



Electronic Communications Committee (ECC)  
within the European Conference of Postal and Telecommunications Administrations (CEPT)

## **IMPLEMENTATION OF ACR SUPPLEMENTARY SERVICE**

**Oulu, March 2006**

## **EXECUTIVE SUMMARY**

The purpose of this report is to provide information on the implementation of the Anonymous Call Rejection (ACR) Supplementary Service and to draw up conclusions for possible further actions.

ACR supplementary service enables the called user to reject incoming calls from subscribers who have restricted the presentation of their calling line identity (CLIR Supplementary Service).

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## Implementation of ACR supplementary service

### 1 INTRODUCTION

The purpose of this report is to provide information on the implementation of the Anonymous Call Rejection (ACR) Supplementary Service and to draw up conclusions for possible further actions.

### 2 EU LEGISLATION

#### 2.1 Directive on privacy and electronic communications

Directive on privacy and electronic communications /1/; Article 8 (3) (Presentation and restriction of calling and connected line identification) regulates as follows:

*Where presentation of calling line identification is offered and where the calling line identification is presented prior to the call being established, the service provider must offer the called subscriber the possibility, using simple means, of rejecting incoming calls where the presentation of the calling line identification has been prevented by the calling user or subscriber.*

According to Article 8 (6):

*Where presentation of calling and/or connected line identification is offered, the providers of publicly available services shall inform the public thereof and of the possibilities set out in paragraphs 1, 2, 3 and 4.*

However, the explanatory part of the directive (Paragraph 19) notes exceptional cases as follows:

*The application of certain requirements relating to presentation and restriction of calling and connected line identification and to automatic call forwarding to subscribers connected to analogue exchanges should not be made mandatory in specific cases where such application would prove to be technically impossible or would require a disproportionate economic effort.*

#### 2.2 Framework Directive and the List of Standards

Framework Directive /2/; Article 17 (Standardisation) encourages the use of the European standards and asks the Commission (EC), where necessary, to request the European Standards Organisations (ESOs) to draw up the standards.

Based on the request from the Commission, ETSI has produced the standards for the ACR Supplementary Service.

Framework Directive Article 17 (1) asks the Commission to draw up and publish in the Official Journal a list of standards to serve as a basis for harmonised provision of networks and services. The interim list was published in the Official Journal of the 31 December 2002.

The EC invited the ESOs to analyse the interim list. ETSI produced the report SR 002211 which was then reviewed by the Expert Group on Standardization (EGS) of the EC COCOM. ETSI has prepared a new version of the report SR 002211 /3/ using the criteria specified by EGS as a basis when reconsidering the list of standards.

The new version of the report SR 002211 states that the standards of the ACR Supplementary Service have not been included into the new List of Standards due to the fact that, although the ACR was standardized for PSTN/ISDN networks, the current implementations do not fully comply with the standards and ACR standards have not been produced for GSM networks.

The report also notes that ETSI TISPAN is preparing ACR standards for NGN (Next Generation Networks) that should be reconsidered when NGN is stable enough to be recognized as a new technology in the list.

### 3 ACR STANDARDS

#### 3.1 PSTN/ISDN and GSM networks

ACR Supplementary Service is defined in the following ETSI standards:

- ETSI EN 301798 Anonymous Call Rejection (ACR); Supplementary Service; Service description.
- ETSI EN 300 356-21; ISDN; Signalling System No.7; ISDN User Part (ISUP) version 4 for the international interface; Part 21; Anonymous Call Rejection (ACR) supplementary service; (ITU-T Recommendation Q.731 clause 4 (1993) modified). 2001.

The requirements in the directives concern both the PSTN/ISDN and the GSM networks. However, the standards were prepared for the PSTN/ISDN networks but not for the GSM networks.

Although there are no particular ACR standards for GSM networks, solutions similar to the PSTN/ISDN networks could be used. Differences in the subscriber access do not affect the solution implemented in the network.

#### 3.2 Next Generation Networks (NGN)

ETSI TISPAN is preparing standards for NGN aiming at to finalize the NGN Release 1 phase by the end of this year. The Release 1 phase comprises the ACR service as a “NGN simulation service” (similar to but not identical with the PSTN/ISDN ACR service).

The service description and signalling requirements are contained in the draft ETSI TS 1183011 “TISPAN; NGN Signalling Control Protocol; Anonymous Communication Rejection (ACR) and Communication Barring (CB) PSTN/ISDN simulation services”.

In the NGN the ACR simulation service is interpreted to be a special case of the Incoming Communications Barring (ICB) service. The ICB service makes it possible for a user to have barring of certain categories of incoming communications according to a barring program selected at provision time.

A barring program is expressed as a set of rules. The rules have a conditional part and an action part. For the ACR service the conditional part studies whether the originating user has restricted the identity (anonymous). If the conditional part matches with the rule the action part specifies that the incoming communication shall be barred.

#### 3.3 Provision of the ACR service

ACR supplementary service enables the called user to reject incoming calls from subscribers who have restricted the presentation of their calling line identity (CLIR Supplementary Service). The ACR rejects all calls where CLI is marked “presentation restricted” due to CLIR. The calls are rejected regardless whether the called subscriber is busy or free. Outgoing calls can be made normally.

The ACR supplementary service is provided on request. There is no obligation to offer the service free of charge, as is the case with some other CLI services.

The ACR is not invoked for incoming calls that have their CLI marked “not available” or “presentation restricted by network”. The calling subscriber must be informed that the call is rejected due to CLIR. The cause codes and the corresponding announcements and tones are defined in standards.

The standards define procedures for the customer to activate or deactivate the service from the terminal equipment. The service can also be activated and deactivated permanently by the operator.

## 4 IMPLEMENTATION ALTERNATIVES

Implementation alternatives and basic elements in each alternative are shortly described below. Alternative 3 is the implementation that was standardised by ETSI for the ACR. The other two alternatives provide information on the possibilities to introduce the ACR using the existing network capabilities (e.g. ISUP2 or ISUP3 signalling versions).

The main shortcomings in Alternative 1 and Alternative 2 are:

- The distinction between the network restriction and the subscriber restriction cannot be made. The standards give as an example the following cases for network restriction: special call-back arrangements, special originating accesses (emergency centre, pay phone, operator-assisted calls) and special services (wake-up calls).
- The calling party is not informed that the call is rejected due to CLIR.

### 4.1 Alternative 1 (User based solution)

The end-user equipment recognizes that CLIR has been set up for an incoming call and rejects the call. The user-based solution requires special terminal equipment. "Black and white" number lists enable call rejection based on a calling telephone number.

Implementation example in GSM access network:

The solution is based on the access signalling information. In the GSM access signalling the *Calling line identity* include the *Calling party BCD number* -information and the possible subaddress information. The *Calling party BCD number* comprises the number information and the *Presentation/screening* indicators. If the incoming call does not contain the *Calling line identity* information, the *Presentation* indicator value in the SETUP message sent to the subscriber is set to be "*Number not available*".

If the CLIP Supplementary Service is in use and if the calling user has activated the CLIR Supplementary Service in order to restrict the presentation of the number, the exchange sends in the *Calling party BCD element* of the SETUP message to the subscriber the *Presentation* indicator value "*Presentation restricted*" without the calling subscriber's number.

The called user can reject the call on the basis of the received *Presentation restricted* information displayed in the terminal e.g. as "*Unknown number*" simply by pressing *End call* button.

### 4.2 Alternative 2 (Network based solution, ISUP2/ISUP3; Apri 11 not in use)

Calls are rejected by a network and therefore normal terminal equipment can be used.

For the time being, ISUP version 2 (ISUP2) and ISUP version 3 (ISUP3) are widely in use for network signalling. In ISUP2/ISU3 versions the Address presentation restricted indicator (Apri) of the Calling party number parameter may have the following values:

00	presentation allowed
01	presentation restricted
10	address not available
11	spare

ISUP2/ISUP3 signalling versions carry the information "presentation allowed/presentation restricted" but they cannot indicate whether the restriction is made by the user or by the network.

Operation when Apri 11 is not in use:

Information from the network to called subscriber	ACR decision	Called subscriber's terminal equipment
"address not available"	ACR not invoked	call delivered, no Calling Identity displayed
"presentation allowed"	ACR not invoked	call delivered, Calling Identity displayed
"presentation restricted"	ACR invoked	no call delivered, no Calling Identity displayed

#### 4.3 Alternative 3 (Network based solution, ISUP4; Apri 11 is in use)

ISUP4 standards contain all the necessary features for the ACR supplementary service as it was standardized by ETSI. ISUP4 version makes it possible to distinguish whether the presentation is restricted by the subscriber or by the network.

In ISUP4 version the Address presentation restricted indication (Apri) of the Calling party number parameter may have the following values:

- 00 presentation allowed
- 01 presentation restricted
- 10 address not available
- 11 presentation restricted by the network

Operation when Apri 11 is in use:

Information from the network to called subscriber	ACR decision	Called subscriber's terminal equipment
"address not available"	ACR not invoked	call delivered, no Calling Identity displayed
"presentation allowed"	ACR not invoked	call delivered, Calling Identity displayed
"presentation restricted"	ACR invoked	no call delivered, no Calling Identity displayed
"presentation restricted by network"	ACR not invoked	call delivered, no Calling Identity displayed

## 5 TRIS GUIDELINES

In CLI document /4/ TRIS gives the following guidelines for ACR implementation:

*The service should only reject a call where the caller has blocked their CLI. Calls where CLI may not be presented for reasons other than blocking by the calling user, should not be rejected.*

*When an anonymous incoming call is rejected by the network, the caller should receive an announcement indicating that their call has been rejected because they have not released their CLI. The announcement should inform the caller that if they wish to complete the call, they should dial again this time unblocking their CLI, or call from another line. When suitable standards become available the announcement should be provided by the originating telephone network and also inform the caller of the unblocking code.*

*The current ETSI ISUP standards do not cater for the distinction between "presentation restricted by network" and "caller withheld" to be carried forward in the network, with the result that such calls may be rejected by anonymous call rejection services and render the caller incapable of completing the call. The ETP therefore urges caution in the use of anonymous call rejection services within member states until the ability to distinguish between these two types of CLI withheld are catered for in the signalling systems. As a minimum it is recommended that where no CLI is received at all these calls should not be treated as anonymous and should be allowed to complete to customers with anonymous call rejection. Failure to do this could result in the vast majority of international calls failing to complete to these users as well as calls from analogue exchanges and any other lines where CLI transmission or blocking is not possible.*

## 6 QUESTIONNAIRE ON IMPLEMENTATION OF ACR

A questionnaire on the status of implementation of ACR was sent to the TRIS members. Information was received from several member countries. The received information indicates that,

- The GSM operators do not provide the service in their networks but the Alternative 1 (User based solution) is widely in use.
- Several PSTN/ISDN operators offer the ACR service based on the Alternative 2 solution (ISUP2/ISUP3) but none of them has yet introduced the standardized Alternative 3 (ISUP4) facilities.
- Although the ACR has been available for a quite long time the interest and demand for the service have been very low.
- The interest of operators and vendors has moved towards the new technology (e.g. IP and NGN) and they seem to be unwilling to introduce new facilities in the PSTN/ISDN and GSM networks.

## 7 CONCLUSIONS

As a summary it can be concluded that

- the ACR service was standardized for the PSTN/ISDN networks. "ACR-like" services are in use but they do not fully comply with the ETSI ACR standards.
- the ACR service was not standardized for the GSM although the CLI services are more widespread in the GSM networks than in PSTN/ISDN networks.
- PSTN/ISDN and GSM networks are well established and no major evolution is expected in the traditional circuit switched technology.
- The standardization organizations are working very actively in order to prepare standards for the IP based NGN and the NGN deployments are planned to start in the near future.

It is recommended that the focus in standardization should be moved from the PSTN/ISDN and GSM networks to the IP/NGN networks in order to ensure that the ACR and the other privacy protection requirements are properly taken into account in the early phase of the standardization process and that the future implementations support the international interoperability of the services. During the review of the regulatory framework it should be studied whether amendments are needed to the ACR and the other privacy protection requirements.

## 8 REFERENCES

1. Directive 2002/58/EC concerning the processing of personal data and the protection in the electronic communications sector (Directive on privacy and electronic communications).
2. Directive 2002/21/EC on a common regulatory framework for electronic communications networks and services (Framework Directive).
3. Draft ETSI SR 002211; Electronic communications networks and services; Candidate list of standards and/or specifications in accordance with Article 17 of Directive 2002/21/EC.
4. ETP (European Telecommunications Platform) Guidelines for Calling Line Identification; CLI Working Group; Issue 4, September 2002.