updates
Pokémon Battle Revolution	Multiplayer	Nintendo	Nintendo Wii	https://www.nintendo.com/whatsnew/detail/vyWpoM6CBIe6FjW8NIY7bvzOrgBURhzw
Pokémon Black Version	Multiplayer	Nintendo	Nintendo DS	https://www.nintendo.com/whatsnew/detail/vyWpoM6CBIe6FjW8NIY7bvzOrgBURhzw
Pokémon Black Version 2	Multiplayer	Nintendo	Nintendo DS	https://www.nintendo.com/whatsnew/detail/vyWpoM6CBIe6FjW8NIY7bvzOrgBURhzw
Pokémon Diamond Version	Multiplayer	Nintendo	Nintendo DS	https://www.nintendo.com/whatsnew/detail/vyWpoM6CBIe6FjW8NIY7bvzOrgBURhzw
Pokémon HeartGold Version	Multiplayer	Nintendo	Nintendo DS	https://www.nintendo.com/whatsnew/detail/vyWpoM6CBIe6FjW8NIY7bvzOrgBURhzw

Pokémon Mystery Dungeon: Explorers of Darkness	Multiplayer	Nintendo	Nintendo DS	https://www.nintendo.com/whatsnew/detail/vyWpoM6CBIe6FjW8NIY7bvzOrgBURhzw
Pokémon Mystery Dungeon: Explorers of Sky	Multiplayer	Nintendo	Nintendo DS	https://www.nintendo.com/whatsnew/detail/vyWpoM6CBIe6FjW8NIY7bvzOrgBURhzw
Pokémon Mystery Dungeon: Explorers of Time	Multiplayer	Nintendo	Nintendo DS	https://www.nintendo.com/whatsnew/detail/vyWpoM6CBIe6FjW8NIY7bvzOrgBURhzw
Pokémon Pearl Version	Multiplayer	Nintendo	Nintendo DS	https://www.nintendo.com/whatsnew/detail/vyWpoM6CBIe6FjW8NIY7bvzOrgBURhzw
Pokémon Platinum Version	Multiplayer	Nintendo	Nintendo DS	https://www.nintendo.com/whatsnew/detail/vyWpoM6CBIe6FjW8NIY7bvzOrgBURhzw
Pokémon Ranger: Guardian Signs	Multiplayer	Nintendo	Nintendo DS	https://www.nintendo.com/whatsnew/detail/vyWpoM6CBIe6FjW8NIY7bvzOrgBURhzw
Pokémon Ranger: Shadows of Almia	Multiplayer	Nintendo	Nintendo DS	https://www.nintendo.com/whatsnew/detail/vyWpoM6CBIe6FjW8NIY7bvzOrgBURhzw
Pokémon SoulSilver Version	Multiplayer	Nintendo	Nintendo DS	https://www.nintendo.com/whatsnew/detail/vyWpoM6CBIe6FjW8NIY7bvzOrgBURhzw
Pokémon White Version	Multiplayer	Nintendo	Nintendo DS	https://www.nintendo.com/whatsnew/detail/vyWpoM6CBIe6FjW8NIY7bvzOrgBURhzw
Pokémon White Version 2	Multiplayer	Nintendo	Nintendo DS	https://www.nintendo.com/whatsnew/detail/vyWpoM6CBIe6FjW8NIY7bvzOrgBURhzw
Pro Evolution Soccer 2012	Multiplayer	Konami	PS3, Windows, PS2 PSP, Wii	http://www.onlyproevolutions.com/2014/01/konami-shut-down-pes-2012-servers.html

Professor Layton and the Curious Village	Multiplayer	Nintendo	Nintendo DS	https://www.nintendo.com/whatsnew/detail/vyWpoM6CBIe6FjW8NIY7bvzOrgBURhzw
Professor Layton and the Diabolical Box	Multiplayer	Nintendo	Nintendo DS	https://www.nintendo.com/whatsnew/detail/vyWpoM6CBIe6FjW8NIY7bvzOrgBURhzw
Professor Layton and the Last Specter	Multiplayer	Nintendo	Nintendo DS	https://www.nintendo.com/whatsnew/detail/vyWpoM6CBIe6FjW8NIY7bvzOrgBURhzw
Professor Layton and the Unwound Future	Multiplayer	Nintendo	Nintendo DS	https://www.nintendo.com/whatsnew/detail/vyWpoM6CBIe6FjW8NIY7bvzOrgBURhzw
Resistance 2	Multiplayer	Sony Computer Enteratinament	PS3	http://www.gamespot.com/articles/gran-turismo-5-s-pre-online-shutdown-event-unlocks-gran-turismo-6-cars/1100-6419331/
Resistance 3	Multiplayer	Sony Computer Enteratinament	PS3	http://www.gamespot.com/articles/gran-turismo-5-s-pre-online-shutdown-event-unlocks-gran-turismo-6-cars/1100-6419331/
Resistance: Fall of Man	Multiplayer	Sony Computer Enteratinament	PS3	http://www.gamespot.com/articles/gran-turismo-5-s-pre-online-shutdown-event-unlocks-gran-turismo-6-cars/1100-6419331/
Ridge Racer: Driftopia	All Play	Bandai Namco	PS3	http://www.eurogamer.net/articles/2014-06-19-bandai-namco-to-shut-down-f2p-ridge-racer-driftopia-servers
Rune	Online Services	2K	PC	http://support.2k.com/hc/en-us/articles/201967707-2K-Online-Server-Migration-from-GameSpy-Technology
Saints Row 2	Multiplayer	THQ	PC	http://saintsrow.com/community/go/thread/view/136773/30236103/Gamespy_servers_going_down,_will_Co-Op_be_gone_from_SR2?post_num=2#538733051

Samurai Warriors 3	Multiplayer	Nintendo	Nintendo Wii	https://www.nintendo.com/whatsnew/detail/vyWpoM6CBIe6FjW8NIY7bvzOrgBURhzw
Shaun White Skateboarding	Multiplayer	Ubisoft	PS3, XBox360	https://support.ubi.com/en-US/FAQ/35/2569/xbox-360-multiplayer-availability/kA030000000egiwCAA
Sid Meier's Civilization Revolution	Online Services	2K	DS	http://support.2k.com/hc/en-us/articles/201967707-2K-Online-Server-Migration-from-GameSpy-Technology
SimCity Creator for Wii	Multiplayer	Electronic Arts	Wii	http://www.ea.com/1/service-updates
Sin & Punishment: Star Successor	Multiplayer	Nintendo	Nintendo Wii	https://www.nintendo.com/whatsnew/detail/vyWpoM6CBIe6FjW8NIY7bvzOrgBURhzw
Skate It	Multiplayer	Electronic Arts	Nintendo DS	http://www.ea.com/1/service-updates
Sneezies	Multiplayer	Electronic Arts	Wii	http://www.ea.com/1/service-updates
SOCOM 4: U.S. Navy SEALs	Multiplayer	Sony Computer Enteratinament	PS3	http://www.ign.com/articles/2013/07/16/ps3-servers-for-mag-and-socom-4-being-shut-off
SOCOM: Confrontation	All Play	Sony Computer Enteratinament	PS3	http://www.gamespot.com/articles/gran-turismo-5-s-pre-online-shutdown-event-unlocks-gran-turismo-6-cars/1100-6419331/
Splinter Cell: Double Agent	Multiplayer	Ubisoft	Xbox 360	https://support.ubi.com/en-US/FAQ/35/2059/xbox-360-multiplayer-availability/kA030000000egiwCAA
Spore Creatures	Multiplayer	Electronic Arts	Nintendo DS	http://www.ea.com/1/service-updates
Spore Hero Arena	Multiplayer	Electronic Arts	Nintendo DS	http://www.ea.com/1/service-updates
Star Fox Command	Multiplayer	Nintendo	Nintendo DS	https://www.nintendo.com/whatsnew/detail/vyWpoM6CBIe6FjW8NIY7bvzOrgBURhzw
Star Wars Republic Commando	Multiplayer	Electronic Arts	PC	http://steamcommunity.com/app/6000#scrollTop=0
Star Wars: Battlefront	Multiplayer	Electronic Arts	PC, PS2	http://www.ea.com/1/service-updates
Star Wars: Battlefront II	Multiplayer	Electronic Arts	PC, PS2	http://www.ea.com/1/service-updates

Stronghold 2	Online Services	2K	PC	http://support.2k.com/hc/en-us/articles/201967707-2K-Online-Server-Migration-from-GameSpy-Technology
Stronghold Legends	Online Services	2K	PC	http://support.2k.com/hc/en-us/articles/201967707-2K-Online-Server-Migration-from-GameSpy-Technology
Style Savvy	Multiplayer	Nintendo	Nintendo DS	https://www.nintendo.com/whatsnew/detail/vyWpoM6CBIe6FjW8NIY7bvzOrgBURhzw
Super Smash Brothers Brawl	Multiplayer	Nintendo	Nintendo Wii	https://www.nintendo.com/whatsnew/detail/vyWpoM6CBIe6FjW8NIY7bvzOrgBURhzw
Supreme Hero City	Multiplayer	Electronic Arts		http://www.ea.com/1/service-updates
Supreme Heroes	Multiplayer	Electronic Arts		http://www.ea.com/1/service-updates
Take On Helicopters	Multiplayer			http://forums.bistudio.com/showthread.php?175463-End-of-Gamespy
Tenchu: Dark Secret	Multiplayer	Nintendo	Nintendo DS	https://www.nintendo.com/whatsnew/detail/vyWpoM6CBIe6FjW8NIY7bvzOrgBURhzw
Tetris DS	Multiplayer	Nintendo	Nintendo DS	https://www.nintendo.com/whatsnew/detail/vyWpoM6CBIe6FjW8NIY7bvzOrgBURhzw
The Beatles: Rock Band	Multiplayer	Electronic Arts	Wii	http://www.ea.com/1/service-updates
Tiger Woods PGA Tour 08 for Nintendo DS	Multiplayer	Electronic Arts	Nintendo DS	http://www.ea.com/1/service-updates
Tiger Woods PGA TOUR 12	Multiplayer	Electronic Arts	iOS, Google Play, Amazon	http://www.ea.com/1/service-updates
Top Spin	Online Services	2K	PS2, PC	http://support.2k.com/hc/en-us/articles/201967707-2K-Online-Server-Migration-from-GameSpy-Technology
Top Spin 2	Online Services	2K	PC, DS	http://support.2k.com/hc/en-us/articles/201967707-2K-Online-Server-Migration-from-GameSpy-Technology
Ultima Forever	Multiplayer	Electronic Arts		http://www.ea.com/1/service-updates

Vietcong	Online Services	2K	PC	http://support.2k.com/hc/en-us/articles/201967707-2K-Online-Server-Migration-from-GameSpy-Technology
Vietcong 2	Online Services	2K	PC	http://support.2k.com/hc/en-us/articles/201967707-2K-Online-Server-Migration-from-GameSpy-Technology
Vietcong 2 Demo	Online Services	2K	PC	http://support.2k.com/hc/en-us/articles/201967707-2K-Online-Server-Migration-from-GameSpy-Technology
Vietcong Demo	Online Services	2K	PC	http://support.2k.com/hc/en-us/articles/201967707-2K-Online-Server-Migration-from-GameSpy-Technology
Vietcong Fist Alpha	Online Services	2K	PC	http://support.2k.com/hc/en-us/articles/201967707-2K-Online-Server-Migration-from-GameSpy-Technology
WarioWare DIY	Multiplayer	Nintendo	Nintendo DS	https://www.nintendo.com/whatsnew/detail/vyWpoM6CBIe6FjW8NIY7bvzOrgBURhzw
Wii Music*	Multiplayer	Nintendo	Nintendo Wii	https://www.nintendo.com/whatsnew/detail/vyWpoM6CBIe6FjW8NIY7bvzOrgBURhzw
World Series of YAHTZEE	Multiplayer	Electronic Arts	iOS	http://www.ea.com/1/service-updates