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**Datasheet for the decision  
of 30 August 2023**

**Case Number:** T 1573/21 - 3.5.05

**Application Number:** 12889778.2

**Publication Number:** 2866393

**IPC:** H04L12/70, G06F9/455

**Language of the proceedings:** EN

**Title of invention:**

METHOD AND APPARATUS FOR DETERMINING VIRTUAL MACHINE DRIFTING

**Applicant:**

Huawei Technologies Co., Ltd.

**Headword:**

DETERMINING VIRTUAL MACHINE DRIFTING / Huawei

**Relevant legal provisions:**

EPC Art. 56

**Keyword:**

Inventive step - (yes) - non-obvious solution



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Case Number: T 1573/21 - 3.5.05

**D E C I S I O N**  
**of Technical Board of Appeal 3.5.05**  
**of 30 August 2023**

**Appellant:** Huawei Technologies Co., Ltd.  
(Applicant) Huawei Administration Building  
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**Representative:** Thun, Clemens  
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**Decision under appeal:** **Decision of the Examining Division of the European Patent Office posted on 17 March 2021 refusing European patent application No. 12889778.2 pursuant to Article 97(2) EPC.**

**Composition of the Board:**

**Chair** A. Ritzka  
**Members:** N. H. Uhlmann  
F. Blumer

## Summary of Facts and Submissions

- I. The appellant appealed against the examining division's decision to refuse the European patent application in suit.
- II. The examining division decided that the main request did not meet the requirements of Article 56 EPC; auxiliary requests 1 and 2 were not admitted into the proceedings.
- III. The examining division made reference, *inter alia*, to the following document:  
  
D1 US 2009/249438
- IV. In its statement setting out the grounds of appeal, the appellant maintained the requests underlying the decision under appeal.
- V. Final requests  
  
The appellant requested that the decision under appeal be set aside and that a patent be granted based on the main request, or on auxiliary requests 1 and 2, on which the decision under appeal was based.
- VI. Claim 1 of the main request is worded as follows:  
  
" A method for determining virtual machine migration, wherein the method comprises:  
  
obtaining (21), by a client in a host machine, a unique identifier of a virtual machine on the host machine and an address of the host machine;  
  
determining, by the client, whether the unique identifier of the virtual machine exists in a local

record, wherein the local record of the client is stored in a cache of the host machine;

if the unique identifier of the virtual machine does not exist in a local record of the client, sending (22), by the client, a packet to a server in a network in which the host machine is located, wherein the packet carries the unique identifier of the virtual machine and the address of the host machine, the packet enables the server to determine that the virtual machine is migrated when the unique identifier of the virtual machine exists in a record of the server and the address of the host machine carried in the packet is different from a host machine address corresponding to the unique identifier of the virtual machine in the record of the server; and

if the unique identifier of the virtual machine does not exist in the local record of the client, adding, by the client, the unique identifier of the virtual machine to the local record to update the local record;

wherein the obtaining, by a client in a host machine, a unique identifier of a virtual machine on the host machine comprises:

intercepting, by the client in the host machine, an Address Resolution Protocol, ARP, packet carrying the unique identifier of the virtual machine from the virtual machine on the host machine; and obtaining the unique identifier of the virtual machine from the intercepted packet; or,

receiving, by the client in the host machine, an Address Resolution Protocol, ARP, packet carrying the unique identifier of the virtual machine from the virtual machine on the host machine and forwarded by a virtual switch on the host machine; and obtaining the

unique identifier of the virtual machine from the received packet."

- VII. The wording of the claims of auxiliary requests 1 and 2 is of no relevance for the present decision.

### **Reasons for the Decision**

1. The current application pertains to a method for determining a virtual machine migration. On a host machine, a client component obtains a unique identifier of a virtual machine from an Address Resolution Protocol, ARP, packet from the virtual machine. The client component determines if this identifier exists in a local record stored on the host machine. If the identifier does not exist in the local record, it is added to the record and sent to a server in a packet, together with the address of the host machine. This packet enables the server to determine if the virtual machine was migrated: this is the case if the identifier exists in a record on the server, but is associated with the address of a different host machine.
2. Document D1 discloses a method for migrating a virtual machine to another host. A demon on a host machine sends a packet including a virtual machine identifier to a server-firewall coordinator. A virtual machine tracker (connected to the firewall coordinator), using its database, determines if the virtual machine was migrated or is a new one.

### **Main request**

3. Inventive step
- 3.1 Document D1 forms a suitable starting point for assessing inventive step.

3.2 According to the decision under appeal, D1 did not disclose the following two features of claim 1:

- (a) the server determines that the virtual machine is migrated when the unique identifier of the virtual machine exists in a record of the server and the address of the host machine carried in the packet is different from a host machine address corresponding to the unique identifier of the virtual machine in the record of the server
- (b) the unique identifier of the virtual machine is obtained by either intercepting or receiving an Address Resolution Protocol, ARP, packet carrying the unique identifier of the virtual machine from the virtual machine on the host machine.

3.3 The board agrees with this finding; the appellant did not counter-argue.

3.4 The examining division argued that no objective technical problem was credibly solved over the scope of claim 1 and made a reference to a "case when a virtual machine which was previously located on the client is again migrated back to that client, this client won't send a packet to the server since the local record is still present as it doesn't get deleted when a virtual machine is migrated to another server. Therefore, the correct detection of a migration is not consistently achieved and thus a proper definition of a technical effect (which goes beyond the well-known technical effects of data exchange in a network) provided by the differing features is not possible".

The board notes that this objection in the decision under appeal relates to distinguishing feature (a) only. It is not necessary to take a position on it

because distinguishing feature (b) establishes an inventive step, as explained below.

3.5 The technical effect caused by feature (b) is that a unique identifier of a virtual machine is obtained efficiently (see paragraph 62 of the description of the application in suit).

3.6 The objective technical problem to be solved is accordingly "how to efficiently obtain a unique identifier of a virtual machine".

3.7 Faced with this problem, the skilled person would not receive any hint from document D1 to intercept or receive an ARP packet and to obtain a unique identifier from the packet. Firstly, D1 discloses in paragraph 123 that an identifier of a new virtual machine is sent to a firewall coordinator, but does not specify how such identifier is to be obtained.

Secondly, ARP packets, as such, are generally known. However, it is not apparent how a skilled person, without resorting to hindsight, would specifically select an ARP packet as a source for a unique identifier of a virtual machine.

3.8 For these reasons, the subject-matter of claim 1 of the main request involves an inventive step. Similar observations apply to further independent claims 3 and 6.

## Order

### For these reasons it is decided that:

1. The decision under appeal is set aside.
2. The case is remitted to the examining division with the order to grant a patent on the basis of the main request (claims 1 to 6) as filed with the statement setting out the grounds of appeal and a description and drawings to be adapted.

The Registrar:

The Chair:



H. Jenney

A. Ritzka

Decision electronically authenticated