

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

HEWLETT PACKARD ENTERPRISE COMPANY,
Petitioner,

v.

INTELLECTUAL VENTURES II LLC,
Patent Owner.

IPR2022-00211
Patent 7,783,788 B1

Before KEN B. BARRETT, NABEEL U. KHAN, and
STEPHEN E. BELISLE, *Administrative Patent Judges*.

BARRETT, *Administrative Patent Judge*.

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

I. INTRODUCTION

A. Background and Summary

Hewlett Packard Enterprise Company (“Petitioner”)¹ filed a Petition requesting *inter partes* review of U.S. Patent No. 7,783,788 B1 (“the ’788 patent,” Ex. 1001). Paper 2 (“Pet.”). The Petition challenges the patentability of claims 1–4, 6, and 7 of the ’788 patent. Intellectual Ventures II LLC (“Patent Owner”)² filed a Preliminary Response to the Petition. Paper 11 (“Prelim. Resp.”).

An *inter partes* review may not be instituted “unless . . . the information presented in the petition . . . shows that there is a reasonable likelihood that the petitioner would prevail with respect to at least 1 of the claims challenged in the petition.” 35 U.S.C. § 314(a) (2018). Having considered the arguments and evidence presented by Petitioner and Patent Owner, we determine that Petitioner has demonstrated a reasonable likelihood of prevailing on at least one of the challenged claims of the ’788 patent. Accordingly, we institute an *inter partes* review as to all the challenged claims of the ’788 patent on all the grounds of unpatentability set forth in the Petition.

¹ Petitioner identifies Hewlett Packard Enterprise Company as the real party-in-interest. Pet. 1.

² Patent Owner identifies Intellectual Ventures II LLC as the real party-in-interest. Paper 6, 1.

B. Related Proceedings

Both parties identify, as a matter involving or related to the '788 patent, *Intellectual Ventures I LLC et al v. Hewlett Packard Enterprise Co.*, Case No. 6:21-cv-00226 (W.D. Tex.)³. Pet. 1; Paper 6, 1.

C. The '788 Patent

The '788 patent “relates to computing platforms and, more particularly, to virtualization of input/output (I/O) subsystems that facilitate transparent sharing of I/O subsystems among multiple processing systems.” Ex. 1001, 1:11–14. The '788 patent states that “a need in the art exists for more flexible server infrastructures where additional I/O resources can be deployed as needed to support varying requirements.” *Id.* at 1:64–66.

According to the '788 patent, to address this need it describes:

the Virtual Compute Environment (VCE)[, which] is a unique hardware and software virtualization solution that consolidates current data center resources to utilize them more efficiently and cost effectively. With virtualization, a physical computer or server no longer needs to be provisioned as a static resource dedicated to a particular application (or set of applications). Instead, a physical machine can be subdivided into its component parts—processor, memory, storage, and network resources—and these parts can be flexibly arranged by virtualization functionality to create purely logical combinations of resources. In some implementations, the virtualization of I/O access . . . allows for enhanced provisioning and control of I/O bandwidth and I/O subsystem access among a plurality of application servers.

Id. at 2:23–37.

³ Patent Owner indicates that, on November 30, 2021, the district court case was ordered to be transferred to the Northern District of California. Paper 6, 1

Figure 1 of the '788 patent is reproduced below.

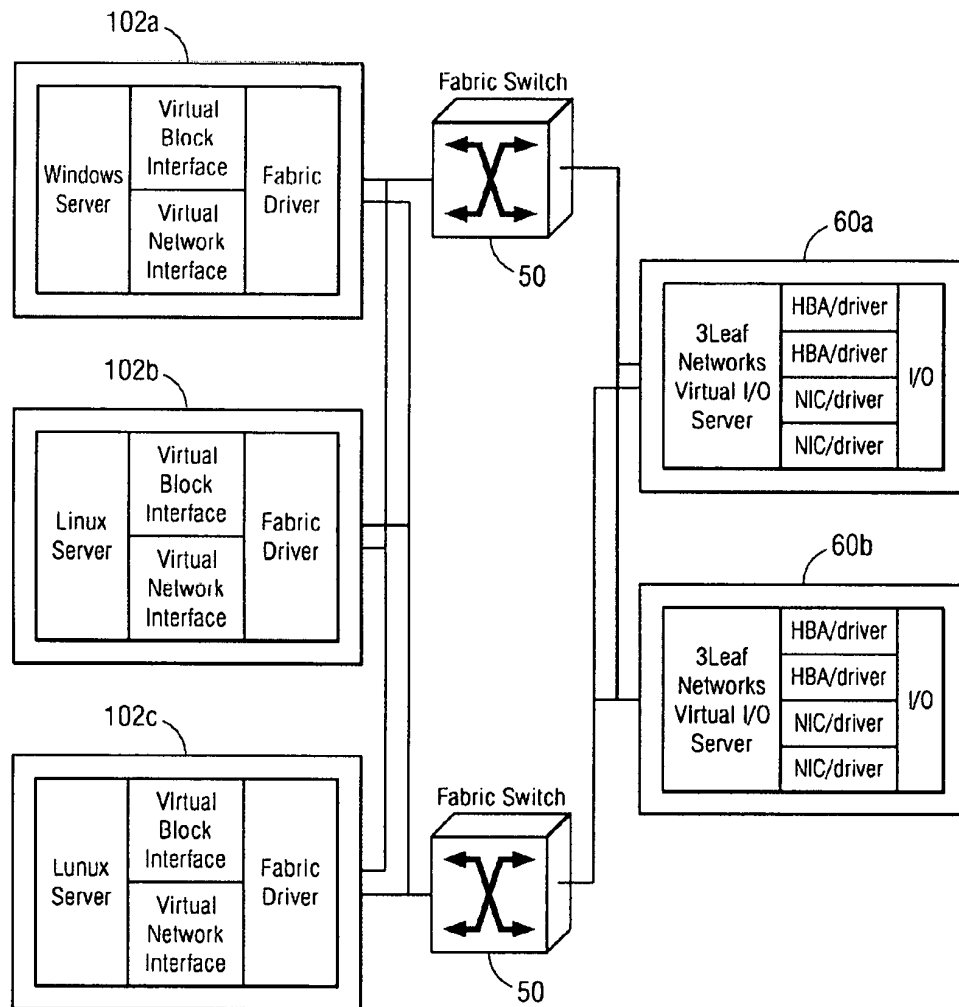


Fig. 1

Figure 1 “is a functional block diagram illustrating an I/O switch fabric interconnecting application servers and virtual I/O servers.” *Id.* at 2:43–45. Application servers 102 are served by two virtual I/O servers 60, with switches 50 implementing an I/O switch fabric interconnecting the application servers and the virtual I/O servers. *Id.* at 3:8–17. “The virtual I/O server 60 provides the storage and external networking needs of the application servers 102 connected to the I/O switch fabric, allowing

transparent, shared [Host Bus Adapter (HBA) and Network Interface Controller (NIC)] access through the multiplexing and associated modules of the virtual I/O server.” *Id.* at 3:18–24. Implementations also may be configured with I/O subsystems other than storage and networking systems. *Id.* at 3:22–24. “[A]pplication servers 102 access these devices through virtual device interfaces,” which operate in connection “with various standard protocol stack modules, intercepting I/O traffic at the device level and forwarding the I/O traffic to the virtual I/O server.” *Id.* at 3:25–29.

D. Illustrative Claim

Of the challenged claims of the ’788 patent, claim 1 is an independent claim. The remaining challenged claims depend directly from claim 1. Claim 1, reproduced below with Petitioner’s bracketed annotations inserted, is illustrative.

1. [1-PRE] An apparatus, comprising
 - [1a] a memory;
 - [1b] one or more processors;
 - [1c] an input/output (I/O) fabric interface;
 - [1d] an I/O subsystem physical interface;
 - [1e] I/O subsystem device protocol stack logic operative to control data transfer with one or more peripheral systems over the I/O subsystem physical interface; and
 - [1f-1] virtualization logic encoded in one or more tangible media for execution and when executed operable to cause the one or more processors to:
 - [1f-2] establish one or more persistent control connections to virtual I/O peripheral subsystem interface driver modules of one or more application servers;
 - [1f-3] transmit I/O peripheral subsystem configurations to the one or more application servers



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