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Datasheet for the decision of 31 March 2011

Case Number: T 0597/08 - 3.5.05

Application Number: 04252561.8

Publication Number: 1509007

IPC: H04L 12/46

Language of the proceedings: EN

Title of invention:
Method and apparatus for frequency offset control of ethernet packets over a transport network

Applicant:
Agere Systems Inc.

Headword:
Compensating for a frequency offset between an ingress LAN and an egress LAN/AGERE

Relevant legal provisions:
EPC Art. 56
RPBA Art. 15(3)

Keyword:
"Inventive step - no (main and auxiliary request)"

Decisions cited:
-

Catchword:
-

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Case Number: T 0597/08 - 3.5.05

D E C I S I O N
of the Technical Board of Appeal 3.5.05
of 31 March 2011

Appellant: Agere Systems Inc.
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Decision under appeal: **Decision of the Examining Division of the European Patent Office posted 9 November 2007 refusing European patent application No. 04252561.8 pursuant to Article 97(1) EPC 1973.**

Composition of the Board:

Chairman: A. Ritzka
Members: M. Höhn
F. Blumer

Summary of Facts and Submissions

I. This appeal is against the decision of the examining division, dispatched on 9 November 2007, refusing European patent application No. 04252561.8. The decision makes reference to communications dated 10 November 2005, 6 September 2006 and 22 May 2007 in which it was held that the claimed subject-matter lacked novelty and inventive step (Articles 52(1), 54 and 56 EPC) in the light of the prior-art documents:

D1: SCHOLTEN M ET AL: "RATE ADAPTATION IN TRANSPARENT GFP MAPPING" CONTRIBUTION TO T1 STANDARDS PROJECT, 26 March 2001, pages 1-7,
D2: US 6 226 290 B1,
D3: US 2002/034195 A1 and
D4: GB 2 362 303 A.

II. The notice of appeal was received on 7 January 2008. The appeal fee was paid on the same day. The statement setting out the grounds of appeal was received on 19 March 2008. The appellant requested that the appealed decision be set aside and that a patent be granted on the basis of the two sets of claims 1 to 10 submitted with the statement setting out the grounds of appeal as a main request and an auxiliary request.

Although the appellant did not request oral proceedings explicitly, the appellant was summoned by the board, because it considered this to be expedient according to Article 116(1) EPC. A summons to oral proceedings to be held on 31 March 2011 was issued on 7 January 2011. In an annex accompanying the summons the board expressed the preliminary opinion that the subject-matter of

claim 1 of both requests did not appear to fulfil the requirements of Article 84 EPC and that the claimed subject-matter of both requests did not appear to involve an inventive step in the light of the disclosures of D1 or D2. The board gave its reasons for the objections and stated that the appellant's arguments were not convincing.

III. By letter dated 28 February 2011 the appellant filed two sets of claims according to a new main and auxiliary request comprising claims 1 to 10 which replaced the previously filed requests. The appellant commented on the objections in the annex to the summons to oral proceedings and submitted arguments in support of the clarity and inventive step of these claims.

IV. By letter dated 29 March 2011 the appellant's representative informed the board that the applicant would neither attend nor be represented at the oral proceedings. The appellant requested that the board reach a decision taking into account the submissions filed on 28 February 2011.

V. Independent claim 1 according to the main request reads as follows:

"1. A method for compensating for a frequency offset between an ingress local area network (110) and an egress local area network (160) communicating over a transport network (150), said ingress local area network (110) employing an ingress inter-packet gap between each packet (210) in a packet flow, said method characterized by the steps of:

receiving a plurality of packets (210) over said transport network (150) originating from said ingress local area network (110); and
providing said plurality of received packets (210) to said egress local area network (160) with an egress inter-packet gap between each of said received packets (210), wherein a size of said egress inter-packet gap is decreased to compensate for said frequency offset when said ingress local area network is faster than said egress local area network and is increased to compensate for said frequency offset when said egress local area network is faster than said ingress local area network."

Independent claim 1 according to the auxiliary request reads as follows:

"1. A method for compensating for a frequency offset between an ingress local area network (110) and an egress local area network (160) communicating over a transport network (150), said ingress local area network (110) employing an ingress inter-packet gap between each packet (210) in a packet flow, said method characterized by the steps of:
receiving a plurality of packets (210) over said transport network (150) originating from said ingress local area network (110); and
providing said plurality of received packets (210) to said egress local area network (160) with an egress inter-packet gap between each of said received packets (210), wherein a size of said egress inter-packet gap is decreased to compensate for said frequency offset when said ingress local area network is faster in processing packets than said egress local area network

and is increased to compensate for said frequency offset when said egress local area network is faster in processing packets than said ingress local area network."

VI. The appellant requested in writing that the decision under appeal be set aside and that a patent be granted on the basis of the main request (claims 1 to 10) or, subsidiarily, on the basis of the auxiliary request (claims 1 to 10), both filed with letter dated 28 February 2011.

VII. Oral proceedings were held on 31 March 2011 in the absence of the appellant. After due deliberation on the basis of the written submissions in the statement setting out the grounds of appeal, in the letter dated 28 February 2011 and on the basis of the requests, the board announced its decision.

Reasons for the Decision

1. Admissibility

The appeal complies with the provisions of Articles 106 to 108 EPC (see Facts and Submissions, point II above). Therefore the appeal is admissible.

2. Non-attendance at oral proceedings

In its letter dated 29 March 2011 the appellant informed the board that the applicant would neither attend nor be represented at the oral proceedings. The board considered it expedient to maintain the date set

for oral proceedings. Nobody attended on behalf of the appellant.

Article 15(3) RPBA stipulates that the board is not obliged to delay any step in the proceedings, including its decision, by reason only of the absence at the oral proceedings of any party duly summoned who may then be treated as relying only on its written case.

Hence, the board was in a position to announce a decision at the conclusion of the oral proceedings.

Main request

3. D2 is considered to be a pertinent prior-art document. In contrast to the appellant's argument, D2 addresses the issue that network 101 may be used for transport purposes (see abstract: "…a plurality of network devices are tightly coupled together in series…" and "…the data being transmitted between the network devices…"). In addition, D2 mentions that its teaching can be implemented using the Ethernet standard (see column 3, line 61 and claim 8 of D2), which is usually used for LAN networks. D2 makes reference to "for example repeaters, switches, bridges, concentrators, hubs, or the like, to interconnect various smaller segments of the network" (see column 1, lines 34 to 39) and explicitly mentions that network devices 201A-D (see figure 3) may be arranged as repeaters (see column 7, line 51). The skilled reader of D2 would therefore recognise that the teaching of D2 concerns communication between segments of a network and may also be applied to communication between LANs over a transport network. The appellant's argument that D2

addressed the adjustment of an inter-packet gap in a local area network LAN and that it did not suggest communication using a transport network is therefore not convincing.

3.1 D2 discloses that each one of the plurality of network devices 103, 105, 107 and 109 includes an internal reference clock used to transmit and receive the packets to and from the corresponding neighbouring network devices (see column 1, lines 59 to 62). D2 addresses the problem that, in reality, there is often at least a slight difference between the internal clock speeds of the neighbouring devices, and that there is a real possibility that one network device will send data faster than the recipient network device can process and forward the data. D2 makes reference to the known solution to the problem of clock differences between network devices, i.e. utilisation of elasticity buffers within each network device in combination with inserting inter-packet gaps between the packets (see column 1, line 64 to column 2, line 6). This is in accordance with the preamble of claim 1.

3.2 D2 further discloses as an example that the internal clock in a receiving egress network device (see e.g. network 105 in figure 1 or 201B in figure 3) runs slower than the internal clock in a sending ingress network device (see e.g. network 103 in figure 1 or 201A in figure 3). Consequently, the upstream network device 103 transmits faster than the neighbouring downstream network segment 105 can transmit. To address this situation, D2 discloses in accordance with the characterising portion of claim 1 that the inter-packet gaps IPG can be decreased at a receiving network

segment before sending a packet further downstream over a chain of network segments ("shrink the inter-packet gaps", see e.g. column 2, lines 18 to 42 or column 4, lines 30 to 32 and column 5, lines 1 to 22). D2 therefore discloses to decrease the inter-packet gap between each of the received packets to compensate for the frequency offset according to claim 1. The skilled person, hence, is taught that it can be useful to decrease the IPG when communicating between network segments and would consider the same to be useful for communicating between LANs having clock differences.

3.3 The method disclosed in D2 is therefore distinguished from the subject-matter of claim 1 merely in that D2 does not explicitly disclose the step of increasing the IPG if the sending LAN is slower than the receiving LAN.

3.4 The underlying objective problem is considered to be to compensate frequency differences at the receiving device or egress network if the sending device or ingress LAN is faster.

3.5 Since the skilled person learns from the disclosure of D2 that when transferring packets from a faster network segment to a relatively slower network segment, the IPG has to be "shrunk", i.e. decreased, at the receiving network segment (see point 3.2 above), it is the logical consequence that in the opposite case, i.e. transferring packets from a slower network segment to a relatively faster network segment, the IPG can alternatively be increased at the receiving network segment. This is considered to be a design option within the technical principle disclosed in D2 and to

be within the routine skills of the skilled reader without requiring any inventive activity.

3.6 In addition, the skilled reader of D2 even finds a motivation for such a measure in this prior-art publication. When transferring a packet from network device 201D to network device or segment 201A, 201A is relatively faster. D2 therefore proposes for this scenario that "adjuster 211A of network device 201A adjusts the interpacket gaps as necessary such that increased size interpacket gaps that are transmitted to network device 201B", see column 6, lines 47 to 51 - emphasis added; see also column 7, line 65 to column 8, line 4).

3.7 For this reason the board judges that the skilled person would come up with the solution of the objective technical problem according to claim 1 by increasing the IPG without the need for inventive skill whenever there is a packet to be transmitted from a slow network segment to a relatively faster network segment, and would consider such a measure also to be useful for transmitting packets from a slow LAN to a relatively faster LAN.

The subject-matter of claim 1 was therefore obvious in the light of D2 combined with the skilled person's common general knowledge.

Auxiliary request

4. The subject-matter of claim 1 of this request is distinguished from that of the main request by the

added expression that the ingress LAN or egress LAN is faster "in processing packets".

4.1 In D2 it is disclosed that when differences between the internal clock speeds of neighbouring network devices or segments occur, one network "sends data faster" (see column 2, line 1). In the board's opinion, D2 therefore discloses that one network segment processes data packets faster than the other.

The subject-matter of claim 1 of this request therefore lacks an inventive step over D2 combined with the skilled person's common general knowledge, for the same reasons as in the main request.

4.2 In the letter dated 28 February 2011 the appellant argued that the rate of processing packets was generally distinguished from the rate of sending data packets (see page 4, second paragraph). Conventionally, packets were processed with a first clock rate and then transmitted at a second clock rate. D2 did not address the issue of compensating for a difference of packet processing rates.

4.3 The board would have liked to discuss this argumentation, which was presented for the first time in the appeal proceedings in the letter dated 28 February 2011, with the appellant, but was not able to do so because the appellant decided not to participate in the oral proceedings.

In the board's view, however, this argumentation does not convince, for several reasons.

4.4 The board notes that the description discloses

"If an egress LAN that is receiving packets from a remote transmitting station over a WAN link is unable to receive and process the packets at a rate greater than or equal to the transmission rate of the ingress LAN, the buffer associated with the egress LAN can overflow. Thus, when a frequency offset exists between the egress and ingress LANs, such that the frequency of the ingress LAN exceeds the frequency of the egress LAN, the egress buffer will eventually overflow." (see paragraph [0006] of the published application - emphasis added). Hence, the application only refers to a single frequency for each LAN. There is no indication that there might be different clocks for processing and sending a packet in an ingress or egress LAN. The clock of the egress port and the clock of the ingress port referred to in paragraph [0016] of the published application are thus considered to perform the same task as the internal reference clock referred to in D2, column 1, line 59 to column 2, line 2. The board considers that the reference to "a rate" for receiving and transmitting in paragraph [0006] of the published application indicates that the formulation "receive and process" is not to be interpreted in the sense that sending a packet downstream has to be regarded as something different from processing a packet. Given the disclosure of the application as filed, a different interpretation might give rise to objections under Articles 84 and 123(2) EPC. However, as the subject-matter of claim 1 does not involve an inventive step (see point 4.1 above), this matter has no bearing on the decision.

Order

For these reasons it is decided that:

The appeal is dismissed.

The Registrar: The Chair:

K. Götz A. Ritzka