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CCITT

I.252.2

THE INTERNATIONAL
TELEGRAPH AND TELEPHONE
CONSULTATIVE COMMITTEE

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**INTEGRATED SERVICES DIGITAL
NETWORK (ISDN)**

**GENERAL STRUCTURE AND SERVICE
CAPABILITIES**

CALL FORWARDING BUSY

Recommendation I.252.2



Geneva, 1992

FOREWORD

The CCITT (the International Telegraph and Telephone Consultative Committee) is a permanent organ of the International Telecommunication Union (ITU). CCITT is responsible for studying technical, operating and tariff questions and issuing Recommendations on them with a view to standardizing telecommunications on a worldwide basis.

The Plenary Assembly of CCITT which meets every four years, establishes the topics for study and approves Recommendations prepared by its Study Groups. The approval of Recommendations by the members of CCITT between Plenary Assemblies is covered by the procedure laid down in CCITT Resolution No. 2 (Melbourne, 1988).

Recommendation I.252.2 was revised by Study Group I and was approved under the Resolution No. 2 procedure on the 4th of August 1992.

CCITT NOTES

- 1) In this Recommendation, the expression "Administration" is used for conciseness to indicate both a telecommunication Administration and a recognized private operating agency.
- 2) A list of abbreviations used in this Recommendation can be found in Annex A.

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Recommendation I.252.2

CALL FORWARDING BUSY

(revised 1992)

1 Definition

Call Forwarding Busy Service permits a "served user" (see § 2.2) to have the network send to another number all incoming calls for the served user's ISDN number (or just those associated with a specified basic service) which meet busy at the served user's ISDN number. The served user's originating service is unaffected.

The forwarded-to number is registered with the network for use on all calls.

Note – In normal situations, the service is provided on a per access basis. (In these situations, there is a one-to-one relationship between ISDN number and access.) However, the network may recognize multiple numbers on a single interface; in addition, it may not understand a complete ISDN number (e.g. Direct-Dialling-In). In these cases, the Call Forwarding Busy service is offered on the basis of the part of the ISDN number which the network can recognize.

2 Description

2.1 General description

For a given ISDN number, the Call Forwarding Busy (CFB) service (including options) may be subscribed to for each basic service to which the user(s) of the number subscribes, or collectively for all the basic services to which the user(s) subscribes. Since subscription is on an ISDN number basis, the same call forwarding subscriptions will apply to all terminals using this number.

Note – In this service description, it is assumed that a single ISDN number is not shared across multiple interfaces. A single ISDN number may, however, be shared by multiple terminals on the same interface. Procedures permitting an ISDN number to be shared across multiple interfaces are for further study. For multiple access installations, it may be possible for the user to specify, on activation, if the service is applicable to a specific access or all accesses associated with that installation.

The served user can request a different forwarded-to number for each basic service subscription parameter value to which he has subscribed.

An indication that the CFB service is activated on a number may, as an option, be given to the user who has forwarding activated, each time an outgoing call is made. This may take the form of a special indication in the proceed response.

2.2 Specific terminology

Served user: User of a particular ISDN number who is requesting that calls to his number be forwarded. This user may also be referred to as the forwarding user or the called user.

Forwarded-to-user: User to whom the call shall be forwarded.

2.3 Qualifications on the applicability to telecommunication services

No restrictions identified.

3 Procedures

3.1 Provision/withdrawal

CFB service shall be provided after pre-arrangement with the service provider.

The service can be offered with four subscription options. Options apply separately to each basic service subscribed to on each ISDN number. For each subscription option, only one value can be selected. Subscription options are summarized below:

Subscription options	Value
Served user receives notification that the call has been forwarded	No Yes, with information about the call for the NDUB case (see § 3.2.2)
Calling user receives notification that the call has been forwarded (see Note)	No Yes, without the forwarded-to user number Yes, with the forwarded-to user number
Served user receives notification that CFB is currently activated	No Yes
Served user releases his/her number to forwarded-to user	No Yes

Note – Notification of diversion to the calling user A may be provided as a network provider option.

This service will be withdrawn by the service provider at the subscriber's request or for administrative reasons.

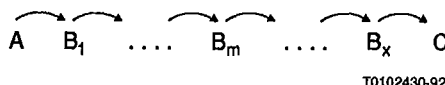
3.2 Normal procedures

3.2.1 Activation/deactivation/registration

Same as for Call Forwarding Unconditional (CFU) (see Recommendation I.252.4).

3.2.2 Invocation and operation

The following illustration clarifies the CFB procedures. Assume that A calls B₁, who forwards the call to B₂, ..., B_m, ..., B_x. The final receiver of the call is C.



3.2.2.1 Served user B_m's perspective

If CFB is active and the served user is network determined user busy (NDUB) or user determined user busy (UDUB), then an incoming call to the served user will be forwarded. In case of NDUB, the call is not offered to the served user.

In the case of UDUB, the call will have been offered to the served user. Normal call set-up information will already have been provided to the served user. When the forwarding attempt is started, the served user, as a subscription option, may receive notification that a call has been forwarded. No further notification is given.

When an incoming call is forwarded without being offered to the served user (i.e. NDUB condition), the served user, as a subscription option, may receive notification of the call forwarding (but will not be able to answer the incoming call). This notification is given as soon as the forwarding attempt is started.

This notification includes the following information (on the call that has been forwarded):

- 1) indication that a call has been forwarded;
- 2) telecommunications service information (e.g., bearer capability, higher layer compatibility);
- 3) ' user-to-user information;
- 4) B_m 's number; and
- 5) calling party number A [if the calling line identification presentation (CLIP) is applicable].

If multiple forwardings have occurred and the served user is authorized to receive additional information he may also receive:

- 6) originally called number B_1 ;
- 7) cause for original forwarding;
- 8) last forwarding number $B_{(m-1)}$;
- 9) cause for last forwarding.

3.2.2.2 Forwarded-to user C's perspective

The forwarded-to user C will receive an indication that the call has been forwarded.

As an option he may also receive:

- 1) originally called number B_1 ;
- 2) cause for original forwarding;
- 3) last forwarding number B_x ;
- 4) cause for last forwarding.

(Depending on the use of other supplementary services, the forwarded-to user C may also receive information such as the calling party A number and user-to-user signalling. See the description of interactions with other supplementary services.)

3.2.2.3 Calling user A's perspective

The following notification procedures for the calling user A are a network provider option. The notification procedures for calling user A shall only operate if the served user has subscribed to the option "calling user receives notification that call has been forwarded".

For the initial diversion and for any subsequent call forwarding no reply (CFNR), or call deflection (CD) after alerting has commenced, the network will take the following actions depending on the subscription option parameter of the served user.

- 1) If this parameter is set to "calling user does not receive notification", no notification is given to the calling user.
- 2) If this parameter is set to "notify calling user, without forwarded-to number", then the calling user will receive a notification that the call has been forwarded without the forwarded-to number, providing a previous diverting user has not requested that no notification is given as under item 1) above.

- 3) If this parameter is set to "notify calling user, with forwarded-to number", then the calling user will receive a notification that the call has been forwarded, providing a previous diverting user has not requested that no notification is given as under item 1) above. In addition, if alerting takes place (e.g. at user C), notification of the current forwarded-to number will be given when alerting commences if all served users in all previous diversions subscribe to "notify calling user, with forwarded-to number".

Transfer of the forwarded-to user's number may be subject to number notification restrictions due to the invocation of other supplementary services at the forwarded-to user.

3.3 *Exceptional procedures*

3.3.1 *Activation/deactivation/registration*

Same as CFU (see Recommendation I.252.4).

3.3.2 *Invocation and operation*

Call forwarding applies only to subscribed basic services. Calls to an ISDN number requesting a basic service which is not subscribed to, will never be forwarded.

In cases where a user may be given the address of users involved in the call [e.g. when the calling user may receive the forwarded-to user's address, or when the forwarded-to user may receive the forwarding user's address and originally forwarding address (multiple forwarding), or when the served user may receive user's addresses] as part of that user's notification and this address information is unavailable (e.g. due to address presentation restriction or interworking), the user who would have been given the address shall get an indication of the reason why no number can be given.

Within an ISDN, or tandem ISDNs, the total number of all forwardings for each call should be limited. The maximum number of such connections should be limited to a value between three and five for each call. This is to prevent infinite looping.

If the limit is reached and an attempt is made to forward the call an additional time, then the forwarded call shall be treated as follows:

If the forwarded call cannot be completed to the forwarded-to destination, then the network will clear the forwarded leg of the call. Specifically, if CFB has been invoked, and CFNR or CD after alerting has not occurred, then the call would be cleared back towards the calling user, and the calling user would be sent a cause to indicate that the call cannot be completed (i.e. because of network congestion, invalid number, facility not available, etc.). This information shall not explicitly reveal that the call has been forwarded. Refer to Recommendations I.252.3 or I.252.5 respectively, for the case where the forwarded call cannot be completed and CFNR or CD, after alerting, has occurred.

3.4 *Alternative procedures*

None identified.

4 **Network capabilities for charging**

This Recommendation does not cover charging principles. Future Recommendations in the D-Series are expected to contain that information.

It shall be possible to charge the subscriber accurately for the service.