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**Datasheet for the decision
of 15 March 2011**

Case Number: T 0732/07 - 3.5.05

Application Number: 02290758.8

Publication Number: 1246396

IPC: H04L 12/24

Language of the proceedings: EN

Title of invention:

Method and apparatus for rerouting a connection in a data communication network based on a user connection monitoring function

Applicant:

Alcatel Canada Inc.

Headword:

Injection of diagnostic cells into the data stream/ALCATEL

Relevant legal provisions:

EPC Art. 56

Relevant legal provisions (EPC 1973):

EPC Art. 106, 107, 108

Keyword:

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

Decisions cited:

J 0010/07

Catchword:

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Case Number: T 0732/07 - 3.5.05

D E C I S I O N
of the Technical Board of Appeal 3.5.05
of 15 March 2011

Appellant: Alcatel Canada Inc.
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Decision under appeal: Decision of the Examining Division of the
European Patent Office posted 8 December 2006
refusing European patent application
No. 02290758.8 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 8 December 2006, refusing European patent application No. 02290758.8 because of lack of inventive step (Articles 52(1) EPC and 56 EPC).
- II. The notice of appeal was received on 6 February 2007. The appeal fee was paid on the same day. The statement setting out the grounds of appeal was received on 10 April 2007. The appellant requested that the appealed decision be set aside and that a patent be granted on the basis of claims 1 to 23 according to the main request or the auxiliary request, both submitted with the statement setting out the grounds of appeal. Oral proceedings were requested on an auxiliary basis.
- III. A summons to oral proceedings to be held on 15 March 2011 was issued on 19 November 2010. In an annex accompanying the summons the board expressed the preliminary opinion that the claimed subject-matter of the independent claims of both requests did not appear to fulfil the requirements of Article 123(2) EPC and further appeared to lack novelty or at least not to involve an inventive step in the light of the disclosures of

D4: WO 99/11090 A1 and

D5: ITU-T Recommendation I.610, ITU-T
TELECOMMUNICATION STANDARIZATION SECTOR OF ITU,
November 1995, GENEVA, Switzerland (referred to in
D4).

Prior-art publications D4 and D5 were introduced into the proceedings of the board's own motion in accordance with Article 114(1) EPC. The board gave its reasons for the objections and stated that the appellant's arguments were not convincing.

IV. By letter dated 14 February 2011 the appellant filed two amended sets of claims 1 to 23 replacing the main and auxiliary requests previously filed. The appellant indicated passages on which the amendments were said to be based and submitted arguments in favour of an inventive step of these claims.

V. Oral proceedings were held on 15 March 2011 in the course of which the appellant filed two amended sets of claims 1 to 23 replacing the previous requests. The appellant requested that the decision under appeal be set aside and that a patent be granted on the basis of the main request (claims 1 to 23) or, subsidiarily, on the basis of the auxiliary request (claims 1 to 23), both requests as filed during oral proceedings before the board (replacing the main and auxiliary requests filed with letter dated 14 February 2011).

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

"1. A method of re-routing a connection in a connection-oriented packet switched data communication network (200) comprising a plurality of nodes (Node) interconnected by communication links (231), and wherein in order to send data traffic between end users (241, 242) attached to the network a virtual connection is established through the network (200) under the

management of a control plane (Network Manager) by routing a stream of packets carrying the data traffic in a user plane along a particular path between a source node (210, 310) and a destination node (216, 340) connected to the respective end users, characterized in that this particular path transmitting a service selected by the user among a plurality of services, where such a service guarantees a maximum latency for data traffic, the method comprising establishing the virtual connection between said source and destination nodes through the network under the management of the control plane, and sending data traffic between the end users over the established virtual connection, diagnostic packets (108) are injected into the stream of packets carrying the data traffic over the virtual connection at an upstream node along said virtual connection and transported to a downstream node along said virtual connection such that the diagnostic packets traverse the network in the same manner as the stream of packets carrying the data traffic; the diagnostic packets are monitored at the downstream node;

the performance of the virtual connection over the particular path is determined by the monitoring (104) of the diagnostic packets received at the downstream node; and

the control plane initiates (110) re-routing of the virtual connection in response to a determination that a performance criterion of the virtual connection is degraded beyond a predetermined acceptable threshold level (109) the re-routing of the virtual connection being triggered if said guaranteed latency specific to the selected service is exceeded."

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

"1. A method for re-routing a virtual connection established (102) across a connection oriented packet-switched data communication network (200) for transmitting user data between a source and a destination, said virtual connection being established by a control plane along a particular path through the network, this particular path transmitting a service selected by the user among a plurality of services, where such a service guarantees a maximum latency for data traffic, characterized in that it comprises the steps of:

establishing an operation and management (OAM) source and an OAM sink at a respective upstream and downstream nodes respectively along said virtual connection;

generating (108) OAM packets with said OAM source at said upstream node, and periodically inserting the OAM packets on said virtual connection along with said user data towards the OAM sink at the downstream node such that said OAM packets traverse the network in the same manner as the stream of packets carrying the data traffic;

monitoring (104) the OAM packets of said OAM sink over a period of time with a view to establish the status of the virtual connection; and

when the status of the selected characteristic is degraded beyond a predetermined acceptable threshold level (109), initiating (110), by the control plane, rerouting of the connection the re-routing of the virtual connection being triggered if said guaranteed latency specific to the selected service is exceeded."

VII. After due deliberation on the basis of the written submissions and the appellant's arguments presented during oral proceedings, the board announced its decision.

Reasons for the Decision

1. Admissibility

The appeal complies with the provisions of Articles 106 to 108 EPC 1973, which are applicable according to J 0010/07, point 1 (see Facts and Submissions, point II above). Therefore the appeal is admissible.

Main request

2. Interpretation of claim 1

The board has doubts that the expression "...transmitting a service..." in claim 1 makes sense from a technical point of view, because a "service" cannot be transmitted. It is rather the corresponding data which is transmitted. A "service" is understood to be an agreement about what kind of data is to be transmitted and about the quality of service QoS. Those aspects are, however, non-technical and do not make an inventive technical contribution. For the assessment of inventive step the board therefore interprets the feature underlying this expression on a technical level as a virtual path for transmitting data for which a maximum latency is guaranteed.

3. Inventive step - Articles 52(1) and 56 EPC

3.1 In the light of the amendments introduced with the appeal, D4 is considered to be the closest prior art. D4 discloses an ATM network, i.e. a connection-oriented packet-switched data communication network, for sending data traffic between end users (see figure 3) under the management of a telecommunication network manager TMN (see e.g. figure 4), i.e. a control plane. Data packets are transferred from a source point (A in figures 1 and 2) to a sink point (G in figures 1 and 2).

3.2 D4 furthermore provides for a method of triggering a rerouting of data in a packet-based telecommunication system, the system comprising a main data path and a bypass path for bypassing a portion of the data path, the portion and the respective bypass defining a protection domain, the system comprising nodes for each of the domains, for monitoring respective domains and for issuing alarms in the form of packets (known as AIS cells), to other nodes downstream, with a domain identifier indicating the respective domain in which the alarm originated (see e.g. page 4, line 29 onwards). It is considered to be implicit for issuing an alarm that a corresponding performance criterion has to be observed to be above an accepted threshold level according to the last feature of the characterising portion of claim 1.

The subject-matter of claim 1 therefore differs from D4 in that D4 does not explicitly disclose that diagnostic packets are injected into the stream of packets carrying the data traffic over the virtual connection at an upstream node along said virtual connection and

transported to a downstream node along said virtual connection such that the diagnostic packets traverse the network in the same manner as the stream of packets carrying the data traffic, that the diagnostic packets are monitored at the downstream node and that the performance of the virtual connection over the particular path is determined by the monitoring of the diagnostic packets received at the downstream node; and that the criterion to be monitored is a guaranteed maximum latency for the data traffic.

- 3.3 The objective technical problem underlying these distinguishing features is considered to be to detect whether a performance characteristic at the virtual connection exceeds a guaranteed threshold using an end-to-end monitoring function.
- 3.4 In the disclosure of D4 reference is made to D5 (see D4, page 9, lines 7 to 18) for a detailed description of the format of the AIS cell, how it is used, and how various OAM (operations and management) cells are used for fault management, performance management and system management. The corresponding parts of D5, in particular those dealing with OAM cells, are therefore incorporated by reference into the disclosure of D4.
- 3.5 Even if one considered D4 not to incorporate all of the afore-mentioned information of D5 by reference, the skilled person was thereby motivated to combine the information of the two publications in an obvious way when trying to solve the objective technical problem.
- 3.6 D5 discloses in table 2 on page 8 a distinction between user cells and non-user cells in the ATM network.

Section 6.2.2.1 entitled "Virtual channel fault management functions" and starting on page 20 deals with the use of those non-user cells for diagnostic purposes. In particular, section 6.2.2.1.2 discloses an example of a continuity check. This is one of the types of errors which are also dealt with in the description of the present application (see e.g. paragraphs [0015] and [0019] of the A2 publication). According to D5 such a continuity check CC on the virtual channel can be carried out end-to-end (see first paragraph of section 6.2.2.1.2 on page 20) by inserting continuity checking cells in the UNI or NNI portions of the endpoint nodes (in accordance with the embodiment as described in paragraph [0036] of the A2 publication of the present application). A continuity check cell is inserted at a VCC source-point, i.e. injected at an upstream node according to claim 1, and sent downstream to a VCC sink-point (see top of page 21 of D5) where those cells are monitored by checking whether a time interval, i.e. a threshold level, is exceeded (see last two paragraphs of section 6.2.2.1.2), i.e. monitored at the downstream node by a determination that a performance criterion of the virtual connection is degraded beyond a predetermined acceptable threshold level according to claim 1.

- 3.7 Section 6.2.2.2 of D5 deals with virtual channel performance management functions. For this purpose performance monitoring cells PM are inserted into the stream of packets. Those monitoring cells are considered to be comparable to the diagnostic packets according to the distinguishing features of claim 1. According to section 6.2.3 of D5, performance monitoring and continuity check are performed under

control of the network manager TMN or of the end-user. In particular, the OAM CC and PM cells traverse the ATM network in the same manner as the stream of packets carrying the data traffic.

3.8 Neither D4 nor D5 explicitly discloses the monitoring of a maximum latency for the data traffic. However both publications disclose performing re-routing dependent on fault management and performance checking. In particular, D5 discloses the use of diagnostic cells for the purpose of a continuity check which involves testing of a time interval as a time-related threshold. The skilled person would recognise that the principle of D5 can be applied to test multiple well-known faults and performance criteria including latency, i.e. the amount of time required for data traffic to transit the network, without the need for inventive skill, in particular since checking for a maximum guaranteed latency also involves the use of a time-related threshold for performing the step of monitoring the diagnostic cells, as is explicitly disclosed in D5 (see last two paragraphs of section 6.2.2.1.2).

3.9 The board does not follow the appellant's argument presented during oral proceedings that D5, in contrast to the claimed invention, proposed to use the same threshold for all virtual channels. Claim 1 only specifies a single virtual channel and a single dedicated threshold. Therefore such an alleged difference, which is doubted by the board, cannot distinguish the subject-matter of claim 1 from the disclosure of D5.

3.10 Hence, the subject-matter of claim 1 lacks an inventive step over a combination of the disclosures of D4 and D5.

Auxiliary request

4. Inventive step - Articles 52(1) and 56 EPC

4.1 In contrast to claim 1 of the main request, claim 1 of this request is directed to the specific use of an OAM source and sink as well as OAM packets. It uses merely different wording for specifying generally the same subject-matter as in claim 1 of the main request on a more concrete level.

4.2 However, D4 and D5 already disclose the use of OAM cells for the purpose of monitoring and rerouting in an ATM network, as shown in section 3 above. In particular, D5 explicitly discloses that continuity check CC cells can be sent repetitively with a certain periodicity (see D5, section 6.2.2.1.2, page 21, item 2), i.e. periodically according to claim 1 (see the step of generating OAM packets).

Therefore D5 discloses the additional features of claim 1 of this request and the above reasoning in section 3 applies *mutatis mutandis*. Hence, claim 1 of this request is also considered to be obvious in the light of a combination of D4 and D5.

Order

For these reasons it is decided that:

The appeal is dismissed.

The Registrar:

The Chair:

K. Götz

A. Ritzka