

VOICE BAND CALL ROUTING

With the development of Personal Number services the object is for the user to be registered as having a personal number which is used wherever the user may be "for life". At present this is satisfactory for responding to telephone calls, but there is often a need for another number to be taken out in order to cater for such services as fax.

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It would be preferable for the single personal number to suffice for both voice and fax calls, since this makes the situation easier for the caller. In present networks it is possible to use terminals which are designed to recognise fax tones and automatically switch to a fax receiver if required. However, this requires answering the call before discrimination can take place, and therefore requires to be associated with a voice-answering machine as a fall-back if the call is not fax, and the human recipient is not present.

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As personal numbering schemes develop, individual customer's needs will be highly flexible, and will include the following:

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- selected calls to be offered direct to the customer
- other calls to be connected to a voice mail-box
- non-voice (e.g. fax) to be connected to a suitable terminal (e.g. a fax machine in the office)

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For this and other reasons there is a need for screening the number from which an incoming call arises.

It is of course possible that the Personal Number service may direct a call to different networks on different occasions and that the voice mail-box or fax machine may be on a different network from that where the intended recipient is located at that time.

5 The description has referred to use with a Personal Number Service. The present invention may be implemented where a call is directed to a number other than a Personal Number, for example a number on a company network where the call may be subsequently routed within the network or to a point outside that network.

10 The call may be directed to another user, to a fax machine, a voice mail-box, a modem connected to a personal computer depending on the in-band identification signal received. It is only required that the terminating unit be a user voice-band terminating unit identified as a UVTU herein, of which examples are given above.

15 There is nothing within the calling number or within the call request message to the network which can identify fax calls - they can only be identified by the Calling Tone (CNG) signal which is sent in the speech channel as soon as the originating fax machine has dialled out the required number. At present CNG tone is bursts of 500mS of 1100Hz separated by gaps of 3 seconds.

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According to the present invention there is a telecommunications network comprising routing means whereby a call to an identified user is routed to a User Voice-band Terminating Unit (UVTU) on the network or a further network in response to an in-band

identification signal carried with the call.

There is further provided in a telecommunications network a method whereby a call to an identified user is routed to a User Voice-band Terminating Unit (UVTU), routing being carried out in the network in response to an in-band identification signal carried with the call.

The present invention will now be described by way of example, with reference to the accompanying drawings, in which:

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Figure 1 is a schematic illustration of the architecture of a telecommunications system according to the present invention; and

Figure 2 is a flow diagram illustrating the present invention.

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A personal number service makes use of Intelligent Network facilities, and by using a device known as an "Intelligent Peripheral" a method is provided whereby monitoring equipment is connected to the line to test for the CNG tone. If the tone is detected this will be used to determine the terminal identity to which the call shall be connected.

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Figure 1 shows in schematic form the physical architecture associated with Intelligent Networks. The principles of operation are then as follows:-

Telephone 1 originates a call to a Personal Number customer 2, whose profile is stored

in a database at a Service Data Point 3. When the call is received within the telephone network at a Service Switching Point 4, recognition that the requested number is a Personal Number causes a program associated with the profile to "trigger" and to send, via the signalling network 5, a message to the Service Control Point 6. Such a message would normally include the calling line identity (CLI).

For normal calls the calling identity could be screened to determine if the call is to be completed via the network 10 direct to the Personal Number Customer 2, at the latest known location, or if it is a call to be forwarded to a voice mail-box 7. All of this method is known.

If, however, the personal profile stored at the Service Data Point 3 shows that the customer wishes to receive facsimile calls at one or more alternative locations (e.g. at the customer's office), then it is necessary to identify if the CNG tone is present on the line. This is achieved by the system attaching an Intelligent Peripheral 8 such that it can monitor the caller's line and signal to the Service Control Point 6 whether or not a CNG tone is detected. If the tone is not detected then normal call screening would be effected; otherwise, detection of tone would cause the necessary routing information to be sent to the Service Switching Point 4, and for the call to be extended to the required fax terminal 9.

Because of the periods of silence between the CNG tone bursts, it will be necessary to monitor the line for up to 3.5 seconds in order to establish that a normal voice call is

required. Such a period would seem a long time to a voice caller in a modern network, so it could be arranged to connect a suitable announcement from the Intelligent Peripheral 8 to the calling circuit inviting a possible voice caller to hold for the connection. Meanwhile, the call screening process for possible voice termination could take place in parallel to minimise any further network delays.

Figure 2 is a sequence chart showing the principal logic described above.

CLAIMS

1. A telecommunications network comprising routing means whereby a call to an identified user is routed to a User Voice-band Terminating Unit (UVTU) on the network or a further network in response to an in-band identification signal carried with the call.
2. A telecommunications network as claimed in Claim 1, wherein the user has a personal number.
3. A telecommunications network as claimed in Claim 1 or 2, wherein the UVTU is a modem.
4. A telecommunications network as claimed in Claim 3, where the modem is arranged for receiving a facsimile call and the in-band identification signal is a Network Calling Tone (CNG) signal.
5. In a telecommunications network a method whereby a call to an identified user is routed to a User Voice-band Terminating Unit (UVTU), routing being carried out in the network in response to an in-band identification signal carried with the call.
6. In a telecommunications network, a method as claimed in Claim 5, wherein the

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identified user has a personal number.



7. In a telecommunications network a method as claimed in Claim 5 or 6, wherein the UVTU is a modem.

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8. In a telecommunications network, a method as claimed in Claim 7, wherein the modem is arranged for receiving a facsimile call and the in-band identification signal is a Network Calling Tone (CNG) signal.