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**Datasheet for the decision
of 22 April 2020**

Case Number: T 0129/16 - 3.5.03

Application Number: 09847264.0

Publication Number: 2320598

IPC: H04Q11/00, H04L12/18

Language of the proceedings: EN

Title of invention:

Multicast processing method and apparatus

Patent Proprietor:

ZTE Corporation

Opponent:

Huawei Technologies Co., Ltd. (until 20 February 2017)

Headword:

Multicast method in optical networks/ZTE

Relevant legal provisions:

EPC Art. 123(2), 56, 113(1), 116(1)

Keyword:

Decision in written proceedings after cancellation of oral proceedings

Added subject-matter - main and first auxiliary requests
(yes): intermediate generalisation

Inventive step - second auxiliary request (no)

Decisions cited:

T 0526/17



Beschwerdekammern

Boards of Appeal

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Case Number: T 0129/16 - 3.5.03

D E C I S I O N
of Technical Board of Appeal 3.5.03
of 22 April 2020

Appellant:

(Patent Proprietor)

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Decision under appeal:

**Decision of the Opposition Division of the
European Patent Office posted on 27 November
2015 revoking European patent No. 2320598
pursuant to Article 101(3)(b) EPC.**

Composition of the Board:

Chair K. Bengi-Akyürek
Members: T. Snell
 R. Winkelhofer

Summary of Facts and Submissions

- I. The present decision concerns the appeal filed by the patent proprietor (henceforth, appellant) against the decision of the opposition division revoking the patent, *inter alia*, on the ground of lack of novelty of the subject-matter of claim 1 of the second auxiliary request with respect to the disclosure of document MH7:

MH7 = IEEE P802.3avTMD3.4, Draft Standard for information technology - Telecommunications and information exchange between systems- Local and metropolitan area networks - Specific requirements; Part 3: Carrier Sense Multiple Access with Collision Detection (CSMA/CD) Access Method and Physical Layer Specifications; Amendment: Physical Layer Specifications and Management Parameters for 10 Gb/s Passive Optical Networks, pp. 1-227, 18 June 2009.

- II. The opposition has been withdrawn in the course of the appeal proceedings. Consequently, only the appellant is a party to these proceedings.
- III. The appellant requests that the decision under appeal be set aside and the patent be maintained on the basis of the claims of either a main request or alternatively of either a first or a second auxiliary request, all requests as filed with the statement of grounds of appeal. The main request corresponds to the second auxiliary request refused by the opposition division.

IV. Oral proceedings had been appointed in accordance with a conditional request by the appellant. In the communication under Article 15(1) RPBA 2007, the board gave a reasoned preliminary opinion that none of the claim requests could be acceded to. The appellant subsequently informed the board that it would not attend the oral proceedings. No written arguments were submitted in response to the board's preliminary opinion. The oral proceedings were then cancelled.

V. Claim 1 of the **main request** reads as follows:

"A method for multicast processing in an EPON, Ethernet Passive Optical Network, comprising:

replicating multicast data to different broadcast logical channels, 0x7fff or 0x7ffe, according to the ONU, Optical Network Unit, types of users who join a multicast group when an OLT, Optical Line Terminal, on which a same port is connected to different types of ONUs, replicates downlink multicast data, wherein the ONU types are classified by rate."

VI. Claim 1 of the **first auxiliary request** reads as follows (the amendments vis-à-vis the main request underlined by the board):

"A method for multicast processing in an EPON, Ethernet Passive Optical Network, comprising:

replicating multicast data to different broadcast logical channels, 0x7fff or 0x7ffe, according to the ONU, Optical Network Unit, types of users who join a multicast group when an OLT, Optical Line Terminal, on which a same port is connected to different types of

ONUs, replicates downlink multicast data, wherein the ONU types are classified by rate;

wherein if there are only the same ONU type of users joining the multicast group under an OLT port that corresponds to the multicast group, sending the multicast data down to ONUs under the OLT port through a broadcast logical channel to which this ONU type corresponds; and

if there are different ONU types of users joining the multicast group under an OLT port that corresponds to the multicast group, sending the multicast data respectively to ONUs under the OLT port through broadcast logical channels to which these ONU types each correspond."

VII. Claim 1 of the **second auxiliary request** reads as follows (the amendments vis-à-vis the first auxiliary request indicated by the board):

"A method for multicast processing in an EPON, Ethernet Passive Optical Network, comprising:

replicating multicast data to different broadcast or multicast logical channels, ~~0x7fff or 0x7ffe,~~ according to the ONU, Optical Network Unit, types of users who join a multicast group when an OLT, Optical Line Terminal, on which a same port is connected to different types of ONUs, replicates downlink multicast data, wherein the ONU types are classified by rate;

wherein if there are only the same ONU type of users joining the multicast group under an OLT port that corresponds to the multicast group, sending the multicast data down to ONUs under the OLT port through

a broadcast or multicast logical channel to which this ONU type corresponds; and

if there are different ONU types of users joining the multicast group under an OLT port that corresponds to the multicast group, sending the multicast data respectively to ONUs under the OLT port through broadcast or multicast logical channels to which these ONU types each correspond."

Reasons for the Decision

1. Decision taken without oral proceedings

In accordance with the jurisprudence of the boards of appeal, an announcement of non-attendance at oral proceedings means a withdrawal of the request for oral proceedings (cf. e.g. T 526/17, Reasons, point 1). As a consequence, the decision can be handed down in writing without holding oral proceedings (cf. Article 113(1) EPC).

2. Main request - claim 1 - Article 123(2) EPC

2.1 The amendment "0x7fff or 0x7ffe" is not based on the application documents as originally filed.

2.2 The relationship between the logical link identifiers (LLIDs) 0x7fff and 0x7ffe is disclosed in the present description as filed on page 6, line 19 ff. and page 8, Table 1. According to this passage and table, 0x7fff is used when there are only 1G-ONUs, 0x7ffe is used when there are only 10G-ONUs, and 0x7fff and 0x7ffe are both used, respectively for 1G-ONUs and 10G-ONUs when these are both connected. Present claim 1 is however more general than this disclosure, and

embraces further embodiments, e.g. 0x7fff being used for 10G-ONUs and 0x7ffe for 1G-ONUs. Claim 1 is therefore based on an intermediate generalisation not directly and unambiguously derivable from the application as filed, contrary to Article 123(2) EPC.

3. *First auxiliary request - claim 1 - Article 123(2) EPC*

The same objection applies, *mutatis mutandis*, as given in connection with claim 1 of the main request in point 2 above.

4. *Second auxiliary request - claim 1 - Article 123(2) EPC*

Following the amendments made to claim 1 (see point VII above), the objection raised under Article 123(2) EPC is considered to be overcome.

5. *Second auxiliary request - claim 1 - inventive step (Articles 52(1) and 56 EPC)*

5.1 The technical background underlying the present patent is set out in paragraphs [0002] to [0006] of the patent specification.

"[0002] A PON (Passive Optical Network) system is generally composed of an office-side OLT (Optical Line Terminal), a user-side ONU (Optical Network Unit)/ONT (Optical Network Termination), and an ODN (Optical Distribution Network) ... Generally, the ODN adopts a point-to-multipoint structure, that is to say, an OLT is connected to multiple ONUs through an ODN.

[0003] An EPON (Ethernet Passive Optical Network) is a new-generation broadband passive optical integrated access technology based on IEEE

(Institute of Electrical and Electronics Engineers) 802.3-2005 Section 5 and IEEE802.3av standards.

[0004] For the EPON, the IEEE standards only define the standards of physical layers and link layers of a 1 G-EPON and a 10G-EPON and do not involve other service functions. For multicast, the IEEE802.3-2005 Section 5 standard defines a broadcast logical channel identifier in the 1G-EPON as 0x7fff; the IEEE802.3av standard defines a broadcast logical channel identifier in the 10G-EPON as 0x7ffe ...

[0005] The above is mainly aimed at the situation that only the same type of ONUs are connected to a port on the OLT.

[0006] When different types (such as different rates) of ONUs are connected to a port on a same OLT, as shown in Fig. 1, there are three ONUs under optical splitter 1 connected to OLT port 1, wherein ONU A and ONU B are 1G-EPON ONUs, and ONU C is a 10G-EPON ONU. In this case, there are no specifications in existing standards on how an OLT uses a broadcast or multicast logical channel to send multicast messages, therefore, how to efficiently use physical channels in a PON to implement the forwarding of multicast traffic is an urgent problem to be solved."

5.2 Claim 1 of the second auxiliary request essentially comprises the following features:

A: replicating multicast data to different broadcast or multicast logical channels according to the ONU types of users who join a multicast group when an OLT on which a same port is connected to different types of ONUs, replicates downlink multicast data, wherein the ONU types are classified by rate;

B: wherein if there are only the *same* ONU type of users joining the multicast group under an OLT port that corresponds to the multicast group, sending the multicast data down to ONUs under the OLT port through a broadcast or multicast logical channel to which this ONU type corresponds; and

C: if there are *different* ONU types of users joining the multicast group under an OLT port that corresponds to the multicast group, sending the multicast data respectively to ONUs under the OLT port through broadcast or multicast logical channels to which these ONU types each correspond.

- 5.3 The wording "on which a same port is connected to different types of ONUs" in feature A is to be interpreted as "on which a same port may be connected to different types of ONUs" in order to be consistent with feature B.
- 5.4 The closest prior art is represented by document **MH7**, which is a draft of an unapproved standard document for IEEE 802.3av networks, i.e. related to those mentioned in the patent (cf. point 5.1 above).
- 5.5 In document MH7, Figure 75-3 (page 69) discloses an OLT that is connected via one port to several ONUs. The appellant has not disputed that these may be either 10G-EPON ONUs or 1G-EPON ONUs (henceforth referred to as 10G ONUs and 1G ONUs), or both. In any case, this overall system structure corresponds to Fig. 1 of the patent, which is referred to as "an existing technology" (cf. paragraph [0023] of the patent; see also the statement of grounds of appeal, page 6, 2nd paragraph, lines 1-2).

5.6 Re features A and C:

5.6.1 Table 76-4 (page 114) of MH7 contains reserved LLID values 0x7fff and 0x7ffe for broadcast downstream 1Gb/s and 10Gb/s transmission. It follows, or is at least obvious, that in accordance with MH7, when a port is connected to coexisting 10G and 1G ONUs, data must be broadcast/multicast on both logical channels 0x7fff and 0x7ffe. Therefore, MH7 leads directly to features A and C.

5.6.2 The appellant argues essentially that MH7 merely reflects common general knowledge according to which logical channel 0x7fff is used to transmit downstream multicast data of 1Gb/s and logical channel 0x7ffe is used to transmit downstream multicast data of 10Gb/s, but that MH7 does not explicitly disclose how to transmit multicast messages under the scenario that the same port is connected to different types of ONUs (cf. e.g. the appellant's submission dated 1 June 2017, page 6, 5th paragraph).

5.6.3 The board however does not see how the teaching of MH7 can lead to any other conclusion that, when the same port is connected to both 1G and 10G ONUs, data is broadcast/multicast on both 0x7fff and 0x7ffe logical channels. The appellant apparently agrees (ibid, page 6, last two paragraphs) but then argues that, in this case, each ONU will receive two copies of multicast data. However, that is apparently also the case with the present patent in view of the function of the optical splitter (see e.g. Fig. 1). Consequently, the appellant's arguments are unconvincing.

5.7 Re feature B:

- 5.7.1 MH7 does not disclose that, if there is only the same type of ONU, the broadcast/multicast data are replicated only on the corresponding broadcast/multicast logical channels.
- 5.7.2 However, the skilled person knows from Table 76-4 of MH7 that *registration* takes place on the logical upstream channels 0x7fff and 0x7ffe. Therefore, the OLT can be assumed to be in a position to recognise the type or types of ONUs connected to the single OLT port. Assume e.g. that there are only 10G ONUs. The skilled person would be immediately aware in this case that it is only necessary to broadcast/multicast data on channel 0x7ffe, i.e. the multicast logical channel to which this ONU type corresponds, which is the "prior art" solution described in paragraphs [0004] and [0005] of the patent ("... Usually, when an OLT in the EPON sends multicast traffic, it may send the multicast traffic to all ports under a PON port by using a broadcast logical channel ... The above is mainly aimed at the situation that only the same type of ONUs are connected to a port on the OLT"; board's underlining). The same is true for a group of 1G ONUs on channel 0x7fff.
- 5.8 Thereby, the skilled person would solve the problem of implementing broadcasting/multicasting of data within the type of network shown in Figure 75-3 of MH7 if a multicast group connected to a single port consists of all 10G ONUs, all 1G ONUs, or a coexistence of the two.
- 5.9 The appellant argues mainly that the "method of the patent achieves efficient multicast processing when different types of ONUs coexist, and enables an ONU to distinguish whether the multicast data belongs to an

ONU of its type before forwarding the multicast, thereby preventing excessive data from unnecessarily interfering with the ONU, meanwhile, efficiently utilising the bandwidth between an OLT and an ONU, and avoiding meaningless bandwidth occupation by data streams" (cf. the statement of grounds of appeal, page 6, last full paragraph).

The board agrees, but all these points are obvious for the reasons given above, all the more so as it is an obvious goal of the person skilled in the field of telecommunication networks to avoid unnecessary bandwidth wastage by the transmission of data streams.

5.10 Consequently, the subject-matter of claim 1 of the second auxiliary request does not involve an inventive step (Articles 52(1) and 56 EPC).

Order

For these reasons it is decided that:

The appeal is dismissed.

The Registrar:

The Chair:



B. Brückner

K. Bengi-Akyürek

Decision electronically authenticated