

United States District Court,  
D. Delaware.

**SEACHANGE INTERNATIONAL, INC,**  
Plaintiff.

v.

**NCUBE CORPORATION,**  
Defendant.

**nCUBE Corporation,**  
Counter-claimant.

v.

**SeaChange International, Inc,**  
Counter-defendant.

Civil Action No. 00-568-JJF

**Aug. 29, 2000.**

Owner of patent for method of redundantly storing data in distributed computer system sued competitor for infringement. Construing claim terms, the District Court, Farnon, J., held that: (1) processor systems could be connected with each other using any kind of network, and (2) processor systems called for consisted of least one central processing unit capable of running application type software, and at least one mass storage subsystem.

Claim construed.

5,862,312. Construed.

William J. Marsden, Jr., J. Andrew Huffman, Fish & Richardson P.C., Wilmington, DE, of counsel: Jack Slobodin, Karen I. Boyd, Fish & Richardson P.C., Menlo Park, CA, Robert E. Hillman, Lawrence K. Kolodney, Steven R. Katz, Fish & Richardson P.C., Boston, MA, for plaintiff SeaChange International, Inc.

Mary B. Graham, Rodger D. Smith, Morris Nichols Arsht & Tunnell, Wilmington DE, of counsel: James Pooley, Browning Marean, Gabriel Kralik, Elizabeth Day, L. Scott Oliver, Derek Westberg, Gray Cary Ware & Freidenrich LLP, Palo Alto, CA, for defendant nCUBE Corporation.

## **OPINION**

**FARNAN, District Judge.**

Presently before the Court in this patent infringement action are two issues of claim construction presented by the parties to the Court. Specifically, the parties seek construction of the phrase "interconnecting each

one of said processor systems through a network for data communications with each other one" and "processor systems". FN1

FN1. In briefing, the Plaintiff sought construction of other terms such as "central processing unit" and "distributed computer system." Because the Defendant's response focused on "processor systems" and because the Court believes that a construction of "processor systems" is sufficient to address the dispute, the Court will not construe any other terms at this time.

## **I. Background**

### **A. Procedural History**

Plaintiff SeaChange International, Inc. ("SeaChange") filed the instant action on June 13, 2000 alleging infringement by nCUBE Corporation ("nCUBE") of certain claims of United States Patent No. 5,862,312 (the "'312 patent"). (D.I.1.) SeaChange also moved for a preliminary injunction. (D.I.3.) The Court heard argument on the motion on July 27, 2000. At that hearing the parties impressed upon the Court the need for a rapid adjudication of the case, and accordingly the Court denied the preliminary injunction application as moot and scheduled the case for trial in September, 2000. The parties subsequently submitted briefing on disputed terms in need of construction by the Court. The Court heard oral argument on claim construction issues on August 24, 2000.

### **B. The '312 Patent**

The '312 patent is entitled "Loosely Coupled Mass Storage Computer Cluster." The specification states that although modern computer systems require large capacity mass storage, and while such storage is available, the technology for rapidly accessing the stored information has been static. This problem is particularly vexing in digital video systems. ('312 patent, col. 1, ll. 10-24.)

The specification observes that one way for providing a sufficient quantity of data in a reliable configuration is the Redundant Array of Inexpensive Disks ("RAID") method, which the specification indicates is well known in the art. ('312 patent, col. 1, ll. 25-34.) The RAID-5 system redundantly spreads the stored data among three or more disk drives. In the event of disk failure, the redundant location of data allows efficient retrieval of the desired information from the remaining disks. The specification gives an example of RAID-5 functionality:

[I]f one has a six gigabyte cluster volume which spans three disk drives, each disk drive would be responsible for servicing two gigabytes of the cluster volume. Each two gigabyte drive would be comprised of one-third redundant information, to provide the redundant, and thus fault tolerant, operation required for the RAID-5 approach.

('312 patent, col. 1, ll. 43-49.)

In a video application, a video data object would be stored on, and read from, the disk drives. The processor would read the blocks of the video data object in round robin fashion, reading the first block from the first drive, the second block from the second drive, etc. ('312 patent, col. 1, ll. 50-62.) Unfortunately, among other problems, the processor is limited by the relatively slow bus (for present purposes, the connection) linking the drives. ('312 patent, col. 1, l. 63 - col. 2, l. 5.) The specification proposes as a solution a method

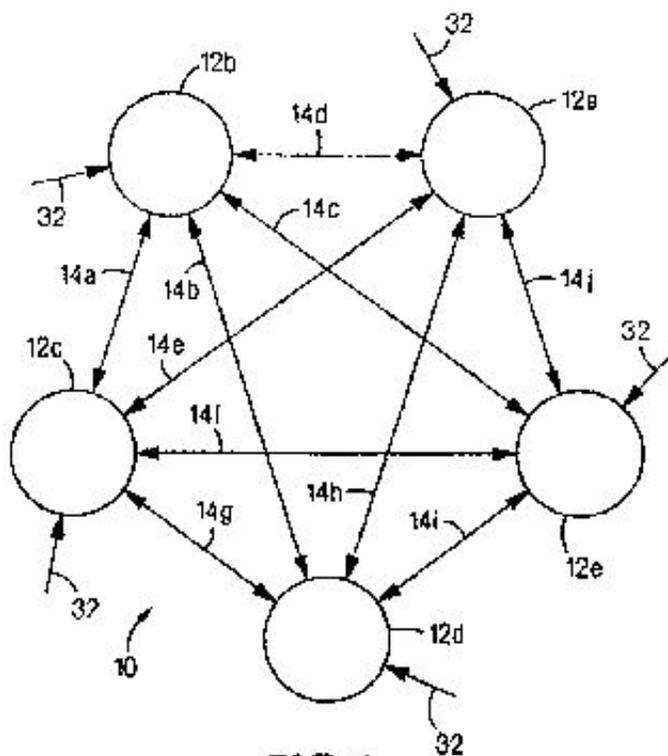
and an apparatus having:

improved and increased mass storage read and write bandwidth (delivery bandwidth), operating using a reliable and fault tolerant protocol in a novel topology and enabling large quantities of data to be read and written in accordance with well known and accepted techniques.

('312 patent, col. 2, ll. 6-14.)

As a further aid to understanding the technology, it is helpful to study the embodiment described beginning at column 5 of the patent.

**\*476**



**FIG. 1**

**FIG. 1**

Figure 1 depicts a "redundant distributed computer system 10." The system has a "plurality of processor systems, 12a, 12b, 12c, 12d, 12e" that are connected by the interconnecting channels 14a, 14b, 14c ... 14j. In this embodiment the connection is point to point.

The processor systems 12 are shown in greater detail in Figure 2 of the patent.

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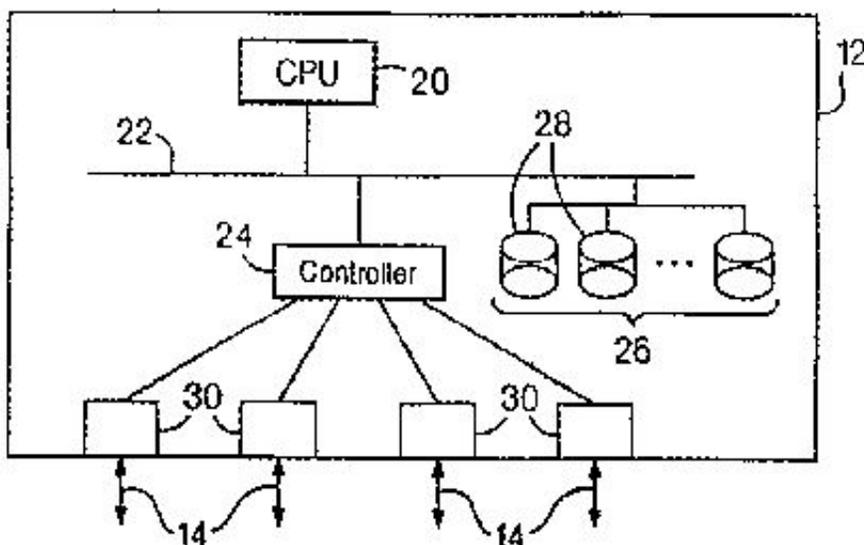


FIG. 2

FIG. 2

Each processor system 12 has a CPU 20 connected, as depicted in Figure 2, to an internal data communications bus 22, to which are connected at least a memory, a communications controller 24 and a mass memory storage unit 26. The mass storage unit typically has a plurality of disk drive units 28. (312 patent col. 5, l. 66 - col. 6, l. 5.) The specification describes the operation of the preferred embodiment as follows:

In accordance with a particular embodiment of the invention, the controllers 24 of the processor systems 12 individually and collectively act to store data across the entire computer system 10 network in a redundant fashion so that if any one processor system 12 fails the remaining processor systems can nevertheless reconstruct all the data available in the entire system. In addition, this approach, as will be described in more detail below, provides, in the illustrated embodiment, load balancing across the various processing systems as well as enabling any one processor system requiring either to read or write data the capability of a very large bandwidth memory communication channel.

In the preferred embodiment of the invention, a RAID-5 architecture is implemented, for the first time, at

the system level to provide the redundancy, load balancing, and bandwidth necessary to meet the objectives of the distributive computer system.

('312 patent, col. 6, ll. 37-53.)

As discussed, the RAID method was already used in the art at the storage level. The employment at the system level therefore presented the "novel circumstance of employing the RAID-5 technology twice, both at the storage level as is well known, but also at the system level, which is new, to achieve a high reliability, lower cost, computer system." ('312 patent, col. 8, ll. 19-23.)

The above description is intended only to present a basic explanation of the technology at issue. The Court will provide more detail where it is necessary to support the analysis.

### **C. Claims at Issue**

SeaChange has asserted independent claims 37, 52, 69 and 71 of the '312 patent and their associated dependent claims. The parties have presented their claim construction arguments in the context of independent claim 37.

Claim 37 reads:

A method for redundantly storing data in a distributed computer system having at least three processor systems, each processor system comprising at least one central processing unit and at least one mass storage sub-system, comprising the steps of:

interconnecting each one of said processor systems through a network for data communications with each other one of said processor systems; and

storing data input at any one of said processor systems according to a distributed, redundant storage process with data stored at each of said processor systems and a portion of a redundant representation of the data is stored at each of said processors.

### **II. Claim Construction Generally**

[1] [2] [3] [4] Claim construction is a question of law. *Markman v. Westview Instruments, Inc.*, 52 F.3d 967, 977-78 (Fed.Cir.1995), *aff'd*, 517 U.S. 370, 388-90, 116 S.Ct. 1384, 134 L.Ed.2d 577 (1996). When construing the claims of a patent, a court considers the literal language of the claim, the patent specification and the prosecution history. *Markman*, 52 F.3d at 979. A court may consider extrinsic evidence, including expert and inventor testimony, dictionaries, and learned treatises, in order to assist it in construing the true meaning of the language used in the patent. *Id.* at 979-80 (citations omitted). A court should interpret the language in a claim by applying the ordinary and accustomed meaning of the words in the claim. *Envirotech Corp. v. Al George, Inc.*, 730 F.2d 753, 759 (Fed.Cir.1984). However, if the patent inventor clearly supplies a different meaning, the claim should be interpreted accordingly. *Markman*, 52 F.3d at 980 (noting that patentee is free to be his own lexicographer, but emphasizing that any special definitions given to words must be clearly set forth in patent). If possible, claims should be construed to uphold validity. In *re Yamamoto*, 740 F.2d 1569, 1571 & n. \* (Fed.Cir.1984) (citations omitted).

### **III. Discussion**

## **A. "interconnecting each one of said processor systems through a network for data communications with each other one of said processor systems"**

[5] The dispute here is whether the language of the interconnecting step requires that each processor have some sort of direct connection with each other processor, or whether indirect connections are possible. nCUBE argues that the language *each one ... with each other one*, along with supporting evidence from intrinsic and extrinsic sources, leads to the conclusion that the patent requires direct connections among the processors. SeaChange argues that claim 37 itself contains no such limitation, and that the intrinsic record does not support implying one.

### **1. Claim Language**

The place to start is, as always, the language of the claim. It is the Court's view that a plain reading of the claim does not reveal the limitation advanced by nCUBE. It is true that the language requires the "interconnection" of each processor with each other processor. However, that "interconnection" is accomplished "through a network of data communications." There is nothing in this broad language that would lead the Court to conclude that there is a limitation requiring a direct connection.

[6] [7] However, there is some evidence supporting the opposite conclusion. Claim 1 of the patent is identical to claim 37 with one exception. Instead of "interconnecting each one of said processor systems *through a network of data communications* with each other one of said processor systems" it teaches "interconnecting each one of said processor systems *in a point-to-point two way channel interconnection* with each other one of said processor systems." ('312 patent col. 17, ll. 49-61) (emphasis added). The language in claim 1 expressly requiring a form of direct connection stands in sharp contrast to the broad language of its fraternal twin, claim 37. The doctrine of claim differentiation is sometimes helpful in interpreting claim language. It says in essence that where two otherwise identical claims differ in a certain term, it is generally presumed that a different meaning was intended. *See Beachcombers v. WildeWood Creative Prods., Inc.*, 31 F.3d 1154 (Fed.Cir.1994). The doctrine is not always controlling; each independent claim of a patent stands on its own, and if a proper construction of two differently worded claims leads to the conclusion that they mean the same thing, than the doctrine of claim differentiation must step aside. *See Multiform Desiccants, Inc. v. Medzam, Ltd.*, 133 F.3d 1473, 1480 (Fed.Cir.1998). However, it is a useful channel buoy for the Court in navigating through the construction analysis.

### **2. Specification**

[8] Turning to the specification, the parties appear to be in agreement that the specification discloses a point-to-point system as the only embodiment of a "network." That embodiment certainly appears to correspond with the teaching of claim 1. However, as discussed, the language of claim 1 is narrower than that of claim 37. It is well settled in patent law that the claim should not be limited to the preferred embodiment absent some contrary indication. *See American Permehedge, Inc. v. Barcana, Inc.*, 105 F.3d 1441 (Fed.Cir.1997). Moreover, the specification need not disclose what is well known in the art. Presently, in determining what is known in the art, the Court only has the benefit of the declaration of Dr. Wilkes, who indicates that other forms of "networks" besides a point-to-point configuration are well known. (D.I. 80 at para. 14.) This fact supports a conclusion that the point-to-point embodiment disclosed in specification should not limit claim 37.

The Defendant argues that the Court should not adopt a broad meaning of "network" because to do so would

run afoul of validity issues. FN2 In its able defense of this position, nCUBE cited at oral argument *Gentry Gallery, Inc. v. The Berklene Corp.*, 134 F.3d 1473 (Fed.Cir.1998). In *Gentry*, the defendant argued that certain claims of the patent-in-suit that taught a sectional sofa where the location of the controls for the sofa was not limited to a console were invalid under the written description requirement of 35 U.S.C. s. 112 para. 1. The specification of the patent at issue disclosed the location for the controls of a sectional sofa with side-by-side recliners. The disclosure clearly identified a certain location (on a console) for the controls, allowing only for minor variations. The Federal Circuit concluded that this narrow disclosure combined with the fact that the only discernible purpose for the console was to house the controls as well as the statement "[a]nother object of the present invention is to provide ... a console positioned between [the reclining seats] that accommodates the controls for both of the reclining seats" indicated that the challenged claims did not comply with section 112. *Id.* at 1479. Contrast those facts with the instant case where the stated purpose of the invention is improved/increased mass storage delivery bandwidth operating using a reliable and fault tolerant protocol. ('312 patent col. 2, ll. 6-10.) A broader understanding of "network" does not conflict with the object of the invention or render useless a part of the invention as was the case with the console in *Gentry Gallery*. FN3

FN2. The Defendant is concerned with both the enablement and written description requirements. These are distinct issues, as an invention may be described without the disclosure being enabling. *See Gosteli v. McCombie*, 230 U.S.P.Q. 205, 209 (Bd.Pat.App. & Interf. 1986).

FN3. The Court understands nCUBE's argument presented through the Wilkes' Declaration about the effect of the phrase "novel topology" on the analysis. (D.I. 80 at para. 14.) However, the Court is not persuaded that this phrase is directed at the type of network as opposed to another aspect of the invention.

The Court is also not persuaded that its construction necessarily implicates enablement. At oral argument, the parties each discussed various Federal Circuit enablement cases and their impact on this issue. Stated simply, enablement requires that the disclosure be sufficiently clear to enable one of skill in the art to make and use the invention without undue experimentation. If one accepts that other forms of networks are well known in the art, then a skilled artisan should be able to make and use without undue experimentation the invention in an environment other than a point-to-point system.

The Court has briefly addressed validity issues because they sometimes bear on claim construction. The Court's conclusion that they do not affect its analysis here is not meant to foreclose any defense available to nCUBE at trial, including assertions that the construction of certain terms form part of a chain of clear and convincing evidence that the asserted claims are invalid.

### **3. Prosecution History**

Moving finally to the last piece of intrinsic evidence FN4, the Court is not persuaded that the limitation on the type of network is found in the prosecution history.

FN4. Dictionaries are in that strange netherworld between the realms of intrinsic and extrinsic evidence. Because the Court concludes that the claims, specification and prosecution history are clear, it will not resort to dictionary definitions.

The '312 patent issued from an application filed on October 24, 1995. (D.I. 81 at NC004218.) The original application recited 39 claims, all of which taught the "point-to-point two way channel interconnection" method discussed above. On September 26, 1996, the applicants submitted a Preliminary Amendment seeking to add 36 new claims. These additional claims used the "through a network for data communications" language in place of the "point-to-point two way channel interconnection" language found in the original claims. The stated purpose of the amendment was "to more fully cover the scope of the invention." FN5 (D.I. 81 at NC004307.)

FN5. nCUBE contends that this language is boilerplate and presumably meaningless. (D.I. 79 at 5.) It is the Court's view that it means what it says.

In an office action dated December 12, 1996, the examiner rejected the pending claims. The relevant part of this rejection was obviousness under 35 U.S.C. s. 103. The examiner concluded that the relevant claims FN6 were unpatentable over United States Patent No. 5,202,980 ("Morita") in view of United States Patent No. 5,072,371 ("Benner"). The examiner found that Morita taught the claimed method for redundant storing of data in a distributed computer system where the processors of the computer system consisted of a processor and mass storage subsystem. The examiner observed that Morita did not disclose at least three processors in the distributed computer system or the point-to-point configuration, but that this limitation could be found in Benner. Benner taught a distributed processing system with more than two processor systems where each processor unit comprised a processor and mass memory. Benner also disclosed interconnection of the processors in the point-to-point two way channel configuration. Therefore:

FN6. The examiner grouped Claims 1, 9-12, 19, 20, 23-27, 40, 48-51, 53-55 and 63-66 in the rejection. Claim 40 became Claim 37 in the issued patent. (D.I. 79 at 6.)

it would have been obvious to a person having ordinary skill in the art at the time the invention was made to modify Morita et al.'s [sic] by incorporating more than two processors in the distributed computer system and interconnecting these processors in a point-to-point two way channel as disclosed by Benner et al. This modification would have been obvious because a person having ordinary skill in the art would have been motivated to provide more processors and increase the system processing power in the case of parallel processing; and a person of ordinary skill would have been motivated to interconnect each of the processor [sic] in point-to-point to facilitate data exchange among the processors, and also because [it] is suggested by Benner et al.

(D.I. 81 at NC004311-12.)

The applicant responded on June 12, 1997. (D.I. 81 at NC 004331.) In the remarks section, the applicant stated:

[w]ith respect to the prior art rejection, the Examiner grouped various claims and rejected the group claims. Applicant submits that with respect to each group of claims that certain of the claims in the group add further patentably distinct features to the invention and thus are further patentably distinct over the applied references. For simplicity, however, Applicant will in general treat a single claim as being representative of the group of claims but reserves its right to later argue that additional ones of the claims are patentably distinct over the combination of references.

(D.I. 81 at NC004359-60.)

The applicant then proceeded to distinguish the prior art from the invention, using claim 1 as an exemplar. The applicant first addressed Morita, contending that Morita did not disclose at least three processors, a point-to-point interconnection, or a processor system that stores data in the manner recited by claim 1. Next, the applicant challenged the assertion by the examiner that Benner taught "more than two processor systems ..." and "point-to-point two way channel interconnection." nCUBE relies heavily on the statements made regarding the Benner art. The applicant stated:

Applicant's claim 1 recites a method in which ... processor systems are interconnected using a point-to-point two-way channel interconnection with each one of the other processor systems. That is, any one processor system can communicate *directly* with any one of the other processor systems.

(D.I. 81 at NC004360-61) (emphasis added).

Also:

Benner describes a parallel computing system of the hypercube type. As such ... Benner does not describe that each of the processor systems are interconnected in a point to point way with *each other one* of the processor systems as recited in Applicant's claim 1.

(D.I. 81 at NC004362) (emphasis in original). nCUBE urges the Court to draw the following conclusions from the quoted language and similar passages in the prosecution history: first, that the applicant limited the scope of claim 37 (application claim 40) to its argument over claim 1 by grouping claim 37 with claim 1 and using claim 1 as illustrative of all claims in the group; second, that in distinguishing claim 1 over the prior art, the applicant affirmatively disclaimed a hypercube and affirmatively claimed a direct connection among processors.

Although nCUBE's argument has merit, the Court ultimately cannot agree with its contention. In the Court's view, a member of the public reviewing the entire intrinsic record would be aware that the statements made by the applicant in the relevant portions of the prosecution history could not pertain to claim 37 (application claim 40). First, the plain language of claim 1 and claim 37 indicates that claim 37 is broader in scope. Second, the file wrapper clearly indicates that claim 37 (application claim 40) was added to more fully cover the invention. Third, it was the examiner who originally grouped the claims. The applicant clearly indicated that its response was drafted with similar grouped arguments in an effort to achieve simplicity. Moreover, the applicant expressly stated that it believed that the individual claims were patentable independent of claim 1, and that the applicant reserved its rights in that respect. Finally, the arguments made in response to the rejection clearly addressed the subject matter of claim 1 both in substance and nomenclature.

There is one additional piece of the documentation concerning the prosecution of the '312 patent that may shed additional light on the question. In a declaration accompanying its reply brief, nCUBE presented to the Court a document produced by SeaChange in discovery. This document appears to be a supplemental amendment to the application leading to the '312 patent. The document contains an attestation by an employee of the prosecuting attorney that it was mailed to the Patent Office on June 25, 1997. However, both parties have represented to the Court that the supplemental amendment does not appear in the '312 file wrapper.

As an initial matter, this unusual document raises questions of what place, if any, it should play in the intrinsic record of the patent. On the one hand, the public policy rationale counsels its exclusion; of what use is it to the public if the public is unaware of its existence? On the other hand, it sheds light on the applicant's intentions during prosecution.

At oral argument, both parties argued that this document supported their contentions. In the Court's view, the document supports SeaChange's argument that the applicant's illustrative use of claim 1 in arguing nonobviousness in view of Morita and Benner was not intended as binding for all of the pending claims. Moreover, it indicates that the "reservation of rights" language was not a mere formality. Also, it is the Court's opinion that the substance of the document supports SeaChange's argument that claim 37 should not be limited to the same scope as claim 1. For example, the document observes that "[c]laim 40 could have been separately argued [from the claim 1 grouping] since some of the limitations in claim 1 are not part of claim 40." (D.I. 92, Exh. C at 2.) The document also emphasizes that the interconnection of processors, "each one to the other one", is through a network, language which does not necessarily imply a "direct" connection as urged by nCUBE.

In any event, because the document's place in the intrinsic record is open to question, the Court will not rely on it for purposes of claim construction.

In summary, after a consideration of the intrinsic record, the Court cannot conclude that the phrase in issue should be construed in the limited fashion urged by nCUBE. Accordingly, the Court construes "interconnecting each one of said processor systems through a network for data communications with each other one of said processor systems" to mean establishing data communication between every pair of processor systems in the distributed computer system using any kind of network.

## **B. "Processor Systems"**

[9] The dispute over "processor systems" raises the following question: does claim 37 disclose a processor capable of running "application level" software? nCUBE argues that "processor system" should be construed to mean "at least one of any sort of central processing unit, regardless of the nature of the processing performed, and at least one mass storage subsystem." (D.I. 79 at 2.) nCUBE characterizes the issue as "boil[ing] down to whether 'application-level' processing or computation is a necessary part of the definition of 'central processor unit.'" (D.I. 79 at 20.) nCUBE cites two dictionary definitions as indicia of the meaning of central processor unit to one of skill in the art:

(1) "The unit of a computing system that includes certain circuits controlling the interpretation of instructions and their execution." *The New IEEE Standard Dictionary of Electrical and Electronic Terms* (5th ed.1993); and

(2) "[t]he part of a computer system that operates on data." *Merriam-Webster Online Dictionary-Thesaurus* (visited August 29, 2000) <<http://www.m-w.com>>.

nCUBE also looks to the specification, arguing that there is no clear definition provided by the patentee that would add something else to the dictionary definitions cited. (D.I. 79 at 21-22.)

After a review of the specification, the Court cannot agree with nCUBE. Figure 4 of the patent, reproduced below, "illustrates the software architecture in accordance with the invention." (312 patent col. 5, ll. 7-8.)

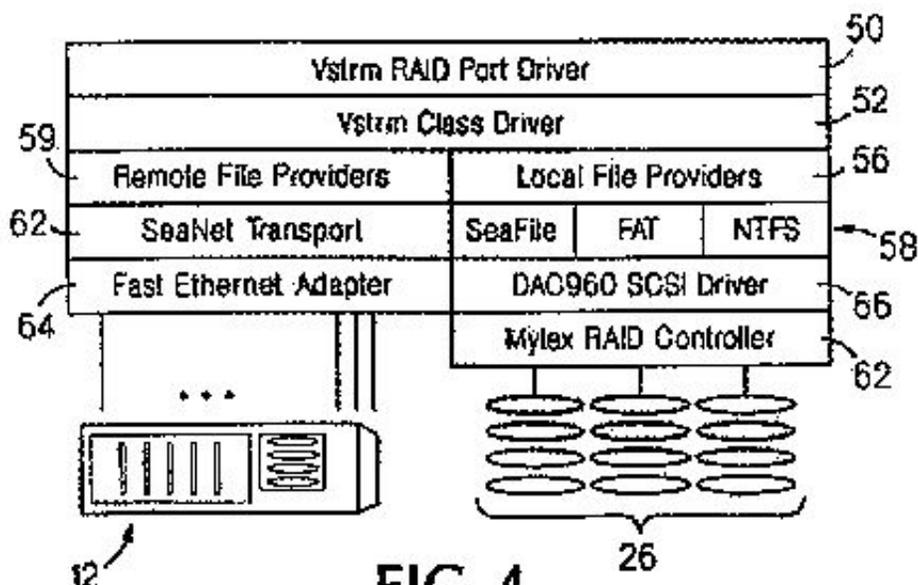


FIG. 4

FIG. 4

Figure 4 depicts the processor system 12, also shown in Figures 1 and 2. The mass memory storage unit 26 shown in Figure 2 is also depicted in Figure 4. The text of the specification states: "Referring now to FIG. 4, the major components of a single processor system 12 ('also called a cluster member') include a ... remote file provider 54...." ('312 patent col. 8, ll. 39-45.) The remote file provider is further described as "represent[ing] any third party application or device driver that might use the cluster technology. Examples include Lotus Notes, medical applications, or database systems." ('312 patent col. 9, ll. 7-11.) In the Court's view, this reference to application type software as a part of the processor 12 is a clear statement by the patentee that the processor at a minimum must be capable of operating the software described. Also, the specification describes an embodiment that not only stores the video data, but plays it as well. ('312 patent, col. 10, ll. 34-35.)

Accordingly, the Court concludes that the proposed construction advanced by nCUBE is too broad, in view of the disclosure. That is, the processor and its central processing unit must be capable, at a minimum, of operating the application software described in the specification. Therefore, the Court construes "processor systems" to mean "at least one central processing unit capable of running application type software, and at least one mass storage subsystem."

#### IV. Conclusion

At the Markman hearing, the parties represented to the Court that claim construction might significantly impact trial issues. Accordingly, in view of the Court's construction, the parties shall submit a revised

proposed pretrial order, if appropriate. The Court will schedule a final Pretrial Conference.

D.Del., 2000.

SeaChange Intern., Inc. v. nCUBE Corp.

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