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Foreword

This European Standard (Telecommunications series) has been produced by ETSI Technical Committee Services and Protocols for Advanced Networks (SPAN).

In accordance with ITU-T Recommendation I.130 [1], the following three level structure is used to describe the supplementary telecommunications services as provided by European public network operators under the pan-European Integrated Services digital Network (ISDN):

- Stage 1: is an overall service description, from the user's standpoint;
- Stage 2: identifies the functional capabilities and information flows needed to support the service described in stage 1; and
- Stage 3: defines the signalling system protocols and switching functions needed to implement the service described in stage 1.

The present document details the stage 1 aspects (overall service description) for the Remote Control (RC) service.

| National transposition dates | |
|--|------------------|
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1 Scope

The present document defines the stage one of the Remote Control (RC) service for the pan-European Integrated Services Digital Network (ISDN) as provided by European public telecommunication operators. Stage one is an overall service description from the user's point of view (see ITU-T Recommendation I.130 [1]), but does not deal with the details of the human interface itself.

The present document defines the interworking requirements of private ISDNs with the public ISDN.

In addition the present document specifies the base functionality where the service is provided to the user via a private ISDN.

The present document does not specify the additional requirements where the service is provided to the user via a telecommunications network that is not an ISDN, but it does include interworking requirements of other networks with the public ISDN.

Charging principles are outside the scope of the present document.

The RC service enables a user to control a (supplementary) service or a number of (supplementary) services associated with that user from another access using the procedures provided for the (supplementary) service (s) to be controlled at the served user's access.

The RC service is applicable to all circuit-switched telecommunication services.

The present document is applicable to the stage two and the stage three standards for the ISDN RC service. The terms "stage two" and "stage three" are also defined in ITU-T Recommendation I.130 [1]. Where the text indicates the status of a requirement, (i.e. as strict command or prohibition, as authorization leaving freedom, or as capability or possibility), this will be reflected in the text of the relevant stage three standards.

Furthermore, conformance to the present document is met by conforming to the stage three standard with the field of application appropriate to the equipment being implemented. Therefore, no method of testing is provided for the present document.

2 References

The following documents contain provisions which, through reference in this text, constitute provisions of the present document.

- References are either specific (identified by date of publication and/or edition number or version number) or non-specific.
- For a specific reference, subsequent revisions do not apply.
- For a non-specific reference, the latest version applies.

- [1] ITU-T Recommendation I.130 (1988): "Method for the characterization of the telecommunication services supported by an ISDN and network capabilities of an ISDN".
- [2] ITU-T Recommendation I.112 (1993): "Vocabulary of terms for ISDNs".
- [3] ITU-T Recommendation I.210 (1993): "Principles of telecommunication services supported by an ISDN and the means to describe them".
- [4] ETSI ETS 300 345 (1994): "Integrated Services Digital Network (ISDN); Interworking between public ISDNs and private ISDNs for the provision of telecommunication services; General aspects".
- [5] ETSI EN 301 132: "Integrated Services Digital Network (ISDN); Security tools (SET) for use within telecommunication services".

3 Definitions and abbreviations

3.1 Definitions

For the purpose of the present document, the following terms and definitions apply:

authentication procedure: procedure to verify the identity of the served user

basic access: see ITU-T Recommendation I.112 [2], clause 2.4, definition 425

confidential code: general term for the combination of characters (e.g.: PIN, TAN, Dynamic authentication security tool) used to identify the served user when operating the RC service

home location: location at which the service provider considers the user's ISDN number and services are registered

Integrated Services Digital Network (ISDN): see ITU-T Recommendation I.112 [2], clause 2.3, definition 308

Personal Identification Number (PIN): PIN is a 4 to 12 position alphanumeric code or password the customer possesses for authentication. This is used to provide authentication of the user with the access device

primary rate access: see ITU-T Recommendation I.112 [2], clause 2.4, definition 426

served user: user to whom the RC service is provided

supplementary service: see ITU-T Recommendation I.210 [3], clause 2.4

remote location: location other than Home location

transaction number: alphanumeric code selected from a list of TANs the customer possesses for authentication, used to provide authentication of the user with the access device

NOTE: Each TAN is only usable for one instance of authentication.

3.2 Abbreviations

For the purposes of the present document, the following abbreviations apply:

| | |
|------|-------------------------------------|
| IN | Intelligent Network |
| ISDN | Integrated Services Digital Network |
| PIN | Personal Identification Number |
| PSTN | Public Switched Telephone Network |
| PTN | Private Telecommunication Network |
| RC | Remote Control |
| TAN | Transaction number |

4 Description

The RC service shall be available to served users connected to the network via the basic access or the primary rate access.

The RC service enables a served user to control a (supplementary) service or a number of (supplementary) services which are subscribed to by that user from another access using the procedures provided for the (supplementary) service(s) to be controlled at the served user's access.

The RC service enables a user to perform the following actions from an access other than the served user's home location access:

- activation of (supplementary) services;
- deactivation of (supplementary) services;
- registration of information for (supplementary) services;
- erasure of information for (supplementary) services;
- interrogation of (supplementary) services.

The list of the supplementary services or services that can be controlled remotely is provided in annex A.

The home location access of the served user shall be protected against any unauthorized operation on that home location access by the use of an authentication procedure preceding any use of the RC service.

In the provision of RC service to the ISDN served users, the following considerations should be noted:

- Provision of RC supplementary service may be based on different network configurations including the access to the RC service through an equipment external to LEs. In this case service provision can include service elements provided by the external equipment (e.g. authentication procedure).
- Remote Control functionality may be used as generic feature allowing the handling of data related to IN services (e.g. in the case of activation of Call forwarding service using IN functions).
- Although provided to an ISDN served user, RC features as described in this specification may be accessed via a PSTN. This possibility does not impact the served user's operations on the RC service using the ISDN network access.

5 Procedures

The clauses below contain the procedures associated with the RC service only.

5.1 Provision and withdrawal

The RC service shall be provided after prior arrangement with the service provider.

A confidential code used in the authentication procedure shall be assigned to the served user at provision. The selection of the confidential code is a service provider option. It is recommended to use a PIN, a dynamic authentication security tool or, both PIN and TAN.

The RC service shall apply to the whole access, or as a service provider option, on a per ISDN number basis.

The service provider shall specify which (supplementary) services can be remotely controlled. The user may remotely control a (supplementary) service on an access or an ISDN number basis depending on the provision of that (supplementary) service at the home location.

As a service provider option, the RC service can be offered with two subscription options which are summarized in table 1.

Table 1

| Subscription option | Values |
|-----------------------------|--|
| Remote control restriction | A subset of the supplementary services |
| Call forwarding restriction | - Yes, (see note) - No. |

With the first subscription option the served user can select which supplementary services or services provided by the service provider the served user wants to be remotely controllable. If the service provider does not offer this subscription option, or if this option is offered and the value of the option is "No", all the supplementary services or services which are offered by the service provider to be remotely controlled may be remotely controlled by the served user.

With the second subscription option the served user may restrict the forwarded-to numbers which may be used when he remotely activates a call forwarding service.

NOTE: Examples of the second restriction could be that the forwarded-to number specified at remote activation is within a specified geographic area, or that the forwarded-to number specified at remote activation belongs to a list of predetermined forwarded-to numbers. It is outside the scope of the present document to specify which restrictions are possible.

Some networks may implement in addition a subscription option "default" defined as a RC service permanently activated under control of the service provider i.e. the served user has no control of activation/deactivation at either home or remote locations. In this case, in addition to the normal subscription option, the proposed subscription option is provided as a service provider option. For each subscription option, only one value shall be selected. Subscription options are summarized in table 2:

Table 2

| Subscription options | Value |
|---|---|
| The subscriber may activate/deactivate the RC service | - Yes, only at the home location - Yes, both at the home and remote location - No (option supported only by some networks). |

The RC service shall be withdrawn by the service provider upon request of the subscriber or for service provider reasons.

5.2 Normal procedures

5.2.1 Activation, deactivation and registration

The RC service shall be automatically activated on provision.

As a service provider option a subscription option may be offered to the served user which allows him to activate/deactivate the RC service from the home location only or from both the home location and remote location.

The activation/deactivation of the RC service at the remote location shall be performed with a specific procedure using the appropriate level of security (defined in EN 301 132 [5]).

NOTE: Some networks may adopt a less secured procedure for requests coming from the home location (absence of authentication).

5.2.2 Erasure

Not applicable.

5.2.3 Invocation and operation

The served user may invoke the RC service from any remote location.

When invoking the RC service the served user shall provide the ISDN number of the home location and the PIN only or both PIN and TAN depending of the authentication procedure chosen by the served user. (The authentication procedure is outside of the scope of the present document). The network shall indicate whether the invocation of the RC service has been successful.

The RC service may be invoked independently of the state of the served user's home access. Existing calls at the home access shall not be affected by the invocation of the RC service. Only new calls shall be affected by the actions associated with the RC procedure.

The home location of the served user shall be available for outgoing calls and incoming calls, as long as no (supplementary) service affecting the ability to make or receive calls has been activated.

Once the RC service has been invoked, then the served user may control (supplementary) services and the procedures given in the service description for the (supplementary) service being controlled shall apply for activation, deactivation, registration, erasure, and interrogation of that (supplementary) service. In addition, indications provided to the user at the home location shall be in accordance with the procedures given in the service description for the (supplementary) service being controlled.

Actions performed by using the RC service shall have equal status as actions performed directly from the served user's home location access.

More than one supplementary service may be remotely controlled during a single invocation.

For each supplementary service, in turn, at the remote location, the served user shall be given the result of the activation, deactivation, registration, erasure and interrogation of a (supplementary) service controlled by the RC service. Changes to that supplementary service will then take place as defined by that service.

When the served user has completed the control of one or several (supplementary) service (s), the served user shall explicitly indicate this to the network and the RC service shall be cancelled, using the same security mechanism as for invocation.

Invocation of the RC service shall not be possible from the home access.

5.2.4 Interrogation

The served user may interrogate the network from any location in order to determine the status of the RC service.

The following information shall be provided in response to a request:

- the RC service is not currently active; or
- the RC service is active.

As for activation/deactivation requests, an authentication procedure shall be required in the interrogation request.

Some networks may adopt a less secured procedure for requests coming from the home location (absence of authentication).

5.3 Exceptional procedures

When the RC service has been invoked, the exceptional procedures for the control of (supplementary) services subscribed to by the served user shall be in accordance with the procedures covered in the standards containing the service descriptions for those (supplementary) services.

5.3.1 Activation, deactivation and registration

A request for activation or deactivation of the RC service may be rejected with the following reasons:

- the RC service is not subscribed to;
- the authentication procedure has failed;
- deactivation and (re)activation of the RC service at the remote location is not supported by the network (see the service provider option of clause 5.2.1).

5.3.2 Erasure

Not applicable.

5.3.3 Invocation and operation

If the user attempts to invoke the RC service, the service provider may reject the request and shall give the reason for rejection.

Possible reasons for rejection are:

- the RC invocation attempt is made from the home access;
- the RC service is not subscribed to;
- the RC service has not been activated;
- the RC service is already in operation;
- the authentication procedure has failed;
- operation not provided remotely.

If the Remote Control user fails to cancel the invocation of the RC service within a period of time defined by the service provider, then the network shall cancel the invocation of the RC service and shall inform the served user that the RC service is no longer invoked.

5.3.4 Interrogation

If the request for interrogation of the RC service is rejected, a reason for the rejection shall be given to the user.

Possible reasons for rejection are:

- the RC service is not subscribed to;
- incorrect procedures used;
- user authentication unsuccessful.

6 Intercommunication considerations

6.1 Interworking with non-ISDNs

If the RC service is available in a non-ISDN and intercommunication between the ISDN and a non-ISDN applies, invocation of the RC service may be possible with the non-ISDN procedures.

6.2 Interworking with private ISDNs

A served user who has subscribed to (supplementary) services on the public ISDN may invoke the RC service from an access attached to a private ISDN if the intercommunication between the public ISDN and the private ISDN permits.

Where the RC service described in the present document is available in the private ISDN a user who has subscribed to supplementary services or services within that private ISDN may invoke the RC service of that private ISDN from an access attached to a public ISDN if the intercommunication between the public ISDN and the private ISDN permits. In order to distinguish between Remote control of private services and public services related to the interface between public and private networks the ISDN number of the home location shall be evaluated.

NOTE: Annex A lists the supplementary services or services that can be controlled remotely.

The public and the private ISDN shall interwork in a co-operative manner.

Interworking with private ISDN shall include the requirements given in ETS 300 345 [4].

7 Interaction with supplementary services

There is no interaction with supplementary services.

Control of supplementary services which apply to the remote access at the remote location by users other than the remote control user while the remote control user has invoked the RC service shall be treated as totally independent of the RC service and shall apply to the remote access.

NOTE: The use of RC service does not imply the setting up of a call. Therefore, interactions with supplementary services cannot occur.

8 Supplementary services that can be remotely controlled

Annex A lists the (supplementary) services which are recommended to be remotely controllable.

Annex A (normative): Applicability of the RC service to (supplementary) services

The following (supplementary) services have been identified as being able to be remotely controlled:

- Call forwarding unconditional;
- Call forwarding busy;
- Call forwarding no reply;
- Outgoing call barring-User Controlled;
- Selective call forwarding;
- Line hunting;
- Trunk hunting.

As a service provider option, the list may be extended to other (supplementary) services.

NOTE: The control of the Remote Control service from a remote location is part of the Remote control service (see clause 5.2.1).

History

| Document history | | |
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