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**Datasheet for the decision  
of 26 July 2007**

**Case Number:** T 0856/05 - 3.4.03

**Application Number:** 02026899.1

**Publication Number:** 1339034

**IPC:** G09B 5/00

**Language of the proceedings:** EN

**Title of invention:**  
System and method for distance learning

**Patentee:**  
NOVELL, INC.

**Opponent:**  
-

**Headword:**  
VIRTUAL machine/NOVELL

**Relevant legal provisions:**  
EPC Art. 56  
EPC R. 68(2)

**Keyword:**  
"Inventive step (no)"  
"Decision under appeal resoned (yes)"

**Decisions cited:**  
-

**Catchword:**  
-



Case Number: T 0856/05 - 3.4.03

**D E C I S I O N**  
of the Technical Board of Appeal 3.4.03  
of 26 July 2007

**Appellant:** NOVELL, INC.  
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**Representative:** Hanna, Peter William Derek  
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**Decision under appeal:** Decision of the Examining Division of the  
European Patent Office posted 11 April 2005  
refusing European application No. 02026899.1  
pursuant to Article 97(1) EPC.

**Composition of the Board:**

**Chairman:** R. G. O'Connell  
**Members:** G. Eliasson  
U. Tronser

## Summary of Facts and Submissions

I. This is an appeal against the refusal of European patent application 02 026 899.1 for lack of inventive step over

D1: J. Nieh and O. C. Leonard, "Examining VMware", Dr. Dobb's Journal, August 2000, pages 70, 72 to 74, and 76.

II. The appellant applicant requests that the decision under appeal be set aside and a patent be granted on the basis of the refused claims.

In the alternative, it is requested that the application be remitted to the examining division for further prosecution.

III. Independent claims 1 and 6 read as follows:

"1. A computer implemented method for enabling a student to perform an exercise remotely using a client system (104), said client system comprising a web browser (146) and a remote display viewer (148), and said method comprising the steps of:

transmitting (212,612) a list of exercises from a server (126) to the client system, whereby the client system displays the list of exercises to the student via the web browser, and wherein each exercise on the list is associated with one or more virtual machines (132) and wherein each one of the virtual machines has an operating system that produces a graphical user interface;

receiving (214,614) at the server data transmitted from the client system, wherein the data indicates that the student selected a particular exercise from the list;

determining (222,408,642) which of the one or more virtual machines (132) is associated with the selected exercise, and determining (622) if there is an available launcher (397) associated with each of the needed virtual machine(s);

if there exists an available virtual machine launcher (397) running on the same computer system (102,380) that comprises a remote display server (124) onto which the selected exercise has been installed,

automatically launching (224,410) the one or more virtual machines that are associated with the particular exercise; and

transmitting (228) data to the client system, wherein the data directs the client system (104) to establish a session with the remote display server (124) by launching (232) the remote display viewer (148), wherein the viewer displays to the student, within a window of the web browser (146), a graphical user interface produced by one of the one or more operating systems, after establishing the connection with the remote display server,

whereby the student is able to use the client system to remotely interact with at least one of

the one or more virtual machines after the connection is established."

- "6. A system for enabling a student to perform an exercise remotely using a client system (104), comprising a web browser (146) and a remote display viewer (148), the system comprising:

a first computer system (302) comprising a distance learning front-end server (327); and

a plurality of second computer systems (380), each second computer system having installed therein a virtual machine platform (122) for allowing virtual machines (132) to run on the second computer system, a virtual machine launcher (397), and a remote display server (124), wherein each one of the virtual machines has an operating system that produces a graphical user interface, and wherein,

the distance learning front-end server (327) is operable to:

transmit (604) a list of exercises to the client system, whereby the client system (104) displays the list of exercises to the student, via the web browser (146), and wherein each exercise on the list is associated with one or more virtual machines;

receive (606) data transmitted from the client system, wherein the data indicates that the

student selected a particular exercise from the list;

select (628) an available virtual machine launcher (397) that is running on one of the plurality of second computer systems (380), that comprises a remote display server (124) onto which the selected exercise has been installed;

transmit (632) to the selected virtual machine launcher an exercise identifier that identifies the particular exercise selected by the student, wherein the virtual machine launcher automatically launches the one or more virtual machines (132) that are associated with particular exercise; and

transmit (638) to the client system data directing the client system to establish a session with the remote display server by launching the remote display viewer (148), wherein the viewer displays to the student, within a window of the web browser (146), a graphical user interface produced by one of the one or more operating systems, after establishing the connection with the remote display server,

whereby the student is able to use the client system to remotely interact with at least one of the one or more virtual machines after the connection is established."

IV. The examining division gave essentially the following reasons in the decision under appeal:

- (a) The method of claim 1 differed from that disclosed in document D1 in that
  - (i) the client system contained a web browser which was used to host the window produced by the remote display server;
  - (ii) the exercises were transmitted via an exercise list from a server to the client system, whereas in document D1, the students received exercise assignments from another source; and
  - (iii) the selection by a user of an exercise automatically launched at least one virtual machine associated with an exercise on an available launcher. In the method of document D1, each student had to log on to a particular server (PC in the computer lab) and launch its virtual machine manually.
- (b) The problems solved by the application were seen as relating to (i) providing a platform-independent remote display viewer; and (ii) providing automation of the process of document D1.
- (c) Regarding difference (i), a skilled person faced with the problem of providing platform-independent display viewers would be led to use a Java applet running on a local web-browser, as Java enabled

web-browsers were known in all major operating systems.

- (d) The differences (ii) and (iii) would result from a straightforward automation of the manual process known from document D1 using commonplace programs, such as an http-server in combination with cgi-script.

V. The appellant applicant's arguments can be summarized as follows:

- (a) The examination division failed to take into account that in contrast to the simple client and the server layers in the system of document D1, the invention as illustrated by Figure 3 provided in addition:

- (i) A "top layer" with multiple versions of virtual machines (VM files 132) pertaining to different operating system configurations in accessible storage,
- (ii) A layer of virtual machine launchers (397) interacting with the server layer (302), via the known virtual machine platform (122), but with user selection triggering available launchers, and
- (iii) An intermediate layer interacting with the server layer comprising a database (130), linking (a) users to courses, (b) courses to exercises, and (c) exercises to virtual machines.



The combination of features claimed in claims 1 and 6, as a whole, was not contained in the teaching of any of the prior art documents cited by the examination division, and therefore could not be lacking in inventive step.

The contribution of the invention thus resided not simply in the "an automated implementation of these two known software products", eg. VMware and VNC, but in the manner in which these components were deployed, and the way they were made to interact with the other components of a novel combination.

- (b) The examination division appeared to have made an incorrect assumption that the virtual machine launchers (397) recited in the claims were part of the virtual machine platform (122). The virtual machine launchers in the present invention were a separate element and integer of the claimed combination. While VMware, for example, had a "launcher", the user in the method of document D1 had to launch manually a virtual machine through the graphical user interface (GUI) of that software (see D1, page 76, second column, second paragraph).
- (c) The claimed invention used a combination of known elements in a new way to achieve functions that were not described in the prior art. Insofar as the invention did make use of known software components, it did not use these in the same way as they were used in document D1. In particular,

the virtual machine platforms (VMware) only executed the selected virtual machine without requiring any user interaction. All user interaction with the operating system configuration running as a virtual machine was through the medium of the web browser interface. Also, the arrangement of a distributed server architecture comprising multiple versions of the VM platform, virtual machines 122(a) arranged in multiple files 132, a plurality of remote display servers 124(a) was nowhere disclosed in the cited prior art in this context. This arrangement of hardware and software elements had the advantage in practice of allowing different users to select and access different exercises, using the same or different virtual machines, simultaneously or at different times. Such a degree of flexibility would not be possible with any of the models envisaged or practised in D1. Although Figure 1 of document D1 appeared to show two virtual machines accessible simultaneously, it was pointed out at page 76, paragraph before "Conclusion" that this led to performance problems.

- (d) The technical problem formulated by the examining division, to design or use an existing client program which was platform independent, was too narrowly defined and amounted to an oversimplified framing of the objective technical problem. The technical problem should be restated as follows:

"How to enable one or more users to simultaneously select and remotely access various information technology exercises and

automatically launch, on a remote server, the virtual machine(s) associated with the selected exercise."

- (e) The decision of the examining division did not comply with Rule 68(2) EPC because no reasons were given for the refusal of independent claim 6, as amended and filed on 10 February 2005. In the absence of any reason for refusal, or any sustainable objection under the EPC, claim 6 must be regarded as claiming a patentable invention.

### **Reasons for the Decision**

1. The appeal is admissible.
2. *Inventive step*
  - 2.1 Document D1 discloses a computer implemented method for enabling a student to perform an exercise remotely using a client system comprising a remote display viewer installed on a client system (see in particular page 74, section "VMware Setup"). The remote display viewer is the X version of VNC ("Virtual Network Computing", developed by AT&T research). A virtual machine launcher (VMware) and a remote display server corresponding to the remote display viewer are installed on PCs in a computer laboratory. Using the remote display viewer on the client system, a student could start VMware remotely on one of the PCs in the computer lab. The virtual machine is started using the graphical user interface of VMware. Once the operating

system of the virtual machine is running, the student can perform the assigned exercise through the graphical user interface displayed on the remote display viewer.

2.2 The method of claim 1 differs from that of document D1 in that

- (a) the client system contains a web browser which is used to host the window produced by the remote display server, as well as displaying the graphical user interface of the server, whereas in document D1 an X window version of the remote display viewer VNC is used in the client system;
- (b) the exercises are transmitted via an exercise list from a server to the client system, whereas it is not specified in document D1 how the students are given their exercise assignments; and
- (c) the selection by a user of an exercise automatically launches at least one virtual machine associated with an exercise on an available launcher, whereas in document D1, it appears that the steps of remotely logging into a computer having a virtual machine platform, starting the virtual machine platform, and starting the virtual machine has to be done manually.

2.3 In the decision under appeal, the examining division considered that the problems solved related to (A) providing client machines with a platform-independent display viewer; and (B) providing an automated process of directing students to the desired exercise.

The appellant applicant argued that the problem to be solved should instead be formulated as enabling one or more users simultaneously to select and remotely access various information technology exercises and automatically to launch, on a remote server, the virtual machine(s) associated with the selected exercise.

2.4 The board agrees however with the examining division regarding that the question how the client systems communicate with the server and the virtual machines is technically distinct from that of automatically directing students to the desired exercise, and therefore relates to a separate technical problem. As to the formulation of the problem of directing the students to the desired exercise, the board will for the sake of argument use the formulation suggested by the appellant applicant. Hence the problems addressed by the application relate to (A) providing client machines with a platform-independent, display viewer; and (B') enabling one or more users to simultaneously select and remotely access various information technology exercises and automatically launch, on a remote server, the virtual machine(s) associated with the selected exercise.

2.5 Regarding feature (a), the use of a web browser for logging into the server and hosting the remote display of the virtual machine, it is acknowledged in the application (see application as published, paragraph 0021; page 7, lines 9 to 15 of the priority document), that the same remote display system as used in document D1 (VNC) was available in a Java version at the

priority date of the application. In this version, the remote display of the virtual machine can be displayed on a normal web browser in the client system. It is also noted that at the priority date of the application, it was commonplace to use web-browsers for logging on to remote servers, as they have the known advantage of being platform independent. The skilled person faced with the problem of seeking a platform-independent solution for the software in the client system would consider Java-based applications in combination with web-browsers for this purpose. As the remote display system used in document D1 was available in a Java-version, the board cannot see any inventive merit in modifying the method of document D1 by means of feature (a).

- 2.6 A skilled person faced with the problem (B') proposed by the appellant applicant, namely modifying the method of document D1 so as to enable one or more users to select simultaneously and access remotely various information technology exercises and automatically launch, on a remote server, the virtual machine(s) associated with the selected exercise, would as a matter of routine consider introducing a server computer as a front-end machine to which each user has to log on to. It would furthermore be considered a purely conventional measure to give the server the task of querying the user as to which exercise should be performed and thereafter enabling connection to the virtual machine appropriate for the selected exercise. Such a server must, as a matter of course, be equipped with the necessary memory means for storing data relating to the exercises corresponding to the respective users.

2.6.1 As to the question of automatically launching the virtual machines once a connection between the user and the computer hosting the virtual machine has been established, the appellant applicant correctly observed that the method described in document D1 did not employ a virtual machine launcher to start the virtual machine, as it was only possible to start the virtual machine manually through the graphical user interface of the virtual machine platform (see item V(b) above). It was however mentioned in document D1 that future versions of the virtual machine platform would have the additional possibility to start up the virtual machine without the graphical user interface (page 76, middle paragraph of the second column). It also appears that this possibility was implemented in the version (3.0) available at the priority date of the application and the appellant applicant has not disputed that this was the case (see application, paragraph 0021). Having such an option implemented in the virtual machine platform software, it must be regarded as mere routine to introduce a step of automatically launching the one or more virtual machines associated with the chosen exercise.

2.7 The appellant applicant argued that the claimed method resulted in several structural differences in the system from that of document D1 (see items V(a) and (c) above). The implementation of the steps outlined above would however lead to a system having all the features specified in claim 1. It should also be stressed that for the purpose of assessing inventive step of claim 1, it is irrelevant whether the invention as described in

Figure 3 or as claimed in claim 6 may have further features.

2.8 For the above reasons, in the board's judgement, the subject matter of claim 1 does not involve an inventive step within the meaning of Article 56 EPC.

3. The appellant applicant argued that since the decision of the examining division did not give any reasons for refusing claim 6, it was not reasoned thereby contravening Rule 68(2) EPC (see item V(e) above).

3.1 It is sufficient for the examining division, when deciding to refuse a European patent application under Article 97(1) EPC, to state one ground only which in their opinion would prejudice the grant of a European patent, since the EPC does not contain any provision which would allow a European patent to be partially granted. In the present case, the examining division was unable to grant a patent because it was of the opinion that the subject matter of claim 1 did not involve an inventive step. Consequently, the examining division was under no obligation to comment on the other claims, in particular independent claim 6.



**Order**

**For these reasons it is decided that:**

The appeal is dismissed.

Registrar:

Chair:

S. Sánchez Chiquero

R. G. O'Connell