EXHIBIT B

UNITED STATES DISTRICT COURT

NORTHERN DISTRICT OF CALIFORNIA

NETWORK APPLIANCE, INC., Plaintiff, v. BLUEARC CORPORATION, Defendant.	Case no. C 03-05665 MHP

EXPERT REPORT OF MARK E. NUSBAUM

In accordance with F.R.C.P. 26(a)(2), the following is my written report detailing the subject matter areas and opinions about which I expect to testify to in the above-identified litigation if called upon to do so.

In Section I, my background and qualifications are set forth. Section II details my testimony about patent examining practice before the United States Patent and Trademark Office (PTO). Sections III-V provide a description of the prosecution before the PTO of the applications which matured into U.S. Patent No. 6,065,037 (the '037 patent), U.S. Patent No. 5,802,366 (the '366 patent), and U.S. Patent No. 5,931,918 (the '918 patent). Section VI details foundational testimony regarding a patent applicant's duty of disclosure owed to the PTO and my opinion that information material to the '037 patent was not disclosed to the PTO. The remaining sections of my report are as follows: (VII) Other matters that I may testify about; (VIII) Documents and

Information Considered; (IX) Compensation; and (X) Other cases in which I gave testimony as an expert during approximately the last four years.

I. BACKGROUND AND QUALIFICATIONS

I will testify regarding my qualifications, background and experience in the field of U.S. Patent and Trademark Office ("PTO") practice and related areas of patent law. I received a B.S. in electrical engineering from the University of Maryland in 1969. I received a Juris Doctor degree from American University in 1974. I became an Examiner in the PTO in 1969 in the general and special purpose digital data processor-related technological art area. I examined patent applications relating to a wide variety of general purpose computer systems. The invention claimed in these applications may have, for example, primarily involved multiprocessor systems or any one of the subsystems in a computer system such as the memory subsystem. Additionally, I examined applications involving special purpose computer systems designed to accomplish specific tasks such as, for example, memory control, editing, error checking, telecommunications, diagnostic testing, display processing or printer control. I received the authority to grant or deny patents over my own signature in 1975 and became a Senior Examiner in the computer art area in 1977.

In 1980, I was appointed as Supervisory Patent Examiner to manage a group of patent examiners (an art unit) and was responsible for training examiners, evaluating examiner work product quality, and participating with junior examiners in making patentability decisions. This art unit was primarily responsible for examining data processing-related patent applications including those dealing with general and special

purpose digital data processors, a wide range of data processing-related computer applications including telecommunications systems and a wide range of multiplex communication technology. During this time period, I taught PTO in-house patent examiner initial training courses and lectured at the PTO's patent academy.

In 1983, I was appointed as an Examiner-in-Chief and member of the Board of Patent Appeals and Interferences ("the Board") in the PTO. The Board is an appellate tribunal which hears appeals in panels comprising at least three members from decisions of primary examiners which are adverse to patent applicants. A Board panel reviews the record made during the examination of an application, receives briefs from counsel and examiners, conducts hearings and prepares written opinions. The Board's decisions constitute final agency determinations with respect to substantive questions of patent law. They are reviewable by the United States Court of Appeals for the Federal Circuit or by the United States District Court for the District of Columbia, whose decisions, in turn, are reviewable by the Court of Appeals for the Federal Circuit.

My work as a member of the Board required an understanding of patent claims, how they should be construed, and an understanding and application of the pertinent statutes, precedents, rules and other regulations regarding the examination of applications for issuance of United States Letters Patents. While on the Board, I participated in approximately 500 to 750 appeals, the vast majority of which originated from electrical patent examining groups.

In 1986, I resigned from the PTO to become a member of the Nixon and Vanderhye intellectual property law firm in Arlington, Virginia. I specialize in all phases of patent application preparation and prosecution.

During my career, I have been involved in numerous aspects of patent practice, including the drafting and prosecution of patent applications, evaluating prior art references and preparing numerous patentability, validity and infringement opinions. I have prosecuted hundreds of patent applications and I have reviewed hundreds of prosecution histories of other applications. As part of this work, I have had occasion to review thousands of claims in patents and patent applications in order to determine their meaning, to compare them with the prior art, to compare their scope with the specification disclosure and/or to compare them with accused products or processes. I have served as an expert in Patent Office practice and related areas of patent law in numerous patent infringement litigations. For further details, my Curriculum Vitae is attached as Exhibit A.

II. PATENT AND TRADEMARK OFFICE PRACTICE

I may testify about patent examining practice before the PTO. I may testify as to the nature of a patent grant, and the various parts of a patent application, including the specification, claims, drawings, and oath. I may testify about how patent examiners are trained with respect to the various patent application disclosure requirements. For example, patent examiners are trained that the patent specification must be, as of the filing date of the patent application, set forth in such full, clear, concise and exact terms so as to enable a person skilled in the art to make and use the claimed invention without resorting to undue experimentation. Additionally, the patent specification must set forth, as of the original filing date, the best mode contemplated by the inventor for carrying out the claimed invention. Examiners are trained that the "best mode" requirement precludes a patent applicant from securing patent protection for a claimed invention

while at the same time concealing the inventor's contemplated best mode of practicing the claimed invention. The specification must also satisfy the written description disclosure requirement and provide adequate support for later claimed subject matter. The "written description" requirement is separate and distinct from the "enablement" and "best mode" requirements. The purpose of the "written description" requirement is broader than to merely explain how to "make and use" the invention. With respect to claims added after the original filing date, the original disclosure must convey with reasonable clarity to those skilled in the art that, as of the filing date, the inventors were in possession of the later claimed invention.

A patent claim is a single sentence, usually multi-paragraph, definition of the metes and bounds of an applicant's invention, defining the scope of legal protection to which a patentee is entitled. Patent Examiners are trained that claims are not to be interpreted in a vacuum, but rather must be interpreted in light of the patent specification. Examiners are required to give claim language its broadest reasonable interpretation consistent with the specification. A patent claim must be set forth with a reasonable degree of precision and particularity such that the metes and bounds of the invention are reasonably circumscribed.

I may testify as to how a patent examiner examines a patent application including studying the original patent application specification and original claims, searching for relevant prior art patents and publications and generating Office Actions. I may testify that patent applicants respond to an objection or rejection in an Office Action by attempting to convince the Examiner that the objection or rejection was improper and/or by amending the patent claims. In response, the Examiner decides whether to allow, or

finally reject, the patent application. If a final Office Action is rendered, an applicant may appeal to the PTO's Board of Patent Appeals and Interferences.

With respect to searching the prior art, I will testify that in the PTO the chemical, electrical and mechanical technologies are divided into numerous generic classes of technology. Each class is divided into more specific subclasses into which issued patents are classified. Examiners have access to both manual and computer-assisted search systems. Patent examiners theoretically have access to a complete set of all U.S. patents. To a much lesser degree, patent examiners have access to foreign patents and some printed publications. With respect to publications, the Patent Office files are not anywhere close to being a complete library of publications in a field. Patent examiners do not typically have access to information about products which are in public use or are on sale. In accordance with 35 USC §102(b), patent examiners are typically precluded from allowing a patent application where the claimed subject matter or an obvious variation of the claimed subject matter has been sold or offered for sale in the United States more than one year prior to the application filing date. Patent examiners do not typically have access to product brochures or operation manuals. The PTO examiners necessarily rely on patent applicants complying with their duty of disclosure so that they will have the opportunity to consider such information.

A patent examiner's prior art rejections are typically based upon anticipation under 35 USC § 102 or based upon obviousness under 35 USC § 103. To reject a patent claim based on anticipation, it is necessary that a single prior art reference, device, or practice include a counterpart to each and every claimed limitation, either expressly or under principles of inherency.

With respect to obviousness, examiners are trained to perform the analysis set forth in Graham v. John Deere, 383 U.S. 1, 86 S. Ct. 684 (1966) and its progeny. Thus, for example, examiners are required to determine the scope and content of the prior art; ascertain the differences between the prior art and the claims at issue; resolve the level of ordinary skill in the pertinent art; and consider objective evidence of obviousness or nonobviousness.

Patent examiners operate under time constraints dictated by examining productivity goals. In even the most complex technological areas in the PTO, examiners are expected to examine an application from start to finish at an average in the range of 2 to 3 days (which includes time spent reviewing the originally filed specification and claims, searching the prior art, reviewing and understanding the cited prior art, comparing the prior art with the claimed subject matter, preparing office actions, and reviewing the applicant's responses).

Patent examiners, in a typical patent application prosecution, have no access to independent technical expert testimony and, therefore, do not have the opportunity to consult with technical experts in any given technological field. The examination process for a typical application in the PTO is strictly an *ex parte* proceeding in which opponents to a patent have no input.

There are a number of patent validity related issues that cannot be analyzed by a patent examiner due to lack of information relating to such issues. If a patent examiner is not aware of critical information relating to a validity issue, nothing will trigger the need to consider such an issue. For example, although a patent should not issue unless the correct inventors are named, a patent examiner has no way of independently

investigating inventorship. Similarly, if another patent applicant actually conceived of the claimed invention prior to the application at issue, unless a formal proceeding called an interference is initiated in the PTO, there is no way that the PTO will have the necessary information to make any determination as to who was the first to invent. Further, the PTO typically does not have information with respect to best mode issues, or on-sale or public use related activities that can operate to invalidate a patent under certain conditions.

I may testify that patent examiners are trained that the federal court system is an integral part of the U.S. patent system. A federal court considers patent infringement issues which are not considered by the PTO. The fact finder in a federal court patent litigation hears evidence relating to patent validity which is typically not available to a PTO examiner. Patent examiners are trained that patents once issued are accorded a presumption of validity. Patents, however, may be found to be invalid in a federal court, if clear and convincing evidence establishes invalidity, even if such evidence had been considered by the PTO.

III. PROSECUTION HISTORY OF U.S. PATENT NO. 6,065,037 (THE '037 PATENT)

I will testify about the U.S. patent applications which matured into the '037 patent including application Serial No. 07/404,885; application Serial No. 07/875,585; application Serial No. 08/225,356, which matured into U.S. Patent No. 5,485,579; and application Serial No. 08/473,244, which matured directly into the '037 patent. I expect to testify regarding information contained on the PTO file jacket, describe pre-office action activities such as the prior art search and describe communications between the

applicants and the PTO in the patent applications identified above, which matured into the '037 patent, including the communications described below.

A. PROSECUTION HISTORY OF U.S. APPLICATION SERIAL NO. 07/404,885

Application Serial No. 07/404,885 was filed on September 8, 1989, naming David Hitz, Allan Schwartz, James Lau and Guy Harris as joint inventors. The application was classified in class 364, subclass 200 and assigned to art unit 237 for examination. The application was entitled "Multiple Facility Operating System Architecture" and was filed with 1 original claim.

On December 18, 1989, the applicants filed an inventors' Declaration which, *inter alia*, acknowledged their duty to disclose information which is material to the examination of the application in accordance with PTO Rule 56.

On January 17, 1991 and October 16, 1991, the Examiner searched class 364, subclass 200 MS file and subclass 900 MS file. The Examiner also performed an APS search on January 18, 1991 and on October 16, 1991.

In a February 1, 1991 Office Action, claim 1 was rejected as being indefinite based on certain identified challenged claim language including "implementing", and a "plurality of related functions". The Examiner took the position that

> [i]n general, the computer system of claim one is only vaguely defined by the claim language....Stripped of the characterization of the stored instructions as 'a predetermined peer-level facility' and 'a multi-tasking interface function,' the claim is seen simply to recite a multiprocessor system. In this sense, the language describing the type of instructions is particularly important to adequately define the invention.

February 1, 1991 Office Action at page 3.

The Examiner also rejected claim 1 under 35 U.S.C. §102(b) as being anticipated by Zave (U.S. Patent No. 4,685,125). The Examiner concluded that:

[t]he Zave reference anticipates the computer system of claim one. Considering claim parts a and b and not parts i and ii, Zave describes the claimed 'plurality of processor units for implementing a predetermined set of peer-level facilities' (the nodes 10 of figure one) and 'means for interconnecting said plurality of processor units' (the transport network 15 of figure one).

12. Zave also describes the remaining limitations of claim one - parts i and ii - in the description of the nodes 10 of figure one.

13. As shown in figure 2 of Zave, each node 10 includes the claimed 'means for executing program instructions' (items 20 and 26 of the figure) and 'means for storing program instructions and data' (items 21 and 27 of the figure). Zave also teaches that the instructions stored affect various system functions such as control layer processes (column 9, line 6 et seq.) and application processes (column 9, lines 4-5) and this is considered to be equivalent to the claimed 'peer-level facility' instructions. Zave teaches at column 4, lines 51-54 that processes executing at various nodes can communicate with processes executing at other nodes. As inter-process communication is effected in conjunction with the multi-tasking at the nodes, Zave is understood to teach a 'multi-tasking interface function' as claimed.

14. As noted above, Zave anticipates the invention of claim one.

February 1991 Office Action at pages 4 and 5.

In a July 26, 1991 Amendment, the applicants amended claim 1 and inserted new claims 2-13. With respect to the Examiner's indefiniteness rejection, the applicants argued that:

[t]he terms 'peer-level facility' and 'multi-tasking interface' are fully defined within the context of the specification considered as a whole. Specifically, the specification at page 21, line 10 through page 22, line 17 substantially defines the primary peer-level facilities as, in the context of the UNIX operating system, major functional subsystems of the operating system constituted as a separately executed software entities separate from a conventional UNIX kernel. The multi-tasking interface function is further identified as a messaging kernel layer tailored to each type of peer-level facility as appropriate for the specific facility function provided. The specific benefit of the present invention in terms of the implementation of peer-level facilities utilizing interface functions to provide communication thereamong is provided in the specification at page 44, lines 17 through 25.

July 26, 1991 Amendment at page 11.

With respect to the prior art rejection based on Zave, the applicants argued that in Zave:

> [e]ach processor within the disclosed computer system is required to execute its own complete and substantial operating system. In each instance, the operating system provides for the separate execution of multiple tasks. At least one task is dedicated to the execution of what the reference describes as a 'shared image'. Within the context of the disclosure provided by the reference, it is understood that this shared image constitutes an application layer communications program utilized by each of the processors to communicate, in some form, via the communications bus. The specific nature of the communication does not appear to be described.
>
> Regardless, the reference is clear in that tasks described are allocated for the separate execution of multiple application layer programs. These separate tasks are utilized to execute diverse programs whose functions are rather independent of the implementation or function of the underlying operating system. As is conventional, these programs merely rely on the operating system to perform certain primitive functions. Apparently, the operating system further relies on the communication program to provide communication services to other computer systems within the network. Consequently, the individual computer systems of the Zave reference do not implement peer-level facilities, as that term is defined in the present specification. Further, the shared image as described in the reference is not equivalent to the multi-tasking interface function limitation of Claim 1, as that term is defined in the present specification. The multi-tasking interface function exists in lieu of the core portion of an operating system.
>
> Accordingly, Claim 1 is not anticipated under 35 U.S.C. §102(b) in view of the Zave reference.

Id. at pages 12 and 13.

With respect to claim 1 and the newly added claims, the applicants argued that:

> [n]owhere does Zave teach or in any way suggest the use of peer-level facilities -- instantiations of component portions of an operating system provided as separately executing entities on respective processors. Indeed, the communication mechanism described by Zave requires that an application level interface, and corresponding

conventional operating system support capabilities, be provided on each processor.

The messaging kernels described in the specification are attributed with only the capability of enabling the continuing process of task execution as it would execute in a conventional kernel. The messaging kernels provide for the maintenance of task contexts as necessary for the execution of multiple execution threads through the peer-level facility. However, there is no specific support for application level programs by the peer-level facilities. Rather, the present invention avoids the conventional requirement of an operating system kernel's participation in the communications transactions. Between peer-level facilities in, for example, the preferred case of NFS read/write data transactions.

Only the Host facility, present as an effective peer-level facility by the addition of its own messaging kernel interface to the peer-level facilities, provides an application layer for support of application programs. Significantly, the Host facility does not directly participate in the handling of specific file oriented requests through the autonomous data circuit formed through the mutual supporting operation of a network facility, the filesystem facility and the storage facility.

This architecture for a distributed, yet cohesive multiple processor operating system is not in any way shown or suggested by Zave. Applicants respectfully submit that claims 1 through 13 should not be rejected under 35 U.S.C. §103.

Id. at pages 13 and 14.

In an October 29, 1991 Final Rejection, the Examiner rejected claims 1 and 7 under 35 U.S.C. §102 as being anticipated by Zave. The Examiner concluded that:

[c]laim one recites a 'computer system' which 'employs' an operating system architecture and comprises 'a plurality of processor units for executing a predetermined set of peer-level facilities.'

14. In the amendment filed July 26, 1991 applicants urge that the term peer-level facility is fully defined within the context of the specification as a whole indicating that the specification 'substantially defines' peer-level facilities as 'major functional subsystems of the operating system constituted as a separately executed software entities separate from a conventional UNIX kernel.' This definition is not considered to be very specific but is nonetheless seen to be the notion of the software separation reflected in Zave. Thus in Zave, specific software entities such as task control services and I/O services are 'separate

entities' from an operating system kernel. This is reflected in figures 4, 10 and 11 which show such entities separate from the operating system kernel.

15. Zave is seen to anticipate the computer system of claim one in teaching 'a plurality of processor units for executing a predetermined set of peer-level facilities' (the processors 20, 26, 22, etc... of figure 2) wherein each processor is seen to comprise 'means for executing a said control program' (by the processors 20, 26, 22 executing the programs shown in fig. 10) which includes 'a predetermined peer-level facility' (for instance, the file/database management subsystem discussed at column 11 lines 38-53) and a 'multitasking interface function' (as generally described at column 14 line 65 - column 16 line 24). Last, Zave teaches a 'means for interconnecting said plurality of processor units' (as the bus 25 of fig. 2 or, alternatively, the communications software).

October 29, 1991 Office Action at pages 3 and 4.

In response to the applicants' arguments, the Examiner took the position that:

[a]pplicants arguments over the Zave rejection are not persuasive since Zave is understood to teach the implementation of 'peer-level facilities' as interpreted by the examiner in light of applicants proposed definition as 'major functional subsystems of the operating system constituted as a separately executed software entities separate from a conventional UNIX kernel.' Applicants contend that Zave merely teaches the typical application process/operating system kernel architecture but this is not the examiner's understanding of the reference. Zave is understood to teach modular, separate software entities that can be executed by application processes and other processes. These subsystems may be 'totally contained' within a shared image or include an apparent mix of process code and shared image code. In any case, they are understood to anticipate a peer-level function as that term is currently interpreted. The distinction applicants note is not seen to exist. Zave teaches taking the primitives normally provided by the kernel out of the operating system domain.

Id. at pages 4 and 5.

Further, the Examiner rejected claims 1-13 under 35 U.S.C. §103 as being unpatentable over Weisshaar et al. (U.S. Patent No. 4,914,583). The Examiner concluded that the Weisshaar reference describes the invention substantially as claimed but does not specifically describe a network file server architecture. The

Examiner, however, concluded that it would have been obvious to one of ordinary skill in the art at the time of the invention to form a system on which the claims read because Weisshaar gives suggestion of the claimed elements of the file server and because it is well known in the art to employ a file server in multiprocessor network systems. See the October 29, 1991 Office Action at pages 6 and 7.

On June 1, 1992, the PTO mailed a Notice of Abandonment indicating that the application was expressly abandoned in favor of [file wrappper] continuation application 07/875,585. A continuation application is filed to "continue" prosecution of the parent application. The effect of a file wrapper continuation ("FWC') is to restart the prosecution cycle (while abandoning the prior-generation application) with a next-generation application that is entitled to the same priority date. An applicant typically files a preliminary amendment in the FWC addressing a previously issued final rejection.

B. PROSECUTION HISTORY OF U.S. APPLICATION SERIAL NO. 07/875,585

On April 28, 1992, the applicants filed application Serial No. 07/875,585, which is a file wrapper continuation of parent application Serial No. 07/404,885.

In a December 21, 1993 first office action Final Rejection, the Examiner repeated the rejections previously rendered in the parent application, including the prior art rejections based on Zave and Weisshaar.

The application was abandoned in favor of filing a further continuing application.

C. PROSECUTION HISTORY OF U.S. PATENT NO. 5,485,579 (THE '579 PATENT

The '579 patent was filed on April 8, 1994 as U.S. application Serial No. 08/225,356, naming Hitz et al. as joint inventors. The application was classified in class 395, subclass 700 and was assigned to art unit 2307 for examination. The application was filed as a continuation of the above-identified parent application Serial No. 07/875,585,

In an April 8, 1994 Preliminary Amendment, claims 1, 3 and 12 were amended and new claims 14-25 were added.

With respect to the Zave reference, the applicants argued that:

> [t]hus, quite distinct from the present invention, at a minimum none of the subsystems of *Zave* exist as peer-level facilities capable of self-deterministic operation within Zave's unitary complete operating system i.e., more are capable of excluding participations of the kernel by selective direction of messages and data between the facilities.
>
> Other distinctions between the present invention, as presently claimed, and *Zave* are best illustrated by observing what the claimed invention is, rather than what *Zave* is not. Specifically, the present invention relates to a computer system that in one aspect, as set forth in Claim 1 for example, has a novel functionally organized, peer-level related multi-processor architectural structure wherein each processor implements a peer-level facility (an 'instantiation of a single component of said operating system'). A peer-level facility is 'peer-level' by having the ability to be self-deterministic, such as by allocating and managing its own processes (the 'multi-tasking interface'), and is a 'facility' in that it implements a functional component of an operating system, but less than the whole of a conventional operating system (an 'operating system having a predetermined plurality of operating system components, each said component providing for the performance of a predetermined plurality of component functions'). Each of the peer-level facilities may communicate with other facilities (the 'means ... for routing') and do so where, in processing a request provided to a peer-level facility, the services of another peer-level facility is desired ('said peer-level facilities determining the routing of control messages respectively generated by said multi-tasking interfaces').

Thus, in contrast to the multi-processor, unitary operating system architecture of *Zave*, the present invention as set forth in Claim 1 describes a multi-processor, multiple different partial operating systems architecture. This distinction is particularly made clear in the claims dependent from Claim 1 where the different operating systems are related as being the major facilities of a conventional operating system. *Zave* clearly does not teach or suggest any computer architecture employing anything other than a unitary operating system and certainly not multiple partial operating systems. Consequently, *Zave* cannot be viewed as disclosing the present invention or providing any teachings that would lead a person of average skill to the present invention.

April 8, 1994 Preliminary Amendment at pages 15 and 16.

With respect to the "peer-level facilities" the applicants further argued that:

[t]hus, the 'peer-level facilities' of the present invention are unlike the 'specific software entities' of the *Zave* reference in that the benefit of achieving expedient routing of specific requests through peer-level facilities is simply not available in the device of the *Zave* reference. The expedient routing of the present invention is provided by separate facilities that have a means for communicating between these facilities selectively separate from the operating system kernel. In contrast, the 'specific software entities such as task control services and I/O services' of the *Zave* reference are provided by, not exclusive of, the operating system in a conventional manner. (Col. 6, lines 18-23). There is no expedient routing of specific requests in the *Zave* reference because the specific software entities are routed through a conventional operating system kernel and intentionally incur the conventional and substantial overhead processing of the kernel in order to prepare responses to those requests.

Thus, specifically in regard to the Examiner's paragraph 16, the *Zave* reference does not provide 'peer-level facilities' as that term is defined in the present invention.

Id. at pages 19 and 20.

With respect to the Examiner's previous rejection based on Weisshaar, the applicants argued that:

The facilities of the present invention are unlike the nodes/processes of the *Weisshaar et al.* reference in that the 'peer-level facilities' are partial functionally different components of a network operating system. The network facility of the present invention, for example, does not include a storage processor facility. *Weisshaar et al.*,

on the other hand, specifically provides a virtual machine concept in each instance of the operating systems so that, as discussed at length in *Weisshaar et al.*, the 'processes' can be executed in an environment that is free of hardware constraints. (Col 7, lines 23 - 31). Consequently, the operating system present on each node, apparently in order to be both generic and tailorable, provides a basic environment that supports all services including those that may not be available from the node.

Thus, the nodes of *Weisshaar et al.* are not the 'peer-level facilities' of, for example, Claim 1.

Furthermore, the processing of 'processes' is performed by the nodes without distinction as to the content or requirements of the process. Whenever resources of a nature not immediately available to a particular process are nonetheless required, a hierarchical name-based search is performed by the operating systems to find a process/node capable of providing the resource. Only the kernels of the operating systems have a name resolution capability. Furthermore, the performance of this search is not differentiated in any way by the type of resource requested. Rather, all messages are treated identically and are processed by the kernel of each operating system as each new level of the hierarchical search is reached. Consequently, the broadcasting of requests for non-local services requires processing by each full kernel that receives the request. Such routing, furthermore, is entirely generalized rather than specific to the particular contact/data of the request.

Thus, the system of *Weisshaar et al.* is clearly not the network file server system of, for example, Claim 15 that specifically provides for the discrimination of network requests and type selective routing of particular requests so as to avoid the undesirable processing of the requests by the operating system kernel.

Id. at pages 21 and 22.

In an April 8, 1994 Information Disclosure Statement, the applicants brought three foreign patent documents to the Examiner's attention.

In an August 11, 1994 first Office Action restriction requirement, the Examiner required the applicants to elect between claims 1 and 7-11 drawn to a "multiple facility operating system architecture" and claims 2-6 and 12-25 drawn to a "network file server." If two or more groups of claims are directed to "independent and distinct

inventions," a Patent Examiner may require the application to be "restricted" to one of the groups of claims/inventions. Patent applicants are then required by the examiner to "elect" one of the groups of claims for examination in the subject application. Each group of claims is treated by the PTO as being directed to a separate "invention." In response to a restriction requirement, a patent applicant generally must elect a group of claims for examination, with or without traverse. If an election is made without traverse, the applicant loses the right to file a petition objecting to the requirement under 37 C.F.R. 1.144. In the face of a restriction requirement, patent applicants typically file "divisional" patent applications directed to the non-elected inventions.

In an October 19, 1994 Response, the applicants elected to prosecute claims 2-6 and 12-25 drawn to a network file server.

In a January 10, 1995 Office Action, the Examiner found that claims 2-6, 12 and 13 were allowable over the prior art of record.

In the office action, claims 14-25 were rejected under 35 U.S.C. §112, second paragraph, as failing to particularly point out and distinctly claim the subject matter which the applicants regard as their invention since the Examiner could not adequately determine what disclosed structure corresponds to certain identified "means-plus-function" language. The Examiner indicated that claims 14-25 would be allowable if rewritten or amended to overcome the rejection under 35 U.S.C. §112.

In a June 8, 1995 Information Disclosure Statement, the applicants brought various prior art patents and publications to the Examiner's attention.

In a June 8, 1995 Amendment, the applicants cancelled non-elected claims 1 and 7-11 and amended claims 15-21. In the Amendment Remarks, the applicants

addressed the Examiner's rejection of claims 14-25 under 35 U.S.C. §112, second paragraph, in part, by identifying the corresponding structure for the "means for coupling." The applicants identified, as exemplary structure, the request and data paths shown in Fig. 6 and correspondingly described in the current specification as directly interconnecting the network, file system and storage processor facilities 162, 164 and 166 and the memory 18'. The applicants also addressed the other 35 U.S.C. §112, second paragraph, issues raised by the Examiner.

In a August 21, 1995 Notice of Allowability, the Examiner allowed claims 2-6 and 12-25.

The '579 patent formally issued on January 16, 1996.

D. PROSECUTION HISTORY OF U.S. APPLICATION SERIAL NO. 08/473,244

Application Serial No. 08/473,244 was filed on June 7, 1995, naming David Hitz, Allan Schwartz, James Lau and Guy Harris as joint inventors. The application was filed as a divisional application of U.S. application Serial No. 08/225,356, which matured into the U.S. Patent No. 5,485,579. A "divisional" application is a continuing application of a parent application, naming one or more of the same inventors as the parent application and which carves out, i.e., claims, one of multiple distinct inventions from the prior application. The divisional application permits an applicant to resume the prosecution of a set of claims it elected not to pursue in a parent application in which the PTO imposed a restriction requirement. A divisional application must not add new matter to the written description of the invention in the earlier application.

On December 21, 1996, the Examiner searched various subclasses in class 395 and class 709 and conducted an Automated Patent System (APS) search. The

application was filed with 1 original claim directed to a computer system employing a multiple facility operating system architecture. The application was filed with a copy of the inventors' Declaration executed on November 27, 1989, which was associated with parent application 07/404,885. In the original Declaration, the inventors acknowledged their duty to disclose information which is material to the examination of the application.

In a June 7, 1995 Preliminary Amendment, the applicants amended claim 1 and added new claims 2-6.

In a December 26, 1996 Office Action, the Examiner rejected claim 1 under 35 U.S.C. §103 as being unpatentable over Johnson et al. (U.S. Patent No. 5,133,053) in view of Weber et al. (U.S. Patent No. 5,506,998). The Examiner took the position that Weber et al. disclosed all the structural elements of claim 1 except that Johnson, while describing the communication process between nodes "does not go into the details of the multi-tasking of peer-level facility functions." December 26, 1996 Office Action at page 4. The Examiner concluded that Weber et al. shows multitasking of peer-level facility functions citing col. 6, line 27 - col. 7, line 3. The Examiner concluded that it would have been obvious to one of ordinary skill in the art to provide multitasking of peer-level facility functions as taught by Weber for the reasons set forth at col. 2, lines 4-12 of Weber. Additionally, the Examiner rejected claims 2-6 under 35 U.S.C. §103 as being unpatentable over Johnson et al. in view of Weber et al. and further in view of Chung (U.S. Patent No. 5,218,697). The Examiner found that Johnson and Weber do not explicitly recite a file system facility and relied on Chung for such features. The Examiner concluded that it would have been obvious to one of ordinary skill in the art to use the combination of Johnson and Weber in the file system of Chung, since Chung

identifies file servers as the remote nodes for satisfying client requests. The Examiner also found that Chung discloses the subject matter of claims 3-6.

In June 26, 1997 Amendment, claims 1-6 were amended and new claims 7-13 were added. In responding to the Examiner's rejection of claim 1 under 35 U.S.C. §103 as being obvious in view of Johnson in view of Weber, the applicants argued that:

> [c]onversely, claim 1 as now amended calls for a plurality of processor units that execute a predetermined set of peer-level facilities. Each of the processor units 'is associated with [a] respectively distinct peer-level facility and wherein each of said peer-level facilities includes a respective distinct set of peer-level facility related functions.' Thus, for at least the plurality of processors, each performs a mutually exclusive peer-level facility of the operating system itself.
>
> Nothing in Weber, et al. or Johnson, et al. teaches or suggests the execution of distinct operating system peer-level facilities on separate processors to obtain an instantiation of the operating system itself. Thus, neither Johnson, et al. nor Weber, et al. individually or in combination teach or suggest the claimed invention as now set forth in claim 1. Reconsideration of the rejection of claim 1 is therefore respectfully requested.

June 26, 1997 Amendment at page 7.

Further, with respect to the Examiner's rejection of claims 2-6 under 35 U.S.C. §103, as obvious in view of the combination of Johnson, Weber and Chung, the applicants argued that:

> [l]ikewise, Chung discloses an effectively virtual host computer system that is comprised of a plurality of individual server computer systems. While the various servers may implement different specific operating systems, each server is shown as implementing essentially the same logical operating system that includes both network and filesystem facilities as conventional integral and undivided operating system components. The operating system of each server is described in Chung as supporting a transport layer, providing a network facility function, a kernel layer, implicitly incorporating a filesystem facility function, as well as mass storage interface facility function. As such, Chung fails to teach or in any way suggest the computer system of claim 2 wherein 'a first one of said predetermined set of peer-level facilities includes a network

communications facilities and a second one includes a filesystem facility.' Each predetermined set of peer-level facilities is defined in claim 1 as including 'a respective distinct set of peer-level facility related functions.' Consequently, the plurality of processors called for in claim 2 are required to implement a non-symmetrical set of peer-level facilities. Consequently, claim 2 is not obvious in view of the cited references.

The remaining original pending claims, claims 3 through 6, are dependent from claims 2 and, at least on that basis, are not obvious in view of the cited prior art. Accordingly, Applicants respectfully request reconsideration of the rejection of claims 2 through 6.

New claim 7, and its dependant claims, are distinguished from the cited prior art by the specification that 'each of said plurality of facilities implements a multi-tasking interface coupleable between said communications bus and a respective and unique peer-level control function set to permit message transfer between each of said plurality of facilities.' Thus, claim 7 effectively requires an asymmetric implementation of operating system facilities by the plurality of processors. The cited prior art of Johnson, et al., Weber, at al., and Chung clearly fail to in any way suggest or teach anything other than the communication of requests between logically symmetric operating systems instantiated by separate computer systems. This claimed combination is not taught or suggested by the cited prior art.

New claim 11 specifies a plurality of processors '...each implementing a respective local sub-set of said componentized facilities that depends through the exchange of control messages on the execution of another sub-set of said componentized facilities by another of said processors to cooperatively implement said operating system.' Thus, claim 11 and its dependent claims are not anywhere taught or suggested by the cited prior art.

Id. at pages 7 and 8.

In an October 19, 1998 Final Rejection, the Examiner rejected claims 1-13 under 35 U.S.C. §103 as being unpatentable over Welsh "The File System Belongs In The Kernel," 1991. On its face, it appears that the Welsh publication is not prior art to the subject application since the present application has an effective filing date of September 8, 1989.

In a February 3, 1999 Response, the applicants amended the specification to refer to various parent applications dating back to September 8, 1989. In the Amendment Remarks, the applicants argued that the Welsh publication was not prior art to the subject application due to the September 8, 1989 effective filing date.

In a March 15, 1999 Communication, the finality of the October 19, 1998 Office Action was withdrawn.

In a June 11, 1999 Final Rejection, the Examiner rejected claims 1-13 under 35 U.S.C. §103 as being unpatentable over Ousterhout et al., "The Sprite Network Operating System," February 1988. The Examiner reasoned with respect to claim 1 that:

> Ousterhout shows a plurality of processor units provide to cooperatively execute a predetermined set of operating system peer level facilities (Sprite kernels running on multiprocessors, Section 3), wherein each said processor units is associated with a respectively distinct operating system peer-level facility (sprite kernels allow the performance of functions at each node, section 3), wherein each said processor unit including:
>
> i) a processor capable of executing a control program (processors of the system)
>
> 2) a memory store capable of storing said control program, said memory store providing storage of a first control program portion that includes a one of said respective distinct sets of operating system peer-level facility related functions (RPC facility allowing each kernel to invoke operations on other workstations, section 3.2 starting on page 9), and that corresponds to a one of said predetermined operating system peer-level facilities, a second control program portion that provides for the implementation of a multitasking interface function (multitasking, section 3.1) said multitasking interface function being responsive to control messages for selecting for execution one of said peer-level facility related functions of said one of said predetermined operating system peer-level facilities and responsive to said one of said predetermined operating system peer-level facilities for providing control messages to request or to the performance of said predetermined peer-level facility (remote kernel calls, section 3); and

b) a communications bus that provides for the interconnection of said plurality of processor units (computer network connecting the processors), said communication bus transferring said control messages between the multitasking interface functions of said predetermined set of operating system peer-level facilities.

In Ousterhout it is not clear whether the respective functions are distinct from each other. However, duplication of the functions would create more problems and increase the complexity of the system. It would have been obvious to one of ordinary skill in the art to provide for distinct functions at each pear level facility in order to reduce the complexity of the system and avoid duplication of resources.

June 11, 1999 Office Action at pages 2-4.

In a July 29, 1999 Response, with respect to the patentability of independent claim 1, the applicants argued that :

[i]n other words, the claim calls for the 'set of peer-level facility related functions' supported on one of the processor units to be distinct from the 'set of operating system peer-level facility related functions' supported on another of the processor units.

Ousterhout's system, on the other hand, describes the complete antithesis of this feature. Throughout Ousterhout's paper, he assumes that all of the workstations on the network which share in certain features of the Sprite operating system such as transparency of the network file system and migration of processes between workstations, all run the same Sprite operating system. This can be seen from a number of specific comments within the document.

For example, at page 3, line 13, Ousterhout states that 'Sprite guarantees that processes behave the same whether migrated or not.' Such a guarantee would not likely be possible if different workstations support 'distinct' sets of peer-level facility related functions.

At page 7, lines 20-21, Ousterhout defines process migration as allowing processes to be moved 'at any time.' Again, this would not likely be possible if different ones of the participating workstations supported 'distinct' sets of operating system peer-level facility related functions.

At page 8, lines 3-4, Ousterhout states that the transparency of Sprite's migration mechanism 'means that a process will produce exactly the same results when migrated as it would if it were migrated. . . .'

> Clearly this could not be accomplished in a system in which different ones of the participating workstations supported distinct sets of operating system peer-level facility related functions as called for in Applicants' claim 1, at least because the process would not be able to make all of the same operating system calls after migration as it would if it were not migrated.

July 29, 1999 Response at pages 2-4.

The applicants also argued that

> [t]here is no suggestion anywhere in Ousterhout that different ones of the participating workstations include distinct sets of operating system peer-level facility related functions. *Id.* at page 4.

The applicants also disagreed with the Examiner's conclusion that "it is not clear whether the respective functions in Ousterhout are distinct from each other." Rather, the applicants argued that

> it is abundantly clear that the sets of operating system functions available on each of the participating workstations in Ousterhout are the same, and not distinct. *Id.*

With respect to the Examiner's conclusion that it would have been obvious to one of ordinary skill in the art to provide for distinct functions at each peer-level facility in order to reduce the complexity of the system and avoid duplication of resources, the applicants argued that:

> [t]he entire purpose of process migration in Ousterhout is 'in order to take advantage of idle machines'. (Page 2, line 14.) As Ousterhout points out, 'Sprite implements process migration, which allows jobs to be offloaded to idle workstations and thereby allows processing power to be shared.' (Page 4, lines 2-4.) Contrary to the Examiner's assertion, duplication of operating system functions on the different workstations participating in process migration is probably essential to accomplish these goals. As mentioned above, if processes are to be migrateable from one workstation to another, at any time, and transparently to the process itself, then it is greatly desirable (or necessary) that all of the operating system calls which are available on one of the participating workstations be available as well on the others.

> Nor would such 'duplication of functions' necessarily increase the 'complexity' of the system. In one sense, Ousterhout's arrangement probably simplifies system implementation (although at the expense of performance, as described in Applicants' specification), in the sense that only a single unified operating system need be developed.
>
> Applicants strongly disagree, therefore, that it would have been obvious to one of ordinary skill in the art to provide for 'distinct sets of operating system peer-level facility related functions' on different ones of Ousterhout's participating workstations. Certainly there is no suggestion in Ousterhout of such a modification to his arrangement.
>
> Accordingly, it is respectfully submitted that independent claim 1 should be allowable over Ousterhout.

Id. at pages 5 and 6.

In a July 29, 1999 Information Disclosure Statement, the applicants brought various prior art to the Examiner's attention.

In a September 20, 1999 Advisory Action, the Examiner indicated that the Response to the Final Rejection will be entered upon the filing of a Notice of Appeal, but that, in the Examiner's view, the Response does not place the application in condition for allowance since the limitations in the claims are met by the prior art.

In an October 8, 1999 Communication, the applicants forwarded proposed claim amendments to the Examiner. The proposed amendment amended claim 1 to require that "each said processor units is associated with a respective different one of said operating system peer-level facilities and not another of said operating system peer level facilities, and wherein each of said operating system peer-level facilities constitutes a respective separately executed software entity which includes a respective distinct set of peer-level facility related functions, each said processor unit including...:" Similar amendments were proposed for claim 7.

In a December 9, 1999 Communication, the applicants filed a continued prosecution application.

In an associated December 9, 1999 Preliminary Amendment, claims 1 and 7 were amended as proposed in the October 8, 1999 informal Communication. In the Amendment Remarks, the applicants reference several telephone interviews culminating in the information Communication to the Examiner in which proposed revisions to the independent claims were presented. During the course of the interviews, the Examiner was alleged to have indicated that the proposed revisions would render the independent claims patentable over the art of which he was aware.

In a December 20, 1999 Notice of Allowability, claims 1-17 were allowed.

The '037 patent formally issued on May 16, 2000.

IV. PROSECUTION HISTORY OF U.S. PATENT NO. 5,802,366 (THE '366 PATENT)

I may testify about the U.S. Patent applications that matured into the '366 patent, including application Serial No. 07/404,959, which matured into U.S. Patent No. 5,163,131 (the '131 patent), application Serial No. 07/959,746, which matured into U.S. Patent No. 5,355,453 (the '453 patent) and application Serial No. 08/320,451, which matured directly into the '366 patent. I expect to testify regarding information contained on the PTO file jacket, describe pre-office action activities such as the prior art search, and describe communications between the applicants and the PTO in the above-identified patent applications including the communications described below.

A. PROSECUTION HISTORY OF THE '131 PATENT

The '131 patent was filed as U.S. application Serial No. 07/404,959 on September 8, 1989, naming Edward J. Row, Laurence R. Boucher, William M. Pitts, and