**BESCHWERDEKAMMERN
DES EUROPÄISCHEN
PATENTAMTS**

**BOARDS OF APPEAL OF
THE EUROPEAN PATENT
OFFICE**

**CHAMBRES DE RECOURS
DE L'OFFICE EUROPÉEN
DES BREVETS**

Internal distribution code:
(A) [-] Publication in OJ
(B) [-] To Chairmen and Members
(C) [-] To Chairmen
(D) [X] No distribution

Datasheet for the decision
of 4 July 2014

Case Number: T 0557/11 - 3.5.05

Application Number: 99962936.3

Publication Number: 1060595

IPC: H04L12/28, H04M7/00, H04L12/56

Language of the proceedings: EN

Title of invention:
Telecommunication apparatus and method for forwarding packets
using separate collision domains

Applicant:
Hewlett-Packard Development Company, L.P.

Headword:
Multi-functional telephone set/HP

Relevant legal provisions:
EPC 1973 Art. 56

Keyword:
Inventive step - (no): juxtaposition of obvious features

Decisions cited:

Catchword:

Case Number: **T 0557/11 - 3.5.05**

D E C I S I O N
of Technical Board of Appeal 3.5.05
of 4 July 2014

Appellant: (Applicant)	Hewlett-Packard Development Company, L.P. 11445 Compaq Center Drive West Houston, TX 77070 (US)
Representative:	Lippich, Wolfgang Samson & Partner Patentanwälte Widenmayerstrasse 5 80538 München (DE)
Decision under appeal:	Decision of the Examining Division of the European Patent Office posted on 21 October 2010 refusing European patent application No. 99962936.3 pursuant to Article 97(2) EPC.

Composition of the Board:

Chair	A. Ritzka
Members:	K. Bengi-Akyuerek
	G. Weiss

Summary of Facts and Submissions

I. The appeal is against the decision of the examining
    division, posted on 21 October 2010, to refuse European
    patent application No. 99962936.3 on the grounds of
    lack of inventive step (Article 56 EPC) with respect to
    a main request and an auxiliary request, having regard
    to the disclosures of

    D1: T. Konoshi et al.: "Voice and Data Integrated
         Communication on LAN (VOICEHUB)", OKI Technical
         Review 159, pp. 5-10, July 1997;
    D3: EP-A-0 853 405.

II. Notice of appeal was received on 23 December 2010. The
    appeal fee was paid on the same day. With the statement
    setting out the grounds of appeal, received on 25
    February 2011, the appellant re-filed claims 1 to 3 of
    the main request underlying the appealed decision as
    its main request, amended claims 1 to 3 according to
    first to third auxiliary requests, and amended claim 1
    according to a fourth auxiliary request. It requested
    that the decision of the examining division be set
    aside and that a patent be granted on the basis of the
    main request or any of the auxiliary requests. In
    addition, oral proceedings were requested as an
    auxiliary measure.

III. A summons to oral proceedings was issued on 13 March
     2014. In an annex to this summons, the board gave its
     preliminary opinion on the appeal pursuant to
     Article 15(1) RPBA. In particular, objections were
     raised under Articles 54 and 56 EPC 1973, having regard
     to D1.

IV.   With a letter of reply dated 2 June 2014, the appellant
         submitted an amended claim 1 according to a new fourth
         auxiliary request, amended claims 1 to 3 according to a
         fifth auxiliary request, and an amended claim 1
         according to a sixth auxiliary request along with
         arguments in support of novelty and inventive step with
         regard to the fourth to sixth auxiliary requests.

V.   Oral proceedings were held on 4 July 2014, during which
         the appellant withdrew the former main request and
         first to third auxiliary requests. All the pending
         requests were admitted into the proceedings and their
         allowability was discussed.

         The appellant's final request was that the decision
         under appeal be set aside and that a patent be granted
         on the basis of the claims filed as the fourth to sixth
         auxiliary requests with letter dated 2 June 2014.

         At the end of the oral proceedings, the decision of the
         board was announced.

VI.   Claim 1 of the **fourth auxiliary request** reads as
         follows:

         "A telephone set (10), comprising:
         a first media access control (MAC) device (28) in
         electrical communication with a first network (12) via
         a first communication path (16) and being part of a
         first collision domain;
         a second MAC device (32) in electrical
         communication with a second network (14) via a second
         communication path (18) and being part of a second
         collision domain; the telephone set (10) being arranged
         to maintain the first and the second collision domains
         separate;

an input port (26) for receiving audio signals from an input device (17); and

a packet controller (24) in communication with the first (28) and second (32) MAC devices and the input port (26), the packet controller (24) being arranged to generate packets including voice data from the audio signals received by the input port (26) for transmission to at least one of the first (28) and second (32) MAC devices,

characterised in that.[sic]

the telephone set comprises memory for storing packets,

the packet controller (24) is arranged to forward packets received by the first MAC device (28) to the second MAC device (32) for transmission to the second network (14), and

the MAC devices (28, 32) operate such that both can concurrently transmit packets and/or concurrently receive packets, or one of the MAC devices (28, 32) can receive packets while the other transmits packets, without collisions occurring between the first and second networks (12, 14),

the telephone set (10) having an address to receive data packets including voice data from one of the networks (12, 14) and being arranged to produce audio signals from the packets including voice data having the telephone set's (10) address as destination address and to output the audio signals,

the telephone set (10) can give higher priority to packets including voice data than other packets, the level of priority effecting the order in which the telephone set (10) queues in memory the associated packets for transmission to one of the first and second networks (12, 14), wherein the telephone set (10) preempts the transmission of the other data packets and first queues the voice data packets for transmission."

Claim 1 of the **fifth auxiliary request** reads as
follows:

"A telephone set (10), comprising:
a first media access control (MAC) device (28) in
electrical communication with a first network (12) via
a first communication path (16) and being part of a
first collision domain;
a second MAC device (32) in electrical
communication with a second network (14) via a second
communication path (18) and being part of a second
collision domain; the telephone set (10) being arranged
to maintain the first and the second collision domains
separate;
an input port (26) for receiving audio signals from
an input device (17); and
a packet controller (24) in communication with the
first (28) and second (32) MAC devices and the input
port (26), the packet controller (24) being arranged to
generate packets including voice data from the audio
signals received by the input port (26) for
transmission to at least one of the first (28) and
second (32) MAC devices,
wherein the packet controller (24) is arranged to
forward packets received by the first MAC device (28)
to the second MAC device (32) for transmission to the
second network (14),
wherein the telephone set (10) includes
input/output devices (15) including a microphone, a
keypad and a telephone handset, wherein audio signals
enter the telephone set through one of the input/output
devices (15) and, if the destination addresses in voice
data packets indicate that the telephone set (10) is
the targeted recipient, the telephone set (10) produces
audio signals from the voice data in the packets and

outputs the audio signals to one of the input/output
devices (15) so that a local user of the telephone set
(10) can hear the audio signals, and discards the
received voice data packets."

Claim 1 of the **sixth auxiliary request** comprises all
the features of claim 1 of the fourth auxiliary request
and further adds:

> "wherein the telephone set (10) includes
> input/output devices (15) including a microphone, a
> keypad and a telephone handset, wherein audio
> signals enter the telephone set through one of the
> input/output devices (15) and, if the destination
> addresses in voice data packets indicate that the
> telephone set (10) is the targeted recipient, the
> telephone set (10) produces audio signals from the
> voice data in the packets and outputs the audio
> signals to one of the input/output devices (15) so
> that a local user of the telephone set (10) can
> hear the audio signals, and discards the received
> voice data packets".

Reasons for the Decision

1.   The appeal is admissible.

2.   FOURTH TO SIXTH AUXILIARY REQUESTS

These requests, replacing all the previous requests,
were filed in response to the objections raised in the
board's communication under Article 15(1) RPBA (cf.
point IV above) and claim 1 of those requests further
limits the underlying subject-matter in a convergent
way. Therefore, the board admitted them into the appeal

proceedings under Article 13(1) RPBA.

2.1   Claim 1 of the **sixth auxiliary request**, having the
        largest number of features and thus the narrowest scope
        compared to claim 1 of the other requests, is directed
        to a telephone set which has the following features, as
        labelled by the board:

   A) a first MAC device in electrical communication
      with a first network via a first communication
      path and being part of a first collision domain;
   B) a second MAC device in electrical communication
      with a second network via a second communication
      path and being part of a second collision domain;
   C) the telephone set being arranged to maintain the
      first and the second collision domains separate;
   D) an input port for receiving audio signals from an
      input device;
   E) a packet controller in communication with the
      first and second MAC devices and the input port;
   F) the packet controller being arranged to generate
      packets including voice data from the audio
      signals received by the input port for
      transmission to at least one of the first and
      second MAC devices and to forward packets received
      by the first MAC device to the second MAC device
      for transmission to the second network;
   G) the telephone set comprising memory for storing
      packets;
   H) the MAC devices operate such that both can
      concurrently transmit packets and/or concurrently
      receive packets, or one of the MAC devices can
      receive packets while the other transmits packets,
      without collisions occurring between the first and
      second networks;

I) the telephone set having an address to receive
data packets including voice data from one of the
networks and being arranged to produce audio
signals from the packets including voice data
having the telephone set's address as destination
address and to output the audio signals;

J) the telephone set includes input/output devices
including a microphone, a keypad and a telephone
handset, wherein audio signals enter the telephone
set through one of the input/output devices;

K) if the destination addresses in voice data packets
indicate that the telephone set is the targeted
recipient, the telephone set produces audio
signals from the voice data in the packets and
outputs the audio signals to one of the
input/output devices so that a local user of the
telephone set can hear the audio signals, and
discards the received voice data packets;

L) the telephone set can give higher priority to
packets including voice data than other packets,
the level of priority effecting the order in which
the telephone set queues in memory the associated
packets for transmission to one of the first and
second networks, wherein the telephone set
preempts the transmission of the other data
packets and first queues the voice data packets
for transmission.

Claim 1 of this request differs from claim 1 of the
main request underlying the appealed decision in that
it further comprises features G) to L).

Feature G) is supported e.g. by claim 2 of the
application as filed whilst feature H) is based on
page 15, lines 14-17. Feature I) is supported e.g. by
page 9, lines 6-11 of the application as filed, while

feature J) is based on page 8, lines 13-16 and page 11,
lines 18-20. Feature K) is particularly based on
page 12, lines 8-14 and feature L) is supported by
page 21, line 21 to page 22, line 16 of the application
as filed.

Thus, the above amendments comply with Article 123(2)
EPC.

2.2   Article 52(1) EPC: Novelty and inventive step

In the board's judgment, claim 1 of all the pending
requests do not meet the requirements of Article 52(1)
EPC in conjunction with Article 56 EPC 1973, for the
following reasons:

2.2.1   The board concurs with the finding of the decision
under appeal (cf. section II.2) that D1 is the closest
prior art for the claimed subject-matter.

2.2.2   Document D1 is related to an Ethernet hub, named
"VOICEHUB", involving voice terminals and supporting
integration of voice and data communication within and
between different networks via distinct interfaces (see
e.g. D1, Figure 1). Since the VOICEHUB is connected to
voice terminals such as a general telephone and a LAN
phone, it can well be read onto the "telephone set" as
claimed.

As to features A) and B), the examining division found
that D1 did not disclose two medium access control
(MAC) devices within the VOICEHUB (cf. appealed
decision, page 4, first paragraph). However, the board
holds that both interfaces of the VOICEHUB in D1,
namely the LAN interface ("LIF"), interfacing with a
local area network (LAN), and the IP network interface

("RIF"), interfacing with the Internet, represent
"10BASE-T Ethernet ports" (see Figure 1 in conjunction
with Table 1, items 3 and 4) and thus correspond to two
distinct MAC devices (i.e. Ethernet devices) connected
with two different collision domains (i.e. the LAN and
the IP network domains).

As regards feature C), the VOICEHUB interconnects
distinct networks like the Ethernet-based LAN and the
IP network (see e.g. Figure 1), which inherently
constitute independent domains in which packet
collisions only internal to those domains may occur.
That means that different collision domains are kept
separate by the VOICEHUB, in accordance with
feature C).

Also, features D) and E) are anticipated by D1 since
the VOICEHUB contains an input port (e.g. "LAN-PHONE
interface LPIF") for receiving audio signals from an
attached input device (e.g. "LAN-PHONE"), and a packet
controller ("MPU") being in communication with the
respective interfaces RIF, LIF, and LPIF (see e.g.
Figure 2).

As to feature F), essentially specifying that voice
packets originating from the telephone set itself may
be sent to the connected networks whilst those packets
arriving from the first network may be relayed to the
second network, the appellant argued that D1 did not
disclose any data connection or gateway functionality
between the LAN and the IP network, i.e. that D1 failed
to show that any data packets from the IP network
received at the VOICEHUB could be forwarded to the LAN
or vice versa (cf. statement setting out the grounds of
appeal, section IV). The board cannot subscribe to this
interpretation of D1. In fact, D1 teaches that the

VOICEHUB implements voice communication by means of the
Internet (see page 5, left-hand column, last
paragraph), that inter-office communication may be
performed via the integration of the VOICEHUB into a
wide area network (WAN) such as an IP network (see page
6, section 2.2), and that a communication environment
integrating data and voice traffic can be implemented
on the LAN and IP networks (see page 6, section 2.4,
first sentence). Document D1 also teaches that a FAX
modem ("FAXM") is used for inter-connecting different
LANs (see page 8, left-hand column, first paragraph).
Contrary to the assertion of the appellant, the skilled
reader reasonably understands from the above that
inter-communication between the IP network and the LAN,
i.e. forwarding voice and data packets received at the
IP interface RIF to the LAN interface LIF, is indeed
performed in the system of D1, as required by
feature F).

As regards feature G), D1 indicates that voice packets
are supposed to be compressed and packetised (see
page 8, right-hand column, second paragraph: "... IAM
manages voice communication, including the compression
and packeting of voice data ..."). This implies that
the respective packets have to be *stored* in a typical
memory prior to performing the corresponding
compression and packeting operations, in compliance
with feature G).

Concerning feature H), the board finds that
simultaneous packet transmission/reception without
causing mutual packet collisions, as suggested by
feature H), is inherently executed in D1 by way of
employing independently operating interfaces RIF and
LIF connected to the separate LAN and IP networks (see

e.g. Figure 2).

Feature I), which covers the case that the claimed telephone set represents the intended destination of the voice packets originating from either of the connected networks, is at least implicitly disclosed by D1 in view of the voice terminals attached to the VOICEHUB as potential voice packet recipients (see Figure 1). In order to receive those voice packets, a network address, being used as "destination address", has commonly to be assigned to a network device like the VOICEHUB such that it has its unique address to be able to receive voice packets, as mandated by feature I).

2.2.3   In summary, the board concludes that D1 anticipates features A) to I) of claim 1. However, features J) to L) are not directly and unambiguously derivable from D1. Consequently, the subject-matter of claim 1 of the sixth auxiliary request is new having regard to D1 (Article 54 EPC 1973).

2.2.4   Next, it has to be ascertained whether distinguishing features J) to L) provide a non-obvious synergistic technical effect and thus contribute to an inventive step. To this end, according to the "problem-solution approach" as generally applied, the technical effects associated with those features and the objective problem(s) to be solved are to be identified:

(a) The technical effect of feature J) is believed to be that the telephone set constitutes a *combined* telephone apparatus and network device, thus providing an integrated telephone device with added network functionality (cf. appellant's letter of reply dated 2 June 2014, section III).

Accordingly, the objective problem to be solved by
this feature may, with regard to D1, be regarded
as "how to provide for a consolidated multi-
functional VOICEHUB".

(b) Feature K) expands upon feature I) by stating that
the received voice packets are supposed to be
discarded in the event that the telephone set is
the targeted recipient of the voice packets
arriving from either of the connected networks.
Its technical effect can therefore be seen in
freeing up memory space not needed any more. The
corresponding objective problem may be formulated
as "how to avoid wasting internal memory capacity
within the VOICEHUB in the event that voice
packets are not to be forwarded".

(c) Feature L) allegedly provides the technical effect
of facilitating on-time delivery of real-time data
via a specific internal memory configuration (cf.
page 22, lines 10-16 of the application as filed).
However, as queue preemption (i.e. interruption of
packet transmissions in a packet queue) in the
field of digital data communications typically
makes sense only if a *single* transmission buffer
is utilised in a network device, the board
considers the related objective technical problem
to consist in "how to facilitate on-time delivery
of real-time data in the event that the VOICEHUB
comprises only a single transmit buffer".

It is apparent from the above that distinguishing
features J) to L) do not interact with each other in
such a manner that they give rise to an overall
synergistic effect, since the corresponding
implementation measures may be enforced in an entirely
independent way to solve unrelated technical problems.
Therefore, the board considers that the distinguishing

features are associated with separate technical effects
and thus distinct partial objective problems to be
solved. This means in turn, in accordance with
established case law, that the contribution of those
features to an inventive step can be individually
assessed, i.e. on the merits of each distinguishing
feature *per se*.

The appellant argued at the oral proceedings before the
board that the distinguishing features had a combined
technical effect consisting in both collision avoidance
and a simpler prioritisation of voice packets. However,
this argument must fail since, firstly, collision
avoidance is already achieved by features A) to C),
which are also disclosed in D1 (cf. point 2.2.2 above),
and, secondly, because the appellant could not
plausibly argue why a queue preemption scheme, which
typically requires intricate transmission interruption
and resumption operations to be applied within a single
queue, should credibly be simpler than a prioritisation
scheme consisting of two individually controlled
queues. Thus, the technical problem, as formulated by
the appellant, cannot qualify as an acceptable
objective technical problem to be solved in the present
case.

2.2.5   As to feature J), the skilled person would notice that
        the VOICEHUB of D1 accommodates telephone terminals
        (see in particular page 6, section 2.3 and Figure 1) as
        they are connected to the VOICEHUB via different input
        and output ports (e.g. "LPIF", "APIF"). Such terminals
        inherently comprise a microphone, a keypad and a
        telephone handset, as required by feature J). Even
        though the board concedes that D1 fails to demonstrate
        clearly that those terminals are "included", as
        claimed, within the VOICEHUB, the board holds that the

incorporation of those terminals into the same "box",
i.e. the VOICEHUB, represents an obvious implementation
detail, the application of which depends merely on
practical constraints such as implementation
complexity, user preferences or standardisation
frameworks. The latter point was not traversed in
substance by the appellant at the oral proceedings
before the board. Hence, feature J) cannot contribute
to an inventive step.

2.2.6   Regarding feature K), the board considers that
discarding or forwarding the received voice packets in
the system under consideration hinges solely on whether
the telephone set is intended to be a communication
end-device or an intermediary device for a particular
voice data connection established in that system.
Furthermore, D1 teaches that the VOICEHUB can be used
for both intra-communication and inter-communication
(see e.g. page 5, section 2.1 and page 6, section 2.2).
As a consequence, feature K) may not render the
subject-matter of claim 1 inventive over D1 either.

2.2.7   As to feature L), i.e. preempting non-voice packets in
favour of prioritised voice packets within the
telephone set's memory, the appellant contended that
the disclosure of D1, namely according to page 7,
right-hand column, last paragraph and page 9, left-hand
column, last paragraph in combination with Figures 2
and 4, led away from the solution according to feature
L), because this teaching clearly demonstrated that two
distinct ports were used in the VOICEHUB, i.e. one
preferred port ("UPLINK-B") used only for voice packets
and one port ("UPLINK-A") obviously used for non-voice
packets, rather than one memory being used together
with the preemption technique as claimed. Using two
ports, i.e. two hardware connections, at the VOICEHUB,

however, automatically meant that a different network
infrastructure and a distinct interplay between the
VOICEHUB and the router to which the voice packets have
to be sent next (according to Figure 4 of D1) is in
fact employed.

The board first notes that the disclosure of D1
referred to by the appellant, i.e. page 7, right-hand
column, last paragraph, in fact reads:

> "... *When the router has an interface that can
> control priority for two ports, RIF allows using
> the preferred port only for voice*." (emphasis
> added),

while page 9, left-hand column, last paragraph (under
the heading "Developments in Future") states:

> "... *Connecting VOICEHUB to an intranet creates no
> problems because router configuration makes voice
> priority control possible* ..." (emphasis added).

From the above passages the skilled person would
understand that the VOICEHUB supports, as an example,
two priority-specific ports by reason only of the fact
that the next router attached to this VOICEHUB (see D1,
Figure 4) has an interface being able to perform
priority control for *two* ports. Since, moreover, each
port must commonly have its corresponding transmit
buffer, the above disclosure implies the use of two
transmit queues at the VOICEHUB. In view of the partial
objective problem associated with feature L) as set out
in point 2.2.4, item (c) above, a legitimate question
is what the skilled person would have envisaged at the
present application's priority date if the VOICEHUB
comprised only a *single* transmit buffer or,

equivalently, if the corresponding router did *not* possess an "interface that can control priority for two ports" and did *not* make "voice control possible", in contrast to the assumptions made in the respective passages of D1.

As regards the internal buffer configuration of a network device, the skilled person in the field of digital data communications would know from his common general knowledge that there are, in principle, only two feasible ways of implementing priority-based queueing under the present conditions, namely (i) using two queues for storing prioritised packets in one queue and non-prioritised packets in the other queue to subsequently select the prioritised packets first for transmission, as obviously done in D1, or (ii) using a single queue for storing both prioritised and non-prioritised packets upon their arrival and subsequently ensuring that the prioritised packets are selected for being forwarded first, as feature L) implies. These generally applicable storing options are also bolstered by the teaching of the application itself (see e.g. page 16, lines 14-22 in conjunction with Fig. 3 of the application as filed):

> *"Each transmit region 42,48 is partitioned into a priority block 45,55 for packets having priority and a general block 47,57 for non-prioritized packets. Other ways of using the memory 36 to implement priority are contemplated. For example, the memory 36 can be organized as a buffer to store packets as the packets arrive at the telephone set. Rather than evaluate each packet as that packet arrives to determine the block of memory in which to store that packet, each packet can be directly stored in the memory 36 upon arrival and*

*subsequently examined for prioritizing when
selecting a packet to forward to one of the I/O
devices."*

This was furthermore not contested by the appellant at
the oral proceedings before the board. Confronted with
the corresponding objective problem and starting out
from D1, the board however considers that the skilled
person would have only one viable solution at his
disposal to perform priority-based transmission of
packets in such a case, namely option (ii) relating to
the use of a single transmit buffer. Moreover, the
skilled person would be aware that preferential (i.e.
prior) transmission of a prioritised voice packet,
which arrived at the single transmit queue *later* than
any non-prioritised data packet at the head of that
queue, would only be rendered possible *if* an initiated
transmission of the non-prioritised data packet was (at
least temporarily) preempted. Therefore, he would come
up with the solution according to feature L). Hence,
the conclusion that only one option is suitable for
solving the respective objective problem constitutes
sufficient reason why feature L) likewise cannot
contribute to an inventive step.

2.2.8   In view of the above, the board concludes that
        distinguishing features J) to L) are associated with
        distinct partial objective technical problems and that
        their solutions constitute a mere juxtaposition of
        obvious implementation measures which do not produce
        any surprising synergistic effect, since there is no
        combined technical effect which differs from the sum of
        the effects caused by the individual features J) to L)
        per se. Hence, the subject-matter of claim 1 of the
        sixth auxiliary request does not involve an inventive
        step having regard to D1 and the skilled person's

common general knowledge (Article 56 EPC 1973).

2.3   As to the remaining requests, claim 1 of the pending
        fourth auxiliary request differs from that of the sixth
        auxiliary request in that it does not comprise features
        J) and K) whilst claim 1 of the **fifth auxiliary request**
        lacks features G), H), I), and L). Consequently, since
        the subject-matter of claim 1 of the remaining requests
        is broader in scope, it is self-evidently not inventive
        either in view of D1.

2.4   In conclusion, none of the pending requests are
        allowable under Article 56 EPC 1973.

Order

For these reasons it is decided that:

The appeal is dismissed.

The Registrar: The Chair:

K. Götz-Wein   A. Ritzka

Decision electronically authenticated