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Datasheet for the decision of 13 May 2025

Case Number: T 1706/22 - 3.5.06

Application Number: 16719163.4

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Language of the proceedings: EN

Title of invention:
PROVISIONING NETWORK SERVICES IN A SOFTWARE DEFINED DATA CENTER

Applicant:
VMware LLC

Headword:
Network services/VMWARE

Relevant legal provisions:
EPC Art. 54, 56
RPBA 2020 Art. 13(2)

Keyword:
Novelty - main request (no)
Inventive step (no) - auxiliary requests 2 and 3
Amendment after notification of Art. 15(1) RPBA communication - exceptional circumstances (no) - auxiliary request 3

Decisions cited:

Catchword:

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Case Number: T 1706/22 - 3.5.06

D E C I S I O N
of Technical Board of Appeal 3.5.06
of 13 May 2025

Appellant: (Applicant)	VMware LLC 3421 Hillview Avenue Palo Alto, CA 94304 (US)
Representative:	Dilg, Haeusler, Schindelmann Patentanwaltsgesellschaft mbH Leonrodstraße 58 80636 München (DE)
Decision under appeal:	**Decision of the Examining Division of the European Patent Office posted on 27 January 2022 refusing European patent application No. 16719163.4 pursuant to Article 97(2) EPC.**

Composition of the Board:

Chairman	M. Müller
Members:	T. Alecu
	A. Jimenez

Summary of Facts and Submissions

I. The appeal lies from the decision of the Examining Division to refuse the application for lack of novelty (main request) or lack of inventive step (both auxiliary requests) in view of document

D2: US 2013/232480 A1.

II. The Appellant requested with the statement of grounds of appeal that the decision of the Examining Division be set aside and that a patent be granted on the basis of the main request or one of two auxiliary requests, which are those underlying the decision under appeal (claims of the main and the first auxiliary request filed on 6 December 2021, and of the second auxiliary request filed on 10 December 2021). The Appellant filed a further (third) auxiliary request during the oral proceedings before the Board.

III. Claim 1 of the main request defines:

A method comprising:
receiving a request to instantiate a multi-tier application (150) in a network (100) that comprises computing resources (CN1-9) and service resources (SN1-2), wherein the multi-tier application (150) comprises a set of application tiers (260, 270, 280) and the request comprises, for each of at least two application tiers, a set of parameters (122) that generically specifies network services associated with the application tier (260, 270, 280); and
instantiating the multi-tier application (150) by:

assigning each of the application tiers (260, 270, 280) to be performed by a set of the computing resources (CN1-9); and
for each application tier (260, 270, 280) that is associated with network services:
identifying, based on the set of parameters (122), a set of the specific service resources (SN1, SN2) for performing each generically specified network service that is associated with the assigned application tier (260, 270, 280); and
configuring the identified set of specific service resources (SN1, SN2) to provide the generically specified network services for the application tiers (260, 270, 280) of the multi-tier application (150).

IV. Claim 1 of the first auxiliary request defines (underlining indicates additions to claim 1 of the main request):

A method comprising:
receiving, at an orchestration engine (115) of a network manager (110), a request (120) to instantiate a multi-tier application (150) in a datacenter network (100),
wherein the datacenter network (100) comprises computing resources (CN1-9) for executing applications (150) and service resources (SN1-SN24) for providing network services to the applications (150), wherein at least some of the service resources (SN1-SN24) are configured to be shared by multiple applications (150) executing concurrently in the datacenter network (100),
wherein the multi-tier application (150) comprises a set of application tiers (260, 270, 280) and the request (120) comprises a set of service templates

(122), for each of at least two of the application tiers (260, 270, 280), each service template (122) comprising a set of parameters that generically specifies one or more network services associated with the respective application tier (260, 270, 280); and

instantiating the multi-tier application (150) by:

assigning each of the application tiers (260, 270, 280) to be performed by a set of the computing resources (CN1-9); and

for each application tier (260, 270, 280) that is associated with network services:

identifying, based on the set of parameters (122), a set of actual service resources for performing each generically specified network service that is associated with the assigned application tier (260, 270, 280); and

configuring the identified set of actual service resources (SN1, SN2) to provide the generically specified network services for the application tiers (260, 270, 280) of the multi-tier application (150).

V. Claim 1 of the second auxiliary request differs from that of the first auxiliary request by modifying the passages starting with "for each application tier" and "identifying" as follows:

for each application tier (260, 270, 280) that is associated with network services:

performing dynamic service placement based on the service templates by:

identifying, based on the set of parameters (122) of each service template, a set of actual service resources which are most suitable for performing each generically specified network service that is

associated with the assigned application tier (260, 270, 280); and

VI. Claim 1 of the third auxiliary request differs from that of the second auxiliary request by modifying the same passages as follows:

for each application tier (260, 270, 280) that is associated with network services:
performing dynamic service placement based on the service templates by:
identifying, based on the set of parameters (122) of each service template and a current topology of the network, a set of actual service resources which are most suitable for performing each generically specified network service that is associated with the assigned application tier (260, 270, 280); and

VII. The decision was taken and announced during the oral proceedings.

Reasons for the Decision

The application

1. The application relates to provisioning network services in a datacenter. A user requests the instantiation of a multi-tier application, which needs, in addition to computing resources, e.g. processor capacity, also network services such as firewall, load balancing, encryption etc. According to the present application, in the prior art these services were deployed at fixed points in the datacenter topology. Increasing demand and interdependency of applications and tenants leads to various problems such as

hairpinning traffic, choke points and increased overall complexity (paragraph 1).

1.1 The application proposes to allocate the network services dynamically. The user request contains, in a service template, a generic specification of the needed network services. An orchestration engine on the datacenter allocates a generic service to service resources, e.g. "*by using a set of criteria to dynamically identify the most suitable services*". Criteria taken into account may be topology, workload, or the location of the assigned computing services (see e.g. paragraphs 2 to 4, 24 to 32).

Main request: novelty

2. D2 is an application by the parent company Vmware, Inc., of the Appellant, Nicira, Inc. (see the statement of grounds of appeal, page 3). It teaches a deployment system for automatically deploying a multi-tier application to a cloud environment. It is based on the concept of an "application blueprint" or simply "blueprint", which defines the application structure, dependencies, default configurations etc in an infra-structure-agnostic manner (paragraph 5). A blueprint "*may be assembled out of items from a catalog 130, which is a listing of available virtual computing resources (e.g., VMs, networking, storage)*" (paragraph 22). An example given in D2 defines a banking app with three tiers, comprising the application itself, an SQL database, and a load balancer (paragraph 44). Some of these tiers may need to be placed behind a firewall (paragraph 49).

3. The Examining Division was of the opinion (decision, point 12) that D2 disclosed all features of the claim.

In particular, the blueprints contained requirements related to network services, e.g. a load balancer and a firewall.

4. The Appellant argued that the application in general, and claim 1 in particular, made a clear distinction between application tiers and network services (statement of grounds of appeal, page 6).

4.1 The latter could be provided by the application developer as application tiers, which is what happened in D2, or by the datacenter as services external to the application. According to the Appellant: "*[t]hese are two alternate approaches, and the fundamental difference between them should be immediately apparent to the skilled person*" (page 7, third paragraph).

4.2 In the current application the network services were external. This was clear from the claim wording, stating that network services were "associated with" application tiers, and hence were not part of a tier.

4.3 Also, the claim specified that the service resources for performing the network services were identified after the assignment of computing resources for the application tiers. The identification and configuration of the network services was made dependent on the already assigned computing resources, for instance by taking account of the network topology. This allowed the cloud to manage the resources in a beneficial manner.

5. The Board does not agree with the Appellant, because the claim is too broadly formulated to justify the narrow interpretation chosen by the Appellant.

5.1 The claim merely defines that the user request "*comprises, for each of at least two application tiers, a set of parameters (122) that generically specifies network services associated with the application tier*" and that "*a set of the specific service resources (SN1, SN2) for performing each generically specified network service that is associated with the assigned application tier*" are identified for instantiation of the multi-tier application.

5.2 The blueprints of D2 do contain specifications related to required network services (e.g. firewall, load-balancer), and thus require that corresponding "*specific service resources*" are identified and configured when the application is deployed on the datacenter.

5.3 Whether these network services are referred to as application tiers (as in the blueprints of D2) or as network services associated with application tiers (as in the current application) is a difference only in name, which does not imply any difference in terms of technical implementation. In fact, the wording network services "associated with" application tiers covers also network services which are defined as part of the application tiers.

5.4 Also, the claim does not actually specify any ordering of the steps when allocating computing and networking services, and certainly does not define that the identification and configuration of network services take account of any already assigned computing services.

6. The Appellant also argued (page 5, third paragraph from the bottom, page 7, second paragraph) that D2 required manual configuration of the desired network services by

the developer, while the invention "*allow[ed] the developer to generically specify the desired network services*" which are then automatically configured by the host based on the parameters in the request.

7. The Board notes that the term used in the claim of "*generically specify*" encompasses the specifications in the blueprint of D2, which must remain generic at some level. As D2 states: the blueprints define the topology "*in an infrastructure-agnostic manner to be portable across different cloud computing environments*". The catalog of D2, which is used to define the blueprint, provides generic components, which can, but need not, be further manually configured by the developer (see paragraphs 44 to 50).

8. The Board therefore concludes that claim 1 of the main request lacks novelty.

First auxiliary request

9. The Appellant argued (statement of grounds of appeal page 8) that claim 1 of this request contained two further features which were not disclosed in D2, namely that (i) "*at least some of the service resources in the datacenter are configured to be shared by multiple applications*" and that (ii) the (user) request comprises "*a set of service templates*" where the generic network services are specified.

10. Regarding feature (i) the Appellant made the argument that, if the network services are application tiers, as assumed in the discussion of the main request, then they cannot be shared between different application.

10.1 The Board does not follow this argument, because D2 does not define network services exclusively as application tiers. Paragraph 49 for instance explains that some application tiers may need to be protected by a firewall, so they are placed on a separate network behind a firewall. This firewall will thus be a network service shared my multiple applications.

10.2 The Board further agrees with the Appellant's own observation (statement of grounds of appeal, page 8, last paragraph), "*that service resources in cloud environments are, by their very nature, 'configured to be shared by multiple applications'*". So this feature is obvious in the context of D2 even if it were not disclosed.

11. Regarding feature (ii), the Board does not see that it has any technical effect. It may make a difference as to how the information is organized in the request, but it does not appear to change anything in the way resources, of whichever kind, are assigned in the datacenter. At least, there are no claim features that can support such an assertion.

12. The Board therefore concludes that claim 1 of the auxiliary request lacks inventive step over D2.

Second auxiliary request

13. Claim 1 of this request further specifies that (a) when the application is instantiated a "*dynamic service placement based on the service templates*" is performed, and that (b) the "*most suitable*" network service resources are identified.

13.1 The Appellant argued that the identification of the "most suitable" network resources should be understood, as already argued for the main request, to take account of the assignment of computing resources.

13.2 With further reference to dependent claims 2 and 3, which specify that resources are identified on the basis of workload status or topology, the Appellant argued that the amendments defined an optimal use of resources, by using, e.g., available network resources found in the vicinity of computing resources.

14. First, the Board has to stress that the features of claims 2 and 3 are not features of claim 1 and therefore cannot be taken into account in the assessment of inventive step of claim 1.

14.1 The vague features (a) and (b) of claim 1 itself do not establish a difference over D2. The resource placement in D2 is implicitly "*dynamic*" (depending on resources availability at least) and "*most suitable*" in some sense of "*suitable*" (appropriateness to carry out the specified service).

15. The Board therefore concludes that claim 1 of this request lacks inventive step over D2 as well.

Third auxiliary request

16. This request was submitted during the oral proceedings, with the goal, according to the Appellant, of clarifying the meaning of the term "*most suitable*" in claim 1, which had turned out to be insufficient to make an inventive distinction.

17. The Board notes that the admittance of this request is regulated by Article 13(2) RPBA. The Board does not see any exceptional circumstances which might justify admittance of this request.

17.1 In particular, the fact that D2 disclosed the identification of "most suitable" network resources in some sense was already part of the decision of the Examining Division (see points 18, 19, and 19.1). The mere fact that Board confirmed this view does not constitute exceptional circumstances.

17.2 Accordingly, auxiliary request 3 is not admitted in the procedure according to Article 13(2) RPBA.

Order

For these reasons it is decided that:

The appeal is dismissed.

The Registrar: The Chairman:

L. Stridde Martin Müller

Decision electronically authenticated