

THIS OPINION WAS NOT WRITTEN FOR PUBLICATION

The opinion in support of the decision being entered today (1) was not written for publication in a law journal and (2) is not binding precedent of the Board.

Paper No. 25

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte ATUO KOBAYASHI
and YASUHIRO ISHII

Appeal No. 1998-0066
Application 08/258,235¹

HEARD: March 7, 2000

Before KRASS, BARRETT, and GROSS, Administrative Patent Judges.

BARRETT, Administrative Patent Judge.

¹ Application for patent filed June 10, 1994, entitled "Backup Switching Control System And Method," which claims the foreign filing priority benefit under 35 U.S.C. § 119 of Japanese Patent Application 5-140449, filed June 11, 1993.

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DECISION ON APPEAL

This is a decision on appeal under 35 U.S.C. § 134 from the final rejection of claims 1-21.

We reverse.

BACKGROUND

The disclosed invention is directed to a method and system for switching from an operating processor to a backup processor upon detection of failure by the backup processor.

Claim 1 is reproduced below.

1. A backup switching control method for use with a system having at least one system resource, at least one operating data processor exclusively occupying said system resource for processing data within said system including at least one of inputting, outputting and storing data with said at least one system resource, and at least one backup processor which takes over said data processing from said operating processor when a failure of said operating processor occurs, comprising the steps of:

connecting said operating processor, said backup processor and said system resource together for communication therebetween;

said operating processor and said backup processor each performing a switching control function including sending a system disconnection command and a dump acquisition command from said backup processor to said operating processor, and further for sending a disconnection complete notice from said operating processor to said backup processor;

transmitting said dump acquisition command and said disconnection command to said operating processor from said backup processor when a failure occurs in said operating processor, said operating processor executing a dump process in response to receiving said dump acquisition command that dumps data externally of said operating processor and executing a disconnection process in response to receiving said disconnection command independently of the completion of said dump process;

wherein said operating processor outputs to said backup processor the disconnection complete notice once said operating processor is disconnected from said system and whereby said backup processor, after receiving said disconnection complete notice, takes over the data processing from said operating processor including occupying said at least one system resource for performing ongoing processing within said system.

The Examiner relies on the following prior art:

Krings	4,819,232	April 4, 1989
Aslanian et al. (Aslanian)	5,111,384	May 5, 1992

Claims 1-21 stand rejected under 35 U.S.C. § 103 as being unpatentable over Krings and Aslanian. The Examiner finds that Krings teaches a multiple processor fault tolerant system in which one processor acts as a primary processor and the other acts as a backup processor. The Examiner finds that Krings does not teach the backup processor sending a dump command to the operating processor to execute a dump process. The Examiner finds that Aslanian

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teaches generating a physical memory (core) dump and concludes that it would have been obvious to provide signaling to indicate when to initiate a dump and when to have the backup processor begin working.

We refer to the First Office Action (Paper No. 5), the Final Rejection (Paper No. 12) (pages referred to as "FR__") and the Examiner's Answer (Paper No. 20) (pages referred to as "EA__") for a statement of the Examiner's position and to the Brief (Paper No. 19) (pages referred to as "Br__") for a statement of Appellants' arguments thereagainst.

OPINION

Appellants group the claims into two groups:

- (1) claims 1-12 are argued to stand or fall together; and
- (2) claims 13-21 are argued to stand or fall together.

The relevant teachings of Krings and Aslanian are described by Appellants (Br7-8).

Claims 1-12

We find that Krings does not disclose the following limitations of claim 1: (1) "sending a system disconnection command and a dump acquisition command from said backup processor to said operating processor" when a failure occurs

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in the operating processor; (2) "sending a disconnection complete notice from said operating processor to said backup processor" once the operating processor is disconnected;

(3) "said operating processor executing a dump process in response to receiving said dump acquisition command";

(4) "executing a disconnection process in response to receiving said disconnection command independently of the completion of the dump process"; and (5) the "operating data processor exclusively occupying said system resource" and "said backup processor, after receiving said disconnection complete notice, takes over data processing from said operating processor including occupying said at least one system resource for performing ongoing processing within said system."

The relevant portion of Aslanian relied on by the Examiner states (col. 1, lines 16-22):

When a computer system encounters a major problem requiring an interruption of its operation, a physical memory dump is generated for subsequent analysis by system engineers before the system shuts down. Such memory dumps represent the state of the operating system control structures at the time the problem appeared in the system.

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Thus, Aslanian teaches only that a dump process was known for a single processor (which is admitted by Appellants) and does not teach the various claimed signals (system disconnection command, dump acquisition command, and disconnection complete notice) or the actions taken in response to these signals.

The Examiner concludes (Paper No. 5, pages 3-4): "It would have been obvious to a person having ordinary skill in the art to combine Krings with Aslanian by having [sic] providing signaling conditions between each processor to indicate when to initiate a dump and when to have the back-up processor begin working." The Examiner further states (EA4): "[A]n incorporation of Aslanian with the disclosure of Krings[] would lead one of ordinary skill in the art to readily produce a system wherein the signaling conditions between each processor would initiate a memory dump. This dump would perform the expected process of allowing a back-up processor to quickly begin working, to assume continual operation of the process which the failed processor left incomplete."

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The Examiner glosses over the details of the claimed subject matter and provides conclusory statements in place of factual evidence of obviousness. In Krings, processor P1 is formed of two processors which are capable of checking each other and generating a fault message and stopping operation when a fault occurs (col. 4, lines 61-68). Similarly, processor P2 is provided with two processors which check each other (col. 5, lines 62-65). There is no indication that processor P2 sends a "system disconnection command" or that the processor P1 sends a "disconnection complete notice" to processor P2 when it has stopped operation. Aslanian is not directed to a backup system and so it is of no help. The Examiner merely concludes that providing the disconnection signals would have been obvious without stating where the motivation is found. The Examiner has not made a prima facie case that it would have been obvious for the backup processor to command the operating processor to disconnect and to provide the claimed signals and disconnection process.

In addition, Aslanian discloses a memory dump process, but since it is not a backup system all that it says is that

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a system can generate a memory dump before it shuts down. The Examiner baldly concludes that the backup processor providing the signals for the operating processor to initiate the dump process would have been obvious. The Examiner has not made a prima facie case that it would have been obvious for the backup processor to send a dump acquisition command instead of the operating processor just generating a dump as part of its shutdown routine. Nor is the Examiner's conclusion (FR3-4) that executing a disconnection process independently of the completion of a dump process would have been obvious supported by any evidence.

Lastly, Krings does not disclose a shared system resource that is occupied exclusively by the operating data processor and then is occupied by the backup processor. Processor P1 does not exclusively occupy memory M2 during normal operation. Backup processor P2 does not occupy memory M1 after take over. The Examiner does not deal with the "operating data processor exclusively occupying said system resource" language.

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For the reasons stated above, we conclude that the Examiner has failed to establish a prima facie case of obviousness. The rejection of claims 1-12 is reversed.

Claims 13-21

System claims 13-21 include essentially the same limitations as claims 1-12 except stated in means-plus-function format and with slightly different wording. We find that Krings does not disclose the following limitations of claim 13: (1) "means . . . for sending to said operating processor a command for releasing said system resource and for dumping data" upon detecting a failure in the operating processor; (2) "means for transmitting a disconnection complete notice to said backup processor"; (3) "means . . . for dumping data"; (4) "means for releasing said system resource independently of completion of dumping of data"; and (5) the "operating data processor exclusively occupies said system resource during a normal operation of said operating processor" and "said backup processor having means . . . for exclusively occupying said system resource."

For the reasons stated in connection with claim 1, we conclude that the Examiner has failed to provide sufficient

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evidence to establish a prima facie case of obviousness.

The rejection of claims 13-21 is reversed.

In addition, claims 13-21 include the details of the operating and backup processors having a main processor, an auxiliary processor, and a shared memory. The operating and backup processors are connected through communication ports and the backup processor includes means for detecting when a failure occurs in the operating processor. These limitations have not been addressed. For this additional reason, the rejection of claims 13-21 is reversed.

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CONCLUSION

The rejection of claims 1-21 is reversed.

REVERSED

	ERROL A. KRASS)	
	Administrative	Patent Judge)
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)	BOARD OF
PATENT)	
	LEE E. BARRETT)	APPEALS
	Administrative Patent Judge)	AND
)	INTERFERENCES
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