BESCHWERDEKAMMERN DES EUROPÄISCHEN PATENTAMTS	BOARDS OF APPEAL OF THE EUROPEAN PATENT OFFICE	CHAMBRES DE RECOURS DE L'OFFICE EUROPÉEN DES BREVETS

Datasheet for the decision
of 9 June 2021

Case Number: T 0891/18 - 3.5.05

Application Number: 12005566.0

Publication Number: 2562964

IPC: H04L12/28

Language of the proceedings: EN

Title of invention:
Alleviating congestion in a cable modem

Applicant:
Avago Technologies International Sales
Pte. Limited

Headword:
Determining a priority level for an incoming packet

Relevant legal provisions:
EPC Art. 54(1), 56, 84

Keyword:
Claims - clarity after amendment (yes)
Novelty - main request (no)
Inventive step - auxiliary request (yes)

Case Number: **T 0891/18 - 3.5.05**

D E C I S I O N
of Technical Board of Appeal 3.5.05
of 9 June 2021

Appellant: (Applicant)	Avago Technologies International Sales Pte. Limited 1 Yishun Avenue 7 Singapore 768923 (SG)
Representative:	Bosch Jehle Patentanwaltsgesellschaft mbH Flüggenstraße 13 80639 München (DE)
Decision under appeal:	**Decision of the Examining Division of the European Patent Office posted on 2 November 2017 refusing European patent application No. 12005566.0 pursuant to Article 97(2) EPC.**

Composition of the Board:

Chair	A. Ritzka
Members:	P. Tabery
	D. Prietzel-Funk

Summary of Facts and Submissions

I.   The appeal is directed against the examining division's
        decision dated 2 November 2017 refusing European patent
        application No. EP 12005566.0.

II.   The documents referred to by the examining division
        included:

        D1   US 2003/058795 A1, 27 March 2003

        D3   US 2002/129378 A1, 12 September 2002

III.   The examining division decided that the application -
        according to the main request and the first to fourth
        auxiliary requests which were admitted into the
        proceedings - did not fulfil the requirements of
        Article 56 EPC.

IV.   In its statement setting out the grounds of appeal, the
        appellant (applicant) requested that a patent be
        granted on the basis of the claims in accordance with a
        main request or one of first to fourth auxiliary
        requests, all submitted with the statement setting out
        the grounds of appeal.

V.   The board issued a summons to oral proceedings and set
        out its provisional opinion on the case in an annex
        (Article 15(1) RPBA 2020).

VI.   In a reply dated 10 May 2021, the appellant submitted
        an amended main request and amended first to fourth
        auxiliary requests, and provided arguments in support
        of those requests.

VII.   Oral proceedings were held on 9 June 2021. The
        appellant's final requests were that the decision under
        appeal be set aside and that a patent be granted on the

basis of either the claims of the amended main request
submitted on 10 May 2021, or the amended first
auxiliary request submitted during the oral proceedings
before the board, together with description pages 1, 3
and 5-16 as originally filed, description pages 2, 2a
and 4 filed with the letter dated 10 April 2017, and
drawings 1/4-4/4 as originally filed.

All other requests were withdrawn.

VIII. **Claim 15** of the **main request** contains the following
features (as labelled by the board):

"A method for ingress filtering using an inspection
engine, the method comprising:

(i)   receiving a packet;

(ii)   parsing the packet to determine a priority
level of the packet;

(iii)   determining whether there is a buffer
available in a buffer pool to store the packet; and

(iv)   allocating a buffer in the buffer pool to store
the packet based on the priority level of the packet;

characterized by

(v)   dynamically programming the inspection engine to
specify one or more factors that are used to determine
the priority level of the packet."

Independent **claim 1** is directed to a system comprising
corresponding features.

IX.   **Claim 13** of the **first auxiliary request** is based on
claim 15 of the main request and further states that:

"the inspection engine is programmed remotely by a
cable modem termination system to determine the
priority level of the incoming packet."

Claim 1 of the **first auxiliary request** contains the
same additional feature.

Reasons for the Decision

1.   The application in hand concerns prioritising packets
        in a cable modem transmission system to mitigate
        congestion.

2.   Main request

3.   Admissibility (Article 13(2) RPBA 2020)

        The main request was filed to overcome the clarity
        objection raised for the first time in the annex to the
        board's summons. Since this is accepted as being
        exceptional circumstances constituting a cogent reason
        for taking the amendments to the appellant's case into
        account, the board decides that the main request is
        admitted into the proceedings (Article 13(2) RPBA
        2020).

3.1   Novelty (Article 54(1) EPC)

        Document **D1** discloses the following features of
        claim 15 (the references in parentheses relate to
        document **D1**):

        A method for ingress filtering using an inspection
        engine, comprising:

        (i)   receiving a packet *("received packets"; see
        [0028])*;

        (ii)   parsing the packet to determine a priority
        level of the packet *(implied by "Priority queues are
        used to organize the received packets [...] as to take
        into consideration the type of data"; see [0028])*;

        (iii)   determining whether there is a buffer
        available in a buffer pool to store the packet *("If the
        threshold number is exceeded..."; see [0029])*; and

(iv)   allocating a buffer in the buffer pool to store the packet based on the priority level of the packet *("stored in its corresponding priority queue"; see [0029])*; and

(v)   dynamically programming *("implemented using software"; see [0055])* the inspection engine *(implied)* to specify one or more factors *("type of data"; see [0028])* that are used to determine the priority level of the packet.

The subject-matter of **claim 15** is therefore **not novel** over the disclosure of document **D1**.

3.2   The appellant argued that the software disclosed in document **D1** was provided during the manufacturing process and could not be changed later on. In particular, document **D1** disclosed that the cable modem termination system could program only the "*threshold registers*", but not any of the other components. Lastly, document **D1** failed to disclose that any component was to be "*programmed later on*".

The board notes that software programming always has dynamic aspects since the generated code may be changed later on. In this context, the board thus fails to discern any properties that would distinguish a "*dynamically programmable*" engine from an engine that is merely "*programmable*". Hence, the board interprets the term "*dynamically programmable*" as relating to any programming which may be changed later on, i.e. soft ware. The board finds that the only feature that document **D1** explicitly mentions as being able to be implemented using either software or hardware is the "*packet drop feature*" (see [0031]). The board thus concludes that other functions, including the assigning of priorities disclosed in [0021] of document **D1**, are disclosed as being implemented as software, in line with [0055], and may thus be modified later on. Lastly,

the board notes that the claim recites neither "*programming **by the cable modem termination system***" nor that any component was to be "*programmed later on*". Therefore, the appellant's line of reasoning is not convincing.

3.3   The appellant then submitted that, unlike in the invention, the assignment of priorities in document **D1** was fixed ("*voice data would be assigned a higher priority than data involved in web surfing*"; see *[0021]*). The same thus applied to the factors used.

The board is not convinced by this argument since the wording of the independent claims does not reflect changes to either the assignment of priorities or the factors. In other words, the subject-matter of the claims covers embodiments where the assignment of priorities and the factors used therefore remain unaltered. Hence, the appellant's considerations are not applicable over the full breadth of the claims.

3.4   In addition, the appellant argued that document **D1** failed to disclose the claimed "*inspection engine*".

In the board's view, the term "*inspection engine*" does not have a well-defined meaning in the art. Consequently, the properties of the "*inspection engine*" are defined by method steps (ii)-(iv) of claim 13, as evident from claim 1. Since these method steps are known from document **D1** (see 3.1 above), it follows that the claimed inspection engine is also known from document **D1**. Therefore, the appellant's argument fails to convince the board.

3.5   In view of the above, the **main request** is not allowable.

4.   First auxiliary request

4.1   Admissibility (Article 13(2) RPBA 2020)

The first auxiliary request was filed in response to new developments at the oral proceedings, namely in order to overcome an objection raised for the first time by the board during the oral proceedings. Since this is accepted as being exceptional circumstances constituting a cogent reason for taking the amendments to the appellant's case into account, the board decides that the first auxiliary request is admitted into the proceedings (Article 13(2) RPBA 2020).

4.2   Novelty (Article 54(1) EPC)

The board finds that paragraph [0025] of document **D1** mentions remote programming by a cable modem termination system, but only for the purpose of granting bandwidth. The additional feature in **claim 13** is thus disclosed in part as follows (undisclosed elements have been struck through):

"the inspection engine is configured to be programmed remotely by a cable modem termination system ~~to determine the priority level of the incoming packet~~."

For the preceding features of said claim, see the analysis above for claim 15 of the main request.

The subject-matter of claim 13 thus differs from the disclosure of document **D1** in that what is programmed remotely relates to determining the priority level of the incoming packet.

The subject-matter of **claim 13** is therefore novel over the disclosure of document **D1**.

4.3   Inventive step (Article 56 EPC)

The board considers that the distinguishing feature achieves the technical effect of adapting the settings of the system to changing requirements.

The objective technical problem may thus be formulated as how to adapt the settings of the system known from document **D1** to the available network capacity.

When looking for a solution to this problem, the person skilled in the art could have considered document **D3,** which likewise relates to a cable communication system. Document **D3** teaches controlling network congestion caused by the limited network capacity by assigning packets priorities.

On the one hand, [0041] of document **D3** discloses that *"[a] customer may also decide to dynamically change his service level for a given session"*. This teaching would have prompted the skilled person to foresee that *"the inspection engine is configured to be programmed by **a client device** to determine the priority level of the incoming packet"*. However, the distinguishing feature requires programming by **a cable modem termination system** in order to determine the priority level of the incoming packet.

On the other hand, document **D3** teaches that *"[a] group of packets is assigned a priority based on the customer's level of service plan"* (see [0039] and [0040]). This implies programming performed by a remote cable modem termination system. However, assigning the same priority to all of a customer's packets is in conflict with the teaching of document **D1,** in which different data types are assigned different priorities. Although the skilled person could have combined these teachings in a way that could have resulted in the claimed invention, the board does not believe that they necessarily would have done so.

Therefore, the board holds that the skilled person would not have arrived at the subject-matter of **claim**

13 without employing inventive skill. Consequently, the subject-matter of claim 13 involves an inventive step.

The same considerations apply *mutatis mutandis* to **claim 1,** which is directed to a system comprising features corresponding to those of claim 13.

4.4 In view of the above, the board concludes that the **first auxiliary request** is allowable.

5. The appeal is thus allowable.

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 based on claims 1 to 13 of the first auxiliary request submitted during the oral proceedings before the board and the description and drawings to be adapted.

The Registrar: The Chair:

K. Götz-Wein   A. Ritzka

Decision electronically authenticated