

UNITED STATES PATENT AND TRADEMARK OFFICE

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BEFORE THE PATENT TRIAL AND APPEAL BOARD

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CISCO SYSTEMS, INC., QUANTUM CORPORATION,  
and ORACLE CORPORATION,  
Petitioners,

v.

CROSSROADS SYSTEMS, INC.,  
Patent Owner.

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Case IPR2014-01463<sup>1</sup>  
Patent 7,934,041 B2

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Before NEIL T. POWELL, KRISTINA M. KALAN, J. JOHN LEE, and  
KEVIN W. CHERRY, *Administrative Patent Judges*.

POWELL, *Administrative Patent Judge*.

FINAL WRITTEN DECISION  
*35 U.S.C. § 318(a) and 37 C.F.R. § 42.73*

I. INTRODUCTION

We have jurisdiction to hear this *inter partes* review under 35 U.S.C. § 6(c). This Final Written Decision is issued pursuant to 35 U.S.C. § 318(a) and 37 C.F.R. § 42.73. For the reasons discussed below, we determine that

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<sup>1</sup> Case IPR2015-00854 has been joined with this proceeding.

Petitioners have shown by a preponderance of the evidence that claims 1–53 of U.S. Patent No. 7,934,041 B2 (Ex. 1001, “the ’041 patent”) are *unpatentable*.

A. *Procedural History*

Cisco Systems, Inc. and Quantum Corporation filed a Petition (Paper 3, “Pet.”) requesting institution of an *inter partes* review of claims 1–53 of the ’041 patent. On December 19, 2014, Crossroads Systems, Inc. (“Patent Owner”) filed a Preliminary Response (Paper 7, “Pelim. Resp.”). In a Decision to Institute (Paper 9, “Dec. Inst.”) issued March 17, 2015, we instituted an *inter partes* review of claims 1–53 on the following grounds of unpatentability:

1. Claims 1–14, 16–33, 35–50, and 53 under 35 U.S.C. § 103(a) for obviousness over CRD-5500 Manual<sup>2</sup> and HP Journal<sup>3</sup>; and
2. Claims 15, 34, 51, and 52 under 35 U.S.C. § 103(a) for obviousness over CRD-5500 Manual, HP Journal, and Fibre Channel Standard<sup>4</sup>.

After institution of trial, Patent Owner filed a Patent Owner Response (Paper 19, “PO Resp.”) and Petitioners filed a Reply (Paper 32, “Pet. Reply”). On March 6, 2015, in IPR2015-00854, Oracle Corporation filed a

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<sup>2</sup> CMD Technology, Inc., CRD-5500 SCSI RAID Controller User’s Manual (1996) (Ex. 1004).

<sup>3</sup> Petitioners cite the following articles in Exhibit 1006 as one reference: Meryem Primmer, *An Introduction to Fibre Channel*, 47 HEWLETT-PACKARD J. 94–98 (1996) and Judith A. Smith & Meryem Primmer, *Tachyon: A Gigabit Fibre Channel Protocol Chip*, 47 HEWLETT-PACKARD J. 99–112 (Oct. 1996) (Ex. 1006).

<sup>4</sup> American National Standards Institute, Inc., *Fibre Channel Physical and Signaling Interface (FC-PH) X3.230* (June 1, 1994) (“Fibre Channel Standard”) (Ex. 1007).

IPR2014-01463  
Patent 7,934,041 B2

Petition requesting *inter partes* review of claims 1–53 of the '041 patent, along with a motion for joinder. *Oracle Corp. v. Crossroads Sys., Inc.*, Case IPR2016-00854, Papers 1 & 3 (PTAB). On September 15, 2015, we granted Oracle Corporation's motion for joinder and joined IPR2015-00854 to this proceeding. Case IPR2015-00854, Paper 14. Oral hearing was held on October 30, 2015.<sup>5</sup>

Petitioners submitted the Declaration of Andrew Hospodor, Ph.D., dated September 5, 2014 (Ex. 1003, "Hospodor Declaration"), in support of their Petition.

Patent Owner submitted the Declaration of Dr. John Levy, Ph.D., dated May 26, 2015 (Ex. 2027, "Levy Declaration"). Patent Owner also submitted other declarations in support of its contentions of secondary considerations of non-obviousness. *See* Ex. 2039; Ex. 2043.

Patent Owner filed a Motion to Exclude (Paper 37) and Reply in support of its Motion to Exclude (Paper 43). Petitioners filed an Opposition to Patent Owner's Motion to Exclude (Paper 41).

### *B. Related Proceedings*

The '041 patent is the subject of multiple district court proceedings. Pet. 1; Paper 6, 2–3. The '041 patent belongs to a family of patents that are the subject of multiple *inter partes* review petitions, including IPR2014-01197, IPR2014-01207, IPR2014-01209, IPR2014-01226, IPR2014-01544, IPR2015-00822, and IPR2015-00852.

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<sup>5</sup> A transcript of the oral hearing ("Tr.") is included in the record as Paper 48.

## II. DISCUSSION

### A. The '041 Patent

The '041 patent relates to a storage router and method for providing virtual local storage on remote Small Computer System Interface (“SCSI”) storage devices to Fiber Channel (“FC”) devices. Ex. 1001, 1:44–47. SCSI is a storage transport medium that provides for a “relatively small number of devices to be attached over relatively short distances.” *Id.* at 1:51–54. FC is a high speed serial interconnect that provides “capability to attach a large number of high speed devices to a common storage transport medium over large distances.” *Id.* at 1:56–59. Computing devices can access local storage through native low level, block protocols and can access storage on a remote network server through network interconnects. *Id.* at 1:65–2:10. To access the storage on the remote network server, the computing device must translate its file system protocols into network protocols, and the remote network server must translate network protocols to low level requests. *Id.* at 2:12–20. A storage router can interconnect the SCSI storage transport medium and the FC high speed serial interconnect to provide devices on either medium access to devices on the other medium so that no network server is involved. *Id.* at 3:58–4:1.

Figure 4 of the '041 patent is reproduced below:

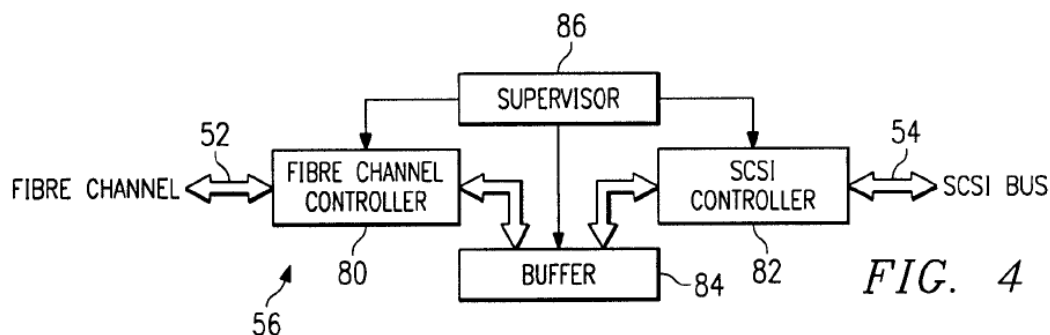


Figure 4 is a block diagram of an embodiment of a storage router. *Id.* at 3:22–23, 5:34–35. Storage router 56 can comprise FC controller 80 that interfaces with FC 52 and SCSI controller 82 that interfaces with SCSI bus 54. Buffer 84 connects to FC controller 80 and SCSI controller 82, and provides memory work space. *Id.* at 5:35–37. Supervisor unit 86 connects to FC controller 80, SCSI controller 82, and buffer 84. *Id.* at 5:37–39. Supervisor unit 86 controls operation of storage router 56 and handles mapping and security access for requests between FC 52 and SCSI bus 54. *Id.* at 5:39–44.

Claims 1, 20, and 37 are the independent claims at issue in this trial, and claim 1 is reproduced below:

1. A storage router for providing virtual local storage on remote storage devices, comprising:
  - a first controller operable to interface with a first transport medium, wherein the first medium is a serial transport media; and
  - a processing device coupled to the first controller, wherein the processing device is configured to:
    - maintain a map to allocate storage space on the remote storage devices to devices connected to the first transport medium by associating representations of the devices connected to the first transport medium with representations of storage space on the remote storage devices, wherein each representation of a device connected to the first transport medium is associated with one or more representations of storage space on the remote storage devices;
    - control access from the devices connected to the first transport medium to the storage space on the remote storage devices in accordance with the map; and

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