

UNITED STATES PATENT AND TRADEMARK OFFICE

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BEFORE THE PATENT TRIAL AND APPEAL BOARD

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GOOGLE LLC,  
Petitioner,

v.

LS CLOUD STORAGE TECHNOLOGIES LLC,  
Patent Owner.

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IPR2023-00120  
Patent 10,154,092 B2

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Before LARRY J. HUME, MINN CHUNG, and AMBER L. HAGY,  
*Administrative Patent Judges.*

HUME, *Administrative Patent Judge.*

DECISION  
Granting Institution of *Inter Partes* Review  
*35 U.S.C. § 314*

## I. INTRODUCTION

Google LLC (“Petitioner”)<sup>1</sup> filed a Petition (Paper 2, “Pet.”) requesting *inter partes* review (“IPR”) of all claims 1–24 (“the challenged claims”) of U.S. Patent No. 10,154,092 B2 (Ex. 1001, “the ’092 patent”). LS Cloud Storage Technologies LLC (“Patent Owner”) timely filed a Preliminary Response. Paper 6 (“Prelim. Resp.”).

An *inter partes* review may not be instituted unless “the information presented in the petition . . . and any response . . . shows that there is a reasonable likelihood that the petitioner would prevail with respect to at least one of the claims challenged in the petition.” 35 U.S.C. § 314(a); *see* 37 C.F.R. § 42.4.

Having reviewed the parties’ papers and the evidence of record, we determine that Petitioner has shown a reasonable likelihood it will prevail in establishing the unpatentability of at least one challenged claim. Accordingly, we institute an *inter partes* review of all challenged claims 1 through 24 of the ’092 patent, based on the grounds raised in the Petition.

## II. BACKGROUND

### A. Related Matters

The parties indicate that the ’092 patent has been asserted in various district court lawsuits, including: *LS Cloud Storage Technologies, LLC v.*

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<sup>1</sup> Petitioner identifies its parent entity as XXVI Holdings Inc., which is a subsidiary of Alphabet Inc. Petitioner states that neither XXVI Holdings Inc. nor Alphabet Inc. are real parties-in-interest to this proceeding. Pet. 2, n.1.

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*Google LLC*, No. 6:22-cv-00318 (W.D. Tex. 2022). Pet. 2; Paper 4 (Patent Owner Mandatory Notices), 2.<sup>2</sup>

After filing of the Petition and Patent Owner’s Response, the ’092 patent has become the subject of one other petition for *inter partes* review and Motion for Joinder, i.e., IPR2023-00733 (filed by Cisco Systems, Inc., Microsoft Corporation, Amazon.Com, Inc., Amazon Web Services, Inc., and Amazon.Com Services LLC). The Decision whether to institute *inter partes* review in IPR2023-00733 and effect joinder with this proceeding will be made in due course.

### *B. The ’092 Patent*

The ’092 patent is titled “Data Sharing Using Distributed Cache in a Network of Heterogeneous Computers.” Ex. 1001, code (54). The ’092 patent issued December 11, 2018, from U.S. Patent Application No. 14/997,327, filed January 15, 2016, claiming benefit as a continuation application under 35 U.S.C. § 120 to a series of applications, and ultimately claiming benefit as a divisional application under 35 U.S.C. § 121 of U.S. Patent Application No. 09/236,409 filed on January 22, 1999, and issued on April 15, 2003. *Id.* at codes (21), (22), (45), (60). We note the ’092 patent term appears to have expired on September 16, 2019.

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<sup>2</sup> In addition, Patent Owner has asserted the ’092 patent against other parties, i.e., *LS Cloud Storage Technologies, LLC v. Amazon.com, Inc. et al.*, 6:22-cv-00316 (W.D. Tex. 2022); *LS Cloud Storage Technologies, LLC v. Cisco Systems, Inc.*, 6:22-cv-00319 (W.D. Tex. 2022) (dismissed); *LS Cloud Storage Technologies, LLC v. Microsoft Corporation*, 6:22-cv-00321 (W.D. Tex. 2022); and *LS Cloud Storage Technologies, LLC v. Cisco Systems, Inc.*, 6:22-cv-00845 (W.D. Tex. 2022). See Paper 4, 2; see also Pet. 2.

The '092 patent describes a network of PCs that includes an input/output (I/O) channel adapter and network adapter, configured for management of a distributed cache memory stored in the plurality of PCs interconnected by the network. *See* Ex. 1001, code (57) (Abstr.). According to the '092 patent, the use of standard PCs serves to reduce the cost of the data storage system, and using networked PCs permits building large, high-performance data storage systems. *Id.* The '092 patent further describes:

This invention relates generally to the field of cached data storage systems and more particularly to a data storage system that permits independent access from local hosts connected via I/O channels and independent access from remote hosts and remote storage systems connected via network links. A network of PCs permits building a high-performance, scalable, data storage system using off-the-shelf components at reduced cost. A configuration manager ensures consistency of data stored in the distributed cache.

*Id.* at 1:18–26.

As background, the '092 patent describes the prior art as follows:

A typical data processing system generally involves a cached data storage system that connects to local host computers via I/O channels or remote host computers via network links. The purpose of the data storage system is to improve the performance of applications running on the host computer by offloading I/O processing from the host to the data storage system. The purpose of the cache memory in a data storage system is to further improve the performance of the applications by temporarily storing data buffers in the cache so that the references to those buffers can be resolved efficiently as “cache hits”. Reading data from a cache is an order of magnitude faster than reading data from a back end storage device such as a disk. Writing data to a cache is also an order of magnitude faster than writing to a disk. All writes are cache hits because data is simply copied into cache buffers that are later flushed to disks.

*Id.* at 1:30–45. The '092 patent also describes the need for improvements in distributed data storage systems at the time of the invention:

There is a growing demand for distributed data storage systems. In response to this demand some prior art systems have evolved into complex assemblies of two systems, one proprietary a data storage system and the other an open networking server. One such system is described in a white paper on a company web site on Internet. The industry white paper, EMC Data Manager: A high-performance, centralized open system backup/restore solution for LAN-based and Symmetrix resident data, describes two different systems, one for network attached hosts and second for channel attached hosts. The two systems are needed because of the lack of generic networking support. In related products such as Celerra File Server, product data sheets suggest using data movers for copying data between LAN-based open system storage and channel attached storage system.

However, the above systems are built from two systems, one for handling I/O channels, and another for handling open networks. Two systems are very expensive even in minimal configuration that must include two systems.

*Id.* at 2:42–60.

The background of the '092 patent concludes by stating that there is a need “to provide a high-performance data storage system that is assembled out of standard modules, using off-the-shelf hardware components and a standard general-purpose operating system that supports standard network software and protocols.” *Id.* at 3:30–34. Further, the background of the '092 patent identifies a need “to provide a cached data storage system that permits independent data accesses from I/O channel attached local hosts, network attached remote hosts, and network-attached remote data storage systems.” *Id.* at 3:35–38.

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