REEXAM 6

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(Also referred to as FORM PTO-1465)

# REQUEST FOR *EX PARTE* REEXAMINATION TRANSMITTAL FORM

66548 U.S. PTO
90007125
07/19/04

Address to:
**Mail Stop *Ex Parte* Reexam**
**Commissioner for Patents**
**P.O. Box 1450**
**Alexandria, VA 22313-1450**

66548 U.S. PTO
07/19/04

**Attorney Docket No.: I006-8910**

**Date: July 19, 2004**

1. [X] This is a request for *ex parte* reexamination pursuant to 37 CFR 1.510 of patent number 6,425,035 issued July 23, 2002. The request is made by:

   [ ] patent owner. [X] third party requester.

2. [X] The name and address of the person requesting reexamination is:

   Natu J. Patel, Esq., Wang & Patel PC
   1301 Dove Street, Suite 1050
   Newport Beach, CA 92660

3. [X] a. A check in the amount of $2520.00 is enclosed to cover the reexamination fee, 37 CFR 1.20(c)(1);

   [ ] b. The Director is hereby authorized to charge the fee as set forth in 37 CFR 1.20(c)(1) to Deposit Account No. _____ (submit duplicate of this form for fee processing); or

   [ ] c. Payment by credit card. Form PTO-2038 is attached.

4. [X] Any refund should be made by [X] check or [ ] credit to Deposit Account No._____. 37 CFR 1.26(c). If payment is made by credit card, refund must be to credit card account.

5. [X] A copy of the patent to be reexamined having a double column format on one side of a separate paper is enclosed. 37 CFR 1.510(b)(4)

6. [ ] CD-ROM or CD-R in duplicate, Computer Program (Appendix) or large table

7. [ ] Nucleotide and/or Amino Acid Sequence Submission
   *If applicable, all of the following are necessary.*

   a. [ ] Computer Readable Form (CRF)
   b. Specification Sequence Listing on:

      i. [ ] CD-ROM (2 copies) or CD-R (2 copies); **or**
      ii. [ ] paper

   c. [ ] Statements verifying identity of above copies

8. [X] A copy of any disclaimer, certificate of correction or reexamination certificate issued in the patent is included.

9. [X] Reexamination of claim(s) 1 through 14 (all claims) is requested.

10. [X] A copy of every patent or printed publication relied upon is submitted herewith including a listing thereof on Form PTO-1449 or equivalent.

07/22/2004 MTWITTY 00000003 90007125
01 FC:1812 2520.00 OP

11. [ ] An English language translation of all necessary and pertinent non-English language patents and/or printed publications is included.



This collection of information is required by 37 CFR 1.510. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 2 hours to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Mail Stop *Ex Parte* Reexam, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

*If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.*

12. [X] The attached detailed request includes at least the following items:

a. A statement identifying each substantial new question of patentability based on prior patents and printed publications. 37 CFR 1.510(b)(1)
b. An identification of every claim for which reexamination is requested, and a detailed explanation of the pertinency and manner of applying the cited art to every claim for which reexamination is requested. 37 CFR 1.510(b)(2)

13. [ ] A proposed amendment is included (only where the patent owner is the requester). 37 CFR 1.510(e)

14. [X] a. It is certified that a copy of this request (if filed by other than the patent owner) has been served in its entirety on the patent owner as provided in 37 CFR 1.33(c).
The name and address of the party served and the date of service are:

_Gray Cary Ware & Freidenrich, LLP, Atn: Tracy McCreight, Esq.,_____

_1221 S. MoPac Expressway, Suite 400_____

_Austin, TX 78746-6875_____

Date of Service: ___July 19, 2004_____; or

[ ] b. A duplicate copy is enclosed since service on patent owner was not possible.

15. Correspondence Address: Direct all communication about the reexamination to:

[X] Customer Number: **37819**

***OR***

| | | | | | |
|---|---|---|---|---|---|
| [ ] Firm or Individual Name | | | | | |
| Address (line 1) | | | | | |
| Address (line 2) | | | | | |
| City | | State | | Zip | |
| Country | | | | | |
| Telephone | | Fax | | | |

16. [X] The patent is currently the subject of the following concurrent proceeding(s):
[ ] a. Copending reissue Application No. _____.
[ ] b. Copending reexamination Control No. _____.
[ ] c. Copending Interference No. _____.
[X] d. Copending litigation styled:

__Crossroads Systems, Inc. v. Dot Hill Systems Corporation, U.S.D.C. for Western District of Texas,__

__ Case Number A-03-CV-754(SS)_____

**WARNING: Information on this form may become public. Credit card information should not be included on this form. Provide credit card information and authorization on PTO-2038.**

_____ **July 19, 2004**_____
*Authorized Signature* *Date*

__Natu J. Patel_____ ___39559_____ [ ] *For Patent Owner Requester*
*Typed/Printed Name* *Registration No., if applicable* [X] *For Third Party Requester*

**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**

| | | |
|---|---|---|
| **Inventor: Hoese, et al.**<br>**Title of Invention:**<br>**Storage router and method for providing virtual local storage**<br>**Issued: July 23, 2002**<br>**Patent No.: 6,425,035** | : | **REQUEST FOR EX PARTE REEXAMINATION** |

Mail Stop Ex Parte Reexam
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

**REQUEST FOR EX PARTE REEXAMINATION**

Dear Sir:

This is a Request for Ex Parte Reexamination of Claims 1 through 14 of the above identified United States Patent. It is believed that newly discovered prior art submitted herewith, which was not considered by the Patent Office during the prosecution of the above Patent, raises a substantial new question of Patentability with respect to Claims 1 through 14. Accordingly, reexamination under 35 U.S.C. §§ 302-307 pursuant to 37 C.F.R. § 1.510, et seq. is hereby respectfully requested.

In accordance with 37 C.F.R. § 1.510, the following is provided herein:

| | |
|---|---|
| 37 C.F.R. § 1.510(a) | Prior art cited under 37 C.F.R. § 1.501, infra.<br>Fee for ex parte reexamination as per 37 C.F.R. 1.20(c)(1), $2,520.00, included with petition. |

| | |
|---|---|
| 37 C.F.R. § 1.510(b)(1) | A statement indicating each substantial new question of Patentability based on prior Patents and printed publications, infra. |
| 37 C.F.R. § 1.510(b)(2) | An identification of every claim for which reexamination is requested, and a detailed explanation of the pertinency and manner of applying the cited prior art to every claim for which reexamination is requested, infra. |
| 37 C.F.R. § 1.510(b)(3) | A copy of every Patent or printed publication relied upon or referred to in paragraph (b)(1) and (2) of this section, with listing (Exhibit 1). |
| 37 C.F.R. § 1.510(b)(4) | A copy of the entire Patent including the front face, drawings, and specification/claims (in double column format) for which reexamination is requested, and a copy of any disclaimer, certificate of correction, or reexamination certificate issued in the Patent. (Exhibit 2). |
| 37 C.F.R. § 1.510(b)(4) | A certification that a copy of the request filed by a person other than the Patent owner has been served in its entirety on the Patent owner at the address as provided for in § 1.33(c). The name and address of the party served must be indicated. (Exhibit 3). |

## I. INTRODUCTION

This request is based upon numerous prior patents and printed publications, including 77 U.S. Patents and 6 printed articles, most of which were not previously considered by the Patent Office in granting the above-referenced patent. It is believed that Claims 1 through 14 of U.S. Patent No. 6,425,035 (the '035 Patent) are invalid:

1) pursuant to 35 U.S.C. §102 as being anticipated by the Maxstrat GEN5, StorageTek Iceberg, CMD CRD-5500 and Infortrend 3000 controller products;
2) under 35 U.S.C. §103 as being obvious;
    i) in light of the patentees' deposition and trial testimony that the invention amounts to nothing more than simply adding "access controls" to a prior art storage router and such a simple modification was obvious in light of a number of patents, products and motivations to make such a combination; and
    ii) because motivations to combine the prior art inevitably would lead one skilled in the art to arrive at the alleged invention embodied in the '035 Patent.



This request is served concurrently with a request for reexamination of U.S. Patent Nos. 5,941,972 (the '972 Patent), 6,421,753 (the '753 Patent), 6,425,036 (the '036 Patent), and 6,738,854 (the '854 Patent), collectively referred to as the "Related Patents." The '972 Patent was the parent of the Related Patents.

## II. BACKGROUND

The invention described and claimed in the '035 Patent is currently assigned to Crossroads Systems (Texas), Inc. ("Crossroads").

The '972 Patent was the parent of the Related Patents, and all five Patent specifications have identical figures and nearly identical written descriptions - the only differences can be found in the claims, and even those differences are minimal. The

differences between the claims of the '972 and '035 Patents concern the way in which the claimed router device is connected to devices. The '972 Patent specifies that the router connects to hosts using the Fibre Channel transport medium, and connects to storage devices using the SCSI transport medium. The '035 Patent specifies that the router connects to hosts using any first transport medium, and connects to storage devices using any second transport medium. Otherwise, the patent claim language is identical or nearly identical. A chart depicting the differences in the claims of the '972, '036, '035 and '854 Patents is included herein (Exhibit 4).

The '972 and '035 Patents are currently being litigated in the case of Crossroads Systems, Inc. v. Dot Hill Systems Corporation, Western District of Texas, Case Number A-03-CV-754(SS) ("*Crossroads v. Dot Hill*"). On June 26, 2004, Dot Hill submitted a Motion for Summary Judgment ("MSJ") to the Court, a copy of which is included herein. (Exhibit 5). The Motion requests a finding of invalidity based upon: 1) the '035 Patent being anticipated by, or rendered obvious in light of, prior art; and 2) the '972 Patent being obvious in light of prior art.

Specifically, the MSJ argument is based partially upon undisputed prior art in the form of the HSZ70 array controller designed and manufactured by Digital Equipment Corporation ("DEC") and related, published product manuals. Further, the MSJ contains three declarations from former DEC employees who were involved in the design and manufacture of the HSZ70 that clearly establish the date of conception, use, and publication of the manuals of the DEC HSZ70 as long before the earliest alleged conception dates for the '035 and '972 Patents. (See Exhibit 5).

The HSZ70 product was on sale before the issuance of the '972, '035 and Related Patents, yet the Patentees did not disclose this relevant prior art to the USPTO during the examination of the Patents. (See Exhibit 5). Even worse, Dot Hill's previous counsel gave to Crossroads' patent counsel copies of the HSZ70 manuals prior to the issuance of the '854 Patent, and yet the Patentees still did not disclose this relevant prior art to the USPTO during the examination of that patent. Dot Hill earnestly encourages the

examiner to review the attached copy of the MSJ and corresponding declarations, which have been filed with the Court, to evaluate the impact of the DEC HSZ70 product literature on the portfolio of Related Patents. (See Exhibit 5).

Further, inventors Hoese and Russell have at least six (6) pending applications that are continuations claiming priority based upon the '972 patent application filing date. The Application Numbers of the pending applications are 10/023786, 10/081082, 10/081110, 10/081114, 10/361283 and 10/658163. As each of these applications depends upon the '972 patent application, Dot Hill contends that each application suffers from the same critical infirmity as the '972 and '035 Patents. Dot Hill cannot pursue reexamination of the pending applications; nevertheless, Dot Hill respectfully requests that these applications and any other pending applications depending on the '972 Patent or any Related Patent be examined in light of this reexamination petition and the petitions for the Related Patents.

## III. PRIOR LITIGATION INVOLVING THE '972 PATENT

This is a unique case that presents the examiner with a wealth of information to assist in the reexamination as to motivation to combine, claim interpretation, and prior art.

The '972 Patent was litigated on two separate occasions and the Court has defined terms in the '972 Patent that apply equally to the '035 Patent. Biovail Corp. Int'l v. Andrx Pharms., Inc., 239 F.3d 1297, 1301 (Fed.Cir.2001) ("When multiple Patents derive from the same initial application, the prosecution history regarding a claim limitation in any Patent that has issued applies with equal force to subsequently issued Patents that contain the same claim limitation."). The claim limitation in the '035 Patent are either broader or equal to the limitations of the corresponding '972 Patent claims. Thus the '972 Patent claim limitations are within the bounds of the '035 Patent claims.

The Court's Markman Order for the '972 Patent in the case of Crossroads Systems, Inc. v. Chaparral Network Storage, Inc., Western District of Texas, Civil Action Number A 00 CA 217 SS ("*Chaparral*") is critical to the examiner's review of the '035 Patent. A copy of the Court's Markman Order appears in Exhibit 6. Pursuant to MPEP §2207, Court documents related to a Patent are to be admitted at any time and from anyone into the Patent file. A district court's finding is binding upon the Patent examiner in a reexamination. Marlow Industries, Inc. v. Igloo Products Corp., 2002 WL 485698, *4 –5, (N.D.Tex.2002) referring to In Re Freeman, 30 F.3d 1459, 1468 (Fed.Cir.1994) see also MPEP §2286. (Exhibit 7).

During the course of the '972 Patent litigation in the *Chaparral* case, the Patentees made a number of admissions under oath at deposition and at trial that have a direct bearing on the current reexamination and the scope of the patents at issue. Pursuant to MPEP §2217, Patentee admissions may be used in combination with Patents and printed publications to establish a substantial new question of Patentability.

Admissions are not restricted to just a determination of a substantial new question of Patentability. Under section 305, reexamination proceeds "...according to the procedures established for initial examination." 35 U.S.C.A. § 305, see also In re Portola Packaging Inc., 122 F.3d 1473, 1475 (C.A.Fed.,1997) see also 37 C.F.R. 1.104 (c)(3). "Facts, including admissions which have already been established in the record, have been authorized for use in reexamination proceedings. See 37 CFR 1.106(c) and M.P.E.P. § 2258." Ex Parte the Successor in Interest of Robert S. McGaughey 1988 WL 252480, *4. (Exhibit 8). "In the initial examination of Patent applications, admissions by the applicant are considered for any purpose including evidence of obviousness under section 103." Id. "An admission is defined as an acknowledged, declared, conceded or recognized fact or truth. Thus, admissions are simply facts." Id at *5.

## IV. THE SCOPE OF THE INVENTION AS ADMITTED BY AN INVENTOR

During trial and deposition testimony in the *Chaparral* case, one of the two inventors of the '972, '035 and other Related Patents stated that the only invention claimed was the movement of access controls from a network server into the router device. Every other limitation in the claims of the '972 and '035 Patents, including the router device itself, was admitted to be prior art. *See* trial transcript of inventor Geoffrey Hoese, Exhibit 9, pages 70 to 72. According to the inventor, the novel feature of the claims is that the storage router, rather than a network server, performs access control such that each workstation may have controlled access to a specific partition of the storage device which forms the virtual local storage for that workstation ('035 Patent, column 4, lines 28-31). All other aspects of the alleged invention as set forth in figure 2 of the '972 and '035 Patents and the corresponding written description of the '972 and '035 Patents were acknowledged by the inventor Geoffrey Hoese, in his trial testimony in the *Chaparral* case, to be part of the prior art and not the invention.

> Q. Figure – well, figure 2 is not your invention, right, sir?
> A. **Figure 2 is not my invention.**
> Q. And this description is in reference to figure 2, and this description mentions native low-level block protocols and mentions mapping, and you say figure 2 is not your invention?
> A. That's correct.
> (Trial transcript of Hoese, page 81, starting at line 3, emphasis added)
>
> * * *

See, *In re Nomiya*, 509 F.2d 566, 570-71, 571 n.5, 184 USPQ 607, 611, 611 n.4 (CCPA 1975) ("We see no reason why appellants' representations in their application should not be accepted at face value as admissions that Figs. 1 and 2 may be considered "prior art" for any purpose, including use as evidence of obviousness under § 103. [Citations omitted.] By filing an application containing Figs. 1 and 2, labeled prior art, *ipsissimis verbis*, and statements explanatory thereof, appellants have conceded what is to be considered as prior art in determining obviousness of their improvement.")

## V. THE '035 PATENT IS INVALID AS IT IS ANTICIPATED BY THE MAXSTRAT GEN 5 PRODUCT

MaxStrat (previously known as Maximum Strategy) was a company that designed and manufactured RAID (redundant array of independent devices) controllers as well as entire storage systems, beginning in the early 1990s. In 1996, MaxStrat began shipping the GEN5 RAID controller, which was a router that performed the function of access controls and met each and every claim of the '972 and '035 Patents. (It should be noted that in the *Chaparral* case, the Court determined that the '972 Patent covered RAID controller devices, as they met the definition of "routers." Further, the devices accused by Crossroads in *Crossroads v. Dot Hill* are RAID controllers, like the GEN5.)

A chart is included in Exhibit 10 comparing elements described in the GEN5 System Guide and GUI User's Guide with each limitation in all claims of the '035 Patent. A copy of the *Gen5 S-SERIES XL System Guide Revision 1.01*, published June 11, 1996 ("System Guide"), is included as Exhibit 11, and a copy of the *Graphical User Interface for MAXSTRAT Gen5/Gen-S Servers User's Guide 1.1*, published January 6, 1997 ("GUI Guide"), is included as Exhibit 12. Both manuals were published before the alleged invention of the '035 Patent.

The GUI Guide describes the operation of the Gen5 S-Series Storage Server, which is documented in the System Guide.

> "1.1.2 System Requirements
> The GUI will function on all models of the Gen5 Storage Servers, at Gen5 software revision 1.60 or higher, and all models of the Profile NFS File Server at ProOS revision 0.82 and higher, and all models of the S-Series at software revision 1.00 or higher." [GUI Guide, page 1]

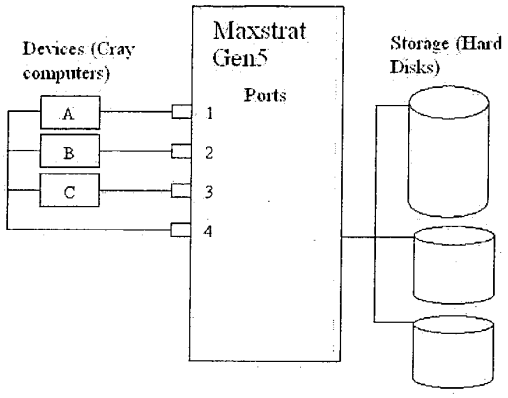
The GUI Guide expressly references the System Guide, which is incorporated by reference:

> "1.1.3 Related Reference Material
> ...
> S-Series System Manual" [GUI Guide, page 2]

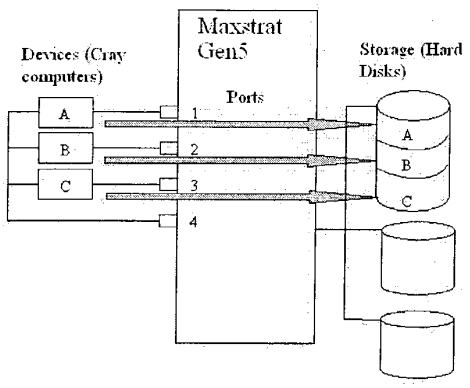
The GUI Guide and System Guide are a two-volume set that make a single publication. This printed publication describes each and every limitation of the Claims of the '035 Patent. The pertinency and manner of applying this printed publication to the

'035 Patent is explained in the chart included in Exhibit 10, which compares elements of the Gen5 with each limitation in each of the claims of the '035 Patent.

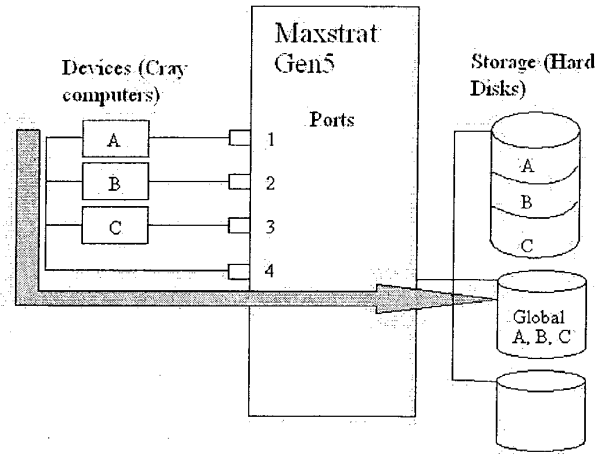
The GEN5 provides a number of devices such as Cray computers on one side of the GEN5 with access to storage devices such as hard disk drives on the other side of the GEN5. An outline of this configuration is shown below.



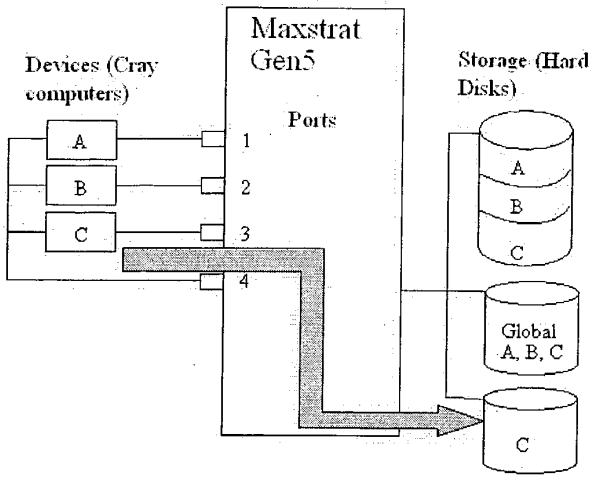

As to the "access control" limitation of the '972 and '035 Patents, the Gen5 is able to assign a specific storage area to a specific device. The GEN5 includes the "ifp" command, which includes the "luns bitmask enable" field. This field is used to specify the enabling of LUNs on interface ports to provide access to "facilities" (storage units). [See Exhibit 10, Claim chart, pages 5 and 6; see Exhibit 11, Gen5 System Guide, pages 4-42 to 4-43]. For example, each device attached to a GEN5 can be assigned a subset of a disk drive as shown below.




Alternatively, the GEN5 allows for a configuration where all the devices can access a global disk storage, as identified below.




Finally, the GEN5 can assign a device to a particular drive, again as displayed below.




Notably, this last configuration of the GEN5 was quite common and not an unreasonable extension of the product. (See *Hillgrave Corp. v. Symantec Corp.*, 265 F.3d 1336, 1343 (Fed.Cir. 2001) for a discussion of the reasonable use of a product involved in an infringement analysis). Review of the GEN5 documentation attached herein indicates that such a configuration was available. (Exhibit 13).

While GEN5 connected to storage devices using only the SCSI transport medium, Gen5 could be configured to use combinations SCSI, Fibre Channel and/or HIPPI transport media to connect to hosts.

In sum, the GEN5 allows access to a global data storage device, subsets of a single storage device, and access to a single storage device. This allocation of storage is what the Court in *Chaparral* identified as access control. (Exhibit 6). The GEN5 meets every element of the alleged invention of the'035 Patent.

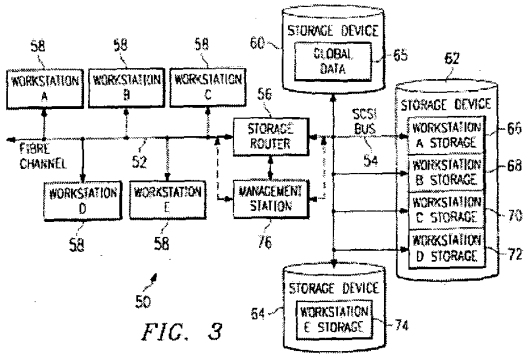



*FIG. 3*

In comparing the last configuration of the Gen5 (shown on the previous page) to an embodiment of the invention of the '035 Patent as shown in Fig. 3 of the '035 Patent specification above, it is clear that the GEN5 anticipates every element of the '035 Patent. The only difference between Fig. 3 and the last configuration of the GEN5 is that the workstations in Fig 3. are attached to a single Fibre Channel transport medium, while the workstations of the GEN5 are attached to separate Fibre Channel transport mediums.

However, it is important to note that Claim 1 of the '035 Patent does require every "device" (referred to as Fibre Channel devices in the specification) to be connected to a single transport medium. This is done in the GEN5 through the use of port 4 connecting to each of the devices on the left side of the GEN5. The chart below identifies an excerpt of Claim 1 that addresses this issue and a full detailed analysis appears in Appendix A. Further analysis in relation to the '035 Patent is presented in Appendix B and C.

| '035 Patent claim 1 | | |
|---|---|---|
| 1. A storage router for providing virtual local storage on remote storage devices to devices, comprising: ..... | | |
| the supervisor unit operable to map between devices connected to the first transport medium and the storage devices, to implement access controls for storage space on the storage devices and to process data in the buffer to interface between the first controller and the second controller to allow access from devices connected to the first transport medium to the storage devices ..... | | This claim element specifies that there is cooperation between the devices and the first transport medium. However, there is no limitation in the claim that access control must be performed exclusively in relation to the first transport medium. The GEN5 allows each device on the left side to be connected to a single transport medium via port 4. The GEN5 allows access control, mapping, and maintaining a configuration by configuring a port for each device. Therefore the GEN5 meets every limitation of the '035 Patent claims. |

Using a number of ports to connect individual devices to GEN5 would be covered by Claim 1. As a result, GEN5 completely anticipates the subject matter claimed in the '035 Patent and renders the '035 invalid.

## VI. THERE WERE OTHER CONTROLLERS ON THE MARKET PRIOR TO THE INVENTION OF THE '035 PATENT THAT ANTICIPATE THE '035 PATENT AND PERFORMED ACCESS CONTROLS

In addition to the Maxstrat Gen5, there were other RAID controllers that performed access controls, were commercially available at the time of the alleged invention of the '035 Patent, and completely anticipate the subject matter claimed in the '035 Patent.

Storage Technologies, Inc. (known as "StorageTek") designed and manufactured the Iceberg RAID controller before 1997. Iceberg performed access control; Iceberg made selected hosts blind to selected storage based on the permission granted to those selected hosts. Iceberg connected a plurality of IBM mainframe host computers to

partitions and subsets of multiple SCSI storage devices. As described in the '035 Patent, Iceberg contained a supervisor unit, which was coupled to a buffer, a host controller and a storage controller. The host and storage controllers included protocol units, FIFO buffers and DMA. Iceberg performed mapping to present a virtual Count-Key-Data disk interface to the hosts for the fixed-block allocation SCSI disk drives.

Similarly, CMD Technology, Inc. made the CRD-5500 SCSI RAID Controller before 1997. The CRD-5500 includes every element described in the '035 Patent. Features for access controls to partitions of disks and subsets of disks (called "redundancy groups") are explained in the *CRD-5500 SCSI RAID Controller User's Manual, Rev. 1.3*, published November 21, 1996, which is included as Exhibit 15.

> "The controller's Host LUN Mapping feature makes it possible to map RAID sets differently to each host. You make the same redundancy group show up on different LUNs to different hosts, or make a redundancy group visible to one host but not to another." (CRD-5500 User's Guide, page 1-1, Section 1.2).

> "4.3.3 Host LUN Mapping
> This screen may be used to map LUNs on each host channel to a particular redundancy group. Or you may prevent a redundancy group from appearing on a host channel. Thus, for example, you may map redundancy group 1 to LUN 5 on host channel 0 and the same redundancy group to LUN 12 on host channel 1. Or you may make redundancy group 8 available on LUN 4 on host channel 0 and block access to it on host channel 1." (CRD-5500 User's Guide, page 4-5, Section 4.3.3).

Finally, Infortrend Technologies, Inc. made the IFT-3000 before 1997. The IFT-3000 is also a SCSI RAID controller, and includes all the elements described in the '035 Patent. A chart is included in Exhibit 15 comparing elements described in the IFT-3000 Instruction Manual with each limitation in Claim 1 of the '035 Patent. A copy of the *IFT-3000 SCSI to SCSI Disk Array Controller Instruction Manual Revision 2.0*, published in 1995, is included as Exhibit 16.

The manuals indicate that these controllers could be configured in much the same way as the GEN5, as shown above, which performs "access controls" as that term is used in the '035 Patent, and was defined by the Court in the *Chaparral* litigation

## VII. THE '035 PATENT IS INVALID AS IT IS ANTICIPATED BY U.S. PATENT NO. 6,073,209 TO BERGSTEN

The '035 Patent is also anticipated by U.S. Patent No. 6,073,209 (the '209 Patent) titled "Data storage controller providing multiple hosts with access to multiple storage subsystems," to Bergsten, filed March 31, 1997, which was prior art as of the '035 Patent's effective filing date. A copy of the '209 Patent is included in Exhibit 1, and the claim chart comparing elements of this Patent to limitations in the claims of the '035 Patent is included in Exhibit 22. The '209 Patent describes a form of access controls using low level, block protocols. For example, the '209 Patent states in the ABSTRACT section:

> "Each storage controller may be coupled to at least one host processing system and to at least one other storage controller to control access of the host processing systems to the mass storage devices."

The '209 Further states, in column 15, lines 39 to 47:

> "A storage controller of the present invention further allows data blocks to be write protected, so that a block cannot be modified from any host computer. Write protection may be desirable for purposes such as virus protection or implementation of security firewalls. Write protection can be achieved by configuring the storage controller appropriately at set-up time or by inputting a write protect command to the storage controller from a host computer."

The '209 Patent thus describes how to control access of hosts to storage devices by allowing data blocks to be write protected from host computers. Since data blocks can be write protected, the '209 Patent describes a storage controller that limits a computer's access to subsets of storage devices or sections of a single storage devices, which is what the Court in *Chaparral* identified as access control (Exhibit 6). In addition, this explicit reference to security-oriented data protection provides strong motivation to a person of

ordinary skill in the art to combine the '209 Patent and other prior art storage routers with enhanced security features.

The '209 Patent also includes all the remaining elements of the claims of the '035 Patent: a RAM buffer (column 6, line 26); a first (Fibre Channel) controller (column 4, line 28); a second (SCSI) controller (column 4, line 21); a CPU supervisor unit (column 6, line 26); and mapping (column 3, line 18). See Figure 3 from the '209 Patent, included below, depicting a STORAGE CONTROLLER with CPU, RAM, HOST DEVICE I/F (interface) with arrows leading TO/FROM HOST (first transport medium), and STORAGE DEVICE I/F with arrows leading TO/FROM LOCAL EXTERNAL STORAGE DEVICES (second transport medium).

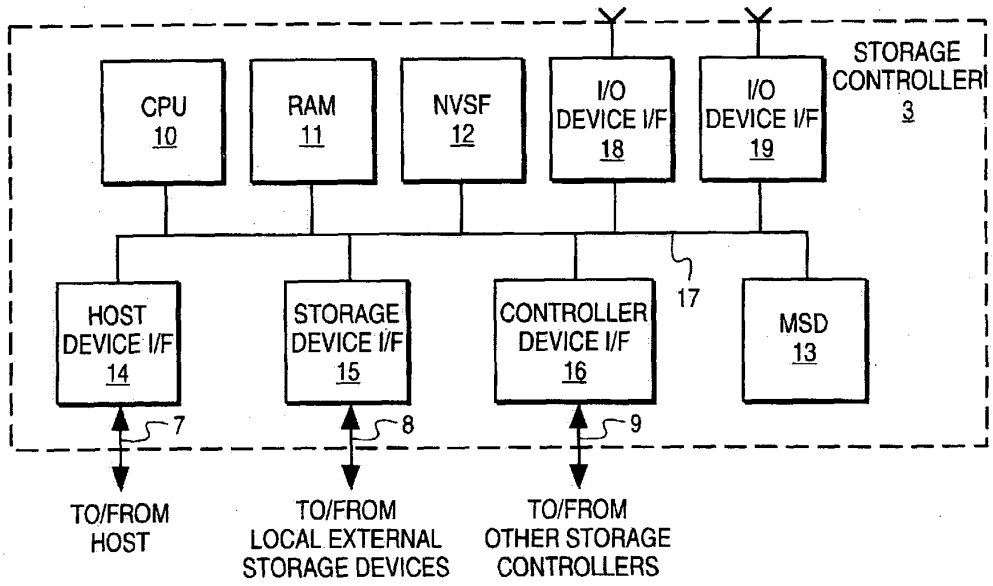



**FIG. 3**

Thus, the '209 Patent anticipates the '035 Patent, or in the alternative, provides strong intrinsic motivation to combine a storage router with access control.

## VIII. THE ALLEGED INVENTION OF THE '035 WAS OBVIOUS IN LIGHT OF THE PRIOR ART AND NUMEROUS MOTIVATIONS TO COMBINE

The Obviousness Standard.

"... [T]he standard under 35 U.S.C. § 103 [for obviousness] is what would have been obvious to one of ordinary skill in the art, and the level of the skilled artisan should not be underestimated. See *In re Sovish*, 769 F.2d 738, 743, 226 USPQ 771, 774 (Fed. Cir. 1985)." *Ex Parte Richard A. Flasck*, 2000 WL 33520310, *3. (Exhibit 17). Factors that may be considered in determining level of ordinary skill in the art include: (1) the education level of the inventor; (2) type of problems encountered in the art; (3) prior art solutions to those problems; (4) rapidity with which innovations are made; (5) sophistication of the technology; and (6) education level of active workers in the field. Environmental Designs v. Union Oil Co. of Cal., 713 F.2d 693, 696-697 (Fed.Cir.1983), cert. denied, 464 U.S. 1043, 104 S.Ct. 709, 79 L.Ed.2d 173 (1984) see also *Orthopedic Equipment Co., Inc. v. All Orthopedic Appliances, Inc.*, 707 F.2d 1376 at 1381-1382 (Fed.Cir.1983). The level of one of ordinary skill is evaluated at the time the invention was made. Id at 1382.

The Field of Endeavor.

The first question in an obviousness argument is whether the references are in the field of the inventor's endeavor. *In re Deminski*, 796 F.2d 436, 230 U.S.P.Q. 313, (Fed.Cir., Jul 08, 1986). The field of art that encompasses the '035 Patent, as well as the Related Patents, is that of computer science and electronics. Some of the hardware identified in the '035 Patent includes routers, networks, bridges, servers, controllers, storage devices, storage disks, microprocessors, buffers, storage controllers, and workstations. The prior art would encompass, at least, the fields of computer science and electronics as it relates to the hardware discussed above.

It is common knowledge that the computer science and electronics field is one that has experienced, and continues to experience, rapid development and complexity in hardware and software. As a result, a person skilled in the art would be someone with a degree in Computer Science, Electrical Engineering or an equivalent, with perhaps seven

or more years of professional experience, and with knowledge of at least computer hardware, systems, electronics, and software in such an area of rapid innovation.

The Motivation to Combine

Identification in the prior art of each individual part claimed is insufficient to defeat patentability of the whole claimed invention. Rather, to establish obviousness based on a combination of the elements disclosed in the prior art, there must be some motivation, suggestion, or teaching of the desirability of making the specific combination that was made by the applicant. *In re Kotzab*, 217 F.3d 1365, 1369-1370 (C.A.Fed., 2000).

Obviousness and Motivation to Combine in Light of the 1984 Byte Magazine Article

As has already been discussed, one of the two inventors of the '972 and '035 Patents admitted under oath that the only limitation of the '972 (and '035) Patents that is not taught by prior art is the movement of access controls from the network server to the router. This petition has identified no less than four RAID controllers – or "routers" – (five if one includes the DEC HSZ70 RAID controller) that performed access controls. However, even if one were to ignore those prior art RAID controllers, the movement of access controls from the network server into the router would have been obvious in light of an article published in Byte Magazine in 1984.

"Local-Area Networks for the IBM PC" was written by J. Scott Haugdahl ("*Haugdahl*") and published in the December 1984 edition of Byte Magazine. Byte Magazine is a widely-read computer magazine and publicly available. (Exhibit 18). The *Haugdahl* article teaches the following:

- A need to preserve the benefits of a stand-alone personal computer system while obtaining the benefits from networking.

"Thus, with LANs you want to preserve the benefits of stand-alone microcomputers, namely, use of your favorite software and peripherals

and having a machine all to yourself, as well as adding new benefits from networking." (p. 147, col. 2).

Network benefits known at the time of the invention included access controls and mapping. This reference, however, is not limited to just networks, but provides motivation to develop systems other than networks that have some desirable network characteristics.

- Access controls that enabled only a particular user to access data.

"Because all these servers support multiple users, you're going to need some sort of password protection scheme, as well as some means of protecting the data of one user from another." (p.151).

This clearly teaches restricting access to stored data. It is not limited to any particular implementation and could very well be the impetus to use such schemes as LUN masking.

- Servers were known to be a potential bottleneck problem.

"However, the server is a potential bottleneck, particularly if you don't go with a high-performance processor." (p. 154, col. 3).

Bottlenecks were a well known problem and a person skilled in the art would be sensitive to alternatives, such as having the router perform access controls, as opposed to the server.

- Implementing access controls at a low level.

"Disk service users' requests for disk I/O (input/output) at a low level. ... Thus the server is really a disk 'volume' server, and file I/O is handled directly by the operating system in the PC." (p. 154, col. 3).

Here is the connection between native low-level protocols as used by a personal computer and the difference as it existed in 1984 for file servers.

- Access control and virtual local storage.

"EtherShare manages virtual disks at the volume level. Passwords are required to 'log on' and optional passwords can be placed on volume. Volumes can be made private for individual use only, public for use by several users in a read-only fashion, and shared for multiple read/write access." (p. 156, col.2).

"[Regarding Corvus] It was simply a device that allowed you to share a hard disk by partitions." (p. 163, col. 3). "[Regarding Nestar] [I]n fact, if you had two PLAN 4000 systems with a gateway server, you could establish virtual connections with disks on other network file servers and use them as if they were local." (p. 166, col. 3).

Virtual access to disks, security-oriented access control, private and shared hard disks, and use of remote storage devices having the appearance and characteristics of local storage were well documented and available to consumers at least as early as 1984.

The article further highlights numerous disadvantages to using file servers for the performance of certain functions and directly indicates how handling a file with a personal computer's I/O is more direct. The type of I/O endemic to the personal computer is a native low-level block protocol. A person skilled in the art would realize that a remote storage device, like that provided by a file server, would be more desirable if it utilized the I/O handling like that of a personal computer. Further, a person skilled in the art would realize that other network-like options would be desirable. Those options would include access control.



Obviousness and Motivation to Combine in Light of the 1995 *Bursky* Article

Similar to the *Haugdahl* article, Dave Bursky wrote an article that appeared in the February 6, 1995 edition of "Electrical Design" entitled "New Serial I/O Speed Storage Subsystems" (Exhibit 19) that also teaches the desirability of connecting workstations to a storage controller or router via serial interfaces, such as Fibre Channel.

- The Bursky article teaches that emerging serial interfaces like Fibre Channel helps relieve problems with remote, high-speed devices, such as noise, signal integrity, speed, and bulky cables.

> "Using a serial interface also helps relieve one of the largest headaches when it comes to connecting many high-speed devices together - noise and signal integrity. ... Therefore, to achieve top performance, long parallel cables must be eliminated to control impedance, minimize crosstalk, and allow data transfers to run at maximum speeds. ... The FC drives eliminate the need for large connectors and bulky SCSI cable." (*Bursky*, p. 81, col. 2 to p. 82, col. 1.)

- The Bursky article teaches that chips for handling various protocols, like Fibre Channel, were commercially available.

> "Aside from Seagate's disk drives, only a handful of FC storage interfaces are immediately available and just a few companies offer any silicon. The smattering of chips on the market include several choices from Applied Micro Circuits, Hewlett-Packard (G-Logic chip set), LSI Logic (megacells), Microelectronics Technology Center, NCR, Rockwell International, TriQuint Semiconductor, and Vitesse Semiconductor." (*Bursky*, p. 88, col. 3.)

The Bursky article expounds the virtues of serial interfaces and lists manufacturers from which controllers for storage interfaces can be acquired.



<u>One of the Inventors Admitted To Obviousness and a Motivation to Combine.</u>

In fact, one of the inventors of the '972 and '035 Patents testified under oath in the *Chaparral* litigation that a person skilled in the art would have known at the time of the filing of the '972 and '035 Patents that various known and readily identifiable problems would be solved by performing the access control function in the router, as opposed to the network server.

> "...the main problem is the network server is expensive to maintain, it has various bottlenecks in transferring data between these things, has to go through a lot of effort to translate the data requests, get the data from one side to the other."
>
> (Trial transcript of Hoese, page 59-60.) (See above).



[redacted]

There is no indication that the main problem spoken of by Hoese constituted a unique problem known only by the Patentees, or that the Patentees forever solved the problem with their alleged invention, or that there was a long felt need to solve the problem that now ceases to exist due to the Patentees alleged invention. Finally, it is clear that the Patentees did not discover the source of any of these problems or their solutions; the problems and solutions were known to the industry at the time.

The Patentees sworn testimony shows that a person skilled in the art at the time of the alleged invention embodied in the '035 Patent would have been acutely aware of a variety of needs in the field. These needs provide the motivation for a person skilled in the art to seek a solution.

## IX. ADDITIONAL PRIOR ART THAT ADDRESSES EACH OF THE GENERAL NEEDS AS IDENTIFIED BY THE SWORN TESTIMONY OF THE INVENTORS

The prior art RAID controllers discussed herein, the magazine article, the prior art patents, and the testimony of the inventors of the '035 are reason enough to find that the '035 Patent should have never issued. However, in the interests of bringing all prior art to the attention of the examiner and the Patent Office, we supply, below, additional prior art that addresses each of the needs as identified by the inventors in sworn testimony.

Access Controls

The *Haugdahl* article addressed access control as far back as 1984. The Patentees admitted that one of the network's functions was the performance of access control.

> Q. Okay. Can you explain your invention of the 972 Patent invention in your own words, sir?
> A. The invention provides a method for connecting computers to storage devices, providing that connectivity, the ability to map storage

between different devices, providing virtual local storage and security management capabilities for those devices.

Q. Well, what was the state-of-the-art at the time that you came up with your invention? How were people doing that sort of thing?

A. Primarily through the use of network servers.

(Trial transcript of Hoese. Page 58, starting at line 16.) See above.

Q. So how did your invention improve on this basic situation?

A. Well, using the invention in this role, you basically have the computers on the one side speaking their native low-level block protocols that they communicate with to storage devices, routing those through a storage router, and connecting those devices to the actual storage without having to do the translation from the – through the network protocols or translation through the file system.

(Trial transcript of Hoese. Page 60, starting at line 19.) See above.

Q. Mr. Russell, you said you solved problems that existed in the world just a moment ago. Could you elaborate on that, what you meant by that?

A. Sure. That was the initial problem that we saw to be solved by the invention which is the way that storage was hooked up remotely. So it was done through network file servers across the network, and that's how you accessed storage.

(Trial transcript of Russell. Page 115, starting at line 5.) (Exhibit 21).

By admission of both Patentees, a prior art network file server had the ability to perform all the functions identified by the invention, including restricting the addressability of the storage units, i.e. access control. What the networks did not do was operate using native low-level block protocols.

However, as shown above, it was well known in the art that transport mediums such as Fibre Channel and SCSI contained network capabilities and could work at low-level block protocols The ability to identify, address, and partition storage drives for access by a host computer was well-known in the art at the time of the filing of the '035 Patent. As already discussed, this was evidenced by prior art RAID controllers such as the GEN5, CRD 5500, Iceberg and Infortrend 3000. However, it was also evidenced by U.S. Patent No. 5,634,111 to Oeda, et al, filed March 1993, issued May 27, 1997,

reference in the Abstract. See also U.S. Pat. No. 4,961,224 to Yung titled "Controlling access to network resources," filed March 6, 1989, issued October 2, 1990. Also, U.S. Patent No. 5,659,756 titled, "Method and system for providing access to logical partition information on a per resource basis," to Hefferon, et al, filed March 31, 1995 discloses a system that partitions a subset of main storage. (Exhibit 1).

Another form of access control is identified in U.S. Patent No. 6,073,218 titled, "Methods and apparatus for coordinating shared multiple raid controller access to common storage devices," to DeKoning, et al, filed December 26, 1996, that was prior art as of the Patent filing date, which states in the "BACKGROUND OF THE INVENTION" section that

> "There are five 'levels' of standard geometries defined in the Patterson publication. The simplest array, a RAID level 1 system, comprises one or more disks for storing data and an equal number of additional "mirror" disks for storing copies of the information written to the data disks. The remaining RAID levels, identified as RAID level 2, 3, 4 and 5 systems, segment the data into portions for storage across several data disks. One or more additional disks are utilized to store error check or parity information."

Thus, storage across disks addresses the concept of assigning subsets of the disk so as to retain information from a specific workstation. (Exhibit 1).

The prior art identifies aspects of a distributed security system in which access to system resources is controlled by access control lists associated with each system resource. U.S. Patent No. 5,315,657 to Abadi, et al., issued: May 24, 1994, filed September 28, 1990. Access control lists are used to define the extent to which different users will be allowed access to different resources on a server depending on the level of access control implemented on a given server, access control lists for a given disk defines the access restrictions for all the resources or files stored on that disk. U.S. Pat. No. 5,889,952 to Hunnicutt, et al, issued March 30, 1999, filed: August 14, 1996 under the "STATEMENT OF THE PROBLEM" as part of prior art as of the filing date of August 14, 1996. Each host processor has exclusive access to its own set of storage devices and it cannot access the storage device of another host. U.S. Pat. No. 5,860,137 to Raz, et al,

issued January 12, 1999, filed: July 21, 1995 under the "BACKGROUND OF THE INVENTION" As part of prior art as of the filing date of July 21, 1995. These groups of files form virtual disks, sometimes referred to as mini-disks, which for purposes of this description are identified by a number. A list of authorized users must exist for each mini-disk. U.S. Pat. No. 5,469,576 to Dauerer, et al, issued November 21, 1995, filed March 22, 1993. (Exhibit 1).

Given the Patentees sworn admission that a storage router was well known in the art, it would have been obvious to a person skilled in the art to start with a router and implement changes to address the need for access controls within the router. This, in turn, would have led to the design of a device that incorporated all the limitations as found in the '035 Patent.

## X. A PERSON OF ORDINARY SKILL IN THE ART AT THE TIME OF THE ALLEGED INVENTION WOULD BE MOTIVATED TO ADD ACCESS CONTROLS TO EXISTING STORAGE ROUTERS

A Person of Ordinary Skill in the Art at the Time of the Alleged Invention

The '035 Patent identifies the invention as a bridge device. '035 Patent Column 5 starting at Line 34. At the time the '972 and '035 Patents were filed, a person skilled in the art of the computer field would have knowledge of networks, server, routers, bridges, and brouters. Furthermore, such a person would be familiar with connecting workstations and storage devices with the items listed above. It is thus important to identify what encompasses a bridge and other related devices at the time of the filing of the '035 application.

"In general, routers are used to interconnect different configurations of LANs (Ethernet to token ring, for example), over arbitrary distances, while bridges are used to interconnect locally like configurations of LANs (token ring to token ring, for example)."

U.S. Patent No. 5,426,637 to Derby, et al, filed December 14, 1992, issued June 20, 1995, (Emphasis added). (Exhibit 1).

> "A router is an internetworking device that chooses between multiple paths when sending data, particularly when the paths available span a multitude of types of local area and wide area interfaces. Routers are best used for (1) selecting the most efficient path between any two locations; (2) automatically re-routing around failures; (3) solving broadcast and security problems; and (4) establishing and administering organizational domains. One class of router, often called bridge/routers or Brouters, also implements switching functionality, such as transparent bridging and the like."

U.S. Patent No. 5,802,278 to Isfeld, et al, identified as prior art as of the date of filing the application, starting at Column 1 at Line 23, filed January 23, 1996, issued September 1, 1998, (Emphasis added). (Exhibit 1).

A brouter (bridge/router) is a device that connects two or more LANs. A brouter allows stations on one LAN to connect to stations on different LANs. U.S. Patent No. 5,781,715 to Sheu, identified in "Prior Art" as of the filing date starting at Column 1, Line 26, filed October 13, 1992, issued July 14, 1998, emphasis added. (Exhibit 1).

> "A previously known local area network (LAN) is used to interconnect multiple personal computers or work stations, called 'clients,' and a network server. The network server comprises a personal computer and a program which provides a variety of services to the clients. For example, the server manages a local disk (DASD) and permits selected (or all) clients on the LAN to access the disk. Also, the server may provide access by LAN clients to a local printer that the server manages. To access the local disk, the client must first establish a session or 'log-on' to the server with a valid account and password and request a connection to the local disk. In response, the server validates the account and password, and grants the connection if available. Then, the client requests a remote file operation (e.g. open, read, write, close) and furnishes associated parameters. In response, the server may copy (depending on the operation) the file from the local disk into RAM, and performs the operation requested by the client. If the file is updated, the server will copy the updated version back to the local disk, overwriting the previous version."

U.S. Patent No. 5,642,515 to Jones, et al, titled "Network server for local and remote resources," filed April 17, 1992, issued June 24, 1997, in the background section

identifying prior art, starting at Column 1 at Line 11, emphasis added. (Emphasis added). (Exhibit 1).

From the references above, it is clear that a person skilled in the art at the time of the filing of the '035 Patent application would understand the principles and applications of: 1) connecting a multiplicity of computing devices together, or to a system; 2) connecting a variety of peripherals to a system; 3) interfacing between like and different mediums; 4) controlling the access to storage units; 5) techniques for making a storage device transparent to a workstation (virtual local storage); and 6) a thorough understanding of similarities and differences in the various protocols in the computer field.



Motivation to add Access Controls to Existing Storage Routers

The central question in combining a variety of elements to arrive at the invention in a Patent is, "what would motivate a person to combine the elements?" In the present case, the Patentees have provided the answer to this question. Through sworn testimony, the Patentees identified a number of general problems in the field. The nature of the problem can lead inventors to look to references relating to possible solutions to that problem. In re Rinehart, 531 F.2d 1048, 1054, 189 USPQ 143, 149 (CCPA 1976).

As discussed above, inventor Hoese testified at trial that a storage router having every limitation of the alleged invention of the '972 and '035 Patents except for access control, was prior art as identified in Fig. 2 of the '035 Patent and the related written description. Also, inventor Hoese stated that the alleged invention of the '035 Patent was just adding access control to a storage router. The Iceberg, GEN5, CRD-5500, and IFT 3000 prior art RAID controllers were all "routers" (as defined by the Court in the *Chaparral* case) that performed access controls. The designers of each of those controllers understood clearly the benefits of having those RAID controllers perform access controls, as opposed to a network server. The article written by *Haugdahl*, above, identifies that making volumes private by using passwords was a desirable feature for a

network type system. Further, inventor Hoese identified that addressibility was a well-known issue in the field. Further, the article written by *Haugdahl,* and the patents to Oeda, Yeung, Hefferon, DeKonig, Abadi, Hunnicutt, Raz, and Dauerer all discuss not only the existence of well-known techniques for restricting access to storage devices in systems involving multiple hosts and multiple storage devices, but the need to do so.

Given the prior art storage router in Fig. 2 of the '035 Patent, the prior art RAID controllers discussed herein, the teaching from *Haugdahl* that it was desirable to include access control in systems like the storage router in Fig. 2, the Patentees testimony that addressibilty was an issue at the time of the alleged invention embodied in the '035 Patent, the numerous prior art patent references to access control, and the knowledge of those in the art regarding the use of access controls in storage systems, it would have been obvious to one skilled in the art at the time of the alleged invention of the '035 Patent to merely add access control to a prior art storage router and arrive at the '035 Patent.

## XI. VALIDITY ANALYSIS: EXHIBITS CITING PRIOR ART AND EXPLAINING THE PERTINENCY AND MANNER OF APPLYING THE CITED PRIOR ART

Due to the large quantity of prior art cited in this request for reexamination, we include appendices and exhibits to explain the pertinency and manner of applying the cited prior art in tabular form rather than to embed hundreds of pages of analysis within this request. Although the analysis in the appendices and exhibits refer directly only to a selected subset of the claims of the '035 Patent, all arguments for invalidity apply equally to the remaining claims of the '035 Patent.

Appendix A includes an analysis of the meaning of terms used in Claim 1 of the '035 Patent, based upon the *Chaparral Markman* order, the patentee's admissions, and the prior art.

Appendix B includes a matrix summarizing and identifying the elements of Claim 1 of the '035 Patent that are found in each of the cited prior art U.S. Patents and printed publications.

Appendix C includes a listing of possible prior art combinations in support of an obviousness rejection claims of the '035 Patent under 35 U.S.C. §103.

Exhibit 22 includes charts for each of the U.S. Patents and printed publications identified in Appendix B, indicating the relevant portions of the prior art that pertain to elements of the '035 Patent claims.

Below, please find the detailed analysis of each of the fourteen (14) claims of the '035 Patent and summary of the prior art and combinations that render each claim invalid.



Claim 1.

Claim 1 states:

> 1. A storage router for providing virtual local storage on remote storage devices to devices, comprising:
>
> a buffer providing memory work space for the storage router;
>
> a first controller operable to connect to and interface with a first transport medium;
>
> a second controller operable to connect to and interface with a second transport medium; and
>
> a supervisor unit coupled to the first controller, the second controller and the buffer, the supervisor unit operable to map between devices connected to the first transport medium and the storage devices, to implement access controls for storage space on the storage devices and to process data in the buffer to interface between the first controller and the second controller to allow access from devices connected to the first transport medium to the storage devices using native low level, block protocols.

This claim is similar to Claim 1 of the '972 Patent, except that limitations for Fibre Channel and SCSI protocols have been removed, and the "to maintain a configuration ..." limitation has also been removed. For further discussion of the

differences between the '972 Patent claims and the '035 Patent claims, see see Exhibit 4 (differences in claims of the '972, '036, '035 and '854 Patents).

Claim 1 is Invalid Based on RAID Controllers in the Prior Art that Already Have Access Controls

As discussed above, the patentees admitted that Fig. 2 was prior art, and thus, that the idea of a "storage router" mapping between Fibre Channel workstations and SCSI disk drives was already known. Such a storage router is also clearly described in the manuals for the Maxstrat Gen5, [See Exhibit 10, Claim chart, and Exhibits 11 and 12, Gen5 manuals], CRD-5500 and the IFT-3000.

The patentees have admitted that the only component of the alleged invention of the '972 and '035 Patents that they believe to be innovative is the performance of "access control" using "low level, block protocols" in the router device.

However, as discussed above and demonstrated in Exhibits 10 and 11, the Maxstrat Gen5 router device implements access controls using low level, block protocols. As the Gen5 manuals show, access control was configured for the Gen5 by using the "ifp" command which includes the "luns bitmask enable" field. This field is used to specify the enabling of LUNs on interface ports to provide access to "facilities" (storage units). [See Exhibit 10, Claim chart, pages 5 and 6; see Exhibit 11, Gen5 System Guide, pages 4-42 to 4-43]. The same is true for the CRD-5500, IFT-3000 and Iceberg RAID controller/router devices.

The Court in the *Chaparral* case defined "implements access controls for storage space on the SCSI storage devices" as "provides controls which limit a computer's access to a specific subset of storage devices or sections of a single storage device." (Exhibit 6, starting on page 3; Exhibit 6, page 15). The Gen5 did exactly that - a simple and reasonable configuration of the Gen5 would result in some computers having access to specific RAID sets (which could be a subset of storage devices or sections of a single

storage device), while other computers would not have access to those specific storage units.

The CRD-5500 had a similar access control called "Host LUN Mapping." The CRD-5500 Host LUN Mapping feature made it possible to map RAID sets differently to each host. (Exhibit 14, CRD-5500 User's Guide, pages 1-1 and 4-5). The IFT-3000 also had a similar feature for mapping LUNs to logical drives (Exhibit 15 Claim chart).

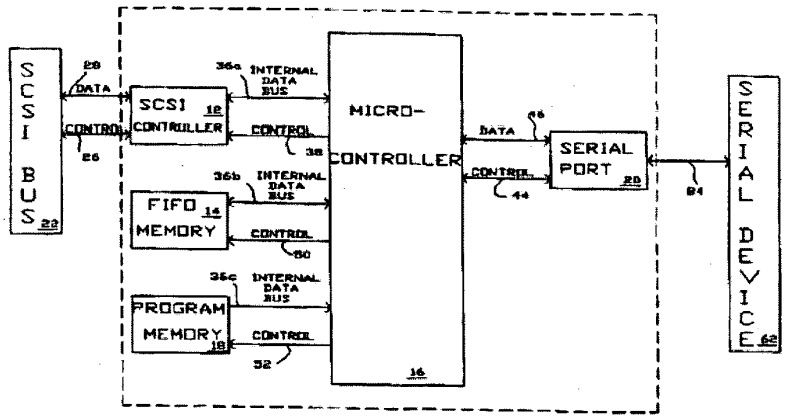
Thus, the Maxstrat Gen5, CRD-5500 and IFT-3000 (as well as the Iceberg and DEC HSZ70) all anticipate Claim 1 under 35 U.S.C. §102.

Claim 1 is Also Invalid Based on Adding Access Controls to U.S. Patents in the Prior Art

The RAID controllers discussed above anticipate and render the '035 Patent obvious because they include elements for "access control," as that term is used in the '035 Patent. The alleged invention of the '035 Patent can also be arrived at by starting with prior art U.S. Patents for storage routers and adding access controls. A listing of such prior art appears in Exhibits 1 and 22 and in Appendices B and C.

For example, U.S. Patent No. 5,748,924 (the '924 Patent) to Llorens, et al, filed October 17, 1995, issued May 5, 1998 is pertinent to discuss here, and a good reference to use for defining one such physical structure. As discussed above, 35 U.S.C. §303(a) authorizes the Patent Office to consider the Llorens prior art in a reexamination, even though this U.S. Patent was cited during the initial examination of the '035 Patent. The structure of Claim 1 in the '035 Patent is virtually identical to Fig. 1 of the '924 Patent shown below. (Exhibit 1).

'924 Patent to Llorens, Fig. 1




This figure identifies the same elements of the storage router depicted in Fig. 4 of the '035 Patent, such as a bus, Serial Device (Fibre Channel), and a memory (buffer).

Below is Fig. 4 of the '035 Patent.

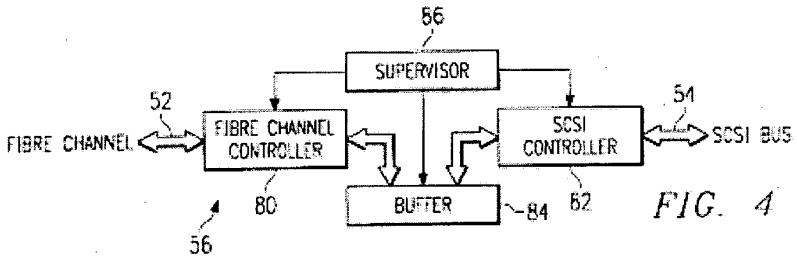



FIG. 4

The comparison between these two figures is striking. While Fig. 4 of the '035 Patent identifies data passing between the controllers and the buffer, it is important to note that this limitation is not present in Claim 1 of the '035 patent. This renders the functionality described by the two images to be nearly identical.

The '924 Patent was referenced as prior art in the '035 Patent application by the Patentees. This shows that a person skilled in the art at the time, such as the Patentees, would have known that the '924 was a relevant and useful foundation from which to solve the problems identified supra by the Patentees.

The '924 Patent addresses an adapter for facilitating communications between a Fibre Channel device and a SCSI device. This was also well known as described above in reference to the patents issued to Chatwani and Arrowood. The '924 structure allows for Fibre Channel to SCSI interfacing using native low-level block protocols, as discussed above. The use of low-level block protocols was also known in the prior art as shown in the patents issued to Malladi and Berman, shown above and addressed the known issue of reducing data translation requests. Further, the patentees admitted that Figure 2 of the '035 Patent was prior art.

While the '924 Patent addresses a single device on each side of the adapter, the principal could be expanded to a number of such devices. This is true where, as here, part of the statement of the problem in the field as sworn to by the inventor of the '035 Patent addressed multiple devices. This would include multiple devices cooperating with multiple storage units.

At the time of the '972 and '035 Patent Applications, a person skilled in the art trying to solve the problem of addressability of devices (as identified by the patentees) would certainly have relied upon disclosures in the prior art referring to access control from such sources as the patents issued to Oeda, Yung, Hefferon, DeKoning, Abadi, Hunnicutt, Raz, and Dauerer discussed above. Access control could be combined with transparent bridging between devices, which was well known in the art. See U.S. Patent No. 5,802,278 to Isfeld, et al, above. This combination provides virtual local storage as defined in the '035 Patent. (Exhibit 1).

Access control is not limited to any single embodiment. As identified in the written description of the '035 Patent, "Storage router 56 allows the configuration and modification of the storage allocated to each attached workstation 58 through the use of mapping tables or other mapping techniques." '035 Patent, starting at Column 4, Line 13. The claims of the '035 Patent cover any mapping techniques, and not just tables or

lists. As such, a person skilled in the art would have known of the numerous ways described above to achieve access control.

When viewing the teachings of the *Haugdahl* and *Bursky* articles, the Patentees sworn statements concerning issues that drove the field at the time of the alleged invention of the '035 Patent, and the numerous prior art references, it becomes clear that a person skilled in the art would have know to combine the references cited above and arrive at the '035 alleged invention.

Claim 2

Claim 2 depends from claim 1 and states:

> 2. The storage router of claim 1, wherein the supervisor unit maintains an allocation of subsets of storage space to associated devices connected to the first transport medium, wherein each subset is only accessible by the associated device connected to the first transport medium.

This claim is similar to Claim 2 of the '972 Patent, except that limitations for Fibre Channel and SCSI protocols have been removed, and the "to maintain a configuration ..." limitation has also been removed. A new limitation in this '035 Claim might also be that in this '035 Claim, the "supervisor unit maintains" that which "the configuration maintained by the supervisor includes" in the '972 Patent.

This claim specifies that each subset of storage space is only accessible by the associated device connected to the first transport medium.

This purported limitation is, however, just an aspect implied by the phrase "access controls" as found in Claim 1. If "access controls" mean "provides controls which limit a computer's access to a specific subset of storage devices or sections of a single storage device" (Exhibit 6, page 15), then limiting access to associate devices is simply one form of access control.

As discussed above with respect to Claim 1, the Maxstrat Gen5, CRD-5500 and IFT-3000 manuals all document exactly this kind of access control. Claim 2 is thus anticipated by the Gen5 RAID CRD-5500 and IFT-3000 RAID controller manuals.

Claim 3.

Claim 3 depends from claim 2 and states:

> 3. The storage router of claim 2, wherein the devices connected to the first transport medium comprise workstations.

This claim is similar to Claim 3 of the '972 Patent, except that limitations for Fibre Channel protocols have been removed.

Patentees own admissions, supra, identify that it was well known in the art that workstations were used routinely in conjunction with routers. In fact, the entire question of using a storage router would be moot if there were no workstations involved. This claim is squarely met in the prior art and a skilled person in the field would have found it obvious to connect workstations to the host (first transport medium) side of a storage router.

Claim 4.

Claim 4 depends from claim 2 and states:

> 4. The storage router of claim 2, wherein the storage devices comprise hard disk drives.

This claim is similar to Claim 4 of the '972 Patent, except that limitations for SCSI protocols have been removed.

Again, the Patentees own admissions, supra, identify that storage devices were routinely in the prior art. A person skilled in the art would have found it obvious to

connect a storage device to the storage side (second transport medium) of a storage router.

Claim 5.

Claim 5 depends from claim 1 and states:

> 5. The storage router of claim 1, wherein the first controller comprises:
>
> a first protocol unit operable to connect to the first transport medium;
>
> a first-in-first-out queue coupled to the first protocol unit; and
>
> a direct memory access (DMA) interface coupled to the first-in-first-out queue and to the buffer.

This claim is similar to Claim 5 of the '972 Patent, except that limitations for Fibre Channel protocols have been removed.

The written description in the '035 Patent identifies a Tachyon HPFC-5000 Fibre Channel controller as part of an embodiment of the alleged invention; prior art. As such, the Tachyon would have a first protocol unit, a first-in-first out queue coupled to the first protocol unit, and a DMA. This claim merely provides further definition for the first controller limitation found in the invalid claim 1. Thus, Claim 5 is anticipated and rendered obvious by the prior art.

Claim 6.

Claim 6 depends from claim 1 and states:

> 6. The storage router of claim 1, wherein the second controller comprises:
>
> a second protocol unit operable to connect to the second transport medium;
>
> an internal buffer coupled to the second protocol unit; and
>
> a direct memory access (DMA) interface coupled to the internal buffer and to the buffer of the storage router.

This claim is similar to Claim 6 of the '972 Patent, except that limitations for SCSI protocols have been removed.

The written description in the '035 Patent identifies a SYMBIOS 53C8xx SCSI controller as part of an embodiment of the alleged invention, and the SYMBIOS controller was prior art at that time. Claim 6, like Claim 5, merely provides further definition for the second controller limitation found in Claim 1.

Claim 7.

Claim 7 states:

> 7. A storage network, comprising:
> a first transport medium;
> a second transport medium;
> a plurality of workstations connected to the first transport medium;
> a plurality of storage devices connected to the second transport medium; and
> a storage router interfacing between the first transport medium and the second transport medium, the storage router providing virtual local storage on the storage devices to the workstations and operable:
> to map between the workstations and the storage devices;
> to implement access controls for storage space on the storage devices; and
> to allow access from the workstations to the storage devices using native low level, block protocol in accordance with the mapping and access controls.

This claim is similar to Claim 7 of the '972 Patent, except that limitations for Fibre Channel and SCSI protocols have been removed.

Claim 7 identifies a "storage router" as a limitation. Since the patentees have chosen to define the phrase "storage router" in Claim 1, Claim 7 thus includes the storage router of Claim 1. Claim 7 is therefore the storage router of Claim 1 combined with communication links (cables), workstations and storage devices.

The only thing claim 7 adds to the alleged invention of claim 1 are the workstations, storage devices, and cables (transport media). These are the components that would naturally be required to use the alleged invention of Claim 1 in its ordinary, intended manner. In addition, Figure 2 generally depicts a storage network. Since Figure 2 is admitted to be prior art, the idea of a storage network is also admittedly prior art. Finally, the manuals and claim charts for the Gen5, CRD-5500 and IFT-3000 show that these products were intended to be used with workstations and disk drives. Thus, Claim 7 is anticipated and rendered obvious by the same prior art that anticipates Claim 1 and renders Claim 1 obvious.



Claim 8.

Claim 8 depends from claim 7 and states:

> 8. The storage network of claim 7, wherein the access controls include an allocation of subsets of storage space to associated workstations, wherein each subset is only accessible by the associated workstation.

This claim is nearly identical to Claim 8 of the '972 Patent.

This claim merely restates the elements of Claim 2, but applied to Claim 7. Just as Claim 2 merely describes a prior-art aspect of "access control," so does Claim 8.

Claim 9.

Claim 9 depends from claim 7 and states:

> 9. The storage network of claim 7, wherein the storage devices comprise hard disk drives.

This claim is nearly identical to Claim 9 of the '972 Patent, except that limitations for Fibre Channel and SCSI protocols have been removed.

This claim merely restates the elements of Claim 4, but applied to Claim 7. Just as Claim 4 merely describes prior-art hard disk drives, so does Claim 9.

Claim 10.

Claim 10 depends from claim 7 and states:

> 10. The storage network of claim 7, wherein the storage router comprises:
> a buffer providing memory work space for the storage router;
> a first controller operable to connect to and interface with the first transport medium, the first controller further operable to pull outgoing data from the buffer and to place incoming data into the buffer;
> a second controller operable to connect to and interface with the second transport medium, the second controller further operable to pull outgoing data from the buffer and to place incoming data into the buffer; and
> a supervisor unit coupled to the first controller, the second controller and the buffer, the supervisor unit operable:
> to map between devices connected to the first transport medium and the storage devices, to implement the access controls for storage space on the storage devices and to process data in the buffer to interface between the first controller and the second controller to allow access from workstations to storage devices.

This claim is nearly identical to Claim 10 of the '972 Patent, except that limitations for Fibre Channel and SCSI protocols have been removed.

This claim merely restates the remaining elements of Claim 1 that were not expressly enumerated in Claim 7. These elements are clearly found in the Gen5, CRD-5500, and IFT-3000 RAID controllers, in the Tachyon and SYMBIOS controllers, as well as in many of the prior art U.S. Patents and articles describe in the appendices and exhibits.

Claim 11.

Claim 11 states:

> 11. A method for providing virtual local storage on remote storage devices connected to one transport medium to devices connected to another transport medium, comprising:
> interfacing with a first transport medium;
> interfacing with a second transport medium;
> mapping between devices connected to the first transport medium and the storage devices and that implements access controls for storage space on the storage devices; and
> allowing access from devices connected to the first transport medium to the storage devices using native low level, block protocols.

This claim is nearly identical to Claim 11 of the '972 Patent, except that limitations for Fibre Channel and SCSI protocols have been removed.

This claim merely restates the limitations of Claim 1, but in the form of a method claim. As such, like Claim 1, this claim is anticipated and rendered obvious by the numerous cited examples of prior art. See Honeywell International, Inc. v. Universal Avionics Systems Corp, 288 F.Supp.2d 638 (D.Del. 2003).

Claim 12.

Claim 12 depends from claim 11 and states:

> 12. The method of claim 11, wherein mapping between devices connected to the first transport medium and the storage devices includes allocating subsets of storage space to associated devices connected to the first transport medium, wherein each subset is only accessible by the associated device connected to the first transport medium.

This claim is nearly identical to Claim 11 of the '972 Patent, except that limitations for Fibre Channel and SCSI protocols have been removed.

This claim merely restates the elements of Claim 2, but applied to Claim 11. Just as Claim 2 merely describes a prior-art aspect of "access control," so does Claim 12.

Claim 13.

Claim 13 depends from claim 12 and states:

> 13. The method of claim 12, wherein the devices connected to the first transport medium comprise workstations.

This claim is nearly identical to Claim 14 of the '972 Patent, except that limitations for Fibre Channel protocols have been removed.

This claim merely restates the elements of Claim 3, but applied to Claim 12. Just as Claim 3 merely describes prior-art workstations, so does Claim 13.

Claim 14.

Claim 14 depends from claim 12 and states:

> 14. The method of claim 12, wherein the storage devices comprise hard disk drives.

This claim is nearly identical to Claim 14 of the '972 Patent, except that limitations for SCSI protocols have been removed.

This claim merely restates the elements of Claim 4, but applied to Claim 12. Just as Claim 4 merely describes prior-art hard disk drives, so does Claim 14.

As has been shown and amply demonstrated by the Maxstrat Gen5, CRD-5500 and IFT-3000 manuals, all claims of the '035 Patent are anticipated under 35 U.S.C. §102 by printed publications.

## XII. THERE ARE NO SECONDARY CONSIDERATIONS THAT WOULD INDICATE THAT THE ALLEGED INVENTION WAS NOT OBVIOUS

Secondary considerations for nonobviousness can include evidence of commercial success, long felt but unsolved needs, and failure of others. Graham v. John Deere Co., 383 U.S. 1, 17-18, 86 S.Ct. 684, 15 L.Ed.2d 545 (1966). As discussed above, there were no long felt but unsolved needs that the alleged invention addressed. Furthermore, there is no indication that others attempted and failed to arrive at the alleged invention.

As to commercial success, there must be a sufficient relationship, or "nexus", between the commercial success and the patented invention. Demaco Corp. v. F. Von Langsdorff Licensing Ltd., 851 F.2d 1387, 1392 (C.A.Fed.1988). "The term 'nexus' is often used, in this context, to designate a legally and factually sufficient connection between the proven success and the patented invention, such that the objective evidence should be considered in the determination of nonobviousness." Id at 1392. The burden of proof as to this connection or nexus resides with the Patentee. Id.

Crossroads, the assignee of the '035 Patent, has never manufactured a product that covers the '035 Patent or the '972 Patent. Crossroads has never even written the code necessary to implement access controls on a router. While Crossroads may contend that there has been licensing of the '035 Patent and '972 Patent, there is no indication that any such licensing was a result of the invention as opposed to a desire on the part of the licensee to avoid the litigious bent of the Crossroads. There is no evidence of any nexus that any licensing was the result of the success of the alleged invention as embodied in the '035 Patent and market driven forces where a customer sought said invention. The Inventors have never made a router product that performs access controls, as described in the '035 Patent; in fact, they have never even written any software that can perform access controls. There is no indication of secondary considerations.

## XIII. IN CONCLUSION, THE '035 PATENT IS INVALID AS BEING ANTICIPATED BY PRIOR ART RAID CONTROLLERS AND AS BEING

## OBVIOUS IN LIGHT OF THE NUMEROUS MOTIVATIONS TO COMBINE AND THE VAST PRIOR ART

The Maxstrat GEN5, CRD-5500, IFT-3000 and Iceberg (as well as the DEC HSZ70) satisfy every limitation that exists in the claims of the '035 Patent. Thus, they all anticipates the '035 Patent and therefore the '035 Patent is invalid.

The patentees have admitted under oath that the only inventive aspect of the '972 and '035 Patents was the movement of the "access controls" function from the network server into the router device. However, the combining of a storage router and access control and thereby arriving at the alleged invention of the '035 patent would have been obvious to one skilled in the art based on the numerous motivations to combine and the prior art references.

As to the question of obviousness, the existence of differences between prior art and the invention is not determinative. "But the mere existence of differences between the prior art and an invention does not establish the invention's nonobviousness. The gap between the prior art and respondent's system is simply not so great as to render the system nonobvious to one reasonably skilled in the art." Dann v. Johnston 425 U.S. 219, 230, 96 S.Ct. 1393, 1399 (U.S.Cust. & Pat.App.,1976)(a computer system case). In the present case, the gap is nonexistent due to the nature of the prior art and the clear motivation to combine. The '035 Patent is invalid as being anticipated and obvious.

**Appendix and Exhibit List for '035 Reexamination**

Following is a description of the appendices and exhibits included herein.

| | |
|---|---|
| Appendix A | Analysis of the meaning of claim terms of '035 Patent |
| Appendix B | Matrix of claim elements of '035 Patent found in prior art |
| Appendix C | Listing of possible prior art combinations showing obviousness |
| Exhibit 1 | Copies of patents and printed publications relied upon |
| Exhibit 2 | Patent at issue (6,425,035) |
| Exhibit 3 | Certification of service |
| Exhibit 4 | Differences between claims of '972, '036, '035 and '854 Patents |
| Exhibit 5 | Motion for Summary Judgment, *Crossroads v. Dot Hill* |
| | MSJ Exhibits 3, 4 & 5 — Declarations of DEC HSZ70 inventor & witnesses |
| | MSJ Exhibits 6, 7 & 8 — DEC HSZ70 Manuals |
| | MSJ Exhibit 11 — DEC HSZ70 Software excerpt |
| | MSJ Exhibit 15 — Chart comparing DEC HSZ70 with claims of '035 Patent |
| Exhibit 6 | Markman Order, *Crossroads v. Chaparral* |
| Exhibit 7 | *Marlow* case |
| Exhibit 8 | *McGaughey* case |
| Exhibit 9 | Trial transcript of Hoese, *Crossroads v. Chaparral* |
| Exhibit 10 | Chart comparing Gen5 with claims of '035 Patent |
| Exhibit 11 | Gen5 System Guide |
| Exhibit 12 | Gen5 GUI User's Guide |
| Exhibit 13 | Declaration that Gen5 configuration was available |
| Exhibit 14 | CRD-5500 User's Manual |
| Exhibit 15 | Chart comparing IFT-3000 with claims of '035 Patent |
| Exhibit 16 | IFT-3000 Instruction Manual |
| Exhibit 17 | *Flasck* case |
| Exhibit 18 | *Haugdahl* article |
| Exhibit 19 | *Bursky* article |
| Exhibit 20 | Deposition of Hoese, *Crossroads v. Chaparral* |
| Exhibit 21 | Trial transcript of Russell, *Crossroads v. Chaparral* |
| Exhibit 22 | Charts comparing prior art with claims of '035 Patent |

We respectfully request that reexamination of U.S. Patent No. 6,425,035 be undertaken based upon the substantial new question of Patentability raised herein.

July 19, 2004

Respectfully submitted,
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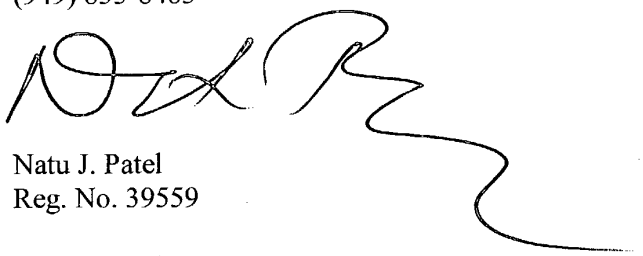
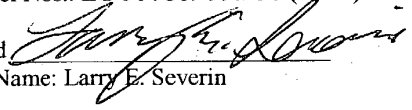


Natu J. Patel
Reg. No. 39559

Enclosures:

- Transmittal Form PTO/SB/57
- Appendices A, B and C
- Exhibits 1 through 22
- Check for $2,520.00, Check no.: 3407

I hereby certify that this is being deposited with the U.S. Postal Service "Express Mail Post Office to Addressee" service under 37 CFR § 1.10 on the date indicated below and is addressed to: Mail Stop Ex Parte Reexam, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450 on July 19, 2004. Express Mail Label Nos.: **EO 904 389 991 US (box 1) and EO 904 389 912 US (box 2).**

Dated: July 19, 2004 Signed 
Print Name: Larry E. Severin

## CERTIFICATE OF SERVICE

I hereby certify that a true copy of the attached **REQUEST FOR REEXAMINATION**, with accompanying exhibits, was served upon counsel of record at the address below via U.S. Postal Service Express Mail on July 19, 2004:

Gray Cary Ware & Freidenrich, LLP
Attn: Tracy McCreight, Esq.
1221 S. MoPac Expressway, Suite 400
Austin, TX 78746-6875

Date: July 19, 2004

Larry E. Severin

# APPENDICES

- **APPENDIX A**
- **APPENDIX B**
- **APPENDIX C**

# APPENDIX A

| 6,425,035 Patent | | Definition of limitation | | Prior Art |
|---|---|---|---|---|
| What is claimed is:<br><br>1. A storage router for providing | | "Storage router".<br>A device which provides virtual local storage, maps, implements access controls, and allows access using native low level block protocols, and which forwards data from devices (such as a personal computer) connected on one side of the router, through the router, to storage devices connected on the other side of the storage router.<br><br>Chaparral Markman Order | | "Storage router"<br>Admission by Patentee.<br>Trial transcript of Hoese. Page 81, starting at line 3.<br><br>Q. Figure – well, figure 2 is not your invention, right, sir?<br>A. Figure 2 is not my invention.<br>Q. And this description is in reference to figure 2, and this description mentions native low-level block protocols and mentions mapping, and you say figure 2 is not your invention?<br>A. That's correct.<br><br>By admission of the Patentee, mapping and low-level block protocol are not the Patentee's invention. They are, by admission, part of the prior art.<br><br>"Access control"<br>The specification discloses aspects of a distributed security system in which access to system resources is controlled by access control lists associated with each system resource.<br>U.S. Patent No. 5,315,657 to Abadi, et al.<br>Issued: May 24, 1994<br>Filed: September 28, 1990<br><br>Access control lists are used to define the extent to which different users will be allowed access to different resources on a server.....<br>Depending on the level of access control implemented on a given |

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| | | | server, access control lists for a given disk defines the access restrictions for all the resources or files stored on that disk.<br>U.S. Pat. No. 5,889,952<br>To Hunnicutt, et al<br>Issued: March 30, 1999<br>Filed: August 14, 1996<br>Under the "STATEMENT OF THE PROBLEM" as part of prior art as of the filing date of August 14, 1996.<br><br>Each host processor has exclusive access to its own set of storage devices and it cannot access the storage device of another host.<br>U.S. Pat. No. 5,860,137<br>To Raz, et al<br>Issued: January 12, 1999<br>Filed: July 21, 1995<br>Under the "BACKGROUND OF THE INVENTION"<br>As part of prior art as of the filing date of July 21, 1995<br><br>These groups of files from virtual disks, sometimes referred to as mini-disks, which for purposes of this description are identified by a number. A list of authorized users must exist for each mini-disk.<br>U.S. Pat. No. 5,469,576<br>To Dauerer, et al<br>Issued: November 21, 1995<br>Filed: March 22, 1993<br><br>"Virtual local storage"<br>Admission by Patentee.<br>Trial transcript of Hoese. Page 81, starting at line 3.<br><br>Q. Figure – well, figure 2 is not your invention, right, sir?<br>A. Figure 2 is not my invention. |

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| | | | In regards to Fig. 2, "A storage router 44 then serves to interconnect these mediums and provide devices on either medium global, transparent access to devices on the other medium."<br><br>'035 Patent, Col. 3 starting at line 38.<br><br>By admission of the Patentee, transparent access to devices is in the prior art. |
| virtual local storage on | | "Virtual local storage". A specific subset of overall data, stored in storage devices that are indirectly connected to and capable of physical separation from the devices connected to the first transport medium, which has the appearance and characteristics of storage on a device directly connected or contained within the workstation.<br><br>Chaparral Markman Order. | "Virtual local storage"<br>Admission by Patentee.<br>Trial transcript of Hoese. Page 81, starting at line 3.<br><br>Q. Figure – well, figure 2 is not your invention, right, sir?<br>B. Figure 2 is not my invention.<br><br>In regards to Fig. 2, "A storage router 44 then serves to interconnect these mediums and provide devices on either medium global, transparent access to devices on the other medium."<br><br>'035 Patent, Col. 3 starting at line 38.<br><br>By admission of the Patentee, transparent access to devices is in the prior art. |

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| | | | "Access control"<br>The specification discloses aspects of a distributed security system in which access to system resources is controlled by access control lists associated with each system resource.<br>U.S. Patent No. 5,315,657 to Abadi, et al.<br>Issued: May 24, 1994<br>Filed: September 28, 1990<br><br>Access control lists are used to define the extent to which different users will be allowed access to different resources on a server.....<br>Depending on the level of access control implemented on a given server, access control lists for a given disk defines the access restrictions for all the resources or files stored on that disk.<br>U.S. Pat. No. 5,889,952<br>To Hunnicutt, et al<br>Issued: March 30, 1999<br>Filed: August 14, 1996<br>Under the "STATEMENT OF THE PROBLEM" as part of prior art as of the filing date of August 14, 1996.<br><br>Each host processor has exclusive access to its own set of storage devices and it cannot access the storage device of another host.<br>U.S. Pat. No. 5,860,137<br>To Raz, et al<br>Issued: January 12, 1999<br>Filed: July 21, 1995<br>Under the "BACKGROUND OF THE INVENTION"<br>As part of prior art as of the filing date of July 21, 1995<br><br>These groups of files from virtual disks, sometimes referred to as mini-disks, which for purposes of this |

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| | | description are identified by a number. A list of authorized users must exist for each mini-disk.<br>U.S. Pat. No. 5,469,576<br>To Dauerer, et al<br>Issued: November 21, 1995<br>Filed: March 22, 1993 |
| remote | "Remote"<br>Indirectly connected and capable of physical separation.<br><br>Chaparral Markman Order. | "Remote"<br>Admission by Patentee.<br>Trial transcript of Hoese. Page 81, starting at line 3.<br><br>Q. Figure – well, figure 2 is not your invention, right, sir?<br>C. Figure 2 is not my invention.<br><br>Fig. 2 shows indirectly connected and separate storage devices. |
| storage devices to devices, comprising: | | "Storage devices"<br>Admission by Patentee.<br>Trial transcript of Hoese. Page 81, starting at line 3.<br><br>Q. Figure – well, figure 2 is not your invention, right, sir?<br>D. Figure 2 is not my invention.<br><br>Fig. 2 shows storage devices. |

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| a buffer providing memory work space for the storage router; | A buffer is a memory device that is utilized to temporarily hold data.<br><br>Chaparral Markman Order. | U.S. Patent No. 5,748,924 to Llorens, et al, filed October 17, 1995, issued May 5, 1998. |
| a first controller operable to connect to and interface with a first transport medium; | A device that interfaces with a first transport medium.<br><br>Based upon Chaparral Markman Order. | U.S. Patent No. 5,748,924 to Llorens, et al, filed October 17, 1995, issued May 5, 1998. |
| a second controller operable to connect to and interface with a second transport medium; and | A device that interfaces with a second transport medium.<br><br>Chaparral Markman Order. | U.S. Patent No. 5,748,924 to Llorens, et al, filed October 17, 1995, issued May 5, 1998. |
| a supervisor unit coupled to the first controller, the second controller and the buffer, the supervisor unit operable to | A microprocessor programmed to process data in a buffer in order to map between devices connected to the first transport medium and storage devices and which implements access controls.<br><br>Chaparral Markman Order. | U.S. Patent No. 5,748,924 to Llorens, et al, filed October 17, 1995, issued May 5, 1998. |
| map between devices connected to the first transport medium and the storage devices, to | To create a path from a device on one side of the storage router to a device on the other side of the router, i.e. from a Fibre Channel device to a SCSI device (or vice-versa). A "map" contains a representation of devices on each side of the storage router, so that when a device on one side of the storage router wants to communicate | Admission by Patentee.<br>Trial transcript of Hoese. Page 81, starting at line 3.<br><br>Q. Figure – well, figure 2 is not your invention, right, sir?<br>R. Figure 2 is not my invention.<br>Q. And this description is in reference to figure 2, and this description mentions native |

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| | with a device on the other side of the storage router, storage router can connect the devices.<br><br>Chaparral Markman Order. | | low-level block protocols and mentions mapping, and you say figure 2 is not your invention?<br>A. That's correct.<br><br>By admission of the Patentee, mapping is not part of the invention and is part of the prior art.<br><br>As to a map, "Storage router 44 uses tables to map devices from one medium to the other and distributes requests and data across Fiber Channel 32 and SCSI bus 34 without any security access controls."<br><br>'035 Patent, Col. 3 starting at line 56.<br><br>U.S. Patent No. 5,748,924 to Llorens , et al, filed October 17, 1995, issued May 5, 1998. |
| implement access controls for storage space on the storage devices and | The phrase "implements access controls for storage space on the SCSI storage devices" means provides controls which limit a computer's access to a specific subset of storage devices or sections of a single storage devices.<br><br>Chaparral Markman Order. | | "Access control"<br>The specification discloses aspects of a distributed security system in which access to system resources is controlled by access control lists associated with each system resource.<br>U.S. Patent No. 5,315,657 to Abadi, et al.<br>Issued: May 24, 1994<br>Filed: September 28, 1990<br><br>Access control lists are used to define the extent to which different users will be allowed access to different resources on a server.....<br>Depending on the level of access control implemented on a given server, access control lists for a given disk defines the access restrictions for all the resources or files stored on that disk. |

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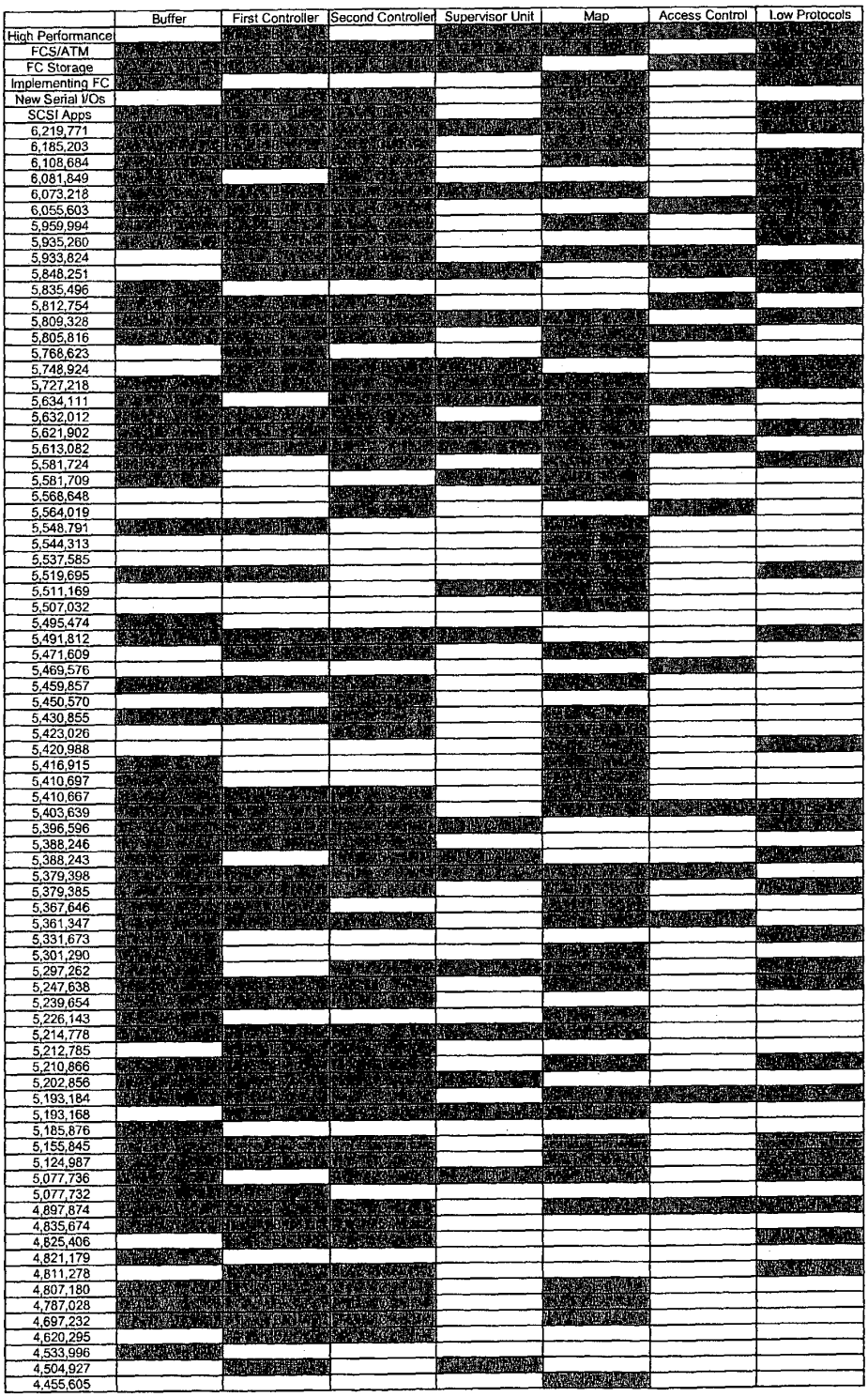
|---|---|---|---|---|
| | | | | U.S. Pat. No. 5,889,952<br>To Hunnicutt, et al<br>Issued: March 30, 1999<br>Filed: August 14, 1996<br>Under the "STATEMENT OF THE PROBLEM" as part of prior art as of the filing date of August 14, 1996.<br><br>Each host processor has exclusive access to its own set of storage devices and it cannot access the storage device of another host.<br>U.S. Pat. No. 5,860,137<br>To Raz, et al<br>Issued: January 12, 1999<br>Filed: July 21, 1995<br>Under the "BACKGROUND OF THE INVENTION"<br>As part of prior art as of the filing date of July 21, 1995<br><br>These groups of files from virtual disks, sometimes referred to as mini-disks, which for purposes of this description are identified by a number. A list of authorized users must exist for each mini-disk.<br>U.S. Pat. No. 5,469,576<br>To Dauerer, et al<br>Issued: November 21, 1995<br>Filed: March 22, 1993 |
| to process data in the buffer to interface between the first controller and the second controller to allow access from devices connected to the first transport medium to the storage devices using native low | | | | U.S. Patent No. 5,748,924 to Llorens, et al, filed October 17, 1995, issued May 5, 1998. |

| | | | |
|---|---|---|---|
| level, block protocols. | | | |

# APPENDIX B

**Infortrend 103 Obviousness Claim Comparison Chart for Patent No. '035**

**Independent Claim 1 Elements**



# APPENDIX C

**Combinations of Prior Art**
**Forming a Basis for Rejection under 35 U.S.C. §103 for**
**Claim 1 of U.S. Patent No. 6,425,035**

The chart following in the next pages shows how U.S. patents and other printed publications may be combined to form a basis for rejection of U.S. Patent No. 6,425,035 ("the '035 Patent") under 35 U.S.C. §103.

All U.S. patents listed here were filed before the effective filing date of the '035, and thus are available as prior art under 35 U.S.C. §102(e). The '035 Patent was filed on September 27, 2001, and claims priority to U.S. Patent No. 6,421,753 (filed on July 15, 1999), which in turn claims priority to U.S. Patent No. 5,941,972, which was filed on December 31, 1997. Thus, the effective filing date of the '035 Patent is December 31, 1997. All printed publications listed here that are not U.S. patents were published before the subject matter disclosed in the '035 Patent was invented, and thus are available as prior art under 35 U.S.C. §102(a). Some of these U.S. patents and printed publications were published more than one year before the '035 Patent was filed, and thus are also available as prior art under 35 U.S.C. §102(b).

Each primary prior art reference is listed in the chart as "Primary Reference," followed on the same line by a code listed as "Claim Elements" describing which claim elements are present in that primary prior art reference. For each primary prior art reference, a list of secondary prior art references are listed as "Secondary References" with an accompanying "Claim Elements" code describing which claim elements are present in that secondary prior art reference. When the primary art reference is combined with any one of the secondary prior art references, all elements of Claim 1 are met so as to support invalidation of Claim 1 of the '035 Patent under 35 U.S.C. §103.

Here are the claim element codes, a short paraphrased description in parentheses, and the corresponding portions of Claim 1 of the '035 Patent:

| | |
|---|---|
| - | "1. A storage router for providing virtual local storage on remote storage devices to devices, comprising: " |
| **A** | **(Buffer)**<br>"a buffer providing memory work space for the storage router;" |
| **B** | **(First Controller)**<br>"a first controller operable to connect to and interface with a first transport medium;" |
| **C** | **(Second Controller)**<br>"a second controller operable to connect to and interface with a second transport medium; and" |
| **D** | **(Supervisor Unit)**<br>"a supervisor unit coupled to the first controller, the second controller and the buffer," |
| **E** | **(Map)**<br>"the supervisor unit operable to map between devices connected to the first transport medium and the storage devices," |

| | |
|---|---|
| **F** | **(Access Control)**<br>"to implement access controls for storage space on the storage devices and" |
| - | "to process data in the buffer to interface between the first controller and the second controller to allow access from devices connected to the first transport medium to the storage devices" |
| **G** | **(Low Protocols)**<br>"using native low level, block protocols." |

This breakdown of elements is the same as that used in the analysis of Claim 1 in Appendix B and Exhibit 22, where the specific portions of the prior art references are related to elements of claims of the '035 Patent. The preamble to Claim 1 does not have a claim element code, because the preamble is not a limitation. The "to process the data ..." portion of claim 1 also does not have a claim element code, because this aspect is a natural and obvious consequence of being a storage router as described, and thus does not represent an independent limitation of Claim 1.

For example, Appendix B shows that U.S. Patent No. 6,219,771 has elements A, B, C, D, E, and G, but possibly not element F. The section of the detailed matrix in Exhibit 22 for U.S. Patent No. 6,219,771 includes specific references that meet many elements of Claim 1 of the '035 Patent, but no reference is listed for claim element F for Access Control. This means that U.S. Patent No. 6,219,771 may be combined with another prior art reference that includes a description of Access Control to support a 35 U.S.C. §103 rejection. Therefore, in the chart in this Exhibit, the Primary Reference entry for U.S. Patent No. 6,219,771 is followed by claim element codes ABCDEG. Listed below this primary reference is a list of several secondary prior art references that all include at least claim element F, so that any of these secondary pieces of prior art can be combined with U.S. Patent No. 6,219,771 to describe all the elements of Claim 1 and thereby render Claim 1 of the '035 Patent obvious.

# 6,425,035 Obviousness Combinations (need ABCDEFG)

***Primary Reference: SCSI applications on Fibre*** *Claim Elements: ABCEG*

| Secondary References | Claim Elements |
|---|---|
| High-Performance Data ... | BDEFG |
| Fibre channel storage ... | ABCDFG |
| 5,848,251 | BCDFG |
| 5,634,111 | ACDEF |
| 5,613,082 | ABCDEF |
| 5,379,398 | ABCDEF |

***Primary Reference: New Serial I/Os Speed ...*** *Claim Elements: BCE*

| Secondary References | Claim Elements |
|---|---|
| Fibre channel storage ... | ABCDFG |

***Primary Reference: Implementing a Fibre ...*** *Claim Elements: AEG*

| Secondary References | Claim Elements |
|---|---|
| Fibre channel storage ... | ABCDFG |
| 5,848,251 | BCDFG |
| 5,613,082 | ABCDEF |
| 5,379,398 | ABCDEF |

***Primary Reference: High-Performance Data ...*** *Claim Elements: BDEFG*

| Secondary References | Claim Elements |
|---|---|
| SCSI applications on Fibre... | ABCEG |
| Fibre channel storage ... | ABCDFG |
| Fiber Channel (FCS)/ATM ... | ABCDEG |
| 6,219,771 | ABCDEG |
| 6,185,203 | ABCDE |
| 6,081,849 | ACG |
| 6,055,603 | ABCFG |
| 5,959,994 | ABCEG |

| | |
|---|---|
| 5,935,260 | ABCG |
| 5,812,754 | ABCF |
| 5,809,328 | ABCDEG |
| 5,805,816 | ABCEF |
| 5,727,218 | ABCDEG |
| 5,634,111 | ACDEF |
| 5,632,012 | ABCE |
| 5,621,902 | ABCDEG |
| 5,613,082 | ABCDEF |
| 5,581,724 | ACEG |
| 5,491,812 | ABCDG |
| 5,459,857 | ABCE |
| 5,430,855 | ABCE |
| 5,410,667 | ABCE |
| 5,403,639 | ABCEFG |
| 5,396,596 | ABCDG |
| 5,388,246 | ABC |
| 5,388,243 | ACDG |
| 5,379,398 | ABCDEF |
| 5,379,385 | ABCEG |
| 5,361,347 | ABCEF |
| 5,297,262 | ACDEG |
| 5,247,638 | ABCEG |
| 5,239,654 | ABC |
| 5,214,778 | ABCDE |
| 5,210,866 | ABCEG |
| 5,202,856 | ABCD |
| 5,193,184 | ABCEFG |
| 5,155,845 | ABCEG |
| 5,124,987 | ABCEG |
| 5,077,736 | ACDEG |

| | |
|---|---|
| 4,897,874 | ABCEFG |
| 4,835,674 | ABC |
| 4,807,180 | ABCE |
| 4,787,028 | ABCE |
| 4,697,232 | ABCE |

***Primary Reference: Fibre channel storage ...*** *Claim Elements: ABCDFG*

| Secondary References | Claim Elements |
|---|---|
| SCSI applications on Fibre... | ABCEG |
| New Serial I/Os Speed ... | BCE |
| Implementing a Fibre ... | AEG |
| High-Performance Data ... | BDEFG |
| Fiber Channel (FCS)/ATM ... | ABCDEG |
| 6,219,771 | ABCDEG |
| 6,185,203 | ABCDE |
| 5,959,994 | ABCEG |
| 5,809,328 | ABCDEG |
| 5,805,816 | ABCEF |
| 5,768,623 | BE |
| 5,727,218 | ABCDEG |
| 5,634,111 | ACDEF |
| 5,632,012 | ABCE |
| 5,621,902 | ABCDEG |
| 5,613,082 | ABCDEF |
| 5,581,724 | ACEG |
| 5,581,709 | ADE |
| 5,568,648 | CE |
| 5,548,791 | ABE |
| 5,544,313 | E |
| 5,537,585 | E |
| 5,519,695 | ABEG |
| 5,511,169 | DE |

| | |
|---|---|
| 5,507,032 | E |
| 5,471,609 | BCE |
| 5,459,857 | ABCE |
| 5,430,855 | ABCE |
| 5,423,026 | CE |
| 5,420,988 | EG |
| 5,416,915 | AE |
| 5,410,697 | AE |
| 5,410,667 | ABCE |
| 5,403,639 | ABCEFG |
| 5,379,398 | ABCDEF |
| 5,379,385 | ABCEG |
| 5,367,646 | ABE |
| 5,361,347 | ABCEF |
| 5,301,290 | AE |
| 5,297,262 | ACDEG |
| 5,247,638 | ABCEG |
| 5,226,143 | AE |
| 5,214,778 | ABCDE |
| 5,210,866 | ABCEG |
| 5,193,184 | ABCEFG |
| 5,193,168 | BCDE |
| 5,155,845 | ABCEG |
| 5,124,987 | ABCEG |
| 5,077,736 | ACDEG |
| 4,897,874 | ABCEFG |
| 4,807,180 | ABCE |
| 4,787,028 | ABCE |
| 4,697,232 | ABCE |
| 4,455,605 | E |

***Primary Reference:*** ***Fiber Channel (FCS)/ATM*** *Claim Elements: ABCDEG*

| Secondary References | Claim Elements |
|---|---|
| High-Performance Data ... | BDEFG |
| Fibre channel storage ... | ABCDFG |
| 6,055,603 | ABCFG |
| 5,848,251 | BCDFG |
| 5,812,754 | ABCF |
| 5,805,816 | ABCEF |
| 5,634,111 | ACDEF |
| 5,613,082 | ABCDEF |
| 5,564,019 | CF |
| 5,469,576 | F |
| 5,403,639 | ABCEFG |
| 5,379,398 | ABCDEF |
| 5,361,347 | ABCEF |
| 5,193,184 | ABCEFG |
| 4,897,874 | ABCEFG |

***Primary Reference: 6,219,771*** *Claim Elements: ABCDEG*

| Secondary References | Claim Elements |
|---|---|
| High-Performance Data ... | BDEFG |
| Fibre channel storage ... | ABCDFG |
| 6,055,603 | ABCFG |
| 5,848,251 | BCDFG |
| 5,812,754 | ABCF |
| 5,805,816 | ABCEF |
| 5,634,111 | ACDEF |
| 5,613,082 | ABCDEF |
| 5,564,019 | CF |
| 5,469,576 | F |
| 5,403,639 | ABCEFG |
| 5,379,398 | ABCDEF |
| 5,361,347 | ABCEF |

| | |
|---|---|
| 5,193,184 | ABCEFG |
| 4,897,874 | ABCEFG |

***Primary Reference: 6,185,203*** *Claim Elements: ABCDE*

| Secondary References | Claim Elements |
|---|---|
| High-Performance Data ... | BDEFG |
| Fibre channel storage ... | ABCDFG |
| 6,055,603 | ABCFG |
| 5,848,251 | BCDFG |
| 5,403,639 | ABCEFG |
| 5,193,184 | ABCEFG |
| 4,897,874 | ABCEFG |

***Primary Reference: 6,081,849*** *Claim Elements: ACG*

| Secondary References | Claim Elements |
|---|---|
| High-Performance Data ... | BDEFG |
| 5,613,082 | ABCDEF |
| 5,379,398 | ABCDEF |

***Primary Reference: 6,055,603*** *Claim Elements: ABCFG*

| Secondary References | Claim Elements |
|---|---|
| High-Performance Data ... | BDEFG |
| Fiber Channel (FCS)/ATM ... | ABCDEG |
| 6,219,771 | ABCDEG |
| 6,185,203 | ABCDE |
| 5,809,328 | ABCDEG |
| 5,727,218 | ABCDEG |
| 5,634,111 | ACDEF |
| 5,621,902 | ABCDEG |
| 5,613,082 | ABCDEF |
| 5,581,709 | ADE |
| 5,511,169 | DE |
| 5,379,398 | ABCDEF |

| | |
|---|---|
| 5,297,262 | ACDEG |
| 5,214,778 | ABCDE |
| 5,193,168 | BCDE |
| 5,077,736 | ACDEG |

***Primary Reference: 5,959,994*** *Claim Elements: ABCEG*

| Secondary References | Claim Elements |
|---|---|
| High-Performance Data ... | BDEFG |
| Fibre channel storage ... | ABCDFG |
| 5,848,251 | BCDFG |
| 5,634,111 | ACDEF |
| 5,613,082 | ABCDEF |
| 5,379,398 | ABCDEF |

***Primary Reference: 5,935,260*** *Claim Elements: ABCG*

| Secondary References | Claim Elements |
|---|---|
| High-Performance Data ... | BDEFG |
| 5,634,111 | ACDEF |
| 5,613,082 | ABCDEF |
| 5,379,398 | ABCDEF |

***Primary Reference: 5,848,251*** *Claim Elements: BCDFG*

| Secondary References | Claim Elements |
|---|---|
| SCSI applications on Fibre... | ABCEG |
| Implementing a Fibre ... | AEG |
| Fiber Channel (FCS)/ATM ... | ABCDEG |
| 6,219,771 | ABCDEG |
| 6,185,203 | ABCDE |
| 5,959,994 | ABCEG |
| 5,809,328 | ABCDEG |
| 5,805,816 | ABCEF |
| 5,727,218 | ABCDEG |
| 5,634,111 | ACDEF |

| | |
|---|---|
| 5,632,012 | ABCE |
| 5,621,902 | ABCDEG |
| 5,613,082 | ABCDEF |
| 5,581,724 | ACEG |
| 5,581,709 | ADE |
| 5,548,791 | ABE |
| 5,519,695 | ABEG |
| 5,459,857 | ABCE |
| 5,430,855 | ABCE |
| 5,416,915 | AE |
| 5,410,697 | AE |
| 5,410,667 | ABCE |
| 5,403,639 | ABCEFG |
| 5,379,398 | ABCDEF |
| 5,379,385 | ABCEG |
| 5,367,646 | ABE |
| 5,361,347 | ABCEF |
| 5,301,290 | AE |
| 5,297,262 | ACDEG |
| 5,247,638 | ABCEG |
| 5,226,143 | AE |
| 5,214,778 | ABCDE |
| 5,210,866 | ABCEG |
| 5,193,184 | ABCEFG |
| 5,155,845 | ABCEG |
| 5,124,987 | ABCEG |
| 5,077,736 | ACDEG |
| 4,897,874 | ABCEFG |
| 4,807,180 | ABCE |
| 4,787,028 | ABCE |
| 4,697,232 | ABCE |

***Primary Reference: 5,835,496*** *Claim Elements: AG*

| Secondary References | Claim Elements |
|---|---|
| 5,613,082 | ABCDEF |
| 5,379,398 | ABCDEF |

***Primary Reference: 5,812,754*** *Claim Elements: ABCF*

| Secondary References | Claim Elements |
|---|---|
| High-Performance Data ... | BDEFG |
| Fiber Channel (FCS)/ATM ... | ABCDEG |
| 6,219,771 | ABCDEG |
| 5,809,328 | ABCDEG |
| 5,727,218 | ABCDEG |
| 5,621,902 | ABCDEG |
| 5,297,262 | ACDEG |
| 5,077,736 | ACDEG |

***Primary Reference: 5,809,328*** *Claim Elements: ABCDEG*

| Secondary References | Claim Elements |
|---|---|
| High-Performance Data ... | BDEFG |
| Fibre channel storage ... | ABCDFG |
| 6,055,603 | ABCFG |
| 5,848,251 | BCDFG |
| 5,812,754 | ABCF |
| 5,805,816 | ABCEF |
| 5,634,111 | ACDEF |
| 5,613,082 | ABCDEF |
| 5,564,019 | CF |
| 5,469,576 | F |
| 5,403,639 | ABCEFG |
| 5,379,398 | ABCDEF |
| 5,361,347 | ABCEF |
| 5,193,184 | ABCEFG |

| | |
|---|---|
| 4,897,874 | ABCEFG |

***Primary Reference: 5,805,816*** *Claim Elements: ABCEF*

| Secondary References | Claim Elements |
|---|---|
| High-Performance Data ... | BDEFG |
| Fibre channel storage ... | ABCDFG |
| Fiber Channel (FCS)/ATM ... | ABCDEG |
| 6,219,771 | ABCDEG |
| 5,848,251 | BCDFG |
| 5,809,328 | ABCDEG |
| 5,748,924 | BCDG |
| 5,727,218 | ABCDEG |
| 5,621,902 | ABCDEG |
| 5,491,812 | ABCDG |
| 5,396,596 | ABCDG |
| 5,388,243 | ACDG |
| 5,297,262 | ACDEG |
| 5,077,736 | ACDEG |

***Primary Reference: 5,768,623*** *Claim Elements: BE*

| Secondary References | Claim Elements |
|---|---|
| Fibre channel storage ... | ABCDFG |

***Primary Reference: 5,748,924*** *Claim Elements: BCDG*

| Secondary References | Claim Elements |
|---|---|
| 5,805,816 | ABCEF |
| 5,634,111 | ACDEF |
| 5,613,082 | ABCDEF |
| 5,403,639 | ABCEFG |
| 5,379,398 | ABCDEF |
| 5,361,347 | ABCEF |
| 5,193,184 | ABCEFG |
| 4,897,874 | ABCEFG |

***Primary Reference: 5,727,218*** *Claim Elements: ABCDEG*

| Secondary References | Claim Elements |
|---|---|
| High-Performance Data ... | BDEFG |
| Fibre channel storage ... | ABCDFG |
| 6,055,603 | ABCFG |
| 5,848,251 | BCDFG |
| 5,812,754 | ABCF |
| 5,805,816 | ABCEF |
| 5,634,111 | ACDEF |
| 5,613,082 | ABCDEF |
| 5,564,019 | CF |
| 5,469,576 | F |
| 5,403,639 | ABCEFG |
| 5,379,398 | ABCDEF |
| 5,361,347 | ABCEF |
| 5,193,184 | ABCEFG |
| 4,897,874 | ABCEFG |

***Primary Reference: 5,634,111*** *Claim Elements: ACDEF*

| Secondary References | Claim Elements |
|---|---|
| SCSI applications on Fibre... | ABCEG |
| High-Performance Data ... | BDEFG |
| Fibre channel storage ... | ABCDFG |
| Fiber Channel (FCS)/ATM ... | ABCDEG |
| 6,219,771 | ABCDEG |
| 6,055,603 | ABCFG |
| 5,959,994 | ABCEG |
| 5,935,260 | ABCG |
| 5,848,251 | BCDFG |
| 5,809,328 | ABCDEG |
| 5,748,924 | BCDG |
| 5,727,218 | ABCDEG |

| | |
|---|---|
| 5,621,902 | ABCDEG |
| 5,519,695 | ABEG |
| 5,491,812 | ABCDG |
| 5,403,639 | ABCEFG |
| 5,396,596 | ABCDG |
| 5,379,385 | ABCEG |
| 5,247,638 | ABCEG |
| 5,210,866 | ABCEG |
| 5,193,184 | ABCEFG |
| 5,155,845 | ABCEG |
| 5,124,987 | ABCEG |
| 4,897,874 | ABCEFG |
| 4,825,406 | BCG |
| 4,811,278 | BCG |

***Primary Reference: 5,632,012*** *Claim Elements: ABCE*

| Secondary References | Claim Elements |
|---|---|
| High-Performance Data ... | BDEFG |
| Fibre channel storage ... | ABCDFG |
| 5,848,251 | BCDFG |

***Primary Reference: 5,621,902*** *Claim Elements: ABCDEG*

| Secondary References | Claim Elements |
|---|---|
| High-Performance Data ... | BDEFG |
| Fibre channel storage ... | ABCDFG |
| 6,055,603 | ABCFG |
| 5,848,251 | BCDFG |
| 5,812,754 | ABCF |
| 5,805,816 | ABCEF |
| 5,634,111 | ACDEF |
| 5,613,082 | ABCDEF |
| 5,564,019 | CF |
| 5,469,576 | F |

| | |
|---|---|
| 5,403,639 | ABCEFG |
| 5,379,398 | ABCDEF |
| 5,361,347 | ABCEF |
| 5,193,184 | ABCEFG |
| 4,897,874 | ABCEFG |

***Primary Reference: 5,613,082*** *Claim Elements: ABCDEF*

| **Secondary References** | **Claim Elements** |
|---|---|
| SCSI applications on Fibre... | ABCEG |
| Implementing a Fibre ... | AEG |
| High-Performance Data ... | BDEFG |
| Fibre channel storage ... | ABCDFG |
| Fiber Channel (FCS)/ATM ... | ABCDEG |
| 6,219,771 | ABCDEG |
| 6,081,849 | ACG |
| 6,055,603 | ABCFG |
| 5,959,994 | ABCEG |
| 5,935,260 | ABCG |
| 5,848,251 | BCDFG |
| 5,835,496 | AG |
| 5,809,328 | ABCDEG |
| 5,748,924 | BCDG |
| 5,727,218 | ABCDEG |
| 5,621,902 | ABCDEG |
| 5,581,724 | ACEG |
| 5,519,695 | ABEG |
| 5,491,812 | ABCDG |
| 5,420,988 | EG |
| 5,403,639 | ABCEFG |
| 5,396,596 | ABCDG |
| 5,388,243 | ACDG |
| 5,379,385 | ABCEG |

| | |
|---|---|
| 5,331,673 | AG |
| 5,297,262 | ACDEG |
| 5,247,638 | ABCEG |
| 5,210,866 | ABCEG |
| 5,193,184 | ABCEFG |
| 5,155,845 | ABCEG |
| 5,124,987 | ABCEG |
| 5,077,736 | ACDEG |
| 4,897,874 | ABCEFG |
| 4,825,406 | BCG |
| 4,811,278 | BCG |

***Primary Reference: 5,581,724*** *Claim Elements: ACEG*

| Secondary References | Claim Elements |
|---|---|
| High-Performance Data ... | BDEFG |
| Fibre channel storage ... | ABCDFG |
| 5,848,251 | BCDFG |
| 5,613,082 | ABCDEF |
| 5,379,398 | ABCDEF |

***Primary Reference: 5,581,709*** *Claim Elements: ADE*

| Secondary References | Claim Elements |
|---|---|
| Fibre channel storage ... | ABCDFG |
| 6,055,603 | ABCFG |
| 5,848,251 | BCDFG |
| 5,403,639 | ABCEFG |
| 5,193,184 | ABCEFG |
| 4,897,874 | ABCEFG |

***Primary Reference: 5,568,648*** *Claim Elements: CE*

| Secondary References | Claim Elements |
|---|---|
| Fibre channel storage ... | ABCDFG |

***Primary Reference: 5,564,019*** *Claim Elements: CF*

| Secondary References | Claim Elements |
|---|---|
| Fiber Channel (FCS)/ATM ... | ABCDEG |
| 6,219,771 | ABCDEG |
| 5,809,328 | ABCDEG |
| 5,727,218 | ABCDEG |
| 5,621,902 | ABCDEG |

***Primary Reference: 5,548,791*** *Claim Elements: ABE*

| Secondary References | Claim Elements |
|---|---|
| Fibre channel storage ... | ABCDFG |
| 5,848,251 | BCDFG |

***Primary Reference: 5,544,313*** *Claim Elements: E*

| Secondary References | Claim Elements |
|---|---|
| Fibre channel storage ... | ABCDFG |

***Primary Reference: 5,537,585*** *Claim Elements: E*

| Secondary References | Claim Elements |
|---|---|
| Fibre channel storage ... | ABCDFG |

***Primary Reference: 5,519,695*** *Claim Elements: ABEG*

| Secondary References | Claim Elements |
|---|---|
| Fibre channel storage ... | ABCDFG |
| 5,848,251 | BCDFG |
| 5,634,111 | ACDEF |
| 5,613,082 | ABCDEF |
| 5,379,398 | ABCDEF |

***Primary Reference: 5,511,169*** *Claim Elements: DE*

| Secondary References | Claim Elements |
|---|---|
| Fibre channel storage ... | ABCDFG |
| 6,055,603 | ABCFG |
| 5,403,639 | ABCEFG |
| 5,193,184 | ABCEFG |

| | |
|---|---|
| 4,897,874 | ABCEFG |

***Primary Reference: 5,507,032*** *Claim Elements: E*

| Secondary References | Claim Elements |
|---|---|
| Fibre channel storage ... | ABCDFG |

***Primary Reference: 5,491,812*** *Claim Elements: ABCDG*

| Secondary References | Claim Elements |
|---|---|
| High-Performance Data ... | BDEFG |
| 5,805,816 | ABCEF |
| 5,634,111 | ACDEF |
| 5,613,082 | ABCDEF |
| 5,403,639 | ABCEFG |
| 5,379,398 | ABCDEF |
| 5,361,347 | ABCEF |
| 5,193,184 | ABCEFG |
| 4,897,874 | ABCEFG |

***Primary Reference: 5,471,609*** *Claim Elements: BCE*

| Secondary References | Claim Elements |
|---|---|
| Fibre channel storage ... | ABCDFG |

***Primary Reference: 5,469,576*** *Claim Elements: F*

| Secondary References | Claim Elements |
|---|---|
| Fiber Channel (FCS)/ATM ... | ABCDEG |
| 6,219,771 | ABCDEG |
| 5,809,328 | ABCDEG |
| 5,727,218 | ABCDEG |
| 5,621,902 | ABCDEG |

***Primary Reference: 5,459,857*** *Claim Elements: ABCE*

| Secondary References | Claim Elements |
|---|---|
| High-Performance Data ... | BDEFG |
| Fibre channel storage ... | ABCDFG |

| | |
|---|---|
| 5,848,251 | BCDFG |

***Primary Reference: 5,430,855*** *Claim Elements: ABCE*

| Secondary References | Claim Elements |
|---|---|
| High-Performance Data ... | BDEFG |
| Fibre channel storage ... | ABCDFG |
| 5,848,251 | BCDFG |

***Primary Reference: 5,423,026*** *Claim Elements: CE*

| Secondary References | Claim Elements |
|---|---|
| Fibre channel storage ... | ABCDFG |

***Primary Reference: 5,420,988*** *Claim Elements: EG*

| Secondary References | Claim Elements |
|---|---|
| Fibre channel storage ... | ABCDFG |
| 5,613,082 | ABCDEF |
| 5,379,398 | ABCDEF |

***Primary Reference: 5,416,915*** *Claim Elements: AE*

| Secondary References | Claim Elements |
|---|---|
| Fibre channel storage ... | ABCDFG |
| 5,848,251 | BCDFG |

***Primary Reference: 5,410,697*** *Claim Elements: AE*

| Secondary References | Claim Elements |
|---|---|
| Fibre channel storage ... | ABCDFG |
| 5,848,251 | BCDFG |

***Primary Reference: 5,410,667*** *Claim Elements: ABCE*

| Secondary References | Claim Elements |
|---|---|
| High-Performance Data ... | BDEFG |
| Fibre channel storage ... | ABCDFG |
| 5,848,251 | BCDFG |

***Primary Reference: 5,403,639*** *Claim Elements: ABCEFG*

| Secondary References | Claim Elements |
|---|---|
| High-Performance Data ... | BDEFG |
| Fibre channel storage ... | ABCDFG |
| Fiber Channel (FCS)/ATM ... | ABCDEG |
| 6,219,771 | ABCDEG |
| 6,185,203 | ABCDE |
| 5,848,251 | BCDFG |
| 5,809,328 | ABCDEG |
| 5,748,924 | BCDG |
| 5,727,218 | ABCDEG |
| 5,634,111 | ACDEF |
| 5,621,902 | ABCDEG |
| 5,613,082 | ABCDEF |
| 5,581,709 | ADE |
| 5,511,169 | DE |
| 5,491,812 | ABCDG |
| 5,396,596 | ABCDG |
| 5,388,243 | ACDG |
| 5,379,398 | ABCDEF |
| 5,297,262 | ACDEG |
| 5,214,778 | ABCDE |
| 5,202,856 | ABCD |
| 5,193,168 | BCDE |
| 5,077,736 | ACDEG |
| 4,504,927 | BD |

***Primary Reference: 5,396,596*** *Claim Elements: ABCDG*

| Secondary References | Claim Elements |
|---|---|
| High-Performance Data ... | BDEFG |
| 5,805,816 | ABCEF |
| 5,634,111 | ACDEF |
| 5,613,082 | ABCDEF |

| | |
|---|---|
| 5,403,639 | ABCEFG |
| 5,379,398 | ABCDEF |
| 5,361,347 | ABCEF |
| 5,193,184 | ABCEFG |
| 4,897,874 | ABCEFG |

***Primary Reference: 5,388,246*** *Claim Elements: ABC*

| Secondary References | Claim Elements |
|---|---|
| High-Performance Data ... | BDEFG |

***Primary Reference: 5,388,243*** *Claim Elements: ACDG*

| Secondary References | Claim Elements |
|---|---|
| High-Performance Data ... | BDEFG |
| 5,805,816 | ABCEF |
| 5,613,082 | ABCDEF |
| 5,403,639 | ABCEFG |
| 5,379,398 | ABCDEF |
| 5,361,347 | ABCEF |
| 5,193,184 | ABCEFG |
| 4,897,874 | ABCEFG |

***Primary Reference: 5,379,398*** *Claim Elements: ABCDEF*

| Secondary References | Claim Elements |
|---|---|
| SCSI applications on Fibre... | ABCEG |
| Implementing a Fibre ... | AEG |
| High-Performance Data ... | BDEFG |
| Fibre channel storage ... | ABCDFG |
| Fiber Channel (FCS)/ATM ... | ABCDEG |
| 6,219,771 | ABCDEG |
| 6,081,849 | ACG |
| 6,055,603 | ABCFG |
| 5,959,994 | ABCEG |
| 5,935,260 | ABCG |

| | |
|---|---|
| 5,848,251 | BCDFG |
| 5,835,496 | AG |
| 5,809,328 | ABCDEG |
| 5,748,924 | BCDG |
| 5,727,218 | ABCDEG |
| 5,621,902 | ABCDEG |
| 5,581,724 | ACEG |
| 5,519,695 | ABEG |
| 5,491,812 | ABCDG |
| 5,420,988 | EG |
| 5,403,639 | ABCEFG |
| 5,396,596 | ABCDG |
| 5,388,243 | ACDG |
| 5,379,385 | ABCEG |
| 5,331,673 | AG |
| 5,297,262 | ACDEG |
| 5,247,638 | ABCEG |
| 5,210,866 | ABCEG |
| 5,193,184 | ABCEFG |
| 5,155,845 | ABCEG |
| 5,124,987 | ABCEG |
| 5,077,736 | ACDEG |
| 4,897,874 | ABCEFG |
| 4,825,406 | BCG |
| 4,811,278 | BCG |

***Primary Reference: 5,379,385*** *Claim Elements: ABCEG*

| **Secondary References** | **Claim Elements** |
|---|---|
| High-Performance Data … | BDEFG |
| Fibre channel storage … | ABCDFG |
| 5,848,251 | BCDFG |
| 5,634,111 | ACDEF |

| | |
|---|---|
| 5,613,082 | ABCDEF |
| 5,379,398 | ABCDEF |

***Primary Reference: 5,367,646*** *Claim Elements: ABE*

| Secondary References | Claim Elements |
|---|---|
| Fibre channel storage ... | ABCDFG |
| 5,848,251 | BCDFG |

***Primary Reference: 5,361,347*** *Claim Elements: ABCEF*

| Secondary References | Claim Elements |
|---|---|
| High-Performance Data ... | BDEFG |
| Fibre channel storage ... | ABCDFG |
| Fiber Channel (FCS)/ATM ... | ABCDEG |
| 6,219,771 | ABCDEG |
| 5,848,251 | BCDFG |
| 5,809,328 | ABCDEG |
| 5,748,924 | BCDG |
| 5,727,218 | ABCDEG |
| 5,621,902 | ABCDEG |
| 5,491,812 | ABCDG |
| 5,396,596 | ABCDG |
| 5,388,243 | ACDG |
| 5,297,262 | ACDEG |
| 5,077,736 | ACDEG |

***Primary Reference: 5,331,673*** *Claim Elements: AG*

| Secondary References | Claim Elements |
|---|---|
| 5,613,082 | ABCDEF |
| 5,379,398 | ABCDEF |

***Primary Reference: 5,301,290*** *Claim Elements: AE*

| Secondary References | Claim Elements |
|---|---|
| Fibre channel storage ... | ABCDFG |
| 5,848,251 | BCDFG |

***Primary Reference: 5,297,262*** *Claim Elements: ACDEG*

| Secondary References | Claim Elements |
|---|---|
| High-Performance Data ... | BDEFG |
| Fibre channel storage ... | ABCDFG |
| 6,055,603 | ABCFG |
| 5,848,251 | BCDFG |
| 5,812,754 | ABCF |
| 5,805,816 | ABCEF |
| 5,613,082 | ABCDEF |
| 5,403,639 | ABCEFG |
| 5,379,398 | ABCDEF |
| 5,361,347 | ABCEF |
| 5,193,184 | ABCEFG |
| 4,897,874 | ABCEFG |

***Primary Reference: 5,247,638*** *Claim Elements: ABCEG*

| Secondary References | Claim Elements |
|---|---|
| High-Performance Data ... | BDEFG |
| Fibre channel storage ... | ABCDFG |
| 5,848,251 | BCDFG |
| 5,634,111 | ACDEF |
| 5,613,082 | ABCDEF |
| 5,379,398 | ABCDEF |

***Primary Reference: 5,239,654*** *Claim Elements: ABC*

| Secondary References | Claim Elements |
|---|---|
| High-Performance Data ... | BDEFG |

***Primary Reference: 5,226,143*** *Claim Elements: AE*

| Secondary References | Claim Elements |
|---|---|
| Fibre channel storage ... | ABCDFG |
| 5,848,251 | BCDFG |

***Primary Reference: 5,214,778*** *Claim Elements: ABCDE*

| Secondary References | Claim Elements |
|---|---|
| High-Performance Data ... | BDEFG |
| Fibre channel storage ... | ABCDFG |
| 6,055,603 | ABCFG |
| 5,848,251 | BCDFG |
| 5,403,639 | ABCEFG |
| 5,193,184 | ABCEFG |
| 4,897,874 | ABCEFG |

***Primary Reference: 5,210,866*** *Claim Elements: ABCEG*

| Secondary References | Claim Elements |
|---|---|
| High-Performance Data ... | BDEFG |
| Fibre channel storage ... | ABCDFG |
| 5,848,251 | BCDFG |
| 5,634,111 | ACDEF |
| 5,613,082 | ABCDEF |
| 5,379,398 | ABCDEF |

***Primary Reference: 5,202,856*** *Claim Elements: ABCD*

| Secondary References | Claim Elements |
|---|---|
| High-Performance Data ... | BDEFG |
| 5,403,639 | ABCEFG |
| 5,193,184 | ABCEFG |
| 4,897,874 | ABCEFG |

***Primary Reference: 5,193,184*** *Claim Elements: ABCEFG*

| Secondary References | Claim Elements |
|---|---|
| High-Performance Data ... | BDEFG |
| Fibre channel storage ... | ABCDFG |
| Fiber Channel (FCS)/ATM ... | ABCDEG |
| 6,219,771 | ABCDEG |
| 6,185,203 | ABCDE |

| | |
|---|---|
| 5,848,251 | BCDFG |
| 5,809,328 | ABCDEG |
| 5,748,924 | BCDG |
| 5,727,218 | ABCDEG |
| 5,634,111 | ACDEF |
| 5,621,902 | ABCDEG |
| 5,613,082 | ABCDEF |
| 5,581,709 | ADE |
| 5,511,169 | DE |
| 5,491,812 | ABCDG |
| 5,396,596 | ABCDG |
| 5,388,243 | ACDG |
| 5,379,398 | ABCDEF |
| 5,297,262 | ACDEG |
| 5,214,778 | ABCDE |
| 5,202,856 | ABCD |
| 5,193,168 | BCDE |
| 5,077,736 | ACDEG |
| 4,504,927 | BD |

***Primary Reference: 5,193,168*** *Claim Elements: BCDE*

| Secondary References | Claim Elements |
|---|---|
| Fibre channel storage ... | ABCDFG |
| 6,055,603 | ABCFG |
| 5,403,639 | ABCEFG |
| 5,193,184 | ABCEFG |
| 4,897,874 | ABCEFG |

***Primary Reference: 5,155,845*** *Claim Elements: ABCEG*

| Secondary References | Claim Elements |
|---|---|
| High-Performance Data ... | BDEFG |
| Fibre channel storage ... | ABCDFG |
| 5,848,251 | BCDFG |

| | |
|---|---|
| 5,634,111 | ACDEF |
| 5,613,082 | ABCDEF |
| 5,379,398 | ABCDEF |

***Primary Reference: 5,124,987*** *Claim Elements: ABCEG*

| Secondary References | Claim Elements |
|---|---|
| High-Performance Data ... | BDEFG |
| Fibre channel storage ... | ABCDFG |
| 5,848,251 | BCDFG |
| 5,634,111 | ACDEF |
| 5,613,082 | ABCDEF |
| 5,379,398 | ABCDEF |

***Primary Reference: 5,077,736*** *Claim Elements: ACDEG*

| Secondary References | Claim Elements |
|---|---|
| High-Performance Data ... | BDEFG |
| Fibre channel storage ... | ABCDFG |
| 6,055,603 | ABCFG |
| 5,848,251 | BCDFG |
| 5,812,754 | ABCF |
| 5,805,816 | ABCEF |
| 5,613,082 | ABCDEF |
| 5,403,639 | ABCEFG |
| 5,379,398 | ABCDEF |
| 5,361,347 | ABCEF |
| 5,193,184 | ABCEFG |
| 4,897,874 | ABCEFG |

***Primary Reference: 4,897,874*** *Claim Elements: ABCEFG*

| Secondary References | Claim Elements |
|---|---|
| High-Performance Data ... | BDEFG |
| Fibre channel storage ... | ABCDFG |
| Fiber Channel (FCS)/ATM ... | ABCDEG |

| | |
|---|---|
| 6,219,771 | ABCDEG |
| 6,185,203 | ABCDE |
| 5,848,251 | BCDFG |
| 5,809,328 | ABCDEG |
| 5,748,924 | BCDG |
| 5,727,218 | ABCDEG |
| 5,634,111 | ACDEF |
| 5,621,902 | ABCDEG |
| 5,613,082 | ABCDEF |
| 5,581,709 | ADE |
| 5,511,169 | DE |
| 5,491,812 | ABCDG |
| 5,396,596 | ABCDG |
| 5,388,243 | ACDG |
| 5,379,398 | ABCDEF |
| 5,297,262 | ACDEG |
| 5,214,778 | ABCDE |
| 5,202,856 | ABCD |
| 5,193,168 | BCDE |
| 5,077,736 | ACDEG |
| 4,504,927 | BD |

***Primary Reference: 4,835,674*** *Claim Elements: ABC*

| Secondary References | Claim Elements |
|---|---|
| High-Performance Data ... | BDEFG |

***Primary Reference: 4,825,406*** *Claim Elements: BCG*

| Secondary References | Claim Elements |
|---|---|
| 5,634,111 | ACDEF |
| 5,613,082 | ABCDEF |
| 5,379,398 | ABCDEF |

***Primary Reference: 4,811,278*** *Claim Elements: BCG*

| Secondary References | Claim Elements |
|---|---|
| 5,634,111 | ACDEF |
| 5,613,082 | ABCDEF |
| 5,379,398 | ABCDEF |

***Primary Reference: 4,807,180*** *Claim Elements: ABCE*

| Secondary References | Claim Elements |
|---|---|
| High-Performance Data ... | BDEFG |
| Fibre channel storage ... | ABCDFG |
| 5,848,251 | BCDFG |

***Primary Reference: 4,787,028*** *Claim Elements: ABCE*

| Secondary References | Claim Elements |
|---|---|
| High-Performance Data ... | BDEFG |
| Fibre channel storage ... | ABCDFG |
| 5,848,251 | BCDFG |

***Primary Reference: 4,697,232*** *Claim Elements: ABCE*

| Secondary References | Claim Elements |
|---|---|
| High-Performance Data ... | BDEFG |
| Fibre channel storage ... | ABCDFG |
| 5,848,251 | BCDFG |

***Primary Reference: 4,504,927*** *Claim Elements: BD*

| Secondary References | Claim Elements |
|---|---|
| 5,403,639 | ABCEFG |
| 5,193,184 | ABCEFG |
| 4,897,874 | ABCEFG |

***Primary Reference: 4,455,605*** *Claim Elements: E*

| Secondary References | Claim Elements |
|---|---|
| Fibre channel storage ... | ABCDFG |

US006425035B2

(12) **United States Patent**
**Hoese et al.**

(10) **Patent No.: US 6,425,035 B2**
(45) **Date of Patent: *Jul. 23, 2002**

(54) **STORAGE ROUTER AND METHOD FOR PROVIDING VIRTUAL LOCAL STORAGE**

(75) Inventors: **Geoffrey B. Hoese**, Austin; **Jeffry T. Russell**, Cibolo, both of TX (US)

(73) Assignee: **Crossroads Systems, Inc.**, Austin, TX (US)

( * ) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 0 days.

This patent is subject to a terminal disclaimer.

(21) Appl. No.: **09/965,335**

(22) Filed: **Sep. 27, 2001**

**Related U.S. Application Data**

(63) Continuation of application No. 09/354,682, filed on Jul. 15, 1999, which is a continuation of application No. 09/001,799, filed on Dec. 31, 1997, now Pat. No. 5,941,972.

(51) **Int. Cl.**[7] ..... **G06F 13/00**

(52) **U.S. Cl.** ..... **710/129**; 710/128; 710/8; 710/36; 710/105

(58) **Field of Search** ..... 710/1–5, 8–13, 710/36–38, 105, 100–101, 126–131; 711/100, 112, 113; 714/42

(56) **References Cited**

U.S. PATENT DOCUMENTS

| | | | | |
|---|---|---|---|---|
| 5,748,924 | A * | 5/1998 | Llorens et al. | 710/129 |
| 5,768,623 | A * | 6/1998 | Judd et al. | 710/37 |
| 5,809,328 | A * | 9/1998 | Nogales et al. | 710/5 |
| 5,812,754 | A * | 9/1998 | Lui et al. | 714/6 |
| 5,835,496 | A * | 11/1998 | Yeung et al. | 370/514 |
| 5,848,251 | A * | 12/1998 | Lomelino et al. | 710/129 |
| 5,935,260 | A * | 8/1999 | Ofer | 714/42 |
| 5,941,972 | A * | 8/1999 | Hoese et al. | 710/129 |
| 5,959,994 | A * | 9/1999 | Boggs et al. | 370/399 |
| 6,041,381 | A * | 3/2000 | Hoese | 710/129 |
| 6,055,603 | A * | 4/2000 | Ofer et al. | 711/113 |
| 6,065,087 | A * | 5/2000 | Keaveny et al. | 710/129 |
| 6,075,863 | A * | 6/2000 | Krishnan et al. | 380/49 |
| 6,098,149 | A * | 8/2000 | Ofer et al. | 711/112 |
| 6,118,766 | A * | 9/2000 | Akers | 370/249 |
| 6,148,004 | A * | 11/2000 | Nelson et al. | 370/463 |
| 6,185,203 | B1 * | 2/2001 | Berman | 370/351 |
| 6,209,023 | B1 * | 3/2001 | Dimitroff et al. | 709/211 |
| 6,230,218 | B1 * | 5/2001 | Caspers et al. | 710/20 |
| 6,341,315 | B1 * | 1/2002 | Arroyo et al. | 709/230 |
| 6,343,324 | B1 * | 1/2002 | Hubis et al. | 709/229 |

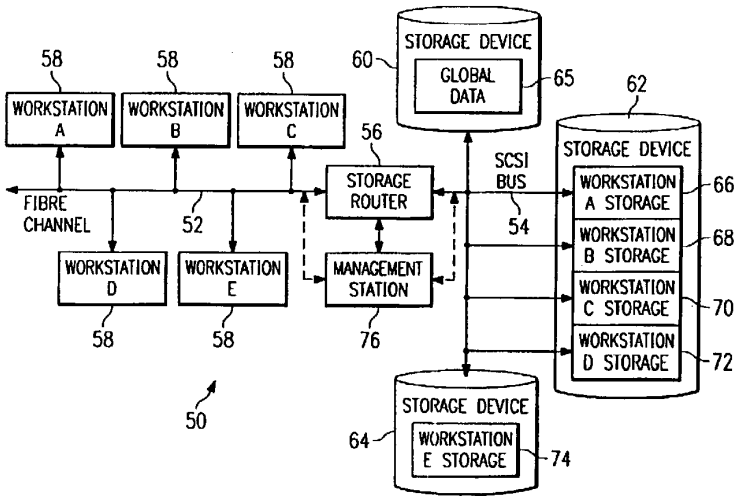
* cited by examiner

*Primary Examiner*—Christopher B. Shin
(74) *Attorney, Agent, or Firm*—Gray Cary Ware & Friedrich LLP

(57) **ABSTRACT**

A storage router **(56)** and storage network **(50)** provide virtual local storage on remote SCSI storage devices **(60, 62, 64)** to Fiber Channel devices. A plurality of Fiber Channel devices, such as workstations **(58)**, are connected to a Fiber Channel transport medium **(52)**, and a plurality of SCSI storage devices **(60, 62, 64)** are connected to a SCSI bus transport medium **(54)**. The storage router **(56)** interfaces between the Fibre Channel transport medium **(52)** and the SCSI bus transport medium **(54)**. The storage router **(56)** maps between the workstations **(58)** and the SCSI storage devices **(60, 62, 64)** and implements access controls for storage space on the SCSI storage devices **(60, 62, 64)**. The storage router **(56)** then allows access from the workstations **(58)** to the SCSI storage devices **(60, 62, 64)** using native low level, block protocol in accordance with the mapping and the access controls.

**14 Claims, 2 Drawing Sheets**



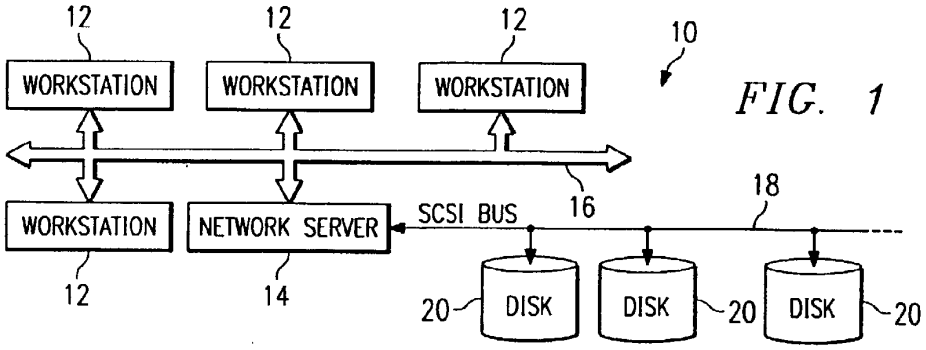



FIG. 1

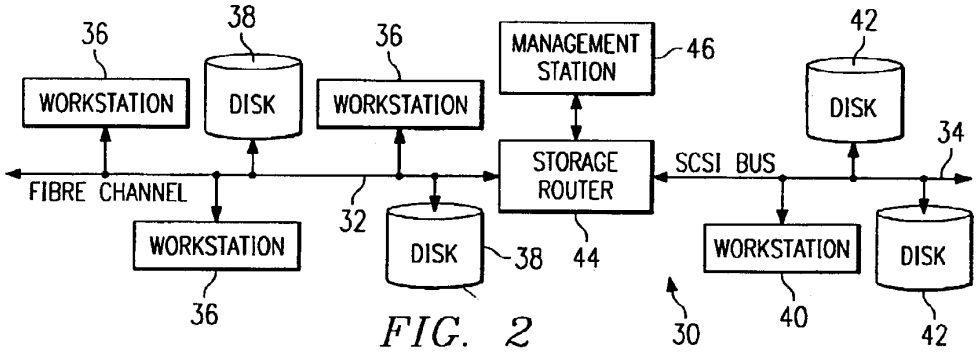



FIG. 2

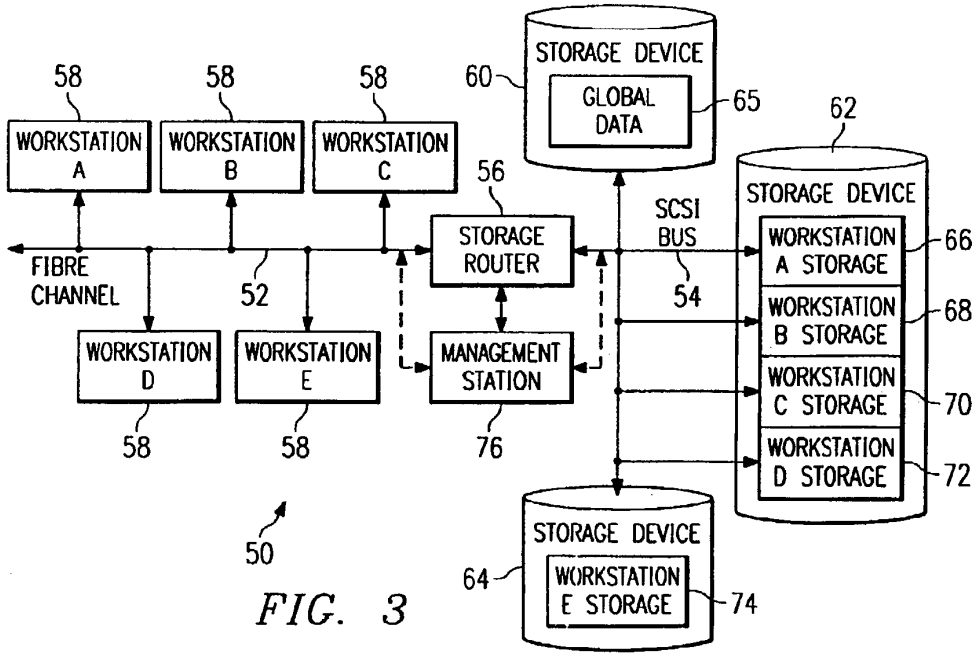



FIG. 3

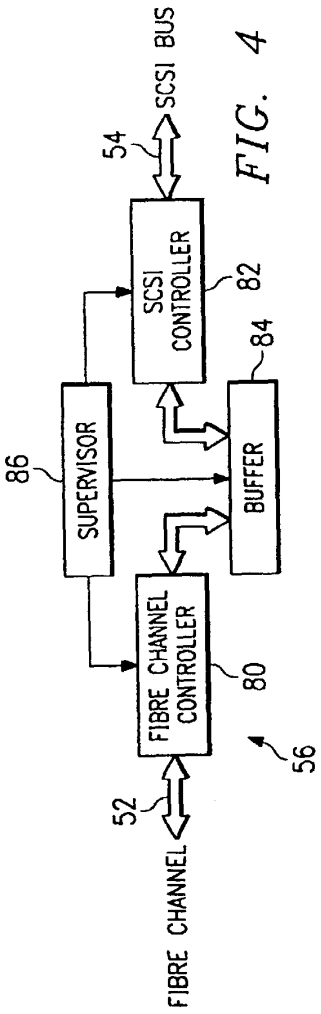



FIG. 4

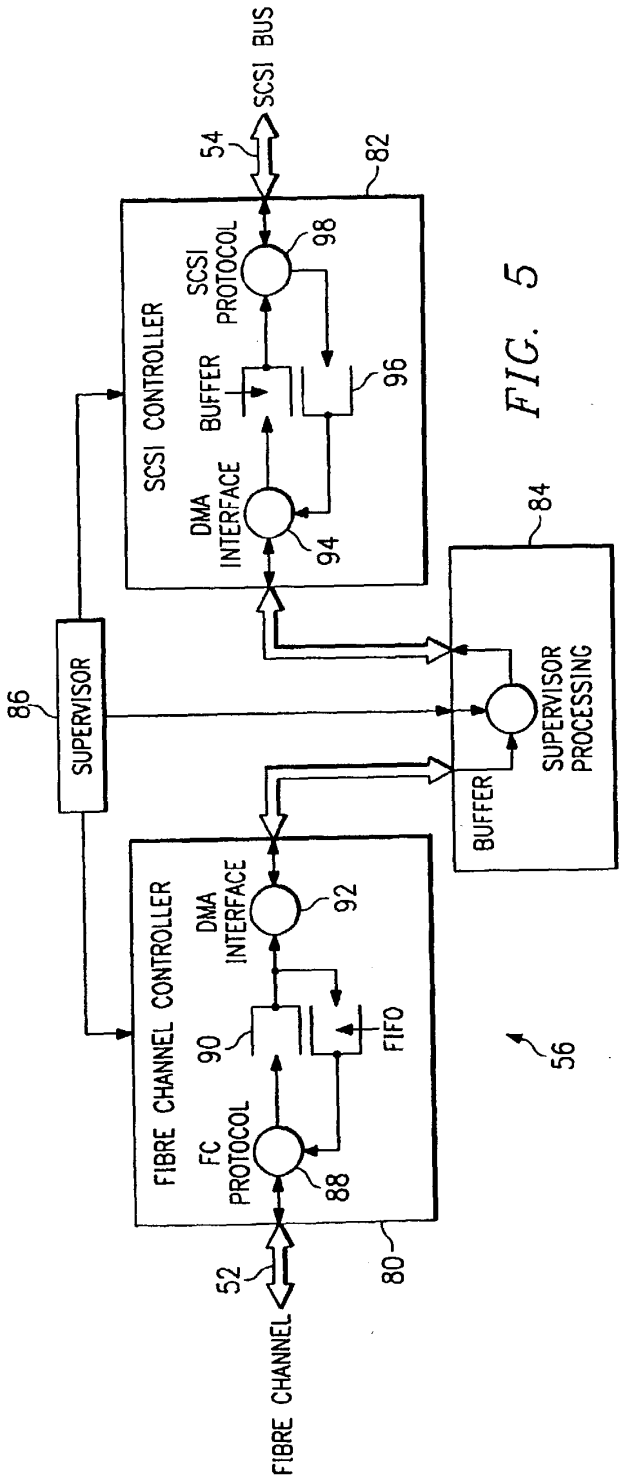



FIG. 5

# STORAGE ROUTER AND METHOD FOR PROVIDING VIRTUAL LOCAL STORAGE

## RELATED APPLICATIONS

This application claims the benefit of the filing date of U.S. patent application Ser. No. 09/354,682 by inventors Geoffrey B. Hoese and Jeffry T. Russell, entitled "Storage Router and Method for Providing Virtual Local Storage" filed on Jul. 15, 1999, which is a continuation of U.S. patent application Ser. No. 091001,799, filed on Dec. 31, 1997, now U.S. Pat. No. 5.941,972, and hereby incorporates these applications by reference in their entireties as if they had been fully set forth herein.

## TECHNICAL FIELD OF THE INVENTION

This invention relates in general to network storage devices, and more particularly to a storage router and method for providing virtual local storage on remote SCSI storage devices to Fiber Channel devices.

## BACKGROUND OF THE INVENTION

Typical storage transport mediums provide for a relatively small number of devices to be attached over relatively short distances. One such transport medium is a Small Computer System Interface (SCSI) protocol, the structure and operation of which is generally well known as is described, for example, in the SCSI-1, SCSI-2 and SCSI-3 specifications. High speed serial interconnects provide enhanced capability to attach a large number of high speed devices to a common storage transport medium over large distances. One such serial interconnect is Fibre Channel, the structure and operation of which is described, for example, in Fiber Channel Physical and Signaling Interface (FC-PH), ANSI X3.230 Fiber Channel Arbitrated Loop (FC-AL), and ANSI X3.272 Fiber Channel Private Loop Direct Attach (FC-PLDA).

Conventional computing devices, such as computer workstations, generally access storage locally or through network interconnects. Local storage typically consists of a disk drive, tape drive, CD-ROM drive or other storage device contained within, or locally connected to the workstation. The workstation provides a file system structure, that includes security controls, with access to the local storage device through native low level, block protocols. These protocols map directly to the mechanisms used by the storage device and consist of data requests without security controls. Network interconnects typically provide access for a large number of computing devices to data storage on a remote network server. The remote network server provides file system structure, access control, and other miscellaneous capabilities that include the network interface. Access to data through the network server is through network protocols that the server must translate into low level requests to the storage device. A workstation with access to the server storage must translate its file system protocols into network protocols that are used to communicate with the server. Consequently, from the perspective of a workstation, or other computing device, seeking to access such server data, the access is much slower than access to data on a local storage device.

## SUMMARY OF THE INVENTION

In accordance with the present invention, a storage router and method for providing virtual local storage on remote SCSI storage devices to Fiber Channel devices are disclosed that provide advantages over conventional network storage devices and methods.



According to one aspect of the present invention, a storage router and storage network provide virtual local storage on remote SCSI storage devices to Fiber Channel devices. A plurality of Fiber Channel devices, such as workstations, are connected to a Fiber Channel transport medium, and a plurality of SCSI storage devices are connected to a SCSI bus transport medium. The storage router interfaces between the Fiber Channel transport medium and the SCSI bus transport medium. The storage router maps between the workstations and the SCSI storage devices and implements access controls for storage space on the SCSI storage devices. The storage router then allows access from the workstations to the SCSI storage devices using native low level, block protocol in accordance with the mapping and the access controls.

According to another aspect of the present invention, virtual local storage on remote SCSI storage devices is provided to Fiber Channel devices. A Fibre Channel transport medium and a SCSI bus transport medium are interfaced with. A configuration is maintained for SCSI storage devices connected to the SCSI bus transport medium. The configuration maps between Fiber Channel devices and the SCSI storage devices and implements access controls for storage space on the SCSI storage devices. Access is then allowed from Fiber Channel initiator devices to SCSI storage devices using native low level, block protocol in accordance with the configuration.

A technical advantage of the present invention is the ability to centralize local storage for networked workstations without any cost of speed or overhead. Each workstation access its virtual local storage as if it work locally connected. Further, the centralized storage devices can be located in a significantly remote position even in excess of ten kilometers as defined by Fibre Channel standards.

Another technical advantage of the present invention is the ability to centrally control and administer storage space for connected users without limiting the speed with which the users can access local data. In addition, global access to data, backups, virus scanning and redundancy can be more easily accomplished by centrally located storage devices.

A further technical advantage of the present invention is providing support for SCSI storage devices as local storage for Fiber Channel hosts. In addition, the present invention helps to provide extended capabilities for Fiber Channel and for management of storage subsystems.

## BRIEF DESCRIPTION OF THE DRAWINGS

A more complete understanding of the present invention and the advantages thereof may be acquired by referring to the following description taken in conjunction with the accompanying drawings, in which like reference numbers indicate like features, and wherein:

FIG. **1** is a block diagram of a conventional network that provides storage through a network server;

FIG. **2** is a block diagram of one embodiment of a storage network with a storage router that provides global access and routing;

FIG. **3** is a block diagram of one embodiment of a storage network with a storage router that provides virtual local storage;

FIG. **4** is a block diagram of one embodiment of the storage router of FIG. **3**; and

FIG. **5** is a block diagram of one embodiment of data flow within the storage router of FIG. **4**.

## DETAILED DESCRIPTION OF THE INVENTION

FIG. **1** is a block diagram of a conventional network, indicated generally at **10**, that provides access to storage

through a network server. As shown, network **10** includes a plurality of workstations **12** interconnected with a network server **14** via a network transport medium **16**. Each workstation **12** can generally comprise a processor, memory, input/output devices, storage devices and a network adapter as well as other common computer components. Network server **14** uses a SCSI bus **18** as a storage transport medium to interconnect with a plurality of storage devices **20** (tape drives, disk drives, etc.). In the embodiment of FIG. **1**, network transport medium **16** is an network connection and storage devices **20** comprise hard disk drives, although there are numerous alternate transport mediums and storage devices.

In network **10**, each workstation **12** has access to its local storage device as well as network access to data on storage devices **20**. The access to a local storage device is typically through native low level, block protocols. On the other hand, access by a workstation **12** to storage devices **20** requires the participation of network server **14** which implements a file system and transfers data to workstations **12** only through high level file system protocols. Only network server **14** communicates with storage devices **20** via native low level, block protocols. Consequently, the network access by workstations **12** through network server **14** is slow with respect to their access to local storage. In network **10**, it can Also be a logistical problem to centrally manage and administer local data distributed across an organization, including accomplishing tasks such as backups, virus scanning and redundancy.

FIG. **2** is a block diagram of one embodiment of a storage network, indicated generally at **30**, with a storage router that provides global access and routing. This environment is significantly different from that of FIG. **1** in that there is no network server involved. In FIG. **2**, a Fiber Channel high speed serial transport **32** interconnects a plurality of workstations **36** and storage devices **38**. A SCSI bus storage transport medium interconnects workstations **40** and storage devices **42**. A storage router **44** then serves to interconnect these mediums and provide devices on either medium global, transparent access to devices on the other medium. Storage router **44** routes requests from initiator devices on one medium to target devices on the other medium and routes data between the target and the initiator. Storage router **44** can allow initiators and targets to be on either side. In this manner, storage router **44** enhances the functionality of Fiber Channel **32** by providing access, for example, to legacy SCSI storage devices on SCSI bus **34**. In the embodiment of FIG. **2**, the operation of storage router **44** can be managed by a management station **46** connected to the storage router via a direct serial connection.

In storage network **30**, any workstation **36** or workstation **40** can access any storage device **38** or storage device **42** through native low level, block protocols, and vice versa. This functionality is enabled by storage router **44** which routes requests and data as a generic transport between Fiber Channel **32** and SCSI bus **34**. Storage router **44** uses tables to map devices from one medium to the other and distributes requests and data across Fiber Channel **32** and SCSI bus **34** without any security access controls. Although this extension of the high speed serial interconnect provided by Fiber Channel **32** is beneficial, it is desirable to provide security controls in addition to extended access to storage devices through a native low level, block protocol.

FIG. **3** is a block diagram of one embodiment of a storage network, indicated generally at **50**, with a storage router that provides virtual local storage. Similar to that of FIG. **2**, storage network **50** includes a Fiber Channel high speed serial interconnect **52** and a SCSI bus **54** bridged by a storage router **56**. Storage router **56** of FIG. **3** provides for a large number of workstations **58** to be interconnected on a common storage transport and to access common storage devices **60**, **62** and **64** through native low level, block protocols.

According to the present invention, storage router **56** has enhanced functionality to implement security controls and routing such that each workstation **58** can have access to a specific subset of the overall data stored in storage devices **60**, **62** and **64**. This specific subset of data has the appearance and characteristics of local storage and is referred to herein as virtual local storage. Storage router **56** allows the configuration and modification of the storage allocated to each attached workstation **58** through the use of mapping tables or other mapping techniques.

As shown in FIG. **3**, for example, storage device **60** can be configured to provide global data **65** which can be accessed by all workstations **58**. Storage device **62** can be configured to provide partitioned subsets **66**, **68**, **70** and **72**, where each partition is allocated to one of the workstations **58** (workstations A, B, C and D). These subsets **66**, **68**, **70** and **72** can only be accessed by the associated workstation **58** and appear to the associated workstation **58** as local storage accessed using native low level, block protocols. Similarly, storage device **64** can be allocated as storage for the remaining workstation **58** (workstation E).

Storage router **56** combines access control with routing such that each workstation **58** has controlled access to only the specified partition of storage device **62** which forms virtual local storage for the workstation **58**. This access control allows security control for the specified data partitions. Storage router **56** allows this allocation of storage devices **60**, **62** and **64** to be managed by a management station **76**. Management station **76** can connect directly to storage router **56** via a direct connection or, alternately, can interface with storage router **56** through either Fiber Channel **52** or SCSI bus **54**. In the latter case, management station **76** can be a workstation or other computing device with special rights such that storage router **56** allows access to mapping tables and shows storage devices **60**, **62** and **64** as they exist physically rather than as they have been allocated.

The environment of FIG. **3** extends the concept of a single workstation having locally connected storage devices to a storage network **50** in which workstations **58** are provided virtual local storage in a manner transparent to workstations **58**. Storage router **56** provides centralized control of what each workstation **58** sees as its local drive, as well as what data it sees as global data accessible by other workstations **58**. Consequently, the storage space considered by the workstation **58** to be its local storage is actually a partition (i.e., logical storage definition) of a physically remote storage device **60**, **62** or **64** connected through storage router **56**. This means that similar requests from workstations **58** for access to their local storage devices produce different accesses to the storage space on storage devices **60**, **62** and **64**. Further, no access from a workstation **58** is allowed to the virtual local storage of another workstation **58**.

The collective storage provided by storage devices **60**, **62** and **64** can have blocks allocated by programming means within storage router **56**. To accomplish this function, storage router **56** can include routing tables and security controls that define storage allocation for each workstation **58**. The advantages provided by implementing virtual local storage in centralized storage devices include the ability to do collective backups and other collective administrative func-

tions more easily. This is accomplished without limiting the performance of workstations **58** because storage access involves native low level, block protocols and does not involve the overhead of high level protocols and file systems required by network servers.

FIG. **4** is a block diagram of one embodiment of storage router **56** of FIG. **3**. Storage router **56** can comprise a Fiber Channel controller **80** that interfaces with Fiber Channel **52** and a SCSI controller **82** that interfaces with SCSI bus **54**. A buffer **84** provides memory work space and is connected to both Fiber Channel controller **80** and to SCSI controller **82**. A supervisor unit **86** is connected to Fiber Channel controller **80**, SCSI controller **82** and buffer **84**. Supervisor unit **86** comprises a microprocessor for controlling operation of storage router **56** and to handle mapping and security access for requests between Fiber Channel **52** and SCSI bus **54**.

FIG. **5** is a block diagram of one embodiment of data flow within storage router **56** of FIG. **4**. As shown, data from Fiber Channel **52** is processed by a Fibre Channel (FC) protocol unit **88** and placed in a FIFO queue **90**. A direct memory access (DMA) interface **92** then takes data out of FIFO queue **90** and places it in buffer **84**.

Supervisor unit **86** processes the data in buffer **84** as represented by supervisor processing **93**. This processing involves mapping between Fiber Channel **52** and SCSI bus **54** and applying access controls and routing functions. A DMA interface **94** then pulls data from buffer **84** and places it into a buffer **96**. A SCSI protocol unit **98** pulls data from buffer **96** and communicates the data on SCSI bus **54**. Data flow in the reverse direction, from SCSI bus **54** to Fiber Channel **52**, is accomplished in a reverse manner.

The storage router of the present invention is a bridge device that connects a Fiber Channel link directly to a SCSI bus and enables the exchange of SCSI command set information between application clients on SCSI bus devices and the Fiber Channel links. Further, the storage router applies access controls such that virtual local storage can be established in remote SCSI storage devices for workstations on the Fiber Channel link. In one embodiment, the storage router provides a connection for Fiber Channel links running the SCSI Fiber Channel Protocol (FCP) to legacy SCSI devices attached to a SCSI bus. The Fiber Channel topology is typically an Arbitrated Loop (FC_AL).

In part, the storage router enables a migration path to Fiber Channel based, serial SCSI networks by providing connectivity for legacy SCSI bus devices. The storage router can be attached to a Fiber Channel Arbitrated Loop and a SCSI bus to support a number of SCSI devices. Using configuration settings, the storage router can make the SCSI bus devices available on the Fiber Channel network as FCP logical units. Once the configuration is defined, operation of the storage router is transparent to application clients. In this manner, the storage router can form an integral part of the migration to new Fibre Channel based networks while providing a means to continue using legacy SCSI devices.

In one implementation (not shown), the storage router can be a rack mount or free standing device with an internal power supply. The storage router can have a Fibre Channel and SCSI port, and a standard, detachable power cord can be used, the FC connector can be a copper DB9 connector, and the SCSI connector can be a 68-pin type. Additional modular jacks can be provided for a serial port and a 802.3 10BaseT port, i.e. twisted pair Ethernet, for management access. The SCSI port of the storage router an support SCSI direct and sequential access target devices and can support SCSI initiators, as well. The Fiber Channel port can interface to SCSI-3 FCP enabled devices and initiators.

To accomplish its functionality, one implementation of the storage router uses: a Fiber Channel interface based on the HEWLETT-PACKARD TACHYON HPFC-5000 controller and a GLM media interface; an Intel 80960RP processor, incorporating independent data and program memory spaces, and associated logic required to implement a stand alone processing system; and a serial port for debug and system configuration. Further, this implementation includes a SCSI interface supporting Fast-20 based on the SYMBIOS 53C8xx series SCSI controllers, and an operating system based upon the WIND RIVERS SYSTEMS VXWORKS or IXWORKS kernel, as determined. by design. In addition, the storage router includes software as required to control basic functions of the various elements, and to provide appropriate translations between the FC and SCSI protocols.

The storage router has various modes of operation that are possible between FC and SCSI target and initiator combinations. These modes are: FC Initiator to SCSI Target; SCSI Initiator to FC Target; SCSI Initiator to SCSI Target; and FC Initiator to FC Target. The first two modes can be supported concurrently in a single storage router device are discussed briefly below. The third mode can involve two storage router devices back to back and can serve primarily as a device to extend the physical distance beyond that possible via a direct SCSI connection. The last mode can be used to carry FC protocols encapsulated on other transmission technologies (e.g. ATM, SONET), or to act as a bridge between two FC loops (e.g. as a two port fabric).

The FC Initiator to SCSI Target mode provides for the basic configuration of a server using Fiber Channel to communicate with SCSI targets. This mode requires that a host system have an FC attached device and associated device drivers and software to generate SCSI-3 FCP requests. This system acts as an initiator using the storage router to communicate with SCSI target devices. The SCSI devices supported can include SCSI-2 compliant direct or sequential access (disk or tape) devices. The storage router serves to translate command and status information and transfer data between SCSI-3 FCP and SCSI-2, allowing the use of standard SCSI-2 devices in a Fibre Channel environment.

The SCSI Initiator to FC Target mode provides for the configuration of a server using SCSI-2 to communicate with Fiber Channel targets. This mode requires that a host system has a SCSI-2 interface and driver software to control SCSI-2 target devices. The storage router will connect to the SCSI-2 bus and respond as a target to multiple target IDs. Configuration information is required to identify the target IDs to which the bridge will respond on the SCSI-2 bus. The storage router then translates the SCSI-2 requests to SCSI-3 FCP requests, allowing the use of FC devices with a SCSI host system. This will also allow features such as a tape device acting as an initiator on the SCSI bus to provide full support for this type of SCSI device.

In general, user configuration of the storage router will be needed to support various functional modes of operation. Configuration can be modified, for example, through a serial port or through an Ethernet port via SNMP (simple network management protocol) or a Telnet session. Specifically, SNMP manageability can be provided via an 802.3 Ethernet interface. This can provide for configuration changes as well as providing statistics and error information. Configuration can also be performed via TELNET or RS-232 interfaces

with menu driven command interfaces. Configuration information can be stored in a segment of flash memory and can be retained across resets and power off cycles. Password protection can also be provided.

In the first two modes of operation, addressing information is needed to map from FC addressing to SCSI addressing and vice versa. This can be 'hard' configuration data, due to the need for address information to be maintained across initialization and partial reconfigurations of the Fiber Channel address space. In an arbitrated loop configuration, user configured addresses will be needed for AL_PAs in order to insure that known addresses are provided between loop reconfigurations.

With respect to addressing, FCP and SCSI 2 systems employ different methods of addressing target devices. Additionally, the inclusion of a storage router means that a method of translating device IDs needs to be implemented. In addition, the storage router can respond to commands without passing the commands through to the opposite interface. This can be implemented to allow all generic FCP and SCSI commands to pass through the storage router to address attached devices, but allow for configuration and diagnostics to be performed directly on the storage router through the FC and SCSI interfaces.

Management commands are those intended to be processed by the storage router controller directly. This may include diagnostic, mode, and log commands as well as other vendor-specific commands. These commands can be received and processed by both the FCP and SCSI interfaces, but are not typically bridged to the opposite interface. These commands may also have side effects on the operation of the storage router, and cause other storage router operations to change or terminate.

A primary method of addressing management commands though the FCP and SCSI interfaces can be through peripheral device type addressing. For example, the storage router can respond to all operations addressed to logical unit (LUN) zero as a controller device. Commands that the storage router will support can include INQUIRY as well as vendor-specific management commands. These are to be generally consistent with SCC standard commands.

The SCSI bus is capable of establishing bus connections between targets. These targets may internally address logical units. Thus, the prioritized addressing scheme used by SCSI subsystems can be represented as follows: BUS:TARGET:LOGICAL UNIT. The BUS identification is intrinsic in the configuration, as a SCSI initiator is attached to only one-bus. Target addressing is handled by bus arbitration from information provided to the arbitrating device. Target addresses are assigned to SCSI devices directly, though some means of configuration, such as a hardware jumper, switch setting, or device specific software configuration. As such, the SCSI protocol provides only logical unit addressing within the Identify message. Bus and target information is implied by the established connection.

Fiber Channel devices within a fabric are addressed by a unique port identifier. This identifier is assigned to a port during certain well-defined states of the FC protocol. Individual ports are allowed to arbitrate for a known, user defined address. If such an address is not provided, or if arbitration for a particular user address fails, the port is assigned a unique address by the FC protocol. This address is generally not guaranteed to be unique between instances. Various scenarios exist where the AL-PA of a device will change, either after power cycle or loop reconfiguration.

The FC protocol also provides a logical unit address field within command structures to provide addressing to devices internal to a port. The FCP_CMD payload specifies an eight byte LUN field. Subsequent identification of the exchange between devices is provided by the FQXID (Fully Qualified Exchange ID).

FC ports can be required to have specific addresses assigned. Although basic functionality is not dependent on this, changes in the loop configuration could result in disk targets changing identifiers with the potential risk of data corruption or loss. This configuration can be straightforward, and can consist of providing the device a loop-unique ID (AL_PA) in the range of "01h" to "EFh." Storage routers could be shipped with a default value with the assumption that most configurations will be using single storage routers and no other devices requesting the present ID. This would provide a minimum amount of initial configuration to the system administrator. Alternately, storage routers could be defaulted to assume any address so that configurations requiring multiple storage routers on a loop would not require that the administrator assign a unique ID to the additional storage routers.

Address translation is needed where commands are issued in the cases FC Initiator to SCSI Target and SCSI Initiator to FC Target. Target responses are qualified by the FQXID and will retain the translation acquired at the beginning of the exchange. This prevents configuration changes occurring during the course of execution of a command from causing data or state information to be inadvertently misdirected. Configuration can be required in cases of SCSI Initiator to FC Target, as discovery may not effectively allow for FCP targets to consistently be found. This is due to an FC arbitrated loop supporting addressing of a larger number of devices than a SCSI bus and the possibility of FC devices changing their AL-PA due to device insertion or other loop initialization.

In the direct method, the translation to BUS:TARGET:LUN of the SCSI address information will be direct. That is, the values represented in the FCP LUN field will directly map to the values in effect on the SCSI bus. This provides a clean translation and does not require SCSI bus discovery. It also allows devices to be dynamically added to the SCSI bus without modifying the address map. It may not allow for complete discovery by FCP initiator devices, as gaps between device addresses may halt the discovery process. Legacy SCSI device drivers typically halt discovery on a target device at the first unoccupied LUN, and proceed to the next target. This would lead to some devices not being discovered. However, this allows for hot plugged devices and other changes to the loop addressing.

In the ordered method, ordered translation requires that the storage router perform discovery on reset, and collapses the addresses on the SCSI bus to sequential FCP LUN values. Thus, the FCP LUN values 0-N can represent N+1 SCSI devices, regardless of SCSI address values, in the order in which they are isolated during the SCSI discovery process. This would allow the FCP initiator discovery process to identify all mapped SCSI devices without further configuration. This has the limitation that hot-plugged devices will not be identified until the next reset cycle. In this case, the address may also be altered as well.

In addition to addressing, according to the present invention, the storage router provides configuration and access controls that cause certain requests from FC Initiators to be directed to assigned virtual local storage partitioned on SCSI storage devices. For example, the same request for LUN 0 (local storage) by two different FC Initiators can be directed to two separate subsets of storage. The storage

UNITED STATES PATENT AND TRADEMARK OFFICE

# CERTIFICATE OF CORRECTION



PATENT NO. : 6,425,035 B2
DATED : July 23, 2002
INVENTOR(S) : Geoffry B. Hoese et al.

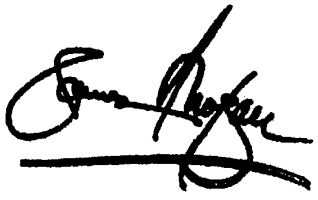
It is certified that error appears in the above-identified patent and that said Letters Patent is hereby corrected as shown below:

Column 10,
Line 47, delete "that implements" and insert -- implementing --



Signed and Sealed this

Twenty-sixth Day of August, 2003



JAMES E. ROGAN
*Director of the United States Patent and Trademark Office*

router can use tables to map, for each initiator, what storage access is available and what partition is being addressed by a particular request. In this manner, the storage space provided by SCSI storage devices can be allocated to FC initiators to provide virtual local storage as well as to create any other desired configuration for secured access.

Although the present invention has been described in detail, it should be understood that various changes, substitutions, and alterations can be made hereto without departing from the spirit and scope of the invention as defined by the appended claims.

What is claimed is:

**1**. A storage router for providing virtual local storage on remote storage devices to devices, comprising:

a buffer providing memory work space for the storage router;

a first controller operable to connect to and interface with a first transport medium;

a second controller operable to connect to and interface with a second transport medium; and

a supervisor unit coupled to the first controller, the second controller and the buffer, the supervisor unit operable to map between devices connected to the first transport medium and the storage devices, to implement access controls for storage space on the storage devices and to process data in the buffer to interface between the first controller and the second controller to allow access from devices connected to the first transport medium to the storage devices using native low level, block protocols.

**2**. The storage router of claim **1**, wherein the supervisor unit maintains an allocation of subsets of storage space to associated devices connected to the first transport medium, wherein each subset is only accessible by the associated device connected to the first transport medium.

**3**. The storage router of claim **2**, wherein the devices connected to the first transport medium comprise workstations.

**4**. The storage router of claim **2**, wherein the storage devices comprise hard disk drives.

**5**. The storage router of claim **1**, wherein the first controller comprises:

a first protocol unit operable to connect to the first transport medium;

a first-in-first-out queue coupled to the first protocol unit; and

a direct memory access (DMA) interface coupled to the first-in-first-out queue and to the buffer.

**6**. The storage router of claim **1**, wherein the second controller comprises:

a second protocol unit operable to connect to the second transport medium;

an internal buffer coupled to the second protocol unit; and

a direct memory access (DMA) interface coupled to the internal buffer and to the buffer of the storage router.

**7**. A storage network, comprising:

a first transport medium;

a second transport medium;

a plurality of workstations connected to the first transport medium;

a plurality of storage devices connected to the second transport medium; and

a storage router interfacing between the first transport medium and the second transport medium, the storage router providing virtual local storage on the storage devices to the workstations and operable:

to map between the workstations and the storage devices;

to implement access controls for storage space on the storage devices; and

to allow access from the workstations to the storage devices using native low level, block protocol in accordance with the mapping and access controls.

**8**. The storage network of claim **7**, wherein the access controls include an allocation of subsets of storage space to associated workstations, wherein each subset is only accessible by the associated workstation.

**9**. The storage network of claim **7**, wherein the storage devices comprise hard disk drives.

**10**. The storage network of claim **7**, wherein the storage router comprises:

a buffer providing memory work space for the storage router;

a first controller operable to connect to and interface with the first transport medium, the first controller further operable to pull outgoing data from the buffer and to place incoming data into the buffer;

a second controller operable to connect to and interface with the second transport medium, the second controller further operable to pull outgoing data from the buffer and to place incoming data into the buffer; and

a supervisor unit coupled to the first controller, the second controller and the buffer, the supervisor unit operable:

to map between devices connected to the first transport medium and the storage devices, to implement the access controls for storage space on the storage devices and to process data in the buffer to interface between the first controller and the second controller to allow access from workstations to storage devices.

**11**. A method for providing virtual local storage on remote storage devices connected to one transport medium to devices connected to another transport medium, comprising:

interfacing with a first transport medium;

interfacing with a second transport medium;

mapping between devices connected to the first transport medium and the storage devices and that implements access controls for storage space on the storage devices; and

allowing access from devices connected to the first transport medium to the storage devices using native low level, block protocols.

**12**. The method of claim **11**, wherein mapping between devices connected to the first transport medium and the storage devices includes allocating subsets of storage space to associated devices connected to the first transport medium, wherein each subset is only accessible by the associated device connected to the first transport medium.

**13**. The method of claim **12**, wherein the devices connected to the first transport medium comprise workstations.

**14**. The method of claim **12**, wherein the storage devices comprise hard disk drives.

* * * * *

| Issue Classification | Application No. | Applicant(s) | |
|---|---|---|---|
| | 90/007,125 | 6425035 | |
| | Examiner | Art Unit | |
| | | 2182 | |

# ISSUE CLASSIFICATION

| ORIGINAL | | CROSS REFERENCE(S) | |
|---|---|---|---|
| CLASS | SUBCLASS | CLASS | SUBCLASS (ONE SUBCLASS PER BLOCK) |
| 710 | 105 | | |
| INTERNATIONAL CLASSIFICATION | | | |
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| (Assistant Examiner) (Date) | | Total Claims Allowed: | |
|---|---|---|---|
| (Legal Instruments Examiner) (Date) | (Primary Examiner) (Date) | O.G. Print Claim(s) | O.G. Print Fig. |

☐ Claims renumbered in the same order as presented by applicant ☐ CPA ☐ T.D. ☐ R.1.47

| Final | Original | Final | Original | Final | Original | Final | Original | Final | Original | Final | Original | Final | Original |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1 | | 31 | | 61 | | 91 | | 121 | | 151 | | 181 |
| | 2 | | 32 | | 62 | | 92 | | 122 | | 152 | | 182 |
| | 3 | | 33 | | 63 | | 93 | | 123 | | 153 | | 183 |
| | 4 | | 34 | | 64 | | 94 | | 124 | | 154 | | 184 |
| | 5 | | 35 | | 65 | | 95 | | 125 | | 155 | | 185 |
| | 6 | | 36 | | 66 | | 96 | | 126 | | 156 | | 186 |
| | 7 | | 37 | | 67 | | 97 | | 127 | | 157 | | 187 |
| | 8 | | 38 | | 68 | | 98 | | 128 | | 158 | | 188 |
| | 9 | | 39 | | 69 | | 99 | | 129 | | 159 | | 189 |
| | 10 | | 40 | | 70 | | 100 | | 130 | | 160 | | 190 |
| | 11 | | 41 | | 71 | | 101 | | 131 | | 161 | | 191 |
| | 12 | | 42 | | 72 | | 102 | | 132 | | 162 | | 192 |
| | 13 | | 43 | | 73 | | 103 | | 133 | | 163 | | 193 |
| | 14 | | 44 | | 74 | | 104 | | 134 | | 164 | | 194 |
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| | 20 | | 50 | | 80 | | 110 | | 140 | | 170 | | 200 |
| | 21 | | 51 | | 81 | | 111 | | 141 | | 171 | | 201 |
| | 22 | | 52 | | 82 | | 112 | | 142 | | 172 | | 202 |
| | 23 | | 53 | | 83 | | 113 | | 143 | | 173 | | 203 |
| | 24 | | 54 | | 84 | | 114 | | 144 | | 174 | | 204 |
| | 25 | | 55 | | 85 | | 115 | | 145 | | 175 | | 205 |
| | 26 | | 56 | | 86 | | 116 | | 146 | | 176 | | 206 |
| | 27 | | 57 | | 87 | | 117 | | 147 | | 177 | | 207 |
| | 28 | | 58 | | 88 | | 118 | | 148 | | 178 | | 208 |
| | 29 | | 59 | | 89 | | 119 | | 149 | | 179 | | 209 |
| | 30 | | 60 | | 90 | | 120 | | 150 | | 180 | | 210 |

| Application Number | Application No. | Applicant(s) | |
|---|---|---|---|
| | 90/007,125 | 6425035 | |
| | Examiner | Art Unit | |
| | | 2182 | |

# Listing of Every Patent and Printed Publication Relied Upon

| Printed Publication | Author | Publication Date | Where Found |
|---|---|---|---|
| CRD-5500 SCSI RAID Controller User's Manual, Rev. 1.3 | CMD Technology, Inc. | November 21, 1996 | Exh. 14 |
| DIGITAL StorageWorks HSZ70 Array Controller HSOF Version 7.0 EK–CLI70–RM. A01 CLI Reference Manual. | Digital Equipment Corporation | July, 1997 | Exh. 5, MSJ Exh. 8 |
| DIGITAL StorageWorks HSZ70 Array Controller HSOF Version 7.0 EK–HSZ70–SV. A01 Service Manual. | Digital Equipment Corporation | July, 1997 | Exh. 5, MSJ Exh. 6 |
| DIGITAL StorageWorks HSZ70 Array Controller HSOF Version 7.0 K-HSZ70-CG. A01 Configuration Guide. | Digital Equipment Corporation | July, 1997 | Exh. 5, MSJ Exh. 7 |
| Fiber channel (FCS)/ATM interworking: a design solution | Anzaloni, et al. | 1993 | Exh. 1 |
| Fibre channel storage interface for video-on-demand servers | Chen, et al. | 1996 | Exh. 1 |
| Gen5 S-SERIES XL System Guide Revision 1.01 | MAXIMUM STRATEGY INC. | June 11, 1996 | Exh. 11 |
| Graphical User Interface for MAXSTRAT Gen5/Gen-S Servers User's Guide 1.1 | MAXSTRAT Corporation (formerly MAXIMUM STRATEGY INC.) | January 6, 1997 | Exh.12 |
| High Performance Data Transfers Using Network-Attached Peripherals at the National Storage Laboratory | Hyer, et al. | February 26, 1993 | Exh. 1 |
| IFT-3000 SCSI to SCSI Disk Array Controller Instruction Manual Revision 2.0 | Infortrend Technologies, Inc. | 1995 | Exh. 16 |
| Implementing a Fibre Channel SCSI transport | Snively | 1994 | Exh. 1 |
| Local-Area Networks for the IBM PC | Haugdahl | December, 1984 | Exh. 18 |
| New serial I/Os speed storage subsystems | Bursky | February 6, 1995 | Exh. 19 |
| SCSI applications on Fibre Channel | Snively | 1992 | Exh. 1 |

Copies of all U.S. Patents are found in Exhibit 1

| U.S. Patent No. | Patentee | Issue date |
|---|---|---|
| 6,219,771 | Kikuchi, et al. | April 17, 2001 |
| 6,185,203 | Berman | February 6, 2001 |
| 6,108,684 | DeKoning, et al. | August 22, 2000 |
| 6,098,149 | Ofer, et al. | August 1, 2000 |
| 6,081,849 | Born, et al. | June 27, 2000 |
| 6,073,218 | DeKoning, et al. | June 6, 2000 |
| 6,073,209 | Bergsten | June 6, 2000 |
| 6,055,603 | Ofer, et al. | April 25, 2000 |
| 5,959,994 | Boggs, et al. | September 28, 1999 |
| 5,935,260 | Ofer | August 10, 1999 |
| 5,933,824 | DeKoning, et al. | August 3, 1999 |
| 5,889,952 | Hunnicutt, et al. | March 30, 1999 |
| 5,860,137 | Raz, et al. | January 12, 1999 |
| 5,848,251 | Lomelino, et al. | December 8, 1998 |

| U.S. Patent No. | Patentee | Issue date |
|---|---|---|
| 5,835,496 | Yeung, et al. | November 10, 1998 |
| 5,812,754 | Lui, et al. | September 22, 1998 |
| 5,809,328 | Nogales, et al. | September 15, 1998 |
| 5,805,816 | Picazo, Jr., et al. | September 8, 1998 |
| 5,802,278 | Isfeld, et al. | September 1, 1998 |
| 5,781,715 | Sheu | July 14, 1998 |
| 5,768,623 | Judd, et al. | June 16, 1998 |
| 5,748,924 | Llorens, et al. | May 5, 1998 |
| 5,727,218 | Hotchkin | March 10, 1998 |
| 5,664,107 | Chatwani, et al. | September 2, 1997 |
| 5,659,756 | Hefferon, et al. | August 19, 1997 |
| 5,642,515 | Jones, et al. | June 24, 1997 |
| 5,638,518 | Malladi | June 10, 1997 |
| 5,634,111 | Oeda, et al. | May 27, 1997 |
| 5,632,012 | Belsan, et al. | May 20, 1997 |
| 5,621,902 | Cases, et al. | April 15, 1997 |
| 5,613,082 | Brewer, et al. | March 18, 1997 |
| 5,581,724 | Belsan, et al. | December 3, 1996 |
| 5,581,709 | Ito, et al. | December 3, 1996 |
| 5,568,648 | Coscarella, et al. | October 22, 1996 |
| 5,564,019 | Beausoleil, et al. | October 8, 1996 |
| 5,548,791 | Casper, et al. | August 20, 1996 |
| 5,544,313 | Shachnai, et al. | August 6, 1996 |
| 5,537,585 | Blickenstaff, et al. | July 16, 1996 |
| 5,519,695 | Purohit, et al. | May 21, 1996 |
| 5,511,169 | Suda | April 23, 1996 |
| 5,507,032 | Kimura | April 9, 1996 |
| 5,504,857 | Baird, et al. | April 2, 1996 |
| 5,496,576 | Jeong | March 5, 1996 |
| 5,495,474 | Olnowich, et al. | February 27, 1996 |
| 5,491,812 | Pisello, et al. | February 13, 1996 |
| 5,487,077 | Hassner, et al. | January 23, 1996 |
| 5,471,609 | Yudenfriend, et al. | November 28, 1995 |
| 5,469,576 | Dauerer, et al. | November 21, 1995 |
| 5,463,754 | Beausoleil, et al. | October 31, 1995 |
| 5,459,857 | Ludlam, et al. | October 17, 1995 |
| 5,452,421 | Beardsley, et al. | September 19, 1995 |
| 5,450,570 | Richek, et al. | September 12, 1995 |
| 5,430,855 | Walsh, et al. | July 4, 1995 |
| 5,426,637 | Derby, et al. | June 20, 1995 |
| 5,423,026 | Cook, et al. | June 6, 1995 |
| 5,420,988 | Elliott | May 30, 1995 |
| 5,418,909 | Jackowski, et al. | May 23, 1995 |
| 5,416,915 | Mattson, et al. | May 16, 1995 |
| 5,410,697 | Baird, et al. | April 25, 1995 |
| 5,410,667 | Belsan, et al. | April 25, 1995 |
| 5,403,639 | Belsan, et al. | April 4, 1995 |
| 5,396,596 | Hashemi, et al. | March 7, 1995 |
| 5,388,246 | Kasai | February 7, 1995 |
| 5,388,243 | Glider, et al. | February 7, 1995 |
| 5,379,398 | Cohn, et al. | January 3, 1995 |
| 5,379,385 | Shomler | January 3, 1995 |

| U.S. Patent No. | Patentee | Issue date |
|---|---|---|
| 5,367,646 | Pardillos, et al. | November 22, 1994 |
| 5,361,347 | Glider, et al. | November 1, 1994 |
| 5,331,673 | Elko, et al. | July 19, 1994 |
| 5,317,693 | Elko, et al. | July 19, 1994 |
| 5,315,657 | Abadi, et al. | May 24, 1994 |
| 5,301,290 | Tetzlaff, et al. | April 5, 1994 |
| 5,297,262 | Cox, et al. | March 22, 1994 |
| 5,247,692 | Fujimura | September 21, 1993 |
| 5,247,638 | O'Brien, et al. | September 21, 1993 |
| 5,239,654 | Ing-Simmons, et al. | August 24, 1993 |
| 5,226,143 | Baird, et al. | July 6, 1993 |
| 5,214,778 | Glider, et al. | May 25, 1993 |
| 5,212,785 | Powers, et al. | May 18, 1993 |
| 5,210,866 | Milligan, et al. | May 11, 1993 |
| 5,202,856 | Glider, et al. | April 13, 1993 |
| 5,193,184 | Belsan, et al. | March 9, 1993 |
| 5,193,168 | Corrigan, et al. | March 9, 1993 |
| 5,185,876 | Nguyen, et al. | February 9, 1993 |
| 5,155,845 | Beal, et al. | October 13, 1992 |
| 5,124,987 | Milligan, et al. | June 23, 1992 |
| 5,077,736 | Dunphy, Jr., et al. | December 31, 1991 |
| 5,077,732 | Fischer, et al. | December 31, 1991 |
| 4,961,224 | Yung | October 2, 1990 |
| 4,897,874 | Lidinsky, et al. | January 30, 1990 |
| 4,835,674 | Collins, et al. | May 30, 1989 |
| 4,827,411 | Arrowood, et al. | May 2, 1989 |
| 4,825,406 | Bean, et al. | April 25, 1989 |
| 4,821,179 | Jensen, et al. | April 11, 1989 |
| 4,811,278 | Bean, et al. | March 7, 1989 |
| 4,807,180 | Takeuchi, et al. | February 21, 1989 |
| 4,787,028 | Finfrock, et al. | November 22, 1988 |
| 4,697,232 | Brunelle, et al. | September 29, 1987 |
| 4,644,462 | Matsubara, et al. | February 17, 1987 |
| 4,620,295 | Aiken, Jr. | October 28, 1986 |
| 4,603,380 | Easton, et al. | July 29, 1986 |
| 4,573,152 | Greene, et al. | February 25, 1986 |
| 4,533,996 | Hartung, et al. | August 6, 1985 |
| 4,504,927 | Callan | March 12, 1985 |
| 4,455,605 | Cormier, et al. | June 19, 1984 |
| 4,415,970 | Swenson, et al. | November 15, 1983 |

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UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
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**CONFIRMATION NO. 2298**

Bib Data Sheet

| SERIAL NUMBER | FILING OR 371(c) DATE / RULE | CLASS | GROUP ART UNIT | ATTORNEY DOCKET NO. |
|---|---|---|---|---|
| 90/007,125 | 07/19/2004 | 710 | 2182 | I006-8910 |

**APPLICANTS**

6425035, Residence Not Provided;
Crossroads Systems, Inc.(Onwer), Austin, TX;
Natu J. Patel, Esq.(3rd Pty. Req.), Newport Beach, CA;

**** CONTINUING DATA ***************************

This application is a REX of 09/965,335 09/27/2001 PAT 6,425,035
which is a CON of 09/354,682 07/15/1999 PAT 6,421,753
which is a CON of 09/001,799 12/31/1997 PAT 5,941,972

**** FOREIGN APPLICATIONS *********************

| Foreign Priority claimed | STATE OR COUNTRY | SHEETS DRAWING | TOTAL CLAIMS | INDEPENDENT CLAIMS |
|---|---|---|---|---|
| ☐ yes ☐ no | | | 14 | 3 |
| 35 USC 119 (a-d) conditions met ☐ yes ☐ no ☐ Met after Allowance | | | | |
| Verified and Acknowledged Examiner's Signature Initials | | | | |

**ADDRESS**

Gray Cary Ware & Friedenrich LLP
1221 S. MoPac Expressway Suite 400
Austin ,TX 78746-6875

**TITLE**

STORAGE ROUTER AND METHOD FOR PROVIDING VIRTUAL LOCAL STORAGE

| FILING FEE RECEIVED | | |
|---|---|---|
| 2520 | FEES: Authority has been given in Paper No. _____ to charge/credit DEPOSIT ACCOUNT No. _____ for following: | ☐ All Fees<br>☐ 1.16 Fees ( Filing )<br>☐ 1.17 Fees ( Processing Ext. of time )<br>☐ 1.18 Fees ( Issue )<br>☐ Other _____<br>☐ Credit |

# Patent Assignment Abstract of Title

#2

**Total Assignments: 3**

**Application #:** 09001799 **Filing Dt:** 12/31/1997 **Patent #:** 5941972 * **Issue Dt:** 08/24/1999

**PCT #:** NONE **Publication #:** NONE **Pub Dt:**

**Inventors:** GEOFFREY B. HOESE, JEFFRY T. RUSSELL

**Title:** STORAGE ROUTER AND METHOD FOR PROVIDING VIRTUAL LOCAL STORAGE

**Assignment: 1**

| Reel/Frame: | Received: | Recorded: | Mailed: | Pages: |
|---|---|---|---|---|
| 008929/0290 | 02/06/1998 | 12/31/1997 | 03/19/1998 | 4 |

**Conveyance:** ASSIGNMENT OF ASSIGNORS INTEREST (SEE DOCUMENT FOR DETAILS).

**Assignors:** HOESE, GEOFFREY B. **Exec Dt:** 12/22/1997

RUSSELL, JEFFRY T. **Exec Dt:** 12/22/1997

**Assignee:** CROSSROADS SYSTEMS, INC.
9390 RESEARCH BLVD., SUITE II-300
AUSTIN, TEXAS 78759

**Correspondent:** BAKER & BOTTS, L.L.P.
ANTHONY E. PETERMAN
2001 ROSS AVENUE
DALLAS, TX 75201-2980

**Assignment: 2**

| Reel/Frame: | Received: | Recorded: | Mailed: | Pages: |
|---|---|---|---|---|
| 011284/0218 | 12/05/2000 | 11/16/2000 | 02/05/2001 | 8 |

**Conveyance:** SECURITY AGREEMENT ✓

**Assignor:** CROSSWORLDS SOFTWARE, INC. **Exec Dt:** 06/30/2000

**Assignee:** SILICON VALLEY BANK
LOAN DOCUMENTATION HG150
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SANTA CLARA, CALIFORNIA 95054

**Correspondent:** SILICON VALLEY BANK
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SANTA CLARA, CA 95054

**Assignment: 3**

| Reel/Frame: | Received: | Recorded: | Mailed: | Pages: |
|---|---|---|---|---|
| 012785/0083 | 04/17/2002 | 04/03/2002 | 06/12/2002 | 2 |

**Conveyance:** RELEASE ✓

**Assignor:** SILICON VALLEY BANK **Exec Dt:** 03/20/2002

**Assignee:** CROSSWORLDS SOFTWARE
577 AIRPORT BOULEVARD, SUITE 300
BURLINGAME, CALIFORNIA 94010

**Correspondent:** SILICON VALLEY BANK
MICHELLE GIANNINI
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3003 TASMAN DR.
SANTA CLARA, CALIFORNIA 95054

Search Results as of: 8/4/2004 8:26:15 A.M.

If you have any comments or questions concerning the data displayed, contact OPR / Assignments at 703-308-9723
Web interface last modified: Oct. 5, 2002

* This is a continuation of, and relates to, serial no. 09/965,335, filed on 09/27/01, Pat. no. 6,425,035, issued on 07/23/02.

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| REEXAM CONTROL NUMBER | FILING OR 371 (c) DATE | PATENT NUMBER |
|---|---|---|
| 90/007,125 | 07/19/2004 | 6425035 |

#3

**CONFIRMATION NO. 2298**

Natu J. Patel, Esq.
Wang & Patel, PC
1301 Dove Street Suite 1050
Newport Beach, CA 92660

Date Mailed: 08/04/2004

## NOTICE OF REEXAMINATION REQUEST FILING DATE

***(Third Party Requester)***

Requester is hereby notified that the filing date of the request for reexamination is 07/19/2004, the date the required fee of $2,520 was received.

A decision on the request for reexamination will be mailed within three months from the filing date of the request for reexamination. (See 37 CFR 1.515(a)).

A copy of the Notice is being sent to the person identified by the requester as the patent owner. Further patent owner correspondence will be the latest attorney or agent of record in the patent file. (See 37 CFR 1.33). Any paper filed should include a reference to the present request for reexamination (by Reexamination Control Number).

cc: Patent Owner

Gray Cary Ware & Friedenrich LLP
1221 S. MoPac Expressway Suite 400
Austin, TX 78746-6875

M. A. Sweitty

Office of Patent Legal Administration
Central Reexamination Unit (703) 308-9692

PART 3 - OFFICE COPY

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| REEXAM CONTROL NUMBER | FILING OR 371 (c) DATE | PATENT NUMBER |
|---|---|---|
| 90/007,125 | 07/19/2004 | 6425035 |

#4

CONFIRMATION NO. 2298

Gray Cary Ware & Friedenrich LLP
1221 S. MoPac Expressway Suite 400
Austin, TX 78746-6875

REEXAM ASSIGNMENT NOTICE

*OC000000013437560*

Date Mailed: 08/04/2004

## NOTICE OF ASSIGNMENT OF REEXAMINATION REQUEST

The above-identified request for reexamination has been assigned to Art Unit 2182. All future correspondence to the proceeding should be identified by the control number listed above and directed to the assigned Art Unit.

A copy of this Notice is being sent to the latest attorney or agent of record in the patent file or to all owners of record. (See 37 CFR 1.33(c)). If the addressee is not, or does not represent, the current owner, he or she is required to forward all communications regarding this proceeding to the current owner(s). An attorney or agent receiving this communication who does not represent the current owner(s) may wish to seek to withdraw pursuant to 37 CFR 1.36 in order to avoid receiving future communications. If the address of the current owner(s) is unknown, this communication should be returned within the request to withdraw pursuant to Section 1.36.

cc: Third Party Requester(if any)

Natu J. Patel, Esq.
Wang & Patel, PC
1301 Dove Street Suite 1050
Newport Beach, CA 92660

M. R. Sweitzer

Office of Patent Legal Administration
Central Reexamination Unit (703) 308-9692

PART 3 - OFFICE COPY

Access DB# 13 1168

# SEARCH REQUEST FORM

**Scientific and Technical Information Center**

Requester's Full Name: Pinchus Laufer Examiner # : 73139 Date: 8/26/04
Art Unit: 2100 Phone Number 308-4562 Serial Number: 90/007,125
Mail Box Location: 2D16B Results Format Preferred (circle): PAPER DISK E-MAIL

**If more than one search is submitted, please prioritize searches in order of need.**
**********

Please provide a detailed statement of the search topic, and describe as specifically as possible the subject matter to be searched. Include the elected species or structures, keywords, synonyms, acronyms, and registry numbers, and combine with the concept or utility of the invention. Define any terms that may have a special meaning. Give examples or relevant citations, authors, etc, if known. Please attach a copy of the cover sheet, pertinent claims, and abstract.

Title of Invention: _____

Inventors (please provide full names): _____

_____

Earliest Priority Filing Date: _____

**For Sequence Searches Only* Please include all pertinent information (parent, child, divisional, or issued patent numbers) along with the appropriate serial number.*

Litigation
6,425,035

Inventor Geoffrey Hoese et al. Date August 31, 2004

**********

| STAFF USE ONLY | Type of Search | Vendors and cost where applicable |
|---|---|---|
| Searcher: Shirelle Green | Sequence (#)_____ | STN _____ |
| Searcher Phone #: 306-4767 | AA Sequence (#)_____ | Dialog _____ |
| Searcher Location: 4B40 | Structure (#) · _____ | Questel/Orbit 11.34 |
| Date Searcher Picked Up: 8/30/04 | Bibliographic _____ | Dr.Link _____ |
| Date Completed: 8/30/04 | Litigation ✓ | Lexis/Nexis _____ |
| Searcher Prep & Review Time: _____ | Fulltext _____ | Sequence Systems _____ |
| Clerical Prep Time: _____ | Patent Family _____ | WWW/Internet _____ |
| Online Time: 15 | Other _____ | Other (specify)_____ |

**Green, Shirelle**

**From:** Laufer, Pinchus
**Sent:** Thursday, August 26, 2004 6:06 PM
**To:** STIC-EIC2100
**Subject:** litigation 7125

SearchForm.doc

*Pinchus*
Pinchus M. Laufer, Ph.D., J.D.
Special Programs Examiner, Technology Center 2100
Computer Architecture, Software, & Information Security
US Patent and Trademark Office
(703) 306-4160
plaufer@uspto.gov

1 of 1 DOCUMENT

UNITED STATES PATENT AND TRADEMARK OFFICE GRANTED PATENT

**6425035**

Link to Claims Section

July 23, 2002

Storage router and method for providing virtual local storage

**REEXAM-LITIGATE:**

NOTICE OF LITIGATION

Crossroads Systems (Texas), Inc., a Texas Corporation v. Dot Hill Systems Corporation, a Delaware corporation, Filed October 17, 2003, D.C. W.D. Texas, Doc. No. A-03-CA-754-55

**CERT-CORRECTION:** August 26, 2003 - a Certificate of Correction was issued for this patent (O.G. September 16, 2003)

**APPL-NO:** 965335 (09)

**FILED-DATE:** September 27, 2001

**GRANTED-DATE:** July 23, 2002

**ASSIGNEE-AT-ISSUE:** Crossroads Systems, Inc., Austin, Texas, 02

**ENGLISH-ABST:**

A storage router ( **56**) and storage network ( **50**) provide virtual local storage on remote SCSI storage devices ( **60, 62, 64**) to Fiber Channel devices. A plurality of Fiber Channel devices, such as workstations ( **58**), are connected to a Fiber Channel transport medium ( **52**), and a plurality of SCSI storage devices ( **60, 62, 64**) are connected to a SCSI bus transport medium ( **54**). The storage router ( **56**) interfaces between the Fibre Channel transport medium ( **52**) and the SCSI bus transport medium ( **54**). The storage router ( **56**) maps between the workstations ( **58**) and the SCSI storage devices ( **60, 62, 64**) and implements access controls for storage space on the SCSI storage devices ( **60, 62, 64**). The storage router ( **56**) then allows access from the workstations ( **58**) to the SCSI storage devices ( **60, 62, 64**) using native low level, block protocol in accordance with the mapping and the access controls.

## No Documents Found!

No documents were found for your search (**6425035 or 6,425,035**). Click the "Edit Search" button below to try again. You may want to try one or more of the following:

- Check for spelling errors.
- Remove some search terms.
- Use a less restrictive date range.
- Use more common search terms. "Suggested Words and Concepts" are displayed on the search form when you click on Edit Search.

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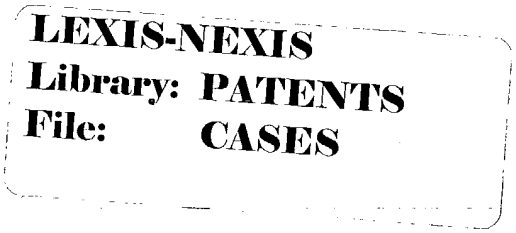
Edit Search





## No Documents Found!

No documents were found for your search (**6425035 or 6,425,035**). Click the "Edit Search" button below to try again. You may want to try one or more of the following:

- Check for spelling errors.
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- Use a less restrictive date range.
- Use more common search terms. "Suggested Words and Concepts" are displayed on the search form when you click on Edit Search.

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Edit Search



**LEXIS-NEXIS**
**Library: PATENTS**
**File: JNLS**

1 of 2 DOCUMENTS



October 22, 2003 Wednesday

**LENGTH:** 74 words

**HEADLINE:** CRDS Files Patent Infringement Suit Against HILL

**DATELINE:** Ridgeland, MS

**BODY:**

...Crossroads Systems Inc. (CRDS) on October 17, 2003. Dot Hill has not been served with the Complaint. The suit alleges patent infringement by Dot Hill of United States Patent Nos. 5,941,972 and **6,425,035,** relating to storage routers and methods for providing virtual local storage.

2 of 2 DOCUMENTS


PR Newswire

October 22, 2003, Wednesday

**SECTION:** FINANCIAL NEWS

**DISTRIBUTION:** TO BUSINESS AND TECHNOLOGY EDITORS

**LENGTH:** 498 words

**HEADLINE:** Dot Hill Systems Announces Complaint Filed By Crossroads Systems

**DATELINE:** CARLSBAD, Calif., Oct. 22

**BODY:**

...Texas by Crossroads Systems on October 17, 2003. Dot Hill has not been served with the Complaint. The suit alleges patent infringement by Dot Hill of United States Patent Nos. 5,941,972 and **6,425,035,** relating to storage routers and methods for providing virtual local storage.

"Crossroads Systems first offered us a license for certain of their patents in February 2002, asserting that the patents related to ...

?us6425035/pn

** SS 1: Results 1

Search statement 2

?prt full nonstop legalall

1/1 PLUSPAT - (C) QUESTEL-ORBIT- image
PN - US2002010812 A1 20020124 [US20020010812]
PN2 - US6425035 B2 20020723 [US6425035]
TI - (A1) Storage router and method for providing virtual local storage
PA - (B2) CROSSROADS SYSTEMS INC (US)
PA0 - Crossroads Systems, Inc., Austin TX [US]
PA2 - (B2) CROSSROADS SYSTEMS INC (US)
IN - (A1) HOESE GEOFFREY B (US); RUSSELL JEFFRY T (US)
AP - US96533501 20010927 [2001US-0965335]
FD - Continuation of: US5941972
PR - US96533501 20010927 [2001US-0965335]
- US35468299 19990715 [1999US-0354682]
- US179997 19971231 [1997US-0001799]
IC - (A1) G06F-003/00
EC - G06F-013/40D2
PCL - ORIGINAL (O) : 710105000; CROSS-REFERENCE (X) : 710008000 710036000 710310000
DT - Corresponding document
CT - US5748924; US5768623; US5809328; US5812754; US5835496; US5848251; US5935260; US5941972; US5959994; US6041381; US6055603; US6065087; US6075863; US6098149; US6118766; US6148004; US6185203; US6209023; US6230218; US6341315; US6343324
STG - (A1) Utility Patent Application published on or after January 2, 2001
STG2- (B2) U.S. Patent (with pre-grant pub.) after Jan. 2, 2001
AB - A storage router (56) and storage network (50) provide virtual local storage on remote SCSI storage devices (60, 62, 64) to Fiber Channel devices. A plurality of Fiber Channel devices, such as workstations (58), are connected to a Fiber Channel transport medium (52), and a plurality of SCSI storage devices (60, 62, 64) are connected to a SCSI bus transport medium (54). The storage router (56) interfaces between the Fibre Channel transport medium (52) and the SCSI bus transport medium (54). The storage router (56) maps between the workstations (58) and the SCSI storage devices (60, 62, 64) and implements access controls for storage space on the SCSI storage devices (60, 62, 64). The storage router (56) then allows access from the workstations (58) to the SCSI storage devices (60, 62, 64) using native low level, block protocol in accordance with the mapping and the access controls.
UP - 2002-05

1/1 LGST - (C) EPO
PN - US2002010812 A1 20020124 [US20020010812]
- US6425035 B2 20020723 [US6425035]
AP - US96533501 20010927 [2001US-0965335]
ACT - 20030826 US/CC-A
CERTIFICATE OF CORRECTION
UP - 2003-41

1/1 CRXX - (C) CLAIMS/RRX
PN - 6,425,035 A 20020723 [US6425035]
PA - Crossroads Systems Inc
ACT - 20030916 CERTIFICATE OF CORRECTION

UNITED STATES DEPARTMENT OF COMMERCE
Patent and Trademark Office
Address: ASSISTANT COMMISSIONER FOR PATENTS
Washington, D.C. 20231

| APPLICATION NO./ CONTROL NO. | FILING DATE | FIRST NAMED INVENTOR / PATENT IN REEXAMINATION | ATTORNEY DOCKET NO. |
|---|---|---|---|
| 90007125 | 07/19/04 | 6425035 | I006-8910 |

Gray Cary Ware & Friedenrich LLP
1221 S. MoPac Expressway Suite 400
Austin, Tx

| EXAMINER |
|---|
| Fleming, Fritz |

| ART UNIT | PAPER |
|---|---|
| 2182 | 5 |

DATE MAILED: 09/22/04

**Please find below and/or attached an Office communication concerning this application or proceeding.**

Commissioner of Patents and Trademarks

CC: Natu J. Patel
Wang & Patel, PC
1301 Dove Street, Suite 1050
Newport Beach CA 92660

Commissioner for Patents
United States Patent and Trademark Office
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(THIRD PARTY REQUESTER'S CORRESPONDENCE ADDRESS)

# *EX PARTE* REEXAMINATION COMMUNICATION TRANSMITTAL FORM

REEXAMINATION CONTROL NO. *90/007,125*.

PATENT NO. *6425035*.

ART UNIT *2182*.

Enclosed is a copy of the latest communication from the United States Patent and Trademark Office in the above identified *ex parte* reexamination proceeding (37 CFR 1.550(f)).

Where this copy is supplied after the reply by requester, 37 CFR 1.535, or the time for filing a reply has passed, no submission on behalf of the *ex parte* reexamination requester will be acknowledged or considered (37 CFR 1.550(g)).

| Order Granting / Denying Request For Ex Parte Reexamination | Control No. | Patent Under Reexamination | |
|---|---|---|---|
| | 90/007,125 | 6425035 | |
| | Examiner | Art Unit | |
| | Fritz M Fleming | 2182 | |

***--The MAILING DATE of this communication appears on the cover sheet with the correspondence address--***

The request for *ex parte* reexamination filed *19 July 2004* has been considered and a determination has been made. An identification of the claims, the references relied upon, and the rationale supporting the determination are attached.

Attachments: a)☐ PTO-892, b)☐ PTO-1449, c)☐ Other: _____

1. ☒ The request for *ex parte* reexamination is GRANTED.

RESPONSE TIMES ARE SET AS FOLLOWS:

For Patent Owner's Statement (Optional): TWO MONTHS from the mailing date of this communication (37 CFR 1.530 (b)). **EXTENSIONS OF TIME ARE GOVERNED BY 37 CFR 1.550(c).**

For Requester's Reply (optional): TWO MONTHS from the **date of service** of any timely filed Patent Owner's Statement (37 CFR 1.535). **NO EXTENSION OF THIS TIME PERIOD IS PERMITTED.** If Patent Owner does not file a timely statement under 37 CFR 1.530(b), then no reply by requester is permitted.

2. ☐ The request for *ex parte* reexamination is DENIED.

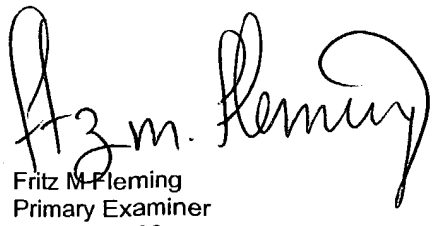
This decision is not appealable (35 U.S.C. 303(c)). Requester may seek review by petition to the Commissioner under 37 CFR 1.181 within ONE MONTH from the mailing date of this communication (37 CFR 1.515(c)). **EXTENSION OF TIME TO FILE SUCH A PETITION UNDER 37 CFR 1.181 ARE AVAILABLE ONLY BY PETITION TO SUSPEND OR WAIVE THE REGULATIONS UNDER 37 CFR 1.183.**

In due course, a refund under 37 CFR 1.26 ( c ) will be made to requester:

a) ☐ by Treasury check or,

b) ☐ by credit to Deposit Account No. _____, or

c) ☐ by credit to a credit card account, unless otherwise notified (35 U.S.C. 303(c)).



Fritz M Fleming
Primary Examiner
Art Unit: 2182

cc:Requester ( if third party requester )

1. A substantial new question of patentability affecting claims 1-14 of United States Patent Number 6,425,035 is raised by the request for *ex parte* reexamination.

Extensions of time under 37 CFR 1.136(a) will not be permitted in these proceedings because the provisions of 37 CFR 1.136 apply only to "an applicant" and not to parties in a reexamination proceeding. Additionally, 35 U.S.C. 305 requires that *ex parte* reexamination proceedings "will be conducted with special dispatch" (37 CFR 1.550(a)). Extensions of time in *ex parte* reexamination proceedings are provided for in 37 CFR 1.550(c).

- The threshold for determining whether or not to grant a re-examination is set forth in MPEP 2242, quoted below:

*For "a substantial new question of patentability" to be present, it is only necessary that: (*>A<) the prior art patents and/or printed publications raise a substantial question of patentability regarding at least one claim, i.e., the teaching of the (prior art) patents and printed publications is such that a reasonable examiner would consider the teaching to be important in deciding whether or not the claim is patentable; and (*>B<) the same question of patentability as to the claim has not been decided by the Office in a previous examination >or pending reexamination< of the patent or in a final holding of invalidity by the Federal Courts in a decision on the merits involving the claim. It is not necessary that a "prima facie" case of unpatentability exist as to the claim in order for "a substantial new question of patentability" to be present as to the claim. Thus, "a substantial new question of patentability" as to a patent claim could be present even if the examiner would not necessarily reject the claim as either fully anticipated by, or obvious in view of, the prior >art< patents or printed publications. As to the importance of the difference between "a substantial new question of patentability" and a "prima facie" case of unpatentability see generally In re Etter, 756 F.2d 852, 857 n.5, 225 USPQ 1, 4 n.5 (Fed. Cir. 1985).*

Thus it is clear, that a granting of a re-examination does not necessarily mean that a prima facie case of unpatentability exists, just that the teachings be important when deciding claim patentability.

- The manner in which the art is to be applied in the request is discussed in MPEP 2217, quoted below:

*The third sentence of 35 U.S.C. 302 indicates that the "request must set forth the pertinency and manner of applying cited prior art to every claim for which reexamination is requested." 37 CFR 1.510(b)(2) requires that the request include "[a]n identification of every claim for which reexamination is requested, and a detailed explanation of the pertinency and manner of applying the cited prior art to every claim for which reexamination is requested." If the request is filed by the patent owner, the request for reexamination may also point out how claims distinguish over cited prior art.*

*Where substantial new questions of patentability are presented under 35 U.S.C. 102(f) or (g), the prior invention of another must be disclosed in a patent or printed publication. Substantial new questions of patentability may also be presented under 35 U.S.C. 103 which are based on the above indicated portions of 35 U.S.C. 102. Substantial new questions of patentability may be found under 35 U.S.C. 102(f) / 103 or 102(g)/ 103 based on the prior invention of another disclosed in a patent or printed publication if the reference invention and the claimed invention were not commonly owned at the time the claimed invention was made. See, 35 U.S.C. 103(c) and MPEP § 706.02(l). See MPEP § 706.02(l)(1) for information pertaining to references which qualify as prior art under 35 U.S.C. 102(e)/103.*

*The mere citation of new patents or printed publications without an explanation does not comply with 37 CFR 1.510(b)(2). Requester must present an explanation of how the cited patents or printed publications are applied to all claims which requester considers to merit reexamination. This not only sets forth the requester's position to the Office, but also to the patent owner (where the patent owner is not the requester).*

Given the above, requestor has, at a threshold minimum, provided a substantial new question of patentability, albeit not in a clear and concise manner. For example, requestor has dedicated pages 5-41 to various "substantial new questions of patentability", which are not entirely clear. Pages 5-11 allege anticipation by the MAXSTRAT GEN5 PRODUCT, but such an analysis seems to rely upon two printed publications in the form of Exhibits 10-12 interpreted in light of an additional declaration in the form of Exhibit 13. Pages 12-13 allege other controllers detailed in Exhibits 14-16. Pages 13-14 allege anticipation over the '209 Patent. Pages 15-20 combine the material of pages 5-13 with admissions, Haugdahl, and Bursky. Pages 20-23 appear to combine admissions/testimony with at least patents to Oeda et al., Yung, Hefferon et al., DeKoning et al., Abadi et al., Hunnicutt et al., Raz et al., and Dauerer et al. Pages 23-26 then add Derby et al., Isfeld et al., Sheu and Jones et al. Pages 26-39 then address some of the above and Llorens, while pages 40-41 seem to summarize such. In order to grant the request for re-examination, the request indicates, at least, that the requestor considers claims 1-14 as being unpatentable over the MAXSTRAT GEN5 manuals of Exhibits 11-12. It is agreed that the consideration of the MAXSTRAT GEN5 manuals of Exhibits 11-12 raises a substantial new question of patentability, as to at least the patentability of claims 1-14 of the Hoese et al. patent. As pointed out in Exhibit 10, MAXSTRAT GEN5 manuals of Exhibits 11-12 teach the use of, amongst other things, of a network routing table, a buffer, the host interface ports, the device module controller, the two general purpose CPUs, the volumes, the ifp, and the internal file system which were not present in the prosecution of the application that became the

Hoese et al. patent. Further, there is a substantial likelihood that a reasonable examiner would consider these teachings important in deciding whether or not the claims are patentable. Accordingly, the MAXSTRAT GEN5 manuals of Exhibits 11 and 12 raise a substantial new question of patentability as to claims 1-14, which question has not been decided in a previous examination of the Hoese et al. patent. Thus claims 1-14 will be re-examined.

Addressing the other art cited in the request for re-examination, it is clear that the request for the re-examination should clearly and concisely set forth the cited prior art and the manner in which it is to be applied to the identified claims. Requestor has instead set forth a voluminous citation of prior art, with an inordinately large number of possible combinations of cited art, placing the burden of "explanation" on the examiner. Appendix C is described by the requestor as "Listing of ***possible*** prior art combinations showing obviousness." Turning to Appendix C, one finds a generic explanation that summarizes claim 1 (only claim 1) into elements A-G, and refers to the chart of Appendix B and Exhibit 22 for an accounting of what elements are found where. The explanation of Appendix C seems to conclude with the opinion that the mere fact that two references that teach all of the elements render a claim as obvious. The examiner would like to point to **MPEP 2143.01, Suggestion or Motivation To Modify the References**, where one finds:

> **The mere fact that references can be combined or modified does not render the resultant combination obvious unless the prior art also suggests the desirability of the combination.** In re Mills, 916 F.2d 680, 16 USPQ2d 1430 (Fed. Cir. 1990) (Claims were directed to an apparatus for producing an aerated cementitious composition by drawing air into

> the cementitious composition by driving the output pump at a capacity greater than the feed rate. The prior art reference taught that the feed means can be run at a variable speed, however the court found that this does not require that the output pump be run at the claimed speed so that air is drawn into the mixing chamber and is entrained in the ingredients during operation. Although a prior art device "may be capable of being modified to run the way the apparatus is claimed, there must be a suggestion or motivation in the reference to do so." 916 F.2d at 682, 16 USPQ2d at 1432.). See also In re Fritch, 972 F.2d 1260, 23 USPQ2d 1780 (Fed. Cir. 1992) (flexible landscape edging device which is conformable to a ground surface of varying slope not suggested by combination of prior art references).

For a specific example, appendix C, page 5, sets forth "Fibre Channel storage..." as a possible primary reference having claim elements ABCDFG with an astounding 54 individual secondary references with which "Fibre Channel storage..." is to be ***possibly*** combined with. The examiner is then supposed to go to Exhibit 22 to then interpret the shorthand of claim elements A-G of each reference in order to come up with the manner in which the cited art is to be applied in combination, thereby placing the burden on the examiner to provide the rationale to make the possible combinations. Furthermore, Exhibit 22 only goes up to claim 6, and not the identified patent claims 1-14. Finally, if the requestor had intended to apply the 200+ "possible prior art combinations showing obviousness" against the claims to form a basis for re-examination, then there should be a corresponding number of prima facie cases of obviousness in order to merit re-examination. Lacking such, the material of Appendix C would appear to provide a cumulative IDS listing of references that individually disclose bits and pieces of claims

1-6, without setting forth the proper rejections under 35 U.S.C. 103, and will be considered as an IDS in the course of the re-examination.

2. The patent owner is reminded of the continuing responsibility under 37 CFR 1.565(a) to apprise the Office of any litigation activity, or other prior or concurrent proceeding, involving Patent No. 6,425,035 throughout the course of this reexamination proceeding. The third party requester is also reminded of the ability to similarly apprise the Office of any such activity or proceeding throughout the course of this reexamination proceeding. See MPEP §§ 2207, 2282 and 2286.

3. It is noted that an issue not within the scope of reexamination proceedings has been raised. The issue of the co-pending applications will not be addressed in this re-examination, noting that some of them have matured into patents. The issue of secondary considerations and any licensing/income will not be considered during this re-examination, unless such is raised as an issue by patent owner. The issue of disclosure during the patent prosecution will not be addressed in this re-examination.

4. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Fritz M Fleming whose telephone number is 703-308-1483. The examiner can normally be reached on M-F, 0600-1500.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jeffrey Gaffin can be reached on 703-308-3301. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Fritz M Fleming
Primary Examiner
Art Unit 2182

fmf

PINCHUS M. LAUFER, PH.D
SPECIAL PROGRAM EXAMINER
TECHNOLOGY CENTER 2100

SS | SUBCLASS

TIC

CLAIM NO.

FOR O.G. _____

DRAWING FIG.
FOR CERTIFICATE AND
FOR O.G. _____

LITIGATION REVIEW [X] FF FF (exmr. init.) 9/30/04 (date)

| CASE NAME | DIRECTOR INITIALS |
|---|---|
| Crossroads Systems (TX) v. Dot Hill Systems, Filed October 17, 2003, D.C.W.D. Texas, Doc. No. A-03-CA-754-SS | |

# INDEX OF CLAIMS

| Claim Final | Claim Original | Date | Claim Final | Claim Original | Date |
|---|---|---|---|---|---|
| | 1 | | | 26 | |
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EEXAMINATION FIELD
F SEARCH

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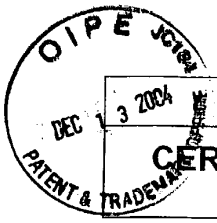
Re Exam




| IN THE UNITED STATES PATENT AND TRADEMARK OFFICE | |
|---|---|
| **CERTIFICATE OF SERVICE UNDER 37 C.F.R. 1.248** | Atty. Docket No. **CROSS1123-17** |

| | |
|---|---|
| Applicant **Geoffrey B. Hoese, et al.** | |
| Application Number **90/007,125** | Date Filed **07/19/2004** |
| Title **Storage Router and Method for Providing Virtual Local Storage** | |
| Group Art Unit **7590** | Examiner **Fleming, Fritz** |
| Confirmation Number: **2298** | |

Applicant hereby serves the Notification of Litigation Under 37 C.F.R. 1.565 in the above referenced case to:

Wang and Patel, PC
1301 Dove Street, Suite 1050
Newport Beach, CA 92660

As per 35 U.S.C. §1.248 service is made via first class mail on December 8, 2004.

Respectfully submitted,

**Sprinkle IP Law Group**

John L. Adair
Reg. No. 48,828

Dated: December 7, 2004

1301 W. 25th Street, Suite 408
Austin, Texas 78705
Tel. (512) 637-9220
Fax. (512) 371-9088

Enclosures

| IN THE UNITED STATES PATENT AND TRADEMARK OFFICE | |
|---|---|
| **NOTIFICATION OF LITIGATION UNDER 37 C.F.R. 1.565** | Atty. Docket No. **CROSS1123-17** |

| | |
|---|---|
| Applicant **Geoffrey B. Hoese, et al.** | |
| Application Number **90/007,125** | Date Filed **07/19/2004** |
| Title **Storage Router and Method for Providing Virtual Local Storage** | |
| Group Art Unit **7590** | Examiner **Fleming, Fritz** |
| Confirmation Number: **2298** | |

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

**Certificate of Mailing Under 37 C.F.R. §1.8**

I hereby certify that this correspondence is being deposited with the United States Postal Service as First Class Mail in an envelope addressed to Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22312-1450 on **December 8, 2004**.

Janice Pampell

Janice Pampell

Dear Sir:

This notification is filed for the sole purpose to inform the Examiner of prior and concurrent litigation involving United States Patent No. 5,941,972 (the "'972 Patent") and United States Patent No. 6,425,035 (the "'035 Patent") as required under 35 CFR 1.565. This is not and should not be construed as a submission under 35 CFR 1.530 as it does not discuss why the subject matter as claimed in these patents is not anticipated nor rendered obvious.

PRIOR AND ONGOING LITIGATION

The '972 Patent was held valid and infringed in *Crossroads Systems (Texas), Inc. v. Chaparral Network Storage, Inc.*, Western District of Texas, Civil Action No. A-00-CA-217-SS (the "Chaparral Litigation"). In the Chaparral Litigation, Crossroads Systems, Inc. ("Crossroads") alleged that storage router and RAID controller products by Chaparral Network Storage, Inc. ("Chaparral") infringed the '972 Patent. The district court found that the '972 Patent was valid; the jury found that Chaparral's storage router and RAID controllers infringed the '972 Patent and also subjected the defendant Chaparral to treble damages for willful infringement of the '972 Patent. A copy of the judgment is attached hereto as Exhibit A. The validity of the '972 Patent, the infringement of the '972 Patent by Chaparral's RAID controllers and the willful infringement finding were all upheld by the Federal Circuit. A copy of the Federal Circuit decision affirming the decision of the lower court is attached hereto as Exhibit B.

Another defendant paid Crossroads $15,000,000 to settle a patent infringement case involving the '972 Patent. In Crossroads *Systems (Texas), Inc., v. Pathlight Technology, Inc.*, Western District of Texas, Civil Action No. A-00CA-248-JN, Crossroads asserted that Pathlight Technology, Inc.'s ("Pathlight") storage router products infringed the '972 Patent. During the course of the litigation, Pathlight was acquired by a company named ADIC. ADIC settled the case with payment to Crossroads of $15M after closing arguments but before the jury returned its verdict.

Currently, there is ongoing litigation in which Dot Hill Systems Corporation's ("Dot Hill") RAID controller products are accused of infringing the '972 and '035 Patents. *See*, Crossroads *Systems, Inc. v. Dot Hill Systems Corporation*, Western District of Texas, Case Number A-03-CV-754(SS). This litigation is pending.

This notification was served via first class mail on December 8, 2004 to Natu J. Patel at Wang and Patel, PC, 1301 Dove Street, Suite 1050, Newport Beach, CA 92660.

Respectfully submitted,

**Sprinkle IP Law Group**
Attorneys for Applicant

John L. Adair
Reg. No. 48,828

Date: December 8, 2004
1301 W. 25th Street
Suite 408
Austin, Texas 78705
Tel. (512) 637-9220
Fax. (512) 371-9088

**IN THE UNITED STATES DISTRICT COURT**
**FOR THE WESTERN DISTRICT OF TEXAS**
**AUSTIN DIVISION**

**CROSSROADS SYSTEMS, (TEXAS), INC.,**

**Plaintiff,**

**-vs-**

**Case No. A-00-CA-217-SS**

**CHAPARRAL NETWORK STORAGE, INC.,**

**Defendant.**

---

**FINAL JUDGMENT**

BE IT REMEMBERED on the 4th day of September 2001, the Court called the above-captioned matter, and all parties appeared through their appropriate representatives and counsel of record and announced ready for trial, and a jury composed of seven legally qualified jurors having been empaneled and this case proceeded to trial on September 4, 2001, and on September 6, 2001, the plaintiff rested its case and the defendant filed a motion for judgment pursuant to Rule 50 of the Federal Rules of Civil Procedure and the Court overruled said motion with the exception of the issue of "contributory inducement," and the trial proceeded until September 11, 2001, when the defendant rested, and thereafter the plaintiff filed its motion for judgment as a matter of law pursuant to Rule 50 of the Federal Rules of Civil Procedure and the defendant renewed its Rule 50 motion and the Court overruled all motions with the exception of plaintiff's motion on the defense of "definiteness" and the case proceeded with all parties closing on September 11, 2001, and all parties renewing their motions, and the Court overruling all Rule 50 motions, and after the Court had instructed the jury

and all counsel had made their final arguments, the case was submitted to the jury on the 12th day of September 2001, and on that said day, the jury returned its verdict answering the questions as follows:

| | | | |
|---|---|---|---|
| Question No. 1: | Yes | | |
| | 1-14 | | |
| Question 2: | Not answered | | |
| Question 3: | Yes | | |
| | 7-14 | | |
| Question 4: | Yes | | |
| | 7-14 | | |
| Question 5: | Router | RAID | |
| | 167,247 | 1,371,693 | |
| | 5% | 3% | |
| | 8365.00 | 41,150.79 | 49,515.79 |
| Question 6: | Yes | | |
| | 1-14 | | |
| Question 7: | No | | |
| Question 8: | No | | |
| Question 9: | No | | |

Said verdict was signed by the presiding juror who advised in open court it was a unanimous verdict and the verdict was accepted by the Court and filed by the Clerk. Thereafter, the parties filed motions and on this date the Court has entered its orders disposing of all motions pending and, based upon the pleadings, trial record, and the law, enters this final judgment:

IT IS ORDERED, ADJUDGED and DECREED that the plaintiff Crossroads Systems (Texas), Inc., do have and recover judgment of and against the defendant Chaparral Network Storage, Inc., for the total sum of $148,547.37 with interest as of July 11, 2001, in the amount of 2.40 percent per annum until paid, plus all costs of suit.

IT IS FURTHER ORDERED, ADJUDGED and DECREED that:

1. Chaparral Network Storage, Inc., has infringed claims 1-14 of the '972 patent in making, using, offering to sell, and selling certain routers and RAID controllers, including but not limited to the models listed in Exhibit 1 attached hereto and incorporated by reference and including any other products that provide access controls in a way that is substantially similar to any product listed in Exhibit 1.

2. Claims 1-14 of the '972 patent are valid.

3. Pursuant to 35 U.S.C. § 154, Crossroads Systems (Texas), Inc., has the exclusive right in the United States to make, have made, use, sell, offer for sell, and import products covered by, or coming within the scope of any of claims 1-14 of the '972 patent.

4. Chaparral has infringed Crossroads' rights in making, offering to sell, and selling router and RAID controller products that use, embody, or perform the inventions of claims 1-14 of the '972 patent.

5. Chaparral has contributorily infringed and induced the infringement of claims 7-14 of the '972 patent by providing third parties with the means of infringing claims 7-14 of the '972 patent and by instructing third parties to infringe claims 7-14 of the '972 patent.

6. By reason of the infringement of the '972 patent, Chaparral Network Storage, Inc., its officers, directors, agents, servants, employees, attorneys, and all persons acting in concert

or participation with them who receive actual notice of this order by personal service or otherwise, are enjoined as of this date from infringing any of claims 1-14 of Crossroads Systems (Texas), Inc.'s '972 patent, including but not limited to the router and RAID controller models identified on Exhibit 1 and including any other router or RAID controllers that are substantially similar to any product listed in Exhibit 1.

7. Chaparral Network Storage, Inc., its officers, directors, agents, servants, employees, attorneys, and all persons acting in concert or participation with them who receive actual notice of this order by personal service or otherwise are enjoined as of this date from contributorily infringing or inducing the infringement of any of claims 7-14 of Crossroads Systems (Texas), Inc.'s '972 patent.

8. IT IS FURTHER ORDERED that Chaparral Network Storage, Inc., will, no later than 30 business days from the date of the entry of this injunction obtain from any dealers, distributors, or sales agents within the United States and take into Chaparral's possession all products which are owned by Chaparral but which are now or will be in the possession or under control of such dealers, distributors, or sales agents and which infringe any of the claims 1-14 of the '972 patent (including but not limited to the products identified in Exhibit 1 and any other router or RAID controllers that are substantially similar to any product listed in Exhibit 1).

9. The United States District Court for the Western District of Texas, Austin Division, retains jurisdiction to enforce the terms of this injunction.

IT IS SO ORDERED this the 15th day of November 2001.

Pam Sparks
UNITED STATES DISTRICT JUDGE

IN THE UNITED STATES DISTRICT COURT
FOR THE WESTERN DISTRICT OF TEXAS
AUSTIN DIVISION

CROSSROADS SYSTEMS, (TEXAS), INC.,

Plaintiff,

-vs-

Case No. A-00-CA-217-SS

CHAPARRAL NETWORK STORAGE, INC.,

Defendant.

---

## EXHIBIT 1 TO PERMANENT INJUNCTION

Chaparral Router Products that Infringe U.S. Patent No. 5,941,972

FS 1220
FS 2620

Chaparral RAID Controller Products that Infringe U.S. Patent No. 5,941,972

G7313
G7324
G8324
K7313
K7413
A8526

NOTE: Pursuant to Fed. Cir. R. 47.6, this disposition is not citable as precedent. It is a public record. This disposition will appear in tables published periodically.

# United States Court of Appeals for the Federal Circuit



02-1158

CROSSROADS SYSTEMS, (TEXAS), INC.,

Plaintiff-Appellee,

v.

CHAPARRAL NETWORK STORAGE, INC.,

Defendant-Appellant.



## JUDGMENT

ON APPEAL from the United States District Court for the Western District of Texas

In CASE NO(S). 00-CV-217 and 00-CV-621

This CAUSE having been heard and considered, it is

ORDERED and ADJUDGED: AFFIRMED. See Fed. Cir. R. 36

Per Curiam (NEWMAN, SCHALL, and DYK, Circuit Judges).



ENTERED BY ORDER OF THE COURT

DATED: FEB 12 2003

Jan Horbaly, Clerk

ISSUED AS A MANDATE: MARCH 5, 2003

Costs Against Appellant:
Total $97.35

186

PTO/SB/08b (08-03)
Approved for use through 06/30/2006. OMB 0651-0031
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB control number.

Substitute for form 1449B/PTO

# INFORMATION DISCLOSURE STATEMENT BY APPLICANT

(Use as many sheets as necessary)

Sheet 1 of 1

| Complete if Known | |
|---|---|
| Application Number | Patent No. 6,425,035 |
| Filing Date | Issue Date 07/23/2002 |
| First Named Inventor | HOESE |
| Art Unit | 2182 |
| Examiner Name | FLEMING, FRITZ M. |
| Attorney Docket Number | HOESE1/WAB |

NON PATENT LITERATURE DOCUMENTS

| Examiner Initials* | Cite No.[1] | Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published. | T[2] |
|---|---|---|---|
| F.F. | 1 | "InfoServer 100 System Operations Guide", First Edition, Digital Equipment Corporation, 1990 | |
| F.F. | 2 | S.P. Joshi, "Ethernet controller chip interfaces with variety of 16-bit processors," Electronic Design, Hayden Publishing Co., Inc., Rochelle Park, NJ, Oct. 14, 1982.pp193-200 | |
| F.F. | 3 | "DP5380 Asynchronous SCSI Interface", National Semiconductor Corporation, Arlington, TX, May 1989, pp. 1-32 | |
| F.F. | 4 | Johnson, D.B., et al., "The Peregrine High Performance RPC System", Software--Practice & Experience, 23(2):201-221, Feb. 1993 | |
| F.F. | 5 | "InfoServer 150--Installation and Owner's Guide", EK-INFSV-OM-001, Digital Equipment Corporation, Maynard, Massachusetts 1991, Chapters 1 and 2 | |
| F.F. | 6 | Pictures of internal components of the InfoServer 150, taken from http://www.binarydinosaurs.couk/Museum/Digital/infoserver/infoserver.php in Nov. 2004 | |
| | | | |
| | | | |
| | | | |
| | | | |

| Examiner Signature | Fritz M. Fleming | Date Considered | 12/16/2004 |
|---|---|---|---|

*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

[1]Applicant's unique citation designation number (optional). [2]Applicant is to place a check mark here if English language Translation is attached.

This collection of information is required by 37 CFR 1.97 and 1.98. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 2 hours to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

*If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.*

[redacted]

RE EXAM



| IN THE UNITED STATES PATENT AND TRADEMARK OFFICE | |
|---|---|
| **NOTIFICATION OF REEXAMINATION UNDER 37 C.F.R. 1.565** | Atty. Docket No. **CROSS1123-17** |

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|---|---|
| Applicant **Geoffrey B. Hoese, et al.** | |
| Application Number **90/007,125** | Date Filed **07/19/2004** |
| Title **Storage Router and Method for Providing Virtual Local Storage** | |
| Group Art Unit **2182** | Examiner **Fleming, Fritz** |
| Confirmation Number: **2298** | |

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

**Certificate of Mailing Under 37 C.F.R. §1.8**

I hereby certify that this correspondence is being deposited with the United States Postal Service as First Class Mail in an envelope addressed to Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22312-1450 on 1-11-05

Janice Pampell
Janice Pampell

Dear Sir:

This notification is filed for the sole purpose to inform the Examiner of concurrent reexamination proceedings involving United States Patent No. 6,425,035 (the "'035 Patent") as required under 35 CFR 1.565. This is not and should not be construed as a submission under 35 CFR 1.530 as it does not discuss why the subject matter as claimed in these patents is not anticipated nor rendered obvious.

ONGOING LITIGATION AND CONCURRENT REEXAMINATION PROCEEDINGS

In addition to the ongoing litigation noted in a previous submission, the '035 application is currently subject to reexamination under Reexamination Control No. 90/007,317. The order granting reexamination is dated December 16, 2004.

This notification was served via first class mail on January 11, 2005 to Natu J. Patel at Wang and Patel, PC, 1301 Dove Street, Suite 1050, Newport Beach, CA 92660.

Respectfully submitted,

**Sprinkle IP Law Group**
Attorneys for Applicant

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Reg. No. 48,828

Date: 1/11/05

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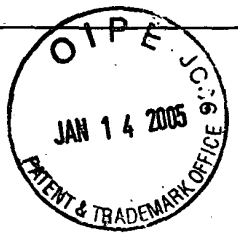
| IN THE UNITED STATES PATENT AND TRADEMARK OFFICE | |
|---|---|
| **CERTIFICATE OF SERVICE UNDER 37 C.F.R. 1.248** | Atty. Docket No. **CROSS1123-17** |

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| Applicant<br>**Geoffrey B. Hoese, et al.** | |
| Application Number<br>**90/007,125** | Date Filed<br>**07/19/2004** |
| Title<br>**Storage Router and Method for Providing Virtual Local Storage** | |
| Group Art Unit<br>**7590** | Examiner<br>**Fleming, Fritz** |
| Confirmation Number:<br>**2298** | |

Applicant hereby serves the Notification Under 37 C.F.R. 1.565 in the above referenced case to:

Wang and Patel, PC
1301 Dove Street, Suite 1050
Newport Beach, CA 92660

As per 35 U.S.C. §1.248 service is made via first class mail on January 11, 2005.

Respectfully submitted,

**Sprinkle IP Law Group**

John L. Adair
Reg. No. 48,828

Dated: January 11, 2005

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Enclosures

| Ref # | Hits | Search Query | DBs | Default Operator | Plurals | Time Stamp |
|---|---|---|---|---|---|---|
| L1 | 19 | scsi same (fibre adj channel) same interface same dma | USPAT | OR | OFF | 2005/01/19 14:08 |
| S1 | 71 | storage adj2 router | USPAT | OR | OFF | 2005/01/19 14:08 |
| S2 | 24 | scsi near5 ((fibre or fiber) adj channel) near storage | USPAT | OR | OFF | 2005/01/13 07:22 |
| S3 | 117 | scsi near5 ((fibre or fiber) adj channel) near5 storage | USPAT | OR | OFF | 2005/01/13 07:40 |
| S4 | 49 | scsi same ((fibre or fiber) adj channel) same storage | EPO; JPO; DERWENT; IBM_TDB | OR | OFF | 2005/01/13 10:27 |
| S5 | 4 | scsi same ((fibre or fiber) adj channel) same bridge | EPO; JPO; DERWENT; IBM_TDB | OR | ON | 2005/01/13 08:15 |
| S6 | 97 | scsi same ((fibre or fiber) adj channel) same bridge | USPAT | OR | ON | 2005/01/13 07:58 |
| S7 | 36 | scsi same ((fibre or fiber) adj channel) same router | USPAT | OR | ON | 2005/01/13 07:59 |
| S8 | 197 | scsi same ((fibre or fiber) adj channel) same adapter | USPAT | OR | ON | 2005/01/13 07:59 |
| S9 | 32 | scsi same ((fibre or fiber) adj channel) same network same storage | EPO; JPO; DERWENT; IBM_TDB | OR | ON | 2005/01/13 08:17 |
| S10 | 664 | scsi same ((fibre or fiber) adj channel) same network same storage | US-PGPUB | OR | ON | 2005/01/13 08:18 |
| S11 | 302 | scsi same ((fibre or fiber) adj channel) same network same storage | USPAT | OR | ON | 2005/01/13 09:06 |
| S12 | 76 | scsi same ((fibre or fiber) adj channel) same (map or mapping) | USPAT | OR | ON | 2005/01/13 09:20 |
| S13 | 10 | scsi same ((fibre or fiber) adj channel) same (map or mapping) | EPO; JPO; DERWENT; IBM_TDB | OR | ON | 2005/01/13 09:33 |
| S14 | 0 | scsi same ((fibre or fiber) adj channel) same (block adj level) | EPO; JPO; DERWENT; IBM_TDB | OR | ON | 2005/01/13 09:33 |
| S15 | 3 | scsi same ((fibre or fiber) adj channel) same (block adj level) | USPAT | OR | ON | 2005/01/13 09:34 |
| S16 | 10 | scsi same ((fibre or fiber) adj channel) same native same block | USPAT | OR | ON | 2005/01/13 09:37 |
| S17 | 141 | scsi same ((fibre or fiber) adj channel) same block same (storage or disk or disc or tape) | USPAT | OR | ON | 2005/01/13 10:12 |
| S18 | 10 | scsi same ((fibre or fiber) adj channel) same (network adj attached adj storage) | USPAT | OR | ON | 2005/01/13 10:13 |

| | | | | | | |
|---|---|---|---|---|---|---|
| S19 | 70 | scsi same ((fibre or fiber) adj channel) and (network adj attached adj storage) | USPAT | OR | ON | 2005/01/13 10:14 |
| S20 | 1 | (block adj level) same (network adj attached adj storage) | USPAT | OR | ON | 2005/01/13 10:15 |
| S21 | 74 | scsi same ((fibre or fiber) adj channel) same shared same storage | USPAT | OR | ON | 2005/01/13 10:17 |
| S22 | 2944 | (peer adj2 peer) | USPAT | OR | ON | 2005/01/13 10:17 |
| S23 | 23 | (peer adj2 peer) same shared same storage | USPAT | OR | ON | 2005/01/13 10:20 |
| S24 | 42 | (shared adj storage) same scsi | USPAT | OR | ON | 2005/01/13 10:23 |
| S25 | 200 | network adj attached adj storage | USPAT | OR | ON | 2005/01/13 10:52 |
| S26 | 622 | scsi same ((fibre or fiber) adj channel) same storage | USPAT | OR | OFF | 2005/01/13 10:36 |
| S27 | 738 | scsi same ((fibre or fiber) adj channel) same interface | USPAT | OR | OFF | 2005/01/13 10:43 |
| S28 | 54 | scsi same ((fibre or fiber) adj channel) same mapping | USPAT | OR | OFF | 2005/01/13 10:43 |
| S29 | 161 | network adj attached adj storage | EPO; JPO; DERWENT; IBM_TDB | OR | ON | 2005/01/13 11:34 |
| S30 | 51 | block adj server | EPO; JPO; DERWENT; IBM_TDB | OR | ON | 2005/01/13 11:38 |
| S31 | 163 | block adj server | USPAT | OR | ON | 2005/01/13 12:21 |
| S32 | 28 | network adj attached adj peripheral | USPAT | OR | ON | 2005/01/13 13:15 |
| S33 | 292 | (710/74).CCLS. | USPAT | OR | OFF | 2005/01/13 13:35 |
| S34 | 84 | (710/74).CCLS. | US-PGPUB | OR | OFF | 2005/01/13 13:37 |
| S36 | 2528 | (711/111-114).CCLS. | USPAT | OR | OFF | 2005/01/19 06:51 |
| S37 | 332 | ((fibre or fiber) adj channel) same scsi same (storage or disk or disc) same controller | USPAT | OR | ON | 2005/01/13 13:48 |
| S38 | 592 | network$ near5 storage near5 controller | USPAT | OR | ON | 2005/01/14 08:27 |
| S39 | 221 | network$ near5 storage near5 controller | EPO; JPO; DERWENT; IBM_TDB | OR | ON | 2005/01/14 08:04 |
| S40 | 1025 | (711/111-114).CCLS. | US-PGPUB | OR | OFF | 2005/01/19 06:35 |
| S41 | 1337 | (711/111,112).CCLS. | USPAT | OR | OFF | 2005/01/19 07:39 |
| S42 | 1495 | (711/113,114).CCLS. | USPAT | OR | OFF | 2005/01/19 08:25 |
| S43 | 100 | atm same scsi same ((fiber or fibre) adj channel) | USPAT | OR | OFF | 2005/01/19 08:37 |
| S44 | 372 | atm same ((fiber or fibre) adj channel) | USPAT | OR | OFF | 2005/01/19 08:41 |
| S45 | 2894 | S40 or S41 or S42 or S43 or S44 | USPAT | OR | OFF | 2005/01/19 08:41 |

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|---|---|---|---|---|---|---|
| S46 | 8 | scsi same fibre same port same adaptor | USPAT | OR | ON | 2005/01/19 12:35 |
| S47 | 27 | scsi same fibre same adaptor | USPAT | OR | ON | 2005/01/19 12:37 |
| S48 | 36 | scsi same fibre same converter | USPAT | OR | ON | 2005/01/19 12:39 |
| S49 | 257 | (710/315).CCLS. | USPAT | OR | OFF | 2005/01/19 12:42 |

all references considered 1/21/2005

FRITZ FLEMING
PRIMARY EXAMINER
GROUP 2100

## Listing of Every Patent and Printed Publication Relied Upon

| Printed Publication | Author | Publication Date | Where Found |
|---|---|---|---|
| CRD-5500 SCSI RAID Controller User's Manual, Rev. 1.3 | CMD Technology, Inc. | November 21, 1996 | Exh. 14 |
| DIGITAL StorageWorks HSZ70 Array Controller HSOF Version 7.0 EK–CLI70–RM. A01 CLI Reference Manual. | Digital Equipment Corporation | July, 1997 | Exh. 5, MSJ Exh. 8 |
| DIGITAL StorageWorks HSZ70 Array Controller HSOF Version 7.0 EK–HSZ70–SV. A01 Service Manual. | Digital Equipment Corporation | July, 1997 | Exh. 5, MSJ Exh. 6 |
| DIGITAL StorageWorks HSZ70 Array Controller HSOF Version 7.0 K-HSZ70-CG. A01 Configuration Guide. | Digital Equipment Corporation | July, 1997 | Exh. 5, MSJ Exh. 7 |
| Fiber channel (FCS)/ATM interworking: a design solution | Anzaloni, et al. | 1993 | Exh. 1 |
| Fibre channel storage interface for video-on-demand servers | Chen, et al. | 1996 | Exh. 1 |
| Gen5 S-SERIES XL System Guide Revision 1.01 | MAXIMUM STRATEGY INC. | June 11, 1996 | Exh. 11 |
| Graphical User Interface for MAXSTRAT Gen5/Gen-S Servers User's Guide 1.1 | MAXSTRAT Corporation (formerly MAXIMUM STRATEGY INC.) | January 6, 1997 | Exh.12 |
| High Performance Data Transfers Using Network-Attached Peripherals at the National Storage Laboratory | Hyer, et al. | February 26, 1993 | Exh. 1 |
| IFT-3000 SCSI to SCSI Disk Array Controller Instruction Manual Revision 2.0 | Infortrend Technologies, Inc. | 1995 | Exh. 16 |
| Implementing a Fibre Channel SCSI transport | Snively | 1994 | Exh. 1 |
| Local-Area Networks for the IBM PC | Haugdahl | December, 1984 | Exh. 18 |
| New serial I/Os speed storage subsystems | Bursky | February 6, 1995 | Exh. 19 |
| SCSI applications on Fibre Channel | Snively | 1992 | Exh. 1 |

Copies of all U.S. Patents are found in Exhibit 1

| U.S. Patent No. | Patentee | Issue date |
|---|---|---|
| 6,219,771 | Kikuchi, et al. | April 17, 2001 |
| 6,185,203 | Berman | February 6, 2001 |
| 6,108,684 | DeKoning, et al. | August 22, 2000 |
| 6,098,149 | Ofer, et al. | August 1, 2000 |
| 6,081,849 | Born, et al. | June 27, 2000 |
| 6,073,218 | DeKoning, et al. | June 6, 2000 |
| 6,073,209 | Bergsten | June 6, 2000 |
| 6,055,603 | Ofer, et al. | April 25, 2000 |
| 5,959,994 | Boggs, et al. | September 28, 1999 |
| 5,935,260 | Ofer | August 10, 1999 |
| 5,933,824 | DeKoning, et al. | August 3, 1999 |
| 5,889,952 | Hunnicutt, et al. | March 30, 1999 |
| 5,860,137 | Raz, et al. | January 12, 1999 |
| 5,848,251 | Lomelino, et al. | December 8, 1998 |



[redacted]

| U.S. Patent No. | Patentee | Issue date |
|---|---|---|
| 5,835,496 | Yeung, et al. | November 10, 1998 |
| 5,812,754 | Lui, et al. | September 22, 1998 |
| 5,809,328 | Nogales, et al. | September 15, 1998 |
| 5,805,816 | Picazo, Jr., et al. | September 8, 1998 |
| 5,802,278 | Isfeld, et al. | September 1, 1998 |
| 5,781,715 | Sheu | July 14, 1998 |
| 5,768,623 | Judd, et al. | June 16, 1998 |
| 5,748,924 | Llorens, et al. | May 5, 1998 |
| 5,727,218 | Hotchkin | March 10, 1998 |
| 5,664,107 | Chatwani, et al. | September 2, 1997 |
| 5,659,756 | Hefferon, et al. | August 19, 1997 |
| 5,642,515 | Jones, et al. | June 24, 1997 |
| 5,638,518 | Malladi | June 10, 1997 |
| 5,634,111 | Oeda, et al. | May 27, 1997 |
| 5,632,012 | Belsan, et al. | May 20, 1997 |
| 5,621,902 | Cases, et al. | April 15, 1997 |
| 5,613,082 | Brewer, et al. | March 18, 1997 |
| 5,581,724 | Belsan, et al. | December 3, 1996 |
| 5,581,709 | Ito, et al. | December 3, 1996 |
| 5,568,648 | Coscarella, et al. | October 22, 1996 |
| 5,564,019 | Beausoleil, et al. | October 8, 1996 |
| 5,548,791 | Casper, et al. | August 20, 1996 |
| 5,544,313 | Shachnai, et al. | August 6, 1996 |
| 5,537,585 | Blickenstaff, et al. | July 16, 1996 |
| 5,519,695 | Purohit, et al. | May 21, 1996 |
| 5,511,169 | Suda | April 23, 1996 |
| 5,507,032 | Kimura | April 9, 1996 |
| 5,504,857 | Baird, et al. | April 2, 1996 |
| 5,496,576 | Jeong | March 5, 1996 |
| 5,495,474 | Olnowich, et al. | February 27, 1996 |
| 5,491,812 | Pisello, et al. | February 13, 1996 |
| 5,487,077 | Hassner, et al. | January 23, 1996 |
| 5,471,609 | Yudenfriend, et al. | November 28, 1995 |
| 5,469,576 | Dauerer, et al. | November 21, 1995 |
| 5,463,754 | Beausoleil, et al. | October 31, 1995 |
| 5,459,857 | Ludlam, et al. | October 17, 1995 |
| 5,452,421 | Beardsley, et al. | September 19, 1995 |
| 5,450,570 | Richek, et al. | September 12, 1995 |
| 5,430,855 | Walsh, et al. | July 4, 1995 |
| 5,426,637 | Derby, et al. | June 20, 1995 |
| 5,423,026 | Cook, et al. | June 6, 1995 |
| 5,420,988 | Elliott | May 30, 1995 |
| 5,418,909 | Jackowski, et al. | May 23, 1995 |
| 5,416,915 | Mattson, et al. | May 16, 1995 |
| 5,410,697 | Baird, et al. | April 25, 1995 |
| 5,410,667 | Belsan, et al. | April 25, 1995 |
| 5,403,639 | Belsan, et al. | April 4, 1995 |
| 5,396,596 | Hashemi, et al. | March 7, 1995 |
| 5,388,246 | Kasai | February 7, 1995 |
| 5,388,243 | Glider, et al. | February 7, 1995 |
| 5,379,398 | Cohn, et al. | January 3, 1995 |
| 5,379,385 | Shomler | January 3, 1995 |

| U.S. Patent No. | Patentee | Issue date |
|---|---|---|
| 5,367,646 | Pardillos, et al. | November 22, 1994 |
| 5,361,347 | Glider, et al. | November 1, 1994 |
| 5,331,673 | Elko, et al. | July 19, 1994 |
| 5,317,693 | Elko, et al. | July 19, 1994 |
| 5,315,657 | Abadi, et al. | May 24, 1994 |
| 5,301,290 | Tetzlaff, et al. | April 5, 1994 |
| 5,297,262 | Cox, et al. | March 22, 1994 |
| 5,247,692 | Fujimura | September 21, 1993 |
| 5,247,638 | O'Brien, et al. | September 21, 1993 |
| 5,239,654 | Ing-Simmons, et al. | August 24, 1993 |
| 5,226,143 | Baird, et al. | July 6, 1993 |
| 5,214,778 | Glider, et al. | May 25, 1993 |
| 5,212,785 | Powers, et al. | May 18, 1993 |
| 5,210,866 | Milligan, et al. | May 11, 1993 |
| 5,202,856 | Glider, et al. | April 13, 1993 |
| 5,193,184 | Belsan, et al. | March 9, 1993 |
| 5,193,168 | Corrigan, et al. | March 9, 1993 |
| 5,185,876 | Nguyen, et al. | February 9, 1993 |
| 5,155,845 | Beal, et al. | October 13, 1992 |
| 5,124,987 | Milligan, et al. | June 23, 1992 |
| 5,077,736 | Dunphy, Jr., et al. | December 31, 1991 |
| 5,077,732 | Fischer, et al. | December 31, 1991 |
| 4,961,224 | Yung | October 2, 1990 |
| 4,897,874 | Lidinsky, et al. | January 30, 1990 |
| 4,835,674 | Collins, et al. | May 30, 1989 |
| 4,827,411 | Arrowood, et al. | May 2, 1989 |
| 4,825,406 | Bean, et al. | April 25, 1989 |
| 4,821,179 | Jensen, et al. | April 11, 1989 |
| 4,811,278 | Bean, et al. | March 7, 1989 |
| 4,807,180 | Takeuchi, et al. | February 21, 1989 |
| 4,787,028 | Finfrock, et al. | November 22, 1988 |
| 4,697,232 | Brunelle, et al. | September 29, 1987 |
| 4,644,462 | Matsubara, et al. | February 17, 1987 |
| 4,620,295 | Aiken, Jr. | October 28, 1986 |
| 4,603,380 | Easton, et al. | July 29, 1986 |
| 4,573,152 | Greene, et al. | February 25, 1986 |
| 4,533,996 | Hartung, et al. | August 6, 1985 |
| 4,504,927 | Callan | March 12, 1985 |
| 4,455,605 | Cormier, et al. | June 19, 1984 |
| 4,415,970 | Swenson, et al. | November 15, 1983 |

UNITED STATES PATENT AND TRADEMARK OFFICE

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United States Patent and Trademark Office
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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|---|---|---|---|---|
| 90/007,125 | 07/19/2004 | 6425035 | I006-8910 | 2298 |

44654 7590 02/07/2005

SPRINKLE IP LAW GROUP
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| EXAMINER | |
|---|---|
| ART UNIT | PAPER NUMBER |

DATE MAILED: 02/07/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

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(THIRD PARTY REQUESTER'S CORRESPONDENCE ADDRESS)

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Newport Beach, CA 92660

# *EX PARTE* REEXAMINATION COMMUNICATION TRANSMITTAL FORM

REEXAMINATION CONTROL NO. *90/007,125*.

PATENT NO. *6425035*.

ART UNIT *2182*.

Enclosed is a copy of the latest communication from the United States Patent and Trademark Office in the above identified *ex parte* reexamination proceeding (37 CFR 1.550(f)).

Where this copy is supplied after the reply by requester, 37 CFR 1.535, or the time for filing a reply has passed, no submission on behalf of the *ex parte* reexamination requester will be acknowledged or considered (37 CFR 1.550(g)).

| Office Action in Ex Parte Reexamination | Control No. 90/007,125 | Patent Under Reexamination 6425035 | |
|---|---|---|---|
| | Examiner Fritz M Fleming | Art Unit 2182 | |

*-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --*

a☐ Responsive to the communication(s) filed on _____ . b☐ This action is made FINAL.
c☒ A statement under 37 CFR 1.530 has not been received from the patent owner.

A shortened statutory period for response to this action is set to expire 2 month(s) from the mailing date of this letter. Failure to respond within the period for response will result in termination of the proceeding and issuance of an *ex parte* reexamination certificate in accordance with this action. 37 CFR 1.550(d). **EXTENSIONS OF TIME ARE GOVERNED BY 37 CFR 1.550(c).** If the period for response specified above is less than thirty (30) days, a response within the statutory minimum of thirty (30) days will be considered timely.

Part I THE FOLLOWING ATTACHMENT(S) ARE PART OF THIS ACTION:

1. ☒ Notice of References Cited by Examiner, PTO-892.
2. ☒ Information Disclosure Statement, PTO-1449.
3. ☐ Interview Summary, PTO-474.
4. ☐ _____.

Part II SUMMARY OF ACTION

1a. ☒ Claims *1-14* are subject to reexamination.
1b. ☐ Claims _____ are not subject to reexamination.
2. ☐ Claims _____ have been canceled in the present reexamination proceeding.
3. ☐ Claims _ are patentable and/or confirmed.
4. ☒ Claims *1-14* are rejected.
5. ☐ Claims _____ are objected to.
6. ☒ The drawings, filed on *7-19-2204* are acceptable.
7. ☐ The proposed drawing correction, filed on _____ has been (7a)☐ approved (7b)☐ disapproved.
8. ☐ Acknowledgment is made of the priority claim under 35 U.S.C. § 119(a)-(d) or (f).
   a)☐ All b)☐ Some* c)☐ None of the certified copies have
   1☐ been received.
   2☐ not been received.
   3☐ been filed in Application No. _____ .
   4☐ been filed in reexamination Control No. _____.
   5☐ been received by the International Bureau in PCT application No. _____.
   * See the attached detailed Office action for a list of the certified copies not received.
9. ☐ Since the proceeding appears to be in condition for issuance of an *ex parte* reexamination certificate except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte* Quayle, 1935 C.D. 11, 453 O.G. 213.
10. ☐ Other: _____

cc: Requester (if third party requester)

***Reexamination***

1. The patent owner is reminded of the continuing responsibility under 37 CFR 1.565(a) to apprise the Office of any litigation activity, or other prior or concurrent proceeding, involving Patent No. 6,425,035 throughout the course of this reexamination proceeding. The third party requester is also reminded of the ability to similarly apprise the Office of any such activity or proceeding throughout the course of this reexamination proceeding. See MPEP §§ 2207, 2282 and 2286.

***Claim Rejections - 35 USC § 102***

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claims 7-9,11-14 are rejected under 35 U.S.C. 102(b) as being anticipated by Petal: Distributed Virtual Disks ("Petal").

Petal is competent art under 102(b) as its publication date is September 1996, more than one year prior to effective filing date (12/31/1997) of the instant patent.

Addressing claim 11 (the broadest independent claim), Petal provides virtual local storage (page 5, section 3, "This allows clients to access Petal virtual disks just like local disks." And page 7, section 3.2 "Petal provides clients with a large virtual disk that is available to all clients on the network.") in the form of the Figure 1 virtual disks in the form of Figure 6 SCSI disks (connected to one transport medium—SCSI) to devices connected to another transport medium in the form of the Petal clients connected to the

Digital ATM Network. The method is shown to interface to the first transport medium (Digital ATM Network for the clients) and the second transport medium (SCSI for the disks) per Figure 6 via the overall Petal Virtual Disk storage servers of the Figure 2 physical view, which provides the actual interface between the two media. A mapping is shown per Figure 4 and the virtual to physical mapping and the section 2 discussion. Page 3 shows the 3 step mapping process to translate a client supplied virtual disk identifier into a global map identifier, to a given offset, to the physical mapping at the actual disk. Thus there is a mapping of the client devices to the storage devices in order to use the storage space. As far as "implements access controls for storage space on the storage devices" is concerned, this limitation is very broad in that it provides no specifics as to exactly what these controls are to be. Given this, page 7, column 2 sets forth "We currently do not provide any special support for protecting a client's data from other clients; however, it would not be difficult to provide security on a per virtual disk basis.", which is anticipatory, as this teaches an implementation of security access controls on a per virtual disk basis, if and when desired. Thus there is a clear teaching of an implementation of a security access control per virtual disk basis by protecting a client's data from other clients. Given a plain reading of this passage, it clearly teaches that a client is only able to access its own virtual disk. Finally, this access is allowed from the client devices to the storage devices "using native, low level, block protocols", as page 7, section 4, column 2 provides "Petal provides a disk-like interface that allows clients to read and write blocks of data." Section 3.2 provides "In all cases but one, the file system level performance of the Petal virtual disk is

comparable to locally attached disks." Section 3, column 2, page 5 sets forth that access to the disks is provided using the UNIX raw disk interface. Page 1, column 2+, sets forth the concept of a "lower level service" and "block level storage system" and "An additional benefit is that the block-level interface is useful for supporting heterogeneous clients and client applications". Section 2, column 1, page 2 explicitly sets forth "As shown in Figure 2, Petal consists of a pool of distributed storage servers that cooperatively implement a single, block level storage system. Clients view the storage system as a collection of virtual disks " which anticipates the breadth of the claim language, as it only requires the use of "native, low level, block protocols." Also note page 8, column 2, which clearly states "Petal provides block level rather than a file level interface." Finally, page 1, column 1, sets forth specifically "To a Petal client, this collection appears as a highly available block-level storage system that provides large abstract containers called virtual disks. A virtual disk is globally accessible to all Petal clients on the network. A client can create a virtual disk on demand to tap the entire capacity and performance of the underlying physical resources." Thus the reference anticipates the native, low level, block protocols, as the clients view the storage as block level and hence access it using such protocols accordingly. Per claim 12, anticipation is provided by the previously mentioned "for protecting a client's data from other clients...to provide security on a per virtual disk basis." As a client creates a virtual disk, and such can be kept private from other clients, then each virtual disk, which is a subset of the entire storage, is only accessible by that client to which it is mapped. Per claim 13, workstations are the clients. Per claim 14, hard disk drives are the storage devices.

Turning to claims 7-9, claim 7 adds a storage router interfacing the media. When viewed per the Figures, Petal provides a storage router via the mapping of Figure 4. Figure 4 provides for the mapping and thus the storage routing of the translation of the client supplied virtual disk identifier to the actual physical disk. Per column 2, section 2, clients maintain minimal high level mapping information so as to properly route read and write requests to the "most appropriate" server. Thus "routing" is used to get the mapping from the client to the actual disk, and the mapping of Figure 4, which is the Petal servers taken as a whole, thus meeting the claimed "storage router" limitation. It is to be noted that the "storage router" is not further defined in any sort of a structural manner, therefore the Petal servers acting per Figure 4, anticipate what is claimed. Also note that claim 7 only requires "and operable", "to map", and "to implement" and "to allow", all of which are provided by the "storage router" of the Petal system, interpreted to be all of the Petal system of Figure 6, absent the disks. Thus the access is allowed via block level protocols in accordance with the mapping and access controls.

Note that the "to allow" and "allowing" limitations of claims 7/11 are very broad. Claim 7 only requires that the "storage router" be "operable" "to allow access...using ..." without further specifying how or what "uses" these protocols. As the Petal system uses a block-level interface and blocks of data are read and written (i.e. section 3.1), the native, low-level block protocols are used, at least to the extent claimed. The same applies to the limitations of claim 11. Note also that per section 3, that both the Petal servers and clients run Digital Unix, so that the client is able to access Petal virtual disks just like local disks, which per section 4, page 7, column 2 results in "Petal provides a

disk-like interface that allows clients to read and write blocks of data", and per section 6, column 2, page 8 has "Petal provides a block level rather than a file level interface.", thereby teaching the use of native, low level, block protocol. Finally, not section 1, which reads "A Petal virtual disk is a container that provides a sparse 64-bit byte storage space. AS with ordinary magnetic disks, data are read and written to Petal virtual disks in blocks", thereby providing for clear anticipation of what is claimed.

***Claim Rejections - 35 USC § 103***

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

5. The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

6. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was

not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

7. Claims 1-4 and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Petal in view of Quam and Cummings and Crouse et al.

Petal, as discussed in detail above, teaches a storage router for providing local storage on remote storage devices, but does not detail a buffer or supervisor connected to the two controllers. Note that the network used to connect the clients to the virtual local storage is an ATM protocol based network.

Quam, as a whole, compares and contrasts ATM to Fibre Channel. Per pages 651-2, "Fibre Channel vs. ATM", it is clearly taught that Fibre-channel is better suited is better suited for a channel where large blocks of data are transferred between users, while ATM is suited for high speed switching with low latency.

Cummings, as a whole, teaches the use of Fibre-Channel so that the Disk Array and Tape Library are accessed using the same protocols (e.g. SCSI) as if they were connected to the user's local workstation, such that remote disk storage is regarded as private and can be accessed at the same level of performance and with comparable latency as any local disk, per pages 253-254 and Figure 2.

Finally, Crouse et al. show the specifics of a UNIX running network data server 14, that provides an interface between a Fibre Channel network 12b and the SCSI storage 46. Thus, per Figures 3 and 4, note a first controller 54 operable to connect to the Fibre Channel medium 12b, a second controller 68 connected to the SCSI bus and

storage, with a buffer 64 providing memory work space to facilitate block transfers. A supervisor unit is seen as 60, to include the device microprocessor of Figure 4, and is thus operably coupled to both controllers 54 and 68, so that block oriented I/O operations can be carried out at maximum transfer rates to and from the storage 16, the controller 68, the buffer 64, the processor 54, and network 12.

Therefore it would have been obvious to one having ordinary skill in the art at the time that the invention was made to modify Petal per the teachings of Quam, Cummings and Crouse et al. for the express purpose of using Fibre-Channel in place of ATM to take advantage of Fibre-Channel's ability to better transfer large blocks of data, to then use the Fibre Channel to obtain the same advantages of Petal in the form of Fibre Channel's ability to access a disk array using a SCSI protocol as if they were attached to the local workstation with access and latency comparable to local disk access per Cummings, with the specifics of controllers and buffer and supervisor running on a UNIX based network data server in order to carry out block transfers at maximum transfer rates per Crouse et al.

8. Claims 5,6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Petal in view of Quam and Cummings and Crouse et al. as applied to claims1-4 and 10 above, and further in view of Pisello et al.

Petal in view of Quam and Cummings and Crouse et al. set forth the specifics of the Fibre-Channel to SCSI interface to include DMA transfers at both controllers at 66, but lacking the FIFO queue and the internal buffer.

Pisello et al., in the same art of network to SCSI interfacing, shows a supervisor 44 coupled to the first controller 38 and the second controller 42, with a FIFO queue RAM buffer 48 that is coupled to the first controller 38 and a second controller 42 when the other buffer 40 has data on its way through 42 onto bus 30. See column 3, lines 28-44. The purpose is to provide a direct connection for a SCSI device to a LAN/network, thereby precluding another LAN server, which is consistent with the teachings of the other references.

Therefore it would have been obvious to one having ordinary skill in the art at the time that the invention was made to modify the teachings of Petal in view of Quam and Cummings and Crouse et al. by the teachings of Pisello et al. for the purpose allowing for a direct connection of a SCSI device to the network, with the ability to queue SCSI data in a FIFO buffer. Thus combined, the buffers 48 and 40 of Pisello et al. interact with the DMA of Crouse et al. coupled thereto, in order to maximize transfer rates while directly coupling the first and second protocol units 54/60 of Crouse et al. to their respective transport media. Thus the DMA interfaces 66 of Crouse et al. are analogously coupled to the buffers of Pisello et al. for the purpose of being able to queue SCSI data.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Fritz M Fleming whose telephone number is 571-272-4145. The examiner can normally be reached on M-F, 0600-1500.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jeffrey Gaffin can be reached on 571-272-4146. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Fritz M Fleming
Primary Examiner
Art Unit 2182

fmf

| Notice of References Cited | Application/Control No. 90/007,125 | Applicant(s)/Patent Under Reexamination 6425035 | |
|---|---|---|---|
| | Examiner Fritz M Fleming | Art Unit 2182 | Page 1 of 1 |

**U.S. PATENT DOCUMENTS**

| * | | Document Number Country Code-Number-Kind Code | Date MM-YYYY | Name | Classification |
|---|---|---|---|---|---|
| | A | US-5,394,526 A | 02-1995 | Crouse et al. | 709/219 |
| | B | US- | | | |
| | C | US- | | | |
| | D | US- | | | |
| | E | US- | | | |
| | F | US- | | | |
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**FOREIGN PATENT DOCUMENTS**

| * | | Document Number Country Code-Number-Kind Code | Date MM-YYYY | Country | Name | Classification |
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**NON-PATENT DOCUMENTS**

| * | | Include as applicable: Author, Title Date, Publisher, Edition or Volume, Pertinent Pages) |
|---|---|---|
| | U | Systems Architectures Using Fibre Channel, Roger Cummings, Twelfth IEE Symposium on Mass Storage Systems, copyright 1993 IEEE. Pages 251-256. |
| | V | Fibre Channel and ATM: The Physical Layers, Jerry Quam, WESCON/94, published 27-29 September 1994. Pages 648-652. |
| | W | Petal: Distributed Virtual Disks, Edward K. Lee and Chandramohan A. Thekkath, ACM SIGPLAN Notices, Volume 31, Issue 9, September 1996, pages 84-92. |
| | X | |

*A copy of this reference is not being furnished with this Office action. (See MPEP § 707.05(a).)
Dates in MM-YYYY format are publication dates. Classifications may be US or foreign.

## Index of Claims

| Application No. | Applicant(s) | |
|---|---|---|
| 90/007,125 | 6425035 | |
| **Examiner** | **Art Unit** | |
| Fritz M Fleming | 2182 | |

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| Search Notes | Application No. | Applicant(s) | |
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| | 90/007,125 | 6425035 | |
| | Examiner | Art Unit | |
| | Fritz M Fleming | 2182 | |

| SEARCHED | | | |
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| Class | Subclass | Date | Examiner |
| 710 | 1-5, 8-13, 36-38, 105, 100, 101, ~~123-125~~ | 1/21/05 | FMF |
| 711 | 100, 112, 113 | 1/21/05 | FMF |
| 714 | 42 | 1/21/05 | FMF |
| 710 | 305-316 | | |
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| SEARCH NOTES (INCLUDING SEARCH STRATEGY) | | |
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| EAST SEARCH NOTES | 1/21/05 | FMF |
| NPL SEARCH: SCSI, FC, Fibre Channel, storage, block level, native ATM | 1/21/05 | FMF |
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| APPLICATION NUMBER | FILING OR 371 (c) DATE | FIRST NAMED APPLICANT | ATTY. DOCKET NO./TITLE |
|---|---|---|---|
| 90/007,125 | 07/19/2004 | 6425035 | I006-8910 |

**CONFIRMATION NO. 2298**

*OC000000015123258*

*OC000000015123258*

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1301 W. 25TH STREET
SUITE 408
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Date Mailed: 02/07/2005

## NOTICE OF ACCEPTANCE OF POWER OF ATTORNEY

This is in response to the Power of Attorney filed 12/08/2004.

The Power of Attorney in this application is accepted. Correspondence in this application will be mailed to the above address as provided by 37 CFR 1.33.

Michelle R. Eason

MICHELLE R EASON
3921 (571) 272-4231

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| 90/007,125 | 07/19/2004 | 6425035 | I006-8910 |

**CONFIRMATION NO. 2298**

Gray Cary Ware & Friedenrich LLP
1221 S. MoPac Expressway Suite 400
Austin, TX 78746-6875

*OC000000015123236*
*OC000000015123236*

Date Mailed: 02/07/2005

## NOTICE REGARDING CHANGE OF POWER OF ATTORNEY

This is in response to the Power of Attorney filed 12/08/2004.

- The Power of Attorney to you in this application has been revoked by the assignee who has intervened as provided by 37 CFR 3.71. Future correspondence will be mailed to the new address of record(37 CFR 1.33).

Michelle R. Eason

MICHELLE R EASON
3921 (571) 272-4231

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| | |
|---|---|
| **Reexamination Appl. No.: 90/007,125** | **CHANGE OF CORRESPONDENCE ADDRESS OF THIRD-PARTY REQUESTER FOR EX PARTE REEXAMINATION** |
| **Reexam. Request Filed: July 19, 2004** | |
| **Patent No.: 6,425,035** | |
| **Issued: July 23, 2002** | |
| **Inventor: Hoese, et al.** | |
| **Group Art Unit: 2182** | |
| **Examiner: Fleming, Fritz M.** | |
| **Attorney Docket No.: I006-8910** | |

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

**CHANGE OF CORRESPONDENCE ADDRESS OF THIRD-PARTY REQUESTER FOR EX PARTE REEXAMINATION**

Dear Sir:

Please change the correspondence address for notifications sent to the third-party requester in the above-referenced patent reexamination proceeding to:

Larry E. Severin
Wang, Hartmann & Gibbs, PC
1301 Dove Street, #1050
Newport Beach CA 92660
Telephone: (949) 833-8483
Fax: (949) 833-2281

The individual who originally requested this ex parte reexamination, Natu J. Patel, is no longer with our firm. Our firm does, however, continue to represent the parties upon whose behalf this request was made. Accordingly, our firm retains the right to

receive copies of Office Actions or other correspondence from the Patent and Trademark Office that is sent to the third party requester in an ex parte reexamination proceeding under 37 C.F.R. §1.550.

A copy of this letter, including the certification of service, has been sent to the attorney of record of the patent owner, per 37 C.F.R. §1.33(c). Certification of service is enclosed.

February 18, 2005

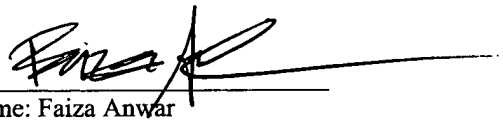
Respectfully submitted,
Wang, Hartmann & Gibbs, PC
1301 Dove Street, #1050
Newport Beach CA 92660
(949) 833-8483

Larry E. Severin
Reg. No. 54606

Enclosures:

- Certificate of Service to Patent Owner

I hereby certify that this is being deposited with the United States Postal Service with sufficient postage as first class mail on the date indicated above in an envelope addressed to Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450..

Dated: 2/18/05 Signed 

Print Name: Faiza Anwar

## CERTIFICATE OF SERVICE

I hereby certify that a true copy of the attached **Change Of Correspondence Address Of Third-Party Requester For Ex Parte Reexamination** was served upon counsel of record at each of the addresses below via U.S. Postal Service first class mail on February 18, 2005:

DLA PIPER RUDNICK GRAY CARY US, LLP
Atn: Mark Berrier
2000 University Avenue
E. Palo Alto CA 94303-2248

SPRINKLE IP LAW GROUP
1301 W. 25TH Street
Suite 408
Austin TX 78705

Date: February 18, 2004

Faiza Anwar

Reexam

| IN THE UNITED STATES PATENT AND TRADEMARK OFFICE | |
|---|---|
| **CHANGE OF POWER OF ATTORNEY AND CORRESPONDENCE ADDRESS** | Atty. Docket No. **CROSS1123-17** |


| | |
|---|---|
| Applicant<br>**Geoffrey B. Hoese, et al.** | |
| Application Number<br>**90/007,125** | Date Filed<br>**07/19/2004** |
| Title<br>**Storage Router and Method for Providing Virtual Local Storage** | |
| Group Art Unit<br>**7590** | Examiner<br>**Fleming, Fritz** |
| Confirmation Number:<br>**2298** | |

Applicant hereby served the attached Revocation and Power of Attorney and Change of Mailing Address on Third Party Requester at the address listed below:

Wang and Patel, PC
1301 Dove Street, Suite 1050
Newport Beach, CA 92660

As per 35 U.S.C. §1.248 service was made via first class mail on February 18, 2005.

Respectfully submitted,

**Sprinkle IP Law Group**

John L. Adair
Reg. No. 48,828

Dated: February 23, 2005

1301 W. 25th Street, Suite 408
Austin, Texas 78705
Tel. (512) 637-9220
Fax. (512) 371-9088

Enclosures

sprinkle IP LAW GROUP

February 18, 2005

Natu J. Patel, Esq.
Wang & Patel PC
1303 Dove Street
Suite 1050
Newport Beach, CA 92660

Re: U.S. Reexam No. 90/007,123 filed 07/19/2004 (Our No. CROSS1120-14)
U.S. Reexam No. 90/007,124 filed 07/19/2004 (Our No. CROSS1121-15)
U.S. Reexam No. 90/007,126 filed 07/19/2004 (Our No. CROSS1122-16)
U.S. Reexam No. 90/007,125 filed 07/19/2004 (Our No. CROSS1123-17)
U.S. Reexam No. 90/007,127 filed 07/19/2004 (Our No. CROSS1128-18)

Dear Mr. Patel:

Applicant hereby serves the Revocation and Powers of Attorney in the above-referenced cases on:

Wang & Patel PC
1303 Dove Street
Suite 1050
Newport Beach, CA 92660

As per U.S.C. § 1.248, service is made via first class mail on February 18, 2005. These documents give Sprinkle IP Law Group the authority to transact all business with the U.S. Patent Office in connection with the above matters.

Sincerely,

**Sprinkle IP Law Group**

John L. Adair
jadair@sprinklelaw.com

JLA/jp
Enclosure

1301 W. 25th STREET, SUITE 408, AUSTIN, TX 78705
[o] 512.637.9220 [f] 512.371.9088

| IN THE UNITED STATES PATENT AND TRADEMARK OFFICE | |
|---|---|
| **REVOCATION AND POWER OF ATTORNEY AND CHANGE OF MAILING ADDRESS** | Atty. Docket No. **CROSS1123-17** |
| Applicants **Geoffrey B. Hoese, et al.** | |
| Application No. **90/007,125** | Filing Date **07/19/2004** |
| For **Storage Router and Method for Providing Virtual Local Storage** | |
| Group Art Unit **7590** | Examiner **Fleming, Fritz** |
| Confirmation No. **2298** | |

**Certification Under 37 C.F.R. §1.8**

I hereby certify that this document is being transmitted to the COMMISSIONER FOR PATENTS via facsimile on 12/8/ 2004.

Janice Pampell

Janice Pampell

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Dear Sir:

Crossroads Systems, Inc., 100% owner of the above-identified patent application, as evidenced by the Assignment recorded in the parent application on December 31, 1997 on Reel/Frame: 8929/0290, hereby revokes all previous Powers of Attorney and appoints the following attorneys under Customer No. 44654, all of the firm of SPRINKLE IP LAW GROUP, to prosecute the above-identified Patent and to transact all business in the Patent and Trademark Office connected therewith.

| | |
|---|---|
| STEVEN R. SPRINKLE | Registration No. 40,825 |
| JOHN ADAIR | Registration No. 48,828 |
| ARI AKMAL | Registration No. 51,388 |

Direct all telephone calls and correspondence to:

Customer No. 44654
**SPRINKLE IP LAW GROUP**
1301 W. 25th Street, Suite 408
Austin, Texas 78705
Attn: Steven Sprinkle
Tel. (512) 637.9220 / Fax (512) 371.9088

I hereby state I am authorized to act on behalf of Crossroads Systems, Inc.

Respectfully submitted,

**Crossroads Systems, Inc.**

Dated: Dec 7, 2004

By: _____
Robert Sims, President & CEO

UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|---|---|---|---|---|
| 90/007,125 | 07/19/2004 | 6425035 | I006-8910 | 2298 |

44654 7590 03/17/2005

SPRINKLE IP LAW GROUP
1301 W. 25TH STREET
SUITE 408
AUSTIN, TX 78705

| EXAMINER | |
|---|---|
| Fleming, Fritz | |
| **ART UNIT** | **PAPER NUMBER** |
| 2182 | |

DATE MAILED: 03/17/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

PTO-90C (Rev. 10/03)

UNITED STATES DEPARTMENT OF COMMERCE
Patent and Trademark Office
Address: ASSISTANT COMMISSIONER FOR PATENTS
Washington, D.C. 20231

| APPLICATION NO./ CONTROL NO. | FILING DATE | FIRST NAMED INVENTOR / PATENT IN REEXAMINATION | ATTORNEY DOCKET NO. |
|---|---|---|---|
| 90/007,125 | 07/19/2004 | 6425035 | I006-8910 |

Larry E. Servin
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1301 Dove Street, #1050
Newport Beach, CA 92660

| EXAMINER | |
|---|---|
| Fleming, Fritz | |

| ART UNIT | PAPER |
|---|---|
| 2182 | |

DATE MAILED: 03/17/05

**Please find below and/or attached an Office communication concerning this application or proceeding.**

Commissioner of Patents and Trademarks

CC: SPRINKLE IP LAW GROUP
1301 W. 25th Street
Suite 408
Austin, TX 78705

UNITED STATES DEPARTMENT OF COMMERCE
**Patent and Trademark Office**
Address: ASSISTANT COMMISSIONER FOR PATENTS
Washington, D.C. 20231

| APPLICATION NO./ CONTROL NO. | FILING DATE | FIRST NAMED INVENTOR / PATENT IN REEXAMINATION | ATTORNEY DOCKET NO. |
|---|---|---|---|
| 90/007,125 | 07/19/2004 | 6425035 | I006-8910 |

William A. Blake
JONES, TULLAR & COOPER, PC
P.O. Box 2226 Eads Station
Alexandria, VA 22202

| EXAMINER |
|---|
| Fleming, Fritz |

| ART UNIT | PAPER |
|---|---|
| 2182 | |

DATE MAILED: 03/17/05

**Please find below and/or attached an Office communication concerning this application or proceeding.**

Commissioner of Patents and Trademarks

CC: SPRINKLE IP LAW GROUP
1301 W. 25th Street
Suite 408
Austin, TX 78705

Commissioner for Patents
United States Patent and Trademark Office
P.O. Box 1450
Alexandria, VA 22313-1450
www.uspto.gov

| | | |
|---|---|---|
| Steven R. Sprinkle<br>Sprinkle Law Group<br>1301 W. 25th Street<br>Suite 408<br>Austin, Texas 78705 | ) | **FOR OWNER** |
| Larry E. Severin<br>Wang, Hartmann & Gibbs, PC<br>1301 Dove Street, #1050<br>Newport Beach, California 92660 | ) | **FOR FIRST THIRD PARTY REQUESTER** |
| William A. Blake<br>Jones, Tullar & Cooper, PC<br>P.O. Box 2226 Eads Station<br>Alexandria, Virginia 22202 | ) | **FOR SECOND THIRD PARTY REQUESTER** |
| In re Hoese et al.<br>Reexamination Proceeding<br>Control No. 90/007,125<br>Filed: July 19, 2004<br>For: U.S. Patent No. 6,425,035 | ) | **DECISION *SUA SPONTE*, MERGING REEXAMINATION PROCEEDINGS** |
| In re Hoese et al.<br>Reexamination Proceeding<br>Control No. 90/007,317<br>Filed: November 23, 2004<br>For: U.S. Patent No. 6,425,035 | ) | |

The above noted reexamination proceedings are before the Director of Technology Center 2100 for consideration of merger of the proceedings under 37 CFR § 1.565(c).

## BACKGROUND

1. Patent No. 6,425,035 issued on July 23, 2002.

***'7125 Proceeding***

2. A first request for reexamination, Control No. 90/007,125 ('7125) was filed by the Third Party Requester on July 19, 2004.

3. Reexamination was ordered in the '7125 reexamination proceeding on September 22, 2004.

4. A Notification of litigation under 37 C.F.R. §1.565 filed by Patent Owner was received in the USPTO on December 13, 2004.

5. A Notification of concurrent proceedings under 37 C.F.R. §1.565 filed by Patent Owner was received in the USPTO on January 14, 2005.

6. A revocation and appointment of attorneys was filed on December 8, 2004.

7. A first Office action was mailed on February 7, 2005.

8. A Change of correspondence address for third party requester was filed on February 24, 2005.

***'7317 Proceeding***

9. A second request for reexamination, Control No. 90/007,317 ('7317) was filed by another Third Party Requester on November 23, 2004.

10. Reexamination was ordered in the '7317 reexamination proceeding on December 16, 2004.

11. A Notification of concurrent proceedings under 37 C.F.R. §1.565 filed by Patent Owner was received in the USPTO on January 14, 2005.

**DISCUSSION**

37 CFR § 1.565(c) states:

"If reexamination is ordered while a prior reexamination is pending, the reexamination proceedings will be consolidated and result in the issuance of a single certificate under section 1.570."

## DECISION

### I. Merger of Proceedings

In accordance with 37 CFR 1.565(c), the '7125 and '7317 reexamination proceedings are merged. The merged proceeding will be conducted in accordance with the following guidelines and requirements.

### II. Requirement for Same Amendments in all Proceedings

The Patent Owner is required to maintain the same claims and specification in both files.

### III. Conduct of Merged Proceeding

All papers mailed by the Office will take the form of a single action which applies to all proceedings. All papers issued by the Office or filed by the patent owner will contain the identifying data for both files and will be physically entered in each reexamination file. All papers filed by the patent owner must consist of a single response, filed in duplicate, each bearing an original signature, for entry into each file. All papers filed by the patent owner must be served on the requester and requester will be sent copies of all papers mailed by the Office.

Pinchus M. Laufer
Special Programs Examiner
Technology Center 2100
Computer Architecture, Software, and Information Security
(571) 272-3599

cc: DLA Piper Rudnick Gray Cary US, LLP
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