

### 2.3.3 Convenient invocation of relay services

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#### Introduction

The term relay service refers here to a service that allows people with a disability to use the telephone, when normally they could not, through the use of an operator. Today these three types of relay service are in common use in Sweden and other countries:

- *Video telephone relay services: telecommunications services that enable deaf video telephone signers and voice telephone users to interact*
- *Text telephone relay services: telecommunications services that enable text telephone users and voice telephone users to interact by providing conversion between the two modes of communication in substantially real time*
- *Speech-to-speech relay services: telecommunications services that enable speech impaired telephone users and other users to interact by providing skilled assistance between them.*

These relay services are very good and important for translation between various means of communication. They thereby contribute towards ensuring equal opportunities for telecommunications for people with disabilities. Further variations of relay services can be created through new combinations of media and language in the calls.

To call through a relay service is currently a two-step process. First a person calls the service and explains who they really want to call. The relay service then connects and performs the relaying action.

The methods for invoking the relay service for a call can be improved so that the relay service can contribute more effectively to equal opportunities for communication. There are methods to arrange the convenient invocation of relay services that are listed below.

#### Needs and functional description of connection cases

In the illustrations, a picture of a text telephone that has a call through the Relay Service for Text Telephony is usually used, but the cases also apply to video

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telephony through the Relay Service for Video Telephony and voice telephony through the speech-to-speech relay service (Teletal in Sweden).

The descriptions provide reasons for why the connection cases would simplify the relay services for the user.

#### Direct dialling to relay service users

Of all calls to the relay services, 85% are initiated by relay service users. Voice phone users rarely call to relay service users. One reason for this is that it is too complicated for a voice telephone user to call to a relay service user. It is also too complicated to describe how to do it.

One solution is to be able to use a voice telephone number to the relay service user that automatically connects the call from the voice telephone user through the relay service to the relay service user.

This leads to equal opportunities for communication and reduces unequal treatment of people with disabilities. An illustration is shown below of how such a call between a voice telephone and a text telephone could be performed.



Figure 2.22. The voice telephone user rings a direct number to a relay service user with a text telephone. The relay service for text telephony is automatically invoked.

#### Direct dialling to voice telephone users

Today the relay service user first calls the relay service and requests that they arrange for the call to be connected to the destination. This is sometimes perceived to be an inconvenient and time-consuming process. It also makes it more difficult to benefit from electronic telephone directories.

In order to simplify management of dialled calls to voice phone users, a function is needed that allows the relay service user to dial the destination's number, and allow the call to invoke the relay service and connect the destination.

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An illustration is shown below of how such a call between a text telephone and a voice phone could be performed.



*Figure 2.23. The relay service user's call from a textphone to a voice phone goes automatically through the Relay Service for Text Telephony.*

### **Forwarding voice calls so that they are connected via the relay service**

For relay service users, it may be very frustrating to be alone in premises where there is a voice telephone. When someone calls to the voice telephone, the relay service user must be able to get the call connected via the relay service.

When the relay service user realises that no one can receive a voice call for a period, then the relay service user should, by a simple action, be able to request call forwarding via the relay service of incoming voice calls. This may mean that the call, after having been connected through the relay service, also goes to another terminal that can deal with the media that the user wishes to use.

Today it is usual for a voice telephone and a text telephone to be on the same number and telephone connection. For users who wish to retain this form of connection, it is desirable to have a call forwarding that has the effect that only incoming voice calls go through the relay service, while text calls are dealt with directly.

An illustration is shown below of how a connection from a voice telephone to a text telephone via the Swedish Relay Service for Text Telephony is performed, when the voice telephone is forwarded to the relay service user via the relay service.

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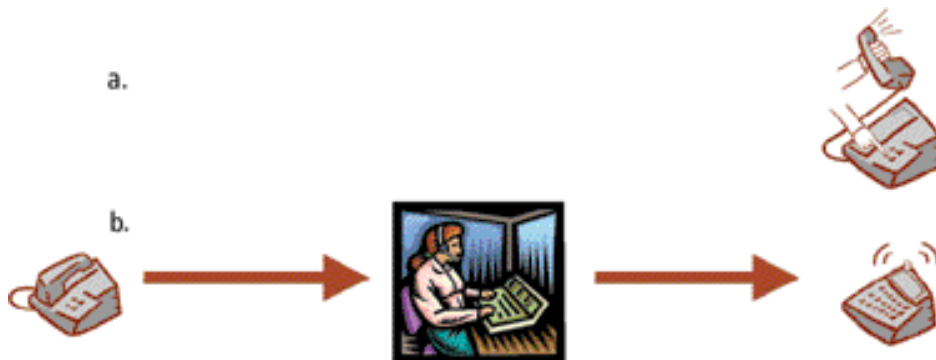


Figure 2.24.

- a. The relay service user by a simple action requests connection on the voice phone of an incoming call via the Relay Service for Text Telephony.
- b. An incoming call is connected to the relay service user's text telephone via the Relay Service for Text Telephony.

#### **Transferring an incoming voice call so that it is connected via the relay service**

It is very frustrating for relay service users when a voice phone rings when at that particular time there is no hearing person in the vicinity who can answer.

It is desirable to have a function that by a simple action allows the relay service user to request that the incoming call to be transferred to him/her via the relay service.

Today it is usual for a voice telephone and a text telephone to be on the same number and telephone connection. For users who wish to retain this form of connection, it is desirable that the transfer can be made selectively so that only incoming voice calls go through the relay service, while text calls are dealt with directly. It is also desirable that calls, after connection through the relay service, can revert to text calls on the same number.

An illustration is shown below of how a transfer of an incoming voice call via the Relay Service for Text Telephony to a text telephone could be performed.

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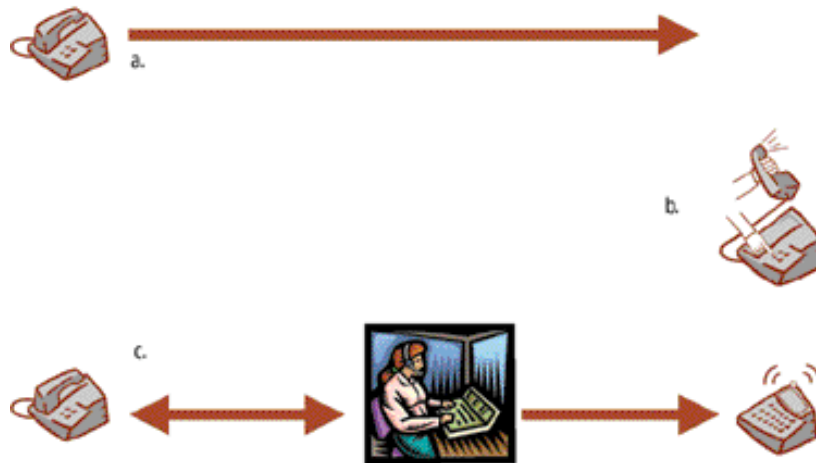


Figure 2.25.

- a. An incoming call to a voice telephone cannot be answered by the relay service user.
- b. The relay service user requests connection via the Relay Service for Text Telephony by a simple action.
- c. The Relay Service for Text Telephony takes the call and calls up the user.

#### Transferring an ongoing voice call so that it is connected via the relay service

If one party in an ongoing voice call wishes to hand over the call to a relay service user, it is not possible today to transfer the call being made as a voice call, but the call must be ended and either party called up through the relay service's two-step process. This is so intricate that users in many cases refrain from transferring the call, and the call is conducted without the participation of the relay service user. This often results in inadequate participation and independence for people with disabilities.

A function that allows voice telephone users to transfer calls to a relay service user via the relay service is important to avoid these situations. This would make things much easier for all parties and a significant step towards equality to be able to say "Please hold and I'll connect you to Lasse" instead of saying "call 020280020 and request a connection to lasse.larsson@sip.omnitor.se".

Today it is usual for a voice telephone and text telephone to be on the same number and telephone connection. For users who wish to retain this form of connection, it is desirable that the transfer can be implemented so that the call

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reverts as a text call to the same number after having been connected through the relay service.

There may also be a need for other similar transfers. It may be a call between two individuals with disabilities who have a direct conversation in text or sign language between themselves, and then the need arises to transfer the call to go through the relay service to a voice telephone user. Another variant is the need to transfer a call that started with the relay service invoked to go directly between the call parties or to another relay service user.

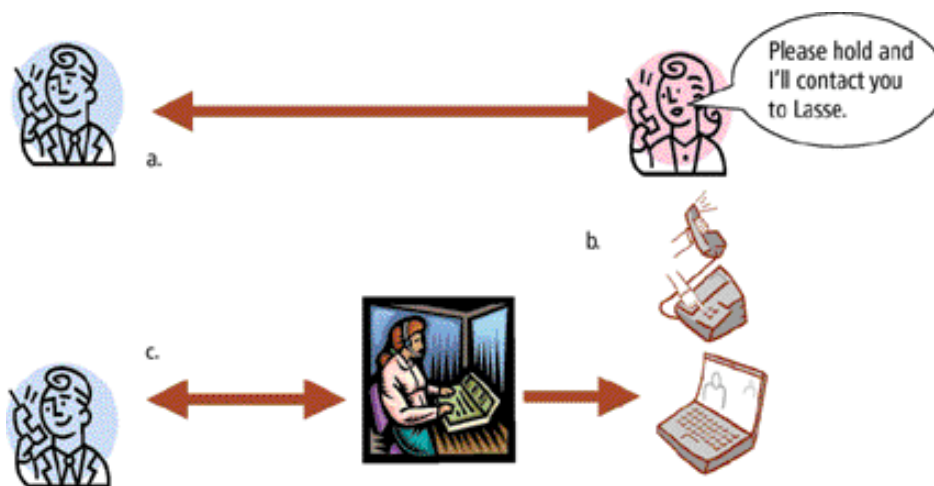


Figure 2.26.

- a. Two voice phone users are having a conversation.
- b. One of the voice phone users requests by a simple action transfer via the Relay Service for Video Telephony.
- c. The other user is then connected to a relay service user via the Relay Service for Video Telephony.

### Conditional invocation and performance of a relay service

There are many further potential improvements for the methods to invoke the relay service. Facts about the two call parties and their terminals can provide an information base for decisions for the relay service to be invoked and how this should be performed. Such functions can mean that it becomes even simpler for the users to have access to convenient telecommunications.

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Information that may be desirable to form a basis for such decisions includes, for instance:

- *The capacity of the terminal to deal with various media, such as video, text and audio*
- *The user's preferences as regards medium for his/her communication*
- *Languages which the parties and the relay service prefer and have a command of of*
  - *Among spoken languages*
  - *Among written languages*
  - *Among sign languages*
- *Subject areas for calls, so that the relay service can choose staff with the appropriate competence*
- *Desires or needs for the performance and kind of relay service, for example relay services that deal with sign language, text or voice, for simultaneous speech and text, for typed text voice calls, etc.*
- *Need to pre-plan the call with the relay service*
- *Customer relations and account information.*

*Language: Swedish sign language  
Medium: total conversation terminal*

*Language spoken: Swedish  
Medium: telephone*

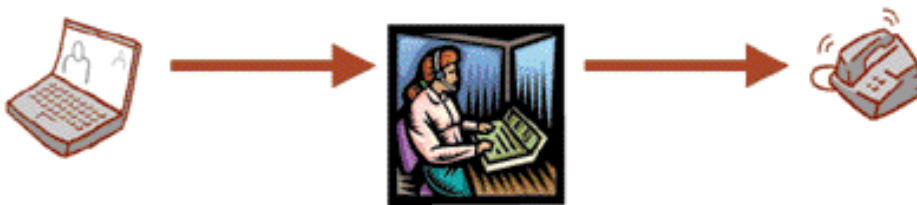


Figure 2.27.

*The relay service user has specified 'Swedish sign language' and rings to a voice telephone user who has specified 'spoken Swedish'. The call is then connected automatically through the Relay Service for Video Telephony.*

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The information that is required as a basis for decisions can be sent with the connection, stored in the network or stored in a database at the relay service. Decisions can be made by users, terminals, network components or communications assistants.

There are many other possibilities with such functions. When a call is connected, a relay service with adapted qualities may be included in the call. A relay service for video telephony can, for instance, be invoked between a relay service user who has been registered for using Swedish sign language and a voice phone user who is registered to only be able to use Swedish spoken language.

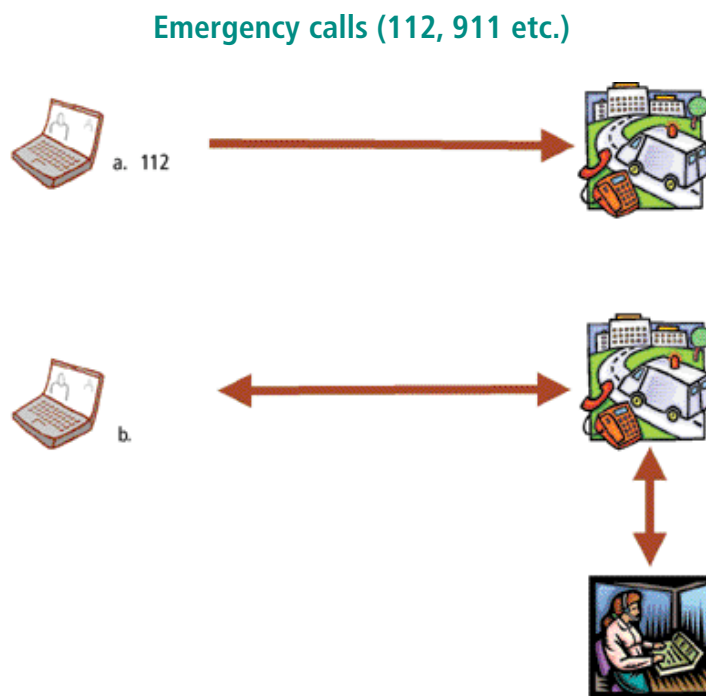


Figure 2.28.

a. The relay service user dials 112 for an emergency call on his/her text telephone.

b. The Emergency Centre or the relay service user requests assistance from the Relay Service for Text Telephony which is invoked for the call.

It is a tradition in Sweden that everybody, also people with disabilities, should be able to call 112 for emergency calls. This is an important principle, which avoids having to learn different numbers for different ways of making emergency calls. Nonetheless, it may with an emergency call be very valuable to be supported by a relay service that can deal with sign language, text or voice.

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It may occur with such calls that the party calling and the relay service have common media that cannot be presented in the Emergency Centres (known as 'SOS Centres' in Sweden), but translated to and from speech by the relay service. This primarily applies to sign language in a video channel. It is necessary to determine which cases it would be reasonable to perform in this way.

It is necessary to be able to invoke a relay service in a convenient way into an emergency call on the initiative of the relay service user or of the Emergency Centre.

#### Invocation of relay service in two steps

In order to make the description of the connection cases complete, a description is provided here of the two-step method. This is currently the most usual method of invoking a relay service for a call. This method should be retained even when more convenient methods have been introduced, as it provides good opportunities to discuss the service performance without first having to provide any destination address.

The relay service's own address is only used to connect a call between the party calling and the relay service. In calls with the relay service, the calling party states the address that is to be called up, following which the relay service connects to the address, and relays the call between the parties. The initiative for the connection can be taken by either of the parties.



Figure 2.29.

*The voice telephone user rings the number to a relay service.*

*In calls with the relay service, the number is transferred on a text telephone.*

*The relay service rings the text telephone and relays the call.*

### Connection of ordered relayed call

One method of getting a relay service for a call is to order the call. This possibility is available today, and is included here only to make the analysis complete.

An order can, for example, be placed for a call at a specified time. The relay service receives an order to perform a relayed call at a particular time. The service then makes calls to both parties and relays the call between them.

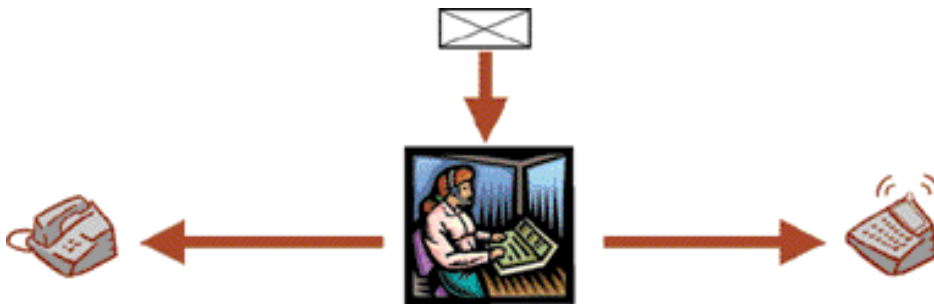


Figure 2.30.

*The relay service receives an order to perform a relay.*

*The relay service calls a text telephone user and a voice telephone user.*

*When both calls are connected, the relay can be performed.*

The described call cases can be implemented in various network environments. One key component is to have a mechanism that takes a call to a specific number to the user through the relay service. Most other call cases can be implemented by adding various supplementary services to that basic solution.

One smooth way of developing the solutions is to use the ENUM-mechanisms for translating telephone numbers to SIP-addresses and use VoIP and IP Multimedia technologies for routing the calls.

A report from the project initiated by the National Post and Telecom Agency in Sweden (Post- och telestyrelsen, PTS) gives details on implementation opportunities in various network technologies and relay services [PTS, 2006].

### References

PTS (2006). "Convenient invocation of Relay Services - A pre-study conducted by Omnitor, commissioned by the PTS - PTS-ER-2006:5".  
<http://www.pts.se/Dokument/dokumentlista.asp?SectionId=2884>.