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**Datasheet for the decision  
of 4 March 2009**

**Case Number:** T 1143/08 - 3.5.05

**Application Number:** 01965510.9

**Publication Number:** 1303970

**IPC:** H04L 29/06

**Language of the proceedings:** EN

**Title of invention:**

TCP flow control

**Patentee:**

Nokia Corporation

**Opponent:**

QUALCOMM incorporated

**Headword:**

TCP flow control/NOKIA

**Relevant legal provisions:**

EPC Art. 106, 107, 108

RPBA Art. 15(3)

**Relevant legal provisions (EPC 1973):**

EPC Art. 100(a), 100(b)

**Keyword:**

Disclosure - sufficiency (no)

**Decisions cited:**

-

**Catchword:**

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Case Number: T 1143/08 - 3.5.05

**D E C I S I O N**  
of the Technical Board of Appeal 3.5.05  
of 4 March 2009

**Appellant:** Nokia Corporation  
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**Decision under appeal:** Decision of the Opposition Division of the  
European Patent Office posted 21 April 2008  
revoking European patent No. 1303970.

**Composition of the Board:**

**Chairman:** D. H. Rees  
**Members:** A. Ritzka  
P. Schmitz

## Summary of Facts and Submissions

I. This appeal is against the decision of the opposition division dispatched 21 April 2008 to revoke the European patent 1 303 970. The opposition was based on the grounds of Article 100(a) and (b) EPC 1973. The patent was revoked for lack of sufficiency of the disclosure of the invention as claimed in claim 18.

II. Notice of appeal was submitted on 18 June 2008. The appeal fee was paid on the same day. The statement setting out the grounds of appeal was submitted on 20 August 2008.

The appellant (patentee) requested that the decision under appeal be set aside and that the patent be maintained on the basis of claims 1 to 24 of a main request or claims 1 to 17 of a first auxiliary request, both sets of claims being filed with the statement setting out the grounds of appeal. The claims of the main request correspond to claims 1 to 24 of the patent as granted; the claims of the first auxiliary request correspond to claims 1 to 17 of the patent as granted. An additional request for oral proceedings was made.

III. In its letter dated 7 October 2008 the respondent (opponent) withdrew its opposition.

IV. In a communication accompanying the summons to oral proceedings the board gave its preliminary opinion that the subject-matter of claim 18 did not appear to be disclosed in a manner sufficiently clear and complete for it to be carried out by a person skilled in the art and that the main request was therefore apparently not

- allowable. Further, the same applied to the first auxiliary request since the second mode of claim 1 corresponded to the method of claim 18 of the main request.
- V. In its letter of 29 January 2009 in response to the board's communication the appellant presented its comments and filed claims 1 to 24 of amended auxiliary request 1 and claims 1 to 24 of auxiliary request 2. The appellant withdrew its request for oral proceedings. It requested that the patent be maintained as granted or that the patent be maintained on the basis of the claims of auxiliary request 1 or 2. It stated that the case could be decided based on the written procedure.
- VI. The board informed the appellant that the date for oral proceedings was maintained. In its letter of 25 February 2009 the appellant announced that it would not be represented at the hearing.
- VII. The oral proceedings took place on 4 March 2009. Nobody attended on behalf of the appellant. At the end of the hearing the chairman announced the board's decision.
- VIII. Claim 1 of the main request reads as follows:
- "A data communication node (25) for operation in a communication path (22) between a transmitter of datagrams (20) and a receiver of datagrams (21) under a protocol wherein the transmission of datagrams by the transmitter is dependant [sic] on it receiving an acknowledgement message for a previously transmitted datagram, the node comprising:

detection apparatus (29) for detecting communications in the path;

an acknowledgement generator (36) adapted to generate acknowledgement messages for datagrams and transmit those messages to the transmitter; and

flow interruption apparatus adapted to interrupt communications in the path;

characterised in that the node is adapted to operate in the second and at least one of the first and third of the following modes:

- a first mode in which it does not interrupt communications in the path;
- a second mode in which it transmits an acknowledgement message for a datagram succeeding the latest datagram detected at the node; and
- a third mode in which it delays the communication of acknowledgement messages to the transmitter."

Claim 18 of the main request reads as follows:

"A method for data communication over a communication path (22) between a transmitter of datagrams (20) and a receiver of datagrams (21) under a protocol wherein the transmission of datagrams by the transmitter is dependant [sic] on it receiving an acknowledgement message for a previously transmitted datagram, there being a node (25) located in the communication path between the transmitter and the receiver; characterised in that the method comprises:

the transmitter transmitting datagrams towards the receiver;

the node detecting the said datagrams; and

the node repeatedly transmitting to the transmitter an acknowledgement message for a datagram succeeding the latest datagram detected at the node."

Claim 1 of auxiliary request 1 is identical to claim 1 of the main request. Claim 18 of auxiliary request 1 is directed to a method for data communication over a communication path in which a node corresponding to the data communication node of claim 1 of the main request is located and operated as specified in claim 1 of the main request.

Claims 1 and 18 of auxiliary request 2 add to claim 1 and claim 18 of auxiliary request 1, respectively, that an acknowledgement mode is selected based on available bandwidth, buffer occupancy and/or congestion.

## **Reason for the Decision**

### **1. *Admissibility***

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

Therefore it is admissible.

### **2. *Non-attendance of oral proceedings***

In its letter of 29 January 2009 the appellant withdrew its request for oral proceedings. In its letter of 25 February 2009 the appellant announced that it would not be represented at the oral proceedings. The board considered it to be expedient to maintain the set date

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

Article 15(3) RPBA stipulates that the board shall not be 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.

Thus, the board was in a position to take a decision at the end of the hearing.

### 3. *Sufficiency of the disclosure*

#### 3.1 Main request

The method of claim 18 refers to "an acknowledgement message for a datagram succeeding the latest datagram detected at the node".

The skilled person would understand the term "datagram succeeding the latest datagram" as referring to a datagram that has not yet been detected at the node.

Considering the description of the published patent at page 2, line 41 to page 4, line 4, the problem underlying the subject-matter of claim 18 is seen to be to improve a method of data communication usable under a protocol like the TCP protocol with respect to resource assignment, waste of resources and buffer overflow.

The skilled person would understand that not any datagram succeeding the latest datagram, e.g. a datagram being sent after a delay of a couple of hours, would be suitable as basis for a generated acknowledgement message in the method of claim 18 for solving the underlying problem. Thus, further details are needed to put the method of claim 18 into practice.

According to the description, paragraph [0040], when there is available bandwidth above a set threshold, and the mode selector detects no packet loss due to congestion, the early acknowledgement mode is selected. When a packet is received and detected by the node, an early acknowledgement message is generated and sent to the transmitter. The packet number in the early acknowledgement message is that of a packet that has not yet been received by the node (but, for compatibility with most protocols, one that is likely to have been sent by the sender before the acknowledgement reaches it). Although the "but" clause is put within parentheses, the skilled person would understand that this provision is necessary. The number by which the acknowledgement number is in advance of the last packet received by the node is said to depend on the available bandwidth, nature of packet losses and available buffer space in the network node.

The skilled person would understand that the early acknowledgement mode discussed in paragraph [0040] corresponds to the method of claim 18 and the second mode mentioned in claim 1 and would consult the complete description for further details of the early acknowledgement mode.



According to paragraphs [0041] and [0042] the generated acknowledgement  $ACK^o(i)$  can be formulated by equations (1) and (2) given in those paragraphs. Moreover it meets the inequality

$$ACK^i(i) \leq ACK^o(i) \leq PK(i),$$

wherein  $ACK^i(i)$  is the arriving acknowledgement and  $PK(i)$  the sequence number of the arriving packet, given in the line after equation (1) in [0041].

No indication is given how the constants  $a_1$  and  $a_2$  used in (2) can be determined.

Further, the relation  $ACK^o(i) \leq PK(i)$  indicates that the generated acknowledgement  $ACK^o(i)$  is smaller or equal to the sequence number of the arriving packet  $PK(i)$ , thus, the generated acknowledgement  $ACK^o(i)$  corresponds to a packet received before the packet  $PK(i)$ . This is in contradiction to the requirement of claim 18 that the generated acknowledgement message corresponds to a datagram succeeding the latest datagram at the node and to lines 10 and 11 of page 6 that the packet number specified in the early acknowledgement message is that of a packet that has not yet been received by the node.

As the inequality  $ACK^i(i) \leq ACK^o(i) \leq PK(i)$  is stated in paragraph [0041] on the line after equation (1), which is said to define the generated acknowledgement of the early acknowledgement mode, and therefore appears to provide further details of equation (1), the teaching of [0040] and [0041] is confusing and unclear.

In paragraph [0044] limiting values of function  $f$  of equations (1) and (2) are discussed for decreasing/increasing buffer space and/or bandwidth. Conclusions for the value of  $ACK^o$  relative to the value of  $ACK^i$  are drawn, even though  $ACK^i$  is not mentioned in equations (1) and (2). Further, paragraph [0044] says that, when there is lot of unused available bandwidth, the node in early acknowledgement mode operates in a similar way to the TCP snooping method. However, the problem to be solved is to avoid waste of available bandwidth and buffer overflow. The statement in lines 49 and 50 of paragraph [0044] appears to indicate that this problem is not solved by the early acknowledgment mode. The confusing teaching of [0044] does not help to determine the missing constants  $a_1$  and  $a_2$ .

Figure 6 and paragraphs [0047] and [0048], to which the appellant refers in its statement setting out the grounds of appeal, further illustrate the early acknowledgment mode. At page 7, lines 10 and 11 it is taught that one method for the node to use in calculating the value of  $ACK^o$  had been shown in equation (1). However, as set out above, equation (1) is not considered to be sufficient to determine the value of  $ACK^o$ .

A more detailed example of the use of early acknowledgment mode can be found in paragraph [0052]. In the example a packet with the sequence number 64 arrives at the node from the source, i.e. the transmitter, whilst an acknowledgment with number 57 arrives from the receiver. In the early acknowledgment mode an acknowledgment message with number 60 is created and transmitted to the TCP source. It is

explicitly noticed that the number of the generated acknowledgment message is below the number of the arrived packet (see page 7, lines 28 to 32), contradicting paragraphs [0040] and [0056].

Paragraph [0056], which appears to be a concluding comment on the early acknowledgment mode, explicitly states that the node generates and returns acknowledgments to the TCP transmitter for data packets that have not yet reached the node, see page 7, lines 54 to 56.

In paragraphs [0040], [0041], [0042], [0044], [0047], [0048], [0052] and [0056] the early acknowledgment mode, which is considered to be the subject-matter of claim 18, is disclosed in a self-contradicting and therefore confusing manner. It is not clear from the description how the early acknowledgement mode can be implemented. In particular, no indication how to determine the sequence number of the "succeeding packet" can be found. However, this feature appears to be crucial for the claimed method and cannot be added by the skilled person only making use of common general knowledge.

The board would like to make the following comments on the appellant's arguments presented in its letter of 29 January 2009 in response to the communication accompanying the summons.

The appellant's argument that the problem underlying the invention was not just to improve the snooping node, but to provide overall improvement was taken into consideration in the board's assessment presented above

concerning the sufficiency of the disclosure. However, the board notes that it can be inferred from the description, page 2, line 41 to page 4, line 4, that an improvement with respect to resource assignment, waste of resources and buffer overflow rather than an unspecified overall improvement is aimed at.

With respect to the parameters  $a_1$  and  $a_2$  used in equation (2) it was argued that the skilled person would understand that they are weight factors and that the most common approach was that their sum equalled 1. The appellant did not give any evidence for this allegation. The board notes that the description is silent about how the parameters  $a_1$  and  $a_2$  might be determined. The skilled person can not find any indication in which range  $a_1$  and  $a_2$  might be chosen. Therefore, equation (2) is not sufficiently disclosed.

Further, the appellant argued that, as the description discloses different alternatives how to implement the early acknowledgment mode, i.e. the alternative disclosed with reference to paragraphs [0040] and [0056] and a different alternative disclosed with reference to paragraphs [0041], [0042], [0044], [0047], [0048] and [0052], the skilled person would understand that claim 18 had to be interpreted so as to encompass both alternatives. Therefore, the term "succeeding" in the claim referred to an acknowledgment message that was transmitted succeeding detection of the latest datagram, i.e. that the transmission of an acknowledgment was triggered by or follows as a consequence of detection of the latest datagram. For support of this interpretation, the appellant pointed to page 3127 of the Oxford English Dictionary, according to which a

meaning of "succeed" was "follow as a consequence of, ensue, result (from)".

The board notes that the skilled person would interpret any claim using its commonly agreed, linguistic meaning and that the claim has to be seen in its context. In the present case, even if the Oxford English Dictionary gives an additional, specific meaning in point I.3b of the definition, the board considers that the skilled person would not interpret "succeeding" in this sense.

Firstly, the skilled person would understand the term "succeed" in its common meaning of "follow or come after in the course of time or the sequence of events".

Secondly, in view of the grammar of claim 18 "succeeding the latest datagram" is a participle clause corresponding to a relative clause. As "succeeding" follows "datagram" immediately it is to be understood as defining the datagram mentioned before. Even if the skilled person were to understand the term "succeeding" in the meaning suggested by the appellant, it would refer to "datagram" rather than to "acknowledgement".

Moreover, the board notes that, even if the skilled person were to understand the description as disclosing two different implementations of the early acknowledgment, they would not necessarily draw the conclusion that claim 18 has to be interpreted so as to encompass both alternatives. In the board's view the skilled person would consider that only the alternative falling within the normal interpretation of claim 18 was claimed.

Finally, even if the skilled person were to consider an interpretation of claim 18 as suggested by the appellant, the acknowledgement would be entirely undefined, as any transmission of an acknowledgement follows as a consequence of detection of the latest datagram. In particular, this interpretation of claim 18 would encompass the first and third mode referred to in claim 1. Thus, the feature of claim 1 that the node is adapted to operate in the second and at least one of the first or third modes, would be void, as the second mode as defined in claim 1 corresponds literally to the method of claim 18. The skilled person would understand that in claim 1 at least two different modes are intended and therefore interpret the expression "datagram succeeding the latest datagram" as referring to a datagram that has not yet been detected at the node. Given that claim 1 and claim 18 use the same phrase the skilled person would also reject the appellant's interpretation of claim 18.

For these reasons, this argument does not convince the board.

Thus, the subject-matter of claim 18 is not considered to be disclosed in a manner sufficiently clear and complete for it to be carried out by a person skilled in the art, and thus the reason for opposition under Article 100(b) EPC 1973 prejudices the maintenance of the patent.

Therefore, the main request is not allowable.

3.2 Auxiliary request 1

Claim 18 of auxiliary request 1 comprises a second mode defined by the same wording as used in claim 18 of the main request. Therefore, the objections raised with respect to claim 18 of the main request in point 3.1 above apply equally.

As the amendments according to auxiliary request 1 do not overcome the ground for opposition under Article 100(b) EPC 1973, auxiliary request 1 is not allowable.

3.3 Auxiliary request 2

Claim 18 of auxiliary request 2 comprises a second mode defined by the same wording as used in claim 18 of the main request. Therefore, the objections raised with respect to claim 18 of the main request in point 3.1 above apply equally.

As the amendments according to auxiliary request 2 do not overcome the ground for opposition under Article 100(b) EPC 1973, auxiliary request 2 is not allowable.

3.4 There being no further request, the appeal has to be dismissed.

**Order**

**For this reasons, it is decided that:**

The appeal is dismissed.

Registrar:

Chairman:

K. Götz

D. H. Rees